

## CURRICULUM VITAE

### *Maria Eugenia Moreyra Garlock*

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## Education

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Lehigh University, Bethlehem, PA, 1997 – 2002

**Doctorate** (Ph.D.) Degree: Structural Engineering, 2003

Dissertation: “Design, Analysis, and Experimental Behavior of Seismic Resistant Post-Tensioned Steel Moment Resisting Frames.”

Advisors: James Ricles and Richard Sause

Cornell University, Ithaca, NY, 1991-1993,

**Masters** (M.S.) Degree: Civil Engineering, 1993

Thesis: “The Behavior of Cold-Formed Steel Lipped Channels under Bending”

Advisor: Teoman Pekoz

Lehigh University, Bethlehem, PA, 1987 – 1991

**Bachelors** (B.S.) Degree: Civil and Environmental Engineering, 1991

GPA: 3.8/4.0, Summa Cum Laude

## Licensure

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New York State Professional Engineering License (since 1997)

## Appointments

### ~~~~~ Academic – Princeton University

July 2018 to present: Head of Forbes College, Princeton University, Princeton, NJ.

July 2017 to present: Professor, Dept. of Civil and Environmental Engineering, Princeton University, Princeton, NJ.

July 2011 to June 2017: Associate Professor, Dept. of Civil and Environmental Engineering, Princeton University, Princeton, NJ.

February 2003 to June 2011: Assistant Professor, Dept. of Civil and Environmental Engineering, Princeton University, Princeton, NJ.

September 2002 – February 2003: Instructor, Dept. of Civil and Environmental Engineering, Princeton University, Princeton, NJ.

#### **Academic – Other**

October 2017 – Visiting scholar at the Universitat Politècnica de València (UPV) funded by UPVs Escuela de Doctorado (Graduate School) – one week term, seminars on fire following earthquake and ethics in engineering.

#### **Industry**

July 1993 – July 1997: Consulting Structural Engineer, Leslie E. Robertson Associates, R.L.L.P, 30 Broad Street, 47th Floor, N.Y., N.Y., 10004-2304

*Partial List of Projects:* BDNI Center (Jakarta, Indonesia); Baltimore Convention Center Expansion (Baltimore, Md.); Megaworld Place (Manila, Philippines); Berlin Historical Museum (Berlin, Germany); World Trade Center Structural Integrity Inspections (New York, N.Y.)

### **Fellowships, Awards, and Recognitions**

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Fellow of the American Society for Civil Engineers (ASCE) Structural Engineering Institute (SEI): “The SEI Fellow (F.SEI) grade distinguishes members as leaders and mentors in the profession.”

2016 T.R. Higgins Lectureship Award (“recognizes an outstanding lecturer and author whose technical paper or papers, published during the eligibility period, are considered an outstanding contribution to the engineering literature on fabricated structural steel.”)

Princeton University School of Engineering and Applied Science Commendation List for Outstanding Teaching (2006, 2007, 2014, 2016)

Selected to participate in the National Academy of Engineering's 2013 Frontiers in Engineering Education Symposium (‘one of 73 of the nation's most innovative, young engineering educators to take part...)

President’s Award for Distinguished Teaching (2012) – given to four faculty for record of distinguished teaching at Princeton University

1st place poster in category of Steel Structures, Composite Structures and Connections in the *5th International Conference for Structures in Fire*, East Lansing, MI, June, 2010 (Quiel, S., Garlock, M.E.M. “Stress-based Equations for Predicting the Buckling Capacity of Steel Plates Exposed to Fire”

Lawrence Keyes, Jr. /Emerson Electric Co. Faculty Advancement Award given by Princeton University (June 2006)

Bronze Award for the Advancement of Arc Welded Design, Engineering and Fabrication, given by The James Lincoln Arc Welding Foundation (2003)

Excellence in Civil Engineering Education (ExCEED) Fellow (2003)

Lehigh University Milestone Fellowship (1998) – twelve months support, tuition and stipend.

General Electric Foundation Graduate Fellowship, Lehigh University (1997) – twelve months support (tuition and stipend) rewarding select individuals for their motivation and success.

John B. Carson Prize, Lehigh University (1991) – given to the senior civil engineer showing most marked excellence in professional courses.

Lehigh University Class of 1904 Scholarship Award (1991) – given to an outstanding member of the junior class on the basis of character, scholarship, qualifications indicating promise of future leadership, and extracurricular activities.

Roger Slutter Memorial Scholarship, Lehigh University (1991) – given to the highest ranking junior in Civil Engineering.

## Books

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Garlock, M.E.M., Billington, D.P. (2008). ***Félix Candela: Engineer, Builder, Structural Artist***, Yale University Press (207 pages)

Press Reviews: “Garlock and Billington’s book, aimed at a professional readership, is a magisterial overview of Candela’s synthesis of geometry, engineering and art “(Architectural Record, February 2009); Top of the list of “Best Architecture Books of 2008 (<http://www.archnewsnow.com/features/Feature272.htm>); “Visual Masterpiece, Thought-Provoking Read” (Amazon.com, May 8, 2009).

E.M. Hines, S.G. Buonopane and M.E.M. Garlock, editors (2012), ***Festschrift Billington 2012***, International Network for Structural Art, (253 pages).

## Book Chapters & Contributions

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Adriaenssens, S., and Garlock, M.E.M.(2012) " Teaching Social and Multidimensional Aspects of Structures through Fazlur Khan," in *Festschrift Billington 2012*, E.M. Hines, S.G. Buonopane and M.E.M. Garlock, editors, International Network for Structural Art, pp. 122-155.

Garlock, M.E.M., Billington, D.P. (2014). “Félix Candela and Heinz Isler: A comparison of two structural artists” in *Shell Structures for Architecture: Form Finding and Optimization*, edited by Sigrid Adriaenssens, Philippe Block, Diederik Veenendaal & Chris Williams, Routledge Taylor and Francis publishers.

Garlock, M.E.M., Billington, D.P. (2014). “Nervi and Candela: comparison of philosophies of design” *Pier Luigi Nervi. Gli stadi per il calcio*. University of Bologna

Garlock, M.E.M and Boegle, A. (2015). “SOM Structural Engineering”, DETAIL engineering. (lead author of Chapter 4, “Efficiency and Economy”)

## Refereed Journal Publications

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56. Paya Zaforteza, I., Garlock, M.E.M. (2018). "Eminent Structural Engineer: David P. Billington (1927-2018). Inspiring generations through the integration of engineering and art", submitted to *Structural Engineering International*, IABSE
55. Glassman, J.D., Boyce, V., Garlock, M.E.M. (2018). "Effectiveness of stiffeners on steel plate shear buckling at ambient and elevated temperatures", submitted to *Engineering Structures*, Elsevier.
54. Coar, M., Garlock, M.E.M., Elhami Khorasani, N. (2018). "Effects of water network dependency on the electric network for post-earthquake fire suppression", submitted to *Sustainable and Resilient Infrastructure*, Taylor and Francis.
53. Garlock, M.E.M, Quiel, S.E., Alos Moya, J., Wang, P., Glassman, J. (2018). "Postbuckling Mechanics of a Square Slender Steel Plate in Pure Shear," Accepted for publication in AISCs *Engineering Journal*.
52. Gernay, T., Elhami Khorasani, N., Garlock, M.E.M. (2018). "Fire fragility functions for steel frame buildings: Sensitivity analysis and reliability framework", *Fire Technology*, Springer, <https://doi.org/10.1007/s10694-018-0764-5>.
51. Gerasimidis, S., Elhami Khorasani, N., Garlock, M.E.M., Pantidis, P. Glassman, J. (2017). "Resilience of tall steel moment resisting frame buildings with multi-hazard post-event fire", *Journal of Constructional Steel Research*, Elsevier, Vol. 139, pp. 202-219.
50. Elhami Khorasani, N., Gernay, T., Garlock, M.E.M. (2017). "Data-Driven Probabilistic Post-Earthquake Fire Ignition Model for a Community", *Fire Safety Journal*, Elsevier, Vol 94, pp. 33-44.
49. Glassman, J., and Garlock, M. (2017). "A compression model for ultimate postbuckling shear strength at elevated temperatures", *Journal of Structural Engineering*, Volume 143 Issue 6 - June.
48. Elhami Khorasani, N., Garlock, M.E.M. (2017). "Overview of Fire Following Earthquake: Historical Events and Community Responses". *International Journal of Disaster Resilience in the Built Environment*, Volume 8, Issue 2.
47. Elhami Khorasani, N., Garlock, M.E.M., Gardoni, P. (2016). "Probabilistic Performance-Based Evaluation of a Tall Steel Moment Resisting Frame under Fire Following Earthquake". *Jrnl of Structural Fire Engineering*, Emerald Insight, Vol. 7 No. 3, pp. 193-216.
46. Gernay, T., Elhami Khorasani, N., Garlock, M.E.M. (2016). "Fire fragility curves for steel buildings in a community context: a methodology." *Engineering Structures*, Elsevier, Volume 113, 15 April, Pages 259–276.
45. Glassman, J., and Garlock, M. (2016). "A Compression Model for Ultimate Postbuckling Shear Strength". *Thin Walled Structures*, Elsevier, Volume 102, Pages 258–272.
44. Glassman, J., Garlock, M.E.M., Aziz, E.M., Kodur, V.K. (2016). "Modeling parameters for predicting the ultimate postbuckling shear strength of steel plate girders", *Journal of Constructional Steel Research*, Elsevier, Volume 121, Pages 136–143
- 43 Elhami Khorasani, N., Garlock, M.E.M., Quiel, S. (2015). "Modeling Steel Structures in OpenSees:

