

UNIVERSITY OF MINNESOTA

MINNEAPOLIS, MINNESOTA

A Narrative Description
Including an Architectural Program
with Space Schedules

ABSTRACT

This application seeks funds to construct Phase I, Step I, Unit A of the Health Sciences Capital Development Program at the University of Minnesota. The Health Sciences program has been divided into two phases of development. The first makes provisions for facility need of existing programs and planned changes during the next 10 years. The second envisions possibilities for future development through the 1980's. Most important of the programmatic changes is the closer integration of all Health Sciences programs. The facilities are planned to support this integration and to take into account technological developments and changes in teaching, research and health care techniques as well as provide facilities for an increasing number of health profession personnel. Detailed planning documents are now being developed for all of Phase I.

Incorporated with the Capital Development Program is expansion in the Medical School class from 163 to 203 and the Dental School class from 115 to 150 with accompanying expansion of enrollments in related programs. X

Unit A is a 20-floor structure containing new facilities to support most of the Dental School programs and some programs in the Schools of Medicine and Public Health. In addition, it will include shared classrooms, auditoria, and basic science teaching laboratories to serve all units of the Health Sciences. These new areas will permit the earliest possible expansion of enrollments, and will free existing space to be remodeled in the next two steps to serve other programs.

The decision to undertake the project was the result of University, State and public dedication to the vital need to provide Minnesota and the Upper Mid-west the highest quality Health Science training and service possible. Innovations in teaching methods, technological changes and advances, expanded enrollments, limitations imposed by current space and facilities all produced the urgent need to renovate and expand the Health Science facilities.

The long-range master plan of the Health Sciences at the University of Minnesota is part of an emerging master plan for the whole University. This plan envisions enrollments of approximately 75,000 persons for the University system and 60,000 persons on the Twin Cities Campus. In accordance with the goals established by the Higher Education Coordinating Commission, the University's enrollment structure in the Twin Cities is moving toward 1/3 lower division, 1/3 upper division and 1/3 graduate and post-baccalaureate professional.

The dollar magnitude of the current plan is approximately \$40 million of which \$28 million is for actual construction. Of this total construction figure \$5.8 million is for the Medical School, \$19.2 million is for the School of Dentistry, and \$3 million is for the School of Public Health. The shared facilities are divided proportionately.

PART ONE

Section A Background

1. Short history of the University

The University of Minnesota is the State and Land-Grant University of the State of Minnesota. Founded in 1851 by the Territorial Legislature, it enrolled in excess of 47,500 students in Fall 1968 on four campuses in the Twin Cities (St. Paul and Minneapolis), Duluth, Morris, and Crookston. Through an affiliate arrangement with the Mayo Foundation, 614 graduate medical students were receiving training in Rochester.

The University is the only institution in the State offering the Ph.D. degree. It also offers the only programs in many professional areas including medicine, public health, dentistry, pharmacy, engineering, and agriculture; all of which are located on the main campus in the Twin Cities. Offerings in almost all important disciplines are found on this campus, where approximately 41,000 students enrolled in the Fall 1968.

PART ONE

Section A Background

3. Justification and Need

For more than five years the faculties of the University of Minnesota Health Sciences have carefully considered objectives and programs for the future. The plan for physical development results from this collective effort. The Health Sciences Center must be expanded and developed physically in order to meet the academic, patient-care and other service objectives. The primary goal of Master Planning for the Center is to provide an orderly and flexible framework for growth for the next twenty years and beyond through new construction and development for the existing complex.

The Health Sciences Center is responsive to the health needs of the state. This program is designed to meet the state needs of increased health manpower, provide for closer cooperative arrangements among members of the health science team, and provide the patient easy access to the comprehensive specialty-referral health care system.

Concurrent with the internal University effort the Hill Family Foundation, at the request of the University Board of Regents, sponsored a comprehensive health manpower study for the upper Midwest. The principal recommendations of this study made available in June, 1966, called for expansion in entering classes for the University Medical and Dental Schools at the earliest possible date.

Architectural planning began in fall 1967 supported by a \$500,000 appropriation from the State Legislature. In addition to the detailed program described in this application the architectural team was asked to provide physical master plans for Health Science programs through the mid 1980's.

PART ONE

Section A, Background

4. Describe present facilities and deficiencies in the facility which preclude expansion of enrollment and which may curtail enrollment or quality of instruction.

The Health Sciences Center includes the following facilities:

Jackson Hall
Lyon Laboratory
Millard Hall
Owre Hall
Mayo Memorial Building
Health Service
Children's Rehabilitation Center
University Hospitals
Variety Club Heart Hospital
Diehl Hall
VFW Cancer Research Center
Masonic Memorial Hospital
Powell Hall

These total approximately 1,180,000 net square feet. Most of these facilities are capable of several more decades of effective service to educational programs. To obtain maximum effectiveness, however, we must modify and improve the use of existing space as well as to add additional floor area. Growth in enrollment and modification in manifold teaching, research, and service activities in the past years have placed excessive strain on existing facilities. The adaptation of buildings poorly designed for programs which they now serve has resulted in considerable inefficiency in operation and management. Most notable are those related to access and circulation. This is particularly evident within the present facilities as it affects the movement of students, faculty, staff, patients, and supplies.

Other problems exist because the total space is inadequate to accommodate staff and equipment essential to the operation of Health Sciences programs. The resultant overcrowding virtually eliminates the flexibility required for adaptation of the rapidly changing procedures and methods of instruction and learning in these fields.

PART ONE

Planning

3

Section A Background

7. Briefly describe the planning process involved in this project, including such things as student, faculty involvement, etc.

Planning for the program under consideration has been underway for more than a decade. The detailed coordinated effort began in late 1964 with the appointment of a Health Sciences Planning Committee. This Committee included administrators from central administration, the Dean of the College of Medical Sciences, Deans from the Schools of Dentistry, Pharmacy and Veterinary Medicine, the Director of Hospitals and members of the faculty.

For eighteen months the Committee, assisted by six sub-committees concentrated upon definition of roles, objectives and programs of all the Health Sciences units. In mid 1966, attention turned to methods and resource requirements needed to implement the programmatic plans.

Concurrent with the internal University effort, the Hill Family Foundation, at the request of the University Board of Regents, sponsored a comprehensive health manpower study for the upper Midwest. The principal recommendations of this study, made available in June, 1966, called for expansion in entering classes for the University Medical and Dental Schools at the earliest possible date.

Acting upon the Hill Family Foundation recommendations and the preliminary report of the Health Sciences Planning Committee, the Board of Regents proposed an expansion of the physical facilities which were considered essential to the maintenance of quality programs in the Health Sciences.

In addition, it would make possible the introduction of new programs and the recommended increases in enrollments. Entering classes in Medicine would be increased from 163 to 203 and Dentistry from 115 to 150. There would also be proportionate enrollment increases in related health professional programs.

The Regents requested, from the 1967 Legislature, \$650,000 to purchase land required for physical expansion and \$500,000 to finance preliminary physical planning. This request was granted, and a Design Coordinating Committee was appointed. An architectural team was also selected to work with the Committee to develop a physical master plan to serve the Health Sciences programs through the mid 1980's.

