

SCOTT A. CIVJAN, P.E., Associate Professor

University of Massachusetts at Amherst

College of Engineering

Department of Civil and Environmental Engineering

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EDUCATION

Ph.D. in Engineering (Structural), The University of Texas at Austin, August 1998

M.S.C.E (Structural), The University of Texas at Austin, May 1995

B.S.C.E, Washington University, St. Louis, May 1989

PROFESSIONAL REGISTRATION

P.E. Registration Massachusetts (#42419) and Texas (#81440)

OSHA 10 Hour Certification

PROFESSIONAL EXPERIENCE

The University of Massachusetts, Amherst

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|---|---------------|
| Associate Professor, CEE | 2004-Present |
| Assistant Professor, CEE | 1998- 2004 |
| Adjunct Professor, Architecture and Design | 2004-2008 |
| Structural Engineering/Mechanics Group Coordinator | 2005-Present |
| CEE Chief Undergraduate Advisor | 2007- Present |
| CEE Personnel Committee | 2005-2008 |
| Chair | 2006-2007 |
| CEE Curriculum Committee – Chair | 2007-Present |
| Environmental Performance Advisory Committee (EPAC Chancellor Appointment) | 2007-Present |
| ASCE Student Chapter co-advisor | 2006-2008 |
| Advisor of Steel Bridge Team (ASCE student chapter) | Yearly |

The University of Texas at Austin

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|-----------------------------|-----------|
| Graduate Research Assistant | 1993-1998 |
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Black and Veatch Architects and Engineers, Overland Park, KS

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| Civil Engineer 03 | 1989-1993 |
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Work included the structural analysis, design, detailing, checking, and construction contact for power plant facilities. Work included the design and detailing of deep pit concrete and pump structures, computer finite element analysis of structural mats for power plant buildings, and initial design of steel superstructures for boiler buildings. Culverts, retaining walls, site layouts and pipe routing were also performed. Coordinated with field engineers, consortium partners, contractors, and equipment manufacturers. Supervised drafters and entry-level engineers.

RESEARCH INTERESTS:

Structural Engineering with an emphasis on experimental research. Specific areas of interests include seismic design of structures, composite steel/concrete structures, steel design and structural monitoring. Interactions between disciplines (such as architectural/structural components and soil-structure interaction) are of special interest.

COURSES TAUGHT AT UMASS

CEE434 Structural Steel Design
 CEE542 Advanced Topics in Steel Design
 CEE646 Seismic Concepts and Design of Structures
 CEE433 Design of Reinforced Concrete Structures
 ENGIN111 Introduction to Civil and Environmental Engineering
 CEE365 Laboratory Experience for Students in Civil/Environmental Engineering
 ARCH DES 690T – Tectonics III (Architecture)
 Critiques of Architecture Studio Projects

PROFESSIONAL ACTIVITIES

Associate Editor: ASCE Journal of Structural Engineering, 2004-2007

Memberships/Committees

American Concrete Institute

Associate Member, Paper Awards Committee, 2001-2004

Chair – Subcommittee SC-1 (Construction) Committee, 2003-2004

Associate Member, ACI335, “Composite and Hybrid Structures” 1999-2005

American Institute of Steel Construction

Partners in Education Committee, 2004- Present

American Society of Civil Engineers

BSCE Structural group Committee, Member, 2002- 2007

Lecture Series Committee Member, 2002 – 2007

Earthquake Engineering Research Institute

National Steel Bridge Alliance

Structural Engineering Institute

Building Seismic Safety Commission Technical Subcommittee TS11 – Composite Structures. Corresponding Member, 2006 - Present

Reviewer for the following:

Proposals: NSF Proposals (NEESR Small Group Buildings , NEESR Individual Investigator – Concrete, Natural and Man-Made Hazards Mitigation, Large Structural and Building Systems), Cooperative Grants Program of the U.S. Civilian Research and Development Foundation, NEES site review team (2007)

