

Northern Regional Library Facility

Phase 4 project description



EXECUTIVE SUMMARY

The University of California (UC) Libraries have a long-standing commitment to collaboration in support of our individual and collective university missions. The 10 library systems of UC and the California Digital Library (CDL), a division within the UC Office of the President, collaborate closely to build shared collections and services, lower the cost of library services at each campus, magnify the impact of library resources through widespread sharing, and lead innovative research and learning services, all in support of the UC mission.

The UC's library and archival collections are fundamental building blocks for UC's teaching, research, patient care, and community services. Taken together, our library collections comprise the largest academic library in the world and contribute significantly to the world's record of scholarship as well as its cultural and historical record. This collection is sustained in part through the efforts of shared Regional Library Facilities (RLFs) that provide preservation-quality housing and access services for 13.8 million of the 40 million volumes of UC. The RLFs lower local library costs while simultaneously increasing access to, and preservation of, UC's unique library collections.

Given the continued acquisition of archival and general collections at each campus as well as changing space needs in campus libraries, the RLFs fill an essential need for every campus. With continued collection growth however, both the Northern Regional Library Facility (NRLF) located at UC Berkeley and Southern Regional Library Facility (SRLF) located at UC Los Angeles are nearly full. To sustain the important role of the RLFs in enabling the success of our libraries, students and faculty, the University Librarians of the 10 UC campuses and the Executive Director of the CDL request approval for a project to add a 4th phase to NRLF, extending the capacity of this facility to meet campus needs through 2030.

The NRLF expansion was separately recommended by both the Systemwide Library and Scholarly Information Advisory Committee (SLASIAC) (which reports to the UC provost) and the University Committee on Library and Scholarly Communication (UCOLASC), a faculty committee of the systemwide University Academic Senate. Provost Dorr responded to these recommendations on 11 August 2015, writing that she "share[s] the commitment to exploring the best options in planning for collection management." She recommended that The Council of University Librarians (CoUL) bring forward a "plan for moving ahead with planning for possible solutions to the space issues." Provost Dorr further states, "This is, indeed, a shared, systemwide issue." As a result in 2016, CoUL proposed, and President Napolitano approved, a design study for the expansion of NRLF that was completed in March 2017.

The resulting plan presented here was developed by a group under the leadership of Susan Carlson and Aimee Dorr, the project owner, and is brought forward with the continuing support of President Napolitano, Provost Dorr and governance groups across the University of California. The project anticipates funding through 2018 AB94 for all costs excluding Preliminary and Working Drawings (P&W). In Fall 2016 SLASIAC and the Council of Vice Chancellors (COVC) reviewed this project and unanimously recommended proceeding with construction to Provost Dorr. The new phase will add capacity for an additional 3.1 million print materials, meeting the deposit needs of campus libraries from 2020-2030.

UPDATE ON LIBRARY STORAGE EXPANSION

Background

In addition to the two regional library facilities and the CDL, the UC libraries number more than 100 across the 10 campuses. Though geographically dispersed and diverse in terms of their sizes and local characteristics, the UC libraries have a remarkable history of collaboration that dates back at least to the Salmon Report¹ of 1977 which gained momentum with the founding of the CDL in 1997. In line with the many other successful collaborations of the UC libraries, the NRLF and SRLF exist to house UC's world-class information resources and provide outstanding service. The RLFs collectively save the University of California millions of dollars annually through the efficiencies gained when spaces and operational costs are shared across the UC System rather than being replicated at every campus.

Over the past thirty years, the UC libraries have:

- built a shared collection of over 40 million volumes and used our collective purchasing power to greatly reduce the cost of electronic resources through shared licensing agreements.
- taken a leadership role in implementing the UC-wide Open Access policy, a policy that seeks to redefine issues around access to scholarship.
- contributed over 3 million volumes to HathiTrust, a national digital preservation platform for the world's scholarship.
- established the two UC regional library facilities as the backbone for regional and national shared print programs established to provide long-term preservation of print materials.

The University of California's library and archival collections are fundamental building blocks for UC's teaching, research, patient care, and community service. Taken together, our library collections comprise the largest academic library in the world and contribute significantly to the world's record of scholarship as well as to its cultural and historical record. When last estimated in 2015-16, the economic value of the combined UC libraries' physical collection was calculated at \$1.1 billion, while the value of its special collections totaled \$382 million. Combined, this represents 5.1% of UC's net capital assets.