Specific goals established for the architects included:

- a) Expansion to serve increased enrollments in Medicine, Dentistry and other related programs.
- b) Improvement and conservation of existing facilities
- c) A physical arrangement that supports and encourages interaction among Health Sciences units and between all of the units and the entire University.
- d) Flexibility in planning to adapt to future program changes.
- e) Provision for expansion to accommodate future needs.

These goals had to be met within the context of total University planning. As this work proceeded, thirteen additional special sub-committees were formed to assist the Coordinating Committee and the architects. In the planning process to date, more than 150 faculty members have participated. A listing of all the Committees is included in an appendix.

PART ONE

Section B, Community Relationships

The University's main campus is located near the geographic center of the Twin Cities metropolitan area. Population in the seven-county area exceeds 1.7 million persons, about 55% of the State's total. Electronics is the major industry in a diversified economy. Food processing, advertising, banking, wholesaling and transportation are other major forms of economic activity. Commercial interests of the Twin Cities serve the needs of agriculture and industry throughout the Ninth Federal Reserve District.

While the level of economic activity in the metropolitan area is high, the relatively great importance of agriculture and mining in the State's economy results in a per capita personal income slightly lower than the U.S. average. Levels of health care are generally rated well above the U.S. average but general concern is expressed about declining physician-to-population and dentist-to-population ratios. There is concern also about the distribution of physicians and dentists in the more sparsely settled rural areas.

Population is growing in the metropolitan areas but, as is the case in most states, it is declining in the core cities. It also is declining in many of the more rural counties. Because of its leadership position in higher education, the University has special opportunities and responsibilities to work on many problems including delivery of health care in both rural and urban settings.

Throughout the entire planning process representative groups of the metropolitan and out-state areas have been appraised of the program and intentions. Copies of preliminary plan reports were distributed and continuing information is given to interested parties such as the city council, metropolitan council, neighborhood organization groups, and the University Community Development Corporation.

Perhaps most significant was the Regents request prior to any of the planning for a comprehensive study of the Health Manpower needs of the region. The advisory committee held extensive consultations with appropriate representatives of the community.

PART ONE

Section C Organizational Structure

1. Organizational Structure

The University is governed by a Board of twelve Regents elected for six year terms by the State Legislature. By tradition, eight of the Regents are elected from Congressional Districts and four are elected on an at large capacity. The Regents of the University of Minnesota are by constitutional definition (reaffirmed by court decision) an autonomous body. Responsibility for academic materials has been directed by the Board of Regents to the respective collegiate faculties with all University materials in this area managed through a representative elected senate of faculty and students.

The President of the Board of Regents is also the chancellor of the University. Under his authority are five vice presidents with responsibilities as follows: Administration, Academic Administration, Business Administration, Educational Relationships and Development, and Student Affairs. In this structure the office of the Vice President for Academic Administration assumes central importance for administration of collegiate units. The administrative offices of collegiate units do, however, report directly to the other four vice presidents in matters relating to their area of responsibility.

The College of Medical Sciences, the School of Dentistry, the College of Pharmacy, and the College of Veterinary Medicine comprise the Health Sciences on the Twin Cities campus of the University of Minnesota. Within the College of Medical Sciences are four administrative units: Medical School, School of Public Health, School of Nursing, University Hospitals. Since 1968 the chief administration of each of these units including the sub-units of the College of Medical Sciences have been recognized by the Board of Regents as a Council of Health Science Deans and Directors. This Council serves as the coordinating mechanism of programs in all health science units.

SECTION D FUTURE PHASED PROJECTS - PHASE I

FUNCTION	STEP 2						STEP 3	
	UNIT B	UNIT C	UNIT D	UNIT E	UNIT F	REMODELING	REMODELING	UNIT L
DEPARTMENTAL OFFICES AND RESEARCH DEPARTMENTS	DEPARTMENTAL OFFICES AND RESEARCH DEPARTMENTS	OUTPATIENT CLINICS - DIAGNOSTIC RADIOLOGY PATIENT CARE MEDICINE AND PEDIATRICS -EXPANSION OF OPERATING ROOMS	RADIO THERAPY FACILITIES	HEALTH SCIENCES RECEIVING STORAGE FOOD PREPARATION AND CAFETERIA	COLLEGE OF PHARMACY	PUBLIC HEALTH ANIMAL QUARTERS EXPANSION	SCHOOL OF NURSING BASIC SCIENCES CLIN. DEPT. EXP. HOSPITAL DEPT. EXPANSION ANIMAL QUARTERS PUBLIC HEALTH	LEARNING RESOURCES CENTER
ESTIMATED APPLICATION DATE	MARCH 70	JULY 71	NOVEMBER 71			NOV. 71	JULY 73	JULY 73
ESTIMATED CONSTRUCTION COMPLETION	MAY 1974		MAY 73	OCT. 1973	FEB. 74	SEPT. 72	SEPT. 1975	SEPT. 1975
ESTIMATED BREAKDOWN OF PROJECT BETWEEN FUNDING SOURCES	HILL BURTON HEALTH MANPWR ALLIED HEALTH HRF	(UNITS B & C) (UNITS B & C) (UNIT C) (UNIT B)	HILL BURTON HEALTH MANPOWER HRF	HILL BURTON HEALTH MANPOWER	HEALTH MANPOWER	PUBLIC HEALTH HRF	HEALTH MANPOWER HRF NURSING ALLIED HEALTH	HEALTH MANPOWER
TOTALS	\$ 32,985,240		\$811,680	\$6,086,760	\$8,976,000	\$2,452,620	\$8,106,480	\$3,078,000

PART ONE

Section D Future Phased Projects

UNIVERSITY OF MINNESOTA HEALTH SCIENCES EXPANSION

ESTIMATED DOLLAR MAGNITUDE OF CURRENT STEP 1 PLAN

624,938 SFG = \$ 37,496,280

ESTIMATED DOLLAR MAGNITUDE OF REMAINDER OF PHASE I
(INCLUDES STEPS 2 AND 3)

UNITS B & C 549,754 SFG = \$ 32,985,240

 D 13,528 SFG = \$ 811,680

 E 101,446 SFG = \$ 6,086,760

 F 149,600 SFG = \$ 8,976,000

REMODELING 351,970 SFN = \$ 10,559,100

L (LEARNING
RESOURCES
CENTER) 51,300 SFG = \$ 3,078,000

TOTAL PHASE I \$ 99,993,060

TAC JUNE 25, 1969

PART ONE

Section D Future Phased Projects

SUMMARY OF PROPOSED HEALTH SCIENCES NET EXPANSION AREAS THROUGH 1975
PHASE I

	<u>Existing Net S.F. 1968</u>	<u>Total Net S.F. 1975</u>
AMBULATORY CARE	-	8,780
BASIC SCIENCES	160,495	253,100
BIOMEDICAL LIBRARY	72,075	72,075
CLINICAL TEACHING & RESEARCH	239,355	365,555
CONTINUATION EDUCATION	1,185	2,500
SCHOOL OF DENTISTRY	63,190	200,050
MAYO GARAGE	83,067	48,212
UNIVERSITY HOSPITAL	350,024	486,340
ADMINISTRATIVE AND OTHER SPACE	49,831	57,376
NEW ANCILLIARY DEPARTMENTS	-	10,000
ON-CALL QUARTERS	16,848	16,848
OUTPATIENTS DEPARTMENT	25,439	84,115
SCHOOL OF NURSING	12,482	32,500
SCHOOL OF PUBLIC HEALTH	40,520	83,180
SCIENTIFIC APPARATUS	6,699	11,700
STUDENT HOUSING	51,067	-
SHARED CLASSROOMS	13,369	45,200
COLLEGE OF PHARMACY	- *	79,578
HEALTH SCIENCES ADMINISTRATION	-	4,670
EDUCATIONAL RESOURCES CENTER	-	30,000
 TOTAL	 1,185,646	 1,891,779

