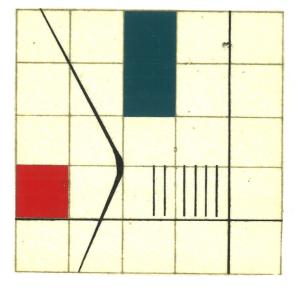
UNIVERSITY OF ROCHESTER MEDICAL CENTER

ROCHESTER NEW YORK

MASTER PLAN



ELLERBE

THOS. F. ELLERBE

ARCHITECT

SAINT PAUL, MINNESOTA

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MASTER PLAN FOR UNIVERSITY OF ROCHESTER MEDICAL CENTER ROCHESTER, NEW YORK

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SCOPE OF THE STUDY

The purpose of this study is to develop a long-range (15 years) master program of development for the University of Rochester Medical Center. The center engages in three interrelated activities---teaching, research and patient care. Each requires distinctive but interrelated physical facilities. Of prime importance is the relationship of the three major components of the medical school: (1) the basic science facilities, (2) the clinical science facilities, and (3) the patient care facilities.

In arriving at the recommendations for the program of development analysis had to be made of past utilization of each department, the present space allocated to the department, the desired physical relationship between departments, the projected work load of each service and the obsolescence of the present physical facilities.

Early in our study it became readily apparent that Strong Memorial Hospital was obsolescent as a hospital but readily adaptable for medical school purposes.

The study and recommendations cover the following units of Medical Center complex:

- (1) School of Medicine and Dentistry, including the Division of Graduate Studies in Medical Sciences.
- (2) Strong Memorial Teaching Hospital.
- (3) Psychiatric Unit.
- (4) School of Nursing.
- (5) Outpatient Clinic.
- (6) Atomic Energy Project.
- (7) Rochester Municipal Hospital.
- (8) Rehabilitation Center.
- (9) Student Health Service.
- (10) Division of Clinical Dentistry.
- (11) Central Services for Medical Center.
- (12) Proposed Motel Facility.

This report develops the long-range master program. Appendix III shows a possible staging plan.

SUMMARY OF RECOMMENDATIONS

- I. Hospital Facilities.
 - A. Strong Memorial Hospital.

Abandon the present hospital and provide for 800 acute, 40 extended care, and 50 chronic beds in new construction.

B. Psychiatric Unit.

Present facility to be retained and expanded.

C. Municipal Hospital.

To be reassigned for the use of the Medical School.

D. Rehabilitation Center.

Expand vertically to provide for 50 beds.

II. Medical School.

Expand into space to be vacated by Strong Memorial and Municipal Hospitals and construct new areas as needed.

III. Graduate Studies.

Provide additional space in the departmental areas of the Medical School expansion.

- IV. Department of Dentistry.
 - A. Office and research will be provided in clinical science area of the Medical School.
 - B. Provide additional space for the increase in the Basic Science graduate program.
 - C. The Dental Clinic will be incorporated into the proposed central clinic.
- V. School of Nursing.

Expand and relocate in an area with a closer physical relationship to the hospital and medical school.

VI. Outpatient Clinic.

Construct a new central clinic.

VII. Atomic Energy Project.

Provide new construction to accommodate expansion.

VIII. Student Health Service.

Provide a new facility in new construction.

IX. Motel Facility.

Provide an 80-unit motel facility for housing patients having diagnostic workups in the Medical Center, visitors and families of patients, as well as other guests of the University.

X. Central Services for the Medical Center.

Expand into present space to be vacated by Strong Memorial Hospital. Relocate University receiving, stores and maintenance.

XI. Housing.

Recommend that nursing students be housed on campus and that intern and resident housing be relocated into Helen Wood Hall.

XII. Parking.

For the present surface parking will be provided.

Long-range plans under consideration for the University campus development makes provision for ramp parking.

XIII. Utilities.

A. Build a new heating and cooling plant.

B. Other Utilities.

Utilities such as electric, water, sanitary and storm sewers and gas are available in the area of sufficient capacity to adequately serve the new complex.

C. Centralized Control.

Centralized control of mechanical equipment for the entire complex is recommended.

