A FUTURE PLAN FOR SEOUL NATIONAL UNIVERSTTY

by

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B. S. Seoul National University, Korea

(1950)

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Master in Architecture

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

(1959)

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Dear Dean Belluschi:

In accordance with the requirement for the Degree of Master in Architecture at the Massachusetts Institute of Technology, I hereby submit the following thesis entitled " A Future Plan for Seoul National University.

Respectfully submitted

Chang Sup Yoon

ACKNOWLEDGEMENTS

I would like to express sincere appreciation to the following persons for their kind guidance and help during my study at the Institute.

Dean Pietro Belluschi
Professor Lawrence B. Anderson
Professor Herbert L. Beckwith
Professor Gyorgy Kepes
Professor Eduardo F. Catalano

for his invaluable suggestions on basic approach to this thesis

Professor Walter Gropius

for their friendly encouragement and assistance on the work of this thesis

Mr. and Mrs. Walter F. Rybkowski

ABSTRACT

A Future Plan for Seoul National University: Chang Sup Yoon

Submitted to the Department of Architecture in partial fulfillment of the Degree of Master in Architecture.

This thesis is concerned with the design of a future plan for Seoul National University in the Republic of Korea.

The need for a new centralized campus of the University actually exists and the hope is that this design may stimulate and encourage the actual planning and execution of a new campus.

A study, therefore, has been made of the unique problem of the University, an Introduction, Basic Approach, Space requirement, Climate and Site condition, Criteria for A Future Plan, and a proposed future plan are among the topics considered.

This study is also intended to serve as a statement of the author's views on university campus design in general.

CONTENTS

I. INTRODUCTION

1. Brief History of the University

When Korea was liberated from the detested Japanese reign by the Allied Forces at the end of the Second World War, it became necessary to undertake a reorganization and amplification of the existing educational system as well as to institute reforms that would bring the newly independent country closer to democracy.

In line with this aim of improving higher education in Korea, Seoul National University, comprising the Graduate School and nine colleges, was founded on the basis of the former Japanese Imperial University and other Professional Colleges in Seoul on August 26, 1946, according to the United State Military Government Ordinance No. 100.

With the establishment on August 15, 1948, of the Government of the Republic of Korea, Seoul National University became the first national university.

Since its inception, the University has undergone various hardships which are similar to those experienced by other institutions in Korea. Indeed, it had almost recovered from the temporary disorders following the liberation when the Korean War broke out and the functions and facilities of the University were shattered.

The four years following the end of the Korean War have constituted a remarkable period of rehabilitation and restoration for the University. Though it still faces many problems such as those occurring as an aftermath of the war, nevertheless it has made considerable progress and has highest status among the institutions of higher education in Korea.

2. Organization

The University is organized into the following school, colleges, divisions and departments:

Graduate School

College of Agriculture
Departments - Agriculture, Agricultural Biology, Agricultural Chemistry, Forestry, Livestock, Sericulture

College of Commerce
Departments - Economics, Commerce

College of Dentistry

College of Education

In division of Education - Education, Educational Administration, Educational Psychology

In division of Humanities - English Literature, General Social Sciences, Geography, History, Korean Literature

In Division of Sciences - Biology, Chemistry, Home Economics, Mathematics, Physical Education, Physics

College of Fine Arts

Departments - Aesthetics, Applied Design, Painting, Sculpture

College of Law
Departments - Administration, Law

College of Liberal Arts and Sciences

In division of Liberal Arts - Chinese Literature, English Literature, French Literature, German Literature, Korean Literature, History, Philology, Philosophy, Political Science, Psychology, Religion, Sociology

In division of Sciences - Biology, Chemistry, Geology, Mathematics, Physics, Pre-Medical Course

College of Medicine

College of Music

College of Pharmacy

College of Technology
Departments - Architectural Engineering, Chemical Engineering, Civil Engineering, Communication Engineering, Electrical Engineering, Mechanical Engineering, Metallurgy, Mining, Naval Architecture and Aeronautical Engineering, Textile Engineering.

College of Veterinary Medicine

A functional chart of the University appears in the Appendix (Table A).

3. Present Location and Existing facilities

The principal sites of Seoul National University are located in the city of Seoul.

The University Administration, the Graduate School, Colleges of Fine Arts, Law, Liberal Arts and Sciences, Medicine, Music, and Veterninary Medicine form the main

campus in the north-eastern corner of the central parts of Seoul. The College of Dentistry and College of Pharmacy are also located in the central part of Seoul, although they are separated from the main campus. The Colleges of Commerce, Education and Technology are located in the north-eastern suburb at some distance from each other. The College of Agriculture is situated in Soowon which is 25 miles from Seoul.

The total site area of existing campuses is 569 acres, excluding the agricultural experiment field and forest which spread over 37,300 acres in Soowon.

The gross existing floor coverage is 1,664,300 sq. ft. This means that there is approximately 110 sq.ft. of the net floor space per full-time student.

More detailed information concerning the existing buildings of the University is attached in Appendix (Table B).

4. The Necessity of Centralization

Since the University is composed of many institutions which had individual functions and scattered locations, each of its colleges has had a more or less independent development. Some of the contradictions and deficiencies which exist in the university plant operation, which are

mostly caused by the decentralized campuses of the University, are readily apparent. Examples of these are:

i) operational complications and extravagances in administrative expenditure.

ii) duplicated academic subjects and instructions, especially in the basic requirement subjects.

iii) contradictions in the curriculum of the College of Education. The College has a liberal and sciences course which will naturally have to be affiliated with the College of Liberal Arts and Sciences when the University has a centralized campus.

Under present conditions it is impossible to expect a sound development of the University as a consistent and organic entity in the future. In this regard the problem of the centralization of the University has given rise to discussion among the faculty of the University, and on November 19, 1958, a Planning Board for the centralization of the University was established for the purpose of finding the proper method for the centralization of the University.

II. PROPOSED METHODS FOR CENTRALIZATION

There are three possible ways to achieve the necessary centralization. The first method would be to select a new site in a suburban area of Seoul and to build an entirely new campus. The second possibility would be to create the centralized campus on the present site of the College of Technology, utilizing some of the existing buildings and facilities and purchasing any additional land required. The third method would involve making some minor improvements of the existing conditions to achieve a certain degree of centralization in the university plant operation. For instance, a medical center might be established near the main campus in order to consolidate several colleges related to the medical sciences, such as the Colleges of Dentistry, Medicine, Pharmacy and Veterinary Medicine.

The last method would require the least expenditure and would provide a partial solution to the problem, but it would be impossible to remove the major deficiencies caused by the scattered location of the campuses by this method. The most ideal solution to the problem is presented by the first method because there would be no existing

facilities on the site to exercise a restraint upon planning. However, the purchase of land and the construction of a whole new campus would be very costly.

The second solution offers many more advantages than the other two. Some of which can be outlined as follows:

i) The College of Technology has 228 acres of land, which constitutes about one-fourth of the land needs of the centralized campus. Moreover, the value of land in this area is not nearly so great as that of land in the suburban area of Seoul.

ii) On this site the University owns 393,600 sq. ft. of the existing building area, of which well maintained concrete structures, which are expected to adequately fulfill their purpose for many years, cover 258,000 sq. ft. of floor area, excluding some new dormitories that have a capacity of 600 students.

iii) The site is well endowed with a beautiful landscape. It is surrounded by mountains and hills and embraces a considerable amount of flat land with good soil conditions.

iv) It is within commuting distance from downtown Seoul, which is approximately seven miles away, and the trip takes twenty minutes by city bus line or less by train.

After serious consideration of the advantages presented by all three possibilities, the author proposes to select the second method for achieving centralization.

Although it would involve certain difficulties and may seem impossible to execute at the present time, nevertheless it is his opinion that an attempt to create the new centralized campus, in cooperation with the Government and the House of Representatives, disposing of the properties of the University by appropriate methods, would make it possible to have excellent modern facilities and an ideal environment for the University.

One of the primary purposes of this thesis is to promote constructive in a new centralized campus and to prepare a preliminary study for the Master Plan of the new Campus.

III. BASIC APPROACH

A basic approach to the planning of the University campus should concern the problem of how we can best relate "groups of scholars" - and here we would include students - so as to provide for communication and interdisciplinary growth, which encourages the development of new concepts and theories in the understanding of man and his environment.

An approach of this nature would suggest that the usual individual school units--with separate classrooms and laboratories--might be superceded by other physical arrangements which would provide a setting for a flexibility in the allocation of physical resources adaptable to the changing needs of a growing university.

It suggest further that in terms of administrative organization it might be possible to emphasize as a final aim the role of the Dean in the individual colleges as leaders of program and faculty development in their respective schools. By gradually making them more truly Deans of Faculty, and freeing them from the managerial problems of plant, maintenance and space allocation, their time could be wholly devoted to these leadership activities.

The identities of the various colleges which have developed through the years would be retained by establishing for each of them separate permanent headquarters and teachers' offices. The central university administration would deal with the distribution problem related to housing, instructional space, research laboratories and library facilities. Thus the central administration could have a greater opportunity to coordinate the need of the entire university and to avoid some of the problems relating to growth and change.

Substantial savings of investment and operational cost of the physical plant could be expected from this type of approach.

In accordance with this approach the author proposes the following as basic factors of the campus planning:

i) The planning should be flexible enough to adapt to growth and need of new generations. None of us can adequately foresee the nature of needs which will concern future generations, so in the planning of a university campus we must put particular emphasis on greatest possible flexibility of organizational system as well as of the physical plant.

ii) All of the classrooms for didactic instruction should be consolidated into one large building which would be cetrally located so as to be easily accessible from each of the colleges. This building should be made flexible as far as increasing or decreasing size of rooms is concerned.

iii) Professional laboratory spaces, seminar rooms, some special lecture halls, and faculty offices would be retained within each college building, preserving the individual identity of the various colleges.

iv) Colleges which have closely related courses of instruction should occupy the same building, so that more of the space and facilities will be utilized. This would also result in better circulation and flexibility. The tendency at present seems to be towards a breaking down of barriers between departments and a utilization of all space to the maximum.

v) A Space Utilization Section should be established in the Administration Office for the purpose of controlling the use of diactic class rooms and laboratories This would result in economy through efficient utilization and would allow for flexibility in the growth of different schools.

IV. SPACE REQUIREMENT

1. Methods of estimation

There are several methods for estimating space requirements of a university and three of the principal types are the following:

i) One is to set recommended standards for various kinds of space in terms of the population served, namely to assume the square footage of total building area per student as a basic index for finding the space requirement. Table C in the Appendix lists one of the examples which is a proposed index in "a plan for its development of University Circle". These recommendations are based on careful consideration of the existing physical plant, the instructions, programs and objectives and comparisons with current standards of other schools. Table D in the Appendix presents comparative data on these ratios at other institutions.

ii) Another method is to calculate the number of rooms required for the University, assuming the size of class and the number of instructional hours per week. Then the space requirement is computed with the determination of the optimum space needs for the size of each classroom. Table E in the Appendix presents an example of this

method which was used to find the space requirement in the planning of "the University of Baghdad".

iii) The third method is based on "the student station hours" of teaching. As a first step in this method it is necessary to find the total student station hours per week in each of the colleges, taking into consideration the cross-over factor between college instructions. Then by means of defining the optimum space use factor which varies according to the characteristics of the instruction, the space requirement can be determined. The publication "How to Estimate the Building Needs of a Colleg or University" contains the most excellent and detailed material on this method.

The first method, which is based on common sense, is most customarily used. It will give good approximation of the space requirement for institutions which have smaller enrollments, less educational diversity and more readily available funds. A complex institution like the University is faced with varying demands of students of several colleges and diverse demands of different kinds of instruction so that the amount of space required will vary from college to college. This is probably the method which has been employed - explicitly or implicitly - in

much planning by most colleges in the past. But it does not offer a satisfactory solution for modern institutions which have far more complex problems.

By the second method a more detailed statement of the area required for every instructional division is obtainable. We can compute the exact number of rooms required assuming the size of class, type of instruction, and number of instruction hours. But it is difficult to define all types of instructions and the optimum size of class without a detailed knowledge of the curriculum of the University. Even if we could define these with precise knowledge of the curriculum this method would not serve to fulfill the future requirement because of the rapid change which is characteristic of the modern institution. The type of instruction and optimum size of classes tends to vary from time to time.

Consequently it is the author's feeling that this is not the proper method for projecting space needs for the University.

The most reasonable method is the third one because it is directly based on the loads of instruction which can be measured by "student station hours". By this method we can take into account the "cross-over" factor. In

actual practice it is seldom that students enrolled in a particular college use only the facilities of that one college; but rather use the facilities of other colleges as well. Table F in the Appendix shows the student station hour distribution (Cross-over factor) for the University of Minnesota, which is derived from a study of the averages of six recent consecutive quarters.

However, this pattern varies according to the university and even in the same university will not remain static; the load distribution should probably be reviewed and changed as necessary. In this regard the author intends to make some modifications in consideration of the cross-over factor in order to project the building needs of the University.

According to the basic approach, obviously it is not necessary to consider the cross-over factor in the relation to didactic instruction because the University will have the consolidated classroom building for this purpose. The only problem is how to take into account the cross-over factor in a consideration of laboratory space. Actually the numbers of cross-over instruction in laboratory will be much less than that of didactic instruction so that it is possible to solve this problem by means of generous consideration in the determination of laboratory space needs, such as by assuming considerably low utilization percentage for laboratory space.

