Thornton Tomasetti

Stephen Pessiki, PhD

Senior Vice President

Summary

Stephen Pessiki joined Thornton Tomasetti in 2018. He has led research teams on numerous externally-funded experimental and analytical research projects encompassing both laboratory and field studies. He has investigated the field performance of numerous concrete, steel, masonry, fabric, and timber structures, including commercial and industrial buildings, bridges, dams, silos, chimneys, pavements and slabs, water tanks, and domes. Since 1990, Dr. Pessiki has taught a wide array of undergraduate and graduate courses in structural engineering, structural design, materials, nondestructive evaluation of materials and structures, and condition evaluation of structures.

Areas of Technical Expertise Includes

- Forensic Engineering
- Materials Evaluation
- Nondestructive Testing

Education

- Ph.D., Civil and Environmental Engineering, 1990, Cornell University
- M.S., Civil and Environmental Engineering, 1986, Cornell University
- B.S., Civil Engineering with Honors, 1984, Drexel University

Professional Activities

- Member, American Concrete Institute (multiple committees), 2000-present
- Member, Precast / Prestressed Concrete Institute (multiple committees), 2000-present
- Member, Board of Directors, Lehigh Valley Section, American Society of Civil Engineers, 1994-1997

Honors and Awards

- Best Paper Award (Materials), 16th European Bridge Conference, Edinburgh, 2015
- Honorary Visiting Professor, University of Jinan, China, 2013-2016
- Honorary Member, Brazilian Society of Structural Engineers, 2009
- Fellow, Precast / Prestressed Concrete Institute, 2004
- Fellow, American Concrete Institute, 2004
- Distinguished Educator, Precast / Prestressed Concrete Institute, 2002
- Best Paper Award, ASCE Journal of Architectural Engineering, 1997

Select Project Experience

Forensics Engineering

Serviceability Evaluation of a Wastewater Treatment Plant, Snyder County, PA.* Determined cause of cracking in water treatment tank walls, and provided recommendations for repair.

Damage Analysis of Beam-Column Connections in a Reinforced Concrete Frame Structure, Queens County, NY.* Investigated the cause of structural damage in a low-rise reinforced concrete frame structure.

Collapse Evaluation of Air-Supported Dome Structure, Lycoming County, PA.* Analyzed collapse of air-supported soccer dome during a winter storm.

Vibration Analysis of Long-Span Post-Tensioned Floor System, Northampton County, PA.* Analyzed dynamic response of floor system experiencing excessive vibration.

Cement Silo Roof Failure, Miami-Dade County, FL.* Evaluated structural aspects of cement silo collapse during silo operation.

Materials Evaluation

Cracking Evaluation of an Industrial Floor Slab with Radiant Heat Tubing, Delaware County, PA.* Investigated the cause and long term performance consequences of cracking in an industrial concrete floor slab.

Condition Assessment of Refractory Brick Chimney Liner, Muskogee, OK.* Evaluated the condition of a refractory brick chimney liner in a coal-fired power plant that was off-line for maintenance.

Nondestructive Testing

Evaluation of Concrete Foundation Structures, Sur, Oman.* Evaluated in-service and long-term performance of turbine and generator foundation structures in newly-constructed power generating station, considering material and construction issues.

Masonry Façade Cracking, Philadelphia County, PA.* Provided nondestructive evaluation and materials investigation for façade cracking of multi-story masonry institutional structure.

Stephen Pessiki, PhD
Senior Vice President

Cracking Evaluation of a Concrete Dam Structure, Potter County, PA.* Determined the root cause of cracking in the dam structure, and evaluated anticipated in-service performance of the structure as influenced by cracking.

