

## Meeting Notes

### Building Research Committee (BRC)

Tuesday, November 24, 2020, 9:00 a.m. to 12:00 p.m.

#### Zoom Meeting

online

#### In Attendance:

Denisa Ionescu, BC Housing (Chair)	Jonty Sizer, Sense Engineering
Albert Lam, Brantwood Consulting	Kevin Pickwick, RJC Engineers
Andy Chase, Building and Safety Standards Branch	Laurence Matzek, RCABC
Antje Wahl, Forestry Innovation Investment	Lorne Ricketts, RDH Building Science
Arash Azadeh, BC Housing	Malamarie Sinha, BC Housing
Bernie Hoing, Mosaic Homes	Micah Lang, City of Vancouver
Blaine Moore, Dryvit	Michael Lemm, Busque Engineering
Cassandra Lafond, FP Innovations	Michelle Lee, BC Housing
Christopher Black, LDR Group	Murray Frank, Constructive Home Solutions
Cindy Moran, BC Housing	Neal Holcroft, FP Innovations
David Bruce, Pacific Energy Innovation Association	Nina Dmytrenko, CMHC
David Kayll, Morrison Hershfield	Omid Tamanna, BCIT
Devin Pickles, Travelers	Patrick Roppel, Morrison Hershfield
Don Munich, Travelers	Peter Senez, Senez Consulting Ltd.
Dorian Tung, FP Innovations	Phalguni Mukhopadhyaya, University of Victoria
Douglas Bennion, Quadlock	Pierre-Michel Busque, Busque Engineering
Fred Tai, Simpson Strong	Ralph Moore, Aviva
Hamid Ghanbari, EduBuild Solutions	Remi Charron, BC Housing
Helen Goodland, Scius	Richard Kadulski, Richard Kadulski Architect
Jason Teetaert, SMT Research	Robert Marshall, CertainTeed Saint-Gobain
Jeff Fisher, UDI	Shakir Rashid, SR Engineering Ltd.
Jieying Wang, FP Innovations	Silvio Plescia, NRCan
	Terri Peters, Ryerson University
	Warren Knowles, RDH Building Science

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#### 1. Approval of the Agenda/Additional Items

The meeting was called to order at 9:05 a.m. D. Ionescu welcomed everyone to the meeting on behalf of the BRC followed by a roundtable introduction. The November 24, 2020 meeting agenda was approved.

#### 2. Vancouver's Zero Emission Building Retrofit Strategy Project

Micah Lang of the City of Vancouver provided an overview of the City's Zero Emission Building Retrofit Strategy in the context of Vancouver Climate Emergency. Given that 95% of building related emissions come from the combustion of natural gas, the decarbonization of thermal energy in buildings is the key. The plan involves first sending clear signals of future targets through streamlined regulations and carbon pollution limits, followed by three strategies, support early owner action, increase industry capacity, and facilitate access to renewable energy.

### **3. Impacts of Balcony Design on Daylight in Apartment Housing**

Terri Peters from Ryerson University presented a summary of their work in developing Design Guidelines for Condominium Balconies in British Columbia. The results of their research highlight the impact balcony design has on the amount of daylight availability, with the most effective strategy being staggered and glazed balconies. Preliminary results show balcony orientation and geometry are the most important factors to optimising performance, additionally, there were no significant differences between climate zones for these elements. When designing balconies, numerous parameters aside from daylight need to be considered, including impact on energy efficiency, indoor thermal comfort, relative size of unit to balcony space, views, and privacy.

### **4. Eliminating Thermal Bridges in Small Structure**

Murray Frank from Constructive Home Solutions presented a case study of a house built near Ashnola River in 2020. The team designed the building to maximize performance while minimizing costs. The house was built without a traditional foundation to minimize site disturbance and is not connected to local utilities. The design relies solely on exterior insulation with a unique system to minimize thermal bridges.

### **5. R22 Walls Testing**

Jieying Wang of FPInnovations presented the results of testing R22 effective wall configurations in a test hut in Vancouver. The purpose of the study is to provide recommendations to ensure durability of wood-frame walls that meet or exceed R22. The preliminary results demonstrate that interior vapour control of the building envelope remains important in Vancouver's mild and humid climate.

### **6. NBC Standing Committee on Environmental Separation Update**

David Kayll of Morrison Hershfield provided an update on the status of the NBC standing committee on environmental separation. Many comments were received during the public review related to the Standing Committee on Energy Efficiency (SCEE) and Housing and Small Buildings (HSB), with COVID-19 impacting the process, they are hoping to have the full set of 2020 Model Codes completed by December 2021. The next code cycle will put emphasis on governance models for the Code process, retrofits to existing buildings and continued focus on energy efficiency and climate change.

