

5-26-1966

A Middle School for Albuquerque

Landis Eugene Bebermeyer

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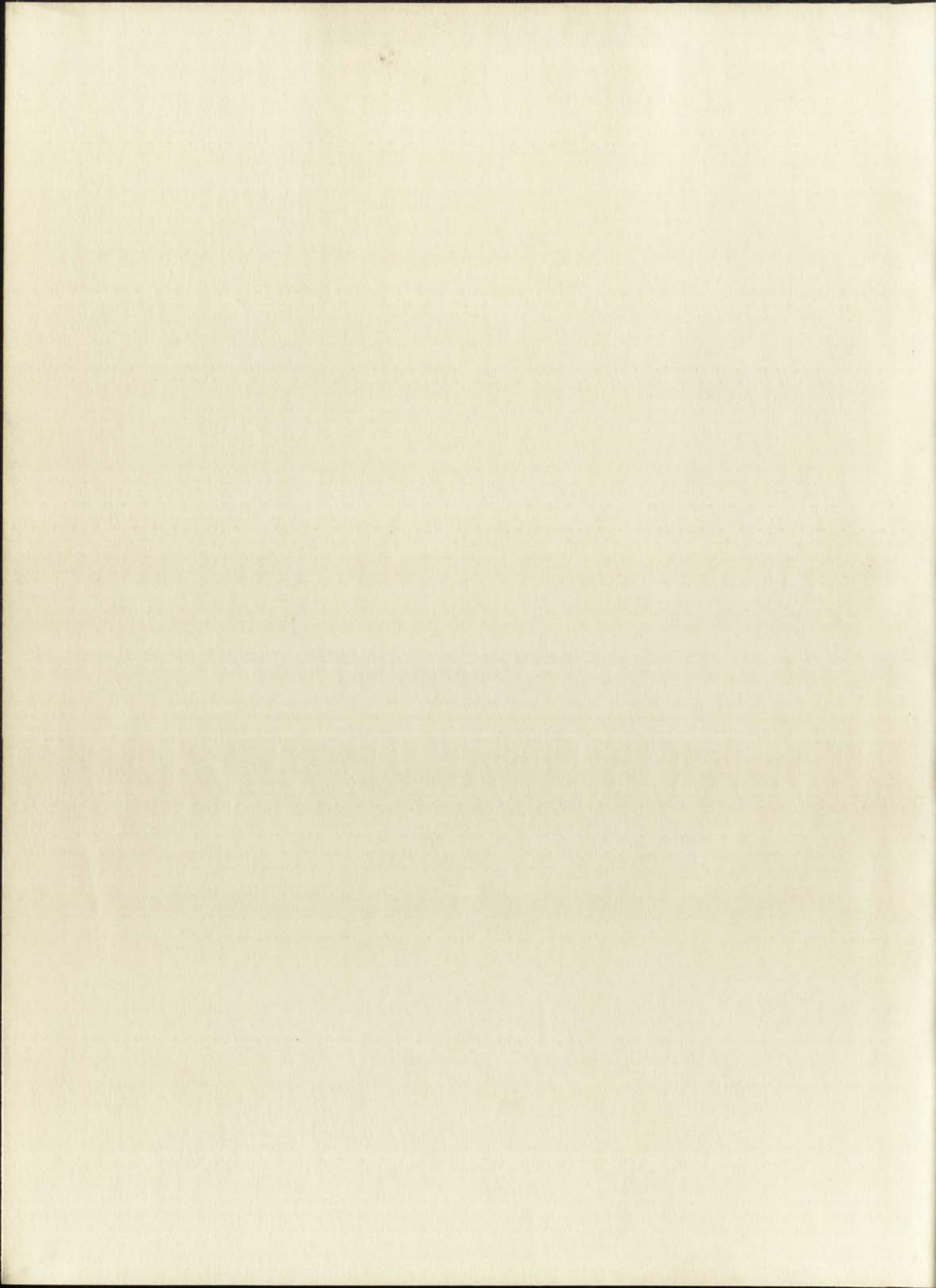
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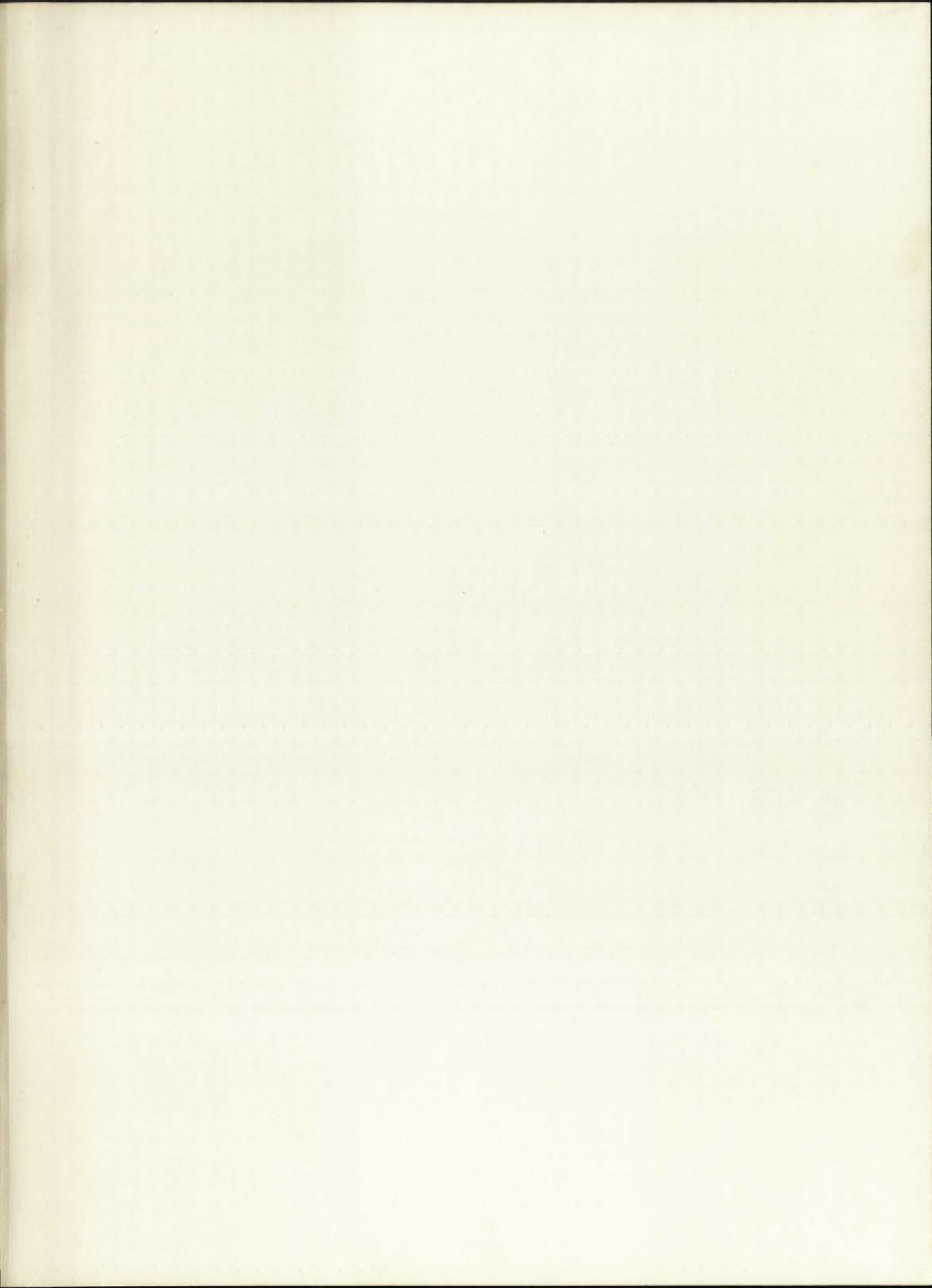
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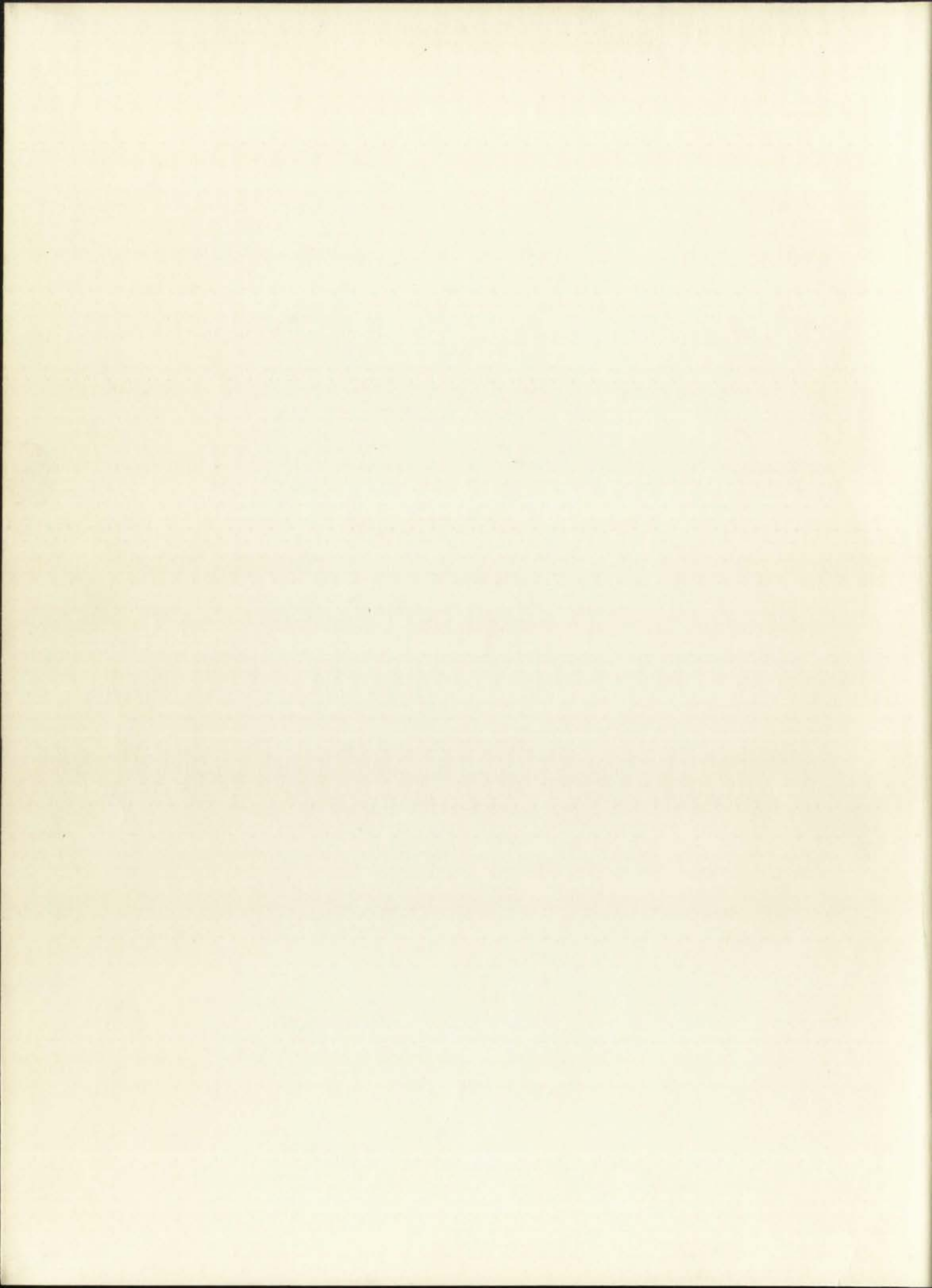
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New Book Shelf **DATE DUE**

NOV 7 '67			
MAY 9 1968	DEC 6 '75	IDFA	
APR 26 1968	REC'D FA	REC 11 '75	
MAR 3 1969	2 WK FA	APR 20 '76	
MAR 3 REC'D REC'D	REC'D UNM	APR - 7 '76	
APR 21 1969	FRI	JUL 29 '77	
APR 20 REC'D			
MAY 7 1972			
MAY 1 1972	FA		
SEP 20 1973			
OCT 16 1973	FA		
OCT 23 '74	2WFA		
REC'D FA	NOV 2 1974		
SEP 28 1975			
REC'D FA	SEP 25 '75		
REC'D FA	SEP 23 '75	RBR	
2 WK FA	NOV 10 '75		
GAYLORD	REC'D FA	NOV 10 '75	PRINTED IN U.S.A.







BACHELOR OF ARCHITECTURE

THESIS

UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO

PREPARED BY:

LANDIS EUGENE BEBERMEYER

DATE:

MAY 25, 1966

THE PROBLEM

TO DESIGN A MIDDLE SCHOOL FOR ALBUQUERQUE. TO
HOUSE 1,000 STUDENTS FROM GRADE FIVE THROUGH EIGHT.

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 - B. THE PROBLEM

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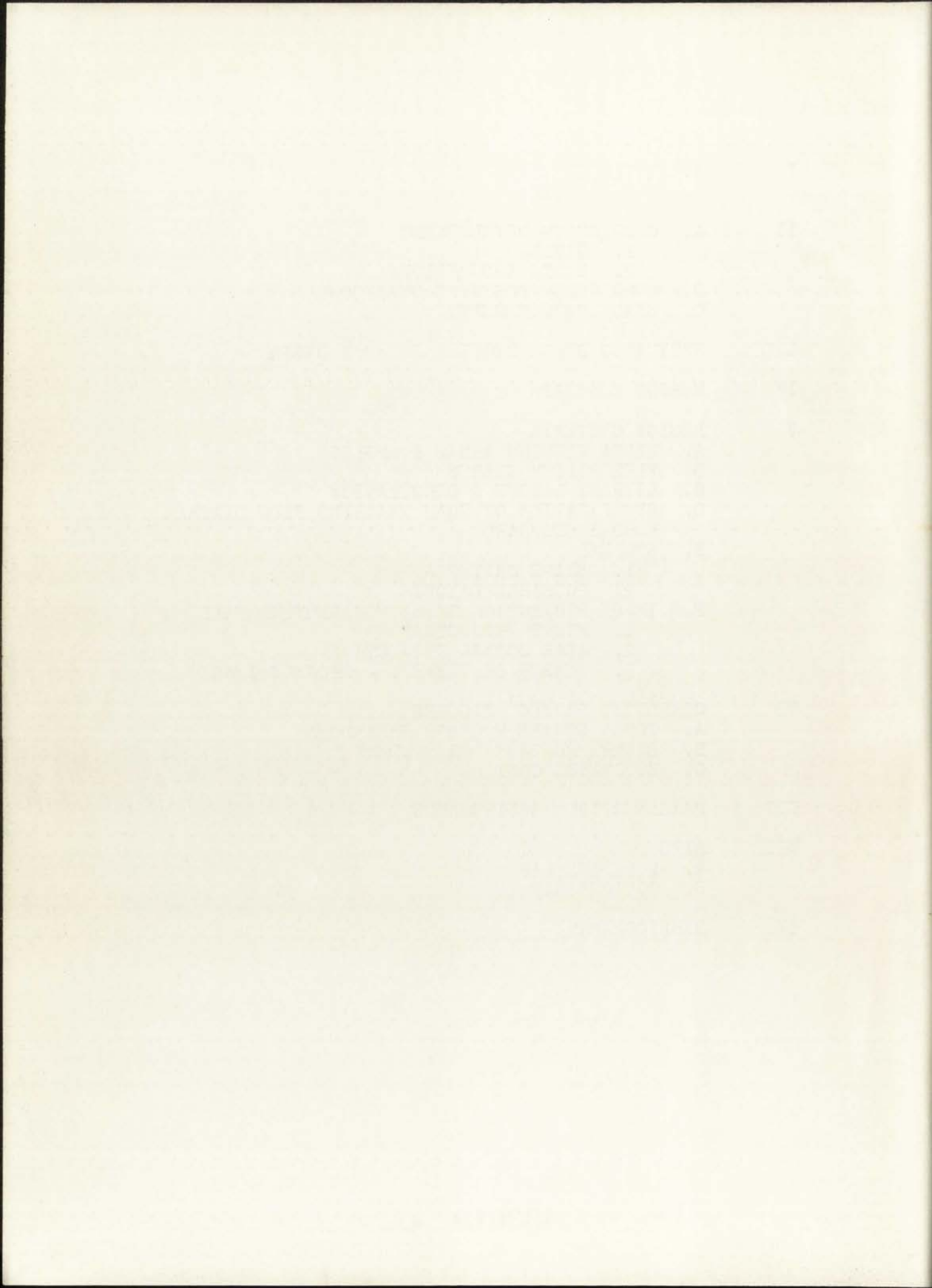
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II A. CURRICULUM DEVELOPMENT

1. GIVEN

The four grades to be equally divided into groups of 250 each.

Each student to have a seven-hour day, including lunch and free time.

Thirty hours of scheduled instruction time per week, on the basis of a five-day week.

2. BASIC ASSUMPTIONS

The school is to be operated eight hours per day, five days per week.

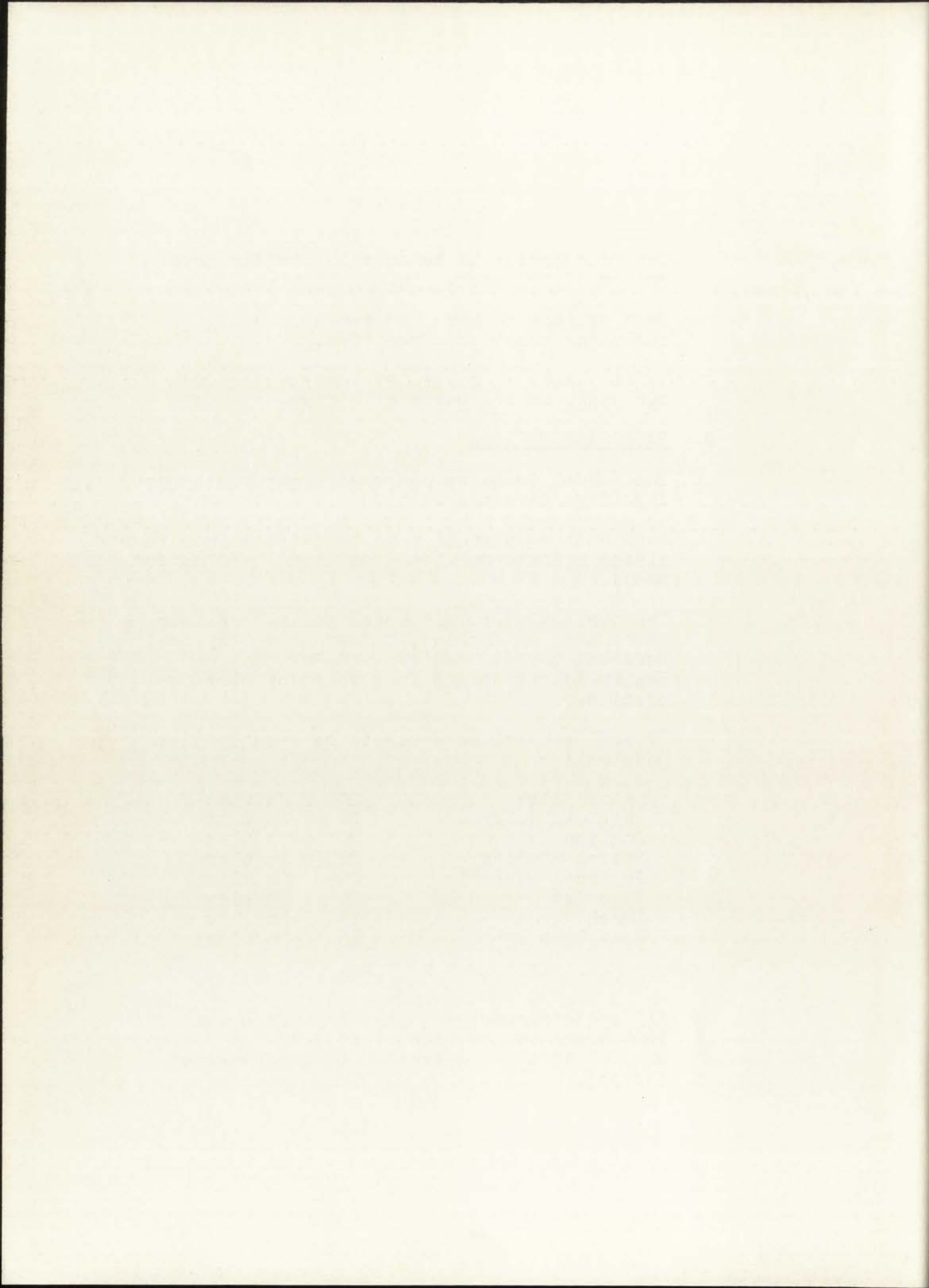
Each hour of operation to be divided into four fifteen-minute modules (total 160 modules per week).

The curriculum requirements to include four years each of English, Mathematics, Physical Science, Social Studies, and Physical and Health Education and four years of elective credits.

Typical student schedule to be (weekly time modules):

Mathematics	20	Modules
Physical Science	20	Modules
English	20	Modules
Social Studies	20	Modules
Physical Education	20	Modules
Elective	20	Modules
Lunch	10	Modules
Free Time	10	Modules
	140	Modules

All space requirement calculations based on 100% occupancy of space, and space to be in use 80% of total operation time (frequency factor).



Because of the recognized difference in comprehension levels within any given group of students, there will be a division of students enrolled into three comprehension levels as follows:

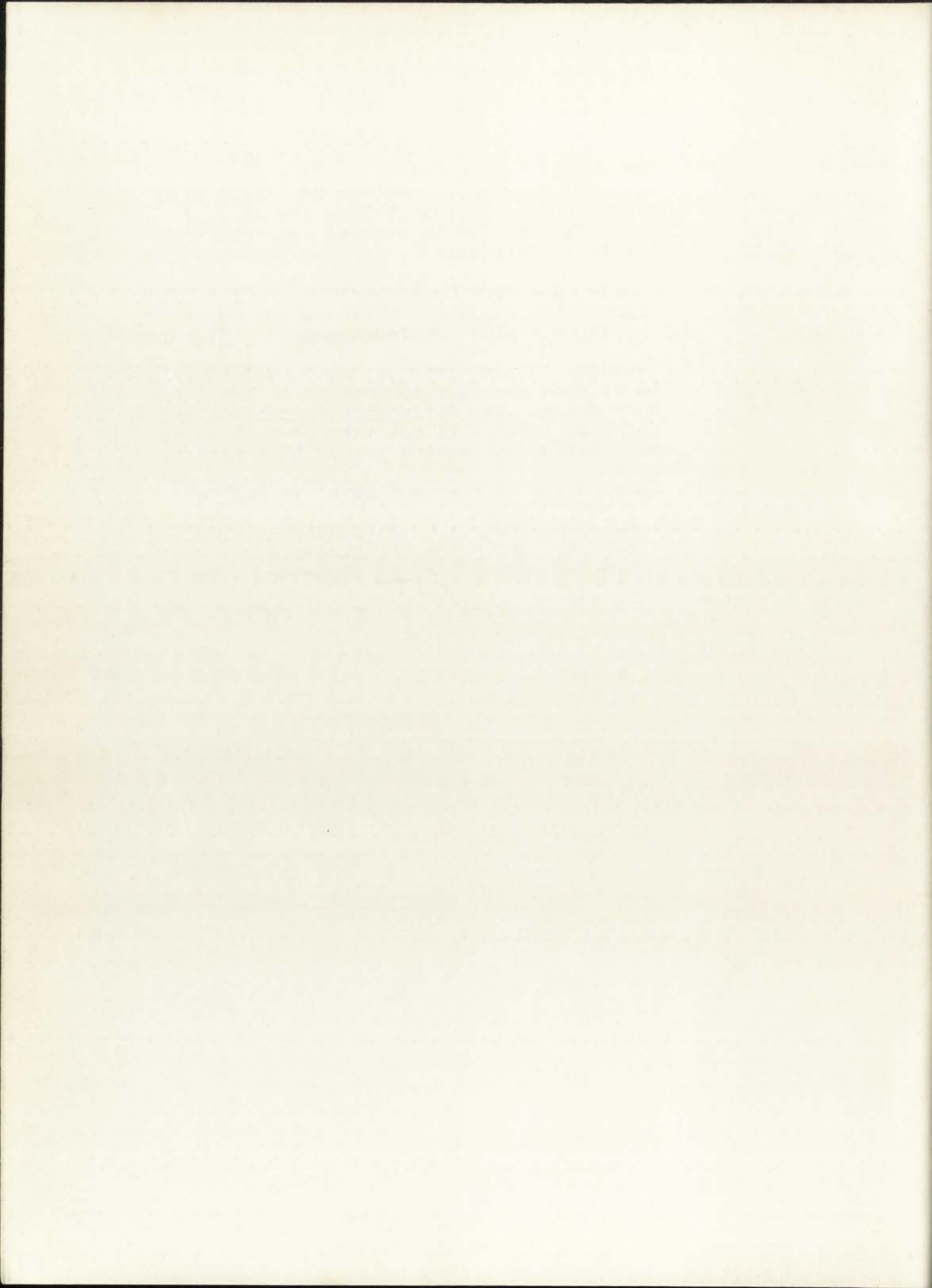
Group A - Fast Comprehension	10% = 100
Group B - Average Comprehension	75% = 750
Group C - Slow Comprehension	15% = 150

Because of this division, each subject will be offered for each comprehension level for each grade. The difference in subject matter for each level will not vary so much as it will differ in penetration of that matter.