* EXISTING SPACE NOW USED BY COLLEGE OF PHARMACY IN APPLEBY HALL IS NOT INCLUDED AS PART OF HEALTH SCIENCES EXISTING SPACE.

PART ONE

Section J, Availability of Patients

1. Describe the source and the adequacy of patients for teaching purposes.

By policy of the Board of Regents, patients at the University of Minnesota Hospitals are admitted and treated by referral from their own physicians only. Certain exceptions to this policy have been made for specified groups such as Community-University Health Care Center, Obstetrics patients, and Family Practice. Patients come in equal numbers from the twin cities metropolitan area and the rest of the state. Many of the non-private patients have formerly been funded by the progressive welfare programs of the State of Minnesota. With the introduction of Medicare and Medicaid we have found no major shift in types of patients, but rather a shift in source of funding from state/county welfare to these federally sponsored programs.

While the present patient population is adequate for the training of the existing student load, additional students as well as new programs referred to elsewhere will require increasing numbers of patients. To this end other sources of patients are being considered and the strict referral policy is now undergoing review.

2. Provide current and projected figures for numbers of inpatients, outpatients.

Outpatients in fiscal 1968 made 113,000 visits to the University Hospitals. During fiscal 1969 this number had increased to 120,000. By 1973 we anticipate on the order of 190,000 although the new clinics are projected to accommodate 250,000 without major expansion. It is the intention of the University Health Sciences to provide more and more services on an ambulatory basis and organize them in such a way as to be efficient for teaching purposes.

It will also be important to expand the outpatient load to provide the base for an increased inpatient census. Inpatient days in fiscal 1968 totaled 230,000 and are expected to reach 275,000 to 280,000 by 1973.

PART ONE

Section L University of Minnesota Hospitals

NATIONAL INSTITUTES OF HEALTH GRANT APPLICATION

University of Minnesota Hospitals

The University of Minnesota Hospitals is owned and operated by the University of Minnesota for the fulfillment of its many obligations to the state and region in health sciences education, service and research. By Board of Regents policy all patients admitted or treated at the University Hospitals are available for the clinical educational programs of all the Health Sciences. In addition to the traditional clinical programs in medicine, nursing and public health, the Hospitals has joint programs, as exemplified by formal agreement, with the School of Dentistry and the College of Pharmacy, (Appendix A).

Bearing in mind its responsibility to these educational programs as well as to the citizens of Minnesota and the Upper Midwest, the staff of the University Hospitals has defined its roles in relation to education, service, research and serving as a model to the region. A statement of roles and current objectives for University Hospitals appears in Appendix B.

University of Minnesota Hospitals, a designation which includes the Mayo Building, and Children's Rehabilitation Center, the Variety Club Heart Hospital, and the Masonic Memorial Hospital, encompasses 854 beds, 16 geographically distinct outpatient clinics, 14 operating rooms,

and almost all other services considered to be an integral part of a University teaching hospital. These facilities have been designed and developed to serve the various teaching programs currently conducted at University Hospitals. The Hospitals staff has worked particularly closely with the faculties involved in developing facilities for current new programs such as Family Practice, Pediatric Surgery, Hospitals Dentistry, Hospital Clinical Pharmacy and Experimental Nursing Organization. Many of the facilities designed in the early part of the century are now inadequate to carry on their currently designated functions, much less serve new and expanding programs.

While the replacement and expansion of hospital departments and clinical facilities are programmed for Step II of the Development Program, considerable thought and study has been devoted to these plans already. The number of beds is projected to be between 1000 and 1020; 150 new general examination rooms in addition to specialized and emergency facilities are planned to replace the present outpatient clinics; 6 additional operating rooms are scheduled to adjoin the existing operating suite; a new post-anesthesia recovery room and new intensive care unit are included; other hospital departments will be expanded minimally in relation to their respective needs and present deficiencies. The Step II planning program for Hospitals and Clinics has been approved and supported by the Hospital Planning Councils of both Minneapolis and Saint Paul. Their report appears as Appendix C.

Appendix A

JOINT PROGRAM STATEMENT OF THE SCHOOL OF DENTISTRY

AND

THE COLLEGE OF MEDICAL SCIENCES/UNIVERSITY HOSPITALS

Introduction

The School of Dentistry recognizes the increasingly important role of the hospital in the care and management of dental patients. In turn, the University Hospitals consider it part of their role to provide a clinical environment for all of the health sciences. Undergraduate and graduate dental educational programs are conducted in the University Hospitals, community hospitals (county and private) and other state supported health centers.

The community hospitals offer undergraduate dental students an opportunity to assist in specialized oral health treatment of patients under general anesthesia, and to gain experience in emergency care of patients with acute dental infections and/or oral-facial trauma. Conjoint educational objectives with the University Hospitals relate primarily to diagnosis and treatment planning for care of the physically and/or mentally ill, and to preventive and comprehensive rehabilitative care of patients referred for specific therapy. The University Hospital setting provides an environment for interaction with a variety of health professionals not readily available in a non-university setting.

The School of Dentistry and University Hospitals also have direct relationships in fulfilling the research and service roles of the University Health Sciences. These activities relate to treatment of specific oral health diseases and to the organization of hospital dental services for their most effective utilization. This relationship imposes an obligation upon the participants to translate research findings to programmatic services. The purpose of this report is to delineate the common areas of responsibility.

Roles

1. Education

- A. To provide staff and a clinical environment for the education of undergraduate and graduate dental students and the training of para-dental personnel.
- B. To promote interdisciplinary health sciences relationships through conjoint educational, research, and service programs as a model for students.

2. Service

- A. To make dental consultation available to all patients admitted to the University Hospitals, and to provide adjunctive dental treatment in support of medical, surgical and psychiatric therapy.

- B. To provide exemplary comprehensive and/or specialized ambulatory and inpatient care to patients referred to University for dental consultation and treatment.

3. Research

- A. To conduct applied clinical research in cooperation with other health professionals.
- B. To experiment with improvements in systems and facilities for the provision of dental care.

