



Designed to be the greenest building in North America, CIRS is a 'living lab' that demonstrates the possibilities in sustainable design and construction, serving as a catalyst for change.

Area: 5,675 sm (61,085 sf)  
Sustainability Targets:  
Living Building Challenge  
LEED® Canada New Construction v 1.0

Awards:  
*AIBC Innovation Award, 2012*

*Treehugger Best of Green: Best Office  
or Commercial Design & Reader's  
Choice Winner, 2011 & 2012*

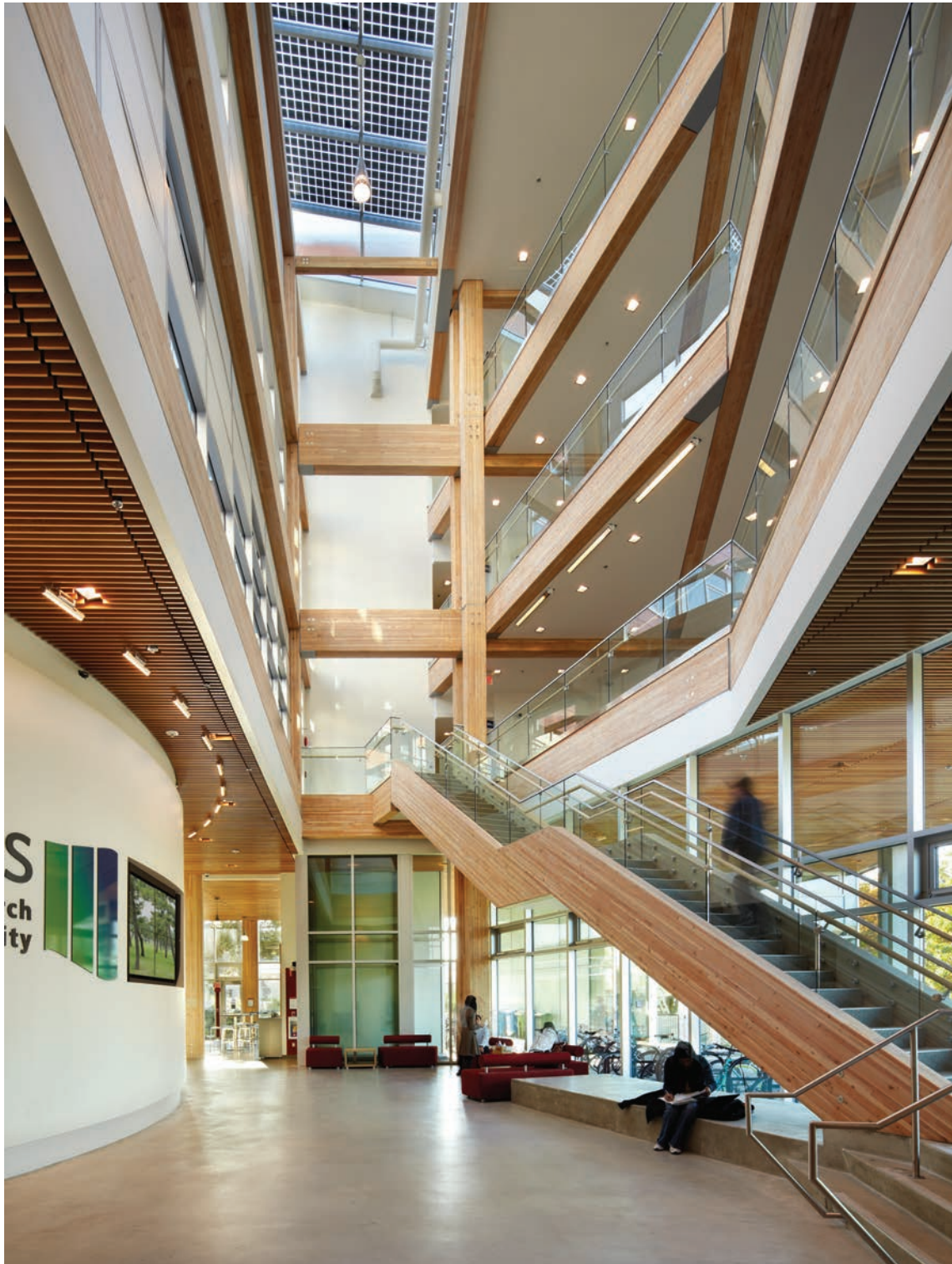
Located on a previously developed site at the University of British Columbia, CIRS houses 200 researchers from private, public and non-government organization sectors, who work together under a common mission: to accelerate sustainability. Including lab space, academic offices, meeting rooms and social spaces, CIRS is organized around two four-storey wings, linked by an atrium that serves as a building lobby, entry to a daylit 450-seat auditorium and 'social condenser' space.

