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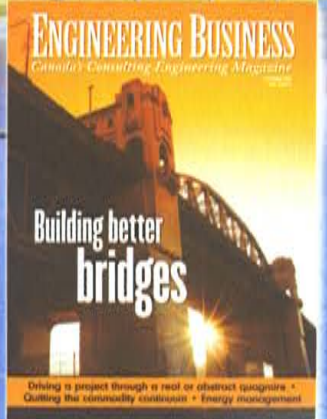
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## Kwantlen Trades & Technology Centre

Public Works & P3s  
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2007 Show Preview

**NOW INSIDE!**





# Laying the foundation for trades training

By CLARE TATTERSALL  
PHOTOS COURTESY BUNTING COADY ARCHITECTS

Founded in the early '80s, upon splitting with Douglas College, Kwantlen University College has come a long way in the last 25 years. Originally formed as a college, Kwantlen — named after the First Nations that settled in the region — became a degree-granting institution in 1995, and is now comprised of five campuses spread across British Columbia's Fraser Valley, the newest addition being the Trades and Technology Centre in Cloverdale. Part of the school's long-term site master plan, the new \$42.3 million facility was developed to replace the Newton campus, which was unable to accommodate Kwantlen's growing student population, as well as a number of workshops located at the Langley campus.

"The old facility was leased space that had not been purpose-built for trades training," explains Karen Hearn, Kwantlen's facilities director. "The new facility is owned ... and gives us more room to respond to the changing learning needs of trades and technology students. It also helps support the evolution of Kwantlen as we're creating opportunities for those with a skilled trade to bridge their learning and lead into a bachelor's degree."

Officially opened in April 2007, the 183,000-square-foot facility accommodates up to 900 full-time students annually,

which is more than double the number of students who studied at the Newton campus.

Construction began in June 2005, approximately one year after the school secured the requisite funding to proceed with the project; however, the replacement campus had been on the books for more than 10 years.

## Going For Gold

Designed and constructed by Bunting Coady Architects and Ledcor Construction Ltd. respectively, Kwantlen's Trades and Technology Centre is the first permanent, purpose-built, post-secondary campus developed in the Lower Mainland in the past seven years. The state-of-the-art facility is comprised of three wings containing 21 workshops, 27 classrooms, computer labs, study lounges, a student services centre, bookstore and cafeteria.

Currently, the focus of the Cloverdale campus is on trades, technology and applied training. Some of the programs offered include appliance servicing, automotive parts and mechanical repair, bricklaying and cement masonry, carpentry and building



**Above: The atrium consists of eye-catching, multi-coloured glazing and interior glulam beams. Wood products used in the structure contain no added urea formaldehyde resins.**

construction, drafting and CADD technologies, millwright and welding. The Centre is also home to the public safety communications 9-1-1 program.

At the request of Kwantlen, Canada's newest trades and technology training facility was designed to modern environmental standards. However, the architect went a step further and the complex is in the process of being LEED gold certified.

"Kwantlen is a leader in sustainability, within our building operations and our construction, and those values needed to be embraced in our new building," says Hearn, adding Kwantlen was recognized in 2002 with a Leadership Award presented by the Canadian Standards Association for the school's outstanding efforts to reduce greenhouse gas emissions.

"It was important that we chose sustainable features that weren't just about obtaining another LEED point but would actually help reduce the cost of maintaining

the facility in the long-term while minimizing our ecological impact."

Constructed of 147 tilt-up concrete wall panels with primarily open web steel joist and glazed glass, the south and north building faces were designed to be substantially larger than the east and west faces to maximize natural light as well as control heat loss and gain. As a result, the building is 30 per cent more energy efficient than a conventional facility of the same size.

"When you look at this project, every single bit of it, from the master plan to the final detailing of the edge of the reception desk, was done with environmental principles in mind," says Bunting Coady CEO and principal-in-charge Teresa Coady, noting this is the fourth project the firm's worked on with Kwantlen.

Other "green" design features include glulam wood beams containing no added urea formaldehyde resins, polished concrete floors laid overtop a radiant heating and cooling system, a photovoltaic solar wall, low-flow toilets, waterless urinals and sensor-controlled faucets, which will reduce water consumption by approximately 30 per cent, and the use of materials containing low volatile organic compounds (VOC) and off-gassing toxins.

In addition, at least half the building materials were manufactured locally, the project team conserved the surrounding natural habitat and restored any damaged areas and a waste management plan was implemented to recycle and salvage 75 per cent of construction waste. The general contractor, Ledcor, exceeded the latter requirement by 10 per cent.

"When you have a contractor that does a great job, fantastic consultants, our experience and a client that's really committed, it makes obtaining certain goals a lot easier," notes Coady, adding communication was key to obtaining such high objectives on a tight budget and in a limited time frame.