The role of the regional library facilities

Following the plan established in 1977, UC built and eventually expanded two temperature and humidity controlled RLFs. These RLFs provide a cost-effective systemwide capacity to store and provide access to collections off central campuses. Campus libraries have leveraged the RLFs to house valued collections in preservation-quality storage, sustaining collection growth and freeing up space for other learning and research priorities. The NRLF, located on the Berkeley Global Campus in Richmond, CA, has been

¹ University of California (System). Office of the Executive Director of University wide Library Planning. *The University of California Libraries: a plan for development, 1978-1988*. Berkeley: Office of the Executive Director of University wide Library Planning, 1977.

http://libraries.universityofcalifornia.edu/groups/files/about/docs/UC_library_plan_1977.pdf

receiving deposits since May 1983. The SRLF, located on the UC Los Angeles campus, has been receiving deposits since January 1987. Additional phases were constructed once at SLRF and twice at NRLF.

The mission of the RLFs is to house, preserve, and provide access to UC's unique and valued collections. In serving this mission, the RLFs accept general and archival materials from each campus and provide UC-wide access to all general collections. This mission enables campus libraries to avoid the expensive and duplicative costs of collection preservation and access, allowing each local campus to make the best use of its available library space and resources.

Together the RLFs have the capacity to house 14.6 million volumes and currently hold about 13.8 million or about 35% of the entire UC library collection. The RLFs accept between 250,000 and 300,000 items per year from the 10 campus libraries and are 95% full.

Long range campus library materials preservation needs

The UC libraries increasingly purchase digital resources. However, there is still a strong demand in the academy for print resources, especially for foreign language materials, and for publications in the arts, humanities, and historical (rare or "special collections") areas. In many fields of study the demand for information in print and other non-digital formats is based on sound pedagogy, scholarship, availability and long-term preservation needs. Increasing reliance on digital resources is slowing the rate of growth of print resources but will never entirely halt it.

This continuing trend in print resource publication has sustained the systemwide need for new RLF capacity. In addition, the libraries at each campus are being pressed to move more of their existing collections off campus to reallocate space to mission-critical priorities including the creation of teaching, collaboration, and cross-disciplinary spaces. The result is that even as the UC libraries work to build a collection to serve the scholarship of UC, they are facing a space and collections housing crisis at the campus level that must be addressed.

A 2012 survey of collections growth in UC libraries indicated that they collectively anticipated adding over 300,000 volumes annually for a total of 1.7 million volumes by 2017. The projected rate of growth from 2012 has proven to be accurate and, given various scholarship and publishing trends as well as the expanding need for resources on campuses, the UC libraries anticipate that the need for space to move materials off campus will continue at this rate for the next 10 years.

Given the campus needs, both NRLF and SRLF are facing space crises with NRLF set to fill by 2018 and SRLF set to fill between 2022 and 2024 at current deposit levels. With NRLF filling in 2018, five UC campuses, Berkeley, Davis, Merced, San Francisco, and Santa Cruz will be unable to deposit materials at NRLF. Los Angeles, Irvine, Riverside, San Diego and Santa Barbara will face this same challenge just four years later. Although the immediate space crisis is felt more at NRLF, the inability to expand SRLF as well as the ongoing need for space beyond the immediate fill dates of both RLFs has positioned this project to seek resources to meet the full UC library storage needs from 2020-2030. With campus

libraries already at capacity and needing to re-purpose space within their libraries, RLF capacity for an additional 3.1 million print materials is needed to meet campus demand through 2030.

Key project drivers

The RLFs provide essential services to UC libraries and amplify the impact of library resources. To ensure that the expansion of NRLF continues the practice of meeting existing and future campus library needs, this project is driven by five principles, cost savings, shared collections, long-term preservation, digital conversion and campus innovation.

It costs less to store materials at RLFs than on campuses: The RLFs collectively save the UC libraries \$23.4 million annually in serving their mission to preserve and provide long-term access to valued campus collections. A 2010 study demonstrated that high density storage facilities store items at lower cost than traditional library facilities², at a cost of \$.86 per book versus \$4.26 per book. This annual saving is on top of the initial higher capital costs associated with building traditional library spaces on campuses.

The UC campus libraries use the RLFs to house collections and in many cases have used them in concert with strategies to renovate libraries to provide new services on campus. Deposited materials are persistent and not duplicated, meaning that the materials in the RLFs constitute a unique collection that UC has committed to retain for the very long term. These policies and practices mean that each campus can make collection and space management decisions with the confidence that the RLF collections will be there for current and future scholars.