### **7. Characterizing Inter-Zonal Air Leakage in Multi-Unit Residential Buildings**

Cara Lozinsky, a PhD candidate at the University of Toronto presented preliminary results of her work in characterizing inter-zonal airtightness in MURBs to improve compartmentalization. The goal of the study is to examine the typical levels of airtightness achieved in various inter-zonal separations (i.e. floors, ceilings, and walls) and to determine its impacts on overall building performance. The researcher is seeking additional buildings in the Lower Mainland (or Southern Ontario) to include as test sites, specifically new mid to high-rise buildings.

### **8. Forum Discussion**

Denisa Ionescu encouraged attendees to ask questions related to the presentations.

- Jeff Fisher asked Micah Lang if rental apartments are included in the strategy.
- Micah Lang: Rental apartments are not included in the initial set of regulations. The strategy indicated that the City would work to identify a set of low cost, cost effective, prescriptive

measures in partnership with industry for rental apartments, but they will not be subject to carbon inclusion limits or performance requirements.

- An attendee: Is there a link to seismic in this policy or will that be addressed separately?
- Micah Lang: This will be addressed separately. A seismic retrofit policy package will be released in late 2021. The subsequent building bylaw will harmonize carbon requirements with future seismic requirements.
- Cara Lozinsky mentioned their research is still accepting buildings to include in the study. The only requirement is buildings access and co-operation from the building and design team, in exchange for free testing. Test data will be made available to industry partners once the study is completed.
- Arash Azadeh, asked if the study only includes uncompartimentalized buildings.
- Cara Lozinsky confirmed that ideally the buildings would be uncompartimentalized and not designed to meet LEED or other compartimentalized standards.
- Warren Knowles: Have you considered including tracer gas testing as part of the study?
- Cara Lozinsky: It was considered however this study is trying to link how the industry assesses compartimentalization using blower door testing, and how that relates to compartimentalization. CONTAM an airflow network model is being used to translate blower door test metrics to actual building performance. Instead of using tracer gases, to look at how airflow moves under ambient conditions, we will be using a model which will allow assessing different air tightness characteristics and configurations in a more systematic manner.
- Michelle Lee: Are new construction projects the only ones being considered?
- Cara Lozinsky: Yes, because that is where the majority of compartimentalization requirements are aimed at, even though there are a few compartimentalization requirements available for retrofits through LEED.
- Richard Kadulski asked Terri Peters if the effects of cloud coverage were examined in the study.
- Terri Peters responded that the research used annual average climate data which may or may not pick up the daily difference.
- Richard Kadulski: Was there any consideration given to colour? There is a trend to use darker colour finishes, which tend to absorb a lot of the light designers and architects work to incorporate into the design.
- Terri Peters: We looked at some examples of changing the reflectance value in the materials, however we have not done a detailed study. We also noticed different colours used for balcony battle straits and glazed balconies, sometimes dark colours are used in areas that are designed to bring light in, all of which affect the amount of light that comes in.
- David Kayll: In the past 20 – 30 years, each jurisdiction has implemented different municipal guidelines on what is allowed and what is counted in FSR, did the research look at baselining against no balconies, if so, did it provide a potential argument for municipalities to move away from balconies?
- Terri Peters: The research compared a no balcony option and a balcony option. The findings of this study will help develop guidelines to providing balconies that are big enough to be useful and not shading devices. Also, we will determine which are the best balconies to have based on orientation and will compare it relative to a no balcony option.
- Arash Azadeh: What are the implications of not having enough daylight? And are you aware that the new rendition of building code allows for blind bedrooms.
- Terri Peters: The implications of not having enough daylight would be a great study based on its effect health and wellbeing, especially in situations where people do not have enough access to outdoor spaces. Often, we are creating the same daylight conditions in the bedroom that are in

the living room, because in small units there is glazing that runs along one façade. However, all research shows that a bedroom needs very different amounts of daylight than a living room, and different lighting conditions need to be created, to provide spaces for sleep and quiet and spaces for alertness.

- Richard Kadulski: In the design guide you are putting together, are there any considerations for latitude because that affects the amount of daylight available.
- Terri Peters: The study has not considered the issue of surrounding building, even though clusters of buildings will have implications on the amount of light entering the building. This would be a good topic for future research.
- Denisa invited attendees to share projects or research they are currently working on and to provide suggestions for future research.
- Meeting closed.

#### **9. Next BRC Meeting**

- Meeting is scheduled for April 20, 2021, 9:00 a.m.-11:30 a.m.