Hamlet Waterfront Residential Masterplan, Ho Chi Minh City, Vietnam.

Our Eyes Are Open

The pandemic has had an unexpected impact on the sustainable design industry

by NATALIE BRUCKNER

COVID has had more of an impact on sustainable design than we could have perhaps ever imagined. It has made us hyper-sensitive to our human health and the health of the planet's entire ecosystem and made people acutely aware of the need for biophilic and regenerative design.

"Humans innately connect with natural materials and ecosystems, and for the resources and systems that are not naturally renewable, we want them to be recoverable and reusable to feed back into our economies," says Lisa Bate, global sustainability lead at B+H Architects.

The team at B+H has been involved in some very exciting projects of late including Humber College's Building NX – a Passive House certified, Net Zero Carbon Design-certified building and winner of the Retrofit of the Year Award from the Canada Green Building Council (CaGBC). "Our Holly Jordan led the design team to retrofit the building to completion and reopening in October, 2019. While the building is operating well below a Net Zero Carbon performance, Humber College is wisely waiting to seek the certification when it is back to occupancy," says Bate.

B+H's Planning and Landscape (P&LA) team has been incredibly busy globally. "In Southeast Asia, the world's 'bread basket' equivalent for rice production, we have been promoting our fundamental planning principles to embed biomimicry principles into design to rediscover ecosystem models that are shaped to last by harnessing free energy, redundancies, and cyclical processes," explains Bate.

Projects such as the Hamlet Waterfront Residential Masterplan (Ho Chi Minh City, Vietnam) and Tam Da Smart City Masterplan (Vietnam) are examples of how the principles of biomimicry can be applied to master planning new urban subcentres to achieve a low-impact approach.

RENDERING COURTESY B+H ARCHITECTS

Parkin, a leading architectural firm when it comes to sustainable design, has seen numerous changes over the past year as society begins to rethink how to operate in our daily lives. "With 2020 behind us, 2021 has brought about many shifts globally. One is the exploration of architecture that facilitates connecting through both design and technology, while maintaining people's safety," says Shannon Wright from Parkin.

The pandemic has undoubtedly created more awareness of the impacts that interior spaces have on physical and mental health, and one topic of increasing interesting is Sick Building Syndrome. "Designers have an opportunity to ensure that our indoor environments foster and support the health of its occupants. Performance based standards such as the WELL Building Standard extends the definition of sustainability to far more than the building materials we specify," explains Wright.

Parkin's internal Sustainability Think-Tank aims to drive change both within its own operations and through the buildings they design. "This initiative is founded on our Vision – creating environments that positively impact lives. One of our goals is to continuously increase and diversify our sustainability certifications and knowledge base amongst our staff, one of our initiatives based on our mission statements – we empower our team to design meaningful and enriching environments."

Prairie Architects is also seeing incredible opportunity for sustainable architecture due to this growing interest in architecture that promotes and supports occupant health and well being.

Over the past 12 months, Prairie had two more projects receive LEED certification: the Old Grace Housing Co-op – an inter-generational, mixed-income co-operative housing project in the heart of Winnipeg's Wolseley Community; and the Brandon Municipal Airport Expansion and Renovation in Brandon, Manitoba.

"We are also in the early design stages of the North End Women's Centre redevelopment, which has LEED and Net Zero targets. The project includes the expansion of the existing drop-in centre; a social enterprise thrift store; programming space for workshops to build women's capacity and increase skills for creating new and sustainable healing options; and the continuation and enhancement of the transitional housing program that serves a crucial role in the community," says Lindsay Oster, principal architect at Prairie.

Being a highly progressive firm, Prairie's team remains committed to being leaders in the sustainable design realm, and as such has made a commitment to prioritize passive strategies and are looking to Passive House as a pathway to achieve Net Zero.

"I recently became a Certified Passive House Designer and we hope to be able to advocate for more passive approaches to high-performance buildings in Manitoba. It is critical that we adopt strategies to mitigate the effects of climate change, adapt the way that we've been doing things, and prioritize a zero-emission, efficient, and resilient building stock," says Oster.

The team at RJC Engineers agrees that the past 12 months has brought with it further advancement of knowledge when it comes to sustainable design throughout the industry.

"There is a high degree of awareness of thermal performance of the assemblies, air and moisture control, the importance of air tightness, controlled ventilation, and heat recovery. These are concepts that are broadly understood and accepted now across the construction and design community," says Terry Bergen at RJC.