Class sizes by year and level as follows:

5-6-7-8	Group A = 25 Students
5-6-7-8	Group B = 188 Students
5-6-7-8	Group C = <u>37</u> Students

TOTAL 250 x 4 = 1,000



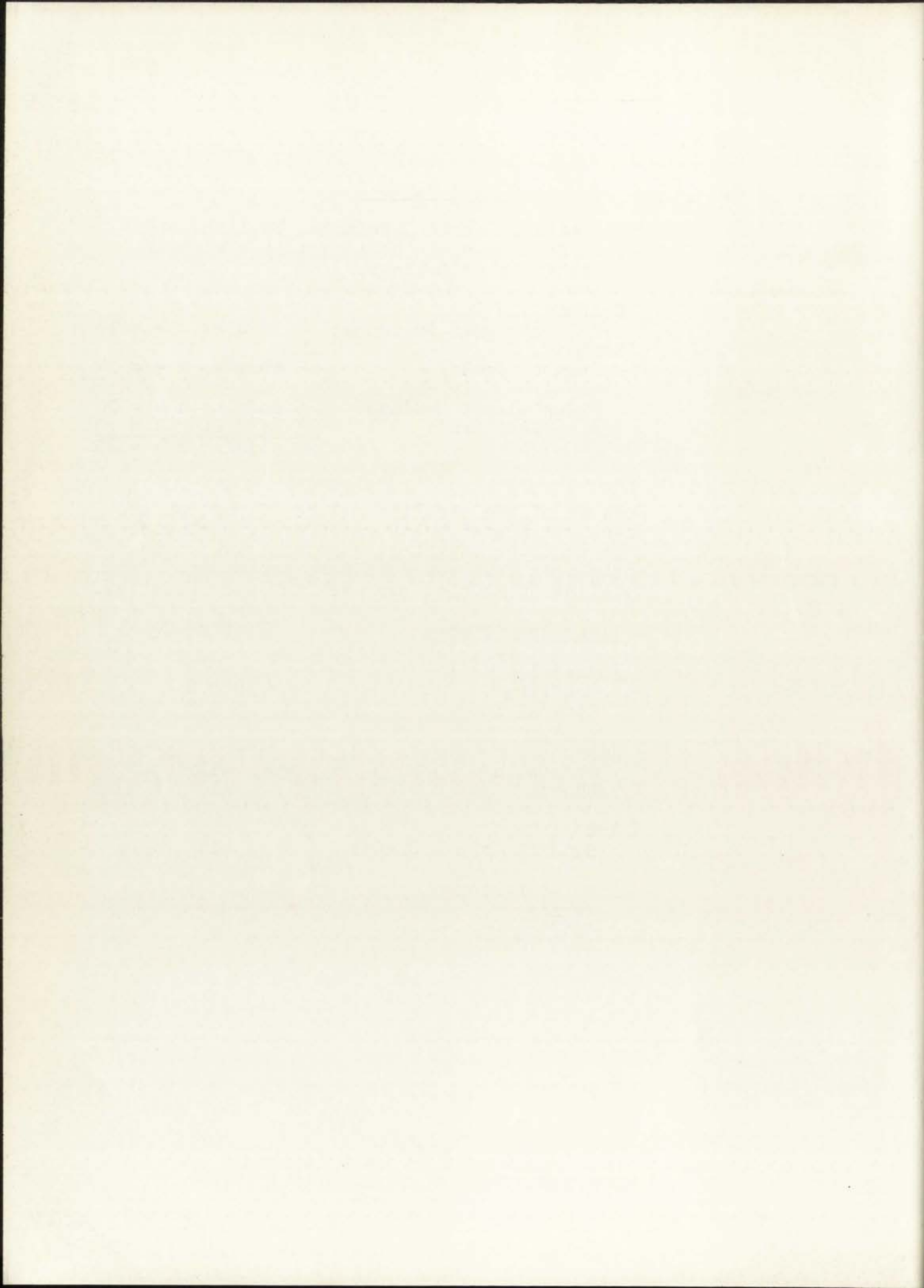
B. CURRICULUM SCHEDULE BREAKDOWN

Mathematics, Physical Science, English, and Social Science shall be taught in each year on a schedule as follows:

Lecture	
(all students in course)	4 modules x 4 = 16
Seminar	
(ten students)	6 modules x 4 = 24
Study Lab	
(30 students maximum)	5 modules x 4 = 20
Independent Study	5 modules x 4 = 20
	<u>20 modules x 4 = 80</u>

Because of the peculiar nature of most of the electives listed below as offered, each elective shall be taught on a schedule which the instructor involved considers necessary, totaling 20 modules per week for each elective.

<u>Electives Offered</u>	<u>Limited To</u>
Industrial Arts	
Drafting	7 & 8
General Shop	7 & 8
Music	
Orchestra	All
Chorus	All
Art	
General Arts & Crafts	All
Home Economics	
Sewing	7 & 8
Cooking	7 & 8



C. SPACE REQUIREMENTS

Lecture Hall

Need: 16 modules x 1,000 students equals
16,000 Student Modules

Availability of one Facility: 160 modules
x 188 Students x .8 frequency factor
equals 24,000.

Provide: One 188 seat lecture hall

Note: This gives a 0.53 frequency factor.

Seminar Rooms

Need: 24 x 1,000 = 24,000 Student Modules

Availability: 160 x 10 x .8 = 1,280

Provide: 18 ten seat seminar rooms

Study Labs

Need: 20 x 1,000 = 20,000 Student Modules

Availability: 160 x 30 x .8 = 3,840

Provide: Six 30 seat study labs

Elective Spaces

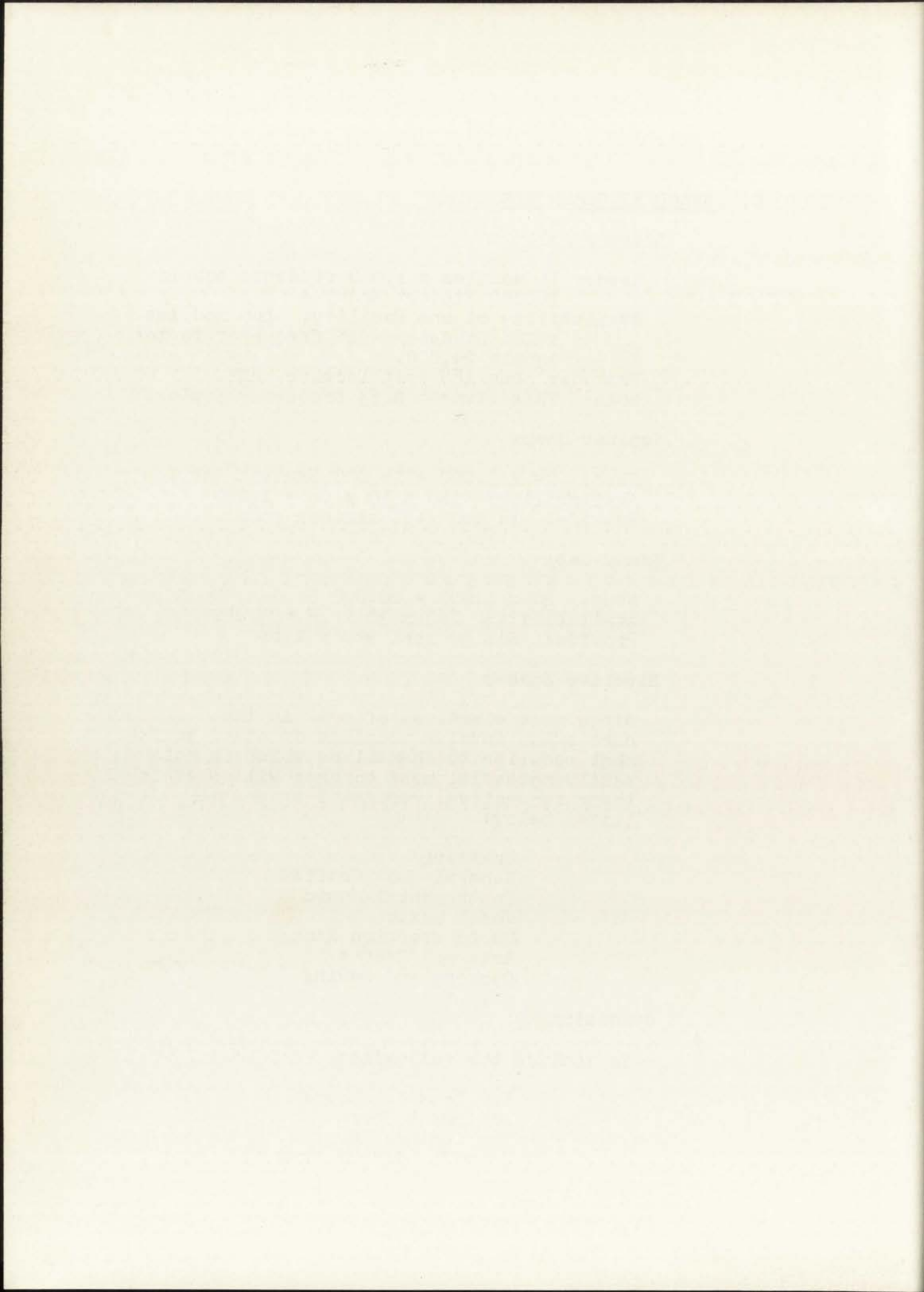
Since most electives offered in the curriculum involve machines or other equipment peculiar to themselves which is not easily moveable, most courses will meet in their respective, permanent spaces as listed below:

Drafting
General Shop Crafts
Instrumental Music
Vocal Music
Music Practice Rooms
Arts and Crafts
Cooking and Sewing

Gymnasium

To include the following:

Two Dressing Rooms
Equipment Room
Two Lecture Rooms
Room for indoor exercise



Library

Staff Facilities

Card Catalogue
Reference Collection
Reference Consulting Desk
Circulation Desk (records & work area)
Staff Quarters

- a. Reference Consultation Room
Librarian's Office
- b. Media Specialists Office
Reference Librarian
- c. Storage Room (Audio Visual
equipment and materials)
- d. Technical Processes Room
- e. Teachers Preparation Room
- f. Studio and Control Room

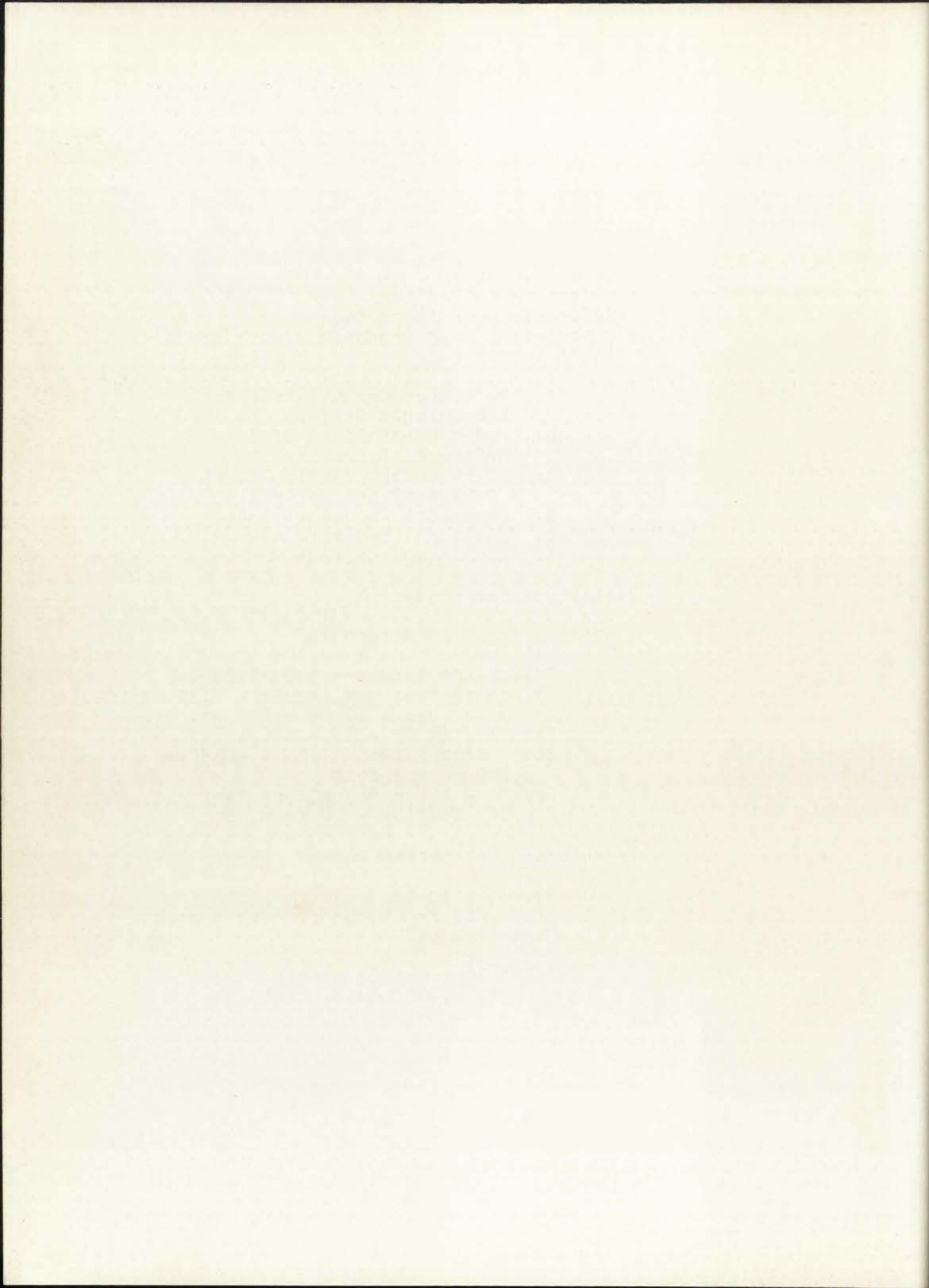
Facilities for Readers

Overall Space Requirements

33% of enrollment = 330 students
25 square feet per reader = 8,325 sq.ft.
Study Carrels - 60% = 4,995 sq. ft.
Flat Top Study - 8% = 666 sq. ft.
Study Groups (Rooms of 5) - 15% =
1,249 square feet
Lounge - 17% = 583 square feet
Faculty Studies - 10 required

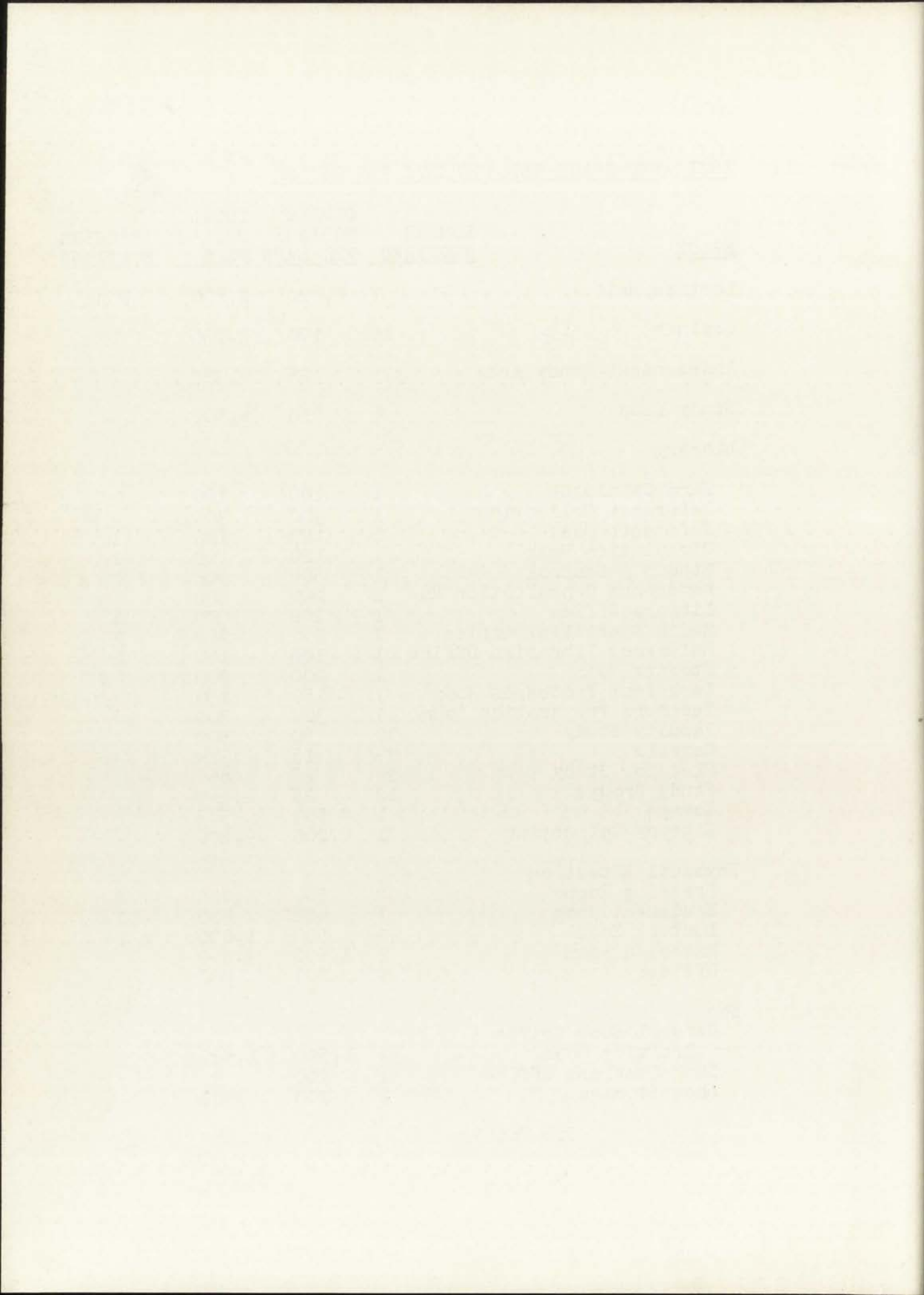
The Library Collection

30,000 volumes
Films, tapes, records, pocket books
Magazines and newspapers
One square foot per 15 volumes
15' long, 4' 6" apart
Total 8,200 square feet

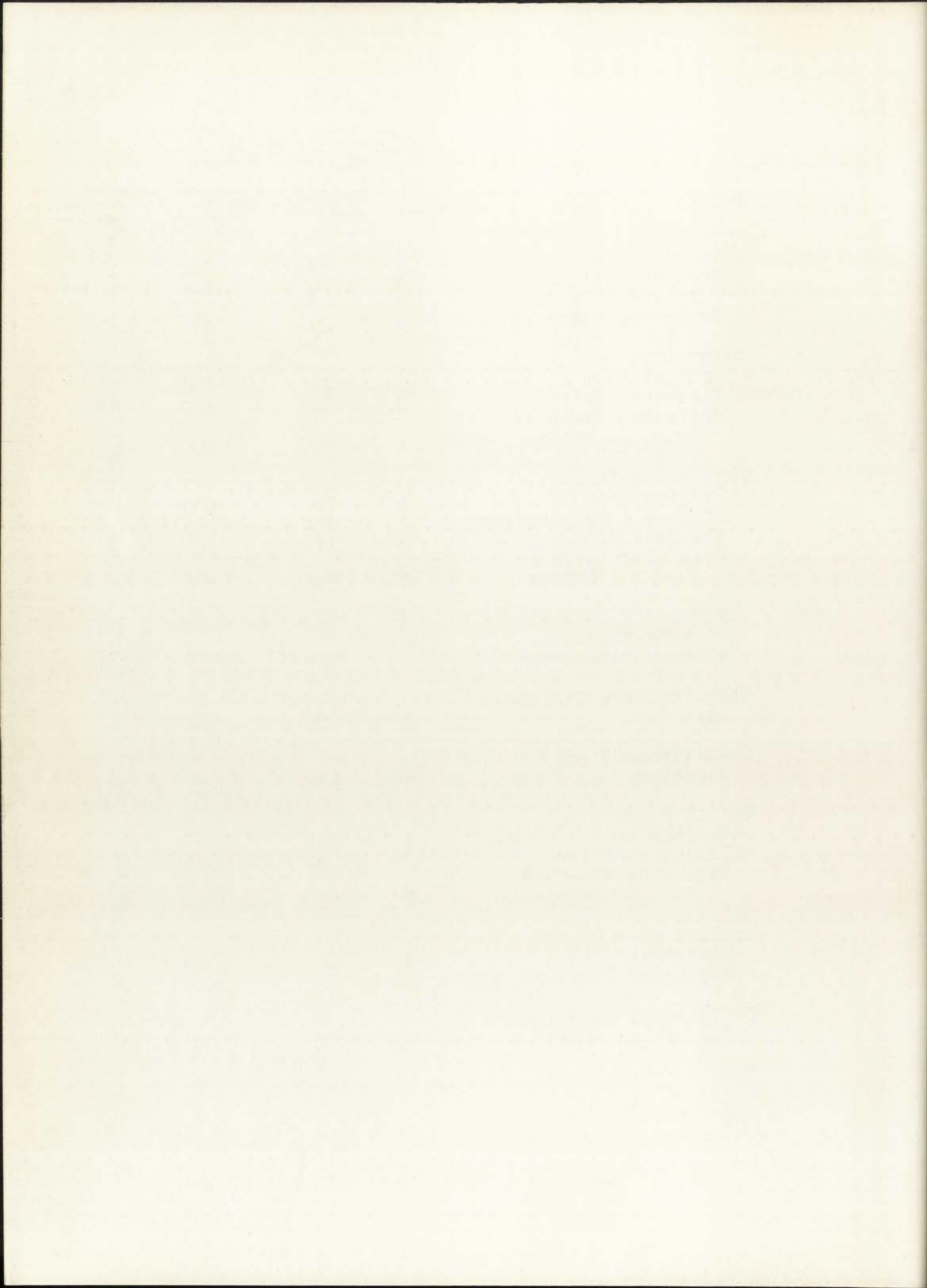


III ESTIMATED SPACE REQUIREMENTS FOR DESIGN

<u>SPACE</u>	<u>NUMBER REQUIRED</u>	<u>SQUARE FOOTAGE PER EACH</u>	<u>TOTAL SQUARE FEET</u>	<u>TEACHING STATIONS</u>
Lecture Hall	1	2,820	2,820	None
Seminar	19	170	3,230	
Independent Study Area	333	25	8,325	
Study Labs	6	750	4,500	
Library				
Card Catalogue	1	100	100	
Reference Collection	1	300	300	
Reference Desk	1	120	120	1
Circulation Desk	1	120	120	1
Studio & Control	1	500	500	2
Reference Consultation Rm.	1	200	200	
Library Office	1	200	200	1
Media Specialist Office	1	200	200	1
Reference Librarian Office	1	100	100	1
Storage Room	1	200	200	
Technical Processes Room	1	150	150	
Teachers Preparation Room	1	300	300	
Faculty Study	10	50	500	
Carrels	24	15	384	
Flat Top Study	24	25	666	
Study Groups	12	25	1,249	
Lounge	1	583	583	
Library Collection	1	9,200	9,200	
Physical Education				
Dressing Rooms	2	500	1,000	2
Equipment Room	1	400	400	1
Lecture Room	2	500	1,000	2
Exercise Room	1	3,500	3,500	
Offices	2	200	400	
Shop				
General Shop Crafts & Drafting Room	1	1,500	1,500	1
Shop Teachers Office	1	200	200	
Shop Storage	2	200	400	
Sub Totals			42,247	13