XIV. Athletic Facilities.

Construct a new gymnasium adjacent to Helen Wood Hall.

SUMMARY DISCUSSION

A recapitulation of the space needs of each unit of the Medical Center is shown in Appendix I. Major determining factors, established by the administration, which dictated space needs were:

- 1. The entering class of the Medical School may eventually be increased by stages from 70 to 96 students.
- 2. The graduate program of the Medical School will be expanded to 300 students.
- 3. Approximately 1200 patient beds will eventually be required to meet the needs for teaching, research and patient care.
- 4. The division of nursing education will be expanded to provide for an entering class of 100 students.

To develop the total master plan there must be considerable new construction and remodeling. To accomplish an orderly and economically feasible development, the master plan can be staged as suggested in Appendix III. The physical changes necessary to establish the most efficient and functional plan are:

Hospital Facilities

The program calls for 1170 beds divided into the following types of services:

To establish the proposed complement of beds new nursing units will be constructed and existing units abandoned.

Other existing units will be upgraded and expanded.

1. Strong Memorial Hospital.

This building is to be gradually abandoned as a hospital and remodeled to serve Medical School uses. This recommendation is occasioned because the building design is obsolete for modern hospital functions. A new hospital of 800 acute, 40 extended care and 50 chronic beds is proposed.

2. Psychiatric Wing.

The office and research areas are to be expanded into Building Q as required. The psychiatric beds presently in Municipal Hospital will be relocated into Q-2 contiguous to the Psychiatric Wing and also additional beds will be developed in new construction in the connecting link between Buildings Q-2 and R-2.

The ultimate plan looking beyond 15 years would be to relocate the beds and outpatient facilities in the new hospital and clinic.

3. Rochester Municipal Hospital.

As new acute beds are available, this facility will be renovated for Medical School use.

4. Rehabilitation Center.

The building can be expanded vertically two floors to provide bed units and expansion of the total program as required.

Medical School and Graduate Programs

The revised curriculum and increased student body will require an additional 309,100 net square feet of working space. A large portion of this area can be added by expanding into the present Strong Memorial Hospital. This building is physically compatible to the new functional requirements. The balance of the expansion will be in new construction contiguous to the present school. These areas are lecture rooms, student laboratories, animal facilities and research space.

Department of Dentistry

The present department will be substantially increased in size and could be located in the clinical science area.

School of Nursing

The present housing and classrooms in Helen Wood Hall will be abandoned. The teaching space and administrative unit will be relocated in new construction or in space vacated.

Outpatient Clinic

A new clinic is proposed adjacent to the new hospital and emergency department. This unit will replace the presently scattered clinics. The vacated clinic areas will be used for clinical science expansion. The clinic will be closely related to the diagnostic facilities and the registration area in the new hospital. Medical records will be housed in the new clinic.

Atomic Energy Project

The present facility will be retained and be expanded into adjacent new construction.

University Health Service

This department will function for the entire University. The service will be expanded and relocated to new construction.

Central Services for the Medical Center

The services required to serve the Medical Center will be expanded as required into space vacated by Strong Memorial Hospital. It is recommended that the University receiving, stores and maintenance be changed to a new location on campus to serve the University complex.

Housing

Nursing students could be housed on the academic campus. Housing for interns and residents could be relocated to Helen Wood Hall. Additional housing will be constructed as needed.

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Parking

Surface parking for approximately 2000 cars will be provided. Ramp parking may ultimately be required in conjunction with the University longrange planning.

Space Requirements

A detailed architectural program has been written which defines each individual space requirement for the total master program. Appendix I is a summary indicating over-all need.

Utilities

Appendix II gives a detailed report.

