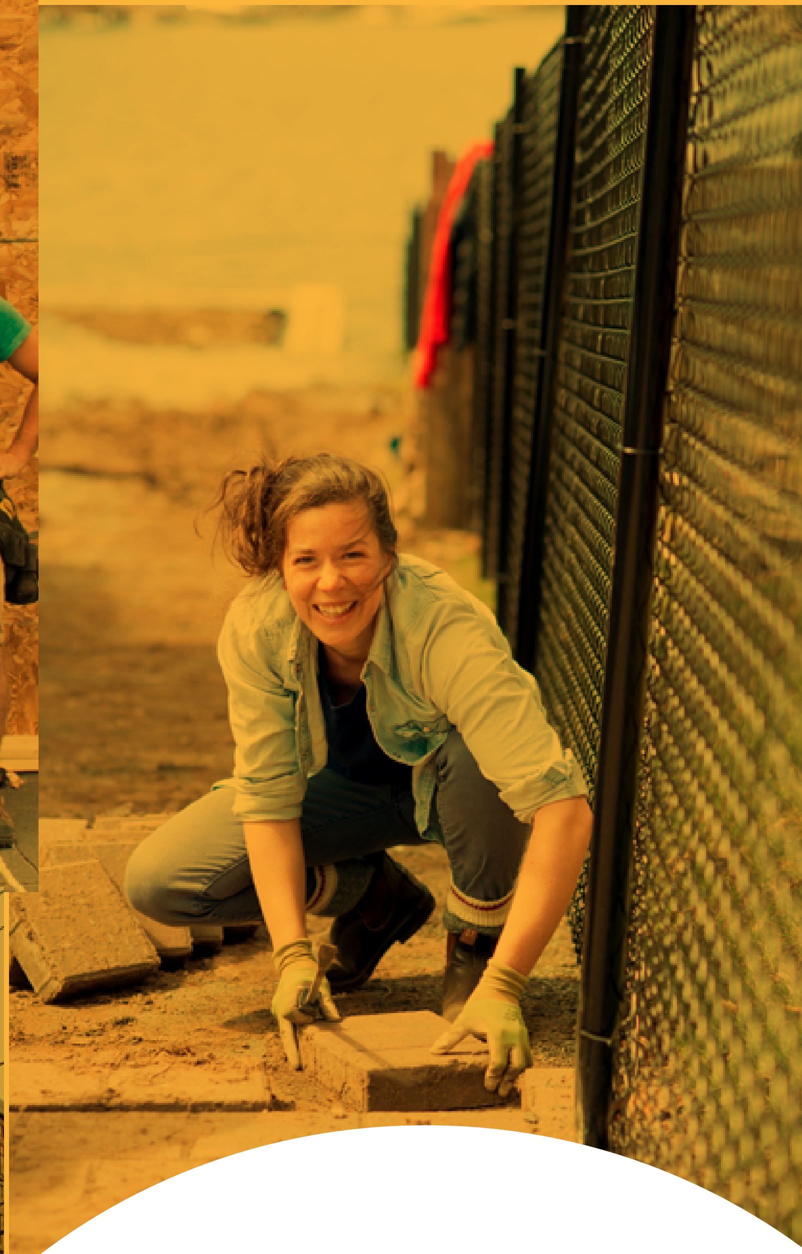

FERN LANE GREEN BUILDING ENCYCLOPEDIA

Ecology Action Centre's 2015-2016 Renovation

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Compiled November, 2016 for the Ecology Action Centre

Project Design

Getting Started

2705 Fern Lane has been the home of the Ecology Action Centre (EAC) since 2006. In the summer of 2005 we purchased the salt box style home, originally built in 1915, and created the first working demonstration of a green office renovation in Atlantic Canada. Owning our own home was transformational. It allowed us reduce our environmental footprint, deepened our understanding of green buildings and gave us a tangible way to share that learning. It also increased the organization's profile, effectiveness and sense of community.

In 2014, driven by an increase in the size of the organization, we made the choice to renovate again. Although there were a range of options to increase the size of our office space – from moving to building a whole new office – we decided to continue to invest in our building and our neighbourhood in Halifax's North End.

The first stage was consultation; together the staff, board, volunteers, members and community experts determined the goals for our shared space. We articulated those objectives as: increasing our floor space, enhancing the building as an environmental showcase and reflecting the organization's ethos as a welcoming community space.