2. Assumptions

In estimation of the space requirement of the University the following assumptions are made:

i) Number of Students

The number of enrollments in each department of the University has been fixed by the University in its General Regulations. According to these Regulations, the enrollments of each college are:

Agriculture	1080
Commerce	1200
Dentistry	480
Education	1640
Fine Arts	360
Law	1200
Liberal Arts and Sciences	2080
Medicine	480
Music	300
Pharmacy	480
Technology	1500
Veterinary Medicine	320

The Regulations indicate that the number of graduate students should not be more than one-twentieth of the undergraduate enrollment in each department.

The author assumes that the total number of enrollments

in each college will not be greatly changed in the future, even though the number of enrollments in each department may undergo some change because of new educational demands, such as the establishment of new departments. The Division of Humanities and the Division of Sciences in the College of Education should be affiliated with the College of Liberal Arts and Sciences. The number of enrollments in both divisions is 1140, excluding the departments of Physical Education, Home Economics and Geography.

These assumptions make the number of students in each college as follows:

College	under-graduate	graduate
Agriculture	1080	54
Commerce	1200	60
Dentistry	480	24
Education	500	25
Fine Arts	360	18
Law	1200	60
Liberal Arts & Sciences	3220	160
Medical	480	24
Music	300	15
Pharmacy	480	24

Technology	1500	75
Veterinary Medicine	320	16
Total	11200	555

ii) Percentage of laboratory hours

Some of the professional colleges require extensive laboratory work while some of the others require less work. Considering the nature of instruction of each college, the following assumptions are made.

THE PERCENTAGE OF LABORATORY HOURS TO TOTAL INSTRUCTION HOURS

College	Percentage
Agriculture, Dentistry, Medicine, Pharmacy, Technology, Veterinary Medicine	40%
Fine Arts, Music	30%
Education, Liberal Arts & Sciences	20%
Commerce	5%
Law	0%

Compared with data from the University of Minnesota

Agriculture	50%
Business Administration	4%
Dentistry	55%
Education	21%
Law	0%
Medical Science	37%

Pharmacy	43%
Liberal Arts & Sciences	18%
Technology	39%
Duluth Branch (include Music & Fine Arts)	29%
Veterinary Medicine	36%

iii) Total Instruction Hours

The General Regulations of the University defines the credit system as follows: A student is permitted to carry up to 22 credits per semester in class and laboratory work. A student who attained an average grade of "B" or better in the preceding semester may carry a semester program of as many as 24 credits. The credit represents one hour of class work per week for one semester (15 weeks), including the necessary preparation for the class hour.

Two or sometimes more than two hours of laboratory work are considered as the equivalent of one hour of class work.

According to this credit system and assumed percentage of laboratory hours in each college, the total number of instruction hours assumed is as follows:

College	Total	Lab	Class
Agriculture	30	12	18
Commerce	23	1	22
Dentistry	30	12	18

Education	26	5	21
Fine Arts	28	10	18
Law	23	0	23
Liberal Arts & Sciences	26	5	21
Medicine	30	12	18
Music	28	10	18
Pharmacy	30	12	18
Technology	30	12	18
Veterinary Medicine	30	12	18

A comparison with the data from the University of Minnesota for total instruction hours shows:

Agriculture	20
Business Administration	14
Dentistry	22
Education	14
Law	16
Medical Science	15 (excludes clinic)
Pharmacy	23
Liberal Arts & Sciences	16
Technology	21
Duluth Branch	18
Veterinary Medicine	32

From the above mentioned assumptions, the student station hours of each college are calculated as follows:

STUDENT STATION HOUR

		Number of Students	Assumed Total Instruction Hours	Percentage of Lab Hours
1.	Agriculture	1080	30	40%
2.	Commerce	1200	23	5%
3.	Dentistry	480	30	40%
4.	Education	500	26	20%
5.	Fine Art	360	28	30%
6.	Law	1200	23	0
7.	Liberal Arts & Sciences	3220	26	20%
8.	Medicine	480	30	40%
9.	Music	300	28	30%
10.	Pharmacy	480	30	40%
11.	Technology	1500	30	40%
12.	Veterinary Medicine	320	30	40%
	Total	11120		

		HOURS OF INSTRUCTION PER STUDENT PER WEEK		STUDENT STATION HOURS		
		Lab. Hours	Didactic Instruction Hours	Lab.	Didactic	Total
1.	Agriculture	12	18	12960	19440	32400
2.	Commerce	1	22	1200	26400	27600
3.	Dentistry	12	18	5760	8640	14400
4.	Education	5	21	2500	10500	13000
5.	Fine Art	10	18	3600	6480	10080
6.	Law	0	23	0	27600	27600
7.	Liberal Arts & Sciences	5	21	16100	67620	83720
8.	Medicine	12	18	57600	8640	14400
9.	Music	10	18	3000	5400	8400
10.	Pharmacy	12	18	5760	8640	14400
11.	Technology	12	18	18000	27000	35500
12.	Veterinary Medicine	12	18	3840	5760	9600
	Total			58480	222120	280600

iv) Space Need Factor

To determine the space need factor and space need as related to instruction, the author referred to the publication "How to Estimate the Building Needs of a College or University", because it contains data which is derived from reliable study of existing use of area at the University of Minnesota where many aspects of the physical plant operation are similar to those at Seoul National University.

The are use factor, which was used to estimate the building needs of the University of Minnesota in 1970, are listed on the next page.

Space needs non-related to instruction are assumed according to comparisons of the existing examples of other universities.

AREA USE FACTOR (SPACE NEED FACTOR)

Estimated for 1970 The University of Minnesota

College	Student Service & Office	Lab & All Other	Grad. Research	Academic Programming
	Based on Total Hours	Based On Lab. Hours	Per Grad. Student	Per Total Student
Agriculture*	1.15	5.05	675	0.6
Business Administration	0.56	3.52	40	0.65
Dentistry	0.80	7.86	345	1.10
Law	0.57	0.17	0	0.45
Liberal Arts & Sciences	0.69	4.50	70	0.12
Medical Science	0.80	3.87	205	0.27
Pharmacy	0.78	6 09	75	0.65
Technology	0.85	7.81	450	0.38
Veterinary Medicine*	0.95	7.66	500	1.55
Duluth Branch (includes Fine Arts & Music)	0.62	3.04	35	0.60
Education	0.71	3.40	15	0.30

General purpose classrooms (Based on Total Hours)

Minneapolis campus	0.50
Duluth Branch	0.75

Library (Based on Total Hours)

Library of Law	1.00
Central Library	0.30

*Exclude farm field building.

These Area Use Factors are based on the optimal student station utilization as follows:

Agriculture	30%
Business Administration	42%
Dentistry	48%
Education	48%
Liberal Arts & Sciences	35%
Medical Science	30%
Pharmacy	32%
Technology	32%
Veterinary Medicine	40%
Duluth Branch	35%

3. Estimated Space Requirement

1) The space needs related to instruction

		OFFICE & STUDENT SERVICE 1		LAB & OTHERS 2		RESEARCH 3		
		SPACE NEEDS FACTOR 5	SPACE NEEDS	SPACE NEEDS FACTOR 6	SPACE NEEDS	SPACE NEEDS FACTOR 7	NO. OF GRAD. STUDENTS 8	SPACE NEEDS
1.	Agriculture	0.8	25900	5.0	64800	450	54	24300
2.	Commerce	0.5	13800	3.0	3600	40	60	2400
3.	Dentistry	0.8	11500	7.0	40000	300	24	7200
4.	Education	0.6	6800	3.0	7500	40	25	1000
5.	Fine Arts	0.6	6000	3.0	10800	40	18	700
6.	Law	0.5	8200	0	0	0	60	0
7.	Liberal Arts & Sciences	0.6	50200	4.0	64400	70	160	11200
8.	Medicine	0.8	11500	4.0	23000	300	24	8400
9.	Music	0.6	5000	3.0	9000	40	15	600
10.	Pharmacy	0.7	10000	5.0	28800	70	24	1600
11.	Technology	0.8	28000	7.0	126000	450	75	31500
12.	Veterinary Medicine	0.8	7600	7.0	26800	450	16	7200

		SPECIAL LECTURE HALL		SEMINAR ROOM 11		EXHIBITION ROOM	ACADEMIC 4 PROGRAMMING	ASSIGNABLE AREA	GROSS AREA 10
		NO.	SPACE NEEDS	NO.	SPACE NEEDS				
1.	Agriculture	1	2500	5	1500	2000	3000	124000	161000
2.	Commerce	1	2500	6	1800		3000	27100	35000
3.	Dentistry	1	2500	2	600		1800	63600	82000
4.	Education	1	2500	2	600	1000	1800	21200	27000
5.	Fine Arts	1	2500	2	600	3000	1800	25400	33000
6.	Law	1	2500	6	1800		3000	15500	20000
7.	Liberal Arts & Sciences	2	5000	16	4800	3000	3000	138600	180000
8.	Medicine	1	2500	3	900		1800	48100	62000
9.	Music	1	2500	2	600		1800	19500	25000
10.	Pharmacy	1	2500	3	900		1800	45600	59000
11.	Technology	3	7500	8	2400	3000	3000	200900	260000
12.	Veterinary Medicine	1	2500	2	600		1800	46500	60000
									1004000

Remarks:

1. Office of the teaching department and service area for student activities.

2. Laboratory and the area essentially related to laboratory, comprising primarily stockrooms, maintenance shops, laboratory preparation and laboratory service rooms.

3. The amount of space required for research related to graduate school instruction.

4. It refers primarily to the offices of the deans and their administrative staffs and the college general offices.

5. Based on total student station hours.

6. Based on total laboratory hours.

7. Sq. ft. of research area per graduate student.

8. 5% of total enrollment of the under-graduate student.

9. The sum of the floor area of the individual rooms assignable to the agencies housed in the building. Excluding the floor space such as corridors, toilet rooms, stairway, etc.

10. Total floor area of all rooms within a building. The gross space is estimated here to be 30% above assignable area.

11. One seminar room per 200 students approximately size of seminar room 300 sq. ft.

Didactic Classroom Space Needs

Space Need factor (based on total Student Station Hours)	0.6
Total Student Station Hours	222,000
Assignable Area Need	133,200
Gross Area need	177,000

2. The Space Needs Non-related Instruction

a) Research Laboratory

	(gross area)
Special Science & Engineering Lab	30,000
Nuclear Engineering Lab	10,000
Supersonic Lab & Wind Tunnel	30,000
Strength of Materials Testing Lab. (3 stories high)	10,000
Instrumentation Lab	30,000
Cosmic Ray Lab	2,000
Computation Lab	8,000
Electronics Lab	20,000
Earth Science Lab	8,000
Spectroscopy Lab	8,000
	156,000

In Separate Building

Green House	4,000
Observatory	8,000

Cyclotron	5,000
Nuclear Reactor	8,000
Total	181,000

b) Library

	(gross area)
Central Library (0.3 x 280,600)	84,000
Science Library	10,000
Engineering Library	10,000
Architecture & Arts Library	5,000
Law Library (0.75 x 27,600)	20,000
Medical Science Library	5,000
Agriculture Library	5,000
Oriental Study Library	5,000
Total	144,000

c) Administration

	(gross area)
President	3,000
Bureau of Academy	20,000
Bureau of Secretariat	30,000
Post Office & Other Service	2,000
Alumni Office	1,000
Printing Room	9,000

University Press Office	1,000
Total	66,000

d) The Others

	(gross area)
Auditorium	40,000
Museum	30,000
Student Union	20,000
Faculty Club	10,000
University Cooperation	20,000
Restaurant	20,000
Chapel	4,000
Infirmary	40,000
Building Maintenance & Power Plant	50,000
Total	234,000

e) Athletic

	(gross area)
Arena	40,000
Field House	50,000
Ice Rink	20,000
Total	110,000

Grand Total Of Space Needs For the University Plant — 2,072,000 sq. ft.

3. <u>The Space Needs For Housing</u>

a) Student

Anticipated student housing needs in the campus is assumed to be 2800 men (undergraduate 2600, graduate 200), 200 women, and 100 couples, which is approximately one-fourth of the total enrollment. Assuming space need indices for men's dormitory 210 sq. ft., for women's dormitory 230 sq. ft., and for couple's 420 sq. ft., required space needs for student housing are determined as follows:

Men's Dormitories

Assignable area	2800x210 =	588,000 sq. ft.
Gross area		780,000

Women's Dormitory

Assignable area	200x230 =	46,000
Gross Area		60,000

Married Couples

Assignable area	100x420 =	42,000
Gross Area		56,000
Total		896,000 sq. ft.

b) Staff

Required total number of faculty is assumed to be 740, which will give the ratio of one faculty member per 15 students in comparison with some examples of universities in the United States.

The Ratio of Student Per Faculty Member

Year	M.I.T.	Harvard

1946	13.6	18.5
1954	10.4	12.1

"The President's (Eisenhower) Committee on Education Beyond the High School" found that present practice in the United States provides one instructor for each seventeen students.

Total Personnel of the University including faculty is assumed to be 1400.

Anticipated staff housing needs in the campus assumed to be 400 families. Assuming space need index for staff housing 840 sq. ft. required space needs are determined as follows:

Assignable Area 840x400 = 336,000

Gross Area 448,000

Grand Total of

Housing Needs 1,344,000 sq. ft.

4. Land Needs

The land required for buildings will depend on two factors: the necessary amount of floor space, and the density at which the floor space is accommodated on the land. Determination of density is fundamental and has far reaching effects on the final quality of the environment.