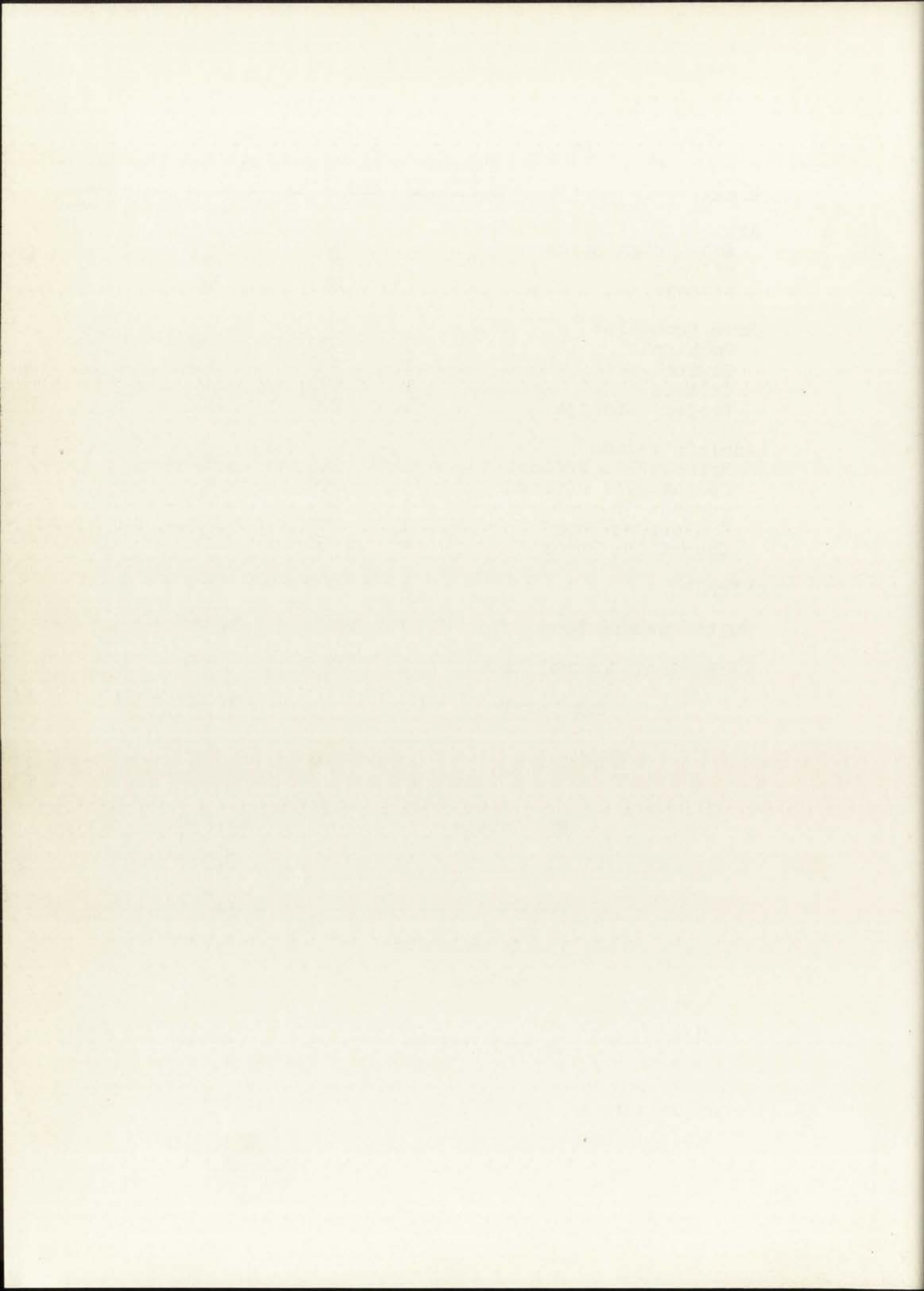


<u>SPACE</u>	<u>NUMBER REQUIRE</u>	<u>SQUARE FOOTAGE PER EACH</u>	<u>TOTAL SQUARE FEET</u>	<u>TEACHING STATIONS</u>
Music				
Vocal Music	1	900	900	1
Instrumental Room	1	1,200	1,200	1
Teachers Offices	1	200	200	
Instrument Storage	1	200	200	
Mathematics				
Project Room	1	200	200	
Teachers Offices	3	120	360	3
Beginning Teachers Office	1	200	200	2
Physical Science				
Project Room	6	100	600	
Storage & Preparation	1	250	250	
Teachers Office	3	120	360	3
Beginning Teachers Office	1	200	200	2
Offices for Co-Chairman of Math-Physical Science Department	2	200	400	2
Team Teachers Confer- ence Room	1	300	300	
Co-Chairman Clerk & Secretary	1	120	120	1
Social Studies				
Project Room	1	200	200	
Teachers Office	3	120	360	3
Beginning Teachers Office	1	200	200	2
English				
Teachers Office	3	120	360	3
Beginning Teachers Office	1	200	200	2
Offices for Co-Chairman of Humanities Department	2	200	400	2
Team Teachers Conference Rm.	1	300	300	
Humanities Co-Chairman Secretary and Clerk	1	120	120	1
Sub Totals			7,630	26



<u>SPACE</u>	<u>NUMBER REQUIRED</u>	<u>SQUARE FOOTAGE PER EACH</u>	<u>TOTAL SQUARE FEET</u>	<u>TEACHING STATIONS</u>
Art				
Art-Design Space	1	800	800	1
Offices	1	200	200	
Storage	1	200	200	
Home Economics				
Cooking	1	300	300	1
Sewing	1	300	300	1
Offices	1	200	200	
Project Storage	1	200	200	
Administration				
Principal's Office	1	300	300	1
Secretary's Office	1	200	200	1
Records Storage	1	200	200	
Conference Room	1	700	700	
Counseling Rooms	4	50	200	
Kitchen	1	900	900	
Multi-Purpose Room	1	3,000	3,000	
Mechanical Control Room	1	200	200	
Sub Totals			7,900	5
Sub Totals			42,247	13
			7,630	28
			7,900	5
Totals			57,777	46
10% Circulation			5,777	
5% Janitor & Toilets			2,888	
Grand Total			66,442	46

Provide parking for 50 cars at 400 square feet ea. = 20,000



IV DESIGN CONCEPT

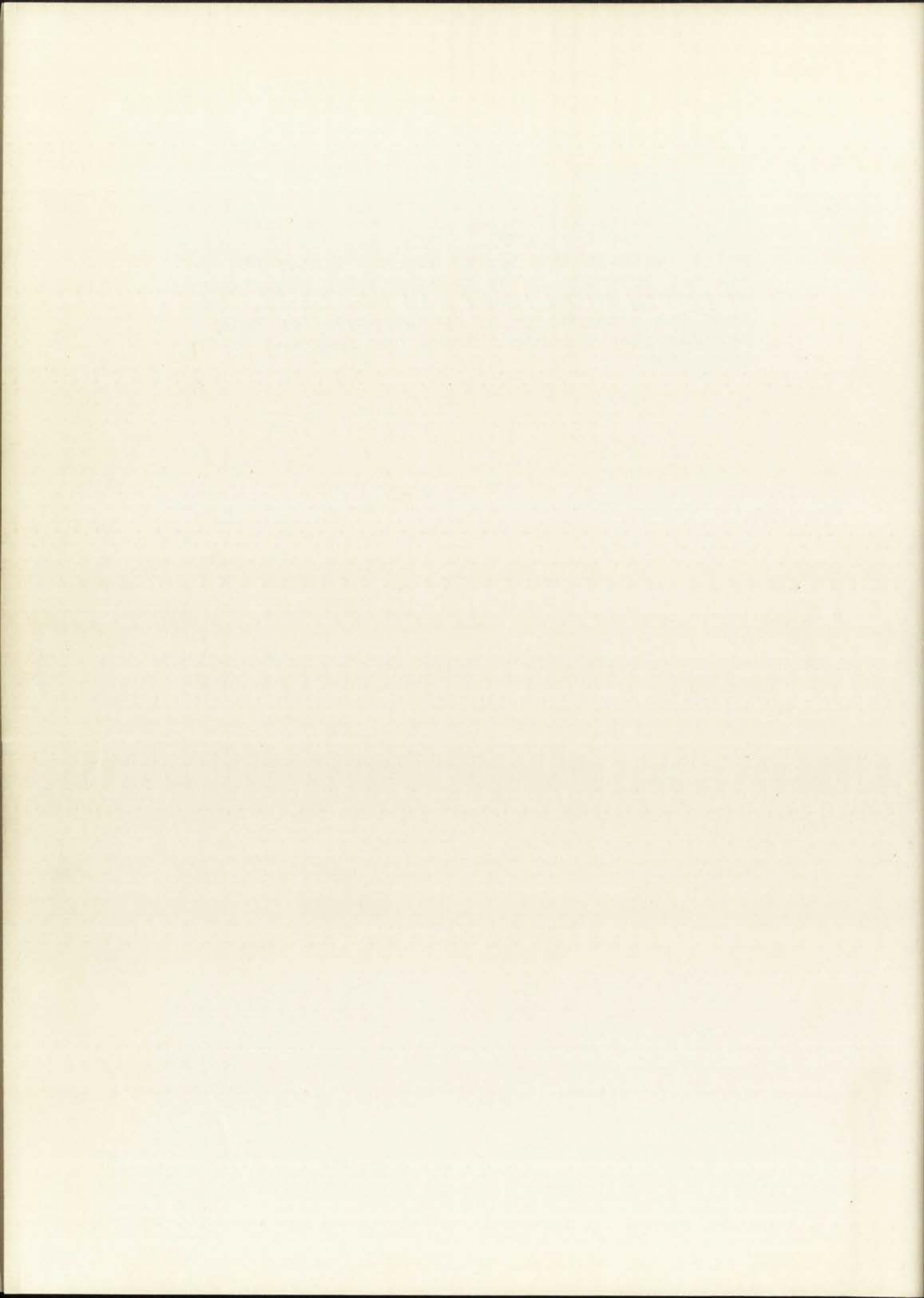
In order to provide an efficient and economical plant for the education of 10 to 13 year old children in contemporary America, it is the intension of this thesis to incorporate within the design, the following as major guide lines to the development of this facility.

- (a) The use of media ie. Television and Projection Devices to a maximum extent to improve the quality of education at the same time free instructors to provide better instruction on an individual basis.
- (b) To provide a compact design with specialized spaces in order that flexibility can more readily be achieved through the moving of students rather than objects.
- (c) The use of a centralized library design in the interest of better library function and economy as opposed to a decentralized type.
- (d) Team teaching to its highest degree in order to make available to all students a more rounded educational experience taking advantage of the combined abilities of more faculty members offered more on an individual basis.



V DESIGN CRITERIA

The following tables, diagrams and text are included here-in as basic foot note to the major points with-in the design concept statement, and are not intended to be an exhaustive restatement of finding of the research in these areas. The need for a common point of departure for both the designer and his critics has prompted their inclusion.



MEDIA VIEWING AREAS & ANGLES

60° ON ϕ

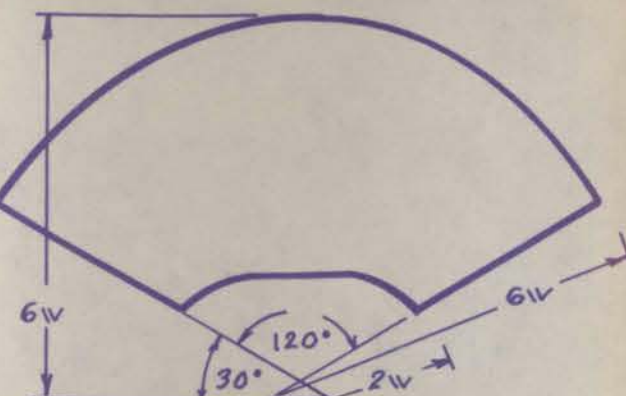
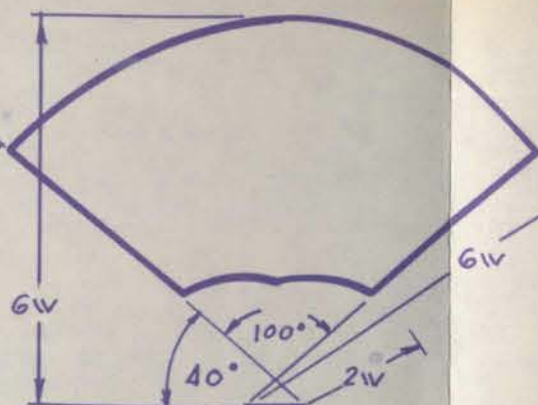
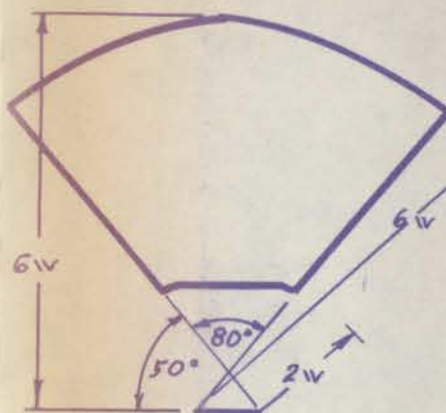
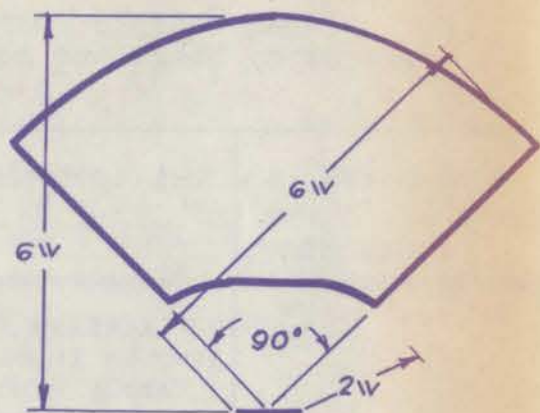
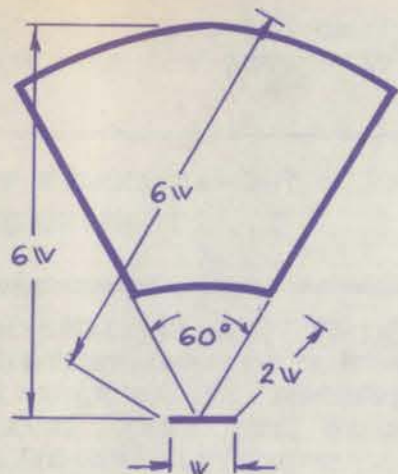
90° ON ϕ

50° EDGE ANGLE

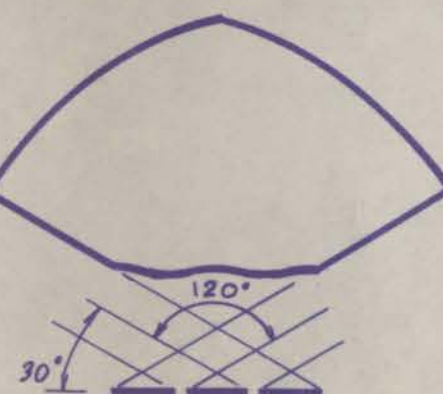
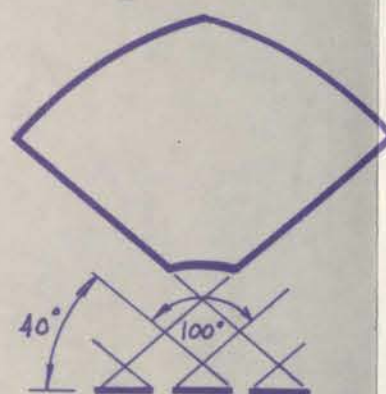
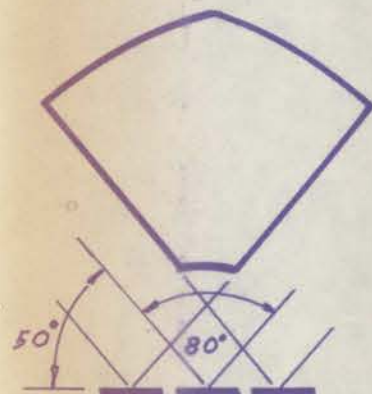
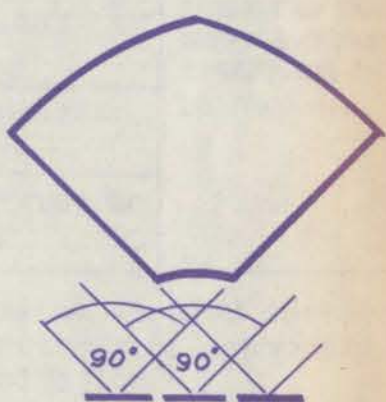
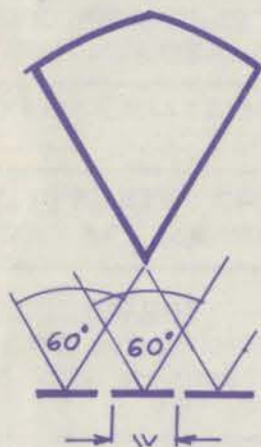
40° EDGE ANGLE

30° EDGE ANGLE

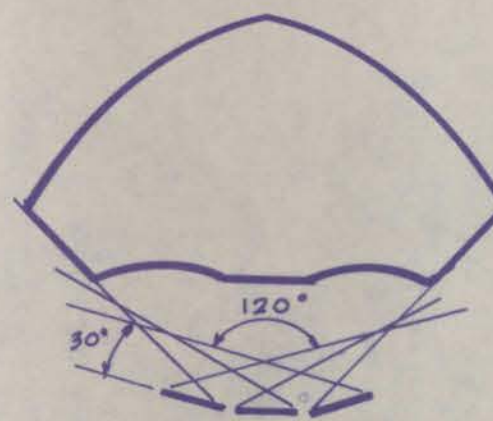
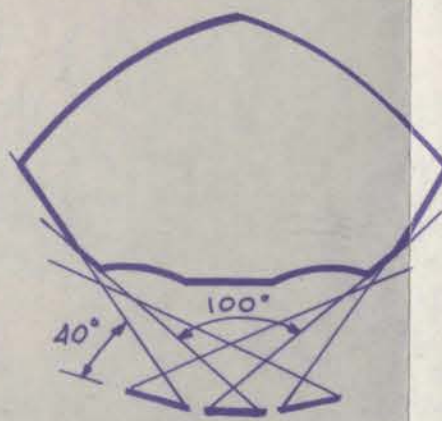
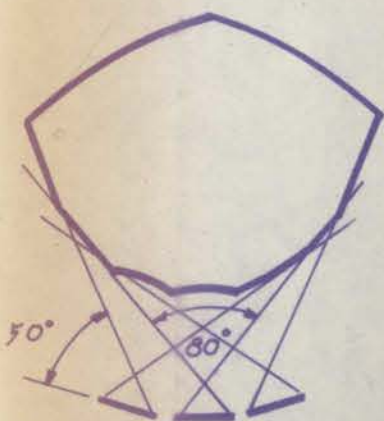
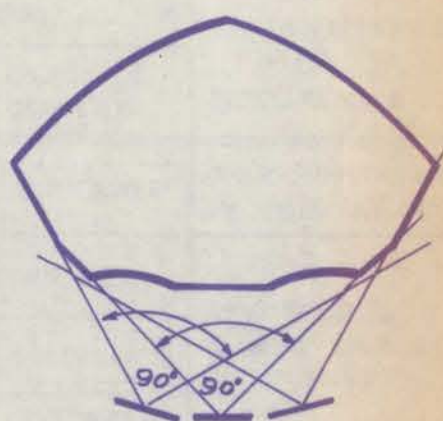
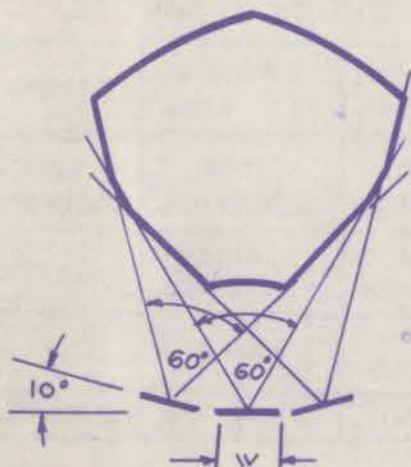
ONE
SCREEN



THREE
SCREENS
ON ONE
PLANE



THREE
SCREENS
ON THREE
PLANES



Projected Image Viewing

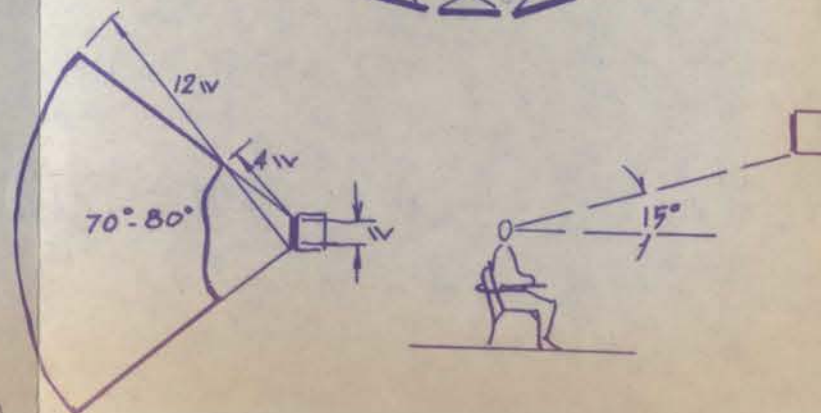
general terms, for an image "W" feet wide projected on a matte screen:

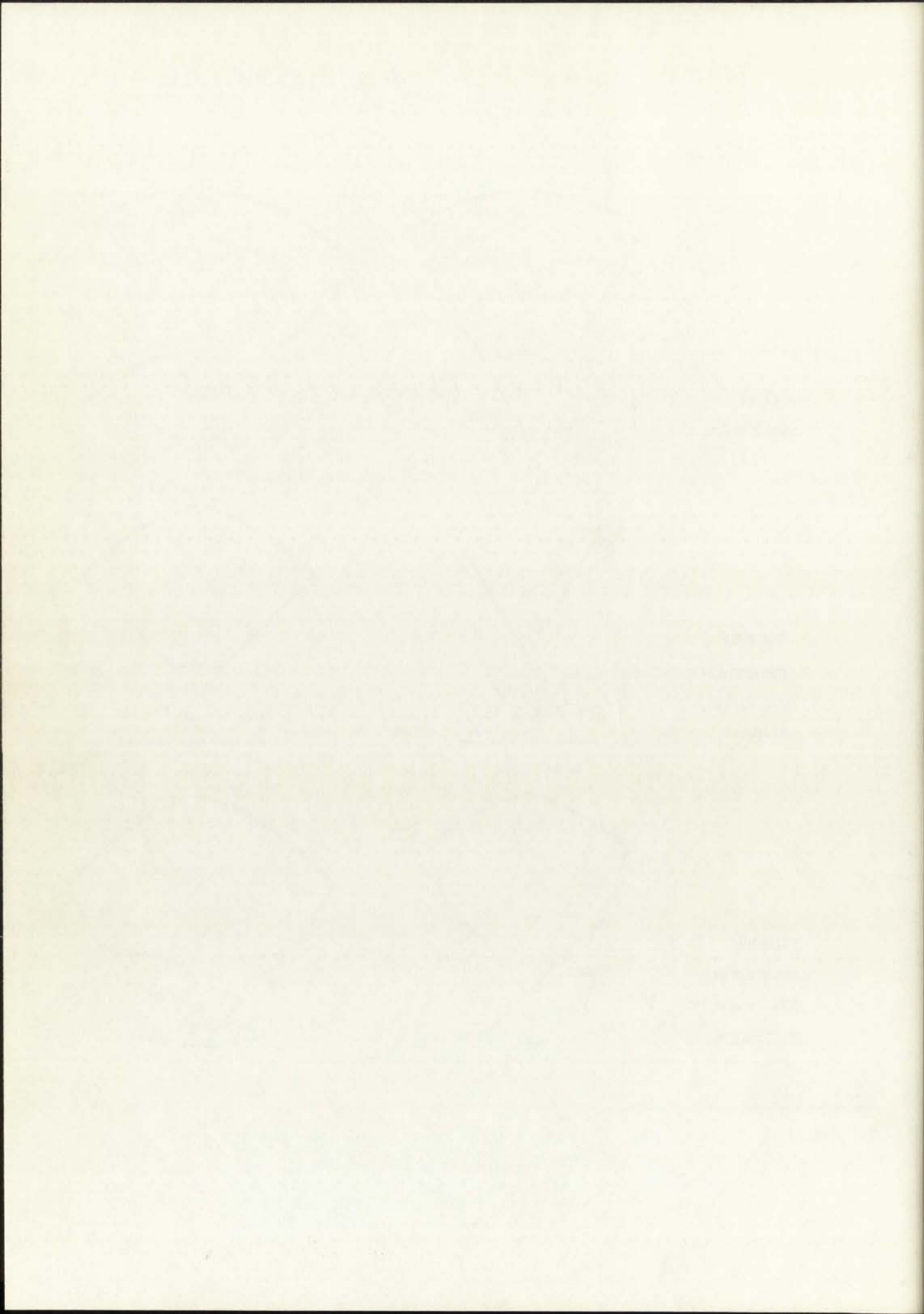
1. The minimum distance equals 2 W.
2. The maximum distance may vary from 6 to 7 W.
3. The horizontal viewing angle may vary from 60° to 120°.
4. The maximum angle of elevation equals 15°.

This diagram illustrates five different approaches for determining a viewing area, and compares each approach on the basis of a single image, three images on one plane, and three images on three planes.

For optimum monitor viewing:

1. The minimum distance equals 4W
2. The maximum distance equals 12W
3. The horizontal viewing angle equals 70 - 80°
4. The maximum angle of elevation equals 15° (to the bottom of the image.)





B. FLEXIBILITY

Flexibility of space sizes and functions can be provided in either of two ways:

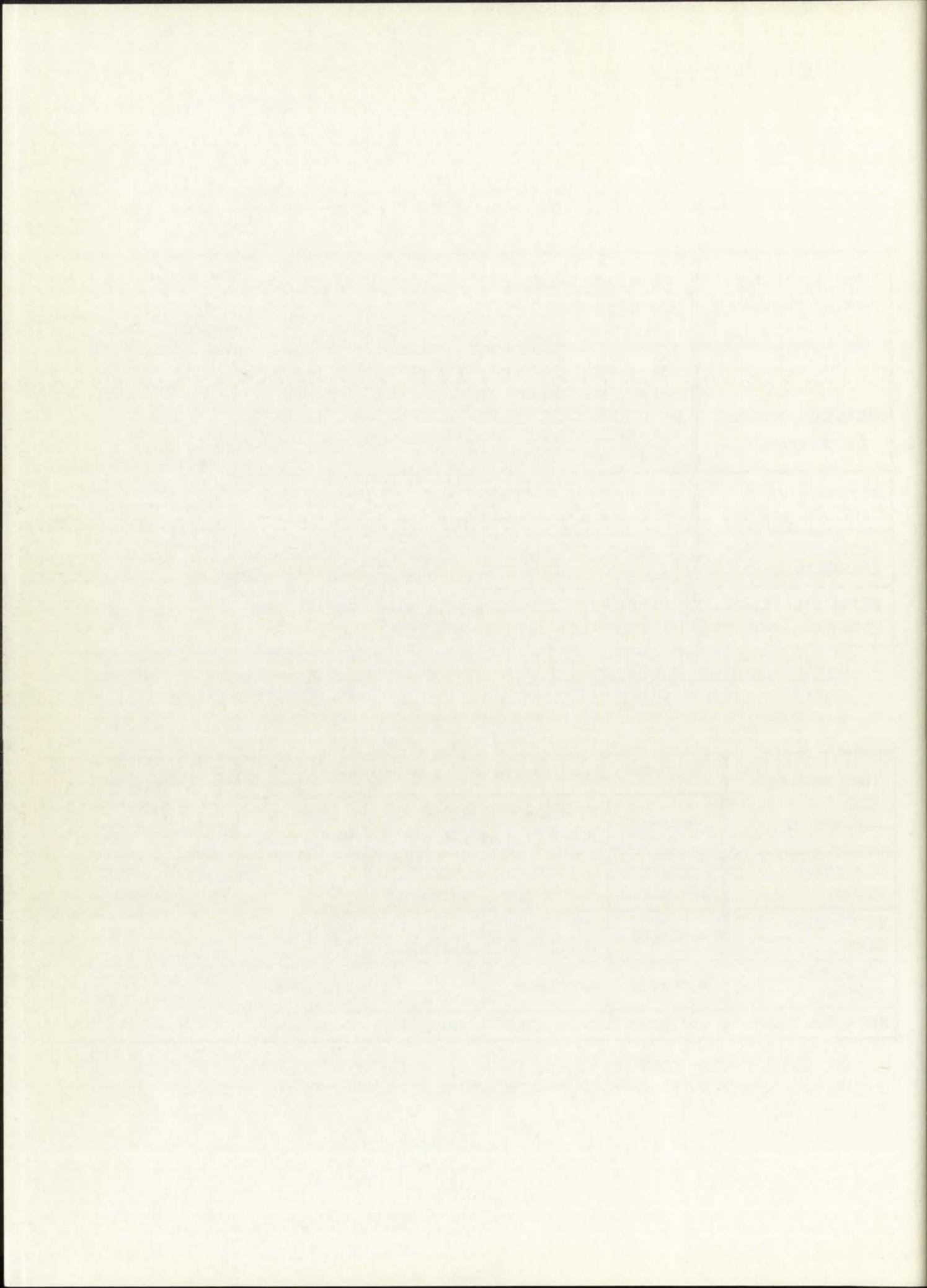
- a) By changing the size and or function of the space.
- b) By transferring the occupants from one space to another.

TIME AVAILABLE FOR CHANGEOVER	BY REARRANGEMENT OF FURNISHINGS AND EQUIPMENT	BY TRANSFER OF OCCUPANTS
BETWEEN - PERIODS (1-5 MIN.)	IN SMALL SPACES, LIMITED TO REARRANGEMENT OF CHAIRS AND OTHER LIGHT OBJECTS, IN LARGE SPACES, DEMONSTRATION AREA MAYBE RESET BY REVOLVING OR SLIDE-ON PLATFORM.	PERMITS COMPLETE CHANGE OF ENVIRONMENT AND FACILITIES REGARDLESS OF TIME LIMITATIONS.
BETWEEN-DAYS (1HR. OR MORE)	HEAVIER FURNITURE AND EQUIPMENT MAY BE REARRANGED.	
BETWEEN-TERMS (SEVERAL DAYS)	EXTENSIVE REARRANGEMENT POSSIBLE	
BETWEEN-YEARS (SEVERAL MO.)	COMPLETE REARRANGEMENT OF FURNISHING CAN BE ACCOMPLISHED.	

Variations in Space Functions To accommodate various instructional methods, the table indicates how two basic methods of providing flexibility compare with respect to time limitations.

TIME AVAILABLE FOR CHANGE OVER	BY PARTITIONING METHODS				BY TRANSFER OF OCCUPANTS
	OPERABLE	DEMOUNT-ABLE	BLOCK OR FRAMED	GLASS & CURTAIN	
BETWEEN PERIODS	SUITABLE IF MOTORIZED	NOT SUITABLE	NOT SUITABLE	SUITABLE	ONLY LIMITATION IS DISTANCE
BETWEEN DAYS	SUITABLE	POSSIBLE SUITABLE	NOT SUITABLE	SUITABLE	ANY DESIRED CHANGE CAN BE ACCOMPLISHED.
BETWEEN TERMS	SUITABLE	SUITABLE	NOT SUITABLE	SUITABLE	
BETWEEN YEARS	SUITABLE	SUITABLE	SUITABLE	SUITABLE	

In this table four types of partitions for changing the size of space are compared with the alternative of moving the occupants.

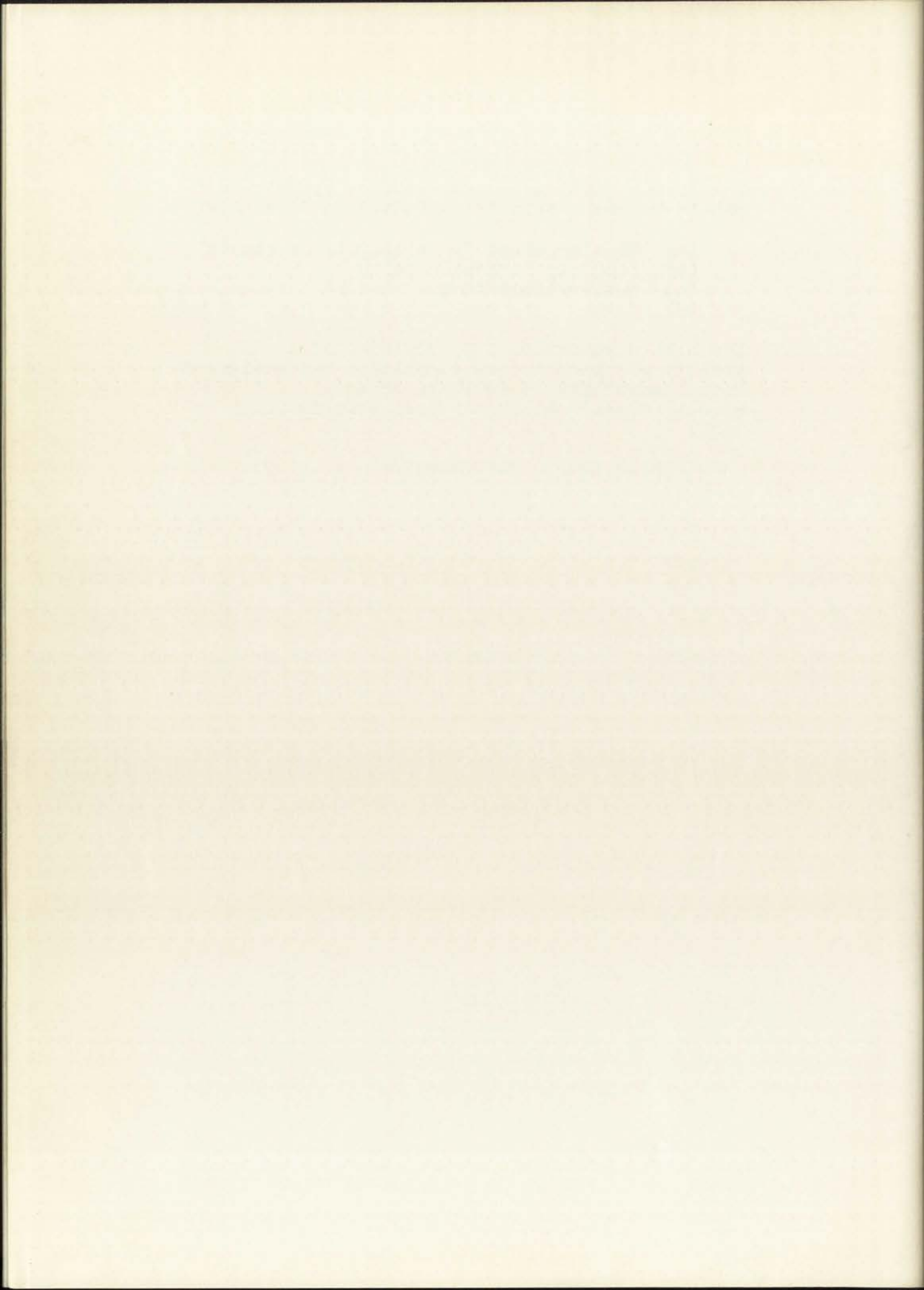


The four partitions suggested vary greatly and should be comparatively evaluated on four points:

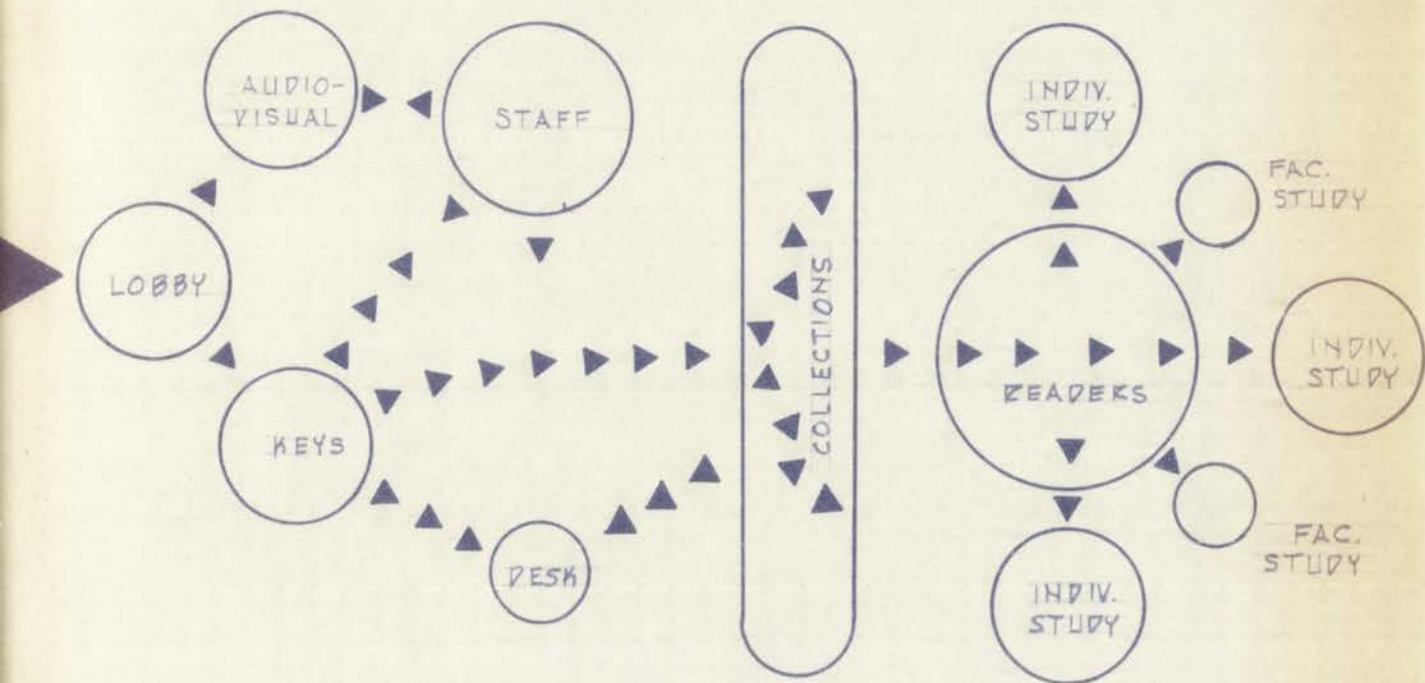
- (a) Time required for placement or removal
- (b) Sound transmission value
- (c) Design limitations
- (d) Cost

For higher education the provision of a wide variety of space types, capacities and equipment with flexibility achieved by scheduling of the spaces, appears a logical goal towards which to work.

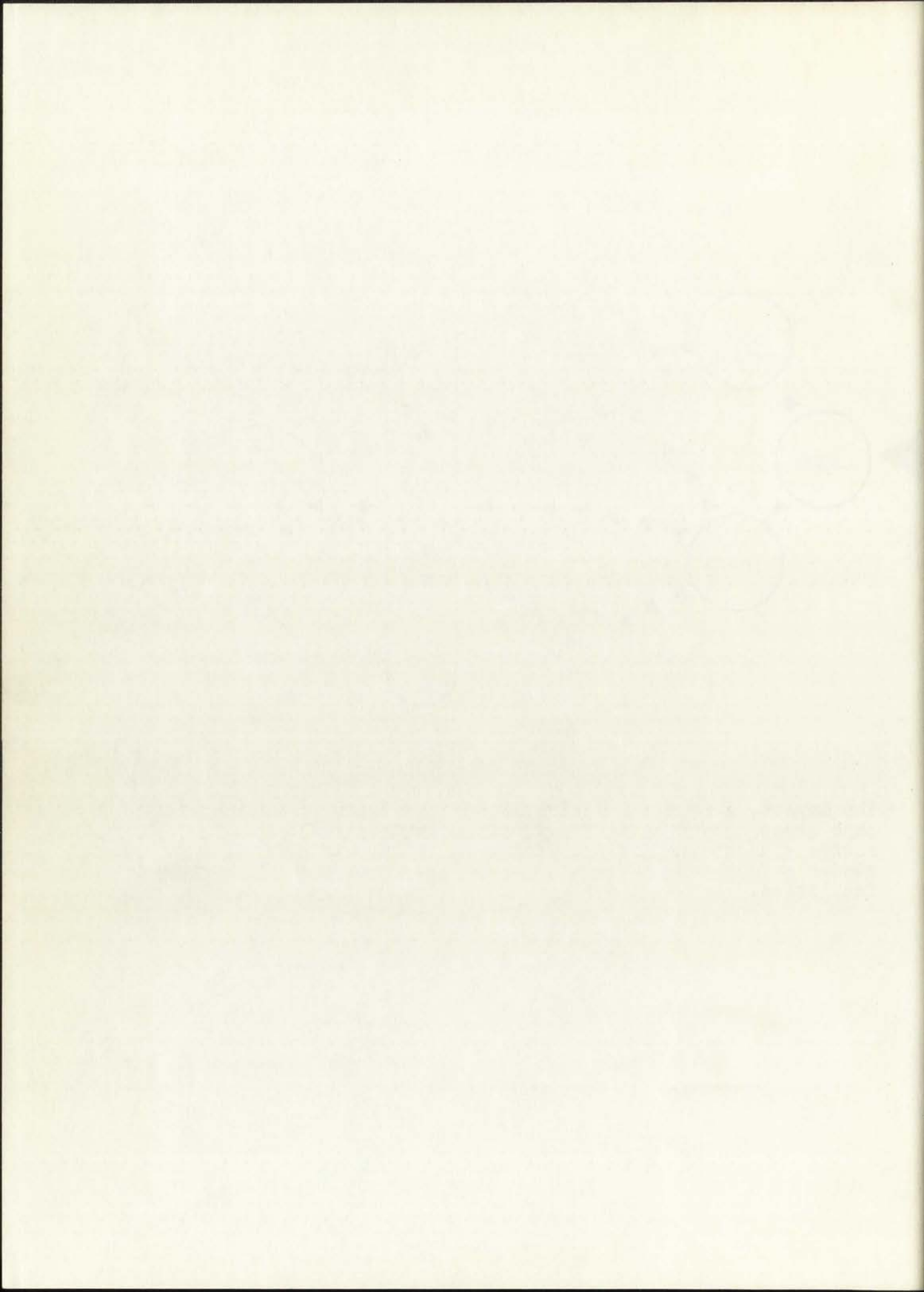
("New Spaces for Learning" p. 11-7)



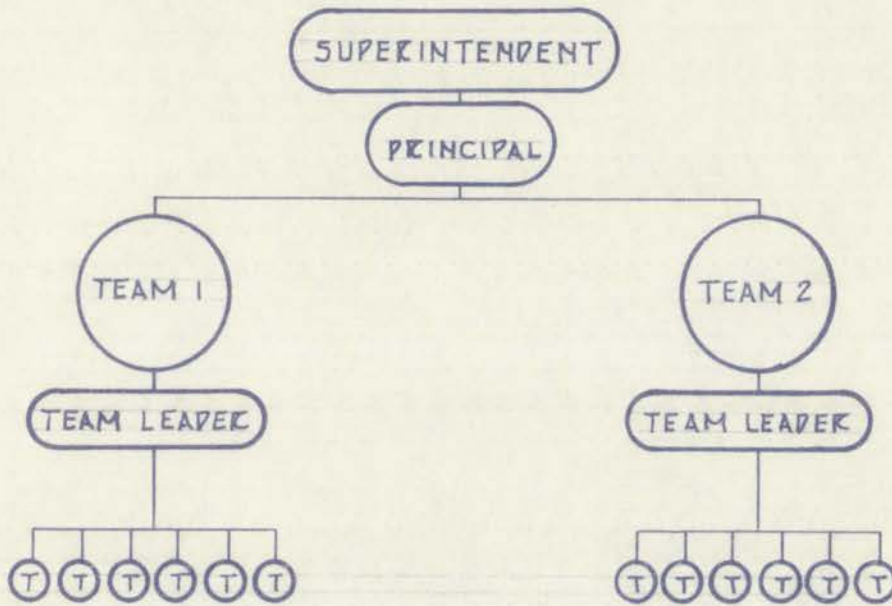
C. LIBRARY LAYOUT & CIRCULATION



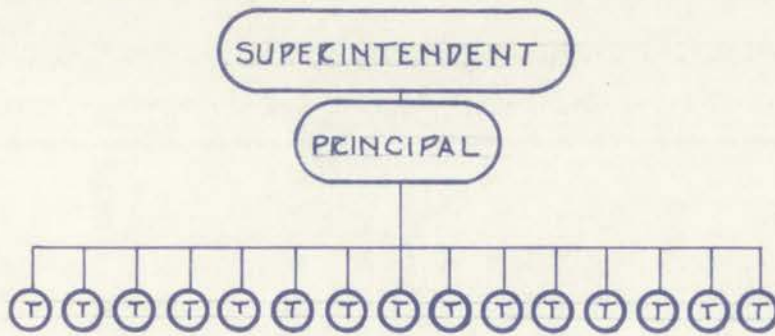
The layout, a critical factor in how a library works, should zone areas according to function. Circulation flow that routes student traffic from entrance to keys to materials to reader spaces, as shown, will make for proper use of library's facilities.



