historic buildings inventory
st. paul campus
university of minnesota

office of physical planning

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October 12, 1972

It is the intent of this report to provide a systematic framework wherein decisions can be made regarding the preservation of selected old buildings on the St. Paul Campus that were recommended in the Long Range Development Plan. The investigation, while sufficient to delineate general directions, must be supported by studies oriented toward renovation design and strucutral analysis for final judgment.

Although this study concentrates on an evaluation of the ten buildings recommended for preservation in the campus plan, it is preliminary in nature and, therefore, is designed to stimulate further study. It is hoped that from subsequent reviews will evolve an evaluative criteria that could be generally applicable to all campus buildings.

Finally, the information presented in this document is intended for the use of those individuals and organizations who have expressed a continuing interest in the development of the St. Paul Campus.

Clinton N. Hewitt
Director

CNH:rvo

contents

introduction

Ten old buildings on the St. Paul Campus of the University of Minnesota have been designated in the John Andrews Long Range Development Plan as historically significant and worthy of preservation.[1] The recommendation to utilize these buildings to meet new spatial requirements recognizes new nationwide attitudes toward the role of "obsolete" buildings in educational institutions. Enterprising college administrators and designers have demonstrated repeatedly that remodeling old buildings can be more economical and often more exciting than new building construction.

Although the historical significance of the old St. Paul buildings gives them an inherent humanistic value, they must also be economically functional to be worth the effort of preservation. It should cost less to remodel than to build new facilities and the buildings must be flexible enough to provide spaces for the variety of educational functions that are presently in demand.

This inventory demonstrates the range of possibilities for remodeling educational buildings and reviews the significant features of the ten St. Paul Campus buildings recommended for preservation. It presents an explanation of the history and character of each building and summarizes spatial flexibility and cost estimations. The appendix contains additional information about the St. Paul Buildings and educational remodeling in general.

range of possibilities

College and University Business Magazine[2] described four major categories of educational remodeling. The John Andrews recommendations imply the use of three of these categories; some description, and examples of the range of possibilities provides a useful context for the evaluation of the St. Paul Campus buildings.

1. Renovation of an existing college building for some other educational function: This type of remodeling is important in the St. Paul effort. It usually requires a sound structural shell and a desirable location.

   A. Harvard's 115 year old Bosyl Hall was originally a chemistry building but has undergone a series of renovations that have gradually transformed the building into a modern language center. A few minor changes have left the exterior appearance basically unchanged and preserved the character of the adjacent open space. Major interior remodeling, including the addition of one complete floor in the high ceiling space between old second and third floors and a mezzanine over part of the first floor, has accommodated the latest change of function.[3]

   B. Jefferson Community College in Kentucky is housed in a seminary building built in 1907. The original building was structurally sound and is a unique example of Collegiate Gothic Architecture, but the heating, plumbing, and electrical systems needed replacement. The exits and stairways were inadequate and 80% of the plaster was badly damaged. At a cost of $19.00 per square foot, renovation proved to be cheaper and faster than new building construction.[4]

   C. McLean Hall on the Moorhead State College Campus, in Moorhead, Minnesota, was renovated in 1970. Prior to the renovation it served primarily as a classroom facility. It is now an administrative center. The reinforced concrete and masonry structure remained intact while some portions of the interior were gutted to make way for new walls and partitions. The heating and ventilation systems were replaced and central air conditioning was installed.

      Cost:

$11.50 per square foot	Total Construction
$6.00	General Construction
$4.00	Mechanical Systems
$1.50	Electrical Systems

      Weld Hall, which is also on the Moorhead Campus was completely remodeled in 1969 at a cost of $15.00 per square foot.[5]

D. The "Old Main" building on the Knox College Campus in Galesburg, Illinois, was remodeled in 1937 to accommodate administrative and faculty offices, student meeting rooms and classrooms. Before the remodeling it had been an all purpose building but had become obsolete. The character of the building and its history as a focus of campus life gave sufficient justification for preservation, but it also acts as a landmark of the scene of the famous Lincoln/Douglas Debate of 1858.[6]

2. Using an existing college building essentially "as is":

Since this possibility is not dramatic, it does not usually draw attention on a national scale but it is economical and Walter Library on the University of Minnesota Campus is a typical example. It was essentially replaced by the New Library on the West Bank but continues to serve as a center for specialized Libraries. It required only minor spacial reorganization on the ground level and lighting improvements in the large rooms on the second level.

3. Renovation of existing buildings for the same function:

A. Valdosta State College, Valosta, Georgia, remodeled a 50 year old dormitory that had been unacceptable to the students for several years. At a cost of $10.00 per square foot, the remodeling provided new apartment arrangements, kitchen facilities, new mechanical and electrical systems, and complete interior treatment, including carpeting, paneling and furniture. Although the buildings basic function has not been changed, it has new life because it comprehends changes in the accepted conception of students and student housing.[7]

B. The Quad buildings at Stanford University in Palo Alto, California, have made a strong architectural contribution to the character of the campus since 1891. When they became too obsolete to be tolerated, they were gutted and remodeled rather than destroyed. The form and character of the buildings remained but economical and functional spaces, both interior and exterior, were achieved in previously useless or wasteful areas.[8]

4. Remodeling of non-educational buildings for new college roles:

A. Vencennes University in Vencennes, Indiana, renovated a 60,000 square foot cold storage warehouse and utilized the space for classrooms, laboratories and related educational functions for 1,500 students. The 16" brick walls were retained without modification but a new roof and a wide enclosed stairway were added. The lighting and heating systems were replaced and air conditioning was installed. The total cost was $4.00 per square foot.[9]

B. The New Jersey Brookdale Community College turned a race horse breeding farm into an educational facility for 1,309 full time students. Multi-purpose learning spaces, art studios, classrooms, a cafeteria, and lounges were located in a huge wooden barn. The first stage of remodeling (18,000 square feet), required only 177 days of construction and cost was $25.00 per square foot.[10]

C. In 1966 the Dallas Junior College Committee created El Centro College and housed it completely in a downtown Dallas department store building. The steel frame building lent itself to the various space requirements of new educational techniques, and its nine floors provided enough area for almost all educational facilities for 4,000 students. The building was structurally sound, but required new duct work, mechanical systems, and lighting. The remodeling cost was $13.30 per square foot.[11]

building inventory

The St. Paul Campus Development Plan recognizes old buildings as assets to the overall campus character and encourages their use in future development of the campus. However, the oldest buildings are presently unsuited for contemporary educational activity. Most will require renovation or remodeling. Before further planning can begin, each building must be evaluated to determine if it is worth the cost of rehabilitation. This inventory will facilitate that determination by examining a variety of value potential in each of the ten buildings.

The history of each building and historical events that are associated with it are documented to establish its value as part of the heritage of the campus; an evaluation by the Minnesota Historical Society's Historic Site Survey[12] gives a notion of architectural significance; and old and new photographs display the character of each building.

The instrument used to arrive at an estimation of cost was designed by architects Caudill, Row Lett, and Scott of Philadelphia (see sample chart).[13] It is a crude measuring tool without adjustments to the Minnesota Building Market but it does break down the important cost considerations in remodeling and provide a basis of comparison between new buildings and remodeling costs. It indicates how much of the existing building can be used in remodeling. Since the specific new function is unknown for most of the buildings, the chart does not take a change of function or necessary additions into consideration; it simply shows how much usable raw material is available in the old building. Percentage figures were derived from a combination of evaluations by the University of Minnesota Plant Maintenance Office[14] and the Office of Physical Planning.

Spatial flexibility is also a significant consideration. To become useful members of the campus in the future, the buildings must offer space that can house a variety of functions. The specific demands for space in each building has not been determined; classrooms and offices may replace an existing shop or laboratory and vice versa. To accommodate this variety, it has been assumed that large continuous (block) space can be most easily adapted to all functions. These large spaces can be either opened up or subdivided depending on the specific demands of its new use.

For each building the block square footage divisions have been outlined on floor plans and summarized to give a quantitative notion of the available usable space in each building. Buildings with high square footage totals in the "over 2,000 sq. ft." category generally offer the most usable space.

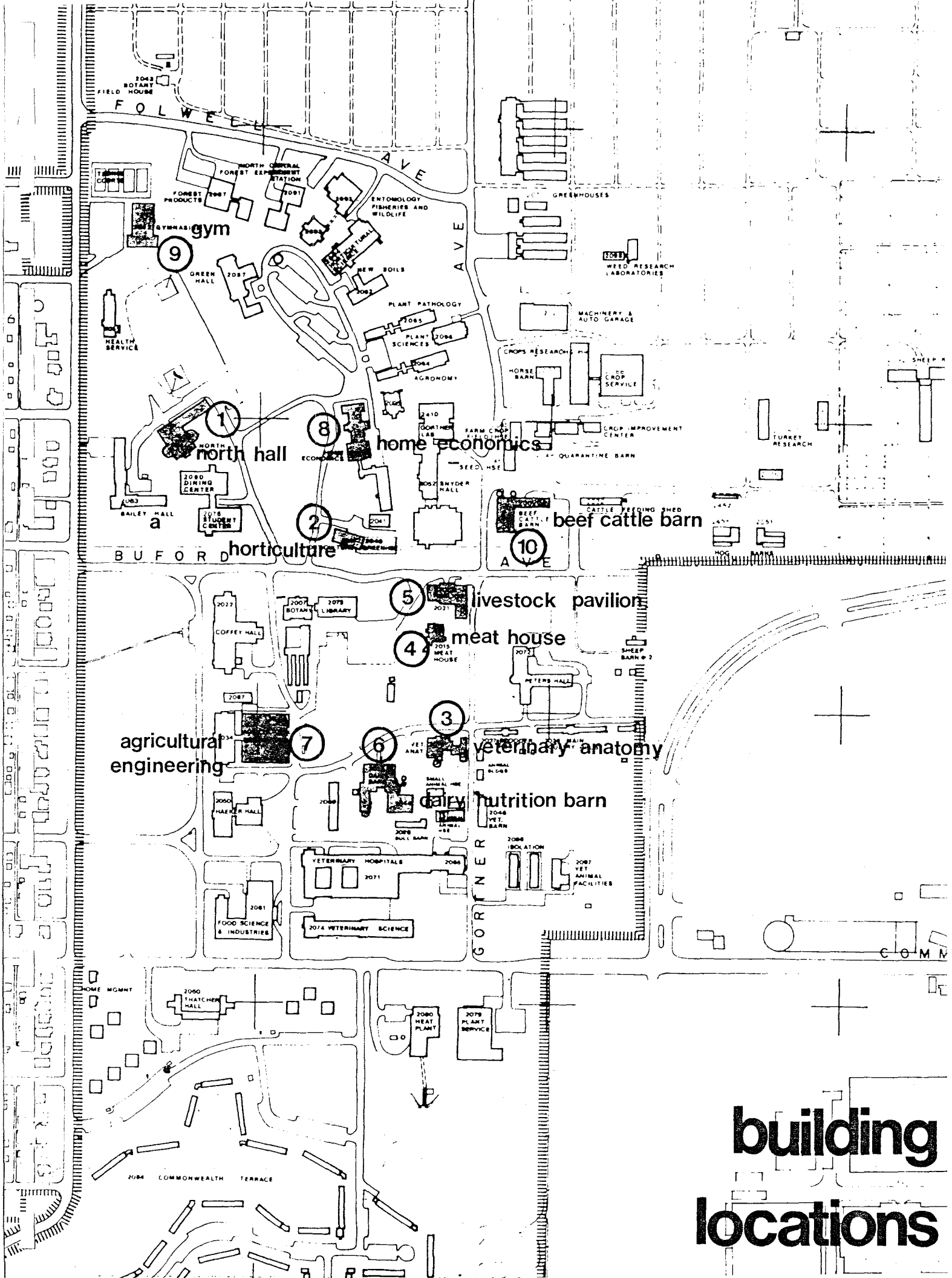
SAMPLE CHART

Cost Analysis Data:

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	70%	7.0%
Roofing	3	100	3.0
Flooring	4	0	0.0
Ceilings	3	20	.6
Partitioning	9	10	.9
Wall finishes	2	0	0.0
Fixed equipment	5	0	0.0
Miscellaneous	4	0	0.0
TOTAL	40%		11.5%
Excavation and substructure	5%	100%	5.0%
Vertical frame	2	100	2.0
Horizontal frame	18	90	16.2
TOTAL	25%		23.2%
Heating, ventilating, air cond.	20%	50%	10.0%
Plumbing	5	75	3.8
Electrical	10	65	6.5
TOTAL	35%		20.3%
GRAND TOTAL	100%		55.0%

NOTE: The actual value factor is a quantitative measure of how much of the old buildings are usable in comparison to a new one serving the same purpose. If, for example, a partitioning system represents nine percent of a new building's total budget, and ten percent of the partitioning in the subject building is reusable, then a value factor of .9 percent is derived. (10% of 9% = .9%)

A total value factor of 55%, therefore, means that 55% of the cost of a new building is already available in the old one.


gym
north hall
home economics
horticulture
beef cattle barn
livestock pavilion
meat house
agricultural engineering
veterinary anatomy
dairy nutrition barn
building locations

NORTH HALL

North Hall was constructed in 1895 and dedicated with a flourish of a colorful ceremony that included Cyrus Northrop and Governor John Pillsbury.[15] It was originally called "The Dining Hall" and retained that identity until 1960 when it began its gradual transformation from a dormitory to an office building.

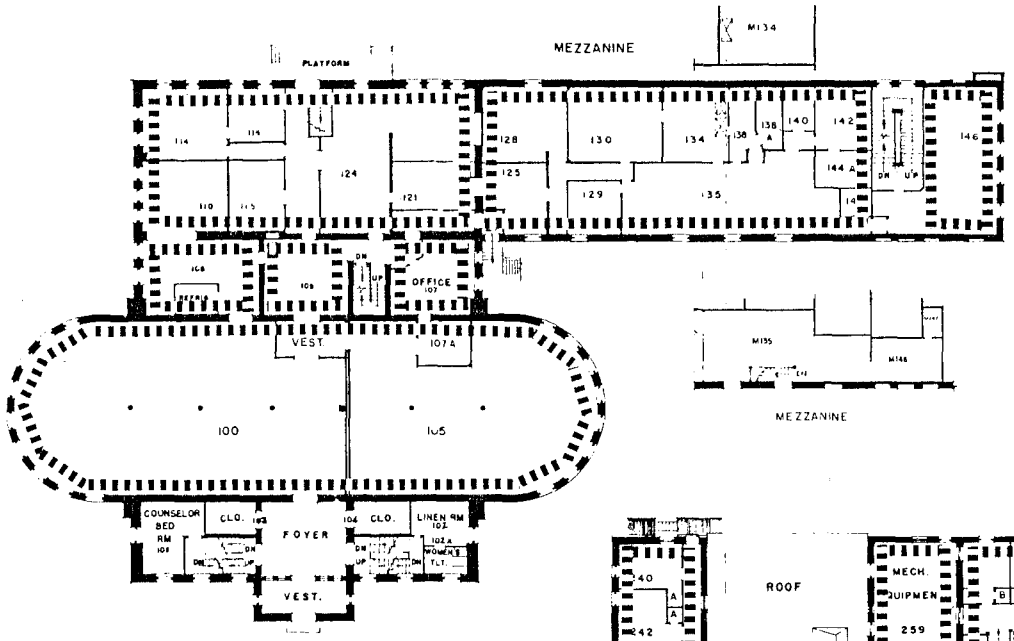
It is architectually classified as Romanesque revival. The abundance of arches and cornices, the storation and rusticated lower level are typical of period around 1900 in Minnesota and most of the old buildings on campus display similar features.

The interior was originally finished completely with white oak and was considered to be a significant and complementary addition to the small St. Paul Campus.[16] In 1911 a new wing was constructed to provide more dormitory space and the front entry was added in the 1930's with the help of the WPA.

