

A WOMEN'S GYMNASIUM
FOR KANSAS STATE COLLEGE

By

KEITH HARRY HINCHCLIFF
B. S., Kansas State College of
Agriculture and Applied Science
1933

A THESIS

submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE

TABLE OF CONTENTS

	Page
INTRODUCTION.....	1
STATEMENT OF PROBLEM.....	2
STUDIES IN PARTI.....	6
DEVELOPMENT OF FINAL SCHEME.....	16
CONCLUSION.....	39
ACKNOWLEDGMENTS.....	40
REFERENCES.....	41

INTRODUCTION

Selection of a problem, which would offer the many and varied conditions found in actual practice, resulted in the choosing for this thesis the problem of designing a women's gymnasium building for Kansas State College.

While such a problem takes in a wide scope in planning, it also presents not only a problem for elevation considerations in keeping with existing buildings on the campus, but must also be a study of a building that will function.

For an ultimate consideration I have kept before me the ideal of the greatest practicality compatible with architectural fitfulness. The prime factor of consideration next to logical unit and room arrangement, has been to provide adequate lighting.

A women's gymnasium building is increasingly necessary to the campus, because of the limited quarters now used, and the poorly planned locker space which at present is both inefficient and lacking in certain sanitary requirements. Furthermore, the present quarters are incapable of expansion.

Since the physical education of the girls is quite intimately associated with their social and other activities, it

has seemed reasonable to include the dean of women, the Y.W.C.A., and Mortar Board in the building.

The primary needs of the women's physical education department were incorporated in all of these plans, in determining the preferred locations for each room, and of the office or suite of offices.

After consultations between members of the architectural and women's physical education department, it was decided that a women's gymnasium should be designed to meet the requirements as follows:

STATEMENT OF PROBLEM

For the purpose of this problem let us assume that the Women's Athletic Department at Kansas State College has been granted funds for the purposes of erecting a building and purchasing equipment for a new Women's Athletic Building.

This Building will consist of the following units:

1. Physical Education for Women (Capacity 600 women)

(a) Instructional

- (1) Gymnasium 60' x 90' (with equip.room)
- (2) Small Gymnasium 40' x 50'
- (3) Games Room 30' x 30'
- (4) Class Room 30' x 30'

(5) Swimming Pool 25' x 60'

Observation Gallery 15' x 60'

(b) Service

(1) Locker and dressing room (service
100 per hour)

Full length lockers for street
clothes

(2) Shower Room

At least 30 shower heads

(3) Lavatory and toilets

(4) Rest Room

(5) Matron's Room

(6) Hair Drying Room

(7) Storage and Equipment Room

(c) Administration

(1) Outer office (secretary) 12' x 15'

(2) Four inner offices for instructors
10' x 12'

(3) Instructor's showers and lavatory and
toilets

(4) Dressing room for instructors

(5) Library and study room for majors

2. Offices of the Dean of Women

This shall consist of a suite of offices for the Dean of Women, together with closets, toilet room, etc.

3. Offices of the Y. W. C. A.

This shall consist of a suite of offices similar to the Dean of Women's.

4. Offices of W. A. A. (Women's Athletic Association)

5. There shall be a Women's Lounge or series of lounges, together with coat rooms and necessary toilet room.

Since considerable thought and study are necessary for a problem of this type the procedure in this paper will be to present a discussion and the results of this development, telling why some additions were made and why others were subsequently omitted. During the development of the problem, many plans were conceived. Some have been developed in this thesis, others were discarded as not possessing sufficient merit to be considered here. In the development, three-story schemes were discarded for the two-story structure. Locker space was changed from a basement location to the main floor level in order that the locker rooms might better serve the gymnasium and natatorium units. Two distinct units developed by having a service, locker room part of a minor

element unit; and a major unit consisting of gymnasium, swimming room, and administrative offices.

The material for the research of this problem was gathered from various sources, especially from books in the architectural library, and from periodicals; from plans of similar types of buildings erected at colleges having similar conditions, and from advice of the architectural adviser

It is not claimed that the schemes submitted represent all of the possible solutions which might be applied to this problem, but it is my belief that the final plan developed in this thesis possesses the greatest merit as a possible structure for Kansas State College.

In regard to the plot for the location of this building there are only a few logical places open for consideration. These are all located on the the space south of the Engineering building and north of Anderson Avenue. It is necessary, since the activity centers of several departments are located in the building, that it be located as nearly as possible among the other buildings used by these groups, and at the same time be accessible to a playing field for the athletic department.

From the standpoint of proximity to other centers the

location just opposite the Engineering building and facing north seems desirable. A second location, and probably next in desirability, is the location west of the Home Economics Building. The location most nearly adapted to the final developed plan, is the level plot where the tennis courts are now located. The other plot across the road and east of the stadium is less desirable because of its distance from existing social centers.

STUDIES IN PART I

Scheme No. 1

The first plot, as suggested by the physical education department, was the north-east corner of the previously described plot. Such a position as this is contrary to the general campus plan. That is not characteristic, to have a building facing any except the cardinal points. However, the development of the first plan, which I will consider in this thesis, will be one of this type.

This plan has the advantage of closeness to the other campus buildings which house activities concerned with this particular group of students. This plan also allows a unique arrangement for the administration office and other offices. It also allows considerable light in these units. On the other hand, it is not a flexible building, as the locker rooms being located under the main gymnasium, can

not be extended without altering the gymnasium unit. This feature seems important because of future expansion with future enrollments.

The other limitations of this plan are numerous. For example, the swimmers' locker room, while directly accessible to the natatorium is limited in space to the seating area required above. While this is a very economical use of the space under the seats, it also limits the ventilation and light, which is so necessary to a locker room.

The main locker room and its relation to other rooms is satisfactory, I believe, since a single stair hall allows privacy to students in going to and from the small gymnasium, game room, or large gymnasium. Since the class room is not for students dressed in athletic suits, it was not included in the arrangement with the locker room.

It seems fortunate that there was adequate space for locating of the general rest room near the physical examination room, because during examinations the rest room may be used as an overflow room for students waiting to take their examinations.

The seating of the spectators on a balcony located on a level with the main hall has the advantage of satisfactorily separating the performers and spectators, and at the

same time allowing a comprehensive view of the pool to the spectators.

The general shape of the office space, while quite irregular, lends itself rather nicely to the suites of rooms necessary, and affords privacy and adequate outside lighting. The inner unlighted space is readily used for equipment space in connection with the main gymnasium and for file space, so necessary for the dean of women.

The third floor is limited to offices for the physical education department, W. A. A. offices, and study room with library. A disadvantage in the working of this plan is that the instructors must cross a corridor in order to reach their private stairway. In a later plan the stairway is included in the instructors' dressing unit.

Scheme No. 2

After considering the impracticality of using a corner entrance solution, this plan aiming at great compactness as well as adequate lighting was developed. Beyond any doubt, this second scheme would work much more desirably in elevation than the previously considered scheme.

The first important change I will consider is the removal of the locker space from under the main gymnasium to a centralized position on the same floor level as its dependent units. In this plan the locker room is entered directly from the main hall without the necessity of using a stairway. Another asset to the one story locker room is that it offers a possibility of over-head lighting. Another important advantage is its potential expansion should this become desirable at a future time.

Another improvement is the placing of the instructors' stairway in connection with their dressing room. The physical examination room has been combined with the stairway. It is readily accessible from the locker room as well as being close to the instructors' administrating unit through the stair hall.

An essential feature to be noted in this plan is the combining of the uses of the small gymnasium by raising the floor level of the small gymnasium and using a removable

partition between the two in order to view dancing exhibitions. In this arrangement the small gymnasium becomes a stage, and the large gymnasium may be used as an auditorium.

This plan has the disadvantage of limited locker space for swimmers. While it is possible to connect the main locker room with the swimmers' locker room directly, it seems that a scheme where the room might be enlarged if it became necessary, would solve the problem in a more comprehensive manner.

The natatorium has an added feature in that a solarium has been provided. This additional space is desirable, as it is near the diving-board, where swimmers tend to gather. The solarium is also, practical for sun-bathers, as well as being an attractive feature for elevation considerations.

The second floor of the scheme allows two class rooms instead of the one as provided in scheme No. 1. This is a feature that possibly will prove valuable in case of future expansion. These rooms are well adapted to be placed on the second floor near the administration offices, and would be shielded from noises of the other units to a greater degree than if located on a floor with them.

With the instructors' private stairway located in connection with the dressing room, all contact with people in

street clothes is eliminated.

The public observation space for the natatorium is located on a balcony floor, which is entered from the landing of the general stairway. This gives considerable room, which is necessary, for swimmers around the pool. This also provides desirable space for spectators.

Scheme No. 3

In this plan a better circulation was obtained by adding secondary corridors in the working portions of the plan. All of the units are connected without any necessity of crossing the circulation of students dressed in gymnasium suits by those in street clothes.

Another advantage of this plan is the placing of observation seats at the side of the natatorium. This allows a much more desirable position from which to witness swimming events.

In this plan all of the units where students will be in athletic suits are located on the same floor level. The examination room was placed near the locker room and also near the instructors' private stairway for the convenience of both students and instructors. Since the physical examination room will be used only on certain occasions, it could easily be used as headquarters for instructors at other times.

A centrally located group of showers is provided in this plan. These showers may be well ventilated so that no steam can escape to the dressing room. It also has the advantage of being close to all of the lockers, and easily reached from them.

The hair drying room, while used mostly by the swimmers, is accessible to both the general and the swimmers' locker room. It is directly connected with the main locker room, and also has admittance from the rest room. Any of these minor units may be adequately lighted by skylights.

The second floor provides all of the necessary elements, but may be less satisfactory because of having two of the athletic offices separated from the director's office by the hall. A unit consisting of a lounge, study, library, and W. A. A. office is introduced in this scheme. Such a grouping of these units fosters social relations, as it would provide a place for a girls' student center.

The plumbing of the second floor is simplified by having the toilet adjacent to the instructors' dressing room. This concentrates the water and sewage pipes. The class room is located near the athletic offices for greater efficiency, and because it allows more freedom from noises.

Scheme No. 4

The advantage of this scheme over the one preceding, is that this plan shows provision for more adequate circulation, and also provides an outside entrance from the minor unit to the playing field. The distinct feature of this plan is the accessibility of locker rooms to their dependent units.

The dividing of the shower space into two banks, one on either side of the locker room, gives good accomodation from every part of the locker room.

The setting in of the minor halls, which connect with the main hall, allows the necessary equipment space for the main gymnasium and the ticket and storage space for the natatorium.

