
CHAPTER 3

Special Collections, General Collections, and Hybrid Conservation Laboratories

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A number of factors determine a conservation laboratory's design, including the mission of the particular institution, the functions to be carried out in the space, and the collections that will be treated. Some laboratories primarily perform book repairs, others limit themselves to full special-collections treatments and advanced bookbinding work, while still others might incorporate both general collections and special collections workflows in the same hybrid space. In this chapter, the distinctions and similarities among general collections, special collections, and hybrid laboratories will be discussed, along with recommendations from the literature on maximizing functionality of the space, no matter the type of laboratory.

DEFINITIONS

General Collections

General collections conservation (also called collections conservation) focuses on library materials that are generally readily available for patrons to remove from the library premises for use off-site and general reference collections that are used in-house. They are generally more modern

works, dating later than the early- to mid-1800s, although the cutoff date may depend on the library and the item in question. Jan Merrill-Oldham and Nancy Carlson Schrock note that, "as a rule, [general collections] are more important for the information they contain than as artifacts; that is, they are not rare or unique, but this varies from institution to institution."¹

As a result, the work performed on such collections (often called "book repair") usually focuses first on preserving the informational content of these items. "Maximizing the life and usability of the text at reasonable cost and within a reasonable time is the primary concern" of collections conservation.² Books with similar damage might be batched into jobs, and mass production functions such as precutting and presorting supplies are usually implemented. A laboratory manual that details the basic repairs employed in the lab serves as documentation for each item treated—in other words, the items needing treatment are fit into the particular types of repairs available. The workflow for collections conservation is usually highly refined to gain the largest efficiencies and to maximize output while maintaining quality.

Typical large equipment found in a book repair or collections conservation operation includes a variety of cutting devices, typically a board shear and guillotine; various presses, including nipping, standing, and finishing; a job backer; pamphlet binding equipment such as a saddle stapler or machine stitcher; and plenty of bench space for multiple workers to operate simultaneously. Enclosure and protection operations may require additional large equipment, such as a heat, laser, or ultrasonic encapsulator and board creaser. Ideally every book repair unit will be equipped with at least one small sink for cleaning brushes and other small tools.

Special Collections

According to the Association of Research Libraries (ARL) "Statement of Principles," special collections may be defined as comprising "manuscripts and archival collections unduplicated elsewhere and one-of-a-kind or rarely held books. They also include items precious through their rarity, monetary value, or their association with important figures or institutions in history, culture, politics, sciences, or the arts."³ Conservation of these collections is in some ways similar to general collections work in that conservators adhere to the American Institute for Conservation's "Code of Ethics and Guidelines for Practice" and use high-quality materials in their work, yet each item is generally documented individually and an arsenal of treatment options is applied to the requirements of an individual item—a reverse from the general collections approach of fitting the item into the established treatment classes. Special collections conservation focuses on preserving the artifactual, as well as the

informational, value of the collections, so that minimal intervention is used to allow maximum flexibility for future treatments, should they be warranted.

More specialized treatments require more specialized equipment beyond what is found in a general collections conservation laboratory. As Rowley and Hanthorn state, "the book and paper conservation functional area is truly a laboratory" and requires equipment such as a fume hood, chemical storage cabinet, and refrigerator that would be found in many laboratory settings.⁴ If the laboratory will be designed for work on flat, oversized papers such as maps or posters, paper conservation equipment should be planned for, such as a light table, mat cutter, vacuum suction table, and, in some cases, a leaf casting machine. Aqueous treatments that are common in book and paper conservation require document treatment sinks, generally as large as possible with access on multiple sides to facilitate the work. They are equipped with a water purification system that should ideally have hot and cold water taps, and may include an exhaust system so that solvent treatments may be carried out safely in the sink cavity. A drying rack and storage for washing trays should be included near the washing sink(s). Some laboratories that incorporate spray deacidification into their workflow might also have a spray booth for that purpose. Finally, if fine binding will be practiced in the laboratory, specialized bookbinding tools and a stamping press will be required as well.

