



Better Buildings Boot Camp

BETTER BUILDINGS BOOT CAMP 2021 REPORT

August 23 – 27, 2021

Sustainable Buildings Canada

SUMMARY

In August, 2021, Sustainable Buildings Canada (SBC) hosted its second annual Better Buildings Boot Camp. It was held online due to the COVID-19 pandemic, from August 23 to August 27. The event was hosted on the virtual event platform PheedLoop.

The week-long virtual event featured a series of live, interactive plenary sessions facilitated by a group of leading academic experts and industry professionals, and its format mirrored that of a professional integrated design workshop. Each session was designed to be interactive and focused on one or more topics relevant to sustainable building design, such as indoor environmental quality, opaque and transparent building assemblies, mechanical systems, financing, operations and maintenance, etc. Sessions with a more specialized focus were also held on topics including accessibility, low impact development, solar energy, urban resilience, lighting design and greening a campus. Students participated in daily online group discussions and activities and were asked to work together in groups to produce their own design recommendations. They also had daily time slots where they could interact with each other in an unstructured format. On the penultimate day of the workshop, students had the opportunity to closely observe participating experts conduct a real-life professional design and planning workshop, followed by a “fishbowl session” where they observed the post-workshop watercooler conversation. On the final day of the workshop, the students were asked to present their recommendations and compare them with the recommendations produced by the participating experts. Throughout, students were encouraged to engage with the presentations, with Q&A’s and a “gamification” system which allowed them to earn points that they could then spend on prizes. A new feature of this year's boot camp was the exhibit hall, where 5 brave students volunteered to speak to students about their area of expertise.

The event was planned to give students from a wide range of backgrounds an opportunity to gain practical, hands-on experience with integrated design as applied to a high-performance building project. Organizers chose a “deep energy retrofit” proposed for an existing building on the University of Toronto Campus (the Health Sciences building) and students were invited to observe and participate in the building design process.

Achieving sustainable building design requires integrated design thinking, a diversity of expertise across a wide range of disciplines, and strong multi-stakeholder, interdisciplinary collaboration. For this reason, concerted efforts were made to include and recruit students from a diversity of backgrounds and fields of study.

Undertaking the Boot Camp represents a significant amount of effort from a wide variety of individuals and organizations (see below). SBC recognizes these efforts and would like to thank all those who contributed to making the 2021 Boot Camp a huge success. We are deeply grateful.

WHO ATTENDED

The 2020 Boot Camp was attended by students from Carleton University, George Brown College, Humber College, OCAD University, Ryerson University, Seneca College, the University of Alberta, the University of British Columbia, the University of Calgary, and the University of Toronto. Sixty-one students from the participating institutions signed up for the boot camp, and forty-two met the participation requirements to “graduate.” Students from these institutions represented a diversity of fields of study, from Chemical, Civil, Environmental and Mechanical Engineering, to Building Systems Technology, to Strategic Foresight and Innovation, Inclusive Design, Designing for Health, Building Science, Architecture, Environmental Studies, Interior Design and Arts, Project management and Sustainable Energy. They formed 9 interdisciplinary and cross-institutional teams that participated actively throughout the camp and who provided truly informed and insightful recommendations for the U of T team.

The principal organizers of the Boot Camp included:

- Bettina Hoar, CEO of Sage Living TO;
- Professor John Robinson, University of Toronto;
- Professor Mark Gorgolewski, Ryerson University;
- Professor Arlene Gould, York University,
- Professor Liam O’Brien, Carleton University
- Professor Ian McNab, George Brown College
- Professor Andrew Wickham, Seneca College
- Melanie Simpson, Polished Media;
- Michael Singleton, Adam Jones, Amy Pound, Jen McKennitt, Samantha Hoar, Emily Fardad, and Rhys Stevens, SBC.

Participating in the Boot Camp was a diverse group of industry professionals and academic experts, including:

- Michelle Xeureb, BDP Quadrangle, Director of Innovation
- Larry Yang, U of T, Energy Manager
- Carolina Streber and Mikael Sydor, ERA Architects Inc.
- Jayde Malam, Reimagine Architects, IT Operations
- Dr. Jennifer Hill, U of T, Green Roofs and Storm Water Management
- Ryan Evans and Sean Sirgi, EVNA Engineering
- Professor Alex Lukachko, U of T, Building Science
- Danny Pearl, l’Office de l’Éclectisme Urbain et Fonctionnel, Architect & co founder
- Gerry Cornwall, Gerry Cornwell Lighting, Principal
- Nicole Parsons, WSP Canada Inc., Project Manager and Technical Lead
- Josh Lewis, Nerva Energy Group Inc., Engineering Manager
- Adam Jones, Sustainable Buildings Canada

- Scott Henderschott, U of T, Senior Manager - Sustainability Office
- Dave Petersen , Outside In Design + Build, Principal
- Cara Sloat, Hammerschlag and Joffe, Senior Mechanical Engineer
- Bettina Hoar, Sage Living Toronto, Certified Sustainability Advisor
- Alex Lukachko, RDH Building Science Inc.
- Larry Brydon, Cricket Energy Holdings Inc., VP Business Development and Regulatory Affairs
- Anjali Varma, Sustainable Ventures Inc., CEO
- Adam Barker, EQ Building Performance Inc., Energy Team Manager

Sustainable Buildings Canada would also like to acknowledge and thank Enbridge Gas Distribution for their funding support of the Design Workshop.