- Enhancements for Fire and Multi-Hazard Probabilistic Analyses”, *Computers and Structures*, Elsevier, Vol. 157, p. 218–231.
- 42 Elhami Khorasani, N., Gardoni, P., Garlock, M.E.M. (2015). “Probabilistic Fire Analysis: Material Models and Evaluation of Steel Structural Members”, *Journal of Structural Engineering*, ASCE, Volume 141, Issue 12, December.
  - 41 Aziz, E.M., Kodur, V.K., Glassman, J.D., Garlock, M.E.M. (2015). “Behavior of steel bridge girders under fire conditions”, *Journal of Constructional Steel Research*, Elsevier, Volume 106, March, Pages 11–22
  - 40 Garlock, M, and Glassman, J. (2014). “Elevated temperature evaluation of an existing steel web shear buckling analytical model”. *Journal of Constructional Steel Research*, Elsevier. Volume 101, October, Pages 395–406.
  39. Selamet, S., and Garlock, M.E.M. (2014). "Fire Resistance of Steel Shear Connections". *Fire Safety Journal*, Elsevier, Volume 68, August, Pages 52–60.
  - 38 Alós-Moya, J., Payá-Zaforteza, I., Garlock, M., Loma de Osorio, E., Schiffner, D., Hospitaler, A., “Analysis of a bridge failure due to fire using computational fluid dynamics and finite element models” (2013). *Engineering Structures*, Elsevier, Vol 68, p. 96-110.
  37. Quiel, S.E., Garlock, M.E.M., Dwaikat, M.M.S., Kodur, V.K.R. (2014). “Predicting the demand and plastic capacity of axially loaded steel beam-columns with thermal gradients” *Engineering Structures*, Elsevier, Vol 58, p. 49-62.
  36. Elhami Khorasani, N., Garlock, M.E.M., Gardoni, P. (2014). “Fire Load: Survey Data, Recent Standards, and Probabilistic Models for Office Buildings”, *Engineering Structures*, Elsevier, Vol. 58, pp. 152–165.
  35. Selamet, S., and Garlock, M.E.M. (2013). “Plate Buckling Strength of Steel Wide-Flange Sections at Elevated Temperatures”, *Journal of Structural Engineering*, ASCE, v 139, n 11, p 1853-65.
  34. Pakala, P., Kodur, V., Selamet, S., and Garlock, M.E.M. (2012). “Fire behavior of shear angle connections in a restrained steel frame”, *Journal of Constructional Steel Research*, Elsevier, Volume 77, Pages 119–130.
  33. Olsen, M.J., Cheung, K.F., Yamazaki, Y., Butcher, S., Garlock, M., Yim, S., McGarity, S., Robertson, I., Burgos, L., and Young, Y.L. (2012). “Damage Assessment of the 2010 Chile Earthquake and Tsunami Using Terrestrial Laser Scanning”, *Earthquake Spectra*, Vol. 28, No. S1, pp. S179-S197
  32. Kodur, V.K., Garlock, M.E.M., Iwankiw, N. (2012). "Structures in Fire: State-of-the-Art, Research and Training Needs", *Fire Technology*, Springer Journals, Volume 48, Issue 4, pp 825-839.
  31. Selamet, S., and Garlock, M.E.M. (2012). “Predicting the maximum compressive Beam Axial Force during Fire considering Local Buckling”, *Journal of Constructional Steel Research*, Elsevier, V.71, p.189-201.
  30. Payá-Zaforteza, I, Garlock, M. (2012). “A numerical investigation on the fire response of a steel girder bridge”, *Journal of Constructional Steel Research*, Elsevier, V. 75, p.93-103.

29. Garlock, M., Payá-Zaforteza, I. Kodur, V., Gu, L., (2012). "Fire Hazard in Bridges: Review, Assessment and Repair Strategies", *Engineering Structures*, Elsevier, V. 35, p. 89-98.
28. Garlock, M.E.M., Billington D.P. (2011). "Eminent Structural Engineer: Félix Candela –Structural Artist of Thin Shell Concrete Forms", *Structural Engineering International*, IABSE, v.21, No.4, p.520-523.
27. Quiel, S.E., Garlock, M.E.M., Paya-Zaforteza, I. (2011). "Closed-form Procedure for Predicting the Capacity and Demand of Steel Beam-Columns under Fire", *Journal of Structural Engineering*, ASCE, 137(9), p.967-976.
26. Herning, G., Garlock, M.E.M., Vanmarcke, E. (2011). "Reliability-based evaluation of design and performance of steel self-centering moment frames", *Journal of Constructional Steel Research*, v 67, n 10, p 1495-1505.
25. Dwaikat, M.M.S., Kodur, V.K.R., Quiel, S.E., Garlock, M.E.M., (2011). "Experimental Behavior of Steel Beam-Columns Subjected to Fire-Induced Thermal Gradients", *Journal of Constructional Steel Research*, Elsevier, v67, n 1, p 30 - 38
24. Kodur VR, Gu L, Garlock M.E. (2010). "Review and Assessment of Fire Hazard in Bridges" *Journal of the Transportation Research Board* No. 2172, Transportation Research Board of the National Academies, Washington D.C. (USA), 2010.
23. Quiel, S., Garlock, M.E.M. (2010). "Calculating the Buckling Strength of Steel Plates Exposed to Fire", *Thin-Walled Structures*, Elsevier, v 48, p 684-695.
22. Selamet, S., Garlock, M.E.M. (2010). "Robust Design of Single Plate Shear Connections for Fire", *Engineering Structures*, Elsevier, v 32, n 8, p.2367-2378.
21. Garlock, M.E.M., and Selamet, S. (2010). "Modeling and Behavior of Steel Plate Connections Subject to Various Fire Scenarios", *Journal of Structural Engineering*, ASCE, v 136, n 7, p 897-906
20. Quiel, S., Garlock, M.E.M. (2010). "Parameters for Modeling High-Rise Steel Building Frame Subject to Fire", *Journal of Structural Fire Engineering*, v 1, n 2, p 115-134.
19. Quiel, S., Garlock, M.E.M. (2010). "Closed-form Prediction of the Thermal and Structural Response of a Perimeter Column in a Fire", *Open Construction and Building Technology Journal*, v 4, p 64-78.
18. Draper, P., Garlock, M.E.M., Billington, D.P.(2010). "Structural Optimization of Félix Candela's Hyperbolic Paraboloid Shells", *Journal of the International Association for Shell and Spatial Structures*, v 51, n 163, p 59-66.
17. Thrall, A., Garlock, M.E.M. (2010). "Analysis of the Design Concept for Iglesia de la Medalla Milagrosa" *Journal of the International Association for Shell and Spatial Structures*, v 51, n 163, p 27-34.
16. Kelly. K., Garlock, M.E.M., Billington, D.P. (2010). "Structural Analysis of the Cosmic Rays Laboratory", *Journal of the International Association for Shell and Spatial Structures*, Vol 51, No. 1., p 17-24
15. Billington, D.P., Garlock, M.E.M. (2010). "Structural Art and the Example of Félix Candela", *Journal of Structural Engineering*, ASCE, v 136, n 4, p. 339-342. (Forum paper).

14. Quiel, S.E. and Garlock, M.E.M. (2008). "A Closed-Form Analysis of Perimeter Member Behavior in a Steel Building Frame Subject to Fire", *Engineering Structures*, Elsevier , v 30, n 11, p 3276-3284.
13. Draper, P., Garlock, M., Billington, D. (2008). "Finite Element Analysis of Félix Candela's Chapel of Lomas De Cuernavaca", *Journal of Architectural Engineering*, ASCE, v 14, n 2, p 47-52.
12. Garlock, M, and Li, J. (2008). "Steel Self-Centering Moment Frames with Collector Beam Floor Diaphragms", *Journal of Constructional Steel Research*, Elsevier, v 64, n 5, p 526-538.
11. Garlock, M, Ricles, J., and Sause, R. (2008) "Influence of Design Parameters on Seismic Response of Post-Tensioned Steel MRF Systems", *Engineering Structures*, Elsevier, v 30, n 4, p 1037-1047.
10. Garlock, M.E.M. and Quiel, S.E., (2008) "Plastic Axial Load - Moment Interaction Curves for Fire-Exposed Steel Sections with Thermal Gradients", *Journal of Structural Engineering*, ASCE v 134, n 6, p 874-880.
9. Garlock, M.E.M. and Quiel, S.E. (2007) "Mechanics of Wide-Flanged Steel Sections with Thermal Gradients Due to Fire Exposure," *International Journal of Steel Structures*, Korean Society of Steel Construction, v 7, n 3, p 153-162.
8. Garlock, M., Quiel, S.E. (2007) "The Behavior of Steel Perimeter Columns in a High-Rise Building under Fire", *Engineering Journal*, AISC, v 44, n 4, p 359-372.
7. Mac Namara, S., Garlock, M., Billington, D. (2007). "Structural Response of Nuclear Containment Shield Buildings with Construction Openings", *Journal of Performance of Constructed Facilities*, ASCE, v 21, n 2, p 152-156.
6. Garlock, M, Sause, R., and Ricles, J. (2007). "Behavior and Design of Post-Tensioned Steel Frames", *Journal of Structural Engineering*, ASCE, v 133, n 3, p 389-399.
5. Rojas, P., Garlock, M., Ricles, J.M., and Sause, R. (2005) "Use of Post-Tensioned Friction Damped Connections for Seismic Retrofit of Steel Moment Resisting Frames," *International Journal of Steel Structures*, Korean Society of Steel Construction, v 5.
4. Garlock, M, Ricles, J., and Sause, R. (2005) "Experimental Studies on Full-Scale Post-Tensioned Steel Connections", *Journal of Structural Engineering*, ASCE, v 131, n 3, p438-448.
3. Billington, D., Garlock, M. (2004) "Thin Shell Concrete Structures: The Master Builders" *Journal of the International Association for Shell and Spatial Structures*, v 45, n 146, p147-155.
2. Garlock, M, Ricles, J., and Sause, R. (2003). "Cyclic Load Tests and Analysis of Bolted Top-and-Seat Angle Connections," *Journal of Structural Engineering*, ASCE v 129, n 12, p 1615-1625.
1. Ricles, J., Sause, R., Garlock, M., and Zhao, C. (2001). "Post-Tensioned Seismic Resistant Connections for Steel Frames," *Journal of Structural Engineering*, ASCE, v127, n 2, p 113-121.