Objectives

1. Education

- A. To prepare dental students at the undergraduate and graduate levels for their respective responsibilities in the dental care of ambulatory patients with health problems and hospital inpatients.
- B. To train dental auxiliary personnel for their role in the treatment of patients in a hospital environment.
- C. To offer continuing educational opportunities in hospital dental practice appropriate to dentists, physicians and other health professionals of the region.
- D. To integrate the teaching programs of the School of Dentistry with those of the other health sciences so as to demonstrate the health "team" concept.
- E. To review and develop new methods of teaching principles and skills of hospital dental practice.
- F. To gain maximum utilization of educational resources through the development of cooperative programs with other state, county and federally supported hospitals and private community hospitals.

2. Service

- A. To make efficient dental consultative service available to referring dentists and physicians.
- B. To provide exemplary comprehensive dental care to those patients specifically referred for this purpose.
- C. To cooperate in the development of dental services in hospital facilities throughout the state and region.
- D. To share meaningful oral health knowledge with health professionals and the public.

3. Research

- A. To advance the knowledge of dental science by investigating specific dental diseases in a hospital setting.
- B. To study medico-dental health patterns as opposed to specific dental diseases. The objective of this research will be to seek relationships between oral and systemic dysfunctions and to consider the effects of combined medical and dental treatment processes upon total health.
- C. To experiment with new systems for the accomplishment of dental services in a hospital environment. This will include investigation into the composition of the "dental team," and the relationship of such a "team" to other health professionals.
- D. To encourage interdisciplinary participation in the above research areas.

Programs

Education

1. Undergraduate Dentistry

Undergraduate dental students receive instruction in the basic sciences and in clinical dentistry. They also receive some exposure to physical diagnosis and laboratory medicine. There is, however, a need for more correlative experience.

A. Dental Clerkship Program - University Hospitals

This program is offered to third and fourth year students and includes:

- (1) An opportunity for students to broaden their understanding of the relationship of oral diseases to other systemic dysfunctions through the review of medical records, and the performance of detailed oral diagnostic procedures on hospitalized patients under supervision.
- (2) Instruction in the organizational framework of the hospital. The student will become acquainted with:
 - a. The organization of the hospital staff.
 - b. Departmental relationships and policies.
 - c. Procedures involved in patient admissions and discharges.
 - d. The function of hospital records.
- (3) Orientation and experience in the operating room including scrubbing, gowning, operating room protocol, observation of the administration of general anesthetics, and pre- and post-operative patient management.

- (4) Education in patient care on a hospital station including diet, drug and other therapeutic modalities; orders; and the technique of bedside visits (rounds). Inter-relationship with other health sciences in patient care is emphasized.
- (5) An opportunity to observe and assist in the dental treatment of ambulatory patients who are best treated in a hospital environment.
- (6) Exposure to such diagnostic and treatment services as laboratory medicine, radiology, radiation therapy, and others.

B. Dental Clerkship Program - Affiliate Hospitals

This is a fourth year dental student activity which includes:

- (1) An opportunity for active student participation in the treatment of dental patients under general anesthesia.
- (2) Instruction and experience in the care of patients with acute dental pathology and oral-facial trauma.

This program is offered in private community hospitals and at Hennepin County General Hospital. When University resources do permit inclusion of the foregoing educational experiences, they will supplement those of the affiliate hospitals.

- C. It is felt that the dental clerkship programs will better prepare dentists of the future to meet the total demands of "family practice."

2. Graduate Dentistry

A. Hospital Residency Program

(1) University Hospitals

Graduate students in the clinical specialties of dentistry will each be assigned to the Hospital Dental Service. The amount of time each student will spend in this assignment will naturally depend upon the particular clinical discipline giving the training, but in each instance the purpose is to provide an opportunity for treatment of both ambulatory and hospitalized patients who have special physical or psychological problems. All graduate students will make "rounds," take "calls," participate in "Clinical Pathological Conferences," and receive instruction in administrative procedures pertinent to hospital admission, inpatient care and discharge.

a. Oral Surgery

Oral Surgery graduate students are assigned to the University Hospitals for one calendar year. Six months is devoted to training in anesthesiology. During this assignment students

Summary of Proposal:

As part of a total Health Sciences building program estimated to cost in excess of \$67 million when completed about 1975, the University Hospitals propose to 1) add approximately 160 acute beds, 2) add new facilities to enlarge ambulatory care space from the present 25,000 square feet to 90,000 square feet, 3) add an ambulatory care (motel type) facility of about 9,000 square feet, 4) provide new diagnostic radiology and radiation therapy facilities, 5) construct a "service center" building to house storage and supply areas, new kitchens and new cafeteria and dining facilities, 6) expand the surgery suite, 7) reorient and enlarge other hospital departments through remodeling, and 8) provide a modern automated central distribution system for supplies, an improved parking and vehicular access system and a convenient internal pedestrian circulation pattern. The scheduled completion date is 1973. Funding is dependent upon the State Legislature and Federal grant programs.

Plans subsequent to 1973 suggest continued use of Variety Club Heart Hospital, Children's Rehabilitation Center and Masonic Memorial Hospital with all beds and related services in Mayo moved to new facilities at a site now occupied by Powell Hall.

UNIVERSITY HOSPITALS DEVELOPMENT PROGRAM - FINDINGS AND RECOMMENDATIONS OF THE STUDY COMMITTEE

Introduction

The University of Minnesota began a health sciences development program in 1964. The study resulted in a presentation to the legislature in 1967. The legislature granted \$650,000 for land purchase and \$500,000 for further architectural studies. The land has been purchased, the architectural studies have gone on, and the University was scheduled for presentation to the Legislative Building Commission on July 15, 1968. The University Hospitals' portion of the Health Sciences Capital Development Program will not be presented to the legislature until 1971. However, even though no money will be requested this session, the State requires the total plan be presented as a package.

The main force behind the bed expansion has been the need for new programs in family practice, oral surgery and pediatric surgery and the development of small surgical specialties in ENT, Eye, Neurosurgery and Orthopedics plus a need for a large and improved intensive care unit.

Money for these buildings in the amount of approximately \$24 million would be requested from the 1971 legislature. The University anticipates a 50% federal funding, so the actual State money requested at today's price rates would be \$12 million.

2. Major themes contained in the planning reports prepared by the University Hospitals are as follows:
- a. Programs of the hospital will serve all of the health sciences.
 - b. Every effort will be made to automate procedures.
 - c. Cost effectiveness principles will be used.
 - d. Electronic data processing will be used to replace current record systems.
 - e. Emphasis will be placed on comprehensive ambulatory care programs.
 - f. Hospital departments will be grouped in a functional manner.
3. Student enrollment projections for the health sciences suggest that total enrollment will increase from 3474 students in 1967 to 5290 students in 1973 and 6894 students in 1986. By category these projections are as follows:

	<u>1967</u>	<u>1973</u>	<u>1986</u>
<u>Medical</u>			
Medical Students	658	800	1000
Interns	42	45	55
Graduate Students			
at Medical Center	441	550	650
at Affiliated Hospitals	<u>246</u>	<u>350</u>	<u>400</u>
Total Medical	1387	1745	2105
<u>Dental</u>			
Dental Students	414	560	740
Graduate Students	54	179	274
Dental Hygiene	91	285	360
Dental Assisting	38	140	175
Others	<u>6</u>	<u>20</u>	<u>35</u>
Total Dental	603	1184	1584
<u>Nursing</u>			
Undergraduate	324	398	450
Graduate	71	138	225
Others	<u>4</u>	<u>14</u>	<u>35</u>
Total Nursing	399	550	710

