International Initiative for a Sustainable Built Environment

Held at Helsinki, Finland
October 18 to 21, 2011
Team Sponsors

Silver Level

QUALICO

Bronze Level

MITSUBISHI ELECTRIC

Changes for the Better

CONSTRUCTION LEADERS

Union Gas

A Spectra Energy Company

CELEBRATING 100 YEARS
Estd. 1911

Supporter Level

Canadian Wood Council

Conseil canadien du bois

Manitoba

Graham

Ritchie Bros. Auctioneers

LET'S BUILD THE WORLD
Table of Contents

1.0 Introduction .................................................................................................................. 1
1.1 Objectives of the iiSBE SB11 Canadian Team ............................................................... 1
1.2 Membership Requirements ........................................................................................... 1
1.3 Team Members ............................................................................................................. 1

2.0 Helsinki, Finland ............................................................................................................ 2
2.1 Public Transportation ........................................................................................................ 3
2.2 Climate .......................................................................................................................... 3
2.3 Architecture .................................................................................................................. 3

3.0 SB11 Conference .......................................................................................................... 5
3.1 Keynote Speakers .......................................................................................................... 5
3.2 Technical Sessions ......................................................................................................... 7
3.3 SBChallenge .................................................................................................................. 8
3.4 Evaluated Projects Presented by the Canadian Team ....................................................... 9
3.5 Canadian Team Exhibition .............................................................................................. 9
3.6 Canadian Participation in SB11 ..................................................................................... 10

4.0 Summary ....................................................................................................................... 11

Appendix A ......................................................................................................................... A-1
Appendix B ......................................................................................................................... B-1
Appendix C ......................................................................................................................... C-1
Appendix D ......................................................................................................................... D-1

Note: This document is formatted for double-sided printing
This page left blank intentionally
1.0 Introduction

The World Sustainable Building Conference (SB11) was held in Helsinki, Finland, from October 18th to 21st, at the Holiday Inn and Conference Centre in Pasila, a district within the City of Helsinki. Approximately 1000 delegates from 61 countries attended, with a large number of delegates from the Scandinavian countries.

1.1. Objectives of the iiSBE SB11 Canadian Team

The objectives of the iiSBE Canadian Team are to:
Represent iiSBE International nationally, and liaise with iiSBE International.
Participate in the SB08 International process to:
• Contribute to and learn from the development of an international evaluation methodology and tool in order to benefit efforts to adapt or adopt a tool for the building industry in Canada and to foster market transformation;
• Assess the potential environmental performance of buildings in the design stage;
• Encourage the transfer of the knowledge gained to all sectors of the industry, including Design, Regulation, Construction, Ownership and Development
• Promote the “Greening” of the construction industry in Canada
• Showcase Canadian industry achievements in sustainable buildings.

1.2. Membership Requirements

Membership in the iiSBE SB11 Canadian Team is by invitation only, and includes individuals having the following background and qualifications:
* Commercial/Institutional/Multi-Unit Residential building owners, developers, designers and operators
* Government and utility managers of building-focussed energy and/or environmental programs
* Consultants having specialized expertise in areas of building environmental and energy performance
* Other individuals whose contribution to the Team, based on their skills and experience, is judged to be significant and useful
* A desire to contribute to the activities of the Team.

1.3. Team Members

The following individuals are members of the iiSBE SB11 Canadian Team:
Gord Shymko  G.F. Shymko & Associates Inc. (Team Captain)
Greg Allen  Sustainable Edge
Bob Bach  Energy Profiles Limited
Craig Boyle  Public Works & Government Services Canada
Jim Clark  Office of Energy Efficiency, NRCan
Teresa Coady  B+H Bunting Coady Architects
Doug Corbett  Smith Carter Architects
2.0 Helsinki, Finland

Helsinki is the capital and largest city in Finland, and is located in southern Finland on the shore of the Gulf of Finland, an arm of the Baltic Sea. The population of the City of Helsinki is approximately 580,000 making it by far the most populous municipality in Finland. The Helsinki metropolitan area, with a total population of 1.1 million people, is the world's northernmost urban area, and the city is the northernmost capital of an EU member state. Helsinki is Finland's major political, educational, financial, cultural, and research centre as well as one of northern Europe's major cities. In 2009, Helsinki was chosen to be the World Design Capital for 2012 by the International Council of Societies of Industrial Design.

Helsinki is located some 400 km east of Stockholm, 300 km west of St. Petersburg, and 80 km north of Tallinn, Estonia, and has close historical connections with these three cities.

Helsinki is spread across a number of bays and peninsulas and over a number of islands, with the inner city on a southern peninsula. Major islands in Helsinki include Seurasaari, Lauttasaari and Korkkeaari, the fortress island of Suomenlinna (Sveaborg in Swedish) and the military island of Santahamina. As a whole Helsinki's population density of 3,050 per square kilometre ranks it as quite sparsely populated in comparison to other European capital cities. Much of Helsinki outside the inner city area consists of postwar suburbs separated from each other by patches of forest. Helsinki Central Park, an important recreational area for residents, is a narrow ten-kilometre-long area that stretches from the inner city to the northern border of Helsinki.
2.1. Public Transportation

Getting around in Helsinki proved to be very easy. The city is pedestrian- and bicycle-friendly, and the main sites and attractions in the city centre can be easily reached by foot. Helsinki’s bicycle path network is fairly comprehensive allowing uninterrupted rides through the city. Major traffic jams and traffic breakdowns are rare, and parking in the city centre is generally in underground parking lots. Taxis are easy and quick to access through a central phone service and charge uniform fees.

Public transit services are extensive and include a dense network of trams and buses serving the city centre, with other areas served by buses, metro-rail, and commuter trains. There is a strong emphasis on rail, with two-thirds of the public transport to the central business district using this mode. As an example, accessibility from the conference location to the city centre required a 4 minute train ride from the nearby Pasila station at a cost of €2, and a one-day pass on all public transit within the city was available for €10.

Helsinki’s Suomenlinna (Sveaborg in Swedish) island suburb is served by an all-year-round commuter ferry, and many of Helsinki’s islands can be reached by commuter boats in summer. Ships also run regularly to Sweden, Norway, Russia (St. Petersburg), and other Baltic countries. The Port of Helsinki annually serves more than eight million passengers, en route between Helsinki, Tallinn, Stockholm, and Germany, as well as over 300 international cruise ships.