The second floor plan may be adapted to scheme No. 3. It has some distinct advantages in that there are two class rooms instead of one, thus providing the potential expansion space for the future.

Upon the suggestion of the dean of women, a Mortar Board office was provided in the social unit mentioned in scheme No. 3.

Beyond a doubt the second floor plan planned for scheme No. 4 would be much more attractive, since the main hall is better balanced than that in scheme No. 3.

Scheme No. 5

Because of a desire to present as wide a variety of solutions to this problem as is practical for this thesis, I have included this scheme featuring an interior courtyard. The general plan is the same as those presented in schemes No. 3 and No. 4, but the administration offices have been shifted forward, leaving a space between this unit and the locker room.

While this makes more hall length necessary, it increases the supply of outside wall space for lighting considerations, as well as to enhance the building by providing a place for a garden and fountain.

Good circulation is maintained, and more adequate space has been provided for the dean of women. This location for the dean of women should be quite desirable, as it is somewhat secluded, and has a garden view.

Because of the general stairway to the second floor being shifted to one side, the second floor is not planned symmetrically, as are most of the other second floor plans, however, it meets all of the requirements of the problem.

This plan would not be adaptable to a sloping terraine

DEVELOPMENT OF FINAL SCHEME (NO. 6)

Although somewhat similar to scheme no. 4, this scheme has many advantages over the former solution. The most important change is the placing of the main gymnasium unit and the natatorium unit so that their long axes are parallel with the main hall. This feature is important, both from an economical point of view, because it reduces the amount of outside wall area; and also for the reason that it allows an impressive entrance into these major units, because of these entry ways presenting the long dimension of the room upon admittance.

This plan arrangement allows an observation gallery, entrance to which may be controlled on occasions when admission is charged for swimming events.

The seating arrangement offers a good view to the spectators, and allows the possibility for clearing when more space for swimmers is desired.

The swimming instructors' dressing room has been located in connection with the swimmers' locker room, making closer contact between students and instructors. This arrangement simplifies the plumbing by keeping instructors' showers and students' showers adjacent.

The addition of a public toilet, off the main corridor, has been made in scheme No. 6. The features of scheme No. 4 have been included in the second floor plan of the final development.

The elevation (see Plate No. XII) is characteristic of the existing campus architecture. The gothic buttresses and windows give a suggestion of lightness to the character, while the battlement on the walls suggest athletic strength. The buttresses give vertical character to a building that would otherwise appear too broad.

In the design of the individual units of this final plan, study was made by the use of sections. The pool was located in the center of the floor space of the natatorium in the final plan for aesthetic considerations. The alternate solution, placing the pool in the center of the swimmers' space is shown in Plate No. XVI. The advantage gained by this central position of the pool in the swimmers space, was considered as not of sufficient merit, as the solarium would then have to be adapted to this position. The swimmers' space may be used for temporary bleachers in case of unusually large audiences. The swimmers enter the natatorium about midway between the shallow and deep end of

the pool. This allows equal access to swimmers and divers. A section (Plate No. XVII) shows the relationship between the swimming pool and the locker room. Also, a plan of controlled skylighting is shown.

Submarine lighting is preferred, as it eliminates the glare and reflection accompanied with over-water lighting. The water for the pool is circulated mechanically, insuring constant temperature, and also allowing the water to be more thoroughly disinfected and filtered. The mechanism for this is located around the pool under the natatorium.

Both locker rooms have been designed to provide the most desirable lighting. Both rooms are lighted from one side and also by skylights. This skylighting advantage is very important, because of the combative effect of light on disease germs.

As natural ventilation can't be controlled, it is much inferior to artificial ventilation. Most of the ventilation in this scheme must be artificial. Too much ventilation from windows destroys the artificial ventilating air-currents to a certain degree.

The heating of the building is the low pressure steam heating type supplied by the college power plant.

In the two shower banks provided for the main locker

room, there is six individual shower booths in each. The other showers are the gang type. The type of shower heads are the self-cleaning stream adjustment type.

The roof over the one story units is nearly flat, with just enough pitch to drain the water.

Plate No. XVIII shows a section through the main entrance, showing the relation of the main locker room to the administration unit.

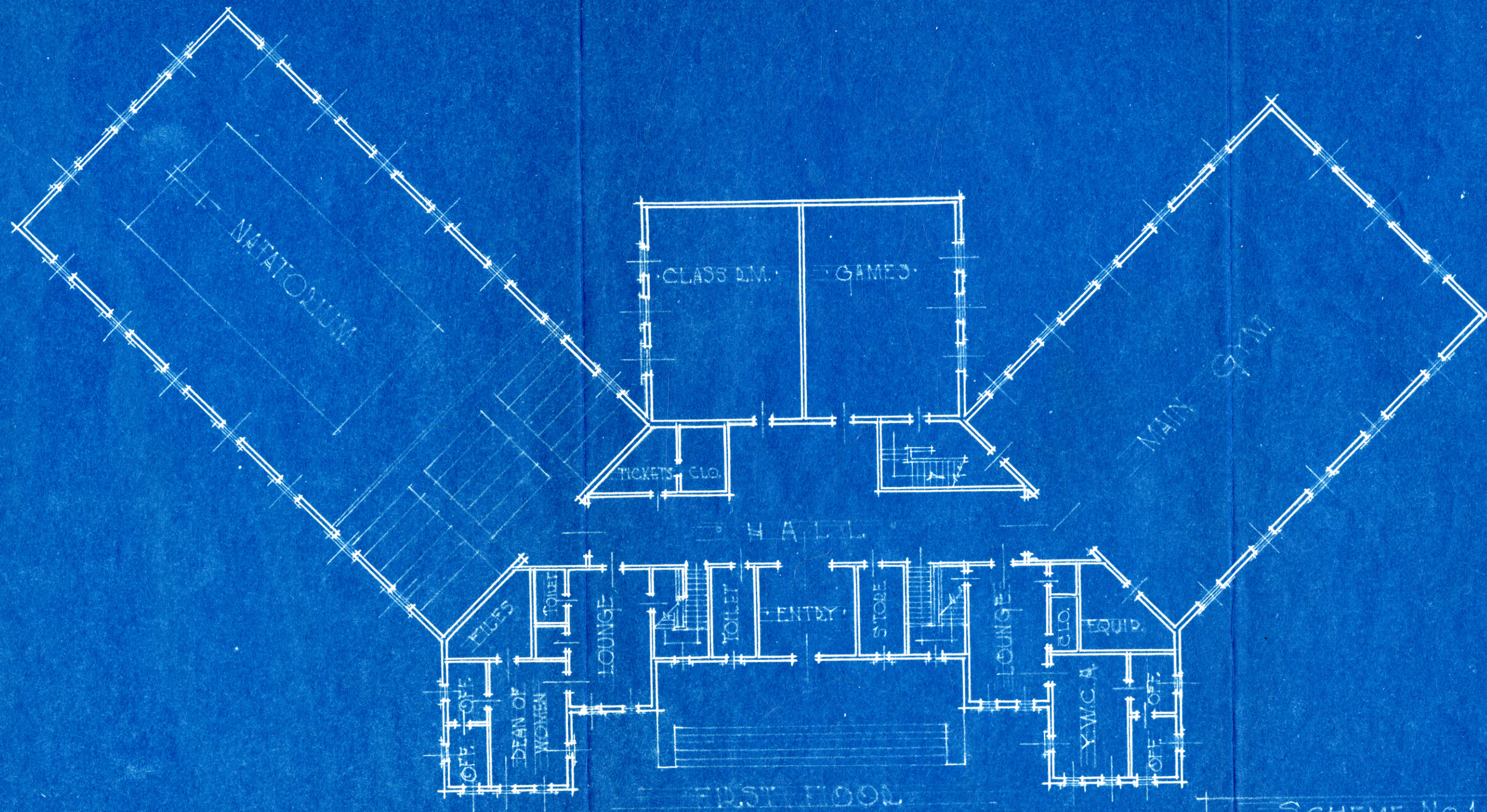
The other three elevations of the final scheme are shown on Plates No. XIV, No. XV, and No. XVI.

Details of the central entrance and oriel window are shown on Plate No. XIX.

The most attractive and practical features of the other schemes were incorporated in this plan. The total cubage of the building is about 500,000 cubic feet. At the present cost of materials and construction, the estimated cost of such a building would be in the neighborhood of \$200,000.

PLATE NO. I

Scheme No. 1, basement plan of a scheme
designed for a corner entrance.

