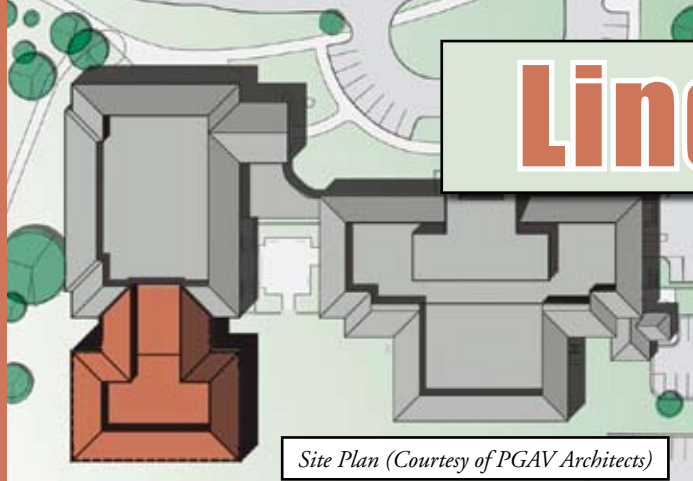


Linda Hall Library



Site Plan (Courtesy of PGAV Architects)

By Michelle Labey

Everything's up to date in Kansas City and at the Linda Hall Library of Science, Engineering & Technology. The world's largest privately funded library of science open to the public was established by the wills of Herbert and Linda Hall. Prominent Kansas Citians who made their fortune in the grain business, their wills provided for a library for the people of Kansas City. The Library is located on the 14 acres of the former Hall estate in the heart of Kansas City. The grounds are maintained as an urban arboretum that is known worldwide for its tree peony collection. The Library opened in 1946 in the Halls' home. The Library's first major acquisition was the purchase of the collection of the library of the American Academy of Arts and Sciences. Through the years the collection has grown through purchases, gifts, deposits from professional societies, and exchanges with foreign academies and societies. The collection expanded further with the acquisition of a portion of the Franklin Institute's library in 1985. In 1995, the Linda Hall Library received the collection of the Engineering Societies Library. It took eighteen 18-wheelers to move the collection. The addition of 250,000 volumes to the collection added depth to both historical and current runs of journals, and strengthened the monographs collection.

Currently the Library's holdings include material in 40 languages, preferring the original to a translation. A variety of formats are collected and maintained: print, microfilm, microfiche, CD-ROM, DVD, and web access. The Library collection consists of over 1 million monographs and conference proceedings, and 14,000 serial titles of which about 10,000 are current subscriptions. It

also houses a growing collection of government technical reports and maps. The Library is one of 85 libraries designated as a Patent and Trademark Depository Library by the U.S. Government. The collections are especially strong in mathematics, physics, applied mechanics, chemical technology, engineering, natural history and chemistry.



Completed stacks addition



Renovation work in the new History of Science area

The History of Science collection contains over 6,000 volumes and adds between 100 and 250 volumes annually. The History of Science Fellowship Program attracts scholars from all over the world and invites applicants studying in the diverse areas of the history of the sciences.

The Library's collection contains complete runs of many journals in the field of engineering. In addition, the Library collects and maintains a collection of over 150,000 standards and specifications published by over 300 professional societies and associations of private industry. An archival collection of structural codes, such as building, electrical, fire, plumbing and mechanical, the *ASME*

The History of Science collection is world-renowned and includes first editions of many seminal science works such as:

Georg Joachim Rheticus
Narratio Prima (Gdansk 1540)

Nicolaus Copernicus
De revolutionibus orbium coelestium (Nuremberg, 1543)

Leonhard Fuchs
De historia stirpium (Basel, 1542)

Galileo Galilei
Sidereus nuncius (Venice, 1610)

Francis Bacon
Instauratio magna [Novum organum] (London, 1620)

Isaac Newton
Philosophiae naturalis principia mathematica (London, 1687)

Georges Buffon
Histoire naturelle (Paris, 1749-1804)

Charles Darwin
On the Origin of Species (London, 1859)

Boiler and Pressure Vessel Code, the *ASTM Annual Book of Standards*, and the *National Fire Protection Association Codes* is maintained. A variety of engineering databases are available to our walk-in patrons, including GeoRef, Ei Compendex, and INSPEC. Currently remote access to these databases is not available; however they are available through our Search Service and to our walk-in patrons. The Library's Digital Services Unit has digitized historical indexes on American engineering topics that are freely available on our web page.

