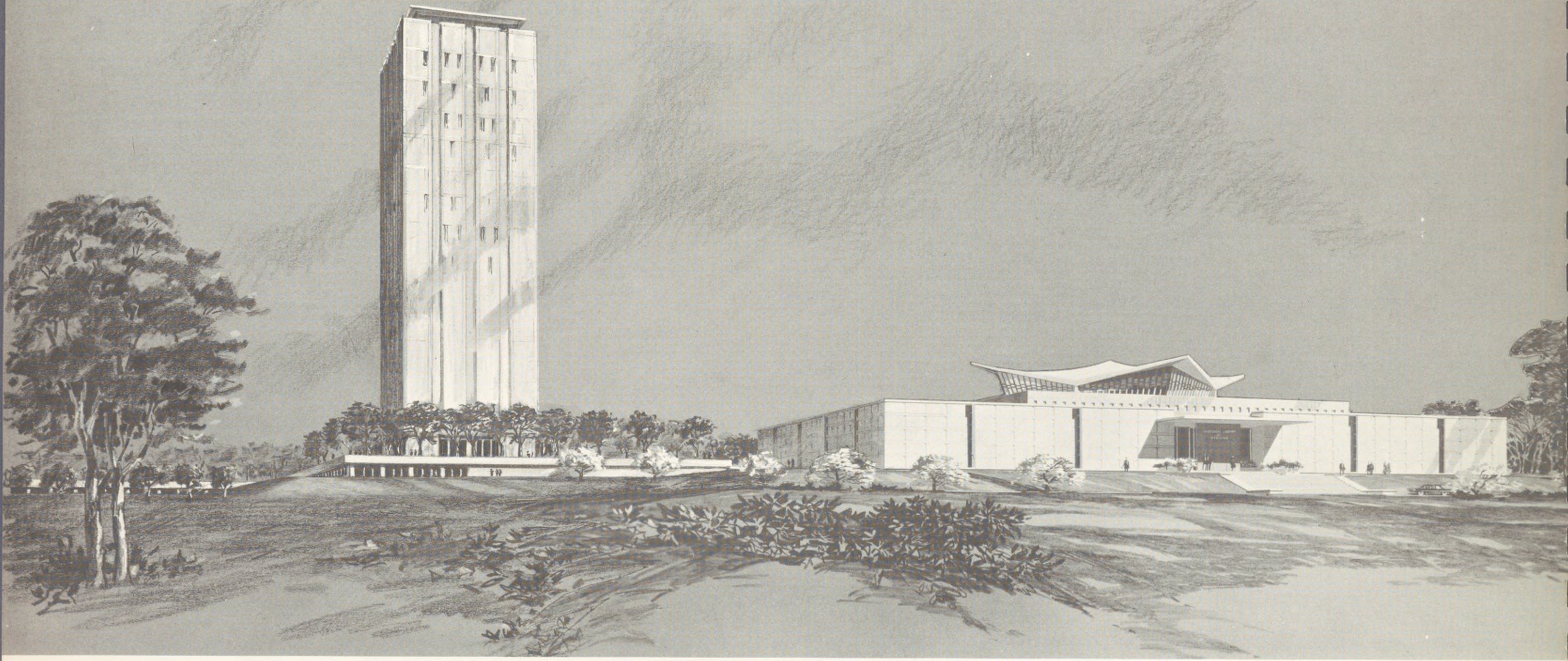
PROPOSED NEW FACILITY
for NATIONAL LIBRARY OF MEDICINE

FEASIBILITY STUDY

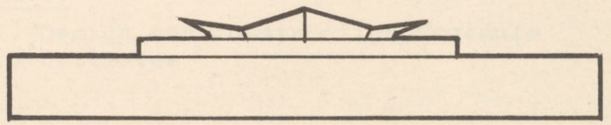
O'CONNOR & KILHAM ARCHITECTS
101 PARK AVENUE NEW YORK N. Y. 1967



NATIONAL LIBRARY OF MEDICINE WITH PROPOSED NEW FACILITY

O'CONNOR & KILHAM ARCHITECTS 1967

PROPOSED NEW FACILITY
for NATIONAL LIBRARY OF MEDICINE



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PREFACE

In 1962 the collection of books that occupied only a few shelves in 1836 as the Library of "The Surgeon General's Office" expanded into a new building all its own in Bethesda, as the National Library of Medicine. By its very nature as a collector of books it was ever growing and for some 40 years had felt the pinch of restricted quarters. At last it had a facility large enough to meet its overall requirements, with enough left over to meet the anticipated stack expansion for at least the next 20 years.

For years the National Library of Medicine had been in the forefront of technical advances in the adoption of new equipment and methods to library purposes. Its development of the mechanization of the photo reproduction of an article from the volume in the stack to its deposit in the mail drop has been an outstanding performance.

Particularly notable, however, was the continued technical advance over the years in the preparation of the Index Medicus, a monthly publication listing the significant citations from some 2500 medical journals. With the installation of a new automated system a computer, installed in the northwest corner of the building, was hitched to the production of the Index Medicus in a program called Medlars (for the Medical Literature Analysis & Retrieval System). With the aid of the computer the information extracted from the journals was stored on tapes, retrieved at the proper time and in edited form ready for the printer. The success of this new operation opened a vast new field in usefulness of catalog and bibliography. Several additional types of publications became possible, including demand bibliographies and recurring bibliographies on selected subjects.

With the Medical Library Assistance Act in 1965, a new and expanded role of the National Library of Medicine was clear, a role embracing new functions to match the ever increasing magnitude of its already established mission. The rapid development of computer and automation techniques in the field of business, science and the military services await only the specifications of the library field to harness them to a new essential purpose in our national life. The access to medical knowledge, the selection of the item, the dissemination to the user whether a library, hospital or individual doctor, becomes possible with a speed and range inconceivable a few years ago. To meet the pressures and increasing demands the National Library of Medicine began expanding its programs and its personnel. All this had to be at the expense of space intended for the traditional library purposes for which it was founded. Space was even acquired on the outside.

The impact of all the new developments on the National Library was that it now has a far bigger job to do, expanding its services as the National Library of Medicine to a bio-medical communications center for the whole country, performing research and development on new methods for handling information and providing new as well as traditional information services. To do this efficiently, additional space is needed to establish the new programs and to permit restoration to the original National Library of the areas it still needs for its own development.

The purpose of this report is to determine the physical requirements of such added facilities and how they can be added to the original project in a way that it can operate efficiently in the years to come as one combined institution for greater service as the new National Library of Medicine.

The solution submitted recognizes the necessity of a close physical and architectural relationship between the new and existing structures. By physically linking the buildings at stack levels A & B the two areas are united. Architecturally the aspect of the National Library of Medicine is already established, and the Tower Scheme has been developed to preserve this character in a harmonious yet dynamic composition in which the existing building continues to be the "keynote" of the overall layout. The use of the terrace embankment, a distinguishing feature of the original concept, is continued with the new design as a unifying element and at the same time as a means of concealing the large expanses of required on site parking. The only practical solution to the parking problem seems to be a multi-tier parking garage plus parking under the building at C level.

For long range planning the site still retains a capability of future expansion with additional stack space possible west of the building beneath the existing parking space and with open space north of the building available for high rise construction.

PROPOSED NEW NATIONAL LIBRARY OF MEDICINE FACILITY

FEASIBILITY STUDY

I. GENERAL

A. Authorization

Contract No. PH43-67-649 - entered into the ninth day of November 1966 by the United States Government and O'Connor & Kilham, Architects in the City of New York.

B. Character and Extent of Services

1. Project Description:

A study of the physical requirements and estimated cost for the construction of additional facilities for the National Library of Medicine and rehabilitation of the existing National Library of Medicine building.

2. Scope of Work

"A study of the feasibility of constructing a new facility for the National Library of Medicine for the purpose of accommodating the total space requirements of the present and planned programs of the NLM in the most efficient manner and making maximum utilization of the present NLM building." The program is detailed in the "Scope of Work" furnished as part of the contract as detailed hereinafter in section II-A-2.

3. Time of Performance

Ninety calendar days from above date of contract, extended to March 3rd, 1967.

C. Background Information

1. Location

The National Library of Medicine is located on Wisconsin Avenue in the SE corner of the National Institutes of Health Reservation in Bethesda, Maryland, across Wisconsin Avenue from the National Naval Medical Center.

2. Existing Building

The present building was first occupied in 1962 as a traditional medical library. The library was formerly the Armed Forces Medical Library first under way in 1836 as the Library of the Surgeon

General's Office. The computer-based Medical Literature Analysis and Retrieval System (MEDLARS) was installed, with resulting alterations, in 1963.

With the Medical Library Assistance Act of 1965 an increase in personnel was authorized commensurate with new program responsibilities - with still further alterations in the plans.

3. Rented Space

In June 1966 commercial space was leased in the Blackwell Building, Bethesda, to accommodate the staff of the Extramural Program.

4. Future Requirements

The success of the Medlars installation as a tool of bibliographic research, the enlarged scope of collecting activities, the broad responsibilities of the NLM under the Medical Library Assistance Act of 1965 affecting the Extra Mural Program, the center for toxicological information, the authorization to proceed with the development of a sophisticated graphic image storage and retrieval system, the preservation microfilming program, the program of research and development in new system and techniques relating to the intended communication of bio-medical information, are all beyond the scope of the library of 1962 - and all have combined to create an ever increasing demand for space to house the growing staff and their activities - currently met at the expense of the space allowed for the basic library functions of the NLM and the growth of its collection and by renting commercial space.

To determine a physical program to best meet these demands and make due allowance for their probable development in space requirements over the next twenty-years - as far as it can be reasonably projected at this time - is the purpose for which this Feasibility Study is authorized.

5. Site

In its total site planning and development program for the NIH campus, additional space contiguous to, and largely to the south of, the NLM has been reserved by the NIH for the projected expansion of the NLM as studied herein.

D. Information Furnished

1. By NLM and NIH - General - (See Appendix #1 for details)

a. Statement of scope, programs, studies to date, and own estimate.

b. Organization charts - tables of personnel and projection.

c. Copies of Technical reports to date.

d. Proposed Toxicological Information Handling - reports and memos.

e. Work reports - existing building.

f. Sketch plans of changes in original building.

g. N.I.H. Utilities and Electrical Plans.

h. Photographs.

i. Site plans and properties of N.I.H.

2. Information available to Architects

Original plans of NLM as of 1963 and of subsequent alterations to include Medlars installation, auditorium and lunch room.

E. Meetings

Meetings were held on the following dates with various individuals, groups, and organizations concerned. Copies of memorandums of these meetings are included in App. #2

1. 22 November, 1966

Place

a. NLM (National Library of Medicine) - General Meeting

NLM & N.I.H. (National Institutes of Health) - Facilities Planning Division

2. 1 December 1966

   a. N.I.H. - Research Facilities, Planning Branch

   b. NLM - Systems Analysis & Auerbach Corp.

   c. NLM - Supply Section

   d. NLM - Director and Staff

   e. NLM & N.I.H. Research Facilities, Planning Branch - Mechanical Requirements

3. 2 December 1966

   a. NLM - Extramural Program - EMP

      NLM - Facilities and Resources Division - FRD

      NLM - Research and Training Division - RTD

      NLM - Grants and Contracts Officer

   b. NLM - Reference Service Division - RSD

4. 7 December 1966

   a. NLM - Bibliographical Services Division - BSD

5. 15 December 1966

   a. NLM - Audio-visual requirements

   b. NLM - Reference Services Division - RSD

   c. NLM - Administrative Services

6. 21 December 1966

   a. N.I.H. - Parking Facilities

   b. NLM - Director and Staff

7. 16 January 1967

   a. NLM - Reference Services Division - RSD

   b. NLM - Administration

   c. NLM - Director and Staff

Note: 27 January 1967 - "First Delivery: - and preliminary report submitted for review.

8. 3 February 1967

   NLM - Administration

9. 14 February 1967

   NYC/Architect's Office - Administration - Final Review

F. Criteria

1. Existing NLM Bldg.

   Rehabilitate as basic National Library of Medicine with functions as originally authorized.

2. New Structure

   Develop scheme - a new structure to meet new and expanded requirements of NLM as "Bio-medical Communications Center."

3. Linkage

   Provide proper "linkage" as part of the new construction so combined facilities can operate efficiently as one institution.

4. Relationships

   New structure to be designed in harmonious relationship to existing NLM and any adjacent buildings or buildings under construction.

5. Future Projects

   Make adequate allowance for future expansion on site with indication of a possible plan.

6. Flexibility

   New space designed with capability of change of arrangements of partitions and utilities to permit future departmental expansions and/or modification of layout.

G. Over-All Summary

1. Organization

   A comparison of the organization of the NLM as of 1967 compared with the expanded NLM of 1972 is illustrated by Diagram #1, page 4.

2. Site Plan

The proposed utilization of the site for the new facilities as of 1972, and allowing for long range developments, is shown on adjacent sketch plan #2.

3. Birds-eye

A schematic perspective of the over-all project development is shown on adjacent thumb nail sketch #3.

4. Estimates & Projections

a. Personnel - Projected authorized increase from 397 in 1967 to 990 in 1972.

b. Space - Increase of floor area from 231,855 sq.ft. (NLM Bldg.) by 229,800 sq.ft. to a grand total of 461,655 sq.ft. exclusive of parking garages.

c. Cost - The estimated construction cost only of Scheme A

1. The New Structure	$8,208.000.
2. Site Development	231,000.
3. Utilities	376,000.
4. Rehabilitation of N L M	618,000.
5. Parking additional	1,056,000.

Note: Figures consistent only with degree of detail available in advance of actual plans - to give "order of magnitude" only.

5. Conclusions

Various detailed conclusions may be found as follows:

a. "Compact" storage Para. C-6)-c), page 44

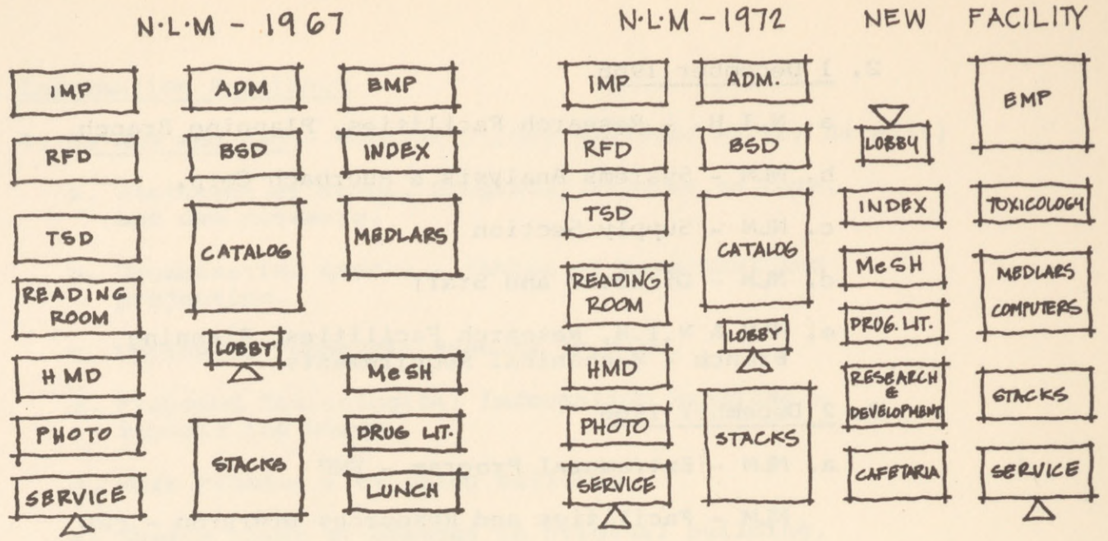
b. Graphic Image Storage & Retrieval Para. 2-e, page 58

c. Eating Facilities Para. 3, page 58

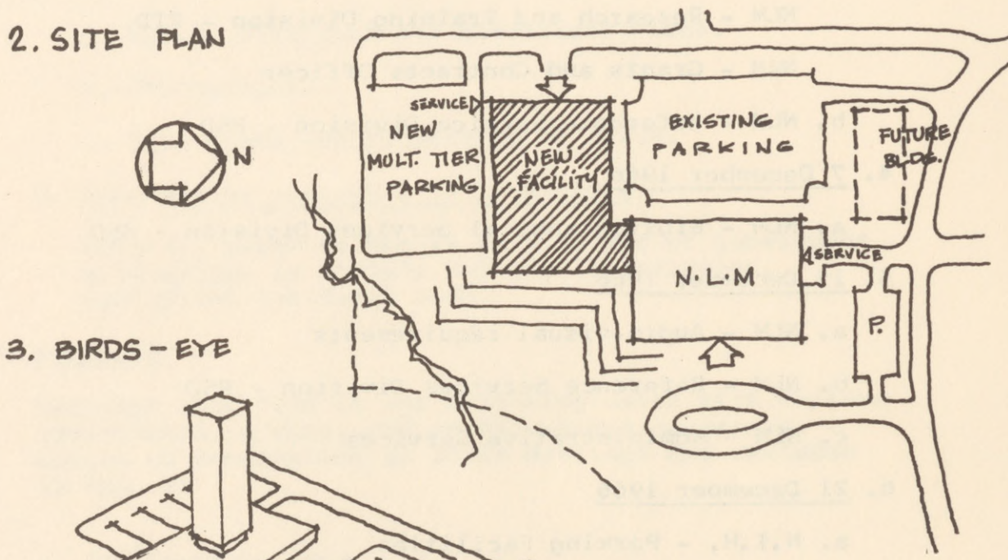
d. Parking Para. 4, page 60

e. "Tower" Para. 2-d, page 84

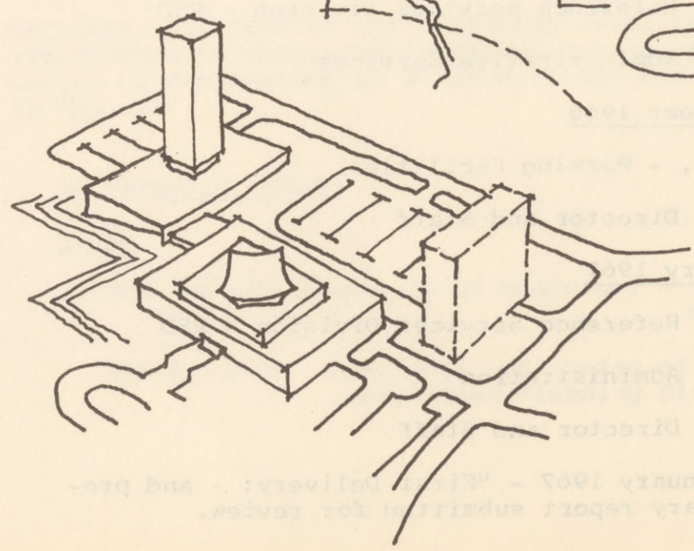
1. ORGANIZATION DIAGRAM



2. SITE PLAN



3. BIRDS - EYE



II. SURVEY

A. Requirements

1. Feasibility Study

Independently and not as an agent of the Government, the Architects will perform "a study of the feasibility of constructing a new facility for the National Library of Medicine for the purpose of accommodating the total space requirements of the present and planned programs of the NLM in the most efficient manner and making maximum utilization of the present NLM building."

2. Scope

The scope of the work is quoted as follows from "Contractor's Requirements" of the contract:

"Specifically, the Contractor (Architect) will:

1. Perform a complete survey of the utilization of space in the present NLM facilities, including rented office space in the Blackwell Building, Bethesda, Maryland. This survey will relate broad functional and organizational activities, such as general administration, Extramural Programs, computer operations, photographic and graphic image services, storage of the collection (presently in use and reserved for expansion) to the number of square feet of space being utilized for those functions and activities. This survey will be purely descriptive in nature.

2. Through consultation with NLM officials and study of NLM documents such as the Five-Year Plan approved by the Surgeon General, the Contractor will become thoroughly familiar with new NLM programs and space requirements, including those described on the preliminary Program of Requirements for an NLM Annex dated October 18, 1966. On the basis of this information, and the results of the survey above, the Contractor will:

   a. Compute the additional net square feet of useable space required in a new structure or structures to enable the NLM to carry out its programs efficiently without renting commercial space.

   b. Make recommendations (with alternatives) on which functions and activities can be carried out in the new structure in order to achieve maximum efficiency in space utilization, considering the functional relationships among all activities, nature of the present space available, long range needs (twenty-five years) for book storage capacity and new types of library and information services.

      (1) Particular emphasis should be placed on computing the requirements for accommodating the growth of the literature collections, based on recent evidence of the growth rate, changes in the scope of the collections, and plans for the future.

      (2) A study will be made of requirements for study carrels and other facilities for on-site scholarly research with recommendations for meeting those requirements.

      (3) A separate critical analysis of changes in space utilization which have occurred since occupancy of the existing building will be made, and a critique prepared which evaluates these changes, including specific recommendations for (a) reconversion to originally planned usage (b) further changes in usage, or (c) continuation of present utilization.

      (4) A separate analysis will be made of the present lunchroom and food preparation facilities of the NLM with recommendations for improved capabilities to prepare and satisfactorily serve the staff and users of the Library. The Contractor will consult with the Chief, Research Facilities Planning Branch,NIH, on cafeteria planning for the NIH complex.

      (5) A separate analysis and report will be made of the general problems of parking facilities, with recommendations on alternative methods of meeting projected parking for the NLM staff and visitors. The Contractor will consult with the Chief, Research Facilities Planning Branch of the National Institutes of Health and take cognizance of studies and plans for parking facilities on the NIH campus generally.

(6) The reader-service desk and related equipment will be studied, and recommendations made to increase the efficiency of service to the public, and improve the usefulness of this area for general management of reading room.

3. On the basis of the foregoing analyses and recommendations, the Contractor will describe alternative approaches to the location, size, and general design characteristics of a new NLM facility, with discussion of the advantages and limitations of each alternative, subject to the following constraints and other considerations:

   a. The location of the facility will be within the area contiguous to the NLM considered available for this purpose in the Master Plan for the National Institutes of Health. The Contractor will consult with the Chief, Research Facilities Planning Branch of the National Institutes of Health and take appropriate cognizance of total site planning and development for the NIH campus.

   b. The general shape and design characteristics of the building must be harmonious with or complimentary to the present NLM facility and present and planned structures in the immediate area.

   c. The dependence of the NLM on the NIH for utilities (electricity, chilled water, hot water, etc.) must be taken fully into account.

4. The analyses and recommendations required above will be consolidated in a final report which contains suitable graphic analyses, diagrammatic sketches, line perspectives, and models which effectively describe relationships between specific activities and the gross space requirements for those activities, with alternative solutions. The report will also contain general construction contract cost estimates for each possible solution, based on similar work performed elsewhere, but not reflecting precise cost estimation techniques usually associated with detailed design and specifications. The cost estimates will reflect the cost of extending utilities from NIH, appropriate landscaping, and conversion of space in the present NLM building.

   The Contractor (Architect) should be prepared to make suitable oral and visual presentations of his findings and recommendations to the NLM, the Research Facilities Advisory Committee of NIH, and the National Capital Planning Commission.

5. An additional report will be prepared which assesses the long-range development potential of the NLM site, in relation to the recommendations made in the basic report. This report should analyse the feasibility of future construction of additional independent facilities, or additions to structures then existing. This report will concern itself with space requirements which can reasonably be anticipated by 1986, including those requirements identified in the preliminary Program of Requirements for an NLM Annex dated September 7, 1966.

6. Delivery under this contract shall be made in two stages, as follows:

   a. First delivery will be made not later than sixty days after execution of this contract, and shall consist of the descriptive survey required in paragraph 1 above, and a preliminary report concerning the analyses and recommendations required in paragraphs 2, 3, and 4.

      Note: This first delivery was made 27 January 1967.

   b. The second delivery shall be made no later than ninety days after execution of this contract, and shall consist of a final report and presentation on all aspects of the study.

      Note: Time was extended to 3 March 1967.

B. Survey - Utilization of Space

1. Project Location - Site Plan of N.I.H.-1967

See Plan "A"
Page 7

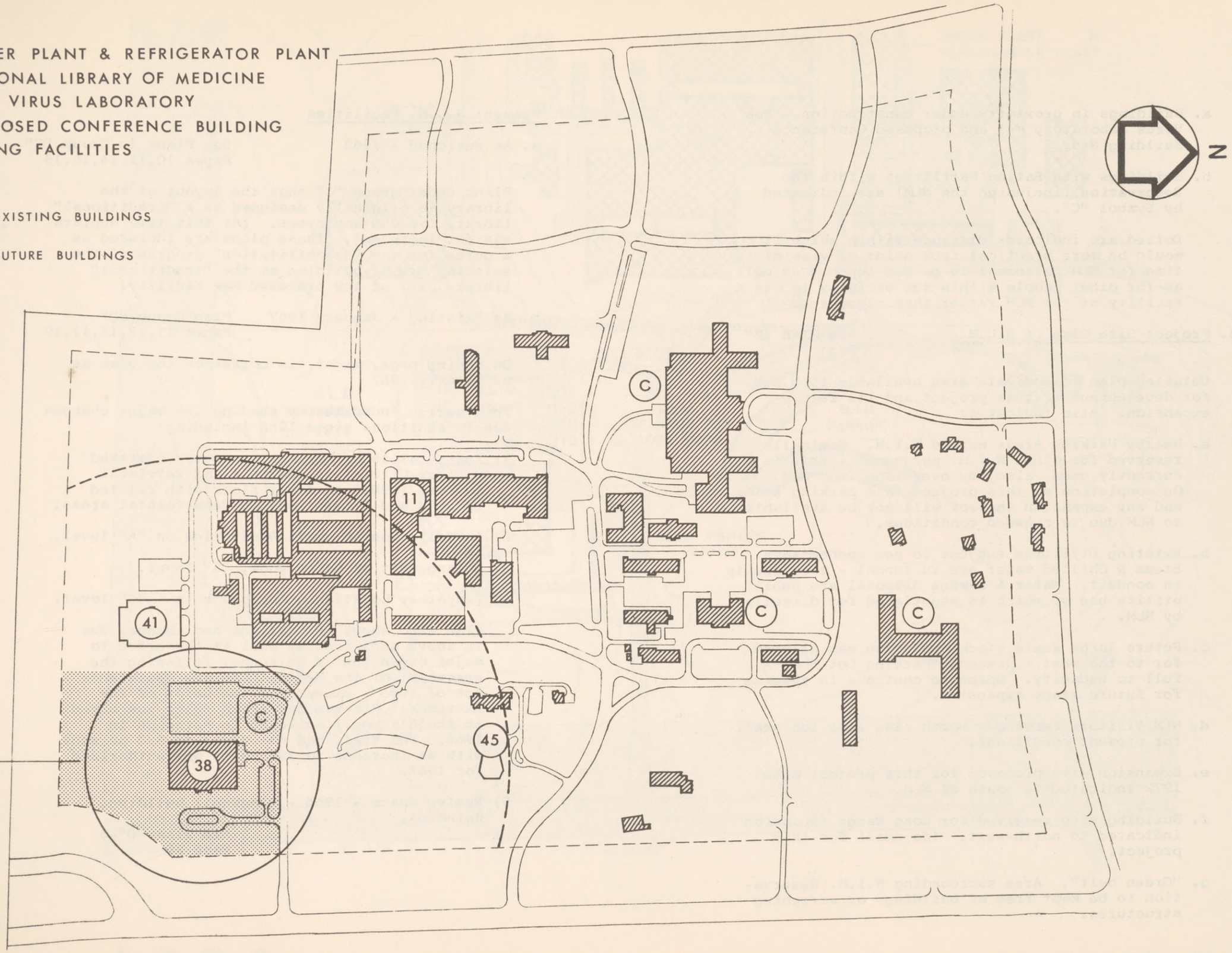
This plan shows the location of the project in the southeast corner of the National Institutes of Health Reservation on Wisconsin Avenue in Bethesda, Maryland. The existing NLM is indicated by Number 38.

The plan further indicates:

11 BOILER PLANT & REFRIGERATOR PLANT
38 NATIONAL LIBRARY OF MEDICINE
41 NEW VIRUS LABORATORY
45 PROPOSED CONFERENCE BUILDING
(C) EATING FACILITIES

EXISTING BUILDINGS

FUTURE BUILDINGS



NIH SITE PLAN 1967

A

a. Buildings in proximity under construction - New Virus Laboratory #41 and proposed Conference Building #45.

b. Buildings with Eating Facilities within the Reservation (including the NLM) are indicated by Symbol "C".

Dotted arc indicates distance within which it would be more practical from point of view of time for NLM personnel to go for lunch - as well as for other people within the vicinity to use a facility at the NLM rather than elsewhere.

2. Project Site Plan of N.L.M. See Plan "B" Page 9

Detailed plan to indicate area available to N.L.M. for development of this project and its future expansion. Also indicates:

a. Nearby Parking Areas marked N.I.H. Nominally reserved for other N.I.H. personnel - this is currently used, also, by over-flow from NLM. On completion of this project this parking space and any expansion thereof will not be available to NLM due to crowded conditions.

b. Existing Utilities subject to new connections. Steam & Chilled water are in tunnel - electricity in conduit. Water & sewage disposal are public utility use of which is negotiated for directly by NLM.

c. Future large scale stack expansion was allowed for to the west - present "Parking Lot NLM" - full to capacity. Space to continue in reserve for future stack expansion.

d. NLM Visitors Parking - north side also too small for present conditions.

e. Expansion site proposed for this project move 1972 indicated to south of NLM.

f. Building site reserved for Long Range Expansion indicated to north-west. Too small for this project.

g. "Green belt". Area surrounding N.I.H. Reservation to be kept free of buildings or screening structures.

3. Present N.L.M. Facilities

a. As designed - 1962 See Plans in Group "C" Pages 10,12,14,16,18

Plans under group "C" show the layout of the library as originally designed as a "traditional" library for 250 employees. (At this time Medlars was not included). These plans are included as a guide for the "Rehabilitation" program of the existing N.L.M. building as the "traditional" library part of the proposed New Facility.

b. As Existing - January 1967 Plan Group "D" Pages 11,13,15,17,19

On facing page, right, is corresponding plan as of January 1967

This series indicates by shading the major changes due to additions since 1962 including:

1) Installation of Medlars (computer operated Medical Literature Analysis and Retrieval System) (1963) on first floor with related changes and alterations in departmental areas.

2) Installation of small Auditorium on "A" level.

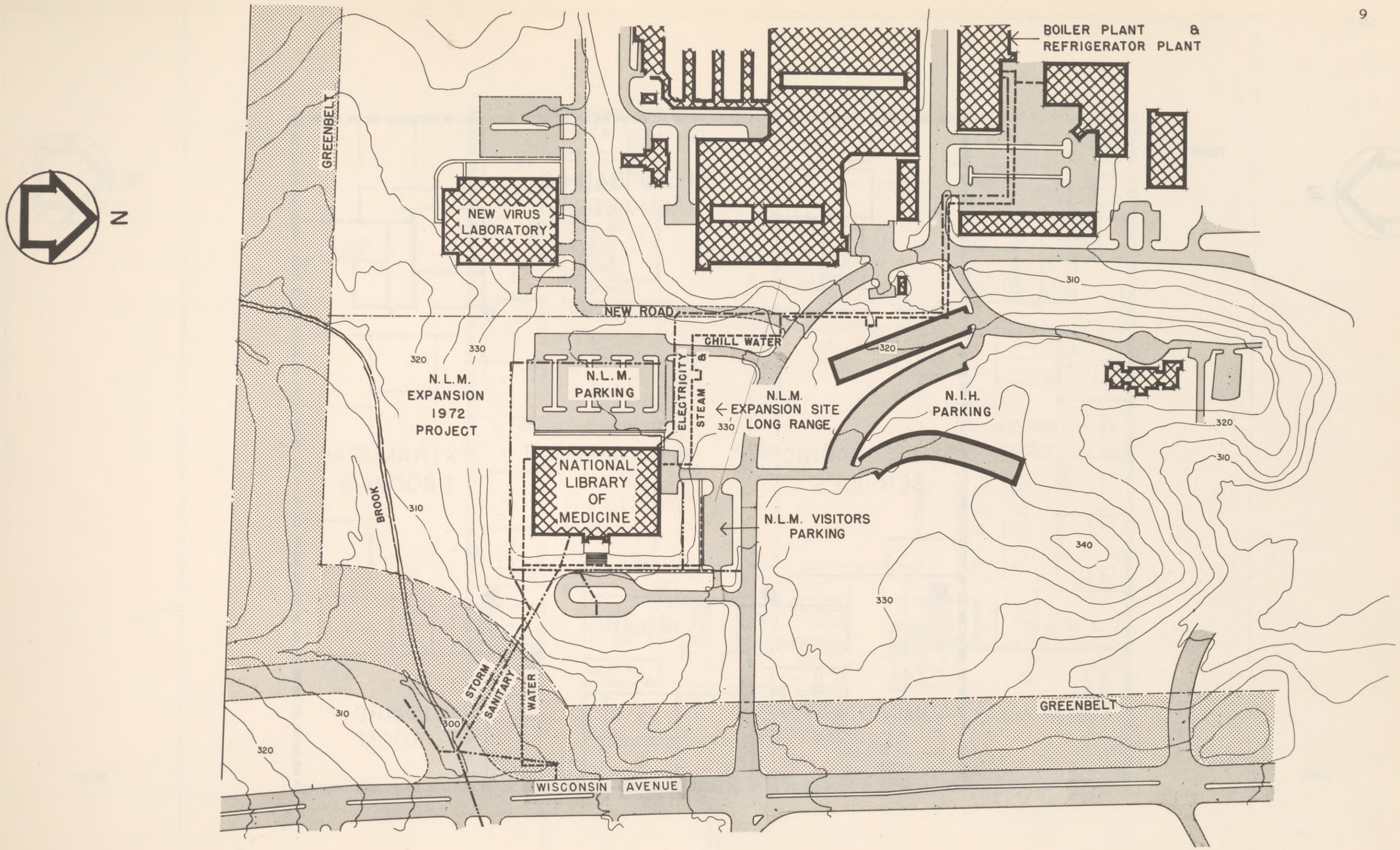
3) Enlargement of Lunch Room, "A" level.

4) Temporary Location - new projects - "C" level.

Plan also shows relocations and changes due to above additions as well as those due to major expansion of personnel following the enactment of the Medical Library Assistance Act of 1965 - except for inclusion of the Extramural Program for which space was hired in the Blackwell Building in Bethesda in 1966. The staff had now risen to 320 persons with an increase to 399 positions authorized for 1967.

5) Rented space - 1966 - Blackwell Building, Bethesda,

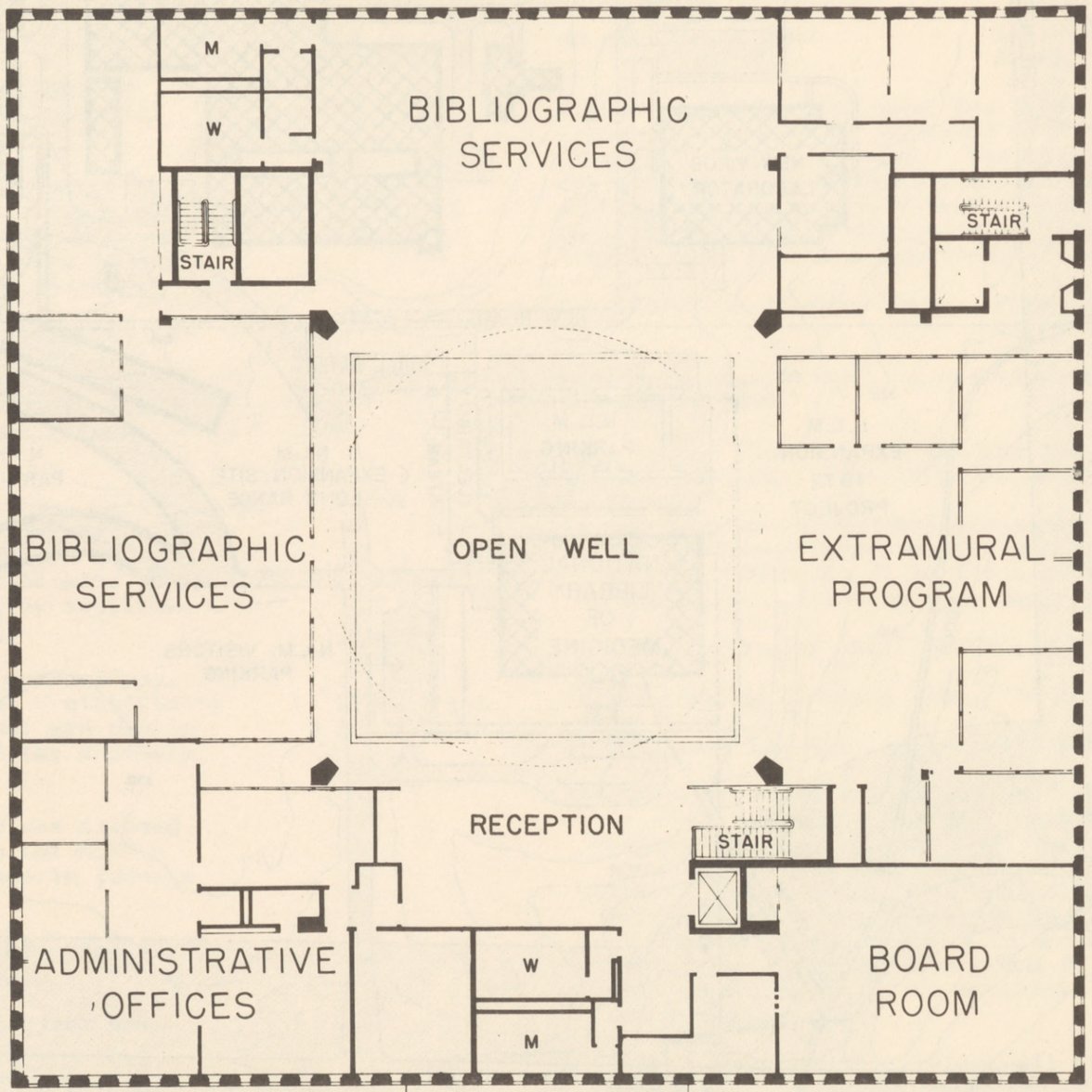
See Plan "D"-6 Page 20



N.L.M. SITE PLAN B

N

ROOF



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1962 FLOOR PLAN MEZZANINE C-1

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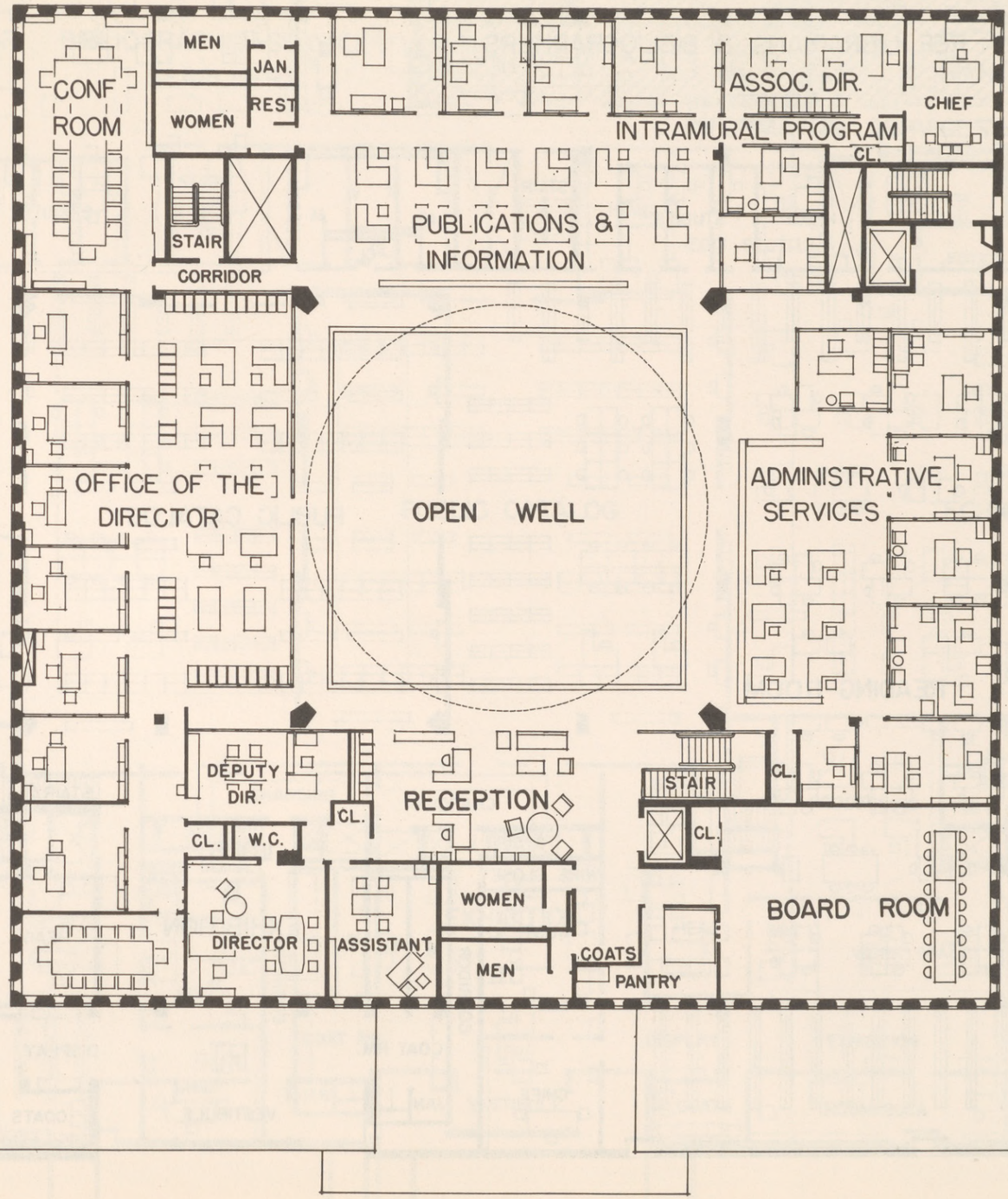
ROOF



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1967 FLOOR PLAN MEZZANINE D-1

N

REF. LIBRARIANS & BIBLIOGRAPHERS

HEAD CAT. SECT.

CATALOGUING

HEAD

STUDIES

STAIR

M.

W.

CL.

WIRE CLOSET

STAIR

FOYER

CHIEF

SEC.

ASST CHIEF

HEAD ED. SEC.

PUBLIC CATALOG

ACQUISITIONS

ASST. CHIEF

SEC.

HEAD ORDER SEC

CHIEF

PHOTOGRAPH DATA PROCESS.

READING ROOM

CHARGING

STAIR

WIRE CLOSET

ASST

SEC

CHIEF

CORRIDOR

W.

M.

COAT RM.

JAN

LOBBY & EXHIBITION

VESTIBULE

STAIR

STAIR

PROCESSING

M.

W.

REFERENCES

STUDIES

HEAD

SEC.

WORK SPACE

DISPLAY

EXHIBITION

COATS

INCUNABULA

HISTORY OF MEDICINE

0 5 10 15 20 25 30

1962 FLOOR PLAN FIRST FLOOR C-2

N

REFERENCE SERVICES

INFORM. SERV.

BIBLIOGRAPHIC SERVICES SEARCHERS

HEAD

STUDIES

STAIR

M.

W.

CL.

PROGRAMMERS & SEARCHERS

PROOF READING

INPUT AREA

COMPUTER ROOM

MAINT.

MECH

HEAD INDEX

HEAD LIT. ANALYSIS

VIEWING

INFORMATION SERVICES

HEAD

EDIT. SECT.

WIRE CLOSET

FOYER

HEAD DATA PROC

SEC.

ASST.

OPER.

PUBLIC CATALOG

TECHNICAL SERVICES

READING ROOM

HEAD CAT.

HEAD ACQ.

HEAD S & S

CHIEF TECH. SERV. DIV.

REFERENCES

STUDIES

M.

W.

STAIR

PROCESSING

CHARGING

WIRE CLOSET

ASST

SEC

CORRIDOR

W.

M.

LOBBY & EXHIBITION

HEAD

SEC.

WORK SPACE

HISTORY OF MEDICINE

COAT RM.