ORGANIZATION



TEACHING TEAMS



CONVENTIONAL



TEACHING TEAMS



EXPERIMENTAL

E.

SEMINAR SHAPE CRITERIA

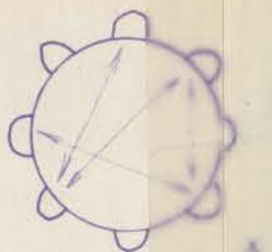
For the small seminar groups not concerned with the use of visual aids, probably the ideal arrangement is the round table, permitting each participant to face most of the others, as indicated in Sketch A.

When the use of visual aids is introduced, however, the round table arrangement has very definite limitations and disadvantages. It becomes necessary either to have a number of "copies" of the images being viewed, or to require many of the participants frequently to turn around in their seats.

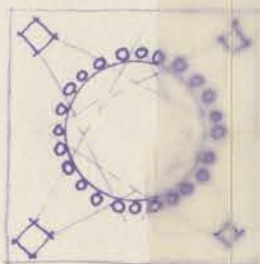
If TV is employed, the necessary duplication of images can be accomplished, - at a price - by using a number of monitors. Four monitors, for instance, might be located in each corner of a square room, as in Sketch B, serving the participants seated in the opposite quadrant of the circle; or a cluster of four or more monitors might be suspended at the center of the group, as suggested in Sketch C.

Either of these arrangements is difficult to justify economically, since each monitor serves only a few participants, and the room area required per student is excessive. A greater disadvantage is that the use of other types of projected materials is difficult because of the cost involved in duplicating screens and projection equipment.

Some other arrangement is, therefore, preferable in order to provide in the seminar rooms, not only TV, but projected images. The arrangement must minimize the amount of equipment needed, make more efficient use of room space, and at the same time locate the seating so that interchange between participants is encouraged. It would seem logical, with these objectives in mind, to use a generally semicircular or semi-elliptical seating arrangement, perhaps in two rows, with the screen and TV monitor at the open side, as indicated in Sketch D.

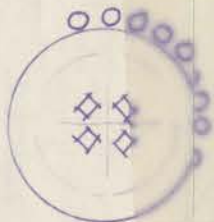


A

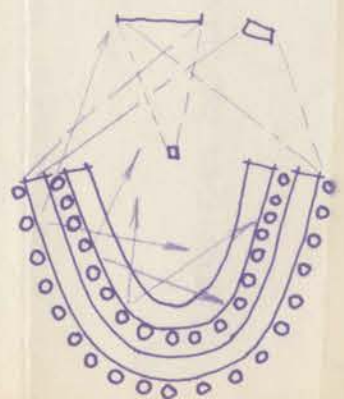


B

4 MONITERS SUSPENDED ABOVE HEAD HEIGHT



C



D

VARIOUS POSSIBLE SEMINAR ARRANGEMENTS

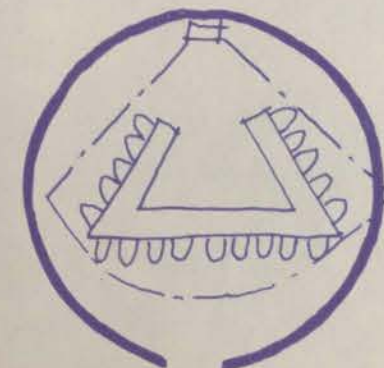
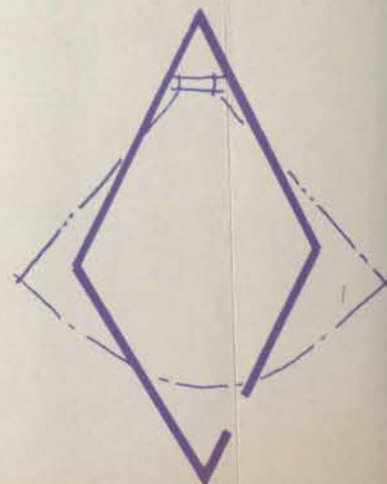
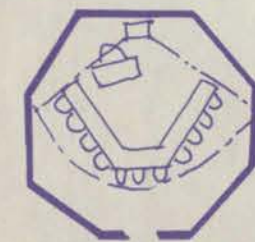
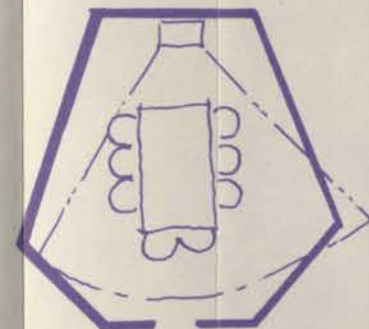
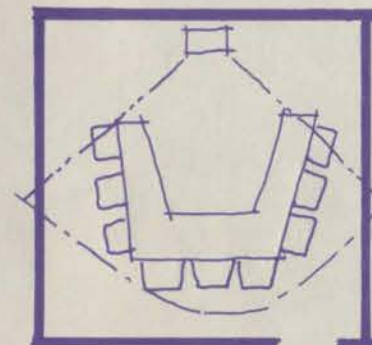
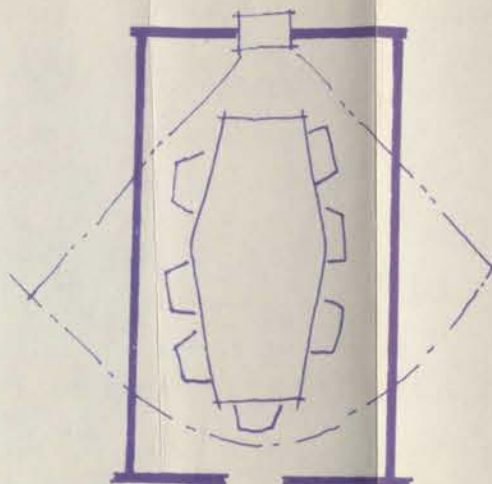
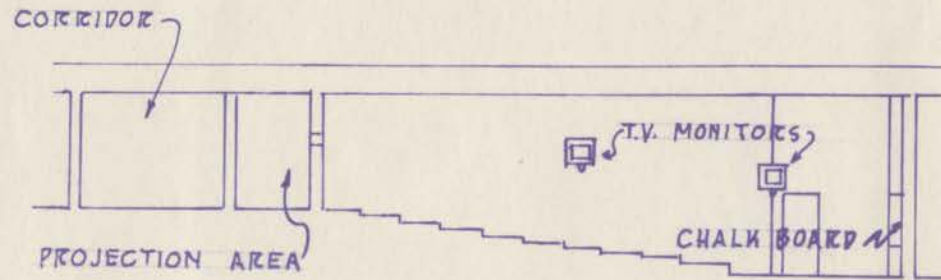


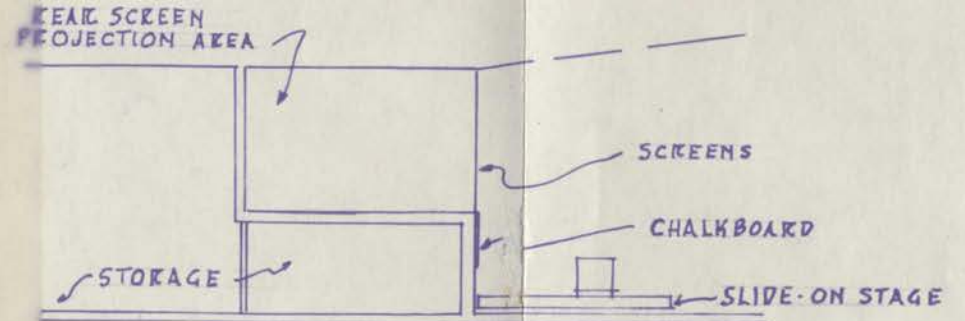


IMAGE PROJECTION TYPES FOR LECTURE HALL

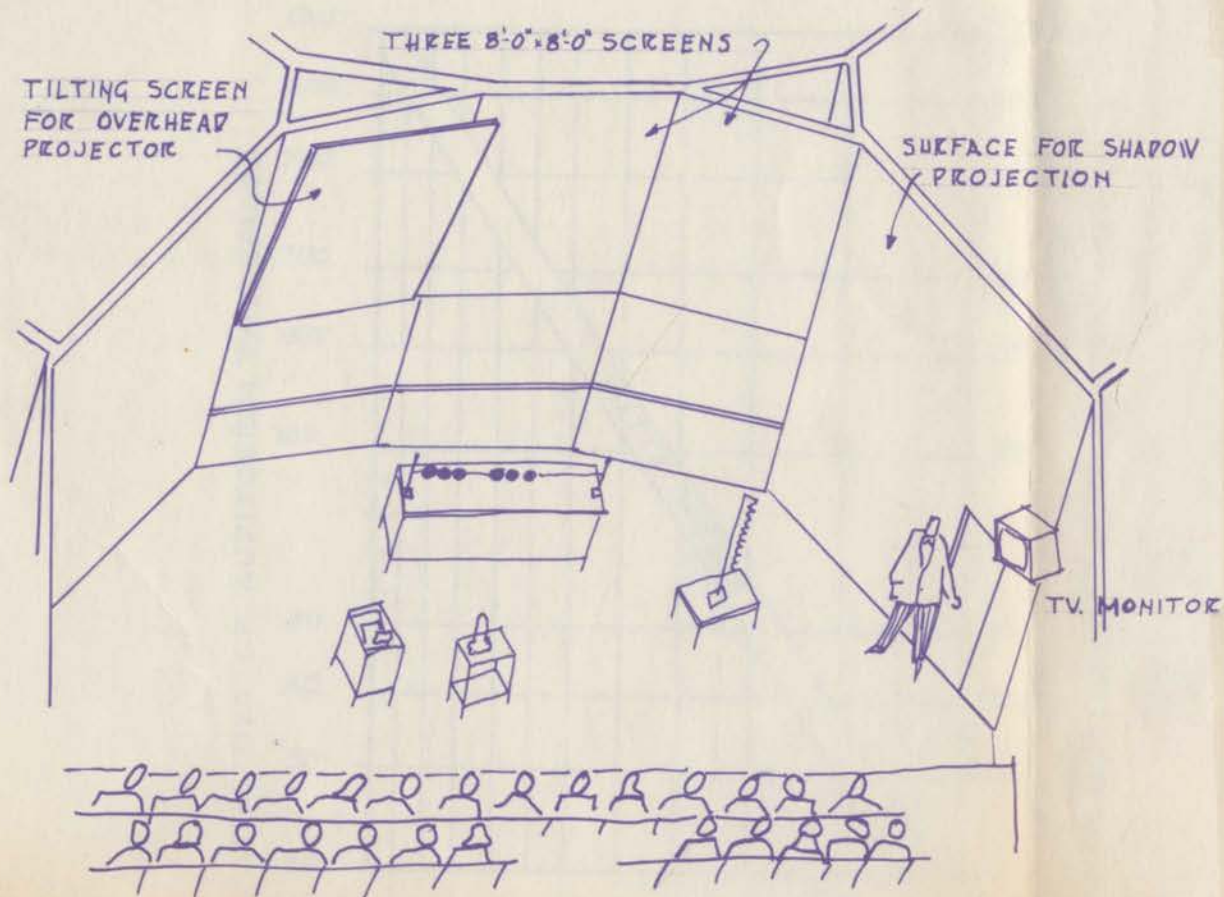
FRONT PROJECTION



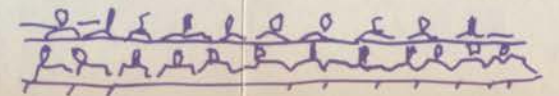
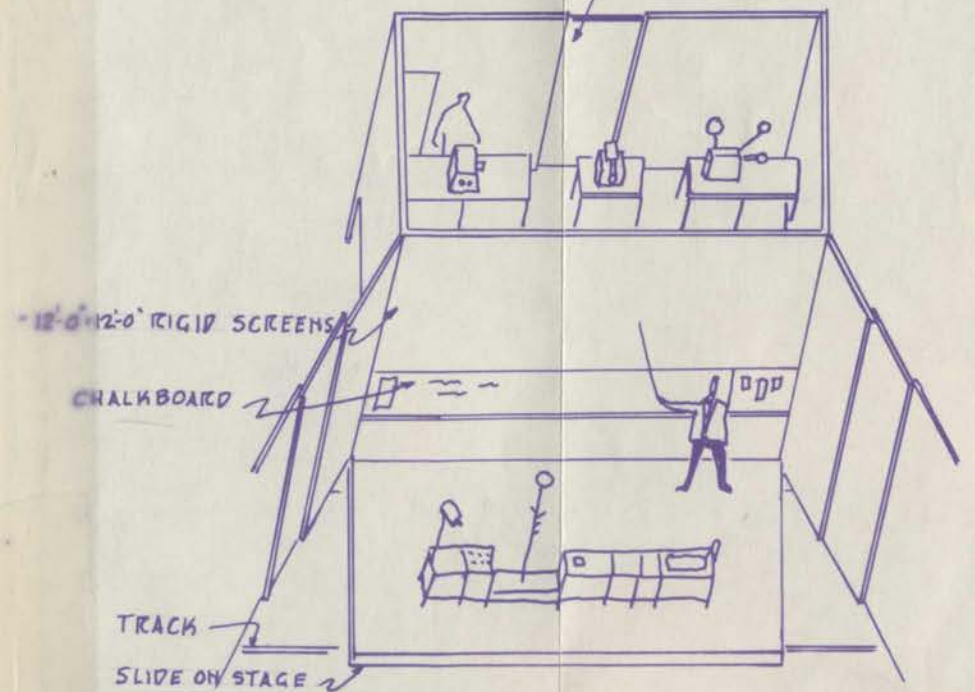
REAR SCREEN PROJECTION



TYPICAL SECTION



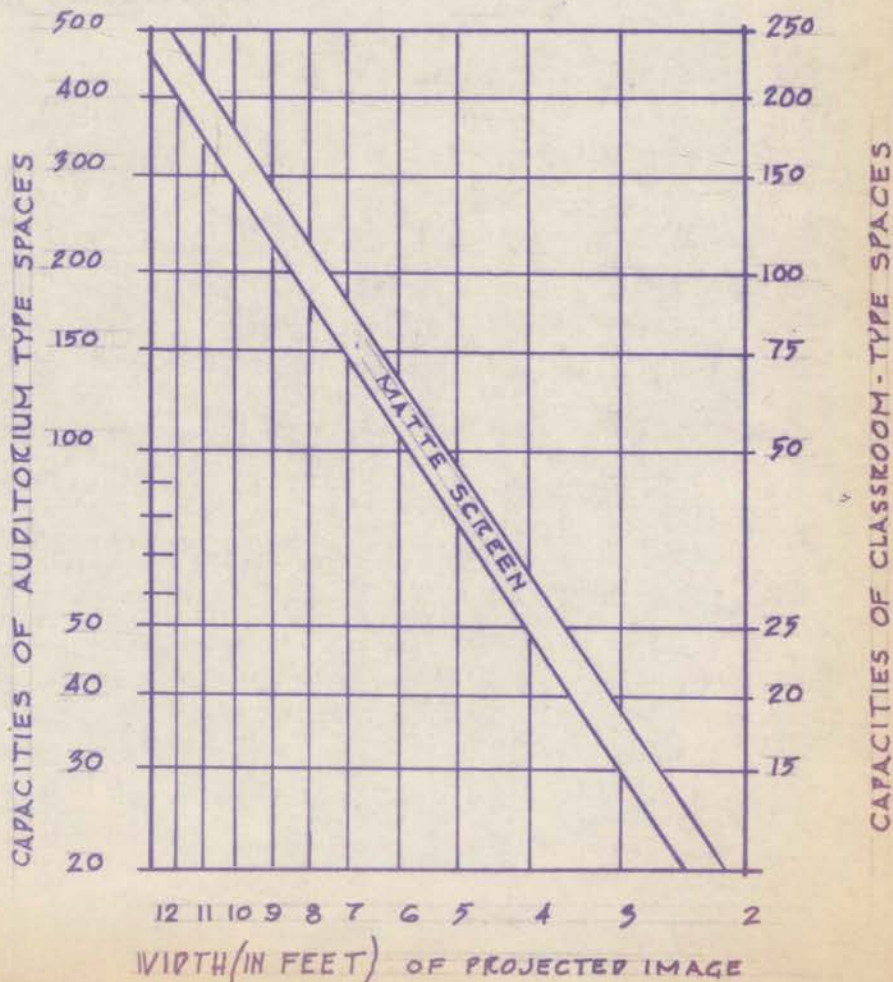
REAR SCREEN PROJECTION AREA



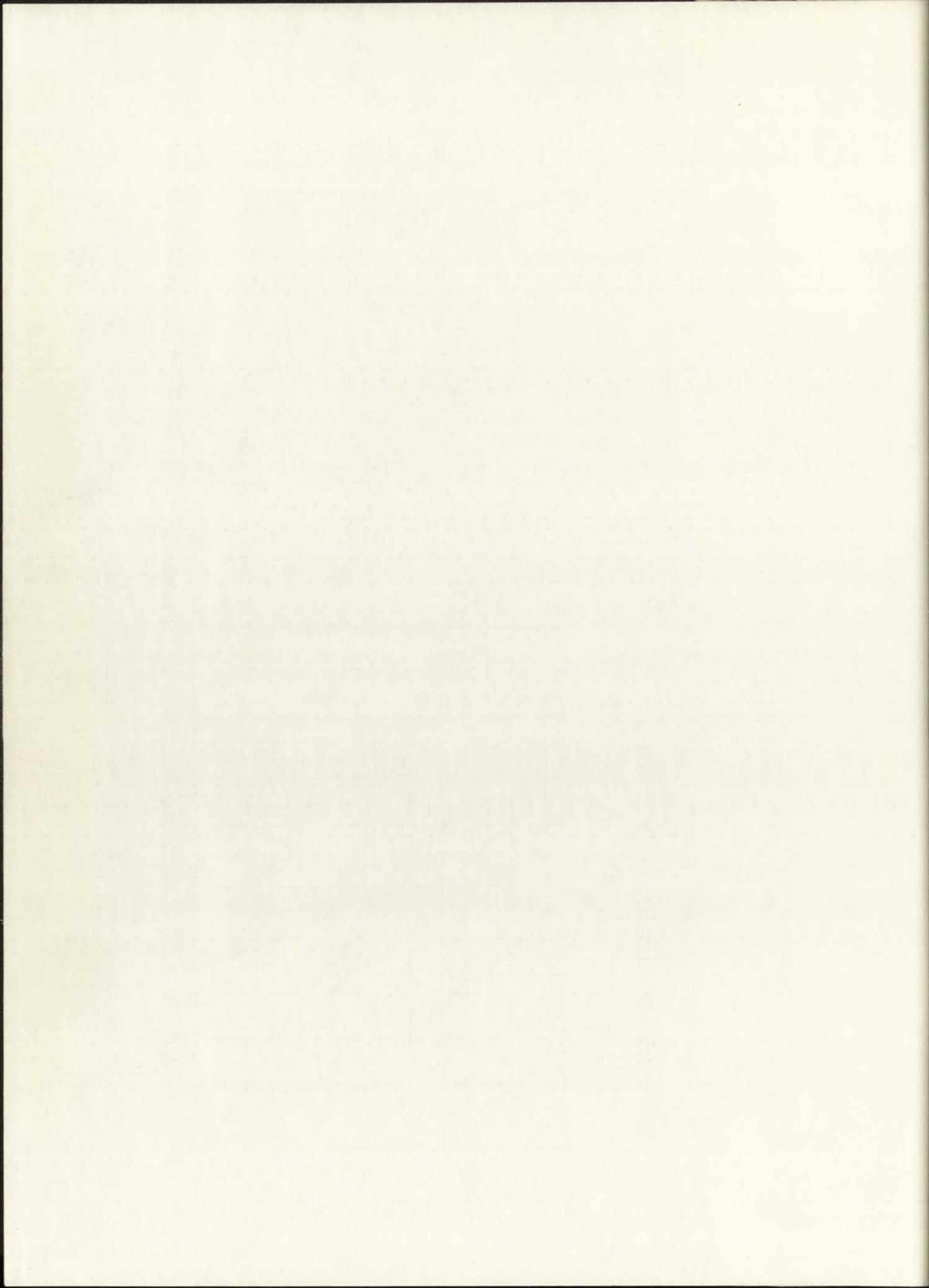


NUMBER OF VIEWERS - PROJECT IMAGE

Once the image size and viewing area are determined, the actual capacity is based on the function of the space. The following graph* shows in very broad terms a relationship between image size and capacity for the two general types of space indicated:



*Based on material published by the Eastman Kodak Co., Rochester, N. Y.