Hybrid Laboratories

While there are conservation laboratories that purely serve the needs of only general or special collections, most laboratories are hybrid to some degree and accommodate workflows for various operations. A recent survey of conservation professionals in research libraries indicated that, since the 1980s, significantly more centralized, or hybrid, facilities have been built or renovated than have laboratories designed solely for general or special collections.⁵ "There is advantage in having the book conservation and the book repair operations part of one space and operation" when a new space is planned because many of the functions of both types of laboratories are identical and will require similar utilities, such as plumbing, waste disposal, and electricity, not to mention similar equipment.⁶ When both general and special collections workflows are performed in one large space, the greatest efficiencies may be gained by separating the specialized equipment and staff areas required for special collections work from those for general collections, while placing shared equipment, materials, and tools in a central area that is easily accessed by all.

Hybrid laboratories, therefore, do not require particular equipment in and of themselves, but instead will require much of the equipment used in both general and special collections laboratories, including paper conservation

equipment. They may however, require behavioral changes and increased expectations by supervisors and staff. For instance, maintaining large clean surfaces for single items or a collection of large flat works on paper can result in conflict with the "dirty" activities such as sanding, paring, and working with red-rotted leather bindings.

FUNCTIONAL AND WORKFLOW ANALYSIS

Before the laboratory planning commences, a workflow analysis and determination of laboratory functions should be undertaken. As Helen Forde notes in her paper on setting up a conservation workshop, "the principal considerations . . . remain the same whatever the ultimate decision about the scope of the enterprise: the work-flow pattern, the existence of utilities, materials and equipment as well as potential for future expansion."⁷ The first considerations are the functions that will take place in the space. Helen Shenton, in her discussion of the development of a special collections conservation studio for books at the Victoria and Albert Museum, notes that the conservation staff brainstormed the divisions of functions that would take place in their new space: Wet processes were separated from dry, dirty processes separated from clean, and noisy processes separated from quiet. In her laboratory, these ideas translated into auxiliary spaces off the main space for "dirty" work such as sanding and paring, a "wet" room with sinks and a fume hood, and a "sound-proofed room for box-making machinery."⁸ In another scenario—a more typical hybrid conservation laboratory—conservators should consider the general collections, rare book, and paper conservation activities that will take place in the space, as well as enclosure construction or other tasks that might be included in the routine work.

Once the functions of the laboratory have been considered, the workflow patterns for these functions must be mapped so that the most routine functions may be performed simultaneously by various laboratory staff. As Mary Lynn Ritzenthaler states, "all treatments to be carried out should be analyzed from the perspectives of their space requirements and necessary supplies."⁹ This concept becomes especially important in a hybrid laboratory. Given the high-volume, rapid pace of many general collections tasks and the often slower-paced, highly focused work of many special collections treatments, the potential for inefficiencies, if not conflicts among laboratory staff, arises if the workflow patterns have not been analyzed to provide the best access to shared pieces of equipment and separate spaces for disparate activities. Some tasks may be successfully carried out from any point in the lab, but other tasks will

best be completed in certain distinct areas, such as the fume hood for solvent treatments or the sink for washing and alkalization treatments.

LABORATORY DYNAMICS AS A FUNCTION OF SPACE

In planning for the space, it is useful to consider both the work that will take place and how noise might affect the work being done. Some tasks in the conservation laboratory, no matter the type, are quite repetitive and rote. For this type of work, the conservator or technician might enjoy listening to background music or chatting with colleagues. If, however, other workers in the same space are focusing on difficult tasks that require close attention to detail, such background noise might be distracting. These situations are particularly vexing in a laboratory whose treatments run the gamut along the general/special collections continuum. Certainly noise levels may be controlled by enforcing rules about music or talk in the lab—and no manager can perfectly predict the personalities or quirks of those who will work in the space—but designing a space that considers varying noise levels will improve the functionality of the space and perhaps personal dynamics as well.