RLF's provide systemwide access to shared collections: The collections housed at the RLFs are a mix of circulating materials available for users affiliated with any UC Library as well as rare and archival materials available to users within controlled reading rooms at any of the ten campuses. Library researchers outside the UCs may also access the circulating portion of the RLFs' collection using interlibrary loan. The RLFs deliver materials to any campus in the UC system in one business day and serve as libraries to local patrons, allowing researchers to visit and conduct in-depth research with on-site collections. The ability of all UC researchers to obtain materials from the RLFs magnifies the value of spending and collection development efforts of individual campuses.

The RLFs ensure long-term preservation of shared collections: RLFs are uniquely positioned to ensure the long-term preservation of collections. They maintain temperature and humidity controls that extend the physical life of materials and collaborate across UC to support programs designed to ensure the long-term retention and preservation of content. These programs, also known as "shared print programs," place validation and retention policies around collections at the local, regional and national level with the goal of assuring libraries and scholars that these information resources will be available for future

²Courant, Paul N. and Matthew "Buzzy" Nielsen. "On the Cost of Keeping a Book." in Council on Library and Information Resources. 2010. *The idea of order: transforming research collections for 21st century scholarship*. Washington, D.C.: Council on Library and Information Resources.

generations. RLF support for these programs enables UCs to provide leadership in shared print programs across the nation³. Without an expanded NRLF, the UCs would be unable to continue building a shared collection and providing leadership for these types of programs.

The RLFs are important partners in the digitization of content: For nearly a decade the RLFs have provided essential digitization services for the UC campuses. Both RLFs provide on-request article digitization services for users while the SRLF also provides extended digitization services. In addition, the RLFs are lead facilities in contributing to the Google Books project, having sent over 3 million volumes for digitization in the last decade. This effort has contributed to the development of a corpus of over 14 million digitized items in HathiTrust. Looking forward, the RLFs are ideal centers for digitization given the large number of collections they hold and their ongoing mission to serve the preservation and access needs of campuses.

The RLFs enable campus innovation and student success: In the crowded environments found in and around UC campuses, libraries serve as safe and trusted places for all members of the UC community to meet in groups for collaboration, study, and exchange of ideas. Increasingly, UC libraries are forming campus-wide partnerships to benefit students, often by hosting innovative learning spaces, such as digital scholarship centers, data commons, multimedia centers, makerspaces. These spaces and services foster research innovation, discovery, creativity, and the deep learning that takes place outside of the lecture hall. Expanding the NRLF will go a long way toward helping UC libraries meet important and increasing student space needs that might otherwise go unmet.

Recommendation for expansion

Over the past several years, some of the UC libraries have launched initiatives to improve utilization of existing storage space, including increasing shelving density, on their campuses. Although libraries can increase storage efficiency in some campus locations, and are doing so to more effectively serve students and faculty, the full cost (including real estate values) for such increases in storage capacity exceeds the cost of building additional NRLF capacity.

In the past two years, CoUL and the RLF directors have studied potential collection and preservation management opportunities as well as potential avenues for expanded space. Earlier space analyses enabled CoUL to arrive at two key objectives for a capacity expansion project: first, the facility should be efficient and effective in terms of construction and operating costs as well as preservation and access, and, second, the solution selected should be designed to meet at least 10 years (i.e. 3 million volumes) of growth.

Based on our analysis, which is explored in detail in Attachment 4, the Shared Library Facilities Board (SLFB) and CoUL concluded that the expansion of NRLF is the most feasible and cost-effective solution

³ UC libraries have been leaders in the creation of WEST (WEstern Regional Storage Trust) and the HathiTrust shared print and digital preservation programs. The RLFs currently support multiple programs that uniquely poise the UC libraries to contribute significantly to a national system that effectively connects print and digital resources in support of scholarly discovery and productivity.

to meet UC campus needs. The proposed project would serve all ten UC libraries, providing sufficient storage growth for the next 10 years.

PROJECT DESCRIPTION

Building description and site plan

The NRLF phase 4 expansion includes the addition of a large high-bay storage facility that will contain 3.1 million print volumes and the addition of staff work areas adjacent to the high-bay storage facility to accommodate processing and digital project workflows. Attachment 1 shows the position of phase 4.

Phase 4 gross square footage (GSF) will be approximately 26,610 GSF:

- 30 foot high-bay storage: 208.5 ft x 103.5 ft, Approximately 21,561 GSF
- Staff work areas: Approximately 4251 GSF plus 614 GSF in Phase 2 corridor extension
- Electrical room: Approximately 100 GSF

High-bay storage

The project will feature a high-bay storage facility to house paper materials (e.g. books, serials, maps, manuscript collections). NRLF phase 4 will be built immediately west of phase 2 and continue the NRLF's main spine corridor, building on the modular design approach set out in previous master plans. This extension will store 3.1 million print volumes in 30' tall, 36" deep shelving, with volumes sorted by size for maximum density. To reach high shelves, operators will use motorized man-aboard lifts. This arrangement is known as the "Harvard System." An example of the Harvard System is shown in Attachment 3.

