LAUREN K. STEWART, PHD, PE
ASSISTANT PROFESSOR
SCHOOL OF CIVIL & ENVIRONMENTAL ENGINEERING

CONTENTS

LAUREN K. STEWART, PHD, PE
ASSISTANT PROFESSOR
SCHOOL OF CIVIL & ENVIRONMENTAL ENGINEERING

I. EARNED DEGREES

- Ph.D. Structural Engineering, University of California, San Diego 2010
  Advisor: Distinguished Professor Gilbert Hegemier
- M.S. Structural Engineering, University of California, San Diego 2006
- B.S. Structural Engineering, University of California, San Diego 2004

II. EMPLOYMENT HISTORY

- Associate Professor, Georgia Institute of Technology Effective Aug 2019
- Assistant Professor, Georgia Institute of Technology 2013-Present
- Senior Blast Engineer, Karagozian & Case 2006-2013
- Postdoctoral Scholar, University of California, San Diego under Gil Hegemier 2010-2013
- Graduate Student Researcher, University of California, San Diego 2004-2010
- Pacific Earthquake Engineering (PEER) Undergraduate Researcher 2003
- Engineering Intern, San Diego Metropolitan Transit Development Board 2002
- Laboratory Technician, Orbital Sciences Corporation 2001-2002

III. HONORS AND AWARDS

A. INTERNATIONAL OR NATIONAL AWARDS

- Engineering Georgia Top 100 Influential Women in Georgia (2019)
- New Voice in National Academies of Sciences, Engineering, and Medicine (2018)
- Civil + Structural Engineer Magazine Rising Star in Structural Engineering (2017)
- Air Force Research Lab Summer Faculty Fellow (2016)
- National Defense Science and Engineering Graduate Fellow (2005-2008)
- Earthquake Engineering Research Institute Travel Scholarship (2005)
- National Science Foundation Graduate Research Fellowship Honorable Mention (2004)
- Pacific Earthquake Engineering Research Center Undergraduate Scholar (2002)

B. INSTITUTE OR SCHOOL AWARDS

- Georgia Tech's Women in Engineering Teaching Excellence Award (2019)
- CEE Research Program Development Award (2017)
- Center for the Enhancement of Teaching Learning "Thank a Teacher" Award (2015, 2017)
- Bill Schutz Junior Faculty Teaching Award (2015)

IV. RESEARCH, SCHOLARSHIP, AND CREATIVE ACTIVITIES

bold = graduate student; **bold** = undergrad or high school student; * partially or fully completed at Georgia Tech

A. Published Books, Book Chapters, and Edited Volumes

A.1. Books

No Data

A.2. Refereed Book Chapters

1. Stewart, L. K. and **Durant, B.** (2016). Experimental and Analysis Methods for Blast Mitigating Designs in Civil Infrastructure. In P. Gardoni and J. LaFave, *Multi-hazard Approaches to Civil Infrastructure Engineering*. New York, NY: Springer. 265-287.*

2. Hegemier, G. and Stewart, L. K. (2015). Application of Fiber Reinforced Polymers to Reinforced Concrete Bridges. In A. Pipinato, *Innovative Bridge Design Handbook*. Amsterdam, Netherlands: Butterworth-Heinemann. 777-795.*

A.3. Edited Volumes

No Data

B. Refereed Publications and Submitted Articles

B.1. Published and Accepted Journal Articles

1. **Sanborn, K.**, Gentry, R., **Koch, Z.**, **Valkenburg, A.**, Conley, C., Stewart, L.K. (In Press, 2018). Ballistic Performance of Cross-Laminated Timber. *International Journal of Impact Engineering*.*

2. **Shin. J.**, Stewart, L.K., Yang, C., Scott, D. (2017). Implementation of Bond-slip Performance Models in the Analyses of Non-Ductile Reinforced Concrete Frames under Dynamic Loads. *Journal of Earthquake Engineering*, 1-26.*

3. Kirkman, R., Arson, C., Stewart, L.K., **Harris, R.**, **Francis, A.** (2017). The Risks of Hydraulic Fracturing and the Responsibilities of Engineers. *Elementa: Science of the Anthropocene*, 5, 17.*

4. **Lee, S.**, **Bakhtiary, E.**, Scott, D., Stewart, L.K., White, D. (2017). Influence of geometric parameters on the restraint of guardrail posts by asphalt mow strips. *Sustainable and Resilient Infrastructure*, 2(1), 22-36.*

5. **Bakhtiary, E.**, **Lee, S.**, Scott, D., Stewart, L.K., White D. (2017). Evaluation of Guardrail Posts Installed in Asphalt Mow Strips by Static Finite Element Simulation. *Open Journal of Civil Engineering*, 7, 141-164.* (Open access journal, first published in 2011)

6. **Shin. J.**, Scott, D., Stewart, L.K., Yang, C., **Wright, T.**, DesRoches, R. (2016). Dynamic Response of a Full-Scale Reinforced Concrete Building Frame Retrofitted with FRP Column Jackets. *Engineering Structures*, 125, 244-253.*

7. **Reichard, B.**, Stewart, L.K., Weaver, M., Morrill, K. Coupled Hydraulic System for Tensile Experiments in Compression-only Machines. (2016). *Experimental Mechanics*, 56(7), 1179-1190.*

8. Stewart, L.K., and Morrill, K. (2015). Residual Capacity Prediction of Steel Columns using Physics-Based Fast Running Models. *International Journal of Safety and Security*. 5, 289-303.*