JAN

CHIEF

VESTIBULE

DISPLAY

COATS

EXHIBITION

INCUNABULA

NEW SINCE 1962

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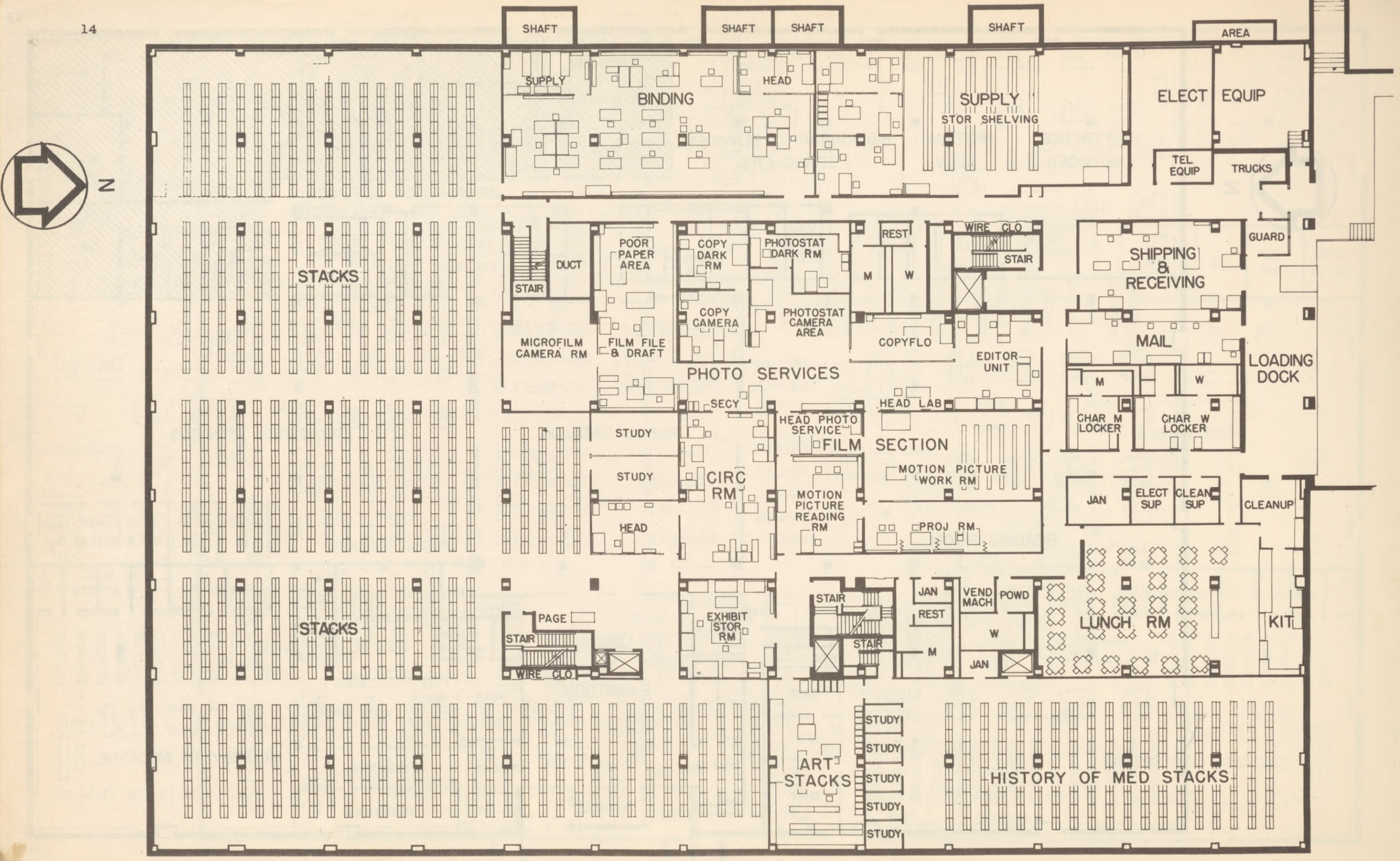
1967 FLOOR PLAN FIRST FLOOR D-2



1962 FLOOR PLAN A LEVEL C-3

N

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RECEIVING AND MAILING

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LOADING DOCK

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DUPLICATION

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HISTORY OF MEDICINE

HISTORY OF MEDICINE STACKS

NEW SINCE 1962

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1967 FLOOR PLAN A LEVEL D-3

N

STACK AREA

STAIR

W.

JAN.

STUDY

STUDY

STUDY

STUDY

CAMERA

WIRE CLOS.

STACK AREA

PAGE

STAIR

WIRE CL.

STAIR

M.

JAN.

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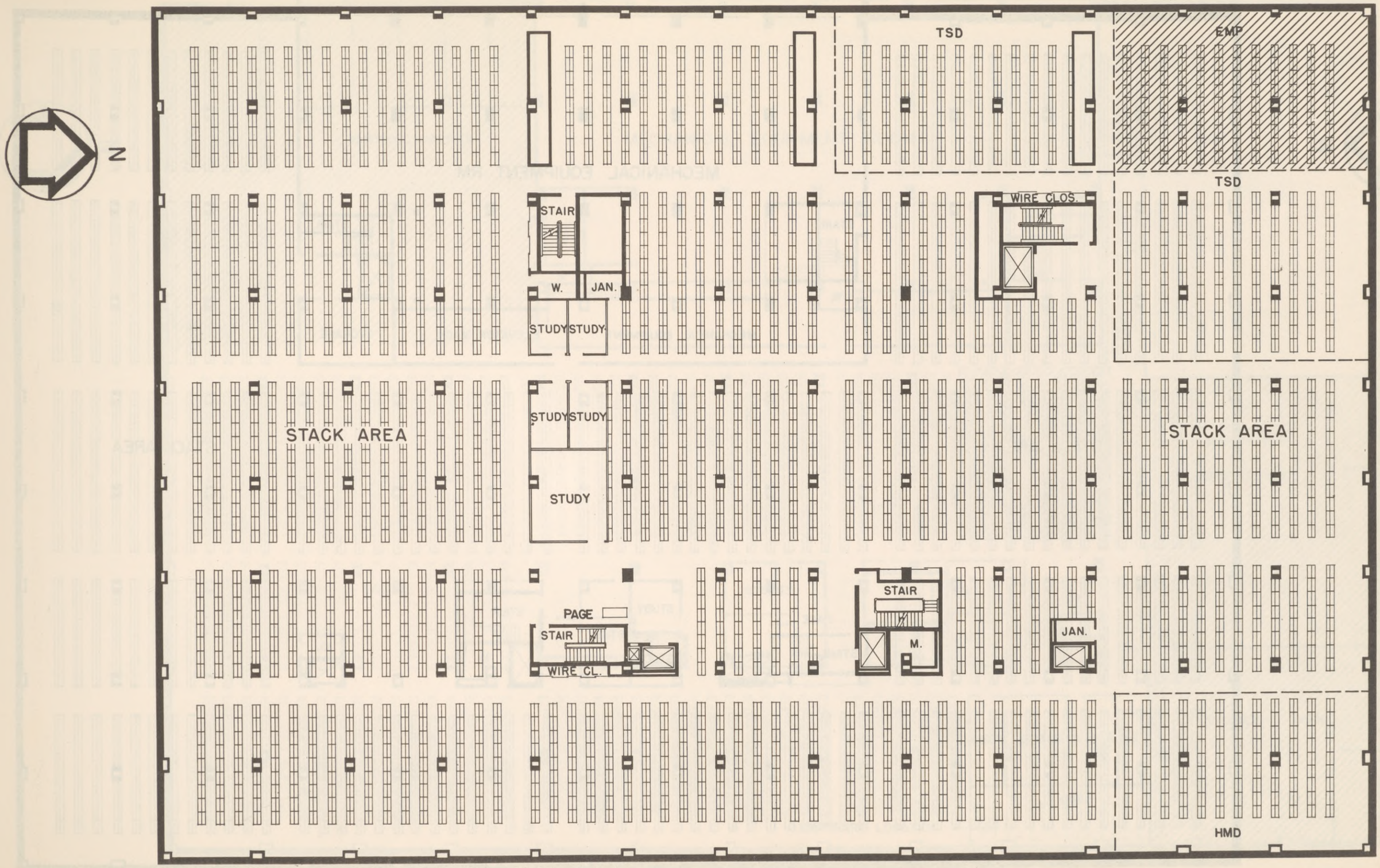
1962 FLOOR PLAN B LEVEL C-4



NEW SINCE 1962

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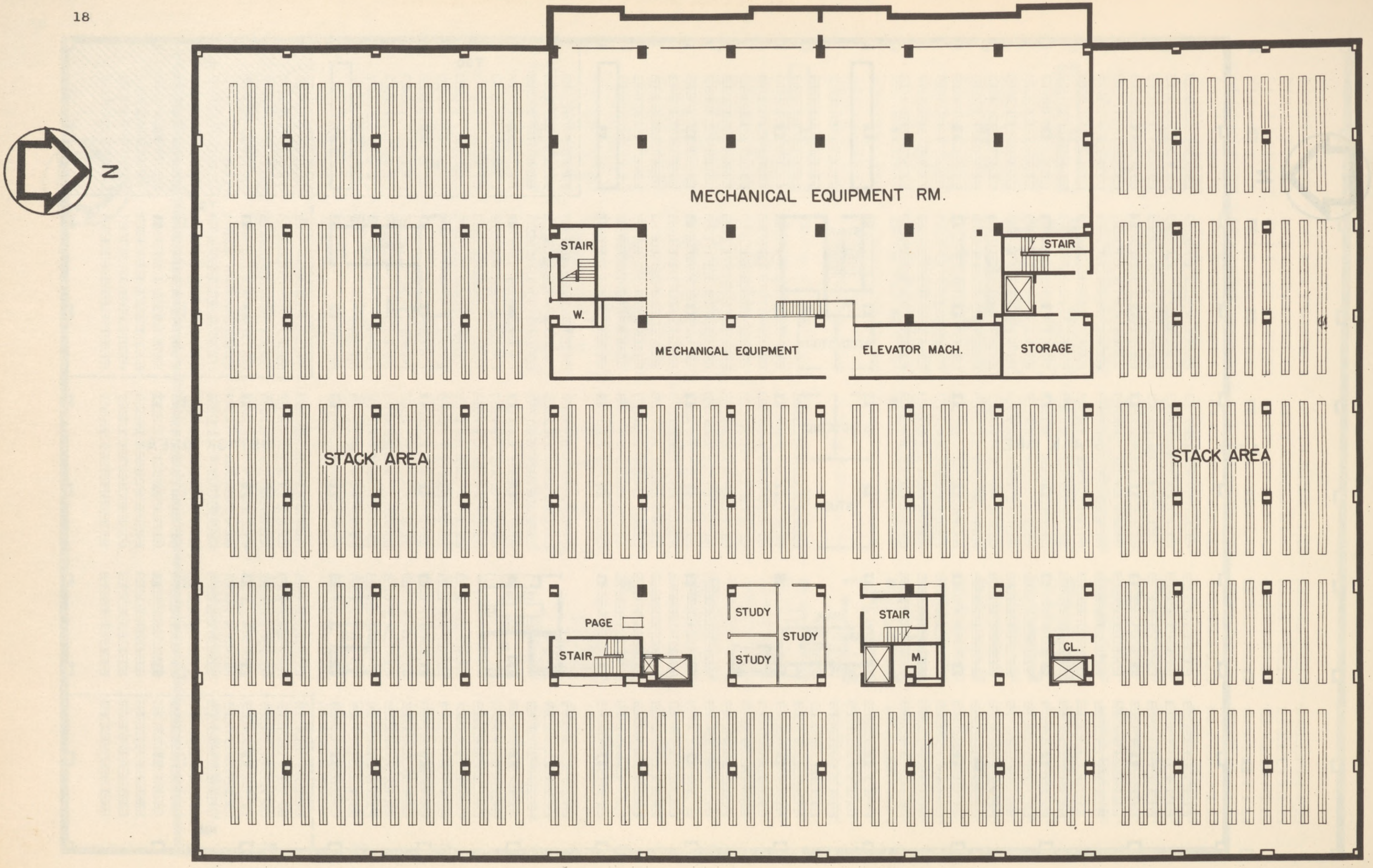
1967 FLOOR PLAN B LEVEL D-4



1962 FLOOR PLAN C LEVEL C-5

N

SYSTEMS ANALYSTS

MECHANICAL EQUIPMENT ROOM

SUPPLY

W

STACKS

STUDIES

W

M

M

PRESERVATION AND MICRORECORDS

CONTRACTORS OFFICE

MECH

EDITING & SPLICING

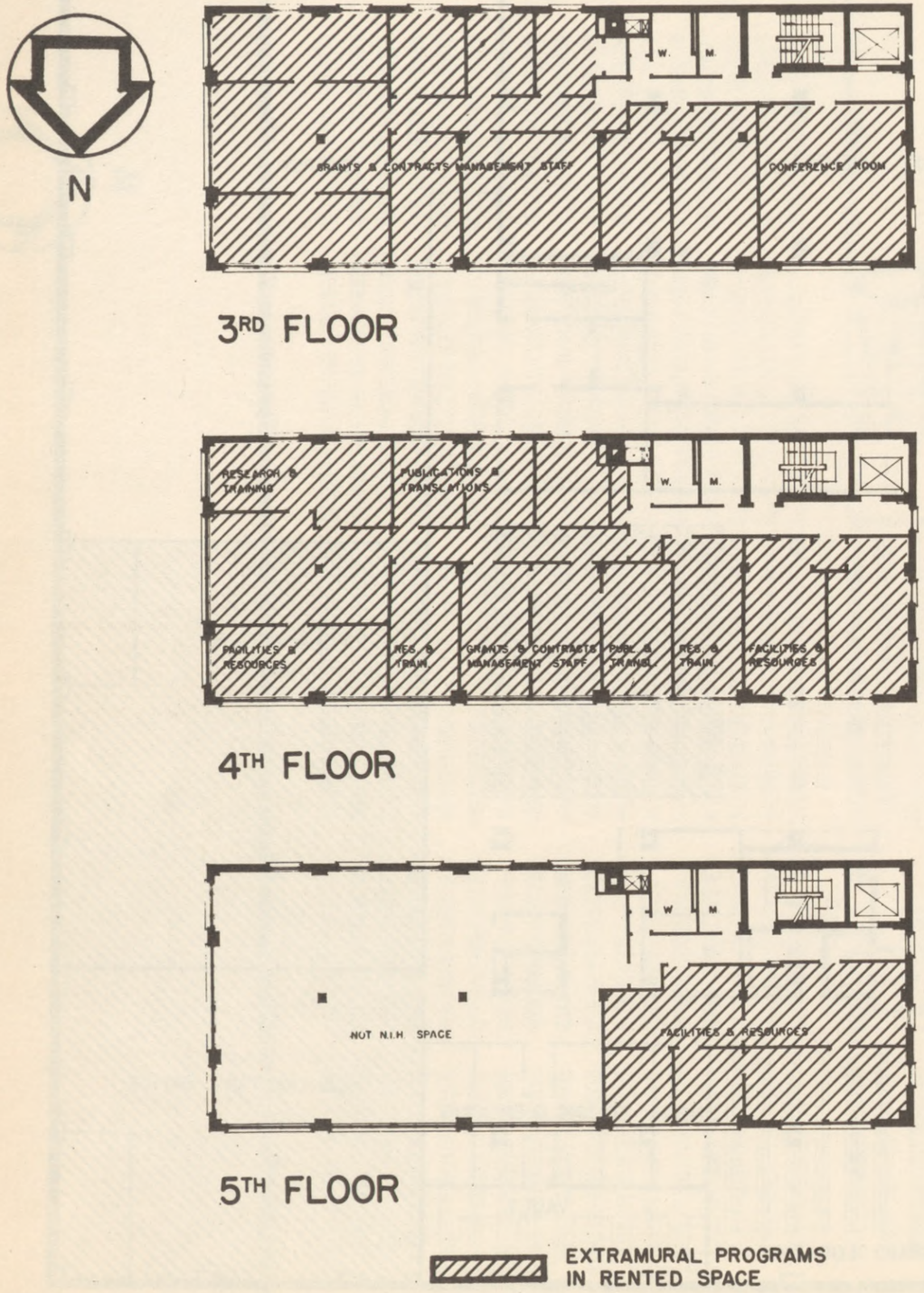
VAULT

TEMPORARY LOCATION

NEW SINCE 1962

0 5 10 15 20 25 30

1967 FLOOR PLAN C LEVEL D-5



c. Organizational Diagram — Diagram I, Page 21

The general organization of the NLM as of 1967 is illustrated diagramatically by this chart. It shows there are two major divisions under the Director of the NLM.

1) The Intramural Program - the internal functioning as a library including research development of information systems.

2) The Extramural Program particularly to develop and conduct programs of grant and contract assistance to medical libraries, librarians, health information specialists, etc.

3) New Departments to be added prior to 1972 are indicated by dotted lines.

d. Departmental Space Utilization — See Small Scale Plans designated "E"-1, Page 22

1) By means of shading on E-1 series allocation of present use of space by the different departments within the perimeter are indicated.

2) In the column to the right of each plan is shown graphically the amount of area to be added or subtracted from any department on adjacent floor as designated by initials and minus or plus sign.

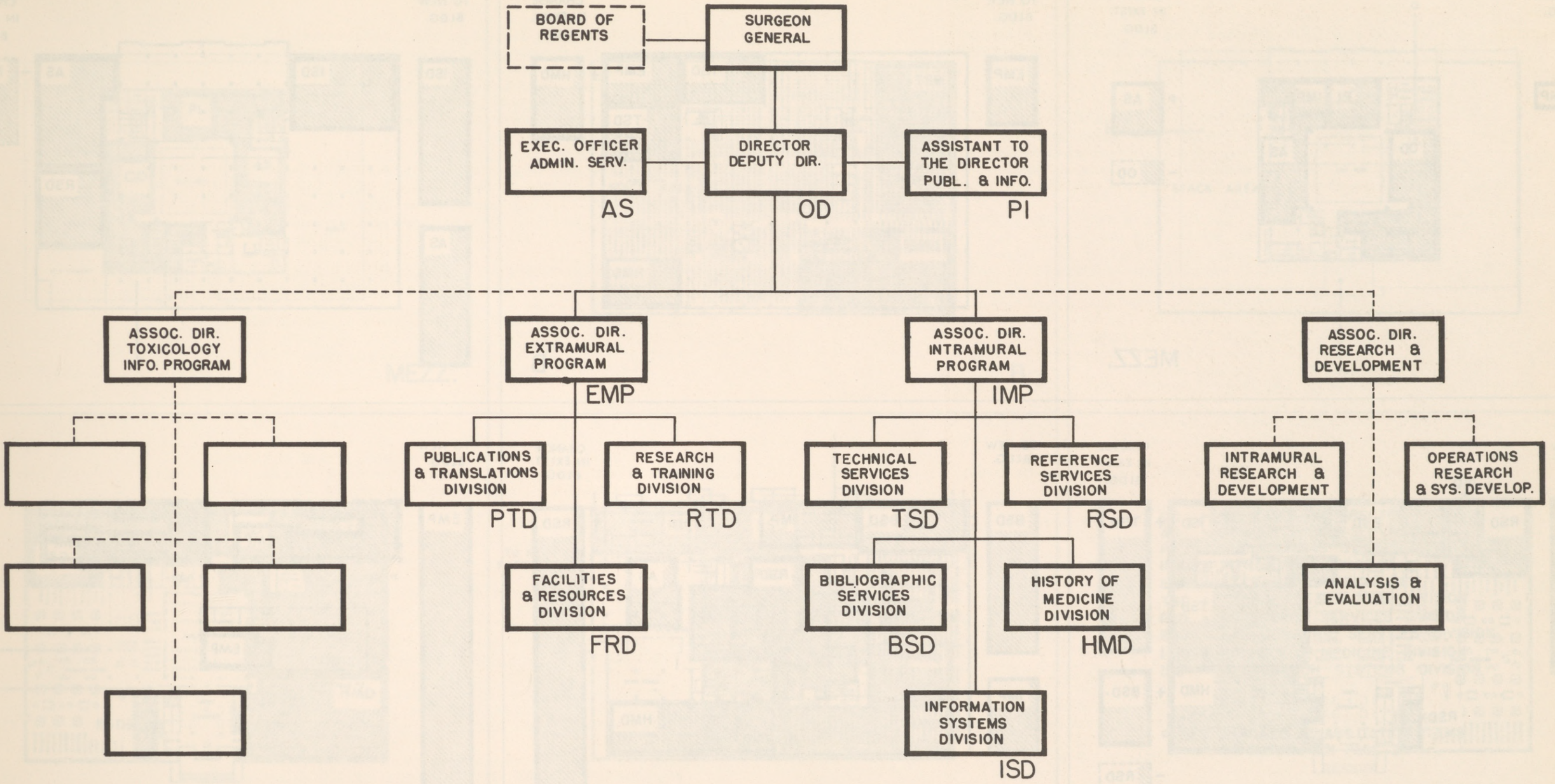
3) In the column at the left is graphically shown the amount of space of any department on that particular floor which is to move out to the new structure including proposed expansion thereof.

4) Item marked "Contractor's Office" on "C" level is a temporary use of the space, to house some contractor personnel working on the development of a new computer system.

e. Basic Expansion & Rehabilitation of NLM Building. — Series "E"-2, Page 23

1) Similar small scale plans show how it is proposed to expand and relocate spaces of departments remaining within the NLM building - utilizing spaces vacated by those that will have to move out for accommodation in the proposed new structure.

1967 BLACKWELL BUILDING D-6



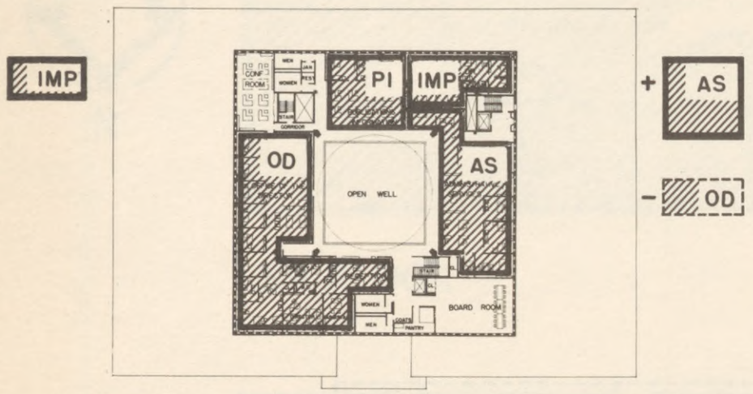
——— 1967 PROGRAMS

------- ADDITIONAL PROGRAMS BY 1972

ORGANIZATIONAL CHART DIAGRAM I

TO NEW BLDG.

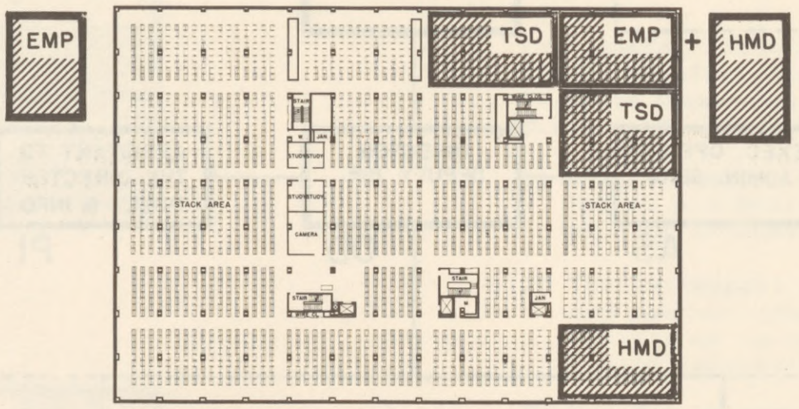
CHANGE IN EXIST. BLDG.



MEZZ.

TO NEW BLDG.

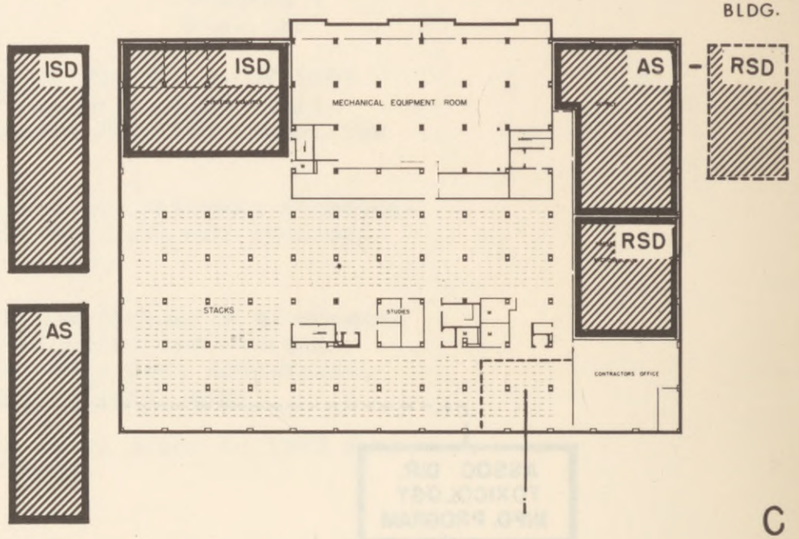
CHANGE IN EXIST. BLDG.



B

TO NEW BLDG.

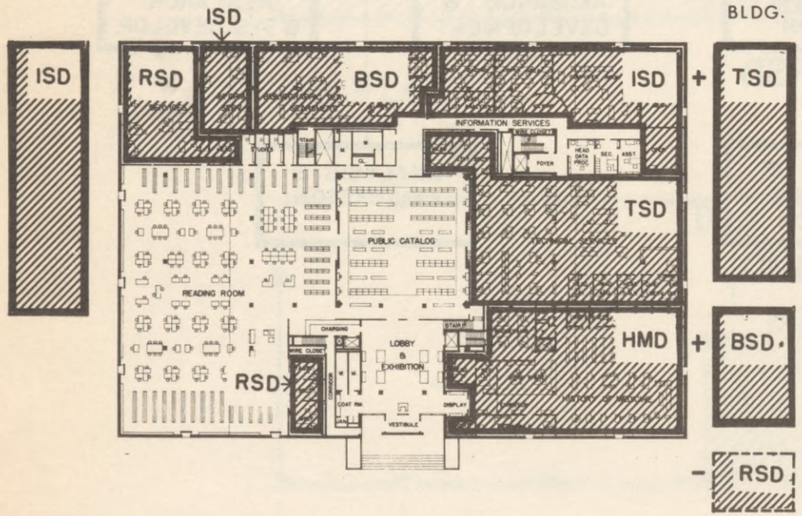
CHANGE IN EXIST. BLDG.



C

TO NEW BLDG.

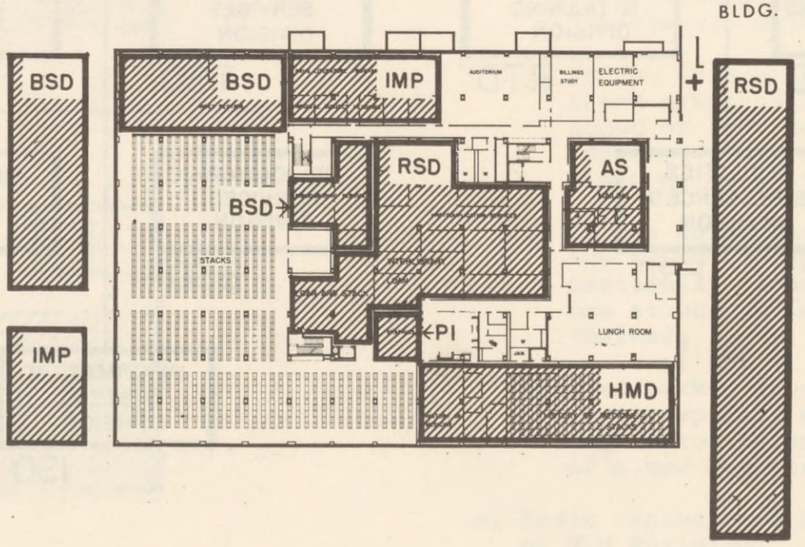
CHANGE IN EXIST. BLDG.



1ST

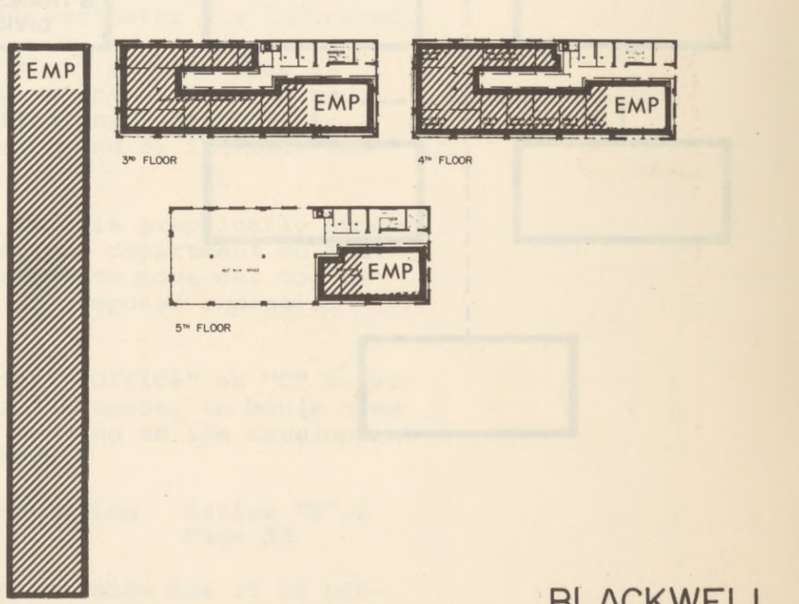
TO NEW BLDG.

CHANGE IN EXIST. BLDG.



A

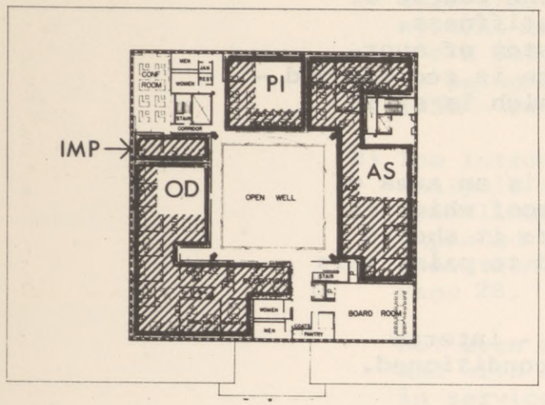
TO NEW BLDG.



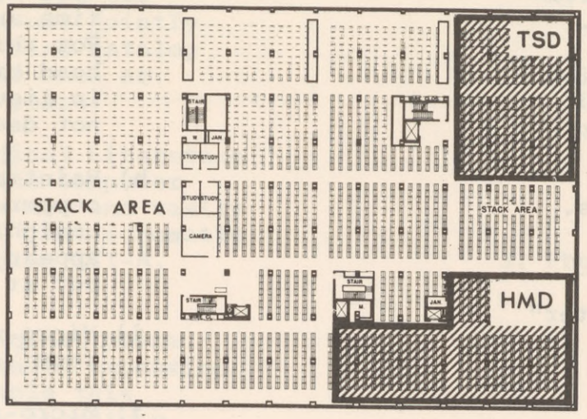
BLACKWELL

0 20 40 60 80 100

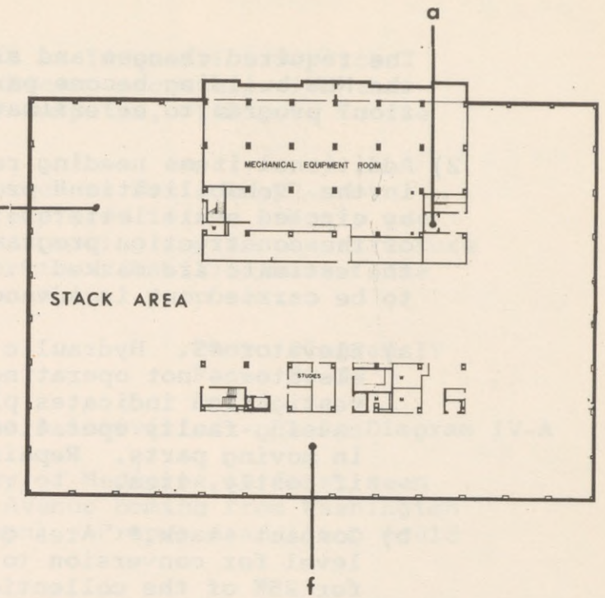
DEPARTMENTAL SPACE UTILIZATION 1967 E-1



MEZZ.



B



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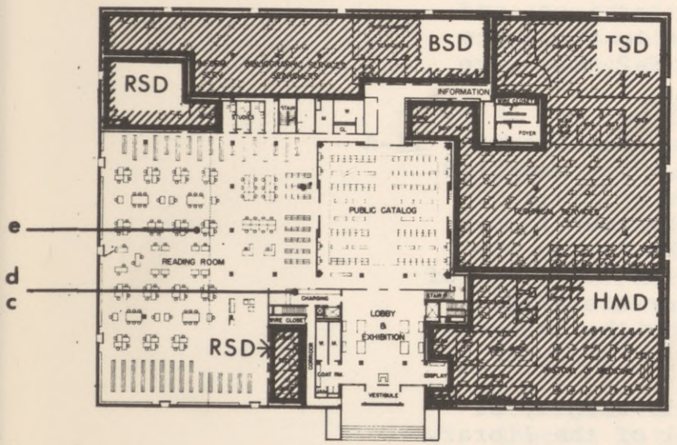
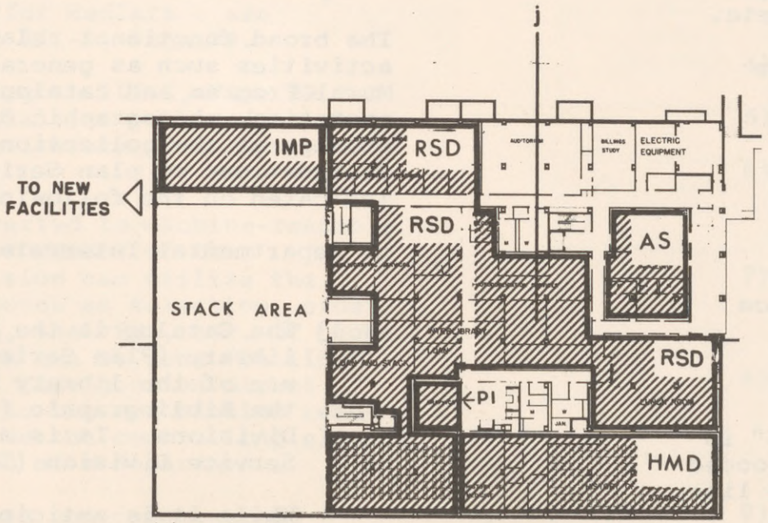


1ST



A

KEY

OD	=	OFFICE OF THE DIRECTOR
AS	=	ADMINISTRATIVE SERVICES
PI	=	PUBLICATIONS & INFORMATION
IMP	=	INTRAMURAL PROGRAM
EMP	=	EXTRAMURAL PROGRAM
TSD	=	TECHNICAL SERVICES DIVISION
RSD	=	REFERENCE SERVICES DIVISION
BSD	=	BIBLIOGRAPHIC SERVICES DIVISION
HMD	=	HISTORY OF MEDICINE DIVISION
ISD	=	INFORMATION SYSTEMS DIVISION

a TO j INDICATE REHABILITATION ITEMS DISCUSSED ON PAGE 24

0 20 40 60 80 100

DEPARTMENTAL SPACE UTILIZATION 1972 E-2

The required changes and alterations within the NLM building become part of the "Rehabilitation" program to be estimated for the budget.

2) Additional items needing repair or modification in the "Rehabilitation" program are indicated by circled small letters. Those that are part of the construction program and included in the estimate are marked *. The balance are to be carried out in advance with other funds.

a) Elevator #3. Hydraulic plunger type elevator - not operating properly. Investigation indicates plunger is "off-center" causing faulty operation and serious wear in moving parts. Repair is an essential, if costly, item.

b) Compact stack.* Area designated on "C" level for conversion to "Compact" storage for 25% of the collection. A method of gaining space in existing building but used for relatively inactive items such as originals that have been micro-recorded, theses, back numbers of bound serials, etc.

c) Charge Desk Modifications - Reading Room

(1) Enlargement of desk
(2) Installation of Book Conveyor
(3) Installation of Turnstile

d) New Annunciator System - Reading Room

e) Dial Access* - Audio Visual equipment. Installation in 8 carrels of Reading Room and 3 adjacent studies.

f) Flooding Alarm System "C" level

Emergency water detection system for "C" in case of flooding. Floor was recently flooded due to blockage of exterior main sewage line. Installation of alarm system proposed.

g) Bracing of Stacks. While stacks are so called "free-standing" type, it was originally intended to have them fastened to the floor. Since stacks are not open to public, and to increase ease of change, library preferred not to have them fastened. However, they tend to move out of line in the course of time and lose their initial stiffness. For this reason a limited system of overhead bracing bolted into place is recommended - in lieu of floor fastening which is still not desired.

h) Painting - High Roof. There is an area of copper flashing on the high roof which is unsightly as a dark line where it should appear white. It is proposed to paint this out at this time.

i) Micro-film Vault. "C" level - interim requirement. Specially air-conditioned.

j) Micro-film Vault.* "A" level - designed and located for efficiency in program operation and long range use. Specially air-conditioned.

4. Functional Relationships

Diagrams II & III
Pages 26-29

The broad functional relationships and organizational activities such as general administration, Intra-Mural Program and catalog related services, computer operation, photographic duplication services, and storage of the collection as related to the space designations of plan Series E-1 and E-2 above are indicated on the following diagrams:

a. Departmental Interrelationships — See Diagrams II-A and II-B

1) The Catalog is the heart of the traditional library (Plan Series C-2) - the key to the use of the library by the public, the tool of the Bibliographic (BSD) & Reference (RSD) Divisions. It is maintained by the Technical Service Division (TSD).

While it is anticipated it will largely be supplanted as the working tool of the library by the computerized machine readable catalog, (a program well under way with new literature) a complete transition that would include all works in the library is a long and laborious

process that only progresses efficiently - at this time - with new literature. The two systems may be expected to be in use jointly for a long time. Currently the card catalog is being converted to tape as far back as 1950 - covering the most active years.

2) The introduction of Medlars (Medical Literature Analysis & Retrieval) based on the computer symbolized the introduction of a new and vastly expanded era of library service. For schematic operation of the system see Diagram III-A, Page 28.

Not even contemplated in the original plans and with a future of continued rapid expansion in services ahead, it is reasonable this computer element move to the new structure where it will become the heart of the activities of the new NLM as well as of increased efficiency of the old.

3) The centralized Library Service activities of the NLM - largely to remain in the existing NLM building - except for Medlars - are illustrated by Diagram III-B, Page 28.

4) Flow Diagrams - See Diagram III-C, Page 29 for paths of various materials as books, journals, films supplies through library processes, and of grant applications.

5) As the catalog is converted to machine-readable form various library processes of the Technical Service Division can utilize the computer for such purposes as selection, ordering, catalog searching, shelving, etc. of books. Since this type of work can be done "on line" with the computer - as time goes on direct access of departments to the new machine readable catalog will not be the controlling element in planning or location of a department.

TSD will continue to use non-computerized special catalogs.

In the future, for both staff and outside users of the library, access to the library's information can also be "on line", i.e. access through consoles or other devices, connected by wire - eliminating the necessity of coming to the public catalog for direct reference or, with Graphic Image Storage & Retrieval, obtaining transcripts.

6) Departments such as Information Services Division which became necessary with the adoption of the computer, will move to the Annex.

7) New programs - such as Toxicology - not originally contemplated in the library are also indicated as moving to the new structure to make room for the rehabilitation of the library to its original purposes.

5. Photographs — Photo Diagram IV, Pages 30-33

a. Existing Conditions & Activities - Photo Diagram IV-A

1) National Library of Medicine as first seen from Wisconsin Avenue coming from Washington (early photograph). Proposed addition would be to left.

2) Card Catalog - open to public.

3) Model of site to show area available for new project to south.

4) Typical stack area.

5) Typical staff area.

6) Reading Room showing open carrel type seating permitting individual study space but facilitating reasonable supervision.

7) Mobile camera - system by which requested item from book is copied onto microfilm without book leaving end of its range of stack.

8) Punch Tape Typewriter - Data-Input method showing how items are typed on to tape for operation of computer, at same time keeping typed record for checking.

9) Medlars Installation - console and paper tape readers.

b. Illustration of possible future conditions and activities to be discussed in succeeding text. Photo Diagram IV-B.

6. Existing Building - Space Utilization

a. Changes since initial occupancy (See Plan "E"-1, Page 22 (For detailed comparison see plan Series "C" & "D", Pages 10-19. Significant changes since initial occupancy include:

NEW FACILITIES

EXTRAMURAL PROGRAM

DRUG LITERATURE

TOXICOLOGY

RESEARCH & DEVELOPMENT

BIBLIOGRAPHIC INDEXERS

MeSh

DATA PROCESSING

SYSTEMS ANALYSTS

COMPUTER

REC. - MAIL & SUPPLY

CAFETERIA

CURRENT FACILITIES

OFF. OF THE DIRECTOR

INTRAMURAL PROGRAM ASSOC. DIR.

PUBLICATIONS & INFORMATION

ADMINISTRATIVE SERVICES

BIBLIOGRAPHIC SEARCH

TECHNICAL SERVICES

CATALOGUE

REFERENCE SERVICES WORK AREA

INTERLIBRARY LOAN & PHOTO DUPLICATION

HISTORY OF MEDICINE

READING ROOM

GRAPHICS

STACKS

RSD MICRORECORDS

RECEIVING & MAIL

SUPPLY

RSD PRESERVATION BINDING

FUNCTIONS TO BE LOCATED IN NEW BUILDING

PRIMARY RELATIONSHIP

SECONDARY RELATIONSHIP

ORGANIZATIONAL RELATIONSHIPS DIAGRAM II-A

NEW FACILITIES

EXTRAMURAL PROG.

MeSh

BIBLIOGRAPHIC INDEXERS

DRUG LIT.

TOXICOLOGY

ISD

COMPUTER

DATA PROCESSING

SYSTEMS ANALYSTS

RESEARCH & DEVELOPMENT

STACKS

NIH

NEW NLM

CAFETERIA

NLM

SUPPLY

RECEIVING

CURRENT FACILITIES

EXTRAMURAL PROG.

DIRECTOR

ADMINISTRATIVE SERVICES

PUBLICATION & INFORMATION

INTRAMURAL PROG.

MEDLARS

BIBLIOGRAPHIC INDEXERS

BIBLIOGRAPHIC SEARCHERS

ISD

COMPUTER

DATA PROCESSING

SYSTEMS ANALYSTS

REFERENCE SERVICES WORK AREA

CATALOG

READING ROOM

LOBBY

PUBLIC

TECHNICAL SERVICES

HISTORY OF MEDICINE

HMD STACKS

MeSh

DRUG LIT.