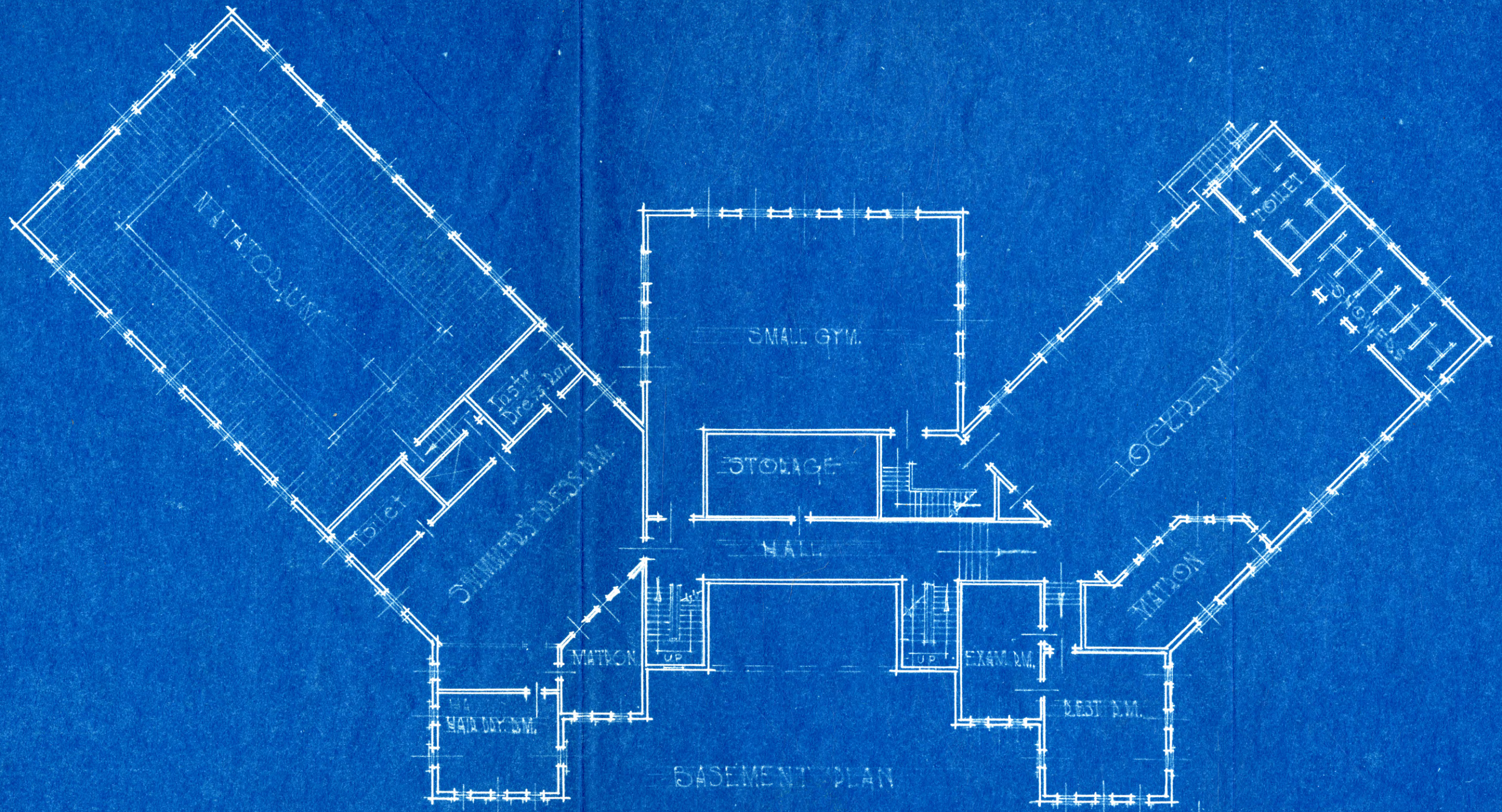


FIRST FLOOR

SCHEME No.1
 Admittance to Natatorium balcony
 by hall entrance.

PLATE NO. II

Scheme No. 1, first floor plan study.

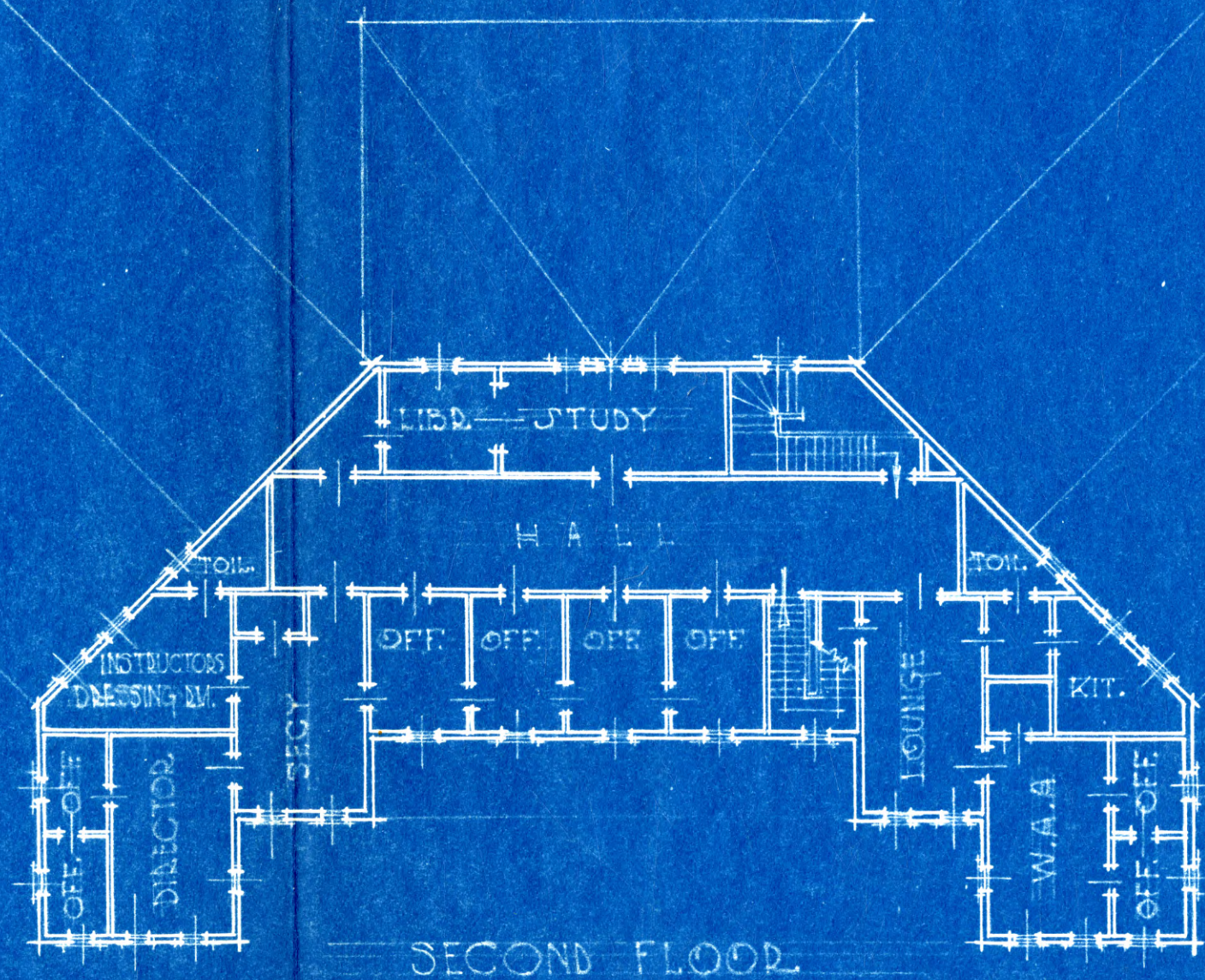


SCHEME No. 1

- Locker rooms in basement
- Planned for corner entrance

PLATE NO. III

Scheme No. 1, second floor plan study.

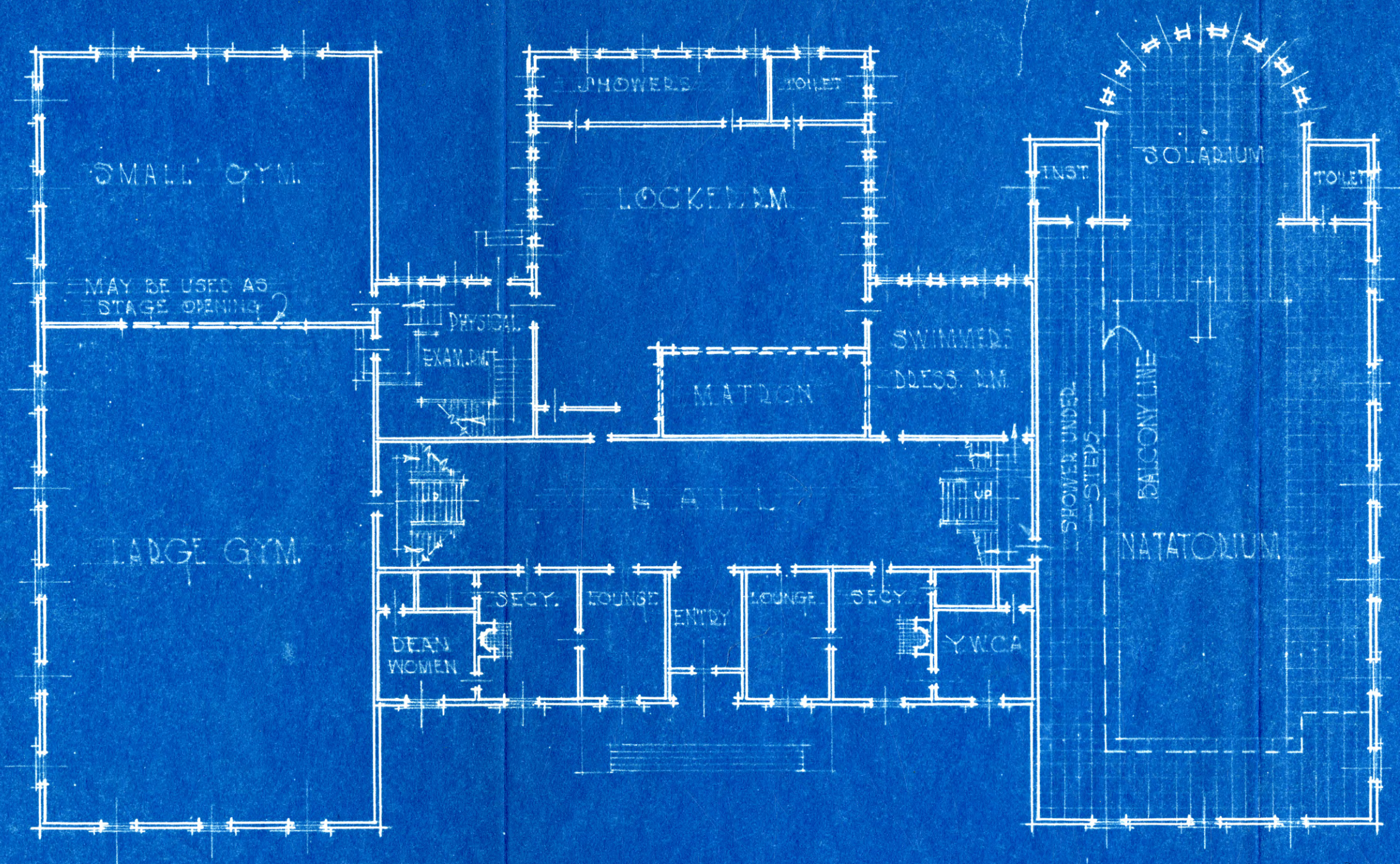


SCHEME NO. 1

Workability of offices but
lack of expansion space

PLATE NO. IV

Scheme No. 2, first floor plan of scheme
considering two floors.

