BUILDINGSMART with Safe and Durable Wall Assemblies





2017 Half-Day Workshop

Presented by the British Columbia Building Envelope Council (BCBEC) and BC Housing.

Thursday, February 2, 2017 8:00 am to 12:00 pm

Registration and Breakfast start at 7:00 am

The Italian Cultural Centre 3075 Slocan Street, Vancouver, B.C.

This half-day workshop focuses on the thermal and moisture performance of highly insulated wall assemblies for new and retrofit buildings. Industry experts discuss the latest research with practical solutions for building durable assemblies. The use of low permeance materials, insulation strategies, drainage systems, ventilation gaps, cladding attachments and the selection of curtain-wall components to enhance thermal performance are addressed.

Register at BCBEC.com

This event is eligible for professional learning credits.









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2017 Half-Day Workshop

| | Registration, Buffet Breakfast and Trade Show | 7:00 – 8:00 am |
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| | Opening Remarks: BCBEC | 8:00 – 8:10 am |
| 1 | Opening Session | 8:15 – 8:35 am |
| | Summary of Recent NRC Building Envelope Research Related to Thermal and Moisture Performance | Michael Lacasse National Research Council Canada (NRC) |
| 2 | Second Session | 8:35 – 9:05 am |
| | Assessing the Hygrothermal Performance of Stucco-Clad Wood-frame Walls with Vented and Ventilated Drainage Cavities | Michael Lacasse NRC |
| 3 | Third Session | 9:05 – 9:40 am |
| | R-22+ Walls – Attaching Cladding with Long Screws | Lorne Ricketts RDH Building Science Inc. |
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| | Tradeshow and Coffee Break | 9:40 – 10:10 am |
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| 4 | Tradeshow and Coffee Break Fourth Session | 9:40 – 10:10 am 10:10 – 11:00 am |
| 4 | Tradeshow and Coffee Break Fourth Session Real-World Performance Results from the Coquitlam Test Hut | 9:40 – 10:10 am 10:10 – 11:00 am John Straube RDH Building Science Labs |
| 4 | Tradeshow and Coffee Break Fourth Session Real-World Performance Results from the Coquitlam Test Hut Fifth Session | 9:40 – 10:10 am 10:10 – 11:00 am John Straube RDH Building Science Labs 11:00 – 11:30 am |
| 4 | Tradeshow and Coffee Break Fourth Session Real-World Performance Results from the Coquitlam Test Hut Fifth Session Research Results from the NRC Summary on Mid-Rise Wood Buildings | 9:40 - 10:10 am 10:10 - 11:00 am John Straube RDH Building Science Labs 11:00 - 11:30 am Michael Lacasse NRC |
| 4 5 | Tradeshow and Coffee Break Fourth Session Real-World Performance Results from the Coquitlam Test Hut Fifth Session Research Results from the NRC Summary on Mid-Rise Wood Buildings Sixth Session | 9:40 - 10:10 am 10:10 - 11:00 am John Straube RDH Building Science Labs 11:00 - 11:30 am Michael Lacasse NRC 11:30 - 11:50 am |
| 4 5 | Tradeshow and Coffee Break Fourth Session Real-World Performance Results from the Coquitlam Test Hut Fifth Session Research Results from the NRC Summary on Mid-Rise Wood Buildings Sixth Session Spray What? Is Spray Polyurethane Foam Safe and Environmentally-Friendly? | 9:40 - 10:10 am10:10 - 11:00 amJohn Straube RDH Building Science Labs11:00 - 11:30 amMichael Lacasse NRC11:30 - 11:50 amHarold Louwerse Morrison Hershfield Ltd. |

Program + Bios

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Summary of Recent NRC Building Envelope Research Related to Thermal and Moisture Performance

In this presentation thermal and moisture performance of highly insulated wall assemblies for new and retrofit homes are reviewed. Recent results from several wall assembly studies are summarized for building practitioners.

Condensation risks, drying capacity and the all-important basic requirements for moisture management in assemblies in midrise buildings are considered. Practical guidelines for enhancing thermal performance are presented.

2

Assessing the Hygrothermal Performance of Stucco-Clad Wood-frame Walls with Vented and Ventilated Drainage Cavities

Canada's coastal climates require walls with a 10 mm capillary break. In this presentation, several alternative solutions for the capillary break are evaluated. Laboratory assessment of moisture performance and modeling activities showed they perform as well or better than walls with minimum NBC requirements.