## Conference and Workshop Publications

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(**bold** represents the author who presented the paper at the conference)

95. Douglas, I., Napolitano, R., Garlock, M.E.M., Glisic, B. (2018). "Reconsidering the vaulted forms of Cuba's national school of ballet", *Proceedings of the 11<sup>th</sup> International Conference on Structural Analysis of Historic Structures*, Cusco, Peru, September 11-13.
94. Douglas, I., Napolitano, Glisic, B., **Garlock, M.E.M.** (2018). "A Structural Evaluation of Cuba's National School of Ballet", *Proceedings of the IASS Annual Symposium 2018*, July 16 – 20, Cambridge, MA., USA.
93. Levine, A., **Garlock, M.E.M.** (2018). "Structural comparison of Candela's 4-sided and 8-sided concrete umbrellas", *Proceedings of the IASS Annual Symposium 2018*, July 16 – 20, Cambridge, MA., USA.
92. Boyce, V., **Garlock, M.E.M.** (2018) "Shear Analysis of Clipped webs in fire and ambient conditions", *Proceedings of the 10th International Conference on Structures in Fire*, Belfast, UK, June 6-8.
91. Boyce, V., **Glassman, J.D.**, Garlock, M. (2018) "Effectiveness of stiffeners on the shear capacity of steel web plates at ambient and elevated temperatures", *Proceedings of the 10th International Conference on Structures in Fire*, Belfast, UK, June 6-8.
90. Jorquera-Lucerga, J.J., **Garlock, M.** (2017). "Integrating Creativity and Discipline in Structural Design Education" *Proceedings of the Structural Engineers World Congress*, Cancun, Mexico, November 14-17.
89. **Napolitano, R.**, Douglas, I., Garlock, M.E.M., Glisic, B. (2017). "Virtual Tour Environment of Cuba's National School of Art," *Proceedings of CIPA Heritage Documentation International Symposium*, Ottawa, Canada, Aug. 38 – Sept. 1.
88. Wang, P. and **Garlock M.E.M.** (2017). "Effects of Composite Slab on Shear Strength of Steel Plate Girders" *Proceedings of the Eighth Composite Construction in Steel and Concrete*, Jackson Hole (WY, USA), July 29-August 2.
87. **Jorquera-Lucerga, J.J., Garlock, M.** (2017). "Elements of Conceptual Design: an Innovative Course", *Proceedings of the IASS Annual Symposium 2017*, September 25 - 28th, 2017, Hamburg, Germany.
86. Boyce, V., Levine, A., **Garlock, M.**, Glisic, B. (2017). "Structural Analysis of the Arcos de Cristal in the Tropicana Night Club" *Proceedings of the IASS Annual Symposium 2017*, September 25 - 28th, 2017, Hamburg, Germany.
85. **Garlock, M.E.M.**, Bhatia, A. Laffey, E., (2017). "Effective Approaches for Teaching STEM-literacy for All Majors: The Example of Resonance", *Proceedings of the 2017 ASEE Annual Conference*, Columbus, OH, June 25-28.
84. **Garlock, M.E.M.**, Alós-Moya, J., Paya Zaforteza, I. (2017). "Alternative designs to improve behavior of thin steel plates in pure shear under fire", *Proceedings of the 2<sup>nd</sup> International Fire Safety Symposium (IFireSS)*, Naples, Italy, June 7-9.
83. **Garlock, M.E.M.**, Quiel, S.E, Alós-Moya, J., Glassman, J. (2017). "Postbuckling mechanics of square



slender steel plates in pure shear: Examining the role of second order effects”, *Proceedings of the Annual Stability Conference - Structural Stability Research Council*, San Antonio, Texas, March 21-24

82. **Coar** M., Elhami Khorasani N., Garlock M.E.M. (2016). “Integrating Water And Electric Systems In Post-Earthquake Fire Analysis”, *Proceedings of International Symposium on Sustainability and Resiliency of Infrastructure*, Taipei, Taiwan, November 9-12.
81. **Michels**, T., Garlock, M.E.M., Adriaenssens, S. (2016)“ Seismic assessment of Félix Candela’s concrete shells and their behavior during the 1985 Mexico City earthquake. A case study on the Church of Our Lady of the Miraculous Medal”, *Proceedings of the 10<sup>th</sup> International Conference on Structural Analysis of Historic Structures*, Leuven, Belgium, September 15-16.
80. **Elhami Khorasani**, N. , Gernay, T., Garlock, M.E.M. (2016). “Probabilistic Measures of Earthquake Effects on Fire Performance of Tall Buildings”, *Proceedings of the Sixth International Conference on Structural Engineering, Mechanics and Computation* Cape Town (South Africa), September 5 – 7.
79. **Laffey**, E., Bhatia, A. Garlock, M.E.M.(2016). "Enhancing Student Cognition and Affect through the Creative Art of Structural and Civil Engineering", *Proceedings of the 2016 ASEE Annual Conference*, New Orleans, LA, June 27-29.
78. **Bhatia**, A. Laffey, E., Garlock, M.E.M. (2016). “Engaging Students with the Creative Art of Civil Engineering”, *Proceedings of the 2016 ASEE Annual Conference*, New Orleans, LA, June 27-29.
77. **Glassman**, J., Garlock, M.E.M. (2016). “Postbuckling Shear Strength at Elevated Temperatures Using a Diagonal Compression Model”, *Proceedings of the 9th International Conference on Structures in Fire*, Princeton, USA, June 8-10.
76. **Elhami Khorasani**, N. , Gernay, T., Garlock, M.E.M. (2016). “Fire fragility functions for community resilience assessment”, *Proceedings of the 9th International Conference on Structures in Fire*, Princeton, USA, June 8-10.
75. **Gernay**, T., Elhami Khorasani, N., Garlock, M.E.M. (2016). “Critical parameters in deriving fire fragility functions for steel gravity frames”, *Proceedings of the 9th International Conference on Structures in Fire*, Princeton, USA, June 8-10.
74. **Garlock**, M.E.M., **Paya** Zaforteza, I. (2015). “The Structural Playground, a New Environment Where to Enjoy Learning Structural Engineering”, *Proceedings of the IABSE Conference – Structural Engineering: Providing Solutions to Global Challenges*, September 23-25 2015, Geneva, Switzerland.
73. **Paya** Zaforteza, I., **Garlock**, M.E.M., Adriaenssens, S., Glisic, B. (2015). “The Art of Spanish Bridge Design’, a New Course Promoting the Holistic Learning of Structural Engineering”, *Proceedings of the IABSE Conference – Structural Engineering: Providing Solutions to Global Challenges*, September 23-25 2015, Geneva, Switzerland.
72. Elhami Khorasani, N. , Gernay, T., **Garlock**, M.E.M. (2015). “Tools for Measuring a City’s Resilience in a Fire Following Earthquake Scenario”, *Proceedings of the IABSE Conference – Structural Engineering: Providing Solutions to Global Challenges*, September 23-25 2015, Geneva, Switzerland.

71. **Garlock**, M.E.M., Bhatia, A., Elhami Khorasani, N. (2015). "Introducing Modern Teaching into a Classic Course on Structural Art", *Proceedings of the IABSE Conference – Structural Engineering: Providing Solutions to Global Challenges*, September 23-25 2015, Geneva, Switzerland.
70. Elhami Khorasani, N., **Garlock**, M.E.M., Gardoni, P. (2015). "Probabilistic Evaluation Framework for Fire and Fire Following Earthquake" *International Conference on Multi-hazard Approaches to Civil Infrastructure Engineering (ICMAE)*, published by Springer
69. **Gernay**, T., Elhami Khorasani, N., Garlock, M.E.M. (2015). "Fragility Analysis of a Steel Building in Fire", *Proceedings of the First International Conference on Structural Safety under Fire & Blast - CONFAB 2015*, Glasgow, UK, 2015, pp. 287-296.
68. Aatish **Bhatia**, Peter Chen, Kimberly Perez, Evelyn Laffey, Maria Garlock (2015). "Active Learning Pedagogies Promoting the Art of Structural and Civil Engineering" Presented at 2015 ASEE Annual Conference and Exposition, Seattle, WA
67. **Glassman**, J., Garlock, M.E.M. (2014). "Models for Analyzing Web Shear Buckling Response of Bridge Steel Plate Girders under Fire", *Proceedings of the 8th International Conference on Structures in Fire*, Shanghai, China, June 11-13.
66. **Labbouz**, S., **Glassman**, J., Garlock, M.E.M., Ricles, J. (2014). "Evaluating Weathering Steel Performance at Elevated Temperatures: The I-195 Bridge Fire Case Study", *Proceedings of the 8th International Conference on Structures in Fire*, Shanghai, China, June 11-13.
65. Elhami Khorasani, N., **Garlock**, M.E.M., Gardoni, P. (2014). "Reliability-Based Approach for Evaluation of Buildings under Post-Earthquake Fires", *Proceedings of the 8th International Conference on Structures in Fire*, Shanghai, China, June 11-13.
64. Elhami Khorasani, N., **Garlock**, M.E.M. (2014). "Using OpenSees for Analyzing a 9-Story Steel Building Under Post- Earthquake Fires", *Proceedings of the Tenth U.S. National Conference on Earthquake Engineering, Frontiers of Earthquake Engineering*, July 21-25, 2014, Anchorage, Alaska.
63. **Glisic**, B., **Garlock**, M., Adriaenssens, S. (2014). "Innovative education in engineering: a social and multi-dimensional exploration of structures", *Proceedings of the ASCE Structures Congress*, ASCE, Boston, April.
62. **Glassman**, J., Garlock, M.E.M. (2014). "Post-fire strength assessment of steel bridges based on residual out-of-plane web deformations", *Proceedings of the ASCE Structures Congress*, ASCE, Boston, April.
61. **Glassman**, J., Garlock, M.E.M. (2013). "Extreme temperatures and bridges: the role of transverse stiffeners in steel plate girder fire performance", *Proceedings of the New York City Bridge Conference*, New York City, August.
60. **Elhami Khorasani**, N. , Garlock, M.E.M., and Gardoni, P. (2013). "A Bayesian methodology for the performance evaluation of steel perimeter columns under fire", *Proceedings of the 11th International Conference on Structural Safety & Reliability*, June 16-20, 2013 – Columbia University, New York City.
59. **Glassman**, J., **Garlock**, M.E.M. (2013). "Shear buckling behavior of steel plate girders at elevated temperatures", *Proceedings of the ASCE Structures Congress*, ASCE, Pittsburgh, PA, May.

