

White Rock Operations Building

White Rock, British Columbia

Colin Foley

Sustainable Design

Background

- Site of old sewage treatment plant.
- Location was primarily residential.
- Need for operations center for town
- Decision was made early on to “go green”



Financing

- Numerous grants were applied for to fund project design, construction.
 - Federal “Commercial Building Incentive Program”
 - REDI Grant

Financing

- Total project cost was \$1,200,000 (excluding land)
 - Just 8% more than standard building construction
- Energy efficiency will save \$5000
 - Cost of Green materials will be repaid within 11 years.

Pre-Construction

- Site Location
 - Near transit
 - Used prior structures foundation
 - Landscaping elements and design used to blend into residential area



Energy

- Energy
 - High efficiency light fixtures
 - Occupancy sensors
 - Low ambient lighting
 - Individual task lights
 - Solar screen



Energy

- Energy II
 - Additional insulation
 - Solar Tubes for hot water generation
 - Low energy heat pump system
 - Efficient hot water tank



Water Conservation

- Waterless Urinals
- Grey water recycling



Other Features

- Changing Facilities
- Public Transportation



LEED Rating


- GOLD (42 Points)
- Close work with contractor
- Understanding what LEED needs

Evaluation

- **Building Successful**
 - Able to achieve numerous energy improvements
 - Energy 50% of ASHRAE
 - 100% of spaces well lit
 - Low cost – 8% over normal, 11 years to pay off

What Else?

- Not Much
- Given projects goals and objectives, not much else to do
 - Purchase more re-useable energy

 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 Prereq 1 Erosion & Sedimentation Control 1 Credit 1 Site Selection 1 Credit 2 Urban Redevelopment 1 Credit 3 Brownfield Redevelopment 1 Credit 4.1 Alternative Transportation, Public Transportation Access 1 Credit 4.2 Alternative Transportation, Single Storage & Changing Rooms 1 Credit 4.3 Alternative Transportation, Alternative Fuel Refueling Stations 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 Credit 6.1 Stormwater Management, Rate and Quantity 1 Credit 6.2 Stormwater Management, Treatment 1 Credit 7.1 Landscape & Exterior Design to Reduce Heat Islands, Non-Roof 1 Credit 7.2 Landscape & Exterior Design to Reduce Heat Islands, Roof 1 Credit 8 Light Pollution Reduction	Y Prereq 1 Storage & Collection of Recyclables 1 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 Credit 2.1 Construction Waste Management, Divert 50% 1 Credit 2.2 Construction Waste Management, Divert 75% 1 Credit 3.1 Resource Reuse, Specify 5% 1 Credit 3.2 Resource Reuse, Specify 10% 1 Credit 4.1 Recycled Content 1 Credit 4.2 Recycled Content 1 Credit 5.1 Local/Regional Materials, 20% Manufactured Locally 1 Credit 5.2 Local/Regional Materials, of 20% Above, 50% Harvested Locally 1 Credit 6 Rapidly Renewable Materials 1 Credit 7 Certified Wood
5 Water Efficiency Possible Points: 5	
Y Credit 1.1 Water Efficient Landscaping, Reduce by 50% 1 Credit 1.2 Water Efficient Landscaping, No Potable Use or No Irrigation 1 Credit 2 Innovative Wastewater Technologies 1 Credit 3.1 Water Use Reduction, 20% Reduction 1 Credit 3.2 Water Use Reduction, 30% Reduction	
11 Energy & Atmosphere Possible Points: 17	
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 Credit 1.2 Optimize Energy Performance, 30% New / 20% Existing 2 Credit 1.3 Optimize Energy Performance, 40% New / 30% Existing 2 Credit 1.4 Optimize Energy Performance, 50% New / 40% Existing 2 Credit 1.6 Optimize Energy Performance, 60% New / 50% Existing 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 Credit 4 Ozone Depletion 1 Credit 5 Measurement & Verification 1 Credit 6 Green Power	Y Prereq 1 Minimum IAQ Performance Y Prereq 2 Environmental Tobacco Smoke (ETS) Control 1 Credit 1 Carbon Dioxide (CO ₂) Monitoring 1 Credit 2 Increase Ventilation Effectiveness 1 Credit 3.1 Construction IAQ Management Plan, During Construction 1 Credit 3.2 Construction IAQ Management Plan, Before Occupancy 1 Credit 4.1 Low-Emitting Materials, Adhesives & Sealants 1 Credit 4.2 Low-Emitting Materials, Paints 1 Credit 4.3 Low-Emitting Materials, Carpet 1 Credit 4.4 Low-Emitting Materials, Composite Wood 1 Credit 5 Indoor Chemical & Pollutant Source Control 1 Credit 6.1 Controllability of Systems, Perimeter 1 Credit 6.2 Controllability of Systems, Non-Perimeter 2 Credit 7.1 Thermal Comfort, Comply with ASHRAE 55-1992 2 Credit 7.2 Thermal Comfort, Permanent Monitoring System 2 Credit 8.1 Daylight & Views, Daylight 75% of Spaces 2 Credit 8.2 Daylight & Views, Views for 90% of Spaces
3 Innovation & Design Process Possible Points: 5	
1 Credit 1 Innovation in Design: Exemplary Performance in 95% CWM 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 Credit 2 LEED™ Accredited Professional	

Sources

- <http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=288>
- http://www.city.whiterock.bc.ca/city_operations/pdfscityoperations/leadingbyexample.pdf
- <http://www.edcmag.com/FILES/HTML/PDF/0904cp-WHITEROCK.pdf>
- <http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=288>
- <http://www.iaatopten.org/hpb/ratings.cfm?ProjectID=288>