Journals: ASCE *Journal of Structural Engineering* , ASCE *Journal of Bridge Engineering* ,ACI *Structural Engineering Journal*, ACI *Concrete International*, ACI *Special Publication on Composite Steel-Reinforced Concrete Structures*, AISC *Engineering Journal*, Elsevier *Engineering Structures* ,Techno Press *Structural Engineering and Mechanics*

Awards

Student nominated COE *Commencement Speaker*, May 2006

ASCE Student Chapter *Teacher of the Year*, 2006

FUNDED RESEARCH:

NSF (PI) Co-PIs Lisa McLaughlin, Sanjay Arwade, Ray Mann “NEESR-II: Engineered Cladding Interaction with Steel Frame Buildings” \$752,335 *Proposal Submitted*

Vermont Agency of Transportation (PI) co-PI: Sergio Breña “Performance Monitoring of Jointless Bridges – Phase III Supplemental Equipment Funding” (\$63,000) **2008-2011**

Vermont Agency of Transportation (PI). co-PI Sergio Brena. “Performance Monitoring of Jointless Bridges – Phase III” (\$372,984) **2007-2011**

NETC (PI), Co PI’s Sergio Brena and Michael Knodler “Enhancing the Reflectivity of Concrete Barriers Phase I”. (\$48,000) **2009-2010**

American Institute of Steel Construction (PI) “Development of Core Teaching Aids for Structural Steel Design Courses” (\$20,000) **2007-2009**

NETC (co-PI), Sergio Brena (PI) “Advanced Composite Materials in New England’s Transportation Infrastructure: Phase I Implementation Selection of Prototype” (\$25,909) **2007-2009**

FHWA (Research Team Personnel) PIs: John R. Mullin and Jack Ahern “Feasibility Study for a Recreational and Wildlife Passage across Route 2 in Concord, Massachusetts” (\$8,000 to CEE Personnel, \$172,500 Total) **2006-2008**

Massachusetts Executive Office of Transportation Proposal (PI) Co-PI Ray Mann “Terrazzo Cracking” (\$59,594) **2006-2008**

Vermont Agency of Transportation (co-P.I.), P.I. Sergio F. Breña; “Evaluation of Bridge Performance and Rating Through Non-destructive Load Testing” (\$166,320) **2005-2007**

NETC (PI) “Field Studies of concrete Containing Salts of an Alkenyl-substituted Succinic Acid” (\$140,000) **2004-2007**

NETC (co-PI), PI: Sergio Brena “Advanced Composite Materials for New England’s Transportation Infrastructure: A Study for Implementation and Synthesis of Technology and Practice” (\$53,339). **2003-2006.**

MassHighway (PI), co-PI Sergio Brena, Jason DeJong. “Behavior of Integral Abutment Bridges: Field Data and Computer Modeling”. (\$126,521) **2002-2005**

Weidlinger Associates, Inc. (PI). “Investigation of a Cambered “Tuned” Strut for Use in Large Excavations.” (\$10,000) **2003-2004**

MassHighway Submittal (PI), co-PI Sergio Brena. “Data Collection at the Orange-Wendell Bridge”. (\$24,495) **2002**

MassHighway Submittal (PI), co-PI Sergio Brena. “Data Collection at the Orange-Wendell Bridge”. (\$14,495) **2001-2002**

NETC (PI) “Performance Evaluation and Economic Analysis of Combinations of Durability Enhancing Admixtures (Mineral and Chemical) in Structural Concrete for the Northeast U.S.A.” NETC 97-2. (\$127,000) **1998-2002**

Faculty Research Grant (PI) “Capacity of Shear Studs in Composite Construction Subject to Cyclic Loads” (\$10,000) **1998-1999**

PUBLICATIONS AND PRESENTATIONS**Journal Publications:**

Ahern, Jack, Warren, Paige, Charney, Noah, Jackson, Scott, Mullin, John, Kotval, Zenia, Brena, Sergio, **Civjan, Scott**, Carr, Ethan. "Issues and Methods for Transdisciplinary Planning of Combined Wildlife and Pedestrian Highway Crossings". *Transportation Research Record*. Accepted for Publication

Civjan S.A., Bonczar C.H., Breña S.F., DeJong J.T., and Crovo D.S., "Integral Abutment Bridge Behavior: Parametric Analysis of a Massachusetts Bridge", *Journal of Bridge Engineering*, ASCE, Vol 12, No 1, 2007 pp. 64-71.