	MASTER PLAN BUDGET COST ESTIMA	TES AS PROGRA	MMED
I.	Teaching Hospital		
	800 Acute, 50 Chronic and 40 Ex	tended Care B	eds
	Building Equipment	\$21,300,000 	422 k.00 000
			\$23,400,000
II.	Outpatient Clinic	4. •	
	Building Equipment	\$ 2,000,000 200,000	2,200,000
مله مله ماله		an er fl. have	
III.	Health Service and School of N	ursing	
	New Construction Equipment	\$ 6,500,000 1,000,000	7,500,000
IV.	Remodeling Present Hospital for Medical School Use	,	Э
	Renovation	\$ 6,700,000	
	Equipment	600,000	7,300,000
v.	Medical School - Continued		
	Air condition balance of e Medical School and Hospita to remain in present locat	l areas	3,400,000
VI.	Additional Psychiatry Beds		
	New Construction Renovations Equipment	\$ 150,000 210,000 40,000	400,000
VII.	Additional Rehabilitation Beds		
v con man gr	New Construction Equipment	\$ 650,000 50,000	700,000
VTTT	Motel Facility		1003000
V who who one of	New Construction	\$ 735,000	
	Equipment	65,000	800,000
IX.	Remodeling Helen Wood Hall		300,000
Χ.	Central Heating and Cooling Pla Utilities to serve the entire Conter Complex		4,000,000
	TOTAL		\$50,000,000
	Note: Cost of addition to Wing 00, not included in th	A. E. C., is ostimate.	

APPENDIXES

SPACE ANALYSIS RECAPITULATION

APPENDIX I

12,900

(203,000)

Department	Present Facility Net Sq Ft	Proposed Net Sq Ft			onal Net Required Reassigned to Existing
PART 1 - Medical School					
Section A - Basic Sciences Anatomy Biochemistry Microbiology Pathology Pharmacology Physiology	14,800 12,900 17,200(1) 17,200 4,100 19,100	25,000 27,300 29,500 29,300 12,900 22,300	12,100 9,900 14,200 15,000 4,100 15,600	5,000 5,000 5,000 5,000 3,000 3,000	7,900 12,400 10,300 9,300 5,800 3,700
Section B - Clinical Sciences OB & Gyn Pediatrics Psychiatry Radiology Medicine (Including Specialties) Surgery (Including Specialties) Preventive Medicine - Public Health Dentistry & Dental Research	4,900 4,300 19,200 1,800 12,000 14,200 1,000(2	13,000 16,500 26,000 6,000 35,000 45,000 14,000 6,400(1	4,900 4,300 19,200 1,800 12,000 14,200 1,000 15) 2,000	3,300(3)	8,100 12,200 6,800 4,200 23,000 27,500 13,000 4,400
Section D - Supporting Services to Medical School Medical Illustration & A. V. Animal Housing Unit Laboratories Lecture Rooms Student Facilities Storage (Equipment Center) Library Technical Shops	2,800 (4 4,700 3,500 1,300 22,600		2,800 2,500 3,500 1,300 22,600	50,000 25,200 10,500 7,700	3,500 4,800 9,100 10,700 7,400 6,000

7,800(14) 20,700

(187,400) (496,500) (170,800)

7,800

(122,700)