At present, the building suffers from the afflictions of old age. The oak floors ripple, and the woodwork is either painted or completely destroyed by remodeling. The large dining area has been made into a theatre on one end and a photographic supply room on the other. The dormitory rooms have retained their configuration along axial corridors but the beds have been replaced by desks and file cabinets. The Photo Lab, the University Police, the College of Agriculture, CLA Sociology and Statistics Departments and the I.T. Math Department, presently share the building.

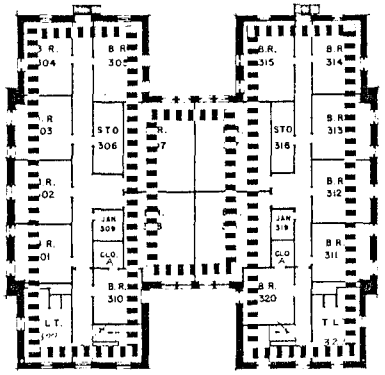
The Andrews Long Range Development Plan projects three possible uses for North Hall in the future: (1) Classroom and Office space for Agricultural Education; (2) A "decanting" space for campus wide use and/or space for the Rhetoric Department of the College of Agriculture; (3) Social Science Center for short term use only.

North Hall is surrounded by significant open spaces; on its southeast and southwest corners, the building adjoins shaded green areas that are listed in the John Andrews Planning Base as major visual assets of the Campus. On the north side a large, flat, grassy space offers an open view of the old Gym and entertains formal recreational activities.

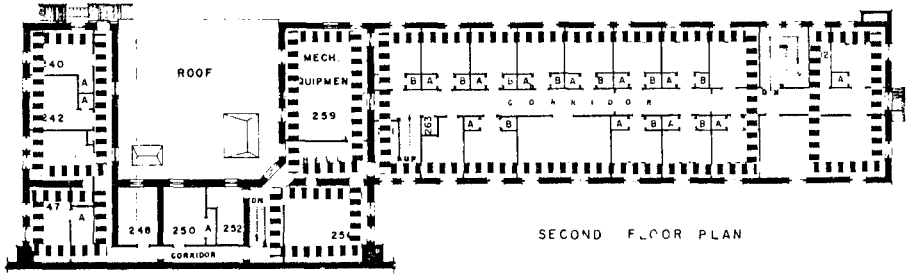


FIRST FLOOR PLAN

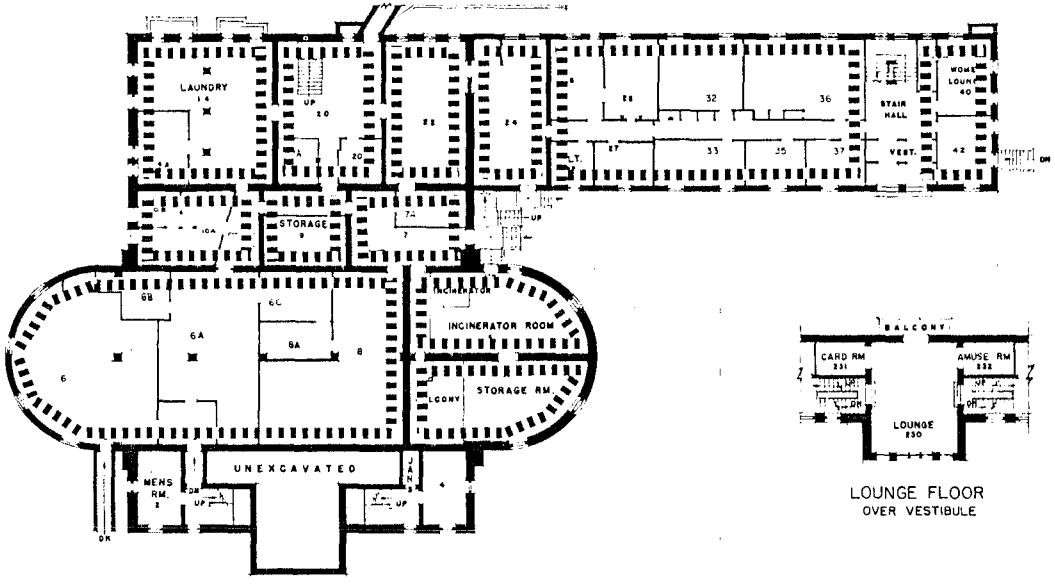
MEZZANINE



THIRD FLOOR

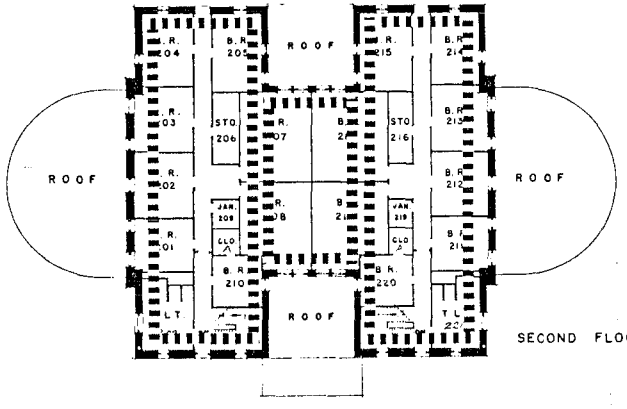


SECOND FLOOR PLAN



BASEMENT FLOOR PLAN

LOUNGE FLOOR
OVER VESTIBULE



SECOND FLOOR

NORTH

REVISIONS SEE XR40124

NO	DATE	NO	DATE	NO	DATE	NO	DATE

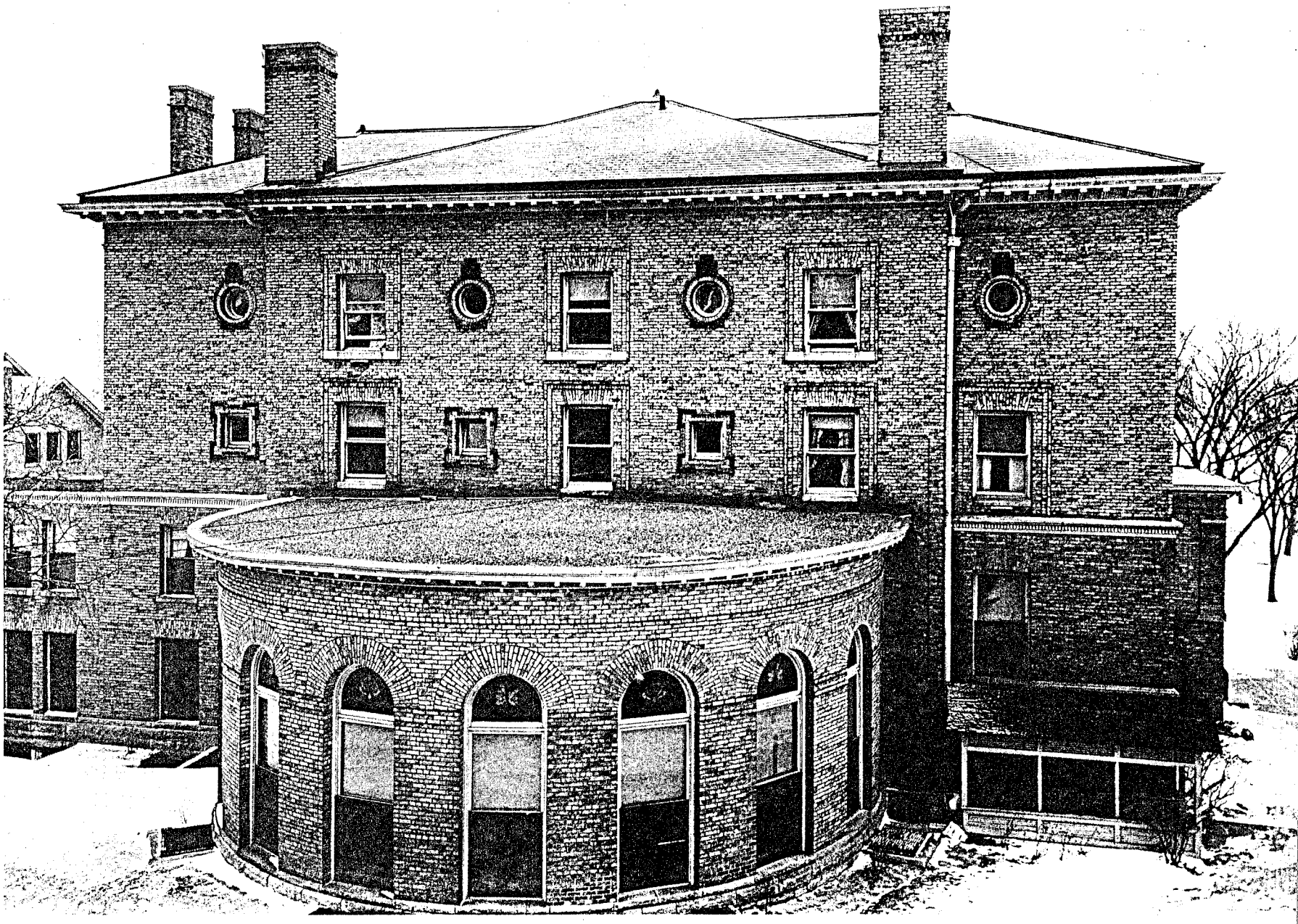
NORTH HALL

UNIVERSITY of MINN
ST. PAUL CAMPUS

PHYSICAL PLANT DEPARTMENT
APRIL 13, 1955

1938

north hall



1972

north hall

Available Space

Gross square footage: 57,232
Block square footage:
Over 2000 sq. ft. . . . . 10 blocks/31,704 total sq.ft.
Between 1000 and 2000 . . . . 1 block/1,088 total sq. ft.
Under 1000 sq. ft. . . . . 21 blocks/10,618 total sq. ft.

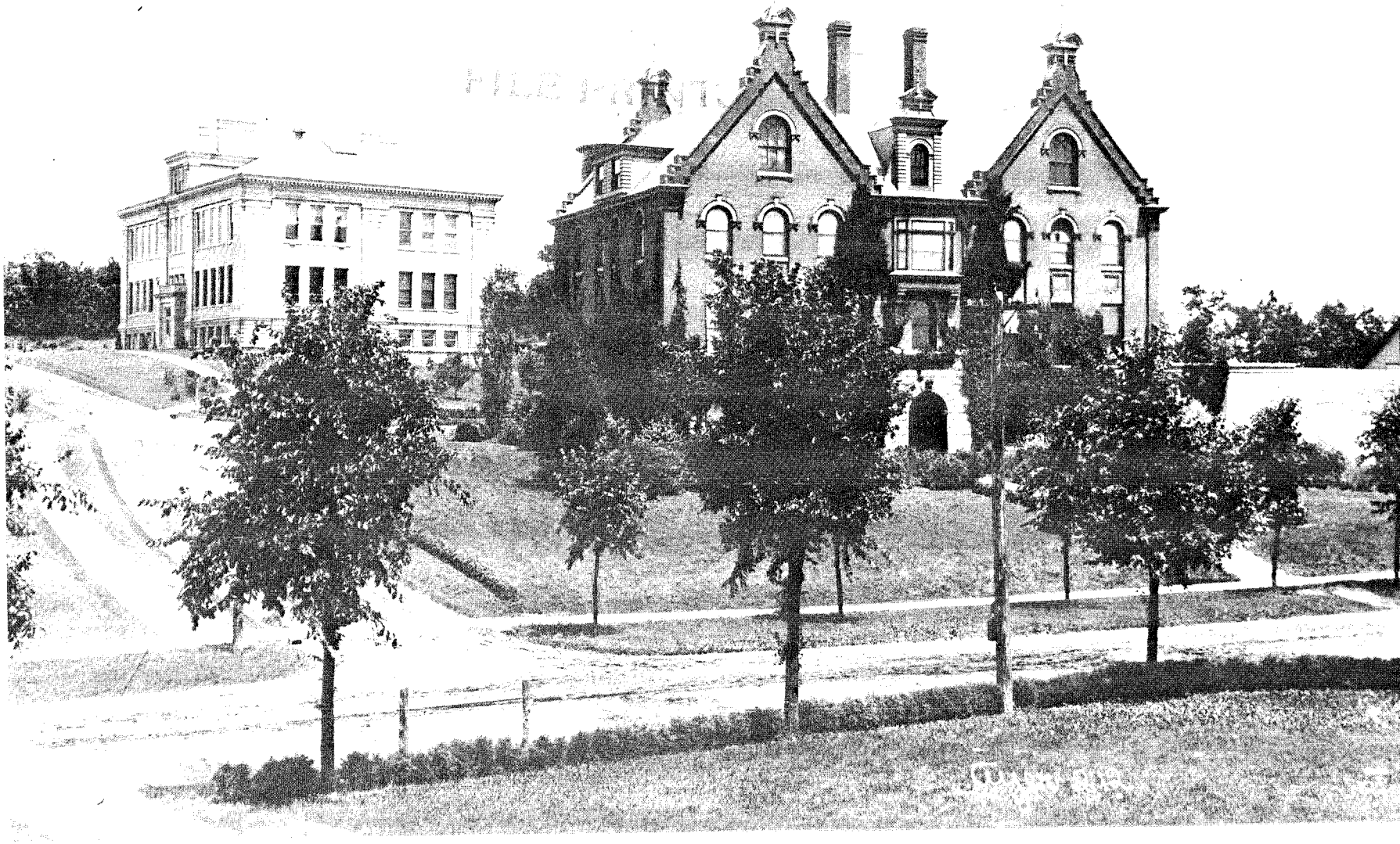
TOTAL. 43,410

Cost Analysis Data

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior Walls	10%	70%	7.0%
Roofing	3	0	0.0
Flooring	4	20	.8
Ceilings	3	20	.6
Partitioning	9	20	1.8
Wall finishes	2	0	0.0
Fixed equipment	5	0	0.0
Miscellaneous	4	0	0.0
TOTAL	40%		10.2%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	50	10.0
TOTAL	25%		15.0%
Heating, ventilating, air conditioning	20%	0%	0.0%
Plumbing	5	0	0.0
Electrical	10	0	0.0
TOTAL	35%		0.0%
GRAND TOTAL	100%		25.2%

1921

horticulture



1972

horticulture


PRODAVLOVIĆ

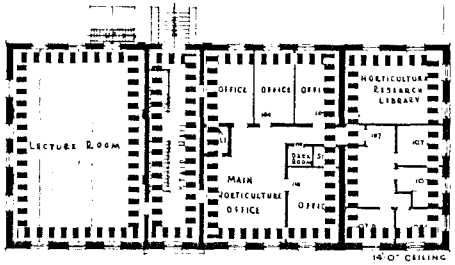
HORTICULTURE

The old Horticulture Building, originally known as "the Horticultural Hall and Physical Laboratory," was constructed in 1899 to house offices, classrooms, and a laboratory facility for the Horticulture Department. It was designed by Charles W. Aldrich and built by P. W. Delancy Construction Company for $24,998.[17] It was described as "substantial in every respect" and was particularly noteworthy because one room was given over to "the girls" for sewing class.[18]

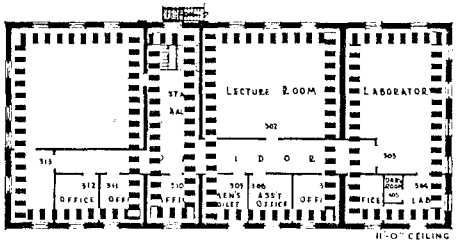
Early photographs clearly show that a major remodeling took place sometime before 1929. The gables were eliminated when a third floor was constructed and an addition was made to the east end of the building.

The Horticulture Building is another example of Romanesque revival architecture. The arched entry with its roundels, Romanesque lettering and decorative detail, coupled with the arched windows and the bay window on the second floor, firmly establish the building as a "product of its time" and relate it to many of the other old buildings on campus.