9. Stewart, L.K., Freidenberg, A., Rodriguez-Nikl, T., Oesterle, M., Wolfson, J., **Durant, B.**, Arnett, K., Asaro, R., Hegemier, G. (2014). Methodology and Validation for Blast and Shock Loading using Hydraulic Blast Simulator. *Engineering Structures*, 70, 168-180.*

10. Stewart, L.K., **Durant, B.**, Wolfson, J., Hegemier, G. (2014). Experimentally Generated High-g Shock Loads using Hydraulic Blast Simulator. *International Journal of Impact Engineering*, 69, 86-94.*

11. Friedenberg, A., Aviram, A., Whisler, D., Kim, H., Stewart, L.K., Hegemier, G.A. (2014). Demonstration of Tailored Impact to Achieve Blast-Like Loading. *International Journal of Impact Engineering*, 71, 97-105.*

12. Stewart, L.K. (2014). Computational Modeling of Steel Columns Subjected to Experimentally Simulated Blasts. *International Journal of Computational Methods and Experimental Measurements*, 2(3), 225-242.

13. Freidenberg, A., Lee, C., Durant,B., Nesterenko, V., Stewart, L.K., Hegemier, G. (2013). Chacterization of the UCSD Blast Simulator Elastomer Material Using a Pseudo-Elastic Tabulated Rubber Model. *International Journal of Impact Engineering*, 60, 58-66.

14. Huson, P., Asaro, R., Stewart, L.K., Hegemier, G. (2011). Non-explosive Methods for Simulating Blast Loads on Structures with Complex Geometries. *International Journal of Impact Engineering*, 38, 546-557.

15. Krysl, P., Ramroth, W., Stewart, L.K., Asaro, R. (2004). Finite Element Modeling of Fiber Reinforced Polymer Sandwich Panels Exposed to Heat. *International Journal for Numerical Methods in Engineering*, 61, 49-68.

B.2. Conference Presentation with Proceedings (Refereed)

1. **Sanborn, K.**, **Flores, N.**, Gentry, T. R., Stewart, L.K., (2018). Towards an SDOF Model for Predicting Performance of Cross-Laminated Timber. In G. Schleyer & C.A. Brebbia. *Structures Under Shock and Impact XV*. Paper presented at SUSI 2018, Sevilla, Spain. Wessex, UK: WIT Press.*

2. **Sanborn, K.**, **Riser, B.**, **Sanborn, K.**, Gentry, T. R., Stewart, L.K., (2018). Performance of Enchanced Cross-Laminated Timber. In G. Schleyer & C.A. Brebbia. *Structures Under Shock and Impact XV*. Paper presented at SUSI 2018, Sevilla, Spain. Wessex, UK: WIT Press.*

3. **Pezzola, G.**, **Stewart, L.K.**, Stephens, C., Judson, J.S., (2018). Experimental Testing of Reinforced Concrete Slabs Retrofitted with CFRP Composites and Mechanical Anchors . In G. Schleyer & C.A. Brebbia. *Structures Under Shock and Impact XV*. Paper presented at SUSI 2018, Sevilla, Spain. Wessex, UK: WIT Press.*

4. Stewart, L.K., **Gao, N.**, **Pezzola, G.**, **Sanborn, M.**, **Nail, A.**, Loreto, G. (2017). Georgia Institute of Technology Laboratory for Blast, Shock, and Impact. *International Conference on Advances in Experimental Structural Engineering*. Paper presented at 7AESE, Pavia, Italy.*

5. **Lee, S.**, **Bakhtiary, E.**, Stewart, L.K., Scott, D., White, D. (2016). Effect of pre-cut asphalt fracture planes on highway guardrail performance. In G. Schleyer & C.A. Brebbia. *Structures Under Shock and Impact XIV*. Paper presented at SUSI 2016, Crete, Greece. Wessex, UK: WIT Press. (Selected for Special Issue: *International Journal of Computational Methods and Experimental Measurements*, 4(3), 353-363.)*

6. **Pezzola, G.**, Stewart, L.K., Hegemier, G. Analysis Methods for CFRP Blast Retrofitted Reinforced Concrete Wall Systems. (2016) In G. Schleyer & C.A. Brebbia. *Structures Under Shock and Impact XIV*. Paper presented at SUSI 2016, Crete, Greece. Wessex, UK: WIT Press. (Selected for Special Issue: *International Journal of Computational Methods and Experimental Measurements*, 4(3), 247-257.)*

7. Stewart, L.K., Freidenberg, A., Hegemier, G. (2014). Design and Testing of Steel Stud Wall System for Blast Mitigation. In G. Schleyer & C.A. Brebbia. *Structures Under Shock and Impact XIII*. 141, 39 - 53. Paper presented at SUSI 2014, New Forest, England. Wessex, UK: WIT Press.*

8. Stewart, L. K. (2012). Experimental and Computational Methods for Steel Columns Subjected to Blast Loads. In G. Schleyer & C.A. Brebbia. *Structures Under Shock and Impact XII*. 126, 157-168. Paper presented at SUSI 2012, Kos, Greece. Wessex, UK: WIT Press.

9. Stewart, L.K., Hegemier, G., Morrill, K. (2009). Simulated Blast Testing of Structural Steel Columns. In *Proceedings of 8th International Conference on Shock and Impact Loads on Structures*. Paper presented at 8th International Shock and Impact Loads on Structures, Adelaide, Australia, Orchard Plaza, Singapore: CI-Premier PTE LTD.