VI COMPLETED PROJECT FIGURES

A. TOTAL SQUARE FOOTAGE BREAKDOWN

Gross square footage 76,497

B. SQUARE FOOTAGE PER STUDENT

76

C. ESTIMATED COST

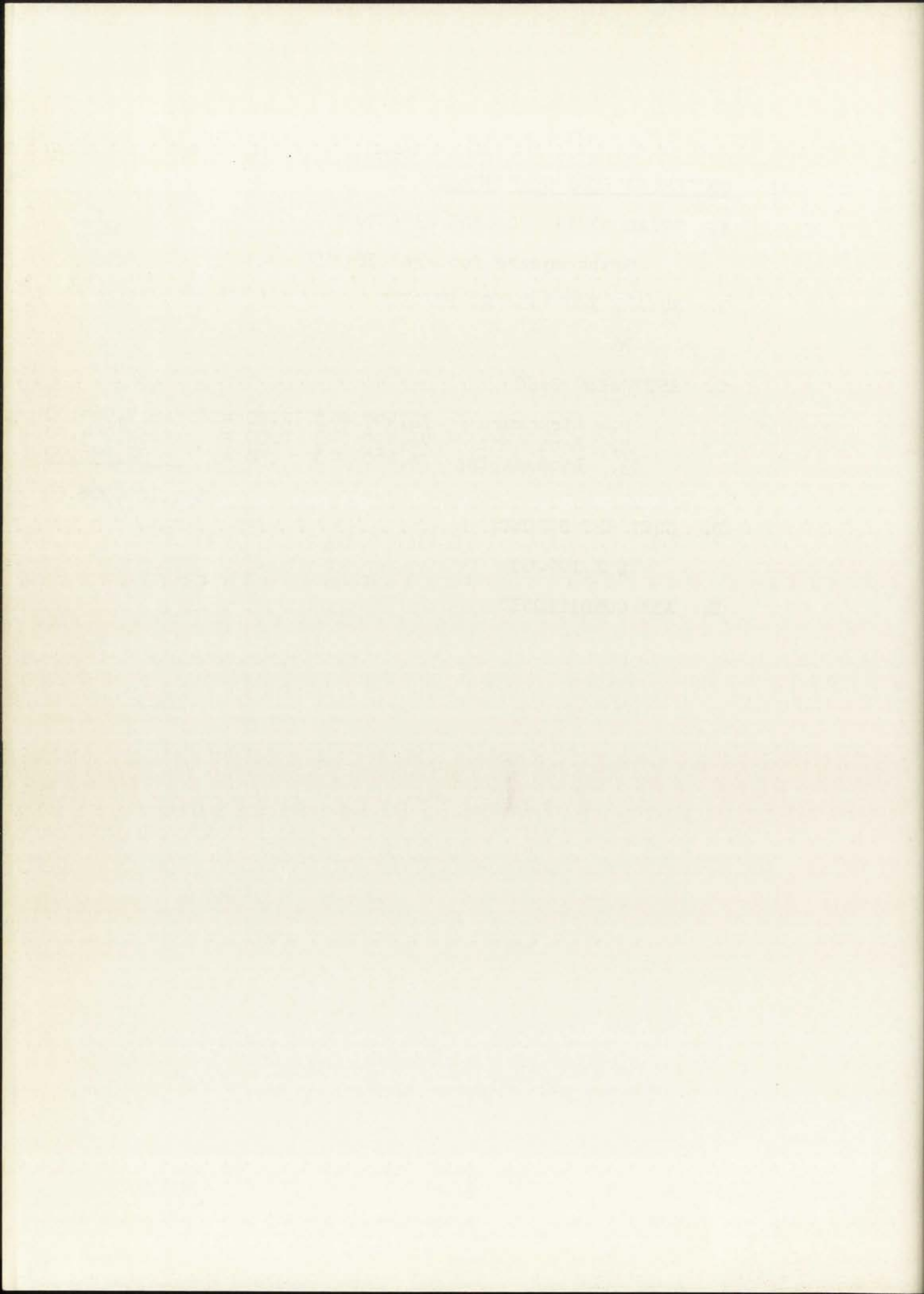
1. Structure	76,497	@	\$ 12.00	=	\$ 917,964.00
2. Equipment	76,497	@	\$ 2.00	=	152,994.00
3. Landscaping	76,497	@	\$.50	=	<u>38,248.00</u>

\$ 1,109,206.00

D. COST PER STUDENT

\$ 1,109.00

E. AIR CONDITIONED



PRESENTATION REQUIREMENTS

- A. PROGRAM
- B. DRAWINGS
 - 1. Site Plan Scale 1" = 50'-0"
 - 2. Floor Plans Scale 1/16" = 1'-0"
 - 3. Elevations Scale 1/16" = 1'-0"
 - 4. Architectural Sections Scale 1/16" = 1'-0"
 - 5. Interior Perspectives
- C. PHOTOGRAPHS
 - 1. General Views
- D. MODEL Scale 1/16" = 1'-0"

MEMORANDUM

TO : [Illegible]

FROM : [Illegible]

SUBJECT : [Illegible]

[Illegible text follows, appearing as faint lines of a memorandum body.]

LOCATION MAP
HO SCALE



COMANCHE RD.



CHELWOOD

JAIN TABO BLVD.

EUBANK BLVD.

WYOMING BLVD.

CANDELAIA RD.

MENAU BLVD.

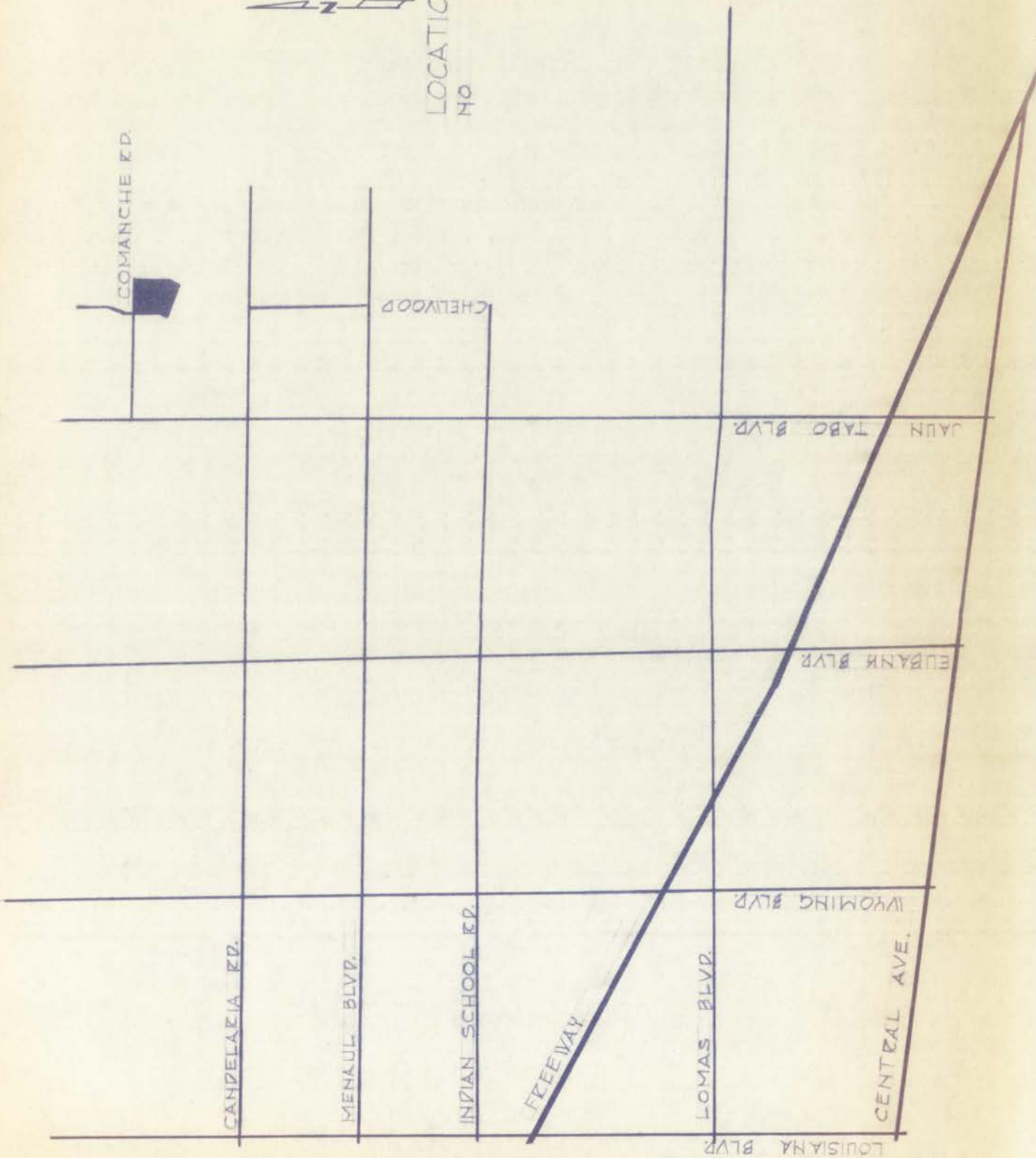
INDIAN SCHOOL RD.

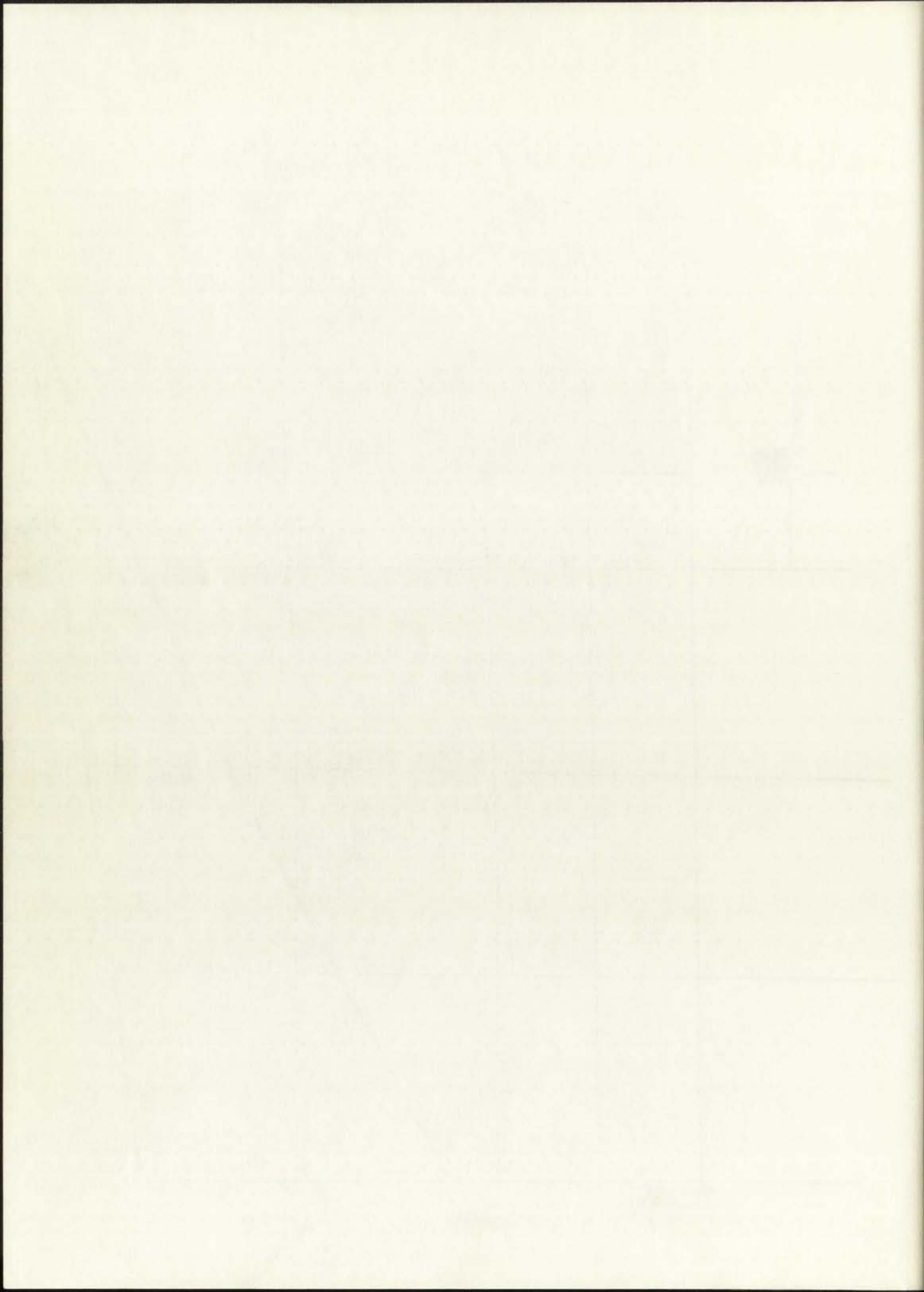
FREEWAY

LOMAS BLVD.

CENTRAL AVE.

LOUISIANA BLVD.



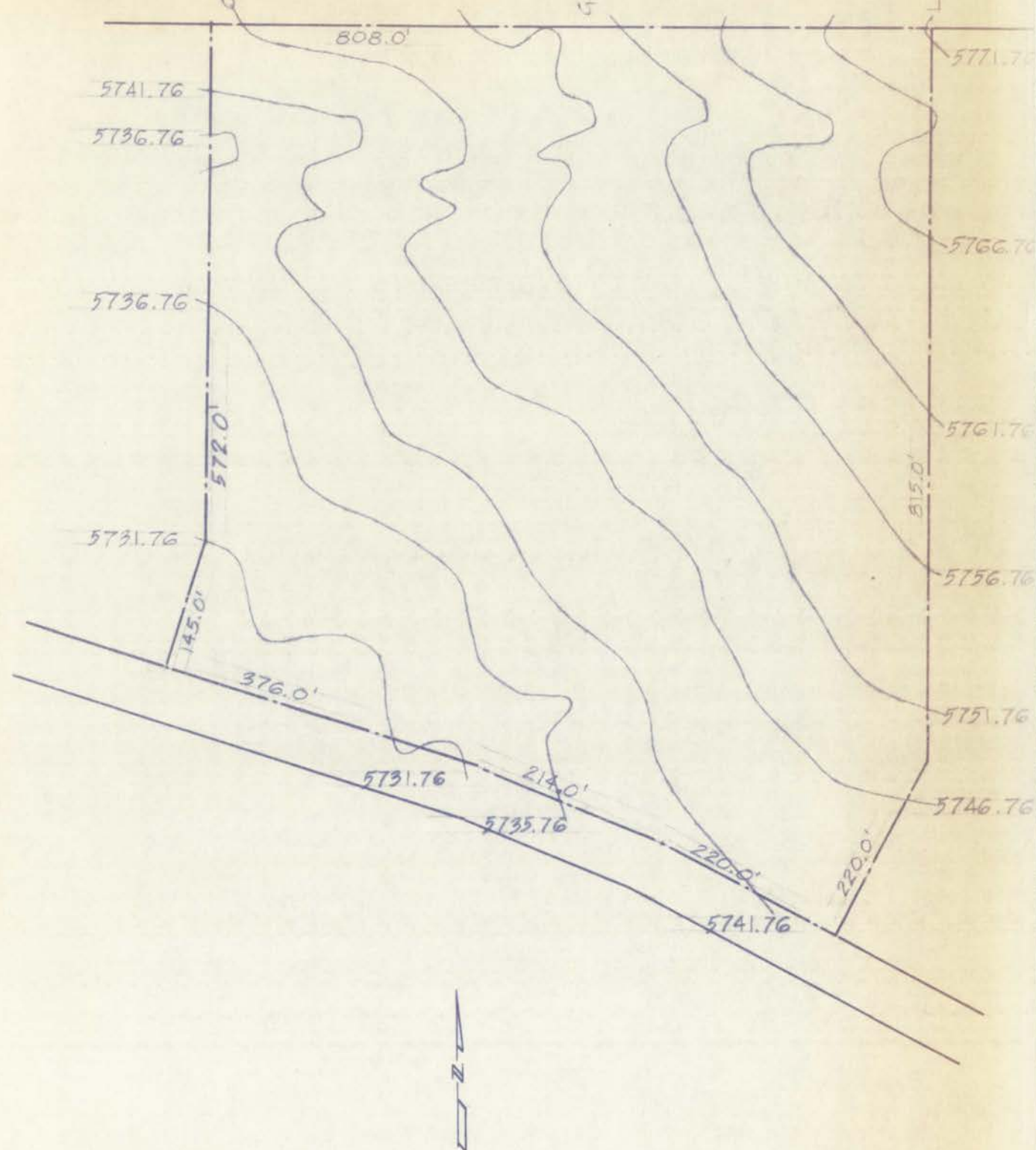


MANCHE RD.

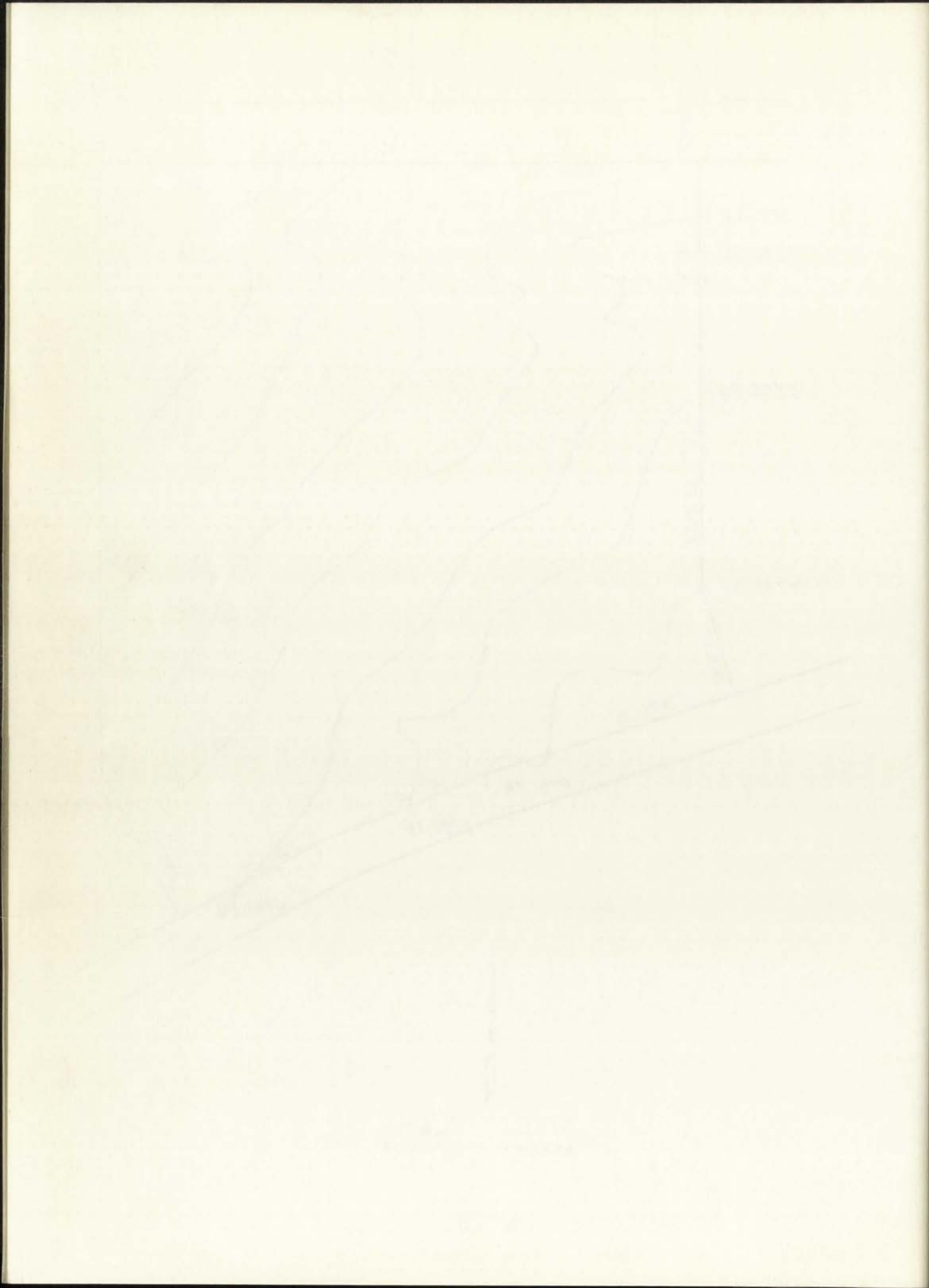
CHELWOOD BLV

GEORGENE PI

LA CHARLES PI



SITE PLAN
 SCALE: 1/16" = 10'-0"



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Better Lighting for Better.....Educational Press
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American School & University
January 1965.....Suttonheim Press

Dr. Meyer.....Albuquerque Public Schools
A. Mathews A.I.A.....Albuquerque Public Schools

CHAPTER I

The first part of the book is devoted to a general introduction to the subject of the history of the world.

The second part of the book is devoted to a general introduction to the subject of the history of the world.

The third part of the book is devoted to a general introduction to the subject of the history of the world.

The fourth part of the book is devoted to a general introduction to the subject of the history of the world.

The fifth part of the book is devoted to a general introduction to the subject of the history of the world.

The sixth part of the book is devoted to a general introduction to the subject of the history of the world.

The seventh part of the book is devoted to a general introduction to the subject of the history of the world.

The eighth part of the book is devoted to a general introduction to the subject of the history of the world.

The ninth part of the book is devoted to a general introduction to the subject of the history of the world.

The tenth part of the book is devoted to a general introduction to the subject of the history of the world.



site plan

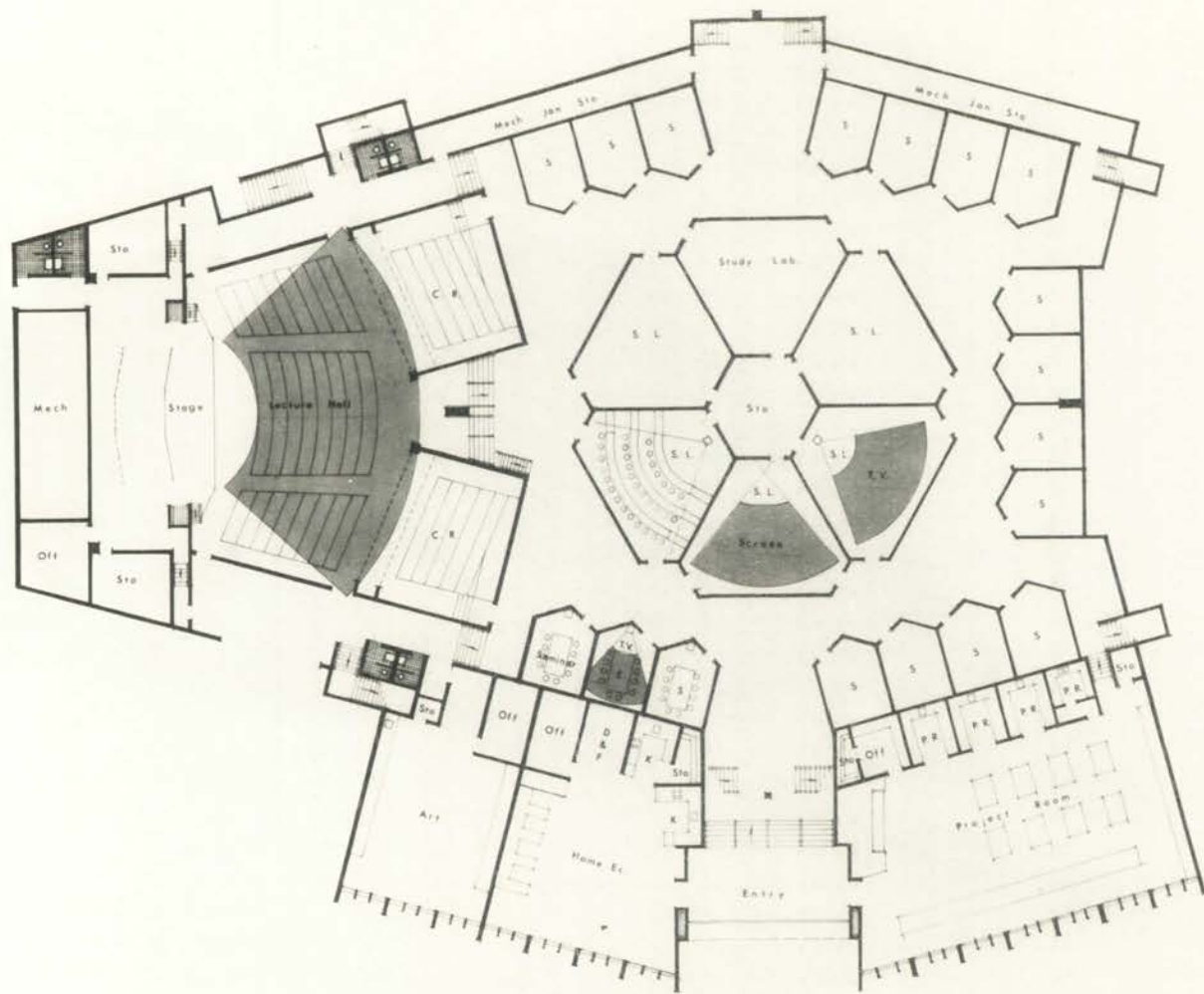
scale: 1" = 60'-0"