Sworn Testimony

Deposition,* regarding construction deficiency dispute. 2015

Deposition,* regarding patent infringement and patent validity dispute for manufactured building components. 2015

Trial,* regarding construction deficiencies at Borgata Casino including my client trying to obtain access to the site for futher inspection and testing. 2005

Trial,* regarding partial collapse during construction of a steel frame building. 1999

Deposition,* regarding construction deficiencies. 1998

Alternative Dispute Resolution

Arbitration,* regarding construction deficiencies. 2011

Arbitration,* regarding the collapse of an air-supported structure. 2010

Arbitration Panel,* to settle dispute related to deteriorated condition / potential overload of roof framing of an industrial building. 2005

Papers, Publications and Presentations

"Experimental Study of the Core-Drilling Method for Evaluating In-Situ Stresses in Concrete Structures," ASCE Journal of Materials in Civil Engineering, Vol. 28, No. 2, February 2016 (Co-Author)

"Cyclic Load Tests of SFRM Insulated Steel Gravity Frame Beam-Column Connection Assemblies," ASCE Journal of Structural Engineering, Vol. 141, No. 10, October 2015, 12 pp. (Co-Author)

"Experimental Validation of a Numerical Model for Simulating Radiographic Imaging of Portland Cement-Based Materials," Journal of Nondestructive Evaluation, Vol. 34, No. 3, September 2015 (Co-Author)

"Effect of Earthquake-Induced Damage on the Sidesway Response of Steel Moment-Frame Buildings during Fire Exposure," Earthquake Spectra, Vol. 31, No. 1, February 2015, pp. 273-292 (Co-Author)

"Experimental Lateral Load Response of Unbonded Post-Tensioned Precast Concrete Walls," ACI Structural Journal, Vol. 110, No. 6, November-December 2013, pp. 1045-1055 (Co-Author)

"Analytical Investigation of Vehicle Fires in Precast Concrete Parking Structures," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 58, No. 3, Summer 2013, pp.111-123 (Co-Author)

"Restraint Mechanisms in Precast Concrete Double-Tee Floor Systems Subjected to Fire," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 58, No. 3, Summer 2013, pp. 95-110 (Co-Author)

"Effect of Earthquake-Induced Damage to Spray-Applied Fire-Resistive Insulation on the Response of Steel Moment-Frame Beam-Column Connections During Fire Exposure," Journal of Fire Protection Engineering, Vol. 22, No. 4, 2012, pp. 271-299 (Co-Author)

"Post-Earthquake Fire Performance of Sprayed Fire Resistive Material on Steel Moment Frames," Journal of Structural Engineering, American Society of Civil Engineers, Vol. 137, No. 9, September 2011, pp. 946-953 (Co-Author)

"Application of the Incremental Core Drilling Method to Determine In-Situ Stresses in Concrete," Materials Journal, American Concrete Institute, Vol. 108, No. 3, May-June 2011, pp. 290-299 (Co-Author)

"Bond Performance of SFRM on Steel Plates Subjected to Tensile Yielding," Journal of Fire Protection Engineering, Vol. 21, No. 1, February 2011, pp. 37-55 (Co-Author)

"Analytical and Numerical Development of the Incremental Core Drilling Method of Non-Destructive Determination of In-Situ Stresses in Concrete Structures," Journal of Strain Analysis for Engineering Design, Vol. 45, No. 8, 2010, pp. 647-658 (Co-Author)

"Forensic Examination of a Non-Composite Adjacent Precast Prestressed Concrete Box Beam Bridge," Journal of Bridge Engineering, American Society of Civil Engineers, Vol.15, No.4, July-August 2010, pp.408-418 (Co-Author)

"Revised Zone Method R-Value Calculation for Precast Concrete Sandwich Panels Containing Metal Wythe Connectors," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 53, No. 5, September-October 2008, pp. 86-100 (Co-Author)

"Design and Analysis of Precast Prestressed Concrete Three-Wythe Sandwich Wall Panels," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 52, No. 4, July-August 2007, pp. 70-83 (Co-Author)

"Analytical and Experimental Lateral Load Behavior of Unbonded Post-Tensioned Precast Concrete Walls," Journal of Structural Engineering, American Society of Civil Engineers, Vol. 133 No. 11, pp. 1531-1540, November 2007 (Co-Author)