	<u>1967</u>	<u>1973</u>	<u>1986</u>
<u>Public Health</u>			
Total Public Health	261	412	565
<u>Other Associated Health Professions</u>			
Medical Technology	121	250	290
Radiological Technology	215	385	730
Occupational Therapy	52	84	110
Physical Therapy	81	95	110
Rehabilitation Counselors	<u>15</u>	<u>25</u>	<u>30</u>
Total Other	484	839	1270
<u>Pharmacy</u>			
Undergraduate	300	480	560
Graduate	<u>40</u>	<u>80</u>	<u>100</u>
Total Pharmacy	340	560	660
GRAND TOTAL	3474	5290	6894

4. Principles used by the Medical Center to determine the types and size of "allied health" training programs are as follows:
 - a. Teaching programs should lead to baccalaureate or graduate degrees.
 - b. Generally, sub-collegiate programs should not be carried out except when special facilities or personnel preclude such programs elsewhere.
 - c. Sub-collegiate programs may be initiated as pilot or research projects to develop the requirements for such a course or to meet community and Medical Center needs.
 - d. Enrollment should reflect demonstrable needs.

5. Determination of needs for physicians and dentists was based on a study sponsored by the Hill Family Foundation entitled Health Manpower for the Upper Midwest.

PART TWO

SECTION C CURRENT FACILITIES

1. DESCRIPTION OF CURRENT FACILITIES OCCUPIED BY THE UNITS IN
STEP 1 OF THE HEALTH SCIENCES EXPANSION

The School of Dentistry currently occupies 63,190 SFN of space located in Owre, Jackson-Owre, and Millard Hall. Basic Science Teaching Laboratories, except for Microbiology, are located in Millard and Jackson Hall. The remainder of Biochemistry, Pathology, Pharmacology, and Physiology Departmental space is located in Millard and Jackson, as well as Owre, Jackson-Owre, and Lyon. Microbiology Teaching Laboratories are on Mayo 2 and Departmental facilities are on Mayo 9 and 10 and Diehl 1.

The Medicine Department currently has space in Mayo, Diehl Hall, Variety Club Heart Hospital, Masonic Hospital, and the VFW Unit. Pediatrics has space in Mayo, Masonic, Diehl, and Variety Club Heart Hospital, as well as 608 Oak Street and 512 Delaware Street.

Existing Medical Student Adytum is located on Mayo, first floor. Public Health space for Physiological Hygiene is currently located in the University Stadium. Epidemiology Department space is in Mayo Tower.

TABULATION OF CURRENT FACILITIES

SCHOOL OF DENTISTRY

	<u>To Be Vacated</u>	<u>Existing To Remain</u>	<u>Existing Total</u>
Owre, Basement	5,606	-	5,606
Owre, First Floor	5,461	-	5,461
Owre, Second Floor	10,341	-	10,341
Owre, Third Floor	13,274	-	13,274
Owre, Fourth Floor	9,065	-	9,065
Owre, Fifth Floor	4,590	-	4,590
Jackson-Owre, Basement	4,390	-	4,390
Jackson-Owre, First Floor	3,985	-	3,985
Jackson-Owre, Third Floor	4,446	-	4,446
Millard, Third Floor	2,032	-	2,032
TOTAL, SCHOOL OF DENTISTRY	<u>63,190</u>	-	63,190

SCHOOL OF MEDICINE

	<u>To Be Vacated</u>	<u>Existing To Remain</u>	<u>Existing Total</u>
BIOCHEMISTRY DEPARTMENT			
Millard, Basement	-	4,463	4,463
Millard, Second Floor	4,336	6,517	10,853
Lyon, Sub-basement	-	1,197	1,197
Lyon, First Floor	-	5,392	5,392
Owre, Basement	-	1,490	1,490
TOTAL, BIOCHEMISTRY DEPARTMENT	4,336	19,059	23,395
MICROBIOLOGY DEPARTMENT			
Mayo, Second Floor	5,300	1,488	6,788
Mayo, Ninth Floor	-	6,924	6,924
Mayo, Tenth Floor	-	7,213	7,213
Diehl, First Floor	-	1,458	1,458
TOTAL, MICROBIOLOGY DEPARTMENT	5,300	17,083	22,383
PATHOLOGY DEPARTMENT			
Jackson, Basement	1,491	742	2,233
Jackson, First Floor	3,954	2,343	6,297
Jackson, Fourth Floor	-	5,291	5,291
Diehl, Sixth Floor	-	746	746
Lyon, Basement	-	388	388
Lyon, Third Floor	-	5,442	5,442
Jackson-Owre, Fourth Floor	-	5,502	5,502
Mayo, First Floor	-	925	925
TOTAL, PATHOLOGY DEPARTMENT	5,445	21,359	26,804

SCHOOL OF MEDICINE Cont.

	<u>To Be Vacated</u>	<u>Existing To Remain</u>	<u>Existing Total</u>
PHARMACOLOGY DEPARTMENT			
Millard, Basement	-	4,387	4,387
Millard, First Floor	918	5,069	5,987
Lyon, Sub-basement	-	1,349	1,349
Lyon, Basement	-	1,015	1,015
Lyon, Second Floor	-	4,555	4,555
Diehl, Second Floor	-	1,894	1,894
TOTAL PHARMACOLOGY DEPARTMENT	918	18,269	19,187
PHYSIOLOGY DEPARTMENT			
Lyon, Sub-basement	-	3,176	3,176
Lyon, Fourth Floor	-	5,169	5,169
Millard, Third Floor	4,533	4,318	8,851
Millard, Fourth Floor	319	14,763	15,082
TOTAL, PHYSIOLOGY DEPARTMENT	4,852	27,426	32,278
MEDICINE DEPARTMENT			
Mayo, First Floor	547	144	691
Mayo, Second Floor	-	1,181	1,181
Mayo, Third Floor	4,454	1,443	5,897
Diehl, First Floor	4,421	-	4,421
Variety Club, First Floor	-	384	384
Variety Club, Second Floor	-	1,416	1,416
Variety Club, Fourth Floor	-	4,013	4,013
Masonic Hospital, Fourth Floor	-	2,593	2,593
VFW, Fourth Floor	-	3,018	3,018
TOTAL, MEDICINE DEPARTMENT	9,422	14,192	23,614

SCHOOL OF MEDICINE Cont.