MICRO—RECORDS

STACKS

PHOTO DUPLICATION SERVICES

GRAPHICS

CAFETERIA

RECEIVING

BINDING

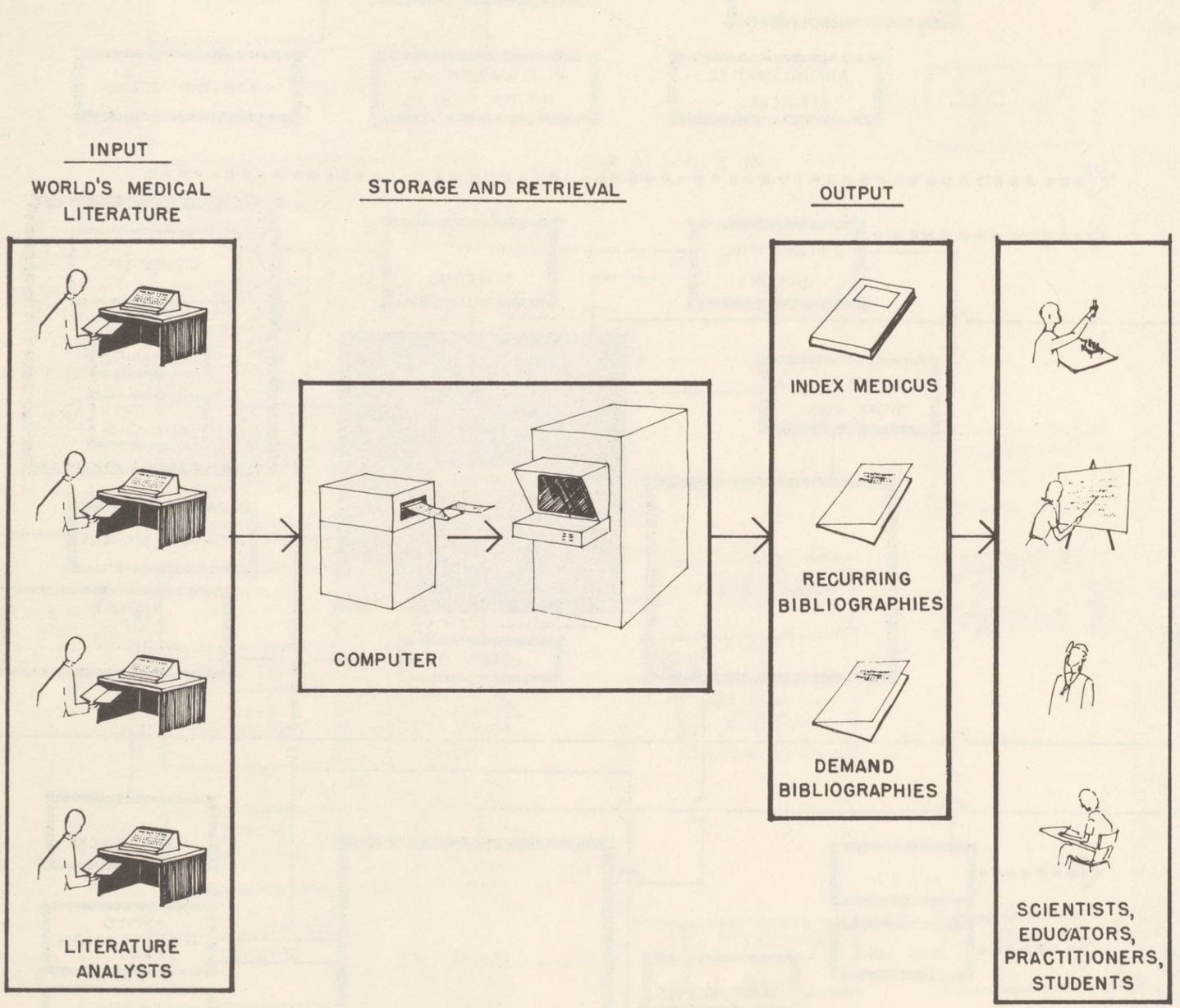
SUPPLY

——— PRIMARY RELATIONSHIP

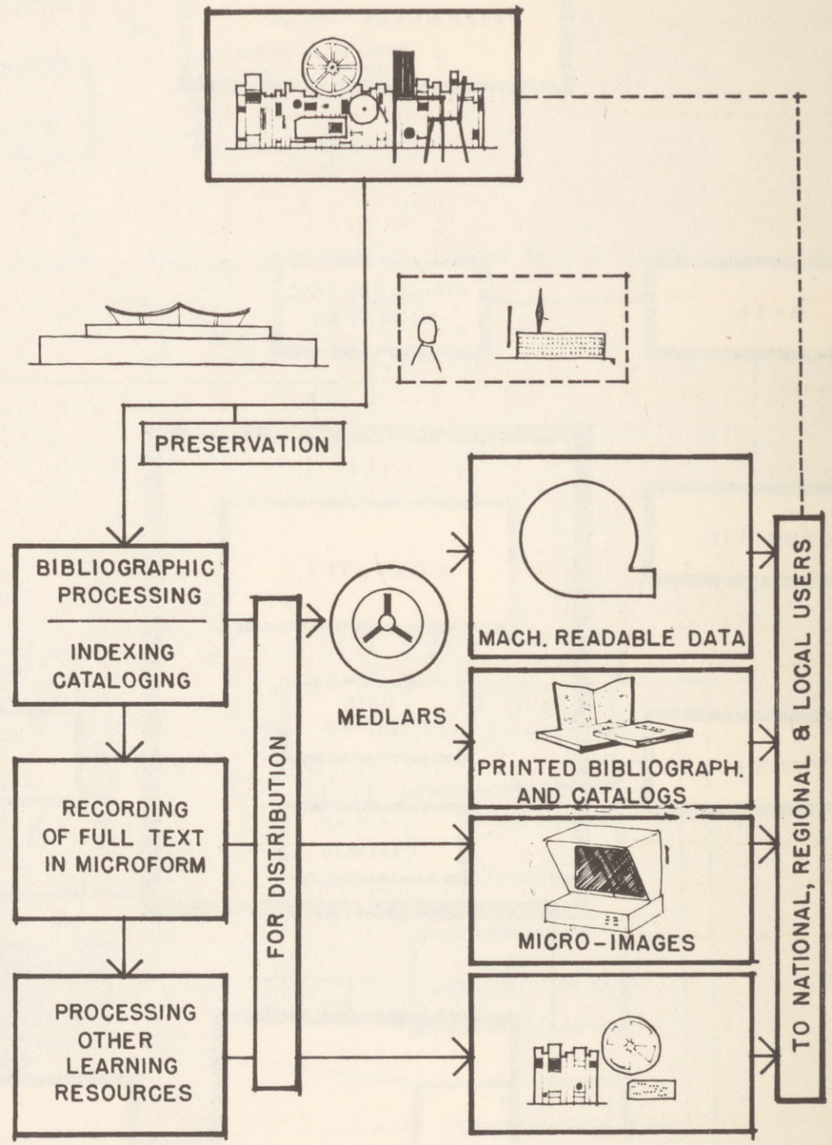
– – – – SECONDARY RELATIONSHIP

●●●●●●● FUNCTIONS TO BE LOCATED IN NEW BUILDING

PHYSICAL RELATIONSHIPS DIAGRAM II-B



A MEDLARS

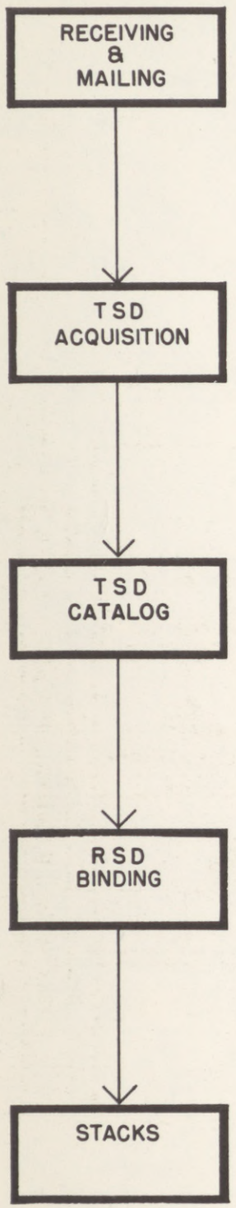


B CENTRALIZED ACTIVITIES AT NLM

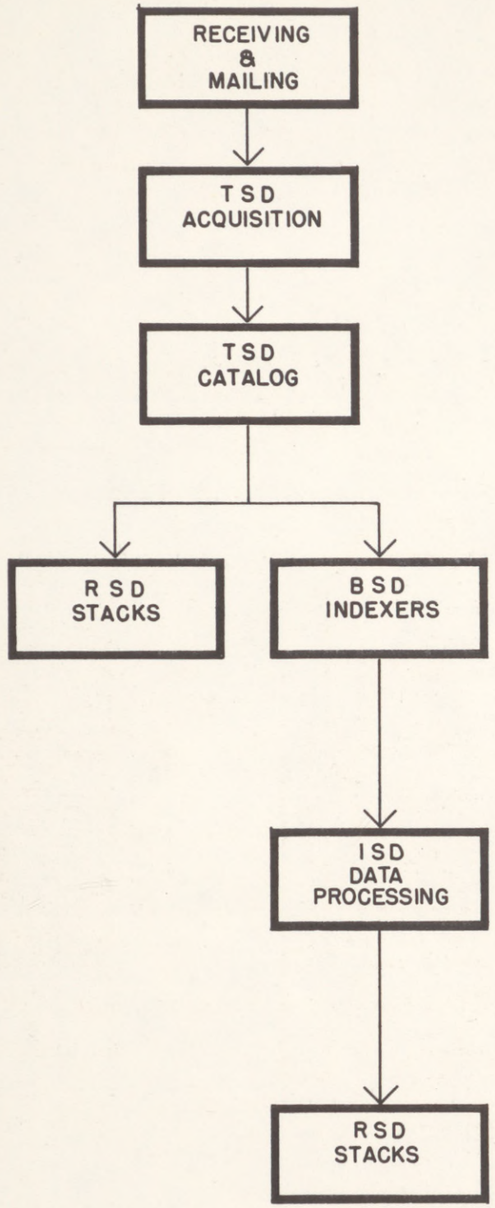
III-A III-B

ACQUISITIONS

MONOGRAPHS

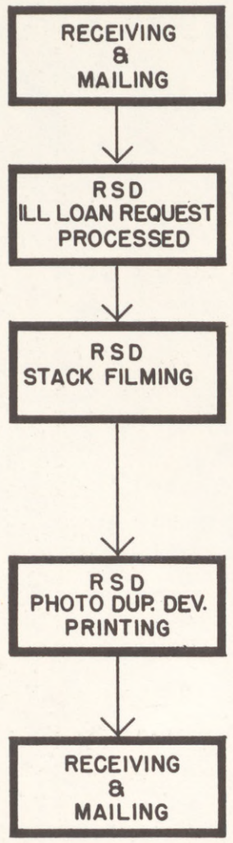


SERIALS

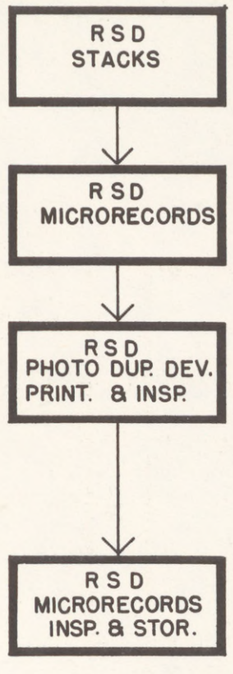


FILMING PROGRAM

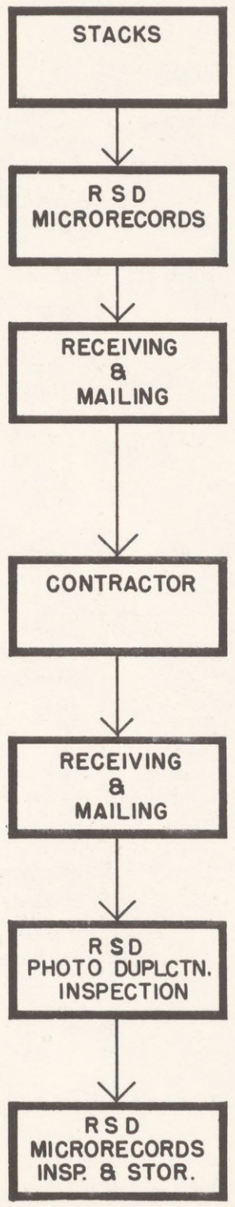
INTERLIB. LOAN



PRESERV. FILM

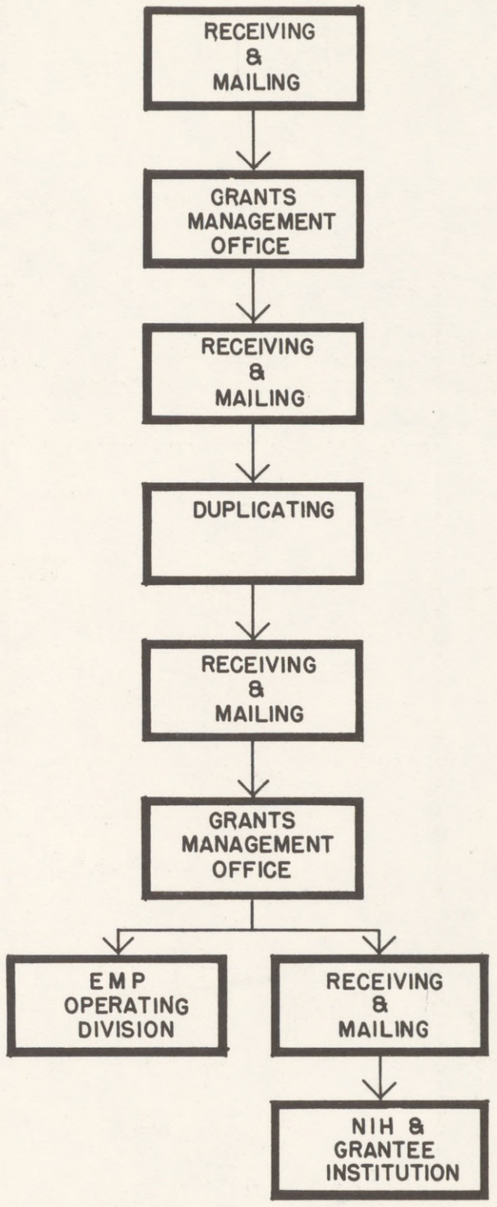


CONTRACT FILM.

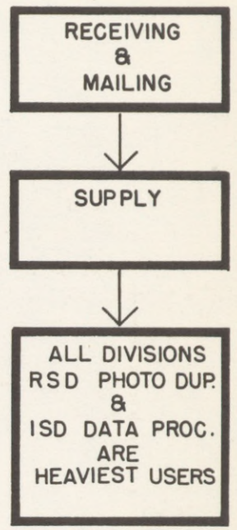


EXTRAMURAL PROGRAM

GRANT APPLICATIONS

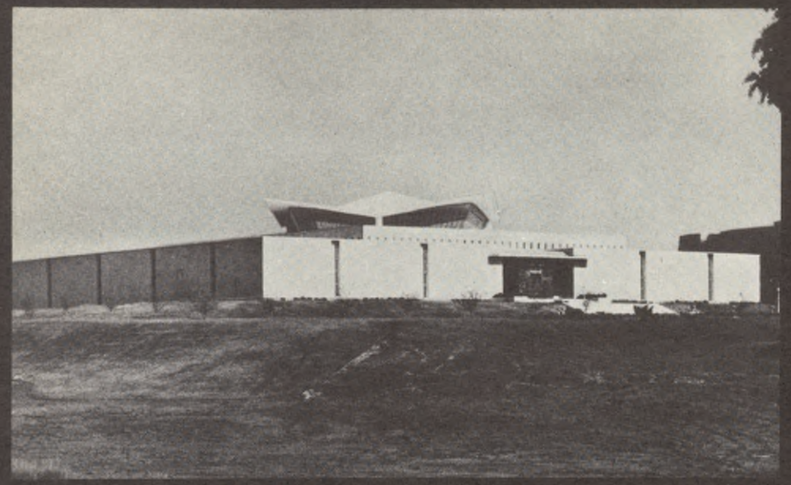


SUPPLY ITEMS



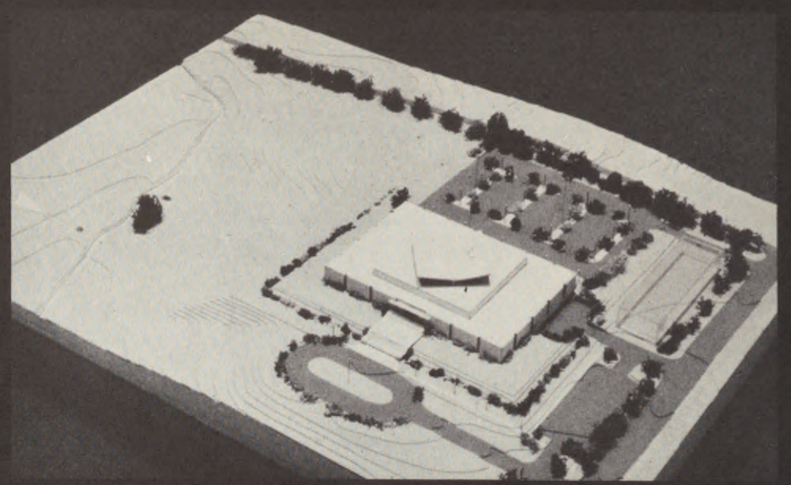
MATERIALS FLOW DIAGRAMS

III-C



1. EXISTING NATIONAL LIBRARY OF MEDICINE, BETHESDA, MARYLAND

2. PUBLIC CARD CATALOG

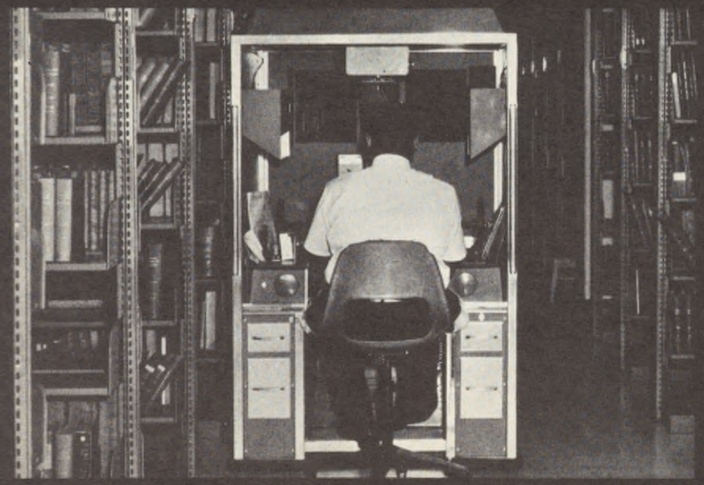


3. EXISTING N.L.M. SITE MODEL

4. TYPICAL STACK AREA

5. TYPICAL STAFF AREA

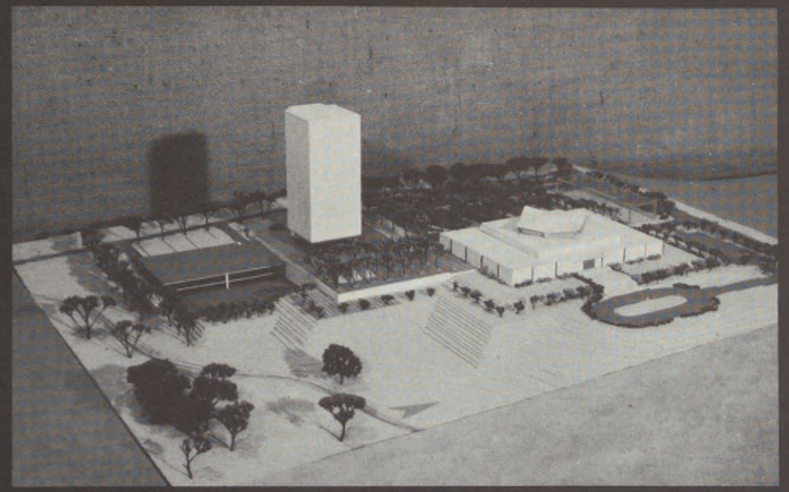
6. READING ROOM - CARREL TYPE SEATING



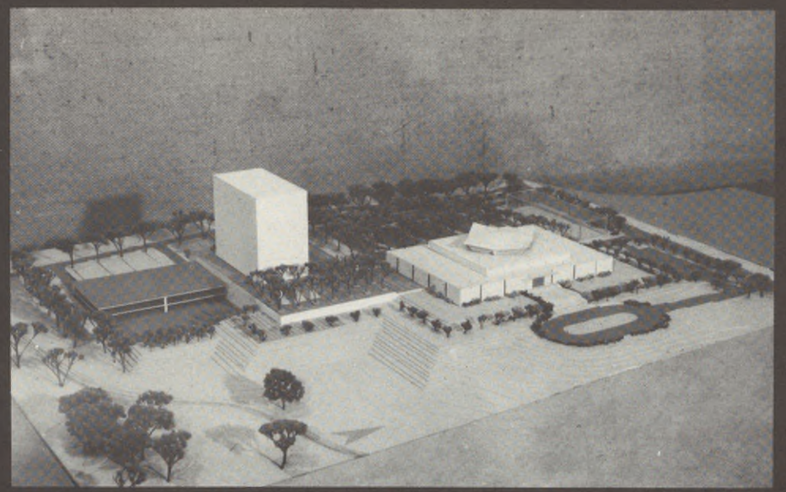
7. MOVABLE CAMERA WITHIN STACK - PHOTOGRAPHY FROM PAGE TO MICROFILM

8. PUNCH PAPER TAPE DATA-INPUT TYPEWRITER

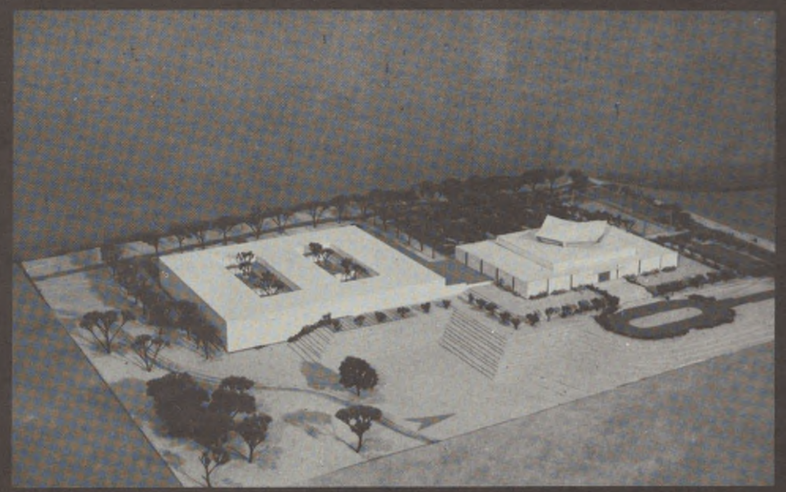
9. MEDLARS INSTALLATION - CONSOLE & PAPER TAPE READERS



10. PROPOSED ANNEX, AS TOWER, SCHEME A

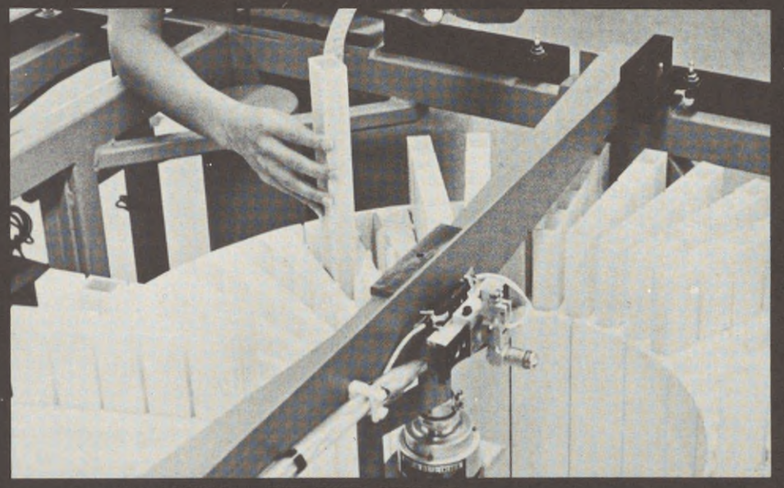


11. PROPOSED ANNEX, INTERMEDIATE STRUCTURE, SCHEME B



12. PROPOSED ANNEX, LOW STRUCTURE, SCHEME C

13. MOCK-UP OF AUDIO VISUAL CARREL

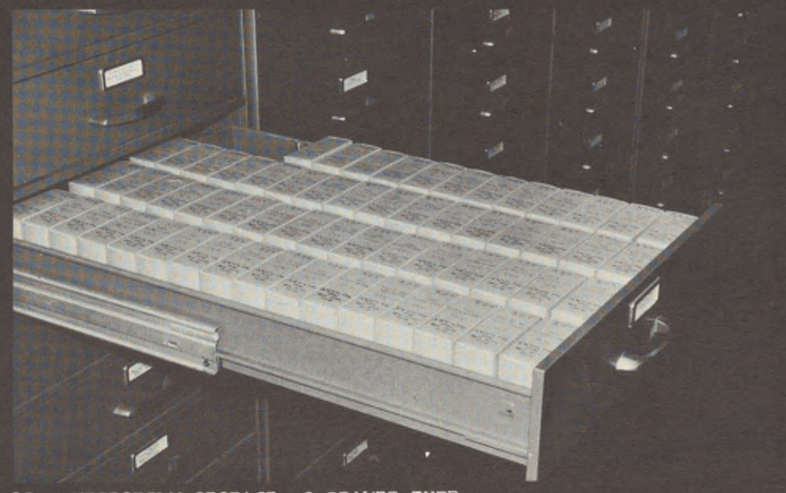


14. RANDOM ACCESS - TUB TYPE STORAGE

15. CONSOLE ACCESS WITH VISUAL READ-OUT

16. COMPACT STORAGE, DRAWER TYPE

17. COMPACT STORAGE, SLIDING CRADLE TYPE

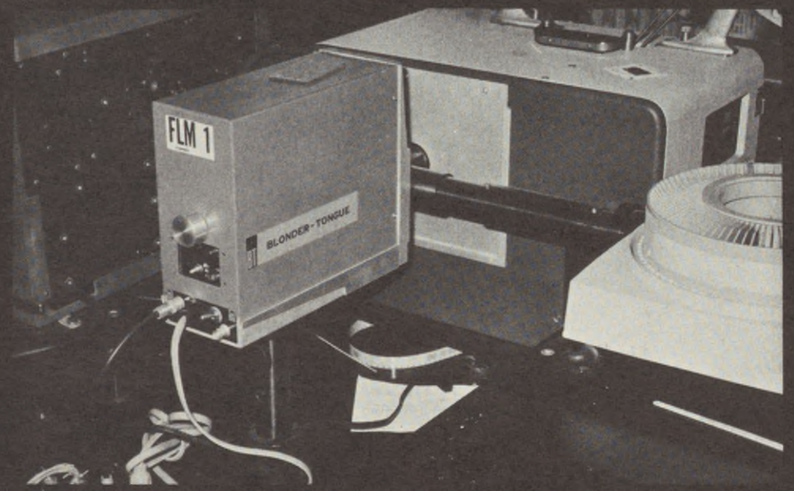


18. MICROFILM STORAGE, 2 DRAWER TYPE

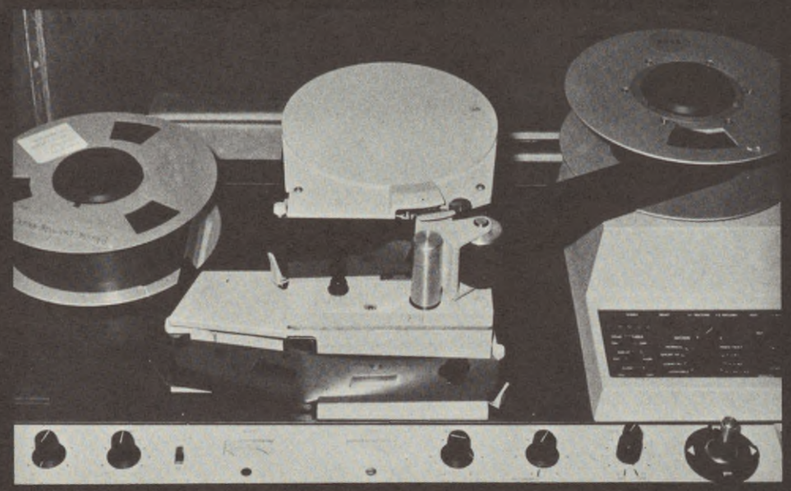
19. CONVENTIONAL SHELVING OF BOOKS

20. SHELVING BY SIZE - YALE SYSTEM

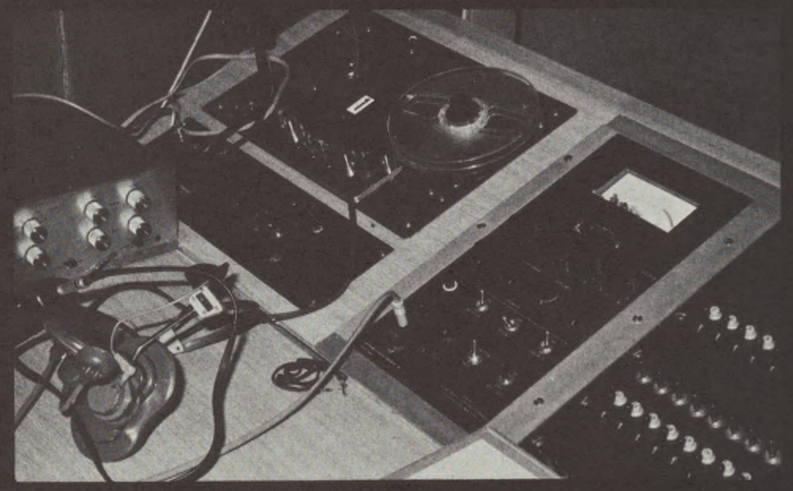
21. BOUND PERIODICALS - MAY BE SHELVED FULL.



22. W. HARTFORD SCHOOL PILOT PROJECT, AUDIO VISUAL EQUIPMENT

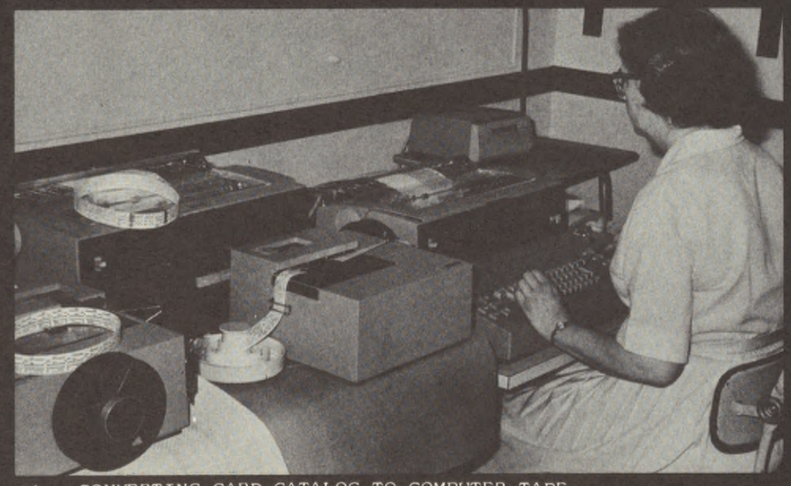


23. AUDIO VISUAL EQUIPMENT, 2

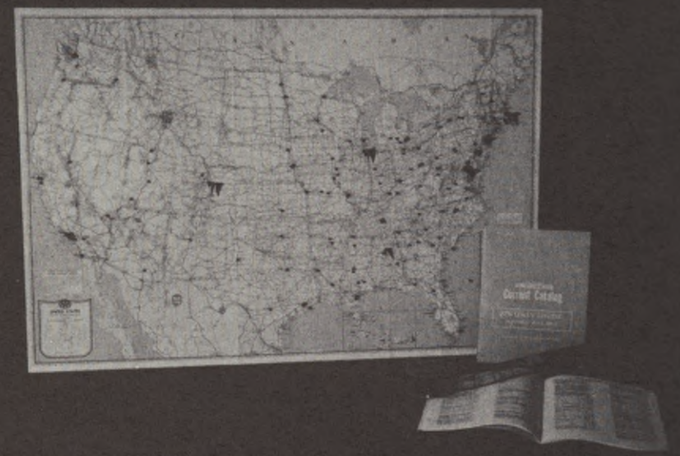


24. AUDIO VISUAL EQUIPMENT, 3

25. PRESENT CONDITION: WORKING WITH CATALOG CARDS



26. CONVERTING CARD CATALOG TO COMPUTER TAPE



27. MEDICAL RESEARCH CENTERS SERVED BY N.L.M.
(MEDLARS CENTERS FLAGGED)

28. INDEX MEDICUS

CEREBROVASCULAR SUBJECT

stimulation and temperature on the contractility of the rat myocardium injured by anoxia. Krofta K, et al. **Physiol Bohemoslov** 14:238-40, 1965
Cit. no. 1335642

The resistance of the myocardium to anoxia in animals acclimated to simulated altitude. Poupa O, et al. **Physiol Bohemoslov** 14:233-7, 1965
Cit. no. 1335641

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Cit. no. 1277755

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Cit. no. 1257102

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Cit. no. 1257076

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Cit. no. 1277203

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Cit. no. 1271451

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Cit. no. 1210033

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Cit. no. 1236653

[The determination of anoxia tolerance in rat heart-lung preparations and the influence of coronary agents on them] Kukovetz WR. **Arzneimittelforschung** 14:1104-7, Oct 64 (Ger)
Cit. no. 1367702

[Hypoxia and metabolic disturbances in plasma cell interstitial pneumonia of premature and undernourished infants] Varga F, et al. **Cesk Pediat** 20:317-9, Mar 65 (Ger)
Cit. no. 1274041

[Direct cortical stimulus-response, impulses and polyneuronal activities during hypoxia] Wieck HH. **Deutsch Z Nervenheilk** 186:299-322, 5 Oct 64 (Ger)
Cit. no. 1311627

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Cit. no. 1210367

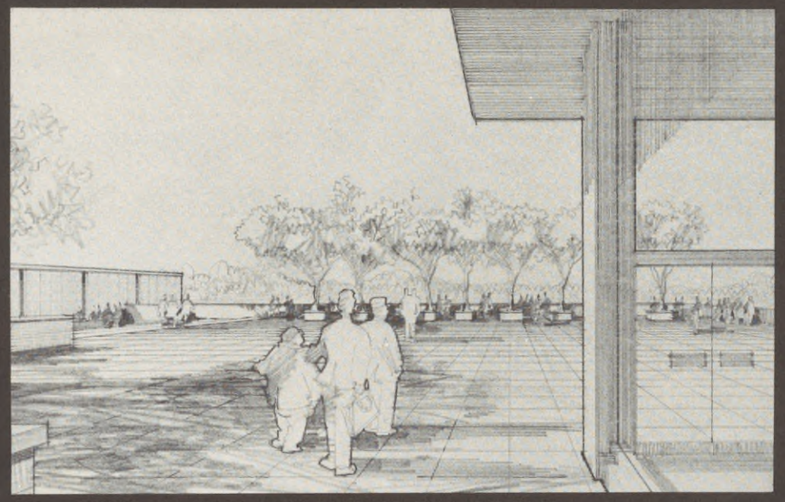
[The influence of O2 deficiency on the development of

29. SAMPLE PAGE, INDEX MEDICUS

CALL NUMBER	I.D. NO.		DATE DUE
PS2387.H61961	400-28-2748	F	03-22-6
PS3053.U4	044-32-2379		04-23-6
PS3231.M2	261-76-1179		04-19-6
PS3501.I5875	261-76-1179		03-22-6
PS3501.L1178T5	562-62-5979		04-19-6
PS3501.L178w5	261-70-9674		04-12-6
PS3509.L43A171963	263-66-2032		04-19-6
PS3509.L43F6	548-36-5898	F	06-08-5
PS3509.L43Z6741963	313-16-3499	F	04-05-6
PS3509.L43Z6771963	265-60-2351		04-23-6
PS3509.L43Z682	313-38-9118		04-19-6
PS3509.L43Z684	265-60-2351		04-23-6
PS3509.L43Z6913	265-60-2351		04-23-6
PS3509.L43Z6961961	265-60-2351		04-23-6
PS3509.L43Z877	313-16-3499	F	04-05-6
PS3509.L43Z8821961	313-16-3499	F	04-05-6
PS3509.L43Z95C.2	104-34-3279		04-12-6
PS3509.L431952A	264-46-5227		04-19-6
PS3511.A86Z783	265-66-9120		04-19-6
PS3511.A86Z87	263-82-5065		04-12-6
PS3511.A86Z8951961	265-66-9120		04-19-6
PS3511.A86Z9741962	263-82-5065		04-12-6
PS3511.A86Z977	263-82-5065		04-12-6
PS3511.R94Z556	264-64-0602		04-12-6
PS3511.R94Z588	261-82-7549		04-23-6
PS3511.R94Z7	264-64-0602		04-12-6
PS3511.R94Z77	264-64-0602		04-12-6
PS3511.R94Z925	261-82-7549		04-23-6
PS3511.R94Z931961	261-82-7549		04-23-6

30. SAMPLE PRINT-OUT CIRCULATION LIST

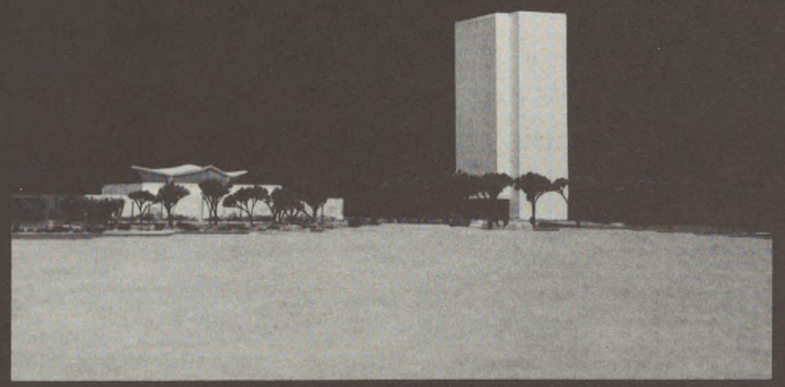
31. EXTERIOR, SHOWING WATER TABLE



32. SCHEME A- VIEW FROM TERRACE LOOKING EAST

33. EXISTING PARKING

34. MODEL OF TOWER SCHEME A, LOOKING WEST



35. MODEL OF TOWER SCHEME A, LOOKING EAST

36. DEVELOPMENT BEYOND 1987

1) The installation of "Medlars" - computerized storage, retrieval & composing of the Index Medicus, resulted in the taking of space on the main floor for the Computer and Data Processing, crowding the Technical Services Division and requiring the assigning of stack space to them on "B" level. Provision for the Systems Analysts occupied space reserved for stack expansion on "C" level.

2) The introduction of Publications & Information crowded out the Bibliographic Services on the Mezzanine while the Auditorium on "A" level caused Supply to move from the convenient same floor as the Service Entrance down to "C" level. Three studies were also displaced.

3) Growth of the Office of the Director, The Administration Services and the Extra Mural Program had the effect of moving out the newly authorized Extra Mural Program itself to the rented Blackwell Building.

4) Moderate growth of the History of Medicine had the effect of occupying more of the general stack space on "B" level.

b. Further changes in useage.

1) The introduction of the Drug Literature Program, Medical Subject Headings and Indexing on "A" level (all to be moved out) absorbed more stack space and caused relocation of Binding into "C" stack space.

2) Expansion of the lunch room at the expense of building maintenance space on "A" level. The greatly increased requirements for the lunch room in the future will require it to move out to the new building with the advantage of being more centrally located in final complex. New structure should also have own supply room rather than further expansion of present.

3) Requirement of more studies related to stacks will be distributed on "B" & "C" level in NLM building and new stack area in new.

4) Additional expansion of HMD will also require more space "B" level.

c. Continuation of present useage - In the rehabilitation plans (Series "F") the major activities to remain are:

1) Mezzanine - Office of the Director and Administrative Services.

2) Main Floor - Card Catalog and related divisions - (TSD, Bibliography & Reference), Public Reading Room & History of Medicine.

3) "A" Level - Inter-library Loan and Photo Duplications, Main Service Entrance (receiving & mailing) Auditorium, and remaining stacks

4) "B" Level - Stacks.

5) "C" Level - Stacks.

7. Lunch Room Facilities

The present lunch room (see plan Series "D"-3, Page on "A" level next to the service entrance, was part of the initial plan, though somewhat enlarged at a later date, until it now has a capacity of 140 seats. It is essentially a packaged-portion food, self-service, snack bar type of facility with provision for hot soup and coffee; cold drinks and ice cream, designed to be serviced by the Maryland School of the Blind.

8. Parking Facilities

On the present site of the NLM there is one visitor's parking space for 36 cars - already much too small and one employee's parking space at the rear - for 196 cars. This is also over crowded and the N.I.H. parking space to the north across the avenue is being used. The west side of the present parking space is being temporarily used as an access road to the new Virus Laboratory currently under construction.

9. Utilities

a. Water - Public Utility (Washington Suburban Sanitary Commission) - direct connection.

b. Sanitary Sewer - Public Utility (Washington Suburban Sanitary Commission) - direct connection.

c. Storm Water - direct outlet to brook.

d. Steam - obtained from N.I.H. Central Power Plant, Bldg. #11.

e. Chilled Water - obtained from N.I.H. Central Power Plant, Bldg. #11.

f. Electricity - connected to present feeders serving N.L.M.

g. Telephone - Chesapeake & Potomac Telephone Co.

10. Foundation Conditions

Solid rock - as indicated by borings available from construction of NLM and present new Virus Laboratory.

11. Zoning, Codes, and Controls

a. National Capital Planning Commission.

b. Montgomery County Zoning Ordinance (1960) does not place restrictions on government buildings.

c. National Building Code (N B F U).

d. N.I.H. Office Committee on Fire Safety.

e. National Electrical Code (N B F U).

C. Analyses and Recommendations

1. Studies

Based on consultation with N.L.M. officials and study of documents furnished by N.L.M. such as the Five Year program including space requirements for an N.L.M. Annex, dated October 18th 1966, - the additional net square feet of useable space required in a new structure or structures (without renting commercial space) to enable the N.L.M. to carry out its program efficiently - was determined. The necessary conclusions were reached through the following studies:

a. Projected Expansion of Departmental Personnel and Areas. — Diagrams V-A and V-B, Pages 36 & 37, Schedule #1, Page 38

The Diagrams show the number of square feet of space and number of personnel by departments as of 1967 and the total amount of space required and authorized number of persons that will be needed as of 1972. In one or two instances a reduction is shown - either because offewer persons or because present space can absorb more workers.

The graphic illustration at the right indicates the amount of additional space needed compared to the old.

The shading indicates which activities will move to the new structure.

The schedule shows the authorized personnel compared with the actual number from 1957-1966 and the authorized number from 1967-1973.