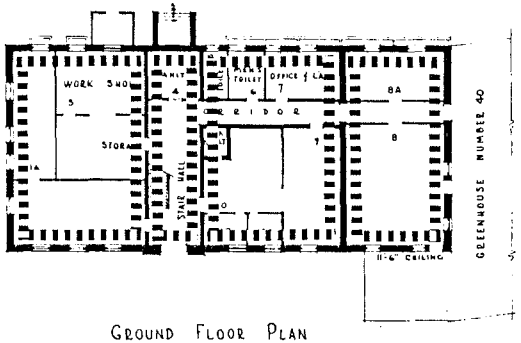
It has continued to serve the Horticulture Department through the years, giving up some space to the College of Home Economics (more room for "the girls"); it will become a permanent part of the Home Economics block when it is connected to a new addition to McNeal Hall.



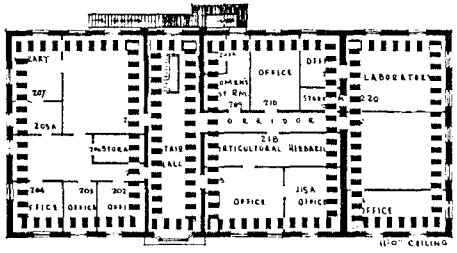
FIRST FLOOR PLAN



THIRD FLOOR PLAN



GROUND FLOOR PLAN



SECOND FLOOR PLAN

REVISIONS SEE XR 60124

No.	DATE	No.	DATE	No.	DATE	No.	DATE
						1	5/2/52
						2	11/4/63

HORTICULTURE

UNIVERSITY OF MINNESOTA
ST PAUL CAMPUS

PHYSICAL PLANT DEPARTMENT
AUGUST 19, 1936

Available Space

Gross square footage: 21,244
Block square footage:
Over 2,000 sq. ft. 0
Between 1,000 and 2,000 . . . .12 blocks/16,512 total sq. ft.
Under 1,000 sq. ft. . . . . 4 blocks/2,304 total sq. ft.

Total 18,816

Cost Analysis Data:

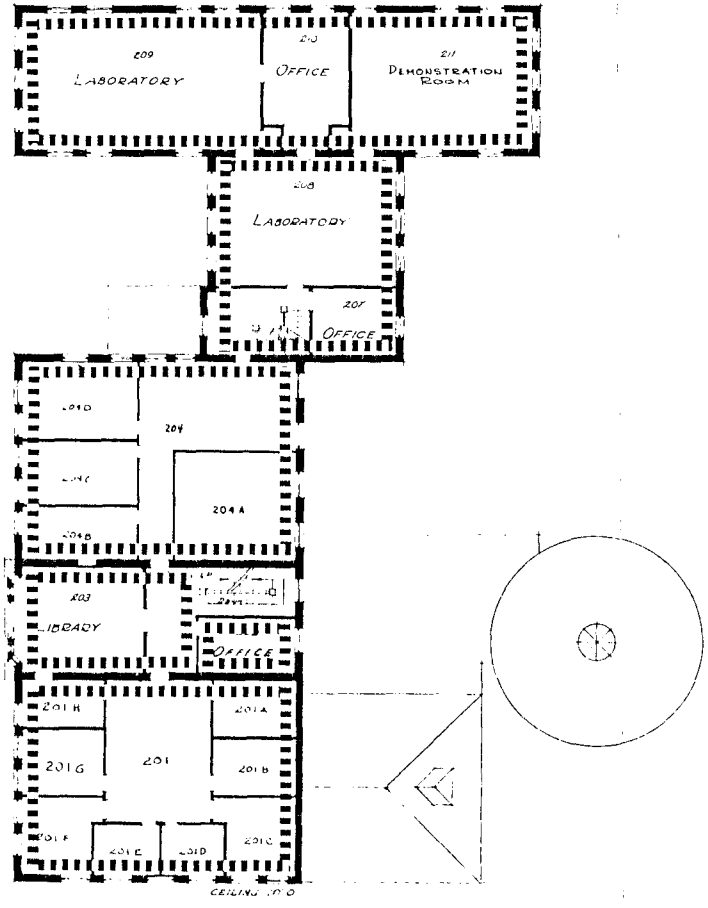
	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	100%	10.0%
Roofing	3	100	3.0
Flooring	4	80	3.2
Ceilings	3	50	1.5
Partitioning	9	10	.9
Wall finishes	2	0	
Fixed equipment	5		
Miscellaneous	4		
TOTAL	40%		18.6%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	70	14.0
TOTAL	25%		19.0%
Heating, ventilating, air cond.	20%	0%	
Plumbing	5	0	
Electrical	10	10	.1%
TOTAL	35%		.1%
GRAND TOTAL	100%		37.7%

1920

veterinary anatomy

1972

veterinary anatomy



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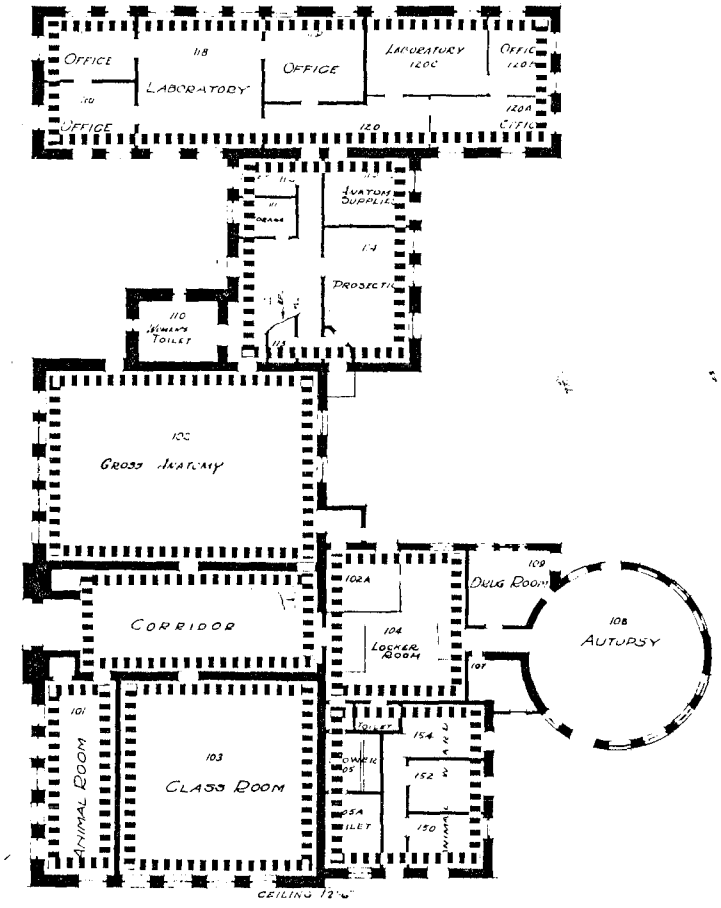


FIRST FLOOR

VETERINARY ANATOMY

ST PAUL CAMPUS
UNIVERSITY OF MINNESOTA

PHYSICAL PLANT DEPARTMENT
DEC. 1, 1928

REVISIONS SEE XR 6012-A

No.	DATE	No.	DATE	No.	DATE	No.	DATE
						1	5/10/52
						2	8/28/58

SHEET 1 OF 1

VETERINARY ANATOMY

Before the completion of the Veterinary Anatomy Building in 1901, the Department of Veterinary Science was housed in an old barn with a roof that was "ready to fall in".[19] Since that time Veterinary Anatomy has faithfully provided classroom, laboratory and office space for the study of Veterinary Science. Its future may hold a surprising change: The Andrews Development Plan has scheduled it to become part of a projected fine arts complex.

The popular Romanesque revival style that influenced the design of North Hall and the Horticulture Building is evident in Veterinary Anatomy. Similar massing and characteristic details like roundels and an arched entry relate these buildings visually and give them a sense of shared history.

Available Space

Gross square footage: 36,684
Block square footage:
Over 2,000 sq. ft. . . . . 5 blocks/14,260 total sq. ft.
Between 1,000 and 2,000 . . 8 blocks/12,524 total sq. ft.
Under 1,000 sq. ft. . . . . 4 blocks/1,444 total sq. ft.

Total 28,228

Cost Analysis Data:

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	90%	9.0%
Roofing	3	20	.6
Flooring	4	40	1.6
Ceilings	3	40	1.2
Partitioning	9	20	1.8
Wall finishes	2	0	
Fixed equipment	5	20	1.0
Miscellaneous	4	0	
TOTAL	40%		15.2%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	50	10.0
TOTAL	25%		15.0%
Heating, ventilating, air cond.	20%	0%	
Plumbing	5	0	
Electrical	10	0	
TOTAL	35%		0.0%
GRAND TOTAL	100%		30.2%

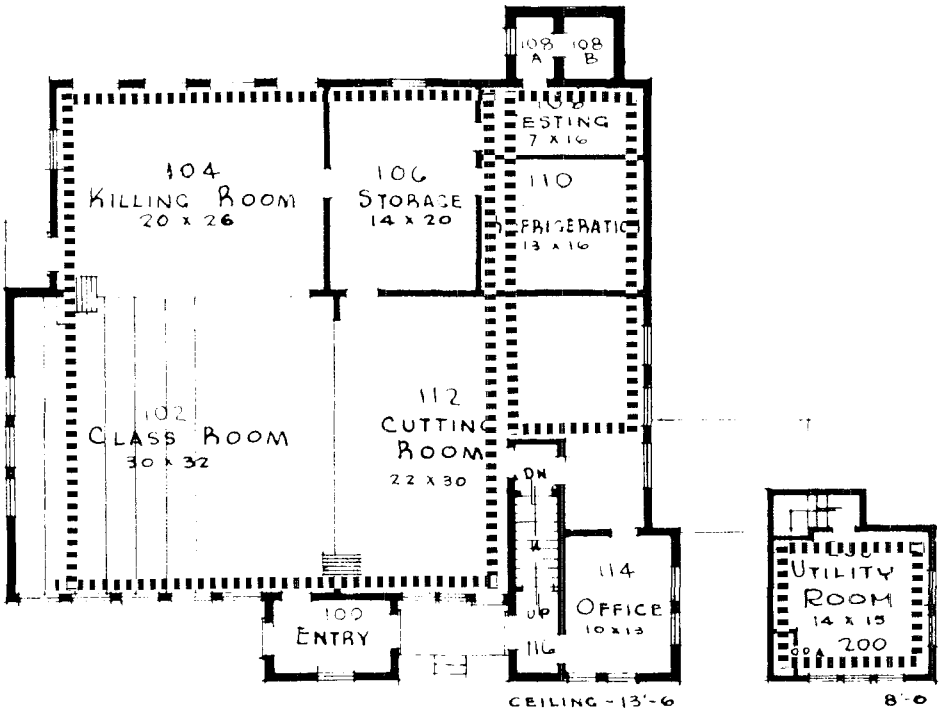
1915

meat house

4625

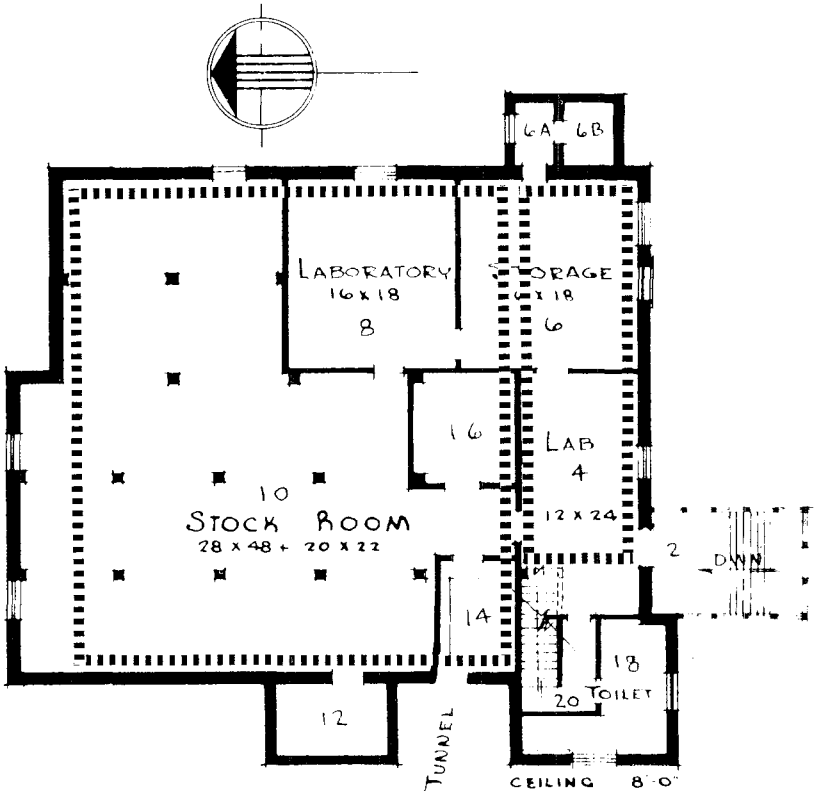
1972

meat house



FIRST FLOOR PLAN

2ND FLOOR



BASEMENT FLOOR PLAN

MEAT HOUSE 15

REVISIONS SEE XR 60124							
No	DATE	No	DATE	No	DATE	No	DATE
						1	6/9/52

POWERHOUSE — MEAT HOUSE

MEAT HOUSE

The University of Minnesota was a pioneer in the field of meat processing education. Prior to 1901 University students were learning how to butcher in an old silo;[20] after 1901 they were studying Meat Science in the Meat House. It was the first facility of its kind in the country and it has served its original purpose until this year; in December the Meat Science Laboratory will be moved out of the Meat House into the new northwest wing of the Food Science and Industries Building.

The building displays no visible historic architectural features. The present siding probably replaced the original wood siding sometime in the 1940's, and the structural system is evident only in the attic which is almost inaccessible.