58. **Elhami Khorasani**, N., Garlock, M.E.M., and Gardoni, P. (2012). "Reliability Analysis of Steel Perimeter Columns Under Fire", *Proceedings of the 7th International Conference on Structures in Fire*, Zurich, Switzerland, June 6-8.
57. Neal, M., **Garlock**, M.E.M., Quiel, S.E., Marjanishvili, S. (2012). "Effects of Fire on a Tall Steel Building Designed to Resist Progressive Collapse", *Proceedings of the ASCE Structures Congress*, ASCE, Chicago, March.
56. Herning, G., **Garlock**, M.E.M., Freidenburg, A. (2012). "Comparison of welded and post-tensioned steel moment-resisting frames", *Proceedings, Steel Structures in Seismic Areas (STESSA)*, Santiago, Chile, January.
55. **Garlock**, M.E.M., Billington, D.P. (2011). "Félix Candela and the Origins of Inspiration", *Proceedings of the ASCE Structures Congress*, ASCE, Las Vegas, NV, April.
54. **Selamet**, S., Garlock, M.E.M. (2011). "A Comparison between the Single Plate and Angle Shear Connection Performance under Fire", *Proceedings of the ASCE Structures Congress*, ASCE, Las Vegas, NV, April.
53. **Selamet**, S., Garlock, M.E.M., (2010). "Guidelines for Modeling Three Dimensional Structural Connection Models Using Finite Element Methods", *Proceedings of the International Symposium "Steel Structures: Culture & Sustainability"*, 21-23 September, Istanbul, Turkey.
52. **Ricles**, J.M., Christopoulos, C., Sause, R., and Garlock, M. (2010). "Development of Self-Centering Steel Moment-Resisting Frames for Damage-Free Seismic Resistant Buildings" *Proceedings of the 9th US National/10th Canadian Conference on Earthquake Engineering*, Toronto, July, (paper # 1526).
51. **Dyke** S.J., Stojadinovic, B., Arduino, P., Garlock, M. (2010). "2020 Vision for Earthquake Engineering Research", *Proceedings of the 9th US National/10th Canadian Conference on Earthquake Engineering*, Toronto, July, (paper # 1832).
50. **Herning**, G., Garlock, M., Vanmarcke, E. (2010). "Reliability-Based Evaluation of Design Procedure for Steel Self-Centering Moment Frames", *Proceedings of the 9th US National/10th Canadian Conference on Earthquake Engineering*, Toronto, July, (paper # 584).
49. Quiel, S., **Garlock**, M.E.M. (2010). "Stress-based Equations for Predicting the Buckling Capacity of Steel Plates Exposed to Fire", *Proceedings of the 6th International Conference for Structures in Fire*, East Lansing, MI, June, p 122 – 129.
48. **Payá-Zaforteza**, I., and Garlock, M.E.M., (2010). "A 3D Numerical Analysis of a Typical Steel Highway Overpass Bridge under a Hydrocarbon Fire", *Proceedings of the 6th International Conference for Structures in Fire*, East Lansing, MI, June, p 11-18.
47. **Selamet**, S., and **Garlock**, M.E.M. (2010). "Improved Details for Fire-Induced Steel Single Plate Shear Connections", *Proceedings of the 6th International Conference for Structures in Fire*, East Lansing, MI, June, p 621-628.
46. **Selamet**, S., and Garlock, M.E.M. (2010). "Local Buckling Study of Flanges And Webs In I-Shapes At Elevated Temperatures", *Proceedings of the ASCE Structures Congress*, ASCE, Orlando, FL, May, p 1592-1603.

45. Quiel, S., **Garlock**, M.E.M., Payá-Zaforteza, I., (2010). "Procedure for Simplified Analysis of Perimeter Columns under Fire", *Proceedings of the ASCE Structures Congress*, ASCE, Orlando, FL, May, p 1580-1591.
44. Kodur V.R., **Gu** L., Garlock M. E., (2010) Review and Assessment of Fire Hazard in Bridges, *Proceedings of 2010 TRB Annual Meeting*, Washington D.C., USA.
43. **Garlock**, M., Li, J., Vanmarcke, E. (2009). "Floor diaphragm design of steel self-centering moment frames", *Proceedings, Steel Structures in Seismic Areas (STESSA)*, Philadelphia, PA, August, p 939 – 944.
42. **Herning**, G., Garlock, M., Vanmarcke, E. (2009). "Evaluation of design procedure for steel self-centering moment frames", *Proceedings, Steel Structures in Seismic Areas (STESSA)*, Philadelphia, PA, August, p 417 – 422.
41. Lee, J., **Garlock**, M. (2009). "Eladio Dieste and Félix Candela: a comparative analysis", *Proceedings of the International Association for Shell and Spatial Structures (IASS) Symposium*, Valencia, 28 September – 2 October, p 1562 – 1572.
40. Garlock, M., **Billington**, D. (2009). "Félix Candela's Legacy", *Proceedings of the International Association for Shell and Spatial Structures (IASS) Symposium*, Valencia, 28 September – 2 October, p 154 – 161.
39. **Herning**, G., Garlock, M., Ricles, J., Sause, R., Li, J.(2009). "An Overview of Self-centering Steel Moment Frames", *Proceedings of the ASCE Structures Congress*, ASCE, Austin, TX, April, p 1412 – 1420.
38. Selamat, S., **Garlock**, M., (2009) "Modified Connection Details for Single Plate Steel Connections under Fire", *Proceedings of the ASCE Structures Congress*, ASCE, Austin, TX, April, p 642 – 649.
37. Segal, E., **Garlock**, M., Billington, D. (2008). "A Comparative Analysis of the Bacardí Rum Factory and the Lambert-St. Louis Airport Terminal", *Proceedings of the International Symposium IASS-SLTE 2008*, Acapulco, Mexico, October 27-31.
36. Kelly, K., **Garlock**, M., Billington, D. (2008). "Félix Candela's First Hypar: The Cosmic Rays Laboratory", *Proceedings of the International Symposium IASS-SLTE 2008*, Acapulco, Mexico, October 27-31.
35. **Thrall**, A., Garlock, M., Billington, D. (2008). "Analysis of Iglesia de la Medalla Milagrosa", *Proceedings of the International Symposium IASS-SLTE 2008*, Acapulco, Mexico, October 27-31.
34. **Holzer**, C.E., Garlock, M., Prevost, J.H., (2008). "Structural Optimization of Félix Candela's Chapel Lomas de Cuernavaca", *Proceedings of the Fifth International Conference on Thin-Walled Structures*, Brisbane, Australia, June.
33. **Garlock**, M., Herning, G., VanMarcke, E. "A Reliability-Based Methodology for Evaluating Connection Design of Self-Centering Frames", *Proceedings of the International Workshop on Connections in Steel Structures: Connections VI*, Chicago, June, p 555 – 564.
32. **Draper**, P., Garlock, M., Billington, D. (2008). "Structural Optimization of Concrete Hyperbolic Paraboloid Umbrella Shells", *Proceedings of the 6th International Conference on Computation of*

*Shell and Spatial Structures IASS-IACM 2008: "Spanning Nano to Mega" 28-31 May 2008, Cornell University, Ithaca, NY.*

31. Selamat, S., **Garlock, M.** (2008). "Behavior of steel plate connections subject to various fire scenarios", *Proceedings of the 5th International Conference for Structures in Fire*, Singapore, May, p 139 – 149.
30. Quiel, S.E., **Garlock, M.E.M.** (2008). "3-D Versus 2-D Modeling of a High-Rise Steel Framed Building Under Fire", *Proceedings of the 5th International Conference for Structures in Fire*, Singapore, May, p 278 – 288.
29. **Quiel, S.E., Garlock, M.E.M.** (2008). "Modeling High-Rise Steel Framed Buildings under Fire", *Proceedings of the ASCE Structures Congress*, ASCE, Vancouver, April.
28. **Chi, H., Liu, J., Garlock, M.** (2008). "Design and Analytical Validation of Post-tensioned Column Bases", *Proceedings of the ASCE Structures Congress*, ASCE, Vancouver, April.
27. Quiel, S.E., Garlock, M.E.M. (2007). "Predicting the Demand on Fire-Exposed Perimeter Members in a High-Rise Steel Building Frame." *Proc. of the 11th International Conference on Fire Science and Engineering* (Interflam 2007), London, UK: 3-5 September.
26. **Garlock, M.E.M. and Quiel, S.E.** (2006) "Mechanics of Wide-Flanged Steel Sections with Thermal Gradients Due to Fire Exposure," *Proceedings of 4th International Symposium on Steel Structures*, Seoul, Korea, Nov 16-17, p 410 – 419.
25. **Garlock, M, Li, J., Blaisdell M.L.** (2006). "Collector Beam Interaction with Steel Self-Centering Moment Frames", *Proceedings of the 4th International Conference on Earthquake Engineering*, Taipei, Taiwan, October 12-13 (paper # 68).
24. **Dobossy, M, Garlock, M., and VanMarke, E.** (2006). "Comparison of two self-centering steel moment frame modeling techniques: explicit gap models, and non-linear rotational spring models", *Proceedings of the 4th International Conference on Earthquake Engineering*, Taipei, Taiwan, October 12-13 (paper # 101).
23. **Dobossy, M, VanMarke E., and Garlock, M.** (2006). "Reliability Assessment of Self-Centering Steel Moment Frame Systems", *Proceedings of the 4th International Conference on Earthquake Engineering*, Taipei, Taiwan, October 12-13 (paper # 102).
22. **Mac Namara, S.C., Garlock, M.M.; Billington, D.P.** (2007). "Delamination and structural response of RC thin shell in nuclear shield buildings with unanticipated construction openings", *Proceedings of the 6th International Conference on Fracture Mechanics of Concrete and Concrete Structures*, v 2, p 939-943.
21. **Garlock, M.E.M. and Quiel, S.E.** (2006). "Combined Axial Load and Moment Capacity of Fire-Exposed Beam-Columns with Thermal Gradients," *4th International Workshop for Structures in Fire, Proceedings*, Aveiro, Portugal, May 10-12, p 187 – 198.
20. **Quiel, S.E. and Garlock, M.E.M.** (2006). "A Performance-based Design Approach for Steel Perimeter Columns Subject to Fire," *4th International Workshop for Structures in Fire, Proceedings*, Aveiro, Portugal, May 10-12, p 175 – 186.