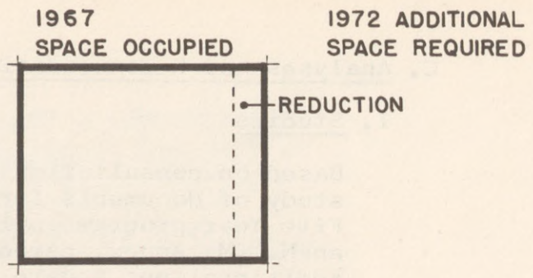
b. Growth of Collections — Diagram VI, Page 39

1) Literature Collections (VI-A) - This chart indicates:

a) That the stack capacity allowance for over 20 years growth in 1962 (i.e. 1982) will be reached in 1980 - even if areas and departments indicated on above Diagrams move to the new structure. This is due not only to

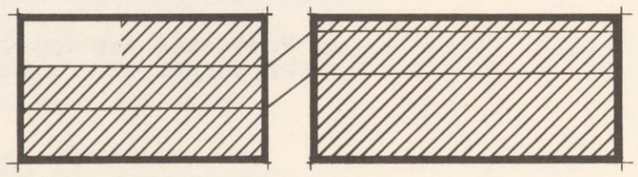
OFFICE OF DIRECTOR

	1967		1972	
	SQ. FT.	PERS	SQ. FT.	PERS
DIRECTOR	5160	24	4440	22
TOTAL	5160	24	4440	22



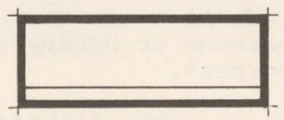
INTRAMURAL PROGRAM

ASSOC. DIRECTOR	1365	8	1890	14
Me Sh	1030	9	2400	20
DRUG LIT.	1420	13	4320	36
TOTAL	3815	30	8610	70



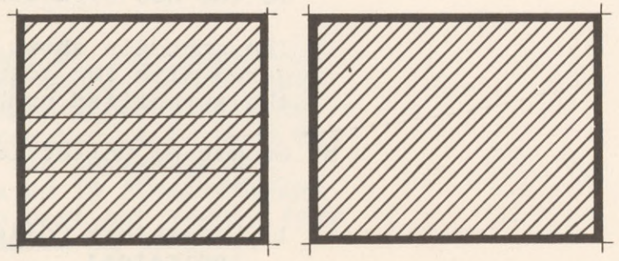
PUBL. & INFORMATION

PUBL. & INFORM.	1840	9	1840	15
GRAPHICS	510	2	510	3
TOTAL	2350	11	2350	18



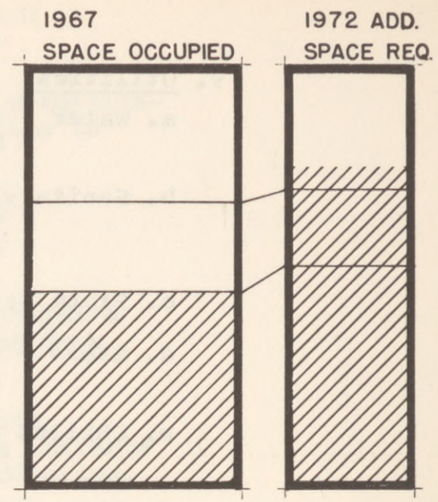
EXTRAMURAL PROGRAM

EXTRAMURAL	3135			
PUBL. & TRANSL.	695			
RES. & TRAINING	700			
FACIL. & RESOURCES	1905			
TOTAL	6435	38	13500	100



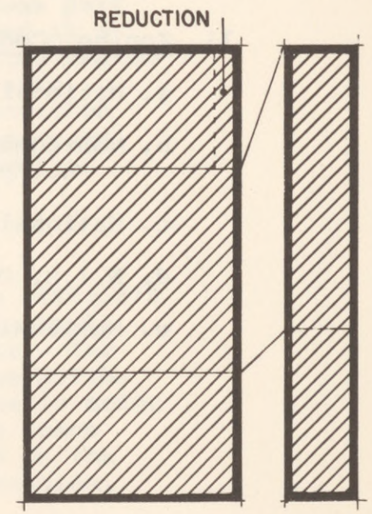
ADMINISTR. SERVICES

	1967		1972	
	SQ. FT.	PERS	SQ. FT.	PERS
ADMIN. SERVICES	3120	19	4800	40
REC. & MAIL	2070	6	3070	12
SUPPLY	4470	7	7500	18
TOTAL	9660	32	15370	72



INFORMATION SERVICES

DATA PROC.	2775	28	2400	16
PROGRAMMERS	4700	27	7200	60
COMPUTER	2860	3	4200	4
TOTAL	10335	58	13800	80



FUNCTIONS REMAIN IN EXISTING BUILDING

FUNCTIONS TO BE IN NEW FACILITIES

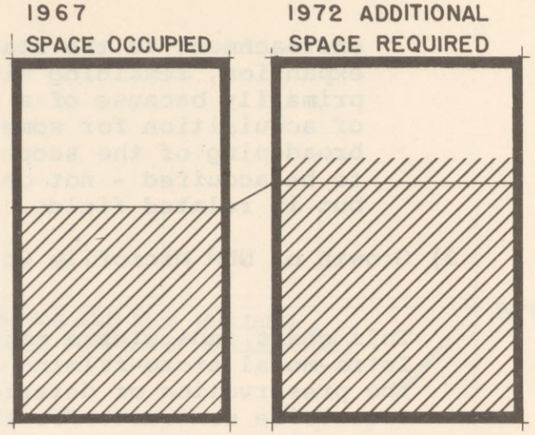
SPECIAL EMP, TSD, HMD & PI STACKS ON B & C LEVELS NOT INCLUDED

0 15 30 45 60 75

PROJECTED EXPANSION OF DEPARTMENTAL PERSONNEL AND AREAS V-A

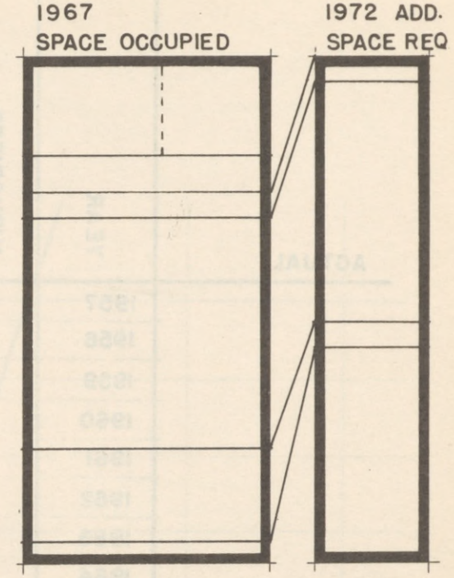
BIBLIOGRAPHIC SERVICES

	1967		1972	
	SQ. FT.	PERS	SQ. FT.	PERS
SEARCH	3415	21	6750	50
INDEX	4830	33	11000	75
TOTAL	8245	54	17750	125



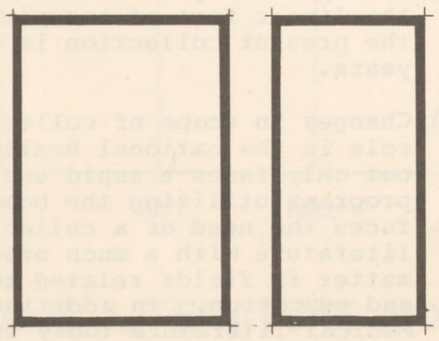
REFERENCE SERVICES

	1967		1972	
	SQ. FT.	PERS	SQ. FT.	PERS
WORK AREA	2575	9	1440	12
STACK & READER SERV.	1200	24	1200	33
OFFICE OF THE CHIEF	645	5	945	7
INTER LIBR. LOAN & PHOTO DUPLICATION	4750	19	8800	28
PRESERV. BINDING	2400	9	2700	10
MICRORECORDS	600	7	3130	13
TOTAL	12170	63	18215	103



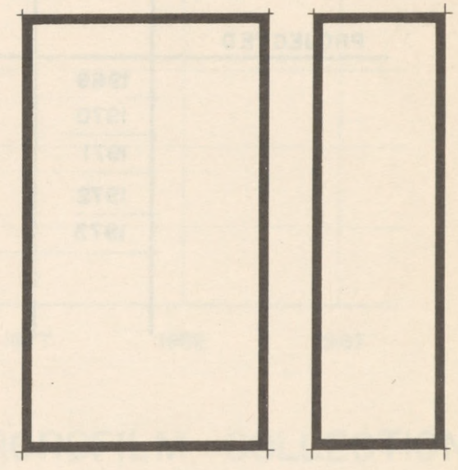
TECHNICAL SERVICES

TECHN. SERVICES	7060	65	12000	100
TOTAL	7060	65	12000	100



HISTORY OF MEDICINE

HIST. OF MEDICINE	11390	22	13990	35
TOTAL	11390	22	13990	35



FUNCTIONS REMAIN IN EXISTING BUILDING

FUNCTIONS TO BE IN NEW FACILITIES

SPECIAL EMP, TSD, HMD & PI STACKS ON B & C LEVELS NOT INCLUDED

0 15 30 45 60 75

PROJECTED EXPANSION OF DEPARTMENTAL PERSONNEL AND AREAS V-B

	YEAR	AUTHORIZED PERSONNEL	ON DUTY	ADDED PERSONNEL FOR TOXICOLOGY	
ACTUAL	1957	223	211		
	1958	225	217		
	1959	224	219		
	1960	224	216		
	1961	224	216		
	1962	234	211		
	1963	242	240		
	1964	268	259		
	1965	291	269		
	1966	352	320		
	1967	393	322	20	
	1968	427		41	
PROJECTED					
	1969	527		60	
	1970	615			
	1971	690			
	1972	790		200	
	1973	835			

TOTAL N.L.M. PERSONNEL

SCHEDULE # I

encroachment to the stack areas by departmental expansion, remaining within the NLM, but primarily because of a rapid rate of increase of acquisition for some years due to the broadening of the scope as to the type of books to be acquired - not only in medicine directly but in related fields.

2) Growth of NLM Microfilm Collection, Diagram VI-B
Page 39

This chart indicates a major expansion of the Intra-Mural micro-filming activity - chiefly in the preservation of deteriorating books, by going to outside contracts for the work, currently planned at 10,000,000 pages a year - a grand total of 12,000,000 pages a year beginning by 1969.

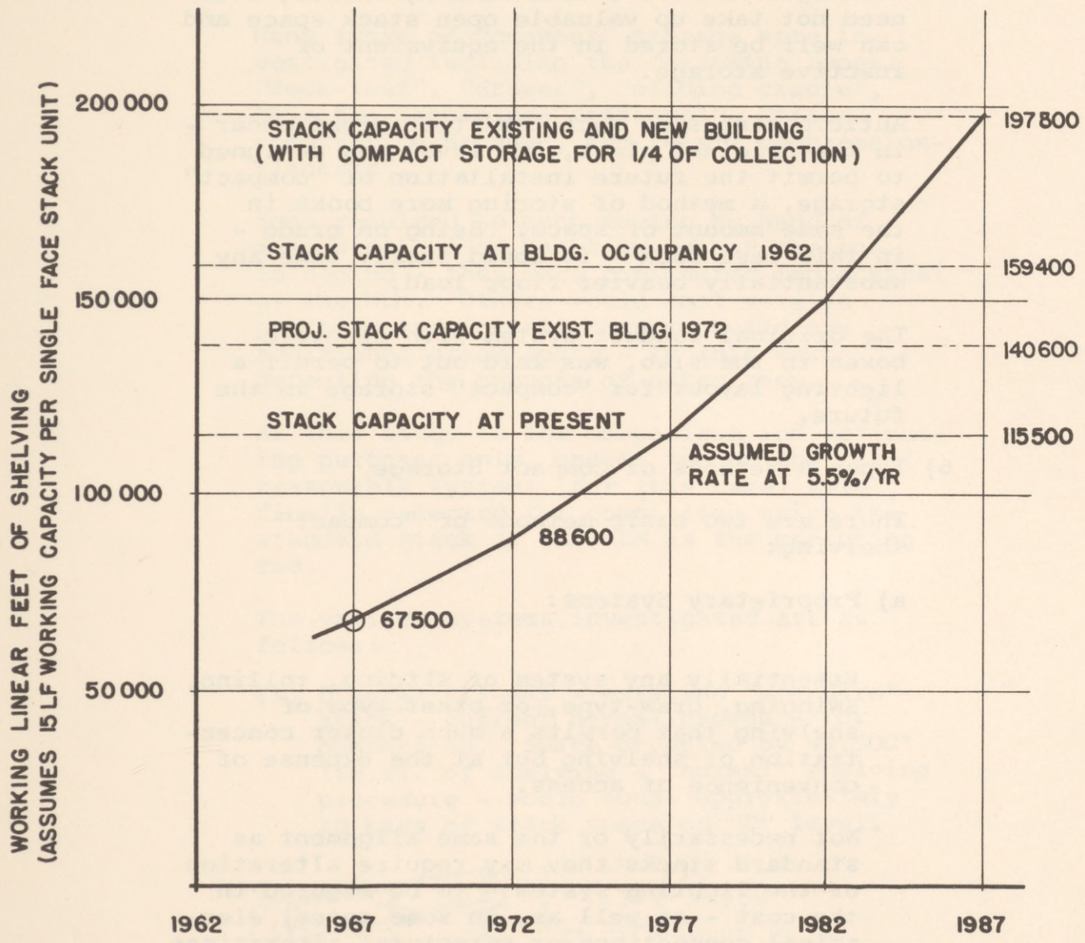
c. Accommodating the Growth of the Book Collection:

1) Mission. The basic mission of the N.L.M. includes the acquisition of the published literature of the bio-medical sciences, and these will continue to be housed in the stacks of the original building (subject to extension as required). It is assumed that for the next 10-20 years (while new types of medical information forms are developing) books and journals will continue to be the principal means of communication.

2) The apparent growth rate - estimates based on the linear feet of occupied shelving indicated the present collection is doubling every 16-18 years.

3) Changes in scope of collection - With its new role in the national health effort the library not only faces a rapid expansion of its basic programs utilizing the book collection but now faces the need of a collection of bio-medical literature with a much broader coverage in subject matter in fields related to problems of health and education. In addition the total body of medical literature today is expanding at a faster rate.

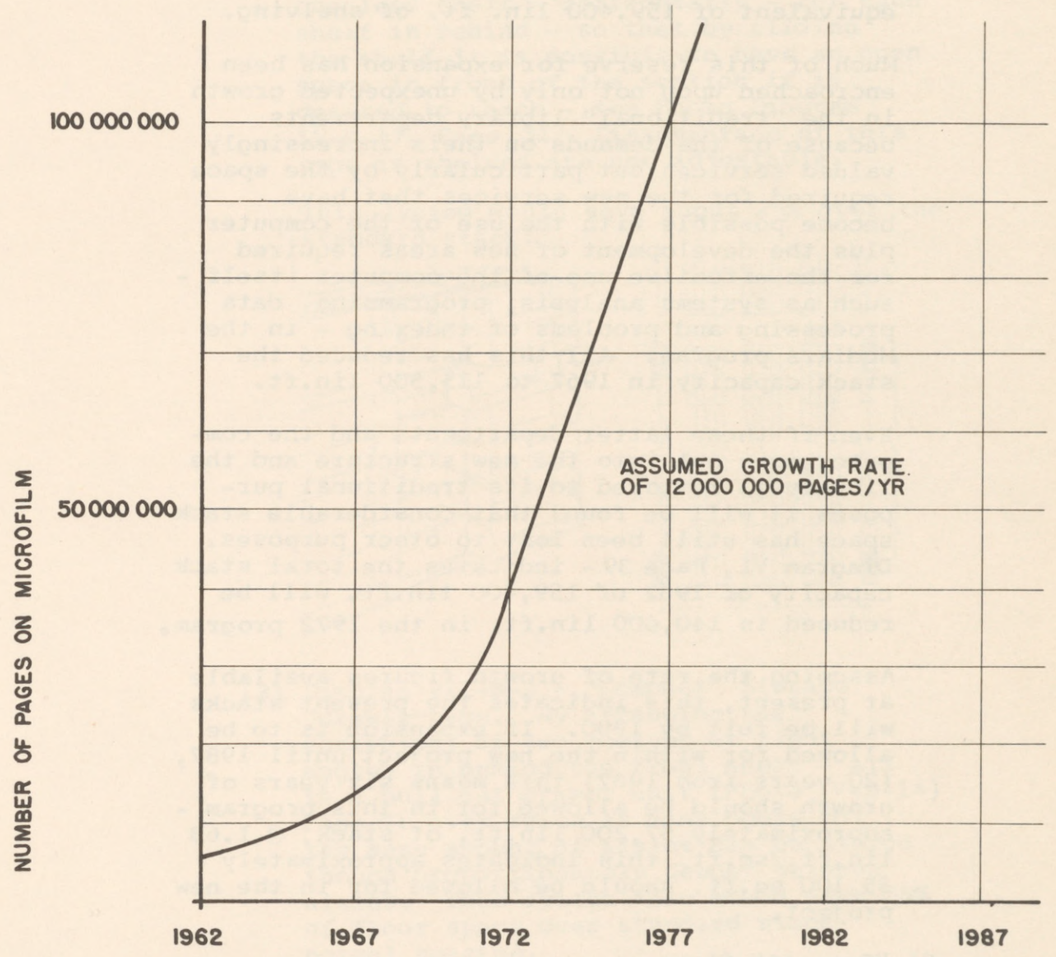
For this reason, the rate of growth indicates not only the increase from the acquisition of newly published bio-medical literature but also the acquisition, for the first time, of books in the broader field including the related subjects. It is anticipated this expansion of the scope of the collection, added to the normal rate growth, will double the collection every 12½ years.



GROWTH OF N.L.M. LITERATURE COLLECTION

A

SHELVING FIGURES DO NOT INCLUDE SPECIAL STACKS FOR HMD, EMP, TSD AND PI



GROWTH OF N.L.M. MICROFILM COLLECTION

B

PROJECTED GROWTH OF COLLECTIONS

DIAGRAM VI-A VI-B

4) Normal Stack Expansion

The plans of 1962 allowed for a stack expansion within the structure of approximately three times the entering collection - or the equivalent of 159,400 lin. ft. of shelving.

Much of this reserve for expansion has been encroached upon not only by unexpected growth in the "traditional" library departments because of the demands on their increasingly valued services but particularly by the space required for the new services that have become possible with the use of the computer plus the development of new areas required for the effective use of the computer itself - such as systems analysis, programming, data processing and problems of indexing - in the Medlars program. All this has reduced the stack capacity in 1967 to 115,500 lin.ft.

Even if these latter departments and the computer move out into the new structure and the library is restored to its traditional purposes it will be found that considerable stack space has still been lost to other purposes. Diagram VI, Page 39 - indicates the total stack capacity of 1962 of 159,400 lin.ft. will be reduced to 140,600 lin.ft. in the 1972 program.

Assuming the rate of growth figures available at present, this indicates the present stacks will be full by 1980. If expansion is to be allowed for within the new project until 1987, (20 years from 1967) this means six years of growth should be allowed for in this program - approximately 57,200 lin.ft. of stack, @ 1.63 lin.ft./sq.ft. this indicates approximately 35,100 sq.ft. should be allowed for in the new project.

5) "Compact" Storage

A program is already under way for the microfilming or recording of documents, particularly of deteriorating books - approximately 4,000,000 pages a year at this time. It is estimated approximately 2,000,000 pages a year will continue to be done "in house" by the NLM, and, at increasing rate up to 10,000,000 pages a year will be done "outside" by contract.

To efficiently photocopy these documents they must be taken apart. Some are rebound, but the larger part are tied up and retained as a matter of record, only. Such books and certain others such as bound copies of journals no longer in active circulation, theses, etc. need not take up valuable open stack space and can well be stored in the equivalent of inactive storage.

Anticipating some such condition might occur - in the original plans, "C" level was designed to permit the future installation of "compact" storage, a method of storing more books in the same amount of space. Being on grade - in this case rock - it could easily take any substantially heavier floor load.

The original conduit system with electric boxes in the slab, was laid out to permit a lighting layout for "compact" storage in the future.

6) Types & Methods of Compact Storage

There are two basic methods of "compact" shelving:

a) Proprietary Systems:

Essentially any system of sliding, rolling, swinging, draw-type, or other type of shelving that permits a much closer concentration of shelving but at the expense of convenience of access.

Not necessarily of the same alignment as standard stacks they may require alteration of the lighting system - to be figured in the cost - as well as, in some cases, electrical connections or structural alterations.

In comparing the "compact" storage systems it was assumed that books would be shelved with the same average number of volumes per shelf as in the standard stack - i.e., to allow for normal "shelving" procedures with present cataloging system of classification numbers.

(Normal shelving procedures leave the average of 30% of each shelf empty, initially, to allow for addition of new material in the same classification, in its right place, without having to shift all the books each time).

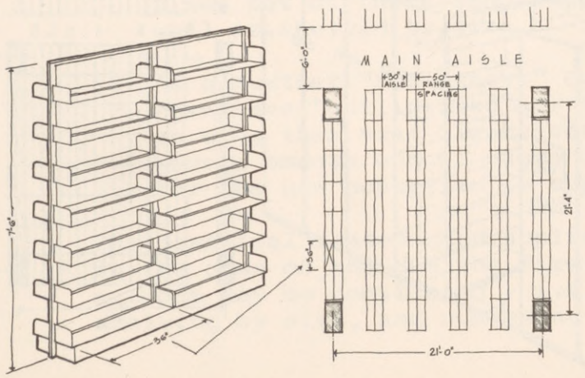
Many types of "compact" storage were investigated including the following types: "Book-leaf", "drawer", "sliding cradle", "Electro-mechanical retrieval", "Aisle compression-Manual", and "Aisle compression-Electric".

Some required so much moving by hand of many sections of books to get at the one in behind - they were considered impractical by the NLM. Others would cost more to purchase and install than to build new additional stack space - in this case defeating the purpose of using them.

As this study is for comparison and estimating purposes only, one or two of the reasonable systems (for this case) were finally selected for comparison using the standard stack of the NLM as the measuring rod.

The various systems investigated are as follows:

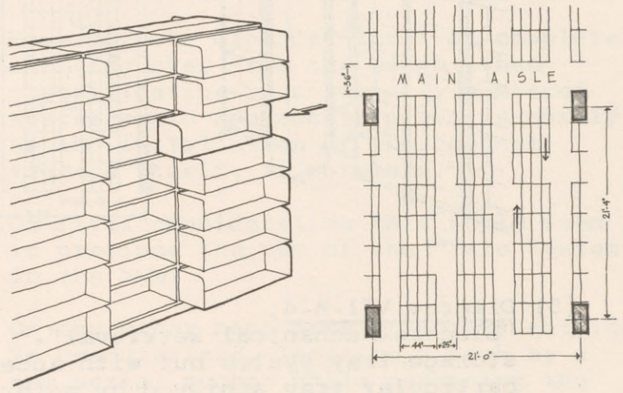
(1) Diagram VII-A-1 - existing "standard" stack - current normal useage - for comparison. Space occupied by 49,500* lin.ft. of shelving - "normal" shelving procedure - would equal approximately 10 bays of stack space on "C" level.



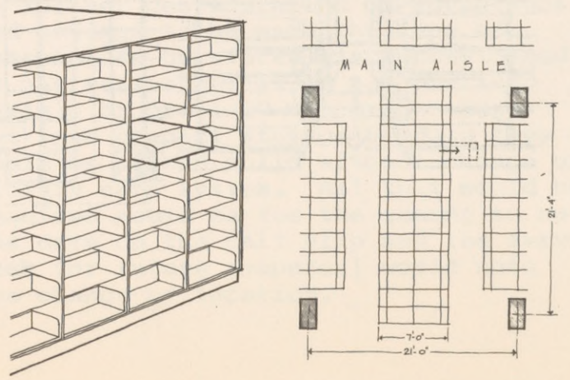
*49,500 lin.ft. is approximately 1/4 of 197,800 lin.ft. anticipated by 1987.

(2) Diagram VII-B-1 - "Compact" Storage - "sliding cradle" type. Rear range of shelving is the same as average standard stack. On tracks, in front, the shelves slide individually, but with one less shelf - horizontally - for each shelf in behind - so that by sliding the shelf it is possible to have an open space in front of the section it is desired to reach - see Photo Diagram IV-B-17, Page **31.** Disadvantage of this type is shelves are not adjustable.

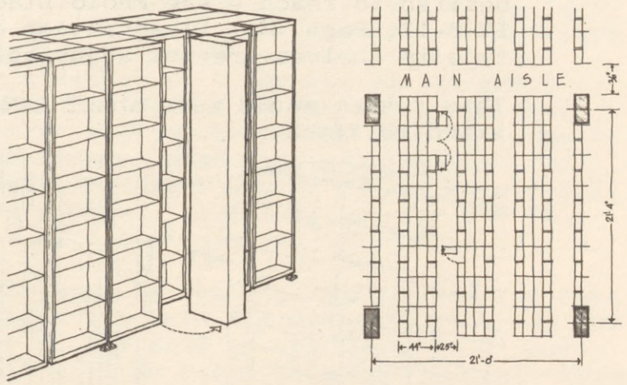
This system would save about 25% over the standard stack.



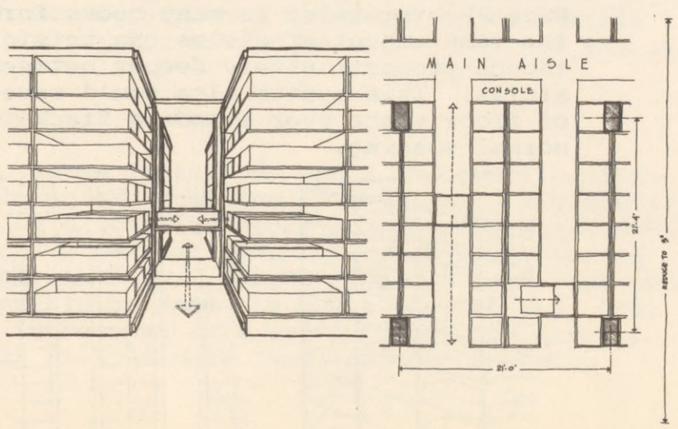
(3) Diagram VII-B-2 - "Compact" Storage "drawer"type. By arranging the equivalent of two shelves at right angles in behind the front shelf - all in a pull out drawer unit (Photo IV-B-16) Page 31 over twice as many books for the same amount of aisles can be stored though proportionately deeper between aisles. This system also would save 25% of floor space over standard stack normal spacing.



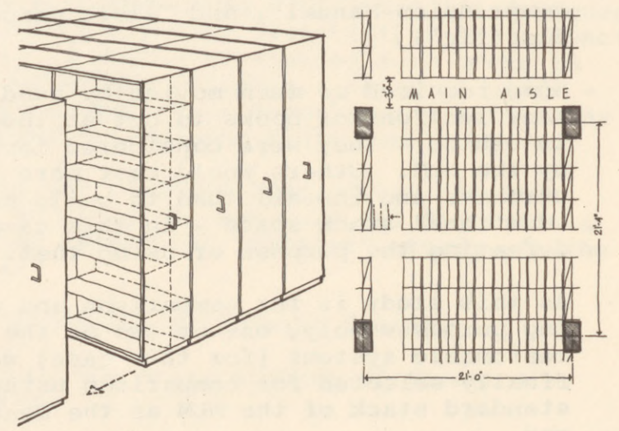
(4) Diagram VII-B-3 "Compact" Storage, "Folding Leaf Type." Equal amount of storage on shelves arranged on hinged units like cupboard doors in front of base units. Unit must be swung open for access to any shelf. Has advantage of adjustable shelf space. Saving 33% over standard.



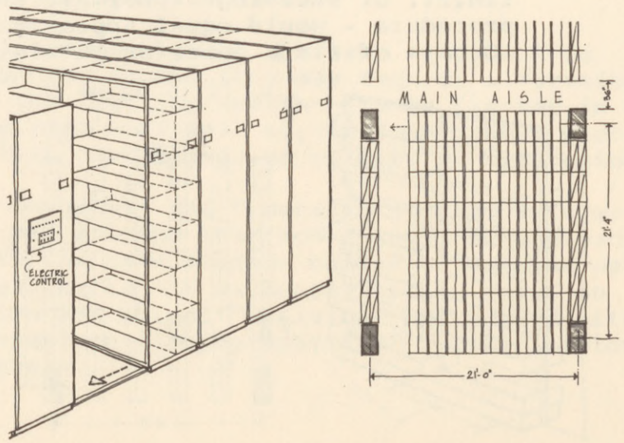
(5) Diagram VII-B-4, "Electro-Mechanical Retrieval". A storage tray system but with access to particular tray achieved by motor operated unit which brings tray to end of aisle. Selection controlled by electric panel at end of every other range. System considered too elaborate and costly for intended useage.



(6) Diagram VII-B-5, "Aisle Compression Manual". Double section unit on tracks allowing complete filling of bay less number of units to create one aisle. By moving all other units aisle is created for access to desired section. Indicate space saving 44%. Considered too inconvenient by librarians but one of most compact and shelves can be adjusted.



(7) Diagram VII-B-6, "Aisle Compression Electric", same as B-4 but motor operated. Requires more height top and bottom to install (raised 6-8" off floor plus 2" at top). Considered too elaborate for purpose.



See Plan G-5
Page 71

(8) Conclusions:

(a) For purposes of this report no specific selection was made but a system assumed, in principle, that would save 25% of area as a reasonable compromise of first cost, convenience and simplicity of manual operation. (One of the motor operated systems alone cost more per sq.ft. than the building itself).

Based on saving 25% of 49,500 lin.ft. or 12,300' of shelving - 7,600 sq.ft. of space could be saved with a compact storage - allowing for shelves 70% full.

b) "Yale" System

(1) Definition: Typical of several systems for shelving more books in standard stacks. In this case:

(a) Shelving books by size - all books on any one shelf of same height - permitting an average of more shelves than the nominal six or seven in the stack height.

(b) Numbering books serially, permitting each shelf to be packed full (instead of allowing room for addition of new books on the same subject normally 25-30%).

(c) To gain more space books are sometimes set on their long edges as well as shelved by size.

(d) As a further "refinement" books are sometimes "guillotined" or trimmed to give them neat dimensions and to give a smooth end of pages surface for the new number to be applied.

For practical reasons and applicability in the case of the NLM the first two methods may be considered - i.e. shelving by size, and numbering serially.

(2) There are several applications such as that of the New England Depository Library, perhaps the first, or the present "Fixed Order Form" of the New York Public Library. (Photo-Diagram IV-C-19, 20, 21, Page 32.

For the NLM - an applicable system to meet the needs of the particular installation would have to be worked out. In principle, however, it is possible to save as much stack space by this method as may be gained by the average "compact" storage equipment maintaining the normal library classification system of numbers.

However, the clerical labor of completely changing over from the established classification to a serially numbered system would apparently prove as costly as the installation of the compact storage itself, if not more.

On first consideration this would seem to preclude the use of the "Yale System" in the NLM.

On the other hand once a library catalog is computerized, locating a book by a new serial number while retaining the old classification number may be very simple.

The great advantage of this system is that the books are still immediately visible and accessible without moving anything or with the use of mechanical contrivances subject to breakdowns.

In addition, the standard shelves, more economical - and "on hand" - can be used.

In further consideration of advantages and savings to be made the type of material to be stored was reconsidered. It was realized that if all pre 1930 serials or pre 1930 monographs were put into compact storage by date they could be packed solid without change of library card system. All that would be required would be for the reader to note the date on the call slip and the service desk (or future computer) would note the change of location.

Another possibility would be that 30-40 volumes of back serials could be represented by one card - a relatively low cost change.

In any case it was decided that 90% of the material ear marked for "compact" storage could be so shelved, whether in standard or "compact" storage at a saving of 25% of the space.

For this reason it was assumed that by going to "compact" storage in "C" level under a combination of the above "Yale" and "Compact" systems 2 x 7,600 sq.ft. or 15,200 sq.ft. could be saved.

c) Conclusions

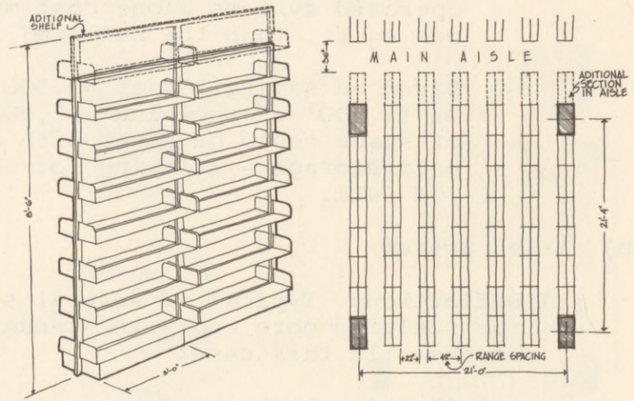
For this study it is sufficient to determine the amount of space that can be saved by a "compact" storage system as a way of reducing the amount of new square footage otherwise required in the program of areas. See Plan G-5, page 71.

At the time the necessity for "compact" storage becomes imminent the decision as to method can be made taking into consideration the types of material to be stored at that time, - there being a balancing factor between the type of compact system selected and the method of shelving within the system - so 50% would still be conservative.

d) Closer Stack Spacing Diagram VII-C-1

While considering ways of saving space it may also be noted there are three ways of saving space with the present standard stacks.

(1) Closer spacing of ranges - by spacing the ranges closer together giving 6 ranges per bay instead of five. This would result in a narrow stack aisle of 22" instead of 30". (Inconvenient in getting past a book truck - or stooping for lower shelf). In any typical bay this would save 18% of the space. Aisles will no longer coincide with overhead light spacing, requiring change of lighting plus addition of row of lights.



(2) Narrow Main Aisle. In addition - if the mobile camera is not required in such an area of the stack - the main aisles could be narrowed from 6' to 3', gaining one double faced stack section per range on each main aisle.

While amount of gain will depend on the particular layout of stack and frequency of main aisles - assuming an average of 6 sections per range after deduction for main aisles and columns it would be possible to gain the equivalent of one range for each bay - an additional saving of 18% of the space.

These two together plus shelving above under a modified "Yale" system or "Fixed Order Form" would save over 50% without the need of purchasing any special compact stacks. Even the

additional standard stacks that would eventually be required could be substituted for with the far more economical metal commercial stack shelving - noting it means the sacrifice of adjustable shelving - and interchangeability in purpose with other stacks in the library.

See Diagram VII-C-1, Page 44

(3) Additional top shelf - In the initial library stack installation a special high post was provided on "A" & "B" level stacks so that an eighth or extra high shelf could be added. This is too high for normal reach of even tall librarians and its use would also mean the material was spread generally throughout the library "A" & "B" stacks rather than the particular area of "C" level. It might well serve for material that has been replaced in active use by micro-filming for example.

It should be cautioned, however, that for "free - standing" stacks, not fastened to the floor - some thoughtless person - reaching for the high shelf without a footstool - may attempt to use a lower shelf as a ladder and tip the stack over (it has happened elsewhere). Therefore, in areas where such extra top shelf might be provided - either floor fastening or top bracing is necessary - preferably both.

d. Accommodating the Growth of Micro-Film Storage, 35 mm.

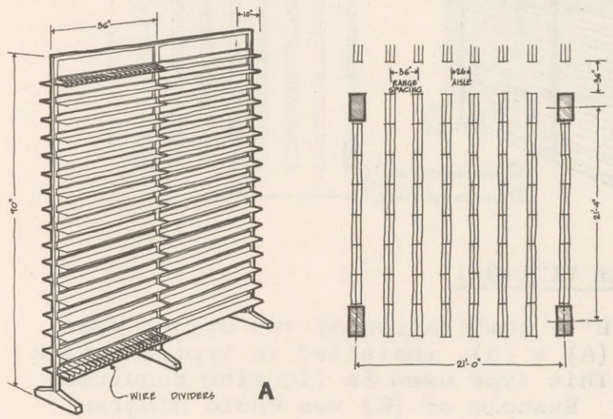
With the accumulation of micro-film from the micro-recording program now under way plus the anticipated requirements of the Graphic Image Storage and Retreival System that will be based on initial micro-filming, it is anticipated a new type of storage will be required for this item.

As at present, it is practical to store the boxes of reels of micro-film (approx. 4 x 4 x 2") in standard stack shelving but, as the collection accumulates, this becomes a very inefficient utilization of stacks as the film box uses up only 4" of the depth of 10" depth of the average shelf.

For comparative purposes, a study of various typical system available was made for storing 47,680 boxes or reels, approximately 40,000,000 pages - the goal for 1972. Provision is to be made in the new budget for storage up to 100,000,000 pages total by 1986.

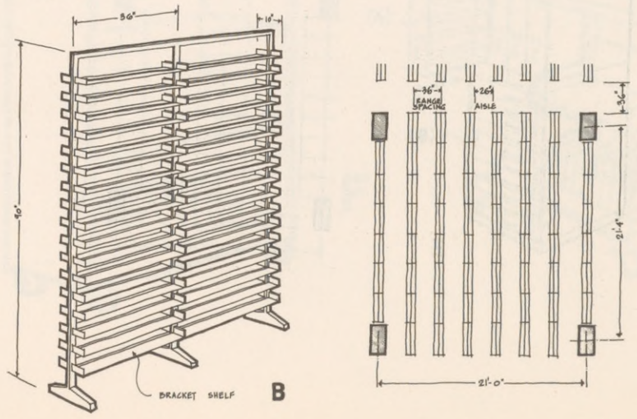
1) Diagram VIII-A-1

Type "A" - open bracket shelf type designed for attachment to standard stack uprights which could be set closer together to gain space.



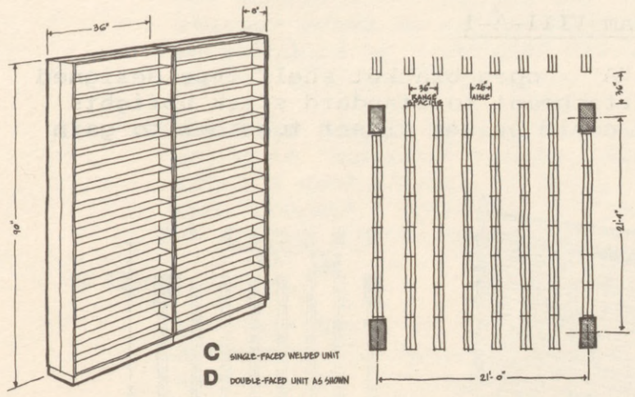
2) Diagram VIII-A-2

Type "B" - open shelf on adjustable brackets for attachment to standard stack posts set closer together or to perforated posts supplied for wall attachment.



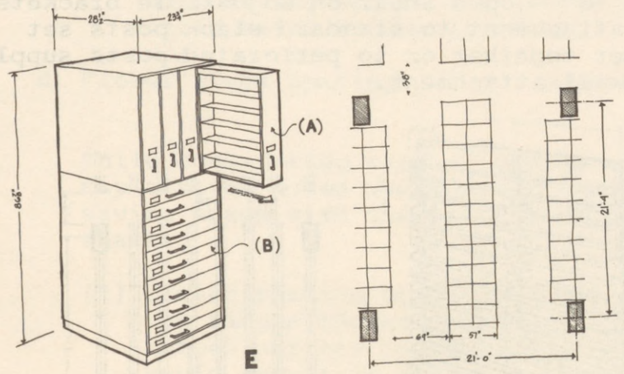
3) Diagram VIII-A-3

Type "C" - welded unit of shelf for wall attachment. Type "D" for double face, attached to posts.



4) Diagram VIII-B-1

Type "E" - combination of two drawer type cases (A) & (B), installed in typical stack bay. This type used in figuring required areas. Example of (B) see Photo Diagram IV-B-18, Page 31.



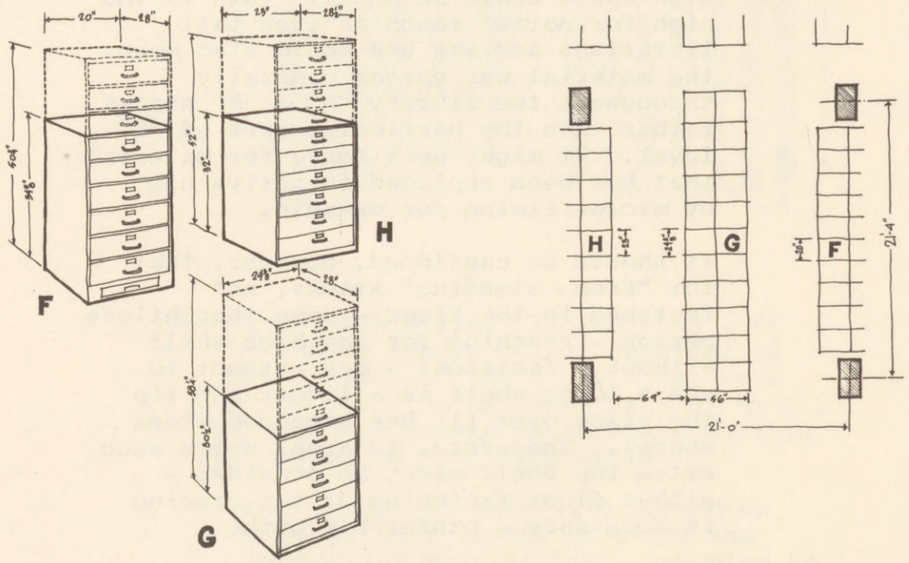
5) Diagram VIII-C-1, 2, and 3

a) Type "F" - sliding tray units

b) Type "G" - sliding tray units

c) Type "H" - sliding tray units

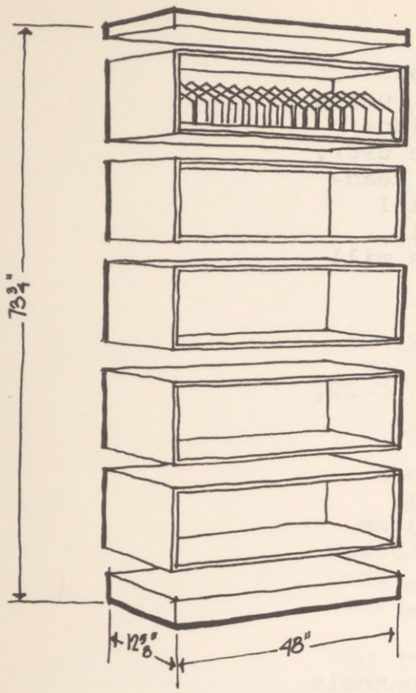
Note: In sliding tray unit observed in use - while designed for 4 rows per tray - 16 boxes deep - using library found depth of only 15 boxes practical to allow sufficient looseness so any box could be readily removed.



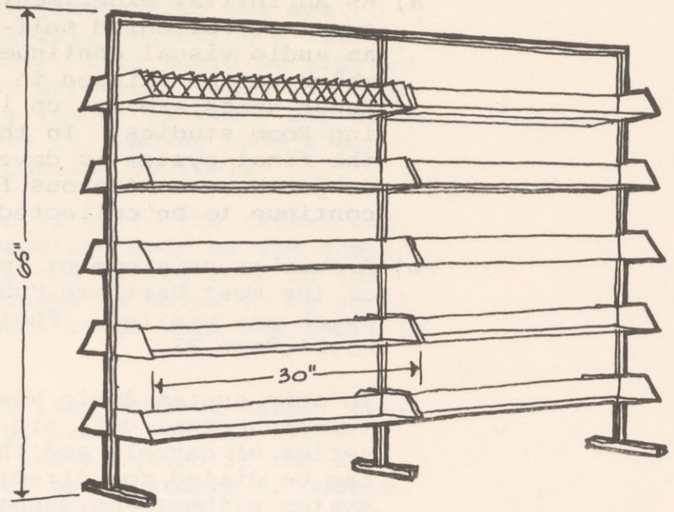
e. Accommodating Growth of Other Types of Information Storage.

1) Tape Storage - Input of Computer for Medlars is on punched paper tape - magnetic tapes are used to store the information available for retrieval. Diagram IX Page 47

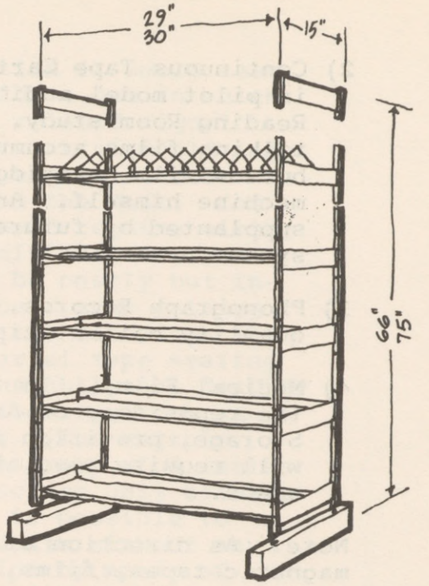
Currently stored in open shelves against wall. Future rate of accumulation to be estimated. Required amount of storage space not serious for present. Methods of storing diagram IX.



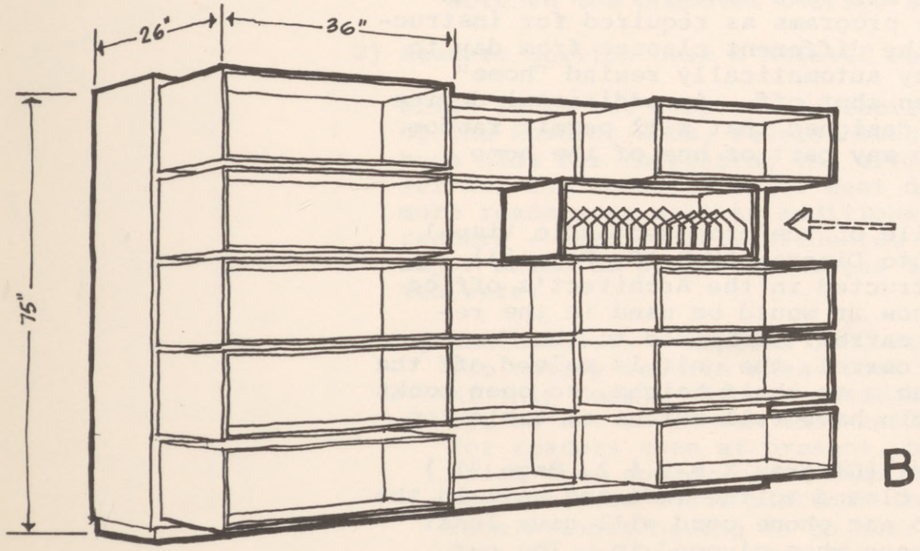
A



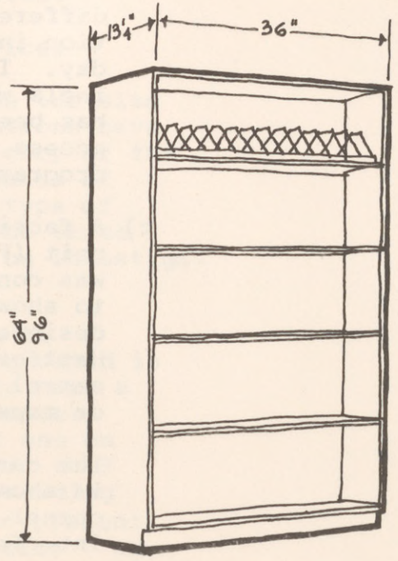
C



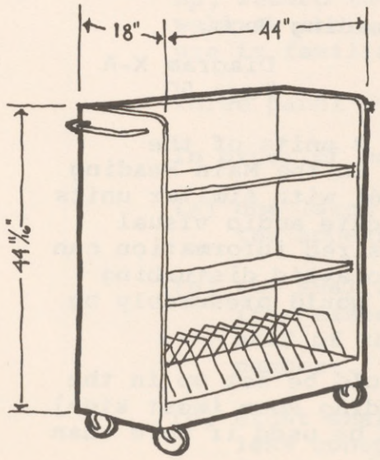
E



B

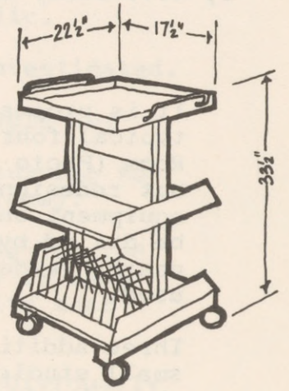


D



F

G



TAPE STORAGE UNITS

DIAGRAM IX

2) Continuous Tape Cartridges. Currently used in pilot model audio-visual equipment used in Reading Room study. Small collection of talking films accumulating. Reader can borrow film cartridge at desk and insert in machine himself. Anticipate will be supplanted by future dial access central system.

3) Phonograph Records. Accumulation in spacial quantity not anticipated.

4) Medical Films. In the event the NLM becomes the repository of Archival Medical Film Storage, provision for taped film storage will require special study as well as vault space.

Note: As direction of future growth in use of magnetic tapes, films, disks, etc., often in plastic containers, becomes more definite - for reasons of fire safety storage on open shelves - as at present - should not continue. The problems of segregation into vaults, fire extinguishing system, alarms, etc. will require detailed study not only to meet the safety problems, but that of planning so efficiency of operation of library will not be adversely affected.

f. Main Reading Room - Improvements - Diagram X

1) A.V. Study Carrels Main Reading Room.

Diagram X-A
Page 50

It is proposed to replace 2 units of the typical four carrel units in the Main Reading Room (Photo Diagram IV-A-6) with similar units but redesigned to accommodate audio visual equipment on which the desired information can be dialed by the user. To avoid disturbing nearby readers, earphones would presumably be used.