We knew it would be important to work with the right people to accomplish these goals. We elected to engage in a design-build process, where the architects and builders work closely together from the earliest design stages. After a proposal and review process we chose Solterre Designs and Tekton Design+Build to work on the project. The combination of expertise and commitment from these two project partners was critical to our success. Not only did they bring great depth of expertise on green building design and construction, they also had a unique commitment to using salvaged materials and working with volunteers.

Project Design

Decision-Making

An important tool in our planning process was a green decision matrix, which helped to identify priority outcomes for the project. The results showed energy, indoor environment and materials/ resources to be the most highly valued. Another tool used in the design process was energy modeling; we worked with Equilibrium Engineering. Various design and material scenarios were modeled to determine the best investments for maximizing our energy savings.

The architects used three principles to guide their process: energy reduction before supply, passive systems before active ones, and simplicity. This meant that much of the focus was on improving the building envelope. A high performing building envelope reduces heating needs, works passively and limits complex systems. Many of the building's features align with all three of these principles. This approach also helped maximize the use of local materials and suppliers and gave considerable scope for volunteer labour.

We considered two alternative approaches to the renovation: lifting the building or adding a third floor. Lifting the building would have provided the best foundation possible, both in function and in energy conservation. It would also have improved accessibility and meant a new longer-lasting foundation. The biggest drawback was that, for cost reasons, it would have limited our ability to insulate the roof and walls. Furthermore, it would have required keeping the existing roof, which would have made insulating the roof more challenging.

Adding a third storey, on the other hand, allowed us to invest in insulating all six sides of the building. Furthermore, this option minimized the waste produced during the renovation by saving the foundation. The added third storey also offered more usable space than the lift scenario. We decided on adding a third storey and built significant accessibility and foundation improvements into the design.

In December 2014, just before we broke ground on the renovation, we were presented with an unexpected opportunity: sell the property and participate in new development in the area. We were approached by local developers planning a green commercial development that could have incorporated the 2705 Fern Lane site. This new building could have helped us reach our energy goals and allowed us to impact a larger development. The trade-offs included the loss of our office for multiple years and relinquishing control. In the end, we decided to continue with the renovation as planned. This opportunity also helped us solidify our commitment to the renovation and the value we placed on the history and community entwined with the building.

Building Envelope

A well-insulated and air-tight envelope is a critical element of green design and energy conservation. We used energy models to assess the cost-benefit of different insulation scenarios and to determine which windows were worth replacing. In the end, the project team decided to upgrade the exterior walls with 4" of additional insulation and improved airtightness. Below are a few key features of the EAC's envelope.

Cladding

The siding, a reverse board and batten design, made from knotty spruce harvested in New Brunswick is from Amos Wood a local company that does design and millwork. The siding is treated with LifeTime Wood Treatment, created by the Canadian based Valhalla Wood Preservation Ltd. The treatment is non-toxic and provides excellent protection; this siding has a 25 year guarantee. The process was made possible thanks to our amazing volunteers who helped us treat each piece of wood.

Roxul

The building shell includes a complete layer of Roxul Comfort Board, created by the Canadian Based company Roxul. Comfort Board has an R value of 4.0 per inch, providing an excellent layer of insulation, made of 75% recycled content. Roxul was selected for both its insulating ability and its low environmental impact. Roxul products are made from stone wool (composed of basalt rock and slag). The basalt rock is an abundant resource and slag, which makes up the recycled content, is a by-product of steel manufacturing that conventionally would be waste.

R-value is a measure of the ability for a material to resist the flow of heat. A material with a high R-value means it is able to effectively mitigate heat flow and act as a strong insulator. Every point of R halves the amount of heat lost, so there is a 50% reduction between R1-R2, an additional 25% saved by going from R2-R3. This also means insulating is subject to diminishing returns (R1-R2 = huge improvement, R39-R40 = relatively small), therefore it is important to insulate uninsulated surfaces first and worry about topping up later.

Exterior insulation (such as Roxul) was used to eliminate thermal bridging, (when heat is transferred through exposed highly conductive material). By creating a complete shell of insulation, highly conductive materials are not exposed to the exterior. There are many types of exterior insulation, of which rigid foam is most common. However, in our envelope, rigid foam might have caused moisture to be trapped inside the wall. By using Roxul, which is vapour permeable, we were able to limit the risk of mold and decay in our walls. Ensuring that a wall can "breathe" is particularly important for renovations since the wall assembly might already include a layer that isn't vapour permeable. Our wall was added to in such a way that any vapour which collects on either side of that layer could "breathe" either to the inside or outside of the building.

