

## 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

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### Academic – Princeton University

July 2023 to present: Acting Director of the Council on Science and Technology

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 UPV's 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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Princeton University School of Engineering and Applied Science [Distinguished Teaching Award](#), May 2024. "...for her dedication to her students and outstanding teaching."

Princeton University School of Engineering and Applied Science Teaching Award, Organized by the Engineering Council (awarded April 2024, for CEE262 taught in Spring 2023): the award celebrates professors... for mastery of academic disciplines, clarity in instruction, and dedication to their students' growth and well-being. Recipients are selected by the votes of engineering undergraduate and graduate students."

ASCE Central Jersey Branch Researcher of the Year Award (Awarded February 2024).

ASCE Moisseif Award (2021) for "an important paper published in a print issue of an ASCE journal": Wang, S., Garlock, M.E.M., Glisic, B. (2020). "Hydrostatic Response of Deployable Hyperbolic Paraboloid Umbrellas as Coastal Armor", *Journal of Structural Engineering*, ASCE, Vol. 146 (6), [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0002619](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002619)

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." (2017)

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, 2022)

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 (ExCEEEd) 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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Garlock, M.E.M. (2021). “Atlas Tragwerke (Manual of Structural Design)”. DETAIL engineering. (author of chapter titled “Tragwerke für Hochhäuser und Wolkenkratzer |(Structures for Tall Buildings)”.

Garlock, M.E.M. (2021). “Félix Candela’s Thin-Shell Concrete Structures in Cuba”, *La estela de Félix Candela: Cascarones de concreto armado en México y el mundo* (The wake of Félix Candela: reinforced concrete shells in Mexico and around the world), Facultad de Arquitectura de la UNAM en coedición con Bonilla-Artigas Editores.

Negar Elhami Khorasani, Maxwell Coar, Amir Sarreshtehdari, Maria Garlock (2018). “A holistic framework to evaluate water availability for post-earthquake firefighting”, *Routledge Handbook of Sustainable and Resilient Infrastructure*

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

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

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.