The intensity of activity will determine the supporting facilities that must be provided on the land, such as roads, utilities, and recreation areas. Over-crowding will make it impossible to provide adequate space for access, light, air, landscaping. Future growth or change becomes substantially more difficult under these circumstances.

In considering density, a good index for estimating land requirements for a given set of buildings is " the floor area ratio". This ratio abbreviates FAR, the ratio of the gross floor space of a building to the total site area.

If, for example, a certain structure has FAR of 1, this means that there will be exactly as much area of land on the site as floor space within the building.

Comparative FAR's in other universities are given in Table G of the Appendix.

Floor area ratio should be used in determining future densities. Such decisions are important ones and will have a decided influence on the future functional and visual character of the area. The following ratios are recommended as standards for the University, representing what we believe to be the maximums desrable.

STANDARDS FOR FUTURE DEVELOPMENT OF THE UNIVERSITY

	FAR
Academic	0.75
Research	1.00
Common Core	1.00
Others	0.50

For outdoor athletic space of the University a standard of 60 sq. ft. per student is proposed.

For housing, the following densities are proposed.

For the single student	150 students per acre
For couple student	75 couples per acre
For the Staff Family	30 families per acre

According to the above-mentioned standard, the lands needs of the University are calculated in the following table.

LAND NEEDS OF THE UNIVERSITY

Academic	1,660,000 sq.ft.	41.5 acres
Research	156,000	4.0
Common Core	275,000	7.0
Others	458,000	11.5
Outdoor Athletic	672,000	15.0
Stadium	320,000	8.0
Housing		
Single Men's Dorm		18.0
Women's Dorm		1.5
Married Student Housing		1.5
Staff Housing		13.0
Community Elementary School		7.0
Community Recreation		3.0
Community Shopping		2.0
President's Residence		1.0
Total		134 acres
Assumed Land needs for future expansion and Permanent green belt		366.0 acres
Assumed Land needs for agricultural experiment		500.0 acres
Grand Total		1,000.0 acres

V. DESCRIPTION OF CLIMATE AND PROPOSED SITE

1. Climate of the Seoul Area

In the planning of any large educational institution it is necessary to give careful thought to climatic variations before applying any design principle whatsoever.

Situated as it is at the northern limit of the monsoon belt, Seoul experiences rainy winds from the sea during the summer. Three of the summer months have mean monthly temperatures above 68°F. Rainfall in the Seoul area averages approximately 40 inches per year. The flood season occurs between July and August, with the rainfall averaging approximately 20 inches in this season. For this reason, storm water drainage provisions must be very carefully engineered.

Winter is the dry season throughout the area. There are three months with mean monthly temperatures below freezing.

A central heating system is a design requirement. During the cold dry winter, the air is a cold mass moving from Asia to the ocean and most of the winds are from the north-west.

Meteorological datum of Seoul are given in the following table.

2. Proposed Site and Existing Buildings

The city of Seoul is situated in the west of the central section of the Korean peninsula on the Han River, some 40 miles east of the Yellow Sea. The topography is rugged, and only

METEOROLOGICAL DATUM OF SEOUL

Summary for 1957

Temperature	mean	11.0 C°
Precipitation	annual total	1260.8 mm
Humidity		69%
Sunshine		56%
Wind	mean velocity	2.6 m/s

Records of Extremes

Temperature	maximum	38.2 C°	August 24, 1943
	minimum	-21.0 C°	Jan. 11, 1923
Precipitation	annual total	2135.1 mm	1940
	daily max. amount	354.7 mm	August 2, 1920
Wind	max. velocity	25.0 m/s	April 19, 1954
	direction		W
Snow	maximum	31.0 cm	March 24, 1922

20% of the area is relatively flat. Low mountain ranges are visible in all directions from the city.

The proposed site for a future plan of the University is located in the north-eastern periphery of Seoul at the foot of Mount Boolam whose great exposed rock surface has encouraged an indefatigable spirit in man through the ages.

The site is surrounded by mountains and small hills, embracing a considerable amount of flat land in the center, the south-western portion opens toward a river, and a small creek flows through the site into the river.

The Technical College of the University has owned 228 acres of land 393,600 sq. ft. floor area of the buildings on this site. Some of these existing buildings, indicated by Nos. 1, 2, 3, 4 in the map, are of well-maintained reinforced concrete construction and can be expected to fulfill their purpose for many years. These have interior walls and ceilings of plaster. Floors are terrazzo and hard wood flooring. The floor area of these buildings is 258,000 sq. ft.

The rest of the existing buildings indicated by No. 5 on the map were built during the Second World War and because of the limited budget, the quality of construction is

poor and the appearance of the buildings is not in harmony with the other buildings. Moreover, these buildings were severely damaged by the Korean War. In this regard the writer proposes to demolish the No. 5 building for the future plan of the University.

Soil conditions throughout the site are generally satisfactory.

A vicinity map of the site and several photographs which reveal the condition of existing buildings and a view of the site are included in the Appendix.

VI. CRITERIA FOR A FUTURE PLAN

Buildings, streets and open spaces of the University campus should be so organized that their participation in the totality of the University is evident. They must remind us of that participation, not only by consistent architecture, but also by their attitudes and arrangements.

To achieve this goal functional and aesthetic considerations are just as important as the satisfaction of quantitative space needs. The environment should be rationally arranged and also be beautifully presented.

If the long range plan is to guide development toward this aim, it must be based upon certain fundamental principles. The following are the author's proposals on criteria for a future plan of the University.

1. Function

A future plan should be so arranged that it will fulfill the function of activities which are involved in the University. Each pair of activities which are functionally linked to one another should also be linked in their physical locations. Activities at class time, for example, should be within easy walking distance. The plan should also reflect the relative value of these connections.

2. Circulation

Adequate circulation is a basic functional requirement.

Each activity must be adequately serviced by internal roads and the whole complex must be easily accessible to traffic from downtown Seoul. Both automobile ways and train connections must be as effective as possible. Within the campus, a system of pedestrian ways should permit walking from sector to sector with ease and without hazard. This can be achieved by lowering the level of pavements and by carrying pedestrian bridges above the roadway.

3. Flexibility and Expansion

Flexibility in general is a desirable quality, but many specialized types cannot achieve great flexibility. A certain measure of flexibility which would permit changes or expansion to meet the future demands of the University should be carefully considered. As one solution of this kind, large blocks of academic buildings will house a group of related institutes, and the adaptability of the interior of these buildings will be assured by a general structure with movable partitions to permit flexibility as far as increasing or decreasing sizes of rooms is concerned.

Past experience has shown that urban universities invariably underestimate their ultimate growth requirements. It is therefore essential that each major function have at one side an area into which it can someday grow without

interfering with the operations of any other major function.

4. Orientation

A careful study for orientation with reference to sun-light and wind is very important, not only in the design of individual buildings, but also in the area plan.

Sun-light is our primary source of living activities, of which visual, thermal, and physiological effects are vital to very life. Direction of sunlight in relation to the earth varies at different latitudes. The latitude of Seoul is 37°34' N. The orientation which is best in the Northern Hemisphere is south, because the solar altitude is highest at noon of the summer solstice and lowest at noon of the winter solstice; consequently sunlight penetrates the room to a great extent in winter and to a lesser extent in summer.

In the layout of building, it is desirable to have a spacing of more than twice the height of the building to avoid an overcasting shadow from another building at noon of the winter solstice -- when the solar altitude is h = 29°, the length of shadow l = 1 8040 in the Seoul are--in the cases where buildings are arranged in parallel rows and at the same level.

A good orientation for wind is also recommended to

attain cool breezes in the hot summer and to avoid chilly winds in the cold winter. Some buildings which may possibly generate noise or order should be located leewards of the prevailing wind direction to prevent their becoming a nuisance.

The above mentioned spacing ($w = 2H$) will generally allow the breeze to reach the ground floor after passing over the obstructing building.

5. Topography

Respect for existing terrain should be a basic premise of the plan. The land itself has shape, colour, texture, pattern, and form. All of these qualities must be taken into consideration in planning. Buildings and other objects should be placed in harmony with the topography, which modifies their forms and is itself modified by them.

The first major aesthetic problem in the area plan is to establish a satisfactory relationship between the natural form of the land and the geometric form of the buildings placed upon it and its basis is the recognition of the formal qualities of the landscape itself.

6. Spatial Organization

In the spatial organization of the University campus, by which is meant the design of forms, texture and colors in three dimensions with relationships to solids and voids

throughout the entire campus, an attempt should be made to achieve the aesthetic requirement, variety in unity.

Every major space should have a focus--climax. This produces the powerful dynamic effect of space, and without it space may have no expression. It is created by collective elements with life intensities and richness.

A dominant focus-climax which symbolizes the total complex should be culminated by a series of subordinate focii so that they create a hierarchy of space.

The creation of a single building or the statement of a single experience has little value when the building or experience is not linked in a chain of meaningful form; in this respect a proper transition should be applied so as to form into a sequence of correlated spaces.

The main approach of the campus should be discernible and pleasant for the visitor.

VII. A FUTURE PLAN

1. Size of Built-up Area

Since the extent of the Academic Area should be nearly as long as the maximum walking distance possible in the time allowed between classes, and since the overall extent of the entire built-up area should be about at the maximum effective radius of heating plant, the overall spread of the built-up area of the University cannot greatly increase. The effective heating radius has exerted great influence upon the design of a future plan as a whole. The proposed method of steam distribution is by low pressure mains. This type of distribution becomes uneconomical when steam has to be carried farther than 2500 feet from the Heat Plant. Within the 2500 foot radius, however, distribution is practical regardless of the topography. All proposed heated buildings in the University should come within this radius.

It is our intention to have a proper degree of compactness of the built-up area in a future plan for the limitation of the effective heating radius, as well as beneficial pedestrian circulation between academic buildings and general circulation throughout the University.

A comparison of several university campus plans in the same scale, which appear in the Appendix, will give a

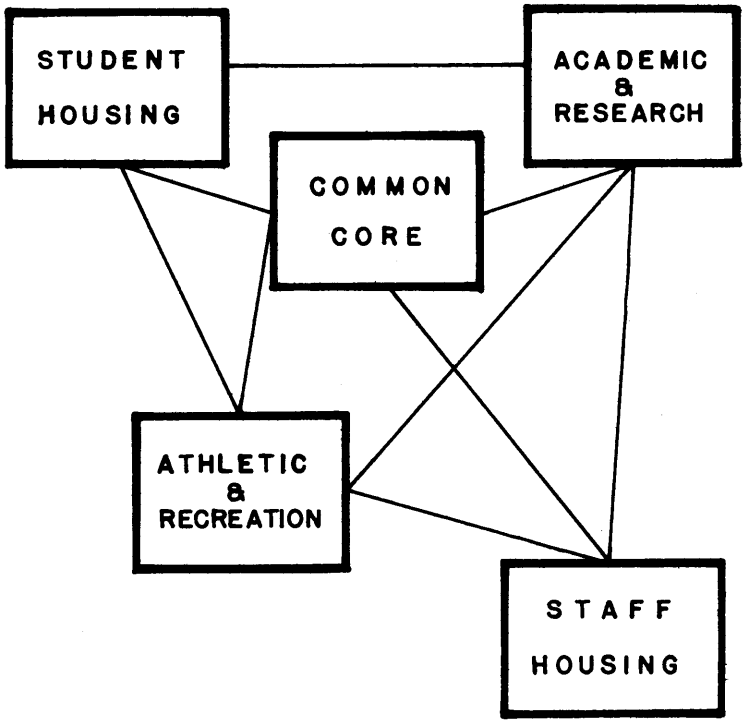
good idea of the proper size of built-up area.

