

Green Design Tour

1) Young Welcome Centre:

Welcome group, Introduce self, Identify Evergreen, Introduce Brickworks, Introduction to Green Design

Evergreen quick facts:

Evergreen is a national charity working to green our cities, by bringing communities and nature together for the benefit of both.

Evergreen is a registered charity that gets funding from corporations, foundations, government agencies, and individual donations from Canadians (point to donor wall).

Evergreen key issues:

- Reducing habitat destruction
- Reversing Nature deficit disorder (getting children back in nature)
- Climate change = living sustainably

Evergreen programs:

- School ground greening
- Community greening
- Brickworks

Evergreen has been operating for 20 years in Canada, and used to be located in downtown Toronto. In Sept, 2010, they moved into the Evergreen Brickworks.

Brickworks quick facts:

- open all year round
- an education centre or an environmental community centre
- focus on hands on experiences and reconnecting people with nature
- is a destination for events (meetings, weddings, corporate events)
- Since 2002 Evergreen has been working to revitalize the site's 16 historic factory buildings through a process called "adaptive re-use" – a process of adapting old structures for purposes other than those initially intended. The result is Evergreen Brick Works – a community environmental centre with programs that celebrate the site's unique geological, industrial and natural heritage.

History of Brickworks

- The Brickwork factory started in 1898 by John, William and George Taylor.
- Clay was dug out from quarry in back, transported by conveyer to site, ground and processed, pressed into bricks (look at brickpress in Welcome centre), fired in kiln (point to other building), taken by train into downtown area. Bricks were used to build many famous buildings (ie. Casa Loma, Massey Hall, Ontario Legislature)
- 1928, peak production of 25 million bricks a year
- By 1980's most of the clay had been used up.
- Eventually taken over by Toronto Region and Conservation authority.

- Site lay mostly abandoned until 1994
- Quarry was filled with excavation material from Scotia Plaza: landscaped to include 3 ponds
- Site officially opened in 1997
- Evergreen leased the "industrial pad" portion from the Toronto Region and Conservation authority.
- Since 2002 Evergreen has worked to design the place where we are today
- Construction began in November 2008, site opened on Sept. 28, 2010.

Introduction to Green Design:

Main point – a lot of thought was put into all aspects of the process. Overall Site Sustainability: sustainable construction methods, operations and technologies.

- Use the most energy and water efficient systems
- Discuss heating and cooling systems
- Discuss insulation of walls, windows
- Create as little waste as possible
- Maintain historic artifacts in preserved state
- Transport of people to and from site

On the tour today, we will see some of these features, but not all of the processes can be seen.

Green Design features in the Welcome Centre

- Foreman's Shed- adapting it into a donor wall
- the Planner- adapting it into the Welcome Desk
- roof was taken off, and replaced with 10 inch thick metal roof – excellent insulation
- Floor is heated with water in a closed system loop
- Acoustics – look at wall of new red bricks, sound-dampening material behind absorbs sound.

Waste reduction:

- 95% of construction, demolition and land-clearing debris was diverted from landfill for recycling or reuse
- 100% diversion of paper, plastic, glass, metal and other recyclable materials
- closed-loop supply chains in which suppliers take back waste created by the use of their product
- only compostable and reusable food service items will be used at Evergreen Brick Works
- on-site composting and reuse of 100% of non-animal and oil-based organic waste

Transportation:

- a dedicated shuttle from a nearby subway station
- a Toronto Transit Commission bus route to the site from Davisville Station (on Saturdays only)

- improved trail connections and signage for pedestrians and cyclists (in collaboration with the City of Toronto and Toronto Region Conservation)
- on-site car sharing and carpooling
- plug-in stations for electric vehicles
- ample bicycle parking (with shower facilities for tenants) on-site bicycle repairs and clinics

Introduce places to be visited on tour/show map (could include the following):

2. Gardens
3. Holcim Gallery – Kilns
4. East parking lot
5. Centre for Green cities (classrooms, BMO room, mudroom)
6. Exterior of Centre for Green Cities
7. Watershed wall
8. Garden centre

2) The Gardens:

Introduce area, Discuss design features

Past uses:

What was this space used for originally???

Present uses:

- Used in the warmer months for events and programming space
- In winter months, it is a skating rink. There is an underground refrigeration system.