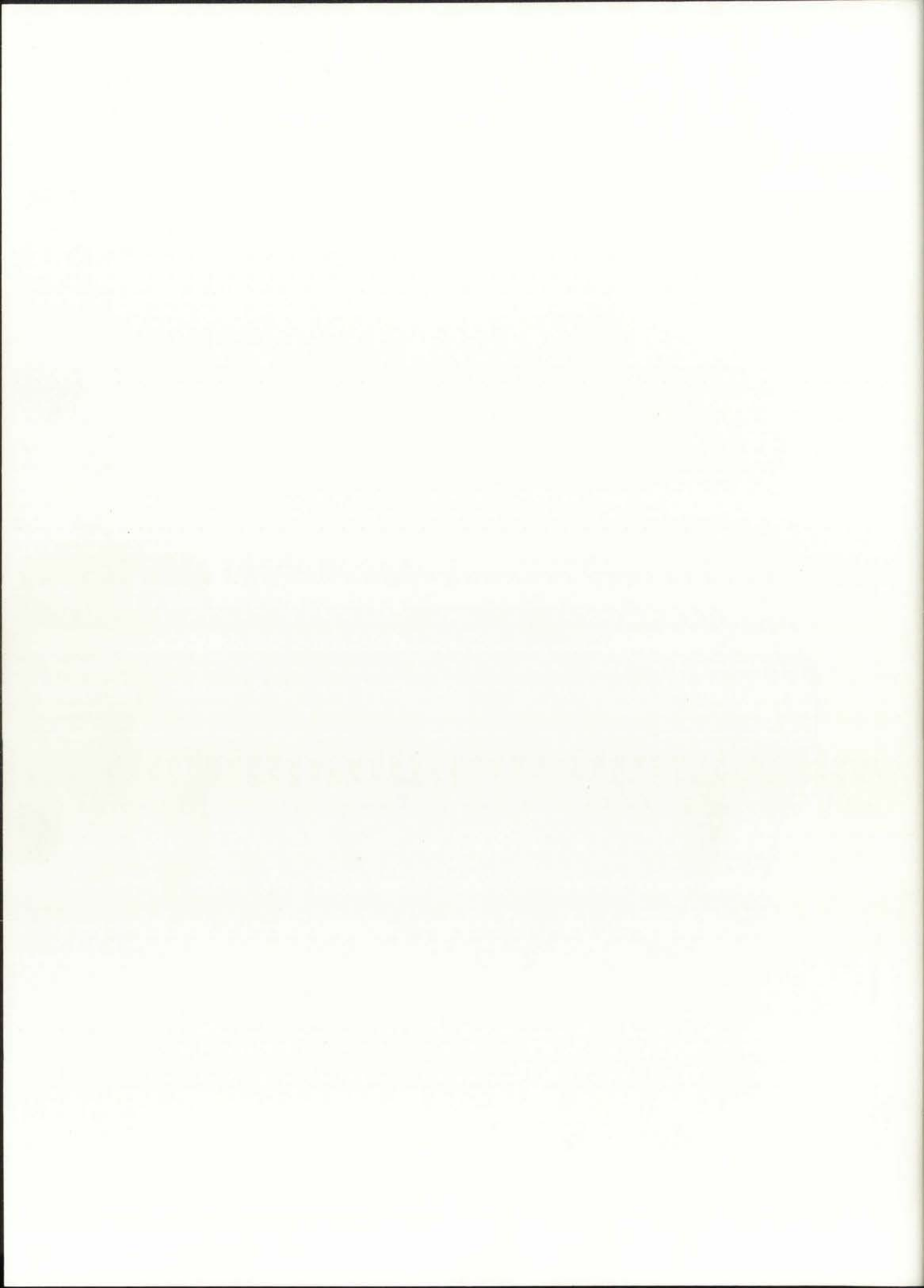
FINE ARTS LIBRARY

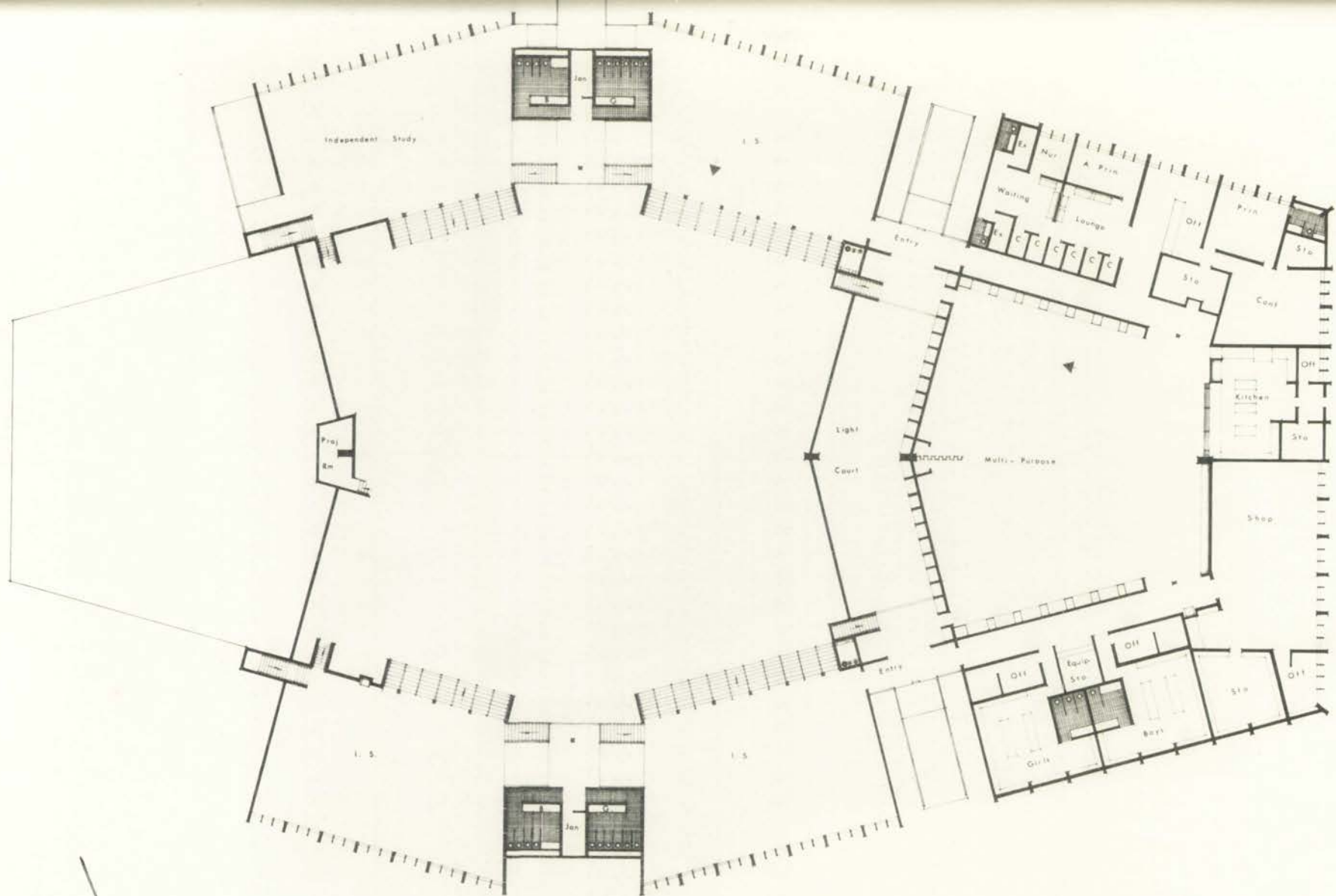
a
middle
school



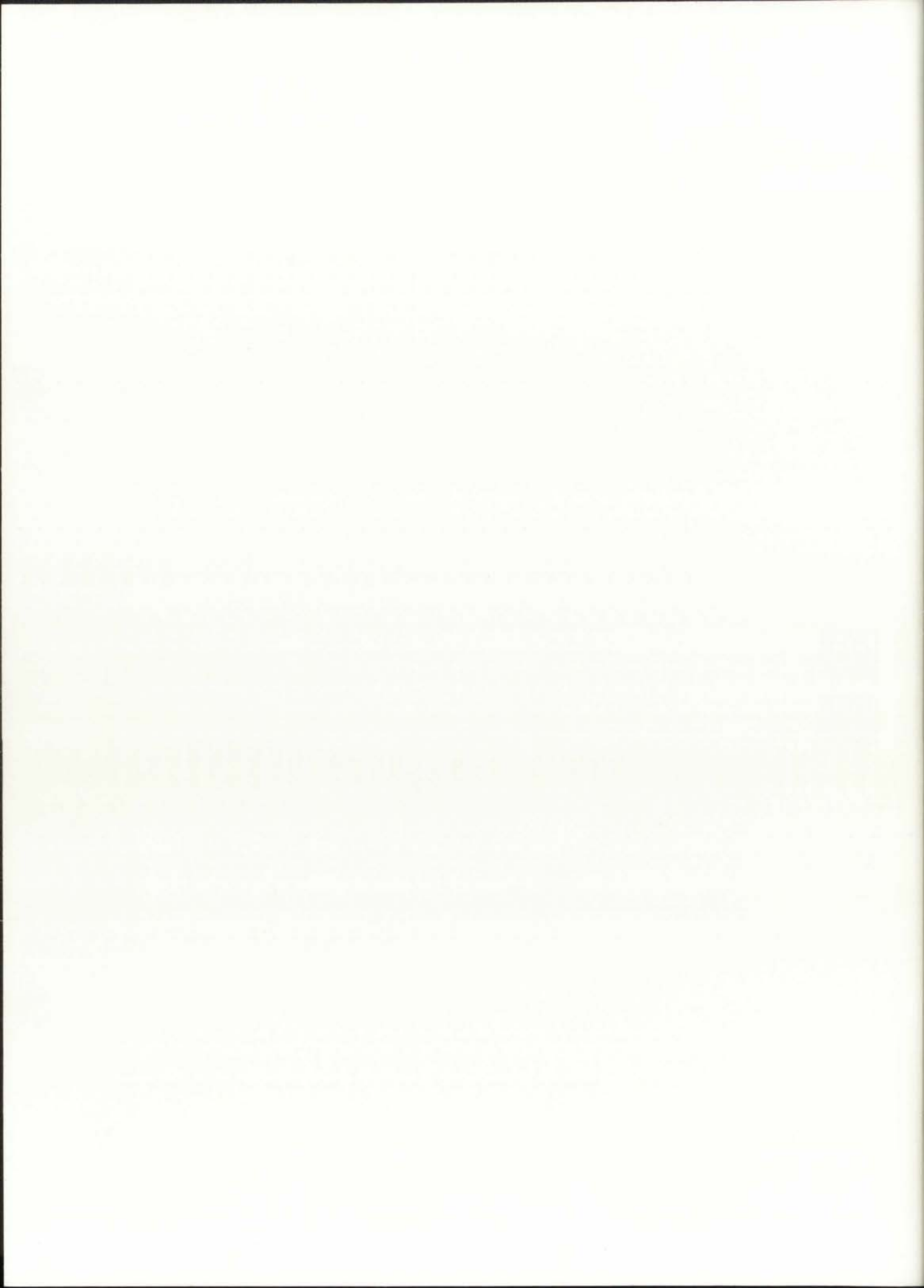


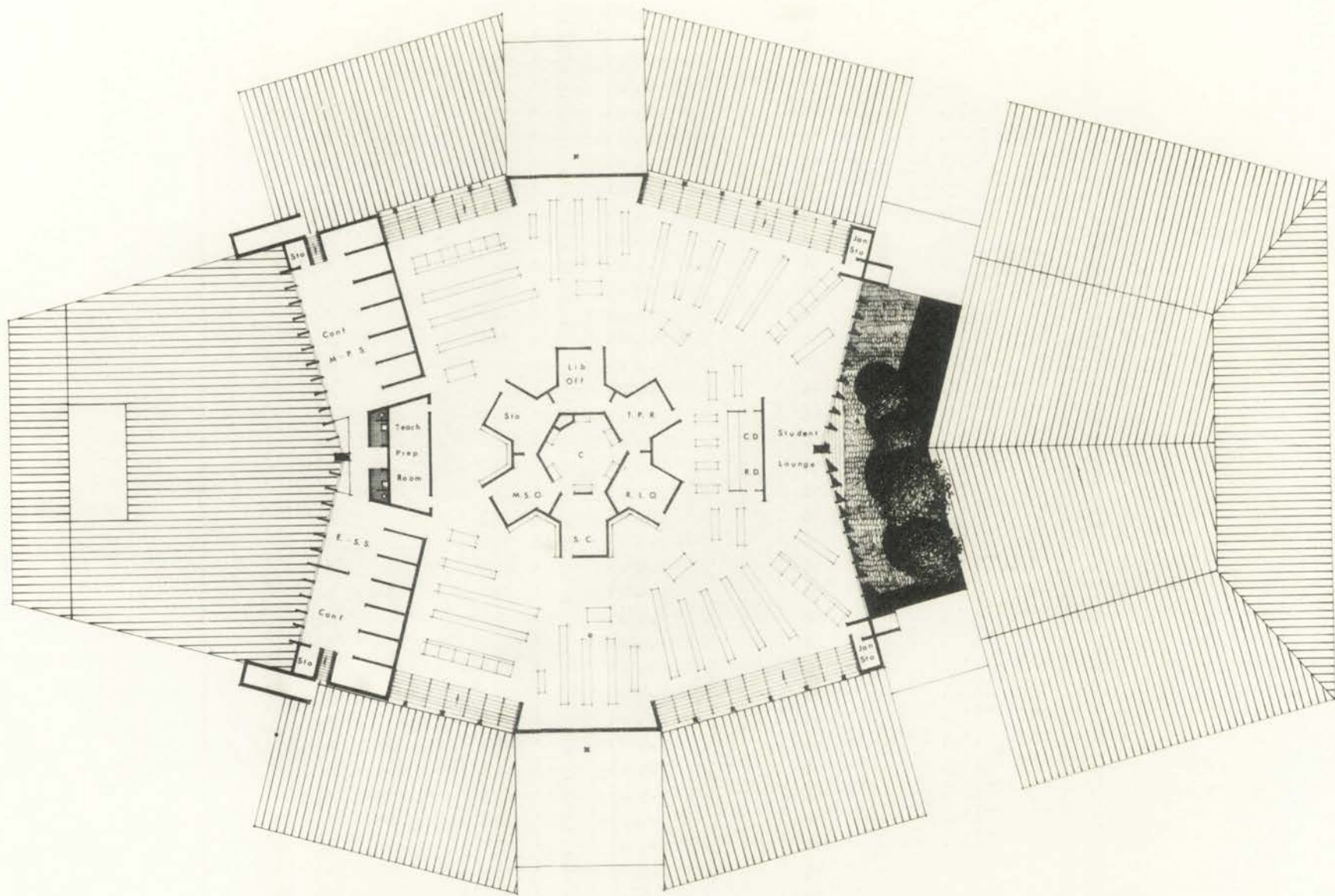
lower level plan



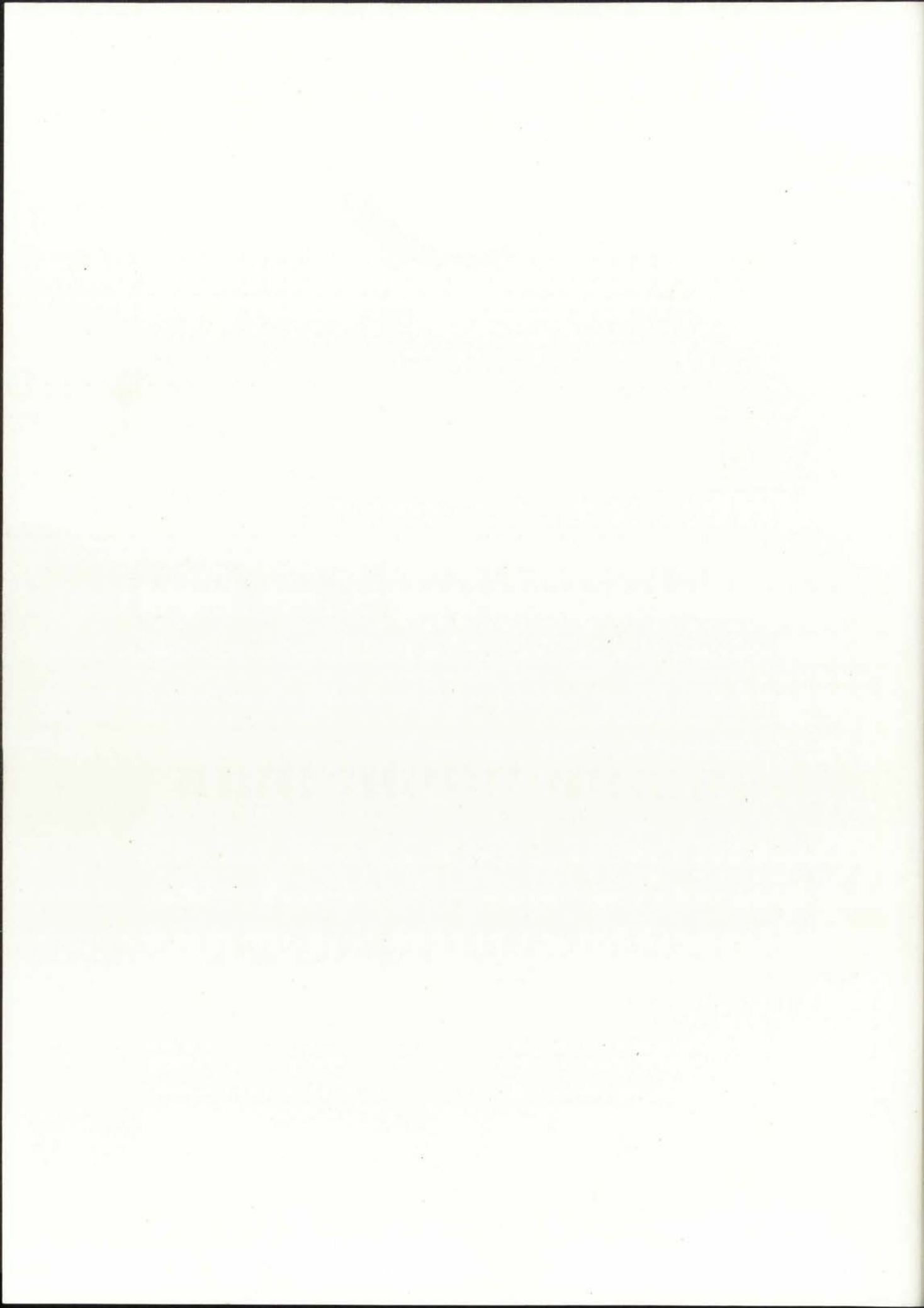


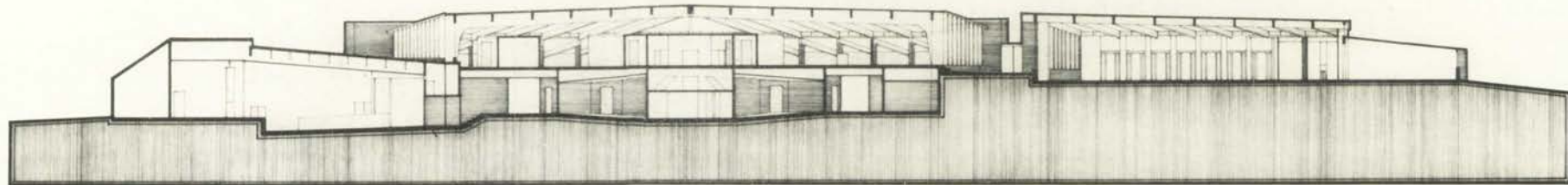
intermediate level plan



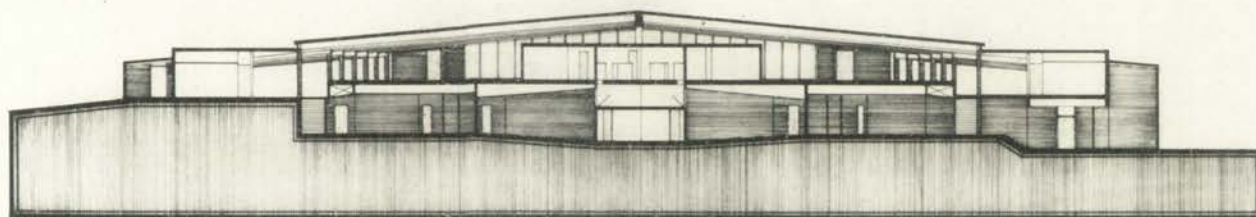


upper level plan





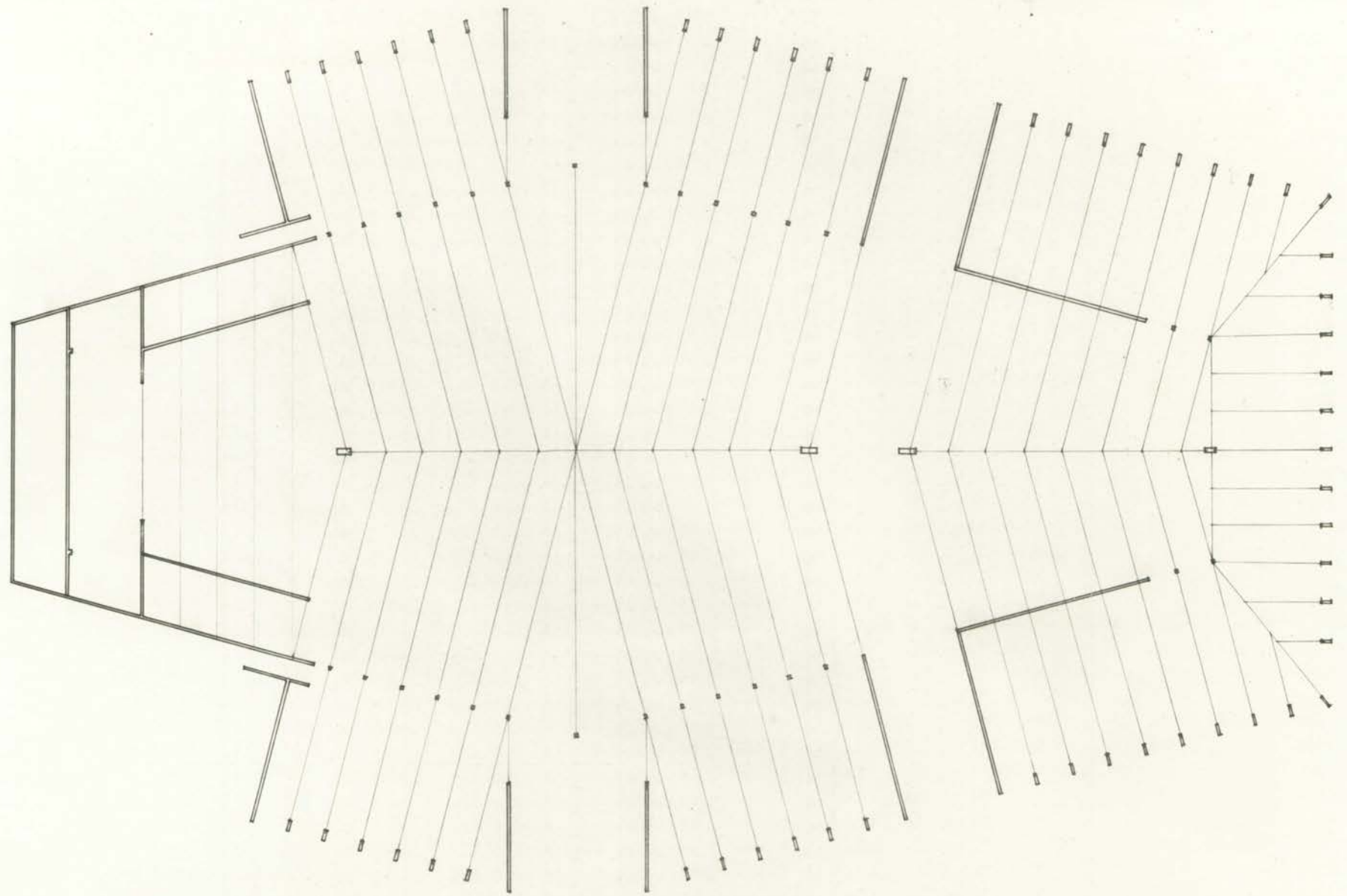
