



Randy Van Straaten

**P.Eng PhD
Building Science Specialist**

Dr. Randy Van Straaten is the President of Building Enclosure Labs Inc (BELi), a material testing laboratory and consultancy firm in London, Ontario. He previously managed masonry risk assessments at RDH Building Science and Building Science Corporation.

Academic

Associate member in Yeates School of Graduate Studies, Ryerson University

- Building Performance Assessment Sessional Professor (Fall term 2022)
- Examination committee for graduate students researching masonry decay

Spring Term 2022 Sessional Professor

- Building Science for Retrofits - George Brown College

Spring Term 2021 Sessional Professor

- Building Science - Fanshawe College

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- Sustainability and the Built Environment - Fanshawe College

Ph.D., Civil and Environmental Engineering, Western University, London, ON

M.A.Sc., (Building Science) Civil Engineering Dept., University of Waterloo, ON

BELi Projects

BELi provide testing and analysis support for a number of engineering firms working on historic masonry projects including Morrison Hershfield, Thornton Tomesetti, WSP, Entuitive, Engineering Link, Synergy Partners, exp, and RJC

BELi also provides engineering consulting to support architects including the following projects:

- Instinct Architects – 55 Walmar St. Toronto
- INVISIJ – 346 & 392 South St, London
- INVISIJ – 16 Steven St., Hamilton
- INVISIJ – St. Peter’s Church, Kitchener.
- Stone’s Throw - 40 Cayley St. Dundas
- Paul Raff Studio - 44 Glen Road, Rosedale
- CS&P - Small Arms Inspection Building, Mississauga
- ERA - Gulf Fisheries Building, Moncton
- Larkin - Metropolitan United Church, Toronto

BELi is active in building research including roles in the following projects:

- Pembina Institute Reframed Lab Initiative aimed at scaling up low carbon building retrofits
- BC Housing Low Carbon Buildings Study
- Spray Foam Industry Life Cycle Analysis Study

Pre-BELi Experience

Dr. Van Straaten conducted masonry risk assessment for a number of projects while at

71 Wellington Street, London Ontario. N6B 2K4

RDH and Building Science Corporation including the following notable projects:

- Canadian Parliament Buildings – Ottawa
- St. Andrew-by-the-Sea, NB
- Ballyshear (Michael Bloomberg's house) – Long Island NY
- Scott Barracks, West Point, NY

Recent Speaking Events

- "Interior Retrofit Insulation Approaches" Toronto Society of Architects – Technical Series, webinar, March 7, 2023.
- "Clay Brick Material Properties" *Association of Preservation Technology Conference*, Detroit, MI, Nov 23, 2022.
- "Retrofitting Masonry Buildings: Do's and Don'ts" *Toronto Society of Architects – Technical Series*, Webinar, April 5, 2022.
- "Clay Brick Material Properties" *Association of Preservation Technology Conference*, Miami, FL, Nov 23, 2019.

Publications

- Van Straaten, R. and Zhang, K. "Hygrothermal Models For Heavy Wall Retrofits Assessments To Masonry Material Properties" *CCBST Toronto* 2022.
- Charron, E. and Van Straaten, R. *Interior Insulation Retrofitting Heritage Masonry Buildings - Best Practice Dos and Don'ts*. OAA Sustainable Built Environment Committee 2021.
- Charron, E. and Van Straaten, R. "Technical: Retrofitting Heritage Masonry Buildings". *Canadian Architect*, Feb 2021.
- Van Straaten, Randy "Retrofitting Masonry Buildings in Cold Climates: When and What to Test" *RCI Interface*, July 2017.

