

# KEN MASCHKE, P.ENG., P.E., S.E., LEED AP

## Vice President



### Summary

Ken Maschke joined Thornton Tomasetti (TT) in 2004 and is responsible for the growth of the Renewal and Forensics practices in Canada. An expert in structural rehabilitation, recladding, adaptive reuse, and building failure investigation, Ken applies the latest technology to his work. His work on historic structures has often presented the opportunity to explore design and repair with archaic materials. He is passionate about revitalizing existing buildings to realize long-term sustainability.

### Areas of Expertise

- Forensic Engineering
- Structural Engineering
- Building Envelope Investigations & Condition Assessments

### Education

- M.S.E., Structures and Materials, 2003, University of Michigan
- B.S.E., Civil and Environmental Engineering, 2002, University of Michigan

### Registrations

- Licensed Professional Engineer in IL
- Licensed Structural Engineer in IL
- Licensed Professional Engineer (P.Eng.) in Ontario and Manitoba
- Act First Safety Mobile Elevating Work Platform and Suspended Work Platform Systems Training in accordance with O.Reg. 213/91
- LEED Accredited Professional

### Professional Activities & Teaching

- Member, American Society of Civil Engineers (ASCE), 2002-2021
- Member, SEI Sustainability Committee, Structural Engineering Institute of the American Society of Civil Engineers, 2011-2016
- Member, American Institute of Steel Construction (AISC)
- Instructor, School of the Art Institute of Chicago, Master of Architecture Program, 2006-2017
- Instructor, Math Department, Davenport University, 2010

### Select Project Experience

#### Investigations & Litigation Support

**Confidential Crane Collapse Investigation**, Ontario. Forensic investigation of a crane collapse allegedly related to failure of the bolts in the turntable. Our review included site review, examination of the crane components relocated to a yard, and observation of tests performed on the turntable bolts.

**Confidential Enclosure Investigation**, Saskatchewan. Provided expert opinion on wall performance and remedial measures for wall insulation panels observed to shrink after installation causing air gaps between joints.

**Confidential Fire Loss Investigation**, Toronto, ON. Property loss investigation of cause and origin and extent of damage due to fire and smoke spread.

**Confidential Roof Damage**, IN. Investigation of structural roof damage at an occupied warehouse. High winds damaged the existing roofing TPO roofing membrane, insulating boards, and wood-framed structure.

**Confidential Building Renovation Litigation Support**, Chicago, IL. Litigation support relating to improvements to a private residence. Scope of work included building underpinning, flat concrete work, replacement of windows, and new exterior wall openings/skylights.

**Confidential Enclosure Investigation**, Manitoba. Property loss investigation of cause and origin of mold observed within walls and attic of newly constructed facility. TT performed thermal and hygrothermal analysis of wall assemblies.

**Confidential Slab Settlement Investigation**, Mississauga, ON. Investigation of alleged slab settlement under loading from a printing press. The project included the use of epoxy injection as a stabilization technique.

**Confidential Building Enclosure Construction Delay**, Toronto, ON. Investigation of the circumstances leading to delay in the installation of window wall and metal panel systems and subsequent delay to substantial completion of a new high rise.

\*Denotes work performed with previous employer.

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**Confidential Conveyor Collapse**, AB. Litigation support for case relating to the collapse of a four-storey tall coal conveyor system. TT performed independent analysis and document review of the cause of failure in the steel structure.

**Confidential Skylight Leak Case**, Toronto, ON. Expert investigation of dispute relating to leak claims in recently constructed skylight system.

**Confidential Natatorium Litigation Support**, WI. Review of existing documentation and site observation in support of litigation involving building performance of a natatorium with greater than anticipated humidity.

**Confidential Wall Collapse**, IN. Investigation of partial wall collapse at a vacant warehouse. High winds created an adequate load event to fail latent construction defects.

**Confidential Fabric Roof Collapse Investigation**, IL. Investigation of the failure of a tensioned fabric roof structure over a performing arts venue.

**Confidential Concourse Waterproofing Litigation Support**, Manitoba. Preparation for expert report to support mediation of claims pertaining to waterproofing and wearing slab deficiencies.

**7652 W. 63rd Street**, Summit, IL. Litigation support services regarding building settlement issues at an existing bakery building and addition. Reviewed project data and performed independent calculations for building performance.

**Confidential Litigation Support for Multi-unit Residential Development**, IL. Litigation support services for wood framed 3-story town home development relating to delay claims.

**Confidential Green Roof Partial Building Collapse**, IL. Investigation and litigation support for partial green roof collapse at landscape supply center. The mono-slope roof extended beyond the heated enclosure to an exterior covered driveway. Snowmelt above the heated area ice dammed over the drive causing overloading.

**Confidential Stadium Litigation Support**, England. Structural engineering expert and litigation support services related to a multi-million-dollar delay claim on a 90,000-seat stadium. Services included creation of analysis models to understand the behavior of structural elements and impact of framing systems on the construction sequence, technical evaluation of the claim and defense and review of more than four million disclosed documents to develop expert testimony. Disclosure yielded numerous XSteel models that were assessed and used to extract relevant information. Knowledge was shared with the steel fabrication and construction scheduling experts. Services were provided through four expert witness sessions and mediation.