Three additional units would be set up in the small studies off the Reading Room (west side) where loud speakers could be used if more than one listener.

a) As an initial experiment, the N.L.M. has acquired Fairchild self-contained units using an audio visual continuous film cartridge which can be slipped in and out by the user. These units are set up in the present Reading Room studies. In the interim, until the final system is developed, medical subjects on continuous film cartridges will continue to be collected.

b) A further development is the pilot project of the West Hartford Public School System which was visited. Photo - Diagram IV-C-22, 23,24,Page 32.

In this system Audio Visual units with a telephone type dial are installed in a series of carrels and the desired program can be dialed for directly from the storage system without any manual assistance. The same dial system serves the large T.V. set in the classroom.

At present they have 8 Audio-Visual channels and 16 audio only, in the system. These channels, including educational subjects from "the air" are manually set up with different programs as required for instruction in the different classes from day to day. They automatically rewind "home" reels when shut off. An additional device has been designed that will permit random access to any part of one of the home programs.

c) A facsimile of the proposed Audio Visual unit (Photo Diagram IV-B-13, Page 31) was constructed in the Architect's office to show how it would be used in the redesigned carrel. Compared to the West Hartford carrel, the unit is raised off the carrel table to shelf height, so open books or maps can have full extent of table top.

The carrel (Diagram X-B-1 & 2, Page 51) is shown closed to the left and unit in the corner so ear phone cord will give least interference when plugged in. The ear phone could be signed for at the desk and plugged in by the user.

The A.V. panel is shown with the seat number of the carrel, including a tell-tale signal light. This would be lighted from the desk by wire-less when the book asked for by the reader is ready for pick-up. (Other seats in reading room would have similar signaling device).

The set is shown fixed to the carrel but it could be a separate unit on the shelf and plugged into the wiring core in the center, if equipment is found to be still in the development stage when new facility opens.

It will be noted the proposed carrel continues the use of small tables. This permits similar installation if the same size is to be set up in single or double units elsewhere in the stack or the new Annex.

d) The eventual A.V. unit would be connected to the proposed Graphic Image Storage & Retrieval System, in this case utilized as a "console" type access to material available in the computer storage system.

2) Readers Service Desk & Related Services

While it is not proposed to increase the size of the Reading Room, several suggestions have been made for increasing the efficiency of the service and supervision to meet demands of more readers as well as additional type of readers - particularly students. The three major areas of proposed changes to be investigated were:

a) Annunciators - Diagram X-B, Page 51 (to notify readers where book requested is at this desk). It was desired to have a system not only with more call numbers for readers than at present, but one on which they could see or hear their call numbers from their place in the reading room without having to go over to present unit at the Desk - from time to time - or waiting in front of it. Various systems for notifying the reader at his numbered place such as by buzzer, signal light, T.V. screen, or other means as well as conventional panels were also considered.

(1) From this investigation it would seem the best system would be one in which the seat numbers or related signal light at the desk or carrel would light up when the readers requested book was ready, by signal from the desk. Conventional methods would require wiring extending to the individual seats. This would not only be costly but installing the wire would mean cutting into the floors for the conduit. The connection to the carrel type seating would not only be unsightly but destroy the flexibility of locating them as pieces of furniture. (The carrels units are actually a group of 4 tables with a demountable screen unit between them). However, it is possible to achieve the same results without any direct wire connection by means of a wireless transmitter. While the most costly because of the equipment - it would be the easiest to install, and the most convenient to the reader. Any possible influence on computer consoles would have to be checked with the computer manufacturer.

(2) Of the other systems, one using a panel or panels with call number of reader illuminated until the book is picked up, seemed the simplest to install, as well as the most economical. Their use is familiar to the public.

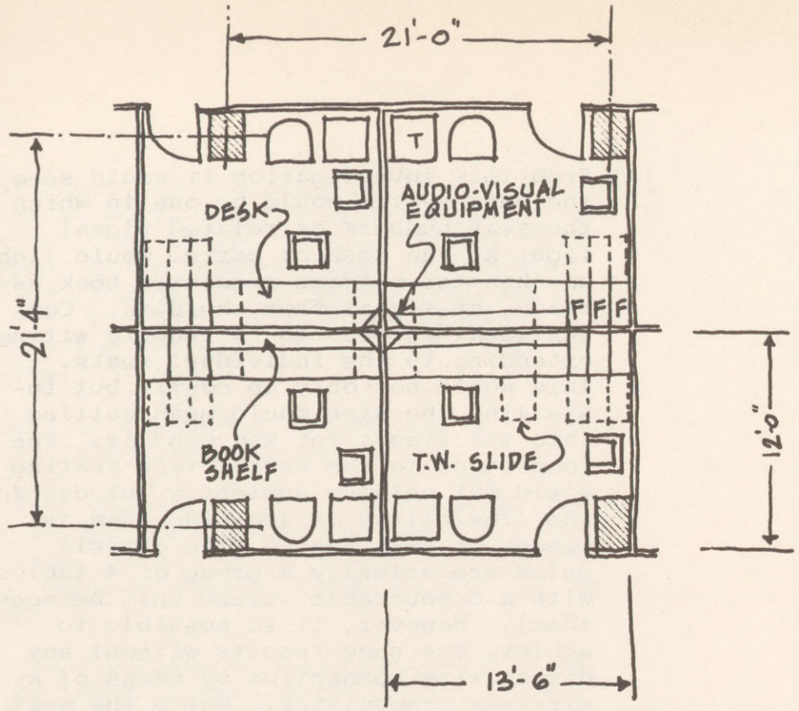
Three panel systems were investigated.

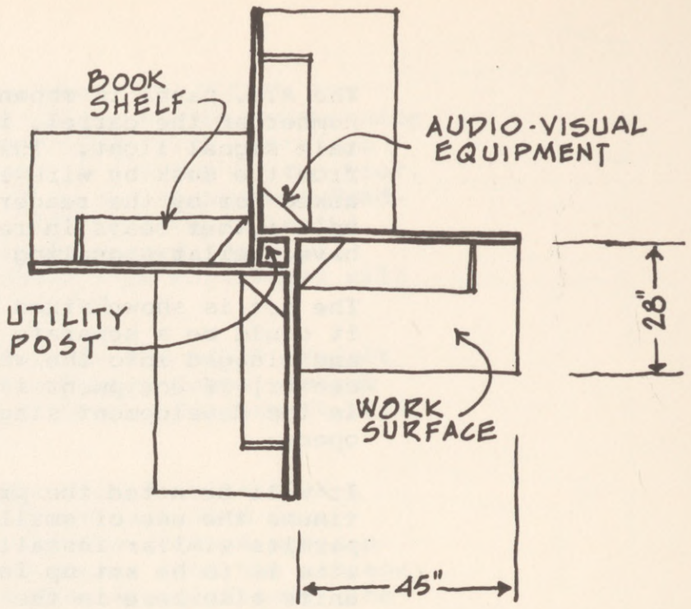
In order of economy they would be:

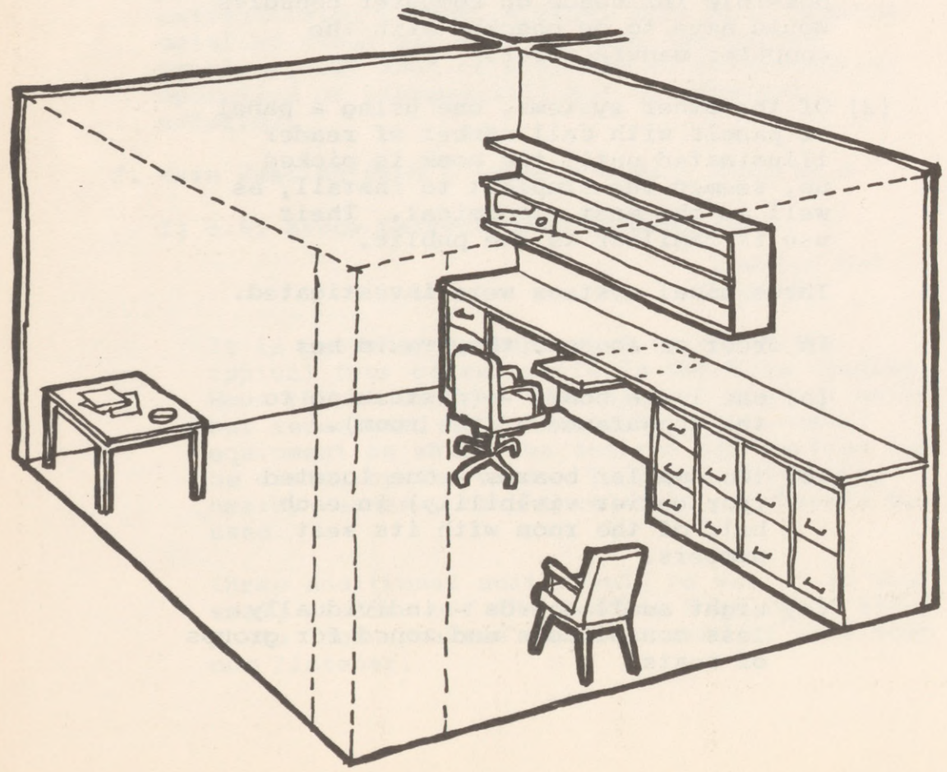
(a) one large board - (disturbing to the appearance of the room).

(b) two smaller boards - one located (for easier visibility) in each half of the room with its seat numbers.

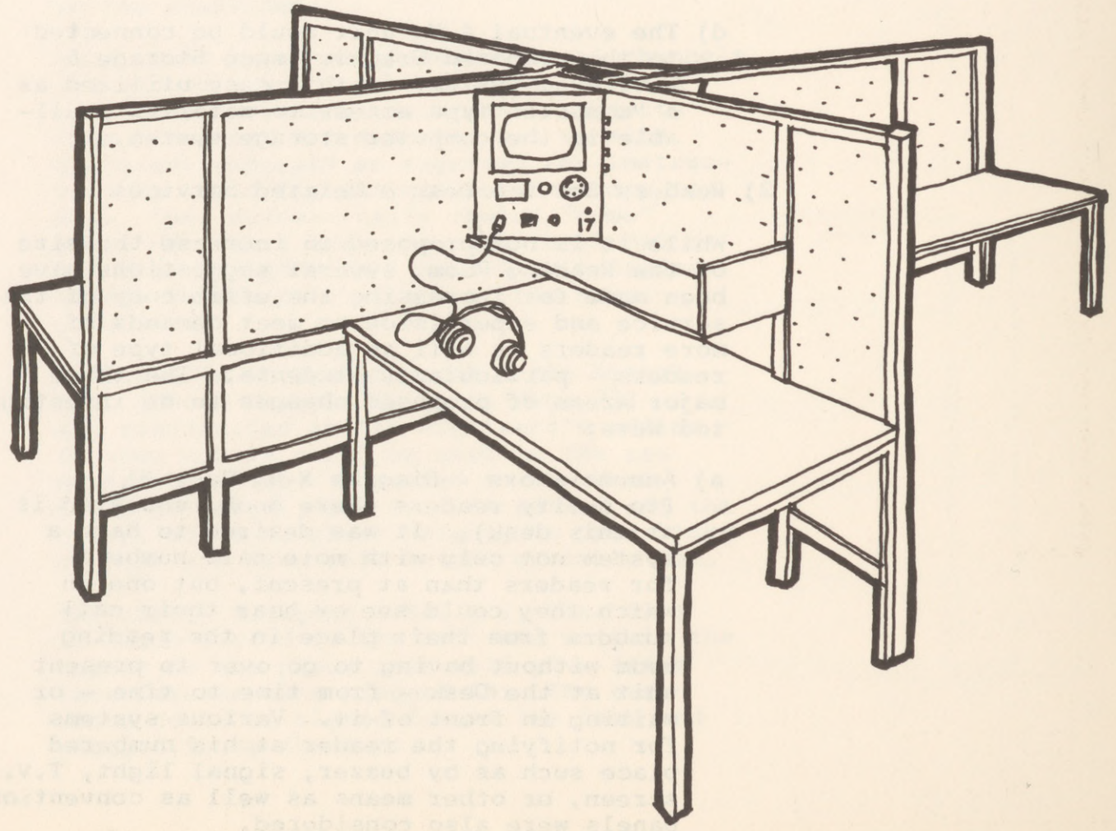
(c) eight small boards - individually less conspicuous and zoned for groups of seats.







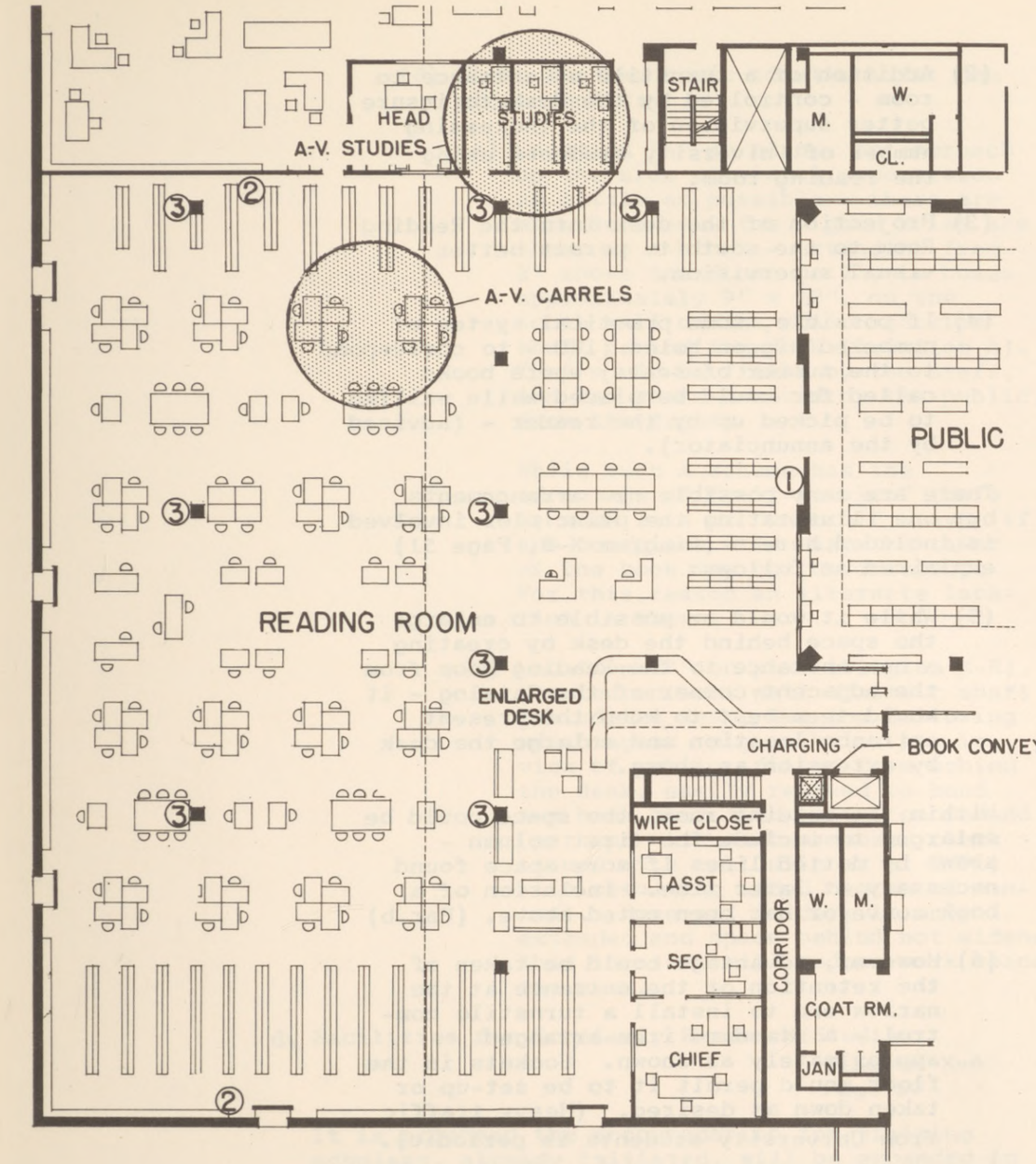
SCHOLAR'S RESEARCH STUDY

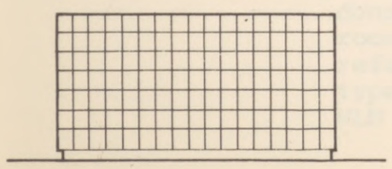


AUDIO-VISUAL STUDY CARREL

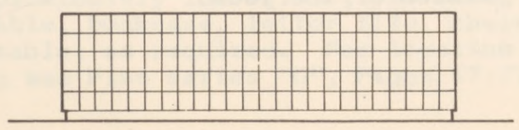
X-A

PLAN ① ② ③ INDICATE ANNUNCIATOR PANELS





120 PIGEON HOLES AT A

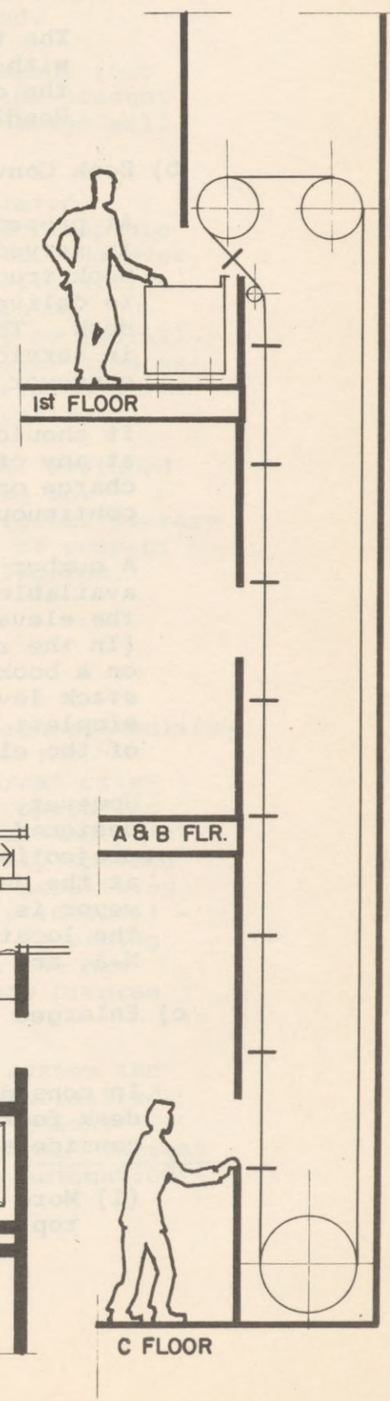


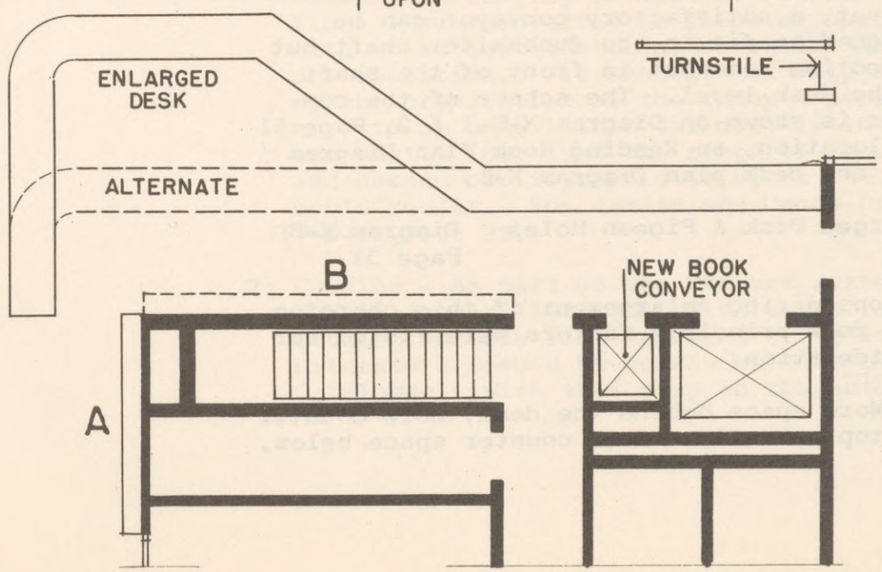
ALTERNATE LOCATION AT B

ANNUNCIATOR TABLE

	TYPE	DESCRIPTION
1	120 STATIONS - WIRELESS	SMALL JEWEL LIGHT INSTAL-LED ON APRON QF EACH READER STATION TABLE
2	① 1 BOARD	SOLID-WIRED, LOCATED FOR TOTAL VISIBILITY
3	② 2 BOARDS	SOLID-WIRED EACH BOARD ZONED AND LOCATED FOR 1/2 POPULATION OF ROOM
4	③ 8 BOARDS	MUCH SMALLER BOARDS
5	120 IND. LGT. SIGNALS-WIRED	SAME AS NO. 1
6	120 IND. LGT. & SOUND SIG.-WIRED	SMALL EWEL LIGHT INSTAL-LED ON APRON OF EACH READER - STATION. SMALL BUZZER AT ONSET
7	120 IND. LGT. & SOUND AND ACK-NOWLEGMENT BUTTON-WIRED	SAME AS 4 & 5 PLUS SIGNAL KEY TO ACKNOWLEGE RECEIPT OF PAGE SIGNAL
8	CLOSED CIRCUIT T.V. (W/NUMBER GENERATOR) TO 1 BOARD	SAME AS 1, BUT ONLY 1 PAGE SIGNAL AT A TIME NUMBERS WOULD HAVE TO BE ROTATED IN SEQUENCE UNTIL ACTED UPON

BOOK CONVEYOR





MAIN READING ROOM IMPROVEMENTS

X-B

The different systems are summarized and compared on schedule No. 5.

The three different "panel" systems with illuminated numbers operated from the desk - are shown by symbols on "F", Reading Room plan - Diagram X-A.

b) Book Conveyor

At present the Reading Room charging desk is served by a small stack elevator for book trucks and personnel and a book-lift to deliver books from the stacks to the desk. This latter is found to be too slow in service with present demands and a book conveyor is desired.

It should be of a type that could be loaded at any of the three stack levels but discharge only at the first floor desk - in a continuous operation - with no waiting.

A number of book-conveyors are commercially available but would require the space of the elevator which cannot be sacrificed. (In the return of books - accumulating them on a book truck designated for a particular stack level or area of stack is still the simplest way, plus retaining the convenience of the elevator for service personnel).

However, a satisfactory conveyor can be designed to fit in the dumbwaiter shaft but projecting somewhat in front of the shaft at the desk level. The scheme of the conveyor is shown on Diagram X-B-1 & 2, Page 51 the location, on Reading Room Plan Diagram X-A, and desk plan Diagram X-B.

c) Enlarged Desk & Pigeon Holes Diagram X-B Page 51

In considering enlargement of this charging desk four principle factors were listed for consideration:

(1) More space behind the desk, more counter top as well as more counter space below.

(2) Addition of a turnstile at entrance to room - controlled by the desk to insure better supervision of the increasing number of University students using the reading room.

(3) Projection of the desk into the Reading Room to the south to permit better visual supervision.

(4) If possible, some practical system of numbered pigeon holes (120 - to correspond to the number of seats) where books called for could be placed while waiting to be picked up by the reader - (advised by the annunciator).

There are many possible new arrangements but one illustrating the principles involved is included herein (Diagram X-B, Page 51) explained as follows:

(5) While it would be possible to enlarge the space behind the desk by creating a new entrance to the Reading Room from the adjacent corner of the Catalog - it would seem best to keep the present entrance location and enlarge the desk by extension as shown.

Within the reading room, the space could be enlarged to include the first column - shown by dotted lines if more space found necessary at later time. Inclusion of a book conveyor has been noted above. (Par.b)

(6) However, advantage could be taken of the retention of the entrance at the narrow end to install a turnstile control - a standard item-arranged approximately as shown. Sockets in the floor would permit it to be set-up or taken down as desired. (Heavy traffic from University students is periodic).

(7) Projecting into the room beyond the fixed stair and wire closet shaft will permit greatly increased visual supervision of the room.

(8) There are two basic solutions for the pigeon holes:

(a) Location "A" on plan. To encroach on the area of visual supervision as little as possible - there are many schemes - the pigeon holes are shown as a block - extending from 2' above the floor to 7', in boxes approximately 9" x 12", on the south wall of the stair and wire shaft behind the desk (location A). They would be filled by the staff, and the books removed by the public, from the front.

While such a scheme has the advantage of "self-service" there is some loss of "control" - even if sub-conscious - in that the taker of the book may not be observed. For this reason an alternate location is shown.

(b) Location "B" on plan (Diagram X-E). Located on West wall of stair shaft behind the desk, has the following advantages: pigeon holes are in view of public, filled from behind the desk, easily reached to hand any book over the counter on demand - (perhaps with seat numbered check issued with call slip as at NYPL) with resulting added degree of control. However, if desk is only extended and space behind not widened - this location will reduce work space too much.

d. Facilities for Scholarly Research Studies

Diagram X-A
Page 50

It is proposed the accommodation for visiting scholars, already initiated, will be expanded in the new facilities as well as in the stack areas and located as most convenient for the work to be done. These would be in the form of small private rooms of approximately 130 sq.ft., providing desk, reference table, bookcase, letter file, chairs, typewriter table, as required. For location in NLM Building see Plan series "G", Pages 67-71.

These studies could also be wired for use of dial access audio-visual equipment as automated storage and access system is developed.

e. Reconversion to originally planned useage (See Plan "E"-2, Page 23) - To reconvert the present NLM Bldg. to its originally planned useage will require:

1) Relocation of the computer and related activities to the new structure to recapture the space for the basic departments. However, the "second-generation" computer will arrive before new space is ready and "phasing" out. There would seem to be a way of installing the new equipment in same general area as the existing equipment because there is still sufficient "raised floor" space available.

2) Recovery of as much of the original assigned stacks spaces as possible by moving out departmental space not part of original library useage and including installation of compact storage system for 25% of the collection.

2. Graphic Image Storage and Retrieval

a. Background Information

1) Bibliography - With the introduction of Medlars- the long published Index Medicus - the monthly cataloging of Medical Journal citations - was converted to computer operation with an automated storage-retrieval and print-out operation. Its success not only speeded up the preparation of the Index - permitting more to be done within the monthly interval - but vastly increased the range of recurring and demand bibliographic services the NLM could render. For sample see Photo Diagram IV-D-20, Page 33.

2) Catalog - As part of the Medlars system the NLM in January 1966 initiated a centralized catalog service for the field of Medical Literature issued bi-weekly as the NLM Current Catalogue. With this step in the automation

of the catalog under way (and eventual linkage with a national system) the information service of the NLM will eventually not only be greatly facilitated and its capabilites expanded but through such methods as tape copies it will greatly assist the improvement of Medical libraries throughout the country.

3) Processing - With the automated catalog the technical services themselves - the selection acquisition - circulation control, etc. of books can be improved and advanced. For example of daily circulation control by library with automated cataloging see example - Photo Diagram IV-D-30,Page 33.

4) Information - With the world's largest collection of bio-medical literature and means of access to it increasing so rapidly the pressure on the service of providing information is great.

   At present, on receipt of a request - personnel of the library make the search - locate the article - find the appropriate volume in the stack and bring it to the end of the range. At this point the highly developed mechanical processes of the library come into action - the mobile camera (Photo Diagram IV-A-7, Page 30) comes to the end of the range - the article is microfilmed - the film developed - photo enlarged by high speed Xerox process into a folder which already includes address of the inquirer and the answer is on its way back in as short a time as 48 hours. The actual time of mechanical processing of item is a matter of minutes.

b. Future - Obviously, if the service of furnishing of information is to keep up with the improvements and expansion of catalog and bibliographic services, the computer must be harnessed to this service as well. In contrast to the current Medlars system which transcribes information to a machine readable language by means of punch tape typewriters, (Photo-Diagram IV-A-8, Page 30) the new service calls for some way of reproducing the printed page with its drawing, diagrams, pictures, etc. in such a way it can be utilized in computer operation to achieve the necessary speed. Such a system is referred to as the Graphic Image Storage & Retrieval System. The problem of the moment is not how to do it - but how to do it practically on a large scale. We read of current computer operations of the storage capacities of billions of "bits", which may be millions of pages which are only thousands of volumes. The NLM may look forward to perhaps the equivalent of 2,000,000 volumes - the Library of Congress many times more.

c. Initial steps - Before material of such a diversity of format, size, and shape as books and journals, etc. can be fed into a machine, they must first be transferred to a common, reproducible form of record. The best method for library purposes today is micro-film. This has reached a high state of development over a long period of years and is widely used for copying unique documents, preservation, space saving, etc., and a great deal of material today is available on micro-film for example - the daily edition of the New York Times.

   The NLM already has the micro-record equipment and a large copying program under way, both in desemination of information and also in the preservation program.

d. Basic Requirements - Recording of required documents on micro-film - These are stored on reels in uniform boxes and filed with an identifying system in steel drawer cases. With the film available - it can be used for many purposes - as duplication, positive film, or slides - operative cards (adapted to handling in punch card system) micro prints or conversion to video tapes, etc.

e. Storage & Retrieval System

   1) Hartford System - The West Hartford School System pilot project illustrated in Photo Diagram IV-C-22,23,& 24,Page 32 illustrated a method where any moving pictures, film strips, slides, with sound tracks, and A.V. tape "in the store" may be made available to student

or teacher by dialing the appropriate number. The system works but its automatic capacity is limited to the number of individual machines and their storage capacity, such as a reel of film or a magazine of slides. For school purposes the appropriate material is set up in advance by programing. For certain aspects of limited library purposes such a system will have its use but is obviously too limited in capacity for general use.

2) Micro-film & Image Handling equipment - While micro-film has the satisfactory "resolution" required for reduction of lines or figures to a minute scale the silver halide emulsion requires a chemical development which is not adapted to the high speeds of the automated process. With the invention of the Kalvar process a method of producing an image by exposure by light and developing by exposure to heat - no intervening chemical & dark room process with its difficulties - the way is open to automation.

   Introducing the basic reel of microfilm into the machine it can be projected onto the new film at still further reduction at the same time recording, in conjunction with the image, the coding or identification necessary for identifying or locating the particular image by machine. This process can take place at a high speed. This new film-tape is the one handled in the storage & retrieval system. The original microfilm can be refiled as a "security" copy in case of damage to the active film.

3) Systems adaptable to library purposes.

   a) Aperture card - One system highly developed for business purposes is to mount copies of one or more individual items on micro-film in cards with apertures or windows for one or more of them. On standard cards this method is adapted to punch cards or other sorting and filing systems. Since its capacity in items is limited it again might have special purposes but not the overall storage purpose of a library where any document, however long - like a book - should be capable of record. Of course successive cards may be used.

      The system may be useful for the "print-out", the form the requested information may be furnished from the computer operation - useable in many ways.

   b) Continuous Image Micro-film Card - Special Mylar or Acetate film card which permits entire area of card to photo-record image or indexing - developed especially for recording of larger drawings - it will take a great number of page size images - in one case of court records - 224 pages on one 5 x 8 stock card. This material is also more durable than cardboard and can be used in tabulating machines. The capacity might be too small for monographs, but would be suitable for journals.

   c) Current development for complete systems of storage and retrieval micro-image forms are in two basic directions - associated with the method of indexing:

      (1) An image with associated indexing information for machine searching.

      (2) An image at a specific address without any indexing information associated with the image.

      The image may be stored on one of the types of available film or on video tape (adequate system not yet developed).

      Two of the micro-film unit record systems begin to approach the problem of large scale storage capacity.

   d) Minicard System - In this system the original 35 m/m micro-film is photographed onto second film - at a further reduction of the image which permits indexing data from punched tape input to be recorded with the

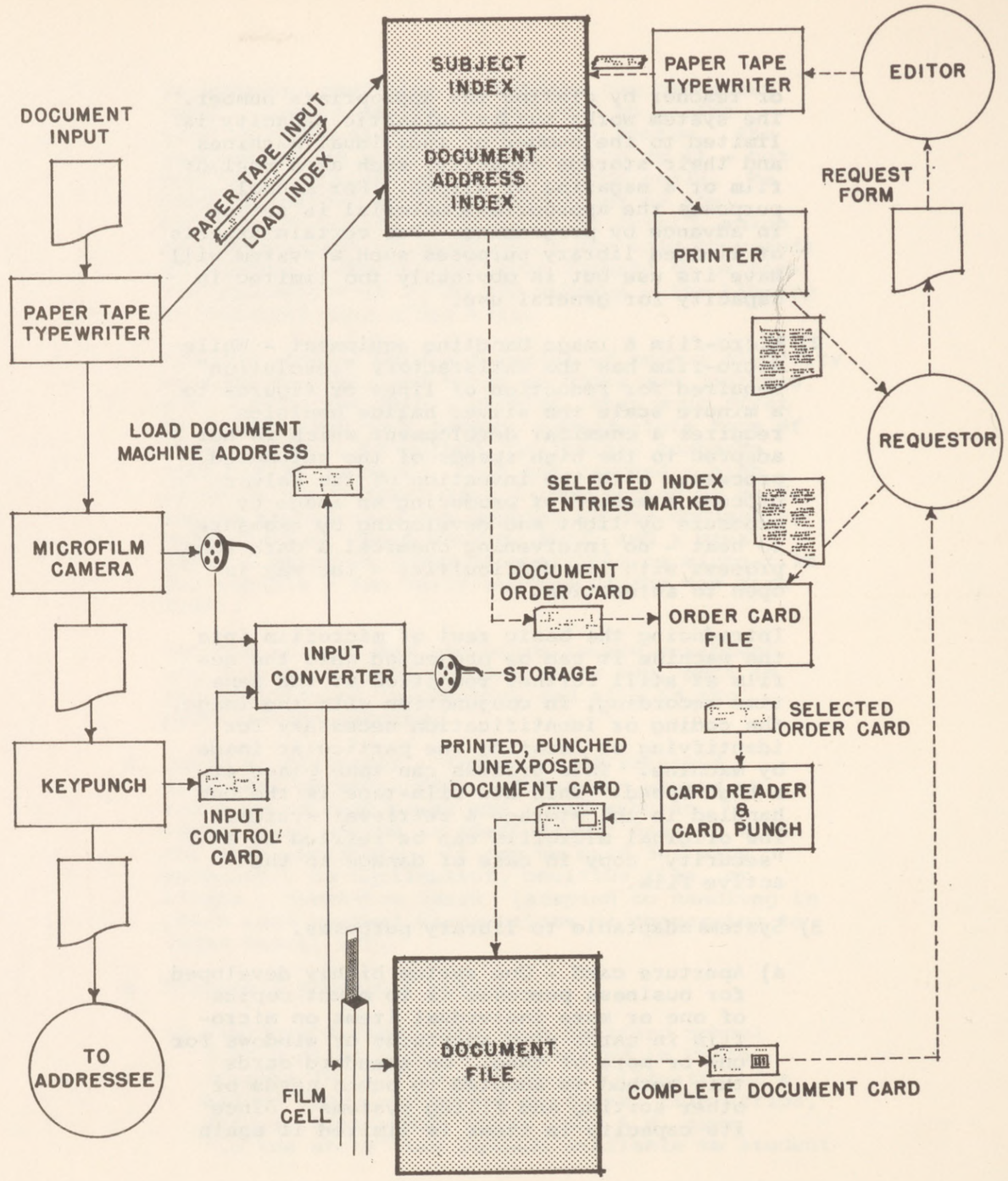
particular image. The unit record is a piece of film 16 x 32 m/m which will hold up to 12 standard pages or 6 pages with 210 code characters on the same chip. The chips are obtained by chopping up the recording film with a film cutter that cuts and stores in magazines at the rate of 2000 chips in four minutes.

File searching is done at a rate of 1200 chips a minute - the question statement supplied on punched tape. From the required chip a third generation negative is obtained which may be viewed, copied, or used to produce a full size print by standard available machines.

The system has been in operation for special government purposes since 1958 but has limited application because of extremely high cost. While it has the capacity for a large number of individual documents, it is understood that translated into equivalent of volumes it is only about 1500 - still no where near enough.

e) Walnut - Code name for complex, mechanized micro-image storage and retrieval system. Following further reduction and recording on second generation film from the micro-film original - without coded information but with address in system. Recording film is cut into strips of 99 images, stored in plastic cells of 50 strips each. The cells are arranged in a tub or bin from which a mechanical device can select any film strip. (Photo Diagram IV-B-14, Page 31).

The input can be by punched tape and the random access selection equipment can locate desired image in less than 5 seconds and produce aperture card records at a rate of 500 cards per hour. Operation illustrated by Diagram XIA and XIB, adjacent. Several of these systems have been in operation.



"WALNUT" XI-A

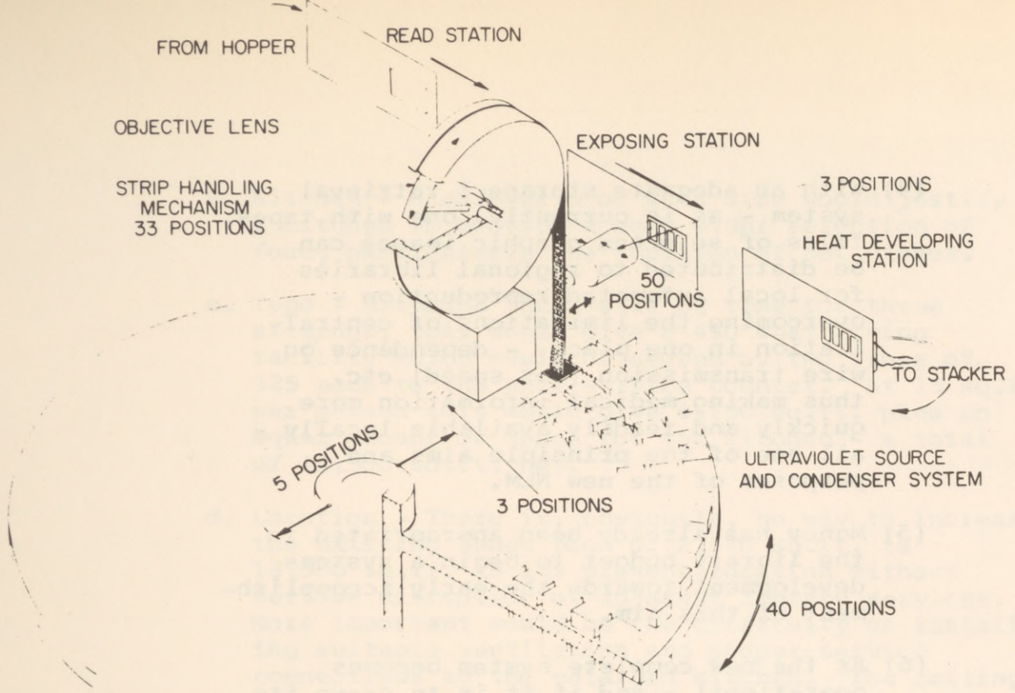


IMAGE FILE, SHOWING BIN, CELL, ACCESS MECHANISM, ULTRAVIOLET OPTICAL SYSTEM AND PHOTOAPERTURE CARD

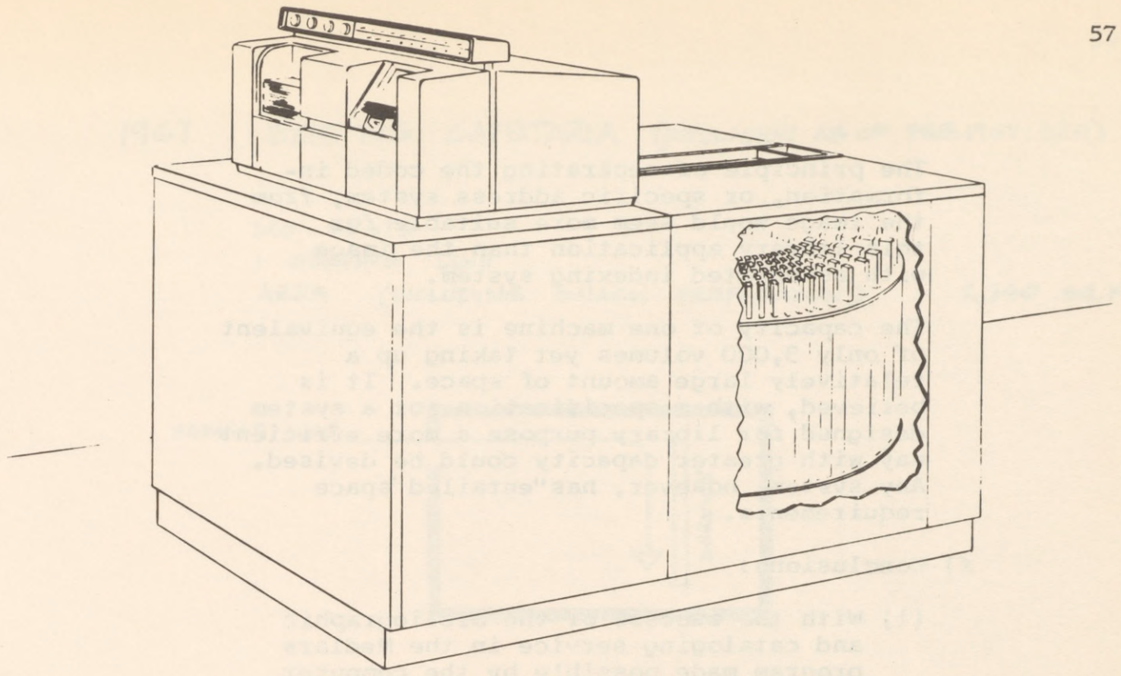


IMAGE FILE: OVERALL PERSPECTIVE SHOWING CUTAWAY TO IMAGE STORAGE BIN

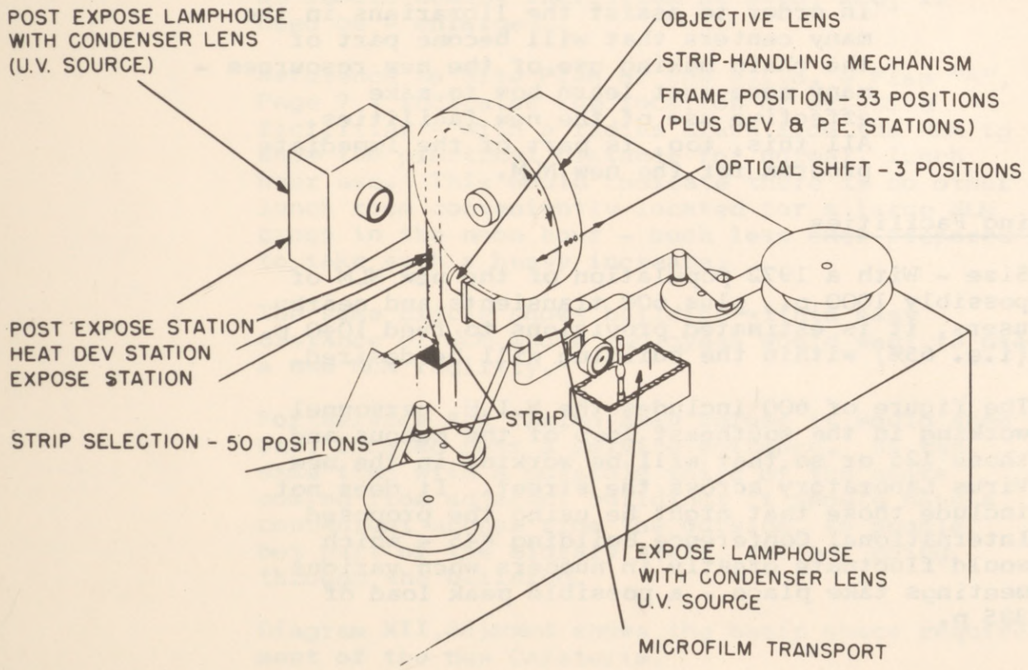


IMAGE CONVERTER: TOP DECK SHOWING MICROFILM DRIVE MECHANISM, STRIP SELECTION AND PICKUP MECHANISM, OPTICAL SYSTEM, AND FILM STRIP

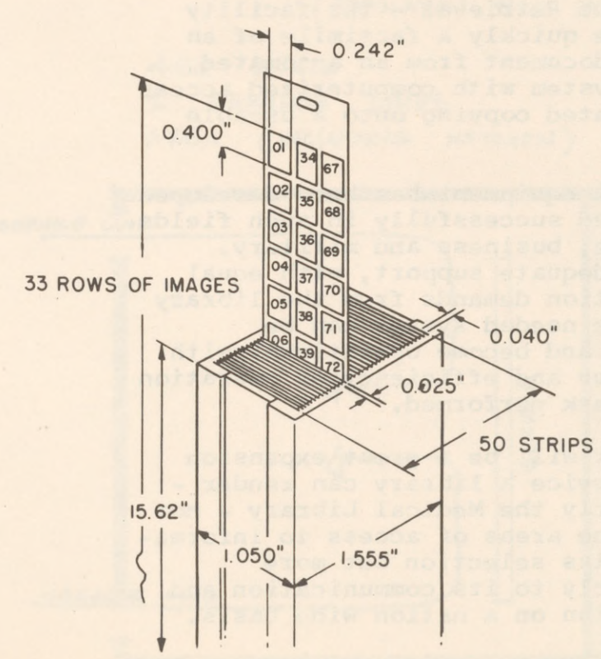


IMAGE FILE CELL, SHOWING FILM STRIP AND IMAGE CONFIGURATION

The principle of separating the coded information, or specific address system, from the image would seem more suitable for this library application than the image with associated indexing system.