Likewise, the issue of public versus office space is an important consideration. In some laboratory settings, office space is kept separate—down the hall or in a separate area. However, in many laboratories the computer desk may be adjacent to the workbench, and once again these distinct functions should be considered when a space is being designed because the different work may require unique atmospheres. Most experts recommend that permanent laboratory personnel be provided office space that is "separate from (though contiguous with) the lab [to enhance] the quality of both treatment and 'administrative' work."¹⁰

BUILDING PLANNING—THE "TEN COMMANDMENTS"

In her book on planning academic library buildings, Heather M. Edwards quotes H. Faulkner-Brown's "Ten Commandments" of library building.¹¹ According to Faulkner-Brown, an architect of many academic libraries, a newly designed space or building should be:

- flexible, with a layout, structure and services that are easily adapted to changing circumstances;
- compact, for ease of movement of readers, staff, and books through the building;

- accessible, from the exterior into the building and from the entrance to all parts of the building, with an easy, comprehensible plan needing minimum supplementary directions;
- extendible, to permit future growth with minimum disruption of services;
- varied, in its provision of accommodation and services to satisfy the differing needs of users;
- organized, to facilitate appropriate exposure of books and other sources of information to users;
- comfortable, to promote efficiency of use;
- constant in environment, for the preservation of library materials;
- secure, to control user behavior and loss of library materials; and
- economic, to be built and maintained with minimum resources both in finances and staff.¹²

With minor modifications, this list holds true for the design of conservation laboratories. In particular, flexibility, compactness, accessibility, extendibility, variety, organization, and security will be addressed in the remainder of this chapter.

Flexibility and Size of Space

Investing in flexible design allows for the greatest number of discrete tasks to be performed in the same space. The need for flexibility is particularly true in cases where a space is designed purely for general collections for the present time but might become a hybrid laboratory at a later time if additional staff can be secured.

Across the board, conservators who have written on the topic of laboratory design recommend that as much of the laboratory furniture as possible be placed on wheels in order to allow rearrangement for different treatments and operations. In the newly designed conservation studio in the Victoria and Albert Museum, for example, all tables were designed to be the same height so they might be placed together for oversized projects. In addition, mobile light boxes, trucks housing rolls of polyester and polyethylene, a table for drying parchment under tension, and drying tables were manufactured at the same height as the large worktables.¹³ When possible, rolling furniture should include locking casters for safety and should be height-adjustable to accommodate different tasks and workers. Purchasing such flexible furniture, asserts Walter Henry, allows an institution to “buy several labs for the price of one.”¹⁴

For the redesigned paper conservation laboratory at the Victoria and Albert Museum, Merryl Huxtable notes that it was challenging to “balance

the flexible use of as much space as possible with a need for the individual’s space required in which to concentrate.” Her laboratory’s ingenious solution was to include screens that could be placed around workbenches to preserve some privacy—a true nod both to the principles of flexible design and an understanding of her laboratory’s personal dynamics.¹⁵ Such a feature might work particularly well in the hybrid laboratory set-up with the highly distinct workflows commonly found in such spaces.

Compactness

Contrary to Faulkner-Brown’s assertion that a library building should be compact enough to allow ease of movement of people and collections, experts who have designed conservation laboratories are emphatic that labs require large amounts of space. As Eleanore Stewart states, “librarians unfamiliar with physical treatment often are astounded at the space requirements” that may be in the range of “two hundred to three hundred square feet per person.”¹⁶ Leighton and Weber agree that a typical laboratory that includes flat paper conservation will require roughly three hundred square feet per person, while a typical general collections unit with no responsibilities for oversized paper collections may function with an estimate of two hundred square feet per person.¹⁷ The size of the space may dictate to a large degree what work can be accomplished therein; therefore, designers should keep in mind the principle of flexibility and decide up front if a laboratory designed solely for general or special collections might become hybrid in the future.

Many of the large pieces of equipment necessary for even the smallest laboratory require a large “footprint” of space around them for proper functioning. For example, an essential piece of equipment in any laboratory, a board shear, might require “over fifty square feet” of floor space to operate.¹⁸ When the laboratory is designed, the planners must consider the operating mechanisms for each piece of equipment to ensure adequate room for access.