CIRS was designed to put sustainable systems on display and to be 'net positive' in seven different ways—net-positive energy; structural carbon neutrality; operational carbon; net-zero water; turning passive occupants into active inhabitants; promoting health and productivity; and promoting happiness. This 'living building' harvests sunlight, captures waste heat from a nearby building, and exchanges heating and cooling with the ground—and returns 600-megawatt-hours of surplus energy back to campus annually. CIRS collects rainwater for potable use and purifies wastewater in an on-site solar aquatics biofiltration system. More than a building, CIRS is a research tool that demonstrates the possibilities in sustainable design, serving as a catalyst for change.



PERKINS  
+ WILL

Centre for Interactive Research on Sustainability (CIRS)  
University of British Columbia  
Vancouver, BC





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**PROJECT DETAILS**

Project: Centre for Interactive Research on Sustainability  
 Location: Vancouver, British Columbia  
 Client: University of British Columbia  
 John Robinson  
 Executive Director | UBC Sustainability Initiative  
 Professor | Institute of Resources, Environment, Sustainability  
 Professor | Department of Geography  
 Completion: August 30, 2011

**TECHNICAL**

Project Size: 5,675 sm (61,085 sf)

**DESIGN TEAM**

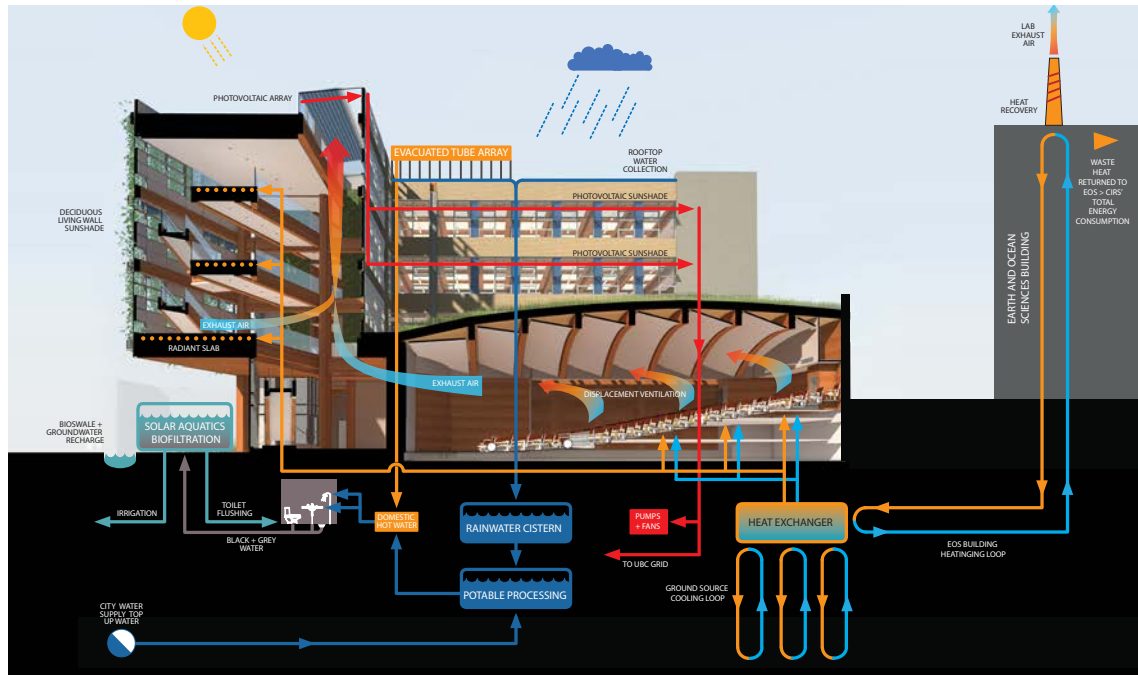
Perkins+Will (formerly Busby Perkins+Will):  
*Principal Design Team:*  
 M. Cocivera, S. Garon, B. Gasmerna, J. Grävenstein, H. Lai,  
 B. McCarry, Z Smith,  
*Supporting Team:*  
 C. Adsit-Morris, C. Blackman, L. Cavallin, I. Chan, W. Dahl,  
 J. Deutscher, J. Doble, R. Drew, B. Engle-Folchert, B. Greig,  
 R. Holt, I. Illic, H. Kao, T. Miller, S. Moran, A. Pilon,  
 R. Rheaume, M. Richter, S. Schou, N. Shuttleworth,  
 R. Sun, K. Wardle