Green Design features in the Gardens

Greenways

Evergreen Brick Works is geographically located in one of the lowest elevations in the city of Toronto. Not uncommon that the site is blanketed with a foot or more of water. Occasional “nuisance flood”, this natural phenomena is managed through a series of constructed greenways that in addition to collecting storm water from roofs channels floodwaters into the storm water management pond at the southern edge of the site.

Open Roof

Metal roof beams left in place. Vision is to have trees grow up and out. Space can be closed in with 4 “walls” and have an open sky. Discuss idea of people being both inside and outside, not just inside.

Garden Market

Point out garden market, where the tour will be finishing.

3) Holcim Gallery/Kilns

Past use:

Kilns

- Are ? feet long.
- Can hold up to ? # of bricks
- Was a very hot and dangerous workplace
- First used coal to make fire, then changed to gas

Present Use:

- Event space
- Bouldering space for Outward Bound Canada (also has office in CGC)
- Other?

Green Design features in the Kilns

Rainwater Harvesting Cisterns:

Heavy rains can dump up to 75,000 gallons of water in a 15 minute period on the vast roofs on site. After entering the eaves troughs “rain catcher” **filters** remove particulate and debris. The rain is then stored in fifteen **20,000 Litre cisterns** positioned strategically around the site which then passes through a series of **secondary sediment filters, carbon filters** (which help to remove scent/smell) and **UV lights** to remove any bacteria.

From here, a set of **distribution pumps** send the water to the Centre for Green Cities where it is used to **flush toilets**, and to provide water for the buildings **cooling tower**. Rainwater harvesting combined with water conserving toilets and faucets and waterless urinals **reduce water use on site by over 60%**.

Other things to mention:

- Graffiti – why it was kept
 - part of history of building, the time of abandonment.
 - If removed, would compromise building integrity
 - To remove, would need chemical solvents

4) East Parking Lot:

Reflective Surfaces:

High-albedo roofing materials, such as galvalum metal roofing and light-coloured aggregates, were selected for the new roofing on building 12, 14 and 16. The use of concrete as surface paving for the central parking lot and driveway allowed for high reflectivity while protecting the archaeology below from damage. Trees were also planted across the centre parking lot to provide solar shading

Pervious Surfaces:

Pervious surfacing systems were used wherever infiltration was allowed, including The Commons and the east parking lot, where a combination of concrete unit pavers and pervious concrete were used to absorb rainwater and recharge the site’s water

Comment [A1]: For each of these, goal is to have a little history for each space (what it was used for), the green design features, and what it is presently used for

table. This is another great example of how this site is in many ways a “test kitchen” for innovation. We’re not sure if it will work, but part of the innovation process is to try something and glean learnings, which are then shared and furthers the green cities movement.

Night Friendly Sky:

The new exterior lighting fixtures provided on site are provided with cut-offs and reflectors so that no light is directed upward into the sky or across the property line. LED lighting within the central parking lot is suspended on cables so that it can be positioned directly over the drive aisles of the lot, where the lighting is most needed, while also available for public gatherings in the area. The reason this is important is because: collisions with buildings has become one of the major causes of death to migratory birds worldwide. Bird biologists estimate that one to 10 birds on average will hit each building each year. In Toronto, that translates into one to 10 million deaths annually.

Extensive night lighting of tall structures may cause night-migrating birds to hit the buildings, often fatally. (Night migrants use the stars and the moon as navigational tools and may mistake the glow from towers as celestial lights.) Artificial illumination is especially confusing to birds on foggy or rainy nights. It is also a problem when cloud cover is low and birds naturally migrate at lower altitudes. (From FLAP)

5) Centre for Green Cities:

(Classrooms, Mudroom or BMO Atrium- depending on availability)

The footprint of the Centre for Green cities was defined by an existing one-story masonry shed, portions of which are still visible along the west and north facades. Other materials used in the building were selected to lessen the impact of extraction, manufacturing and transportation associated with construction including sourcing local materials with high recycled content and wood products that are sustainability harvested.

Beyond this, the Centre for Green Cities is working towards becoming a LEED platinum certified building. LEED stands for **Leadership in Energy & Environmental Design** (LEED). LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies intended to improve performance in metrics such as energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Main point = much more feedback in system (more information available to monitor and change the buildings energy/water uses)

Green Design features in the CGC (interior)

Centralized Building Automation System (BAS):

tracks energy consumption based on the comprehensive measurements and verification plan that has been developed for the entire site – including the Centre for Green Cities.