Available Space

Gross square footage: 7,594
Block square footage:

Over 2,000 sq. ft.	2 blocks/4,400 total sq. ft.
Between 1,000 and 2,000 . .	
Under 1,000 sq. ft.	7 blocks/1,616 total sq. ft.
Total	6,016

Cost Analysis Data:

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	100%	10.0%
Roofing	3	20	6.0
Flooring	4	70	2.8
Ceilings	3	30	.9
Partitioning	9	20	1.8
Wall finishes	2	0	
Fixed equipment	5	0	
Miscellaneous	4	0	
TOTAL	40%		21.5%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	100	20.0
TOTAL	25%		25.0%
Heating, ventilating, air cond.	20%	0%	
Plumbing	5	0	
Electrical	10	0	
TOTAL	35%		0%
GRAND TOTAL	100%		46.5%

1928

livestock pavilion

1972

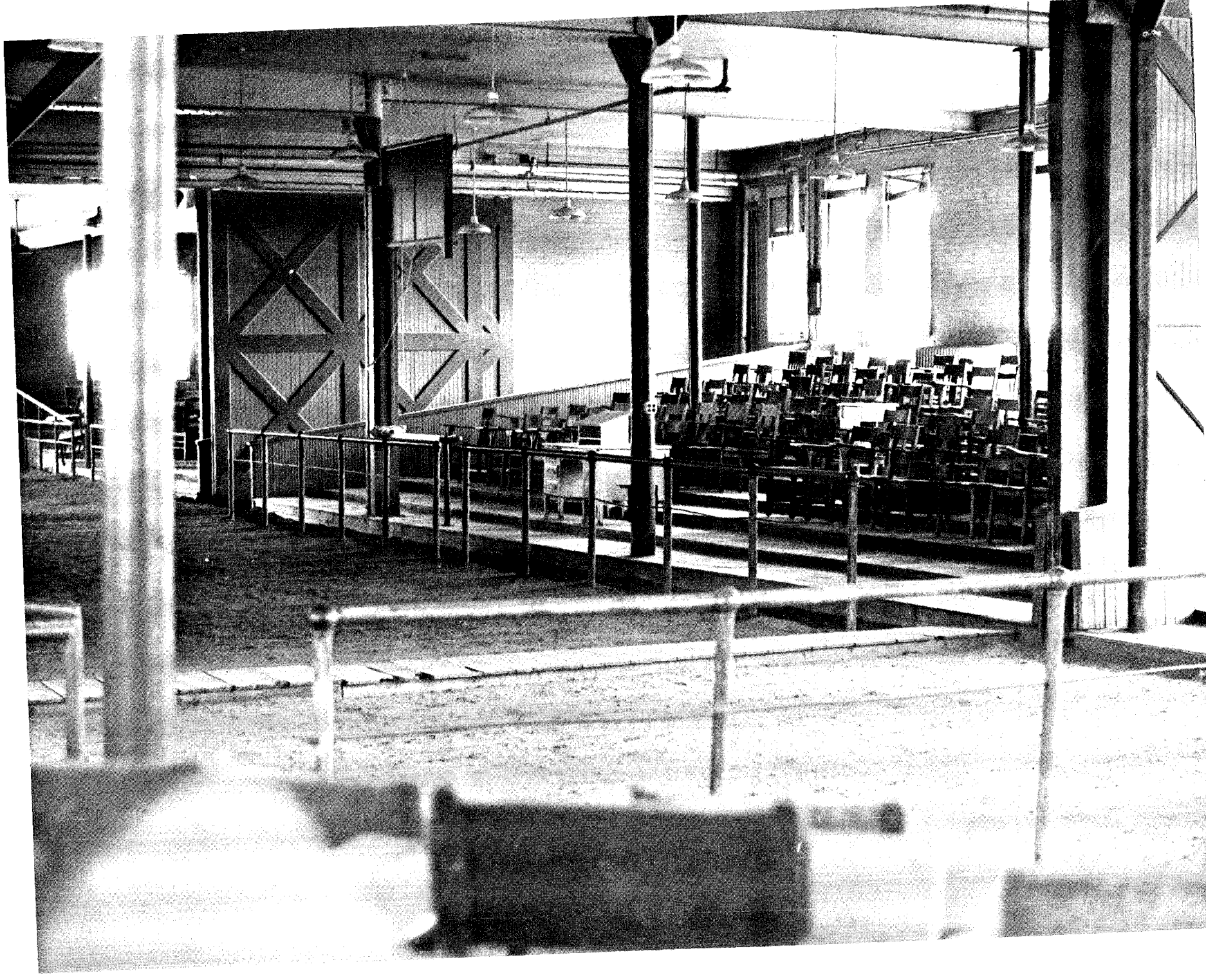
livestock pavilion

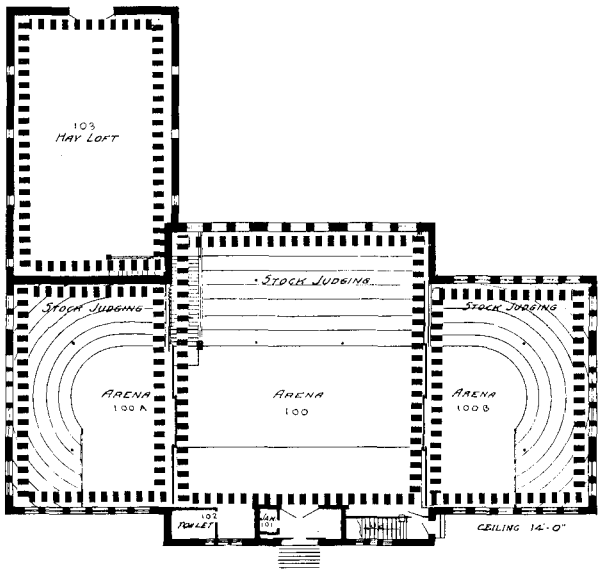
LIVESTOCK PAVILION

The Livestock Pavilion, constructed in 1904, has traditionally served as a livestock amphitheatre. The dirt floor in the show area and the barn-like quality of the east wing have prevented a significant change of function. The second level over the show room has been occupied by the Interior Design Department of the School of Home Economics, and the original Andrews Development Plan suggested that the building become part of the Home Economics Complex. Further consideration, however, has changed the original recommendation, and the future of the building is presently uncertain.

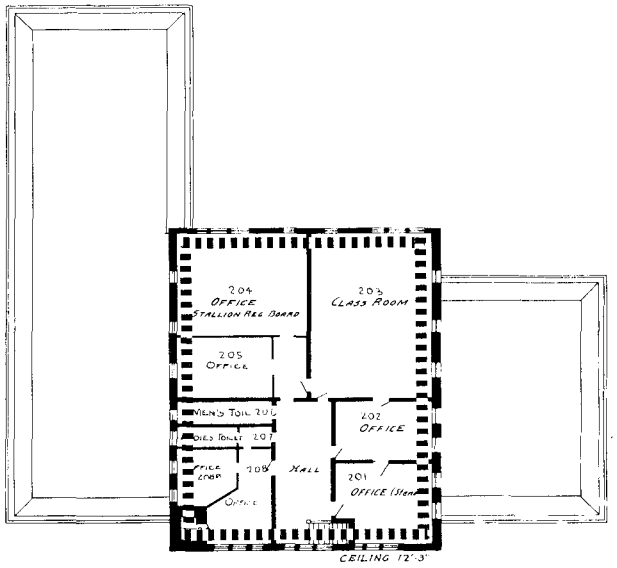
The Minnesota Historical Society classified the Livestock Pavilion as "a weak attempt at Greek revival architecture." It has subtly expressed traces of columns and lintels and a strong statement of the architrave. Inside, the amphitheatre takes the shape of a carriage house with three subdivisions and a large central doorway.

The building seems to offer a good deal of usable space, but in this case the floor plans are deceptive. Low ceilings, dirt or irregular concrete floors, inadequate insulation and poor access tend to reduce the desirability of much of the usable space.





FIRST FLOOR



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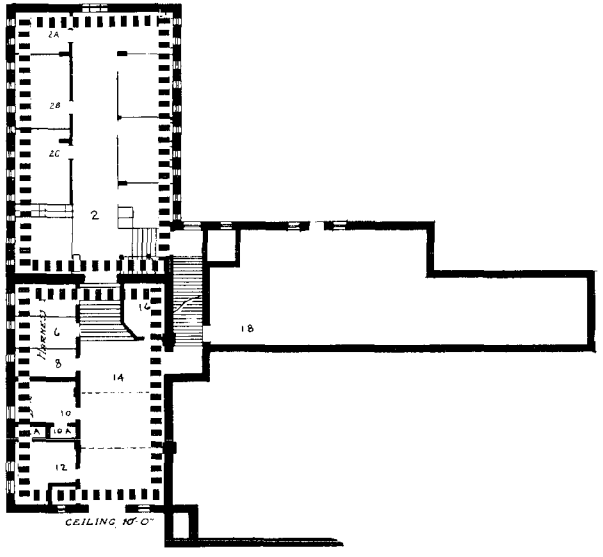
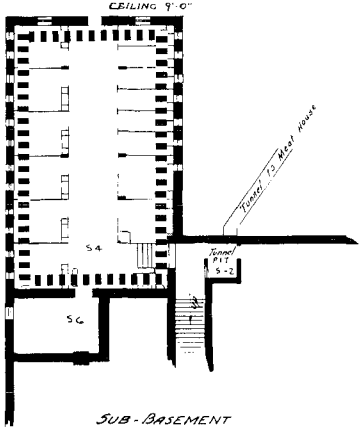


BASEMENT



SUB-BASEMENT

REVISIONS SEE XR 6012A

No.	DATE	No.	DATE	No.	DATE	No.	DATE
						1	6/8/32

LIVE STOCK PAVILION

ST. PAUL CAMPUS
University of Minnesota

Dec. 5, 74

PHYSICAL PLANT DEPT.

LEGEND

37'x53' - 1982. Size. Area Sq. ft
R.F. Raised floor
B 339 Lineal ft Blackboard
M - Motor connection
L - Lantern Connection
W - Water
G - Gas

Available Space

Gross square footage: 27,169
Block square footage:

Over 2,000 sq. ft.	5 blocks/15,312 total sq. ft.
Between 1,000 and 2,000 . .	4 blocks/7,012 total sq. ft.
Under 1,000 sq. ft.	1 block/608 total sq. ft.
Total	22,932

Cost Analysis Data:

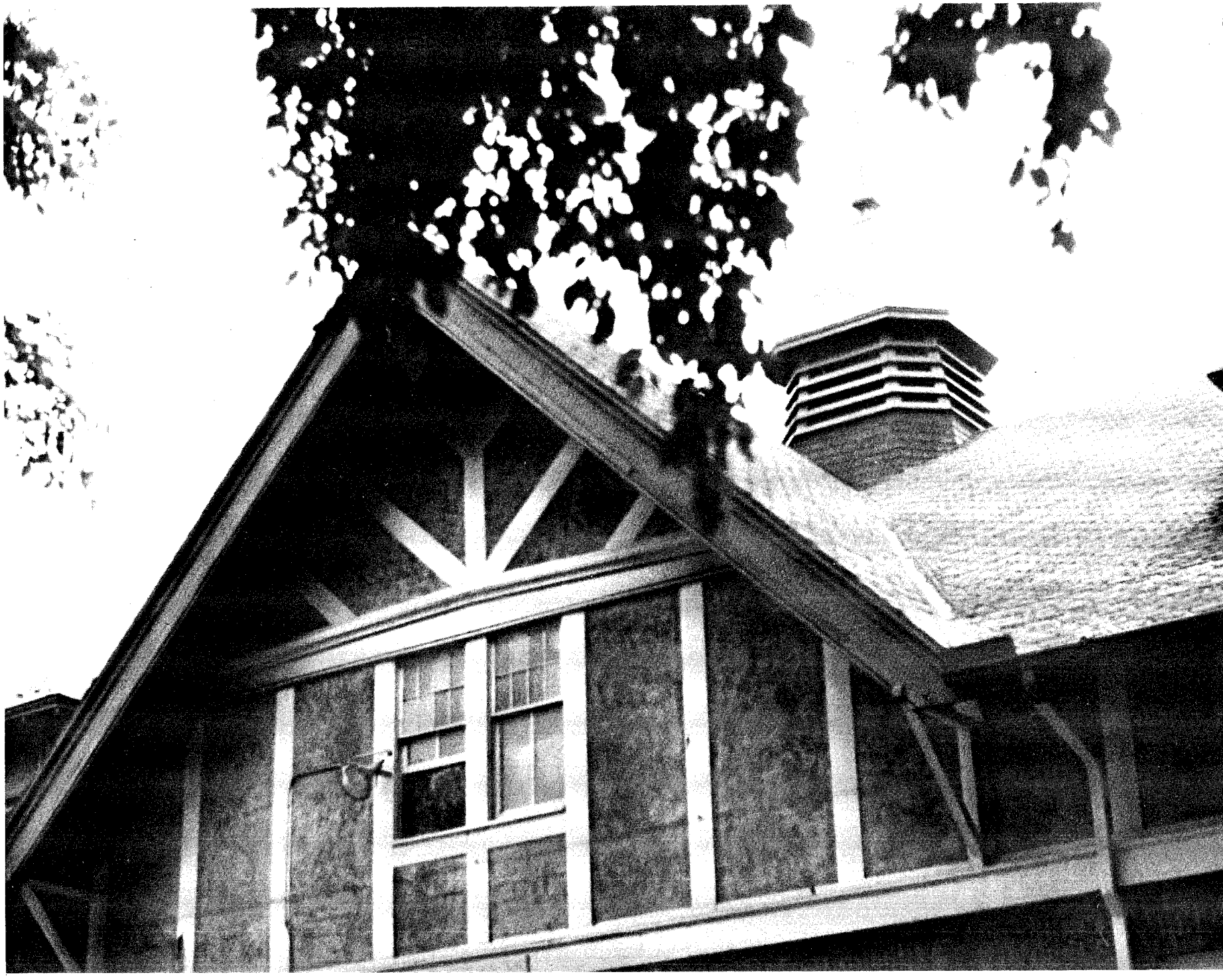
	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	100%	10.0%
Roofing	3	70	2.1
Flooring	4	0	0
Ceilings	3	20	.6
Partitioning	9	10	
Wall finishes	2	0	
Fixed equipment	5	0	
Miscellaneous	4	0	
TOTAL	40%		12.7%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	50	10.0
TOTAL	25%		15.0%
Heating, ventilating, air cond.	20%	0%	
Plumbing	5	0	
Electrical	10	10	.1%
TOTAL	35%		.1%
GRAND TOTAL	100%		27.8%

1912

dairy nutrition barn

1972

dairy nutrition barn



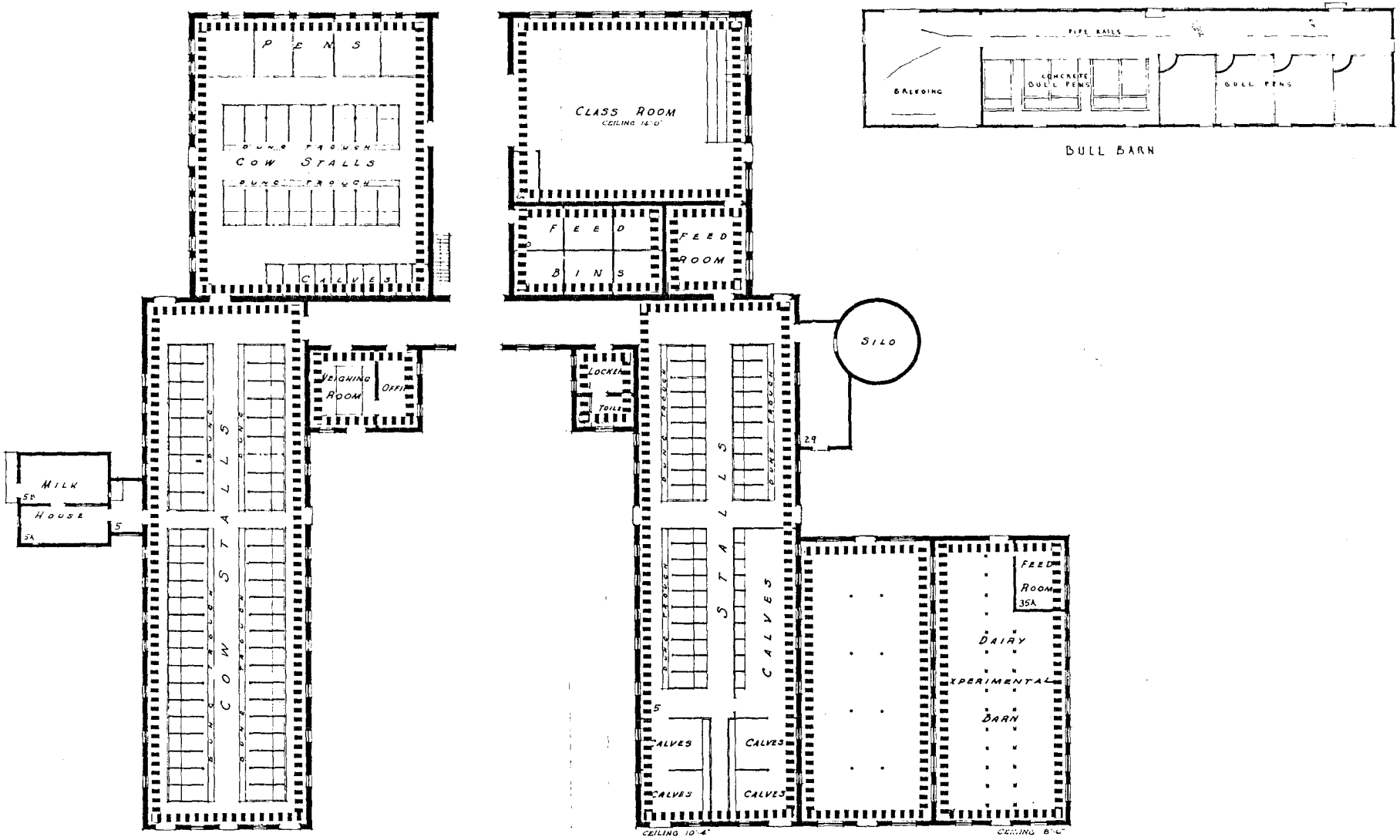
DAIRY NUTRITION

The Dairy Nutrition Barn was built in 1907 to facilitate innovative dairy research being conducted by Avant-Garde Agriculture Professor Haeker. He was one of the first scientists in the country to investigate the relationship between milk production and the rearing and feeding process. The building has accepted various additions since that time but never a major change of function.