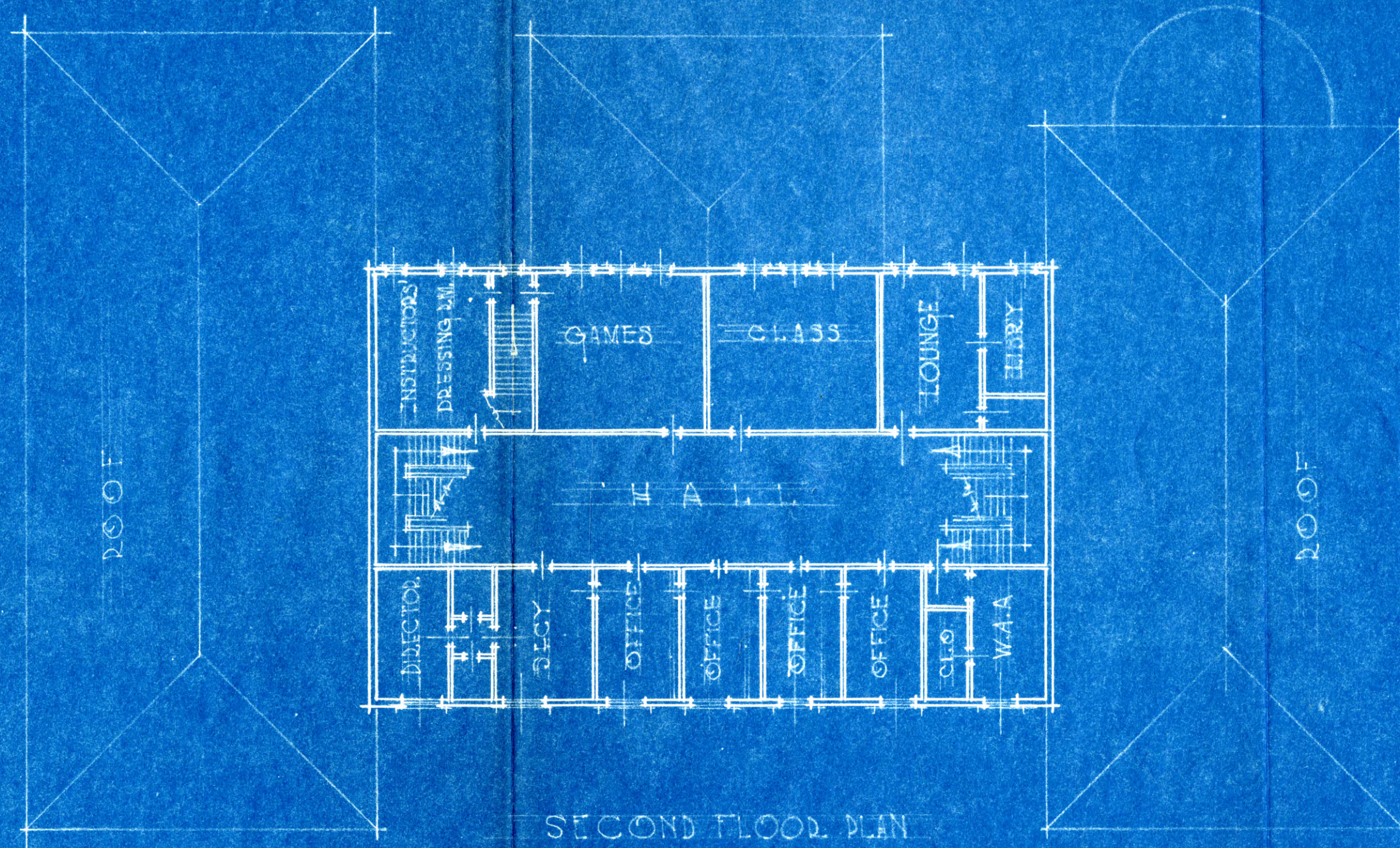


SCHEME No. 2

Lockers on first floor with
all major units accessible.

SCHEME NO. V

Scheme No. 2, second floor plan study.



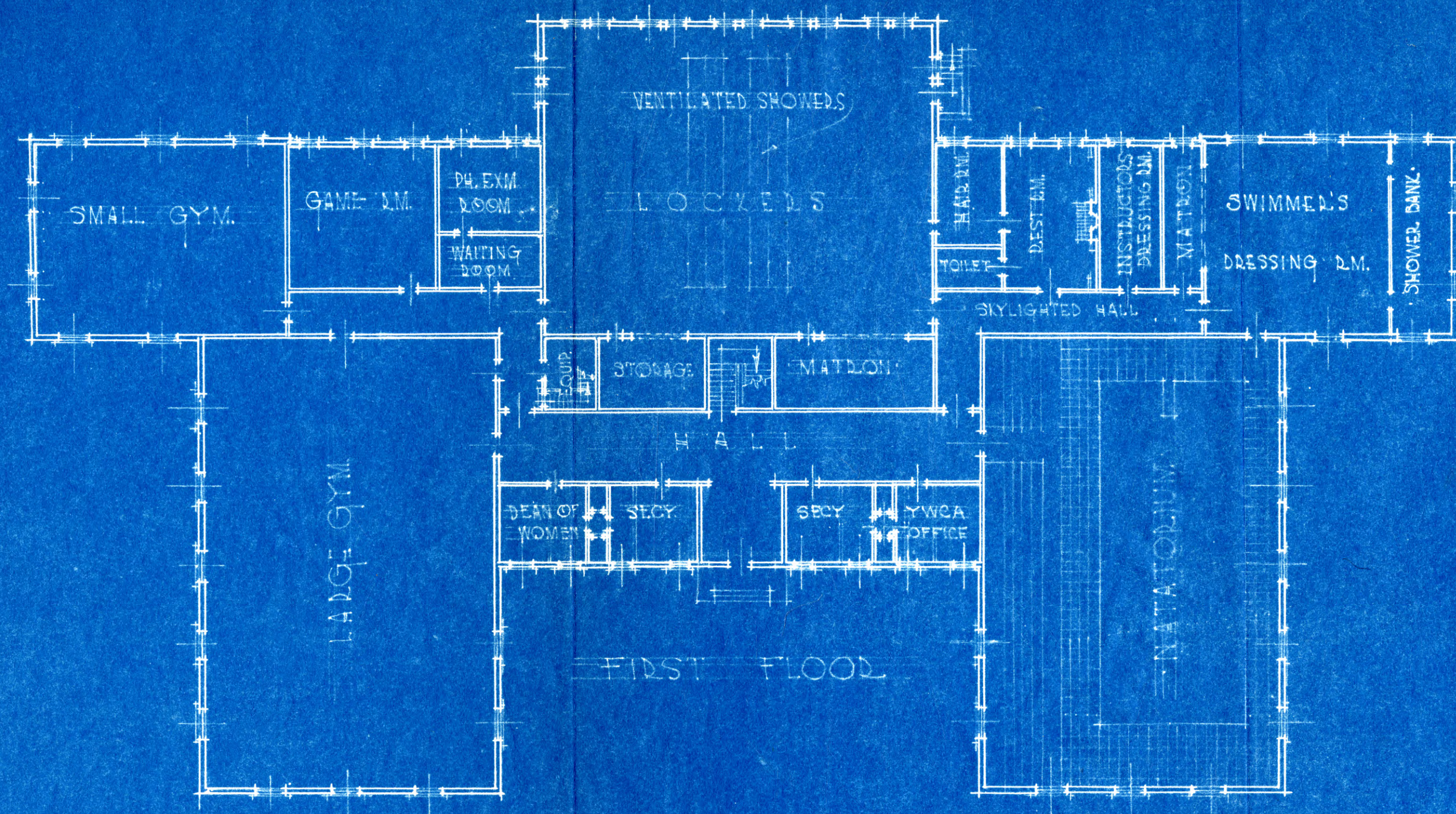
SECOND FLOOR PLAN

SCHEME No. 2

Workability of instructors' dressing room to appropriate units.

PLATE NO. VI

Scheme No. 3, first floor plan of a
scheme providing circulation.

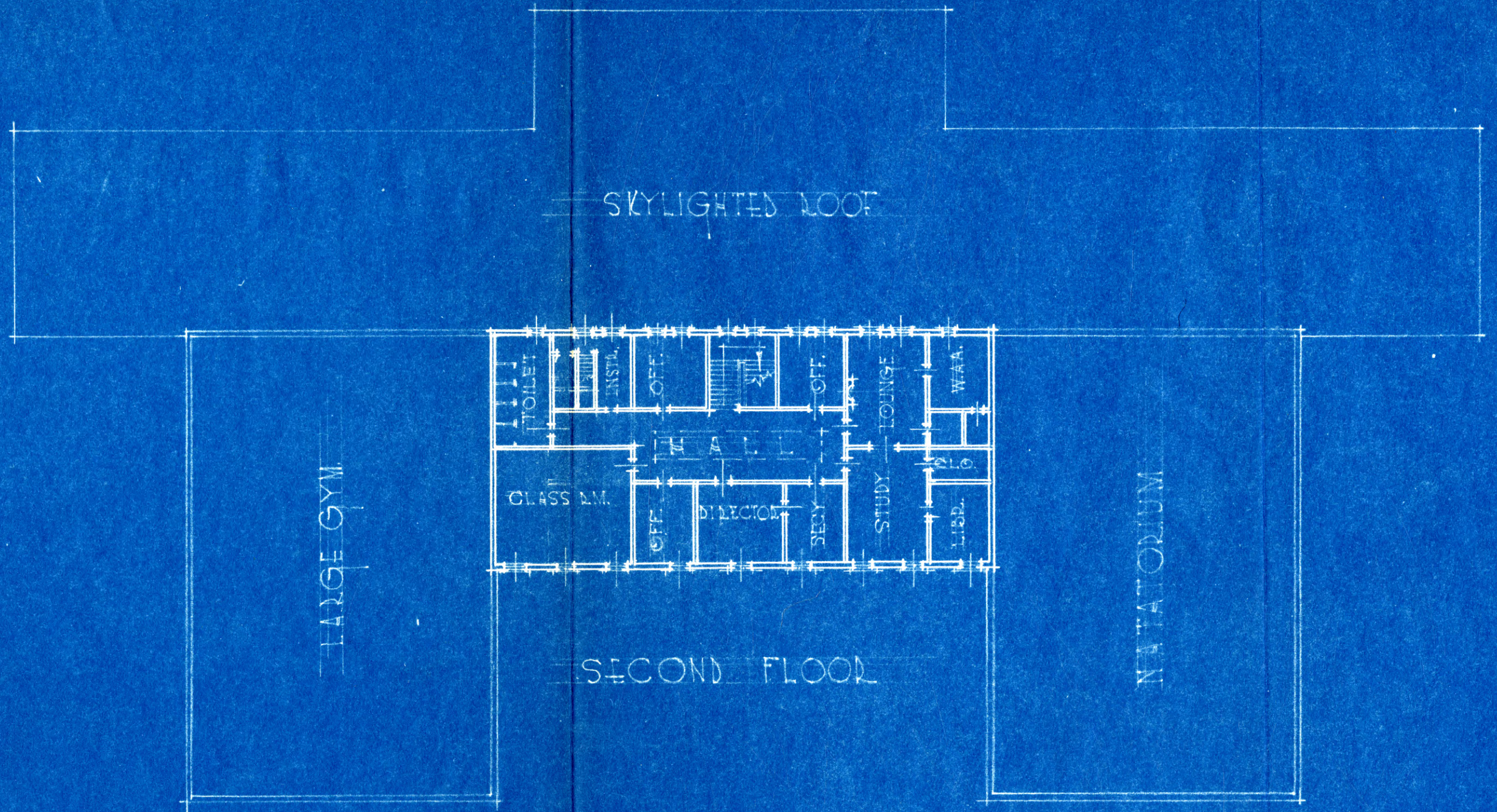


SCHEME No 3

All units on same floor
as lockers

PLATE NO. VII

Scheme No. 3, second floor plan study.