Accessibility

While Faulkner-Brown’s concept of accessibility relates primarily to easy entrance to and egress from parts of a library building, the same concept can be neatly related to conservation laboratory design. In order for the laboratory to function most efficiently, it should be located in close proximity to other operations that relate to the work that takes place in the laboratory. A general collections or hybrid conservation laboratory that produces hundreds of newly cased books, pamphlet binders, and boxes would ideally be located near the labeling and shelf preparation units of the academic library. Likewise,

if an academic library contracts with a commercial library binder, the conservation laboratory that prepares materials for commercial binding should be located so that trucks of prepared materials might be easily passed onto this unit. On the other hand, if a hybrid or special collections laboratory is located at great distance—even in separate buildings—from the collections it serves, great risk exists for damage in transit. Finally, because many of the supplies consumed in a book or paper conservation laboratory are heavy and unwieldy to deliver, the laboratory should be easily accessible by a loading dock and elevator—the larger the better.¹⁹ In addition, both external and internal doorways should be “wide enough to permit the free and regular passage of loaded trolleys [book trucks] and the movement of benches and large equipment.”²⁰ Floor textures, ramp angles, doorway thresholds, and hands-free devices should also all be considered for flow and movement of heavy loaded carts through doorways and hallways.

Extendability

Regardless of the type of laboratory designed, one of the most important recommendations found in the literature is that the space should be planned to allow for maximum future reconfiguration as needed. “Techniques, work priorities, and people all change” and a space that has not been planned to accommodate these changes might prove cumbersome, if not unusable, in the not-too-distant future. In some cases, installing equipment such as a fume hood at a later date might not be possible if the laboratory is designed in a space that cannot be properly vented.²¹

Therefore, if an institution cannot currently staff the special collections functions in a hybrid laboratory but plans to add them in the future, the laboratory should be built initially to accommodate the laboratory-style equipment that will be necessary at a later date. Many of the authors of literature on this topic suggest that one way to avoid future mistakes is to “hire the conservator first and allow her or him to design and oversee construction of the facility” because “what seems a perfectly rational arrangement of space is frequently utterly impractical” in the future.²²

Variety

Before a laboratory is planned or retrofitted, the workflows must be considered, as noted above. When the functions of the laboratory are documented, the designers should note tasks that might be best placed in auxiliary work spaces. For example, special collections conservation work requires that

individual items be photographed before and after treatment. In an ideal laboratory design, a separate photodocumentation room will be provided so that camera and computer equipment can be left set up to save time when a visual image is required and to ensure a separate space that can be darkened and not affect the laboratory lighting system as a whole.²³

Some hybrid and special collections laboratories have a designated space for “wet” treatments in order to contain solvents and treatments involving water. Likewise, a “dirty” room is helpful so that tasks that generate dust, such as leather paring or sanding wood, can be contained in a separate space. Finally, a reference room, often doubling as a conference space or break room, is useful to house the professional literature required by the practicing conservator.

Organization

Faulkner-Brown’s definition of “organization” relates to the arrangement of library materials on the shelves for retrieval and use; the concept of proper organization may be applied in particular to the question of conservation supplies and other storage. No matter the type of conservation laboratory, large amounts of storage space will be required to adequately house the large rolls of cloth and large sheets of paper and board that every conservation laboratory requires. As Walter Henry states, designers should “lavishly overestimate [their] need for storage space (for paper, board, adhesives, and so on) and provide generous access space for that storage.”²⁴ For materials that are particularly sensitive to dust, such as polyester, enclosed storage space is preferred.²⁵

Having flexible storage space is as important as having flexible laboratory furniture. When possible, heavy material, such as binder’s board, should not be stored above waist height and should be kept in small piles to promote safe removal. Flat files are ideal for storing thinner papers, and large rolls of cloth and leather may be stored on specially designed racks or on retractable shelving.²⁶

Some operations of the general collections or hybrid laboratory, such as pamphlet binding, will require adequate storage space for smaller supplies, many of which may be purchased much more economically in bulk. Even if sufficient space to store large reserves of such supplies cannot be allocated inside the walls of the conservation laboratory, the designer must remember that “significant quantities will [still] need to be kept within the work area itself.”²⁷

Security

Depending upon the type of laboratory and its staff, security may be a greater or lesser concern, but it should always be considered in laboratory planning. Though the materials treated in a general collections laboratory may not be artifactually valuable, the tools and equipment in the space might be.

