2013 Exhibition of School Planning and Architecture

Burnaby Central Secondary School

Burnaby, British Columbia, Canada

Burnaby Central Secondary

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Enhancing the Community

Community Environment

- The project is sited on a well-used Parkway, directly facing City Hall.
- It is respectful of its siting and deliberately designed with a low profile, fitting into its surroundings and responding to City Hall. It is divided over 2.5 storeys, built into the sloping grade.
- The School District partnered with the City to construct an enhanced International Standard athletic track directly behind the school, used for community and school functions.
- The school features a Community meeting centre, located off the main level lobby.

Site Elements and Connections

Community Environment

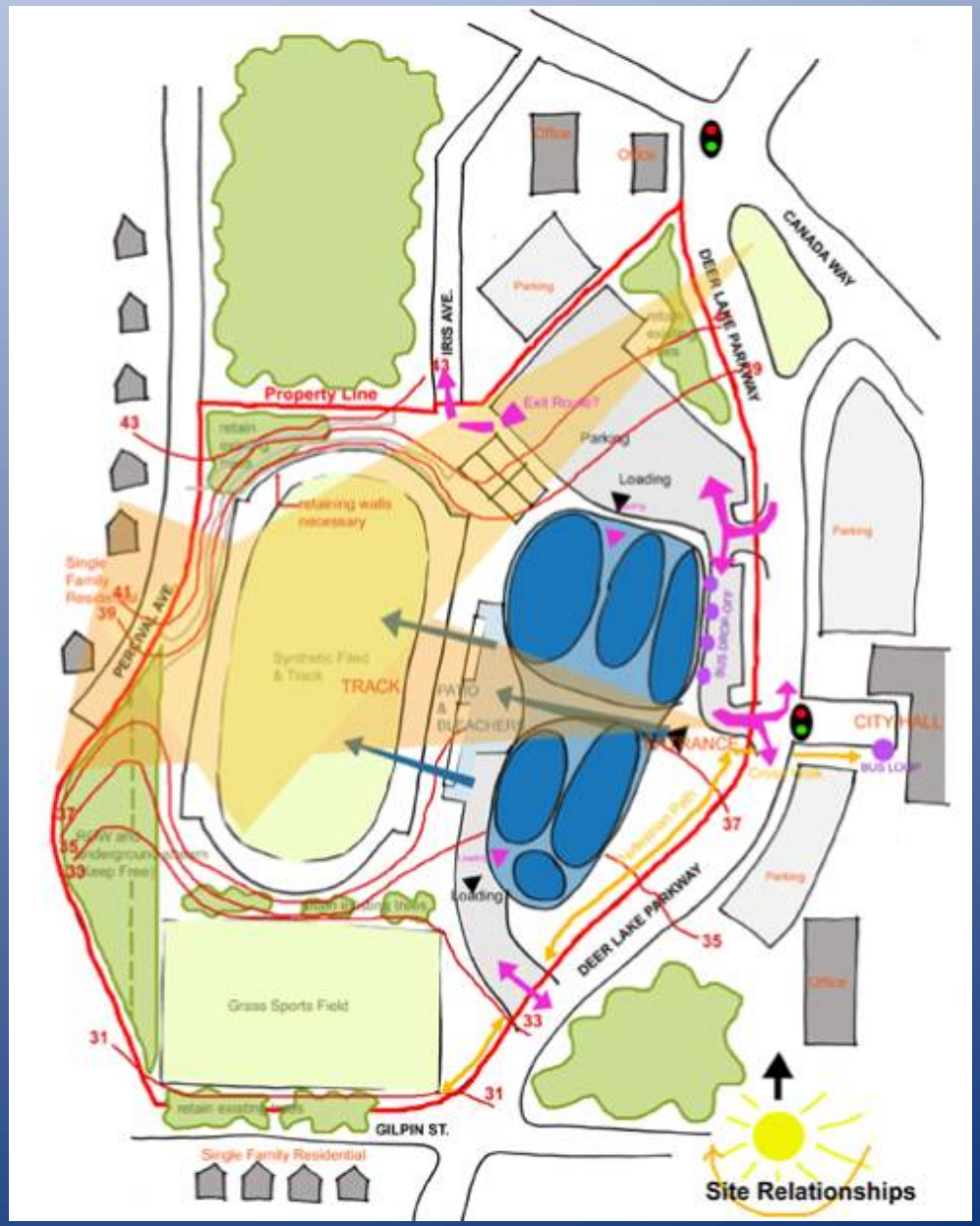
Diagram shows connections to the community and relationship to site orientation.