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-

## Refereed Journal Publications

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83. Franchini, A., Barake, B., Galasso, C., Garlock, M.E.M., Mulligan, J., Quiel, S. Torero, J.L. (2024). “Integrating fire safety into bridge design is essential for resilient infrastructure”, Submitted to *Nature Communications*.
82. ElDarwich, H., Mansour, I., Garlock, M., Wang, S. (submitted 2023). “Predicting Maximum Deflection of N-Edged Thin-Shelled Hyperbolic-Paraboloid Umbrella Using Machine Learning Techniques”, *Thin-Walled Structures*, Elsevier.
81. Masungi, P.M., Garlock, M.E.M., Augustyn, K.E., Quiel, S.E. (2024). “Out-of-Flatness of Steel Plate Girder Webs, Part II: Shear Strength And Mechanics”, *Journal of Constructional Steel Research*, Vol. 219, Elsevier. <https://doi.org/10.1016/j.jcsr.2024.108788>
80. Masungi, P.M., Garlock, M.E.M., Quiel, S.E. (2024). “Out-of-Flatness of Steel Plate Girder Webs, Part I: Tolerance Review And Measurements”, *Journal of Constructional Steel Research*, Vol. 215, Elsevier. <https://doi.org/10.1016/j.jcsr.2024.108543>
79. Prihar, A., Najmeddine, A., Garlock, M.E.M., Moini, R. (2024). “Mechanical Performance of Sinusoidally Architected Concrete Enabled by Robotic Additive Manufacturing”, *Materials and Design*, Elsevier, Vol. 238. <https://doi.org/10.1016/j.matdes.2024.112671>
78. Pawitan, K., Wang, S., Garlock, M.E.M. (2024). “Multiphase SPH Analysis of a Breaking Wave Impact on Elevated Structures with Vertical and Inclined Walls”, *Applied Ocean Research*, Vol. 142. <https://doi.org/10.1016/j.apor.2023.103832>
77. Wu, G., Garlock, M.E.M. (2024). “Investigating the effects of box girder bridge geometry on solitary wave force using SPH modeling”, *Coastal Engineering*, Elsevier, Vol. 187 <https://doi.org/10.1016/j.coastaleng.2023.104430>
76. Shahraki M., Hua N., Elhami-Khorasani N., Tessari A. (2023). “Residual compressive strength of concrete after exposure to high temperatures: A review and probabilistic models”, *Fire Safety Journal*, Elsevier, Vol 135.
75. Augustyn, K.A., Quiel, S.E., Garlock, M.E.M. (2023). “Formation of Post-Buckling Shear Mechanisms in Stiffened Web Panels of Slender Steel Plate Girders”, *Thin Walled Structures* (Elsevier), Vol 184, <https://doi.org/10.1016/j.tws.2022.110481>
74. Moriah Hughes; Sofia Celli; Camille Heubner; Maria Garlock; Federica Ottoni; Davide Del Curto; Shengzhe Wang; Branko Glisic (2023). “Nonlinear Finite Element Analysis for Structural Investigation and Preservation of Hybrid Thin Tile-Reinforced Concrete Domes of Cuba’s Historic School of Ballet Classrooms”, *Journal of Performance of Constructed Facilities*, ASCE, Vol 37, Issue 1.
73. Wu, G., Garlock, M.E.M., Wang, S. (2022). “A Decoupled SPH-FEM Analysis of Hydrodynamic Wave Pressure on Hyperbolic-Paraboloid Thin-shell Coastal Armor and Corresponding Structural Response”, *Engineering Structures*, Elsevier, Vol 268, <https://doi.org/10.1016/j.engstruct.2022.114738>
72. Wang, S., Contreras-Jiménez, J.A., Jorquera-Lucerga, J.J., Garlock, M.E.M., (2022). “Structural Analysis of Félix Candela’s Hexagonal Hyperbolic Paraboloidal Umbrellas”, *Engineering Structures*, Elsevier. Vol. 266, <https://doi.org/10.1016/j.engstruct.2022.114577>
71. Wang, S., Garlock, M.E.M., Glisic, B., Deike, L. (2022). “Feasibility of Kinetic Umbrellas as Deployable Flood Barriers during Landfalling Hurricanes”, *Jnl. of Structural Engineering*, ASCE, Vol 148(5). [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0003295](https://doi.org/10.1061/(ASCE)ST.1943-541X.0003295)