Technical Shops Section D - Administration Dean's Space

PART 1 - SUBTOTAL

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	Part 2 - Teaching Hospital Part 3 - Psychiatry Wing R Part 4 - School of Nursing Part 5 - Outpatient Clinic Part 6 - A. E. P. Wing O Part 7 - Rochester Municipal Hospital Part 8 - Rehabilitation Center Part 9 - Student Health Service Part 10 - Clinical Dentistry	39,700(6) (8) 27,900(7) 31,000	520,500 49,000 19,500 50,000 53,000(9) 40,700 14,000 2,600	27,700 39,700 31,000 28,700	492,800 3,000(10) 19,500 50,000 22,000 12,000 14,000 2,600	6,300(10)	
	Part 11 - Central Services for M. C. Post Office Communication Center Security Office University Receiving, Stores Engineering Maintenance & Shops Employees Facilities University Personnel Office	500 1,250 700 18,800(12) 15,700(13) 8,900 2,400	2,000 3,000 1,600 24,000 24,600 20,000 6,500	500 1,250 700 18,800 15,700 8,900 2,400		1,500 1,750 900 5,200 8,900 11,100 4,100	
	Part 12 - Motel Facility (80 Units) PARTS 2 THRU 12 - SUBTOTAL	(438,050) (22,000 853,000) (175,350)	<u>22,000</u> (637,900)	(39,750)	
	TOTAL	625,450 1,	349,500	346,150	760,600	242,750	
2	 Health Bureau space included. Health Bureau space not included. Anesthesiology Dept. by operating 13,000 net sq ft to be demolished a 		ren 15. Prog	ovated. ram opport) net sq ft of s cunities may req itional space.		
built in new construction. 5. Present student labs to be taken over by Med. School Depts., (14,500 net sq ft). 6. Clinical Dept. of Psychiatry not included. 7. Present facility to be moved to new Constr., (includes hospital, clinic facilities, except Psychiatry) student health service and clinical dentistry. SUMMARY Total Requirements Existing to Remain Summary Total Requirements Existing for New Use New Construction TOTAL SPACE							
	8. Presently in Helen Wood Hall, to be Medical Center complex, 10,350 ne available in Helen Wood Hall.	e moved to t sq ft		Space Una ISTING SPA		00	
	 9. Taken from programmed expansion. 10. Provisions for 44 new psychiatric 11. To become available for clinical demontal expansion. 12. Part of University service. No spanned at this time. 	epart-	and the second design of the second	ea - New (760,6	are net areas. Construction $500 \times 1-1/2 =$ Equip. 5% =	1,140,900 59,100 1,200,000	
	13. Present facility. No change at thi Expansion would be into vacated s required.			space unai	not include ffected by the nt program.		

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UTILITY FACILITIES STUDY

I. Space Needs.

As developed elsewhere in this report, the space needs of the Medical Center indicate a present space of approximately 900,000 sq. ft. and the addition of approximately 1,200,000 sq. ft. of new construction.

It is contemplated that most of the existing space is to be remodeled suitable for the new functions assigned, and that all the remodeled space and the new space provided will be adequately heated, ventilated and air conditioned in accordance with the functions of the space.

The two major mechanical services involved in a plant of this magnitude are that of steam and cooling effect; however, electric service, water, sanitary and storm sewers and gas distribution are a necessary part of the complete utility requirements.

II. Steam Requirements (Medical Center).

Α.	Estimated	present	space heating,		
	hot water	heating	and miscellaneous		
	service-pe	eak stear	n load	70,000	lb/hr

- B. Estimated new construction peak steam load = 1,200,000 sq. ft.x .075 lb/sq.ft. 90,000 " "
- C. Additional steam load due to remodeling of existing space, additional ventilation, etc. 13,500 " "

Total future peak steam load (Medical Center only) = 173,500

Total future peak steam load increase = 90,000 + 13,500 = 103,500 " "

III. Central Heating Plant (Existing)

The existing central heating plant now experiences a maximum peak steam load of 140,000 " "

Present firm capability (maximum plant capacity with largest unit out of service) 160,000 " " The new maximum total steam load as a result of the Medical Center expansion only will be

only will be	140,000 lb/hr
	103,500 " "
	243,500 lb/hr
This would indicate a deficiency in	
firm capability for the Medical	
Center requirement only of	243,500 lb/hr
A. disastonerinerineri	160,000 " "
	83,500 lb/hr

IV. Heating Plant (New).

It is recommended that the existing Central Heating plant continue to be the source of steam for the present academic campus and a new plant constructed to meet the needs of the Medical Center expansion as well as future academic campus expansion beyond the capability of the present plant.

The existing plant is to be phased out of operation as the academic load increases and additional capacity is added to the new plant.

It is recommended that an additional steam supply line be run from the existing central heating plant to the new plant and Medical Center to adequately serve the future loads and provide standby service.

