



CASE STUDY:
ST. LOUIS CENTRAL LIBRARY

St. Louis, Missouri





The History of the St. Louis Public Library

The St. Louis Public Library system began in 1865 that was open to paying members and housed a collection of just 1500 books. By 1893 the collection had grown to 90,000 books and was now accessible by the public with at no cost. Today the St. Louis Public Library system is made up of 15 branches, which include the St. Louis Central Library, and houses a total of 4.6 million volumes in their collection.

The iconic, Italian-Renaissance inspired St. Louis Central Library, was designed by one of the most famous architects of the early 20th century, Cass Gilbert, who later went on to design the United States Supreme Court building in Washington D.C. The Library was constructed in 1912 with money from a donation given in 1901 by Andrew Carnegie. The building has been visited by millions of people from all over the world, but after a century of use, the historic majesty of the structure could not make up for the lack of modern amenities necessary for a library to thrive in the 21st century.





“The Stacks”

An original feature of the St. Louis Central Library was a structural shelving system, considered an engineering feat upon the library's opening in 1912, but which eventually presented both safety and spatial limitations for the library.

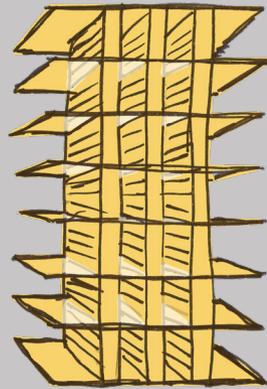
This central stack area was constructed from a steel-framed structure that started in the basement and spanned the height of seven floors, uninterrupted. Metal shelving uprights bolted together one on top of the other, into multiple tiers (floors) separated only by opaque glass tile floors that were suspended right off the steel shelving posts.

To better visualize this stack system, picture a house of playing cards, where the different “floors” are built off of the different “walls” made of cards.

Because there was no separation between tiers, other than glass, this was a major fire hazard. In the event of a fire, it could spread upward quickly with no resistance from the lowest tier to the highest.

In St. Louis, the closer the building sits in relationship to the river, the greater reinforcement is needed to prevent any damage from seismic activity. This system, not unlike the proverbial house of cards mentioned earlier, would be unstable in the event of an earthquake.

The original purpose of this type of stack system was to maximize the floor-to-ceiling height of the shelving, while also saving costs on construction, since it was self-supporting and required no permanent interior walls or floors for support.



When the library was renovated, planners chose to replace the outdated and hazardous shelving system with three mezzanine levels of high-density mobile shelving. High-density mobile shelving systems reduce the number of aisles between shelves. Bookcases simply roll together and aisles open and close as needed. This method of storage holds as much media as possible but in half the footprint, which is how seven floors of books could be stored on only three.

The extra space created through this thoughtful solution, enabled planners and architects to carve out new functional spaces within the library. As a result, the renovated building now includes a cafe, atrium and technology rooms, while still housing a collection of over 4.5 million items in its catalog.

Modernizing a Historic Building

When a library as famous and well visited as the St. Louis Central Library undergoes a massive renovation, great care and consideration must go into the planning process.

Areas that have become essential to a library's success as a community resource, like computer labs, teen spaces and even meeting rooms, were missing from St. Louis Public Library's Central Library. In order to make room for these types of spaces, books needed to be moved, but there was nowhere to move them since the

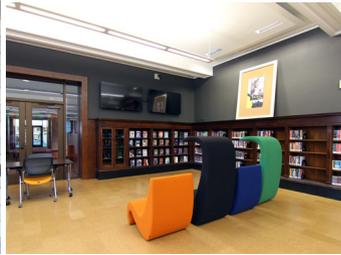
There were several challenges that needed to be addressed as design work began. There was an absence of technology integration in the building, a lack of communal spaces for patrons to use for study and collaboration, and a capacity issue in the central stacks.



◀ The bookshelves' structure rose seven stories tall. The glass floors of this area of the building were hung onto them.

▶ The original glass floors allowed light to filter from floor to floor.





Custom Features and Detailed Planning

With so many challenges to overcome, the St. Louis Public Library integrated many different shelving solutions into their renovation project in order to open up space for repurposing, and to create a sleek, modern appearance in the historic building.

The Library knew the Peterson Group, the local Spacesaver Representative (now Bradford Systems), and Spacesaver, from previous projects that had been completed for their Public Library system over the last 35 years. In fact, the Central Library

project was preceded by a substantial high-density mobile storage project completed for the library's off-site facility permanently operated by the library (mainly used for storage of low-use material and research) located just three blocks from the Central Library. This mobile system is made up of cantilever shelving and half-height laminate end panels. As a closed access building, the units could be functional vs. highly aesthetic, which helped reduce costs while still maximizing the available space.