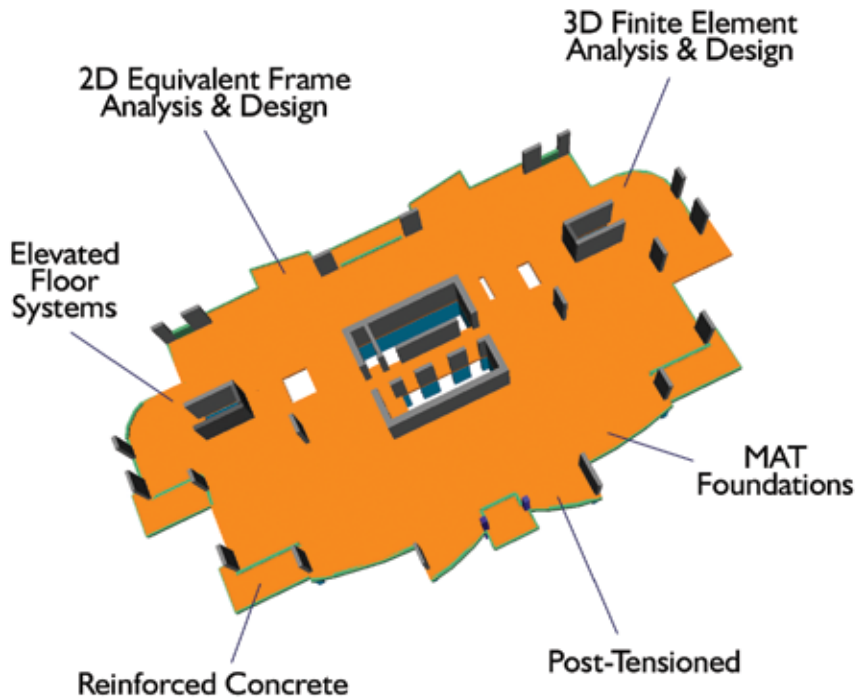
continued on next page

All of the Linda Hall Library's collections are available to walk-in patrons, or via the Library's Search Service and Document Delivery Service. Contacting a reference librarian is easy. Call 800-662-1545 or send an e-mail to reference@lindahall.org. Reference librarians will answer your questions in a timely manner. If your request requires more attention, the librarian may refer you to the Library's Search Service where, for a cost-recovery fee, your topic is researched in more depth.

Structural Concrete Design

ONE MODEL HANDLES IT ALL!

Central Design Model Integrates With:
Revit® Structure - AutoCAD® - ETABS - STAAD.Pro™



ADAPT-Builder EX™ suite streamlines your structural concrete design process from modeling to the creation of structural drawings using one model and continuous workflow, increasing productivity and reducing errors.

Integrated design suite includes:

 ADAPT-RC

 ADAPT-Modeler

 ADAPT-MAT

 ADAPT-PT

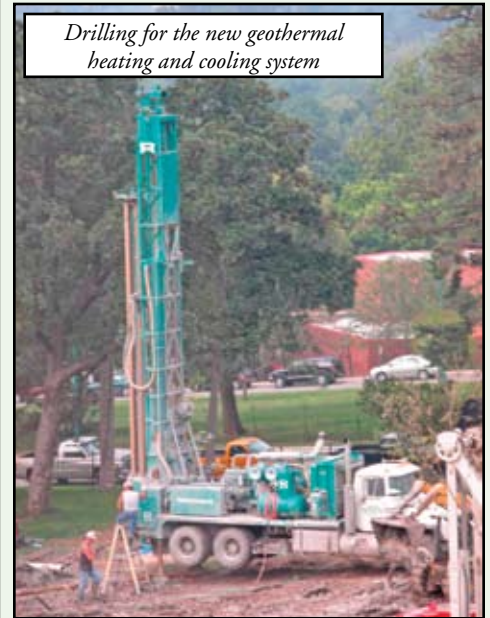
 ADAPT-Floor Pro

 ADAPT-SOG

Contact ADAPT today
(650) 306-2400
www.adaptsoft.com

ADAPT
Structural Concrete Software

Drilling for the new geothermal heating and cooling system



October 2006 marks the grand re-opening and the 60th anniversary of the Library. Over the past 18 months, the Library has undergone an extensive building addition and renovation project. Over 30,000 square feet of shelving space was added, increasing the total square footage of the Library to 220,000. This translates into an additional 16 miles of shelving. The Library adds material at the rate of 7.5 feet per day. In addition, many areas of the Library received a facelift. Throughout the building energy efficient lighting was installed, floors have been refinished, carpet replaced, and patron workstations have been upgraded to wireless capabilities.

A new, larger Rare Book Room and Special Collections area was built in the Library's "annex," which was built as part of an earlier expansion. The new Special Collections area includes new office space, workrooms, study carrels for the Library's Fellows and a large reading room. In addition, the rare books are now housed in a vault with a windowed wall, so the collection is visible to visitors, but safe in a climate controlled environment. The Document Services Department moved to the new building, allowing immediate access to the journal collection surrounding it for faster and more efficient service of copy requests. With reconfiguration of office spaces, the library's exhibition area has now been moved to areas near the Library's main entrance, where patrons and visitors have full access to see the exhibitions during the hours the Library is open.