The school opens from the main entry onto the joint-use athletic track beyond.

The project includes an "urban trail" pedestrian/ cycling path along Deer Lake Parkway, which connects to a regional bicycle route. Secure bicycle racks & showers are provided.

- An on-site riparian area with a salmon-habitat stream has been retained and restored to the southwest.

Direct walking access to the public bus transit on a major arterial route (Canada Way).



Open-Plan, Daylit Library Environment

Learning Environment

• Library features low-E curtainwall glazing, curved suspended aluminium ceiling elements with acoustic properties and dynamic interest, and direct/ indirect light fixtures with occupancy sensors.

• Environment encourages students to succeed through their own learning styles: through open plan, group settings, individual tech stations, and lounge areas.

State-of-the-Art Learning

Learning Environment

- Top quality science labs, with operable windows and views to the trees beyond
- Desired learning program upheld, with several science-based classrooms having joint access to the ‘super lab’ for technical experiments.
- Specialized classrooms also provided for culinary arts; auto, wood, & metal shops; music; theater; dance; art.

Central, Daylit Multipurpose Space

Physical Environment

- The school meets high performance and sustainability goals.
- It is a LEED Gold Candidate, on target for 43 credits.

- A large double-height Multipurpose space is at the heart of the school.
- Skylights along both sides bring in natural light and accent the oversize rainwater gutters, whose axes traverse to both the front & rear of the building.
- Full-height glazing with transparent operable garage doors open onto a plaza and athletic field beyond.

- Recycling stations are located throughout the school.

Innovative Rainwater Management

Physical Environment

Outside the operable glazed garage-door openings of the Multi-purpose space, oversize V-shape rainwater gutters empty into catchers which direct water to landscaped basins, accented with reclaimed boulders found during the site's excavation.

Schematic Design Process

Planning Process

Construction followed a 'P2' Public-Private Design-Build process, awarded through a competition.

The school follows the Ministry of Education budget guidelines, and also provides additional community amenities (international standard athletic track; meeting hall).

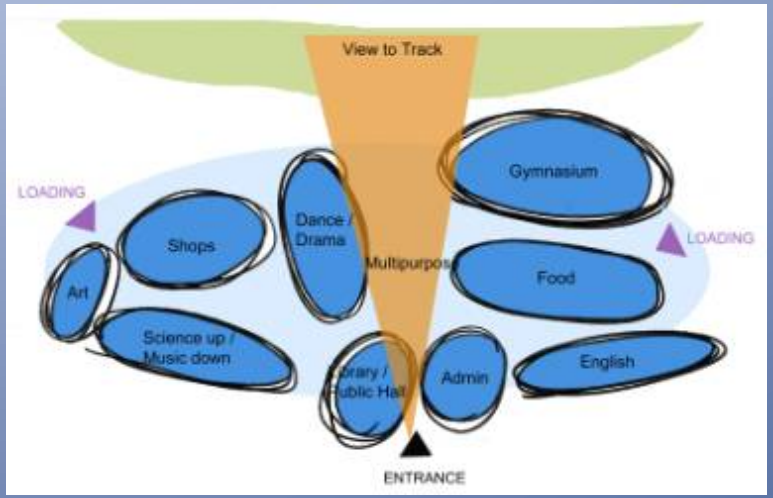
It was completed on time and within budget.

The Planning Team participants included:

School District's Director of Facilities, Director of Education Programs, Director of Athletic Programs, School Principal, City Planner and City Parks Board.

The Team provided a detailed Request for Proposals document outlining all of their programming, performance, and sustainability goals.