	<u>To Be Vacated</u>	<u>Existing To Remain</u>	<u>Existing Total</u>
PEDIATRICS DEPARTMENT			
Mayo, First Floor	-	195	195
Mayo, Second Floor	180	2,826	3,006
Mayo, Fourteenth Floor	5,531	-	5,531
Mayo, Fifteenth Floor	2,288	-	2,288
Masonic, Fourth Floor	-	1,980	1,980
Diehl, First Floor	-	3,315	3,315
Diehl, Sixth Floor	-	2,930	2,930
Variety Club, Second Floor	-	3,386	3,386
Variety Club, Fourth Floor	-	989	989
Variety Club, Fifth Floor	-	4,004	4,004
608 Oak Street	-	2,112	2,112
512 Delaware Street	-	395	395
TOTAL, PEDIATRICS DEPARTMENT	7,999	22,232	30,231
MEDICAL SCHOOL ADYTUM			
Mayo 1	-	4,836	4,836
TOTAL, MEDICAL SCHOOL ADYTUM	-	4,836	4,836

SCHOOL OF PUBLIC HEALTH

	<u>To Be Vacated</u>	<u>Existing To Remain</u>	<u>Existing Total</u>
DEPARTMENT OF PHYSIOLOGICAL HYGIENE			
Stadium	-	10,881	10,881
TOTAL, PHYSIOLOGICAL HYGIENE	-	10,881	10,881
DEPARTMENT OF EPIDEMIOLOGY			
Mayo, Eleventh Floor	2,470	-	2,470
TOTAL, EPIDEMIOLOGY DEPARTMENT	2,470	-	2,470

SHARED CLASSROOMS

	<u>To Be Vacated</u>	<u>Existing To Remain</u>	<u>Existing Total</u>
Owre, Basement	-	3,773	3,773
Owre, First Floor	2,176	-	2,176
Millard, Second Floor	-	1,266	1,266
Jackson, Basement	-	1,386	1,386
Jackson, First Floor	-	2,014	2,014
Mayo Auditorium	-	2,754	2,754
TOTAL SHARED CLASSROOMS	2,176	11,193	13,369

PART TWO

Section D, Proposed Facility

Detailed Description of Step I, Unit A:

Unit 'A' will consist of twenty floors of space. Three of these floors are below ground level. The remaining rise 17 stories above the street. (See cross section in lap set). A floor-by-floor description of functions in Unit 'A' is as follows:

Basement

This level will provide the primary location for major mechanical components serving the new construction. Initially, this mechanical area will occupy the basement of Unit 'A'. It will be expanded under Units 'B' and 'C' in subsequent steps. Steam from the University Central Plant will be piped via deep tunnel system to a reducing station on this level. Switch gear pumps, chillers and emergency generating equipment will also be located on floor 10. Major utilities will be distributed in vertical utility shafts located on 50-foot grid to all floors. Building and plant services will also occupy space on this level.

Floor 1

The central service corridor for the Health Sciences at this level connects the various elements and provides vertical service access to the new units. Other major elements are: the lower level of a major shared teaching auditorium, a Medical School Student Adytum, a supply, storage and receiving area and Public Health space for the divisions of Physiological Hygiene and Epidemiology. The Epidemiology division of the School of Public Health provides offices and workrooms for administrative procedures and provides research laboratories, offices (faculty, graduate and field personnel), statistical analysis rooms and the accompanying support areas for graduate teaching and research.

The Laboratory of Physiological Hygiene which provides graduate teaching and research is organized to accommodate visiting test subjects and their related procedures. Subjects enter and go either to the general office and its related faculty offices or directly to the physiology test and exam stations. Subjects do not enter the chemical laboratories although the laboratories relate to the staff and students in both the general office and physiology areas. In general, the central spaces of both divisions are designed for flexibility with fixed support functions around the perimeter. Epidemiology and Physiological Hygiene share conference rooms, a reference and reading room, a clean and sterile room and a shop.

Service to both divisions will be by means of the main service corridor located on this level. Public access from the information and lobby area on floor 2 will be by either bank of elevators that border the space or by stairs.

Floor 2

This level of Unit 'A', one floor below street level is the main public, student, and staff entry and circulation level. Major shared teaching spaces including one-350,

two-250, and one-200-seat auditoria, smaller classrooms, one for 100 and three for 50 students, seventeen seminar rooms for 15 and 20 students, Department of Pathology reference and study area, a student supply area, and a student-study and lounge are located on this level.

Microbiology and Biochemistry undergraduate teaching labs and support areas are convenient to major student circulation areas permitting direct access to the Basic Science research and departmental areas in adjacent existing buildings.

The undergraduate teaching facilities for Microbiology would consist of three teaching laboratories for 50 students each, a demonstration area and support areas for glass preparation, washing, sterilizing, media preparation, incubators and storage. Undergraduate teaching laboratories for Biochemistry include three 32-student teaching laboratories which can be sub-divided into smaller labs of 16 students each, one 24-student lab, centrally placed instrument and preparation rooms, cold rooms, a demonstration room, supply rooms, and small office and darkroom.

When Washington Avenue is tunnelled, an entrance at the north end of Unit 'A' will provide direct access from a public transit drop-off point.

Floor 3, Ground Level

Unit 'A' at street level is occupied by Pathology, Physiology, Pharmacology, Basic Science undergraduate teaching laboratories and supporting facilities. A street level entrance on Delaware Street provides public access to Dental clinics located on upper levels of Unit 'A'.

Physiology teaching facilities include six 24-student laboratories, a large preparation and stock room as well as a special instrument room to serve the laboratories, and a 150 seat demonstration room shared with Pharmacology. Pharmacology teaching facilities consist of six 24-student laboratories, cold rooms, dispensing area, instrument rooms, and active storage. Teaching facilities for Pathology consist of four 28-student labs each equipped with dry lab benches and wall storage cabinets for microscopes and slide boxes. Additional support facilities include a lab for tissue staining and embedding, a gross specimen museum and storage areas for teaching materials.

Floor 4

This floor will house the preclinical teaching facilities of the School of Dentistry. Twelve multipurpose laboratories each seating 25 students will be used for laboratory courses in the Pre-clinical Dental Sciences. All of these rooms will be equipped with closed circuit TV for lectures and demonstrations and will be designed for the use of audio-visual materials. These areas will also be utilized for seminars. Supporting laboratory service rooms, equipment storage space, and a technicians laboratory will be accessible from the laboratories. Freshman and sophomore locker facilities and offices for the pre-clinical faculty will also be located on this floor. Other facilities on the fourth floor will include seminar and auto-tutorial rooms, a general study-lounge for dental students, and a reference-reading room to serve both faculty and students in dentistry. Non-faculty staff lounge-locker facilities will also be located on this floor.

Floor 5

This floor will contain multi-purpose dental laboratories, a multi-purpose laboratory lecture room to seat 78, and supporting areas which will be shared by dental students in the pre-clinical and clinical years. These will also be used on a space available basis for Continuing Dental Education and to some extent the training of dental assistants and dental hygienists. This auxiliary training program will be integrated very closely with the education of the dental students. These facilities include three multi-purpose laboratories each seating 50 students, equipped for teaching clinical laboratory techniques to dental students, assistants, and hygienists. The rooms will be equipped for closed circuit TV with multiple monitors. There will also be supporting laboratories adjacent to the multi-purpose laboratories equipped for plaster work, casting, and burnout procedures. Other spaces include faculty offices and a demonstration room with tiered seating for 32 people. This room will be provided with clinical and laboratory equipment to permit small group demonstrations.

This floor will also include locker facilities for the clinical faculty, junior and senior dental students, dental assistants, and dental hygienists.

