



PHOTOS: JAMES DOW

Building Communities Through Learning – Component 1

– Red Deer College

by Jane Harris-Zsovan

Who says design can't be practical and experimental at the same time? Component one of Red Deer College's Building Communities Through Learning project doesn't look like a traditional college building, but its metallic cladding, transparent glazing, steel frame and sloping roof are uniquely practical. "We built upon the synergies between the trades and the fine arts and we were on time and on budget," says Nancy Vruwink, of Group2 Architecture Engineering Ltd.

The result: a breathtaking glass and steel home for Red Deer College's Centre for Innovation in Manufacturing, Centre for Trades and Technology, Centre for Business Development and Centre for Visual Art. "This is a building you can learn in and learn from. It sets the stage for future development with its open design and flexibility," says Doug Sharp, director of facilities at Red Deer College. The project was fast-tracked to meet the growing demand for tradespeople in the province. The first portion of the project, expanding the welding, heavy equipment and automotive service areas, was completed while the main building was being designed.

The project was completed in sequential tender packages. "We started in 2006 within two months of being awarded the project and opened the first part in less than a year. The AST [automotive service] and welding areas were open for spring term. We designed the interior while the envelope was being constructed," says Vruwink.

"The building is all about glass, all about light. People can see into the building from outside and one room looks into another," adds Barry Johns of Group2 Architecture Engineering Ltd. Window frames are custom built from steel flat plate and checker plate, while the glazing is high-performance

argon UV- and heat-resistant glass.

The envelope was created from Pre-made Structural Insulating Panels which sandwich polyurethane insulation between interior and exterior metal panels. The panels form exterior cladding and the interior walls. The result is cost-effective and energy efficient walls and roof with R40 ratings.

"There are virtually no ceilings," says Vruwink. Instead, exposed frames, sprinklers and mechanical systems make the building itself a teaching tool. Signs throughout the building describe its mechanical features. "All the space is intended to be learning space," says Vruwink.

The interior uses the same materials as the exterior: metallic refrigerated panels, exposed concrete, steel and glass. "The building's palette is neutral. People and equipment provide the colour," says Johns.

The existing parts of the campus had narrow corridors and separate wings for departments, resulting in few interactions between groups. "It was a challenge to address that issue. We enclosed an external courtyard, which became the connector to the existing campus. We also created a new campus entrance. In the process, we virtually eliminated hallways," says Johns.

A Learning Commons the size of two football fields facilitates interaction between students in trades, technology, business and fine arts. Forklifts and trucks can pass through to deliver equipment, and workspaces can be added later. "They have 20 years of growth with empty areas. We opted to build as much space as possible and fill up spaces as time goes on," says Johns.

Water conservation is a key component of the design according to the LEED consultant. "Our potable water conservation is 50 per cent over LEED requirements," says David Richardson

of Designworks Architecture. The building's swooping roof collects rainwater into two 20,000-gallon water tanks, stored underneath the building while a retaining pond collects rainwater, eliminating the need to use potable water for toilets. Situated between the building and student residences, the pond creates a tranquil environment. Planted with hardy indigenous plants, this park-like space is a miniature water purification plant. "The constructed wetland removes the suspended solids and phosphorus from fluids that drain into the constructed wetland. This creates good outcomes for water quality in the creek," says Richardson.

"The building uses half the energy of a similar building this size," says Dwayne Rose, of Hemisphere Engineering Inc., mechanical consultant. Achieving energy efficiency without sacrificing air quality was a priority.

Rose adds that sick building syndrome is linked to airtight buildings. "Operable windows make it harder to control dust and temperatures, but they create a better sense of health and well-being. Occupants like the flexibility of operable windows and the environment is healthier," says Rose. He adds that chilled slabs and the displacement ventilation system reduce energy consumption. The building is ventilated with 100-per-cent outside air, which enters at a low level and wafts upward in stages, reducing fan air changes from six to one per hour.

"The learning commons area has fantastic access to daylight," says Ron Mah, electrical consultant with Wasnea Mah Engineering Ltd. Lighting is plugged into the automated building system, while motion and daylight sensors promote further energy savings. "The college chose to use voice-over Internet protocol, which reduces the quantity of data. The panel distribution is laid out

LOCATION

Red Deer College Campus
Red Deer, Alberta

OWNER/DEVELOPER

Red Deer College

ARCHITECT/ STRUCTURAL CONSULTANT

Group2 Architecture Engineering Ltd.

ASSOCIATE ARCHITECT

Barry Johns Architecture Limited

CONSTRUCTION MANAGER

Stuart Olson Construction

LEED CONSULTANT

Designworks Architecture

MECHANICAL CONSULTANT

Hemisphere Engineering Inc.

ELECTRICAL CONSULTANT

Wasnea Mah Engineering Ltd.

COST CONSULTANT

Hanscomb Limited

TOTAL AREA

166,300 square feet

TOTAL PROJECT COST

\$67,900,000

to provide flexible power distribution and the building was designed with wireless access points and plug-ins for laptops," Mah notes.

Mah's challenge was getting electrical systems – emergency generators, communications and fire alarms – in place before final plans were available. "The college was in operation while we worked on adjacent areas. At one stage, we had to supply a roof over the existing building and build columns down to the basement while the area was occupied," adds Gord Jones, project superintendent for Stuart Olson Construction, the construction manager.

Challenges aside, the building is slated to receive either a LEED Silver or Gold. "We should qualify for LEED Silver," says Richardson. "But it is definitely possible that we will achieve Gold." ■