If a laboratory will treat special collections materials with artifactual value, suitable locked storage should be included in the design plans, including a safe, lockable cabinets, and lockable flat files for oversized paper storage. A professional should be consulted to ensure that storage cabinets and vaults are properly fire-rated. In addition, "the whole workshop should be fitted with good locks and bolts as there may be occasion when work needs to be left out to dry overnight or when no staff is around."²⁸ In a hybrid space, where there are potentially more lower-level employees, including student workers, preplanning will determine how to protect the materials and secure the lab space while providing access to parts of the space as required. Planning ahead for "an adequate amount of locked storage space helps to remove temptations from internal staff and others in the library."²⁹

Health and Safety

A related topic to security not considered in Faulkner-Brown's Ten Commandments is the health and safety of the staff in the laboratory and others occupying the same building. Health and safety issues should be considered when planning any type of laboratory, not just special collections laboratories storing noxious chemicals. Every laboratory should have in place a manual documenting safe working practices, because even the smallest general collections laboratory will include heavy and potentially dangerous equipment, such as a board shear and guillotine. All laboratory workers are likely to use sharp knives and scalpels and hot tools such as a tacking iron. If the layout and design is not vetted for safety issues, the limitations of the space may contribute to unsafe working practices.

If chemical work will be undertaken in the laboratory, such as deacidification and solvent treatments, then the designers must consult with university or state health and safety officers to ensure that such practices may be performed safely. Walter Henry recommends speaking with an environmental health and safety representative early in the process to avoid costly mistakes further into the planning process.³⁰ Hybrid and special collections laboratories should include an eyewash, safety shower, and fume hood. Sufficient chemical cabinets are required to separate various classes of chemicals as required by the Occupational Safety and Health Administration (OSHA).

For a large special collections or archives laboratory, Walsh recommends one fume hood for every three conservators, each located away from windows or doors.³¹ Because of fire risks, all laboratory doors must be fire-rated and permit easy egress in an emergency, opening out from the space toward the exit. Appropriate emergency contact equipment, as dictated by local building codes, should be installed in an enclosed chemical area.

CASE STUDIES

Two laboratories are featured in this chapter to provide examples of two versions of hybrid conservation laboratory design. Both serve research libraries but are distinct in many of their design features.

Iowa State University

Iowa State University (ISU)³² is a land-grant university of approximately twenty-eight thousand students located in Ames, Iowa.³³ The library collections as of 2007 number roughly 2.6 million volumes.³⁴ The conservation facilities at ISU, measuring approximately three thousand square feet, were constructed as a purpose-built, hybrid space in 1995 and house five permanent staff, one eight-week intern, and just over one full-time equivalent student.

The conservation laboratory is located on the same floor as special collections, although other functions that fall under the purview of preservation, such as commercial binding, marking and plating, reformatting, commercial deacidification, and commercial custom-fit boxing, are located two floors below in the same library. Ideally, those functions would be moved upstairs to the same floor as the conservation laboratory to create a more seamless workflow for the various preservation department functions.

As one enters the laboratory area, a receiving area occupies the space immediately inside the doors. This arrangement allows staff in other departments to drop off supplies or items to be treated without having to penetrate the laboratory area itself. The receiving area includes shelves for incoming materials and materials to be treated, a small worktable for consultations and employee break times, and the laboratory's reference collection.

Office space for staff includes two permanent offices, computers in the receiving area, and a laptop with wireless access that is available for direct input of data when performing condition assessment or treatment reports. Another computer is connected directly to the stereomicroscope located in the laboratory space.