Lighting Controls:

consists of energy management and a fluorescent dimming system that control interior and exterior lighting throughout the complex. This system provides daylight harvesting with daylight sensors and occupancy dictated lighting controls through occupancy sensors to reduce the amount of energy used on unnecessary lighting. Additionally, time scheduling is used to reduce the amount of lighting during unoccupied hours.

CO² sensors:

enables the building to regulate and adjust the volume of fresh air supplied to the space based on actually indoor CO² levels. These sensors provide demand control ventilation scheme that save energy during periods of low occupancy, while at the same time ensuring an optimal indoor environment is maintained from an air quality perspective.

Radiant Heating:

installed on floors 2-5 are highly efficient thanks to their low water content and high coefficient of heat conduction requiring only low flow temperatures- **meaning that more heat is generated by less and cooler water**, an ideal counterpart to the high efficiency boilers installed in the building. **Ground floor** spaces are provided with radiant heating coils within the concrete slab, again delivering heat from a position where its benefits will be felt the most.

Heat Recovery:

from the kitchen exhaust is connected to a run-around closed hydronic loop to recover the heat generated in the kitchen. Warm air from the exhaust passes over the recovery coil located in the kitchen exhaust. The warm air heats a glycol solution in the coil. The solution pumped to a preheat coil in the outside air stream, where the heat from the glycol solution is transferred to the incoming air. The cooled glycol solution is pumped back to the exhaust side to repeat the cycle. This system is used in the fall and winter months to enhance energy recovery within the building, which reduces the amount of energy needed to heat the building.

Tenant missions: ?

**6) Exterior of Centre for Green Cities:
(standing in Chimney Court)**

Present use of Chimney court:

- Place for summer camps, children to play and explore nature

Green Design features in the CGC (exterior)

Building envelope:

Designed and constructed using a quality assurance plan. The design was reviewed numerous times by third-party durability consultant, and ongoing testing of building components occurred during construction to reduce the risk of premature envelope failure and the environmental and economic costs associated with it. This is one of the most effective ways to increase the efficiency of a building- through a high quality building envelope.

Insulation:

MAIN point = much of our decrease in energy use can come with increases in energy conservation

Within the building envelope is composed of sprayfoam derived from soya beans and locally manufactured mineral wool batt insulation. Windows are triple glazed and treated with a heat mirror to increase their ability to resist solar heat gain.

- Compare R-factor for normal (older) house, current “normal construction, and Centre for Green cities
 - Windows: home (R2), normal (R?), CGC (R?)
 - Roof: home (R?), normal (R?), CGC (R?)
 - Walls: home (R?), normal (R?), CGC (R?)

Second floor wrap-around balcony

On its north and west sides, occupying the space between the existing brick wall and the cantilevered floors above. The balcony **offers exterior access** to second floor meeting rooms.

Solar Chimneys:

are an “old” technology from Roman times used to cool buildings. They were in the middle of a house, and when opened up, would let cool air in, and hot air out. Similar use in the CGC

Other things to mention:

- Metal square sticking out of wall are for a mural with sliding parts that will block sun in summer, and let in more light during winter (skin of building)

7) Watershed Wall Education Piece

What's your watershed address?

Represents nature on a map, not just roads. Get people to think more about their connection to nature while living in cities. Similar idea to (inside/outside dichotomy). Not as nature being something that is not inside cities.

Comment [A2]: Need to ask Mike (architect who gave tour)

8) Garden Market

Info to say at the end: How to get involved with Evergreen

1. Sign up for Evergreen newsletter – keep up to date with events, see how to get involved
2. Check out website (www.evergreen.ca) to learn more about Evergreen
3. Buy local plants and plant them in your garden - \$ is used to support Evergreen's programming
4. Volunteer – lots of opportunities, check website, sign up for newsletter, get in touch with Christine Martin (cmartin@evergreen.ca)
5. Donate @ welcome desk or online

Tips for tour Guides:

Before the tour

1. Check what events are upcoming, or currently on
2. Walk around and invite people to join the tour

A good tour:

1. Tells a story
2. Gives Facts/Information
3. Open opportunities for visitors
4. Is fun and engaging

A good tour guide is:

1. Adaptable – look at audience (kids, handicapped, elderly) and adjust tour
2. Well-prepared
3. Other?

Common questions + answers

1. Why pay for parking?
 - Keep area safe
 - \$ used for programming
 - Same cost as subway
 - Still pretty cheap/reasonable compared to rest of Toronto