

CITY OF WHITE ROCK BRITISH COLUMBIA CANADA

leading by example

The City of White Rock's "Green" Operations Building aims for Gold Certification by the U.S. Green Building Council.

renewable energy

air quality

water conservation

natural cycles



City of **White Rock** goes for **gold**

We are setting new standards for building construction in North America by going green with our new operations facility.

Our goal is to receive Gold Certification through the U.S. Green Building Council's internationally recognized LEED™ (Leadership in Energy & Environmental Design) program.

To meet the criteria, we're using a wide variety of innovative building strategies in the 661-square-meter facility – everything from environmentally advanced design to renewable energy systems and water conservation techniques. This will not only substantially reduce the impact on the environment, energy consumed and long-term operating costs, it will also provide a healthier work environment, increase worker productivity and enhance building marketability.

The price of such innovative excellence is just 8% more than the cost of an equivalent conventional building, yet the anticipated 40% reduction in energy costs will completely amortize this additional expenditure within 11 years*. In short, going green delivers an excellent return – environmentally, economically and socially – and we urge others in the community to follow our lead.



reduction
conservation
natural cycles
renewable energy
air quality

* Based on a 5% annual energy inflation rate.

White Rock is a beautiful place to live... and we aim to keep it that way!

Our green building goals and strategies include:

improved **air quality**

Goal: **To create a healthy, vibrant and productive work environment.**

Strategies:


- All new concrete was made with 40% fly ash to reduce carbon dioxide emissions from the production of cement.
- All new materials were produced within a 500-mile radius of the site to reduce transportation effects on the environment.
- Direct ventilation removes contaminants from washrooms, shower and work areas, such as photocopier rooms.
- Operable windows near all work stations and in each enclosed office provide natural ventilation, and are strategically placed to optimize cross ventilation and eliminate the need for air conditioning.
- The ventilation system is customized to suit high and low usage areas, saving a significant amount of heating and electrical energy while maintaining excellent air quality.
- The “Green Roof” reduces heat gain in the environment.

enhanced **liveability**

Goal: **Ensuring the health, safety and comfort of building occupants.**

Strategies:

- Operable windows in offices and at each workstation provide natural ventilation and allow staff to control their personal environment.
- Natural daylight controlled by sunshades, overhangs and a wall trellis infuse the interior workspace with light and eliminate overheating during the warm summer months.
- Task lighting is provided at each workstation.
- Controlled ventilation and the use of water-based, non-toxic adhesives ensure excellent indoor air quality.
- Windows maximize views to the south overlooking the water, and landscaping in “non-view” areas enhances the natural environment.



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renewable energy

Goal: To reduce environmental impact through renewable energy systems both on and off site.

Strategies:

- Sustainable renewable energy, purchased through BC Hydro's green power program, was used to augment the solar electrical power generated on site.
- White Rock is one of the sunniest areas of the Lower Mainland. Solar tubes are used to harness this energy and provide base heating for the building. Natural ventilation combined with solar heating will provide an annual cost savings of \$4,785 compared with a conventional built building.
- Thermal energy in storm water, which is diverted into a detention tank from city streets, is used to help heat and cool the facility.
- A low energy consumption heat pump system is used for a majority of the time, saving approximately \$1,670 per year in energy costs. A gas-heating tank provides backup and will be used only when necessary.
- Other green design features include minimal openings in the north wall, concentrated glazing on the south façade, and high efficiency glass.

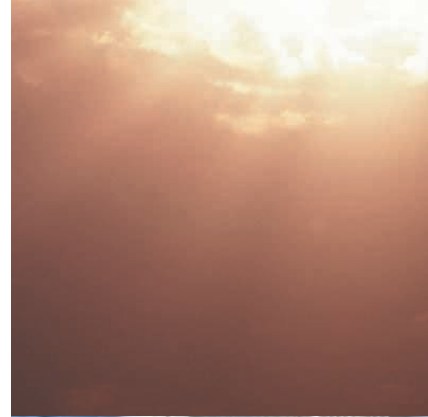
energy conservation

Goal: Saving up to \$5,000 per year through the use of efficient light sources and strategic control of natural daylight.