19. **Garlock**, M, Li, J., Blaisdell M.L. (2006). "Floor Diaphragm Interaction with Self-Centering Steel Moment Frames", *Proceedings of the 8th U.S. National Conference on Earthquake Engineering* (NCEE) San Francisco, CA.
18. **Garlock**, M, and Li, J. (2005). "Floor Diaphragm Interaction with Self-Centering Steel Moment Resisting Frames", *US-Taiwan Workshop on Self-Centering Structural Systems*, Taipei, June 6-7, p 34 – 35.
17. **Garlock**, M. and Quiel, S.E. (2005). "The Behavior of Steel Perimeter Columns in a Fire." *Proceedings of the ASCE Structures Congress*, ASCE, New York, NY, p 1-14.
16. **Rojas**, P., Garlock, M., Ricles, J., Sause, R. (2004). "Seismic Rehabilitation of Steel Moment Resisting Frames with Post-Tensioned Friction Damped Connections", *Proceeding of VII SNIS, Sociedad Mexicana de Ingenieria Sismica*, Tlaxcala, Mexico.
15. **Garlock**, M, Sause, R., and Ricles, J. (2004). "Design and Behavior of Post-Tensioned Steel Moment Frames", *13th World Conference on Earthquake Engineering*, Vancouver, Canada (paper # 2560).
14. **Garlock**, M, Ricles, J., and Sause, R. (2004). "Experimental Studies on Full-Scale Post-Tensioned Steel Moment Connections", *13th World Conference on Earthquake Engineering*, Vancouver, Canada (paper # 2514).
13. **Billington**, D., Garlock, M. (2004). "Thin Shell Concrete Structures: The Master Builders" *Proceedings of the IASS Symposium*, 21-24 September, Montpellier, France.
12. **Garlock**, M., Draper, P., (2004) "The Response of Steel Perimeter Columns in A Fire", *Third International Workshop of Structures in Fire*, Ottawa, Canada, May, p 157 – 168.
11. Grivas, D.A., **Garlock**, M. (2003). "Sensing Systems for Bridges: An Assessment of the State of the Art", *New York City Bridge Conference*, New York City, October, p 269 – 284.
10. **Garlock**, M, Ricles, J., and Sause, R. (2003). "Experimental Studies on Full-Scale Post-Tensioned Seismic-Resistant Steel Moment Connections", *Proceedings, Steel Structures in Seismic Areas (STESSA)*, Naples, Italy, June, p 299 – 305.
9. **Rojas**, P., Garlock, M., Ricles, J., **Sause**, R. (2003). "Seismic Response and Design of Post-Tensioned Steel Moment Resisting Frames," in *Proceedings of Steel Structures in Seismic Areas (STESSA)*, Naples, Italy, p 649 – 655.
8. **Garlock**, M. M., Ricles, J. M., and Sause, R., (2002). "Experimental Studies on Full-Scale Post-Tensioned Seismic-Resistant Steel Moment Connections," *Proceeding of the 7th U.S. National Conference on Earthquake Engineering* (NCEE), Boston, MA.
7. **Rojas**, P., Garlock, M., Ricles, J., Sause, R. (2002). "Reducing Seismic Damage In Steel Frames Using Post-Tensioning," in *Proceedings of the 7th U.S. National Conference on Earthquake Engineering* (NCEE), Boston, MA.
6. **Garlock**, M. M., Ricles, J. M., Sause, R., Zhao, C., and Lu, L.-W. (2000). "Seismic Behavior of Post-Tensioned Steel Frames," *Third International Conference on the Behavior of Steel Structures in Seismic Areas*, Montreal, Canada, p 593 – 599.

5. **Ricles**, J. M., Sause, R., Garlock, M. M., Peng, S.W., and Lu, L.-W. (2000). "Experimental Studies on Post-Tensioned Seismic Resistant Connections for Steel Frames," *Third International Conference on the Behavior of Steel Structures in Seismic Areas*, Montreal, p 231 – 238.
4. **Garlock**, M. M., Ricles, J. M., Sause, R., Peng, S.W., Zhao, C., and Lu, L.-W. (1998). "Post-Tensioned Seismic Resistant Connections for Steel Frames," *Structural Stability Research Council Conference Workshop*, Atlanta, Georgia
3. Moreyra, M. and **Pekoz**, T. (1994). "Experiments on Lipped Channel Flexural Members," *12th Intl. Specialty Conference on Cold-Formed Steel Structures*, p 41-56, St. Louis, Mo.
2. Moreyra, M. and **Pekoz**, T. (1994). "Finite Element Studies on Lipped Channel Flexural Members," *12th Intl. Specialty Conference on Cold-Formed Steel Structures*, p 57-74, St. Louis, Mo.
1. Moreyra, M. and **Pekoz**, T. (1994). "A Design Procedure for Lipped Channel Flexural Members," *12th Intl. Specialty Conference on Cold-Formed Steel Structures*, p 75-91, St. Louis, Mo.

## Exhibitions

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### ***Creativity in Cuban Thin Shell Structures*** (co-curated with Branko Glisic)

Princeton University Engineering Library (February 2017 – present).

Website: <http://cubanshells.princeton.edu>

### ***The Art of Spanish Bridge Design*** (co-curated with Ignacio Paya Zaforteza)

Princeton University Engineering Library (February 2015 – January 2017).

Website: <http://spanishbridges.princeton.edu>

### ***Conquering the Sky*** (co-curated with Sigrid Adriaenssens and Branko Glisic).

Princeton-Fung Global Forum, Shanghai, January 2013.

***The Golden Gate Bridge Outdoor Learning Exhibition*** (NSF sponsored Informal Science Education Program – co PI with Robert Reitherman of CUREE and Denis Mulligan of Golden Gate Bridge Highway Transportation District); Opened May 2012 to commemorate the 75<sup>th</sup> anniversary of the bridge. Specific exhibitions:

- 1:80 scale (about 80 feet long) stainless steel replica of the bridge (designed but on hold)
- Deck torsional resistance exhibition
- Braille representation of bridge

Website: <http://goldengate.org/exhibits/>

### ***Fazlur Khan: Structural Artist of Urban Building Forms*** (co-curated with Sigrid Adriaenssens).

Princeton University Engineering Library (September 2011 – January 2013).

Website: <http://khan.princeton.edu/>

### ***Felix Candela: Engineer, Builder, Structural Artist*** (co-curated with David Billington).

Princeton University Art Museum (Oct. 11, 2008 – Feb. 22, 2009)

MIT Museum (Apr 2, 2009 – Sept 27, 2009)

Carnegie Museum of Art (Sept. 24, 2010 – Jan. 17, 2010).

Website: <http://mcis2.princeton.edu/candela/main.html>

## Invited Talks and Presentations

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### On The Education of the Engineer:

Workshop on "Engineering-Enhanced Liberal Education", June 26 2016, New Orleans, more information on: [www.ASEE.sheilatobias.com](http://www.ASEE.sheilatobias.com), Supported by the Teagle Foundation

"Integrating Art, Society, And Engineering Design In Structural Engineering Education" ASCE Structures Congress, Portland, OR, April 24, 2015.

"Creative Teaching for Educating Creative Structural Engineers", keynote lecture at the 37<sup>th</sup> International Association for Bridge and Structural Engineering (IABSE) Symposium, Madrid, Spain, September 3-5, 2014.

"Educating the engineer of the 21st century", Round Table Participant at the 37<sup>th</sup> International Association for Bridge and Structural Engineering (IABSE) Symposium, Madrid, Spain, September 3-5, 2014.

"Integrando ARTE y RIGOR en la enseñanza y aprendizaje de la ingeniería estructural" (translated – Integrating art and rigor in teaching and learning structural engineering), Keynote speaker, International Symposium on Teaching Structural Engineering, Valencia, June 2013 (in Spanish).

"Take Action, Achieve Your Dreams!" Inspirational Keynote Speaker at the HISPA Youth Conference, Princeton University, June 2013 and June 2011 and June 2009

"The Pedagogical Value of Designing Exhibitions", Public Works for Public Learning Conference, San Francisco, CA, June 2012.

"Structural Engineering/Architecture/Fire Safety - How are people educated at Princeton?", The Lloyd's Register / University of Edinburgh Global Technical Seminar in Fire Safety Engineering, June 2011

"Teaching and Scholarship in CEE262", Princeton Structural Engineering Alumni Association meeting, July 2009.

### On the Art of the Engineer:

"Ethics and Engineering Design... a Necessary Marriage" - Universitat Politècnica de València, November 2, 2017 (*in Spanish*)

"SOM: Engineering x [Art + Architecture] – Panel Discussion: Structure as Poetry", Panel Moderator, Chicago, October 12, 2017.

"Exploring the Art of Structural Engineering in Cuba", Adelante Tigres!, Celebrating Latino Alumni at Princeton, March 31, 2017.

"Integrating Disciplines: Humanities and Engineering", with Sigrid Adriaenssens, President's Retreat on the Humanities at Princeton, October 2, 2015



"Creativity, courage, discipline, and play in structural design", Gilsanz, Murray, Steficek (GMS), NYC, September 9, 2015.

"Structures + Models", Backwards + Forwards Symposium: The history + future of technical research in architecture and buildings at Princeton, Thursday, May 29, 2014 (with Sigrid Adriaenssens)

"The Art of Structural Engineering", NAE Regional Meeting Symposium: Engineering and the Arts, April 15, 2014

"Beauty and Truth in Structures", Fritz Engineering Research Society (FERS) Banquet, Lehigh University, November 2010

"Arte Estructural en Ingeniería y Arquitectura", Round Table, Instituto de las Ciencias de la Construcción Eduardo Torroja, Madrid, Spain, November 2010.

"The Art of Structure", Carnegie Museum of Art, Pittsburgh, September 2010. (with David Billington)

"Architecture and Technology: Concrete Futures", A Symposium at Princeton University School of Architecture, October 2004 (invited panelist)

"Structural Art", Summer Symposia and Workshops for Teaching and Scholarship in the Grand Tradition of Modern Engineering, August 2004

"Structures and the Urban Environment", Symposium in Honor of David Billington, May 2003.

**On Felix Candela:**

"Thin Shell Concrete Structures of Cuba: Context, Candela, Catalan", keynote lecture for the 2017 Structural Engineer World Congress, India.