**Confidential Community College Litigation Support**, IL. Litigation support services related to the halting of construction of a college athletics center due to excessive movement by a column and scissor truss.

**Confidential Building Roof Collapse**, OH. Structural analysis of a roof collapse at a distribution facility. Scope included review of the original design drawings for code conformance and serviceability, establishment of an opinion on the cause and location of primary failure mode and whether the collapse caused secondary structural damage, and evaluation of non-damaged areas to determine if they remain serviceable and in conformance with structural codes. The project team reviewed the replacement connection to determine if it will resolve concerns related to the failure.

**St. Clair Birchmount 2**, Toronto, ON. Structural and building envelope condition assessment of an existing Toronto Community Housing apartment building and concept design for a new building overclad system. The investigation included probe openings into the existing brick veneer, pull testing on masonry anchors, and infrared thermography of the facades and roof. An exterior insulation finishing system (EIFS) overcladding was specified to upgrade the building envelope performance. We developed thermal and hygrothermal models to evaluate the proposed systems. We prepared repair documents for the existing masonry facade and replacement of the existing roofing.

**77 Spencer**, Toronto, ON. Building envelope investigation and repair documents for concrete balconies and guardrails. The balconies comprise of precast planks support on steel outriggers. The repair scope includes scraping, painting, and resealing the steel outriggers and replacing the aluminum guardrails. Water infiltrated the guardrail posts, froze, and expanded to split the tubes at fabricated seams.

### **Select Papers, Lectures and Publication**

"The Deleterious Situation of the Pool Structure," Pool & Spa Marketing, January 2022 (co-author)

"Facade Inspection Comparative Study: Binocular, Close-up and AI-assisted," ICRI Bulletin, 2021 (co-author)

"Overcladding to Meet the Needs of Contemporary Housing in Toronto," 14th Canadian Masonry Symposium, 2021 (presenter)

"Existing Building Envelope," Structures Congress 2018, Fort Worth, TX, April 2018 (presenter)

"Build with Strength – a History of TT/CBM and Concrete Innovation in Chicago," National Ready Mixed Concrete Association blog, August 2016 (author)

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"New Design for Existing Buildings," Association for Preservation Technology Western Great Lakes Region Symposium, April 15, 2016 (presenter)

"Ask a CTBUH Expert - What Limitations Stand in the Way of the First Printed High-Rise?" Council for Tall Buildings and Urban Habitat (CTBUH) Journal, Issue II, 2016 (author)

"Evaluating Crowd Induced Dynamic Loads Through Field Measurement and Analytical Methods," Structures Congress Proceedings Publication, ASCE Structural Engineers Institute, 2015 (co-author)

"Back to the Future: Renovation of a 1930s Apartment Building Into an Art Gallery," Structures Congress Proceedings Publication, ASCE Structural Engineers Institute, 2015, (co-author)

"Adaptive Re-use of the Chicago Theological Seminary Buildings," Structural Engineers Association of Illinois (SEAOI) Structures Symposium, Chicago, IL, November 6, 2013 (co-presenter)

"Leadership on the Entry Level," Leadership and Management in Engineering, 2010–2013 (author)

"Innovation in Sustainable Practices for Existing Building Façades," Proceedings of the 2011 ASCE/SEI Illinois Chapter Bi-Annual Lecture Series, April 2011 (co-presenter)

"Wiki Collaboration in Building Design," Proceedings of the AIA Illinois Annual Conference, November 2010 (author)

"Wind-induced Curtain Wall Damage and Moment Resisting Frame Performance: The Emergency Response, Stabilization, Analysis, Testing and Retrofit of a 36-Story Urban High-Rise," Structural Engineers Association of Illinois, Meritorious Publication Award, 2010 (co-author)

"Data Flow and Communication in the Design of Complex Architectural Forms," Proceedings of the Association for Computer Aided Design in Architecture, Congress (ACADIA), October 2009 (co-author)

"Trading Places: An International Exchange Program for Engineers From the United States and Denmark," Structures Congress, 2009 (co-author)

"Steel Provides Answer to Building on Top of Existing Parking Garage," STRUCTURE magazine, February 2009 (co-author)

"Design of a Residential Tower on Top with an Existing Parking Garage," SEI 2008 Structures Congress, April 2008 (co-author)

"Engineers Teaching Structural Principles to Architectural Students," Structures Congress, April 2008 (co-author)

"Remediation with a Timber Barrel Arch Field House Due to Water Infiltration and Deterioration," SEI 2007 Structures Congress, May 2007 (co-author)

"Bolt Failure at Gabled Roof of a 42-story Building," 4th ASCE Forensic Conference, October 2006 (co-author)

"Ethically Understanding the Role of Computer Software in Engineering Calculation," Civil Engineering, February 2006 (author)

### **CONTACT**

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