- Van Straaten, Randy A. "Pressure Equalization of Wind-Induced Pressures on Residential Vinyl Siding Cladding in Full-Scale." *Doctoral thesis*, Western University 2017.
- Van Straaten, Randy, Trevor Trainor, and John Straube. "Wind-Washing Effects on Mineral Wool Insulated Sheathing." *ASHRAE Performance of the Exterior Envelopes of Whole Buildings XIII*, Clearwater Beach, FL, December 2016.
- Van Straaten, Randy, Trevor Trainor, and Chris Schumacher. "Critical Freeze-Thaw Saturation Measurement of In-Service Masonry." *ASHRAE Performance of the Exterior Envelopes of Whole Buildings XIII*, Clearwater Beach, FL, December 2016.
- Roppel, Pat, Ivan Lee, Randy Van Straaten, and Jamie Mackay. "Guiding Design Teams by Hygrothermal Energy and Thermal Comfort Analysis while Managing Uncertainty." *ASHRAE Performance of the Exterior Envelopes of Whole Buildings XIII*, Clearwater Beach, FL, December 2016.
- Van Straaten, R, Straube J., and A. Lukachko, "Durability and Resilience of Tall Buildings with Precast Concrete Enclosure Systems" *CSCCE Conference*, London, ON, June 2016
- Van Straaten, Randy and Trevor Trainor. "Improving Access to the Frost Dilatometry Methodology for Assessing Brick Masonry Freeze Thaw Degradation Risk." *CCBST Conference*, Toronto, ON, October 2014.
- Ueno, Kohta, John Straube, and Randy Van Straaten. "Field Monitoring and Simulation of a Historic Mass Masonry Building Retrofitted with Interior

- Insulation." *ASHRAE Performance of the Exterior Envelopes of Whole Buildings XII*, Clearwater Beach, FL, December 2013.
- Ueno, Kohta, Phil Kerrigan, Honorata Loomis, and Randy Van Straaten. "Retrofit of a Multifamily Mass Masonry Building in New England." *Building America Program*, U.S. Department of Energy, Oak Ridge, TN, February 2013.
 - Ueno, Kohta, Randy Van Straaten, and Chris Schumacher. "Interior Insulation of Mass Masonry Walls: Joist Monitoring, Material Test Optimization, Salt Effects." *Building America Program*, U.S. Department of Energy, Oak Ridge, TN, May 2013.
 - Ueno, K., and R. Van Straaten. Expert Meeting Report. Interior Insulation Retrofit of Mass Masonry Wall Assemblies. No. DOE/GO-102012-3475. *Building Science Corporation*, Somerville, MA (United States), 2012.
 - Loomis Honorata, Kohta Ueno, and Randy Van Straaten. "Byggmeister Test Home: Cold Climate Multifamily Masonry Building Condition Assessment and Retrofit Analysis." *Building America Program*, U.S. Department of Energy, Golden, Oak Ridge, TN, September 2012.
 - Van Straaten, Randy, Greg Kopp, and John Straube. "Testing Water Penetration Resistance of Window Systems Exposed to "Realistic" Dynamic Air Pressures." *ICBEST Conference*, Vancouver, BC, June 2010.
 - Van Straaten, Randy. "Loss prevention begins at home." *Institute for Catastrophic Loss Reduction* 3, no. 1 (2009) Toronto, ON.
 - Van Straaten, Randy et al. "Correlation between Air Tightness and Air Quality in Mongolian Houses." *Indoor Air Conference*, Beijing, China, 2005.
 - Van Straaten, Randy et al. "Mongolian Housing Energy Efficiency Study and Recommendations for Clean Development Mechanism Project." *Report for United Nations Development Program – Mongolia UNDP Office*, Ulaanbaatar, Mongolia, 2004.
 - Straube, John, Randy Van Straaten, and Eric Burnett. "Field Studies of Ventilation Drying." *Performance of the Exterior Envelopes of Whole Buildings IX ASHRAE*, Clearwater, FL, December 2004.
 - Van Straaten, Randy. "Measurement of ventilation and drying of vinyl siding and brick clad wall assemblies." *Master's thesis*, University of Waterloo, 2004.