After the project was the awarded, the Planning Team continued to meet on a regular basis with the Architect and Contractor throughout the detailed design, construction, and post-occupancy stages.



Above: *Schematic bubble diagram showing the school's programmatic elements.*

Planning and Design Development

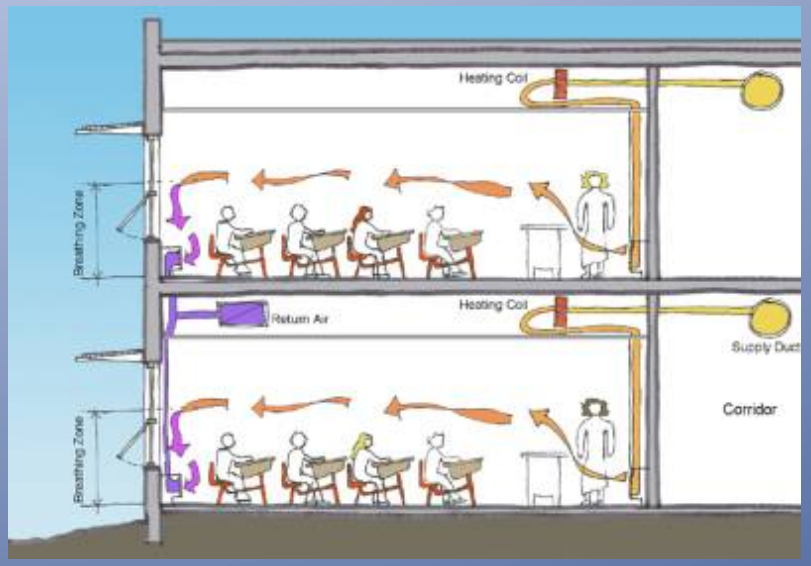
Planning Process

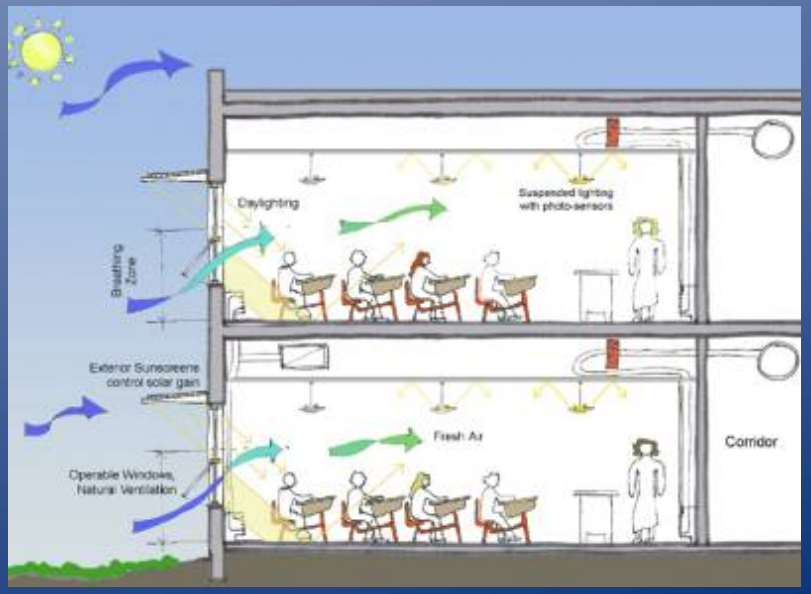
The Planning Team and the Design-Build Team met on a continual basis for a three year period, consisting of the competition, design & development stages, construction, and post-occupancy.

Ongoing opportunities were created to ensure the final product would align with the initial Vision and Goals of the Planning Team, for example the natural and mechanical systems illustrated here.