Air sealing is an important part of creating an energy efficient building. Poor air sealing can lead to mold growth in the wall, reduced air quality, and wasted heating energy. Air can travel and cause problems through even small holes or gaps, which is why we focused on having a continuous barrier that encompassed the building. A common misconception is that gaps in air sealing make a building "breathe". In fact any air that travels through these gaps not only reduces energy efficiency, but is also dangerous for the building and occupant health.

Air and Weather Barrier

AirOutshield was used to create a weather resistant barrier and a continuous air barrier, completely covering the outside of the building (behind the Roxul insulation). AirOutshield acts as a water barrier protecting the building while being vapour permeable to limit the moisture build up in the wall. AirOutshield is created by the Canadian-based company SPR Canada Inc.

A continuous air barrier is critical to building performance, energy conservation, occupant comfort and the durability of the envelope. The seams of the AirOutshield membrane were carefully taped with a UV resistant and vapour permeable tape to maintain the continuity of the air barrier. When planning the project our air sealing goal was 3.5 air changes per hour at 50pa (ACH50). The post-renovation blower door test resulted in a score of 1.4 (ACH50), showing we had surpassed our goal. The pre-renovation value was 7.7 and the R2000 standard is 1.5. We credit the dedicated attention of our architecture and building teams, Solterre Design and Tekton Design + Build, for this success.

Cavity Insulation

The wall cavities (primarily in the newly constructed 3rd floor) and roof were insulated with blown-in cellulose, which has an R-value of 3.5 per inch. To help reduce the need for new material we reused the cellulose that was installed as roof insulation during the 2006 renovation. Cellulose is a high value insulator. It provides low cost insulation with little environmental impact. It is composed of 75% recycled material, mainly paper and cardboard, which makes it a more sustainable alternative to fiberglass. The cellulose we used was produced in Nova Scotia by Thermo-Cell Industries Ltd. and installed by ThermoHomes.

In 2011, denim batt and roll insulation was used to insulate parts of our unfinished basement. During the 2015 renovation it was repurposed to insulate the interior stairwell wall. Denim insulation is composed of 85% recycled cotton and provides an R-value of 3.5 per inch.

Smart Vapour Barrier

Certainteed's MemBrain Smart Vapour Retarder was installed on the warm side of the wall to stop vapour diffusion into the wall. This product is considered a smart vapour barrier because it stops latent moisture in the air (vapour) from entering the wall, and simultaneously allows trapped moisture out of the wall cavity. It does this by increasing pore size as humidity increases, allowing for improved drying and limiting the risk of moisture damage.

Windows

Windows, a source of heat loss, are an important part of any building envelope. After assessing the energy impact and life cycle energy costs of replacement, we chose to upgrade only some of the existing windows on the main floor. Many of the windows removed due to the redesign of the space were then reused elsewhere in the building.

When considering options for the necessary new windows we considered both double and triple glazed. Both double double and triple glazed windows are filled with argon gas, which is able to minimize heat exchange. Triple glazed windows would have improved our energy preformance but based on a cost-benefit analysis we opted for double glazed. The large main floor windows are the only triple glazed ones in the building. All our windows feature a low-e coating, which is able to reflect infrared light while not impacting visible light. By reflecting infrared light the window is able to help trap heat inside the building.

All exterior windows added during the 2015 renovation were from Kohler Windows and Entrance Systems.

Spray Foam

Although spray foam is an excellent insulator and air-barrier, its manufacture requires blowing agents that often utilize hydrofluorocarbon (a greenhouse gas we want to limit). As a result the use of spay foam was limited to sealing around windows.

Roof

Our new roof was constructed from trusses purchased from National Truss, a local company specializing in truss construction. The trusses were designed with a 30" raised heel, allowing over 24" of cellulose insulation (R-75) to be blown into the roof.

The existing roof joists were repurposed and integrated into the floor of the new third story. Conventionally, when an additional storey is added to a building the previous roof trusses are removed and floor joists added. For our project, the original roof truss system only needed slight alteration to make it an effective floor truss structure.

During the construction process, the original water-tight roof structure was maintained and the new walls and roof built on top. Once the third floor was closed in the old roof structure was removed and the third floor was connected to the building. This approach meant that the building remained water tight throughout the entire renovation.