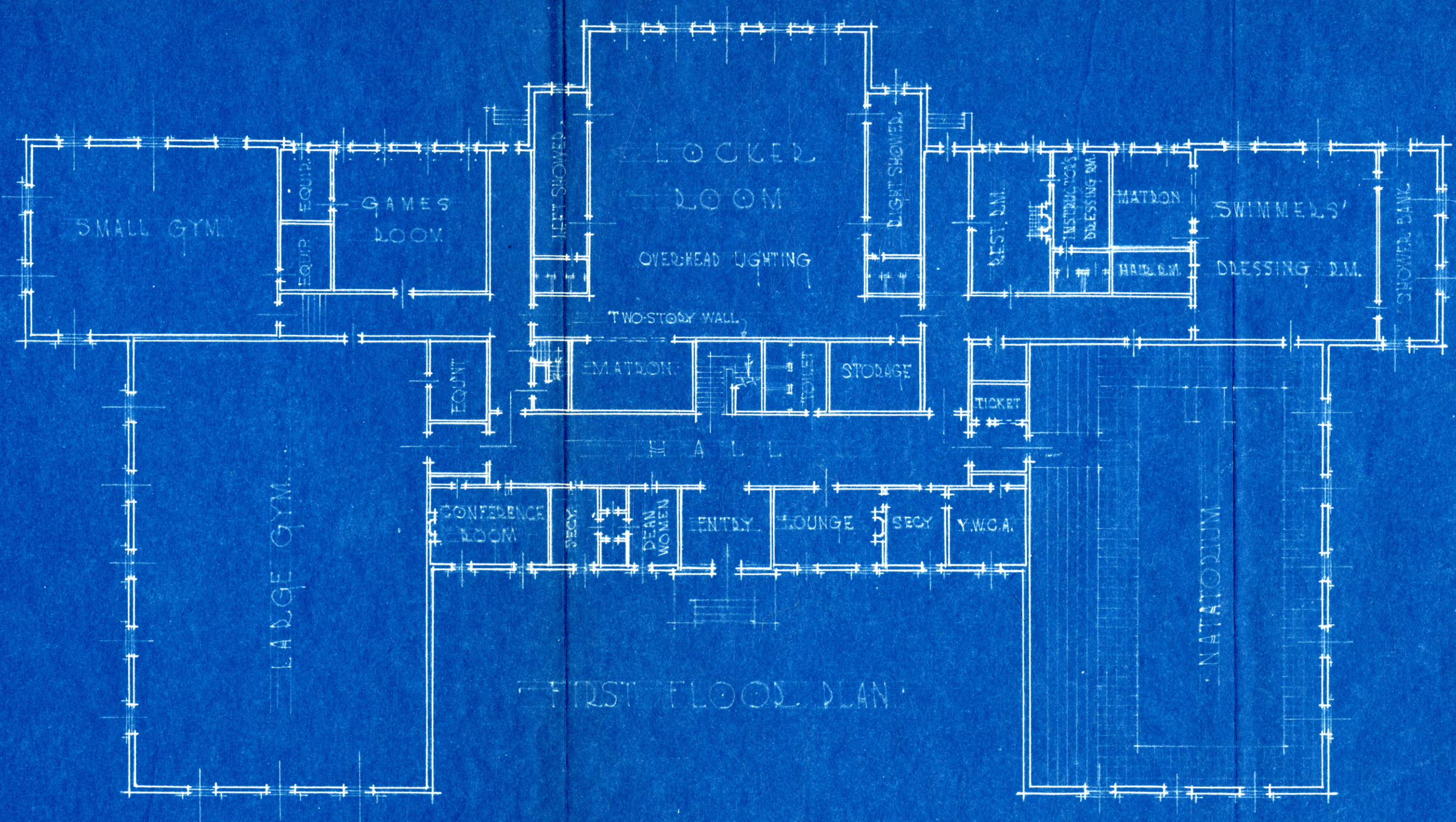


SCHEME No 3.

Private connection between
Instructors' room and gym's.

PLATE NO. VIII

Scheme No. 4, first floor plan of a
scheme providing better contact be-
tween locker room and field.



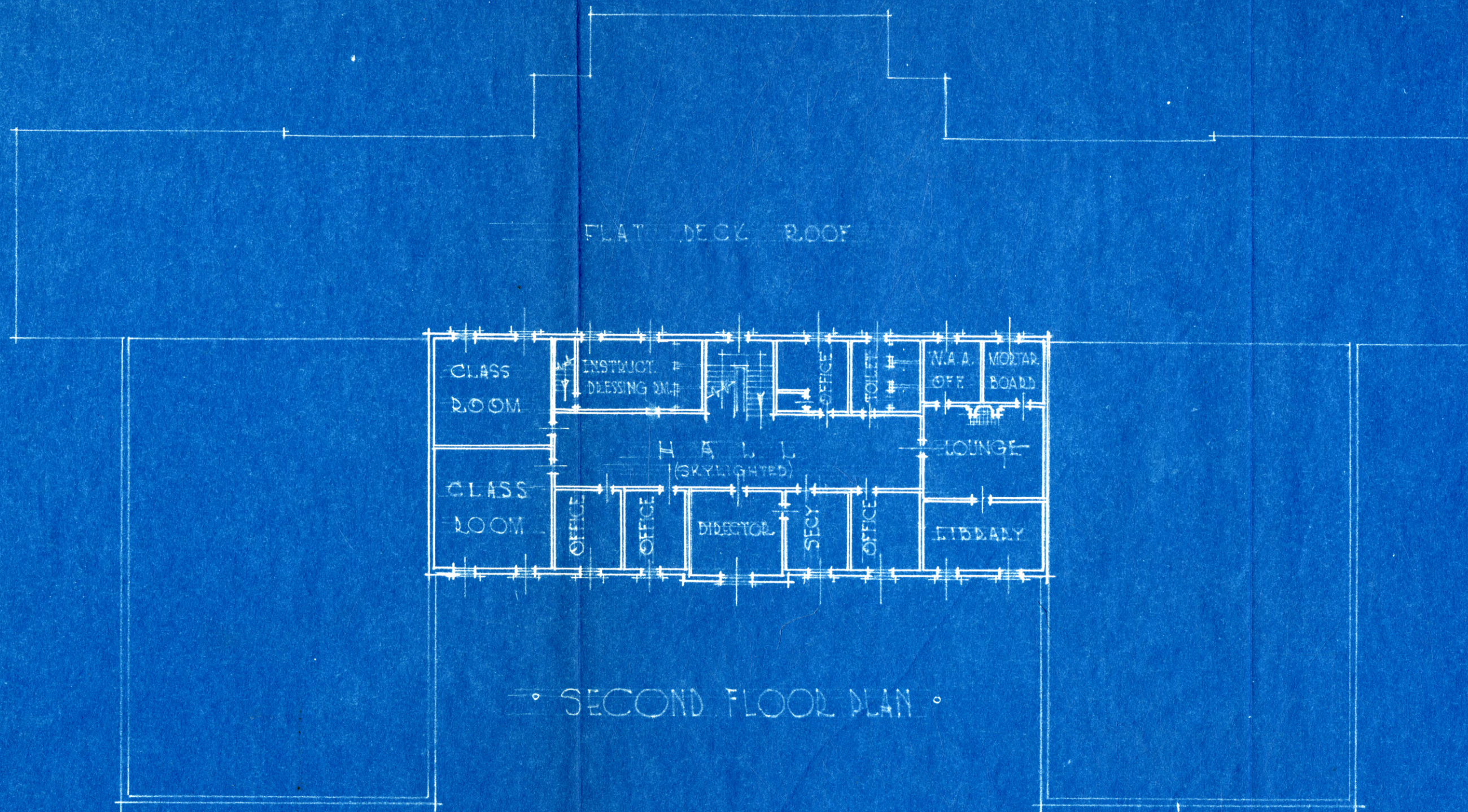
FIRST FLOOR PLAN

SCHEME NO 4

Circulation between lockers, various units and outside.

PLATE NO. IX

Scheme No. 4, second floor plan study.