The gables, half timer, and English cupola on the roof make it look very much like an English Jacobean manor house, and relate it to the architecture of the 1890's.

The Andrews plan suggests the possibility of using the Dairy Barn as part of the Arts Complex but there are problems that will have to be dealt with. First, there is no heat in the building; it is a barn and it is not warm enough for regular human use. Secondly, the stalls for the cows are cast as part of concrete floor which will make them difficult to remove for remodeling.

The University honored Professor Haeker by naming an academic building after him, but little formal recognition has been awarded to his helpmate, the Dairy Nutrition Barn.[21]



GROUND FLOOR PLAN

BULL BARN

REVISIONS SEE XR 60124

No.	DATE	No.	DATE	No.	DATE	No.	DATE
						1	6/13/36

DAIRY & BULL BARNS

UNIVERSITY OF MINNESOTA
ST. PAUL CAMPUS

PHYSICAL PLANT DEPARTMENT

SEPTEMBER 21, 1936

Available Space

Gross square footage: 58,580

Block square footage:	
Over 2,000 sq. ft.	8 blocks/48,140 total sq. ft.
Between 1,000 and 2,000 . .	2 blocks/3,088 total sq. ft.
Under 1,000 sq. ft.	3 blocks/1,824 total sq. ft.
Total	53,052

Cost Analysis Data:

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	30%	3.0%
Roofing	3	60	1.8
Flooring	4	20	.8
Ceilings	3	0	.0
Partitioning	9	20	1.8
Wall finishes	2	0	
Fixed equipment	5	0	
Miscellaneous	4	0	
TOTAL	40%		7.4%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	70	14.0
TOTAL	25%		19.0%
Heating, ventilating, air cond.	20%	0%	
Plumbing	5	0	
Electrical	10	10	.1%
TOTAL	35%		.1%
GRAND TOTAL	100%		26.5%

1900

agricultural engineering

1972

agricultural engineering


NO
PARKING
ANY
TIME
45¢

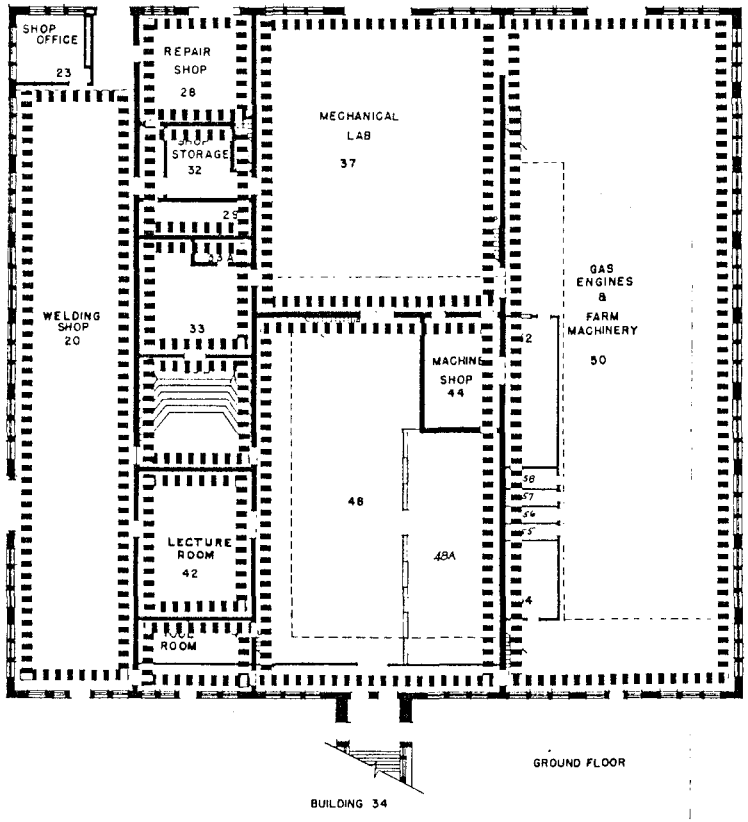
AGRICULTURAL ENGINEERING

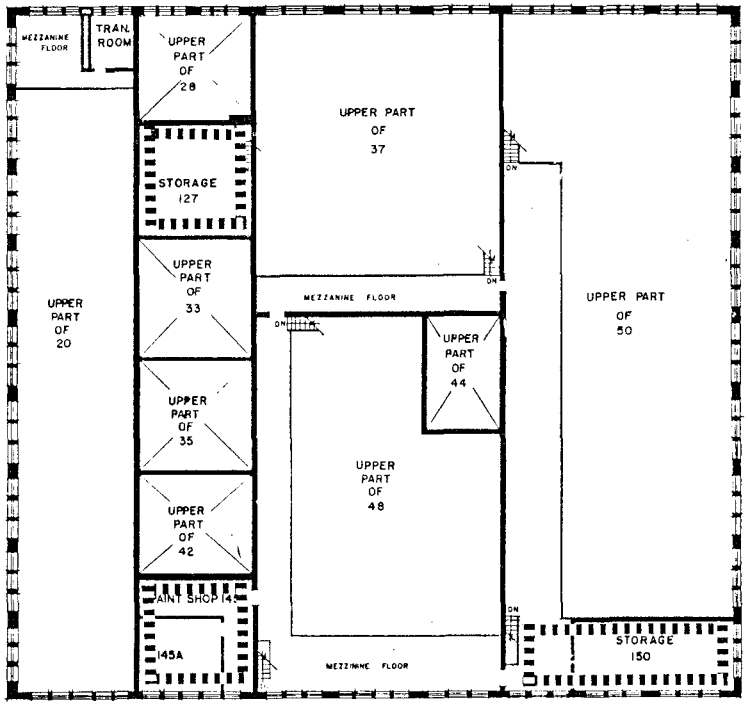
The Agricultural Engineering Shops Building was constructed in 1913 to house the Mechanical Arts Department of the School of Agriculture. The building consists of four large three story spaces and several smaller classroom and storage rooms. All of the large spaces have natural lighting provided by large windows and a skylight that runs the length of the building from east to west.

The building is presently used as a work shop for Agricultural Engineering students; tractors and other farm equipment are moved in and out through large doors on the east end. The Andrews Development Plan Projects a major change in use since it locates the building in the proposed Social Science Area. It could either house the Rhetoric Department or become a library and learning center.

The building is surprisingly fresh and bright on the inside. The glazed brick and exposed steel truss have been well preserved and provide an adequate space for its present use.

Roundles and arched windows reveal some effort to include the Agricultural Engineering Building in the Romanesque revival tradition that is evident in the Horticulture Hall and Veterinary Anatomy Building.





NORTH

REVISIONS SEE XR 60124							
No	Date	No	Date	No	Date	No	Date

AGRICULTURAL ENGINEERING SHOPS

SAINT PAUL CAMPUS
UNIVERSITY OF MINNESOTA

OFFICE OF THE SUPERVISING ENGINEER

OCT 1994 SHEET 1 OF 1

Available Space

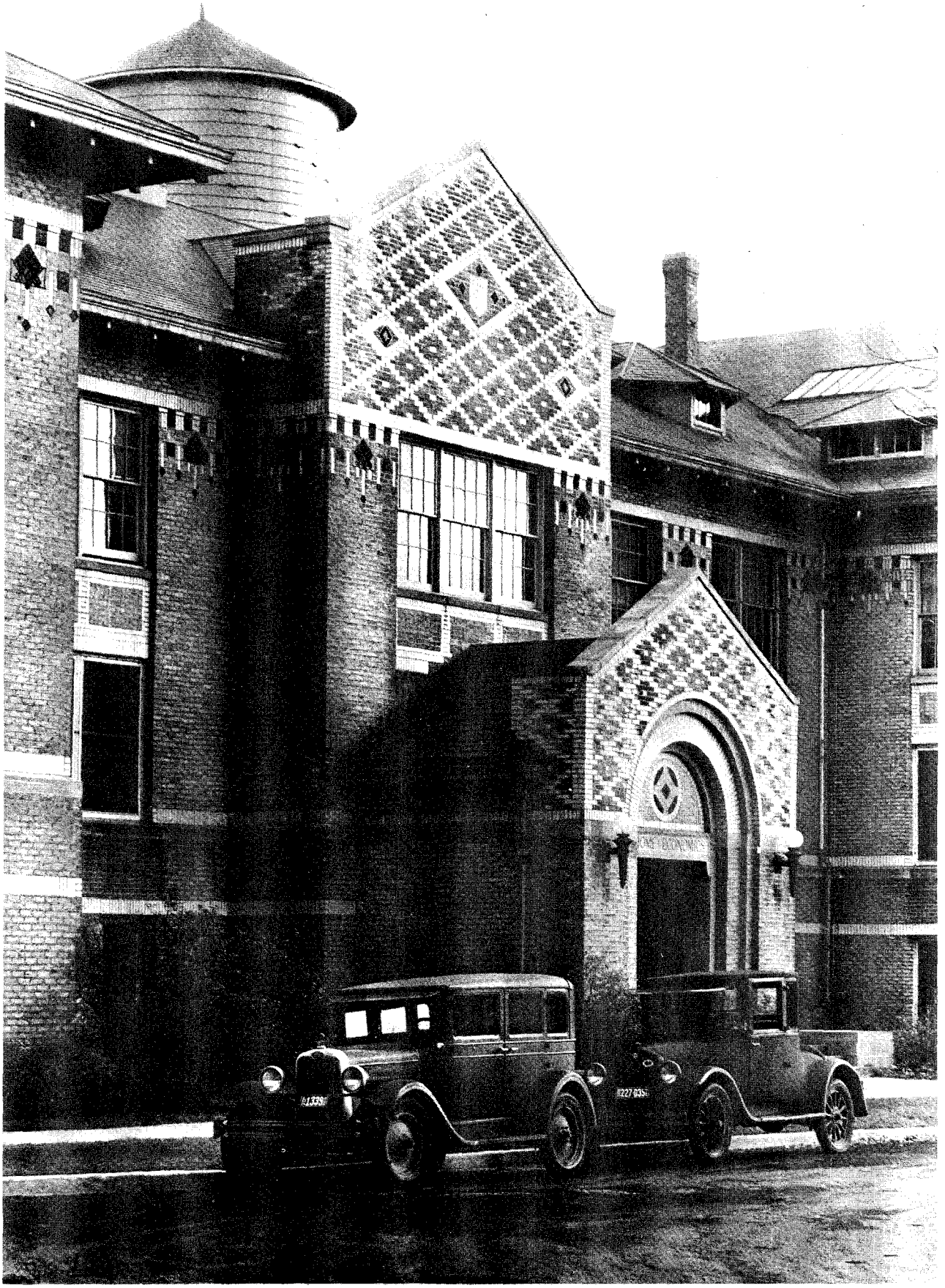
Gross square footage: 34,848

Block square footage:		
Over 2,000 sq. ft.	4 blocks/20,768 total sq. ft.	
Between 1,000 and 2,000 . .		
Under 1,000 sq. ft.	6 blocks/5,968 total sq. ft.	
Total		26,720

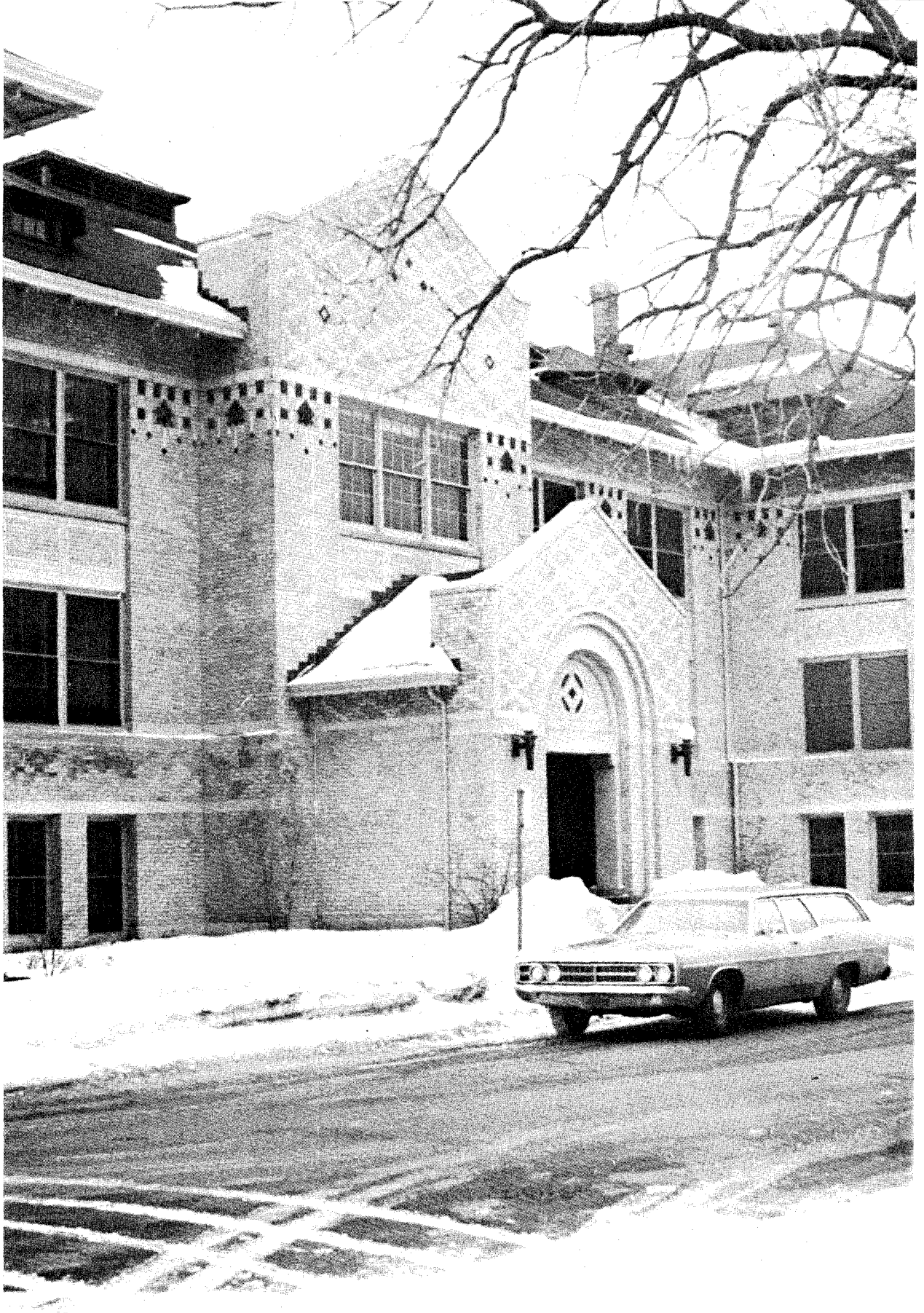
Cost Analysis Data:

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	100%	10.0%
Roofing	3	100	3.0
Flooring	4	100	4.0
Ceilings	3	100	9.0
Partitioning	9	100	2.0
Wall finishes	2	100	
Fixed equipment	5	80	4.0
Miscellaneous	4	0	0
TOTAL	40%		32.0%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	100	20.0
TOTAL	25%		25.0%
Heating, ventilating, air cond.	20%	0%	0%
Plumbing	5	100	5.0
Electrical	10	80	8.0
TOTAL	35%		13.0%
GRAND TOTAL	100%		65.0%

