High Density Library Expansion – University of Calgary

by **ROBIN BRUNET**

LOCATION
11711 85 Street NW, Calgary, Alberta

OWNER/DEVELOPER
University of Calgary

ARCHITECT
Kasian Architecture Interior Design and Planning Ltd.

DESIGN-BUILD CONTRACTOR
CANA Construction

STRUCTURAL CONSULTANT
RJC Engineers

MECHANICAL/ ELECTRICAL CONSULTANT
Williams Engineering Canada

LANDSCAPE ARCHITECT
Scatliff + Miller + Murray

TOTAL SIZE
4,500 square metres

TOTAL COST
$21.8 million

High density libraries, a concept that originated in institutes of higher learning in Eastern U.S., are just that: huge, environmentally-controlled storage facilities for rare or less frequently used books, contained neatly in cases so tall they require forklifts for upper level access.

The University of Calgary opened its High Density Library (HDL) on the Spy Hill Campus in 2010, to protect less used materials so that the University would have space in the new Taylor Family Digital Library on main campus for collaborative learning, multi-media, data visualization, and the use of primary sources.

The HDL's success as a high-tech repository was such that when funding became available, the University of Calgary lost no time initiating a two-storey expansion project that would add 4,500 square metres to the existing facility, essentially doubling its size.

Low energy advanced technologies would provide critical environmental conditions required for storage of reading material (as well as photographs, art, rare books, and audiovisual recordings); the material would be stored on new 30-foot high mobile shelving; and other components would include cold storage, processing, and shipping and receiving. The expansion enabled consolidation of the intake of physical materials and preservation of cultural resources to one location.

Claudette Cloutier, associate University librarian, research and learning services for the University of Calgary's Libraries and Cultural Resources, points out that, "The original HDL was forecast to give us 15 years of storage. Given our desire to provide more study areas on campus for students in our libraries and an expanding records management program at the University, we actually almost reached capacity in the original HDL just eight years after opening."

She adds that the expansion would "allow us to better gather, process, preserve, and house our archival collections, including audiovisual materials. It would provide us with a specialized cold room to store audio visual materials as well as an AV preservation space. Plus, there would be space to house very large pieces of art from our Nickle Galleries collection."

The design build project was facilitated by the fact that Kasian Architecture created the original HDL and was chosen by the University for the expansion (as was the builder of the original HDL, CANA Construction). "The original was located on Spy Hill because the library was heavy and the locale's soil conditions accommodated the very flat floor necessary for the structure," says Kasian principal Judith MacDougall. "When we returned in 2016, our design essentially added another bay behind the rectangular facility to the south and the public review space on the other side of the facility to the north."

While the bookcases of the original facility were fixed, those in the expanded portion of the HDL would be on sliding tracks, enabling for the compression of the cases when not in use, "Thus we would be able to get more capacity and reduce real estate requirements," says MacDougall.

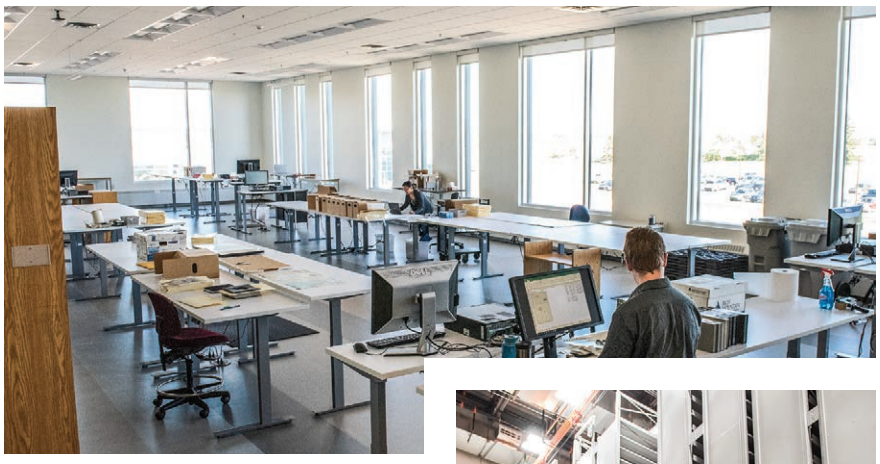
In terms of exterior materials, Kasian decided to use metal cladding to reflect the elegant simplicity of the structure, "as well as provide good thermal bridging," according to MacDougall. "We also added large windows on the north facing side, augmented by metal cladding with a zinc pigment as well as cladding with a wood print, for warmth."

CANA Construction broke ground on the expansion in the summer of 2017, following the general approach of building the two additions, then knocking down the walls to make a seamless whole.

Kyle Schonknecht, project engineer for RJC Engineers, says that while the original HDL was built on spread footings, the tight schedule of the expansion "required us to use pile foundations for the new building components. To integrate with the original foundations, we used cantilevered pile foundations and in other areas we integrated a modified pad foundation with the existing footings." The southern addition containing the sliding bookcases required lots of engineered fill to support the slab on grade, while a structural slab on grade system was sufficient for the new northern public review portion of the library.

Schonknecht adds, "The construction itself was very uneventful due to excellent communication among all parties and a great project manager." Environmental systems were upgraded by Williams Engineering Canada; in fact, the sliding bookcases were deemed acceptable for inclusion in the expansion due to improvements in sprinkler technology.

The original structure received LEED Gold designation in 2016 and the HDL is modelled to use 40 percent less energy than a typical storage facility, despite the strict temperature and humidity requirements in the space. Optimal indoor environmental quality was provided through careful selection of low-emitting materials, access to natural light and views, as well as a mechanical design that provides thermally comfortable spaces year round. About 85 percent of the construction, demolition, and land-clearing waste was diverted from the landfill for reuse or recycling during construction.



Extensive landscaping was required to complete the expansion, with landscape architect Scatliff + Miller + Murray creating an entire front court of hardscaping (an appropriate adjunct to the northern public review space) and providing additional screening for the HDL's loading area.

When asked what the reaction has been among her colleagues to the expansion, Cloutier replies, "Staff are pleased with the new addition. It has created some new spaces for processing materials and has brought together some processes and work areas that had been housed in separate buildings. It has also allowed us to streamline some of our workflows to realize greater efficiencies in making our newly acquired archival collections searchable." **A**

EXTERIOR PHOTOGRAPHY BY DAVID S. TROYER/COURTESY OF BERNELLE; INTERIOR PHOTOGRAPHY BY DAVID H. BROWN/COURTESY UNIVERSITY OF CALGARY