Breña, S.F., Bonczar, C.H., **Civjan, S.A.**, DeJong, J.T., and Crovo, D.S., "Evaluation of Seasonal and Yearly Behavior of an Integral Abutment Bridge", *Journal of Bridge Engineering*, ASCE, Vol 12, No 3, 2007 pp 296-305

Civjan, Scott A. and Crellin, Benjamin J. "A New Admixture to Mitigate Corrosion Problems", *Concrete International*. August 2006, Pp. 2-6.

Civjan, Scott A., LaFave, James M., Trybulski, Joanna E., Lovett, Daniel, Lima, Jose, and Pfeiffer, Donald. "Effectiveness of Corrosion Inhibiting Admixture Combinations in Structural Concrete" *Cement and Concrete Composites*, Vol. 27 Issue 6, 2005. Pp. 688-703.

Civjan, Scott A., Bonczar, Christine Crellin, Benjamin. "A New Admixture to Minimize Corrosion: Overall Performance of DSS Concretes" – New Product Watch. *Structure Magazine*. February 2005. Pp. 38-40.

Civjan, Scott A., Brena, Sergio F., Butler, David A., and Crovo, Daniel S. "Field Monitoring of an Integral Abutment Bridge in Massachusetts" *Design of Structures 2004*. *Transportation Research Record*, No. 1892. Pp. 160-169.

Clouston, Peggi, **Civjan, Scott A.** and Bathon, Leander. "Shear Behavior of a Continuous Metal Connector for a Wood-Concrete Composite System" *Forest Products Journal*. 54(6) Pp. 76-84. 2004.

Civjan, Scott A. and Singh, Prabhjeet "Behavior of Shear Studs Subjected to Reversed Cyclic Loading", *ASCE Journal of Structural Engineering*, November 2003. Pp. 1466-1474.

Jones, Sean C. and **Civjan, Scott A.** "Application of FRP Overlays to Extend Steel Fatigue Life", *ASCE Journal of Composites for Construction*, November 2003. Pp. 331-338.

LaFave, James M., Pfeifer, Donald W., Sund, Daniel J., Lovett, Daniel and **Civjan, Scott A.**, “Using Mineral and Chemical Durability Enhancing Admixtures in Structural Concrete”, *Concrete International*, August, 2002. Pp. 71-78.

Civjan, Scott A., Engelhardt, Michael D., and Gross, John L. “Slab Effects in SMRF Retrofit Connection Tests”, *ASCE Journal of Structural Engineering*, March 2001. Pp. 230-237.

Civjan, Scott A., Engelhardt, Michael D., and Gross, John L. “Retrofit of Pre-Northridge Moment Resisting Connections”. *ASCE Journal of Structural Engineering*, April 2000. Pp. 445-452.

Civjan, Scott A., Jirsa, James O., Carrasquillo, Ramon L., and Fowler, David. W. “Instrument to Evaluate Remaining Prestress in Damaged Prestressed Bridge Girders”, *PCI Journal*, March/April, 1998. Pp. 62-71.

Final Reports:

Jeffrey, A. E., Breña S.F and **Civjan, S. A.** “Evaluation of Bridge Performance through Non-Destructive Load Testing” Vermont Agency of Transportation Final Report 2009-1. January 2009. 271 Pages.