The Helsinki-Vantaa international airport is less than 30 minutes from the city centre, and offers direct connections to the major European destinations, a large number of Asian cities, and some North American destinations.

2.2. Climate

Helsinki has a humid continental climate owing to the mitigating influence of the Baltic Sea and Gulf Stream. Temperatures in winter are much higher than the far northern location might suggest, with the average in January and February around \(-5^\circ C\). Temperatures below \(-20^\circ C\) occur normally for only a week or two per year. However, because of the latitude, days last less than six hours around the winter solstice with very low sunshine, and the very cloudy weather at this time of year accentuates the darkness. Conversely, Helsinki enjoys a long nineteen hours around the summer solstice. The average maximum temperature from June to August is around 19 to 21°C. Due to the marine effect, especially in the summer, daily temperatures are cooler and night temperatures are higher than further away in the mainland. The highest temperature ever recorded at city centre was 34.0°C on July 28, 2010, and the lowest was \(-34.3^\circ C\) on January 10, 1987.

Temperatures during the conference ranged from highs of 8 to 12°C, and lows of 2 to 4°C. The weather was generally overcast with sunny periods with only one day of rain.

2.3. Architecture

The construction of the naval fortress Suomenlinna in the 18th century by Sweden launched modern Helsinki, both by providing significant capital investment, and by encouraging Russia to defeat Sweden in the Finnish War and annex Finland in 1809. Czar Alexander I of Russia moved the Finnish capital from Turku to Helsinki to reduce Swedish influence in Finland. The move consolidated the city’s new role and is highly apparent in the downtown core, which was rebuilt in neoclassical style to resemble St. Petersburg. Technological advancements such as railroads and industrialization were key factors behind the city’s growth.
Carl Ludvig Engel (1778–1840) was appointed to design a new city centre. The focal point of Engel's city plan is the Senate Square that includes the Government Palace, the main building of the University of Helsinki and the enormous Cathedral, which was finished in 1852. Helsinki is, however, perhaps even more famous for its numerous Art Nouveau buildings, designed in the early 1900s and strongly influenced by the popular theme Kalevala. This style is also featured in large residential areas such as Katajanokka and Ullanlinna. The master of the Finnish Art Nouveau was Eliel Saarinen (1873–1950), whose architectural masterpiece was the Helsinki central railway station.

Helsinki also features several buildings by the world-renowned Finnish architect Alvar Aalto (1898–1976), recognized as one of the pioneers of architectural functionalism. Some of his works include the headquarters of the paper company Stora Enso and the concert venue, Finlandia Hall.

Renowned functionalist buildings in Helsinki by other architects include the Olympic Stadium, the Tennis Palace, the Rowing Stadium, the Swimming Stadium, the Velodrome, the Glass Palace, the Exhibition Hall (now Töölö Sports Hall) and Helsinki-Malmi Airport. The sports venues were built to serve the 1940 Helsinki Olympic Games; the games were initially cancelled due to the Second World War, but the venues were eventually used in the 1952 Olympic Games.
3.0 SB11 Conference

SB11 focused on the following themes:

- Improving quality of life
- Mitigating effects of climate change
- Making new business

3.1. Keynote Speakers

The Conference opened on October 18th with a welcome from the conference organizers and from Nils Larsson of iiSBE and Wim Bakens of CIB from the Executive Management Group.

This was followed by a keynote session moderated by Richard Lorch, editor of Building Research and Information (UK). All of the keynote presentations can be found on YouTube using the referenced links.

Richard introduced the session by referencing a book entitled *Clock of the Long Now* by Stewart Brand, and cited the following quotation:

"Responsibility......means mastering long lead times, long lag times, and the hidden effects of cumulative change."

Richard set the stage for the Keynote session by challenging the speakers to look back over 40 years, and to look forward over the next 40 years.

Ray Cole from UBC took up the challenge in a stimulating presentation entitled *Changing Priorities and Responsibilities for Building Design*. His conclusions about the future were as follows:

1. [http://www.youtube.com/watch?v=ag8Bfoirtvw](http://www.youtube.com/watch?v=ag8Bfoirtvw)
3. [http://www.youtube.com/watch?v=gX-pStslFx8](http://www.youtube.com/watch?v=gX-pStslFx8)
Other Keynote presentations were as follows:

- **Alfred Ngowi**: *Rapid Urbanisation in Developing Africa*[^4], spoke of the need to learn from the indigenous tribes about sustainable living.

- **Baizhan Li**: *China’s rapid urbanisation: challenges and opportunities*[^5] spoke of the rapid growth taking place in China, and the efforts that are being made to move this to a more sustainable basis.

- **Bill Bordass**: *Built environment professionals in the UK: 40 years back, 40 years on?*[^6], used experience in the UK to demonstrate that school buildings have become less energy efficient and otherwise less sustainable rather than more, and more complicated rather than less. He advocated a change in the way professionals view the nature of their job by requiring that they follow through properly and engage with the building for an extensive period of time after completion to ensure that it functions as designed, an approach he called “Soft Landings”.

Further keynote addresses were delivered on Wednesday[^7]. **Ger Maas** of the Netherlands, representing Encord comprising 20 of the largest contractors in Europe, spoke on their *Sustainable Development Charter, the approach of industry*. He was followed by **Michael Gratzel** of the University of Lausanne, Switzerland, who spoke on *Mesoscopic Solar Cells for Building Integrated Photovoltaics*.

On Thursday, **Christophe Lalonde**, Human Settlements Officer, Housing Policy Section - Shelter Branch, UN-HABITAT, delivered a presentation entitled *Urban poverty, green buildings*.

[^4]: [http://www.youtube.com/watch?v=z4wMD3QM3Ro](http://www.youtube.com/watch?v=z4wMD3QM3Ro)
[^5]: [http://www.youtube.com/watch?v=z4wMD3QM3Ro](http://www.youtube.com/watch?v=z4wMD3QM3Ro)
[^6]: [http://www.youtube.com/watch?v=XoiXX_dGhgM](http://www.youtube.com/watch?v=XoiXX_dGhgM)
[^7]: [http://www.youtube.com/watch?v=sNmn7xAC4es](http://www.youtube.com/watch?v=sNmn7xAC4es)
and climate change: towards housing sustainability⁸ that examined the issues facing most countries of the world caused by the rapid urbanization of their populations.