Strategies:

- Fluorescent lighting combined with individually controlled desk-mounted task lights save electrical energy and enhance personal comfort and productivity.
- Glass walls and opaque transoms above doors maximize the penetration of natural light.
- Occupancy sensors in rooms that are only used occasionally, such as washrooms, lunchrooms and meeting rooms, ensure lights are not left on unnecessarily. Operational savings are estimated at 4 hours per day, or 260 days per year.
- Low wattage, light emitting diode EXIT signs significantly reduce energy consumption.
- Outdoor security lights combine low wattage metal halide and compact fluorescent luminaries for efficient all-night use.
- Roof overhangs, exterior window shades, deciduous trees and other sun-shading devices reduce heat gain.

The "Green Roof" and minimal openings on the north face of the building provide additional insulation.



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water conservation

Goal: **To reduce the burden on our municipal water supply and waste water system.**

Strategies:

- Waterless urinals and low-flow faucets reduce water consumption.
- Storm water is collected in a storage tank and used instead of potable water for toilets and to wash down vehicles.
- Storm water provides landscape irrigation, and indigenous plants are carefully selected to avoid excessive consumption of potable water.
- In the event of a summer drought, a backup potable water source ensures the building functions will not be compromised.

storm water management

Goal: **To enhance the quality of storm water through best management practices.**

Strategies:

- The “Green Roof” reduces water runoff from impermeable surfaces and mimics the natural water cycle.
- Run off storm water is diverted to a storage tank and used as an energy source.
- The construction storm water control plan helps ensure that silt and dirty storm water runoff from the site does not enter local streams and water systems.
- The gravel parking lot allows for re-infiltration of rainwater into the ground, naturally re-charging the water table, and helps remove pollutants that originate from parked vehicles.
- Replaced 376 square metres of asphalt paving with natural, planted landscape.

solid waste reduction

Goal: **To reduce all construction and demolition debris by reusing and recycling.**

Strategies:

- Reused existing foundation.
- Recycled 99% of the existing building (by weight), diverting almost half a million tonnes from the landfill.
- Used recycled material, such as heavy timber, wood decking and insulation, and sorted construction wastes into accepted recycled components.

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Green Operations Building, LEED Project # 0225
LEED Version 2 Certification Level: GOLD
July 28, 2003

44 Points Achieved **Possible Points: 69**

Certified 26 to 32 points **Silver** 33 to 38 points **Gold** 39 to 51 points **Platinum** 52 or more points

8 Sustainable Sites **Possible Points: 14**

Y			
Y	Prereq 1	Erosion & Sedimentation Control	
1	Credit 1	Site Selection	1
	Credit 2	Urban Redevelopment	1
	Credit 3	Brownfield Redevelopment	1
1	Credit 4.1	Alternative Transportation , Public Transportation Access	1
1	Credit 4.2	Alternative Transportation , Bicycle Storage & Changing Rooms	1
	Credit 4.3	Alternative Transportation , Alternative Fuel Refueling Stations	1
1	Credit 4.4	Alternative Transportation , Parking Capacity	1
	Credit 5.1	Reduced Site Disturbance , Protect or Restore Open Space	1
	Credit 5.2	Reduced Site Disturbance , Development Footprint	1
1	Credit 6.1	Stormwater Management , Rate and Quantity	1
	Credit 6.2	Stormwater Management , Treatment	1
1	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands , Non-Roof	1
1	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands , Roof	1
1	Credit 8	Light Pollution Reduction	1

5 Water Efficiency **Possible Points: 5**

Y			
1	Credit 1.1	Water Efficient Landscaping , Reduce by 50%	1
1	Credit 1.2	Water Efficient Landscaping , No Potable Use or No Irrigation	1
1	Credit 2	Innovative Wastewater Technologies	1
1	Credit 3.1	Water Use Reduction , 20% Reduction	1
1	Credit 3.2	Water Use Reduction , 30% Reduction	1

