CASE STUDY:

AN EMERGING MODEL FOR HIGH-BAY LIBRARY DESIGN

University of Calgary, Canada

An Emerging Model for High-Bay Design

High-bay library shelving facilities can seem more like warehouses than academic institutions. The buildings are typically windowless to minimize stored materials' exposure to harmful UV rays, and the rows of books can extend up to around five stories tall.

While these features are necessary to store and maintain millions of volumes in the best possible preservation environment, a new model is emerging. Modern high-bay facilities are being designed to welcome visitors and encourage more interaction with the university campuses they serve, and they offer spacious reading rooms for visiting researchers and pleasant work areas for archivists, conservators, and other staff.

The University of Calgary has embraced this new model by expanding its off-site library shelving facility to better integrate with on-campus services. The new buildings feature Spacesaver's high-bay shelving in large, climate-controlled storage areas, along with staff work areas, a comfortable reading room for visitors, and a multi-purpose room to host training events and field trips.

"We tied the design and construction of our high-density storage facility to the development and construction of our new library on campus."

-Claudette Cloutier, University of Calgary, Associate University Librarian for Research and Learning Services

The Original Off-Site Shelving Facility Model

The University of Calgary built its original off-site library shelving facility in the late 2000s on a university-owned parcel on the outskirts of the city. The building was designed in conjunction with the new central library on campus, so it also includes Spacesaver art racks and shelving for artwork storage as pieces are rotated out of display in the Nickle Galleries within the library.

The decision to build the original off-site facility was controversial at first, according to Tom Hickerson, Vice Provost for Libraries and Cultural Resources. He was hired to oversee the design of the central library in tandem with the University of Calgary's original high-bay facility. He had seen first-hand the success of Cornell University's high-bay shelving facilities and he and other campus leaders were committed to the principle. "We decided early on that we would never see the storage of print materials drive users out of the library," he said.

At the same time, the project planners were sensitive to librarians' concerns that browsing functionality should be preserved. "Having good metadata is more critical than spatial proximity," Hickerson said. "We devoted more resources to bibliographic access at the same time as we were advocating a move off campus."

Building on a Good Idea

When the time came to consider expanding the facility, the University of Calgary arrived at a new approach. The institution is still acquiring paper-based materials, so proper storage for these materials is still a priority, but the design team also wanted to push beyond the concept of a typical off-site "warehouse" model to consolidate vital services and better integrate with campus.

To achieve these goals, the University of Calgary added two additions to its original high-bay facility in 2017-2018. One addition features Spacesaver XTend® Mobile High-Bay Storage Systems to keep materials organized and protected, and the other features office space and work areas.

Calgary's Decision based on Variety of Factors

1 - Parcel size (adding offices and other workspaces decreased the amount of square footage available for storing printed materials)

2 - Construction costs (larger envelope = higher cost)

3 - Ongoing operating costs (larger facility = higher costs)

4 - Need for future capacity

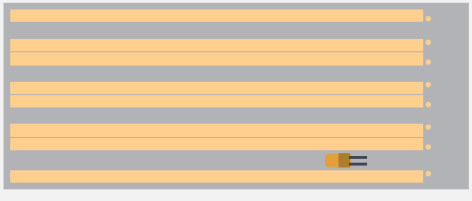
Deciding to go Mobile

The University of Calgary's original high-bay facility was fitted with Spacesaver's XTend® High-Bay Storage System. The planning team decided to use XTend® Mobile for the new addition, which allows the facility to not only take full advantage of the building's vertical height but also eliminate wasted space in the aisles between rows of shelving."

The university's rapidly growing archives were a driving force behind the decision to install mobile high-bay shelving. "We didn't anticipate how quickly some of those areas would grow," said Claudette Cloutier, the University of Calgary's Associate University Librarian for Research and Learning Services.

"Our standard print materials have tapered off and for every volume that we purchase in a given year, we send a volume off-site. But our university records and archives collection is growing exponentially and we didn't really account for that in the design and the development of the original facility. We've taken that into consideration for the addition, which is why we've moved to mobile shelving to increase our storage capacity."

1 Static High-Bay Shelving System



A high-bay shelving system makes maximum use of vertical space. Shelving can be easily adjusted based on book size or box type to condense collections.

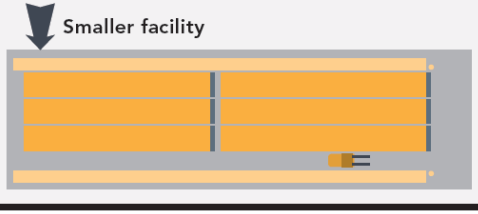
Lifecycle Cost:

$2.99 volume

$2,050,000 Construction w/shelving + $940,532 Lifecycle operating cost

1,000,000 Volumes

2 Mobile High-Bay Systems Require Less Floor Space



A smaller facility can be built when a high-bay system is compacted to eliminate empty aisle space, which results in decreased operational costs.

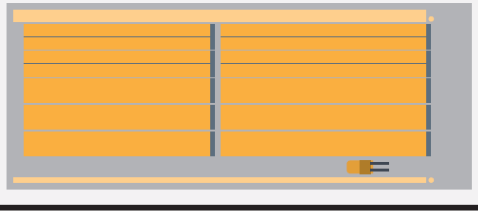
Lifecycle Cost:

$2.48 volume

$1,740,000 Construction of smaller bldg w/shelving + $736,168 Lifecycle operating cost

1,000,000 Volumes

3 Mobile High-Bay Systems at Full Capacity



When the same facility is filled with items stored on a mobile system, more volumes can be stored. The items remain accessible and organized while significant capacity is gained.

Lifecycle Cost:

$2.66 volume

$2,480,000 Construction of smaller bldg w/shelving + $1,033,557 Lifecycle operating cost

1,320,000 Volumes

More Staff, More Workspace

While the original facility housed a staff of only five employees, around 30 staff will work at the expanded building. Along with training areas and other general-use spaces, the new addition has two large staffing areas. One area involves archival description and management those vital metadata services that promote the collections' accessibility and the other area centers on the ingestion of physical materials and the preservation of cultural resources.

These staff had been located in various areas around campus, and the services they provide can now be consolidated in one building. "Anything that comes in to us in a physical format will come to the High Density Library first," Cloutier said. "It won't come to our collections unit on campus anymore. So a lot of the folks who do the cataloging, the description, a lot of the metadata work they will work out there."

Because of these increased staffing levels, the facility design team wanted to create a welcoming workplace. The new workspaces were designed to promote openness and to take advantage of the site's expansive mountain views.

In the end, the expanded facility shows how a modern university can care for and share its collections in a way that best serves the academic community now and into the future.

"We wanted as much long-term capacity as possible, given the size constraints of the site. We sought the best pricing and the best capacity."

-Tom Hickerson,
University of Calgary,
Vice Provost for Libraries and Cultural Resources

Ready to learn more?

Spacesaver's XTend® specialists can help with all aspects of planning and implementing a high-bay shelving system. Our in-house engineering and project management teams, paired with our network of local distributors, offer years of experience and unparalleled expertise in high-bay library design. We look forward to meeting you and working with you on your project.

800.492.3434 | www.spacesaver.com

Spacesaver Corporation
1450 Janesville Avenue
Fort Atkinson, WI 53538-2798
1-800-492-3434
www.spacesaver.com

KI
1330 Bellevue Street
P.O. Box 8100
Green Bay, WI 54302-8100
1-800-424-2432
www.ki.com

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