10. Huson, P., Asaro, R., Stewart, L.K., Hegemier, G. (2009). Laboratory Techniques for Blast Loading of Structures with Complex Geometries. In *Proceedings of 8th International Conference on Shock and Impact Loads on Structures*. Paper presented at 8th International Shock and Impact Loads on Structures, Adelaide, Australia, Orchard Plaza, Singapore: CI-Premier PTE LTD.

B.3. Submitted Journal Articles

1. **Pezzola, G.**, Stewart, L.K. (2018) Explosive Testing and Analysis of FRP Blast Retrofit Using Mechanical Anchors on Large RC Slabs. *Submitted to US Army for Permission for Publication in ASCE Journal of Structural Engineering.*

2. **Shin, J.**, Stewart, L.K., Scott, D. (2019) Multi-Hazard Assessment and Mitigation for Seismically-Deficient RC Building Frames using Artificial Neural Network Models. *Submitted to Engineering Structures.*

3. **Pei, W.**, **Gao, N.**,, **Koochul, J.**, Stewart, L.K., Arson, C. (2019) DEM analysis on the role of aggregates on concrete strength. *Submitted to Computers and Geotechnics.*

C. Other Publications and Creative Products

C.1. Non-refereed Conference Presentations with Proceedings

1. **Liu, X.**, **Dong, X.**, Wang, Y., Stewart, L.K., Dodson, J., Joyce, B. (2017). High-g Shock Acceleration Measurement using Martlet Wireless Sensing System. In *Proceedings of*

SEM IMAC XXXVI. Paper presented at IMAC XXXVI, Orlando, FL.*

2. Freidenberg, A., Stewart, L.K., Hegemier, G. (2014). Advancements in Blast Simulator Analysis. In *Proceedings of 84th Annual Shock and Vibrations Symposium*. Paper presented at *84th SAVIAC*, Atlanta, GA. (Controlled Session and Proceedings)

3. Stewart, L.K., Morrill, K., Natesaiyer, K. (2012). Development of High Performance Concrete Panels for Curtain Wall Systems. In J. Carrato & J. Burns, *Structures Congress 2012: Forging Connections in the Windy City*. Paper presented at *ASCE Structures Congress*, Chicago, IL.

C.2. Software

1. Stewart, L.K., (2013). Threat Assessment: Residual Capacity Predictor for Steel Column Response Subjected to Blast Loading. Submitted to Counter Terrorism Technical Support Office (CTTSO).

C.3. Extended Abstracts

1. Stewart, L.K. and **Hsu, S.** (2014). Modeling Structures Subjected to Blast Loads. *OpenSees Days*. Porto, Portugal.*

C.4. Research with Restricted Publishing

Classified/Distribution D/ITAR research not otherwise listed.

1. Magallanes, J., Torres, L., Morrill, K., Stewart, L.K. (2018) "Final Report: Rigid Off-axis Ordinance Shock Tailslap Environment Replicator (ROOSTER) - Phase II. For US Air Force, Eglin AFB Fuzes Branch.*

2. Magallanes, J., Torres, L., Morrill, K., Stewart, L.K. (2017) "Final Report: Methodologies for Cost-Effect Dynamic Material Testing - Phase I." For Missile Defence Agency.*

3. Magallanes, J., Torres, L., Morrill, K., Stewart, L.K. (2016) "Final Report: Rigid Off-axis Ordinance Shock Tailslap Environment Replicator (ROOSTER) - Phase I. For US Air Force, Eglin AFB Fuzes Branch.*

4. Hegemier, G. Stewart, L.K., **Pezzola, G**. (2014) " Review and Verification of Structural Mitigation Design for Maryland Transit Administration - Final Report." Contract MTA-1388 for Department of Homeland Security via AECOM.*

5. Stewart, L.K., Hegemier, G., Latham, C., Durant, B., Arnett, K. (2013) "Final Report: Structural Test of Service Chase Slab." Task IX-21 for Los Alamos National Laboratories.

6. Sabado, M., Hegemier, G., Stewart, L.K. (2012). "High Yield Accelerator Test (HYAT) Final Report." SAIC with UCSD Concurrence. IDIQ Contract FA8651-11D-0056, Task Order 4, CLIN 003 for US Air Force, Eglin AFB.

C.5. Editorials

1. Arnett, K., Stewart, L.K., Hegemier, G. (2012). "Blasted Heath." CBRNe World. August 2012 Issue. 45-46.

D. PRESENTATIONS

D.1. Keynote Addresses and Plenary Lectures

1. “Georgia Tech Structural Engineering and Materials Laboratory: Force Protection and Impact." *US Army Corps of Engineers Structural Community of Practice Annual Meeting* Atlanta, Georgia. November 2018.

2. “Modeling Structures Subjected to Blast Loads.” *OpenSees Days.* Porto, Portugal. July 2014.

D.2. Invited Conference and Workshop Presentations

1. “Design, Testing, and Analysis of Structures Subjected to Blast and Shock Loads.” *American Society of Civil Engineerings Iowa Chapter Annual Meeting.* Ames, Iowa, October 2018.

2. "Experimental Techniques for High-rate Structural Component Characterization." *Structures Under Shock and Impact XV.* Sevilla, Spain, June 2018.

3. "Expanding the Cross Laminated Timber Market into Military Applications." *Southeast Mass Timber Symposium.* Atlanta, GA, September 2017.

4. “Effect of pre-cut asphalt fracture planes on highway guardrail performance.” *Structures Under Shock and Impact 2016.* Crete, Greece, May 2016.