Floor 6

This is one of four clinical floors for dentistry and will be the major location for the Divisions of Oral Diagnosis and Oral Surgery. The surgical facilities for Oral surgery, Endodontic surgery, and Periodontic surgery are concentrated in one area. A 27-operatory unit of the multi-purpose undergraduate clinic will be on this floor. This unit will be used primarily for undergraduate teaching in Periodontics and Endodontics. Supporting areas include a demonstration operatory, a sterilization room, a student clinical laboratory, and a conference room. Periodontic staff offices will be located nearby.

Clinical facilities for Oral Diagnosis will include 15 dental operatories for the screening of patients, treatment planning, and the teaching of Oral Diagnosis techniques to undergraduate dentistry students and auxiliaries. Supporting facilities will include consultation rooms, a larger operatory for small group demonstrations, a room for instrument sterilization and dispensing of supplies, a clinical lab, and a small plaster room.

With the exception of one or two x-ray rooms on each of the other clinical levels, all facilities for Radiology and film processing will be centralized on this floor, furnishing x-ray services for Oral Diagnosis and all other clinical units of the School of Dentistry. In addition, this area will be used for the teaching of x-ray procedures to undergraduate dental students and auxiliaries. Spaces will include sixteen rooms for instruction in x-ray procedures, special x-ray rooms for wheelchair patients, extra-oral, panoramic and cephalometric procedures, an x-ray demonstration room, processing, mounting, and viewing rooms, and an x-ray equipment laboratory.

Reception and waiting areas, staff offices and conference rooms for Oral Diagnosis and Radiology will also be located on this floor.

Oral Surgery operatories will be clustered around an interior sterile corridor immediately accessible to and supporting sterilization and tray preparation areas. This cluster will include 10 surgical operatories and two larger demonstration rooms. A similar, adjacent cluster will be used for Endodontic and Periodontal surgery procedures. Supporting areas will include a recovery room, examining rooms, and a clinical

service laboratory. Faculty offices for the Division of Oral Surgery will also be located here. Appropriate waiting areas will accommodate patients for the multi-purpose and surgical clinics.

Floors 7 and 8

These two floors will contain the primary undergraduate clinical facilities of the School of Dentistry. On each floor 112 multi-purpose operatory cubicles will be arranged in four units of 28, flanking a central waiting and reception area. These operatories will be used for undergraduate instruction in Endodontics, Crown and Bridge, Prosthodontics, Periodontics, and Operative Dentistry procedures, facilitating the team approach to comprehensive dental care.

Supporting areas will be primarily located around the perimeter of each floor along a separate service corridor. They will include demonstration operatories, sterilization rooms, student laboratories, a technical laboratory, and faculty offices. Each floor will also have lounge-study areas for students and areas for informal faculty-student discussion, and a central grouping of teaching spaces which will include two conference rooms, a seminar-reading room, and a number of auto-tutorial carrels.

Floor 9

Specialty clinical teaching areas for the School of Dentistry will be located on this floor. These include undergraduate and graduate teaching programs in Orthodontics, Pediatric Dentistry, and the Cleft Palate - Maxillo-Facial program. Facilities for Continuing Dental Education will also be located on this floor.

The plan for this floor will be similar to the multi-purpose clinical levels with a central reception and waiting area surrounded by groups of operatories and a ring of supporting areas at the perimeter.

The Orthodontic Clinic will have 44 operatories, with interconnecting doors to facilitate team practice by students working with auxiliary personnel. Supporting areas will include demonstration operatories, a sterilization room, a conference room, faculty offices, and a technicians' laboratory to serve all clinical units.

The Pediatric Dentistry Clinic will have 44 operatories arranged similarly, with supporting areas for demonstration, sterilization, staff offices, student laboratories and study rooms. In addition, there will be consultation rooms where individual treatment programs will be discussed with parents, and a conference room for audio-visual demonstrations on dental health care for waiting parents and children. Separate reception and waiting areas will be provided for Orthodontics and Pediatric Dentistry.

Facilities for Continuing Dental Education will include eight dental operatories with a demonstration operatory, clinical laboratory, and an adjacent sterilization room. There will be a small reception and waiting area, an office for the director and an assembly room for seminar groups of up to 75 people.

The Cleft-Palate-Maxillo-Facial Clinic will be located adjacent to the Orthodontics Clinic and will include a small waiting room and four clinical operatories with adjoining offices. This Clinic will also include speech therapy rooms and examining rooms with adjacent rooms for observation, supporting clinical laboratories, a conference room for team interviews and treatment planning, and offices for the director and a secretary-receptionist.

Floor 10

Mechanical space will occupy this entire floor.

Floor 11

This floor will house the Department of Pediatrics, laboratories and supporting facilities. These modular laboratories are located on the same floor as other future Pediatric laboratory and clinical facilities which will be built in Units 'B' and 'C' as a part of Step 2. Other sections of Pediatrics will remain in existing facilities.

Floor 12

Administrative offices, faculty offices and conference rooms for the Department of Pediatrics will be located on this floor. The concentration of offices for the head of the department and 26 senior faculty will provide for maximum interaction. Unit 'B' and Unit 'C', to be constructed in Step 2, will provide additional clinical and laboratory facilities at the same floor level.

Floor 13

The Department of Medicine on this floor has modular laboratories with supporting facilities which include cold rooms, equipment rooms, and a glass-washing room. Related section office modules will contain three 1-man faculty offices, two 2-man junior faculty offices and one secretarial office.

Floor 14

Additional laboratory facilities and related section office modules of the Department of Medicine are located on this floor. The departmental offices and a major conference room for teaching will be located on the same floor of Unit 'B'. The clinical facilities of medicine will be located on the same floor of Unit 'C'.

Floor 15

This floor will house the administrative offices of the School of Dentistry including the offices of the dean and assistant deans. Adjacent to and connecting with these offices will be the Business and Accounting offices. The remaining areas will be used for a faculty lounge and the Division of Health Ecology. A series of small office interview rooms with centrally located reception and waiting areas will be included. In addition, there will be a large data collection room and conference and seminar rooms for groups of up to 60 people.

Floor 16

This floor will contain faculty offices and laboratories for Oral Pathology, Biomaterials, Biostatistics, Speech Pathology and Oral Genetics. There will be supporting facilities including storage, service areas, instrument rooms, cold rooms, and

special purpose spaces, and a conference room to be shared by all disciplines.

This floor will also house photographic and television facilities for the production of educational materials including studios for photography, television and motion pictures, a control room equipped for sound recording, dark rooms, work rooms, and a library for audio-visual materials.

Floor 17

This floor will house faculty offices and laboratories for Oral Physiology and Oral Biology with associated special purpose rooms. In addition, there will be laboratories and offices for programs of research training to be conducted by the various clinical disciplines.

Floor 18

This floor will contain faculty offices and laboratories for Microbiology and Biochemistry, with associated special purpose rooms, including facilities for electron microscopes. Additional space for research training by clinical disciplines will also be available.