The Harvard System was selected for this project as it allows for very dense storage of materials, lowering the cost of construction and ongoing operations. This is accomplished by using tall, one story stacks, sorting the materials into 11 sizes (by height and depth), placing them in sized archival cardboard trays, and shelving them 2 or 3 deep on 36" deep by 53" wide shelves. The archival trays provide better support for the materials and make shelving and retrieving easier than the current practice of shelving materials two deep directly on the shelves.

Equipment required for the Harvard System includes man-aboard lifts and recharging stations plus custom book carts that ride the man-aboard lifts. The acid-free archival cardboard trays will require pallets and wire racks for storage.

Workspace addition and renovation

To accommodate the new workflow associated with the Harvard System storage approach, NRLF requires additional staff work space and item storage areas. The additional workspace is located adjacent to the high-bay storage phase and will directly support work in phase 4. In addition, space is allocated in this work area to support current and future digitization projects. The current project, Google Books,

requires approximately 1000 GSF and is currently located in the microformat room. Minor alterations are planned for the existing staff work area to support a new workflow.

Workflow and information system changes

Given the presence of a considerable amount of materials in the NRLF and the need to handle collections from across the UC system in the future, the RLF directors and staff are currently exploring new information systems and information system integration that will be required to support the NRLF 4 expansion. The RLF team is also currently studying the information system needs that come with the new storage technology. As the NRLF phase 4 design process continues, the information systems team will finalize its research and make a recommendation to the SLFB regarding information system needs to complement the expanded facility.

Overall project outcomes

This project meets the 10 year needs of the UC libraries by creating capacity for all types of library materials and by adjusting the workflow and space of the NRLF to serve continuing and emerging roles in digitization and print management projects. The outcomes of this project are:

- The addition of capacity for 3.1 print million volumes to serve the special and general collections housing and preservation needs of the UC libraries from 2020-2030
- The creation of new workspace to support current and future digitization and shared print workflows.

Alongside the construction project, the RLF team will work on the implementation of new information systems, workflows, and campus depositing procedures to fit with the added facility capacity. This work is already in the planning phases and with full project approval will move into more detailed planning and implementation phases.

Site layout and positioning

The NRLF phase 4 expansion will build on the modular long-term design plan of the NRLF and be positioned to the west of phase 2 and south of phase 3. This design allows for future phases to extend the modular framework. Attachment 1 shows the position of phase 4 in relation to existing phases. Attachment 2 shows the layout of the facility in context of the larger Berkeley Global Campus at Richmond Bay. A potential future phase (phase 5) is indicated in Attachment 1 as part of the LDRP for NRLF.

The new building will be designed to fit with the overall design of the facility, matching similar exterior elements with phases 2 and 3. Although not indicated in detail, phase 4 is accessed through and connected to the larger facility using the central spine.

Delivery Method and schedule

The project, which will expand an existing complex located at the Berkeley Global Campus at Richmond Bay, will be delivered by the Berkeley campus working in partnership with appropriate stakeholders across the UC system. The anticipated delivery method is construction manager at risk or Design-Bid-Build. A project schedule is shown in Table 1.

Table 1: Anticipated project schedule

PROJECT ACTION	PROPOSED COMPLETION
DISCUSSION ITEM	May 2017
P FUNDING, BEGIN P WORK	July 2017
WORK ASSOCIATED WITH W FUNDING	March 2018
FINAL APPROVALS INCLUDING CEQA, FULL PROJECT FUNDING	July 2018
BID PROCESS COMPLETE (3 MONTH PROCESS)	October 2018
BEGIN CONSTRUCTION (18 MONTH CONSTRUCTION)	October 2018
COMPLETE CONSTRUCTION	April 2020
OPEN FACILITY FOR DEPOSITS	May 2020

Key to Acronyms

ASF	Assignable square feet
CDL	California Digital Library
CoUL	Council of University Librarians
COVC	Council of Vice Chancellors
GSF	Gross square feet
LRDP	Long Range Development Plan
NRLF	Northern Regional Library Facility
RLFs	Regional Library Facilities
SRLF	Southern Regional Library Facility
SLASIAC	Systemwide Library and Scholarly Information Advisory Committee
SLFB	Shared Library Facilities Board
UC	University of California
UCOLASC	University Committee on Library and Scholarly Communication
WEST	Western Regional Storage Trust