70. Augustyn, K., Quiel, S., Garlock, M. (2022). "Post-buckling Shear Resistance of Slender Girder Webs: Stiffener Participation and Flange Contributions", *Journal of Constructional Steel Research*, Elsevier, Vol. 190. <https://doi.org/10.1016/j.jcsr.2021.107117>
69. Wang, S., Garlock, M.E.M., Glisic, B. (2022). "Geometry of N-edged Hyperbolic Paraboloidal Umbrellas", *Engineering Structures*, Elsevier, Vol 250. January. <https://doi.org/10.1016/j.engstruct.2021.113499>
68. Wang, P.Y., Masungi, P., Garlock, M.E.M., Quiel, S. (2021). "Postbuckling Mechanics in Slender Steel Plates Under Pure Shear: A Focus on Boundary Conditions and Load Path", *Thin-Walled Structures*, Elsevier, Vol. 169, <https://doi.org/10.1016/j.tws.2021.108448>
67. Wang, S., Garlock, M.E.M., Glisic, B. (2021). "Kinematics of Deployable Hyperbolic Paraboloid Umbrellas ", *Engineering Structures*, Elsevier, Vol. 244. <https://doi.org/10.1016/j.engstruct.2021.112750>
66. Paya Zaforteza, I., Garlock, M.E.M. (2021). "The Structural Engineering Heroes and their Inspirational Journey", *Structural Engineering International (SEI)*, DOI: [10.1080/10168664.2021.1919038](https://doi.org/10.1080/10168664.2021.1919038)
65. Coar, M., Sarreshtehdari, A., Garlock, M.E.M., Elhami Khorasani, N. (2021). "Methodology and challenges of fire following earthquake analysis: an urban community study considering water and transportation networks", *Natural Hazards*, Springer Publishers, <https://doi.org/10.1007/s11069-021-04795-6>
64. Wang, S., Notario, V., Garlock, M.E.M., Glisic, B. (2021). "Parameterization of Hydrostatic Behavior of Deployable Hypar Umbrellas as Flood Barriers, *Thin-Walled Structures*, Elsevier, Vol. 163. <https://doi.org/10.1016/j.tws.2021.107650>
63. Wang, S., Garlock, M.E.M., Glisic, B. (2021). "Parametric Modeling of Depth-limited Wave Spectra under Hurricane Conditions with Applications to Kinetic Umbrellas against Storm Surge Inundation", *Water*, MDPI Publishers, 13, 251; <https://doi.org/10.3390/w13030251>
62. Wang, P.Y., Garlock, M.E.M., Zoli, T., Quiel, S. (2021). "Low-frequency sinusoids for enhanced shear buckling performance of thin plates", *Journal of Constructional Steel Research*, Vol 177, February. <https://doi.org/10.1016/j.jcsr.2020.106475>
61. Wang, S., Levine, A., Garlock, M.E.M., Contreras-Jiménez, J.A., Jorquera-Lucerga, J.J. (2020). "Structural Evaluation of Félix Candela's 8-Sided Hyperbolic Paraboloidal Umbrellas," *Engineering Structures*, Elsevier. Vol. 222. <https://doi.org/10.1016/j.engstruct.2020.111156>
60. Garlock, M.E.M., Glisic, B. (2020). "Thin Shell Concrete Structures of Félix Candela and Max Borges Jr.," *Journal of the International Association for Shell and Spatial Structures (J.IASS)*. Vol. 61, No. 1 March n. 203, <https://doi.org/10.20898/j.iass.2020.203.031>
59. Glassman, J.D., Gomez, A., Garlock, M.E.M., Ricles, J.M. (2020). "Mechanical properties of weathering steel at elevated temperatures," *Journal of Constructional Steel Research*, Elsevier, Vol. 168, <https://doi.org/10.1016/j.jcsr.2020.105996>
58. Douglas, I., Napolitano, R.K., Garlock, M.E.M., Glisic, B. (2020). "Cuba's National School of Ballet: Redefining a Structural Icon," *Engineering Structures*, Elsevier, Vol. 204. <https://doi.org/10.1016/j.engstruct.2019.110040>
57. Wang, S., Garlock, M.E.M., Glisic, B. (2020). "Hydrostatic Response of Deployable Hyperbolic Paraboloid Umbrellas as Coastal Armor", *Journal of Structural Engineering*, ASCE, Vol. 146 (6), [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0002619](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002619)
56. Coar, M., Garlock, M.E.M., Elhami Khorasani, N. (2019). "Effects of water network dependency on the electric network for post-earthquake fire suppression", *Sustainable and*

*Resilient Infrastructure*, Taylor and Francis,  
<https://doi.org/10.1080/23789689.2018.1563408>