2. Zoning

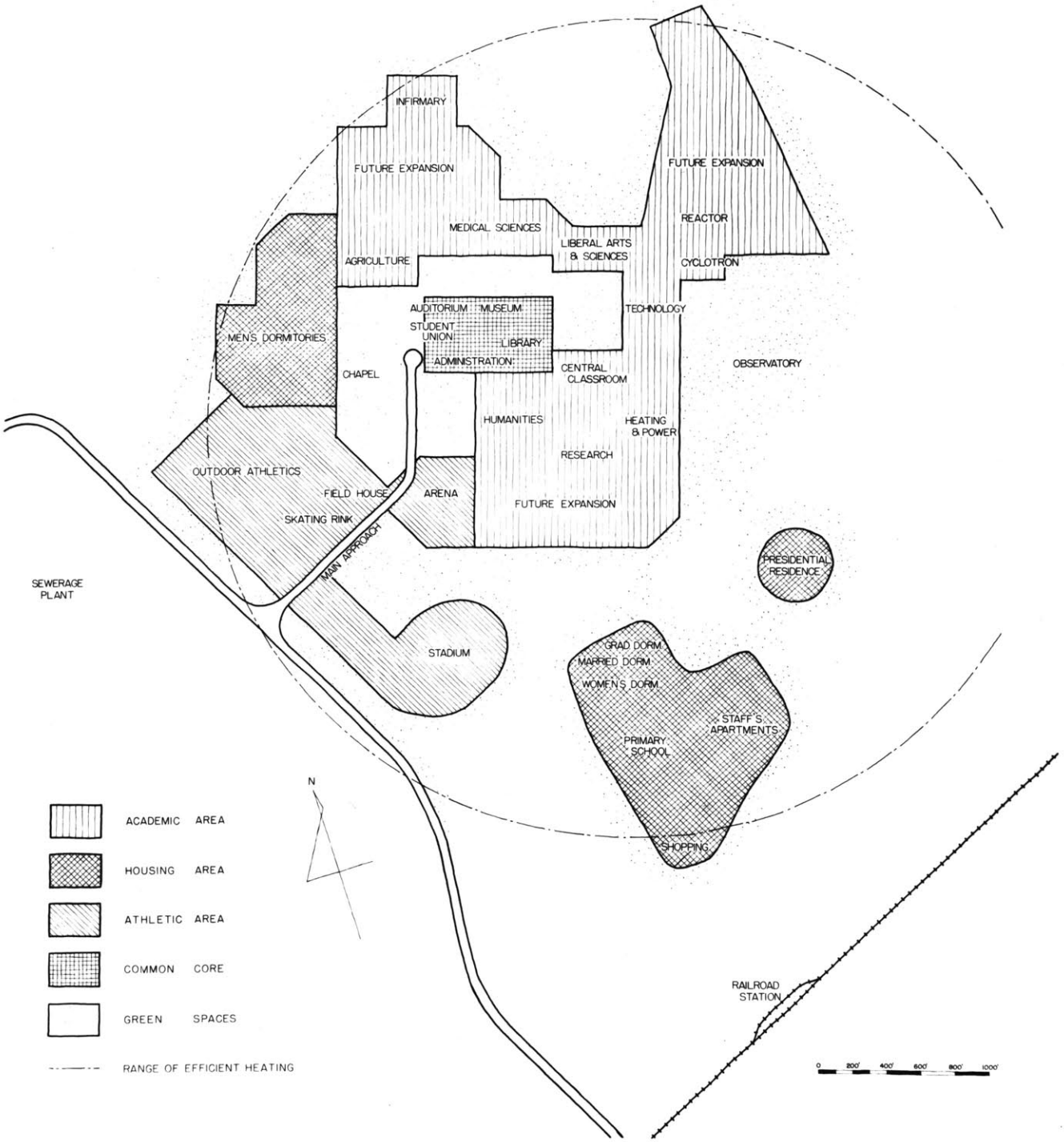
The acitivites which are involved in university life can be classified as academic, athletic and recreation, and eating and sleeping. The diagram on the following page shows the basic functional relationship in the activities proposed by the plan, which is based on careful program analysis.

According to this relationship and giving consideration to the existing terrain, the author proposes a zoning map listed on the following page, by which general land use pattern could be realized in a schematic diagram. The zoning map finally, details the pattern of land use by indicating the proposed location of land for various institutions or other specific uses. Chief functional considerations are as follows:

1) to relate each of the associated activities
2) to provide each part with directions for growth within its own immediate area.
3) to create a common core which would join three of those activities--academic, recreation and living--and would provide an area where staff


STUDENT HOUSING
ACADEMIC & RESEARCH
COMMON CORE
ATHLETIC & RECREATION
STAFF HOUSING

A FUTURE PLAN FOR SEOUL NATIONAL UNIVERSITY



and students from all parts of the institution could get together to meet and exchange ideas.

4) to provide ease and direct accessibility to the area oriented to the general public without introducing the public into the University to the extent that this would create a disturbing influence.

3. Circulation

Main approach: In order to provide a handsome approach to the University, a monumental tower will be placed in the entrance of the main approach road. Visitors who enter the University by this approach will first pass by the Field House, Arena, and University Pond, and then will find University Administration.

Inner Loop Road: A loop road around the Common Core would serve several functions. It would enable all-traffic bound for the institutions to flow smoothly to its destinations. Specialized feeder drives would extend to individual institutions on each side of the loop. On a raised platform the Common Core would be free for pedestrian movement. It is proposed that a shuttle bus system be operated on the loop road and the other main road, having it connect with the train at the University Station.

Outer circumferential road: In order to provide better circumferential circulation around the periphery

of the Campus, an outer circumferential road is proposed. It would provide access to the housing area, Observatory, and such special features as the agricultural experimental field.

Service Road: This is locatedat the south end of the Campus. One of the chief purposes of the service road is to provide access to the coal pit without having the coal trucks pass through an important part of the Campus.

Parking: Parking is not as serious a problem as it is in universities of Western countries, but a necessary parking area for visitors should be included in the central campus area. If the need should arise, several parking areas could be provided in the periphery of the campus.

4. Physical Form

Design of individual structures and open spaces is the province of architects commissioned for special projects, but an overall form concept, governing the basic pattern of open space and building type, can only be established by considering the area as a whole. The form concept should have continuity and harmonious character over a long period of development, without sacrificing flexibility to meet new demands in the future.

The author proposes that this be done by following guides for general spatial organization.

1) All spaces should be interconnected and should be linked with spaces on the perimeter of the central area. Each space should have its own focus in the form of architectural structure, sculpture, tower, water, pedestrian plaza, etc. and all spaces should focus on a central Common Core, where the common activities of the University take place.

2) Changes of floor level by means of steps or ramps leading up to a principal building will always dramatize its siting, particularly if this is combined with cellular planning.

The architects of Greece, Rome and the ancient Orient designed their principal buildings to be the dominant objects in an architectural space setting. To underline their importance, they raised them on a stylobate above the general level of the floor so that the spectator always looked up at the composition.

3) Pathways or "green ways" would have various characters, making them distinct from each other. Along these distinctive paths should occur a whole sequence of visual experiences: small space openings, gardens, sculptures.

4) Small landscaped areas are essential to good visual character. They set off the buildings, are the intimate

places where one can take one's ease, and provide good visual contrast to the larger spaces, such as greenways or gardens. These smaller spaces are particularly important in association with classrooms and laboratories.

5) By the design and control of landscaping, exterior details and certain elements of communication, we can give the University its own proper character, distinct from its surroundings, and harmonious within itself. A common policy as to the types of trees to be used in the area can give a sense of visual unity. The whole area or parts of it may be designed to have a common texture of planting. A coordinated landscape plan is an important part of the overall design that should be developed.

Similar attention should be given to exterior details, the materials and texture of paved surfaces, and the design of such street features as benches, lamp standards and waste containers.

The size and style of all signs in the University should be designed as a single group, a controlled use being made of lettering, color and form to symbolize the location of various functions.

5. Academic and Research

1) The Agriculture and Veterinary Building will house the Colleges of Agriculture and Veterinary Medicine, and the Library of Agriculture. The location of the building will give convenient access to the Farm and the other experimental field and forest, and will be in close relationship with the Medical Building.

The existing facilities of the College of Agriculture in Soowon will be reorganized as an Agricultural Experimental Station of the University to operate large scale experimentation.

2) The Humanities Building will house the Colleges of Commerce, Fine Arts, Music, Education, and Law and the Libraries of Architecture and Arts, and Law. The location of this building is close to the Central Library and the University Administration and Auditorium because both student and faculty in the Humanities Building will have to visit these other buildings frequently.

The existing Attached High School, Middle School, and Primary School in the downtown area will continue the function of providing observation and practice teaching for students majoring in teacher training.

A small primary school (12 class) will be provided in the Staff Housing Community for the education of the

in the community.

3) The Liberal Arts and Sciences Building will house the College of Liberal Arts and Science and Library of Sciences. It is centrally located in the Academic Area.

4) The Medical Building will house the Colleges of Medicine, Dentistry, Pharmacy and the Library of Medical Sciences. The existing facilities of the College of Medicine in the downtown area will be reorganized as a Medical Research Center of the University and the existing University Hospital will continue the function of adding proper facilities for the Dental Department. On the Campus the University will operate an Infirmary (100 beds) but all serious or complex cases will be sent downtown.

5) The Technology Building will house the College of Technology and the Library of Engineering. The location has a close relation to the Liberal Arts & Sciences Building and the Nuclear Reactor and Cyclotron Building are located near this building.

6) Didactic Classroom Building will house all of the didactic classrooms. It has a central location and convenient access to the other Academic Buildings and the Common Core. In front of this building a large landscaped area is provided for recreation between class hours.

7) Research Area

This area is located in the south-east periphery of the Campus leeward of the prevailing wind, and has a close relation with the Steam Plant and Power House and Technology Building.

6. Common Core

The Plan proposes the establishment of a common core area which would function as a meeting center, containing the Student Union, Auditorium, Central Library, Museum, Staff Club with restaurants, University Administration, and University co-operatives.

These are intended, not only for the convenience of users of the cultural center, but also to draw them voluntarily together in the area of heightened life and activity. This area provides uninterrupted pedestrian movement on the platform. The collective element of the area, the intensity of the activities, will create the climax of the whole University Campus. The area is located at the center of the Campus, giving easy access to the inhabitant and visitor alike, with a view overlooking College Pond and the landscaped area.

1) University Administration

This is located south of the Common Core and has easy visibility from the main approach road. The Graduate

School Office will be in the University Administration Building, because the students are assigned for their advanc work to the departments in which they are studying therefore, the Graduate School is entirely an administrative organization.

2) Central Library

The Library is situated on a series of platforms dominating the space of the Common Core. It will have a garden for recreation on the north side; Service access is provided underneath the platform. In the Library individual cubicles for students should be made available for every group of 75 students. The Music Library will be housed in this building.

3) Auditorium

The Auditorium should be designed for multiple use and to seat about 4000 persons. This would be used by the University for convocations, musical performances, musical rehearsals, theatrical productions, and a number of other activities. In addition, the plans call for instruction in music in this building, as well as for its use by public and semi-public groups for activities of a public nature.

4) Student Union

This is centrally located on the Campus for the con-

venience of commuting students and also has good accessibility to dormitories, so that it can serve for evening functions as well as for daytime activities. Underneath the floor the University Co-operatives will be housed for the service of students' commodity exchange and at one end of this building the Staff Club is located.

5) Museum

The Museum is located in north-west side of the Central Library and most of the collection will be related to Oriental Arts and History. The Library of Oriental Study will be housed in this building.

6) Chapel

Between the Common Core and Men's Dormitory there is indicated a site for a non-denominational chapel. This site is conveniently located with respect to religious activities which take place at the University.

7) Athletics and Recreation

1) Stadium

The plan indicates a site for the Stadium just to the east of the main approach road utilizing a bowl of terrain. This location has advantages of utilizing the terrain and keeping all traffic out of the Campus. The Stadium has a track and bleachers with a seating capacity of 30,000 persons.

3) Arena

The Arena would contain the exhibition basket ball court. It is located near the Field House and other athletic facilities.

4) Skating Rink

An enclosed skating rink with artificial ice will be needed eventually and perhaps could be built at first without any enclosure, with the intention that the enclosure be added later. At one end of the Field House would be the best location for the Skating Rink.

5) Out-door Athletic Facilities

The proposed athletic facilities would consist of the following:

a) Approximately 15 acres of predominantly flat land in the area bounded by the Field House, Main Approach Road and Men's Dormitories.

b) Small recreational area near the dormitories and family housing.

6) Recreation

The other major area for recreation would extend north and south along the western side of the Common Core. This has connection with the landscaped area in front of the Didactic Classroom Building and other green area.

8. Housing

1) Dormitories for single men

These are located in the west part of the Campus and have a capacity of 2600 students. Most of them have been grouped around sizable open spaces suited for free play and recreation. The plan indicates a site for dining facilities in a convenient location in relation to the Dormitories and Common Core.

2) Graduate Dormitory, Women's Dormitory, and Apartment for Married Students will be located in the Staff Housing Community.

3) Staff Housing

The plan shows the location of Staff Housing and the community facilities. It will give a close relation between the University Railroad Station and the Campus. The Staff Housing Community includes a Primary School (12 class) Nursery, and Shopping and community recreation area.

4) President's House

The site of the President's House is located on the hill side north east of the Staff Housing Community. It will have a good view of the Campus and the Community.

9. Utilities and Other Facilities

1) Heating and Power Plant

The Heating and Power Plant is centrally yet inconspicuously located in the total built-up area, and leeward of the prevailing wind direction.

2) Electrical distribution

The main power plant would be fed by overhead lines from the city power plant. It is recommended that major buildings be supplied from underground primary systems. Telephone service should parallel the underground electric service line.

3) Water supply

The water supply system should provide for fire protection as well as domestic supply. The existing system of water mains in the site is obviously not adequate for the New Campus. It is recommended that the exploration for an increased water supply be pressed and that the University co-operate with city officials to achieved the desired result.

4) Sewerage

The Sewage disposal plant is located on low land near a River as shown on the plan. This should be a modern sewage disposal plant free from unpleasant odors

other offensive characteristics.

Storm water drainage provision must be very carefully engineered and deterrents to soil erosion should be incorporated in the design.

5) Highway

The City will construct and maintain all needed major highways except in case of those wholly constructed by the State, but it will not, nor should it be expected to build minor roads purely to serve the University. It is recommended that the University ask for State and City aid in the construction and maintenance of major roads. The University should plan to construct and maintain its own minor road network.

6) Fire Prevention

The fire alarm warning system of the University should be designed satisfactorily. It is recommended that a Fire Department be established near the University Campus with the co-operation of City officials. The Station should be manned at all times and should contain adequate equipment for fire fighting and rescue work.

10. Future Expansion

It is possible that in the distant future further expansion may be required. The plan indicates some area

is reserved for future expansion and also indicates open land where more building sites or parking lots could be placed.

VIII. STYLE OF ARCHITECTURE

As the University is an instrument for scientific and intellectual development and a leader in cultural achievement having as its aim the advancement of the well being of the nation, it must present itself as the symbol of the values it stands for to both inhabitant and visitor alike.