The capacity of one machine is the equivalent of only 3,000 volumes yet taking up a relatively large amount of space. It is believed, with a specification for a system designed for library purpose a more efficient way with greater capacity could be devised. Any system, however, has"entailed"space requirements.

f) Conclusions:

(1) With the success of the bibliographic and cataloging service in the Medlars program made possible by the computer and the already high state of the developments in micro-recording the pressure is already on the NLM for comparable services in Graphic Image Storage and Retrieval - the facility to produce quickly a facsimile of an original document from an automated storage system with computerized access and automated copying onto a useable form.

(2) Purposeful equipment has been developed and applied successfully in such fields as science, business and military. Granted adequate support, with equal specification demands from the library field, the needed system can be developed and become operational with due economy and efficiency of operation for the task performed.

(3) The result will be a great expansion of the service a library can render - particularly the Medical Library - not only in the areas of access to information and its selection but more particularly to its communication and distribution on a nation wide basis.

(4) With an adequate storage & retrieval system - as is currently done with tapes, files of selected graphic images can be distributed to regional libraries for local automated reproduction - overcoming the limitations of centralization in one place - dependence on wire transmission (for speed) etc. thus making medical information more quickly and readily available locally - all one of the principle aims and purposes of the new NLM.

(5) Money has already been appropriated in the library budget to begin a systems development towards the early accomplishment of this aim.

(6) As the new complete system becomes operational - and if it is to serve its high purpose - many people must be trained to make effective use of the new library systems and equipment (there are almost none available today) - in order to assist the librarians in the many centers that will become part of the chain making use of the new resources - many more must learn how to make effective use of the new facilities. All this, too, is part of the immediate program for the new NLM.

3. Eating Facilities

a. Size - With a 1972 population of the new NLM of possibly 1000 p., plus 600 transients and nearby users, it is estimated provisions to feed 1040 p. (i.e. 65%) within the building will be desired.

The figure of 600 includes the N.I.H. personnel working in the southeast loop of the campus and those 125 or so that will be working in the new Virus Laboratory across the street. It does not include those that might be using the proposed International Conference Building #45 - which would fluctuate greatly in numbers when various meetings take place - a possible peak load of 385 p.

b. Kitchen - A cafeteria of this size would justify a kitchen to provide a much wider selection of food, particularly the addition of hot dishes.

c. Type - Assuming there will be time for three sittings, this would give a 450 seat dining facility which would be served by two lines of 225 each to the self service counter. At 15 sq.ft. per person this would give 6,750 sq.ft. plus an equal amount of space for the kitchen - a total of 13,500 sq.ft. net.

d. Location - There is, obviously, no way to increase the existing lunch room of 2,570 sq.ft. to 13,500 sq.ft. in its present location without serious disruption of adjacent library services. More important would be the difficulty of installing suitable ventilation and proper service connections to the enlarged kitchen. The ceiling heights are also comparatively low.

The question then arises whether the enlarged lunch room should be part of the new NLM facility or should nearby facilities be used, and, if need be - enlarged.

Reference to Site Plan of the N.I.H. - Plan "A", Page 7 - indicates the location of existing facilities - with a radius drawn from the NLM to show the practical distance for normal, lunch hour use. This would indicate there is no other lunch room conveniently located for a large NLM group in the noon hour - much less ones prepared to take such a heavy increase.

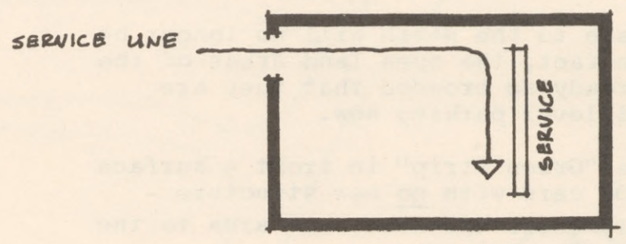
The same circle shows building within easy distance of NLM whose employees would want to use a new NLM facility.

For service and taking away refuse it would seem best located near a service entrance. At the same time with a possible third of the users coming from adjacent buildings it should have a convenient access from the outside, so people, not part of the Library staff, are not going through the building.

Diagram XII, Adjacent shows the basic space requirement of the new Cafeteria.

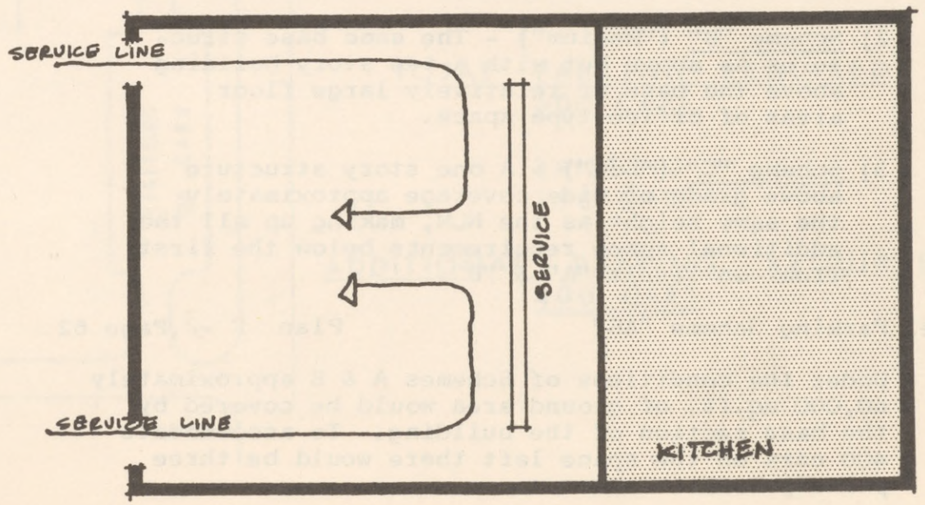
1967 EXISTING CAFETARIA (POPULATION AS OF FEB.1967: 320)

140 SEATS
1 SERVING LINE
AREA (INCLUDING SNACK PREPARATION) 2,740 SQ.FT.



1972 PROJECTED CAFETARIA
(POPULATION NLM 1000, OTHERS-600, TOTAL 1600)

450 SEATS
2 SERVING LINES
AREA (INCLUDING KITCHEN) 13,500 SQ. FT



SPACE REQUIREMENT NEW CAFETERIA

XII

4. Parking Facilities — Plan F-1,Page 61

a. At the rate of 6/car/employee (going up to 7) given by the N.I.H. for the anticipated number of employees - 600 parking spaces will be required for employees with the expanded program. With approximately 200 in the existing parking space - 400 additional will be required.

b. The N.I.H. space to the north will no longer be available - in fact, the open land areas of the N.I.H. are already so crowded that they are going to multi-level parking now.

c. Preserving the "Green Strip" in front - surface parking for 400 cars with no new structure - would virtually cover the available area to the south of the NLM by itself.

d. For the new structure three basic schemes are being analyzed in the respective section of the report. For the purposes of this parking analysis they may be summarized as follows:

1) Scheme "A" ("High") - Base structures at levels "A" & "B" of approximately 60,000 sq.ft. ground area - linking the old and the new with a super structure of 15 stories - containing the office space in relatively small or "tower" floor areas.

2) Scheme "B" ("Medium") - The same base structures as above but with a ten story building above the base of relatively large floor areas of office type space.

3) Scheme "C" ("Low") - A one story structure above grade of wide coverage approximately the same height as the NLM, making up all the additional space requirements below the first floor on levels "A" & "B".

e. Parking Scheme "AB" — Plan F-2,Page 62

Under the conditions of Schemes A & B approximately 60,000 sq.ft. of ground area would be covered by the base section of the building. To accommodate 400 cars on the space left there would be three principal alternatives:

1) Alternate #1 (See plan F-2, page 62)

a) At grade outside, or roofs of new parking structures south of new building

b) Inside multi-tier parking structure

c) On "C" level of new building

2) Alternate #2

a) At grade south of new building

b) Multi-tier parking under existing parking space - retaining present parking on roof

3) Alternate #3

a) At grade south of new building

b) Off-site

f. Discussion:

1) Even if parking garage space or space under building costs up to ten times as much per car as parking on grade - N.I.H. is already faced with multi-tier parking. To provide "on site" parking for the new NLM will also require multi-level parking facilities.

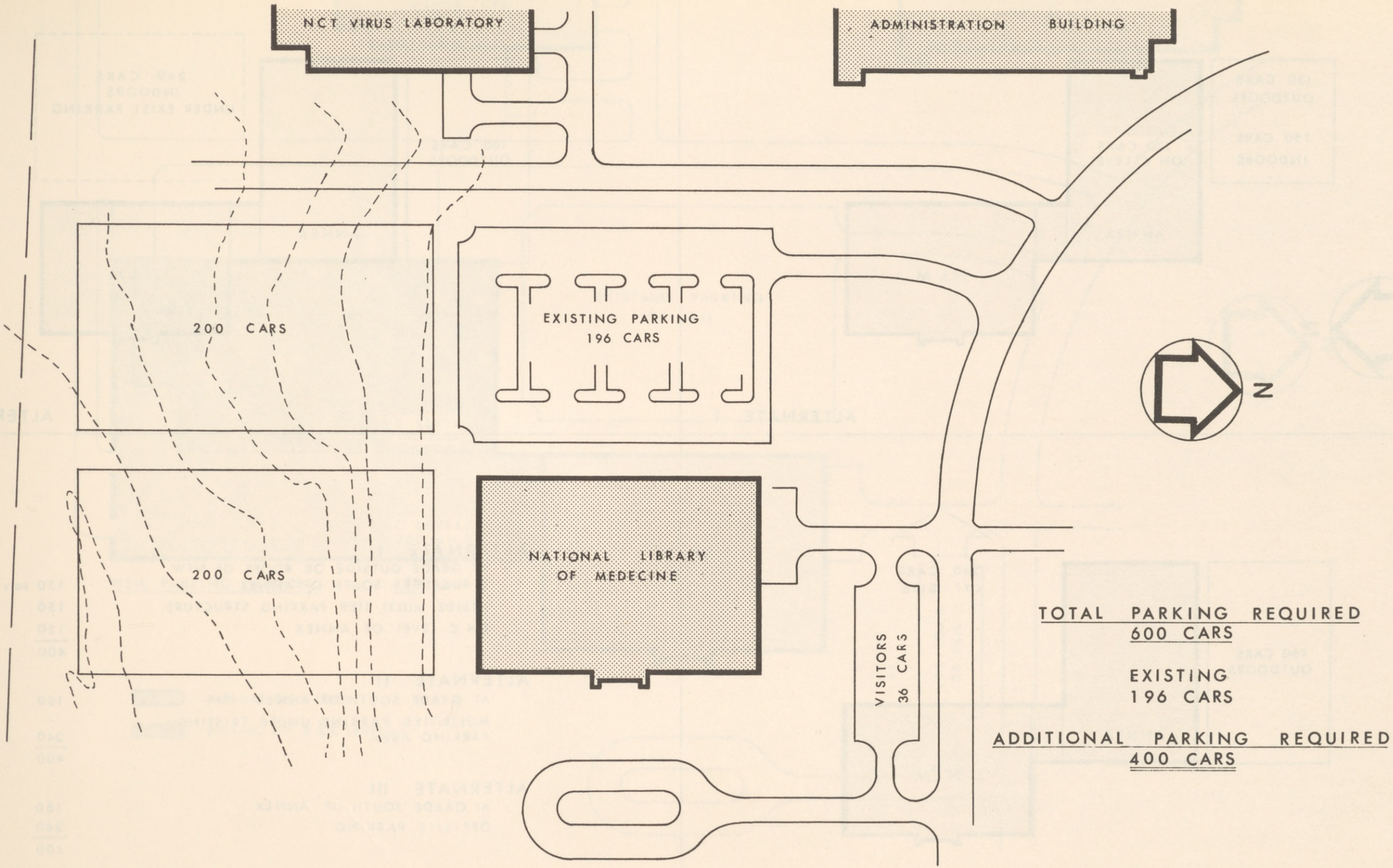
2) Multi-tier parking under the existing parking space on two or three levels plus ramps would:

a) deny use of this facility during construction,

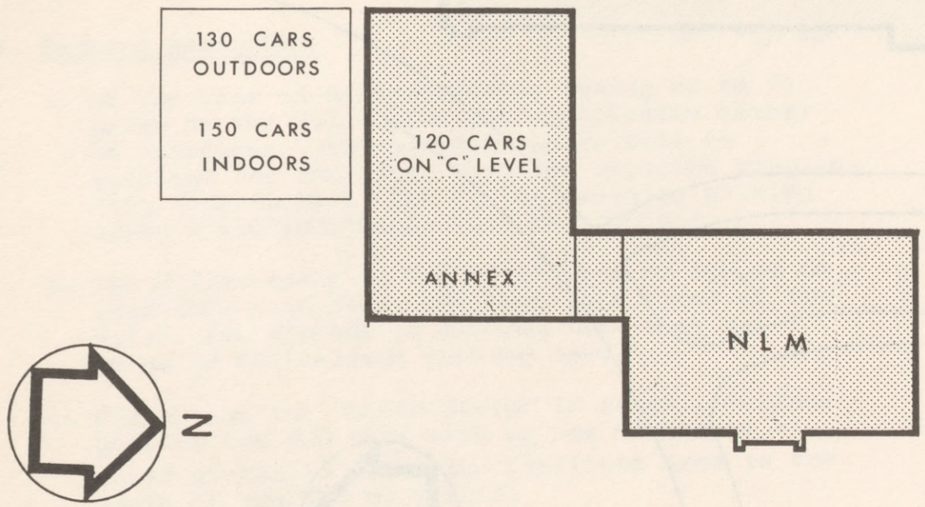
b) even if at present stack levels it would pre-determine type of stack space for the future which might have quite different requirements 20 years from now.

c) excavation of rock would cost as much as other alternates.

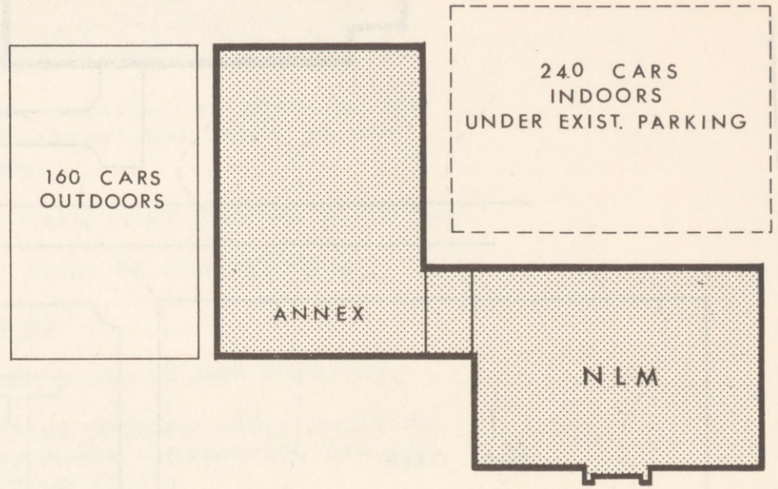
3) Under the circumstances, and until detailed planning of the project is authorized, it is assumed for this study 120 cars will be at "C" level under the building, 150 under cover in multi parking to the south and 130 in the open on the roofs off the multiple tier parking.



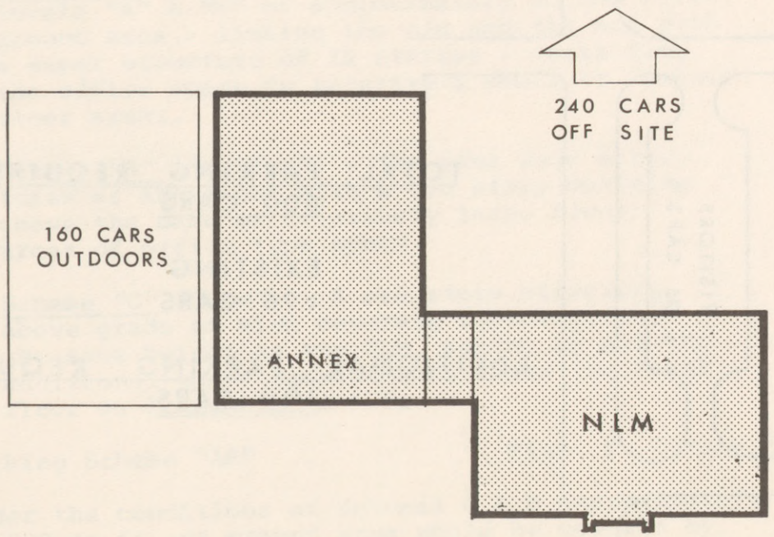
PARKING PROBLEM IF ON GRADE F-1



ALTERNATE I



ALTERNATE II



ALTERNATE III

ALTERNATE I

AT GRADE OUTSIDE OR ROOFS OF NEW STRUCTURES SOUTH OF ANNEX	130 cars
INSIDE MULTI-TIER PARKING STRUCTURE.	150
ON C LEVEL OF ANNEX	120
	400

ALTERNATE II

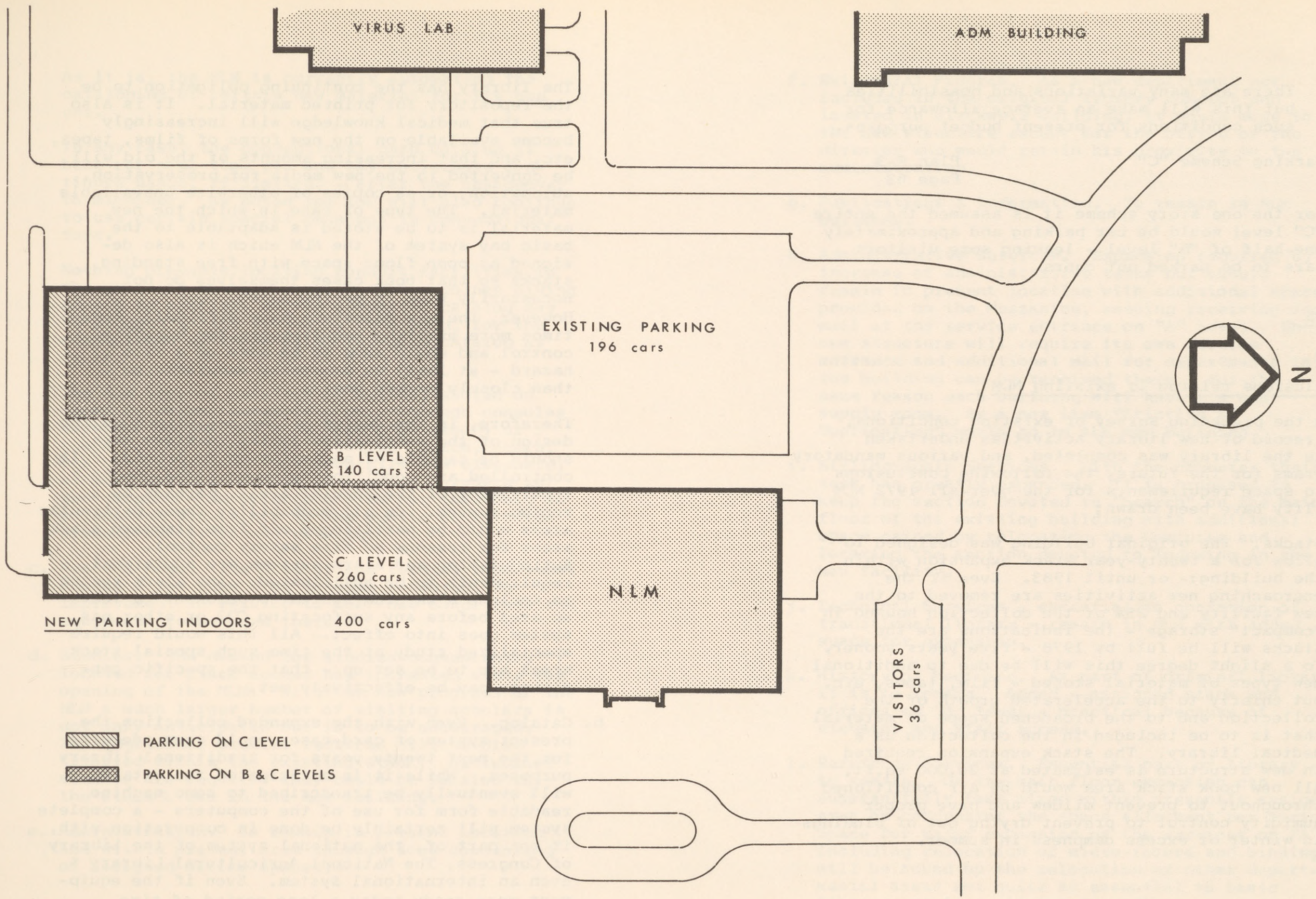
AT GRADE SOUTH OF ANNEX	160
MULTI-TIER PARKING UNDER EXISTING PARKING AREA.	240
	400

ALTERNATE III

AT GRADE SOUTH OF ANNEX	160
OFF-SITE PARKING	240
	400

0 50 100 150 200

PARKING SCHEME A B ALTERNATE SOLUTIONS F-2



PARKING SCHEME C F-3

There are many variations and possibilities but this will make an average allowance for such conditions for present budget purposes.

g. Parking Scheme "C" — Plan F-3 Page 63

For the one story scheme it is assumed the entire "C" level would be car parking and approximately one-half of "B" level - leaving some visitors cars to be parked out doors.

III. CONCLUSIONS

A. Program

1. Conclusions related to existing NLM

From the preceding survey of existing conditions, the record of new library activities undertaken since the library was completed, and various mandatory programs for the future, the following conclusions as to space requirements for the over-all 1972 NLM facility have been drawn:

a. Stacks. The original building was designed to allow for a twenty-year stack expansion within the building:- or until 1983. Even if the encroaching new activities are removed to the new facility and 25% of the collection housed in "compact" storage - the indications are the stacks will be full by 1978 - five years sooner. To a slight degree this will be due to additional new types of material stored - film, tapes, etc. but chiefly to the accelerated growth of the collection and to the broadened scope of material that is to be included in the collection as a medical library. The stack expansion required in new structure is estimated at 20,000 sq.ft. All new book stack area would be air conditioned throughout to prevent mildew and have proper humidity control to prevent drying out of bindings in winter or excess dampness in summer.

The library has the continuing obligation to be the repository for printed material. It is also true that medical knowledge will increasingly become available on the new forms of films, tapes, etc. and that increasing amounts of the old will be converted to the new media for preservation. automation, or as copies of otherwise unavailable material. The type of case in which the new material is to be stored is adaptable to the basic bay system of the NLM which is also designed as open floor space with free standing stacks so that book cases themselves do not necessarily have to be installed.
However, the new materials have difficult, sometimes more exacting requirements, for humidity control and would seem to be more of a fire hazard - at least as presently manufactured - than closely packed books.

Therefore, in the design of the new structure the design of the ventilation system in stack area should be capable of augmentation to provide fully controlled air conditioning to meet the specific requirement of the special areas, perhaps by a zoning system. In all probability these particular areas would be partitioned off from standard stack areas for reasons of fire safety control. Extinguishing and alarm systems are additional requirements to be anticipated - any alarm system to include a warning system to personnel to leave an area before any suffocating CO_2 or other gas system goes into effect. All this would require specialized study at the time such special stack areas are to be set up - that the specific conditions may be effectively met.

b. Catalog. Even with the expanded collection the present system of card-cases would seem adequate for the next twenty years for traditional library purposes. While it is anticipated the catalog will eventually be transcribed to some machine readable form for use of the computers - a complete system will certainly be done in cooperation with, if not part of, the national system of the Library of Congress, The National Agricultural Library & even an international system. Even if the equipment were ready today a long period of time will be required to develop and install a fully operational automated catalog.

As it is, the NLM is currently automating the cataloging of certain new material for its own use.

In any case, the conventional card catalog is here for some time yet and may anticipate continued usage, if limited, - after the changeover to machines. As noted the TSD will also continue to use certain special catalogs in conventional form.

Nothing prevents locating conduit facilities in the existing catalog room so that machines giving access to sections of the automated catalog may be plugged as the system is developed, for the convenience of those using the card catalog as it is.

The new type of catalog, of course, stored on tapes or disks, accessible only through consoles anywhere on the end of a wire ("on line") or space saving "book type" listing (which, again, can be distributed departmentally and elsewhere, as most useful) - could be located anywhere in the complex - in principle - rather than only in a location accessible to the public as with the present manual access catalog.

c. Reading Room. The size of the reading room seems adequate for some time to come - subject to improvement in service to meet new conditions and equipment to be used therein.

d. Studies. The demand for studies conveniently located for stack access has increased since the opening of the NLM. With the new programs of the NLM a much larger number of visiting scholars is not only anticipated but is to be encouraged. The additional studies required will be distributed within the existing stack. As further studies are required they could be located in the stack areas in the new building.

e. Administration. To remain in present location and within present area through some condensing of assigned office spaces.

f. Extramural Program. As a new department not included in the original library concept and located in Blackwell Building, it would move to the new structure except for the office of the director who would retain his proximity to the administration.

g. Publications & Information. To remain in NLM building.

h. Administrative Services. Expansion required by increase of administrative tasks but should remain in present location with additional space provided on the Mezzanine, keeping receiving and mail at the service entrance on "A" level. The new structure will require its own service entrance and additional mail for departments in the building can be received there. For the same reason each building will have its own supply room. As a new item "Printing & Duplicating" would go in the new building.

i. Bibliographic Services. With the computer their task has greatly expanded. It is proposed to keep the section devoted to "Search" on the main floor of the existing building with additional space gained by relocating the Computer and locating the section devoted to Indexing in the new facility.

j. Technical Services - essential to operation of traditional library - remain in NLM with added space for expansion.

k. History of Medicine. As part of original library it is to remain. Added - assigned stack and offices on "B" level - practical because of elevator and stair access.

l. Reference Services. Essential part of library - to remain. On the main floor expansion can substantially take place within presently assigned area by condensing the space allotment per person. Space for major expansion of the services on "A" including relocation of micro-record and binding - will be found by the relocation of other departmental areas not quite as essential to basic library services, as noted on diagram.

m. Information Services. As part of the computer activity Data Processing & Systems Analysts go to new structure with the computer.

n. Audio-Visual Receiver Station. New building.

o. Cafeteria. To new building - no room for expansion in NLM and will be more centrally located in the future complex.

p. Research & Development. New building.

q. Toxicology. New building.

2. Conclusions and Recommendations for Program

The conclusions and recommendations resulting from the above considerations have been depicted in the plans for the rehabilitated NLM - series "G", pages 67-71 and tabulated in the Program of Space Requirements as of 1972 in Schedule #2 on pages 72-73, indicating a total of 229,882, say 230,000 sq.ft. gross area of new construction. It does not include parking garage construction or "C" level parking, which will be required if all NLM parking is to be on the site (being sure to preserve the "green strip" - across all the N.I.H. site as seen from Wisconsin Avenue).

For budget purposes, this program should be augmented by the following items for the existing NLM building:

a. Rehabilitation, Repairs & Improvements - In reorganizing the existing NLM Building as a traditional medical library, the changes in the plans indicate the areas where alteration to the existing building will be required. The alteration, collectively will be the major part of the rehabilitation budget. In addition there are certain Repairs & Improvements called for which are to be included in the budget for 1972:

1) A.V. carrels (8), Modernize 3 studies for A.V. information access.

2) Allowance for installation of "compact" storage on "C" level.

3) Microfilm vault on "A" level.

3. Expansion Beyond 1987

The foregoing program is in anticipation of space requirements projected to 1987. The question then arises as to provision for the future on this site. As with the accumulation of knowledge it is characteristic of libraries that they continue to expand. The storage problem may well take new form for new materials but it will still require space. With the expanding population making increased demands and new services expected of librarians, the personnel will also increase.

a. Stack (or storage) space. As noted in the report, space for stack expansion has been reserved under the present parking space to the west. It would permit through connection at each existing stack level and of the same size as the maximum existing stack - say "C" level. With the probability of increasing use of micro-recording it should be enough for a lot more through the succeeding 20 years.

b. Personnel space. Immediately north of the present parking space there is one open area of land remaining. Too small for this project, it would be large enough for a high rise building as indicated on Photo Diagram IV-D-36 on page 33 At this time a utility tunnel runs between this site and the parking space - but its relocation would be justified if it meant connection or continuity of space with that which might be built under the parking space as noted before. A direct passage connection to "A" level is practical in the N.W. corner of the NLM without relocating the tunnel.

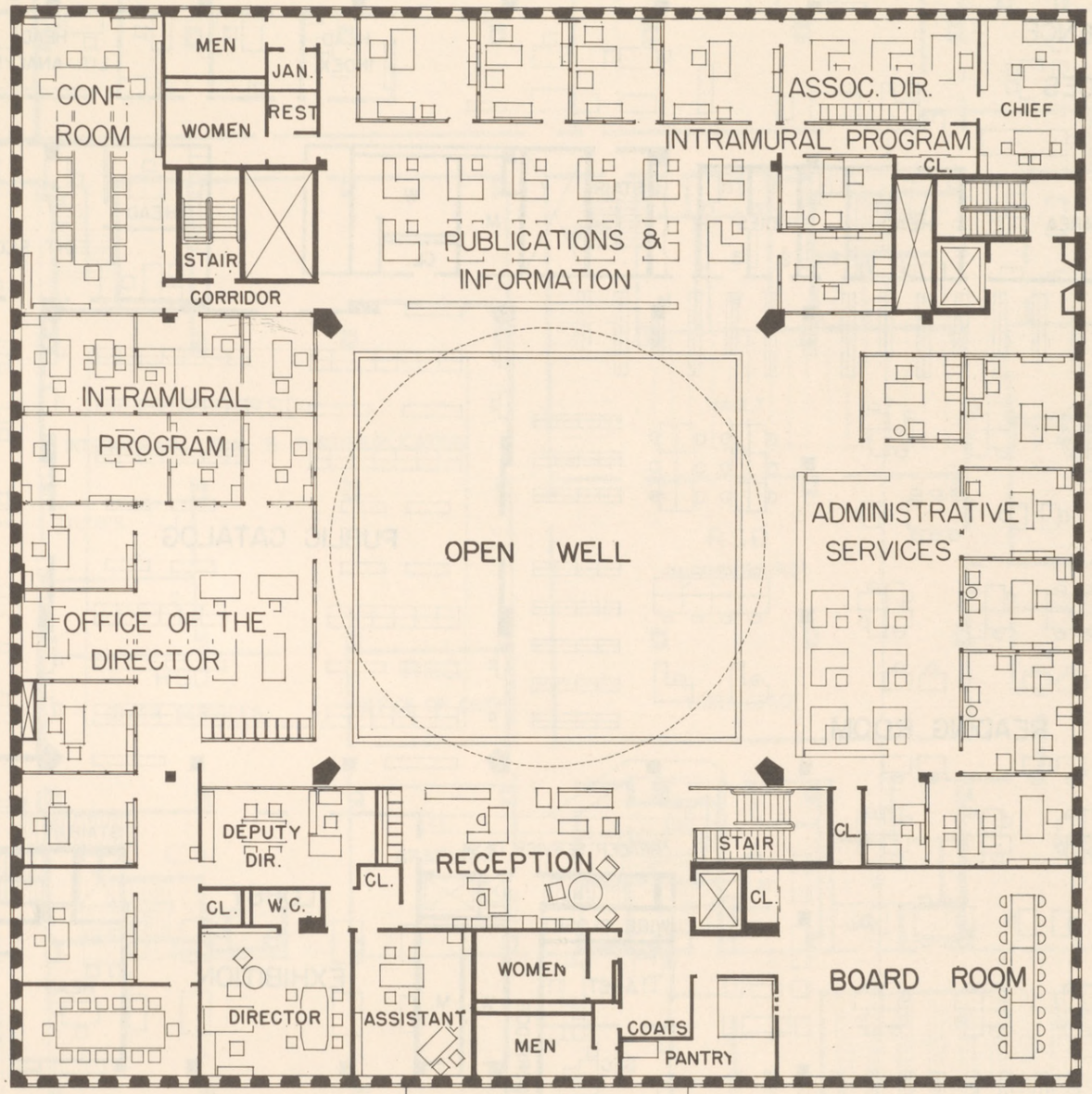
It is believed that such a multi-story structure as indicated could be composed as part of the overall complex in a way that would preserve what would by such time be the "traditional" identity of the original NLM building.

B. Functions & Activities of the New Structure-Plan Series "H" Pages 81-83

With the existing NLM Building rehabilitated as a traditional library centered on the catalog, stacks & Reading Room, the new structure would be developed for

N

ROOF



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0 5 10 15 20 25 30

1972 FLOOR PLAN MEZZANINE G-1

N

BIBLIOGRAPHIC SERVICES
SEARCHERS
CLASSROOM
REFERENCE SERVICES
HEAD INDEX.
HEAD LIT. ANALYSIS
WORK AREA
HEAD
STUDIES 1 2 3
STAIR
M.
W.
CL.
HEAD
EDIT. SECT.
WIRE CLOSET
PUBLIC CATALOG
TECHNICAL SERVICES
1967 63 PERS.
1972 100 PERS.
HEAD CAT.
HEAD ACQ.
HEAD S & S
CHIEF TECH. SERV. DIV.
READING ROOM
READER SERVICE DESK
REFERENCES 4
STUDIES 5 6 7
M.
W.
STAIR
PROCESSING
WIRE CLOSET
ASST
SEC
CHIEF
CORRIDOR
W.
M.
LOBBY & EXHIBITION
HEAD
SEC.
WORK SPACE
HISTORY OF MEDICINE
COAT RM.
JAN
VESTIBULE
DISPLAY
COATS
EXHIBITION
INCUNABULA

0 5 10 15 20 25 30

1972 FLOOR PLAN 1ST FLOOR G-2

IMP

RSD
INTERLIBRARY LOAN & PHOTODUPLICATION

AUDITORIUM

BILLINGS
STUDY

ELECTRIC
EQUIPMENT

N

◇ TO NEW FACILITIES

STACKS

RSD
INTERLIBRARY LOAN & PHOTODUPLICATION

STUDIES 1
2

RSD
STACK SERVICES

RSD
OFFICE OF CHIEF

MECH.

M

W

VAULT

RSD
MICRORECORDS

WORK SPACE

RECEIVING
AND
MAILING

LOADING
DOCK

M

W

PI
GRAPHICS

M

W

JAN.

RSD
PRESERVATION & BINDING

RSD
INTERLIBRARY LOAN & PHOTODUPLICATION

HISTORY OF MEDICINE

HISTORY OF MEDICINE
STACKS

0 5 10 15 20 25 30

1972 FLOOR PLAN A LEVEL G-3

N

TO NEW FACILITIES

STUDIES 20 21 22

STUDIES 17 18 19

STAIR

W. JAN.

STUDIES 1 2

WIRE CLOS

STUDIES 15 16

STACK AREA

3 4

STUDIES 5

STACK AREA

PAGE

STAIR

WIRE CL.

STUDIES 6 7 8 9

STAIR

STUDIES 10 11 12

M.

13 14

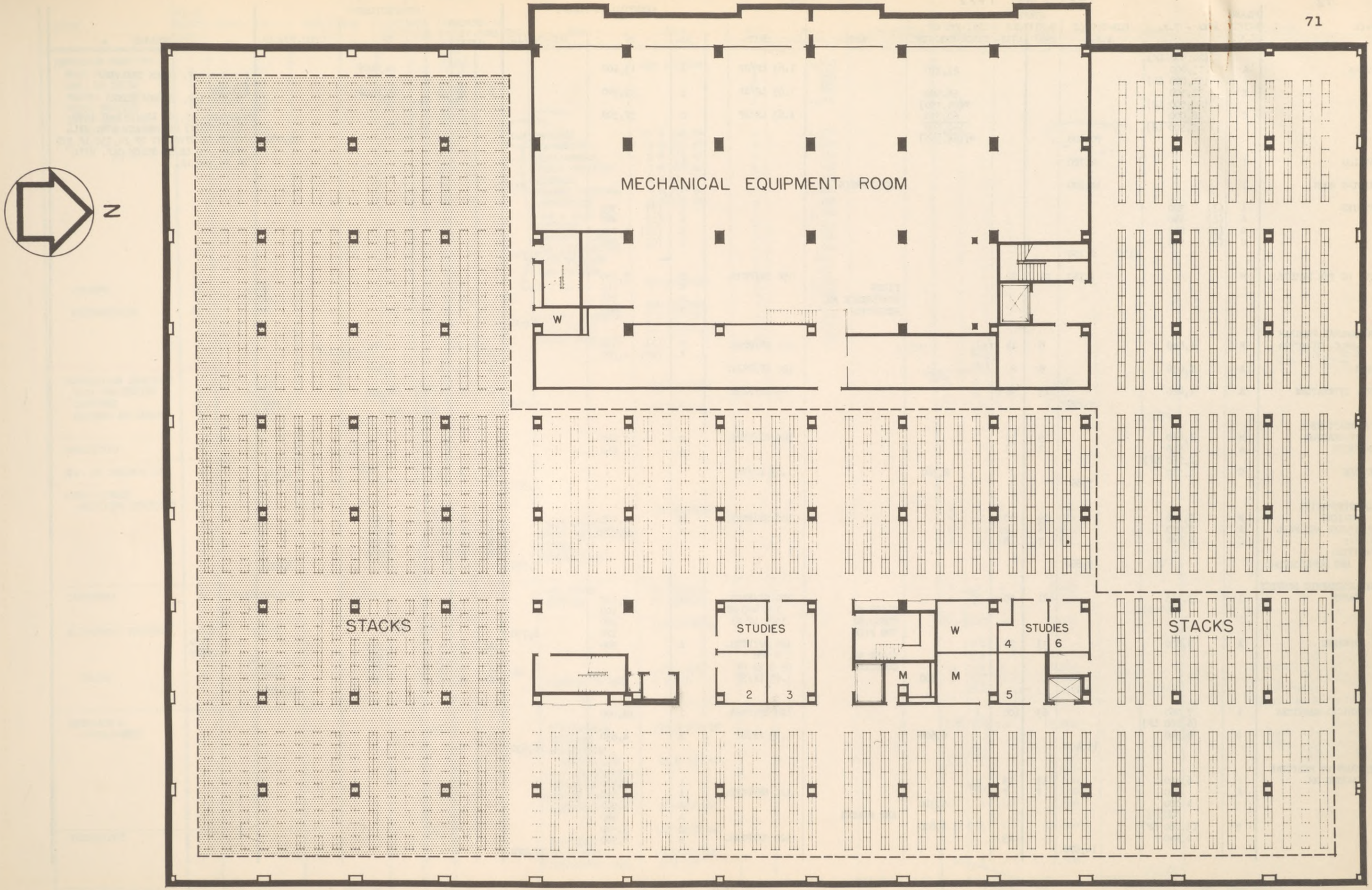
OFFICE AREA

HMD

STACK AREA

0 5 10 15 20 25 30

1972 FLOOR PLAN B LEVEL G-4



1/4 OF 1987 COLLECTION STANDARD SHELVING

1/4 OF 1987 COLLECTION COMPACT SHELVING

0 5 10 15 20 25 30

1972 FLOOR PLAN C LEVEL G-5

1967 ✝ 1972

SPACE	FLOOR EXIST BLDG.	AREA - S.F.	SUB-TOTALS S.F.	STAFF POSITIONS 1967	STAFF POSITIONS 1972	LIN. FT. OF STACK SHELVING	ADD.	UNIT	EXISTING BUILDING FL.	EXISTING BUILDING SF	EXISTING BUILDING SUB-TOTALS	NEW BUILDING SCHEME A	SCHEME B LEVELS	SCHEME C	NEW BUILDING SF	NEW BUILDING SUB-TOTALS	REMARKS
STACKS	A	(24,500 LF) 15,000				21,370		1.63 LF/SF	A	13,100					4,800#		# 7,800 L.F. STACK SHELVING
	B	(61,000 LF) 37,500				58,580		1.63 LF/SF	B	35,940		B	B	B	15,200#		#24,650 32,450 L.F. IN NEW BLDG.
	C	(30,500 LF) 18,000				*(24,750) 60,750		1.63 LF/SF	C	37,300							*ASSUMING 49,500 LF (25% OF 1987 COLLECTION) OF COMPACT STG. WILL OCCUPY EQUIVALENT OF 24,750 LF STD STACK - C LEVEL STACK CAP. WILL BE 85,500 LF.
		(115,500 LF)	70,500			140,600 *(165,350)					86,340					20,000	
CATALOG	1		4,720						1		4,720						
READING ROOM	1		12,200				120 CARRELS		1		11,900						
STUDIES	1	(3) 300							1	(3) 300							
	A	(2) 440							A	(2) 440							
	B	(5) 860							B	(22) 2,730							
	C	(3) 550							C	(6) 880							
			(13) 2,150								(33) 4,350						
OFF. OF THE DIRECTOR	M		5,160	24	22			150 SF/PERS.	M	3,300							
							FILES		M	315							
							CONFERENCE RM.		M	385							
							RECEPTION		M	600							
											4,600						
INTRAMURAL PROGRAM ASSOC. DIRECTOR, LO NETWORK TRAINING	M	1,840		8	14	19 24 11 45		120 SF/PERS.	M	(4) 560							
MESH	A	1,030		9	20			120 SF/PERS.	A	(10) 1,200		A	A	A	2,400		
DRUG LITERATURE	A	1,420		13	36			120 SF/PERS.				9	6	1	4,320		
			4,290								1,760					6,720	
PUBLICATIONS & INFORMATION	M	1,840		9	15			120 SF/PERS.	M	1,840							
GRAPHICS	A	510		2	3				A	510							
		(2,760 LF)															
STACKS	C	1,510				2,760		1.63 LF/SF				B	B	B		1,510	
			3,860								2,350						
ADMINISTRATIVE SERVICES	M	3,120		19	40			120 SF/PERS.	M	4,485		A	A	B	315		
RECEIVING AND MAIL	A	2,070		6	12				A	2,070		A	A	B	1,000		
SUPPLY	C	4,470		7	18							B	B	B	4,500		
PRINTING AND DUPLICATING			9,660								6,555	B	B	B	3,000	8,815	
BIBLIOGRAPHIC SERVICE SEARCH	1→A	3,415		21	50	8		120 SF/PERS.	1	5,100							
MESH	A→1				20	20	CLASS RM.	1 @ 400 SF		400							
							CONSOLES	15 @ 12 SF		180							
							TUB FILE			170	6,750						
INDEXERS	A	4,830		33	75	40		120 SF/PERS.	A	900		A	A	A	9,000		
outside						30	CLASS RM.	1 @ 400				A	A	A	400		
MEDLARS						26	CONSOLES	65 @ 12 SF				A	A	A	780		
manage						16		1.63 LF/SF				A	A	A	820		
			8,245			110 500										11,000	
CHIEF + QUAL. CONT																	
TECHNICAL SERVICES	1	7,060		63	100	8		120 SF/PERS.	1	12,000							
Chief		(6,800 LF)				44											
NAT. CAT. PROG	B	4,340				25		1.63 LF/SF	B	4,630							
SERIALS DATA						23											
SEL/AGQ			11,400			100 6,600					16,630						
HISTORY OF MEDICINE READING RM.	1	6,430		15	15	30			1	6,430							
	A	840		7	7			120 SF/PERS.	A	840							
		4,080				5,310			A	4,080							
		880					ART STACKS		A	880							
	B	(3,180 LF)				4,800			B	3,480							
		2,440			13			120 SF/PERS.	B	1,560							
			14,670								17,270						

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1967 ✝ 1972

SPACE	FLOOR EXIST BLDG.	AREA - S.F.	SUB-TOTALS S.F.	STAFF POSITIONS 1967	STAFF POSITIONS 1972	LIN. FT. OF STACK SHELVING	ADD.	UNIT	EXISTING BUILDING FL.	EXISTING BUILDING SF	EXISTING BUILDING SUB-TOTALS	NEW BUILDING SCHEME A	NEW BUILDING SCHEME B	NEW BUILDING SCHEME C	NEW BUILDING SF	NEW BUILDING SUB-TOTALS	REMARKS
REFERENCE SERVICES						27											
WORK AREA	1	2,575		9	12	14		120 SF/PERS.	1	1,440							
OFF. OF CHIEF	1	645		5	7	6			1	645							
READER SERVICE	1	560		4	6	8			A	300							
STACK SERVICE	A	1,200		22	27	44			1	860							
INTER-LIB. LOAN & PHOTO DUPLICATION	A	4,750		19	28	32 7			A	1,200							
MIDATLANTIC REG. LIB							CAMERAS	15 @ 100 SF	A	1,500							
							PROCESSORS	2 @ 500 SF	A	1,000							
							DUPLICATORS	2 @ 150 SF	A	300							
							XEROX COPYFLOS	2 @ 200 SF	A	400							
							CUTTERS	2 @ 50 SF	A	100							
							READER PRINTERS	5 @ 200 SF	A	1,000							
							CONVERTERS	3 @ 167 SF	A	500							
							LAB & DARK RM.		A	1,500							
							OFFICES		A	1,000							
							ASSEMBLY AREA		A	800							
							QUALITY CONTROL		A	400							
							COLD STORAGE		A	200							
							DRY STORAGE		A	100							
BINDING	C	1,080		9	10	14		120 SF/PERS.	A	1,200							
		1,220				920			A	1,500							
MICRORECORDS	C	700		7	13	18		120 SF/PERS.	A	1,560							
							READER PRINTERS	3 @ 100 SF	A	300							
							FILM VAULT	100 CAB.@11.2SF	A	1,120							
							VAULT MECH. RM.		A	150							
			12,730			143					19,075						
INFORMATION SERVICES																	
DATA PROCESSING	1	2,775		31	20			120 SF/PERS.				A	A	A	2,400		
COMPUTER	1	2,860										A	A	A	4,200		
SYSTEMS ANALYSTS	C	4,700		27	60			120 SF/PERS.				2,3	1,2	A	7,200		
			10,335													13,800	
UNOCCUPIED	C		1,310														
OFF. OF SURGEON GEN.	1		600														
AUDIO-VISUAL RECEIVING STATIONS	1		(3) 100		2			120 SF/PERS.	1		100	B	B	B	240		
							TAPE VAULT					B	B	B	500		
							AUDIO TRANSMISSION					B	B	B	200		
							VISUAL TRANSMISSION					B	B	B	300		
																1,240	
CAFETERIA	A	(140 SEATS)	2,740				450 SEATS	15 SF/PERS.				A	A	A	6,750		
							KITCHEN	15 SF/PERS.				A	A	A	6,750		
																13,500	
EXTRAMURAL PROGRAM	BLACK-WELL BLDG.	6,435		38	100			120 SF/PERS.				14,15	9,10	1	12,000		
		(3,180 LF)															
STACKS	B	2,200				3,180		1.63 LF/SF				B	B	B	2,200		
							CONFERENCE RMS.	2 @ 750				1	1	1	1,500		
			8,635													15,700	
RESEARCH & DEVELOPMENT					125		OFFICE-LABS	125 @ 200 SF				3-8	2-6	1,A	25,000		
							VISITING SCIENTISTS OFFICE-LABS	25 @ 150 SF							3,750		
							A-V STG.&DISTRIB.								3,000		
							RECORDING STUDIO								600		
							GRAPHIC IMAGE R&D								3,000		
							CONFERENCE RMS.	2 @ 750 SF				1	1	1	1,500		
																36,850	
TOXICOLOGY					200			120 SF/PERS.				9-13	7-9	1	24,000		
							VISITING SCIENTISTS	20 @ 120 SF							2,400		
							CONFERENCE RMS.	2 @ 750				1	1	1	1,500		
																27,900	
TOTALS (NET SPACE)			183,305								182,400					157,035	TOTAL (NET SPACE)
																72,765	SUPPORT SPACE
																229,800	GROSS SPACE

new information services built around the computer and the expansion of activities related to or dependent upon it, as well as research & training in its use in medical information programs and procedures made possible by it. The Extramural Program would be a main activity of the new structure.