55. Garlock, M.E.M, Quiel, S.E., Alos Moya, J., Wang, P., Glassman, J. (2019). “Postbuckling Mechanics of a Square Slender Steel Plate in Pure Shear,” *Engineering Journal*, AISC, Vol. 56, p. 27-46 <https://www.aisc.org/Post-Buckling-Mechanics-of-a-Square-Slender-Steel-Plate-in-Pure-Shear#.XDD1Ai2ZNo4>.
54. Glassman, J.D., Boyce, V., Garlock, M.E.M. (2018). “Effectiveness of stiffeners on steel plate shear buckling at ambient and elevated temperatures”, *Engineering Structures*, Elsevier, DOI: 10.1016/j.engstruct.2018.12.012 ISBN: 0141-0296
53. 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”, *Structural Engineering International*, IABSE, November 2018  
<https://doi.org/10.1080/10168664.2018.1528851>
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, p. 1-36.
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.
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112. Wu, G., Pawitan, K., Garlock, M. (2024). “Coastal Hazard Mitigation via Structural Shape Modification: Investigating the Influence of Curved Structural Cross-sections on Wave Forces using SPH Modeling”, submitted to Proceedings of the 38<sup>th</sup> International Conference on Coastal Engineering, Rome, Italy.
111. Pawitan, K., Garlock, M., Wang, S. (2024). “Numerical Exploration on The Influence of Wall Inclination to Impulsive Wave Loads on an Elevated Structure”, submitted to Proceedings of the 38<sup>th</sup> International Conference on Coastal Engineering, Rome, Italy.
110. Eldarwich, H., Pawitan, K., Garlock, M. (2024). “Investigation of Hyperbolic Paraboloid Face Profile Efficacy for Free-Surface Breakwaters”, submitted to Proceedings of the 38<sup>th</sup> International Conference on Coastal Engineering, Rome, Italy.
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108. Eldarwich, H., **Pawitan**, K., Mansouri, I., Garlock, M. (2022). “Hydrostatic Stability Exploration on Floating Structures Using Machine Learning”, Proceedings of the 37<sup>th</sup> International Conference on Coastal Engineering, Sydney, Australia, December.

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  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.
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  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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### ***The Art of 21st Century Shell Design***

Engineering Quad, 3rd Floor, Princeton University (February 2024 – present)

Website: under development

### ***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 Shear Buckling of Thin Steel Plates:**

“New Research Developments for Web Shear Buckling in Steel Plate Girders: Analysis and Performance Enhancement” (with Spencer Quiel, Parfait Masungi, Kevin Augustyn) NASCC Steel Conference, Charlotte, NC, April 2023.

### **On Coastal Resilience:**

- “Climate Adaptable Near-Coast Structures: Bridges and Barriers”, Workshop on Resilience of Navy Waterfront Facilities in a Changing Climate Part II: Resilience Planning and Climate Adaptation, Reston VA, April 2024.
- “Structural Engineering for Climate Adaptation: Bridges and Barriers”, Virginia Tech Dept. Civil and Environmental Engineering Seminar, April 2024.
- “Lessons Learned from the Key Bridge Collapse; Enhancing Resilience in Critical Infrastructure Systems”, roundtable presentation, May 22, 2024 Univ. of Maryland.
- “Effects of wall inclination on elevated structures subject to breaking waves: a multiphase SPH numerical exploration” by Pawitan, K., Garlock, M., Wang, S. (presenter); presented in *Engineering Materials Institute Conference 2024 – Advancing the Fundamentals to Engineer a Better Future*, Univ. Illinois Urbana-Champaign, 28-31 May, 2024.
- “Enhancing the Resilience of Coastal Bridges: The influence of Box Girder Geometry on Wave Forces via SPH simulations” by Wu, G. (presenter), Garlock, M.; presented in *Engineering Materials Institute Conference 2024 – Advancing the Fundamentals to Engineer a Better Future*, Univ. Illinois Urbana-Champaign, 28-31 May, 2024.
- “Future Visions for Climate Resilience”, Applied Technology Council 50<sup>th</sup> Anniversary Symposium, December 2023
- “Structural Engineering for a Changing Climate: Kinetic Umbrellas as Flood Barriers”, Structural Engineering Association of Pennsylvania (SEAoPA), Jan. 19. 2022
- “Aquatectural Engineering: Kinetic Umbrellas as Coastal Armor”, University at Buffalo, Nov. 12, 2021
- “Structural Design for the Flooding and Floating City”, West Point Academy, Oct. 13, 2021
- “Structural Engineering for a Changing Climate: The Floating City”, organizer, moderator, and presenter of this session at the Virtual ASCE Structures Congress 2021 (presented “Structural Design for Ocean Waves”)
- “Felix Candela Umbrellas Transformed: From Roofs to Coastal Defense”, keynote, Structural Engineers World Congress, Istanbul, Turkey, April 2019
- “Modeling of Kinetic Umbrellas for Coastal Hazard Mitigation” by Shengzhe Wang (presenter), Maria Garlock, Branko Glisic ; presented in *Engineering Materials Institute Conference 2019 – Robustness of Infrastructures*, California Institute of Technology, Pasadena, California, 18-21 June 2019.
- “Adaptable Aquatecture: Smart Kinetic Umbrellas for Coastal Protection” presented by Shengzhe Wang, Maria Garlock, Branko Glisic ; presented virtually to *Boston Harbor Now Climate Roundtable*, July 14, 2020.