He was followed by Cameron Sinclair, Co-Founder and CEO of Architecture for Humanity⁹, a nonprofit design services firm that since its creation in 1999 has grown into an international hub for humanitarian design, offering innovative solutions to humanitarian crises in all corners of the globe. Cameron spoke at length about the lessons learned by the architects who commit their skills to assist countries in need. His presentation was delivered with a detailed PowerPoint overview, but this was not made available.

At the closing ceremony on Friday, Pekka Haavisto¹⁰, former Minister of the Environment and Development, and the first Green minister in Europe, provided a broad overview of housing issues around the globe, and in Africa in particular. Mr. Haavisto is a Finnish politician and a Member of the Parliament, and also an expert in global issues. He acts as a Special Representative of the Foreign Minister of Finland in African crisis specializing in Sudan and Somalia, and lectures regularly at the University of Helsinki and the NATO School in Oberammergau. His presentation was also delivered with a detailed PowerPoint overview, but this was not made available.

3.2. Technical Sessions
A wide variety of technical sessions were presented in 10 Special Forums and 6 Themes, as follows:

**Special Forums**
- SF1 Toward Rio+20 and beyond
- SF2 Zero emission buildings
- SF3 SuvelaSURGE Student Competition
- SF4 Industry panel
- SF5 Sustainable procurement
- SF6 Sustainable Valuing
- SF7 Core indicators
- SF8 Cross-scale assessment
- SF9 Property investors
- SF10 High performance energy systems

**Theme 1: World resources (WR)**
- Forecasts and globalisation (WR-F)
- Water and waste management (WR-W)
- Material and energy flows (WR-M)

**Theme 2: Well-being in cities and urban environments (CU)**
- Indicators for the quality of life (CU-I)
- Cultural and regional issues (CU-C)

---

⁸ [http://www.sb11.org/media/lalande_materiaali.pdf](http://www.sb11.org/media/lalande_materiaali.pdf)
• Innovative management and operation (CU-M)
• Land use, infrastructure, transport (CU-L)

Theme 3: Sustainability in developing countries (DC)
• Appropriate sustainable technologies (DC-T)
• Social and economic indicators (DC-I)
• Coastal cities, risks of climate change (DC-C)
• Urbanization, mega cities, employment (DC-U)

Theme 4: Sustainable processes and eco-efficient technologies (EE)
• Assessment of cities, neighbourhoods, buildings and products (EE-A)
• Energy positive and zero energy buildings, passive houses (EE-P)
• ICTs for saving resources and reducing emissions (EE-I)
• Performance and value metrics, health and comfort (EE-V)
• New material technologies and material solutions (EE-M)

Theme 5: Sustainable business models (BM)
• Market transformation, lead market approach (BM-M)
• Sustainable procurement (BM-P)
• Financing and incentives (BM-F)

Theme 6: Social sustainability and environmental ethics (SS)
• Corporate responsibility and reporting (SS-R)
• Sustainable policies (SS-P)
• Education, training, standardization and regulation (SS-E)

The large number of parallel sessions required that attendees select carefully from the extensive list. The organizers provided transactions both in the form of two volumes and also in electronic format on a very large USB card. The complete program is included in Appendix A.

3.3. SBChallenge
One of the special forums was reserved for Sustainable Building Challenge. In this forum, team members from the 14 participating country presented over 40 evaluated projects, and responded to questions. Prior to the forums, the presentations were available on a continuously running PowerPoint presentation that lasted for about 3 hours. The buildings were grouped into categories to more easily permit comparisons in design and construction approaches from several countries. The complete schedule for SBChallenge is included in Appendix B, further details are also included on the iiSBE website11, and videos of the presentations can be viewed online.12

In addition to the evaluated projects, the Canadian Team presented ten Poster Projects in a Canadian booth at the SB11 Exhibition.

11 sbchallenge.iisbe.org
12 http://www.youtube.com/user/sbchallenge?blend=1&ob=video-mustangbase
3.4. Evaluated Projects Presented by the Canadian Team

The Canadian Team presented two buildings that had been fully evaluated using SBTool and the Athena Impact Estimator. Each tool is described as follows:

- **SBTool** is a generic framework for rating the sustainable performance of buildings and projects, and can also function as a toolkit that assists local organizations to develop SBTool rating systems. The system covers a wide range of sustainable building issues, and the scope of the system can be modified to be as narrow or as broad as desired, ranging from 100+ criteria to half a dozen. SBTool takes into account region-specific and site-specific context factors, and these are used to switch off or reduce certain weights, as well as providing background information for all parties. It includes IDP process steps, and covers: new and renovation projects or a mix; up to five occupancy types generically defined and up to three in a single project; buildings of any height, and; provides relative and absolute outputs;

- **Athena Impact Estimator** gives architects, engineers and analysts access to advanced life cycle inventory data without requiring advanced skills. This whole-building tool is used by design teams to explore the environmental footprint of different material choices and core-and-shell system options. It is applicable for new construction, renovations and additions in all building types. It can model over 1,200 structural and envelope assembly combinations and allows for quick and easy comparison of multiple design options. The Impact Estimator provides a cradle-to-grave life cycle inventory profile for a whole building. The inventory results comprise the flows from and to nature: energy and raw material flows plus emissions to air, water and land.

The two evaluated projects were:

- **Okanagan College Centre of Excellence in Sustainable Building Technologies and Renewable Energy Conservation**, located in Penticton, BC, was delivered by Andrew Hay of Okanagan College, and resulted in some interesting questions. This building set as its overall design objective to meet the requirements of the Living Building Challenge\(^\text{13}\), described as the most advanced measure of sustainability possible in the built environment today. The stated challenge is to reconcile the built environment with the natural environment into a civilization that creates biodiversity, resilience and opportunities for life with each development.