The architecture of the University should express the impact of order and unity and stimulate by its architectural character the live activities taking place in and around it so that the students and staff of the University will feel this impact daily and know themselves to be a part of an organic whole.

The University architecture should be both contemporary and regional, showing indigenous characteristics in its design, but without imitatively borrowing adornment from the past.

Care should be taken to preserve as much of the beauty and charm of the older buildings as possible; to add new buildings to groups of older ones in such a way as to insure that each enhances the other, and to develop new groups of buildings which will be harmonious with the rest.

IX. CONSTRUCTION

All new construction will be based upon the use of reinforced concrete for structural purposes and the maximum use of available local materials.

Since financial considerations may not permit the construction of the whole campus at the same time a step-by-step effectuation program is needed. The author proposes an effectuation plan which has been divided into three periods: the first stage 1960-1963, the second stage 1963-1966, and a final stage of four years to 1970. The first stage would be concerned with the construction of University facilities which are absolutely essential to the University plant operation, such as Academic Buildings, Common Core, Heating and Power Plant, Outdoor Athletic Facilities, and Main traffic roads. Land acquisition for succeeding stages would be critical during the early period. The second stage would be concerned with secondary facilities for the University function, such as Research Buildings, Men's Dormitories, Field House, Chapel, Sewerage Plant, Secondary traffic roads, and Pedestrian pavements.

The third stagewould include the rest of the projects, such as Staff Housing Community, Stadium, Arena, Skating Rink, Circumferential road, and others.

Landscape and greenway development should go hand in hand with other projects at each stage.

It is understandably difficult to estimate the construction cost of such a large and complex development. Yet some rough calculation is necessary to assure ourselves that the plan lies within financial capability. Building cost is approximately estimated at $15.00 per gross square foot to construct, while landscaping, utility connections, built-in equipment, preparation of the site and similar expenses would cost about $5.00 per gross square foot. The total of $20.00 has therefore been used in estimating the cost of future construction. The total estimated construction cost is approximately $36,000,000 for University Campus building and $23,500,000 for Dormitories and Housing.

X. RECOMMENDATION

This plan is only a first step in programming future development. Much technical work will have to be done, and the program will need to be re-examined and revised periodically to meet as yet unforeseen needs.

No matter how excellent and valid it may be at the time of its preparation, a future plan must be re-evaluated and corrected to keep pace with changing conditions. In this regard, it is recommended that a committee be organized to interpret the plan and keep it alive. The Committee should approve the location of all new buildings, help determine economical sequence of new work, and determine priority of the new construction and alterations to existing buildings.

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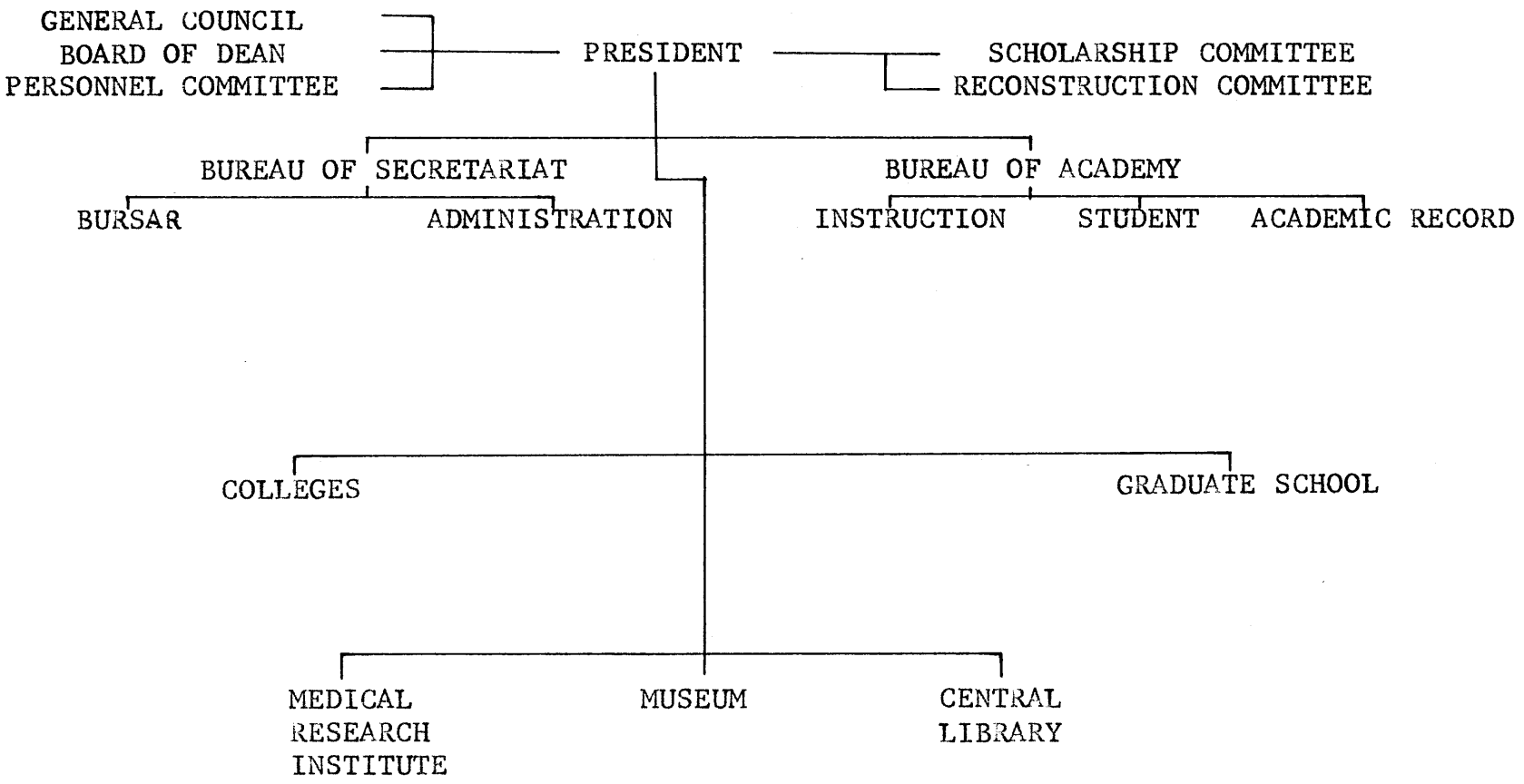
APPENDIX

1. TABLES

2. DRAWINGS AND PHOTOGRAPHY

TABLE A

PRESENT FUNCTIONAL CHART



NOTE: EACH COLLEGE HAS THREE SECTIONS: INSTRUCTION, STUDENT, ADMINISTRATION AS AN ADMINISTRATIVE FUNCTION.

TABLE B

AREA OF EXISTING BUILDINGS & SITES

	Building Area (Gross) sq.ft.	Site Area Acres
Central Administration	48,800	In College of L&S
Graduate School Office	2,700	
College of Agriculture	118,000	43 acres
Experimental Field & Forest		37,300 acres
College of Commerce	58,000	34 acres
College of Dentistry	40,700	0.5 acres
College of Education	121,700	36 acres with 93 acres forest
High School	40,900	11 acres
Middle School	20,000	In College of Education
Primary School	23,700	In High School
College of Fine Arts	23,500	In College of Law
College of Law	48,500	2 acres
College of Liberal Arts & Sciences	127.300	28 acres
College of Medicine	150,000	9.5 acres
Hospital	322,700	40 acres
College of Music	11,400	In Hospital
College of Pharmacy	38,200	1.5 acres
College of Technology	393,600	228 acres

College of Veterinary Medicine	26,000	5 acres
Medical Research Institute	8,100	18 acres
Central Library	33,300	In College of L&S
Museum	5,500	" "
Total	1,664,300	569 acres and 37,300 acres Experimental Field & Forest

TABLE C

EXISTING AND PROPOSED FLOOR SPACE STANDARDS
FROM "A PLAN FOR ITS DEVELOPMENT OF UNIVERSITY CIRCLE"
(FIGURES ARE NET FLOOR SPACE PER FULL-TIME STUDENT)'

Type of Space	Western Reserve		Case	
	Existing	Proposed	Existing	Proposed
General Academic	88	120	146	180
Medicine	550	980		
Nursing	52	150		
Dentistry	85	150		
Law	92	150		
Library Science	68	150		
Social Science	85	150		
General Administration	7	7	8	8
Library (Excluding Departmental)	18	18	2	14
Student Facilities (Union, Cafeterias Meeting Rooms, Theatres, Excluding Indoor Athletic Space	15	20	16	25
Indoor Athletic Space	8	25	45	32
Service & Maintenance	10	See Text	5	See Text

TABLE D

COMPARATIVE FLOOR SPACE STANDARDS

(Net Floor per Full-time Equivalent Student,[1] in Sq. Ft.)

	Gen. Acad.[2]	Main Lib.	Admin.	Stud. Facil.[4]	Dorm.	Indoor Athletic	Service
Columbia U.	150						
Illinois Inst. Tech	215						
M.I.T.	200				400[5]		
Miami U.	96	13	7	6	132[6]	12	4
U. Of Calif. Berkeley							
existing	153	21	17[3]				
recommended	144	17	5	10			
U. of Vermont	130	10	5	17	158[6]	15	12
U. of Minnesota	99		6	29			7
Average of 91 Colleges							
1945-1955:							
Men's					212[5]		
Women's					228[5]		
Milwaukee State Teachers	45	9	3	6	404[6]		

Note: 1. full-time equivalent students equals full-time plus 1/3 of part-time students.

2. Classrooms, laboratories, research areas, departmental offices, conference rooms; but excluding main libraries and large specialized research projects separate from teaching.

3. includes state-wide administration

4. unions, cafeterias, meeting rooms, theatres, but excluding athletic space.

5. with dining facilities

6. no information on dining facilities

7. Source: Riker, Harold C. - "Planning Functional College Housing"

TABLE E

GROSS SPACE REQUIREMENT FROM THE UNIVERSITY OF BAGHDAD

General Classrooms				Phase I - 5000		Phase II - 8000		Phase III 12,000	
Type	No.of Person	Base Sq. Ft.Per Person	Space Per Unit	No. Unit.	Total Sq.Ft.	No. Unit	Total Sq.Ft.	No. Unit	Total Sq.Ft.
A	200	12	2400	4	9,600	6	14,400	12	28,800
B	80	12	960	7	6,720	12	11,520	24	23,040
C	40	20	800	64	51,200	64	51,200	64	51,200
D	20	30	600	57	34,200	57	34,200	57	34,200
Total - General Classroom					101,720		111,320		137,240
Laboratories									
Type	No. of Person								
X	30	60	1800	11	19,800	18	32,400	54	97,200
Y	25	60	1500	11	16,500	25	37,500	52	78,000
Total Laboratories					36,300		69,900		175,200
Seminar Rooms									
	11	22	242	10	2,420	40	9,680	60	14,520
Total Instructional					140,440		190,900		326,960

Offices*								
Professor	240	240	90	21,800	135	32,400	195	46,800
Assoc.& Assistant	120	240	38	9,120	58	13,920	83	19,920
Instructors	120	480	44	21,120	42	20,160	45	21,600
				51,840		66,480		88,320
Total Inst.&Offices				192,200		257,380		415,280

*Offices are allocated on the basis of: Professors - one per room
Assistant - two
Instructor - four

TABLE E (continued)

SUGGESTED PROPORTION OF ACADEMIC HOURS
BY TYPE OF COURSE FROM UNIVERSITY
OF BAGHDAD

Type	Phase I	Phase V	Phase III
A	16%	20%	28%
B	11%	16%	22%
C	50%	44%	35%
D	23%	20%	15%

Type A - Courses for 200 Students
" B - " " 80 "
C " " 40 "
D " " 20 "
Type X - Laboratory Courses for 30 Students
Type Y - " " 25 "

UTILIZATION FACTORS

Type	Phase I	Phase II	Phase III
A	70%	70%	70%
B	"	"	"
C	70%	75%	80%
D	"	75%	80%
Lab	50%	50%	50%

Table F

DISTRIBUTION OF INSTRUCTION BY COLLEGE

Measured in Average Student Station Hours Per Week Per Student From University of Minnesota

College Giving Instruction	Ag.For. & H. Ec.	Vet. Med.	Bus.	Dent.	Dent. Hyg.	Duluth
Ag.For.&.H.Ec.	12.20					
Vet.Medicine		32.00				
Business Adm.	0.23		11.80		0.27	
Dent.& Dent.Hyg				10.45*	10.92*	
Duluth Branch						18.03
Education	0.8					
General College	0.55					
Inst.of Tech.	1.91		0.69	0.19		
Law School						
Medical Science	0.65			9.09	4.73	
Pharmacy						
S.L.A.	3.67		1.77		5.64	
Total	20.01	32.0	14.26	19.73	21.56	18.03

	Educ.	Gen.	I.T.	Law	Med.	Med. Tech.	Pharm.
Ag.For.&H.Ec.	0.08		0.06				
Vet.Medicine							
Business Adm.	0.17	0.36	0.59	0.10			0.64
Dent.& Dent.Hyg.		0.17*					
Duluth Branch							
Education	6.75	0.13					
General College	0.53	13.61					
Inst.of Tech	0.10	0.39	14.73			0.55	1.95
Law School				15.46			
Medical Science	0.93				14.54*	10.55*	3.00
S.L.A.	5.89	1.30	5.79	0.19		1.58	2.50
Total	14.55	15.96	21.17	15.75	14.54	12.68	23.40