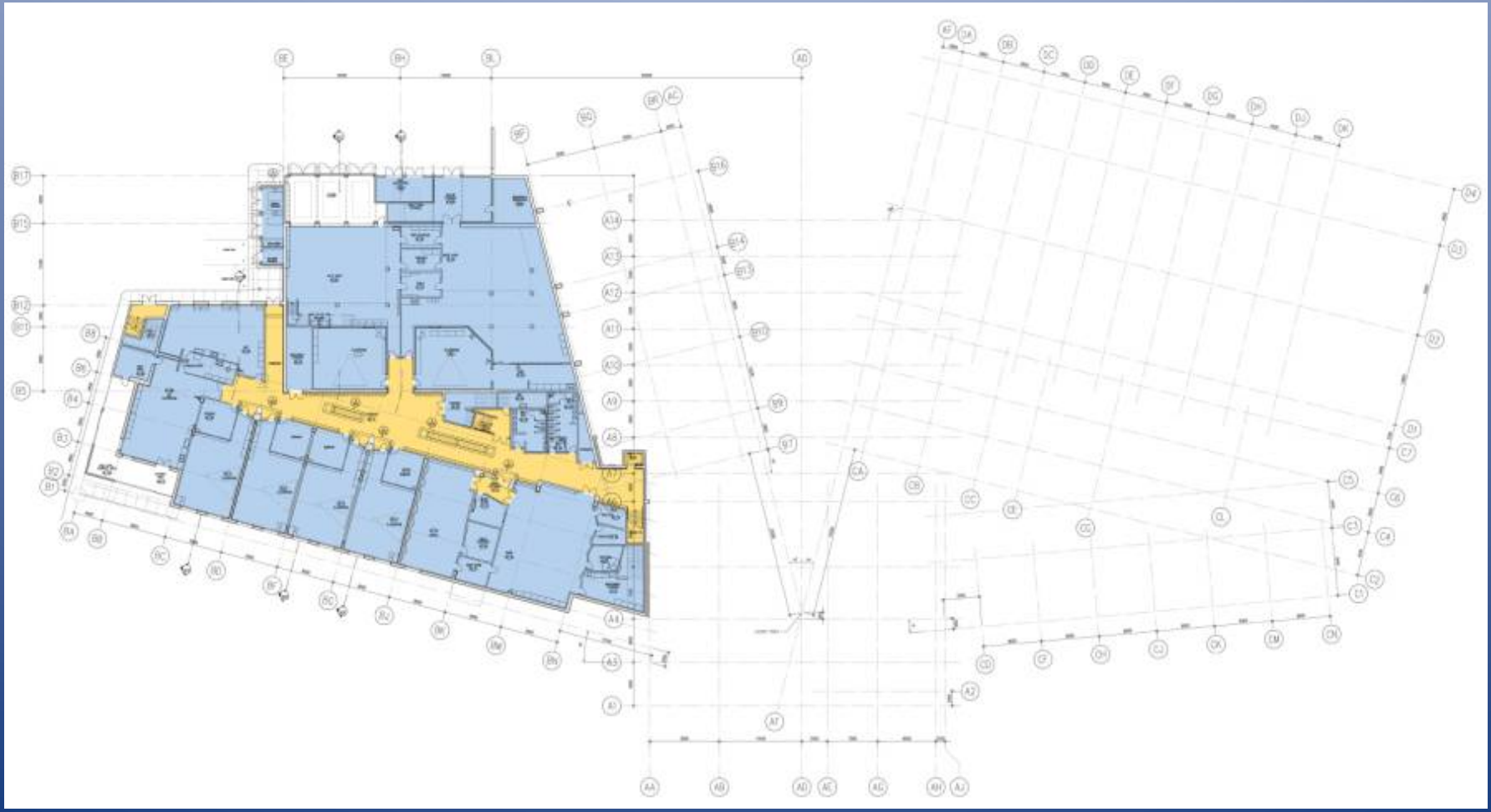
Right Top: *Natural ventilation diagram: operable windows are included throughout the school, with at least two in every classroom.*

Right Bottom: *A displacement air distribution system in classrooms ensures fresh supply air within the "breathing zone" and 90% ventilation effectiveness.*