**PROJECT MANAGER**

Alberto Cayuela, P.Eng. PMP, University of British Columbia

**CONSULTANTS**

Structural Engineer:	Fast + Epp
Mechanical Engineer:	Stantec
Electrical Engineer:	Stantec
General Contractor:	Heatherbrae Construction
Civil Engineer:	Core Group Consultants
Geotechnical Consultant:	Trow Associates Inc
Landscape Consultant:	PWL Partnership
Interior Design:	Perkins+Will Canada
Code Consultant:	LMDG Building Code Consultants
Building Envelope:	Morrison Hershfield Limited
Acoustic Consultant:	BKL Consultants
Audio Visual Consultant:	MC Squared System Group
Furniture, Fixtures and Equipment:	Haworth
Construction Management:	Heatherbrae Construction
Owner Representative:	UBC Properties Trust
Wastewater Consultant:	Eco-Tek Ecological Technologies
Rainwater Consultant:	NovaTec Consultants
Photographer:	Martin Tessler



## ENVIRONMENTAL CONSIDERATIONS

### ENERGY

CIRS is supplied by energy generated on-site and from renewable energy sources, achieving net-positive energy and GHG neutrality. Features include: captured waste heat from a nearby building, on-site fuel cells; a photovoltaic array; solar hot water collectors; ground source heat pumps; glazing treatment that ensures solar heat gain/loss is minimized for each orientation, and a living solar screen that acts as a dynamic shading device and responds to seasonal change.

### WATER

CIRS captures, stores and reuses all stormwater and rainwater on site from exterior and interior building process loads, eliminating the facility's dependence on municipal infrastructure. Features include: a rainwater collection system; ultra low water fixtures; grey and blackwater treatment; and stormwater collection and treatment.

### RESOURCE CONSERVATION

CIRS is designed as an adaptable and flexible structure, using a demountable structure that is constructed from precast concrete and wood that allows easy deconstruction and material recovery. It employs resource-efficient materials that are renewable, recyclable and durable. Materials made from sustainably harvested, local and recycled-content sources are used throughout the facility.

### HEALTH AND WELL-BEING

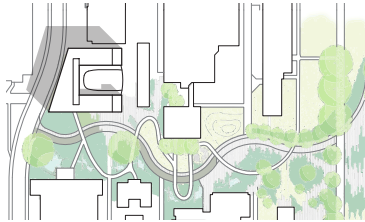
The U-shaped building massing contributes to the goal of 100% natural daylight and ventilation for all inhabitants. The project incorporates operable windows, maximizes natural daylight, and uses zero and low-emitting materials to address the health and well-being of building occupants.

