

One of Canada's most sustainable buildings

Chris Magwood discusses Trent University's Camp Kawartha Environment Centre

By Elisa Pennate

Trent University will soon be home to one of Canada's most sustainable buildings: the Camp Kawartha Environment Centre in Peterborough. The eco-friendly building will serve as a venue to teach children as well as future teachers. Construction will begin this April.

Jacob Rodenburg, the executive director of Camp Kawartha, and also a teacher at Trent University, came up with the idea for the new building. Rodenburg felt that it was necessary to create an environmental centre of this kind because future teachers, currently enrolled in teachers college, need a place where they can earn practical hands-on-experience to teach children about the environment.

"When you teach children to build a love for the environment, they'll also want to protect it," Rodenburg says. The building will represent a place where children will have the opportunity to learn about the environment, as well as learn about what they can do to protect it.

Rodenburg's dream to build a sustainable environment centre will come true thanks in part to a generous donation of \$100,000 by The Gainey Foundation, which was founded by Bob Gainey (general manager of the Montreal Canadiens and also a Peterborough native), and his family to honour both his late wife and daughter.

Chris Magwood, who founded The Sustainable Building Design and Construction Program at Fleming College in Haliburton, will take on the job of building the centre, with the help of his students.

"The program is unique for two reasons," Magwood says. "Firstly, we make some of the world's most sustainable buildings because we combine advanced and energy efficient mechanical systems with very natural, local and low-impact structural materials. Secondly, the students are completely responsible for the entire construction process for the public buildings we make. The combination of those two elements doesn't happen anywhere else."

The course taught by Magwood began in 2005, after he realized that there was a demand to learn how to build sustainable buildings. It is so popular that about 50 students every semester are placed on a waiting list (the program only accepts 26 students each year).

"The students come away with a good, general understanding of the building process, some depth of knowledge in their specialty areas, and a very good understanding of how things work on a real-world job site," Magwood says. "There is also a fairly extensive design component to the course, so they get to work with real life clients as designers too."

Magwood, who was the recipient of a 2008 Excellence in Education Award from the Canada Mortgage and Housing Corporation (CMHC), is happy to be able to construct the Camp Kawartha Environment Centre along with his students.

"I'm excited about the Camp Kawartha Environment Centre," he says. "I love it when our buildings have a final use in which all the sustainable components are

highlighted. Having the building become a learning tool in and of itself means we know we have an 'audience' as we build. Often, buildings are supposed to be the background, but it's exciting when they are the foreground. And this building continues our commitment to net zero energy and zero carbon emission buildings, which is where the whole industry needs to go."

The 2,000 square foot structure will be open year round, and its main objective will be to teach students at local schools about the environment by offering a variety of environmental centric programs related to school curriculum material. The centre will also be a teaching ground for local teachers and future teachers who study at Trent University, who wish to participate in the workshops that the centre will provide. Ultimately, the centre will be an example of how important it is to adopt green living within our everyday lives.

Tandem talked to Chris Magwood about the Camp Kawartha Environment Centre. What will make this project different from other sustainable buildings?

"Well, there really aren't very many truly sustainable buildings in Canada. While the past five years have seen a huge rise in awareness for the need of sustainable buildings, there really aren't very many examples on the ground. There are more and more buildings that incorporate some "green" features, which is great, but very few where sustainability has been the over-riding goal from design, through to job site clean-up. The fact that this will be a net zero energy building (which produces as much energy as it consumes) and will emit no carbon emissions and use no fossil fuels makes it very unique. Its level of energy efficiency will be very high. We always pay particular attention to indoor air quality, and we make sure we use no products or finishes that off-gas toxins or have negative health effects on occupants. The part of the building that always gets the attention is the structural materials we use, which include straw bales, rammed earth, clay plasters, natural stone, local timber and recycled materials. Those materials are great conversation pieces, make good photo-ops and are great for reducing environmental impact."

What are the types of materials that will be used in its construction?

"We really try to reduce or eliminate the use of concrete in our buildings, as it is responsible for a lot of greenhouse gas emissions, so we'll use rammed earth, hempcrete and natural stone for our foundations. The walls tend to get a lot of attention, and we use a combination of straw bale walls (with earthen plasters) and double stud framing with a variety of natural infill insulations like clay/straw and hempcrete and recycled cotton batts. Basically, all our material choices are arrived at by looking at the immediate environmental impact of extraction and production for the material, in combination with its energy efficiency and its long-term durability. A living roof, good passive solar design, and high quality windows... we really seek to make every component the best it can possibly be. On the mechanical side, we'll be using geo-thermal heating with a photovoltaic (PV or solar) power system and efficient air-exchange equipment. The toilets are composting units, and the building will collect rainwater and treat it for use, and then run it through a constructed wetland to filter it before returning it to the ecosystem. What we aim to do is make buildings that are healthy, closed-loop ecosystems themselves, and to minimize our impact on the greater eco-system, wherever the two overlap. We go as far as not only sorting our construction 'leftovers' for recycling, but weighing them and tracking them carefully."

Describe the amount of pre-planning that is required to build a centre of this kind. What role do your students take in the pre-production planning?

"The students don't have a large role in the pre-planning. The building is already designed, budgeted and permitted when they arrive. Their role is to execute the

design to the best of their collective abilities, and to understand the sustainability principles that are guiding the project, as well as learning all sorts of job site skills. The students also get to bring their creativity to the project: our buildings are always full of great flourishes and details that would never happen on a regular job site.”

Why is it so important to build sustainable buildings?

“Depending on whose numbers you use, the construction and operation of buildings in North America account for a staggering 40-60% of all resource consumption, and 25-40% of all landfill waste. There is no bigger target to aim at if we hope to reduce our impact on the planet.

Sustainable buildings also care about their occupants, which is something we often forget in conventional construction. Air quality, embedded toxins, daylighting, colour and texture are all very important elements in a building, and sustainable building puts them front and centre.”

Do you feel that more homes, schools, libraries, etc. should be constructed with the health of our environment in mind?

“Absolutely. Even if you don’t care about the planet, it makes sense on a personal level. A little bit of research into the types of toxins in many conventional building materials and the number of illnesses directly or indirectly related to indoor air quality should lead everybody to building this way.”

What do you want your students to take away with them from this oppor to be part of building a centre that is going to not only be a sustainable building, but also an environmental education centre?

“I like the fact that we always make public buildings with our students, because it puts a strong emphasis on doing your best work and bringing a level of care and attention and creativity to the job. We all know that a lot of people will see this building, will use it, will learn from it, and we want to make it the best we possibly can.

Ultimately, I hope the students leave the program with a new way of looking at the built environment, and the whole ecosystem. It is a large responsibility to make choices (in building and all aspects of our lives) that account for more than just our immediate personal desires. As soon as we get into looking at all the repercussions of our actions, the quality of thought and debate must come up a few notches. I hope the students at least see this in their future building work, and maybe in the rest of their lives too.”

For those interested in contributing donations to the Camp Kawartha Environment Centre, visit Camp Kawartha’s website at www.campkawartha.ca. The right-hand side of the site has a link for the Camp Kawartha Environment Centre and more information on the buy-a-bale campaign, which allows for your donation to go towards buying one of the straw-bales that will be used to create the walls of the building.

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