Lower Level Floor Plan



Main Level Floor Plan

Upper Level Floor Plan

Exhibition of School Planning and Architecture

Project Data

Submitting Firm :	Grant + Sinclair Architects Ltd
Project Role	Architect
Project Contact	Douglas I. Sinclair, Architect AIBC; Paul A. Grant, Architect AIBC
Title	Architect of Record
Address	1000 – 1500 W. Georgia Street
City, State or Province, Country	Vancouver B.C. Canada
Phone	604-681-9191
Joint Partner Firm:	
Project Role	
Project Contact	
Title	
Address	
City, State or Province, Country	
Phone	

Other Firm:	Giffels
Project Role	General Contractor
Project Contact	Tim Fitzpatrick
Title	Executive Vice President
Address	4333 Ste-Catherine St. W., Suite 250
City, State or Province, Country	Westmount, Quebec H3Z 1P9, Canada
Phone	514 931 7756

Construction Firm:	DGS Construction Company, Ltd.
Project Role	Construction & General Contractor
Project Contact	George Rossi; Dennis Rossi
Title	Contractor
Address	A101 - 13761 - 116th Avenue
City, State or Province, Country	Surrey, BC V3R 0T2 Canada
Phone	604-584-2214

Exhibition of School Planning and Architecture

Project Details

Project Name	Burnaby Central Secondary School
City	Burnaby
State	British Columbia
District Name	Burnaby School District No. 41
Supt/President	Greg Frank
Occupancy Date	October 2012
Grades Housed	8-12
Capacity(Students)	1370 Students, designed for future expansion to 1500
Site Size (acres)	15.54 acres (6.29 Ha)
Gross Area (sq. ft.)	176,044 sf (16,355 sm)
Per Occupant(pupil)	128 sf / pupil
gross/net please indicate	
Design and Build?	Yes
If yes, Total Cost:	$50 Million
Includes:	All inclusive
If no,	
Site Development:	
Building Construction:	
Fixed Equipment:	
Other:	
Total:	$50 Million