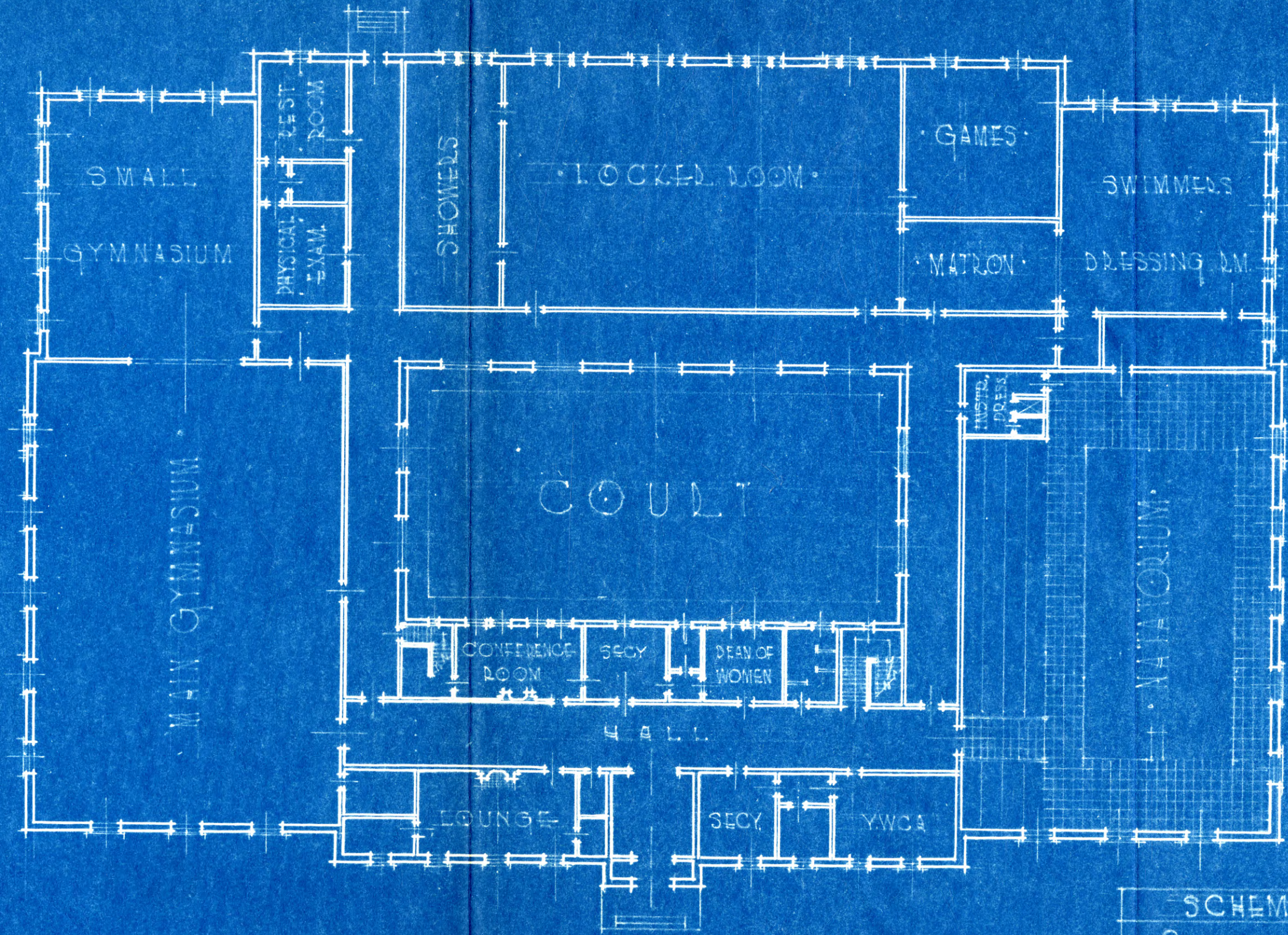


SCHEME NO. 4

Workability of Lounge, library
and offices with gym. units.

PLATE NO. X

Scheme No. 5, first floor plan of a
scheme introducing a court.

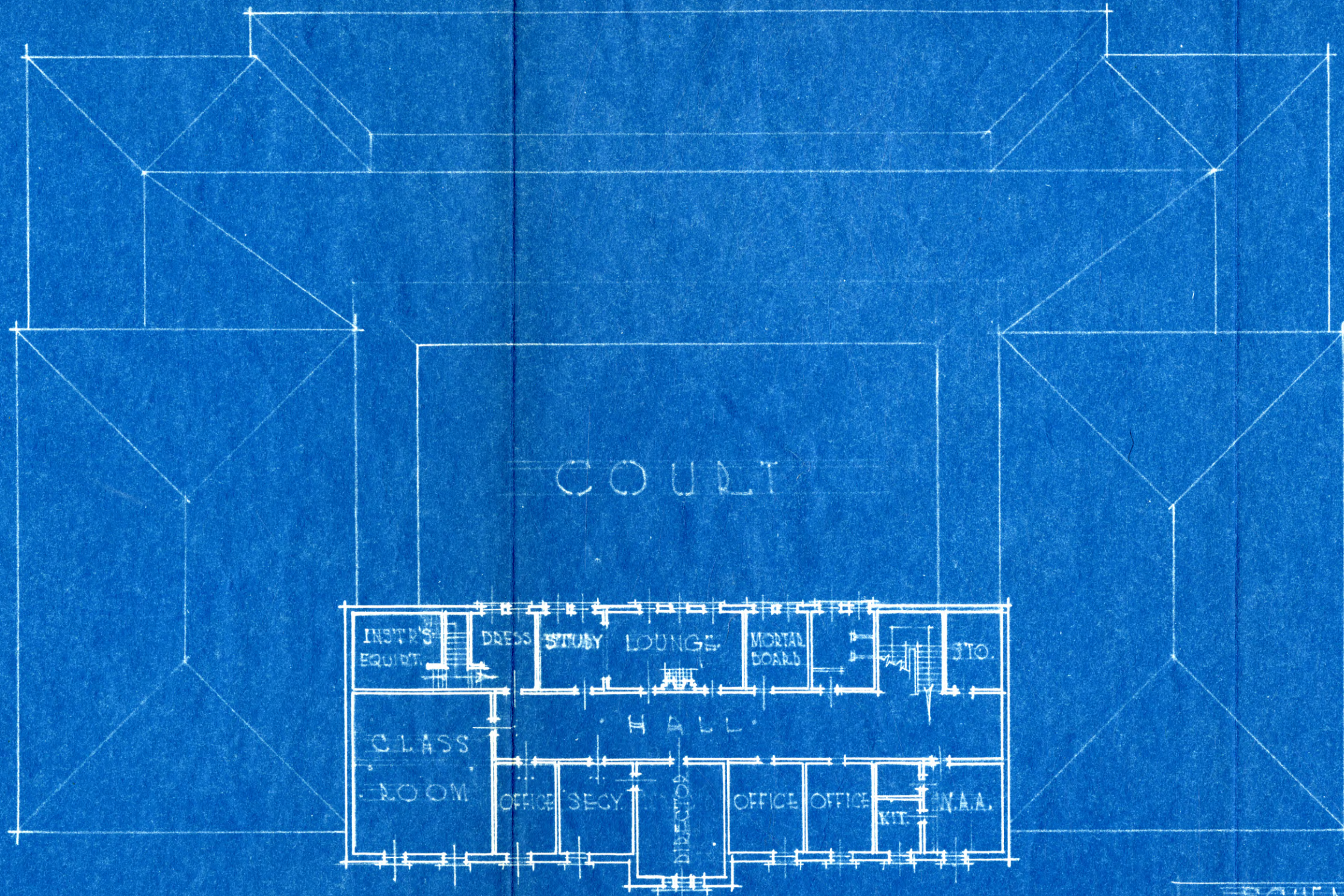


SCHEME NO. 5

Open court, greater space
for dean of women.

PLATE NO. XI

Scheme No. 5, second floor plan study.



SCHEME NO 5

PLATE NO. XII

Scheme No. 6, rendered plan, elevation,
and perspective.

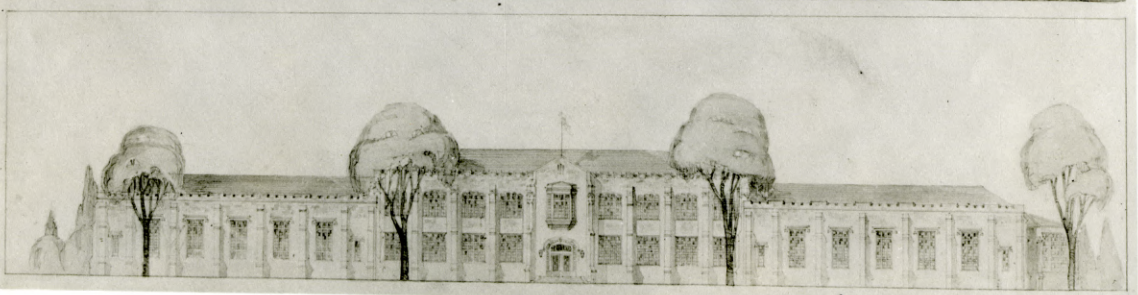
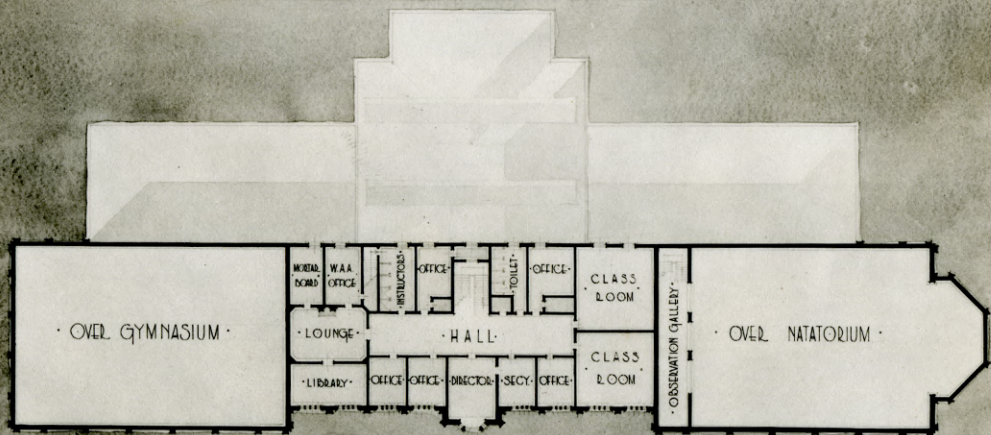
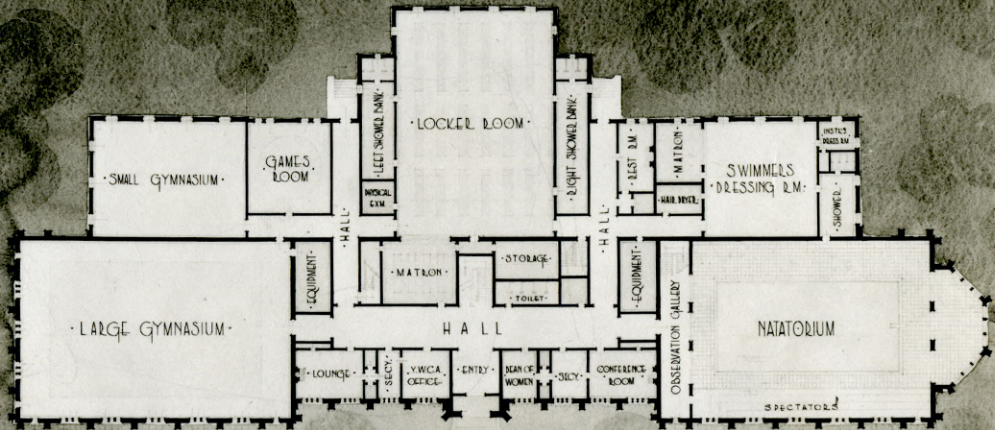
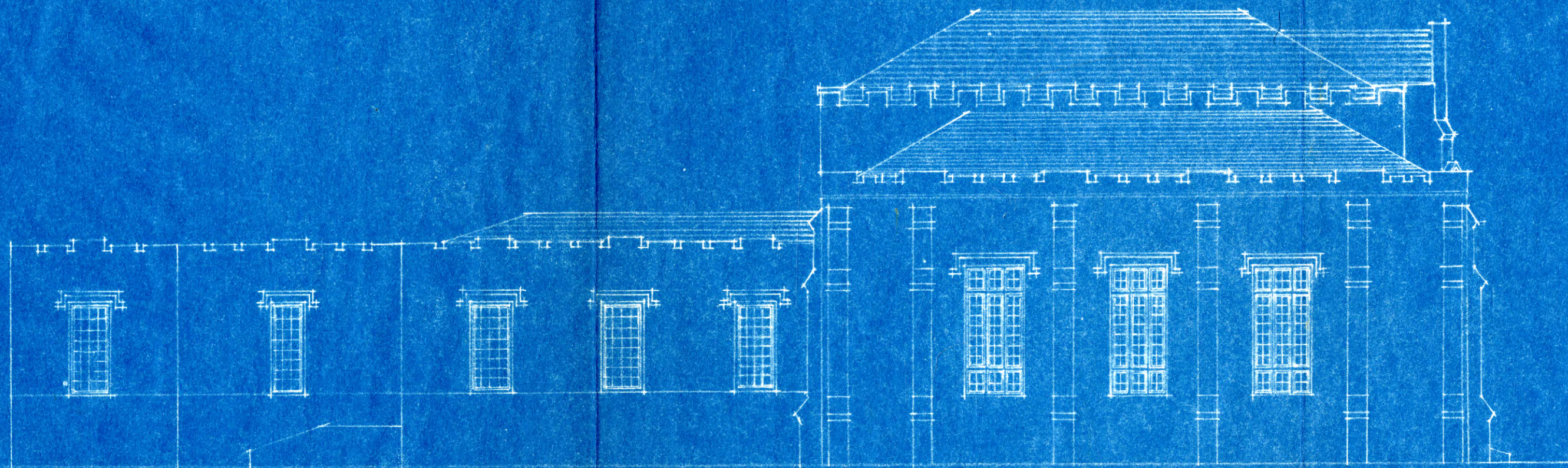