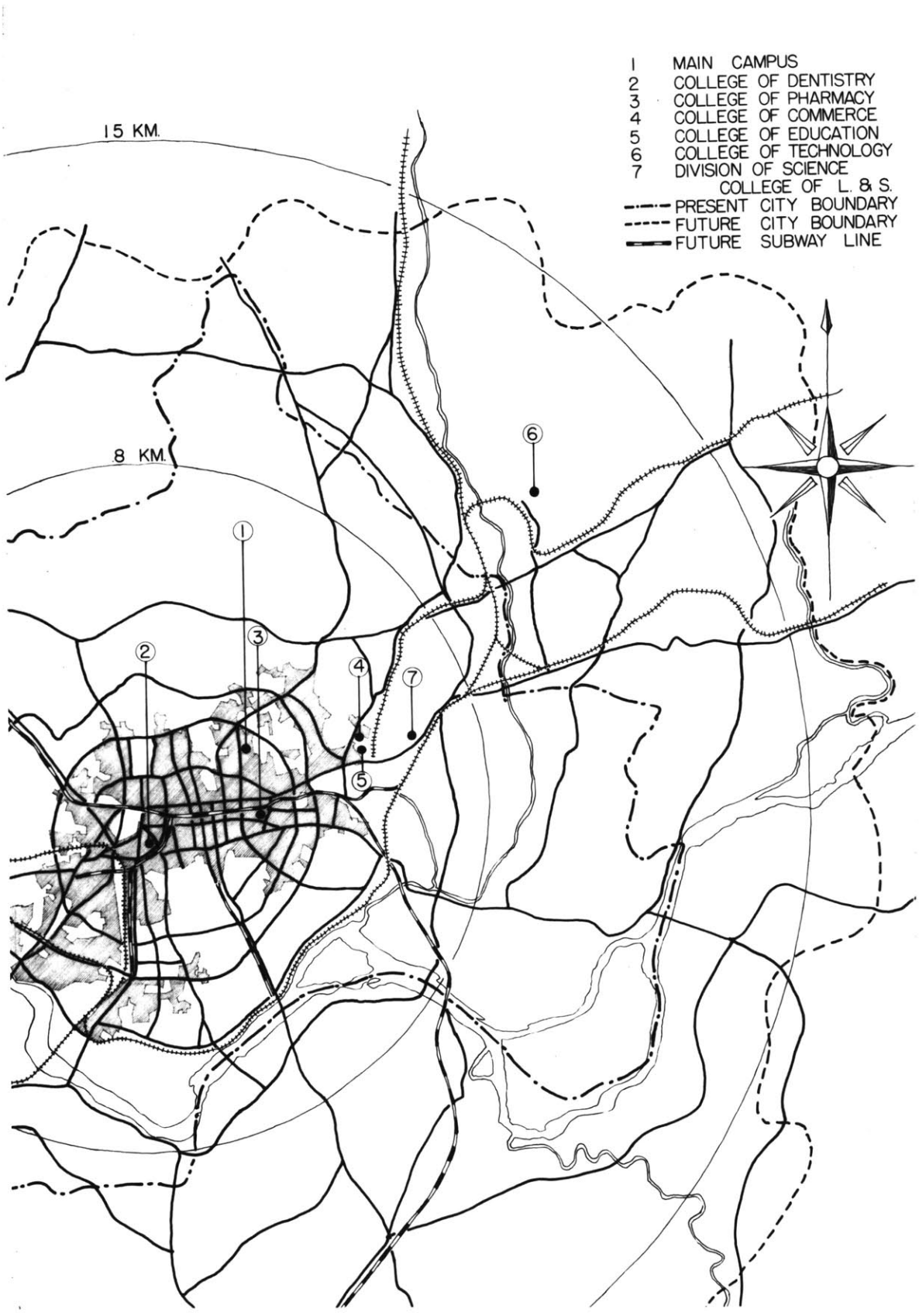
TABLE F (continued)

	S.L.A.	Univ. College
Ag.For.&H.Ec.	0.06	1.54
Vet.Medicine		
Business Adm.	1.31	3.78
Dent.&		
Dent. Hygiene		
Duluth Branch		
Education	0.09	0.29
General College	0.03	
Inst.Of.Tech.	1.41	0.69
Law School		
Medical Science	0.35	0.32
Pharmacy		
S.L.A.	12.75	8.22
Total	16.00	15.04

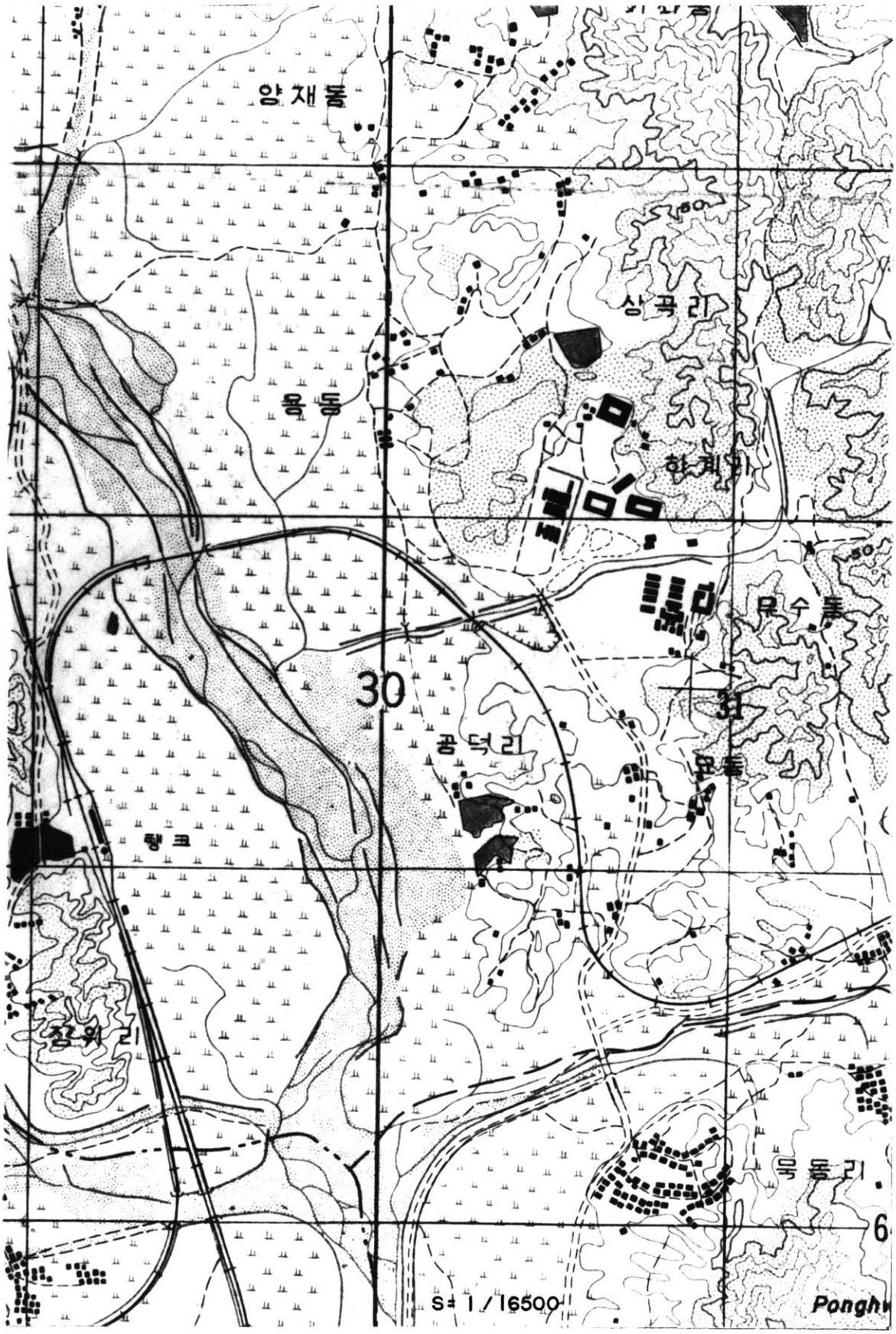
TABLE G

COMPARATIVE FLOOR AREA RATIOS

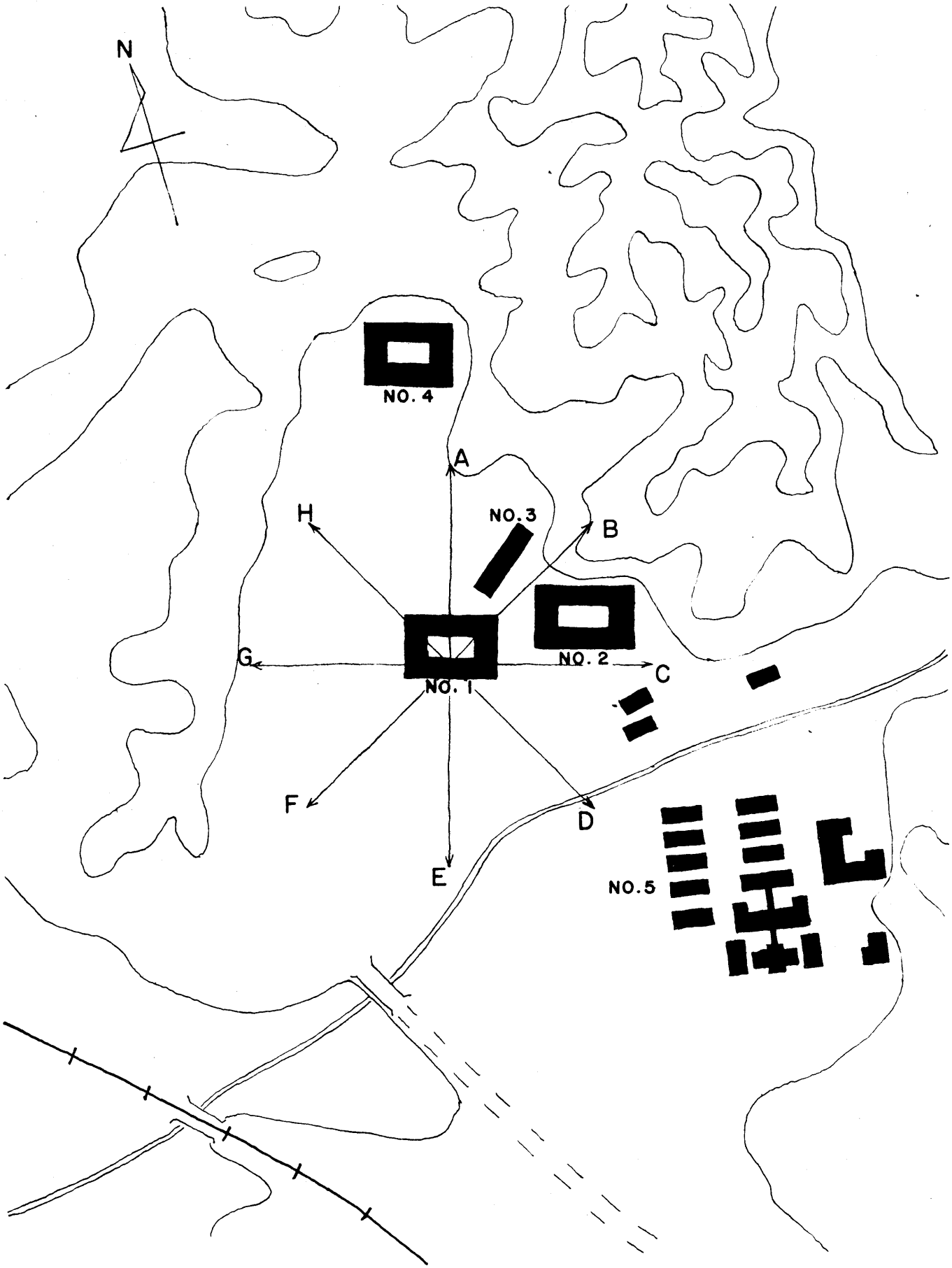
	F.A.R.
Harvard University, Yard	0.75
Illinois Institute of Technology	0.98
University of Chicago, excluding athletic fields	1.0
University of Minnesota Minneapolis Campus	1.0
University Circle Case Campus excluding athletic field and lower level parking	0.98
Western Reserve Adelbert Campus excluding athletic field	0.6