5. “Blast Simulator Methodology and Applications.” *Center for Extreme Events Research Workshop.* University of California, San Diego, February 2015.

6. “Protective Design for Blast Effect on Structures.” *Workshop for Extreme Events.* Monash University, Melbourne, Australia. November 2014.

D.3. Conference and Workshop Presentations

1. **M. Sanborn** and L. Stewart. “Towards Understanding the Preloaded Threaded Interface: Transmission of Impulsive Dynamic Waves.” *Shock and Vibration Exchange (SAVE) 2016.* New Orleans, October 2016.

2. “ Experimental and Computational Methods for Steel Columns Subjected to Blast Loads.” *SAVIAC*. San Diego, CA, October 2009.

D.4. Invited Seminar Presentations

1. “Experimental Facilities for Shock and High-rate Loadings.” *Georgia Tech Geo Seminar Series.* Atlanta, GA, November 2018.

2. “Exploring Cross-Laminated Timber (CLT) for Use in Temporary Military Structures.” *Auburn Sustainable Biomaterials Multidisciplinary Seminar Series.* Auburn, AL, April 2018.

3. "Grand Challenge: Restoring and Improving Urban Infrastructure" *For CEE 4000 - Global Engineering Leadership.* Atlanta, GA, September 2017.

4. "Experimental Methods for Structures subjected to Blast and Shock." *United States Military Academy.* West Point, NY, April 2017.
5. "Design, Testing and Analysis Methods for Structures subjected to Blast and Shock." *Rensselaer Polytechnic Institute.* Troy, NY, September 2016.
6. "Protective Design for Blast Effects on Structures: Analysis, Validation and Implementation." *Structural Engineering Association of Georgia.* Atlanta, Georgia, January 2015.
7. "Methodology and Applications for Blast and Shock Testing." *Structures Seminar.* Georgia Institute of Technology, October 2013.
8. "Testing and Analysis of Steel Columns Subjected to Blast Loads." Lehigh University, February 2013.
9. "Steel Columns Subjected to Blast Loads." Oregon State University, February 2013.
10. "Testing and Analysis of Steel Columns Subjected to Blast Loads." Penn State University, February 2013.
11. "Testing and Analysis of Steel Columns Subjected to Blast Loads." *Structures Seminar.* Georgia Institute of Technology, January 2013.
12. "It's a Blast: Blast Loading on Cold Form Structures." *Cold Form Steel Engineers Institute (CFSEI) West Chapter Seminar*, San Diego, CA, July 2011.
13. "Simulated Blast Loading of Structures." *American Society of Industrial Security (ASIS) San Diego Chapter*, July 2010.
14. "Blast Loading of Steel Columns." *American Iron and Steel Institute (AISI) Seminar*, February 2010.

D.5. Other Presentations

1. "CEE London: Summer Study Abroad." *CEE External Advisory Board Meeting.* Atlanta, GA, October 2017.
2. "The Academic Career Path." *Rensselaer Polytechnic Institute.* Troy, NY, September 2016.
3. "The PE License." *Chi Epsilon Lunch Seminar.* Georgia Institute of Technology. April 2015.
4. "Blast Effects on Structures." *Chi Epsilon Lunch Seminar.* Georgia Institute of Technology. October 2014.
5. "Engineering for Extreme Events." Presentation to *CEE External Advisory Board*. October 2013.

E. Grants and Contracts

E.1. As Principal Investigator

1. Title of Project: Best Practices and Specifications for Massive Concrete Drilled Shafts
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $258,000
   Role: PI
   Collaborators: Larry Kahn (CEE, co-PI), Jason Brown (SoA, co-PI),
   Period of Contract: 09/25/18 - 06/25/21
   Candidate's Share: ∼33% ($86,000)

2. Title of Project: Impact of Construction Loads on Steel Diaphragm Bridge Design
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $98,500
   Role: PI
   Collaborators: Yang Wang (CEE, co-PI), Larry Kahn (CEE, co-PI)
   Period of Contract: 09/25/18- 09/25/20
   Candidate's Share: ∼33% ($32,833)

3. Title of Project: Ultra-High Performance Concrete GDOT Mix Design for Accelerated Bridge Construction
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $417,000
   Role: PI
   Collaborators: Kimberly Kurtis (CEE, co-PI), Larry Kahn (CEE, co-PI)
   Period of Contract: 04/08/2018 - 04/07/2021
   Candidate's Share: ∼33% ($138,000)

4. Title of Project: Enhancing Classroom Instruction with Technology-based Structural Engineering Laboratories
   Agency/Company: Georgia Tech - Technology Fee
   Total Dollar Amount: $23,619
   Role: PI
   Collaborators: N/A
   Period of Contract: 7/1/2017 - 6/30/2018
   Candidate's Share: ∼100% ($23,619)

5. Title of Project: Quantifying the Impact of Cover Deficiencies on Bridge Deck Service Life: Recommendations for Contracting
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $175,000
   Role: PI
   Collaborators: Kim Kurtis (CEE, co-PI)
   Period of Contract: 8/9/17-8/8/19
   Candidate's Share: ∼50% ($87,500)

6. Title of Project: Expanding the Cross-Laminated Timber (CLT) Market into Temporary Military Construction
   Agency/Company: US Department of Agriculture, US Forest Service (USFS)

Total Dollar Amount: $375,000 ($250,000 from USFS with $125,000 match)
Role: PI
Collaborators: Russell Gentry (SoA, co-PI)
Period of Contract: 7/1/17-6/30/20
Candidate's Share: ∼50% ($187,500)