- **The second**, *A Greener Grand, Enerrmodal Engineering Head Office*, located in Kitchener, ON, was delivered by Bob Bach, and resulted in a number of questions including one about differing results between rating systems. The goal for this building was to achieve triple LEED Platinum, including LEED for New Construction, Commercial Interiors, and Existing Buildings: Operations & Maintenance Platinum, and this goal was met.

The two presentations are included in Appendix C.

3.5. Canadian Team Exhibition

The Canadian Team set up a double-size booth in the SB11 Exhibition area to present the two Evaluated Projects as well as the ten Poster Projects. The latter included the following buildings:

\(^{13}\) [https://ilbi.org/](https://ilbi.org/)
<table>
<thead>
<tr>
<th>Category</th>
<th>Project</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation &amp; Housing</td>
<td>Maison Productive House</td>
<td>Montreal, PQ</td>
</tr>
<tr>
<td>Offices &amp; Research</td>
<td>Epcor Tower</td>
<td>Edmonton, AB</td>
</tr>
<tr>
<td>&quot;</td>
<td>Ritchie Brothers Head Office</td>
<td>Burnaby, BC</td>
</tr>
<tr>
<td>Public Service</td>
<td>Creekside Community Ctr</td>
<td>Vancouver, BC</td>
</tr>
<tr>
<td>&quot;</td>
<td>UniverCity Childcare</td>
<td>Burnaby, BC</td>
</tr>
<tr>
<td>&quot;</td>
<td>WestVan Community Ctr</td>
<td>West Vancouver, BC</td>
</tr>
<tr>
<td>Schools &amp; Education</td>
<td>Centre for Green Cities</td>
<td>Toronto, ON</td>
</tr>
<tr>
<td>&quot;</td>
<td>Kwantlen Polytechnique</td>
<td>Surrey, BC</td>
</tr>
<tr>
<td>&quot;</td>
<td>Okanagan College</td>
<td>Kelowna, BC</td>
</tr>
<tr>
<td>&quot;</td>
<td>Walden Elementary School</td>
<td>Sudbury, ON</td>
</tr>
</tbody>
</table>

The booth was arranged in geographic location from west to east, left to right. There was considerable interest shown by conference participants and other exhibition visitors in all 12 projects, and several commented on the breadth of the projects presented, and the country in which they are located.

The posters exhibited at the conference for the ten Poster Projects are included in Appendix D.

### 3.6. Canadian Participation in SB11

The following iiSBE Canadian Team members attended:

- Bob Bach
- Craig Boyle
- Teresa Coady
- Mark Gorgolewski
- Nils Larsson
- Jiri Skopek
- Giulia Barbano (honorary)

In addition, the following Canadians attended and participated:
A reception hosted by the City of Helsinki was held on Tuesday evening at the Helsinki City Hall, and included dinner and drinks. Members of the Canadian Team were resplendent in their Team hats, a practice that has been followed at every conference since Oslo in 2002, and which remains an exclusive Canadian practice.

A dinner for all the Canadians at the conference was held on Wednesday evening at the Restaurant Zetor featuring authentic Finnish food, the most popular of which was reindeer.

In addition, at the closing dinner on Thursday evening two tables were reserved for the Canadians in attendance, and all were well entertained by a local mentalist who invited audience participants to permit him to demonstrate his ability to read their thoughts in an intriguing but humourous manner.

4.0 Summary

The World Sustainable Building Conference 2011 proved to be well organized, well attended, and thought provoking. All of the Canadians in attendance including the Canadian Team members enjoyed the time spent at the conference as well as in Helsinki generally, and found it to be both educational and enjoyable.

Team member Jiri Skopek conducted a poll among all the Canadians who attended to find out their choices for the most significant themes from the conference. The results are summarized in the following table:

<table>
<thead>
<tr>
<th>Area of Interest</th>
<th>% of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trend Towards Assessing Buildings &amp; Community</td>
<td>21%</td>
</tr>
<tr>
<td>Advances in Solar PV</td>
<td>16%</td>
</tr>
<tr>
<td>Post Occupancy Assessments</td>
<td>11%</td>
</tr>
<tr>
<td>Use of Life-Cycle Assessment</td>
<td>11%</td>
</tr>
<tr>
<td>Zero Energy or Zero Carbon Buildings</td>
<td>5%</td>
</tr>
<tr>
<td>Carbon Neutral Cities</td>
<td>5%</td>
</tr>
<tr>
<td>Financial Benefits of Sustainability</td>
<td>5%</td>
</tr>
<tr>
<td>Public/Private Collaboration on Sustainability</td>
<td>5%</td>
</tr>
<tr>
<td>Growth in Interest in Passive House</td>
<td>5%</td>
</tr>
<tr>
<td>Cold Climate Commercial Scale Sustainable Design</td>
<td>5%</td>
</tr>
<tr>
<td>SB Challenge Presentations &amp; Ability to Compare</td>
<td>5%</td>
</tr>
<tr>
<td>Design Practices Across the Globe</td>
<td>5%</td>
</tr>
<tr>
<td>Variety and Level of Interest in Canadian Buildings by Visitors to the Exhibit</td>
<td>5%</td>
</tr>
</tbody>
</table>
World Sustainable Building Conference addresses new opportunities for
• improving quality of life
• mitigating effects of climate change
• making new business
KEYNOTE PRESENTATIONS

Main Hall

OPENING CEREMONY AT 9.00-9.30

Keynote session 1
Chair: Richard Lorch
Tuesday at 9.00-10.30

The Relevance of Time
Richard Lorch (UNITED KINGDOM)
Volume 1, page 2

Environmental Issues Past, Present & Future: Changing Priorities & Responsibilities for Building Design
Raymond J. Cole (CANADA)
Volume 1, page 6

Rapid Urbanisation in Developing Africa
Alfred Ngowi (BOTSWANA)
Volume 1, page 10

China’s rapid urbanisation: challenges and opportunities
Baizhan Li (CHINA)
Volume 1, page 13

Built environment professionals in the UK: 40 years back, 40 years on?
Bill Bordass (UNITED KINGDOM)
Volume 1, page 16

Keynote session 2
Chair: Nils Larsson
Wednesday at 9.00-10.30

ENCORD’s Sustainable Development Charter: the approach of the industry
Ger Maas (THE NETHERLANDS)
Volume 2, page 2