Civjan, Scott A. and Crellin, Benjamin. “Field Studies of Concrete Containing Salts of an Alkenyl-Substituted Succinic Acid” NETC03-2. Final Report prepared for the New England Transportation Consortium (NETC). NETR73. December 2008. 135 Pages
http://www.netc.umassd.edu/reports_listing.html

Civjan, Scott A., Kinoshita-Mann, Ray, and Mitchell, Mike J. “Terrazzo Cracking” Cooperative Research Program Task Order #11 Final Report, Executive Office of Transportation, August 2007. 128 Pages.

Ahern, Jack, Warren, Paige, Charney, Noah, Jackson, Scott, Mullin, John, Kotval, Zenia, Brena, Sergio, **Civjan, Scott**, Carr, Ethan. “Walden Passage Feasibility Study” FHWA January 2007.

Breña S.F., **Civjan S.A.**, and Goodchild M., “Advanced Composite Materials for New England’s Transportation Infrastructure: A Study for Implementation and Synthesis of Technology and Practice”, *Final Project Report: NETC 01-1 (NETCR62)*, New England Transportation Consortium, May 2006. 77 Pages.
http://www.netc.umassd.edu/reports_listing.html

Bonczar, Christine H., **Civjan, Scott A.**, Brena, Sergio F., DeJong, Jason, “*Behavior of Integral Abutment Bridges: Field Data and Computer Modeling*”, Final Report prepared for the Massachusetts Highway Department. UMTC-05-04, June 2005. 201 Pages.

Civjan, S. A., LaFave, J. M, Lovett, D., Sund, D. J., Trybulski, J. “*Performance Evaluation and Economic Analysis of Combinations of Durability Enhancing Admixtures (Mineral and Chemical) in Structural Concrete for the Northeast U.S.A.*”, NETC 97-2 Final Report prepared for the New England Transportation Consortium. February, 2003. 165 Pages http://www.netc.umassd.edu/reports_listing.html

Civjan, Scott A., Engelhardt, Michael D. “Experimental Investigation of Methods to Retrofit Connections in Existing Seismic-Resistant Steel moment Frames”, Summary Final Report to the National Institute of Standards and Technology, The University of Texas at Austin, 1998.

Civjan, Scott A., Jirsa, James O., Carrasquillo, Ramon L., and Fowler, David. W. “Method to Evaluate Remaining Prestress in Damaged Prestressed Bridge Girders”, Research Report CTR 0-1370-2, Center for Transportation Research, October, 1995.

Invited Presentations:

Civjan, Scott A. “Core Teaching Aids for Courses in Structural Steel Design”, NASCC Educators Session, Phoenix, AZ, April 2009.

Civjan, Scott A., Larsen, Gershon and Hines, Eric M. “Historic Shear Connections: Rivet and Moment Capacity Data”, *Connections VI Sixth International Workshop on Connection in Steel Structures*, Chicago, June 2008.

Civjan, Scott A., Galloway, Judd, Kirmani, Minhaj, Aristorenas, George, “Experimental and Analytical Verification of the “Tuned Strut” Concept”, *ASCE Structures Congress*. St. Louis, MO May 2006.

Civjan, Scott A. and Rhodes, Philip S. “Hycrete: Innovative Admixture for Extending Structural Life of Concrete--Chemistry and Test Results” (P05-0030) *Transportation Research Board* Washington D.C. January 2005.

Civjan, Scott A., Bonczar, Christine H., Brena, Sergio F., DeJong, Jason, and Crovo, Daniel. “Integral Abutment Bridges: A Case Study and Parametric Analysis”, Louisiana Structures Congress, September 9, 2005 (CANCELLED)

Civjan, Scott A. and Crellin, Benjamin, “Hycrete – DSS An Innovative Admixture for Concrete: An Update on NETC 03-2” *16th Annual NE Materials and Research Meeting* Concord, NH June 7, 2005.

Civjan, Scott A. “Evaluation of DSS Corrosion Inhibitor”, *North Eastern States Materials Engineers’ Association 80th Annual Meeting*, Portsmouth, NH October 19, 2004.

