

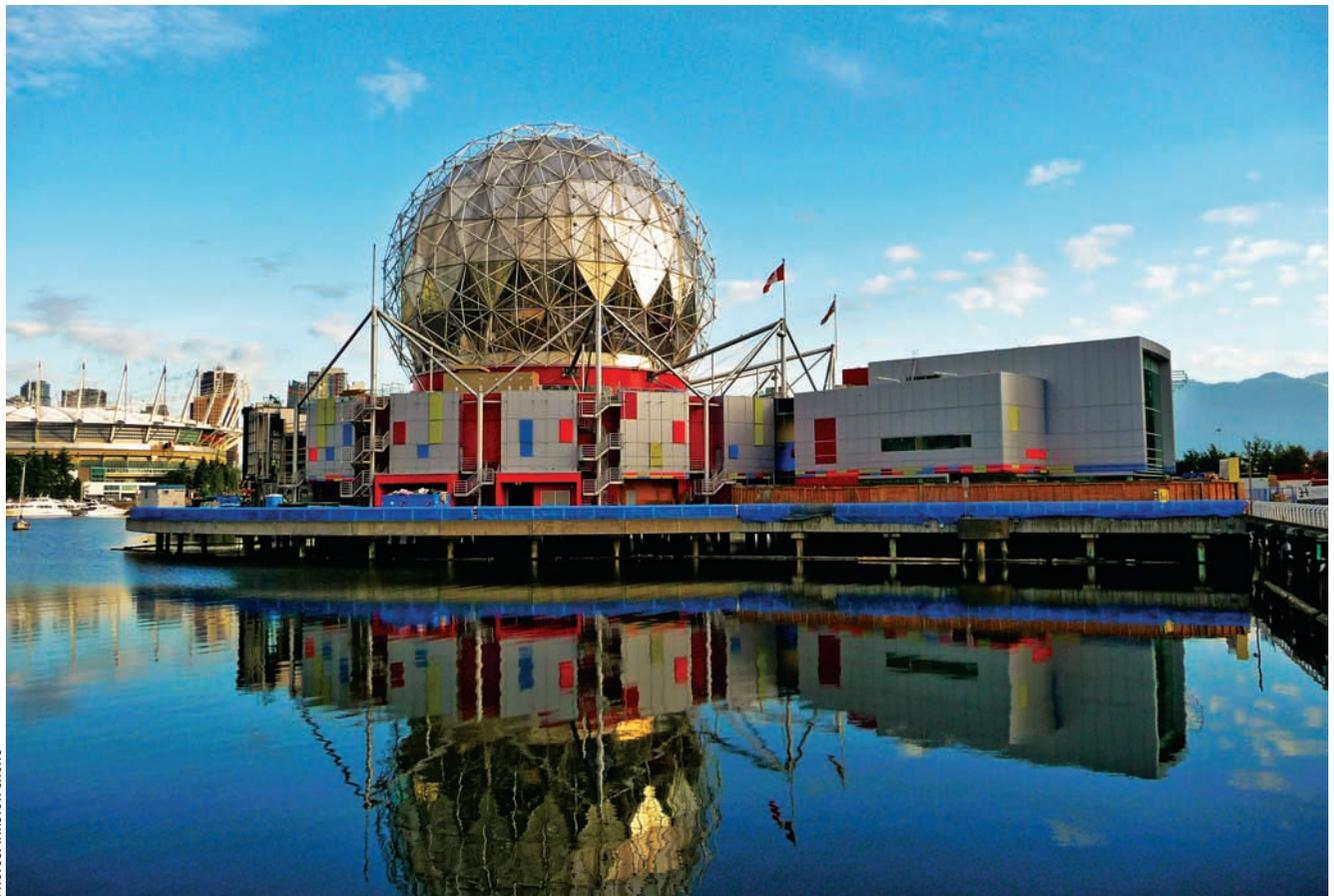
Sometimes, rain clouds really do have silver linings. In 2004, fed up with a leaking building at Telus World of Science, Science World decided to do something about it. It took a hard look its facility and found a disconcerting to-do list. But it also found that the aging Expo 86 structure held an incredible opportunity.

"We had some funding but the problems identified through the building audit were beyond our available money. Because just fixing the existing building was so expensive, the Board decided to increase the scope of the project to include consideration of Science World's long-term needs and ambitions. We evaluated what Science World wanted and needed to be – what we're all about – and used those ideas to initiate a master plan," says Kevin Kearns, vice president of Facility, Development and Future Planning at Science World. "We had to stop the leaks but we also wanted to do more – to improve how we meet the needs of the community. We wanted to streamline the way visitors move through the building and improve the way we work. We also wanted to put forward a new face to the community and become more sustainable."

