Camp Kawartha Health Centre
Sustainable Building Features

Rubble Trench Foundation

The mining and burning of limestone to make cement is energy intensive. A ton of cement equals nearly a ton of carbon emissions. This project starts avoiding materials like cement, that are responsible for high carbon emissions, at the foundation stage and carries that all the way through. A rubble trench, a bed of compacted stone, will replace a conventional concrete frost wall. Then a walk out basement constructed of Nexcem insulated concrete forms will be anchored to a concrete footing that sits on top.

Nexcem Foundation

Nexcem is the only ICF that isn't made of foam or polystyrene (high carbon emissions). It's made here in Ontario from waste wood chips and oops, cement. But, some of carbon emissions from the cement are are offset by the wood chips in the Nexcem that sequestered carbon from the atmosphere when it was growing. Good deal.

Earthen Floor in the Basement

An earthen floor is similar to a polished concrete floor except clay is the binder instead of cement. Making one starts by mixing clay, sand and straw and plastering a 3/4" thick layer over a stable base such as limestone screenings. Once dry, it's hardened with a blend of oils and sealed with varnish.

Health Centre Specs.

Exterior: 1380 sq.ft
Interior: 1104 sq.ft (straw bale walls are thick!)
Construction Timeline: Sept. 2020 - June 2021
Design Team: The Endeavour Centre, Straworks Inc., Tim Krahn, P. Eng
Builder: Straworks Inc.

Straw Bale Walls

The exterior walls will be super insulated with 300 bales of wheat straw. Combined with careful air sealing and plastering, these 16" thick walls offer R-30 and unrivalled beauty with their curves, dips and dives. Straw is a local, annually renewable resource that comes in a bale not in a plastic bag.

Natural Plaster

The straw bale walls will be plastered with clay, lime, sand and chopped straw. It's a tried and true combination that we stand behind with permeability, longevity, beauty and low carbon emissions in mind.

Foam Free!

One of sustainable features is something the Health Centre won't have: foam—no rigid foam, no used foam, and no spray foam. All types are made with toxic ingredients. All types have a huge carbon footprint, and are deadly in a house fire.

Non-Toxic Paints and Finishes

The indoor air quality of most new homes is often more polluted than the outdoor air because of the toxic materials we put into them—formaldehyde in the glues, mildewcides and fungicides in the drywall mud…In high enough doses those toxins can make people sick and have no place in our homes or health centres. The Health Centre at Camp Kawartha will be built and finished entirely with natural non-toxic materials. Your nose will be judge in the end. If we pass the sniff test, it will smell like nothing.

Marmoleum on the Main Floor

Marmoleum is a resilient flooring that is made from 97% natural raw materials- linseed oil, wood flour and jute. It's similar to the original linoleum before phthalates, plasticisers and mineral oil were added.

Triple Pane Windows and Doors...

are approximately 50% more efficient, are more soundproof and have less condensation than double pane. They are the obvious choice when thinking long term as Camp Kawartha is for the Health Centre.

straworks inc.

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- 5.6 tonnes of CO2 Emissions!

Thanks to the **Builders for Climate Action** carbon calculator, we estimate the Health Centre's material carbon emissions to be **6.9 tons.** But the wood, straw and cellulose insulation will be storing **12.5 tons** that they absorbed during photosynthesis when they were plants. The net difference is **-5.6 tons**, so as long as the building stands, it will be a carbon sink!

The calculator also tells us that if we build the Health Centre conventionally, with a concrete foundation, spray foam insulation in the walls, floor and ceiling and clad the exterior in brick, the material emissions would jump to approximately **39 tonnes!**

The Health Centre will be on the right side of climate change during its operational phase too. Super levels of insulation and diligent air sealing mean the heating loads will be low. An ultra efficient air sourced heat pump, powered by Peterborough's relatively green grid, will do the job and fit the project goal of low carbon construction and operation emissions.

Pine, Cedar, Hemlock

The Health Centre will feature exposed pine rafter tails, pine soffits and hemlock beams on round cedar posts. Given its carbon sinking potential, there has never been a better time to love wood.

Dense Pack Cellulose

The main floor and the roof will be insulated with dense pack cellulose made from post consumer waste