V. Cooling Effect.

A. Existing Cooling Effect.

The existing Medical Center now has the following cooling equipment installed or about to be installed:

20	Rehabilitation Building Electric Drive Centrifugal	150	tons
2.	Hospital - New operating room unit being installed	200	88
3.	Medical Library	150	17
4.	Miscellaneous self-contained units	100	11
	Total Tons Installed	600	tons
Estimate	ed existing space now air condi-		

tioned:

 $\frac{600 \text{ tons}}{.0035 \text{ tons/sq ft}} = 170,000 \text{ sq ft}$

B. Additional Cooling Effect.

1.	Existing space to be remodeled and air conditioned = 900,000 sq ft - 170,000 sq ft	730,000	sq ft
	Cooling effect required = 730,000 sq ft x .0035 tons/sq ft	2,550	tons
2.	Estimated new construction cooling effect required = 1,200,000 sq ft x .004 tons/sq ft	4,800	tons
	Additional cooling effect required	7,350	tons
3.	Retirement of existing cooling effect	600	tons
4.	Total future cooling effect required	7,950	tons

VI. Cooling Plant (New).

In order to provide cooling effect of this magnitude, it is unquestionably prudent and economical to do so on a central plant basis much as is the case for central heating.

The refrigeration units to be installed in the larger sizes, i. e. 2000 - 3500 tons, and arranged to deliver chilled water into a chilled water distribution system designed to supply those buildings and areas requiring air conditioning.

In so doing it would also be economically feasible to use the Genesee River or canal water as a condensing medium and eliminate the need for cooling towers. The use of an adequate natural source of condensing water such as the Genesee River is most desirable as compared to a cooling tower installation as the operating and maintenance costs are much less. Further, the average river water temperature during the cooling season will be less than that of a cooling tower requiring less power per ton of refrigeration produced.

The undesirable appearance and nuisance of a cooling tower is also eliminated.

The energy source for a central plant of this type would be either electric drive or steam turbine drive requiring some 8,000 hp.

The steam generating equipment in the new plant should be selected to operate at a pressure greater than the present units and provided with some superheat to accomplish an attractive steam rate with the refrigeration drive turbines.

The plant may well be made up of a combination of steam turbine drives exhausting into absorption machines with a still more economical over-all steam rate.

An economic analysis of first costs and owning and operating costs will be required to determine the most economical and desirable energy source for this project; however, in previous studies of this type and size plant the steam energy source has proven to be the most economical.

It is, therefore, recommended that a central cooling plant adjacent to the new central heating plant be incorporated into the master plan to provide the required cooling effect.

VII. Plant Location.

A suitable location for the central heating-cooling plant would be adjacent to the canal and west of the intersection of Westmoreland Drive and Kendrick Road, suitable for trackage into the plant area, with condensing water piping run to the canal and chilled water piping to the Medical Center.

VIII. Centralized Control (Data Center).

The application of a centralized data and control center to this project appears to be most practical and desirable. Generally, this equipment has not been too well adapted to existing facilities due to the excessive costs of providing controls and sensing points for existing equipment.

However, since the master plan indicates a sizable expansion (100%) and since the existing space and equipment is to be remodeled extensively, the application of such a data center is practical. The location of such a center is ideally in a central heating-cooling plant with year around 24-hour supervision, thus eliminating three-shift building operators. In the event such a plant is not practical the center would be placed in the hospital proper and provided with 24-hour supervision.

In installations of the type contemplated here it has been found that the initial investment can be amortized in approximately two to three years by the economies in labor and utilities.

IX. Electrical Service.

Present Service

- The primary loop service now being developed for Α. the Medical Center and the University Campus with one loop in operation for the Medical Center and one for the University Campus will provide service reliability not possible with a radial system distribution. The primary loop serving the Medical Center carries only a portion of the load and a second loop is being planned to provide two-way service to the transformers in the medical buildings. With the remodeling work that will be performed in the present buildings to accommodate changes in functions, it may be necessary to increase the capacities of existing transformer stations to serve increased loads due to the addition of air conditioning equipment.
- B. The existing Rochester Municipal Hospital located in the Medical Center area is presently served direct by R. G. & E., and proper revisions will be made to connect the existing transformer substation into the Medical Center primary loop distribution system.

New Construction Requirements

A. The proposed new construction in the Medical Center will add approximately 1,200,000 sq. ft. of floor space, the greater portion of which will be air conditioned. Using a preliminary figure of 5 watts per square foot, we arrive at an estimated demand of 6,000 KW. This electrical load should be served on a new primary loop or dual primary feeders emanating from the two main substations. An undetermined electrical load will be added at the central heating-cooling plant for central air conditioning equipment and additional boiler capacity. In the teaching hospital double ended unit substations are recommended to provide maximum service reliability.