"Differential Shrinkage Effects in the Core-Drilling Method," Magazine of Concrete Research, Vol. 59, No. 3, 155-164, 2007 (Co-Author)

"Water Induced Swelling Displacements in the Core-Drilling Method," ACI Materials Journal, Vol. 104, No. 1, 13-22, 2007 (Co-Author)

** Denotes work performed with previous employer.*

Stephen Pessiki, PhD
Senior Vice President

"Experimental Investigation of Precast, Prestressed Inverted Tee Girders with Large Web Openings," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 51, No. 6, November-December 2006, pp. 32-47 (Co-Author)

"Seismic Retrofit of Lap-Splices in Non-Ductile Columns Using CFRP Jackets," Structural Journal, American Concrete Institute, Vol. 103, No. 6, November-December 2006, pp. 874-884 (Co-Author)

"Thermal Performance Evaluation of Precast Concrete Three-wythe Sandwich Wall Panels," Energy and Buildings, Vol. 38, Issue 8, August 2006, pp. 1006-1014 (Co-Author)

"Digital Image Correlation Applied to Nondestructive Evaluation of In-situ Stresses in Concrete," Experimental Mechanics, Vol. 45, No. 4, 2005, pp. 359-367 (Co-Author)

"Experimental Evaluation of the Composite Behavior of Precast Concrete Sandwich Wall Panels," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 48, No. 2, March-April 2003, pp. 54-71 (Co-Author)

"Seismic Response Evaluation of Unbonded Post-tensioned Precast Concrete Walls," Structural Journal, American Concrete Institute, Vol. 99, No. 5, September-October 2002, pp. 641-651 (Co-Author)

"Proposed Design of High Strength Spiral Reinforcement in Compression Members," Structural Journal, American Concrete Institute, Vol. 98, No. 6, November-December 2001, pp. 799-810 (Co-Author)

"Axial Behavior of Concrete Confined with Fiber Reinforced Composite Jackets," Journal of Composites in Construction, American Society of Civil Engineers, Vol. 5 No. 4, 2001, pp. 237 245 (Co-Author)

"Axial Load Tests of Concrete Compression Members with High Strength Spiral Reinforcement," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 45, No. 2, March-April 2000, pp. 64-80 (Co-Author)

"Influence of Steel Reinforcing Bars on the Evaluation of Early-Age Concrete Strength Using the Impact-Echo Method," Structural Journal, American Concrete Institute, Vol. 94, No. 4, July-August 1997, pp. 378-388 (Co-Author)

"Axial Load Behavior of Large-Scale Spirally-Reinforced High-Strength Concrete Columns," Structural Journal, American Concrete Institute, Vol. 94, No. 3, May-June 1997, pp. 304-314 (Co-Author)

"Evaluation of Effective Prestress Force in 28-Year Old Prestressed Concrete Bridge Beams," PCI Journal, Precast/Prestressed Concrete Institute, Vol. 41, No. 6, November-December 1996, pp. 78-89 (Co-Author)

"Nondestructive Evaluation of Early-Age Concrete Strength in Plate Structures by the Impact-Echo Method," Materials Journal, American Concrete Institute, Vol. 93, No. 3, May-June 1996, pp. 260-271 (Co-Author)

"In-Place Evaluation of Concrete Strength Using the Impact-Echo Method," New Experimental Techniques for Evaluating Concrete Material and Structural Performance, Edited by D.J. Stevens and M.A. Issa, American Concrete Institute, Detroit, 1994, pp. 275-295 (Co-Author)

"Setting Time and Strength of Concrete Using the Impact-Echo Method," Materials Journal, American Concrete Institute, Vol. 85, No. 5, September-October, 1988, pp. 389-399 (Co-Author)

Contact

Stephen Pessiki
40 Wall Street
New York, NY 10005
212.367.3000
SPessiki@ThorntonTomasetti.com
www.ThorntonTomasetti.com

** Denotes work performed with previous employer.*