

JUSTIN F. BREG, H.B.A.S., M.ARCH, PH.D. (CIV. ENG.)

FORENSIC CONSULTANT

- Structural Assessments – fire, wind, water, impact and vibration damage to structure, renovations and new builds (approximately 143 projects)
- Building Science Assessments – leakage investigation, building enclosure failures and design (approximately 121 projects)
- Fire Protection Engineering – fire separations, code compliance (approximately 31 projects)
- Expertise in building enclosure strategies for extreme northern environments
- Expertise in microstructural creep and fracture of porous ceramics (e.g. mortar, concrete)
- Expertise in hygrothermal and freeze-thaw testing of materials and assemblies

ACADEMIC BACKGROUND

- Doctor of Philosophy (Civil Engineering), University of Waterloo, 2017 – 2020
- Candidate for Master of Applied Science (Civil Engineering), University of Waterloo, 2014 – 2016 [Transferred to PhD Program]
- Master of Architecture, University of Waterloo, 2014
- Honours Bachelor of Architectural Studies, University of Waterloo, 2011

ACADEMIC TEACHING EXPERIENCE

- Adjunct Professor (Special Lecturer), Arch 173: “Building Construction II.” University of Waterloo, Winter 2020.
- Adjunct Professor (Special Lecturer), Arch 465: “Advanced Structures; Design and Analysis.” University of Waterloo, Fall 2017, Fall 2018.
- “Introduction to High-Performance Enclosures,” Willowbank School for Restoration Arts, 2019.
- “Building Durability in Far Northern Canada,” Willowbank School for Restoration Arts, 2019.
- “Building Durability in Southern Ontario,” Willowbank School for Restoration Arts, 2019.
- Building Science Consultant for Arch 393: “Kayanese Studio”. University of Waterloo, Fall 2017.

INDUSTRY TEACHING EXPERIENCE

- Fenestration Seminar for 12,000 square meter community center (New Build). Guelph, 2018.
- Building Enclosure Seminar for five-storey mixed-use development (Major Addition). Windsor, 2018.
- Building Enclosure Seminar for 190-unit apartment building (New Build). London, 2018.
- Building Enclosure Seminar for 13-storey apartment complex (New Build). London, 2018.
- Building Enclosure Seminar for three-storey office and warehouse buildings (New Build). Paris, 2018.
- “Housing in Remote Northern First Nations Communities.” Royal Architecture Institute of Canada, Ottawa, 2017.
- “How Building Science Can Meet Local Needs.” RDH Building Science Laboratories Seminar, Waterloo, 2017.

- “Building Options: Assemblies, Details and Strategies for Building in the James Bay Lowlands.” Kashechewan, 2013.

EMPLOYMENT BACKGROUND

Caskanette Udall Consulting Engineers (Kitchener)

Structural Design, Engineering Investigation, November 2017 – Present

Forensic engineering services to insurance and legal clientele

University of Waterloo School of Architecture (Cambridge)

Adjunct Professor (Special Lecturer), 2017 – Present

Instructor for courses related to structures and building science

RDH Building Science Laboratories (Waterloo)

Building Science Researcher, 2017 – 2019

Testing and analysis of materials and assemblies; consulting for industry

Rainbow Concrete Industries Ltd. (Sudbury)

Product Research and Development, 2014 – 2015

Technical advisor for novel concrete mixes and applications

atelier PRO architecten (Den Haag, Netherlands)

Adaptive re-use of old building stock, 2012

KPMB Architects (Toronto)

Fire separation and code compliance, 2011

SIM (Blantyre, Malawi)

Structural and enclosure design, 2009

Steenhof Building Services Group (Orillia)

Structural Designer and Consultant, 2008 – 2010

Building enclosure and structural investigation, design and construction review

ADDITIONAL COURSES AND SEMINARS ATTENDED

- CivE707 “Advanced Building Science,” University of Waterloo, May to August 2018.
- Achieving Net Zero in Commercial, Office, and Mixed-Use Buildings, August 2018.
- Large-Scale Passive House Projects, July 2018.
- State-of-the-Art in Ice Arenas, July 2018.
- Interior Insulation Retrofits of Old Buildings, June 2018.
- Building Science in Old Buildings, April 2018.
- Low-Slope Residential Roofs, March 2018.
- HVAC and Whole-Building Performance, February 2018.
- High-Performance Prefab: CLT To Precast, January 2018.
- Climate Change Adaptation and Mitigation, November 2017.
- 25 Years of Building Enclosure Research, October 2017.
- Learning from Failures – Forensics, Research, and Building Performance, September 2017.
- Towards Net-Zero Schools, August 2017.
- Design Options for Cathedral Ceilings, May 2017.

- Energy-Secure, Adaptable Housing and Infrastructure for Remote Communities, April 2017.
- High-End HVAC for Multi-Unit/Multifamily, April 2017.
- Myths of Insulating Old Masonry Buildings, March 2017.
- Extreme Durability, January 2017.
- Creating Sustainable Cities from the Ground Up – Lessons from Disney Research, October 2016.
- High or Low? Vapor Permeance of Exterior Insulation, October 2016.
- Predicting Wind Loads in Vented Cladding Systems, September 2016.
- Better Multifamily / Multi-Unit Residential Buildings, August 2016.
- Large Building Airtightness: Where We're At and Where We're Going, June 2016.
- Hybrid Wall Systems, March 2016.
- BUILD Ideas Toronto, October 2015.
- The Building Science of Prefabricated Construction, September 2015.
- How to Design with Spray Foam – Lessons from Forensic Investigations, March 2015
- Temperature-Dependent R-values for Roof Insulation Materials, February 2015
- Insulating Load-Bearing Masonry Buildings: The myths and the science of freeze-thaw risk assessment, January 2015.
- Thermal Bridging and Building Codes, November 2014.
- Lateral Design for Wood Buildings: Design Principles and Loads, November 2008.
- How to Design Halls and Wide Span Structures, Toronto Wood Solutions Fair, November 2008.

(Revised January 2020)