7. Title of Project: STTR Phase I: Methodologies for Cost-Effective Measurement of Dynamic Material Properties
   Agency/Company: Missile Defense Agency
   Total Dollar Amount: $150,000
   Role: GT PI (Subaward from Industry Lead)
   Collaborators: Karagozian & Case (Industry Lead)
   Period of Contract: 3/15/17-9/15/17
   Candidate's Share: GT Portion = 20% ($30,000) of AFRL Award

8. Title of Project: SBIR Phase II: Rigid Off-Axis Ordinance Shock/Tail-Slap Environment Replicator (ROOSTER)
   Agency/Company: AFRL Eglin Air Force Base
   Total Dollar Amount: $750,000
   Role: GT PI (Subaward from Industry Lead)
   Collaborators: Karagozian & Case (Industry Lead)
   Period of Contract: 12/23/16 - 12/31/2018
   Candidate's Share: GT Portion = 33% ($250,000) of AFRL Award. In addition, experimental apparatus to be transferred to SEML lab from Industry Lead.

9. Title of Project: SBIR Phase I: Rigid Off-Axis Ordinance Shock/Tail-Slap Environment Replicator (ROOSTER)
   Agency/Company: AFRL Eglin Air Force Base
   Total Dollar Amount: $150,000
   Role: GT PI (Subaward from Industry Lead)
   Collaborators: Karagozian & Case (Industry Lead)
   Period of Contract: 10/1/15 - 6/30/16
   Candidate's Share: GT Portion = 28% ($42,000) of AFRL Award

10. Title of Project: Simulation Laboratory for Naval Shock Qualification
    Agency/Company: US Navy via ROI Defense Associates
    Total Dollar Amount: $13,000
    Role: PI
    Collaborators: N/A
    Period of Contract: 8/1/2014 - 12/31/15
    Candidate's Share: 100%

11. Title of Project: Modeling Strategies and Experimental Procedures for Composite Shell Systems
    Agency/Company: Composite Solutions International
    Total Dollar Amount: $111,000
    Role: PI
    Collaborators: N/A
    Period of Contract: 04/01/14-10/01/15
    Candidate's Share: 100%

12. Title of Project: SBIR Phase II: Hydraulically Controlled Tensile Testing of Concrete in Tri-axial Apparatus
    Agency/Company:US Army Engineering Research Development Center (ERDC) via Karagozian & Case
    Status: Completed
    Total Dollar Amount: $101,000
    Role: PI
    Collaborators: N/A
    Period of Contract: 06/01/2014-12/31/14
    Candidate's Share: 100%

13. Title of Project: Maryland Transit Authority Experimental Program
    Agency/Company:Maryland Transit Authority/Department of Homeland Security via UCSD
    Status: Completed
    Total Dollar Amount: $17,000
    Role: PI
    Collaborators: N/A
    Period of Contract: 09/01/13-04/01/14
    Candidate's Share: 100%

E.2. As Co-Principal Investigator

1. Title of Project: Simulation of Vehicle Impacts on Georgia Department of Transportation Single Slope Barriers
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $40,000
   Role: co-PI
   Collaborators: David Scott (CEE, PI)
   Period of Contract: 05/30/18 - 10/30/18
   Candidate's Share: $\sim$50% ($20,000)

2. Title of Project: Mechanical Integrity and Sustainability of Pre-stressed Concrete Bridge Girders Repaired by Epoxy Injection - Phase III
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $100,000
   Role: co-PI
   Collaborators: Chloe Arson (CEE, PI)
   Period of Contract: 8/9/17-8/8/18
   Candidate's Share: $\sim$50% ($50,000)

3. Title of Project: Crash Test on Guardrail Systems Embedded in Asphalt Vegetation Barriers
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $238,866
   Role: co-PI
   Collaborators: David Scott (CEE, PI), Donald White (CEE, co-PI)
   Period of Contract: 7/14/16 - 4/30/18
   Candidate's Share: $\sim$33% ($79,622)

4. Title of Project:Dynamic Subcomponent Testing and Finite Element Simulation of Guardrail Systems with Alternative Post Installation Methodologies
   Agency/Company: Georgia Department of Transportation
   Total Dollar Amount: $491,547
   Role: co-PI
   Collaborators: David Scott (CEE, PI), Donald White (CEE, co-PI), Jonathan Holmes (GTRI) and Wiley Holcombe (GTRI)
   Period of Contract: 1/22/16 - 11/22/17
   Candidate's Share: ∼33% ($163,849)

5. Title of Project: A Case Study for Hydraulic Fracturing
   Agency/Company: GT FIRE
   Total Dollar Amount: $40,000
   Role: co-PI
   Collaborators: Chloe Arson (CEE, PI) and Robert Kirkman (Public Policy, co-PI)
   Period of Contract: 09/01/13-04/01/14
   Candidate's Share: ∼33% ($13,000)

E.3. As Senior Personnel or Contributor

1. Title of Project: ERC: Center for Bio-mediated and Bio-inspired Geotechnics (Research Experience for Veterans)
   Agency/Company: National Science Foundation
   Total Dollar Amount: $10,000
   Role: Senior Personnel
   Collaborators: David Frost (CEE, GT PI)
   Period of Contract: 5/1/18-4/30/19
   Candidate's Share: 100% ($10,000)

E.4. Pending Proposals

No data.

E.5. Proposals Submitted But Not Funded

See Appendix.