Recyclable and Recycled are often confused. Recyclable means that the material at the end of its lifecycle can be recycled. A typical example is a plastic water bottle. The recycled content of a product is how much recycled goods went into making the product. For example, when referring to our denim insulation as 85% recycled, we're saying that only 15% of the material to make it was new. It does not mean the end product is recyclable.

There is also an important differentiation when thinking about recycled content, post-consumer vs pre-consumer. Post-consumer means the recycled material went through a lifecycle and has then been recycled. Pre-consumer means the material came from a manufacturing process and never reached a consumer. A water bottle that you used and then recycled would be considered post-consumer contant whereas any plastic off-cuts at the bottle making facility would be pre-consumer. Both are great, but typically post-consumer recycling is more challenging and valuable.

Building Wood

Exterior Stairs

The exterior stairs are constructed from hemlock. The large 6"x6" hemlock posts were supplied by Barrett Lumber, a local company which sources Nova Scotian wood. The wood for the stairs was provided by Kodiak Forest Products Ltd., another Canadian lumber supplier. Hemlock was chosen for its structural integrity and its resistance to rot. Weather treatments utilizing harmful chemicals were not necessary.

Deck and Exterior Ramp

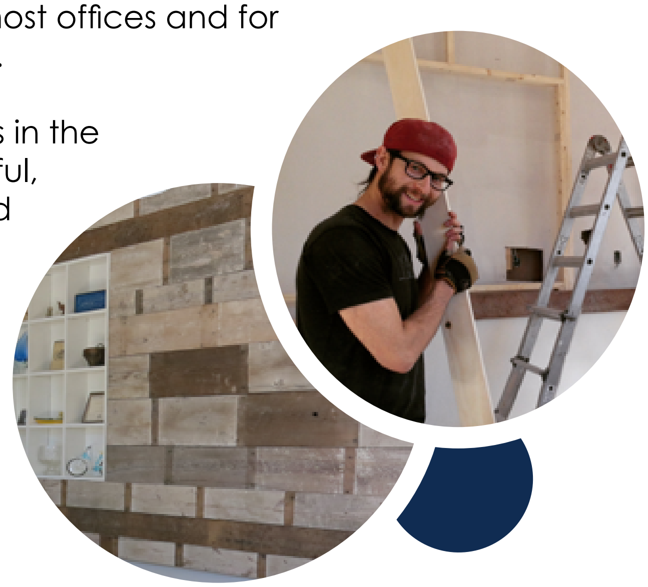
The lumber forming the surface of the deck and ramp is Forest Stewardship Council (FSC) certified wood from Windhorse Farm. This certification guarantees that the wood is harvested, milled and managed in an environmentally responsible way. The wood was not pressure treated, making it a healthier option for both us and the environment.

Windhorse Farm takes forest stewardship to a higher level; they practise enrichment forestry. The process includes selecting trees in high competition areas, leaving dead wood to decompose and maintaining forest connectivity. The farm, which is located in south-east, Nova Scotia has been operating for nearly 200 years.

Interior Wood

There are various types of wood featured through the interior of the building. The railing for the intermediate staircase between the main floor levels is aqua salvaged wood from the Deanery Project. Approximately 150 years ago the boards were sunk into a lake on the Eastern Shore of NS to reduce the rotting process; they were recently retrieved and dried using the solar kiln at the Deanery Project. Windhorse Farm wood is used for the surfaces of desks in most offices and for the construction of various bookshelves and cabinets.

Repurposed subfloor boards are featured on the walls in the entry and the main level meeting room. These beautiful, old whitewashed floor boards were carefully salvaged during the deconstruction of part of the main level. Thanks to volunteers they were de-nailed, brushed clean and sealed. Zak Miller of Full Cycle Builders installed them.



Baltic Birch plywood was used for the wide windowsill risers on the first floor as well as the kitchen cabinet doors and board room tables.