LOCATION OF THE EXISTING CAMPUSES



VICINITY MAP OF THE SITE



VIEWS OF THE SITE & EXISTING BUILDINGS

BUILDING
NO. 1

NO. 2

NO. 4

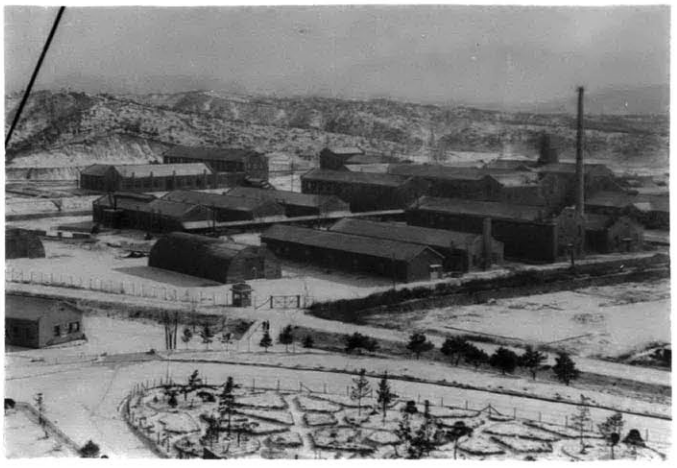
NO. 5

DIRECTION A

B

C

D



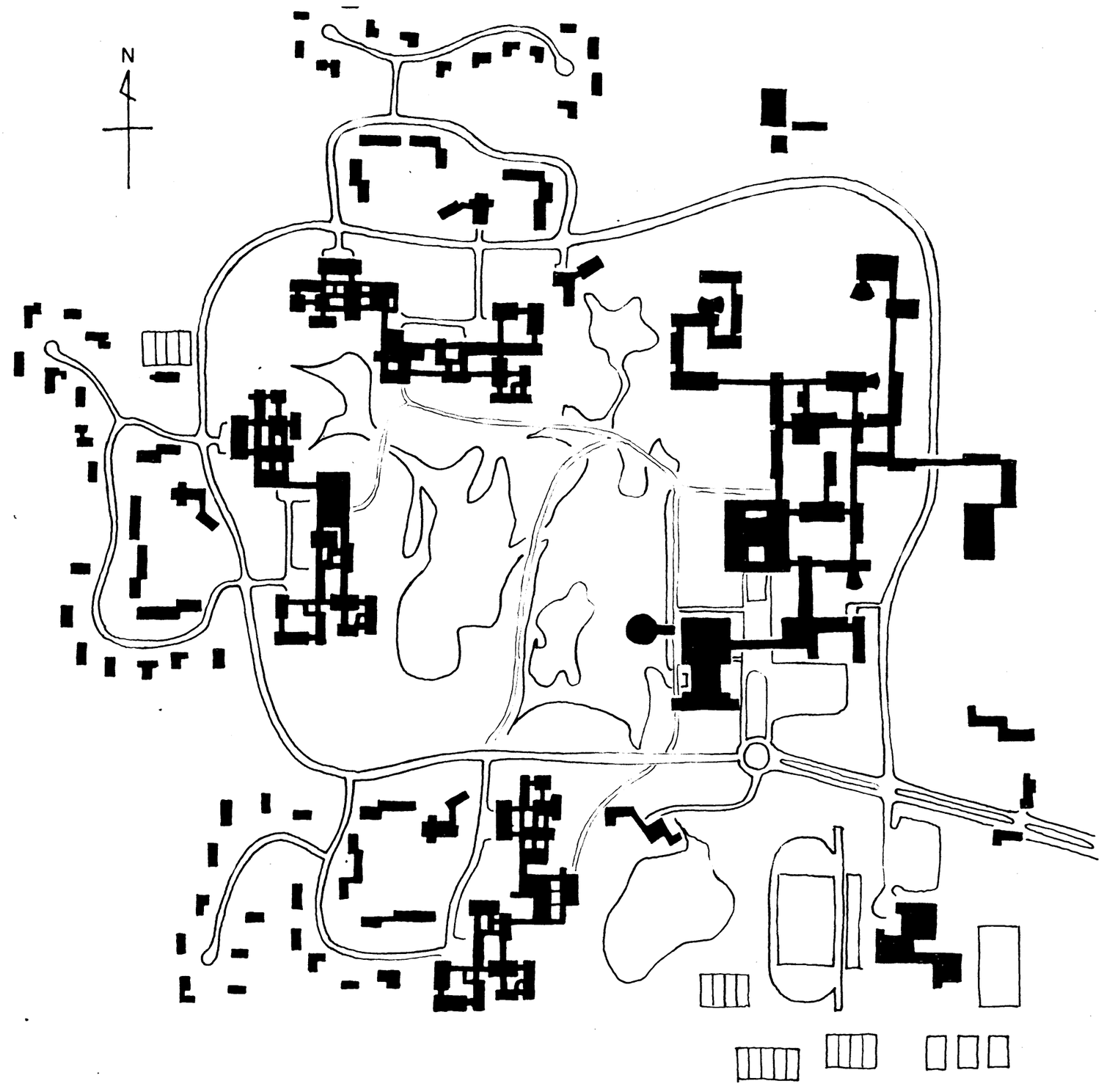
E

F

G

H

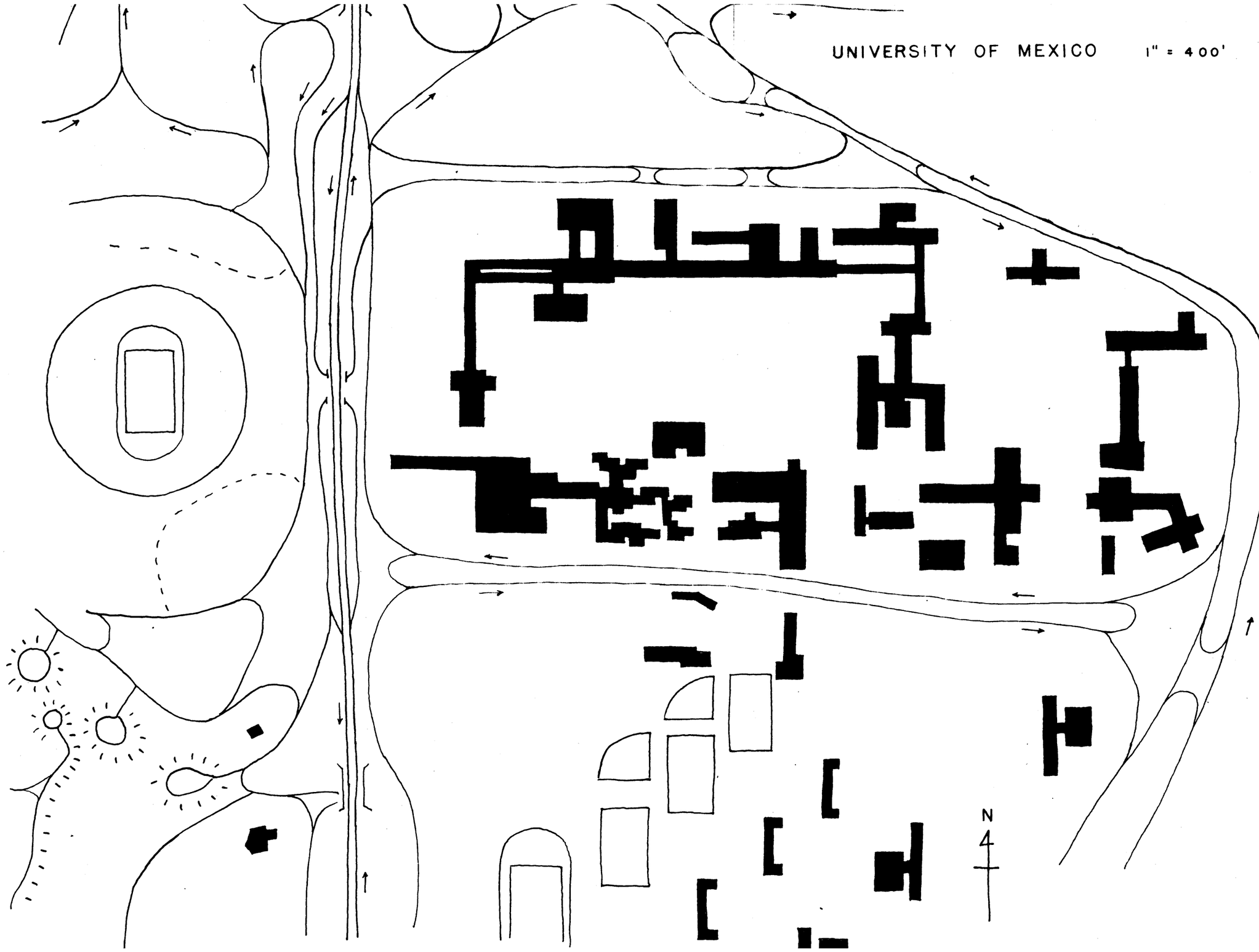
A COMPARISON OF SEVERAL UNIVERSITY CAMPUSES

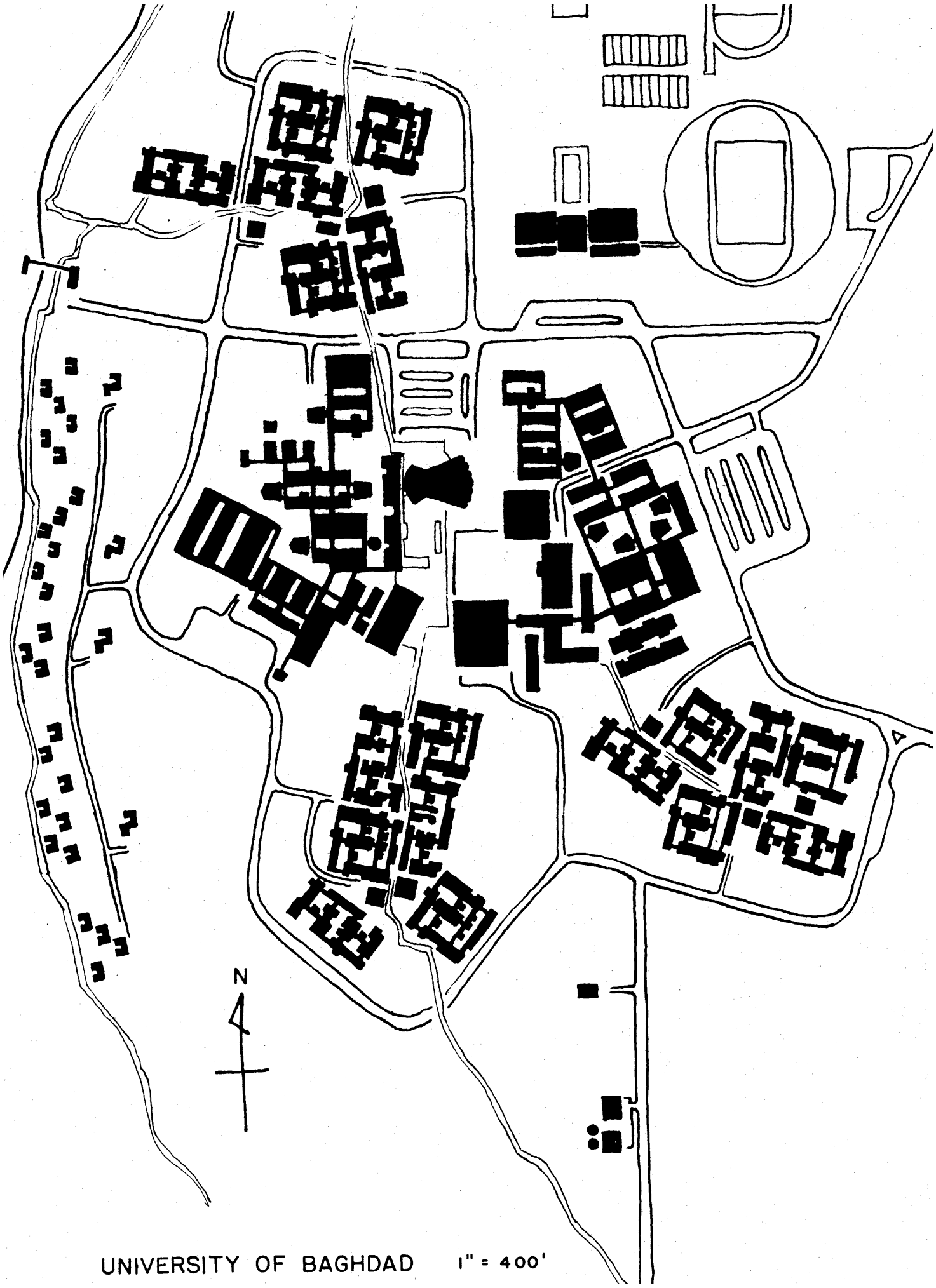


HUA TUNG UNIVERSITY 1" = 400'