longitudinal



transverse

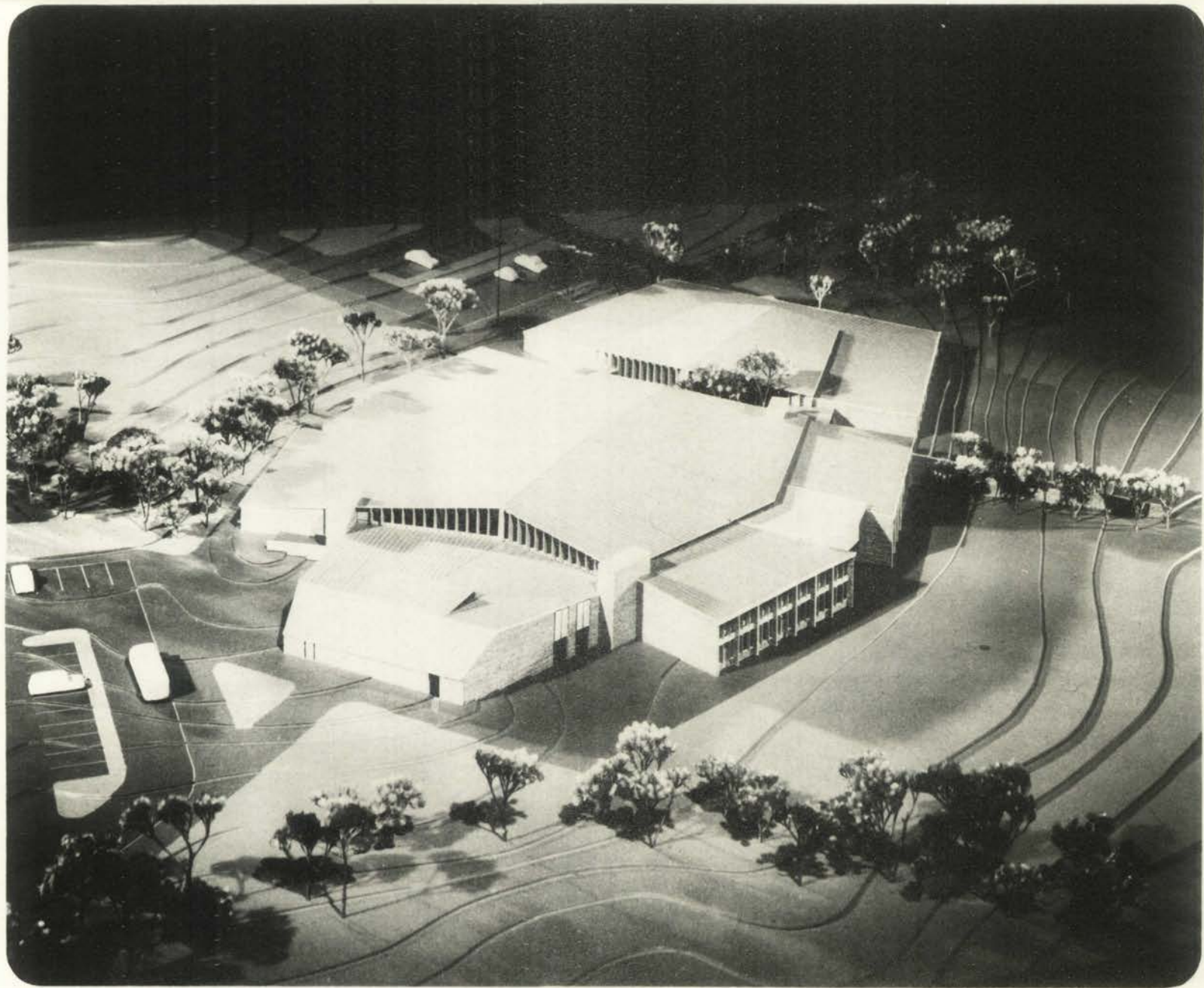
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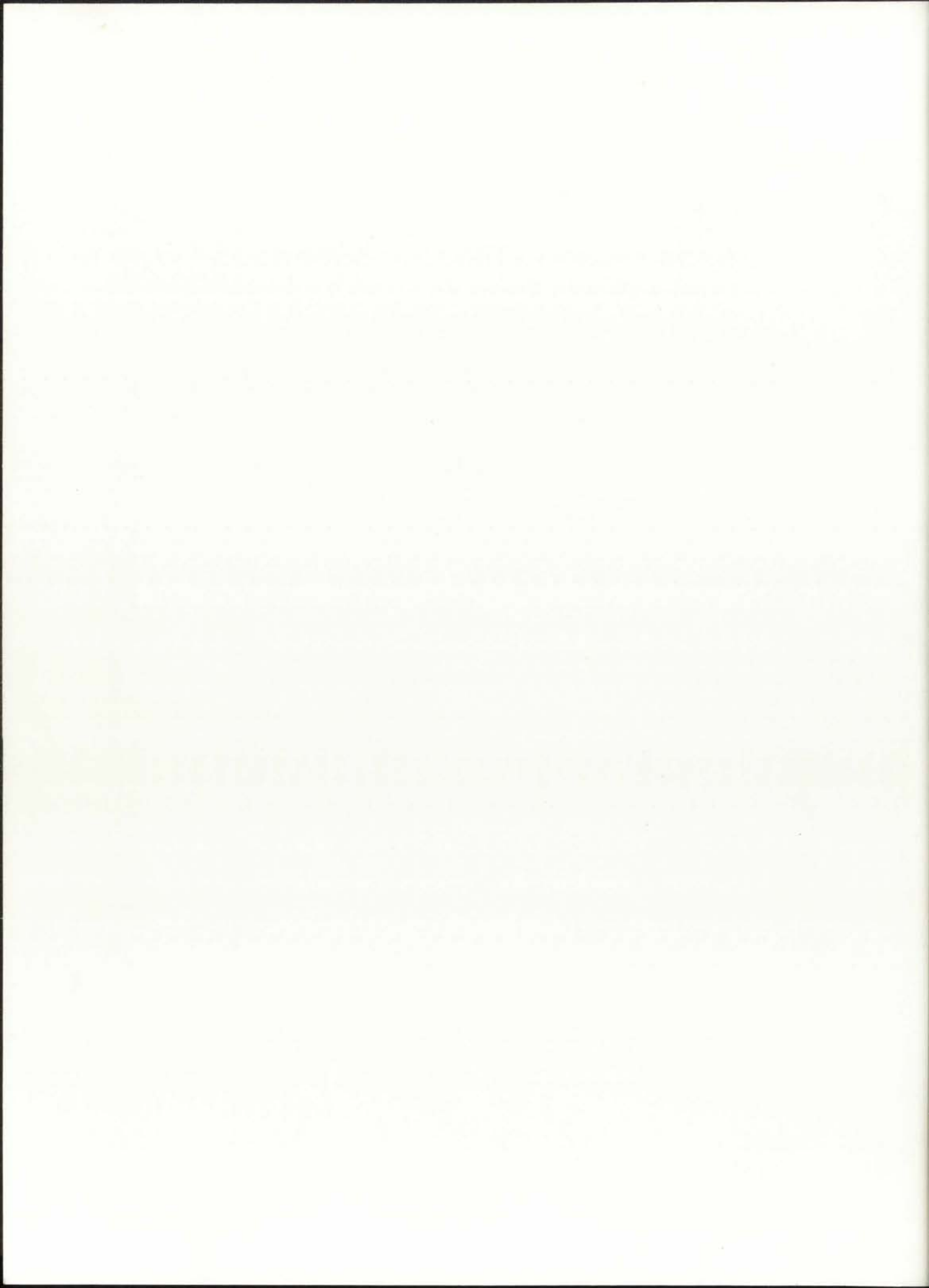


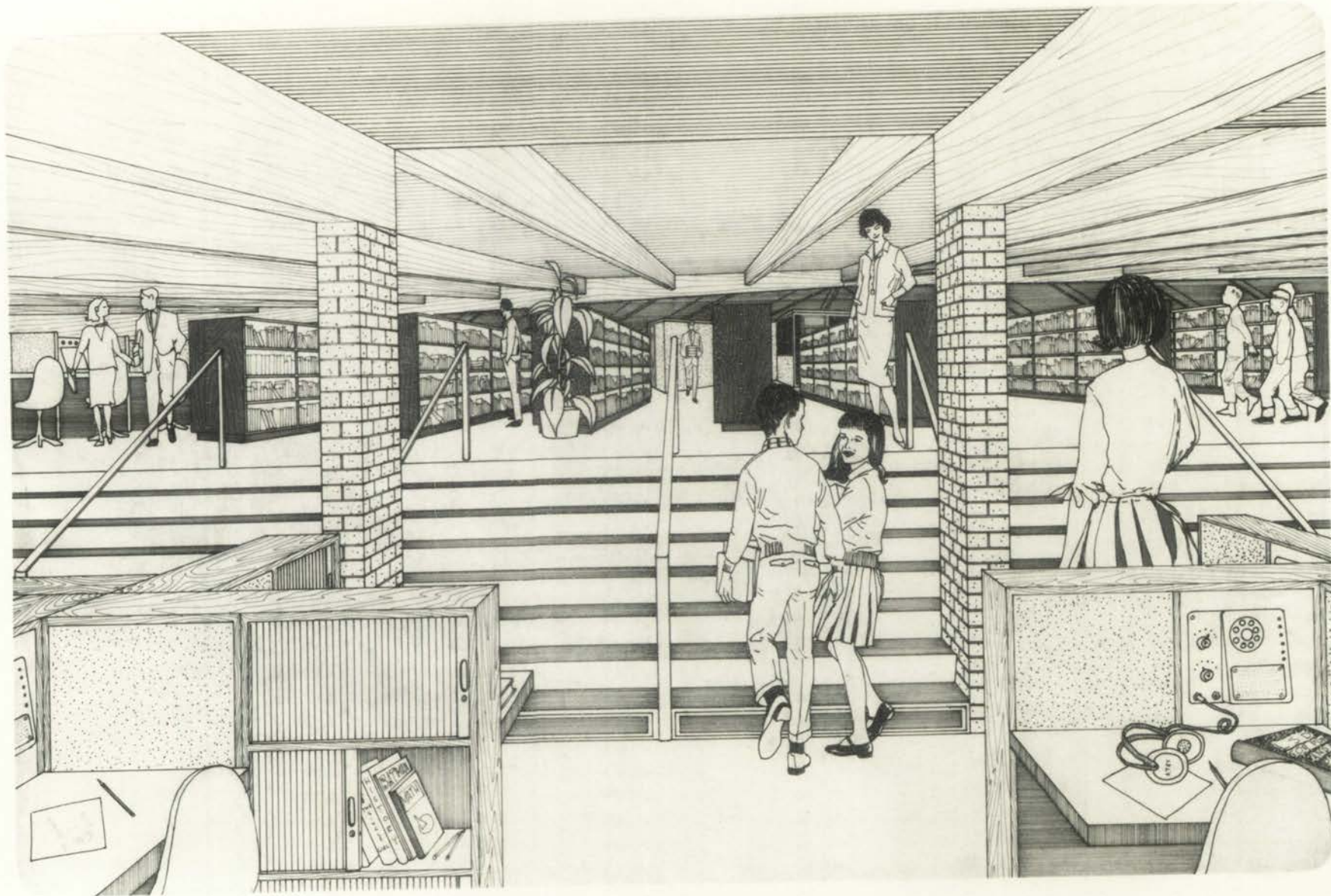


structural framing plan



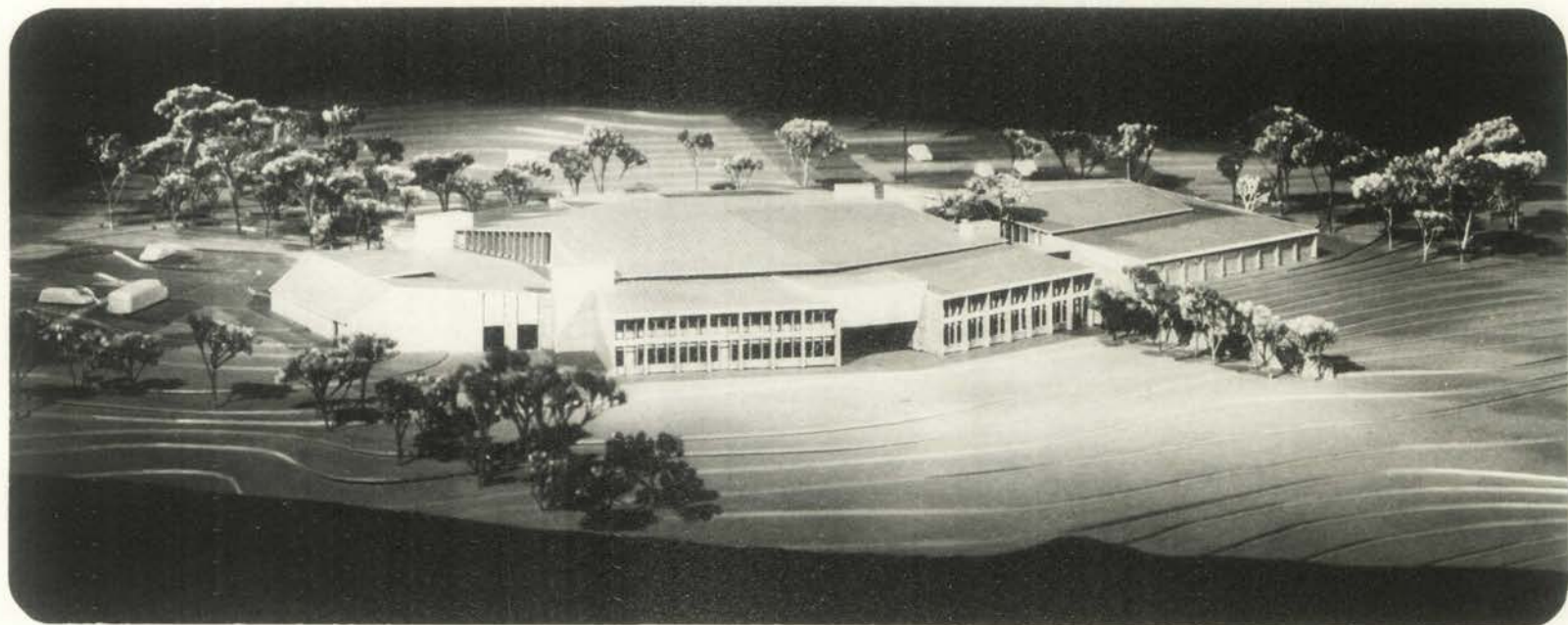






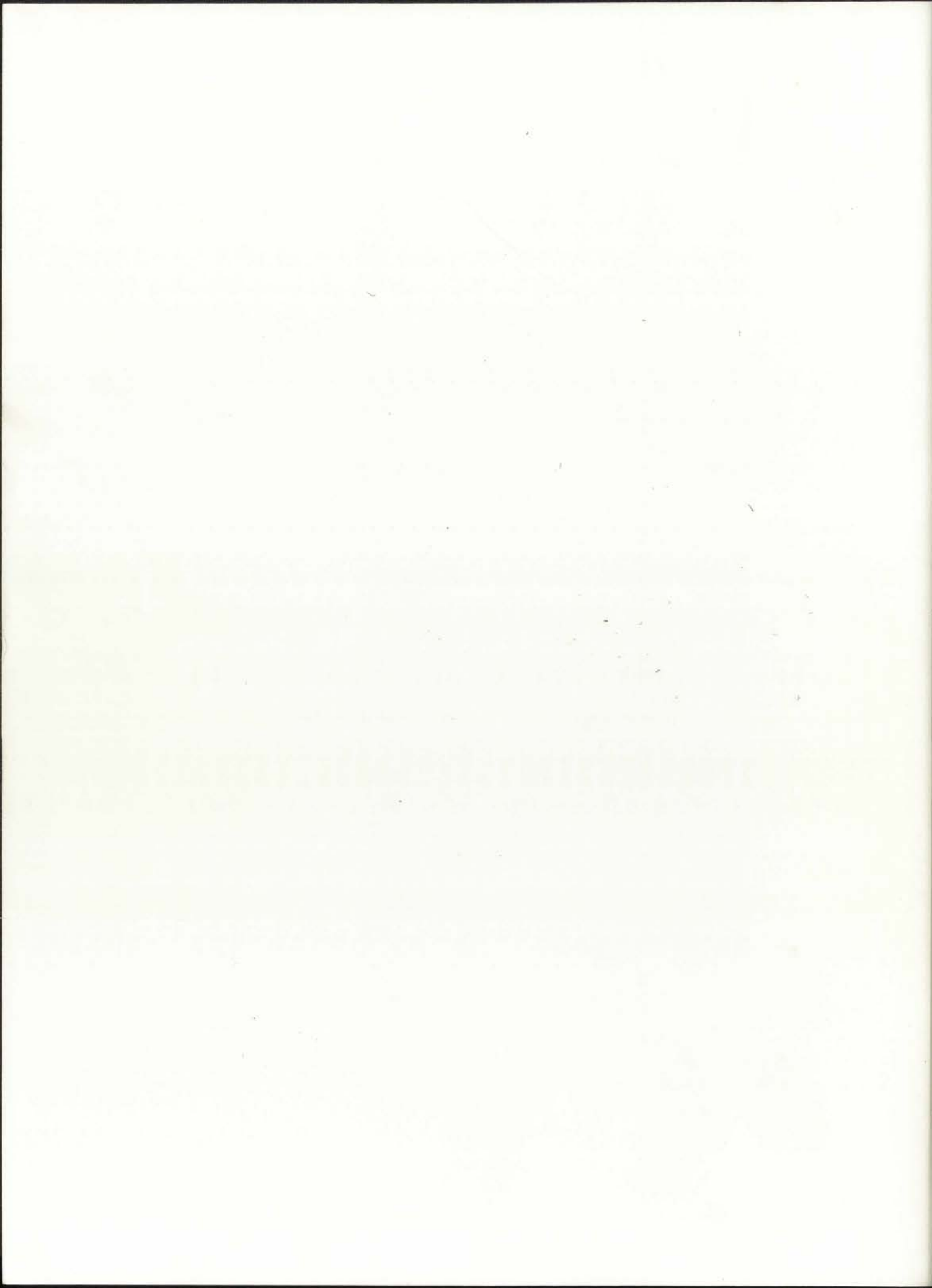
library and study carrels

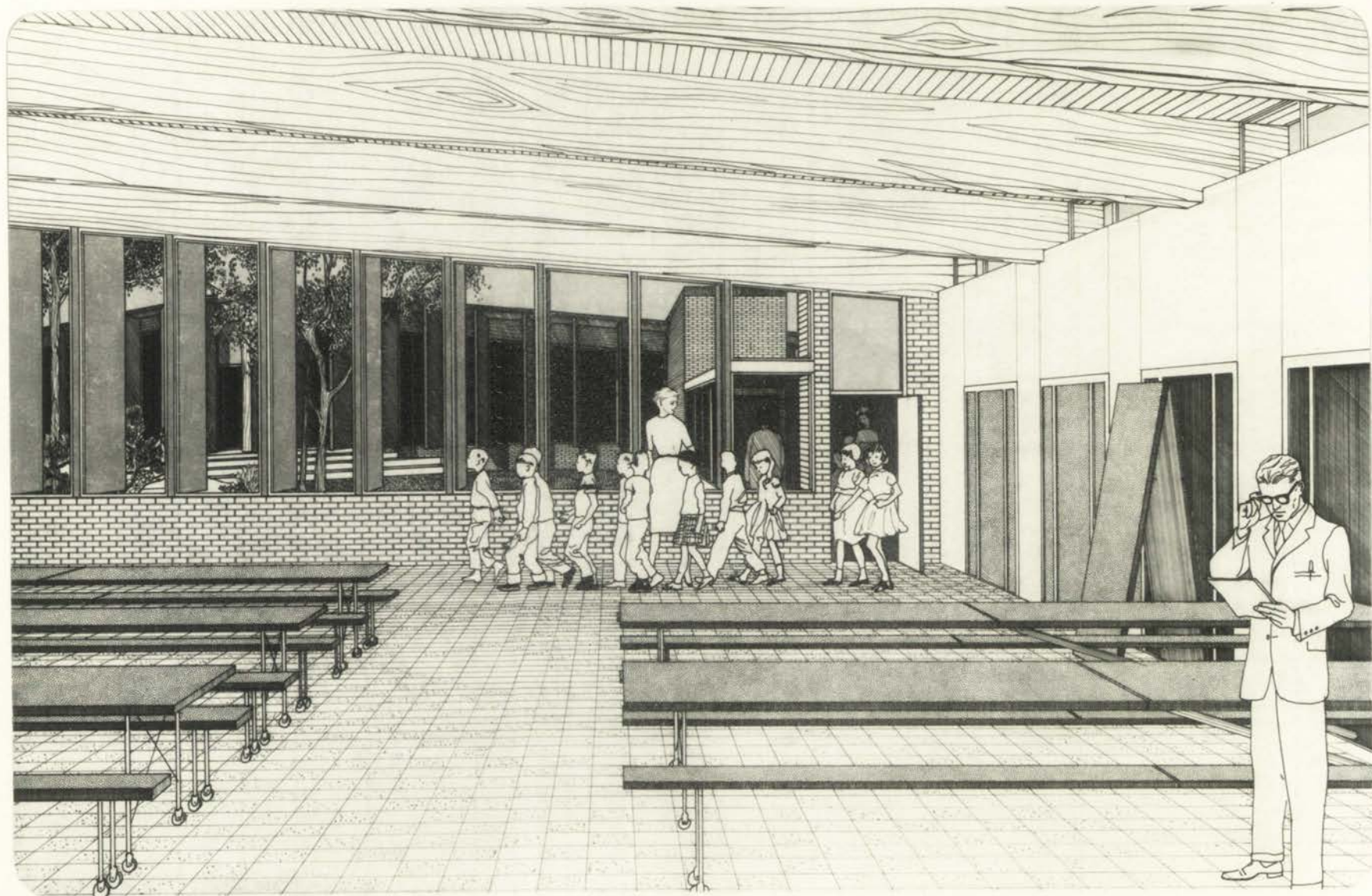












multi-purpose room and light court