E.6. Georgia Tech Foundation Donations

1. Title of Project: Composite Design Research
   Agency/Company: Composite Solutions International
   Total Dollar Amount: $10,000 Role: PI
   Candidate's Share: 100% ($10,000)

F. Other Scholarly and Creative Accomplishments

F.1. Startups

- President & Owner, Blast and Security Engineering, LLC (2010, California)

F.2. Art Engineering

- Computational modeling / high performance computing consultant for analysis and design of structural system for "Jetson" sculpture located at the Tennebaum Atrium within the Clough Learning Commons at the Georgia Institute of Technology.

G. Societal and Policy Impacts

- Responded to television and news media inquiries regarding the 2017 GA-85 Bridge Collapse resulting in over 2,500 press mentions in the first 48 hours of the collapse. Relevant video: `https://tinyurl.com/stewart-i85`
- Responded to television and GT media inquiries regarding the 2017 Georgia Dome Implosion. Relevant video: `https://tinyurl.com/stewart-georgiadome`
- Air Force Subject Matter Expert in Mechanical Shock - participated in research direction panels and workshops to guide core research areas for Air Force future.
- World Trade Center 7 Collapse Investigator - team member for litigation of the WTC 7 collapse. Conducted computational analysis to determine possible causes of collapse.

H. Other Professional Activities

- Independent Consultant, Herbert Walker Harper - Assignment: design review of proprietary blast mitigating structural system.
- Independent Consultant, Protective Technologies, LLC - Assignment: experimental consultant for live explosive field testing.
- Independent Consultant, Parsons Brinckerhoff - Assignment: Anti-Terrorism Force Protection (ATFP) design for Veteran's Affairs (VA) data center.
- Independent Consultant, SGH - Assignment: design and testing of proprietary blast mitigating structural system.
- Independent Consultant, SAIC - Assignment: high yield accelerator experiment development.

V. Education

A. Courses Taught

Semester, Year	Course Number	Course Title	Students
Spring 2019	COE 3001	Deformable Bodies	56
Spring 2019	CEE 3051	Introduction to Structural Engineering	65
Fall 2018	CEE 8813	Multi-hazard Design & Analysis	25
Spring 2018	CEE 3051	Introduction to Structural Engineering	35
Fall 2017	CEE 3051	Introduction to Structural Engineering	45
Spring 2017	CEE 6541	Earthquake Engineering	50
Spring 2016	CEE 6541	Earthquake Engineering	44
Fall 2015	CEE 8813	Multi-hazard Design & Analysis	27
Fall 2015	CEE 4803	Introduction to Structural Engineering	18
Spring 2015	CEE 6541	Earthquake Engineering	35
Fall 2014	CEE 4803	Introduction to Structural Engineering	33
Spring 2014	CEE 8813	Multi-hazard Design & Analysis	28

B. Individual Student Guidance

B.1. Ph.D. Students

B.1.a. Graduated

1. Student: Genevieve Pezzola
   Graduation Date: April 2018
   Thesis: Experimental Testing and Modeling Strategies of Carbon Fiber-Reinforced Polymer Blast Retrofits Using Steel Anchorage Systems
   Current Position: Research Engineer, US Army Engineer Research and Development Center (ERDC)
   Honors: Department of Defense Science, Mathematics, and Research for Transformation (SMART) Scholarship

2. Student: LTC Kathryn Sanborn
   Graduation Date: April 2018
   Thesis: Exploring Cross-Laminated Timber Use for Temporary Military Structures: Ballistic Considerations
   Current Position: Commander, Honolulu District, U.S. Army Corps of Engineers

3. Student: LTC Marc Sanborn
   Graduation Date: March 2018
   Thesis: Experimental Methods for Understanding the Behavior and Residual Capacity of Bolts and Steel Bolted Connections under Impulsive Loads
   Current Position: Commander, 29th Engineer Battalion, 3rd Brigade Combat Team, 25th Infantry Division

4. Student: Nan Gao (primary advisor, co-advised with Reginald DesRoches)
   Graduation Date: December 2017
   Thesis: Experimental Methods for Evaluating Strain Rate Dependency of Shape Memory Alloy Materials under Quasi-static and Impulsive Loading
   Current Position: Research Engineer, Georgia Institute of Technology

5. Student: Jiuk Shin (co-advised with David Scott, CEE)
   Graduation Date: August 2017
   Thesis: Multi-hazard Performance Criteria for Non-Ductile Reinforced Concrete Frame Buildings Retrofitted with an FRP Column Jacketing System
   Current Position: Research Specialist, Korean Institute of Civil Engineering and Building Technology (KICT)

6. Student: Esmaeel Bakhtiarty (co-advised with Don White, CEE)
   Graduation Date: July 2017
   Thesis: Assessment of Guardrail Systems with a Stiff Surficial Layer via Continuum and Discrete Simulations
   Current Position: Staff Engineer II, United Consulting

B.1.b. In Process

1. Student: Nadine Farhed (co-advised with Yang Wang)
   Start Date: August 2018

Status: Completing Coursework
Thesis: Impact of Construction Loads on Steel Diaphragms

2. Student: Aaron Miller (co-advised with Kimberly Kurtis)
   Start Date: August 2018
   Status: Completing Coursework
   Thesis: Ultra High-Performance Concrete using Local Georgian Materials for Bridge Deck Closure Pours

3. Student: Diwakar Singh
   Start Date: April 2018
   Status: Completing Coursework
   Thesis: Robotic Structures for Adaptable Design