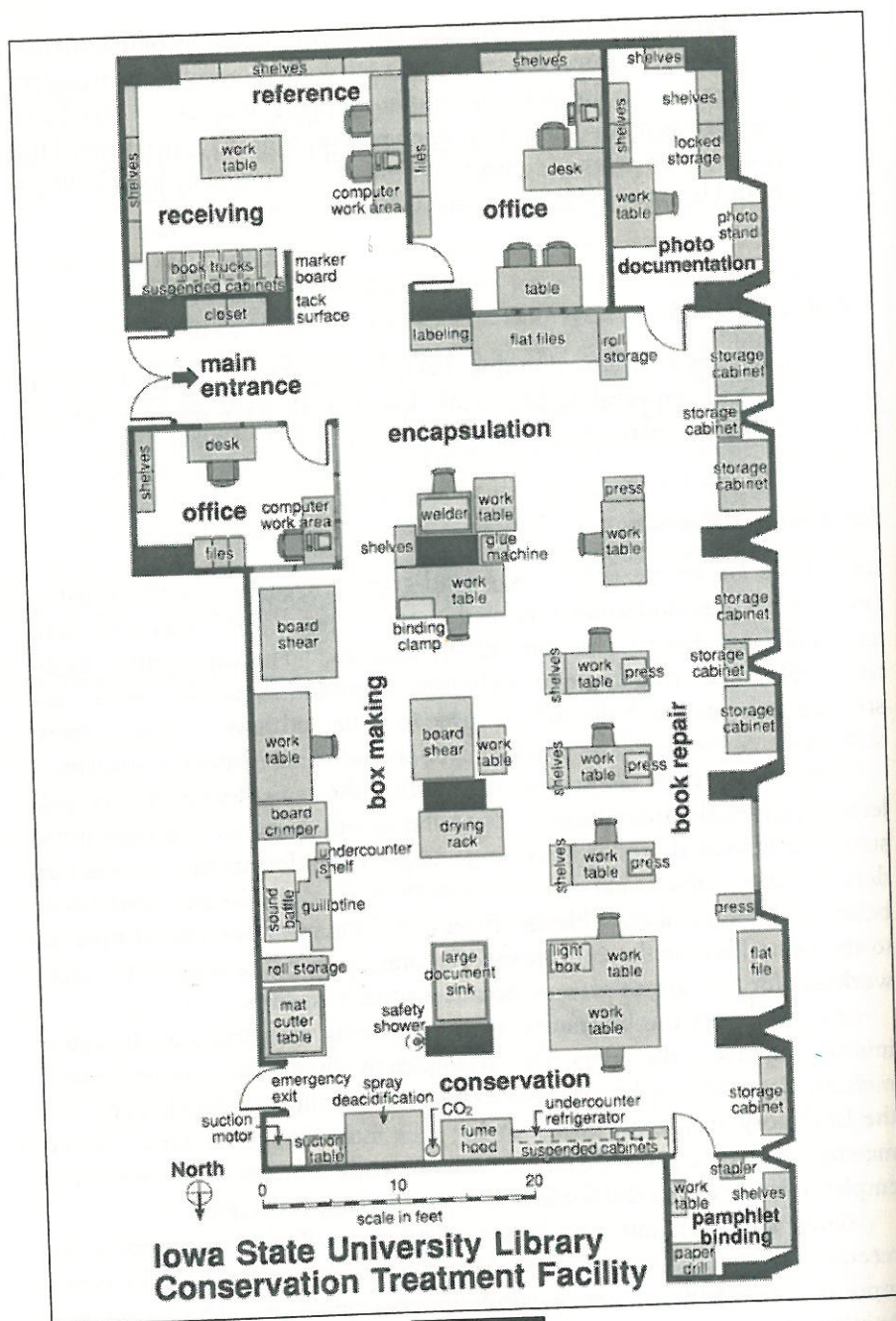


FIGURE 3.1

Iowa State. Reprinted with permission from Thorson, Brom, Broshar, Snyder Architects, 1996.

Other auxiliary rooms include a room designed for photodocumentation (currently used for storage) and a room for pamphlet binding that stores pamphlet binders and the paper drill. Plans are being made to expand the pamphlet binding room to increase the supply storage area and possibly add a "dirty" room. In addition to the expansion, another large office will be added.