### BUILDING OPERATIONS AND MAINTENANCE

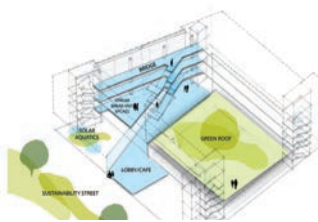
A 1000-point monitoring system provides continuous feedback on water and energy consumption, natural ventilation rates, daylight and artificial illumination levels, airflow and air change rates, oxygen and carbon dioxide levels, and surface mass and air temperature in all areas of the building. Feedback gathered from this system enables researchers, facility managers and other partners to refine the operation and maintenance of individual systems and the entire facility.

### CONTINUOUS OUTREACH AND EDUCATION

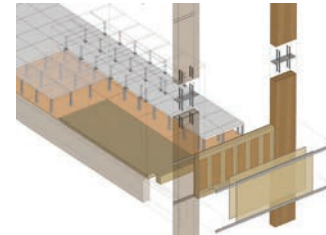
In addition to putting sustainable systems on display and educating visitors, a Technical Manual and website ([www.cirs.ubc.ca](http://www.cirs.ubc.ca)) further disseminate information, with lesson learned, on-going updates and actual performance data from the project. The process of creating CIRS has reshaped UBC's vision for its campus and its role as an institution; the results from CIRS are helping move the world toward a more sustainable future.



**CONTEXT** Located on the University of British Columbia Vancouver campus at the corner of West Mall and Sustainability Street.



CIRS is adjacent to SUSTAINABILITY STREET, a landscape and urban infrastructure project.

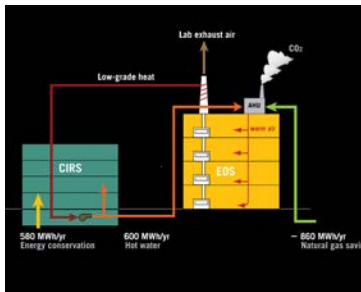


CIRS's wood structure sequesters 600 tonnes of carbon, helping achieve net-zero carbon in construction and operations.

**PROGRAM** This 5,675 sm facility houses highly flexible classrooms, laboratories and office space in addition to lecture theatres, a public atrium, exhibition spaces and a café.



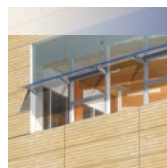
The building is ORGANIZED around two wings of office/lab blocks that are linked by an atrium.



CIRS is designed to be NET-POSITIVE ENERGY by using waste heat from an adjacent building.

**INNOVATION** In response to the global challenge for a sustainable society, CIRS aspires to be the most innovative and high performance building in North America, with leading research in sustainable design, products, systems and decision making. With this in mind, the project team has set the following environmental goals:

- Net-positive energy
- Net-zero water
- Net-zero carbon construction
- Net-zero carbon operation
- A building that learns from its users; a building that helps its users learn from it
- Every work space daylight, naturally ventilated, temperature and air under individual control
- Minimize building waste
- LEED Platinum
- Living Building Challenge



**MATERIALS**

- Four-storey wood structure with wood cladding
- Locally or regionally sourced materials
- Building designed for modification and disassembly



**HEALTH / COMFORT**

- Natural ventilation with operable windows
- 100% daylighting for all occupied spaces
- Central atrium space serves as social space



**SITE ECOLOGY**

- Live within the footprint of building site
- Net-positive impact on the ecology of the site
- Planted solar shade on west façade



**WATER**

- Harvest and store rainwater on site
- Treat rainwater for potable water consumption
- Treat grey and blackwater on site with solar aquatics system



**ENERGY**

- High-performance building envelope
- Waste heat recovery from adjacent building
- Building integrated PVs and geoechange system



**REGENERATIVE BUILDING CONCEPT:**

- SMART
- GREEN
- HUMANE