

Richardson College Benefits from Integrated Project Delivery Process

When high expectations for its new environmental facility hit up against the familiar obstacle of budget constraints, the University of Winnipeg found an unorthodox solution. Using a process called Integrated Project Delivery (IPD) it formed a partnership that integrated project participants in a cooperative team focused on a common goal: the most cost-effective way to deliver the best quality facility.

The \$58 million building designed to house the Richardson College for the Environment (RCFE), currently under construction in Winnipeg's downtown, was envisioned as a signature sustainable development for the University. RCFE aimed to set a new standard for sustainable laboratory design, green lab practice, operational performance and sustainable education. The college faculty also had a substantial list of program requirements.

"The scope of the project continued to grow," said Doug Hanna of Number Ten Architectural Group. "The initial budget couldn't support it so we were looking for ways to rein in the scope, control costs and tighten up the schedule. IPD helped us find solutions."

IPD was developed in the 1990s by a group of Florida businesses that applied the processes of lean manufacturing to building construction. The resulting IPD approach was defined as "a process where all disciplines in a construction project work as one firm, creating faster delivery times, lower costs, no litigation and a more enjoyable process for the entire team—including the owner."

"IPD enabled the University to harness the strengths of all participants to solve challenges," said Murray Guy of Saskatoon's Integrated Designs, the owner's representative and commissioning coordinator for RCFE. Guy first introduced IPD to Sherman Kreiner of the University of Winnipeg Community Renewal Corporation.

The IPD process involved the developer and builder, the design team, and major sub-contractors and consultants, as well as University executives, program directors, finance personnel, and operations and maintenance people (See IPD Team box inset.)

"Combining the talents of the team yielded practical, cost-effective and sustainable design solutions," said Guy. "Having all the members at the table, including suppliers and sub-trades, we were able to make appropriate adjustments that allowed us to meet project requirement while reducing risk and uncertainty."

The selection of building systems to achieve high performance required a fully integrated process involving a high level of owner participation, research, and analysis and the creation of mutually agreed upon Owner's Project Requirements. Costly aspects of the original design, such as a geothermal heating system, were eliminated in favour of a better building envelope.

To achieve high performance in laboratory design, the team came up with innovative ventilation and heat recovery strategies. RCFE will utilize a three level laboratory air change rate that supplies the appropriate amount of ventilation based upon actual use. In addition to reducing the amount of air movement required to safely operate the labs, the project team partnered with the ventilation company SEMCO on an industry-leading

heat recovery wheel developed in collaboration with John Hopkins University. The wheel will enable 80% heat recovery, including fume hood exhaust.

“The IPD process was key to meeting schedule for this type of project,” said Guy. “It would not have been possible to get executive approval for starting the building foundations without confidence in the numbers for significant building envelope components, controls, and mechanical and electrical systems. I was amazed at how accurate our estimates were given they were based on preliminary design concepts.

“The contractor was so involved with the architect on the design and costing of the structure that they achieved an amazing level of design-build management that eliminated a high percentage of coordination issues.”

“In more traditional ways of construction, the contractor and consultants often find themselves in a confrontational relationship,” said Bill Sharpe of Manshield Construction, the general contractor. “In this process there is a spirit of cooperation to solve problems, and not just your own problems. It was not just about our company looking after its own interests; we also did our best to help the design team and the owner’s representative work to the best of their ability. The IPD process breeds trust.

“For Manshield, IPD helped us meet our needs as builders. We were involved at the outset in design decision and methodologies; we contributed to decisions that impacted issues of scheduling, of quality of workmanship and cost. This is in sharp contrast to the traditional approach where you receive plans and specs and you put together a price based on someone else’s work. Being there at the outset helps refine costing.

“IPD also allows us to involve certain key suppliers and subcontractors at an early stage. Involving trades in decision-making contributes to the best, most cost-effective decisions.”

According to Doug Hanna, the early participation of the mechanical and electrical contractors in the IPD process was critical.

“A building of this complexity is system dominant. In consultation with the Engineers, Mechanical and electrical subtrades had a lot of input into the design development process. Alternatives were discussed, developed and reviewed, and we received good cost feedback to help bring the building in on budget. Similarly, suppliers provided important input on the building envelope and how to erect it in the most cost effective way.”

“The key thing was how the IPD process evolved as the job moved forward,” said Bill Sharpe. “It’s one thing to talk about philosophy at the beginning and another to see it work in practice. We were involved for two years before starting to build. Working on it that long tests the process. You have to be tenacious and face tough decisions about programs and budget.

“I have to say the entire group did a good job of working through issues in a positive way. I found all parties were very cooperative and I tend to attribute that to the IPD process itself. It created a work environment where all partners were on the same page.”

RCFE IPD TEAM

Owner/Development Group

Owner – The University of Winnipeg, Bill Balan, Sherman Kreiner, Ken Friesen, Len Cann

Owner's Representative – Integrated Designs, Murray Guy, Trish Marianovits

Developer – Chartier Property Management, Giselle McDonald

Builder – Manshield Construction, Bill Sharpe, Justin Bova

Contractor Group

Curtain Wall – Border Glass, David Borys

Mechanical – Westwood Mechanical, Lorry Allan

Electrical – McCaine Electric, Lorne Goodall

Controls – BSD, Claude Dupas

Consulting Group

Architecture – Number TEN, Terry Cristall, Doug Hanna, Greg Hasiuk

Mechanical – SMS, Russell Lavitt

Laboratory Design – Perkins + Will, Frank Schillinger, Geneva Middlebrook

Electrical – SMS, Chris Hewitt

Structural – Crosier Kilgour and Partners, Tom K. Malkiewicz, Joel Smith

Design Facilitation, LEED and Cx – Integrated Designs, Murray Guy