B. An automatically started diesel electric emergency plant should be provided in the hospital to serve emergency lighting and power loads. It should also be sized to service at least one elevator at one time on a manual selection basis, permitting all cars in a bank to be emptied before selecting one car to operate during an emergency.

X. Water Distribution.

All water requirements for the Medical Center are at present supplied by means of two 8" connections to the City of Rochester water system 8" main in Elmwood Ave. and one 6" connection to the 10" main in Crittenden Blvd.

It appears that the water distribution system is adequate in the area and new service connections as required can be readily made to provide for the new space demands.

XI. Sanitary Sewer.

The sanitary sewer system for the existing Medical Center consists basically of one 12" and one 10" gravity sewer line to the manholes at the intersection of Lattimore Road and Kendrick Road at which point additional sewer lines serving other areas join and the lines increase to one 15" and one 12" continuing west to the city pumping station at Kendrick Road and Westmoreland Drive. At this point the city pumps all sewage through a 12" force main back along Kendrick Road, Lattimore, and then along Elmwood and across the river.

It is evident that the present University 12" and 10" mains are loaded at present and additional mains will be required to serve the new space proposed. It is also evident that the City will have to increase the pumping stations and force main capacity to meet the new space requirements. In order to properly handle the increased sewage flow from this area the possibility of reconnecting an old existing 24" x 24" stone sewer which runs along the south bank of the Genesee River and connecting to the sanitary sewer appears to be a practical solution to the immediate problem and should be adequate for at least a ten-year period, the City taking the necessary steps for further expansion during this period.

XII. Storm Sewer.

The storm sewer system serving the existing Medical Center consists of 18" and 27" to 30" mains in Elmwood area, a 25" main grid system serving the Helen Wood Hall and the parking areas to the west. The City recently installed a second trunk line in Elmwood to the river to relieve storm water in the area. In general, the mains appear to be adequate to serve the new space proposed; however, laterals will no doubt be required to serve certain new building and parking areas.

XIII. Gas Distribution.

The entire Medical Center is served with gas by means of mains in Elmwood and Crittenden Blvd. and this distribution should be adequate to serve the new space requirements.

STAGING PROGRAM

- I. Hospital Construction.
 - A. Relocate interns and residents now housed in Staff House to a part of Helen Wood Hall.
 - B. Relocate and consolidate Medical Center engineering and shops to S and A Building as required to demolish Staff House.
 - C. Demolish Staff House.
 - D. Construct Stage I of Hospital Construction.

This to include Emergency, Surgery, Food Service, Outpatient Radiology, Central Supply, Pharmacy, Blood Bank and 150 Acute Beds.

- E. Upon completion of Stage I Hospital Construction and the departments have taken occupancy, remodel vacated spaces as required for Medical School use and expanded hospital facilities.
- II. Atomic Energy Project Addition.
 - A. Construct Proposed Wing 00.
- III. Medical Science and Educational Unit Construction.
 - A. Demolish original animal building.
 - B. Construct Stage I of Medical Science and Educational Unit. This to include animal facilities, animal labs, student laboratories, lecture rooms and student study areas.
 - C. Upon completion and facilities have been occupied, remodel vacated spaces for Medical School use.
- IV. Construct New Central Heating and Cooling Plant.
 - A. This unit to be staged and completed at a time prior to completion of any of the above items I, II or III.
- V. Construct the Central Outpatient Clinic Building.
 - A. After completion and occupancy, remodel vacated space for expansion of Clinical Science departments.

- VI. Construct the Balance of New Hospital.
 - A. Relocate beds from Wings B, C, Q, X and Y to new construction and psychiatric beds to renovated Wing Q-2 and new connection between Q-2 and R-2.
 - B. Renovate vacated space for Medical School use.
- VII. The following projects could proceed at any time:
 - A. Athletic Facility.
 - B. Additional Housing.
 - C. Addition to Rehabilitation Unit.
 - D. Motel Facility.

EXHIBITS