1. Types of Space

Several types of space would be included in the new structure:

a. Stack or storage space. Extension of existing stack level - open floors to accommodate free standing book stacks or other types of storage system and capable of taking heavy loads.

It would be capable of being readily partitioned off as required for fire safety or any special humidity requirements of future materials stored. The ventilation system which will be capable of various degrees of air conditioning as required for special conditions will provide supply and exhaust mains to each bay to prevent mildew of books and have humidity control to prevent over dryness of the bindings in winter or dampness in summer.

The lighting layout should have more flexibility of layout than the old because of the different types of storage racks or files that may be included besides book stacks.

Designed as open floors - if not utilized for storage it can always be partitioned off for special purposes as at present.

b. Computer space.

1) Computer space normally has an auxiliary floor of removable panels - two feet by two feet on the average - raised above the structural floor slab to give an accessible space for special wiring, changes, repairs, etc. In the case of the new building the structural slab would probably be depressed - approximately a foot - so the raised or auxiliary floor may be flush with the building floor levels.

2) Factors to be considered in the design of computer floors include:

a) Concealment of connecting cables between various component units of the system (less hazard to employees tripping over cable, less possibility of cables being disturbed affecting systems operation.)

b) Distribution of the heavy computer loads (generally on four contact points) over a greater area of floor slab.

c) Electrical power distribution system above the floor slab, which can be easily altered as computer system is replaced and/or enlarged.

d) The height i.e.: floor to obstruction above computer units (computer units vary in height and require circulation of air above to dissipate their heat gain load when in operation.)

e) Advisable to continue computer floors uninterrupted under related offices, tape storage areas, maintenance areas etc. Metal partitions are recommended for these sub-divisions as they can be attached to the floor system and be easily relocated.

f) Double glazing should be provided over exterior glass to eliminate condensation in the winter time. (Would prefer inside space).

g) Electric power conduits and receptacles must be kept clear of the computer cables. (Where cables and conduits cross may affect the required height of the raised floor.)

h) Population and light load - recommend the intensity of light be high in this area, 60 f.c. minimum. The light load may greatly affect the air conditioning. It should also be capable of reduction over equipment with illuminated dials of screens that would be difficult to read in a bright light.

i) Special Electrical Considerations.

(1) Provide spare capacity in feeders, and panels (25%).

(2) Provide security so that only authorized personnel have access to system operating computers.

(3) Divorce computers from other circuits provide separate panels.

(4) Provide humidity and temperature recording charts at visible points of the floor.

(5) Provide cut off switches readily accessible to cut power to computer system in case of malfunction of computer or fire.

(6) Provide fire warning system (preferably a heat and smoke type alarm) under as well as above the raised computer floor system.

j) If system warrants protection for continuous uninterrupted operation check:

(1) Dual services of power enters building so cross connected so that if one fails the switch over is automatic. (Caution - be sure dual set of feeders is not from the same transformer vault or substation as on outage here would put both feeds out of commission).

(2) Voltage dip, of minimum duration, in utility service which will tend to cause a malfunction in the computer operation can be protected by use of motor generator installation.

(3) The electric lighting and air conditioning should also be connected to this system.

k) Air Conditioning Considerations.

(1) Design so that relative humidity does not fall below 40% during the heating season in computer areas, tape and card storage areas.

(2) Cooling to handle light and population load as well as computer heat gain. (Provide spare capacity of 25% for possible growth).

(a) If system warrants protection for continuous uninterrupted operation it may be advisable to install an auxiliary system as a stand by.

(b) High efficiency and high capacity filter banks are necessary in order to keep computers dust free.

(3) No access panels to ceiling above computer units as men climbing over units or dust dropping from ceiling can cause a malfunction in the computer.

(4) No pipes containing water or other fluids in the ceiling which, if broken, could damage the expensive and sometimes irreplaceable computer units.

c) "Technical Space". It is recognized that a certain amount of the spaces - particularly for research and development - will be in the nature of laboratory space for testing equipment and procedures and establishing specifications for future equipment and installations throughout the country. Such space should be designed to permit:

1) installation of air conditioning as the equipment may require, not only humidity but heat control.

2) temporary acoustic installation for testing of effects in noise reduction.

3) variable lighting levels - perhaps on rheostats so cathode ray tubes, screens, instrument dial illumination, or small projections may be properly read and standards of light levels established as part of the information program.

4) Bus duct, floor access conduits or other convenient methods for plug-in conduits connecting up different equipment locations as well as the computer or its information storage system.

d. Office Type Space. Most of the remaining functions going into the new structure require office type space - preferably with outside windows - in contrast to the old building that was two-thirds stack space below grade. While most of "A" level and part of "B" can have windows due to slope of ground, a structure that could have windows all around would be above grade. Subject to changing conditions and reassignments of space, a type of space designed for partition changes, as in office buildings, would be advisable. The suspended ceiling-partition system should be designed to prevent sound transmission over the tops of the partitions through the ceiling space. Such office type space is scheduled to be air-conditioned.

2. Physical Relation of New Structure to Old

Assuming the new project as taking place to the south of the NLM as the only space large enough - the first essential would be for "A" level to carry through as the main connecting "link" or backbone of the combined structures. It happens that the so-called "pipe-space" for the NLM is below "A" floor ("B" level ceiling space) so this, too, would provide the connection for utilities, conduits and cables, etc.

The first floor of the NLM is above grade and is recalled on the exterior by the "Water Table" or moulding at the bottom of the limestone facing of the building. See Photo Diagram IV-D-31 Page 33 From the point of view of appearance it is important that the roof of the "link" - however wide - does not project above this line. This is structurally feasible - at least for a reasonable distance from the NLM.

3. Linkage - "A" Level

Taking up some of the "in common" elements of "A" Level in detail, considerations would be as follows:

a. Stacks. The existing stacks on "A" level are not only the "most used" but also the most convenient - particularly to the large element of photographic processes on the same floor. It would be desirable therefore, if part of the new stack expansion could be a "working" extension of the existing stack - that is contiguous without an interrupting corridor and in a reasonably large size "block" of ranges for practical classifying of the books. Inside space would be preferable. The balance of stack required would be on "B" level and connected through to the old stack.

b. Circulation. Through the same area desirable for the stack is the necessity of a convenient passage or connecting corridor between the two structures at "A" level - so arranged that people passing through do not cut through departments or stack areas causing inconvenience or disturbance. Such a passage, too, should have a sense of direction so the way through may be easily found by or described to those unfamiliar with the route. The connection at "B" level should also have special consideration.

c. Service. A necessary part of the successful operation of the new complex will be the coordinated "service" of the two buildings. Incoming and out-going mail is already established in the NLM and should remain with the Administration Services. The photo-services also have a lot of incoming supplies and are source of outgoing mail. There is no room for expansion to accommodate the requirements of the new building which - for convenience should have its own service area. Therefore, as a matter of convenience, it would seem advisable for the new service area to also be on "A" level extension so any interchange of supplies or mail, etc. could be hand-trucked across without change of levels or use of elevators.

The particular service for the cafeteria could be part of the new service entrance or separate, as may serve its operation.

d. Computer location. The computer is the heart of the new structure but will increasingly be used to improve services of the old, such as their technical operations (automation of selection, ordering, and processing of new books) and gradually surplanting of the catalog (automation of same already under way). A central location again would seem advisable, particularly in consideration of connecting cables. Since "A" floor has the duct or pipe space below it would be the best location for convenience in extending the conduits to the different "consoles" and other connected equipment locations throughout the complex.

e. Systems Analysis and particularly Data Processing. Would logically be on the same level as the computer. It would be air-conditioned space and with conduit system to be provided as with so called "technical space" for this project.

f. Cafeteria. To the employees a location equally accessible from the new and the old building will be important. Adjacency or corridor connection to service entrance will be necessary. This again indicates "A" level as preferred. "B" level is a good alternate if more important elements should be assigned to "A" level. An outlook over a planted green area would be desirable. With the probability that other employees of the N.I.H. will also be large users of the facility, a floor level with direct access to outside will also be a factor.

g. To summarize the above would be the main functions, tentatively, on "A" level. Together with the balance of the stack and other elements best located in the base structure they comprise about 47% of the new space. A schematic plan to accomplish these purposes is shown on Plan Series "H"-2, Page 80for "A" level and Plan "H"-3 for "B" level.

4. Ground Floor

a. Public Space. The new building would have its own entrance lobby, presumably from the new road to the west of the NLM. As with the NLM this lobby would also provide exhibition space.

The program calls for 6 conference rooms of approximately 750 sq.ft. or 30 persons each. The new project would also have need of an auditorium but one was not included in the program because of the recent installation of a small one in the old building on "A" level. It is not too satisfactory because it had to be adapted to a confined low ceiling space. It will be inconveniently located for the future program.

It has been suggested, however, that if the 6 conference rooms could be on the same floor and arranged with movable partitions, they might be opened up to form one room for larger gatherings or meetings. If so this would be conveniently located on the entrance level for the benefit of the visitors. Such a possibility is diagramatically indicated on plan "H"-1, page 79.

5. Space Above Grade

Vertical relationship. A diagramatic section showing the relationship of the different elements discussed above is shown in cross-section in Plan H-3, page 81.

6. Functional Relationships — Diagram II, Pages 26,27

a. Organization. An organizational diagram of the new NLM as of 1972 is illustrated in Diagram II-A,Page 26 showing the connection between the various departments.

b. Interrelationships. The overall inter-relationships of the new NLM as an integral complex of the traditional library combined with the new facility of Bio-Medical Communications - grouped as they will be in each structure - are indicated on Diagram II-B, Page 27.

7. Additional Factors in the Program

In establishing the budget the following must also be included:

a. Site Development - grading - drainage - roads - walks - lighting - planting. As indicated on Plan H-1, Page 79 for estimating purposes.

b. Parking - as indicated on Plan G-2, page 62 for estimating purposes - 400 additional spaces for employees for the basic estimate the following is being allowed:

1) Under new building - "C" level - 120 cars

2) Multi-tier parking - 150 cars

3) Open parking space - 130 cars

4) Visitors parking - as many as site permits

5) Unit prices for each type of space will be included to permit comparative alternates.

c. Utilities

1. Cold Water Supply
8" cold water main will be connected to existing service line to NLM building.

2. Sanitary System
10" sanitary sewer will be run from new building to existing manhole near Wisconsin Avenue serving the present 8" line from NLM building.

3. Storm Water Drainage
Storm water drainage will be run to present brook, similar to way NLM building was handled.

4. Steam

Steam and pumped return service lines will be taken from existing Manhole CS-49. New 8" steam, and 4" Pumped Return will be run for a distance of 660' to new manhole, from which point 6" steam, 3" Pumped Return and 1¼" drip will be run to new building.

5. Chilled Water

Chilled water service will be connected to existing 20" lines at Manhole CS-49. New lines will be 18" from existing Manhole CS-49 to new Manhole about 400' from new building. From new manhole, lines will be 14" to new building.

6. Electrical

Electrical light and power service will be connected to present feeders serving NLM.

7. Communications

Communication cables (telephone, Supervisory, Fire Alarm, Watchmans' Report Systems) will be run to Manhole T-3 Dwg. 9-41 Project No. 18096. Extension of these cables to final terminal points will be done as determined by NIH.

8. Not provided for in budget estimate:

a. Possible future tie-in with pneumatic tube communications network.

b. Extensions of communications cables beyond Manhole T-3.

c. Any assessment for increase in boiler and refrigeration plant capacity.

d. Special Furniture or Equipment - as may be called for to be designed or selected under architectural contract.

e. Notes.

1) Government supplied furniture and equipment - not included.

2) Government overhead costs - including architectural & engineering fees not included as not negotiable or determined at this time. Purpose of budget to be furnished will be to estimate as closely as degree of detail permits - the construction or building contractor cost with certain additional allowances as indicated to give an idea of the order of magnitude of the total project.

C. Approach to Design of the New Structure

1. Location on this site — Photo Diagram IV-A-3 Page 30

a. Ground area. Figures indicate that a grouping of elements desirable on "A" level with the remaining stack and other base structure elements in a level below will require approximately 60,000 sq.ft. of ground area.

b. Available site. The tradition of maintaining a green strip around the boundaries of the N.I.H. reservation, particularly along Wisconsin Avenue and the south boundary, has already been established.

In addition, from the front or east it is desired to preserve the present aspect of the original building as the symbol of the NLM - (Photo IV-A-1).

As may be seen on Plan "B" the area to the north of the parking space is too small and can well be reserved for a future high rise building.

The present parking space not only serves a necessary purpose at the moment but it was reserved in the initial project as an area for a major stack expansion in the future, whether books or future films, tapes or new development.

This leaves the area between the south side of the NLM and the brook.

c. Location. Since the lower floor levels, at least, should be extended at their same levels into the new structure to provide a practical integration, the new structure would be contiguous with the old. 60,000 sq.ft. on the ground would take up about half this space, leaving the rest for parking.

2. General Shape & Design Characteristics

The program, as developed, calls for a total of approximately 230,000 sq.ft. of space, somewhat over half of which could be on the first floor or above. This results in more mass of building called for above grade

NEW ROAD

LAMP POST

VISITORS PARKING

NEW PARKING
70 CARS

GARAGE UNDER
150 CARS

SERVICE

EXHIBITION
and
CONFERENCE

NEW FACILITY

TO DINING

NEW PARKING
60 CARS

EXHISTING PARKING
196 CARS

SERVICE

NLM

N

0 10 20 30 40 50 60

NEW BUILDING 1972 1st FLOOR and SITE PLAN H-1

OUTDOOR PARKING
70 CARS

BIBLIOGRAPHICAL INDEXERS

T T

N

NEW
RECEIVING

REC.
&
MAIL

BIBLIO.
INDEXERS

DATA
PROCESSING

COMPUTER

KITCHEN

T
T

Me Sh

IMP
OFFICE

BIBLIO.
SEARCH.

R S D
ILL. & PHOTODUP.

AUDITORIUM

STUDY

ELECTR.
EQUIPMENT

EXIST.
RECEIVING

CAFETERIA

STACK EXPANSION
7800 LF.

R S D STACKS
21370 LF.

R S D
ILL. & PHOTODUP.

R S D
MICRORECORD

REC.
&
MAIL

T T

R S D
PRES. & BINDING

T T

DINING TERRACE

H M D

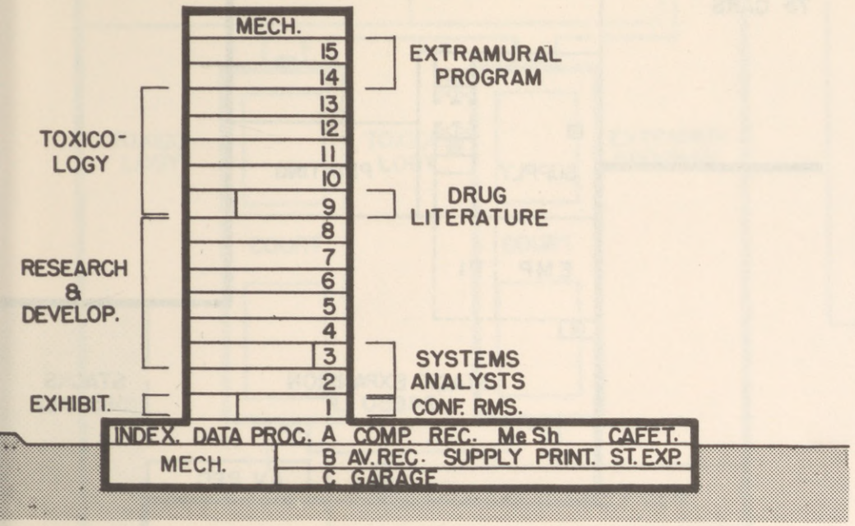
A LEVEL SHOWING LINK WITH EXISTING BUILDING

EXISTING BUILDING

0 10 20 30 40 50 60

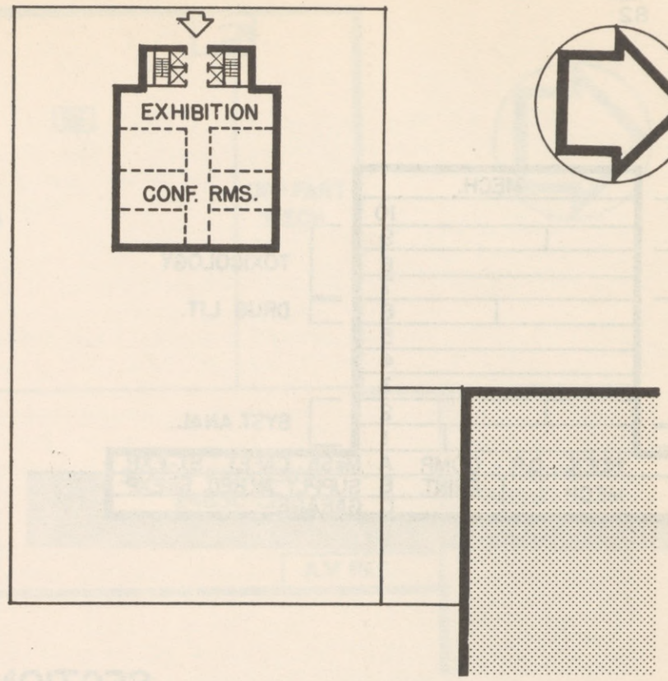
NEW BUILDING 1972 SCHEME A

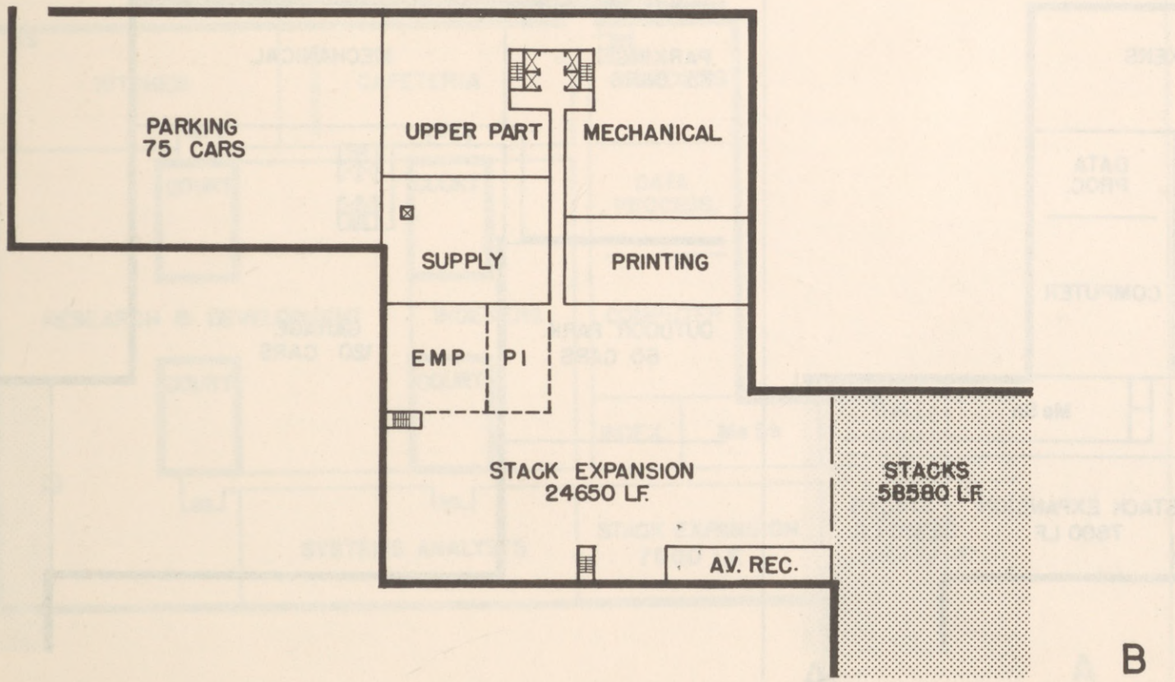
H-2

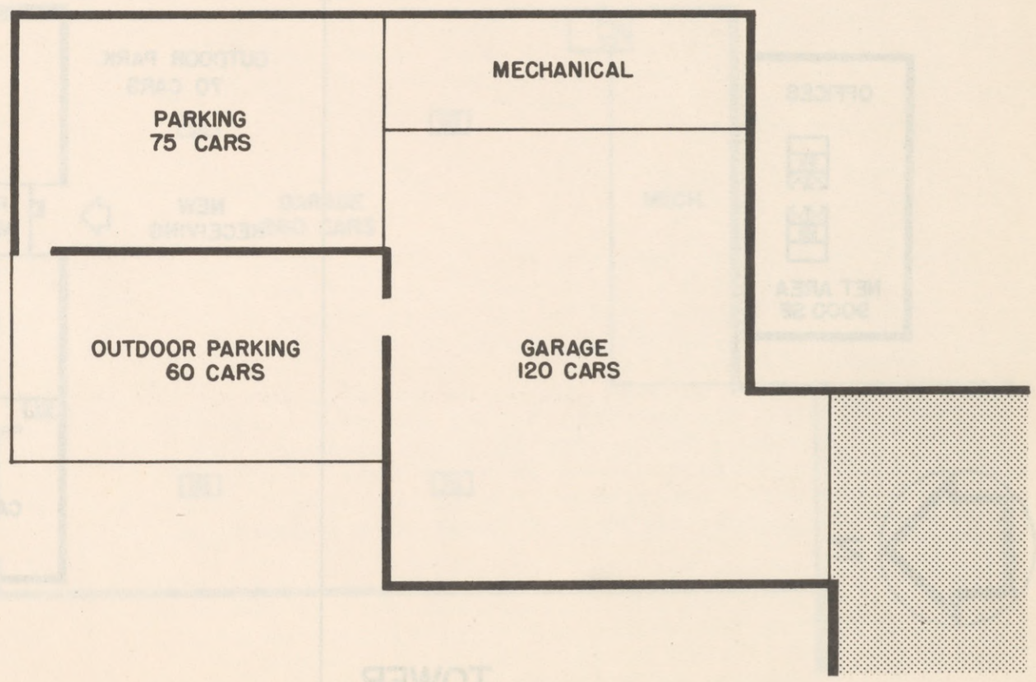


SECTION

TOWER



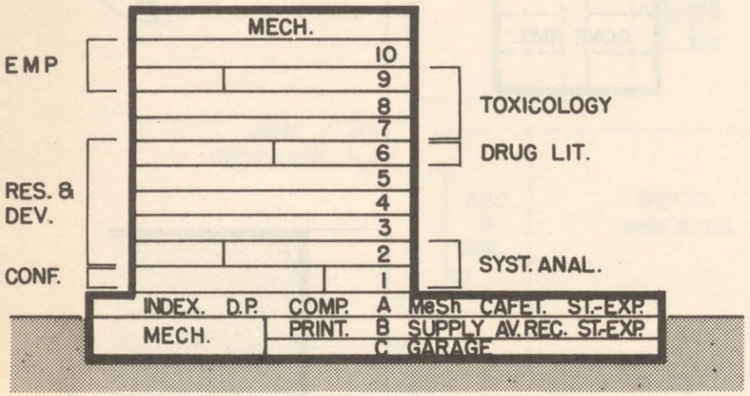




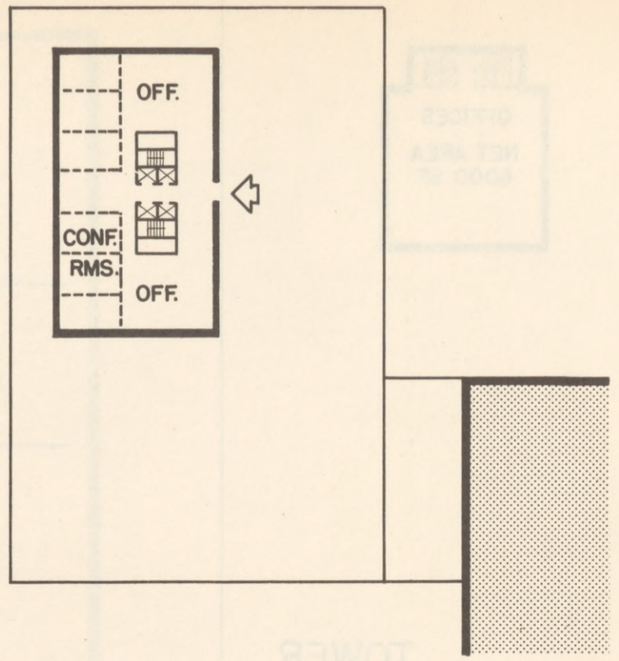
EXISTING BUILDING

0 20 40 60 80 100 120

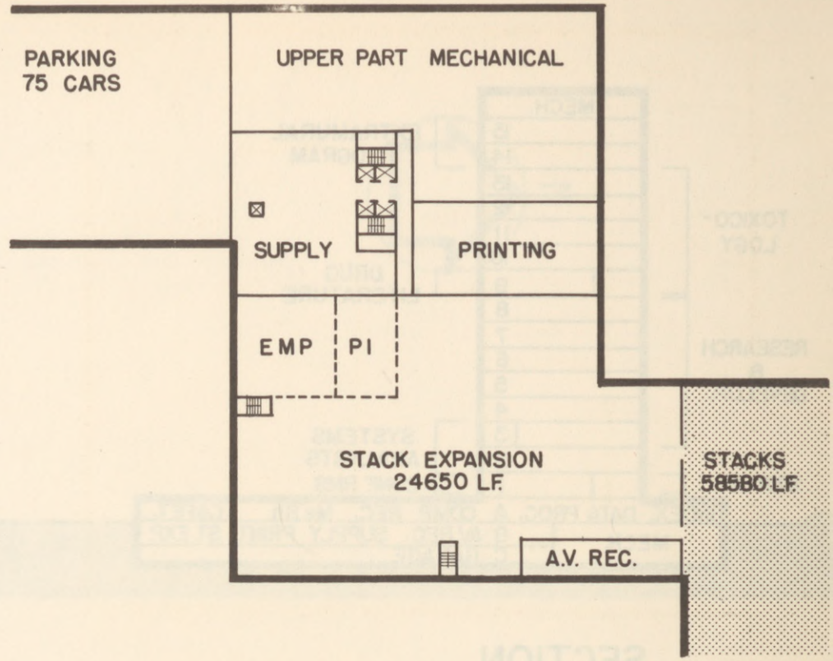
NEW BUILDING 1972 SCHEME A H-3



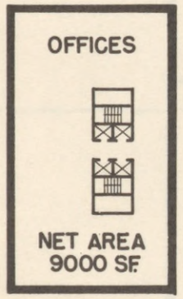
SECTION

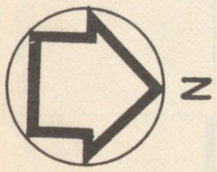


1ST

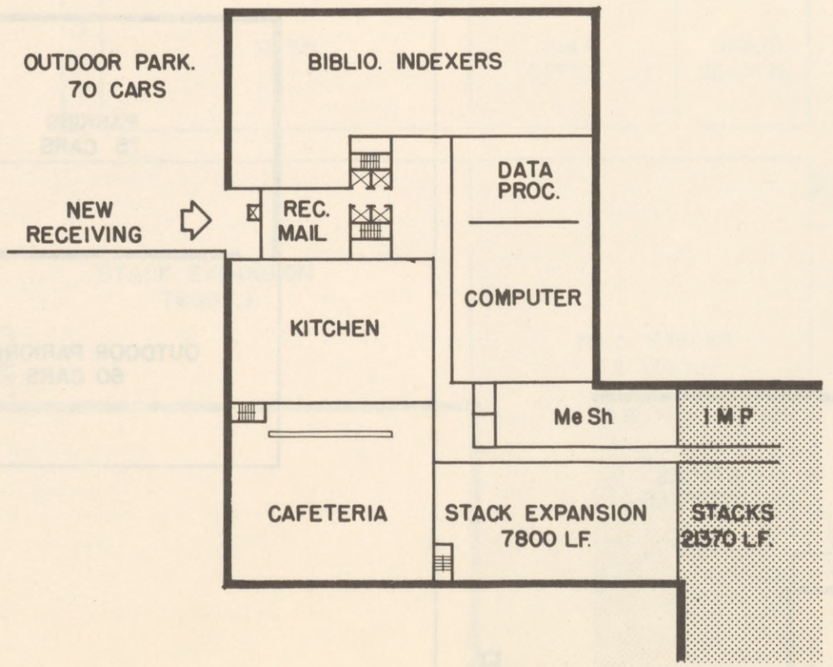


B

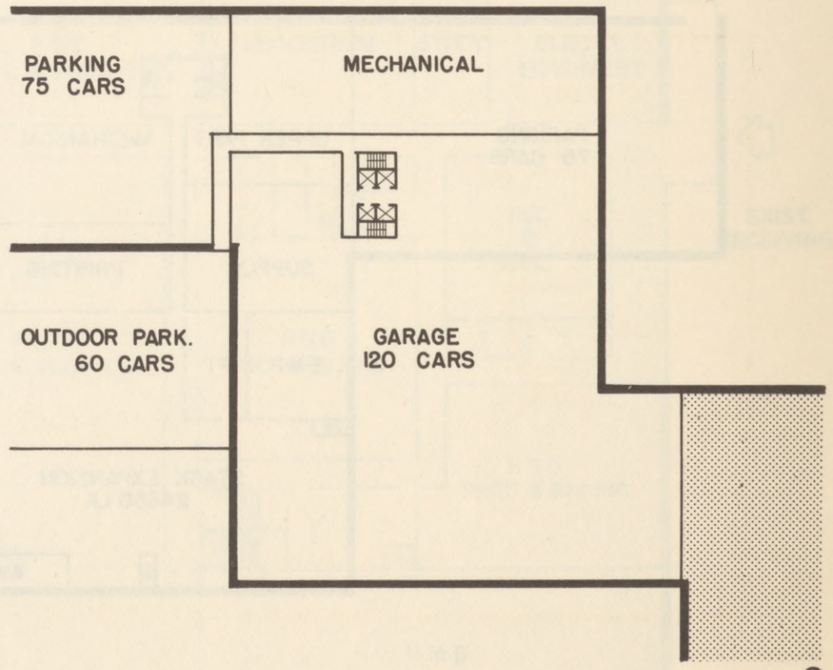




TOWER



A

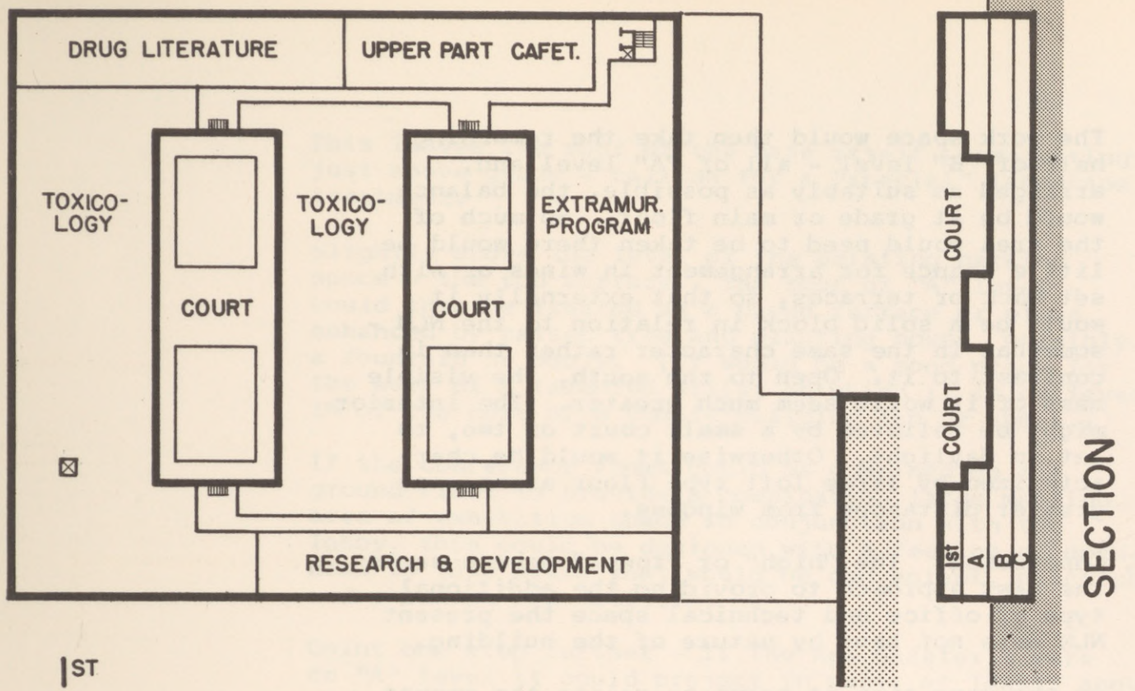


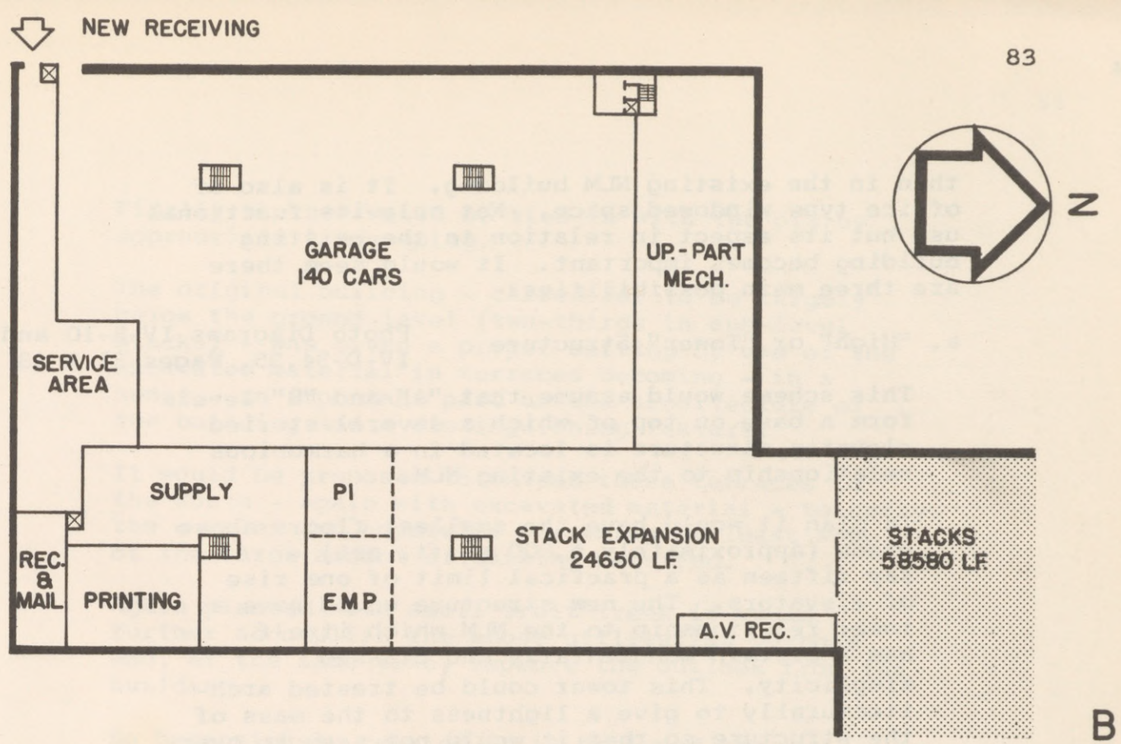
C

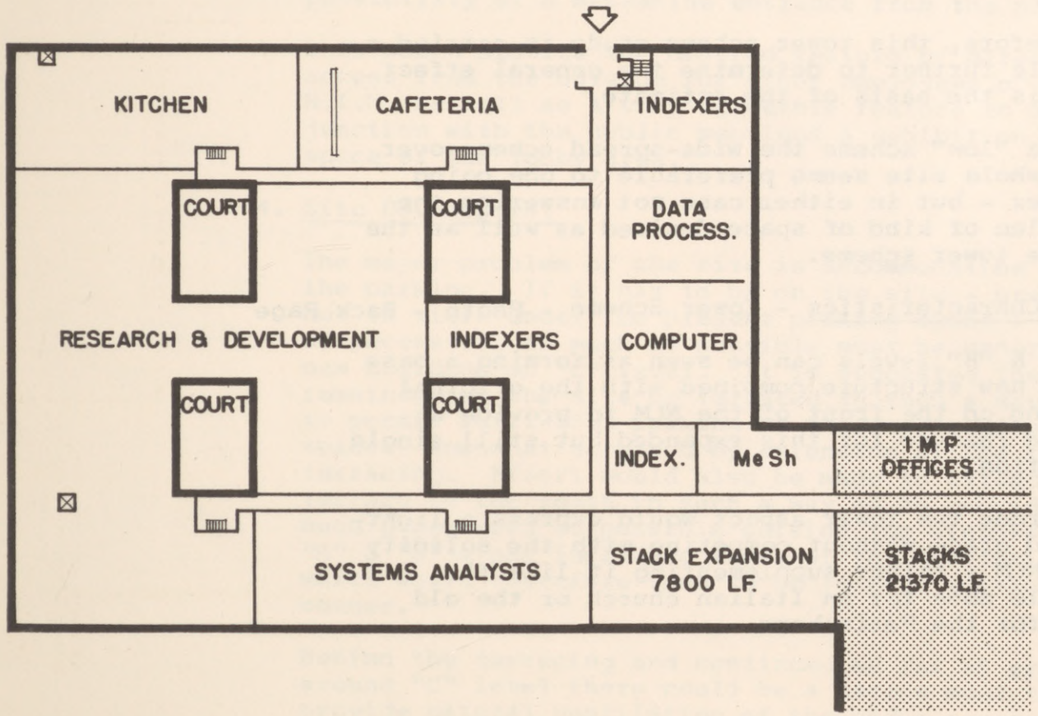
EXISTING BUILDING

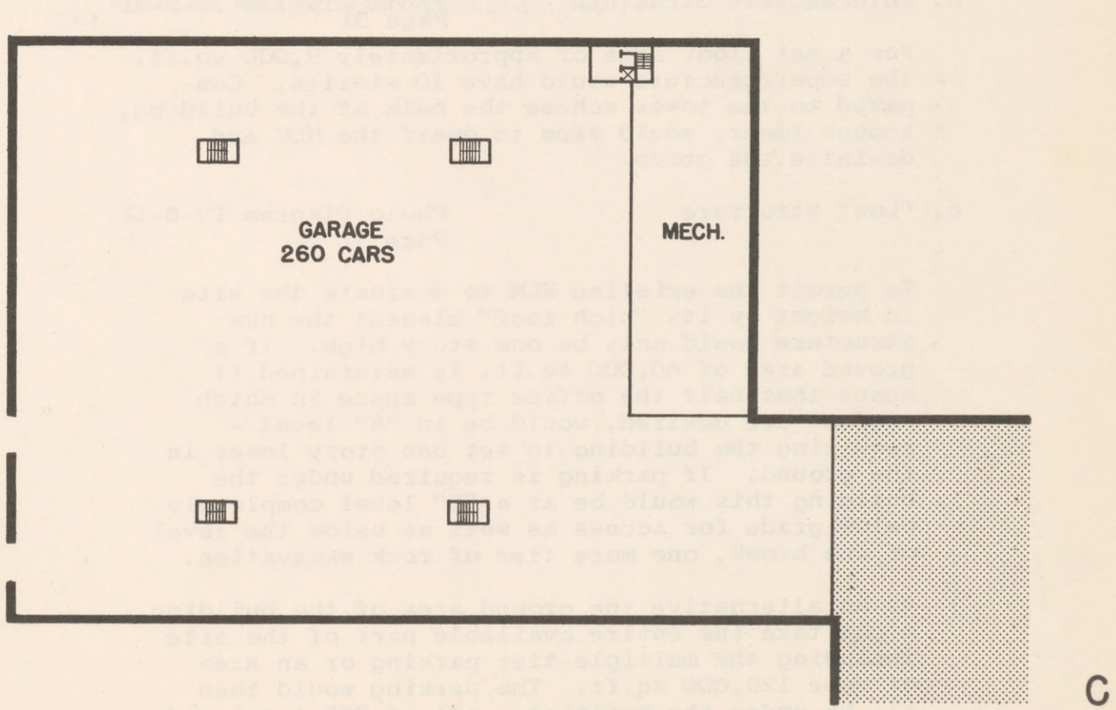
0 20 40 60 80 100 120

NEW BUILDING 1972 SCHEME B H-4









EXISTING BUILDING

0 20 40 60 80 100 120

NEW BUILDING 1972 SCHEME C

H-5

than in the existing NLM building. It is also of office type windowed space. Not only its functional use but its aspect in relation to the existing building becomes important. It would seem there are three main possibilities:

a. "High" or "Tower" Structure — Photo Diagrams IV-B-10 and IV-D-34,35, Pages 31 & 33

This scheme would assume that "A" and "B" levels form a base on top of which a several storied elevator structure is located in a harmonious relationship to the existing NLM.

In plan it would have the smallest floors above grade (approximately 6,000 sq.ft. net) - say fifteen as a practical limit of one rise of elevators. The new structure would have a tower relationship to the NLM which itself has a certain monumentally and classic simplicity. This tower could be treated architecturally to give a lightness to the mass of the structure so that it would not seem to overpower the composition but rather enhance it.

b. Intermediate Structure — Photo Diagram IV-B-11 Page 31

For a net floor area of approximately 9,000 sq.ft. the superstructure would have 10 stories. Compared to the tower scheme the bulk of the building, though lower, would seem to dwarf the NLM and dominate the group.

c. "Low" Structure — Photo Diagram IV-B-12 Page 31

To permit the existing NLM to dominate the site in height by its "high roof" element the new structure could only be one story high. If a ground area of 60,000 sq.ft. is maintained it means that half the office type space in which windows are desired, would be in "A" level - requiring the building to set one story lower in the ground. If parking is required under the building this would be at a "D" level completely below grade for access as well as below the level of the brook, one more tier of rock excavation.

As an alternative the ground area of the building might take the entire available part of the site including the multiple-tier parking or an area of some 120,000 sq.ft. The parking would then all be under the building - all of "C" level and half of "B" level for a total of approximately 400 cars. Visitors parking could be on the surface in small areas.