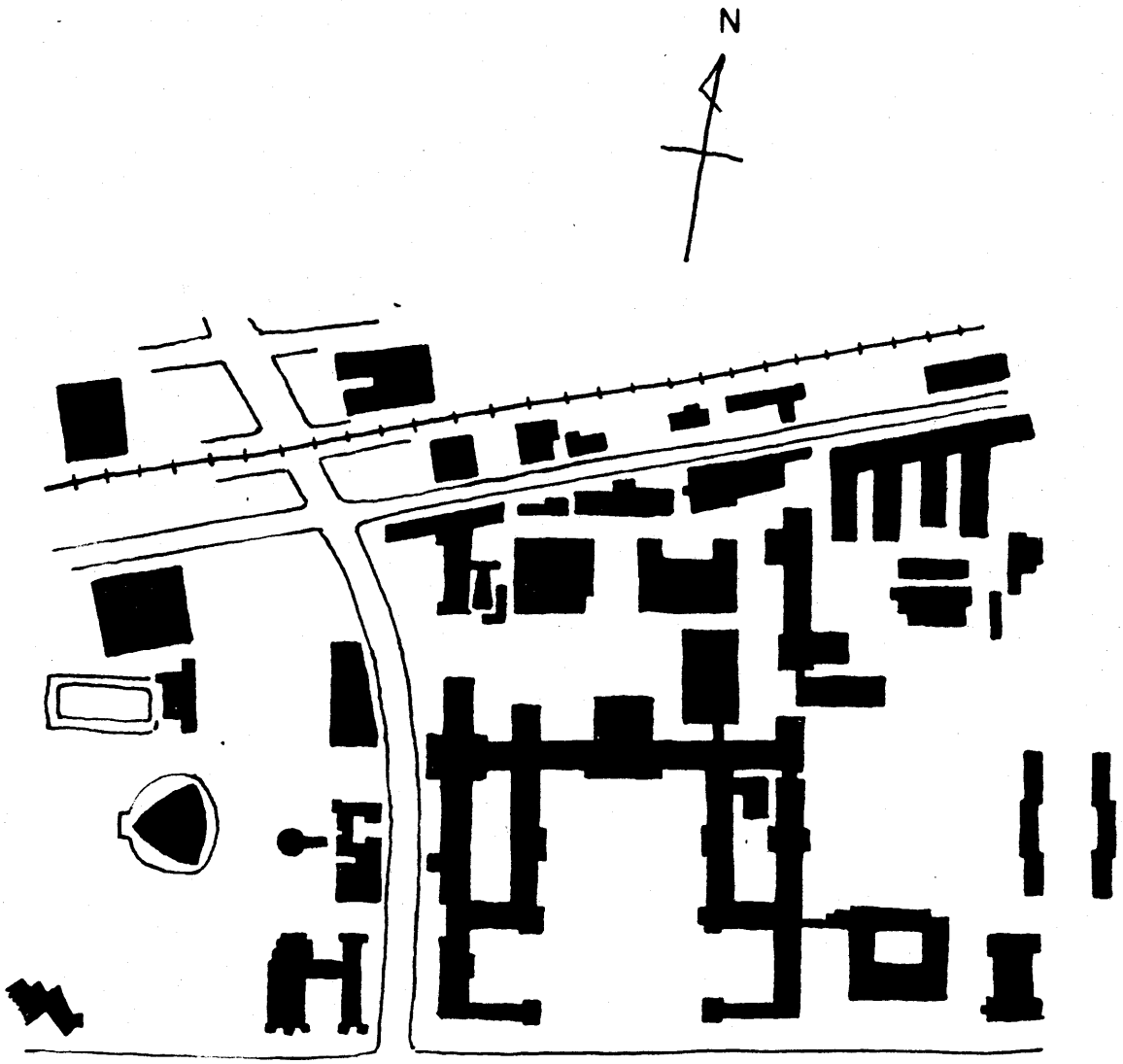
HARVARD UNIVERSITY 1" = 400'

UNIVERSITY OF MEXICO 1" = 400'

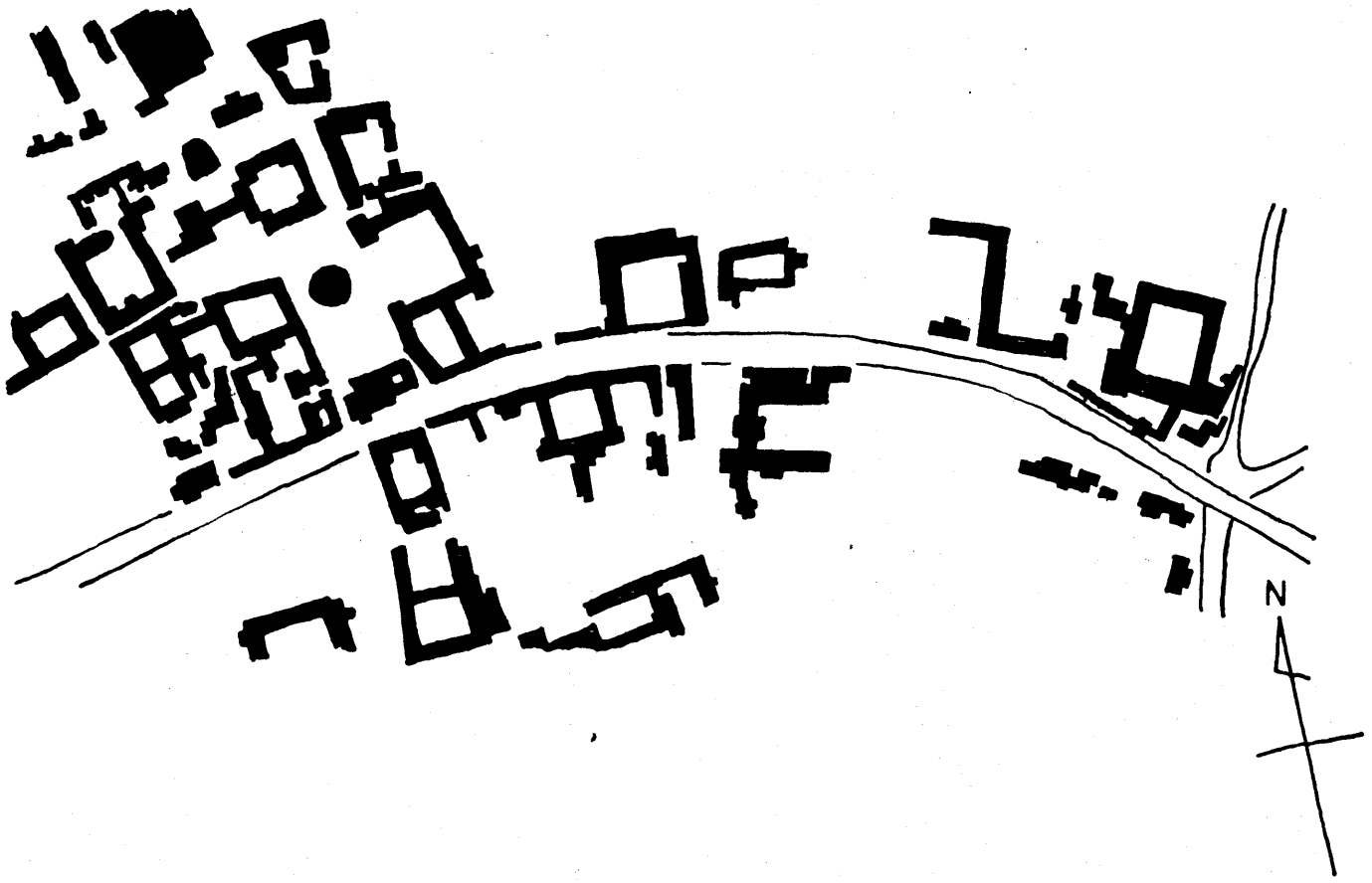




UNIVERSITY OF BAGHDAD 1" = 400'



M. I. T. 1" = 400'



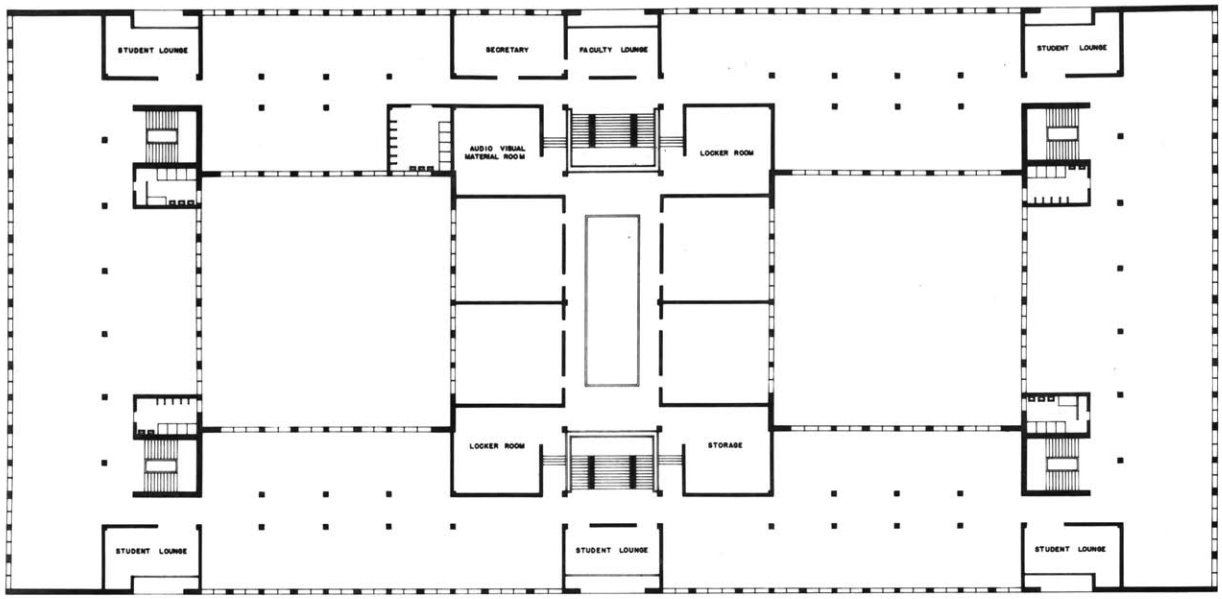
OXFORD UNIVERSITY III 1" = 400'

A FUTURE PLAN FOR SEOUL NATIONAL UNIVERSITY

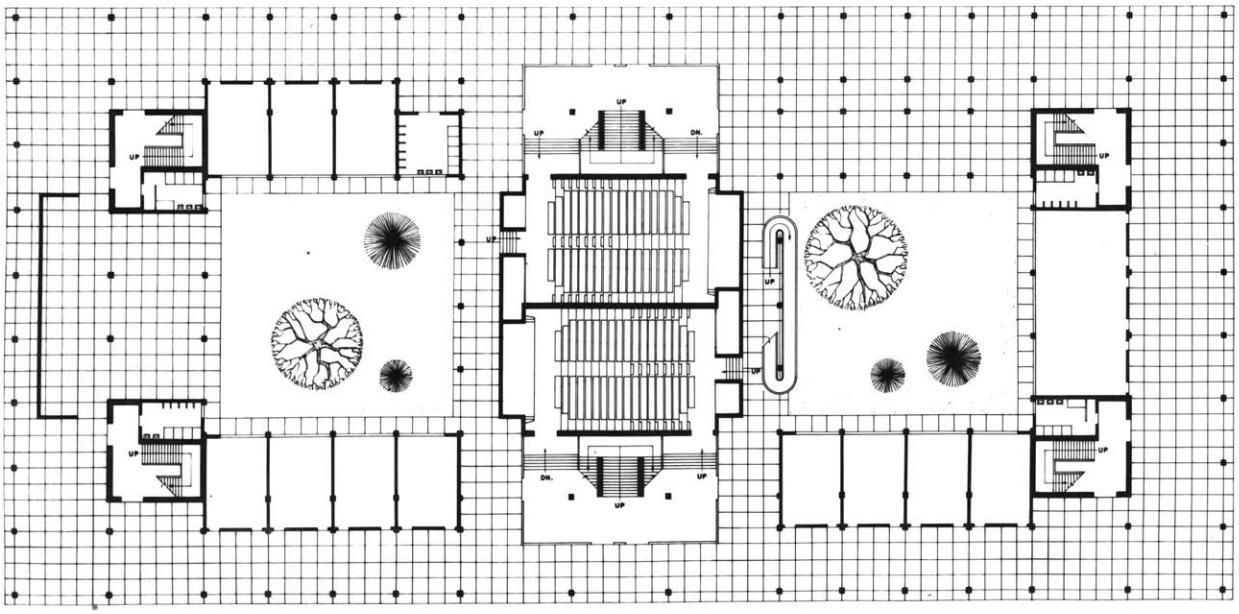
MASTER PLAN

. FUTURE PLAN FOR SEOUL NATIONAL UNIVERSITY

:LASSROOM BUILDING



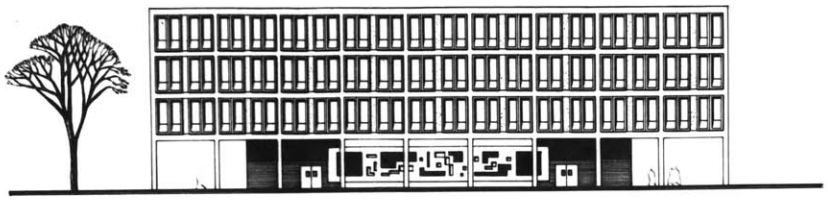
TYPICAL FLOOR PLAN 1/16" = 1'-0"



GROUND FLOOR PLAN 1/16" = 1'-0"

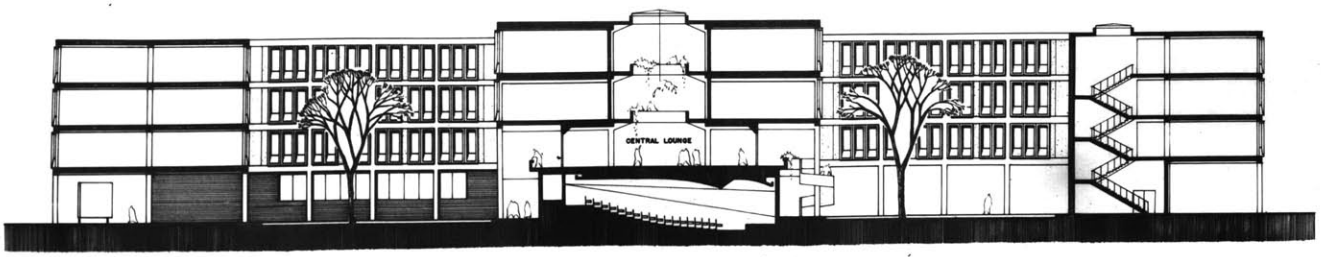
A FUTURE PLAN FOR SEOUL NATIONAL UNIVERSITY

CLASSROOM BUILDING



WEST ELEVATION 1/16" = 1'-0"

NORTH ELEVATION 1/16" = 1'-0"



SECTION 1/16" = 1'-0"

VIEW OF COURT