4. Student: Noel Flores
   Start Date: January 2018
   Status: Completing Coursework
   Thesis: Blast Loading of Cross Laminated Timber Rapid Connections

5. Student: Leonidas Emmenegger (co-advised with Kimberly Kurtis)
   Start Date: August 2017
   Status: Completing Coursework
   Thesis: Quantifying the Impact of Cover Deficiencies on Bridge Deck Service Life

6. Student: Maria Warren
   Start Date: August 2017
   Status: Completing Coursework
   Thesis: Exploring Damage in Steel Structures Subjected to Impulsive Loads
   Honors: NSF Graduate Research Fellow and DOD NDSEG Recipient (declined)

7. Student: Rebecca Nylen
   Start Date: August 2017
   Status: Completed Qualifying Exam
   Thesis: Exploring Cumulative Damage in Concrete Structures Subjected to Impulsive Loads
   Honors: NSF Graduate Research Fellow

8. Student: LTC Kevin Arnett (co-advised with Gil Hegemier, UCSD)
   Start Date: August 2016
   Status: Completed Proposal Defense
   Thesis: Experimental Methods and Phenomenological Constitutive Modeling for Explosive Welding of Aluminum

9. Student: Julian Opsina-Diaz
   Start Date: January 2015
   Status: Completed Qualifying Exam
   Thesis: Effective Modeling of Structures Subjected to Blast Loading

B.2. M.S. Students

B.2.a. Graduated

1. Student: Rebecca Tien
   Graduation Date: February 2019
   Thesis: Mechanical Integrity and Sustainability of Pre-stressed Concrete Bridge Girders Repaired by Epoxy Injection

2. Student: Brett Reichard
   Graduation Date: May 2015
   Thesis: Uniaxial Tensile Testing Technique to obtain Softening Response of Ultra-high Performance Concrete under Confining Pressures
   Current Position: Graduate Engineer, Walter P. Moore & Associates

B.2.b. In Process

B.2.c. Non-Thesis MS Students with Significant Research Advising

1. Student: CPT Brian Riser
   Start Date: August 2017 - Present
   Research: Ballistic Performance of Cross-laminated Timber

2. Student: Danny Rosoborough
   Start Date: 2018 - Present
   Research: Understanding Wood Hardness in Ballistic Performance

B.3. Undergraduate Students

- Soniya Bhagat (2019, Concrete Damage)
- Alix Nail (2019, Concrete Damage)
- Michael Waters (2018, Epoxy Injections for Concrete Repair)
- Christopher Foster (2017 - Present, Shock Loading of Bolted Connections)
- Christopher Miller (2017 - Present, Shock Loading of Bolted Connections)
- Danny Rosoborough (2017 - Present, CLT for Army Applications)
- Alex Herdt (2017 - Present, CLT for Army Applications)
- Lauren Maes (2016-2017, Anchorages for FRP Connections)
- Matt Rash (2016-2017, Shock Loading of Threaded Interfaces)
- Aine Magnan (2016, Shock Loading of Threaded Interfaces)
- James Lee Young (2015, Experimental Hydraulic Systems)
- Jasmine Denizard (2015, Rate Effects of Shape Memory Alloys)
- Jennifer Kurkowski (2015-2016, Blast Damage Assessment Tool)
- Keun Lee (2015-Present, Blast Damage Assessment Tool)
- Clay McElwain (2015, Material Properties of 3D Printed Components)
- James Nguyen (2015, Vapor Cloud Explosions)
- Zachary Wilson (2014-Present, UHPC Material Characterization, Guardrail Impacts)
- Stephanie Amos (2013, Blast Damage Quantification)

B.4. Service on thesis or dissertation committees

B.4.a. Internal

Student	School	Advisor	Relevant Dates
Yang Jiang	CEE	Glaucio Paulino	Proposal - April 2019
Koochul Ji	CEE	Chloe Arson	Proposal- April 2019
Ajay Saini	CEE	Iris Tien	Proposal - May 2018
Xi (Sissy) Liu	CEE	Yang Wang	Proposal - May 2018
Javaid Anwar	CEE	David Scott	PhD - May 2017
Sujith Mangalathu	CEE	Reginald DesRoches	PhD - May 2017
Seo-hun Lee	CEE	David Scott	PhD - November 2017
Mehdi Nourbakhsh	SoA	Javier Irizarry	PhD - January 2016

B.5. Mentorship of postdoctoral fellows or visiting scholars

- Giovanni Loreto, PhD (2016)

B.6. International Student Advisement

- Esau Quieroz Melo de Costa (Summer 2016, Rate Effects of Shape Memory Alloys)
- Simon LeBastard, ENCP (Summer 2015, 3D Printing Material Characterization)
- Guillaime Pelletier, ENCP (Summer 2014, Hydraulic Testing for UHPC Characterization)

C. Educational Innovations and Other Contributions

C.1. Program Development

1. CEE London Study Abroad Program - Program Director and primary instructor for a series of three study abroad courses designed for the Global Engineering Leadership Minor in structural and construction engineering. The courses had embedded engineering communications components. The study abroad program became the largest travel course in CEE recent history, with over 30 students.

C.2. Course Development

1. Introduction to Structural Engineering (CEE 3051, Georgia Tech) - problem based course to serve as an introduction combining analysis, design and mechanics from the structural engineering perspective. In 2017, it became the new breadth elective for civil engineering majors and a core course in the curriculum. This course was also awarded a FY2018 Tech Fee to enhance technology in the laboratories.