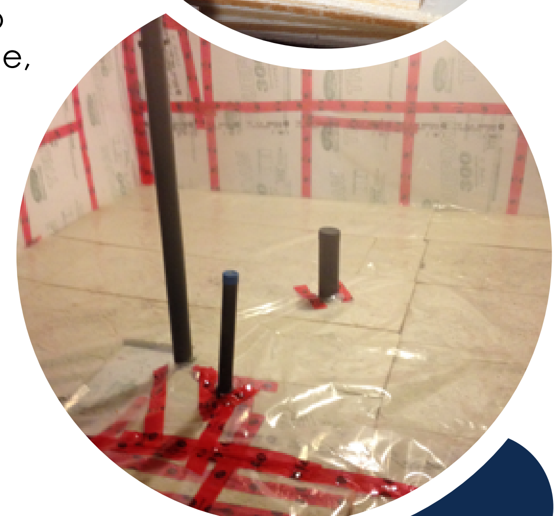
Wood Finishes

Sasdura wood finish made by Sasco Products was used on the interior stair baseboards, risers and vertical rails. This product, invented in Nova Scotia, is a water-based urethane finish which provides an environmentally friendly alternative to conventional finishes. Conventional lacquers and varnishes often contain petroleum based solvents and release VOCs during applications. Sasdura avoids these solvents and reduces VOCs.

Linseed oil was used as a finish on the wood features on the main floor and the second floor meeting room table. Linseed oil is a natural product extracted from flax seeds and it is an environmentally friendly and food-safe finishing alternative. The product we used was produced by Recochem in Canada.

Arcyllak finish was also used on various wood elements including the Baltic Birch plywood features on the main floor. The product is manufactured by Chemcraft Inc. and made in Canada. It is part of their waterborne line, which utilizes fewer chemicals than conventional finishes.

Foundation



Steel Door Cut-Outs

The basement floor slab was insulated with steel door cut-outs donated by Kohler Windows and Entrance Systems. During the manufacturing of steel doors a complete assembly of steel and insulation is created, and then a window is cut from the assembly. The cut-outs contain excellent insulating material, that conventionally enters the waste steam. Kohler donated 400 of these cut-outs! Volunteers then assisted in removing the steel and preparing the polyurethane insulation for use under the basement subfloor. The steel was also salvaged and re-used in another Solterre Design project and at the Deanery Project.

TrueFoam

In the basement, TrueFoam 300 type 3 EPS insulation was used under the structural bearing points. This product has an R-value of 4.26 per inch. TrueFoam was also used to insulate the exterior foundation to 2 ½ feet below grade, which helps keep the building warm and protect the foundation from moisture and frost. This product does not contain dangerous fluorocarbons and, remarkably, is 100% recyclable. TrueFoam Ltd. operates an EPS densification machine which allows them to recycle Styrofoam and their own insulation products. This means scraps of TrueFoam can be returned for recycling. TrueFoam Ltd is an insulation company based in Atlantic Canada.

Extruded Polystyrene Foam (XPS) vs Expanded Polystyrene Foam (EPS) - XPS cells contain insulating gas, which helps increase the initial R-value. Over time this gas diffuses, and the R-value drops. EPS is has a lower R-value, but has a better lower cost per R-value. XPS also utilizes hydrofluorocarbons, which has a high global warming impact.