More information on the Library is available on its website at www.lindahall.org. The website contains information about the Library's collections and services, digital versions of the Library's past exhibits, digital versions of some of the Library's rare books, the Library's Gift Shop, and information about current and upcoming events. Users may also check the Library's holdings on Leonardo, the Library's online catalog, and place an order for documents through the Document Services webpage. ■

Contact Information

Linda Hall Library of
Science, Engineering & Technology
Kansas City, MO 64110
816-363-4600
800-662-1545
www.lindahall.org
reference@lindahall.org



Foundation work on the new addition

Michelle Lahey has been the Collection Development Librarian at Linda Hall Library since 2003. Holding a master's degree in library science, Ms. Lahey is an occasional instructor in the School of Library and Information Management at Emporia State University.

Linda Hall Library

Stack Expansion

By Bret Busse, P.E.

To accommodate its growing collection of technical journals, texts, and rare science and engineering books, the Linda Hall Library needed to expand its stack area. The new three-level stack addition has a footprint of only 10,000 gross square feet, but will accommodate over 16 miles of high-density shelving. As the space will be closed to the public, the Library's primary goals were to maximize the density of shelving, provide excellent temperature and humidity control, and match the existing Georgian architecture.

The existing 1978 stack annex was designed for conventional shelving utilizing a 150-psf floor loading and a low 9-feet 8-inches floor-to-floor height. The structural system consisted of a 12-inch thick concrete flat plate and a 20- by 20-foot bay size.

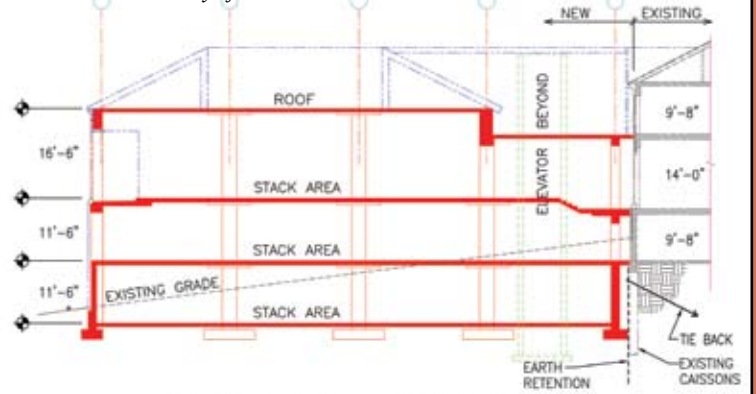
Working with the architect, shelving consultant and mechanical engineer, Walter P Moore selected a structural bay size of 18 by 24 feet and a floor-to-floor height of 11-feet 6-inches for the stack expansion, along with a 250-psf live load, a 2-inch concrete topping, and a 10-psf MEP load.

The addition has a different floor-to-floor height from the existing facility and is constructed on a sloping site. Thus, the lowest level of the addition needed to be a full level below the existing lower level. The connector element between the two accommodates double-sided elevators, exit stairs, and ramps to make the level transitions possible. A temporary earth retention system and a single-sided concrete foundation wall were utilized adjacent to the existing foundation.

A structural floor framing study, between a conventionally reinforced 12-inch concrete flat plate and an 8-inch flat slab with 6-inch drop panels (priced by the contractor), determined the latter to be the more economical structural system. Preliminary design was performed using the direct design method per ACI 318 Section 13.6; the final design was confirmed using SAFE software. As with all flat slab and flat plate structures, punching shear needed to be carefully checked for all loading conditions, including 100% alternate bay loading of the high-density shelving.

Every project has its design challenges, whether maximizing the quantity of high-density shelving, high floor loads, earth retention systems, or a host of other issues. The success of this project was achieved, not through a highly unique and creative structural system, but through sound project management, understanding the owner's and architect's goals and paying thorough attention to detail. ■

Section View (Courtesy of Walter P Moore)



Project Team

Owner

Linda Hall Library of
Science, Engineering & Technology
(Kansas City, MO)

Architect

Mark Viets, Principal Architect
Peckham Guyton Albers & Viets (Westwood, KS)

Structural & Civil Engineer

Bret Busse, P.E.,
Walter P Moore (Kansas City, MO)

Project Manager

Jim Lacy
Lacy & Company (Kansas City, MO)

Contractor

J.E. Dunn (Kansas City, MO)

Bret Busse, P.E. (BBusse@walterpmoore.com), is a Principal in the Kansas City, Missouri office of Walter P Moore.