1929



home economics



1972

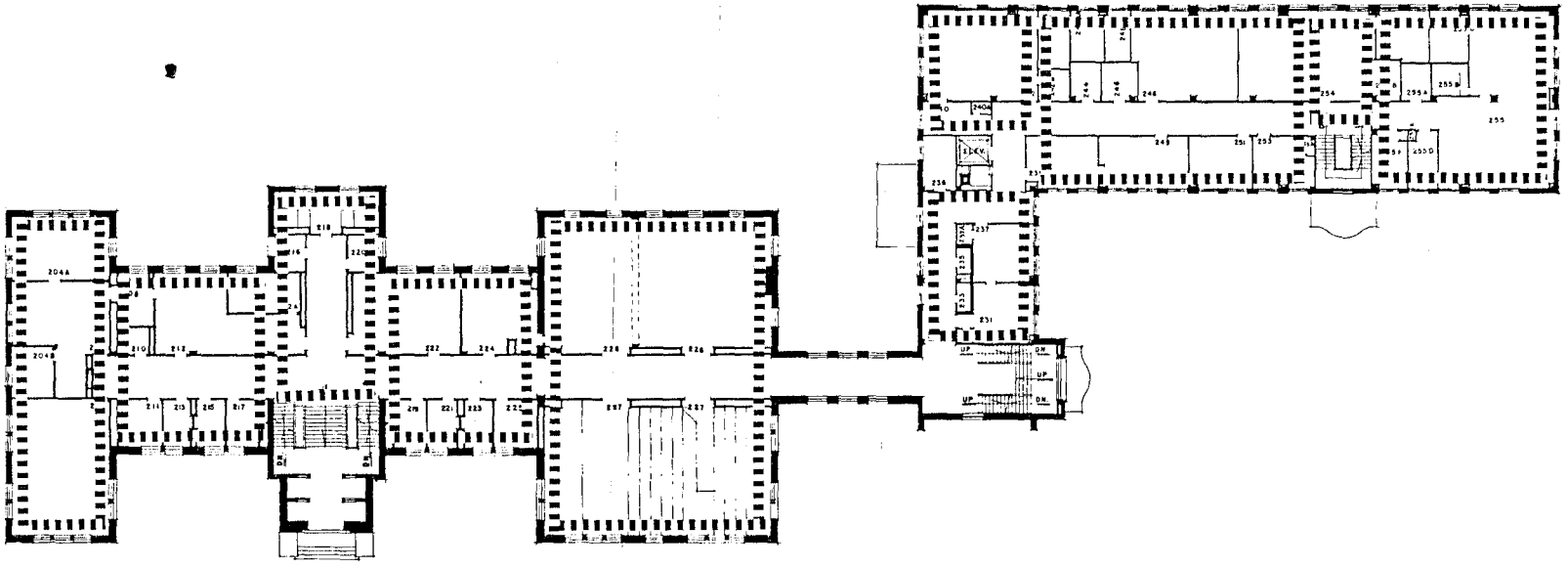
home economics

1921

fireside room

1972

fireside room



SECOND FLOOR

REVISIONS SEE XR 60124

No.	DATE	No.	DATE	No.	DATE	No.	DATE
						1	1-9-52
						2	3-25-52

McNEAL HALL
HOME ECONOMICS

ST. PAUL CAMPUS
UNIVERSITY OF MINNESOTA
OFFICE OF THE SUPERVISING ENGINEER
SHEET 4 OF 6 SHEETS

FEBRUARY 1951

HOME ECONOMICS

In 1904 the Department of Home Economics was created as part of the School of Agriculture. The "ladies" began immediately to seek funds for their own building. Their teas and benefits decisively failed to produce the necessary amount, but the President of the School of Agriculture promised to rescue their cause by requesting a new college building. In 1914 the Home Economics Building was completed and the ladies have occupied it ever since.[22] Several additions have increased the building to approximately twice its original size, and still another addition is in the planning stage.

The original building is part of the Romanesque revival movement on campus, but the most recent addition resembles the 1940's motif present in Coffman Union on the Minneapolis Campus. In the old section, the decorative brick detail resembles that of the Gym and the entry is similar to those in the Horticulture Hall and the Veterinary Anatomy Building.

Old Home Economics has been remodeled and up-dated regularly and is in very good condition. Plans for its future use as part of the Home Economics Complex are now in their final stages.

Available Space

Gross square footage: 88,144

Block square footage:		
Over 2,000 sq. ft.	8 blocks/29,440 total sq. ft.	
Between 1,000 and 2,000 . .	24 blocks/37,760 total sq. ft.	
Under 1,000 sq. ft.	8 blocks/5,520 total sq. ft.	
Total		72,720

Cost Analysis Data:

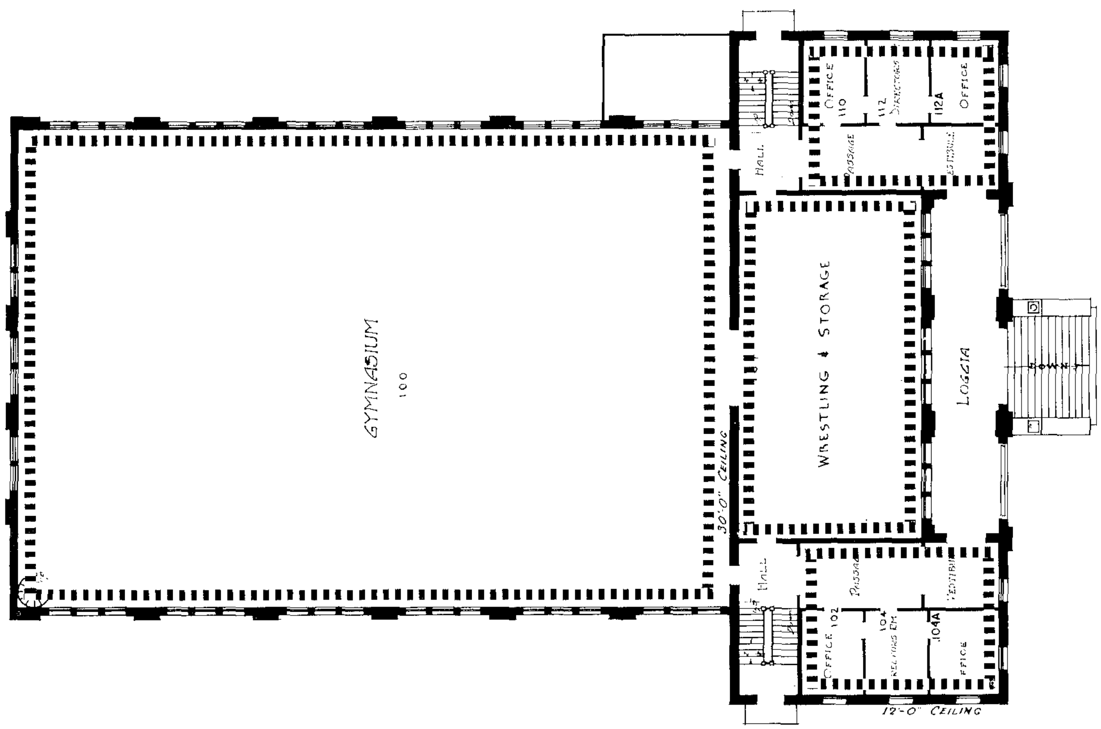
	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	100%	10.0%
Roofing	3	60	1.8
Flooring	4	90	3.6
Ceilings	3	70	2.1
Partitioning	9	40	5.4
Wall finishes	2	0	
Fixed equipment	5	40	2.0
Miscellaneous	4	0	0
TOTAL	40%		24.9%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	80	16.0
TOTAL	25%		21.0%
Heating, ventilating, air cond.	20%	100%	20.0%
Plumbing	5	70	3.5
Electrical	10	70	7.0
TOTAL	35%		30.5%
GRAND TOTAL	100%		76.4%

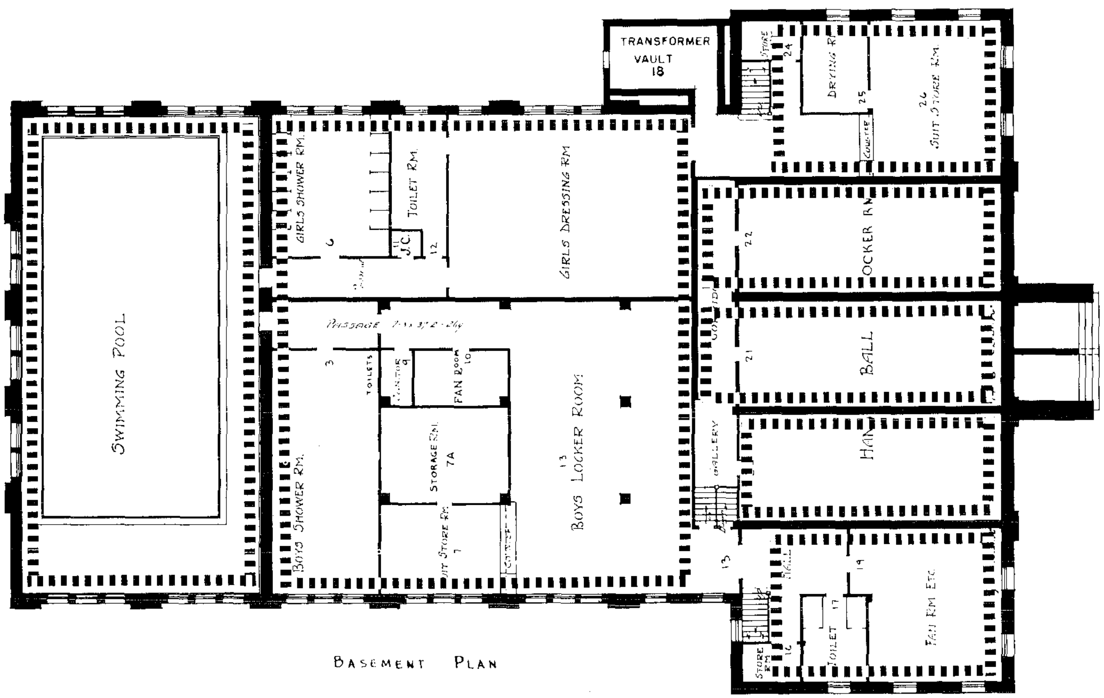
1929

gym

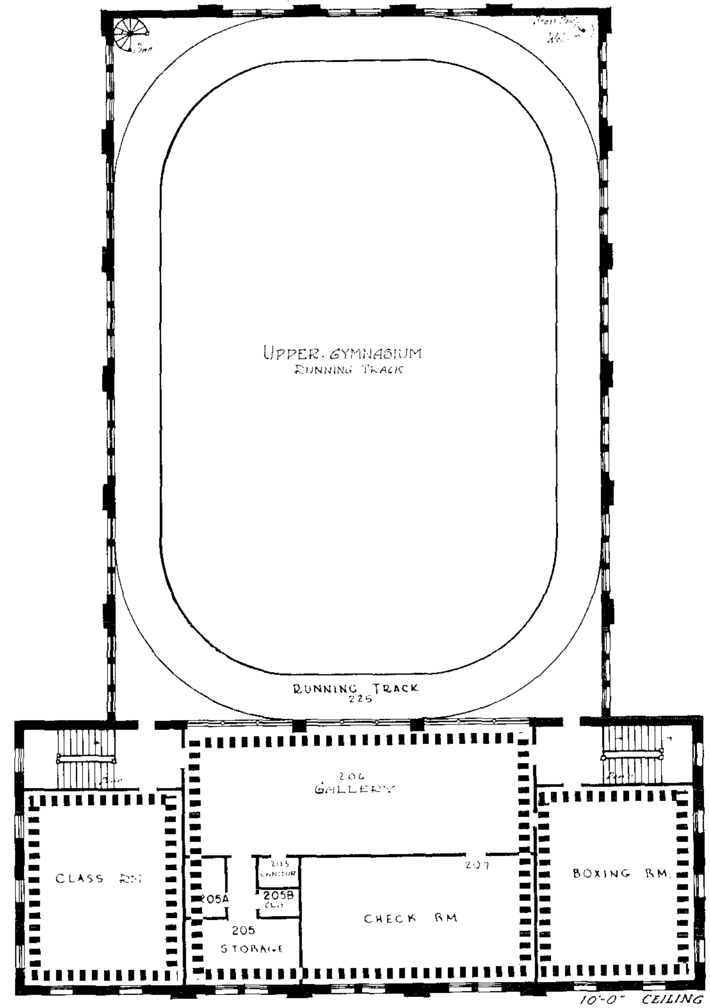
1972

gym





BASEMENT PLAN



REVISIONS	SEE XR 60124						
No.	DATE	No.	DATE	No.	DATE	No.	DATE
						1	5/12/51
						2	71657

GYMNASIUM
ST. PAUL CAMPUS
University of Minnesota

June 8 '15

Physical Plant Department
REVISED NOV 14 '28

GYM

The gym was built in 1915. Leaving very little recorded history in its wake, it has quietly served as a physical education and recreation center for St. Paul Campus and will probably continue to do so in the future. It is in good physical condition and the Long Range Development Plan has scheduled it to be part of the Health Sciences Facilities on the St. Paul Campus.

It looks somewhat like a Renaissance palace and is undoubtedly a Romanesque revival building. It has a distinctive corbel table, a monochrome brown color scheme in the brick detail, and the unmistakable arched entryway that is so common in these older campus buildings.

Available Space

Gross square footage: 37,161

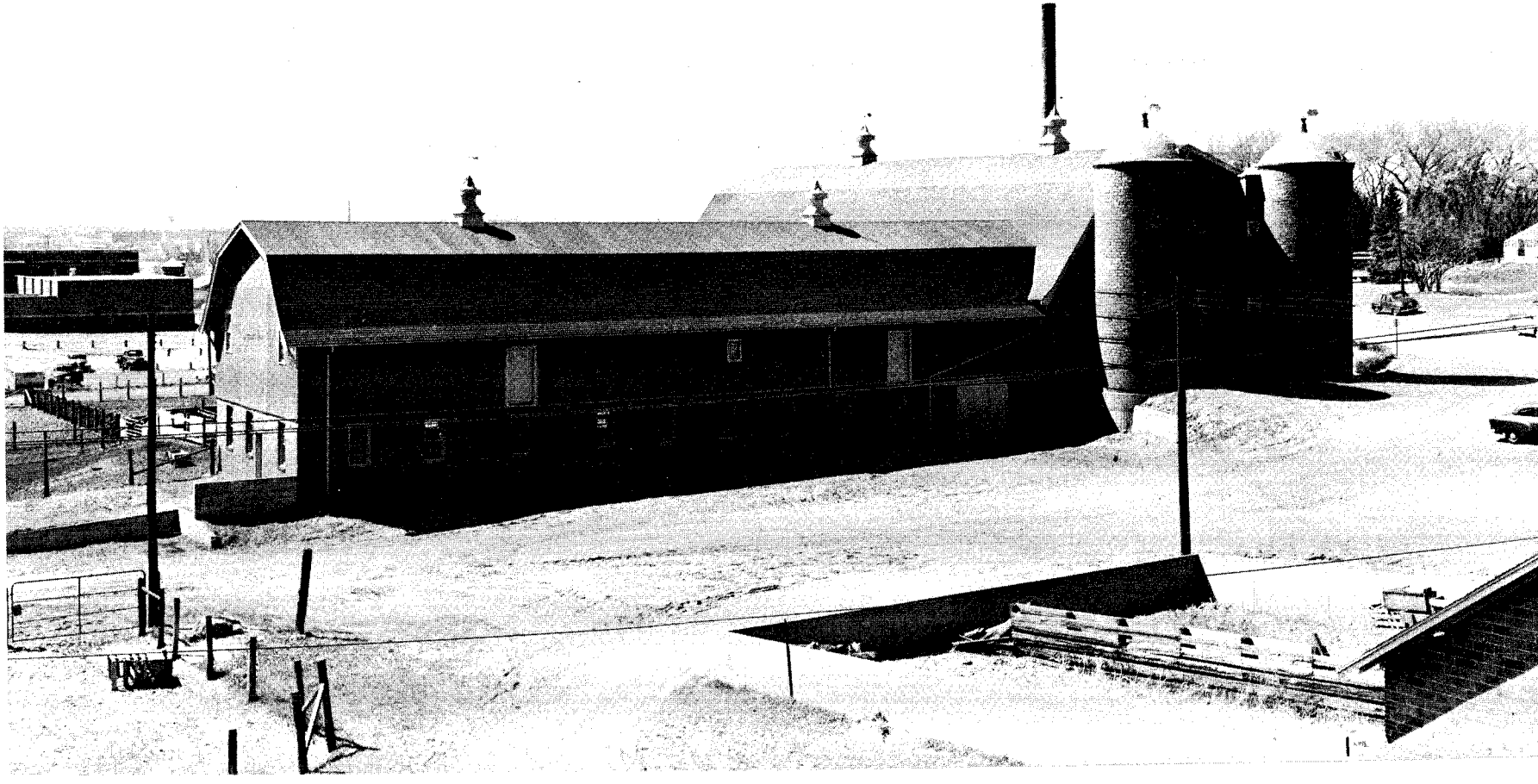
Block square footage:	
Over 2,000 sq. ft.	3 blocks/13,020 total sq. ft.
Between 1,000 and 2,000 . .	3 blocks/4,250 total sq. ft.
Under 1,000 sq. ft.	9 blocks/6,748 total sq. ft.
Total	24,018