ATTACHMENTS

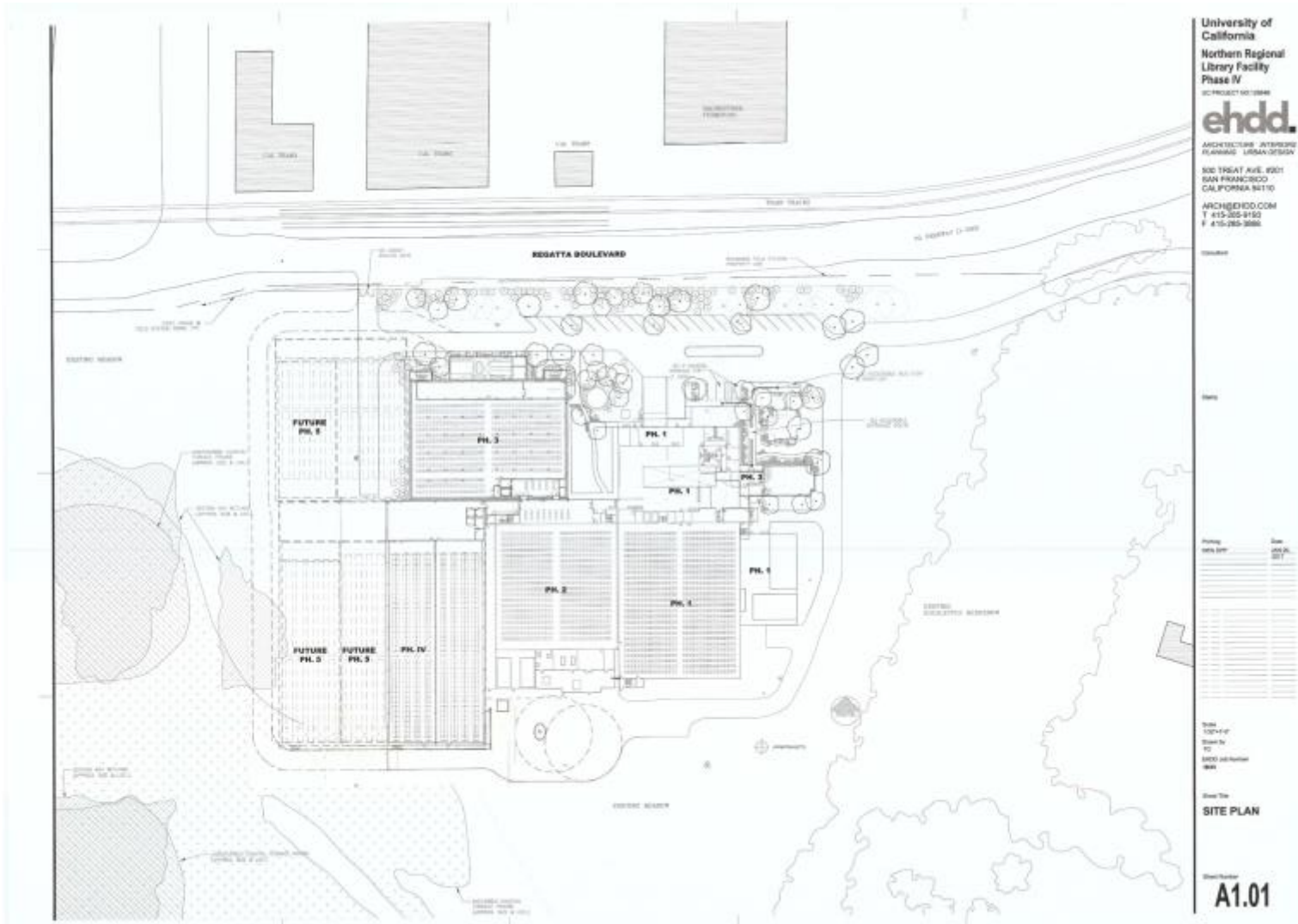
Attachment 1: NRLF phase 4 elements

Attachment 2: Project Site Map

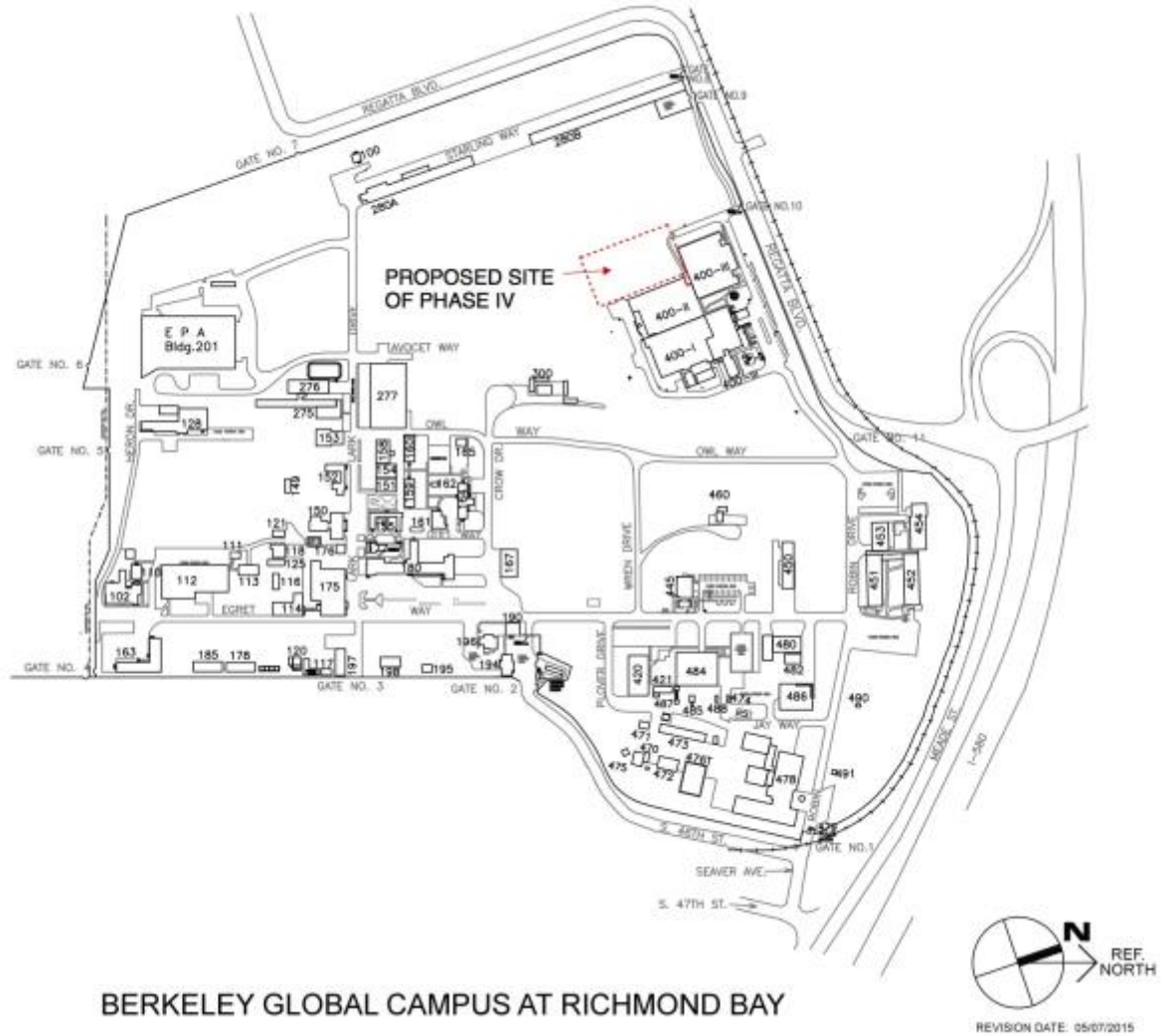
Attachment 3: Example Harvard model photographs

Attachment 4: Efforts to maximize capacity and Alternatives considered to expansion