Mesoscopic Solar Cells for Building Integrated Photovoltaics
Professor Michael Grätzel (SWITZERLAND)

Keynote session 3
Chair: Greg Foliente
Thursday at 9.00-10.30

Christophe Lalande (FRANCE)
Human Settlements Officer, Housing Policy Section - Shelter Branch, UN-HABITAT

Cameron Sinclair (USA)
Co-Founder and CEO of Architecture for Humanity

Keynote session 4
Friday at 11.00-12.30

Pekka Haavisto (FINLAND)
Former Minister of the Environment and Development
## SB11 Helsinki Programme at a Glance

### 18 - 21 October 2011

**SB11 Helsinki World Sustainable Building Conference**  
**Improving quality of life**  
**Mitigating the effects of climate change**  
**Making new business**

### Tuesday 18 Oct
- **Main Hall**
  - **8:00**
    - **Opening ceremony**
  - **9:00**
    - **SF10**
  - **10:30**
    - **201 Main Hall**
  - **11:00**
    - **PHN1**
  - **12:30**
    - **Lunch from 12:30 to 14:00**
  - **14:00**
    - **PHN1**
  - **15:30**
    - **EE-M1**
  - **16:00**
    - **EE-M1**

### Wednesday 19 Oct: INDUSTRY DAY
- **Main Hall**
  - **8:00**
    - **Opening ceremony**
  - **9:00**
    - **SF10**
  - **10:30**
    - **201 Main Hall**
  - **11:00**
    - **PHN1**
  - **12:30**
    - **Lunch from 12:30 to 14:00**
  - **14:00**
    - **PHN1**
  - **15:30**
    - **EE-M1**

### Thursday 20 Oct
- **Main Hall**
  - **8:00**
    - **Opening ceremony**
  - **9:00**
    - **SF10**
  - **10:30**
    - **201 Main Hall**
  - **11:00**
    - **PHN1**
  - **12:30**
    - **Lunch from 12:30 to 14:00**
  - **14:00**
    - **PHN1**
  - **15:30**
    - **EE-M1**

### Friday 21 Oct
- **Main Hall**
  - **8:00**
    - **Opening ceremony**
  - **9:00**
    - **SF10**
  - **10:30**
    - **201 Main Hall**
  - **11:00**
    - **PHN1**
  - **12:30**
    - **Lunch from 12:30 to 14:00**
  - **14:00**
    - **PHN1**
  - **15:30**
    - **EE-M1**

### City reception, 19:00-21:00

### Parallel Sessions

<table>
<thead>
<tr>
<th>SB Regional</th>
<th>Regional Reporting on Sustainable Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR</td>
<td>Theme 1 World resources</td>
</tr>
<tr>
<td>WR-F</td>
<td>Forecasts and globalisation</td>
</tr>
<tr>
<td>WR-W</td>
<td>Water and waste management</td>
</tr>
<tr>
<td>WR-M</td>
<td>Material and energy flows</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SB Challenge</th>
<th>Sustainable Building Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE</td>
<td>Theme 4 Sustainable processes and eco-efficient technologies</td>
</tr>
<tr>
<td>EE-A</td>
<td>Assessment of cities, neighbourhoods, buildings and products</td>
</tr>
<tr>
<td>EE-P</td>
<td>Energy positive and zero energy buildings, passive houses</td>
</tr>
<tr>
<td>EE-I</td>
<td>KTs for saving resources and reducing emissions</td>
</tr>
<tr>
<td>EE-V</td>
<td>Performance and value metrics, health and comfort</td>
</tr>
<tr>
<td>EE-M</td>
<td>New material technologies and material solutions</td>
</tr>
<tr>
<td>BM</td>
<td>Theme 5 Sustainable business models</td>
</tr>
<tr>
<td>BM-M</td>
<td>Market transformation, lead market approach</td>
</tr>
<tr>
<td>BM-P</td>
<td>Sustainable procurement</td>
</tr>
<tr>
<td>BM-F</td>
<td>Financing and incentives</td>
</tr>
<tr>
<td>SS</td>
<td>Theme 6 Social sustainability and environmental ethics</td>
</tr>
<tr>
<td>SS-P</td>
<td>Sustainable policies, corporate responsibility</td>
</tr>
<tr>
<td>SS-R</td>
<td>Regulation and standardization</td>
</tr>
<tr>
<td>SS-E</td>
<td>Education and training</td>
</tr>
</tbody>
</table>

### Keynote Speeches

1. **Sustainability 40:40 Looking back and forward**
   - KN1
2. **Climate change**
   - KN2
3. **Sustainable businesses**
   - KN3
4. **Case studies**
   - KN4
5. **Quality of life**
   - KN5
6. **Global sustainability**
   - KN6

### Special Forums

1. **Toward Rio+20 and beyond**
   - SF1
2. **Zero emission buildings**
   - SF2
3. **SuelasURGE Student Competition**
   - SF3
4. **Industry panel**
   - SF4
5. **Sustainable procurement**
   - SF5
6. **Sustainable Valuing**
   - SF6
7. **Core indicators**
   - SF7
8. **Cross-scale assessment**
   - SF8
9. **Property Investors**
   - SF9
10. **High performance energy systems**
    - SF10

### Disclaimer:

*Disclaimer: SB11 Helsinki World Sustainable Building Conference organizing committees reserve the right to modify, without notice, the content of the conference programme due to reasons beyond their control. The organizers cannot be liable for the loss, damage, expenditure or inconvenience caused by such modifications.*

www.sb11.org
Appendix B

SB Challenge Program
The Sustainable Building Challenge is a process focused on the existing tools for the assessment of sustainability, the development of new ones, and innovative sustainable building design concepts and techniques. Organized by the International Initiative for a Sustainable Built Environment (iiSBE), it has been part of the global SB conference series since its inception. The 2011 edition of SBChallenge has collected over 40 projects from 14 countries, from individual teams to national teams alike. A selection of this projects will be presented in three panels on different typologies of buildings (education; offices & research centres; public: accommodation, commercial, social utility). Each panel will feature the presentation of seven projects, followed by a short discussion and Q&A on the design solutions and challenges posed by the building type. Videos and papers of all the projects of SBChallenge will also be available during the conference in the SBChallenge area, next to room 102.