Cost Analysis Data:

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual
Exterior walls	10%	95%	9.5%
Roofing	3	100	3.0
Flooring	4	80	2.4
Ceilings	3	70	2.1
Partitioning	9	80	7.2
Wall finishes	2	10	.2
Fixed equipment	5	30	1.5
Miscellaneous	4		
TOTAL	40%		25.9%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	100	20.0
TOTAL	25%		25.0%
Heating, ventilating, air cond.	20%	0%	
Plumbing	5	0	
Electrical	10	25	2.5%
TOTAL	35%		2.5%
GRAND TOTAL	100%		53.4%

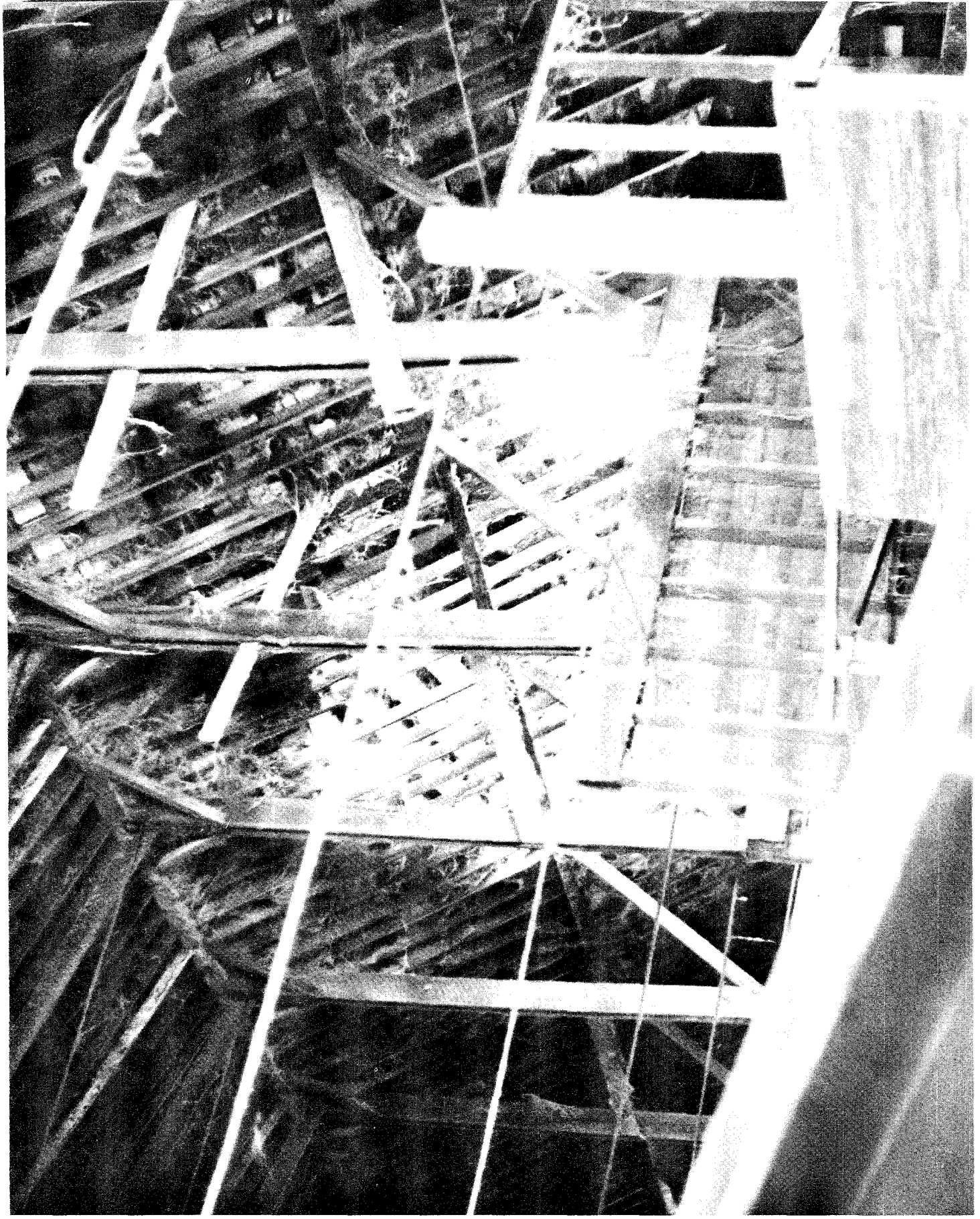
1954

beef cattle barn



1972

beef cattle barn



BEEF CATTLE BARN

The Beef Cattle Barn was built in 1917. If offers two large areas with very high ceilings and some smaller spaces in the basement, but the absence of mechanical systems and the light structure make it unreceptive to significant change of function. It is a barn and it would be difficult and expensive to remodel for educational use.

Cost Analysis Data:

	Average Percentage Complete Buildings Total Cost	Percentage Acceptable in this Building	Actual Value Factor
Exterior walls	10%	50%	5.0%
Roofing	3	70	2.1
Flooring	4	5	.2
Ceilings	3	5	.2
Partitioning	9	0	
Wall finishes	2	0	
Fixed equipment	5	0	
Miscellaneous	4	0	
TOTAL	40%		7.5%
Excavation and substructure	5%	100%	5.0%
Vertical and horizontal frame	20	5	1.0
TOTAL	25%		6.0%
Heating, ventilating, air cond.	20%	0%	
Plumbing	5	0	
Electrical	10	0	
TOTAL	35%		
GRANT TOTAL	100%		13.7%

summary

COST ANALYSIS SUMMARY:

VALUE FACTORS

1.	HOME ECONOMICS	76.4
2.	AGRICULTURAL ENGINEERING	65.0
3.	GYM	53.4
4.	MEAT HOUSE	46.5
5.	HORTICULTURE	37.7
6.	VETERINARY ANATOMY	30.2
7.	LIVESTOCK PAVILION	27.9
8.	DAIRY NUTRITION BARN	26.5
9.	NORTH HALL	25.2
10.	BEEF CATTLE BARN	13.7

BLOCK SQUARE FOOTAGE SUMMARY

A. TOTAL BLOCK SQUARE FOOTAGE OVER 2,000 SQ. FT.

1.	DAIRY NUTRITION BARN	48,140
2.	NORTH HALL	31,704
3.	HOME ECONOMICS	29,440
4.	AGRICULTURAL ENGINEERING	20,768
5.	LIVESTOCK PAVILION	15,312
6.	VETERINARY ANATOMY	14,260
7.	GYM	13,020
8.	MEAT HOUSE	4,400
9.	HORTICULTURE	0

B. PERCENTAGE OF GROSS OVER 2,000 SQ. FT.

1.	DAIRY NUTRITION	83%
2.	AGRICULTURAL ENGINEERING	68%
3.	MEAT HOUSE	63%
4.	LIVESTOCK PAVILION	57%
5.	NORTH HALL	56%
6.	VETERINARY ANATOMY	39%
7.	GYM	35%
8.	HOME ECONOMICS	34%
9.	HORTICULTURE	0%

C. TOTAL BLOCK SQ. FT. OVER 1,000 SQ. FT.

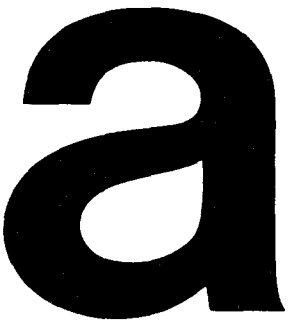
1.	HOME ECONOMICS	67,200
2.	DAIRY NUTRITION BARN	51,140
3.	NORTH HALL	32,792
4.	VETERINARY ANATOMY	26,784
5.	AGRICULTURAL ENGINEERING	26,736
6.	LIVESTOCK PAVILION	22,324
7.	GYM	17,270
8.	HORTICULTURE	16,512
9.	MEAT HOUSE	4,400

D. PERCENT OF GROSS OVER 1,000 SQ. FT.

1.	DAIRY NUTRITION BARN	88%
2.	AGRICULTURAL ENGINEERING	87%
3.	LIVESTOCK PAVILION	83%
4.	HOME ECONOMICS	77%
5.	MEAT HOUSE	76%
6.	HORTICULTURE	76%
7.	VETERINARY ANATOMY	73%
8.	NORTH HALL	58%
9.	GYM	47%

appendices

evaluations



NORTH HALL, BUILDING NO. 311

EVALUATION BY THE OFFICE OF PHYSICAL PLANT MAINTENANCE AND OPERATIONS

1. Year constructed: 1895.
2. Floor area: Gross area 56,495 square feet.
3. Exterior walls: Brick requires cleaning and some tuckpointing.
4. Structural frame: Wood beam and post.
5. Roof: Major areas are sloped, asphalt shingles -- needs extensive repair or replacement.
6. Heating system: Steam, needs replacing.
7. Plumbing: Needs replacing.
8. Ventilation: Inadequate, needs replacing.
9. Exterior windows and doors: Wood, needs replacing.
10. Room lighting inadequate: Needs replacing.
11. Emergency lighting and fire alarm system: None existing. New system should be installed.

REMARKS: This building would require gutting of all interior walls and floor systems and total rebuilding of all systems to bring it up to present day codes and standards. The cost of remodeling would likely exceed the cost of total replacement.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:[23]

1. Due to combustible interior construction, narrow corridors and numerous unprotected vertical openings, it is recommended that the entire building be provided with an automatic sprinkler system and a fire alarm system.

2. In addition, the auditorium, Southwest area of first floor, should have a second egress directly to the outside.

3. Also, the stairway serving the west end of the building should have "B" label doors, at each level.

4. Also, enclose the stairway at Northeast end of the building. It would be desirable to rebuild this stair of non-combustible materials.

5. If the computer area is to remain, it should be provided with additional egress to the outside of the Northwest side of the building. It would be desirable to consider a Halon Automatic Extinguishing system for the computer machine areas, in addition to automatic sprinklers.

6. Illuminated EXIT and DIRECT TO EXIT signs should be provided throughout the building.

HORTICULTURE BUILDING NO. 314

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1899.
2. Floor area: Gross area 21,244 square feet.
3. Exterior walls: Brick, good condition.
4. Structural frame: Basically wood beam and post.
5. Roof: Slopes, asphalt shingles new in 1971.
6. Heating system: Steam, needs replacing.
7. Plumbing: Inadequate, needs replacing.
8. Ventilation: Inadequate, needs replacing.
9. Exterior windows and doors: Wood, need replacing.
10. Room lighting: Inadequate, needs replacing.
11. Emergency lighting and fire alarm system: Inadequate, new system should be installed.

REMARKS: This building should be gutted and new structural system along with all other building systems replaced.

If interior brick bearing walls were retained, costs for bringing this building up to present day standards and codes would be approximately $600,000.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:

1. Enclose the center stairway with two-hour walls and "B" label doors at door entrances. Doors to Rooms 1 and 10 should be relocated out of egress corridor at ground level. The corridor should be closed off at the stairway landing.

2. An enclosed stairway serving all floors should be provided at the east end of the building, and it is suggested that a similar enclosed stairway would be desirable at the west end.

3. The attic should be provided with an automatic sprinkler system.

4. It is suggested that the building be provided with a fire alarm system.

5. All stairwell doors can be held in an open position, if desired, provided electro-magnetic holders, actuated by properly placed ionization detectors, and the fire alarm system are provided.

VETERINARY ANATOMY, BUILDING NO. 316

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1901.
2. Floor area: Gross area 16,521 square feet.
3. Exterior walls: Brick, fair condition.

4. Structural frame: Wood beam and post.
5. Roof: Sloped, asphalt shingles, needs replacing.
6. Heating system: Steam, needs replacing.
7. Plumbing: Needs replacing.
8. Ventilation: Inadequate, needs replacing.
9. Exterior windows and doors: Wood, needs replacing.
10. Room lighting: Most areas inadequate, needs replacing.
11. Emergency lighting and fire alarm system: Inadequate, new system should be installed.

REMARKS: This building would have to be totally gutted and a new structural system along with other building systems should be installed to bring this building up to present day standards and codes.

The cost of doing this work most likely would exceed the cost of replacing this building with a new structure.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:

1. Provide a fire door at the second level of the center stairs.

2. Remove narrow interior stair.

3. Provide enclosed egress from upper floors at east and west ends of the building.

4. Because of the combustible interior construction, a complete automatic sprinkler system is recommended. If installed, no other modifications would be required.

MEAT HOUSE BUILDING, NO. 315

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1901.
2. Floor area: Gross area 7,594 square feet.
3. Exterior walls: Wood frame - fair to good condition.
4. Structural frame: Wood beam and post.
5. Roof: Sloped, asphalt shingles - needs replacing.
6. Heating system: Steam - needs replacing.
7. Plumbing: Needs replacing.
8. Ventilation: Inadequate - needs replacing.
9. Exterior windows and doors: Wood - needs replacing.
10. Room lighting: Inadequate - needs replacing.
11. Emergency lighting and fire alarm system: Inadequate - should be replaced.

REMARKS: The cost of remodeling this building to bring it up to present standards and codes would likely exceed the cost of a new building.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:

1. No additional egress requirements. Due to combustible construction, it is suggested that the present laboratory occupancy should be moved to another location.

LIVESTOCK PAVILION, BUILDING NO. 321

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1904.
2. Floor area: Gross area 27,169 square feet.
3. Exterior walls: Brick -- good condition.
4. Structural Frame: Wood beam and post.
5. Roof: South wing-sloped, asphalt shingles -- fair to good condition. Main part of building - flat, pitch and gravel -- fair to good condition.
6. Heating system: Steam - needs replacing.
7. Plumbing: Needs replacing.
8. Ventilation: Inadequate - needs replacing.
9. Exterior windows and doors: Wood - needs replacing.
10. Room lighting: Inadequate - needs replacing.
11. Emergency lighting and fire alarm system: Inadequate - should be replaced.

REMARKS: This building should be totally gutted and structural system along with other building systems should be replaced.

The cost for doing this work would approach the cost of replacing the total building.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:

1. Re-establish south exit from first floor east section of the building and extend it to second floor if this area is to be occupied.

2. Provide egress directly to the outside from both east and west ends of the show ring.

3. Rebuild the front stairs to the second floor, using non-combustible materials; and provide a one-hour separation wall between the stair and building, with openings into the building protected by "B" label doors.