11 Energy & Atmosphere **Possible Points: 17**

Y			
Y	Prereq 1	Fundamental Building Systems Commissioning	
Y	Prereq 2	Minimum Energy Performance	
Y	Prereq 3	CFC Reduction in HVAC&R Equipment	
2	Credit 1.1	Optimize Energy Performance , 20% New / 10% Existing	2
2	Credit 1.2	Optimize Energy Performance , 30% New / 20% Existing	2
2	Credit 1.3	Optimize Energy Performance , 40% New / 30% Existing	2
2	Credit 1.4	Optimize Energy Performance , 50% New / 40% Existing	2
	Credit 1.5	Optimize Energy Performance , 60% New / 50% Existing	2
1	Credit 2.1	Renewable Energy , 5%	1
	Credit 2.2	Renewable Energy , 10%	1
	Credit 2.3	Renewable Energy , 20%	1
	Credit 3	Additional Commissioning	1
1	Credit 4	Ozone Depletion	1
	Credit 5	Measurement & Verification	1
1	Credit 6	Green Power	1

6 Materials & Resources **Possible Points: 13**

Y			
Y	Prereq 1	Storage & Collection of Recyclables	
	Credit 1.1	Building Reuse , Maintain 75% of Existing Shell	1
	Credit 1.2	Building Reuse , Maintain 100% of Existing Shell	1
	Credit 1.3	Building Reuse , Maintain 100% Shell & 50% Non-Shell	1
1	Credit 2.1	Construction Waste Management , Divert 50%	1
1	Credit 2.2	Construction Waste Management , Divert 75%	1
1	Credit 3.1	Resource Reuse , Specify 5%	1
	Credit 3.2	Resource Reuse , Specify 10%	1
1	Credit 4.1	Recycled Content	1
	Credit 4.2	Recycled Content	1
1	Credit 5.1	Local/Regional Materials , 20% Manufactured Locally	1
1	Credit 5.2	Local/Regional Materials , of 20% Above, 50% Harvested Locally	1
	Credit 6	Rapidly Renewable Materials	1
	Credit 7	Certified Wood	1

11 Indoor Environmental Quality **Possible Points: 15**

Y			
Y	Prereq 1	Minimum IAQ Performance	
Y	Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1	Credit 1	Carbon Dioxide (CO₂) Monitoring	1
	Credit 2	Increase Ventilation Effectiveness	1
	Credit 3.1	Construction IAQ Management Plan , During Construction	1
1	Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1
1	Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1
1	Credit 4.2	Low-Emitting Materials , Paints	1
1	Credit 4.3	Low-Emitting Materials , Carpet	1
1	Credit 4.4	Low-Emitting Materials , Composite Wood	1
1	Credit 5	Indoor Chemical & Pollutant Source Control	1
1	Credit 6.1	Controllability of Systems , Perimeter	1
	Credit 6.2	Controllability of Systems , Non-Perimeter	1
1	Credit 7.1	Thermal Comfort , Comply with ASHRAE 55-1992	1
	Credit 7.2	Thermal Comfort , Permanent Monitoring System	1
1	Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1
1	Credit 8.2	Daylight & Views , Views for 90% of Spaces	1

3 Innovation & Design Process **Possible Points: 5**

Y			
1	Credit 1.1	Innovation in Design : Exemplary Performance in 98% CWM	1
1	Credit 1.2	Innovation in Design : Exemplary Reduction of Water Use	1
	Credit 1.3	Innovation in Design :	1
	Credit 1.4	Innovation in Design :	1
1	Credit 2	LEED™ Accredited Professional	1



For more information contact:

Greg Scott

City Engineer

City of White Rock

British Columbia Canada

Website: www.city.whiterock.bc.ca

E-mail: gscott@city.whiterock.bc.ca



**THE CORPORATION
OF THE CITY OF
WHITEROCK**

Architect: **BUSBY + ASSOCIATES ARCHITECTS**

Contractor: **KDS CONSTRUCTION**