PLATE NO. XIII

Scheme No. 6, main gymnasium elevation
study.

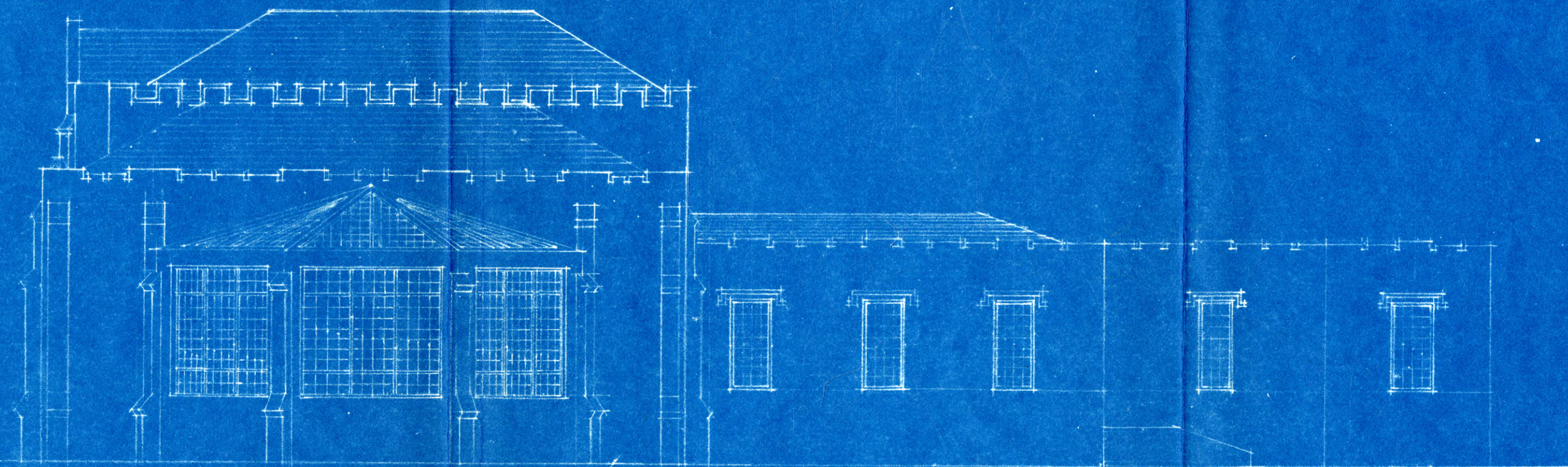


SCHEME NO. 6.

Gymnasium Elevation

PLATE NO. XIV

Scheme No. 6, natatorium elevation
study.

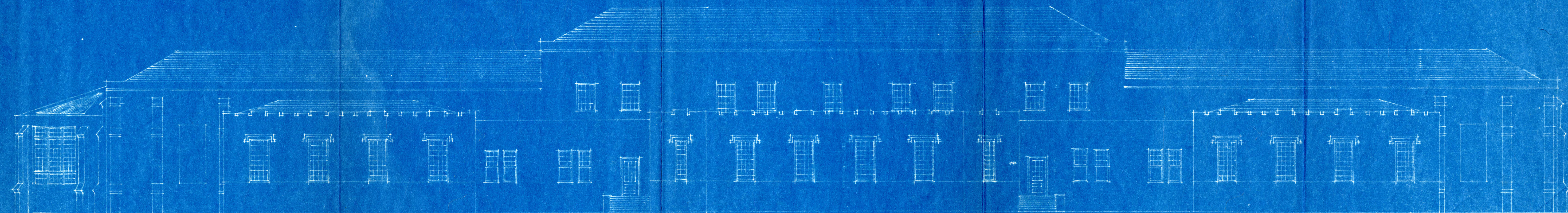


· SCHEME NO. 6 ·

· Natatorium Elevation ·

PLATE NO. XV

Scheme No. 6, rear elevation study.



• REAR ELEVATION •
• SCHEME NO. 6 •
Scale 1/8" = 1'

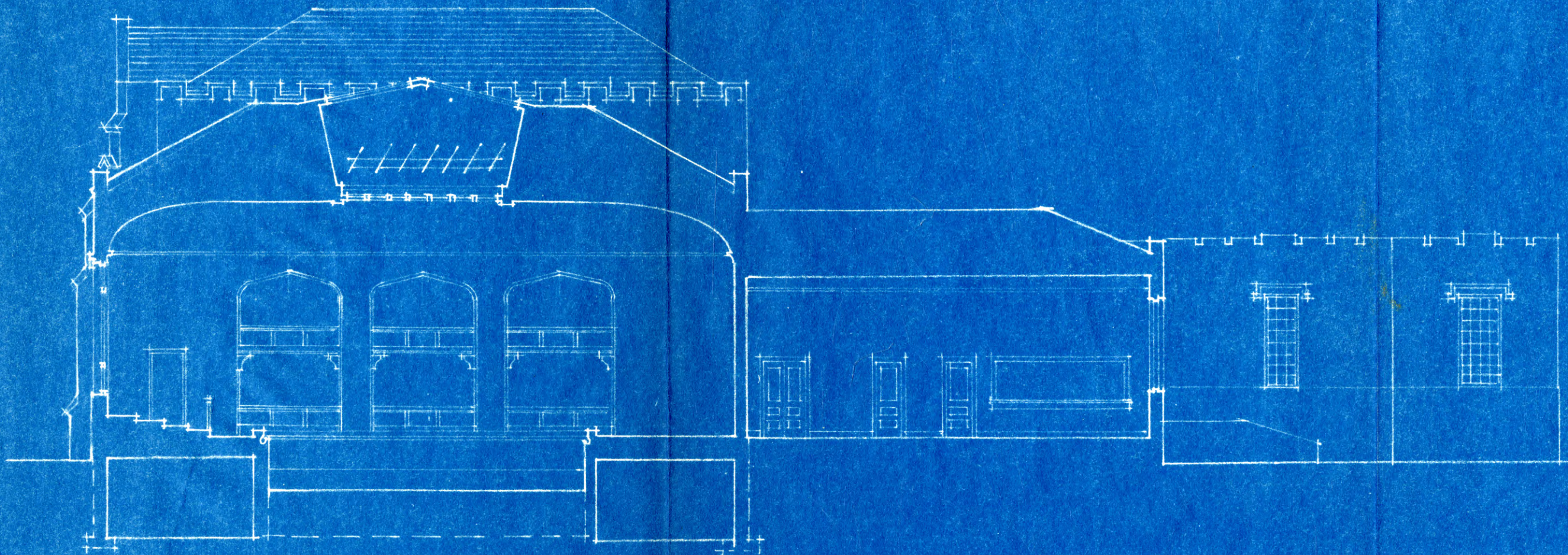
• SCHEME NO. 6 •
• Rear Elevation •

PLATE NO. XVI

Scheme No. 6, alternate
natatorium study.

PLATE NO. XVII

Scheme No. 6, section through
natatorium and locker room.