### **On Fire Resilience:**

- “The Resilience of Bridges to Fire: Case Studies and Consequences”, Transportation Research Board Workshop: Resilience, Safety, and Security of Bridges and Tunnels: U.S. and International Topics, January 16, 2020.
- “Bridge Fire: Case Studies, Statistics, Vulnerabilities”, FHWA-NIST Workshop: Identifying Needs and Knowledge Gaps for Fire Safety of Highway Bridges, October 30, 2019

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

**On The Education of the Engineer:**

- Panelist in “Using Modern Technology to Educate and Inspire Non-STEM Majors”, American Society of Engineering Education Conference, Salt Lake City, June 26.  
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:**

- “Structural Art in Steel Bridges: Past, Present, and Future”, Virginia Tech Dept. Civil and Environmental Engineering Seminar, April 2024.
- “Candela and Nervi: Merging their Design Philosophies for Flood Resilience”, keynote, 14<sup>th</sup> International Symposium on Ferrocement and Thin UHPC Composites, New Brunswick, NJ, June 2024
- “Arte e Ingeniería: Un Matrimonio Imprescindible”, keynote lecture, ACHE Conference, Santander, Spain, June 2022
- “Structural Art in Steel Bridges: Past, Present, and Future”, World Steel Bridge Symposium, NASCC, Denver, CO, March 2022.
- “Structural Art in Steel Bridges: Past, Present, and Future (Abbreviated)”, Fritz Engineering Research Society (FERS) Banquet, Lehigh University, April 2022
- “The Relationship between Ethics and Elegance in Structural Engineering” Old Guard, January 2018  
Nassau Club, November 2018
- “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:**

- “Félix Candela: Structural Artist of Thin Shell Concrete Structures”, MPDA master programme in Parametric Design in Architecture, UPC school in Barcelona, Nov. 3, 2021
- “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, llegada*, 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.

## Conference/Workshop Organizer

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*Climate Adaptation Workshop: Structural Design for Coastal Flood Resilience*, held at Princeton University May 16-17, **lead organizer**, sponsored by NSF, ATC, Princeton Univ.

ASCE Structures Congress 2024, Special Session co-organizer (with Dan Linzell and Marc Hoit) “Building a Better Structural Engineer - using improvisation to improve communication”

ASCE Structures Congress 2023, Special Session co-organizer (with Dan Linzell) “Structural Engineering Education from Plans to Action”

FHWA-NIST Workshop: Identifying Needs and Knowledge Gaps for Fire Safety of Highway Bridges, **organizing committee**, October 30, 2019

*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

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### Professional Leadership:

Board of Governors – American Society of Civil Engineers (ASCE), Structural Engineering Institute (SEI)

Executive Committee – Applied Technology Council (Feb 2022 – present)

Board of Directors – Applied Technology Council (May 2020 – present)

Board Member – Structural Engineers World Congress [Worldwide] - SEWC is dedicated to the Art, Science and Practice of Structural Engineering.

Guest Co-Editor – *Journal of Structural Engineering*, ASCE, “Structural Fire Engineering” (to be published 2020)

Executive Committee Member – American Society of Civil Engineers (ASCE), Structural Engineering Institute (SEI), Technical Activities Division (TAD)

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:

Committee Member – Committee on Reform of Structural Engineering Education (CROSEE-2), ASCE/SEI, September 2020 – 2023)

Panel Moderator – *Rocking the Cradle While Rocking the Workplace: A Dialogue with Princeton Alumnae on Managing Home, Family, and Career. She Roars Conference*, Princeton University, October 6, 2018