For instance, if it was not for the architect and client's good working rapport, Kwantlen's Hearn says the team would not have implemented as many energy efficient initiatives.

REACHING BEYOND BOUNDARIES



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The pedestrian-friendly layout of this facility has an open and friendly atmosphere.

"One (initiative) we're very proud of is within our welding shop, which contains 42 welding booths. While it's a very active shop, at some points in the day all the booths might not be in use," explains Hearn, noting the new campus' welding learning facility is hailed as the most high-tech training facility in North America.

"We gave direction to the design team to put a low voltage light switch on every booth (in the welding shop) and linked it back to the variable speed drive on the fan, which controls the exhaust, so the fan rate is adjusted based on the number of booths that are occupied."

Thereby conserving energy and saving the school money down the road.

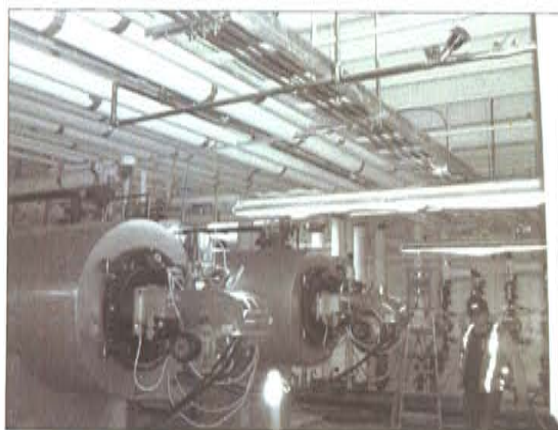
### Blue Clay To Coloured Concrete

Built on 73-acres of land, B&B Contracting Ltd. provided the civil site servicing excavation and piling work. This included site access preparation, erosion and sediment control, topsoil stripping and excavation to design subgrades, water, sanitary and storm sewers, placement of subbase material and construction of gravel base for future paving within parking and on-site circulation areas. Upon completion, B&B Contracting handed the site over to Ledcor and major construction began in earnest in summer 2005. However, it wasn't without its challenges.

"Typical to that area, the site is on 40-feet of blue clay (and), as such, the building is designed to be supported by piles," explains Ledcor project manager Bruce Vasarhely. "This is not an unusual design but from a construction standpoint we had some pretty large tilt-panels (weighing) up to 110,000 pounds, so we used a 250-tonne crane. Trying to build access roads that could support that kind of weight was a definite challenge."

And when you combine the less than favourable soil conditions with the extreme weather that hampered the region last fall and

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*And we chose coloured concrete because we wanted to keep the concrete exposed to show the (masonry) students they are learning a very important trade.*

winter, Vasarhely says the crew had to do quite a bit more road maintenance and reconstruction work one might not otherwise do in a typical year.

"We weathered that pretty well though," he says, adding the rising cost of materials and shortage of skilled labourers — both felt industry-wide — also posed a challenge. However, "partly because the site was central to where a lot of tradesmen live, it wasn't as difficult to find skilled labourers. For a lot of guys in the trades, the site was close to home."

Which was of comfort, especially since this was, at the time, the largest project in the Lower Mainland to use coloured tilt-up concrete. According to Vasarhely, there was a lot of apprehension about using the coloured building material as nobody had used it in a project of this magnitude before. Vasarhely was concerned about maintaining consistency in the appearance of the coloured concrete, however, having the supplier, Langley-based Rempel Bros., located nearby helped put the project manager's mind at ease.

"They batched the concrete from the same plant so that we had consistency," he says.

But when it came time to pour the concrete, all would've been lost if they had proceeded to do so in the rain.

"With grey concrete tilt construction where you're going to be painting, you can pour in the rain because you can sack any rained out faces before painting and the intended finish will be maintained," he explains. "But the challenge with coloured concrete is that if a panel is rained out, you have little alternative but to re-cast the panel."

Placement was another challenge. Crews had to be more cautious when placing and consolidating the coloured concrete wall panels to prevent banding and riveting.

"Before we got going (on this project), we consulted with the architect, supplier and subtrade and did several mock-ups to ensure everything would turn out well," he says.

And that it has.

Not only is the building envelope practically maintenance-free, in that it will never need to be repainted, the coloured concrete wall panels add interest and warmth to an otherwise industrial environment.

"We didn't want this facility to be a cool, grey concrete colour. Instead, we wanted it to look like a university more than an industrial facility, so the character of the colour was really important to us," says principal-in-charge Coady, adding the pigmented walls deepen when wet and change colour with the light.

"And we chose coloured concrete because we wanted to keep the concrete exposed to show the (masonry) students they are learning a very important trade," she continues. "One of the reasons you see the concrete as well as the beautiful woodworking, detailed drywall and glass and steel work is the architecture itself is a celebration of the skill of the trades." **CB**

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