"Félix Candela: Engineer and Artist of Thin Shell Concrete Structures": MIT, March 17, 2015; Lehigh University, March 28, 2015; Rutgers University, April 8, 2015

"Félix Candela: Structural Artist", Northwestern University, May 2012; ACI Convention, Dallas, March 2012

"Félix Candela: Artista de la Ingeniería Estructural", *Coloquio Felix Candela: vida, obra, legado*, UNAM, Mexico City, December 2011. (in Spanish)

"Félix Candela: Strength and Elegance in Structural Engineering", RPI, Department of Civil and Environmental Engineering, November, 2011.

"Félix Candela: Engineer, Builder, Structural Artist", Grupo Latino Americano de Mujeres de Princeton, May 2011.

"Félix Candela: Engineer, Builder, Structural Artist", Rutgers University, March 2011; Dartmouth College, February 2011 & 2012

Invited Round Table participant on the occasion of the centenary birth of Félix Candela, organized by the Ministry of Culture through the Sociedad Estatal de Commemoraciones Culturales (SECC), Valencia, October 2010.

“Félix Candela: Strength and Elegance in Structural Engineering”, University of California Berkeley, Department of Civil and Environmental Engineering, October, 2010.

“Félix Candela: Engineer, Builder, Structural Artist”, ETH Zürich, November 2010.

“Félix Candela: Engineer, Builder, Structural Artist”, Princeton University Book Talk, Lewis Library, February 2010. (with David Billington)

“Félix Candela: Engineer, Builder, Structural Artist”, Massachusetts Institute of Technology, April 2009. (with David Billington)

“The Making of Félix Candela: Engineer, Builder, Structural Artist”, Art Museum Freshman Seminar, December 2008. (with David Billington)

“The Making of Félix Candela: Engineer, Builder, Structural Artist”, Art Museum Gallery Talk, December 2008. (with David Billington)

“Félix Candela: Engineer, Builder, Structural Artist”, New Jersey Chapter of the American Concrete Institute, December 2008. (with David Billington)

“Candela and the Influence of Structural Artists”, Symposium on Félix Candela, Princeton University, October 2008.

“Félix Candela: Thin-shell Master Builder”, 2005 Summer Workshop and Symposium for Teaching and Scholarship in the Grand Tradition of Modern Engineering, Princeton University, August 2005.

#### **On Fire/Resilience:**

“FIRE FOLLOWING EARTHQUAKE (FFE): Probabilistic Studies at Different Scales: Part 1, Moment Resisting Steel Frames” - Universitat Politècnica de València, October 30, 2017

“FIRE FOLLOWING EARTHQUAKE (FFE): Probabilistic Studies at Different Scales: Part 2, Community Level Studies” - Universitat Politècnica de València, October 30, 2017

“THE ROLE OF ACADEMIA IN ADVANCING STRUCTURAL-FIRE ENGINEERING (SFE): *USA Perspective*”, AISC-ATC Workshop on Structural-Fire Engineering, October 19-20, Alexandria VA., 2017

“How Long-Span Bridges and Tall Buildings Resist the Elements of Nature: Gravity, Wind, Earthquake”, *The Academy for Teachers* lecture, a 3-hour Master Class for 18 of New York's strongest teachers, January 2016

“The Future of Smart Cities”, panel member for *TigerTalks*, hosted by Princeton's Entrepreneurship Council (PEC), New York City, December 1, 2016

“Integrating water and electric systems in a post-earthquake fire analysis”, Joint Engineering Mechanics Institute Conference and Probability Mechanics and Reliability Conference, Vanderbilt University, May 22-25, 2016. Co-authored by Negar Elhami Khorasani (presenter) and Max Coar.

“Get Fired Up: What Structural Engineers Should Know about Fire Design”, keynote, Higgins Lecture, NASCC Steel Conference, Orlando, April 13-15, 2016.

T.R. Higgins Lectureship Award “Get Fired Up: What Structural Engineers Should Know about Fire Design” presented at (“SEA” = Structural Engineers Association):

Purdue University August 30, 2016	SEA Central California October 4, 2016	Univ. California San Diego Jan. 25, 2017
SEA Colorado September 15, 2016	SEA Texas October 21, 2016	University of Kansas March 2, 2017
SEA Washington September 27, 2016	SEA New York November 15, 2016	SEA Mass February 2017

“Resiliency of a Community of Buildings to Fire Following Earthquake”, Engineering Mechanics Institute Conference, Stanford University, June 19, 2015.

“A Compression Approach for the Evaluation of Web Shear Buckling of Steel Bridge Girders (at Elevated Temperatures)” ASCE Structures Congress, Portland, OR, April 25, 2015.

“Fire following earthquake: historical events and evaluation framework”, International Conference on Multi-hazard Approaches to Civil Infrastructure Engineering (ICMAE), June 26, 27, 2014.

“A Probabilistic Approach to Evaluating Structures in Post-Earthquake Fires”, Johns Hopkins University, Civil Engineering Department Seminar, May 1, 2014.

“Resilience-Based Evaluation of Steel Buildings under Fire”, Presented at the Engineering Mechanics Institute Conference, Northwestern University, IL, August 2013. (co-authored with Elhami Khorasani, and Gardoni, P.)

“Performance and Research Needs for Bridges Subject to Fire”, US-Japan Fire Research Workshop, July 2012 (presented by Venkatesh Kodur).

“Robust Fire Design: Steel Perimeter Columns and Connections”, Structural Engineers Association of Northern California (SEAONY), October 2010.

“Resilient Fire Resistant Steel Design: Columns and Connections”, Simpson Gumpertz & Heger (SGH), Engineering Firm, Boston, June 2010

“Resilient and Sustainable Structures: Innovations and Inspiration”, Department of Civil and Environmental Engineering, University of Illinois, Urbana-Champaign, April 2010

“Factors to be Captured in Modeling the Behavior of Structural Fire Safety”, National Workshop on Structures in Fire: Research and Training Needs, June 2007.

“Mechanics of Wide-Flanged Steel Sections with Thermal Gradients Due to Fire Exposure”, 4th International Symposium on Steel Structures, November 2006.

“The Response of Steel Perimeter Columns in a Fire”, Building Fire Research Lab, NIST, February 2006

“The Response of Steel Perimeter Columns in a Fire”, Department of Structural Engineering, University of California, San Diego, November 2005

**On Earthquake/Resilience:**

“Evaluating resilience in a multi-hazard context”, NEES/E-Defense 10th planning meeting –December 10-13, 2013, Japan.

“Self-centering Seismic Steel Frames: The High Performance Option Coming to You Soon” NASCC Steel Conference, AISC, May 13, 14 2011, Pittsburgh. (with Constantin Christopoulos)

“Resilient and Sustainable Earthquake Design”, IUSSTF-NSF Indo-US Workshop on Innovative Materials and Structural Systems for Resilient & Sustainable Built Infrastructure, December 13-15, 2009

“Resilient Structures”, NEES-E-Defense Planning Meeting Phase 2, NSF, January 2009.

“Calculus in Earthquake Engineering”, Princeton University, School of Engineering and Applied Science, MAT104 lecture, November 2004 and October 2005.

“Seismic Resistant Damage-Free Steel Buildings”, Princeton University, School of Engineering and Applied Science, May 2005.

“Post-Tensioned Seismic-Resistant Steel Frames”, Department of Civil and Environmental Engineering, University of Texas Austin, September 2004

“Self-Centering Steel Moment-Resisting Frames”, Department of Civil and Environmental Engineering, University of Illinois, Urbana-Champaign, September 2004

“Self-Centering Steel Moment-Resisting Frames”, Department of Civil and Environmental Engineering, Johns Hopkins University, September 2004

“Post-Tensioned Seismic-Resistant Steel Frames”, Department of Structural Engineering, University of California, San Diego, January 2004

“Homeland Security Research Initiatives at Princeton University”, State of NJ Symposium on Homeland Security Research, Rutgers University, October 2003.

## Conference/Workshop Organizer

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*Living at the Intersection [of Engineering and Art] Symposium*, held at Princeton University, April 12, 13 2018, **organizing committee & panel moderator**, hosted by CST Princeton.

*Advancing the Dissemination of the Creative Art of Structural/Civil Engineering*, held at Princeton University June 14 & 16, 2017, **lead organizer** with Sanjay Arwade (U. Mass Amherst) and Cris Moen (Johns Hopkins U.).

*9<sup>th</sup> International Conference on Structures in Fire*, Princeton University, June 8 – 10 2016, **Chair** of Organizing Committee.

*Advancing the Dissemination of the Creative Art of Structural/Civil Engineering*, held at U. Mass Amherst University June 13, 14, 2016, **co-organizer** with Sanjay Arwade (U. Mass Amherst, lead) and Cris Moen (Va. Tech).

*Advancing the Dissemination of the Creative Art of Structural/Civil Engineering*, held at Princeton University June 4 & 5, 2015, **lead organizer** with Sanjay Arwade (U. Mass Amherst) and Cris Moen

(Va. Tech).

*NY/NJ Regional Workshop on Critical Infrastructure Security and Resilience: Bridging the Gap between State-of-the-Art and Practice*, held at Princeton University May 20, 2015, **lead organizer** with Ignacio Paya Zaforteza.

*Workshop on multi-hazard response of structures: earthquake and fire, CUREE-Sponsored*, held at NIST January 7, 2014, **lead organizer** with Michel Bruneau, U. Buffalo, Matthew Hoehler, NIST, Tara Hutchinson, UCSD, Brian Meacham, WPI, Gilberto Mosqueda, UCSD, and James Ricles, Lehigh University.

*Workshop of the International Network for Structural Art*, Princeton University, June 2013

*Workshop of the International Network for Structural Art*, Princeton University, June 2012, **co-chair** with Eric Hines and Stephen Buonopane.

*Workshop of the International Network for Structural Art*, Princeton University, June 2011, **co-chair** with Sigrid Adriaenssens and David Billington.

*The Fazlur Rahman Khan Distinguished Lecture Series and Grand Opening of the exhibition “Fazlur Khan: Structural Artist of Urban Building Forms”*, Sept. 9, 2011, **co-organized** with Sigrid Adriaenssens.