SBChallenge session 1, Education, 11:00-12:30
- Vargbroskolan, Storfors, Sweden (DELTAté)
- Takamatsu University Building 2, Kagawa, Japan (SBC11 team Japan)
- Okanagan College Penticton Campus, British Columbia, Canada (SBC11 team Canada)
- Frontier Project, Rancho Cucamonga, California, USA (HMC Architects)
- Rosignano Marittimo Public Library, Italy (SBC11 team Italy / AREAPROGETTI)
- Eco/nect, Heerlen, the Netherlands (HSZuyd / RiBuiT)
- Energy- Plus- Primary School Niederheide, Hohen Neuendorf, Germany (IBUS architects and engineers)

SBChallenge session 2, Offices & Research centres, 14:00-15:30
- New Research Laboratory at the Tobitakyu Research Center of the Kajima Technical Research Institute, Japan (SBC11 team Japan)
- Obayashi Corporation, Technical Research Institute, “TECNO-STATION”, Japan (SBC11 team Japan)
- Nissan Global Headquarters, Yokohama City, Japan (SBC11 team Japan)
- REGAIN Building, Wales, UK (Cardiff University / Blaenau Gwent Borough Council)
- Modemet, Stockholm, Sweden (The Swedish Research Council Formas)
- Tripark Las Rozas, Madrid, Spain (SBC11 team Spain)
- ST Diamond Building, Putrajaya, Malaysia* (IEN Consultants Sdn Bhd)

*awaiting confirmation

SBChallenge session 3, Public: accommodation, commercial, social utility, 16:00-17:30
- All Seasons Hotel, Troyes, France (TERAO SARL)
- A Grander View, Kitchener, Ontario, Canada (SBC11 team Canada)
- Eco-coop supermarket, Italy (SBC11 team Italy)
- The Blood and Tissue Bank of Catalonia, Barcelona, Spain (SBC11 team Spain)
- ETSAV Student Residence, Sant Cugat del Vallés, Barcelona, Spain (SBC11 team Spain)
- 40 Apartments in the Giron Group, Zaragoza, Spain (SBC11 team Spain)
Appendix C

Canadian Team Evaluated Projects

1. Okanagan College Centre of Excellence in Sustainable Building Technologies and Renewable Energy Conservation

2. Enermodal Engineering Head Office: A Greener Grand
Okanagan College Centre of Excellence

» Building Type / Use
  Post Secondary

» Designer
  CEI Architecture

» Owner
  Okanagan College

» Developer
  Okanagan College

» Construction year
  2009 - 2011

» Location
  Penticton, British Columbia, Canada

LIVING BUILDING CHALLENGE

Site
Energy
Materials
Water
Indoor Quality
Beauty & Inspiration

www.livingbuildingchallenge.org
Penticton, BC

300 mm precipitation
- approx 25mm per month
2000 hours of sunshine annually
Max summer temperature: 40° C
Min winter temperature: -27° C
Average temperature: 9° C

Pine Beetle Kill Forest

JULIE CASTONGUAY
Okanagan College, Penticton – Centre of Excellence
14.5 million hectares (56,000 square miles) affected
80% kill of all pines in some areas

Timber Frame Construction
Sun Tracking Light Pipes

Natural Ventilation

---

SBChallenge11 Helsinki  ||  Project name: Okanagan College, Penticton – Centre of Excellence
Natural Ventilation

Conserve + Capture + Create
Conserve + Capture + Create

- Triple glazed, argon filled windows
- High insulation levels
- Solar shading
- High performance doors
- Air-tight construction

SBChallenge11 Helsinki  ||  Project name:  Okanagan College, Penticton – Centre of Excellence
Conserve + Capture + Create

Passive solar gain
Natural ventilation
Ground source heat pump
Ground source cooling
Light pipe technologies

Photovoltaic array
Solar hot water
Centre of Excellence in
Sustainable Building Technologies
and Renewable Energy Conservation

www.alivingclassroom.com

SBChallenge11 Helsinki || Project name: Okanagan College, Penticton – Centre of Excellence
**A Grander View, Canada’s most energy-efficient office**

- **Building Type / Use**: Office
- **Designer**: Robertson Simmons architects inc. and Enermodal Engineering Ltd
- **Owner**: Enermodal Engineering Ltd
- **Developer**: Enermodal Engineering Ltd
- **Construction year**: 2009
- **Location**: Kitchener, Ontario

**A Grander View: Energy Saving Features**

- Three variable refrigerant flow rooftop heat pumps connect to indoor fancoil units in 60 zones
- Automated exterior shades to minimize glare and solar heat gain
- Server room air-to-water heat pump for all domestic hot water needs
- Concrete earth tubes bring in and pre-heat/cool ventilation air
- All ventilation sent through six energy recovery units
- Integrated daylighting sensors
- Occupancy sensors control ventilation, heating/cooling, and lighting
- Insulated concrete form shell
- Triple-glazed windows
- 5.5 kW, 24-panel rooftop PV system
A Grander View: Green Features

• 5 m³ rainwater cistern collects and stores rooftop rainwater for toilet flushing
• Condensate from air conditioning process recaptured for cistern
• Low, narrow building footprint (12 m across) to allow all employees access to operable window and views
• In-ground waste storage system
• Employee garden plots
• Native species, pesticide-free, irrigation-free landscaping
• Salvaged stone and wood flooring

Annual Energy Costs

- Water Heating
- Fans & Pumps
- Space Cooling
- Space Heating
- Computer Servers
- Receptacles
- Exterior Lighting
- Interior Lighting
- PV Generated Electricity
LEED® Project Facts

Gross Floor Area: 2043 (m²)
Energy Density: 49 (kWh/m²)
Lighting Power Density: 8 (W/m²)