He adds that the lifetime footprint of a building is today much more of a design metric that is often considered and is a requirement for many BC Housing-funded projects. "It's focussing design and construction teams on long-term holistically-performing buildings."

Bergen and his team have been working on a number of BC Housing projects that are BC Energy Step 3 and 4 and have carbon intensity targets. He is also seeing increasing focus (and an understanding) when it comes to high-performance enclosures: "Regulations such as the BC Step Code and NECB 2017 have an envelope driven approach toward building performance and as a result it has become more common; for example, the potential for 12-inch and 14-inch thick wall assemblies don't freak anyone out like they used to."

Looking forward, Bergen is excited to see the data as the first wave of Step Code buildings come into service as that will bring with it mass results of air tightness testing as buildings move into occupancy, and then in-service energy use over time. "We will have the ability to measure and compare the performance of buildings on that metric across the province like we've never been able to do before."

Lindsay Austrom, team lead, sustainability at Williams Engineering Canada says the pandemic was a bit of a wake up call in realizing how much we rely on systems and our community, adding that the crisis that came out of the pandemic in many ways resembles the crisis we face with climate change.

"We know it's coming and we need to get our act together. We need to adapt to changes coming like forest fires, heatwaves, and cold snaps, and understand how to mitigate the risks associated with those changes. The Texas cold snap was an example of that; they reached a tipping point and a crisis occurred," says Austrom.

As a result people are considering the potential impacts of climate change with a bit more gravity. "At Williams we are looking more and more at the vulnerability of buildings as a result of climate change, whether that is new construction or extending the life of an existing building. People are also looking to see what they can do in their sphere of influence."

One of the big challenges Williams is seeing is in identifying priorities and breaking it down to make the most sense for each individual client. "While for some clients electrification or renewables may make sense now, for others, it will be a case of waiting or looking at other solutions. There is no one-size-fits-all solution," explains Austrom.

Utility providers have also been forging ahead when it comes to promoting sustainable design. Last year FortisBC informed *Award* it was beginning its gas absorption heat pumps pilot. The goal was to measure domestic hot water savings of installing two Robur gas absorption heat pump units to cover approximately 75 percent of the domestic hot water load at seven participating commercial buildings. And the results are now in!

"There were several interesting findings. Across all sites there was an average gas utilization efficiency of 121 percent. We also learned this technology worked better when it works hard. There were points it got up to 160 percent efficiency, usually because the system is working really hard and has a lot of load and demand which drives efficiency. Installation was also shown to be really simple, plug and play; no different to installing a condensing boiler," says Jim Kobialko, program manager, innovative technology and projects at FortisBC.

Kobialko says the results are a big leap forward towards the Pan-Canadian Framework's aspirational goal that all space and water heating technologies for sale meet an energy performance of more than 100 percent by 2035. This will also help FortisBC meet its 30By30 target to reduce its customers' greenhouse gas emissions by 30 percent by the year 2030.

FortisBC is now looking into launching a rebate program to provide incentives for customers to invest in the technology. "Our rebates aim to cover the increments of cost of choosing the more efficient equipment," adds Nicole Brown, corporate communications advisor at FortisBC.

Over at BC Hydro, there has been some exciting news as they recently announced plans to launch the Creative Energy Decarbonization Project, a collaboration between Creative Energy and BC Hydro.

The project will add new electrode steam boilers to Creative Energy's existing natural gas-powered steam plant. Once in place, Creative Energy's system would have enough capacity to serve approximately 12-million square feet of new development, enough to serve over 10 years of growth in low-carbon buildings in downtown, the West End, North East False Creek, and False Creek Flats.

"We're excited to partner with Creative Energy on their move to heat buildings across downtown with our clean electricity," says Chris O'Riley, president and CEO of BC Hydro. "This project helps support electrification goals and reduces greenhouse gas emissions by the equivalent of removing 12,000 gas powered cars from the road each year."

The future of sustainable design is indeed positive, and the green building industry has now become a mature sector of the Canadian economy, generating more jobs than oil and gas extraction, mining, and forestry combined.

"To reach our climate targets, Canada must not only address new buildings but also the large number of inefficient buildings and homes," says Thomas Mueller, president and CEO of CaGBC. "Strong public policy, private sector investment, performance standards and certification programs like LEED will support this urgently needed transformation." **A**