2. Multi-hazard Design & Analysis (CEE 8813, Georgia Tech) - Graduate level design course which includes designing and analyzing structures for extreme loads including earthquakes, blast, wind and fire.

3. Blast Design & Analysis (UCSD) - Graduate level design and analysis course, which included designing for man-made and accidental explosions. Course included basic design strategies and advanced techniques using commercial finite element software.

C.3. Course Improvement

1. Earthquake Engineering (CEE 6541, Georgia Tech) - created problem based laboratory and instructional material using hand-built mini shake tables to demonstrate and compare experimental, computational and analytical results of earthquake response.

C.4. Graduate Student Special Problems

- Diwakar Singh (Spring 2018, Robotic Structures)
- Amelia Goydich (Summer 2017, Structural Design)
- Luke Reeve (Summer 2017, Blast Analysis)
- Marco Kneifel (Fall 2016, Blast and Ballistics)
- Rebecca Nylen (Fall 2016, Blast and Ballistics)
- Jacqui Mulholland (Fall 2016, Blast and Ballistics)
- Rachel Ford Fink (Fall 2016, Blast and Ballistics)
- Heba ElSayed (Fall 2016, Blast and Ballistics)
- Rebecca Milano (Fall 2016, Blast and Ballistics)
- Zac Wilson (Fall 2016, Blast and Ballistics)
- Matthew Naugle (Fall 2015, Blast Damage Quantification)
- Akshay Kosanam (Summer 2014, Computational Analysis of Hopkinson Bar Setup)

VI. Service

A. Professional Contributions

A.1. Society Offices, Activities and Membership

- Voting Member, American Concrete Institute Committee 370 on Blast and Impact
- Member, Structural Engineering Institute Blast, Shock, and Impact Committee
- Member, ASCE 59 Blast Protection of Buildings Standards Committee
- Member, American Society of Civil Engineers (ASCE)
- Professional Member, Society of Women Engineers (SWE)
- Professional Member, Structural Engineers Association of Georgia (SEAOG)
- Former Member, Consortium of Universities for Research in Earthquake Engineering (CUREE)

A.2. Organization and Chairman of Technical Sessions, Workshops and Conferences

- Member, International Scientific Advisory Committee for Structures Under Shock and Impact (SUSI)
- Organizer, Minisymposium on Computational and Experimental Investigation of Manmade and Natural Disasters, 13th US National Congress on Computational Mechanics (USNCCM13)
- Organizer, Workshops I and II on Hydraulic Fracturing at Georgia Tech

A.3. Technical Journal or Conference Referee Activities

- Reviewer, Journal of Engineering Mechanics
- Reviewer, Resilient and Sustainable Infrastructure
- Reviewer, Journal of Building Engineering

- Reviewer, Journal of Impact Engineering
- Reviewer, Journal of Structural Engineering
- Reviewer, Engineering Structures
- Reviewer, Structures Under Shock and Impact (SUSI)
- Reviewer, Journal of Solids and Structures

A.4. Proposal Panels & Reviews

- Panel Member and Reviewer, NSF GRFP (2018)
- Panel Member, NSF Review Panel CMMI - Engineering for Natural Hazards (2017)
- Panel Member, National Defense Science and Engineering Graduate (NDSEG) Fellowship (2015)

A.5. Other Involvement

- Invited Participant, NSF-Sponsored Creative Art of Structural/Civil Engineering Workshop at Princeton (2017)
- Panel Member, Air Force Research Laboratory / AFOSR Workshop (2015)

B. Public and Community Service

- Westminster Academy - Structures Lab Visit (2018)
- Structures and Materials Laboratory High School Research Program (2017)
- Westminster Academy - JanTerm (2017)
- Amana School STEM Outreach - Laboratory Visit and Lesson (2015)
- SWE STEM Outreach at Petco Park (2010)
- BEWISE Day at UCSD (2009)

C. Institute Contributions

C.1. School Committee Service

- Member, Faculty Search Committee for SEMM PoP (2019)
- Member, Faculty Search Committee (2017-Present)
- Member, CEE Grad Committee (2013-Present)
- Gatekeeper, SEMM (2014-Present)
- SEMM Graduate Admissions Committee (2014 - Present)

C.2. Other Institute Service Contributions

- Faculty Advisor, Earthquake Engineering Research Institute (EERI) (2017-Present)
- Director, Structural Engineering and Materials Laboratory (2015 - Present)
- Capstone Design, SEMM Contributor (2016 - 2017)
- Faculty Advisor, Chi Epsilon (2014 - 2017)
- Panel Member, CEE Faculty Interview Preparation Seminar (2014)
- Faculty Reviewer, Capstone Design (2013, 2014, 2016)

E5. Proposals Submitted But Not Funded - Past 24 Months

1. Title of Project: CAREER: Robotic Structures - A Pathway for Creativity and Adaptability
   Agency/Company: NSF
   Total Dollar Amount: $500,000
   Role: PI
   Submitted: July 2018

2. Title of Project: Experimental and Numerical Study of Loading Rate Dependency of Rock Tensile Strength
   Agency/Company: American Chemical Society Petroleum Research Fund
   Total Dollar Amount: $110,000
   Role: PI
   Collaborators: Haiying Huang (CEE, co-PI)
   Period of Contract: 24 month POP
   Candidate's Share: $\sim$50% ($55,000)

3. Title of Project: CAREER: Adaptable Design for Evolving Hazards
   Agency/Company: NSF
   Total Dollar Amount: $500,000
   Role: PI
   Submitted: July 2017