Expressive Architectural Elements

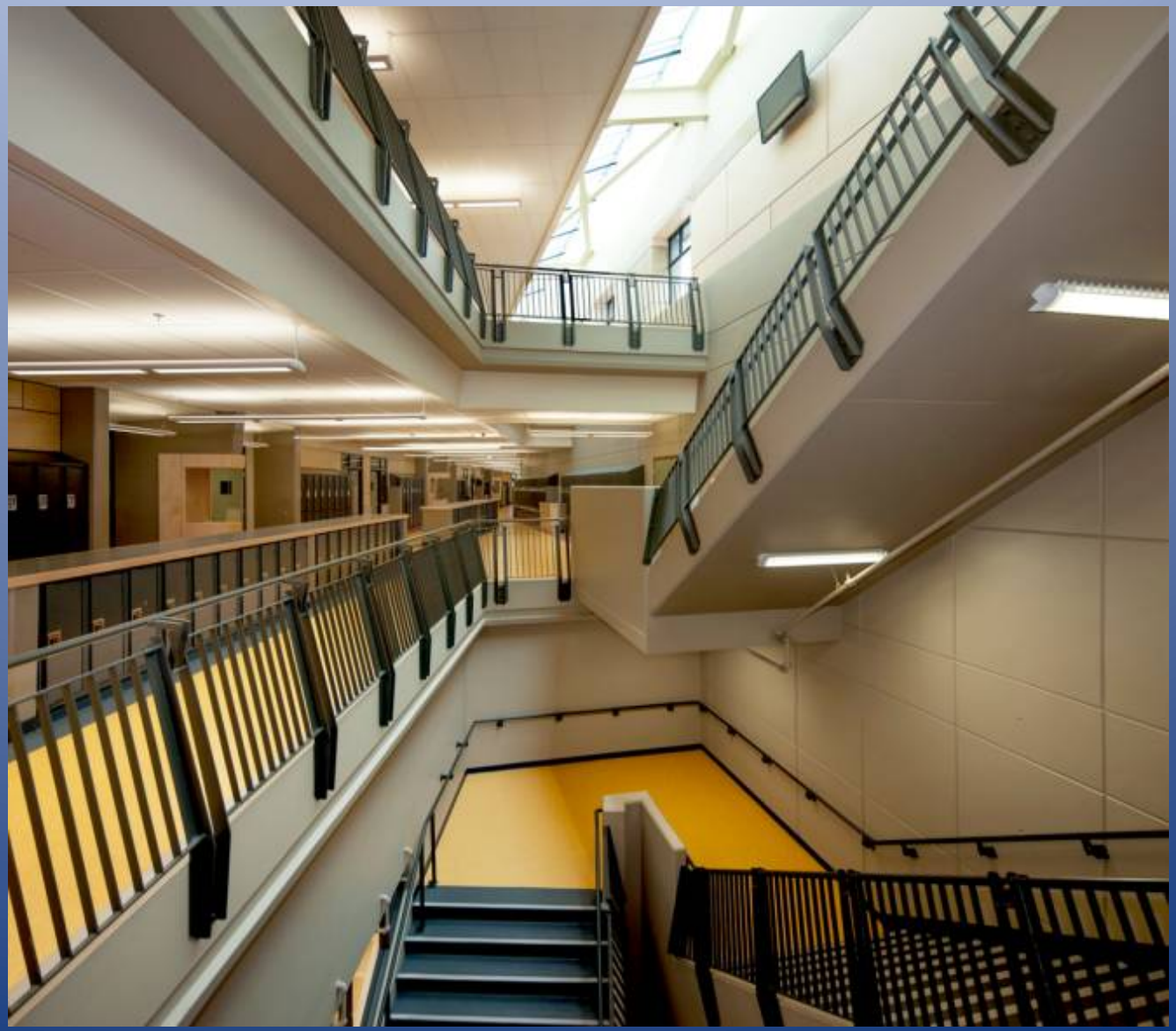
Physical Environment

The glass and steel entry canopy continues as a playful element from the exterior into the Main Lobby, and manifests as V-shaped gutters in the multi-purpose space, to the exterior plaza beyond.

Inspiring, Daylit Environment

Physical Environment

Lightwells throughout the school provide natural daylighting to each level of the building.



Joint-use Partnership between the School and Community

Community Environment

The School District and the City partnered to provide an International Standard athletic track with changing facilities, to be used jointly by the Community and the school.

LEED Gold Candidate

Canada Green Building Council

Right: LEED Gold Checklist. Project is on target for 43 credits.

LEED Canada-NC v1.1 Project Checklist

Burnaby Central Secondary School
Burnaby, BC

GOLD Checklist
March 19 2013

Yes	?	No	Sustainable Sites	14 Points
Y			Prereq 1 **Erosion & Sedimentation Control**	Required
1			Credit 1 **Site Selection**	1
		1	Credit 2 **Development Density**	1
		1	Credit 3 **Redevelopment of Contaminated Site**	1
1			Credit 4.1 **Alternative Transportation**, Public Transportation Access	1
1			Credit 4.2 **Alternative Transportation**, Bicycle Storage & Changing Rooms	1
		1	Credit 4.3 **Alternative Transportation**, Alternative Fuel Vehicles	1
1			Credit 4.4 **Alternative Transportation**, Parking Capacity	1
		1	Credit 5.1 **Reduced Site Disturbance**, Protect or Restore Open Space	1
		1	Credit 5.2 **Reduced Site Disturbance**, Development Footprint	1
1			Credit 6.1 **Stormwater Management**, Rate and Quantity	1
1			Credit 6.2 **Stormwater Management**, Treatment	1
		1	Credit 7.1 **Heat Island Effect**, Non-Roof	1
1			Credit 7.2 **Heat Island Effect**, Roof	1
1			Credit 8 **Light Pollution Reduction**	1

Yes	?	No	Water Efficiency	5 Points
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

