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Kwantlen University College Trades and Technology Centre – Cloverdale

by Robin Brunet

In the middle of an acreage where a dilapidated barn used to sit, Kwantlen University College's new Trades and Technology Centre in Cloverdale, British Columbia, is a strikingly modern addition to the Fraser Valley area. The new campus not only replaces Kwantlen's Newton and Langley workshops but, in keeping with its pursuit of environmental sustainability, it is also a targeted LEED Gold project.

What this means in layman's terms is a campus that provides optimum natural light and ventilation, minimizes water usage and will achieve an energy consumption savings of 31 per cent compared to conventional facilities of this size. However, it was a challenge to include sustainable systems as an integral part of the facility's design. Kwantlen facilities director Karen Hearn says, "We had a tight project budget of $42.3 million, and the schedule was even tighter, to the point where we fast-tracked the design process because, for every month we weren't on the ground, we had $420,000 less to spend."

The campus consists of three major building blocks containing classrooms, shops, fabrication areas and a boardroom, while the western block contains services and classrooms and is linked by a central spine and an eye-catching atrium with immense, multi-coloured glazing and interior glulam beams. From a user's perspective the campus has an open and inviting atmosphere, because of a pedestrian-friendly layout, the stylistic flourishes including the atrium and the terra-cotta-coloured tilt-up concrete slabs that form the bulk of the building blocks.

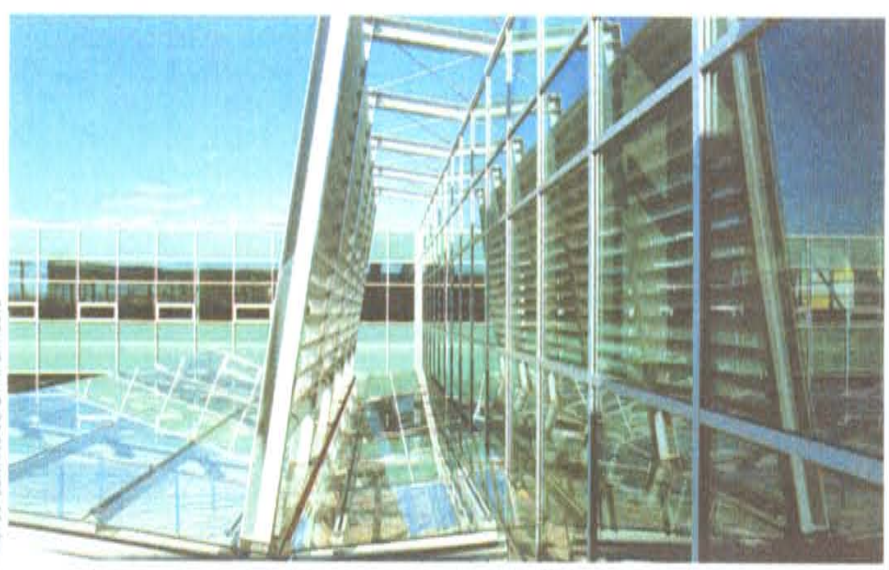
Environmental considerations largely influenced the design, starting with the orientation of the campus. "Our design team studied potential building orientations, wind directions, landscaping options — every possible detail that would result in maximum efficiency and user comfort," says Hearn. "Decisions were then made, such as staggering the windows at the west elevation to reduce heat buildup, and setting the skylights mainly to the north to achieve a filtered light and reduce heat."

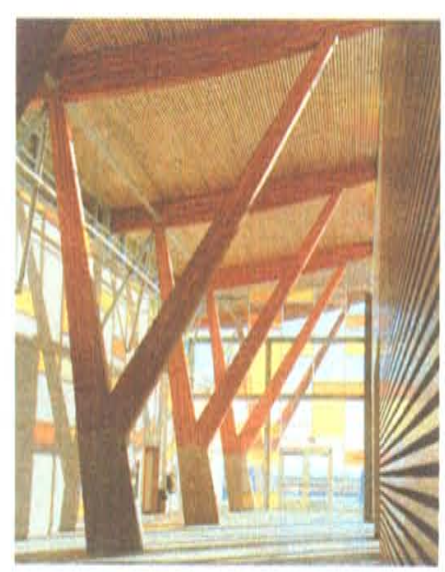
James Vasto, project architect for Bunting Coady Architects says, "The shop and outdoor shop areas and related storage areas, which are located along north and south wings of the building, are generally facing each other across a large open courtyard. This arrangement accomplishes two important objectives. First, the containment of noise and second, the efficient concentration of vehicle circulation within a contained courtyard. A large physical distance is maintained between the buildings and a residential area to the east."