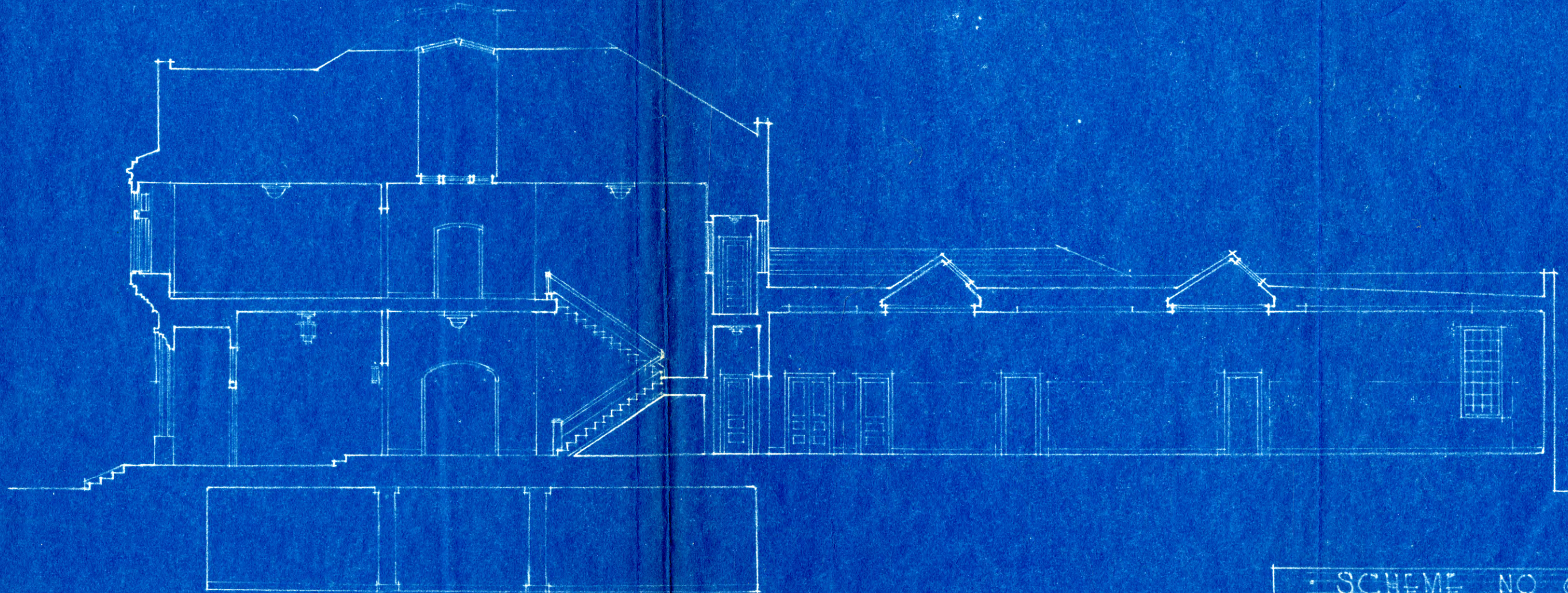


SCHEME NO. 6.

Section through
Nataforium

PLATE NO. XVIII

Scheme No. 6, section through main
locker room and adminis-
trative unit.

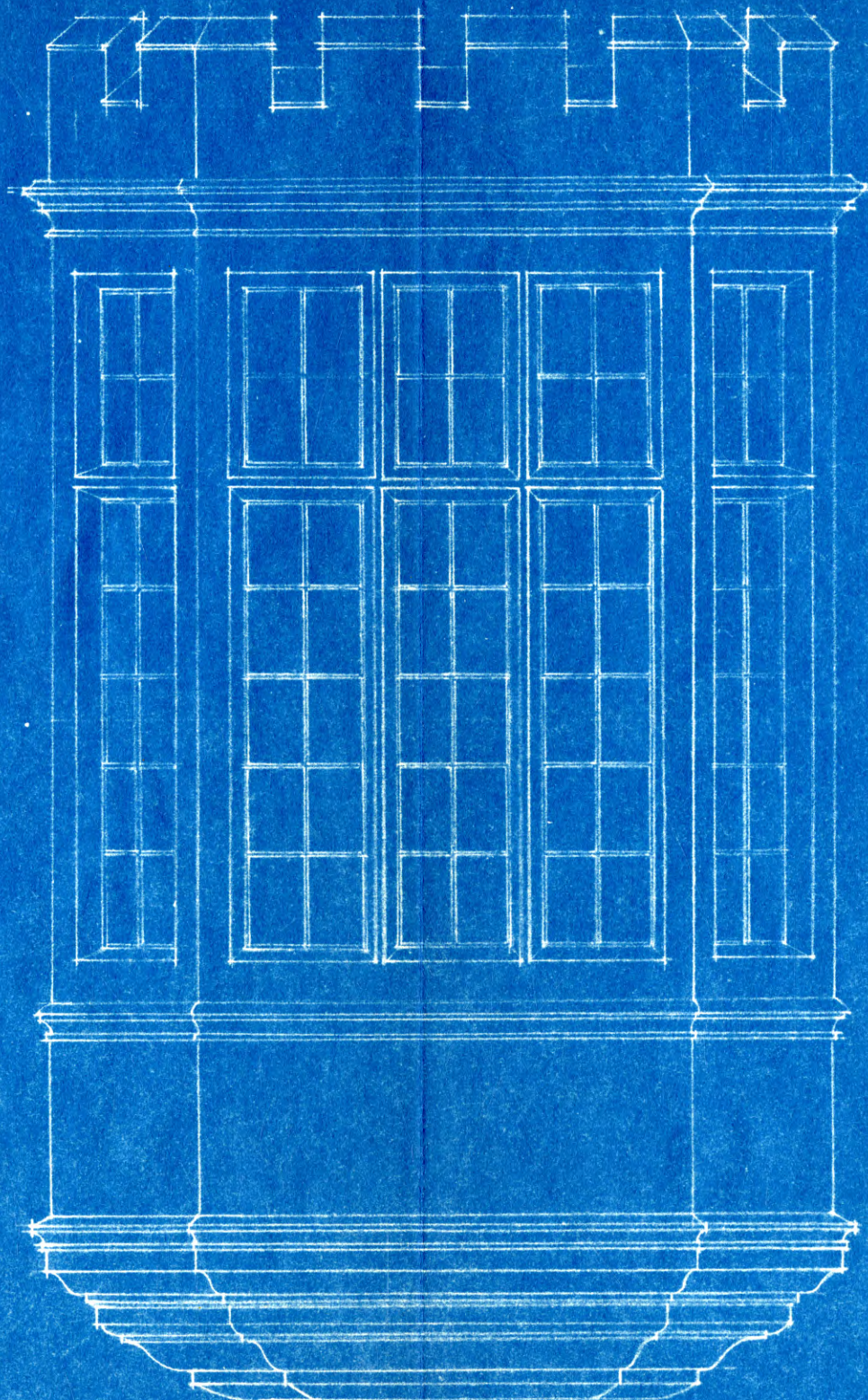
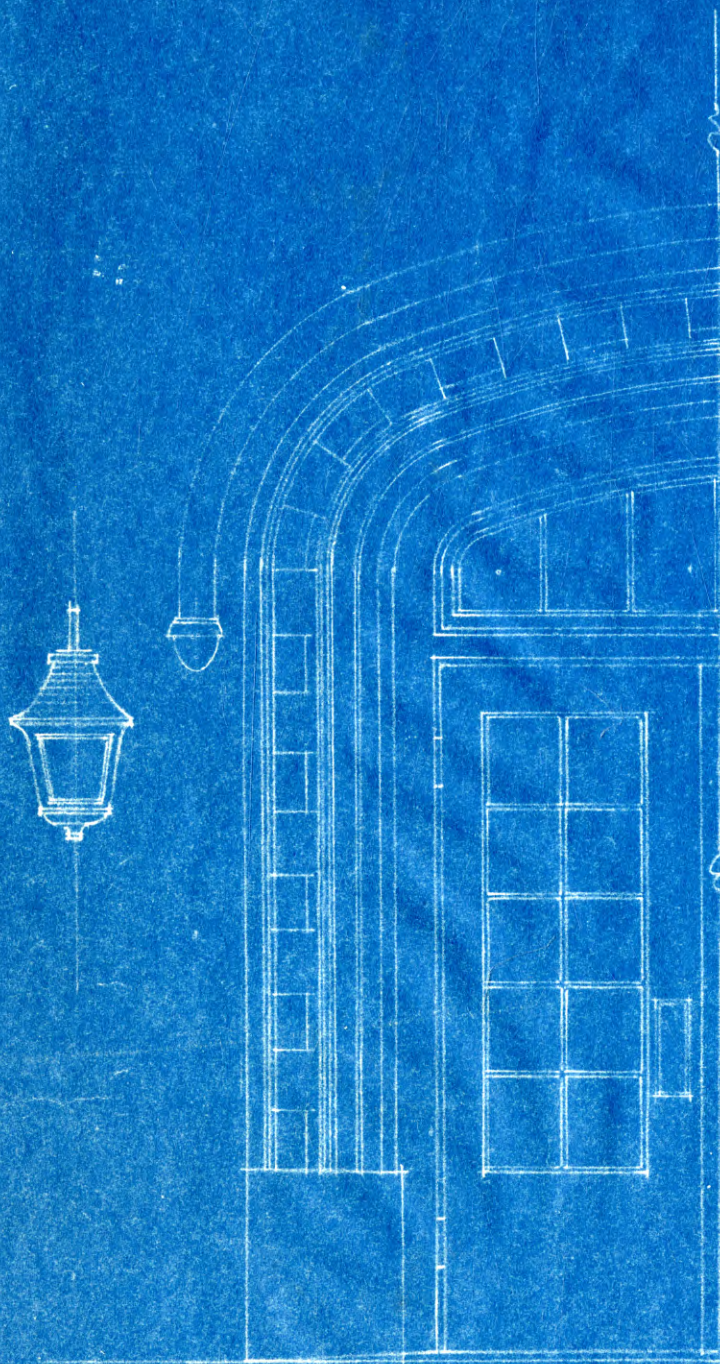


• SCHEME NO 6 •

== Cross Section ==

PLATE NO. XIX

Scheme No. 6, central entrance
and window details.



DETAIL CENTRAL DOOR

DETAIL CENTRAL WINDOW

Scale 1/2" = 1'

CONCLUSION

From the results of this study, it seems reasonable to the author that the designs developed, and especially the final scheme considered in this thesis would make a practical addition to the campus of Kansas State College.

The fact that the present conditions are inadequate as well as being extremely out-of-date makes such a study and development of a Women's Athletic Building one in keeping with the present needs.

I believe that, considering the level plot of ground where the tennis courts are now located, the final solution shown in this thesis is the most economical as well as one which solves the problem at hand.

ACKNOWLEDGMENT

I wish to express my appreciation to Professor Paul Weigel for his assistance and guidance in the writing of this thesis and the study of the problem; and for the helpful suggestions and criticisms given by Professor Helen G. Saum of the Physical Educational Department for Women.

REFERENCES

- Brooks, R. U.
A field house for Kansas State College. Unpublished thesis, Kansas State College. 1932.
- Clute, Eugene
A Timely Problem.. Pencil Points. The Pencil Points Press. Stamford Conn. p. 431. October, 1933.
- Donivan, J.
School Architecture; Principles and Practice. New York. Macmillan. p. 223-231. 1921.
- Goodhue.
A Book of Architecture and Decorative Drawing. The Architectural Book Publishing Company. New York. p. 65-79. 1914.
- Harrison and Dobbin.
School Buildings of Today and Tomorrow. The Architectural Book Publishing Company. New York. p. 149-179. 1931.
- Nash, J. B.
Administration of Physical Education. A. S. Barnes. New York. 1931.
- Pope, J. R.
The Architecture of John Russel Pope. Vol. 1. William Helburn, Inc. New York. plates 42-44.
- School Buildings and Grounds.
Published by the University of State of New York. p. 192-322. 1915.