Yes	?	No	Energy & Atmosphere	17 Points
Y			Prereq 1 **Fundamental Building Systems Commissioning**	Required
Y			Prereq 2 **Minimum Energy Performance**	Required
Y			Prereq 3 **CFC Reduction in HVAC&R Equipment**	Required
6		4	Credit 1 **Optimize Energy Performance**	1 to 10
		1	Credit 2.1 **Renewable Energy**, 5%	1
		1	Credit 2.2 **Renewable Energy**, 10%	1
		1	Credit 2.3 **Renewable Energy**, 20%	1
1			Credit 3 **Best Practice Commissioning**	1
1			Credit 4 **Ozone Protection**	1
		1	Credit 5 **Measurement & Verification**	1
1			Credit 6 **Green Power**	1

Yes	?	No	Materials & Resources	14 Points
Y			Prereq 1 **Storage & Collection of Recyclables**	Required
		1	Credit 1.1 **Building Reuse:** Maintain 75% of Existing Walls, Floors, and Roof	1
		1	Credit 1.2 **Building Reuse:** Maintain 95% of Existing Walls, Floors, and Roof	1
		1	Credit 1.3 **Building Reuse:** Maintain 50% of Interior Non-Structural Elements	1
1			Credit 2.1 **Construction Waste Management:** Divert 50% from Landfill	1
1			Credit 2.2 **Construction Waste Management:** Divert 75% from Landfill	1
		1	Credit 3.1 **Resource Reuse:** 5%	1
		1	Credit 3.2 **Resource Reuse:** 10%	1
1			Credit 4.1 **Recycled Content:** 7.5% (post-consumer + ½ post-industrial)	1
1			Credit 4.2 **Recycled Content:** 15% (post-consumer + ½ post-industrial)	1
1			Credit 5.1 **Regional Materials:** 10% Extracted and Manufactured Regionally	1
1			Credit 5.2 **Regional Materials:** 20% Extracted and Manufactured Regionally	1
		1	Credit 6 **Rapidly Renewable Materials**	1
1			Credit 7 **Certified Wood**	1
1			Credit 8 **Durable Building**	1

Yes	?	No	Indoor Environmental Quality	15 Points
Y			Prereq 1 **Minimum IAQ Performance**	required
Y			Prereq 2 **Environmental Tobacco Smoke (ETS) Control**	required
1			Credit 1 **Carbon Dioxide (CO_2) Monitoring**	1
		1	Credit 2 **Ventilation Effectiveness**	1
1			Credit 3.1 **Construction IAQ Management Plan:** During Construction	1
1			Credit 3.2 **Construction IAQ Management Plan:** Testing Before Occupancy	1
1			Credit 4.1 **Low-Emitting Materials:** Adhesives & Sealants	1
1			Credit 4.2 **Low-Emitting Materials:** Paints and Coating	1
1			Credit 4.3 **Low-Emitting Materials:** Carpet	1
1			Credit 4.4 **Low-Emitting Materials:** Composite Wood and Laminate Adhesives	1
1			Credit 5 **Indoor Chemical & Pollutant Source Control**	1
		1	Credit 6.1 **Controllability of Systems:** Perimeter Spaces	1
		1	Credit 6.2 **Controllability of Systems:** Non-Perimeter Spaces	1
1			Credit 7.1 **Thermal Comfort:** Compliance	1
1			Credit 7.2 **Thermal Comfort:** Monitoring	1
		1	Credit 8.1 **Daylight & Views:** Daylight 75% of Spaces	1
		1	Credit 8.2 **Daylight & Views:** Views 90% of Spaces	1

Yes	?	No	Innovation & Design Process	5 Points
1			Credit 1.1 **Innovation in Design:** Green Housekeeping	1
1			Credit 1.2 **Innovation in Design:** Green Education Program	1
1			Credit 1.3 **Innovation in Design:** Exemplary Performance, Water Use Reduction, 40%	1
1			Credit 1.4 **Innovation in Design:** 30% regional, 25% Recycled, or 100% Stormwater	1
1			Credit 2 **LEED® Accredited Professional**	1

Yes	?	No	Project Totals (pre-certification estimates)	70 Points
43		27		

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-70 points

Right: Students exiting the school, and relaxing on boulders reclaimed from on-site excavation at the landscaped bioswales.
Far Right: The project uses geothermal energy; geothermal field is located under the south play field.