Attachment 1: NRLF phase 4 elements



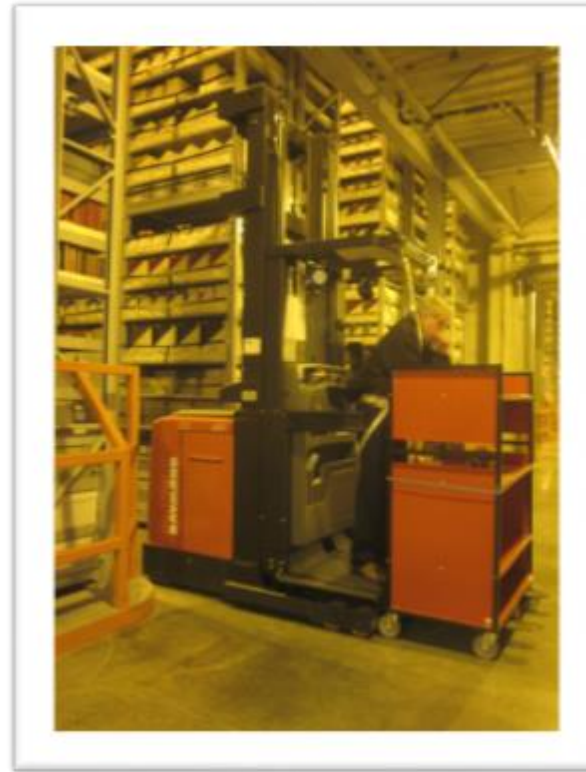
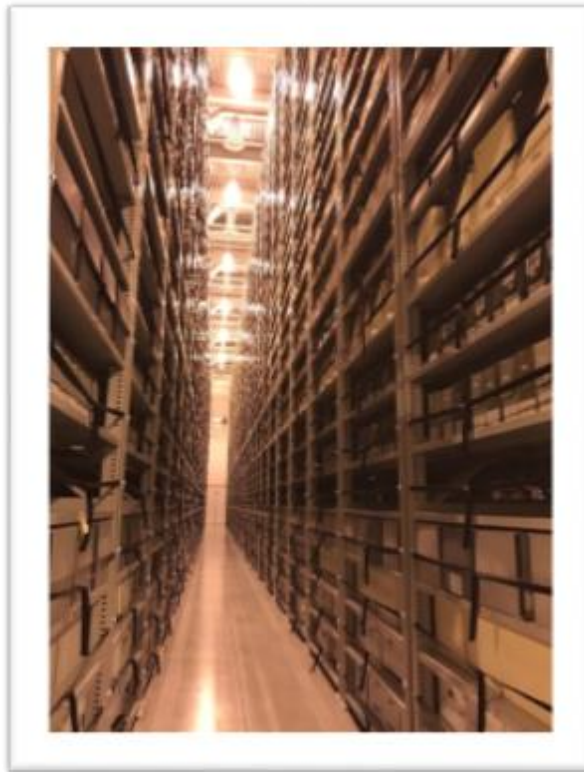
Attachment 2: Project Site Map



Attachment 3: Example Harvard model photographs

Photo 1: In a Harvard model items are stored in boxes and trays in tightly grouped sizes and then stored on high shelving. This approach maximizes the available storage space by minimizing shelving infrastructure and un-utilized shelf space through variable layouts to accommodate grouped sizes

Photo 2: Storage and retrieval in this type of facility is completed via a man-lift specially equipped to serve library materials. This lift raises and lowers as needed to locate items on the shelf.



Attachment 4: Efforts to maximize capacity and Alternatives considered to expansion

Overview

In addition to expanding the scope and quantity of digital resources as a means to optimize the value and impact of our content, CoUL has launched several initiatives to reduce systemwide library space demands through de-duplication and shared print programs. The non-duplication and persistence policies established for the RLFs enable campuses to make management decisions that focus on maintaining unique, distinctive local collections based on the assurance that items, once deposited at an RLF, will remain over time. Several projects to de-duplicate materials in the RLFs (each carefully managed to ensure long-term preservation and access) are also underway.

The UC libraries are also leading and participating in shared print programs such as the Journal Archiving Campaign, the Western Regional Storage Trust (WEST), and the Federal Documents Archive. The goal of these shared print programs is to create shared collections--which, in some cases, involve sharing with institutions outside the University of California--so that campus libraries can make informed judgements about withdrawing print materials from their local collections.

Over the past several years, some of the UC libraries have launched initiatives to improve utilization of existing stack space, including increasing shelving density, on their campuses. Although libraries can increase efficiency in some campus locations, and are doing so to more effectively serve students and faculty, the full cost (including real estate values) for such increases in storage capacity exceeds the cost of building additional NRLF capacity. Improving space utilization in the existing RLF facilities is also not a viable solution since the facilities were built for high-density storage from the start. Although it is cost effective to employ current technology to achieve somewhat higher storage density in the new NRLF phase as compared to the existing RLF phases, retrofitting the same new technology to the existing RLF facilities increases capacity so modestly as to not be cost effective.

Both above-mentioned strategies--collection management (e.g., digital collections, de-duplication, shared print) and improved space utilization--have already been implemented and have successfully stretched collection purchasing power and stack capacities considerably. At the same time, these solutions cannot address the continued need for space to house, preserve, and provide access to the 300,000 print volumes per year the UC libraries must add to the remote facilities. Despite our best efforts, the ongoing collection growth--as well as library needs to use on-campus spaces to serve students and faculty -- require a new investment to expand remote shelving capacity.