- 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 2021
- CEE262B Structures and the Urban Environment – co-taught with David Billington Spr 03 to 12), taught alone 2013 to present (every year)
- CEE440: Elements of Conceptual Design and Analysis of Structures – Spring 2018, Fall 2020
- CEE467 Design & Behavior of Steel Structures –Fall 14, Fall 16, Fall 2019
- CEE474: Special Topics in Civil and Environmental Engineering: Design of Steel Buildings – Fall 09
- CEE474: Special Topics in Civil and Environmental Engineering: Elements of Conceptual Design and Analysis of Structures – Spring 18, Fall 20
- 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)
- CEE540: Structural Engineering for Climate Change Adaptation – Spr. 2022
- CEE567 Adv Design & Behavior of Steel Structures – Fall 04, Fall 05, Fall 06, Spr 09, Fall 10,

Fall 14, Fall 16, Fall 19, Fall 22

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

**Summer Global Seminar**

CEE263: Two Millennia of Structural Architecture in Italy – Summer 2019

PIIRS Global Seminar Taught in Rome, Italy (co-instructors Sigrid Adriaenssens and Branko Glisic) <https://piirs.princeton.edu/piirs-global-seminars/2019italy>

**“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, co-taught with Sigrid Adriaenssens and Branko Glisic Summer 2019.

STC209 Transformations in Engineering and the Arts – lead by Naomi Leonard, co-taught with Sigrid Adriaenssens, Adam Finkelstein, Jeffrey Snyder – 2016, 2017

**MOOC Classes:**

“The Art of Structural Engineering: Bridges” January 2016, edX,

<https://www.edx.org/course/art-structural-engineering-bridges-princetonx-cee262-1x>

“The Art of Structural Engineering: Vaults” January 2019, edX <https://www.edx.org/course/the-art-of-structural-engineering-vaults> (Class Central’s list of most popular courses in 2019, top 100 out of 13,500 courses <https://www.classcentral.com/list/2019-s-most-popular-online-courses-free-dl/twvly>)

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

**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, Fall 21

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

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

**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)

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

*Maria E. Moreyra Garlock*

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)  
(November 2023 – February 2024)

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, Spain  
(April 2017 – July 2017)

Vicente Albero Gabarda  
Assistant Professor  
Universitat Jaume I  
Castellon, Spain  
(August 2019)

Iman Mansouri  
Incheon National University, Incheon, South Korea  
(June 2021 – current)

Krisna Pawitan  
Okinawa Institute of Science and Technology  
(Dec. 2021 – current)

**Doctoral Theses:**

Zhaoyang Song (2028)

Muhie (Dean) Ahdab (2027)

Hamid ElDarwich (2025)

Gaoyuan Wu (2025)

Parfait Masungi (2024). “Effects of Out-of-Plane Patterns on Thin Steel Webs: Fabrication

- Imperfections and Low-Frequency Sinusoids”, Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University.
- Shengzhe Wang (2022). “Deployable Hyperbolic Paraboloidal Umbrellas as Adaptable Aquitecture for Coastal Defense Applications”, Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University.
- Maxwell Coar (2022). “An Evaluation Framework for Fire Following Earthquake in Seattle: Water Network Performance and Deep Basin Seismic Effects”, Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University.
- Peter Wang (2021). “Plate Shear Buckling: Mechanics and Enhancements Using Low-Frequency Sinusoids”, Ph.D. dissertation presented to the Department of Civil and Environmental Engineering, Princeton University.
- 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:**

- Muhie (Dean) Ahdab (2024). “Redefining the Shear Capacity of Steel Plate Girders Based on Recent Shear Mechanics and an Extensive Numerical Investigation”, A Master’s Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Melanie Galantino (2023): Master of Arts

Alex Gomez (2020) “Web Out-of-Straightness in Plate Girders: Methodology for Measurements and Effects on Shear Capacity” A Master’s Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Vanessa Notario (2020) “Structural Analysis of Deployable Hypar Umbrellas for Coastal Defense” A Master’s Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

Daniela Lugo Romero (2020) “Retrofit Strategies for Tall Non-Ductile Steel Moment Resisting Frames in Seattle, WA” A Master’s Thesis presented to the Department of Civil and Environmental Engineering, Princeton University.