The work space would then take the remaining half of "B" level - all of "A" level and, arranged as suitably as possible, the balance would be at grade or main floor. So much of the area would need to be taken there would be little chance for arrangement in wings or with set back or terraces, so that externally it would be a solid block in relation to the NLM - somewhat in the same character rather than in contrast to it. Open to the south, the visible mass of it would seem much greater. The interior might be relieved by a small court or two, to let in daylight. Otherwise it would be characterized by large loft type floor areas - at greater distances from windows.

d. Conclusion. The "high" or "tower" scheme seems the best approach to providing the additional type of office and technical space the present NLM does not have by nature of the building.

At the same time it seems to relate the amount of new volume to the old in the most harmonious way.

Therefore, this tower scheme study is carried a little further to determine the general effect and is the basis of the estimate.

For a "low" scheme the wide-spread scheme over the whole site seems preferable to one going deeper - but in either case not answering the problem of kind of space desired as well as the above tower scheme.

3. Design Characteristics - Tower Scheme - Photo - Back Page

The "A" & "B" levels can be seen as forming a base for the new structure combined with the original terracing on the front of the NLM to provide a unifying feature for this expanded but still single institution.

Above grade the tower aspect would express a lightness and grace without competing with the solidity of the NLM - rather supplementing it like the campanile does for an Italian church or the old Trylon for the Perisphere.

This leaves the roof of the base itself - projecting just above grade - calling for a "special" landscape treatment.

Slightly above the level of the existing parking space - the top surface - the roof of "A" level - could then be treated as a paved terrace or plaza enhanced by raised tree and planting boxes, possibly a fountain or pools. (It would be a good place for the work of a talented artist on which it is believed 1% of the cost of a public building can be spent.)

If the conference rooms could be combined on the ground floor to provide a combination large meeting area of exhibition space in conjunction with the lobby, this could be designed with a feeling of openness to this plaza that would be convenient, practical and pleasant for visitors.

Goint one step further - if the new Cafeteria were on "A" level it could project in part, at least, above the terrace - not only permitting it to have a desirable higher ceiling but also giving it the possibility of a mezzanine entrance from the plaza.

This would provide the desired feature of direct access from the outside for other employees of the N.I.H. as well as a very agreeable feature in conjunction with the public meetings & exhibition space of the lobby area.

4. Site Development

The major problem of the site is accommodation of the parking. If it has to be on the site - preferably not in tiers under the present parking space - then, of necessity, as much as possible must be under the new building on "C" level. It is suggested the remainder of the site be terraced in such a way as to permit multi-tier parking of the new parking space - somewhat screened by extension of the front terracing. Effort would also be made to extend this terrace to the south in such a way as to provide as much green area as possible outside the windows of "A" & "B" areas including those of the Cafeteria which would therefore tend to be located in the S.E. corner.

Behind the terracing and continued as far as practical around "C" level there could be a narrow moat to provide natural ventilating of the under cover parking to some degree.

Finally the new would be tied in with the old by appropriate landscaping.

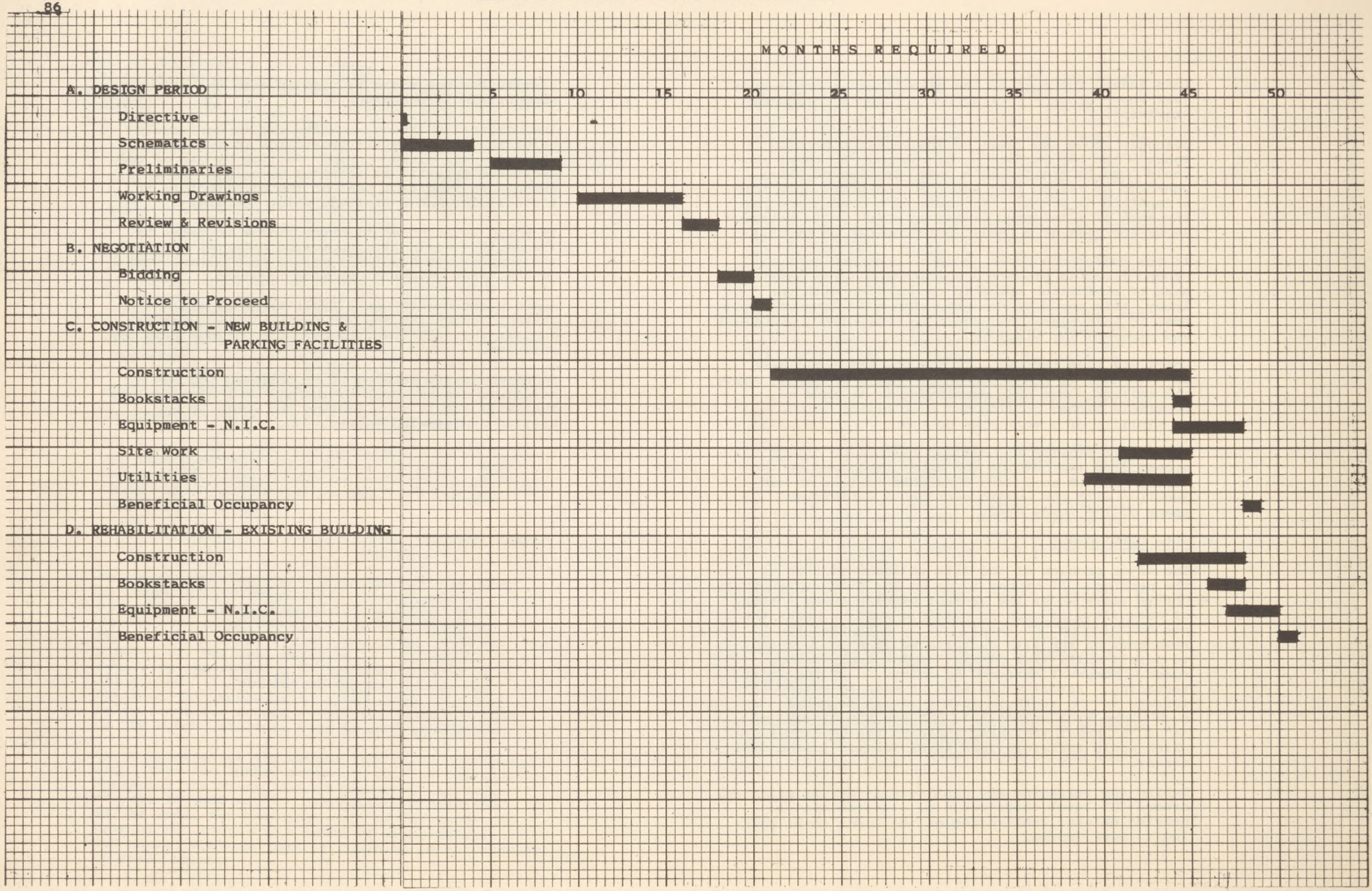
The original building - called for to be largely below the ground level (two-thirds in sub-level stacks) - was given a proper setting by use of the excavated material in terraces becoming - in a sense - an important part of the architecture of the building and a distinguishing feature.

It would be proposed to extend these terraces to the south - again with excavated material - to unify the complex and hopefully screening at least some of the large amount of parking required.

Again planted with small fruit trees it would further accomplish the above utilitarian purpose and, at the same time, improve the outlook from the building.

So harmoniously related it is believed the new structure can be added to the old in a pleasing way that will result in a feeling the whole is one unified and growing institution.

DESIGN AND CONSTRUCTION PROGRESS SCHEDULE



COST ESTIMATES

I. NEW BUILDING

A. 15-Story Tower (Scheme A)

1. General Construction	$7,620,000
2. Site Development - Roads, surface drainage, lighting, visitor's parking, walks, grading, trees and planting.	220,000
3. Utilities	
a. by General Contractor) b. Assessment from N.I.H.) see Page 78	358,000
4. Bookstacks (New)	120,000
5. Work of Artists - 1%	77,000
Sub-total	$8,395,000
Contingencies - 5%	420,000
TOTAL	$8,815,000

Exclusions:

1. All equipment other than bookstacks - e.g. casework, movable furniture and equipment, tape files etc.
2. Parking facilities at "C" level, in multi-tier structure and adjacent area on grade. Visitor's parking included in "Site" above.
3. Computer and console wiring.

B. 10-Story Tower (Scheme B)

Cost relationship to 15-Story Tower - NO CHANGE

C. Low Building (Scheme C)

Cost relationship to 15-Story Tower (Scheme A) - DEDUCTION OF 6%, or $460,000 plus contingencies.
Note: Parking cost relationship rises - see II below.

II. PARKING FACILITIES (402 cars)

A. Multi-tier structure	411,000
B. On Grade (adjacent to "A")	16,000
C. Under Main Building ("C" level)	579,000
Sub-total	$1,006,000
Contingencies - 5%	50,000
TOTAL	$1,056,000

Notes:
1. Visitors parking excluded (in I.A.2 above)
2. Cost relationship - 10-Story Tower - NO CHANGE.
3. Cost relationship - Low Building - ADD 78% or, $784,000 plus contingencies.

III. EXISTING BUILDING - REHABILITATION (POST 1972)

A. Alterations	$ 377,000
B. Compact Book Storage (30,000 lin. ft.)	185,000
Sub-total	$ 562,000
Contingencies - 10%	56,000
TOTAL	$ 618,000

Exclusions:

1. Stage II Computer
2. Console wiring
3. Equipment, other than Bookstacks
4. Cost of work proceeding piecemeal - Estimates based on alteration work being done concurrently (excluding compact book storage).

IV. GENERAL NOTES (applicable to all above estimates)

A. Costs estimated as of June 1967. For each yearly increment to bidding date, plus one year thereafter, ADD 2.0% per year. Forecasting the rate of inflation is inexact, but rate of increase is based on average several indices over the past five years.

B. Exclusions:

1. G.S.A. supervision and administration costs.
2. Design costs.

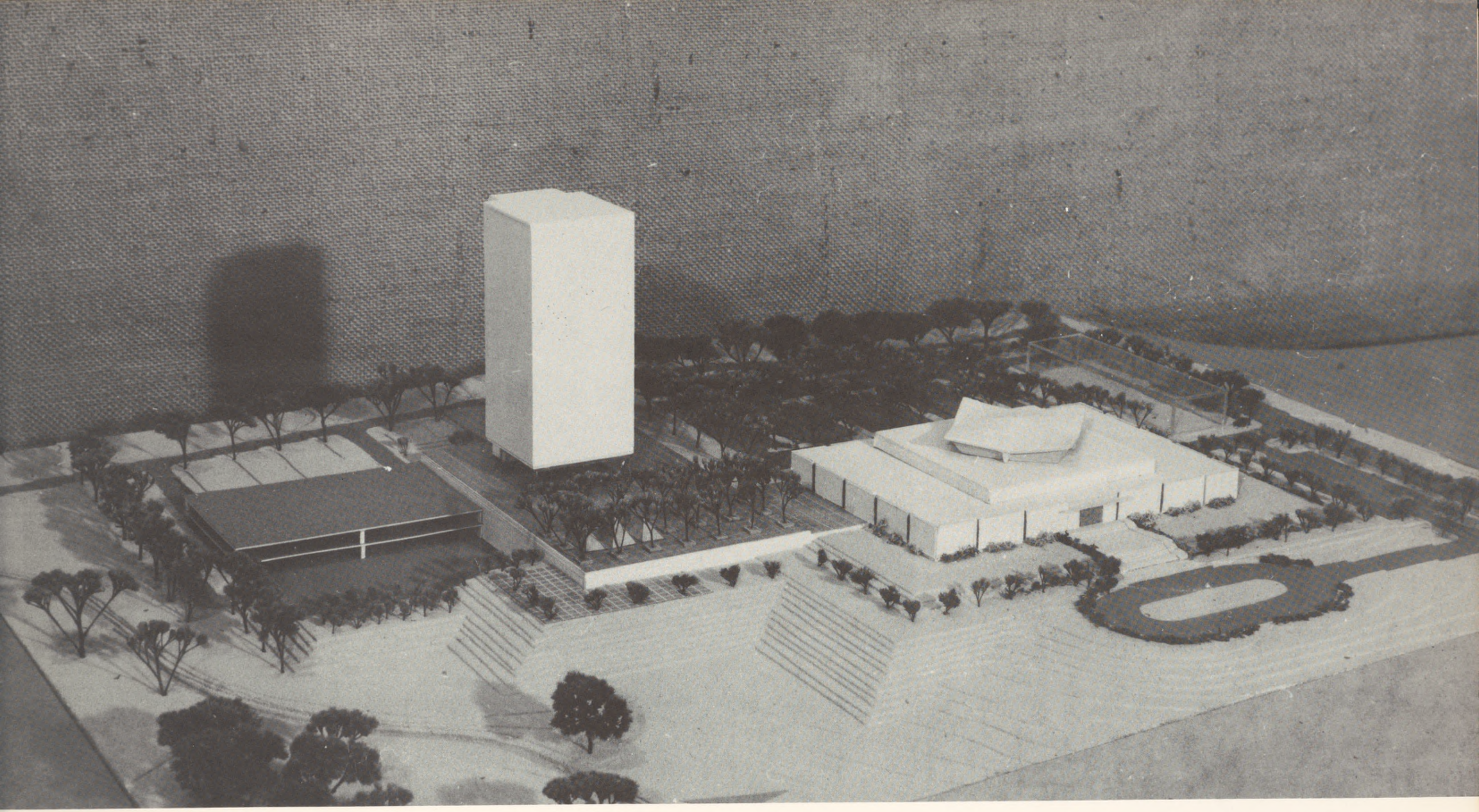
C. Rock excavation included.

D. Building Cost limited to 5 feet outside building; work beyond 5' in "site development and utilities".

V. SUMMARY

New Building - 15-Story Tower (Scheme A)	$8,794,000
Parking Facilities	1,056,000
Rehabilitation - Existing Building	618,000
TOTAL	$10,468,000

Note: Excludes any assessment for utility work by N.I.H.



NATIONAL LIBRARY OF MEDICINE WITH PROPOSED NEW FACILITY

O'CONNOR & KILHAM ARCHITECTS 1967

APPENDIX

APPENDIX No. 1 INFORMATION FURNISHED TO ARCHITECTS

1. Statement of Scope, rev. 10-18-66
2. Preliminary Order of Magnitude Cost Estimates dated 9-7-66, 10-6-66 and 10-18-66.
3. Space Estimates and Miscellaneous Program Data forwarded per letter dated 9-9-66.
4. Organizational Chart.
5. Functional Charts.
6. Up-to-date Floor Plans keyed to Organizational Chart (NLM and Blackwell Building).
7. Auerbach Report - preliminary.
8. Technical notes for Auerbach Report.
9. NBS Report on micro-recording.
10. Summary of Conference on Graphic Image Storage and Retrieval.
11. Current personnel breakdown for all Divisions.
12. NLM Five-Year Program Plan.
13. Report on "Handling of Toxicological Information" by the President, Science Advisory Committee.
14. H.E.W. Memo on Toxicological Information Handling.
15. N.I.H. Utility and Electrical Plans.
16. Work request and partial plan for Renovation to Southwest corner of "C" level.
17. Work request and partial plan for film vault, and adjacent facilities on "C" level.
18. Cafeteria Space Requirements (from G.S.I.).
19. Guide to Collections.
20. Graphic Image Systems.
21. Audio-Visual Photos (from Gerald Kurtz).
22. Flow Charts - supply, extramural program.
23. Physical Requirements for the Computer Room.
24. Summary of Conference on Graphic Image Storage and Retrieval.
25. Summary of Meeting No. 17 - Federal Library Committee.
26. Appendices from 1966 Annual Report.
27. Annual Report - Fiscal Year 1961.
28. Annual Report - Fiscal Year 1964.
29. Survey of the Interlibrary Loan Operation of the National Library of Medicine.
30. Departmental Questionnaires.
31. Personnel Figure Breakdowns for Various Departments.
32. Data re N.I.H. standards for paving and multi-level parking facilities.

APPENDIX 2-1a

M E M O R A N D U M

Re: Biomedical Communications Center
National Library of Medicine

Meeting at NLM, November 22, 1966

Attended by: Messrs. James Isbister, Jim Lawrence, Joe McGroarty of NLM; W.H. Kilham, R.M.Beder, S.R. James, E. Waehrer of O'C & K.

1. Data

a. Documents received

Space and Cost Estimate dated Oct. 18, 1966.
Five-Year Plan.

b. Documents to be forwarded by NLM

Revised budget plans and personnel figures.
Report of the Presidential NBS Advisory Committee
Final version of Aurbach Corp. Report

2. General Planning

a. Will use 1972 as bench mark year for hard planning of new facility.

b. Will use 1986 as base for long range soft planning.

c. Probable future NLM activities (in addition to 5 yr. Plan)

1) Center for toxicological information - could be larger than any present NLM program - might add 35,000 square feet.
2) Center for medical audio-visual activities - might be a center for collecting and distributing material.

d. In general supervisory personnel of Grade GS-12 and above have private offices - others do not.

e. Locations of utilities at south end of N.I.H. Reservation will be furnished by N.I.H. Facilities Planning Division for a meeting on Dec. 1 or 2. At a brief meeting with N.I.H. staff (Messrs. Biggs, Coaster and Stevens) Mr. Biggs agreed to consult with Mr. Isbister regarding Cafeteria use by N.I.H. personnel. The master plan for the Reservation is being currently prepared by Smith, Smith, Haines and Waehler. N.I.H. agreed to allow O'C & K to see the work in progress.

3. Detailed Planning

a. Library Rehabilitation

1) Cafeteria - Originally designed to seat 100 persons. Enlarged to now seat 140. Based on larger user population consider possibility of serving hot food on plates (as opposed to sandwiches on paper plates at present). Change would require larger food preparation area and a dishwasher area.
2) Reader-Service Desk
consider:
(a) enlarging work space (perhaps extending desk to south but leaving drinking fountain accessible).
(b) replacing dumbwaiter with continuous conveyor system for books coming to first floor - use elevator for returning books to lower floors.
(c) post office type box system based on seat numbers 1-120 for book distribution.
(d) replacing present annunciator panel with several panels located so that they can be seen from carrels in the reading room. Number system might be changed to correspond to seat numbers 1-120. Numbers must be large and bright enough to be seen from the most distant carrel.
(e) how to handle 2 panels where glass has been removed.
3) Main waste lines leaving building require study. On about 1 November the sanitary waste lines backed up through the C level toilets and stack area clean-outs. Check installation and functioning of special gravity drains provided for such events.
4) Elevator No. 3 is not balanced properly causing one sheave to wear more rapidly than the other.
5) Consider making stacks more stable by adding top ties or fixing to the floor slab.
6) Consider altering ventilation system so that personnel occupying space designed for stacks are better taken care of. Two categories - temporary until 1972 - Permanent assignment to space.

b. New Facilities

1) Extramural Program - presently occupying Blackwell Building space (visited by SRJ). Primary relationship is with regional and local groups they are designed to encourage. Secondary relationship with Intramural Department.
2) Computer Facilities - in the near future all intramural divisions will make intensive use of the computer. Mr. Isbister will arrange for meetings with Mr. Paul Regner of the NLM Information Systems Division, Mr. James Dugan of the Auerbach Corp. and Mr. Joseph Becker, the NLM EDP consultant on Dec. 1-2. Will try to establish:

(a) types of communication by other divisions with Information Systems Division
(b) special requirements of computer facilities
.power requirements
.temperature and humidity requirements
.size and location of space
.fire protection
(c) future requirements for computers

3) Microfilm Program - at present 3 million pages per year are sent out for microfilming through the binding department (Reference Services) stored in plastic container on conventional library shelving in B level open stack. Must cope with problem of fire protection for microfilm.

c. Departmental Planning Criteria

1) Supply - discussion w/Joe McGroarty, should be close to receiving and loading dock, proximity to heavy users of bulk supply (photographic services, systems analysis) should be considered.
2) Receiving - space needed for exhibits storage and for packing and unpacking.

Regular meetings are scheduled for Thursday, December 8 and Thursday, December 22.

O'Connor and Kilham

Edgar Waehrer

E. Waehrer

EW/de
cc: NLM-James Isbister (5)
James Mongitore Assoc.
Severud Assoc.

Mr. O'Connor
Mr. Kilham
Mr. Beder
Mr. Chu
Mr. James
Mr. Waehrer

APPENDIX 2-2a

MEMORANDUM

Re: National Library of Medicine

Meeting with Lee Vaughn, project manager and Fred Stephens, engineer Research Facilities, Planning Branch: N.I.H. - 1 Dec. 1966.

UTILITIES

1. Received small scale utility drawings of the N.I.H. campus and electrical drawing numbers 9-OS-18 and 9-OS-24 made by Nattingham and Assoc. The latter are to be returned to N.I.H.

2. New N.L.M. facility will tie into N.I.H. chilled water, steam and electrical service. Other lines will be taken directly to or from Wisconsin Avenue.

3. Jim Mongitore will calculate loads of new building. N.I.H. engineer will check existing lines to see whether they will take load or whether enlarging or new lines are necessary. Cost distribution will be discussed at that time.

PARKING

4. Except for the relatively sparsely populated south end of the campus, N.I.H. is going to multilevel parking structures. Currently using a ratio of .6 car/employee although that will probably go up to .7 soon.

The proposed International Conference Building is planned for 200 parking spaces either in the building or in an adjacent parking structure.

CAFETERIA

5. N.I.H. cafeteria planning standard in .7 seats/person divided over 2-3 sittings. South end loop of N.I.H. campus will have approx. 600 persons working therein, including 125 in cancer virus building under construction.

6. The International Conference Building would have a peak load (very variable) of 385 persons for meals.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. Isbister (5)
James Mongitore Assoc.
Severud Assoc.

Messrs. O'Connor, Kilham,
Beder, Chu, James,
Waehrer, Alden

APPENDIX 2-2b

MEMORANDUM

Re: National Library of Medicine

Meeting with Paul Redmer, Chief of Systems Analysis Division and James Dugan, Auerbach Corp. at NLM
1 December 1966

1. By 1970 input-output consoles ranging in size from large typewriters to a large color TV set (cathode ray tube console) will be located in virtually all departments tieing them directly into the computer.

DIVISION	No. of remote station consoles - 1970
TSD	15 (may need as early as 1968)
RSD	2
BSD	10-11
ISD	1 or 2
HMD	1
Drug Lit.	2
MeSh	1
Toxicology	10
R & D	No. of researchers/2

2. All stations require 2 cables or 2 in one wrapping to a coupling station or to the computer - 2000 feet max. distance console - computer without reinforcement of signal.

3. Up to 2000' distance, a 2"-3" diameter cable run directly from each console to computer is the easiest solution - electronically. However, in addition to normal cable shielding the line must be completely shielded from electrical wiring to avoid interference. Need a galvanized metal shield around cables and between each console cable. There is a GSA pamphlet on cables available.

   Past experience has indicated that these cables could be run exposed below ceiling slab or in suspended ceiling without additional shielding. Cable is flexible and there is no limit on numbers of turns.

4. When console-computer distance exceeds 2000' or a better signal is desired various devices may be added to the direct line. When any of these devices are added the cable is reduced to telephone line size without the necessity of any further shielding whatsoever.

   a. Modem Boxes - box required for each console at console end and computer end of line, signal is modulated and demodulated at each transmission.

   b. Buffer Technique - buffer is a memory box which permits changes of speed of signal - sends signal ~~many times by~~ sending it a slower rate.

   c. Switch Technique - (7740 IBM), instead of separate lines to computer signals could be sent through one switch -- might be able to use a smaller communication controller.

   The exact nature of the system to be installed in the library in the next 2 years will not be known until a proposal is accepted for the stage 2 computer system. NLM will have to consider costs of installing and shielding lines in an acceptable manner (electrically and architecturally) as well as the direct computer manufacturer cost.

5. The present data processing space will probably be OK in size.

6. Beginning in late 1967 approximately 30 persons representing contractors will have to be housed in the library.

O'CONNOR AND KILHAM

Edgar Waehrer

E. Waehrer

EW/de
cc: NLM-James Isbister (5)
James Mongitore Assoc.
Severud Assoc.

Mr. O'Connor
Mr. Kilham
Mr. Beder
Mr. Chu
Mr. James
Mr. Waehrer

APPENDIX 2-2c

MEMORANDUM

Re: National Library of Medicine December 5, 1966

Meeting with Joe McGroarty - 1 Dec. 1966

Received copies of work request and partial plan for two items below.

Requested advice concerning:

1. renovation of Southwest corner of "C" level for System Analysis Division.

2. design and construction of a film vault, editing and splicing room and camera station on "C" level.

Should tie in with our overall plans for the "C" level stacks.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc

cc: National Library of Medicine,
Mr. James Isbister (5 copies)

James Mongitore Associates

Severud Associates

Messrs. R.B. O'Connor
W.H. Kilham
R.M. Beder
P.M. Chu
S.R. James
E. Waehrer
R. Alden

APPENDIX 2-2d

MEMORANDUM

Re: National Library of Medicine

Meeting with Dr. Cummings and James Isbister at NLM,
1 December 1966.

Opinion offered by Dr. Cummings

1. estimates that NLM personnel will double every 5 years for the next two five year periods. After 10 years the personnel might plateau.

2. present library will continue to house a collection of books (as apposed to microforms only) and will be primarily an instrument of direct service to the public. Other aspects might be housed in new facility.

3. We should assume:
   1). for the next 10-20 years books and journals in printed form will be the principal means of communications.
      a. the medical literature doubles every 12 years.
   2). new information forms will be library based.
      a. audio-visual material will increase at a faster rate - perhaps double every 5-6 years.
   3). will be able transmit information by wire, wave, satellite etc.
   4). N.L.M. will be required to supply 25-30 regional libraries with microform packages equal to 10% of the NLM collection
   5). new facility must have the ability to develop a linkage with 100 or more other related information centers.

4. In 10 years the personnel size of various divisions might be:

RSD	down
RSD	up x 1
TSD	up x 1
HMD	same
ISD	up x 5
EMP	up x 4
R&D	175 by 1973

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. Isbister (5)
James Mongitore Assoc.
Severud Assoc.

Messrs. O'Connor, Kilham, Beder, Chu, James, Alden, Waehrer.

JAMES MONGITORE ASSOCIATES
Consulting Engineers
101 PARK AVENUE
NEW YORK, N. Y. 10017
MURRAY HILL 3-7240

MEMO - Meeting at NIH re NLM 12/1/66

Present: James Mongitore, Ed Waehrer, Joe McGroarty, Lee Vaughn, Fred Stephens

After a brief discussion regarding utility services for the proposed extension on new building for the National Library of Medicine the following was arrived at -

1. Water service is strictly the responsibility of NLM and any arrangements required will have to be negotiated with the Water Company.

2. Sanitary system and storm water disposal is also the responsibility of NLM.

3. Chilled Water Service -

   We are to submit estimated refrigeration load to NIH thru regular channels so that an evaluation can be made regarding present and and future capability of the present and future chilled water distribution system.

4. Steam Condensate Return Service

   We are to submit estimated steam consumption loads to NIH thru regular channels so that an evaluation can be made regarding present and future capability of the underground steam and condensate distribution system.

5. We are to submit estimated electrical loads to NIH thru regular channels so that an evaluation can be made of capability of present electric distribution system to handle expected loads.

* * * * *

Verbal Discussion - Ed Waehrer, James Mongitore, Joe McGroarty

1. Micro film Storage & Processing - Requirement of 50 to ~~55°~~ 60° F - ~~20%~~ 30%-35% RH - This space will have to be treated same as meat processing rooms such as was designed for West Point Kitchen - Bldg. A - We see no particular problem.

2. Requirement for additional air in Level "C" to handle higher loads for office type use of spaces originally designed for stacks. This problem can be handled more simply by the use of fan coil units to provide the required cooling effect. The present air supply (subject to further check) is probably sufficient to handle oxygen requirements). The fan coil units would be chilled water supplied. Running chilled water piping to fan coil units will be more practical than trying to increase capability of duct and related equipment.

James Mongitore

APPENDIX 2-3a

M E M O R A N D U M

Re: National Library of Medicine
Extramural Program

Meeting with Dr. Marjorie Wilson, Assoc. Director for Extramural Programs; Dr. Carl Douglass, Chief of Facilities and Resources Division; Mr. David Kefauver, Chief of Research and Training Division; Mr. John Spain, Grants and Contracts Officer - at NLM December 2, 1966.

1. EMP has been charged with the responsibility to strengthen the mechanical sciences information of the nation. Gives grants to institutions and individuals for various projects. Generally distributed to approximately 250 institutions.

2. The three sections of EMP,

   Publication and Translation
   Reseaches & Training
   Facilities and Resources

   work very closely with one another and should not be physically separated.

3. Planning

   A. Offices - typical office type space needed. Two private offices with a shared secretarial space has been a good arrangement for EMP. No universal equipment needed but might have consoles tied to computer in the future.

   B. Conference Rooms

      1) Small - need 4 rooms seating 8-10 persons around a table. At present chief offices have tables seating approximately 6 persons.

      2) Large - 2 conference rooms seating 30 persons, 15-20 around table, other around edge. Should have chalk boards, projection screens, tape decks.

         Full day (or longer) conferences with outside participants will be common and will require adjacent facilities.

         Toilets, lounges, telephones, reception area, coat room

         N.I.H. Bldg. 31 could be used as a model.

   C. Work Area

      Special attention should be given to table/counter or other devices for easing task of collating large quantities of material. At present it is done by clerical help using every available flat surface.

   D. Visitors

      Equal to ap rox. 20-25% of staff.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc

cc: NLM - Mr. Isbister (5)
James Mongitore Assoc.
Severud Assoc.

Messrs. O'Connor
Kilham
Beder
Chu
James
Waehrer
Alden

M E M O R A N D U M

Re: National Library of Medicine
Reference Service Division

Meeting with Sam Waters, Chief of Reference Service Division; Ed Miller, Asst. Chief; Tom Bagg, Microfilm consultant at National Lib. Medicine - 2 December 1966.

Immediate Planning for microfilm vault on "C" level

1. Vault:
   a. use stock Watson Cabinets, Jamestown, N.Y.
   b. plan for 35 mm film
   c. plan for 40 million pages on film by 1972
      1000 reels/million pages
      40,000 reels
      40 cabinets - put cabinets on 2" base to protect against flooding.
   d. mechanical
      1) temperature constant 50° - 60°
      2) humidity constant 30% - 35%
      3) air must be filtered - no vapors or dust
      4) fire protection - use CO2 system with locking off possibility during daytime - plan warning system.
      5) relocate any duct passing through vault space.
2. Editing & Splicing Area:
   a. plan for 8 work stations, 7' x 7', closed on 3 sides, open on the fourth.
   b. plan for 3 additional pieces, 7' x 7' for equipment and operator
   c. add necessary aisle space to above space requirements
   d. mechanical
      1) normal ventilation - temperature 70° ±
         humidity 50% ±

Graphic Image Storage and Retrieval - 1972

In addition to 10,400 sf indicated in scope statement an R & D facility consisting of the following program requirements is required:

10 persons @ 100 sf	1000 SF
7 or 8 pieces of equipment @ 150 sf	1200
shop	500
storage	200
dark room	300
office and work space for outside contractors	500
conference room	300
Total	4000 SF

equipment space, shop and storage area require a dust free environment.

Graphic Image Storage and Retrieval - Production & Service

Present Inter-library loan and photo-duplication departments will continue as service elements. After regional library networks is operational, NLM will continue loan service as a regional center and will service the 10% of requests that the regional center are unable to fill.

By 1972 loan requests (duplicates) will be filled by both:

1. hard copy
2. microfilm copies

made from:

1. hard copy original
2. reel microfilms
3. microfilm operture cards

By 1986 there may be as many as 500 million pages on microfilm.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: NLM - Mr James Isbister (5)
James Mongitore Assoc.
Severud Associates
Messrs. O'Connor, Kilham, Beder, Chu, James, Waehrer, Alden

APPENDIX 2-4a

M E M O R A N D U M

Re: National Library of Medicine
Bibliographics Services Division

Meeting with Dr. Bachrach, Chief of Division, at NLM -
7 December 1966.

Search - Uses reference collection - would have to be duplicated in part if search were to move. At present material for computer searches goes to data processing several times a day.

Search manpower will increase in spite of regional library network because individual medical area indexes, presently 6 (nursing, rheumatology, etc.) - may go as high as 50.

A low (7'0") partition separates an office - classroom space from the general work space. Not a very satisfactory arrangement at present.

Index - After indexing serials go to ISD for input typing. In future this might be done directly by indexers. Will need almost one console per indexer. At present 4 indexers are working in Division Chief's office space.

O'CONNOR AND KILHAM

Edgar Waehrer

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APPENDIX 2-5a

M E M O R A N D U M

Re: National Library of Medicine
Audio-Visual

Meeting with Jerome Kurtz, Walter H. Kilham, Robert M. Beder and Edgar Waehrer.

15 December 1966:

1. TV sets located throughout library tied to audio-visual capability, probable locations are: Catalog, Auditorium, Director's office, Medlars Viewing Area.

2. Receiving station require no more than a normal wire in conduit for reception.

3. Build in screens in carrels similar to built-in public phone stations. Consider possibility of tack surfaces on carrels.

4. Consider the possibility of production and reproduction of tapes and color capability.

5. Plan for a large screen in at least one stack study. Consider possibility of TV sets with voice communication in some of the stack studies.

6. Plan taped film storage carefully as there is a possibility that the NLM may house Archival Medical Film Collection which would be open to public viewing. This public viewing could be done at almost any convient spot in the library.

7. There is an operational audio-visual carrel system in the West Hartford School system at present.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. James Isbister (5)
James Mongitore Associates
Severud Associates

Messrs. O'Connor, Kilham, Beder,
Chu, James, Waehrer, Alden

MEMORANDUM

Re: National Library of Medicine
Reference Services

Meeting attended by Mr. Sam Waters, Mr. Tom Bagg, Mr. James Isbister, Mr. Walter Kilham, Mr. Robert Beder and Mr. Edgar Waehrer - 15 December 1966

1. Collection - There is a discrepancy between the figures submitted by Reference Services on the questionaire and those included in the 1966 report. Using the projection from the questionaire it would appear as though the library had a total collection of 504,000 volumes in 1966 whereas the annual report includes roughly 1,000,000 volumes. NLM will attempt to resolve this difference and will inform us of the true size of the collection.

2. Compact Storage - The Yale system of storing books by size in a serial arrangement would involve a very difficult and costly job of reclassification. TSD would probably have to undertake this job and might not have the personel to do so. Mr. Waters expressed a preference for the compact shelving system using the standard Dewey Decimal arrangement.

3. RSD Film Program -

a. Inter Library Loan -

Stacks - to filming operation - to developing - to copy flow - to mail.

b. Preservation filming - 2,000,000 pages per year at most

Stacks - to microrecords - to fixed cameras - to developing & printing - to inspecting - to microrecords vault.

c. Contract filming - Microrecords sent out.

Stacks - to microrecords - to mail-to contractor - to mail - to photo duplication inspection -to microrecords inspection - to microfilm vault.

d. Graphic Image Program - This future operation would have the capability of making hard copies or microrecord copies from Fische or aperture cards. The reel master film would be previously converted to fische or aperture form by photo duplication.

O'CONNOR AND KILHAM

Edgar Waehrer

Edgar Waehrer

EW/gc
cc: Mr. James Isbister (5)
James Mongitore Associates
Severud Associates

Messrs. O'Connor
Kilham
Beder
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James
Waehrer
Alden

MEMORANDUM

Re: National Library of Medicine
Administrative Services

Meeting with Mr. James Isbister, Mr. Joe McGroaraty, Mr. Walter Kilham, Mr. Robert Beder and Edgar Waehrer.

15 December 1966

1. Supply

   a. Supply storage - 4500 sq.ft. i.e. present size is sufficient for 1972 supply storage.

   b. Duplicating facility - 3,000 sq.ft. - photo offset operations.

   c. Exhibit storage - plan on using rental space.

   d. Furniture storage - plan for rental space.

2. Receiving and Mailing

   If a receiving and mailing operation is planned for a new facility present size facility is sufficient in main building. Add approximately 1,000 sq.ft. in the new facility for a second receiving and mailing facility.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. James Isbister (5)
James Mongitore Associates
Severud Associates

Messrs. O'Connor, Kilham, Beder,
Chu, James, Waehrer, Alden

MEMORANDUM

Re: National Library of Medicine
Parking Facilities

Meeting at N.I.H. with Mr. Al Perkins, Mr. Frank Liposky and E. Waehrer - 21 December 1966:

Received from Mr. Perkins:

1. Dwgs. for Emergency Virus Isolation Facility; Site and Location Plan 3674-CE-1; Boring Plan & Notes 3674-CE-8.

2. Soils Investigation Report for Emergency Virus Isolation Facility.

3. Program of Requirements for a Multilevel Parking Facility for Building No. 31.

4. Reprint of "So You're Planning a Parking Garage" by Richard C. Rich.

5. Guide Specification for Bituminous Paving.

6. Mr. Perkins will send N, E & S, elevations of Virus Facility.

On grade parking

1. Parking stall width - 8'0" c. to c., 18' for stall length.

2. Aisle of 22'

3. Buffer preferred between parking rows - 12' if possible - enough for walk, and tree planting.

4. Paving - follow guide spec. for bituminous paving.

5. Drainage - normal; prefer combination curb and gutter continuous (L shaped concrete section)

6. Design - at present N.I.H. uses a ratio of .6 spaces/building occupant. Investigate condition as greater use of car pool may reduce ratio.

Parking Garage

1. May use Program for Requirements for Bldg. 31 Facility as a guide.

2. Built in leaking devices on ramps where snow and ice might accumulate.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc

cc: NLM - Mr. James Isbister (5)
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APPENDIX 2-6b

MEMORANDUM

Re: National Library of Medicine
Overall Planning

Meeting with Dr. Cummings, Mr. James Isbister, Mr. W.H. Kilham and Mr. E. Waehrer - December 21, 1966.

1. Plan new facility for ideal size based on needs as opposed to using 125,000 SF gross as a constraint.

2. Assume supply storage for furniture and large cases will be in rented space.

3. Plan for stack expansion through 1986 assuming the collection will double every 12 1/2 years.

4. Include all types of compact stacks in our study for comparison purposes:

   a. assume 200,000 volumes (25% of collection) might be stored compactly in 1972 and a constant 20%-25% of the collection compact storage over the next 20 years.

5. Jim Isbister will obtain a copy of the C.I.A. Graphic Storage and Retrieval System "Cypress" from Joe Becker.

6. Carrels - consider all types of study areas:

   a. open carrels in reading room -

      standard
      audio - visual

   b. 3 station audio - visual study on first floor

   c, scholars open carrels in stacks

   d. scholars private study rooms in stacks - should be comfortable enough for a man to spend a year working there; desk, audio-visual facility, console tie-in, book case, etc.

7. Reader - Service Desk

   a. consider addition of turnstile at entrance to reading room as a counting device and control.

   b. retain present entrance and expand desk to west and south in a shape of some sort to give more space behind desk; develop this scheme as the "best" solution.

   c. explore pidgeon-hole idea below counter and/or below eye level so that visual control can be maintained over the entire reading room.

8. Existing building planning -

"Best" solution as agreed on by all present was:

Mezz. - expansion of all departments except Offices of Associate Director for Intramural Programs - he would have space for four persons on mezzanine, others of his staff located elsewhere.

1st Fl. - Data Processing & Computers move to new facility; TSD expands fully on this floor; BSD Search expands as much as possible, additional space would be grouped elsewhere with Indexers; RSD work space is reduced to conform to GSA standards; RSD Chief's Office expands at A level.

A level - Inter library loan & Photoduplication (Graphic Image Storage and Retrieval) to expand as necessary; Indexers, Me Sh, Dwg Literature Program, and cafeteria to move to new facility; Binding and Micro-record relocated as this level; Cafeteria moves to new facility.

B level -- HMD expands as necessary on this level; stacks and studies occupy remaining space.

C level - entire floor reconverted to stacks and studies - compact stacks to be on this level

9. New Facility

Two or three alternates will be presented for a new structure tied to the existing building by a link from the South-west corner of A level.

Major alternates will be: 1. tower structure, 2. low structure- approx. some height as existing building

Parking will be considered all on grade, as well as part under or on top of the new facility.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. James Isbister (5)
James Mongitore Assocs.
Severud Associates

Messrs. O'Connor, Kilham, Beder,
Chu, James, Waehrer, Alden

MEMORANDUM

Re: National Library of Medicine
Compact Stacks

Meeting with Messrs. Riley, Waters, Adams, Kilham, Beder, James and Waehrer.

16 January 1967

Compact Stacks

Mr. Waters indiacted a strong preference for stack systems comprised of narrower aisles and/or serially arranged books to that of a mechanically operated system. The ensueing discussion with Mr. Riley and Mr. Waters indicated that it may not be necessary to change the card catalog if books are entered into compact storage by date i.e. say all pre 1930 serials or all pre 1930 monographs. Then, merely by having the reader indicate the date on the call slip the personnel at the readers service desk would query the computer to determine book location. In that case the card catalog would not have to be changed at all.

Another possibility would be to put only dead serials in compact storage and change the cards as necessary.

A single card is used for perhaps 20 to 40 volumes in which case the cost per lineal foot is relatively low. Because of the fact that we could not decide the exact nature of what was to be compacted we decided that O'Connor & Kilham would not attempt to set any kind of cost for changing of the cards or clerical work involved in compacting. Mr. Waters seemed to favor the idea of putting only serials and possibly theses in compact storage. Mr. Riley felt it was possible to put monographs by the pre date method.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. James Isbister (5)
James Mongitore Associates
Severud Associates

Messrs. O'Connor, Kilham, Beder,
Chu, James, Waehrer, Alden

APPENDIX 2-7b

M E M O R A N D U M

Re: National Library of Medicine
General

Meeting at NLM - with Mr. Isbister, Mr. Kilham, Mr. Beder, Mr. James and Mr. Waehrer

16 January 1967

SCHEDULE

1. Date for final submission of contract material will be extended to March 3rd, O'Connor & Kilham's schedule for completion of work and delivery to printers will be February 24th.

2. Meetings with Mr. Isbister prior to that date are tentatively scheduled for January 27th in Washington and February 14th in New York.

3. The material will be presented to the NLM board of regents on March 16th.

4. Parking - note should be made in the report text of the fact that there is an additional need for visitors parking above and beyond the 36 presently provided.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. James Isbister
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APPENDIX 2-7c

M E M O R A N D U M

Re: National Library of Medicine January 16, 1967

Meeting at NLM attended by Dr. Cummings, Messrs. Adams, Isbister, Kilham, Beder, James & Waehrer.

GENERAL

1. Compact Stacks

Dr. Cummings indicated that renting space for compact stacks should not be seriously considered, because:

a. It was hard to equal the security of the NLM.

b. The archival responsibility of NLM places a great responsibility to maintain all of the collection in a secure and accessible location.

Dr. Cummings and Mr. Adams agreed that the preferred solutions for compact storage were ones that included narrowing aisles and arranging books by size as opposed to solutions incorporating mechanical gadgetry. Dr. Cummings also indicated a preference for incorporating the hardware of any of the compact scheme in 1972 rather than merely providing the space and leaving the compact storage hardware for a later date.

2. Graphic Image Storage and Retrieval System

Mr. Becker has not provided the "Cypress" or "Walnut" system outline as yet. Dr. Cummings suggested that we might get the "Cypress" system directly from IBM; their representative in New York is Mr. Steven Furth.

3. Annunciator Boards

The various alternatives outlined by O'Connor & Kilham were presented along with the conclusion that perhaps two boards might be the most reasonable selection. Dr. Cummings expressed interest in the radio microwave system and stressed the point that we would emphasize the best possible system, not necessarily the least expensive.

4. Readers Service Desk

After a general discussion of the arrangement everyone agreed that the pigeonholes were best located on the north wall of the Lounge seating area within the reading room. This means, operationally, that books would be placed in the pigeonholes by the readers service desk attendants and would be taken directly by persons using the reading room.

5. New Facilities

After a general discussion of the various models made by O'Connor & Kilham, there was general agreement that the preferred tower solution was that of the fifteen story point tower located to the south and west of the existing building, close to the loop road. A glass lobby floor at the base of the tower on top of the larger A and B levels was preferred.

Dr. Cummings indicated a strong desire to get a relatively large conference room some place in the project, perhaps seating up to 250 persons. The final suggestion was that this be incorporated into a large exhibition area, within the glassed in Lobby area at the base of the tower. Another possibility would be to have the small conference rooms separated by removable partitions, thus combining three to six small conference rooms into one large conference room.

Dr. Cummings indicated a preference for having the large base of the tower, that is A & B levels possibly articulated in a way similar to that of the low mass clay base. The clay models of the low and intermediate massing were presented but the general feeling was that as solutions they were not as good the tower scheme. However they will be presented as alternatives in the main body of the report.

O'CONNOR AND KILHAM

Edgar Waehrer

EW/gc
cc: Mr. James Isbister (5)
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Severud Associates

Messrs. O'Connor
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