OUTCOMES

The Boot Camp¹ was a rich and unique learning experience for the students who took part. Through their participation in the event, students gained:

- A comprehensive and holistic understanding of integrated sustainable design and its importance
- Knowledge about how different building sector disciplines (architecture, engineering, economics, psychology, etc.) can be combined in the integrated design process;
- Practical, hands-on experience with the integrated sustainable design process and an understanding of how it's operationalized in practice through robust interdisciplinary, multi-stakeholder collaboration;
- An opportunity to learn from and network with leading academic experts, industry professionals and fellow students from several different leading institutions;
- Instruction in specific subject matter areas, such as indoor environmental quality, building science, mechanical systems, energy modelling, financing, etc.
- Working in cross-institutional, multi-disciplinary groups, students produced reports and design recommendations for the building retrofit project, which they presented at the Boot Camp.

A professional Savings by Design Workshop, delivered by SBC on behalf of Enbridge Gas Distribution, was held on the fourth day of the Boot Camp. Savings by Design is a green building initiative that was developed to encourage builders to improve energy and environmental performance in construction projects. The program offers support and financial incentives during the design and construction stages of building and makes use of a large contingent of subject matter experts who are available to provide input and insights into potential design and technology improvements.

The professional workshop produced a report containing a number of key design recommendations for the proposed retrofit of the Health Sciences Building. These recommendations, together with the results of the students' work, were presented to the University of Toronto's governing council, the university's

¹ See the Appendix for the Boot Camp Schedule

highest decision-making body, and will influence the retrofit of the Health Sciences buildings as well as future retrofit projects at the university.

The boot camp also provided the opportunity for the student groups to give their own recommendations for the project building. Recommendations included:

- Install a green roof/terrace/garden space, as well as solar/passive shading, and augmented lighting controls.
- Maximize opportunities for waste reduction and waste management.
- Strategies to increase use of the pathway bridges and on improving wayfinding in the building.
- Position the campus as a living lab, improving the ergonomics of the space, and improving the indoor air quality.
- Ensure appropriate user feedback as part of the retrofit activity.
- Consider moving the upgrading the HVAC systems and mechanical room as part of the retrofit to make better use of the space.
- Upgrade the performance of the envelope through window replacement and additional (external) insulation

According to David Sasaki, Managing Director of Campus Planning at the University of Toronto:

“The value of the Better Buildings Boot Camp is that it begins to articulate the requirements for the next generation of high-performance buildings at U of T. Collaboration between sustainability experts and students from a diverse range of backgrounds has produced recommendations that will influence the design of this and other buildings at U of T.”

STUDENT FEEDBACK

After the Boot Camp, SBC asked participants to provide feedback about the event and how to improve it. The student feedback was highly positive overall and indicated high levels of satisfaction among those who participated. Of the survey responses, just over 85% were highly positive, a little over 13% were neutral, and just over 1% were negative. In the final survey, students were asked specifically about which aspects of the Boot Camp were the most useful or valuable. Responses include:

- “Being able to work with people from various career backgrounds”
- “Interaction with people of different fields”
- “Professional Savings By Design workshop and the presentation of the nearly completed project in Hamilton. This allowed for us to see both sides of the design process, learning what concepts or ideas are discussed in the early stages and then see what decisions were actually feasible in a different project.”

- “Networking with professionals, their presentations covering all aspects for retrofitting the building in question and their general experience.”
- “Getting to talk with students and experts from different educational backgrounds”
- “Getting different perspectives of sustainable building”

Student feedback also highlighted some areas where the event could be improved and streamlined. These include:

I. Technical issues with the online platform used to host the workshop

Due to health and safety concerns related to the COVID-19 pandemic, the Boot Camp was held entirely online via the virtual event portal PheedLoop, with the sessions themselves hosted on Zoom using both Meetings and Webinars. Unfortunately, a few of the students reported technical issues with the platform that somewhat impaired their experience. For example, a few students had some initial trouble accessing the sessions since it required them to have their own Zoom account. As students developed familiarity with the platform most of those issues were resolved. A few mentioned accessibility features such as Zoom’s integrated captioning system, which we were not able to use without going through the PheedLoop system.

II. Issues with program format

One common point of feedback from the 2020 Bootcamp was that the event did not feature enough breakout sessions. This year, SBC included multiple opportunities for student discussion, with breakout rooms, Q&A sessions, and the coffee break “room”. Students reported that these sessions were particularly useful as they were a more welcoming forum in which to ask questions, participate in discussion and engage with experts. Breakout sessions also provided more advanced and detailed instruction than other sessions, which students found valuable. SBC received excellent feedback on the format used for the Q&A breakout sessions (1-2-4-All). Multiple students felt that the system was clunky and took too long, taking away from the opportunity to actually ask questions.

Students expressed confusion and frustration with their assigned groups changing as final numbers were determined. Having a space to interact before the event, and only assigning the groups once final attendance is verified is a way to address this issue.

In 2020, students reported that the event would benefit from greater representation across a range of faculties and disciplines. They saw interdisciplinary attendance as a major selling point of the Boot Camp but felt certain backgrounds and areas of study were overrepresented, such as environmental studies. In 2021, more topics and activities geared towards other disciplines were included, which the students appreciated.

In 2020, students requested additional background information about the building project. This year detailed background information was provided, and students generally felt it improved their understanding overall and their ability to meaningfully participate in discussions. One potential area to improve relates to industry terminology and definitions.

SBC is committed to learning from the feedback and will seek to amplify the things that were done well, while considering ways to improve in other areas.