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 TheGolden 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:**

Zoey Zhang (2023) – “A Sustainable And Economic Design: Optimization Of Grid Shell Spacing For Hypar Kinetic Umbrellas”

Manus C. McCracken (2023) – “Feasibility, Durability, and Ecological Analysis of A Mass Timber Parking Garage”

Audrey Yan (2022) – “Optimized Coastal Defense: A Comparative Formal and Material Analysis of The Deployable Hypar Umbrella”

Beatriz Oliva (2022) – “Cuba’s National Dramatic School of Arts: Structurally Analyzing its Peculiar Ties” (co-advised with Branko Glisic)

Oswald Stocker (2021) – “Parametric Study of the Hydrostatic Stability of Floating Buildings”

Sarah Hultman (2021) – “Serviceability and Strength Analysis of a Floating Multi Story Steel Building Subjected to Rotational Ocean Wave Motion

Melanie Porras (2021) – “Square and Hexagonal Hypar Floating Platforms for Amphibious Houses

Tiffany Lim (2021) – “Kinetic Umbrellas for Storm Surge Defense along Convex Shorelines” (co-advised with Branko Glisic)

Tessa Flanagan (2021) – “Designing the Green New Deal: Thin Shell Umbrella Structures for Low-Carbon Public Housing” (co-advised with Branko Glisic)

Patrick Brucki (2021) – “Displacing Concrete in the Modern Infrastructure: Steel-Timber Hybrid Construction” (co-advised with Richard Garlock)

Natalie Grossi (2020) – “You Can Stand Under My Umbrella: The Analysis and Redesign of Newark Thin Shell Hypar Structures”

Rachel Coe-Scharff (2019) – “Using spatial graphic statics method to find funicular forms for curved-deck arch bridges”

Keiko N. DeClerck (2019) – “The Deconstruction, Reconstruction, and Redesign of Hobey Baker Memorial Rink”

Hanna Endale (2019) – “Slaked Lime and Fly Ash Cement Mix for Application in Marine Environments” (co-advised with Claire White)

Katie Kennedy (2018) – “Jinkieng Jri: An Engineering Documentation, Translation, and Optimization Analysis of Meghalaya’s Living Root Bridges” (co-advised with Branko Glisic, Maurizio Chiaramonte)

Isabella Douglas (2017) – “Cuba’s National School of Ballet: Redefining a Structural Icon” (co-advised with Branko Glisic)

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-advise 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:**

Nicole Martin (2021). “Overcoming the Structures in Place: Recognizing the Contributions of Underrepresented Groups in Bridge Design” and “Built to Last: Structural Triumph in the Roebling’s Brooklyn Bridge”

Melanie Porras (2020). “Understanding Hexagonal Umbrellas Through the Analysis of the Moskovitch and Volga Car Dealership in Azuay, Ecuador”

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**

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

Acting Director of the Council on Science and Technology, July 2023 to present.

Ad Hoc Committee, appointed by President Chris Eisgruber, on the Classroom Learning Environment. (2018, 2019)

Ad-hoc Committee, appointed by Dean of College Jill Dolan, Academic Integrity Report Reconciliation Committee (2018, 2019)

Faculty Fellow for Bridge Year Program in Bolivia (2017 – 2019)

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

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

Program co-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 – 2018)

**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 2018)

Committee Chair of a faculty’s promotion case – Fall 2014, Fall 2015, Fall 2018, Fall 2021(x2), Fall 2022

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

Academic Advisor – Students in the Architecture and Engineering Program (2004 – present):

Class	# students	Class	# students	Class	# students	Class	# students	Class	# students
2006	3	2011	5	2016	7	2021	6	2026	
2007	7	2012	8	2017	8	2022	9	2027	
2008	4	2013	2	2018	7	2023	3	2028	
2009	6	2014	5	2019	5	2024		2029	
2010	7	2015	6	2020	5	2025		2030	

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, 2012-2013, 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)