<table>
<thead>
<tr>
<th>Category</th>
<th>% Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Savings</td>
<td></td>
</tr>
<tr>
<td>Irrigation</td>
<td>100 %</td>
</tr>
<tr>
<td>Indoor Use</td>
<td>89 %</td>
</tr>
<tr>
<td>Energy Savings</td>
<td>62 %</td>
</tr>
<tr>
<td>Waste Diversion</td>
<td>89 %</td>
</tr>
<tr>
<td>Salvaged Content</td>
<td>10 %</td>
</tr>
<tr>
<td>Recycled Content</td>
<td>25 %</td>
</tr>
<tr>
<td>Regional Content</td>
<td>40 %</td>
</tr>
<tr>
<td>FSC Wood Content</td>
<td>90 %</td>
</tr>
<tr>
<td>GREENGUARD Furniture</td>
<td>100%</td>
</tr>
<tr>
<td>Daylighting</td>
<td>99 %</td>
</tr>
</tbody>
</table>

Views: 99 %

LEED® Platinum

LEED NC, LEED CI and LEED EB: O&M Platinum Certified
Completed 2009
Kitchener, Ontario

Relative Performance Results

0 = Acceptable Practice; 3 = Good Practice; 5 = Best Practice
A. Site Suitability and Development
B. Energy and Resource Consumption
C. Environmental Loadings
D. Indoor Environmental Quality
E. Service Quality
F. Social and Economic Aspects
LEED Performance Results:
LEED New Construction, v3.0

SBChallenge11 Helsinki || Project name: A Grander View – Enermodal Engineering’s Headquarters
Appendix D

Canadian Team Poster Projects

1. Centre for Green Cities at Evergreen
2. Creekside Community Centre, Vancouver, BC
3. Epcor Tower, Edmonton, AB
4. Kwantlen Polytechnique University, Main Building and Arbutus Library, Surrey, BC
5. Maison Productive House, Montreal, PQ
6. Okanagan College Centre for Learning, Kelowna, BC
7. Ritchie Brothers Auctioneers New Head Office, Burnaby, BC
8. UniverCity Childcare, Burnaby, BC
9. Walden Elementary School, Sudbury, ON
10 West Vancouver Community Centre, West Vancouver, BC
Centre for Green Cities at the Evergreen Brick Works

*designers:* Architects: Diamond and Schmitt, Toronto; Sustainability Consultants: Halsall Associates Limited, Toronto, 2010

*location:* Toronto, Ontario, Canada

*owner:* Evergreen Brick Works

This project involves transforming an abandoned 19th-century quarry and brick factory on a 16 hectare site into an environmental community centre in the heart of Toronto’s ravine system. When completed, it will include a complex of revitalized historical buildings and industrial structures, several large exhibition halls, ponds, a skating rink, nature trails, a farmers’ market, and canals that will help manage the Don River waters when in flood.

The 4,984 m² Centre for Green Cities provides a workspace for Evergreen and other social entrepreneurs that reflects their appreciation for environmental issues and embodies Evergreen’s mission to “bring communities and nature together for the benefit of both.” The building was built upon an existing heritage building, integrating brick walls, trusses, and columns, and will offer a great visitor experience and be an agent for behavioural change, accomplished through a combination of public art, storytelling, and data from a comprehensive measurement and verification system.

The Brick Works has been recognized by National Geographic as one of the world’s Top 10 geo-tourism destinations.
The new 5,050 m² community centre is designed for a vibrant new sustainable community being formed on this former industrial waterfront site, and the building form recalls that heritage.

Sustainable building design was a key determinant in the shaping of the building, and includes: day lighting of the building interior, efficient use of energy, solar powered mechanical systems, and collection and re-use of rainwater.

The building links the community to a plaza on its waterfront setting, through a tall glazed atrium passage. The curving arc and glazed waterfront facade of the building, embraces this plaza and will be animated with the boating, restaurant and other program activities within the community centre. Glazing to both the street and the waterfront, reveals the programs and activities within the centre. The gymnasium, multi-purpose rooms, fitness and day care uses are showcased to the community and enjoy views to both the street and the waterfront.

Creekside Community Centre

designers: Nick Milkovich Architects Inc. + Walter Francl Architecture, 2009

location: Vancouver, British Columbia, Canada

owner: Vancouver Board of Parks and Recreation
EPCOR Tower


location: Edmonton, Alberta, Canada

owner: Qualico Developments

This 95,260 m² office building is located in downtown Edmonton in a new development called Station Lands, and has access to bus routes and the light rail transit system to encourage the use of public transportation, as well as secure indoor bike storage and showers.

Key features of the indoor air quality system include over 50% occupant controls and a 100% outdoor air system with earth tubes used to pre-heat and pre-cool the building outdoor air.

Daylighting was one of the key factors in selecting a window-to-wall ratio of 49%. High floor to floor dimensions allow daylight penetration to the core walls, thereby reducing energy consumption.

The building uses dual flush water closets, low flow urinals, low flow lavatories, and low flow shower heads. Rainwater is captured and stored in a tank located under the parkade structure, and is then treated and reused to flush water closets and urinals.
The new 4,330 m² Administration Building for Kwantlen Polytechnic University in Surrey provides this campus with a unique and contemporary ‘front door’ through which to welcome and orient students and visitors. The entrance features a dramatic canopy with copper ringed oculus and wood soffit while the light-filled three storey atrium bridges the gap between the old and the new buildings. The integrated design process was used throughout to shape the building, coordinate flexible modular internal layouts and enhance the progressive sustainable building mandate.

The 5,200 m² Arbutus library is at the very heart of the Surrey Campus. The two storey entrance and library renovation is the focal point of the interior quadrangle, providing a light, well ventilated space, dedicated to the pursuit of learning. The second floor of the glazed lobby provides a quiet, daylight filled, contemplative setting for private reading, while the versatile three storey south wing provides learning labs for interactive teaching, along with additional individual and group study areas. Over 90% of all occupied spaces within this facility have views to the outdoors. This durable, flexible and efficient library incorporates a wealth of sustainable design features to significantly reduce environmental impact.

Kwantlen Polytechnic University, Surrey Main Building and Arbutus Library Building

designers: B + H Bunting Coady Architects, 2009
location: Surrey, British Columbia, Canada
owner: Company Kwantlen Polytechnic University
Maison Productive House

designers: Produktif Studio de design, 2010

location: Point St-Charles, Montreal, Quebec, Canada

owner: Produktif Studio de design

This 1,460 m² development is a second generation urban revitalization project located in an inner-city working class neighbourhood. The objective is to increase population density, introduce quality employment, empower its occupants to participate in the green economy, and introduce a destination site that exhibits high architectural quality. The concept is a replicable and scale model for carbon neutral living. The project includes a greenhouse for year round vegetables, an artisan bakery, and a car subscription service.