Dr. Michael A. Lacasse, Ph.D., P.Eng., is a building engineer and senior research officer in the Construction Portfolio of the National Research Council Canada (NRC). He specializes in façade durability and in developing stronger assessment methods to better predict the long-term performance of building components and envelope assemblies. Dr. Lacasse is active in various ASTM, CIB and RILEM technical committees related to performance, durability and service-life prediction of materials.

Program + Bios

R-22+ Walls – Attaching Cladding with Long Screws

Ever increasing thermal performance requirements for wood-frame walls have had a dramatic impact on how we build walls, particularly in the City of Vancouver. To meet these targets, exterior insulation is becoming more and more common, and methods to support the cladding are required that are strong and rigid, yet do not create significant thermal bridging through the insulation. This presentation addresses an update to the Illustrated Guide to R22+ Effective Walls in Wood Frame Construction in British Columbia which now includes information on how to successfully use this attachment approach. The results of recent structural testing of different fastener arrangements will also be discussed.



Lorne Ricketts, MASc, P.Eng., is a building science engineer with RDH Building Science Inc. specializing in new construction, investigation, and research. Typical projects for Lorne include designing building enclosure systems, hygrothermal and thermal analysis and testing and monitoring of building enclosure performance. His combination of practical and theoretical expertise provide him with a unique perspective on building enclosure considerations which allows him to deliver innovative yet practical solutions to complex problems.



John Straube, Ph.D., P.Eng., is a Principal at RDH Building Science and RDH Building Science Labs. Specializing in forensic investigations and high-performance building design, Dr. Straube is a leader in design development of low-energy buildings, enclosure performance and hygrothermal analysis. He is a crossappointed faculty member at the University of Waterloo (School of Architecture and the Department of Civil and Environmental Engineering). An accomplished author, Dr. Straube has published numerous technical papers and two books: *High Performance Enclosures* and *Building Science for Building Enclosures* (with Eric Burnett). Dr. Straube has been recognized with many rewards as a building science leader and educator, including the Lifetime Achievement Award in Building Science Education from the National Consortium of Housing Research Centers (NCHRC).

Real-World Performance Results from the Coquitlam Test Hut

Test hut research provides a rich and valuable reference for real-world performance. This presentation summarizes results from a decade long, Coquitlam, BC-based research project, where a range of wall assemblies with varied materials, ventilation gaps, and insulation strategies were studied. Applications based on almost 80 test walls from the last ten years are discussed.

Program + Bios

5

Research Results from NRC Summary on Mid-Rise Wood Buildings

Accurately estimating moisture damage and the risks to wall assemblies in mid-rise wood buildings in various Canadian climates is discussed using hygrothermal modelling and analysis. Results from various wall assemblies from across Canada are provided.



Dr. Michael A. Lacasse, Ph.D., P.Eng., is a building engineer and senior research officer in the Construction Portfolio of the National Research Council Canada (NRC). He specializes in façade durability and in developing stronger assessment methods to better predict the long-term performance of building components and envelope assemblies. Dr. Lacasse is active in various ASTM, CIB and RILEM technical committees related to performance, durability and service-life prediction of materials.

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Spray What? Is Spray Polyurethane Foam Safe and Environmentally-Friendly?

Spray Polyurethane Foam (SPF) is a popular insulation material and one of the fastest growing insulation materials in North America. Approved for use in Canada, these products have undergone rigorous testing and approvals. However, there is another side to this popular insulation. Some homeowners and construction professionals recount SPF horror stories, blaming the chemicals in SPF for starting fires, reducing air quality and increasing health risks.

This presentation thoroughly reviews SPF best practices: what to avoid and how to successfully use it.



Harold Louwerse, BTech, RRO, is a field technologist with Morrison Hershfield Ltd. (MH), Building Science Division, working as a building science consultant and roof inspector. A recognized materials subject expert, Harold helped develop and manage MH's Quality Assurance Program (QAP) for the Certification Organization for six spray foam manufacturers in Canada (Icynene, Dow, SWD Urethane, Premium Spray Foam, Johns Manville and BASF). An experienced evaluator and inspector, Harold has conducted certification evaluations for hundreds of Canadian spray foam applications on construction sites around the country.

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