*Workshop on the Steps towards Implementation and Codification of Self-Centering Seismic Resistant Systems*, University of Toronto, July 2010, **Workshop Planning Committee**

*Vision 2020: An Open Space Technology (OST) Workshop on the Future of Earthquake Engineering*, St. Louis, MO, January 2010, **Workshop Planning Committee** (Sponsored by the National Science Foundation)

*Sixth International Conference on Steel Structures in Seismic Areas (STESSA)*, Philadelphia, PA, August 2009; **Organizing Committee**

*Félix Candela: His influence for today and the future*, October 11, 2008, Symposium **co-chair** with David Billington.

*National Workshop on Structures in Fire: Research and Training Needs*, June 2007, **co-chair** with Venkatesh Kodur (Michigan State University) and Nestor Iwankiw (Hughes Associates) (Sponsored by the National Science Foundation)

## Professional Leadership and Services

### Professional Leadership:

Chair – ASCE/SEI Special Design Issues TAC (Oct 1 2014 – Oct 1 2017)

President – Consortium of Universities for Research in Earthquake Engineering (CUREE) (Jan. 2012 – December 2016)

Associate Editor – *Journal of Structural Engineering*, ASCE (May 2011 – 2014)

Guest Co-Editor – *Journal of Structural Engineering*, ASCE, “Special Issue: Commemorating 10 years

of research since 9/11”

Executive Committee Member – Consortium of Universities for Research in Earthquake Engineering (CUREE) (2010 – 2016)

Board of Directors – Consortium of Universities for Research in Earthquake Engineering (CUREE) (2008 – 2016)

Univ. Representative – Consortium of Universities for Research in Earthquake Engineering (CUREE) (2003 – 2016)

Chair – ASCE/SEI Committee on Fire Protection (Oct 1 2010 – Oct 2014)

Reconnaissance team member – Team of 5, funded by NSF, traveled to Chile for a week to study the effects of combined earthquake and tsunami on structures (April 2010).

**Other Professional Activities:**

Panel Moderator – Women in Engineering and Design, at the IASS Conference (July 16 – 20, 2018 Cambridge, MA)

Panel Moderator – Living at the Intersection [of Engineering and Art] Symposium, Princeton University (April 13, 2018).

Panel Moderator – SOM: Engineering x [Art + Architecture] – Panel Discussion: Structure as Poetry, (October 12, Chicago)

Invited Participant – Structural Fire Research Needs, National Institute of Standards and Technology (NIST) (September 2011)

Invited Participant – AISC Innovation in Structural Steel, American Institute of Steel Construction (AISC) (December 2010)

Committee Member – ASCE/SEI Committee on Fire Protection (Fall 2007 – present)

Committee Member – ASCE/SEI Committee on Structural Members (formerly Compression and Flexural Members) (2004-present)

Invited Participant – Charting the Course: Steel Research on Earthquake Resistant Building Construction, American Institute of Steel Construction (October 2004)

Invited Participant – First Joint Planning Meeting for Second Phase of NEES/E-Defense Collaborative Research on Earthquake Engineering

Subcommittee Member – Attitudes for ASCE’s Body of Knowledge (2004-2005)

Journal Reviewer – *Journal of Structural Engineering*, *Engineering Structures*, *Journal of Constructional Steel Research*, *Journal of Structural Fire Engineering*, *Journal of Earthquake Engineering and Structural Dynamics*, and *Journal of Engineering Mechanics*

Proposal Reviewer – National Science Foundation, National Institute of Standards and Technology

Member – American Society of Civil Engineering (ASCE)

Member – International Association of Shell and Spatial Structures (IASS)

## Teaching Experience

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### Lecture Classes:

CEE366 Design of Reinforced Concrete Structures – Spr 03, Spr 04, Spr 06, Spr 07

CEE262A Structures and the Urban Environment – co-taught with David Billington Spr 03 to 12, taught alone 2013 to present (every year)

CEE262B Structures and the Urban Environment – co-taught with David Billington Spr 03 to 12), taught alone 2013 to present (every year)

CEE467 Design & Behavior of Steel Structures –Fall 14, Fall 16

CEE474: Special Topics in Civil and Environmental Engineering: Design of Steel Buildings – Fall 09

CEE540 Theory and Design of Plates and Shells (*co-taught with David Billington*) – Spr 07

CEE540: Elements of Conceptual Design and Analysis of Structures – Fall 2015 (with Juan Jose Jorquera-Lucerga)

CEE567 Adv Design & Behavior of Steel Structures – Fall 04, Fall 05, Fall 06, Spr 09, Fall 10, Fall 14, Fall 16

CEE568 Adv Design & Behavior of Concrete Structures – Fall 2011, Fall 2013

### “Studio” Classes:

CEE463 A Social and Multi-dimensional Exploration of Structures - co-taught with Sigrid Adriaenssens Fall 2010, co-taught with Ignacio Paya-Zaforteza Fall 2014, co-taught with Branko Glisic Fall 2016

STC209 Transformations in Engineering and the Arts – lead by Naomi Leonard, co-taught with Sigrid Adriaenssens, Adam Finkelstein, Jeffrey Snyder

### MOOC Classes:

“The Art of Structural Engineering: Bridges” January 2016, edX, <https://www.edx.org/course/art-structural-engineering-bridges-princetonx-cee262-1x>

Under preparation: “The Art of Structural Engineering: Vaults”

**Independent Study Classes:** (one student for each term indicated (Spring or Fall), unless otherwise noted)

CEE375/376: Independent Study<sup>1</sup> (undergraduate) – Spr 03, Spr 04, Fall 09

CEE507: Independent Study I (graduate) – Fall 05, Spr 09

CEE508: Independent Study II (graduate) – Spr 08 (*two students*), Spr 05

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<sup>1</sup> Independent Study in the student's area of interest. Typically taken Junior year.

**Guest Lecturer at Princeton:**

ART242 (The Experience of Modernity: A Survey of Modern Architecture in the West) – “Fazlur Khan and Tall Buildings”, April 2010, 2011.

ARC597/SPA505 (Humanistic Perspectives on History and Society - Havana: Architecture, Urbanism, and Literature in Transition) – “Felix Candela, Cuba, and the Hyperbolic Paraboloid”, February 2017

**Research Advising**

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**Post-doctorate Research Associates and Visiting Research Scholars:**

Professor Ignacio Payá-Zaforteza  
Escuela de Ingenieros de Caminos, Canales y Puertos  
Universidad Politécnica de Valencia, SPAIN  
(May 2009 – August 2010)

Thomas Gernay  
University of Liege, Belgium  
(September 2014 – August 2015)

Dr. M. Dolores Gómez Pulido  
Departamento de Arquitectura y Diseño  
Escuela Politécnica Superior  
Universidad San Pablo CEU, Spain  
(June 2015 – August 2015)

Dr. Juan José Jorquera-Lucerga  
Profesor del Dpto. de Ingeniería Civil  
Universidad Politécnica de Cartagena (Spain)  
(August 2015 – February 2016)

Professor Negar Elhami Khorasani  
Dept. Civil & Environmental Engineering  
University at Buffalo  
(July 2015 – December 2015)

Antonio Navarro-Manso  
Ph.D. Civil Engineer, Associate Professor  
E.P.M. University of Oviedo  
(April 2017 – July 2017)

**Doctoral Theses:**

Maxwell Coar (2020)

Peter Wang (2021)



Shengzhe Wang (2022)

Negar Elhami Khorasani (2015). "A probabilistic framework for multi-hazard evaluations of buildings and communities subject to fire and earthquake scenarios", Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University.

Jonathan Glassman (2015). "Web Shear Buckling of Steel Plate Girders Under Fire", Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University.

Ashley Thrall (2011). "Design and Optimization of Linkage-Based Moveable Bridge Forms", Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University. *(co-advised with Sigrid Adriaenssens)*

Serdar Selamet, (2011). "Behavior, Design and Finite Element Modeling of Shear Connections under Fire Hazard", Ph.D. dissertation, Department of Civil and Environmental Engineering, Princeton University.

Herning, Gordana (2011). "Reliability-based evaluation of design and performance of steel self-centering moment resisting frames", Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University.

Quiel, Spencer (2009). "Behavior and Analysis of Fire-Exposed Steel Beam-Columns that Develop Thermal Gradients", Ph.D. dissertation, Department of Civil and Environmental Engineering, Princeton University.

Draper, Powell (2008). "Building for the Future: Evaluating the Current Viability of Thin-shell Concrete Structures", Ph.D. dissertation, Department of Civil and Environmental Engineering, Princeton University *(co-advised with David Billington)*

MacNamara, Sinead (2006). "Structural Response of Nuclear Containment Shield Buildings with Unanticipated Construction Openings", Ph.D. dissertation, Department of Civil and Environmental Engineering, Princeton University *(co-advised with David Billington)*

#### **Master of Science in Engineering (MSE) Theses:**

Veronica Boyce (2018) "Enhancing the Fire Performance of Steel Plate Girders Subject to Shear Loads" A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Annie Levine (2018) "A Structural Analysis and Comparison of Felix Candela's 4-Sided and 8-Sided Concrete Umbrellas" A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Peter Wang (2018) "Characterizing The Behavior of Slender Square Steel Plates under Pure Shear Load", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Tracy Huynh (2016) "Automated Graphic Static Analysis for Truss Structures", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Samy Labouz (2014) "Evaluating Weathering Steel Properties at Elevated Temperatures: The I-195 Bridge Fire Case Study", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Alexander Salazar (2013) "Parametric Analysis of Outrigger Systems: U.S. Bank Center Case Study", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Meggie Betancourt (2012) "R. Sundaram and Modern Thin Shell Concrete Structures", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Morgan Neal (2011). "Evaluating Fire Following Blast in High-Rise Buildings Designed To Resist Progressive Collapse" A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Dan Schiffner (2011). "Analysis of Collapsed Alabama Bridge due to Fire", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Daly, Gavin (2010). "A Structural Study of a 1:75 Scale Model of The Golden Gate Bridge", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Freidenberg, Aaron (2009). "Comparison of Moment Framed Systems Using Incremental Dynamic Analyses", A Master's Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

O'Connell, David (2006). "Response Spectrum Analysis of Long Period Moment Resisting Frames", A Masters Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

**Master of Engineering (MEng):**

Patrick D'Ambrosio (2009)

**Undergraduate Senior Theses, Princeton University:**

Katie Kennedy (2018) – "Jinkieng Jri: An Engineering Documentation, Translation, and Optimization Analysis of Meghalaya's Living Root Bridges"