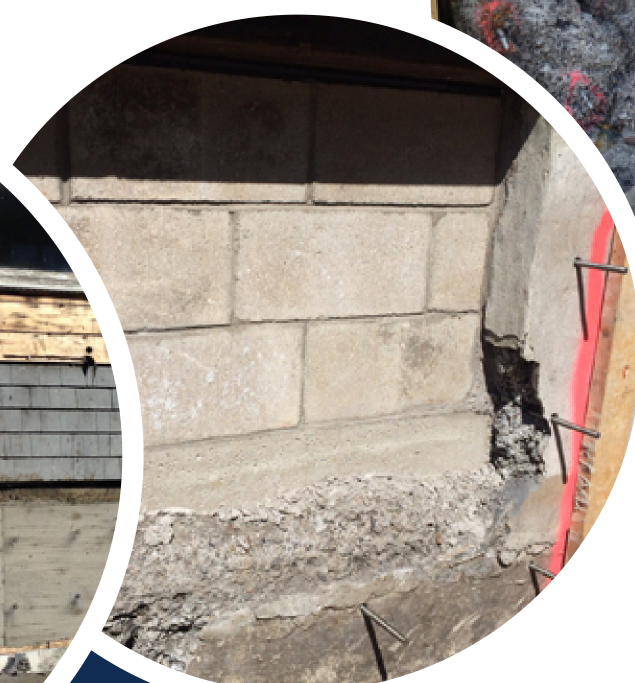
Foundation Repair

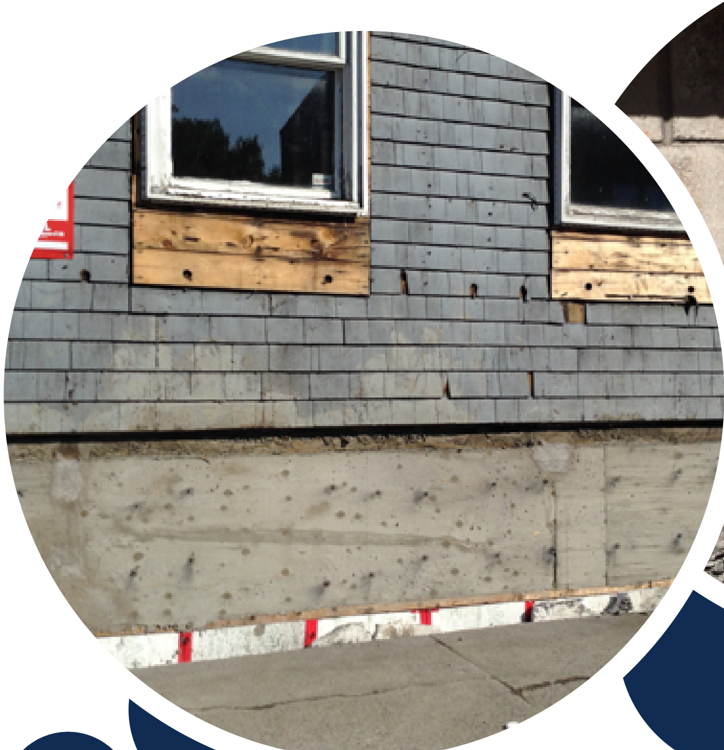
Although structurally sound, the 15" thick foundation required patching, infill and parging to repair some water damaged parts of the exterior.

CarbonCure blocks donated by Shaw Brick were used to fill in gaps where there had once been basement windows. CarbonCure is a locally based company that created a system to integrate sequestered CO_2 into concrete. The CO_2 remains in the concrete even after demolition. This innovation is particularly beneficial in the concrete industry, which is one of the world's largest CO_2 emitters.

Foundation Drainage

The basement is protected by Delta-Drainage Mat which is a waterproof barrier that provides a capillary break under the insulation. The product is made by the Canadian company Delta-MS Membrane System Ltd. The mat is made of high density polyethylene, a non-toxic plastic. The drainage mat runs against the foundation and diverts any moisture into the soil below the foundation. This helps protect the building from water damage and ensure longevity.





Building Heating

Heat Recovery Ventilation

In an air tight building it is important that sufficient ventilation is in place to circulate air. Good air sealing is more energy efficient and better for the occupants' health. Our building uses two different Heat Recovery Ventilators (HRVs). The main floor and half of the second floor is supplied by a Lifebreath HRV, installed during the 2005 renovation. The new third floor and the western half of the second floor are supplied by a Nu-Air HRV, created by a Canadian company of the same name. The two systems, located in the basement and on the second floor, cycle fresh air into the building and transfer heat from the exiting stale air to the incoming air.

Infloor Radiant Heat

The building features concrete floors with in-floor hot water heating. New concrete for the 2015 renovation was supplied by Ocean Contractors Ltd. The concrete acts as thermal mass, improving the effectiveness of the in-floor thermal heating and the passive solar heating design.

Thermal mass is the ability of a material to absorb and store heat energy. Materials like concrete require a great deal of energy to change temperature. This property allows them to remain warm and radiate heat for a prolonged period.

The concrete floors were treated in three ways. The new concrete floors in the basement were sealed with VOCOMP-20 a water-based acrylic curing and sealing compound. The product is produced by W.R. Meadow and is considered a low-emitting alternative to conventional treatments. The old concrete floors on the mezzanine and second floors were refinished with Behr Semi-Transparent sealer, an acrylic product. The new concrete on the ground floor was sealed with Stain-Crete, an Increte System product, which is an acid based sealant. Generally water-based sealers are considered the most environmentally friendly; any sealant which helps lengthen the life cycle of concrete is beneficial.

The building is heated with an in-floor radiant hot water heating system. The system features a network of plastic pipes embedded in the concrete floor. The pipes allow warm water to be pumped through the building, turning the floors into large radiators. The concrete then acts as thermal mass storing the heat through the and minimizing temperature fluctuation. One efficiency- benefit is that water does not have to be raised to a very warm temperature to effectively heat the building, since the distribution system has a large area. Secondly, since the heat is distributed throughout the building, there are fewer warm and cold pockets associated with traditional radiator systems. Finally, there is the added comfort of having warm feet, even on the coldest day.