The layout of the laboratory, as designed, was based on functions of the various processes that would take place in the working space. The lab area itself is flexible and accommodates both general and special collections work in the same open space. While the floor plan suggests two distinct areas for these workflows, in practice the entire space is used for both book repair and conservation treatments. Common pieces of equipment are accessible to all laboratory workers; in particular, the board shears are centrally placed to facilitate use of this crucial piece of laboratory equipment. The benches are not bolted or fixed so that they may be moved to other locations in the laboratory as required. While movable, the benches have proven rather narrow for many laboratory tasks; if unused equipment could be removed elsewhere, the benches might be laid out in a more useful configuration.

Safety and security has not been a concern thus far, although a row of large pillars in the middle of the lab somewhat obstructs the view toward the main entrance. When staff are working at the benches they cannot see (but can hear) as someone enters the front door of the department. Lockable storage cabinets in the photodocumentation room provide storage for valuable materials.

Indiana University, Bloomington

Boasting a student population of approximately thirty-eight thousand students, Indiana University, located in Bloomington,³⁵ comprises nineteen libraries that house roughly 8.6 million volumes.³⁶ The E. Lingle Craig Preservation Lab at Indiana University was built in 2002 as a part of the new offsite storage building, the Ruth Lilly Auxiliary Library Facility (ALF). Because the storage facility was built on the edge of the campus, the laboratories are not located near any of the libraries they serve, with the exception of the storage facility itself. On a daily basis, a library shuttle delivers and retrieves items requiring conservation. Two convenient loading docks exist for this purpose.

Eight full-time and two to eight student employees work in the laboratory spaces, which are divided into three distinct areas: (1) special collections (bound items), (2) paper conservation (serving both special and circulating collections), and (3) bound circulating collections. Because the laboratory space is fairly large, measuring over four thousand square feet, some equipment, such as presses and board shears, has been duplicated for efficiency's sake. The special collections area includes among its large equipment a board