Floor 19

This floor will be for animal facilities for the School of Dentistry. There will be rooms for housing animals involved in on-going research and research training, a germ-free room, operating rooms and supporting areas for cage washing, diet preparation and storage.

PART TWO

Section G (Applicable to replacement, renovation, rehabilitation or addition to present structure)

1. Present Physical Plant

<u>Present Buildings Occupied</u>	<u>Year Constructed</u>	<u>Year of Major Additions or Remodeling</u>	<u>Total Building Net Square Feet</u>
Jackson Hall	1912	1957, 1960, 1962, 1969	43,138
Millard Hall	1912	1957, 1958 1959	57,539
Owre Hall	1930	1946, 1966	56,446
Powell Hall	1933	1943	16,685
Variety Club Heart Hospital	1949	1957, 1964	47,722
Student Health Service	1949	1958, 1962, 1966	71,492
Mayo Memorial Medical Center	1954	1957, 1969	419,979
Masonic Memorial Hospital	1958	1961, 1963 1966	47,011
Lyon Laboratories	1952	1953, 1957 1966	28,042
Diehl Hall	1958	1963	131,877
Jackson-Owre Building	1958		27,389
Childrens Rehabilitation Center	1962		41,242
VFW Cancer Research Center	1958	1968	7,837
Stadium	1925 *1946		88,329 *10,980
Cardio Vascular Labs	**1957		4,975

* Physiological Hygiene Laboratories only.

** Existing building was remodeled to provide for these facilities.
To be demolished when Unit "A" is constructed.

In addition to the above listed facilities, the University of Minnesota now rents space in eight buildings which provides needed areas for laboratories, offices, storerooms, class laboratory rooms, etc. The total amount of space occupied in these buildings is 27,708 sq. ft.

Currently, about 3,500 students are enrolled in Health Science programs. By completion of the first phase of the proposed construction (approximately 1975) over 5,000 are expected to be enrolled. The complexity of health science education and the expected enrollment increases, require a well-developed, self-contained health science audio-visual operation yet still related to and coordinated with the University's television and audio-visual departments.

Since the expansion of physical facilities for the Health Sciences will be implemented in stages over a number of years, the audio-visual services will have to be developed as fully as possible in the various phases of construction for tie-up with centralized facilities. Ideally, the audio-visual systems should be concentrated in and coordinated with an Instructional Resources Center adjacent to the Health Sciences Library. Long range planning is directed to this kind of consideration. To achieve the ultimate in educational resources for our Health Sciences Center would require the simultaneous construction of all the proposed health science units and a major commitment of space and funds now for an Instructional Resources Center. Funding limitations clearly prevent this.

Audio-Visual Services for Construction Unit A

In the first step of construction for which this grant application is made (Unit A in Phase I), educational facilities will include shared classrooms, basic science laboratories, specialized laboratories for the School of Public Health, and clinical laboratory, and study areas for the School of Dentistry. The new lecture rooms will be planned with the most careful attention given to sight lines, acoustics, public address systems, blackboards, projection screens, slide and motion picture projection equipment and location, x-ray viewing, and television origination and receiving. Front, rear screen, and overhead projection will be provided in most classrooms. Television monitors will be connected to receive signals from dentistry's television studio, laboratories, and clinics and from within the classroom. Control of the classroom audio-visual facilities will be as automated as possible. Lighting will be diversified: fluorescent and incandescent, rheostated, ultraviolet for chalk boards. Conduit or accessible plenum and service spaces will be provided to permit an electronic tie-in of the classrooms with audio-visual production and distribution areas in future Health Science units. Since it is very possible that the lecture method of teaching may decrease and self-instruction increase, the design of the lecture classrooms will be sufficiently flexible where appropriate to permit easier remodeling to tutorial classrooms. Seminar rooms in Unit A will be equipped for projection of slides and movies and in some instances sufficiently equipped for some self-instruction with audio-visual materials. Some general purpose study carrels or areas with potential for information access are expected to be provided in Unit A. The appropriate communication network will be provided for television receiving in the teaching laboratories for the basic sciences and School of Public Health.

The School of Dentistry will have the majority of its educational facilities in Unit A. Included for dentistry will be one of the several audio-visual substations in the overall future Health Sciences audio-visual operation. This station will have a centralized area for a television-motion picture studio, television control room, and facilities for production and storage of still photographs, slides, audio and video tapes, art work, and other related graphics. The dental school's central audio-visual area will have installed initially electronic communication with the University's main CCTV production and distribution center, the lecture classrooms and the laboratories, clinics, and specialized study areas in the school. Further, there will be conduit space for eventual link-up with a future Health Sciences central audio-visual production and distribution installation. Also, television origination will be possible within certain

laboratories and clinics.

The faculty of the School of Dentistry has recognized clearly the advantages of auto-tutorial and programmed learning. A special subcommittee on learning resources for the dental school studied the potential of such innovations. From this study, the architects have been asked to design study carrels for the multipurpose teaching laboratories, the specialty and multipurpose clinics, and the reading room. The carrels will be capable of providing information via films, tapes, slides, and programmed instruction; they will be self-contained with potential for cable connection to a central information storage facility. Cathode ray tube remote computer terminals will be installed so that information retrieval from the Bio-Medical Library and a central audio-visual facility will be feasible eventually. Currently, the dental school is using portable television equipment for monitoring and taping student performance with capabilities for instant replay of the tapes. This effective method of teaching will be expanded in the new dental school.

Proposed Audio-Visual Services for Other Construction Units

While this application requests funds for educational facilities just in construction Unit A, the total plans for expanded Health Sciences physical facilities are so interrelated and interdependent it seems essential to describe here to some extent the long range plans for audio-visual services in the other planned Health Science construction units.

It is anticipated that the existing still photography and motion picture production area in the Medical School will be expanded in its present or a new location and will serve as an audio-visual substation to provide some specialized needs of the Medical School. Classrooms to be remodeled will have improved systems for audio-visual projection and television viewing. A new 350 seating classroom for patient viewing and clinical teaching with 180° seating and a thrust stage will require specialized multi-slide projection, television receiving and origination, and special acoustic considerations.

When feasible, audio-visual facilities and services should be centralized to avoid duplication of space, hardware, and technical staff. However, because of the size, complexity, and specialized instructional needs of the Health Sciences some self-instructional and audio-visual production areas will be developed in several areas in the Health Sciences for convenience to the teaching areas such as the clinics and laboratories. Provisions will be made for television origination in hospital stations, clinics, laboratories, and other appropriate teaching areas. As will be true for dentistry in Unit A, other departments will develop a limited number of auto-tutorial, audio-visual study carrels (both WET and self-contained) close to their clinics and laboratories for convenience to the teaching activity and for experimentation.

Cathode ray tube (CRT) sending and receiving equipment will be installed in a number of the Health Science areas such as hospital nursing stations, laboratories, pharmacy, and admissions and out-patient medicine examining rooms, central scheduling, and seminar-conference alcoves.

While audio-visual substations and widely located audio-visual activities will be present in the Health Science Center, the planning for expanded physical facilities clearly recognized the necessity of having a centralized Health Science audio-visual production and storage facility related to and coordinated with the University's T.V. and audio-visual departments.