Solar Thermal System

The building utilizes 10 solar thermal panels on the roof to generate hot water that is then used to heat the building. The panels were recycled and retrofitted during the 2005 renovation by ThermoDynamic Ltd., a local solar equipment company. The system includes 2 arrays of 5 south-east facing thermal solar panels, each 2’ by 6’ in size, attached to the roof. The panels heat a metal strip which in turn heats glycol solution (a mixture of antifreeze and water). The arrays are parallel, so that glycol only runs through one array not both. This allows the system to run more slowly, giving the glycol more time to heat up. From the roof the glycol is pumped to the basement where it runs through a heat exchanger. The cooled glycol is then pumped back to the panels and the warmed water is transferred to one of four hot water tanks where it is saved for use. To further harness solar energy a photovoltaic panel on the roof powers the glycol pump.

The system was a previously owned array purchased and originally installed by Dr. Solar in 2006. During the 2016 renovation it was reinstalled by expert volunteers with an improved orientation.

Daylighting

The building has a variety of features to promote daylighting: large exterior windows, interior windows and light coloured wall finishes. Using natural light vastly reduces the need for conventional lighting which can be up to 25% of an office’s energy use.

Further Products and Techniques

Flooring Alternatives

The interior stairs feature Marmoleum produced by Forbo Flooring Systems. The product is made of 43% recycled material (bio waste from wood processing and 73% rapidly renewable materials including linseed oil). This ecofriendly flooring is biodegradable and all the electricity used in manufacturing comes from renewable sources.

Plumbing

The first floor kitchen and third floor kitchenette feature low flow taps which reduce water usage. The same tap design is also used in the bathroom sinks and in the second floor shower. The bathrooms also feature dual flush toilets which help reduce water consumption. The second floor bathroom has a Falcon Waterfree Technologies urinal and the CamoraSmart flush system which allows users to wash hands with the water used during tank refill.

Paints and Natural Finishes

The walls throughout the building feature natural plasters and paints. This was made possible by the support of Kim Thompson of Straw Bale Projects and Carolyn Hocquard of Standing Ground Natural Plasters and amazing volunteers. The natural finishes are not only environmentally friendly, but add a variety of texture and colour to the building. The natural paints and plasters are composed of local, abundant raw materials. They are primarily composed of clay, sand and straw, and varying the ratio of these ingredients can provide different functions and texture. Starches and pigments are added to act as binders and to provide colour. These paints and plasters are also compostable, producing no landfill waste.

Volatile Organic Compound
The chemical smell and headaches associated with drying paint are caused by VOCs. They have a direct negative impact on occupant health and must be used sparingly; cleaners, wood finishes and many more household products can also contain VOCs.

Natural finishes improve building occupant health by not releasing the volatile organic compounds (VOC) related to traditional paints and plasters.

In terms of functionality, natural finishes have several benefits. They are easy to repair; if cracks develop, adding water and a new finishing coat can quickly fix the problem. They also help mitigate moisture build-up in walls. Furthermore, they are an excellent acoustic absorber, helping to improve sound quality in an office. Aesthetically they can be made in many colours and add a beautiful texture to a space. Since they are not waterproof, it's important to consider the location of their use.

The trim and doors were painted with LifeMaster zero VOC cloud white paint created by Dulux. Cloud white has a low pigment content, further reducing the uas of chemicals. This product helped limit VOCs and improved air quality during the renovation.

The kitchen was painted with a mineral-based paint that was designed for kitchen use and created by EcoHouse.

Visible Salvage

Our building features many examples of salvaged materials. The interior wood used on the wall on the main floor is a great example. These floor boards were salvaged during the 2015 renovation, refinished and used to create a beautiful feature wall. Another example of materials salvaged during our own renovations are the second floor door moldings which were removed, scraped, repainted and re-installed during the 2005 renovation. A section of old wall paper was salvaged as well. Both features help add character to the building, while reducing the energy needed for new materials.

There are several examples of salvage on the outside of the building. The metal siding and flashing used on the east wall was scrap material donated by Scotia Metal. Another interesting piece of exterior salvage are the cement boards used around the foundation and on the bump outs. These were found on Kijiji, an excellent resource for salvaged materials and for recycling our own scrap materials. Another Kijiji salvage find is the paver stones in the alley, which were salvaged from a house prior to its demolition.