Civjan, Scott A. and Engelhardt, Michael D. “Experimental Testing of Retrofit Steel Moment Connections”, *Connections in Steel Structures IV: Steel Connections in the New Millennium* international, Roanoke, Virginia, October 22-25, 2000.

Conference Presentations/Proceedings:

Nguyen, Quan V., **Civjan, Scott A.**, “Seismic Energy Dissipation of Steel Buildings Using Engineered Cladding Systems”, *STESSA*, Philadelphia, August 2009 (Paper Accepted)

Kalayci, Emre, Brena, Sergio F. and **Civjan, Scott A.** “Curved Integral Abutment Bridges – Thermal Response Predictions through Finite Element Analysis”, 2009 *ASCE Structures Congress*. Austin, TX. April 2009.

Ahern, Jack, Warren, Paige, Charney, Noah, Jackson, Scott, Mullin, John, Kotval, Zenia, Brena, Sergio, **Civjan, Scott**, Carr, Ethan. “Issues and Methods for Transdisciplinary Planning of Combined Wildlife and Pedestrian Highway Crossings”. *Transportation Research Board Annual Meeting*. Washington D.C. January 2009

Civjan, Scott A. (2005) “A New Corrosion Inhibitor for Concrete Construction” *Construction Materials: Third International Conference on Construction Materials Performance, Innovations and Structural Implications. ConMat’05*. Vancouver, British Columbia, Canada. Full Paper available on Conference CD

Bonczar, Christine H., Brena, Sergio F., **Civjan, Scott A.**, DeJong, Jason, Crellin, Benjamin and Crovo, Daniel, “Field Data and FEM Modeling of the Orange-Wendell Bridge”. *FHWA Conference on Integral Abutment and Jointless Bridges*. Baltimore, MD, March 2005. Pp. 163-173.

Bonczar, Christine H., Brena, Sergio F., **Civjan, Scott A.**, DeJong, Jason, and Crovo, Daniel, “Pile Behavior and Design – Field Data and FEM Studies” . *FHWA Conference on Integral Abutment and Jointless Bridges*. Baltimore, MD, March 2005. Pp. 174-184.

DeJong, Jason T., Howey, Daniel T., **Civjan, Scott A.**, Brena, Sergio F., Butler, David S., Crovo, Daniel S., Hourani, Nabil and Connors, Peter “Influence of Daily and Annual Thermal Variations on Integral Abutment Bridge Performance”, *American Society of Civil Engineers, Geo-Trans Conference*, Los Angeles, CA. 2004. Pp. 496-505.

Civjan, Scott A., Brena, Sergio F., Butler, David A., and Crovo, Daniel S. “Field Monitoring of an Integral Abutment Bridge in Massachusetts” *Transportation Research Board*, Washington D. C. January 2004.

Civjan, Scott A., LaFave, James M., Trybulski, Joanna E., Lovett, Daniel, Lima, Jose, and Pfeiffer, Donald. “Effectiveness of Corrosion Inhibiting Admixture Combinations” *ACI Fall Convention*, Boston, MA, October 2003.

Civjan, S. A., and Singh, P. “Shear Stud Capacities Under Fully Reversed Cyclic Loading”, Paper #404. *Seventh U.S. National Conference on Earthquake Engineering*, Boston, MA, July 21-25, 2002.

Civjan, Scott A., and Engelhardt, Michael D. “Experimental Testing Utilizing E70T-4 Electrodes in Pre-Northridge SMRF Connections.” Invited Delegate/Presenter. *U.S./Japan Seminar on Advanced Stability and Seismicity Concepts for Performance-Based Design of Steel and Composite Structures*, Kyoto, Japan July 23-27, 2001.

LaFave, J. M., Lovett, D., and **Civjan, S. A.**, “On the Use of Combinations of Durability Enhancing Admixtures (Mineral and Chemical) in Structural Concrete,” *ACI Fall Convention*, Toronto, Ontario, Canada, October 15-21 2000.