Isabella Douglas (2017) – "Cuba's National School of Ballet: Redefining a Structural Icon"

Julie Chong (2017) – "Structural Fire Engineering Applied to World Trade Center 7: Analysis of Failure and Design Recommendations"

Danielle Sawtelle (2017) – "Determining the Shear and Flexural Strength of Fire Damaged Steel Girders: Harrisburg Bridge Fire Case Study"

Michelle Chang (2016) – "Serviceability Assessment of a Polyester Rope Suspended Footbridge Under Pedestrian-Induced Vibration"

Jamie Simpson (2016) – "Conceptual Design of a Pedestrian Bridge Crossing Princeton's Lake Carnegie"

Jacqueline Li (2016) – "Fire and Earthquake Fire Fragility Functions in the Context of Community Resilience Analysis"

Jett Stearns (2016) – "Analyzing the Structural Implications of Redundancy in Truss Bridge Design"

Todd Kranenburg (2015) – “Understanding Community Resilience: A Human and Physical Framework”

Jessica Luo (2015) – “From Temporary to Permanent: A Study of Straw Bale Construction for Post-disaster Housing”

Katherine Gao (2015) – “A structural analysis of bridge abutments considering scour and climate change”

Emily Stinson (2014) – “Characterizing Soil-structure interaction using experimental data from a test structure”

Gabriella Figueroa (2014) – “Roof Design Proposals with ETFE: Enclosing Princeton University Stadium with a Material of the Future”

Ballard Metcalfe (2014) – “A Structural Optimization of Felix Candela’s Chapel of St Vicent de Paul in Coyoacan, Mexico City”

Chen, Stephanie (2012) – “Structure and Aesthetics: A Comparison of Marine Midland and Two Shell Plaza”,

Lau, Michelle (2012) – “A Seismic and Aesthetic Evaluation of the Golden Gate Bridge and the San Francisco-Oakland Bay Bridge”

Oresky, Michelle (2012) – “Storing a Super Jumbo: A Study of Wide-Span Air Hangars”

Allgood, Devona (2012) – “When It All Falls Down: A Failure Risk Analysis on Bridges in the United States (Using Three Case Studies)” *(co-advise with Guy Nordenson)*

Olofsson, Jon (2011) – “Lateral Bracing of Fabric Roof Structures: The Collapse of the Dallas Cowboys’ Practice Facility” *(co-advise with Richard Garlock)*

Ritchie, Cameron (2011) – “Efficiency of Steel Diagrid Structures: Redesigning the John Hancock Center” *(co-advise with Richard Garlock)*

Weigand, Tara (2011) – “Golden Gate Bridge Exhibition: Braille Model and Galvanic Corrosion Studies”

Everett, Marshall (2011) – “The Story of the City-Cathedral Relationship in Amiens with a Structural Analysis” *(co-advise with Esther da Costa Meyer)*

Deir, Elisabeth (2011) – “Resisting the Forces of the Wind: The Golden Gate Bridge Torsion Exhibit (An interactive approach to demonstrating the stiffening effect of the 1954 lower lateral bracing retrofit)”

Plunkett, James William (2010). “Skeletons and Shells: Santiago Calatrava and Félix Candela in the City of Arts and Sciences”

King, Cecily (2010). “Optimization and Structural Art” *(co-advised with Jean Prevost)*

English, Tess (2010). “The Aircraft’s Influence on Architecture: LeCorbusier, Eames, Foster” *(co-advised with Guy Nordenson)*

Lee, Janice (2009). “Eladio Dieste and Félix Candela: Similar Values, Different Approach to Thin Shell Design”

Black, Sylvester (2009). “Design of a 1:100 Scale Model of the Golden Gate Bridge”

Erwin, Benton (2009). “The Emergence of High Strength Concrete in the World’s Tallest Building”

Knezo, Stephen Alexander (2009). “Programmatic Structure: Design and Analysis of Inhabitable Trusses

in a Lower Manhattan Transportation Hub”

Schiavello, Kira (2008). “A Parametric Study of the Multi-Span Cable- Stayed Bridge Form”

Ivanov, Plamen (2008). “Model Complexity in Computer Aided Seismic Analysis of Steel Moment-Resisting Frames” *(co-advised with Jean Prevost)*

Holzer, Christin (2007). “Optimization of Thin-Shelled Hypar Structures: Félix Candela and the Chapel Lomas de Cuernavaca” *(co-advised with Jean Prevost)*

Allaway, Betsy (2007). “Home Field Advantage: Design of a Princeton Club Sports Stadium”

Rimmele, Ryan (2007). “Comparison of Analysis Procedures for Progressive Collapse Mitigation”

Tipold, Jason (2007). “The Butler Apartments: Environmental Analysis and Subsequent Redesign”

Li, Richard (2007). “Butler College: Design and Life Cycle Assessment of Steel vs. Concrete Structural Framing”

Oswald, Erich (2006). “Straw Bale Construction: A Structural, Environmental, and Social Analysis”

Motal, Lindsay (2006). “Field of Dreams: Redesign of the Princeton Softball Fields”

Johnson, Jonathan (2006). “Learning from Disaster: Moment Resisting Frame Design after the Northridge and Hyogen-Nabu Earthquakes”

McGowan, Sean (2006). “Assessing and Improving the Effectiveness of Bamboo Reinforcement in Adobe Structures”

Whitaker, Kyle (2006). “The Louisiana Superdome: A Structural and Financial Analysis of one of Sport’s Most Influential Stadiums”

Rosenberg, Benjamin (2005). “The Stadiums of the Philadelphia Eagles: A Structural and Cultural History”

Glass, Gregory (2005). “Bridge Strengthening Methods and a Proposal for a Standard Texas Bridge”

Blaisdell, Mary Lisbeth (2004). “The Effects of Floor System Design on the Performance of a Post-Tensioned Steel Moment Resisting Frame”

Liu, Katy (2004). “Steel Structures in Fire: Basis for Testing and Design”

Lega, Gaby (2004). “Using sensor technology to Monitor New Methods of Bridge Design and Construction in New Jersey”

Grau, Elizabeth Ann (2003). “Design of an observation tower in Philadelphia”

**Undergraduate Independent Research Work, Princeton University:**

Nathan Brown, Stephanie Chen, and Michelle Lau (2011). “Fabrication Drawings for a 1:80 scale stainless steel model of the Golden Gate Bridge”

Plunkett, James William (2009). “Connection Details for the Design of a 1:80 scale Model of the Golden Gate Bridge”

Glass, Gregory (2004). “Analysis and photoelastic model of the Walnut Lane prestressed beam”

Liu, Katy (2003). “Historical overview and current recommendations for enhancing the built environment for extreme events”

## Princeton University Service

### For the University (for School of Engineering or Department specific see below):

Ad Hoc Committee on the Classroom Learning Environment. (2018 – present)

Faculty Fellow for Bridge Year Program in Bolivia (2017 – present)

Member – Priorities Committee, Princeton University (2014 – 2017)

Executive Committee – Council on Science and Technology (2014 – present)

Program Director – Architecture and Engineering Program, Princeton University (2009 – present)

Committee Member – Architecture and Engineering Program, Princeton University (2004 – present)

Acting Director – Program in Urban Studies, Princeton University (2015)

Executive Committee – Program in Urban Studies, Princeton University (2012 – present)

Steering Committee – Princeton-Mellon Initiative in Architecture, Urbanism & the Humanities, Princeton University (2015 – present)

Member – Special Ad-hoc Committee on Undergraduate Socioeconomic Diversity, Princeton University (2012 – 2013)

Member – Special Ad-hoc Committee on Classroom Design, Princeton University (2012 – 2013)

Member – Princeton University Public Lectures Committee (2007 – 2008, 2012 – 2013 )

Faculty Fellow – Wilson College (2004 – present)

### For the School of Engineering and Applied Science (SEAS):

SEAS Strategic Planning committee to study Department Structures and Research Priorities (2014 – 2015)

Panel member – faculty panel for the Princeton Preview program (April 2010)

Advisor – Freshman Class of 2007, 2008, 2009, 2013

Panel member – Panel discussion for incoming women interested in science, math or engineering, organized by the Council on Science and Technology (Sept. 2009, Sept. 2010)

Panelist – Work and Life Balance, Women in Science and Engineering Conference at Princeton organized by Princeton's GWISE (March 2008)

Member – Executive Committee for Undergraduate Workshop of the SEAS Strategic Planning (2004)

### For the Department of Civil and Environmental Engineering:

Program Director – Mechanics, Materials, and Structures Group in CEE (2013 to present)

Committee Chair of a faculty's promotion case – Fall 2014, Fall 2015

Committee Chair of a faculty's reappointment case – Fall 2014, Fall 2015

Academic Advisor – Students in the Architecture and Engineering Program (2004 – present): class of 06 – 3 students; class of 07 – 7 students; class of 08 – 4 students; class of 2009 – 6 students; class of 2010 – 7 students; class of 2011 – 5 students; class of 2012 – 8 students; class of 2013 – 2 students; class of 2014 – 5 students; class of 2015 – 6 students; class of 2016 – 7 students, class of 2017 – 8 students; class of 2018 – 7 students; class of 2019 – 5 students

Member of Faculty search committee, Department of Civil and Environmental Engineering (2015-2016, 2016-2017)

Chair of Faculty search committee, Department of Civil and Environmental Engineering (2014-2015)

Chair of Faculty search committee, Department of Civil and Environmental Engineering (2012-2013)

Chair of Faculty search committee, Department of Civil and Environmental Engineering (2011-2012)

Interim Undergraduate Departmental Representative, Department of Civil and Environmental Engineering (AY 2008-2009)

Faculty Advisor – ASCE Student Chapter (2009 – present)

Member – Space Committee, Department of Civil and Environmental Engineering (2005 – present)

Member – Curriculum Committee, Department of Civil and Environmental Engineering (2005 – present)

Participant/presenter – Freshman open house, CEE, (2003 - present)

**For other Departments:**

Member – working group for the Princeton University Art Museum focused on building audiences for the future and making the visitor experience a transformative one (2013)

Associated Faculty – School of Architecture (2015 – present)

Associated Faculty – Program in Latin American Studies (2016 – present)