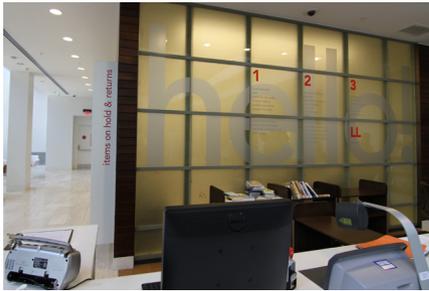
◀ The LED lighting is also extremely energy efficient and lower in cost to operate than traditional florescent bulbs. Custom glass end panels were used in the areas with LED lighting integrated into the shelving. The glass panels are subsequently illuminated – making the stacks look almost like works of art themselves and create a design feature unique to the St. Louis Central Library.

During the two-and-a-half year construction project, the 4 million-volumes were moved into both a temporary off-site warehouse, purely used for storage during the renovation, and into the off-site facility.

During this time, the self-supporting stack structure was completely removed from the building and new floors were constructed and outfitted with Spacesaver mechanical assist high-density mobile shelving.

Static Spacesaver cantilever shelving was used throughout the public access areas of the library for easy browsing by patrons. Cantilever shelving is the most common system used in libraries, due to the on-site reconfigurability.

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◀ The library repurposed some of the original glass floor tiles and used them as a wall near the front desk on the ground level.



▶ In many of the reading rooms, the original bookcases lining the walls were restored and put to use, but in some cases the wooden shelves were cracked or damaged

Shelves were “harvested” from the Government, Business Law & Languages room and used to fill any gaps. Spacesaver then provided metal cantilever shelving to sit inside the original wooden cubbies..

Several custom features were integrated into the final design of the various shelving units throughout Central Library:

▶ **LED Lighting**

LED lighting was installed onto the Spacesaver cantilever-shelving units throughout many areas of the library, including the Fine Arts, Science and Technology and Rare Books rooms.

This required a special base for the cantilever units onto which the vertical lighting fixtures could be affixed. These fixtures not only look like a part of the shelving (painted in the same finish) but are also used to light the aisles, in lieu of adding any additional room lighting that might detract from the historic chandeliers and ornate ceilings.

▶ **End Panels**

Red, acrylic end panels were used on the cantilever-shelving units in the showcase space on the main level of the library called The Center for the Reader. These pieces were custom ordered and then mounted to the Spacesaver shelving during installation.

▶ **Cantilever Shelving**

There is also static cantilever shelving installed in the off-site storage facility on the first and second floor. Though mobile was used on the lower level, only static could be installed on the higher floors due to load capacity. End panels were omitted altogether to save on costs, since the public would not see the inside of this private facility and aesthetics were not a concern.

Reopening its Doors in its Centennial year



The children's area was outfitted with Cantilever Flexible Shelving, so that the area is completely reconfigurable on the fly by the library staff.



Glass end panels were also installed on the cantilever shelving used in the media room. Because these cantilever shelves were designed with pullout drawers to store disks and other media like DVDs, no lighting was integrated.

The Central Library re-opened during the St. Louis Public Library's centennial year of service. This now 102-year-old library is a blend of old and new, where ornate wooden ceilings and dramatic chandeliers meet high-tech computer labs, sleek glass walls and exposed concrete floors.

The use of high-density mobile shelving enabled the library to consolidate the collection from their seven-tiered central system onto just three interior mezzanine-like floors, plus the basement level of the library. Not only does the new stack space meet fire and seismic codes, it is brighter and easier to navigate and truly maximizes the interior floor space.

The high-density mobile storage used throughout the library also helped open up existing spaces for new functions. There is now a teen room, which incorporates study areas, lounge seating, and even a small theater-like TV viewing area. The library also added a café, a book club meeting room, and a studio for movie, music and video game access.



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The remaking of the north wing's bookstacks gives the library a second grand entrance as well as an opportunity to use space in new ways.

■ = bookstacks □ = new use space



before renovation

after renovation

Another stunning addition to the library was a full size auditorium for concerts and live theater. This space is located on the basement level, and through some ingenuity, replaced the original coal bin room.

Each new space and custom shelving solution has helped renew the library as a cultural center for the city of St. Louis.



“ Together, architects and librarians had almost doubled the square footage open to the public without expanding the original walls an inch. ”

-Marta Murvosh

Growing Room: St. Louis Public Library's Grand Central Renovation, Library by Design Magazine



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