Civjan, Scott A., Engelhardt, Michael D., and Gross, John L. “Slab Effects on Retrofit Steel Moment Connections”, *6th ASCCS International Conference on Steel-Composite Structures*, Los Angeles, CA, March 22-24, 2000.

Civjan, Scott A., Engelhardt, Michael D., and Gross, John L. “Experimental Program and Proposed Design Method for the Retrofit of Steel Moment Connections”, *12th World Conference on Earthquake Engineering*, Auckland, New Zealand, Jan. 30-Feb. 4, 2000.

Civjan, Scott A. “Instrument to Determine Prestress Remaining in a Damaged Bridge Girder”, Proceedings of the 1998 *Structural Materials Technology Non-Destructive Testing Conference*, March 1998.

Civjan, Scott A. “Steel Moment Frame Connection Retrofit Project- Research in Progress (Preliminary Results)”, Poster presentation at the *EERI Annual Meeting*, San Francisco, California, February, 1998.

Zobel, Robert S. and **Civjan, Scott A.** “Repair of Impact Damaged Prestressed Concrete Bridge Girders”, Poster presentation at the SEAoT State Conference, Austin, Texas, 1994

Recent Projects:

“Historic Shear Connections” Connections were obtained from two Boston area structures being renovated. Connections were tested to evaluate their existing capacities under cyclic load. This information is being used to evaluate the seismic resistance of historic structures and guide engineers in calculations during structural renovations. Evaluations also included the testing of rivet and steels from the structure.

“Seismic Energy Dissipation of Engineered Cladding Systems” The interaction between heavy architectural cladding and steel structural systems is included in extensive computer modeling. The use of engineered cladding attachments are being investigated for their ability to alter the overall structural response, resulting in greatly reduced damage from earthquakes.

“Behavior of Integral Abutment Bridges: Field Data and Computer Modeling” A current project for the **Vermont Agency of Transportation** and previous investigation for the **Massachusetts Highway Department**. A total of four integral abutment bridges, (two straight spans, one skew span and one curved structure), will have been instrumented (total of over 500 gages) and monitored for several years. This data is used to evaluate the design methods used for integral abutment structures. Extensive parametric Finite Element Modeling of each structure is used to evaluate the effects of design assumptions and construction methods on structural behavior.

“Terrazzo Cracking” An investigation for the **Massachusetts Executive Office of Transportation**. The project evaluated the cause of cracking in terrazzo flooring placed in elevated walkway bridges. Repair methods and future methods of installation were proposed with the goal of introducing these recommendations into future specifications.

“Evaluation of Bridge Performance and Rating Through Non-destructive Load Testing” An investigation for the **Vermont Agency of Transportation**. The project load tested two damaged highway bridges in the field, one concrete and one steel. Readings were used to determine the load distribution and behavior under load in order to aid in future decisions for load rating of similar structures.

“Field Studies of concrete Containing Salts of an Alkenyl-substituted Succinic Acid” An investigation for the **New England Transportation Consortium**. The project investigated a new corrosion inhibiting admixture for concrete. The project includes working extensively with ready-mix companies to determine the acceptability of mixture proportions incorporating the admixture through field and laboratory materials testing of concrete properties. The study culminated with implementation of the new admixture in three infrastructure projects throughout New England.

Advanced Composite Materials for New England’s Transportation Infrastructure: A Study for Implementation and Synthesis of Technology and Practice” An investigation for the **New England Transportation Consortium**. The project included a comprehensive survey of advanced composite materials use throughout New England and worked towards the implementation of these materials within the regional infrastructure.

“Performance Evaluation and Economic Analysis of Combinations of Durability Enhancing Admixtures (Mineral and Chemical) in Structural Concrete for the Northeast U.S.A.” An investigation for the **New England Transportation Consortium**. The project studied the effectiveness of concrete admixture combinations (single, double, and triple) in preventing corrosion of reinforcing steel. Accelerated corrosion testing was used as a basis of comparison. Previous studies had provided data on the effectiveness of single admixtures, but there was little information on combinations of admixtures as often specified by Highway departments.