The south and north building faces were developed to be substantially larger than the east and west faces, in order to maximize control of sunlight and heat gain/loss. Shortly after Bunting Coady was retained by Kwantlen in May 2004, site preparation, including piling (800 piles in total), was advanced as soon as the building footprint was determined. This helped reduce the cost of escalation and advance the project completion date. An erosion and sedimentation-control plan was implemented prior to construction and a temporary sediment control pond was installed.

Bunting Coady principal Tom Bunting says the college took full advantage of his firm's expertise in sustainable design principles. "We were involved from the cradle to the grave. However, the fixed budget and the fixed opening date of the college compelled us to commence work without a detailed program in place." Additionally, because the budget had been established prior to the nationwide inflation of construction costs, Bunting Coady revalued the project and selected more cost-effective construction techniques. "We chose tilt-up, for example, and we used coloured concrete in the tilt-up slabs to raise the quality and appearance of the wall at a minor cost."

Clockwise from top: Kwantlen's main entrance, indoor covered street ensures optimum natural light and ventilation, courtyard canopy.





PHOTOS: BUNTING COADY ARCHITECTS

The site preparation began in February 2005, prior to the completion of the building design. "Again, we did everything we could to save time," says Hearn. Tendering took place in April of that year and building construction began in June.

The sustainability principles addressed during the construction of the college included site and water efficiency, energy and atmosphere, materials and resources, indoor environmental quality and design process. For example, low-flow drains were used on the building's roof as part of a storm-water management plan to prevent the post-development discharge rate from exceeding the pre-development discharge rate. Water conservation strategies in the college include low-flow toilets, waterless urinals and sensor-controlled faucets. Kwantlen and Bunting Coady have calculated that these efforts will result in a water use reduction of 33 per cent over baseline conditions. Plus, using less water has the additional benefit of reducing demand on the overall campus waste water infrastructure. Meanwhile, air quality in the building is monitored using carbon dioxide (CO_2) sensors and Wood products used for the interiors contain no added urea formaldehyde resins. "Also, to generate electricity, photovoltaic panels cover the south side of the college," says Vasto.

By winter of 2006, the college had taken definite form, but Ledcor project manager Bruce Vasarhely and his crew found themselves rejigging the daily schedule to avoid problems caused by unusually heavy rains and freezing weather. "Water and concrete don't exactly mix," says Vasto. In keeping with LEED standards, high levels of recycled content for items such as cement, aluminum and steel were used, with fly ash becoming a major additive for concrete. By the spring of 2007, construction was completed, and following a two-week flush out of the facility to remove off gassing from construction products, a grand opening was staged on April 20.

For her part, Hearn and her Kwantlen colleagues could not be happier with the final product. "We were committed to environmental sustainability long before it was fashionable, but this new campus is a substantial achievement and reflects the skill, hard work and cooperation of the architects, builders and other trades," she says.

Bunting and his team share Hearn's sense of fulfillment. "Sustainability elements aside, we were very happy to achieve Kwantlen's mandate of creating a facility that looks more like a university than a trades school. It was a challenging project overall, but the rewards are substantial." ■

Below: Interior glulam beams.

LOCATION
5500 180th Street
Surrey, B.C.

OWNER/DEVELOPER
Kwantlen University College

ARCHITECT/INTERIOR DESIGN
Bunting Coady Architects

GENERAL CONTRACTOR
Ledcor Construction Limited

STRUCTURAL CONSULTANTS
Bush, Bohlman & Partners

MECHANICAL/ELECTRICAL CONSULTANT
Earth Tech Canada Inc.

BUILDING ENVELOPE CONSULTANT
Trow Associates Inc.

LANDSCAPE CONSULTANT
PWL Partnership Landscape Architects Inc.

TOTAL AREA
185,104 square feet

TOTAL PROJECT COST
$42.3 million