Pearl Company Building 16 Steven Street, Hamilton INVISIJ Architects

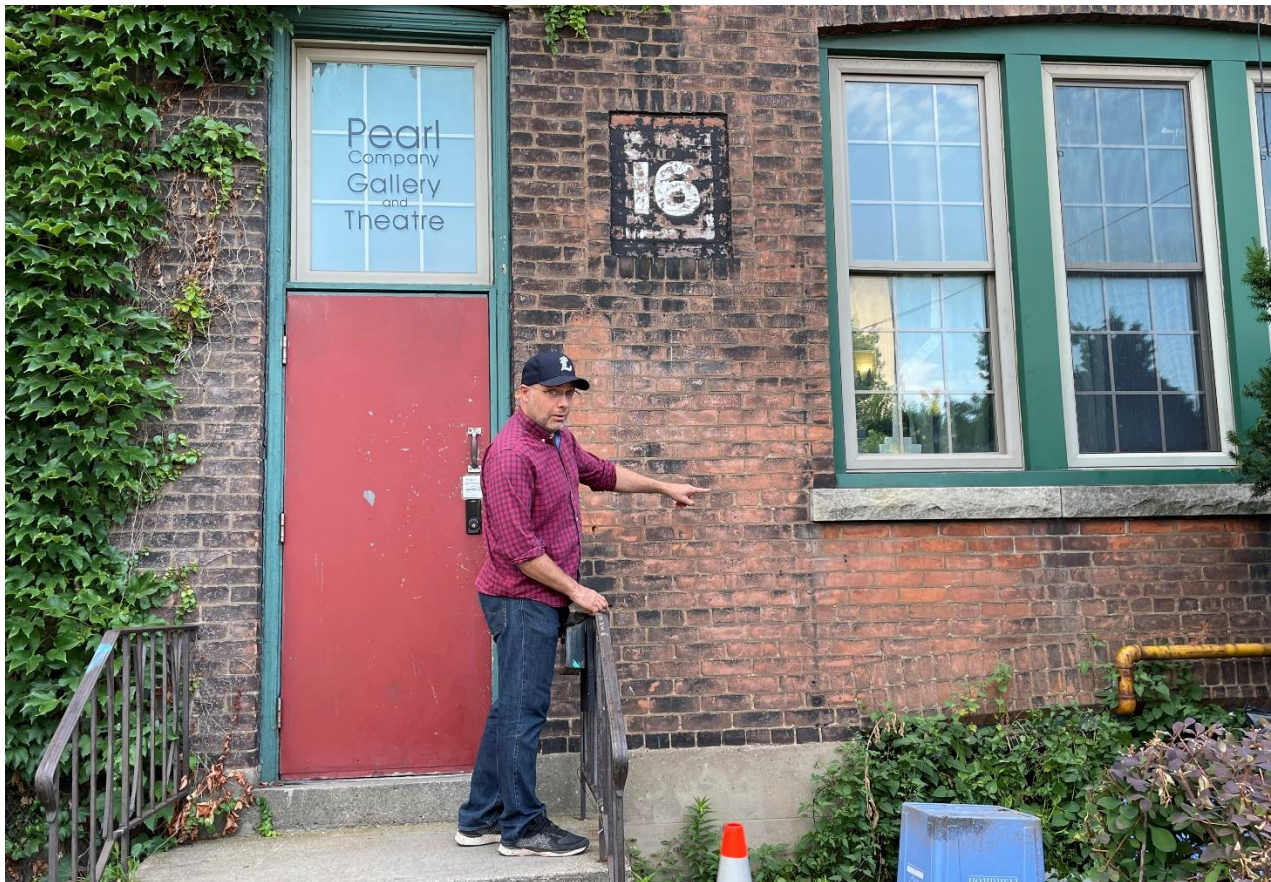
1911 factory converted to low-income housing for Sacajawae Non-Profit Housing.

BELi Scope

- Field Review
- Brick Sampling
- Brick Testing
- Hygrothermal Analysis
- Design Detailing Support

Final Wall Assembly

- 4 wye brick
- 75 mm closed cell spray foam insulation
- 90 mm (R-14) mineral wool insulation between steel studs
- ½" drywall, painted



Small Arms Inspection Building

1352 Lakeshore Rd E,
Mississauga

CS&P Architects

1939 factory conversion to a community
cultural hub.

BELi Scope

- Field Review
- Brick Sampling
- Brick Testing
- Hygrothermal Analysis
- Design Detailing Support

Final Wall Assembly

- Red face brick
- 12mm mortar joint
- 6" clay tile block
- Paint coating over plaster skim coat
- 4" closed cell spray foam with steel studs
offset 1" from wall
- ½" drywall, painted



44 Glen Road, Rosedale

Paul Raff Studio

Planned major retrofit of 1901 home

BELi Scope

- Field Review

Findings

- Brick has low vulnerability to freeze thaw
- Red sandstone sill need replacement
- Adjacent pathway sloped toward masonry wall
- Rear yard soil level has been built up above foundation and wetting brickwork
- Mortar repointing needed in select areas