The project design follows a 7 step plan, including low carbon high efficiency and thermal mass materials, extensive prefabrication, local materials purchase, lowest possibly consumption, renewable energy sources and no fossil fuels, natural ventilation with cooling shafts and extensive heat recovery and water collection and recycling.
Okanagan College Centre for Learning

designers: B+H BuntingCoady Architects, 2009

location: Kelowna, British Columbia, Canada

owner: Okanagan College

The 6,852 m² centre was created to be a location that can function as an innovative learning centre that supports a high level education for local, national and international students, and is also a space that promotes the free exchange of ideas and the development and application of critical thinking skills. The building itself is an educational mechanism where students can learn about the mechanical systems, how the building breathes and how the building impacts other systems. The Centre’s design reflects the natural surroundings of the valley as well as the historical origins of the region.

The existing library building was restored and incorporated respectfully into the massing of the building by the use of and “Atrium and Agora”. This allows the creation of a successful social space for students, faculty and public. Formal and informal spaces flow into each other so that their physical and visual connection between circulation areas, meeting spaces, classrooms, offices, the outdoors and the main atrium areas.

The design of the building and the selection of materials respond to the need to support local products that enhance the local economy while minimizing environmental impact. Embodied energy from transportation to production have been evaluated and minimized. Materials have been selected for durability and adaptability, and most contain recycled content. During construction well over 90% of all waste products were recycled.
This new 14,761 m² office building features a building shape and orientation determined by a combination of solar orientation and programmatic requirements. The resulting form maximizes the south and north exposures of the exterior, while minimizing the east/west facades. The building masses are offset to expose prominent building entries from the southwest and the northeast. The exterior of the building is a composition of shapes and materials which represents Ritchie Brothers image as an international company with local roots. The different forms and materials express playfulness, promotes an environment which is both fun and productive.

The long north and south orientation of the building maximizes the river and North views, while minimizing views to the neighbouring building. This shape also minimizes the building perimeter to produce an economical and energy-efficient design. Large exposures of exterior and interior windows maximize views and daylighting. Lighting is typically controlled by occupancy sensors, and daylight sensors are used in the atrium spaces.

Heating and cooling is provided by Variable Refrigerant Flow (VRF) systems, and ventilation air is provided by high efficiency natural gas dedicated heat recovery ventilation units ducted to terminal VRF units. A high efficiency boiler provides in-floor heating in the atrium.

Ritchie Brothers Auctioneers Head Office

designers: JB+H BuntingCoady Architects and Associates, 2009

location: Burnaby, British Columbia, Canada

owner: Ritchie Brothers Auctioneers
The 2,009 m² UniverCity Childcare is one of the first buildings in Canada pursuing the Living Building Challenge status. This program is arguably the most advanced sustainability measurement system in the world.

The net zero goal is first achieved by minimizing the energy consumption of the building so that all the energy used by the building (heating and electricity) will be offset by returning heating energy to the District Energy System (DES) throughout the year. Evacuated tube solar thermal collectors collect the solar energy and send it back to the DES. The solar collectors will offset electrical and heat energy used throughout the year by delivering heat.

Low flow water fixtures are used throughout. Rainwater is used all year round for flushing toilets, janitorial and other non-potable purposes. No potable water will be used for irrigation mainly because native and adaptive plants have been specified for landscaping.

Every occupiable space has operable windows that provide access to fresh air, views and daylight. The ventilation system uses 100% outdoor air, and is delivered through a displacement ventilation system.

UniverCity Childcare

designers: Hughes Condon Marler Architects; Fast + Epp Structural Engineers; Cobalt Engineering; Cobalt Engineering, 2011

location: Burnaby, British Columbia, Canada

owner: UniverCity/Simon Fraser University Community Trust

See this project at the Team Canada booth
The 5,028 m² elementary school with daycare centre and gymnasium was designed to achieve a high level of overall sustainability, provide a superior learning environment, and to serve as a teaching example of environmental achievement for its students.

The school envelope is constructed from pre-fabricated structural steel member panels, selected to minimize the material waste from construction and to minimize the foundation requirements. On site assembly involved lifting the panels into place and bolting panels together. This form of envelope construction had the added advantage of easy construction in very cold weather where concrete/mortar materials could not be used.

The HVAC design consists of five key components, including geo-exchange heat pump system for heating and cooling, radiant floor heating system, thermal solar panels to assist the heat pump, displacement ventilation system, and high efficiency (85%) air to air heat exchanger. Lighting design makes extensive use of daylight with light and occupancy sensors, and high efficiency light sources.

**Walden Elementary School**

*designers:* Ameresco Design Build Project Management, Castellan James + Partners Architects, LKM Engineers Mechanical and Electrical, Halsall Structural, Dearness Environmental, 2010

*location:* Sudbury, Ontario, Canada

*owner:* Rainbow District School Board
The 3-storey, 8,000 m² community centre is intended to be the defining element of community life on the site. It unifies and connects the various functions and provides focus to the new and improved public outdoor spaces. The facility provides a comprehensive mix of community recreation and community health functions in a “Wellness Centre” that includes health services, dynamic movement gymnasium (dance, gymnastics, trampoline, rock climbing), multi-purpose spaces, youth/children’s areas, fibre arts studio, 3-D art studio, music space, art workshop, offices and a connecting atrium.

Building occupants enjoy a high level of controllability over their environment by providing operable windows and lighting controls. With ample daylight in interior spaces, the design also provides views in approximately 90% of building spaces where view is not detrimental to their use.

Several sustainability initiatives incorporated in the project significantly reduce the operational costs and contribute to the building’s whole life cycle cost savings, including the energy efficient mechanical system, and the building’s water fixtures that achieve over 22% reduction in the consumption of potable water for occupants’ use. No use of potable water for irrigation is another significant operational cost saving initiative.

West Vancouver Community Centre

designers: Hughes Condon Marler Architects; Fast + Epp Structural Engineers; Stantec; Genivar; Hunter Laird Engineering Ltd., 2008

location: West Vancouver, British Columbia, Canada

owner: District of West Vancouver