Potential strategies for expansion

In the past two years, CoUL and the RLF directors have studied potential collection and preservation management opportunities as well as potential avenues for expanded space. All parties concluded that UC needs to pursue all three strategies to avoid the looming problem of all capacity being filled by 2019.

Earlier space analyses enabled CoUL to arrive at two key objectives for a capacity expansion project: first, the high-density facility should be efficient and effective in terms of construction and operating costs

as well as preservation and access, and, second, the solution selected should be designed to meet at least 10 years (i.e. 3 million volumes) of growth.

Option 1 – Build a new regional library facility in a central location

Given the distribution of campuses across the state, CoUL considered building a third RLF in a central location. Such a location could provide lower land and, possibly, construction costs than existing locations and could more closely serve campuses in the central part of the state. At the same time, the added startup and annual transportation and staffing costs associated with establishing a third RLF would lead to higher permanent operational costs. In addition, the existence of a completed master plan for NRLF expansion offsets land costs by substantially reducing planning and approval costs and supports faster turnaround for planning and construction. Finally, given the acute space shortage the UC libraries are facing with the RLFs expected to begin filling in 2018, it is not feasible to build a new regional library facility in the necessary timeframe.

Option 2 – Outsourced “Storage as a service”

In 2014-15, CoUL and the RLF Directors worked with a major external storage service provider to explore the possibility of outsourcing a remote shelving service. An outsourced program would include all accessioning, storage, preservation, and access services for UC libraries. The business model included fees for deposit, annual storage and access. Per the team projections, the cumulative cost (at our expected fill rates, to maximum design capacity) would have met the capital costs of a new facility in around year 15 with growing annual costs exceeding capital costs thereafter. As NRLF is designed to be a 100 year facility, expanding our existing NRLF facility would cost less in the long run. In addition, the incremental cost for an expanded facility will be much lower because there will be almost no increases in staffing.⁴

Outsourcing storage and use servicing to a vendor also presents risks for a permanent collection. For example, the potentially prohibitive costs of later withdrawing millions of books to move them to an alternative shelving solution would provide a vendor with a strong bargaining position against the UC. Such bargaining power might be used to escalate prices substantially faster than inflation (similar to the problem with licenses for journals and monographs, the prices for which typically increase at 5-7% per year). There are also risks to UC’s valuable collections should a vendor suddenly go bankrupt or decide to get out of the storage business. At the necessary scale, a storage as a service solution is not cost effective and presents substantial risks.

Option 3 - Expand one or both Regional Library Facilities

Both SRLF and NRLF were designed using a modular approach to enable them to be expanded relatively inexpensively. The most recent expansion of NRLF in 2003 cost \$18 million and added capacity for 3 million volumes. A 2012 study of a possible addition to SRLF projected a cost of \$27 million to add 85,000 GSF and capacity for approximately 3.8 million volumes. Unfortunately, following this planning

⁴ This problem is shared by building a new UC central facility or utilizing a vendor: tremendous economies of scale in staffing would be lost, resulting in largely duplicative (incremental) staff.

study, UC Los Angeles discovered seismic and construction site issues that make pursuing an expansion of SRLF infeasible.

In considering a phase 4 expansion for NRLF, CoUL and the RLF Directors have explored historical approaches to building as well as alternatives to construction (e.g., the storage as a service model). Advantages to building an extension of NRLF include that UC owns the land already, has committed the land to NRLF, and has voiced support for the expansion of the Berkeley Global Campus on which the NRLF sits. In addition, NRLF has several sunk costs and existing infrastructure which would reduce the building and operational cost of the expanded facility. Consultations with Scott Shackleton, UC Berkeley Assistant Dean, Facilities & Capital Projects, indicate that the phase 2 NRLF building was created in such a way to support easy infrastructure expansion to phase 4. In addition, the NRLF building itself is configured around a central service spine, making it possible to add a new phase in such a way that leverages existing infrastructure.

Option 4 – Increase the capacity of current shelving within NRLF and SRLF

As part of the engineering study completed in March 2017 the NRLF team studied options for increasing the utilization of current facilities. The review of NRLF Phases 1-3 found that altogether they could support up to 800,000 more items but at considerable cost that would be likely to exceed the per-volume cost associated with de-duplication as every item in Phases 2 and 3 would need to be moved. The cost of doing this in situ is prohibitive due to the need to move all volumes and implement new systems.