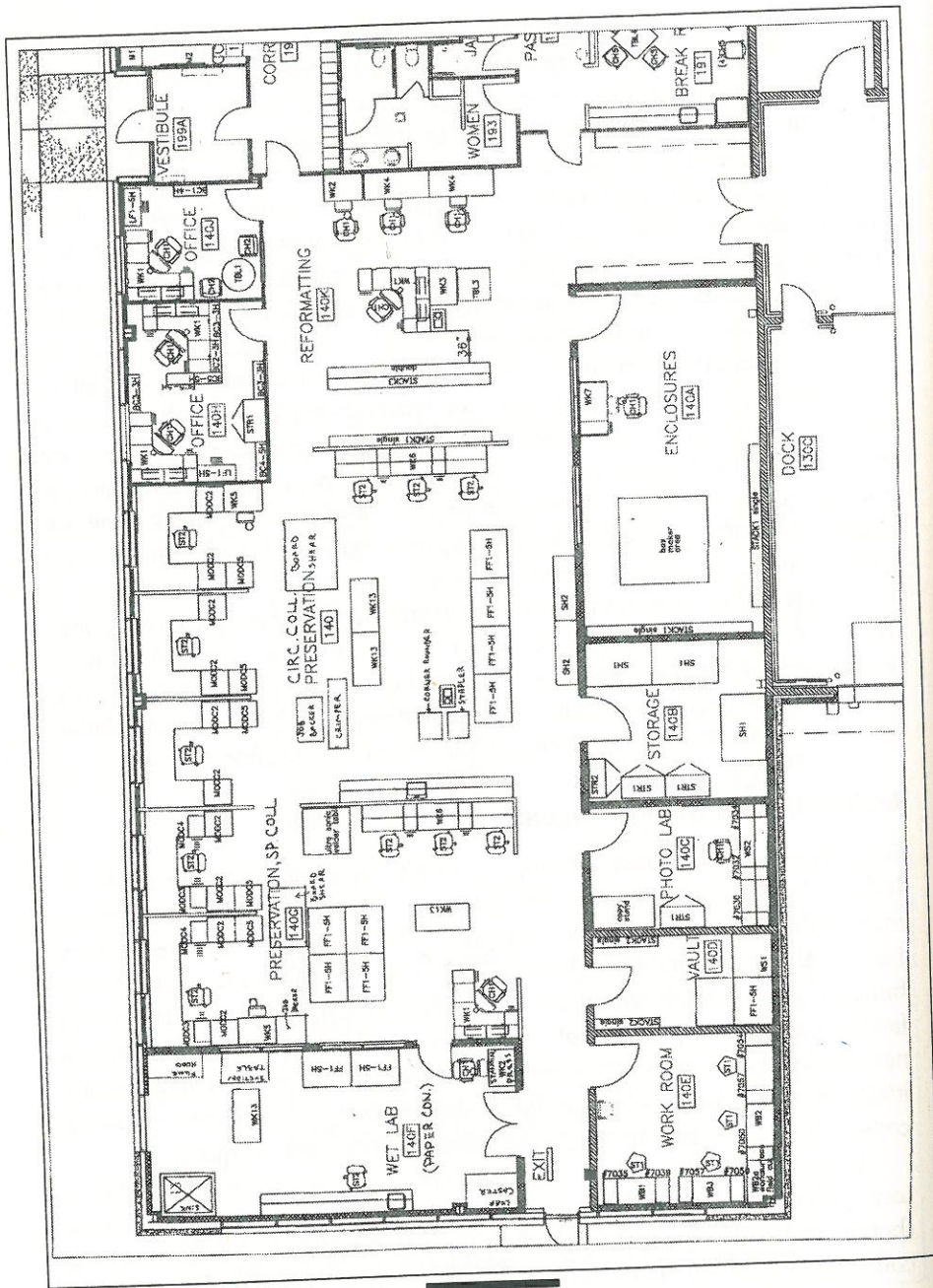


FIGURE 3.2

Indiana University. Reprinted courtesy of Indiana University, University Architect's Office, Engineering Services.

shear and ultrasonic welder; the paper conservation laboratory features a large washing sink, fume hood, vacuum suction table, and leafcaster; and the circulating collections area houses a job backer, board crimper, stapler, and board shear. Walls, and in some cases, doors, separate these three areas.

In the Indiana laboratories, the auxiliary work spaces measure approximately 2,700 total square feet. A notable auxiliary space that is still quite rare for the typical conservation laboratory is a room custom-designed to house an automated Kasemake 503A box making machine and its technician. Other auxiliary spaces include a "dirty" room storing a board slotter, drill press, hot press, and saws; a storage room designed to house both flat and rolled materials commonly used in conservation treatments; the photo lab, designed for photodocumentation, but currently used for additional storage until the scanning program is established; and a vault designated for special collections materials. The ALF is an extremely secure facility, incorporating motion sensors, card keys for entries, and window breakage detectors. All offices and storage areas lock by key.

Dedicated offices outside the laboratory space house four supervising employees and computer terminals throughout the work areas serve technicians and student employees. A break room and restrooms stand apart from the laboratory spaces. Bench space in the laboratories is not assigned to lower-level staff but tends to become personalized, as most staff members prefer to work at the same space during each shift. Despite the open aspect of the Indiana laboratories and the rather large footprint, bench space can be consumed quickly during particular treatments because of the working habits of some staff members.

The space has been designed with both flexibility and workflow in mind. Two tables in the paper laboratory have been fitted with casters so they can be moved around the work space as needed. Work areas for conservators and technicians are u-shaped, permitting easy access to tools and equipment just by swiveling the work chair. In addition, flat files used to house work in progress and store supplies have been outfitted with countertops to double as additional work space.

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5. Whitney Baker and Liz Dube, "Identifying Standard Practices in Research Library Book Conservation," *Library Resources & Technical Services* 54, no. 1 (2010): 21–39; The results of Baker and Dube's 2007 anonymous, web-based survey of 79 conservation professionals working in research libraries revealed that the vast majority of respondents (53) worked in centralized laboratories serving both general and special collections, as compared with 7 institutions with a laboratory only for general collections, 2 with facilities only for special collections, 16 institutions maintaining 2 separate facilities for general and special collections, and 1 respondent indicating another scenario.
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