The first stage was the facility itself (stage two, the Ken Spencer Science Park, will be complete in 2012). Science World applied for – and received – federal stimulus funds but they came with the tremendous challenge of having the project designed, built and substantially completed in 18 months.

After starting in earnest in 2010, the construction manager had to complete the project by October 2011. This schedule meant that construction had to begin before the designers had completed the designs.

Financial realities of the charitable organization meant Science World had to stay open during the renovation. Exhibits and food services were active while public and office spaces were reconfigured, and building controls improved.



PHOTOS: WINSTON CHONG

## Science World at TELUS World of Science

by Corey Van't Haaff

With a \$35-million budget, Science World underwent a metamorphosis. The scope of work included building envelope demolition and remediation complete with new composite metal cladding, a new roof and improved glazing, a new front entry, a building addition with much-needed new gallery space, a green roof and public patio, seismic upgrading, bank stabilization and a partial interior renovation.

"Cannon Design is an ideas-based practice. This ideology helped the collaboration with Science World and Heatherbrae to maximize the design potential with so many known and unknown constraints," says Andrew King, design principal with Cannon Design. "We had to ensure the building functional purpose and the client's mission were met while creating design excellence for the existing architecture, respectful to the iconic design and the community at large."

"There's a clear demarcation toward the entrance of the building now, with the luxury of light and space," says Winston Chong, project design architect with Cannon Design. "With adding a 35,000-square-foot landscaped outdoor space in front of the building, it was important to have an architectural dialogue between the indoor and outdoor

space through its transparency."

The new addition facing False Creek required many new piles – a combination of gravity and battered piles. The addition of new battered piles and extensive shoreline stabilization were required to meet the new building code, which aims to protect the building in the case of an earthquake.

"We took all measures with the specialized consultants to ensure the existing building was secure structurally for the new building addition since it was originally built on piles in the creek and on landfill," says Chong.

"The extent of the seismic remediation was unknown at time of tender and became an extremely challenging part of the project," says Tim Knight, project manager/principal at Heatherbrae, the construction manager. "Stabilizing the shoreline involved compaction grouting over 200 round columns through the existing structural deck into the ocean floor."

The entire project was, says Kearns, a complex puzzle. "We were doing major construction while operating the building. It was about timing. It was complicated and it came together because of the extreme flexibility of all parties," he says.

And, because Science World is more than just a facility, sustainability was really an integral part of the renovation.

"We're about more than just entertainment and education; we work to make B.C. better. One of the most important ways we can do this is by helping the province to become more sustainable. To encourage sustainability thinking, we have to own it ourselves and embed sustainability in all our actions including our renovation," says Kearns.

The building's south side is covered with sunlight harvesting technologies that collect the sun's energy to heat water



Science World at TELUS World of Science

and produce electricity for the galleries or returned to the grid. Incorporating them into the design was a conscious decision by the architects and the client to let everyone know at a glance that the facility was proactive on sustainability.

Much of the new addition is covered with a green roof. LED lighting is standard, and extensive, as necessitated by the exhibits. Glass is specially coated to limit heat causing light rays but allowing great views. Other green initiatives included significant upgrading of the HVAC system including using radiant heating and cooling in some of the big new spaces, and joining a heat utility. There are also smaller efforts like solar flush valves and high-efficiency hand dryers.

“Sustainability is not a series of prescribed actions,” says Kearns. “Instead, it is a goal and it will only be achieved by constant questioning and experimentation. We built into the building the ability to monitor the success of the decisions we made and if we were wrong, we want others to know and expect to make changes. We have deployed various different green strategies and will explore with our visitors and community whether or not they will achieve the intended goals.”

After all, Kearns says, the cornerstone of science is the cycle of hypothesis,

experimentation, review and then hypothesis and experimentation again.

Today, people comment in detail about what they like and don't like – more than the typical platitudes one might expect from a renovation of this prominence. “Neighbours love how the colours of the building and the new dome lights reflect our personality,” says Kearns. The renovation personifies Science World's mission of engaging British Columbians in science and inspiring future science and technology leadership. “Our building says that we are a fun and open part of the community. We want to excite people about the power and possibility of science,” says Kearns. ■

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**LOCATION**

1455 Quebec Street  
Vancouver, B.C.

**OWNER**

City of Vancouver

**PROPONENT/DEVELOPER**

A.S.T.C. Science World Society

**ARCHITECT**

Cannon Design

**CONSTRUCTION MANAGER**

Heatherbrae Builders

**TOTAL AREA**

20,000 square feet  
35,000 outdoor space

**TOTAL COST**

\$35 million

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