During the project we were also able to salvage materials from a number of Dalhousie University buildings that were being demolished. The doors used throughout the building - wooden office doors on the third floor, basement doors, and some of our steel fire doors - were salvaged from Dalhousie. Ten light fixtures on the third floor were part of salvage conducted before the demolition of the Eliza Ritchie Hall residence. The kitchenette on the third floor was salvaged from the renovation of the Killam library as were four beautiful rosewood wall dividers that became the surfaces for tables in the kitchen and Canopy Boardroom.

Thanks to our commitment to salvage, we are proud to say that no new interior wooden doors ever had to be installed in this building! During the 2005 renovation existing doors were reused or salvaged doors were purchased. During the 2015 renovation doors were salvaged from the Roy Building. The interior metal fire doors installed in 2015 were also reused. The main entrance door and window assembly were in the building when purchased in 2005.

Other salvaged or notable materials used:
•Some office furniture, including desks and chairs, was donated by a Royal Bank of Canada office.

•Bike handle bars were used to create coat racks on the first and third floors.

•A new muffler pipe was used to create the interior stair handrail. This was a unique and cost-effective choice.

•Stackable wooden chairs through the building were salvaged from Block House School and restored by volunteers.

•The interior plate of glass facing the main entrance door was salvaged from a bank during the 2005 renovation.

•The interior, tempered glass windows into the first floor EcoDanceHall meeting room were formerly part of bus shelters. They were purchased from a demolition company.

•The beautiful, custom-made sliding doors on the EcoDanceHall are made from doors salvaged from the Roy Building. There are five other Roy Building doors throughout the building.

Some of these materials came from Renovators Resources Inc. a Halifax company that has a wealth of salvaged building materials.

Invisible Salvage

We also salvaged material during the renovation which has been used inside the walls and below the floor. This includes the steel door cut-outs used to insulate the sub-floor, donated by Kohler Windows and Entrance Systems. This reduced the need for any new insulation, diverted material from the waste stream and showcases the dynamic potential of salvage.

Deconstruction can be thought of as "unbuilding". It is a process that focuses on salvaging the materials from a building. There are typically two types: selective and whole building. Selective is when all easily removed features, such as light fixtures or doors are removed before traditional demolition. Whole building is when effort is made to salvage everything from the molding to the bricks. Deconstruction can be a costly process, but it is much more sustainable and can vastly reduce the waste produced by the construction and demolition industry.

During our renovation we needed to deconstruct a number of parts of the building. We designed the renovation to limit the changes and to permit as much salvage as possible. The rubble from deconstruction was used to fill in the west half of the basement which became the at-grade portion of the main floor. This demolition material included bricks from the old chimney and a lot of rubble from the basement renovation. Another interesting use of design-based salvage is the previous roof on the second floor, which was converted to the floor of the new third storey. Insulation was also salvaged for the renovation. The second storey ceiling was insulated with cellulose insulation during the 2005 renovation. In 2015, all this cellulose was vacuumed into bags. Ultimately this salvaged cellulose was then blown back into the new roof. The denim batt and roll insulation used to insulate the frame gaps in the interior stairwell insulation was salvaged from the basement, where it had been used between the unfinished basement and the main floor.

Waste

For the construction and demolition (C&D) waste that was produced during the renovation we worked with Royal Environmental Group who provided dumpsters and transport. All waste was properly sorted and transported to Halifax C&D Recycling Ltd., which has over 75% diversion of C&D waste.

In addition, any would-be waste produced from the project was donated, salvaged from or utilized in another project before going into the waste stream. All the scrap wood that could not be used was de-nailed and donated to a local metal working shop to be burnt for energy. Other materials which we were unable to use were salvaged from the work site by community members eager to integrate them into their own projects. Some material, such as the metal from steel door cut-outs, was used by the community and project partners to help create other sustainable projects.

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Amos Wood

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Bird Stairs

C&D Drywall

Dalhousie University

Dragonfire Pottery

Equilibrium Engineering

Eyecandy Signs Inc

Forbo Flooring

GD Boyd Electrical

Halifax C&D

Hewitt CAT Rentals

Kent Building Supplies

Peter Kohler Windows &Entrances Systems

Tekton Design + Build

Nation Truss

Ocean Contractors

Renovator Resource

RONA

ROXUL

Royal Environmental Group

Sherwood Enterprises

Scotia Metal Products

Shaw Brick

SPR Canada

Standing Ground Natural Plasters

Straw Bale Projects

Thermo Homes

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Whitman Accessibility

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