4. Relocate present egress from west section of second floor at south side of building.

DAIRY NUTRITION BARN, BUILDING NO. 326

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1907.
2. Floor area: Gross area 16,784 square feet.
3. Exterior walls: Wood stud and siding -- stucco above clay tile to a four foot height.
4. Structural frame: Wood -- fair to poor condition.
5. Roof: Sloped (Gambrel), asphalt shingles -- fair condition.
6. Heating system: None.

7. Plumbing: None.
8. Ventilation: For barn usage only.
9. Exterior windows and doors: Wood -- fair to poor condition.
10. Room lighting: Barn usage only - should be upgraded.
11. Emergency lighting and fire alarm system: None existing.

REMARKS: This building could likely be retained as a cattle barn for a period of approximately ten years. Salvage value of the structure for other usages is questionable.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:

1. Because of the combustible interior construction, a complete automatic sprinkler system is suggested. No egress remodeling is required.

AGRICULTURAL ENGINEERING, BUILDING NO. 335

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1913.
2. Floor area: Gross area 34,848 square feet.
3. Exterior walls: Brick -- good condition.
4. Structural frame: Steel.
5. Roof: Flat, asphalt built-up roofing -- good condition.
6. Heating system: Steam -- should be replaced.
7. Plumbing: Adequate for present usage.
8. Exterior windows and doors: Mostly wood - some should be replaced.
9. Room lighting: Some areas inadequate - should be replaced.
10. Emergency lighting and fire alarm system: Inadequate - new system should be installed.

REMARKS: This building, with some upgrading, is adequate for its present usage.

The cost involved to upgrade this building to meet the present standards and codes should approximate $75,000.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:

1. The center stairwell is adequately enclosed, except that the entrance door to Room 314 which is now located in the enclosed stairwell should be relocated outside the enclosure. Additional directional exit signs are needed at the ground floor level to adequately indicate exit location. The shop buildings should be separated from ground floor connecting corridor by a two-hour wall and "B" label 1 1/2 hour doors.

2. An egress from the ground floor to the outside should be provided at the north end of the existing corridor.

3. Enclosed stairwells with direct egress to the outside and serving all floors above the ground floor should be provided at both the north and south ends of the building.

4. A fire alarm system is suggested.

OLD HOME ECONOMICS, BUILDING NO. 338

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1914.
2. Floor area: Gross area 97,122 square feet.
3. Exterior walls: Brick -- good condition.
4. Structural frame: Reinforced concrete for floor system with wood roof system.
5. Roof: Sloped with asphalt shingles -- needs repair.
6. Heating system: Hot water -- good condition.
7. Plumbing: Needs some repair and replacement.
8. Ventilation: Inadequate -- needs replacing.
9. Exterior windows and doors: Mostly wood - needs some replacing.
10. Room lighting: Needs some upgrading.
11. Emergency lighting and fire alarm system: Inadequate -- new system should be installed.

REMARKS: This building is in relatively good condition because it has been upgraded throughout the years.

The costs required to bring this building up to the present-day standards and code requirements would be approximately $500,000.

UNIVERSITY SAFETY ENGINEER's RECOMMENDATIONS:

1. Enclose the main center stairwell by providing cross corridor doors at all levels in the three corridors served by the stair. The doors can be held open by electro-magnetic holders connected to an ionization detector mounted at ceiling of corridor at each stairway floor landing. The corridor doors for the short corridor on the second floor should be located so that the stair from third floor opens into the protected stairwell area.

2. Enclosed stairways exiting directly to the outside should be provided for all floors at both the north and south ends of the building. If the newer section of Home Economics is to remain, the new south stair would not be required, but all existing stairs in the new section should be enclosed at all levels.

3. If newer section is to be removed, the construction at the south end of the older section should include an elevator and grade level access, so that the physically handicapped can have access to the building.

4. A fire alarm system is suggested.

GYM, BUILDING NO. 342

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1915.
2. Floor area: Gross area 40,081 square feet.
3. Exterior walls: Brick - good condition, except needs cleaning.
4. Structural frame: Steel beams and columns with reinforced concrete floor.
5. Roof: Flat, pitch and gravel -- good condition.
6. Heating system: Steam -- needs replacing.
7. Plumbing: Needs replacing.
8. Ventilation: Inadequate -- needs replacing.
9. Exterior windows and doors: Wood -- needs replacing.
10. Room lighting: Needs upgrading.
11. Emergency lighting and fire alarm system: None existing. New system should be installed.

REMARKS: This building is structurally sound and upgrading costs for bringing this building up to standard and codes would be approximately $300,000.

BEEF CATTLE BARN, BUILDING NO. 302

EVALUATION BY PLANT MAINTENANCE

1. Year constructed: 1917.
2. Floor area: Gross area 24, 136 square feet.
3. Exterior walls: Wood stud and siding -- stucco above clay tile to a four foot height.
4. Structural frame: Wood -- fair to poor condition.
5. Roof: Sloped (Gambrel), asphalt shingles -- fair condition.
6. Heating system: None.
7. Plumbing: None.
8. Ventilation: For barn usage only.
9. Exterior windows and doors: Wood - fair to poor condition.
10. Room lighting: Barn usage only - should be upgraded.
11. Emergency lighting and fire alarm system: None existing.

REMARKS: This building could likely be retained as a cattle barn for a period of approximately ten years. Salvage value of the structure for other usages is questionable.

UNIVERSITY SAFETY ENGINEER'S RECOMMENDATIONS:

1. No egress modification needed, but for safety of the structure a complete automatic sprinkler system is suggested.

ADDITIONAL EVALUATIONS

Survey of Various Buildings Systems as Requested by Andrews Architects for Horticulture, Meat House, Livestock Pavilion, and McNeal Hall.

A. A mechanical review of the internal system by Pete Merz.
B. An electrical review of the internal system by Dave Kerkow.
C. A listing of utility services to the various buildings. This is as follows:

Horticulture Building

1. Served by heating tunnel.
2. Water supply comes off 8" main through the greenhouse from the east.
3. Roof drain and downspout system ties into 6" storm sewer off southwest corner.
4. Electric, underground secondary feeder.
5. Sanitary sewer is 8" leaving the building on the north side.
6. Building served by 3" low pressure gas line from north side.

Meat House

1. Served by brick heating tunnel.
2. Served by 2" copper water line from east side off 6" main.
3. No storm sewer.
4. Electrical underground primary feeder.
5. Sanitary sewer leaves building from the east side and ties into the 8" lateral.
6. Low pressure gas line feeds building from east side.

Livestock Pavilion

1. Served by heating tunnel.
2. Two inch water line serves the building from east off 6" main.
3. No storm sewer.
4. Electrical underground secondary feeder.
5. Eight inch sanitary line leaves building from northeast corner, ties into 12" lateral.
6. No gas service.

McNeal Hall

It should be pointed out that there is an old and a new wing, the new wing being the southern portion of the building, so there are some double connections.

1. There are two heating tunnels tying into the building in each wing.
2. Water supply enters south end of new wing off 8" main to the east.

3. New portion, or south wing, carries storm water from roof drains into 10" storm sewer off west side.
4. Electrical service is by underground primary line tying into old wing.
5. Sanitary sewer is an 8" line out of old wing, which enlarges to 10" and then picks up the new wing.
6. Gas service is 4" line entering building at new wing on south end.

Survey of Mechanical Systems, Buildings 315, 321, and 338 (Old Section) St. Paul Campus

GENERAL

The previous St. Paul Campus Master Plan called for the removal of buildings 314, 315, and 321. For this reason, no capital improvements (other than work attendent to remodeling projects) have been made in these buildings. Indeed, as recent as February, 1971, estimates prepared for remodeling portions of Building 314 (Horticulture) were questioned because it was to be razed within a short period of time.

Building 314 (Horticulture)

Heating: Steam heated, one pipe (Paulle System), and cast iron radiation (with a few finned elements which replaced cast iron radiation that failed).

Plumbing: Systems in remodeled areas are satisfactory. Other areas will require replacement.

Ventilation: Virtually none. Air conditioning has been provided in one lab.

Buildings 315 and 321 (meat House and Livestock Pavilion)

If these buildings are to be retained, all mechanical systems will require extensive work. The steam service should be changed to connect to the new tunnel west of Peters Hall, thus eliminating the condensate pump in the Meat House and the old tunnel from the Meat House to the old heating plant basement south of the Library.

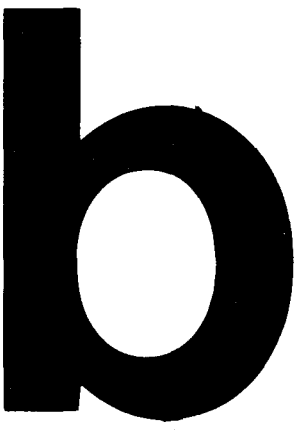
Both buildings have steam heating using cast iron radiation and unit heaters. The plumbing systems in both buildings are poor and would require complete replacement.

Building 338 (McNeal Hall - Old Section)

The existing mechanical systems are good. It is recommended that the temperature control be improved by adding an adequate ventilating system to supplement the existing space heating provided by hot water heating system installed in 1958.

If estimates are required involving the referenced buildings, please advise. However, meaningful estimates can only be provided if we have a good idea of the proposed future usage of each building.

history



The following are excerpts from University documents that deal with the history of the ten St. Paul buildings.

NORTH HALL

1) From the Ariel[24] November 4, 1895:

DINING HALL DEDICATED

The dedication of our recently completed Dining Hall took place the evening of Nov. 9. Invitations had been issued to a great many friends of our school, and we were gladly surprised and gratified to see how well they responded. There were about 500 present.

Our President, Cyrus Northrop, who is so highly honored by the institution, presided on this occasion. The program of the evening was as follows:

1. Music, by the school cadet band.
2. Address of Dedications, by Hon. W. M. Liggett.
3. Response by Prin. H. W. Brewster.
4. Toast (well browned). by Prof. Geo. S. Innis of Hamline University; subject, "The Farm Boy."
5. Music, by school quartet.
6. Toast (not quite so brown), by Prof. S. B. Greene; subject, "The Coming Farm Girl."
7. Remarks, by Ex-Gov. John S. Pillsbury.
8. Music, by school cadet band.
9. Remarks, by Pres. Northrop.
10. Refreshments.
11. "Fantastic Hop," music by Manhattan Orchestra.

Hon. Mr. Liggett's address was weighty and one long to be remembered by those present.

The response by Dr. H. W. Brewster was enjoyable and interesting in that it illustrated the constant growth of the school and the zeal and preserverence of the members of the Faculty in building it up. They certainly do their utmost to enhance the welfare of the institution, which effort is highly appreciated. They have served the "seven years" and obtained as a reward Leah-"The Dining Hall", and by continued service for seven years more they may hope to attain Rachel-Co-Education.

Prof. Innis' toast was one of encouragement. The young men from the rural districts have many advantages for the full development of sound bodies, good common sense, and the general foundation of a grand character. The response to this by Prof. Green pictured the young ladies in their proper sphere at the Dining Hall.

Governor Pillsbury's remarks were upon the early history of the Agricultural school. He showed how, by good management and economy, the school founded and nutured itself without the aid of the state until this last year, when from necessity they accepted the apportionment, which now stands in useful structures.

Among the most interesting and beneficial remarks of the evening were those of President Northrop. Rightly should we all desire to farm, if we were in Vermont surrounded by rocks without, and heavily laden with "rocks" within our bank.

Needless is it to say that all who were present had a splendid time.

2) From the Ninth Biennial Board of Regents Report 1895:

The Dining Hall is of Princeton buff brick Kasota stone trimmings, with twenty and sixteen inch walls; slate roof. It is 140 x 48 feet, three stories high. It contains a dining room 42 x 140 feet with waiting and toilet rooms either side of the main entrance 28 x 20 feet, housekeeper's apartments, kitchen, serving and storerooms, help's quarters for sixteen girls, seventy alcove dormitories and thirty-six study rooms for students. The floor of the dining room is hard wood; those of dormitories are linoleum to deaden sound; of kitchen and toilet rooms are tile, and of basement are cement. The entire building is finished with white oak. The plumbing and heating are the most durable.

3) A picture of a new addition to the Dining Hall in the 17th Biennial Board of Regents Report (1910-1912) suggests that it was constructed during that period.

4) On October 21, 1960, the St. Paul Campus News Report announced that the Department of Rural Sociology and the Photo Lab were moved into the Old Dining Hall and that the building was renamed North Hall.

5) In 1966 the Minnesota Daily reported North Hall would be converted to house faculty offices. This marked the end of its long life as a dormitory facility.

HORTICULTURE BUILDING

1) From the Eleventh Biennial Board of Regents Report, 1900:

HORTICULTURAL HALL AND PHYSICAL LABORATORY

At the last session of the Legislature, there was appropriated $35,000 for the erection and equipment of a Horticultural Hall and Physical Laboratory at the School of Agriculture. This building has now been constructed after plans drawn by Architect Charles W. Aldrich.

The building is substantial in every respect. It is built of brick, with stone trimmings, and occupies a slightly place among buildings at the School of Agriculture. In design and construction it is admirably adapted for the uses for which it is intended.

It was built by P. W. DeLancy Construction Company for $24,998.

2) From Ariel December 22, 1899:

> "A very handsome and commodious new building dedicated to Horticulture will be opened after Christmas vacation by a large reception. The girls are rejoicing because a large classroom in the new building has been assigned to Mrs. Blair for the use of classes in sewing. Mrs. Blair's plans when carried out, will make the room very attractive."

3) From the Eleventh Biennial President's Report:

The appropriations made by the last Legislature, of $35,000 for the Horticultural Building and $10,000 for the Heating and Lighting Plant, have been of great value; and we now have a Horticultural Building which is modern in every respect, fully fitted and equipped for instructive and experimental purposes.

MEAT HOUSE

1) From the Eleventh Biennial Board of Regents Report, 1900:

The Meat House now in use is not only inadequate for this new line of work, in which Minnesota is a pioneer, and with which she should remain at the front, but the workroom is so small as to be unhealthy, and the facilities for work insufficient. This building is also an improvised one, formerly used for a silo, for a building to meet the requirements for this work would require an appropriation of $7,500. The teaching of this line is most useful and very popular with the students.

2) From St. Paul Campus News Notes November 1971:

The Meat Science Laboratory, a $3.3 million northeast wing of the Food Science and Industries Building, got underway June 9 and completion is anticipated in December 1972. It is the first phase of a new $13 million Animal Science-Veterinary Science complex, approved by the Legislature.

There will be facilities for researchers in Meat Microbiology, Histology, Physiology and Chemistry. The present Meats Lab facility across from Peters Hall has been termed inadequate for many years.

VETERINARY ANATOMY

1) From Eleventh Biennial Report of the Board of Regents of the University of Minnesota:

Poor quarters have been furnished the department of Veterinary Science, and the building occupied at present is poorly adapted to the purposes of the department, and is not sufficient for its requirements. This will be better understood when it is known that the present building was formerly a barn. The back wall of it is ready to tumble out, and the roof ready to fall in. To make the department what it should be, one of valuable instruction to the students, and to make provisions for experimentation, and also provide a stock amphitheater for use in the instruction of the several stock classes, the room in the dairy building being entirely too small, would require $30,000.

DAIRY NUTRITION BARN

1) From 13th Biennial Report of the Board of Regents, 1904:

The barn accommodations for the Dairy Herd are inadequate for experimental and educational uses. On account of the rapid increase of students more dairy cattle are needed to furnish mile enough for class work. It is also desirable that the dairy herd should be separated from the other stock.

It is estimated that the cost of an additional barn for the dairy herd, the remodeling and equipping of Dairy Hall, and for additional silos needed will be about $30,000.

2) From the 14th Biennial Report of the Board or Regents, 1906:

A dairy farm suitable for investigation in milk production and feeding dairy stock as well as instruction in the school and college of agriculture is very much needed and would cost $20,000.00. We earnestly recommend that this appropriation be made. The dairy industry is one of the great sources of income to the farmers of the state and we believe that with further development, equipment recommended would greatly assist.

HOME ECONOMICS

1) From the President's Report, 1904:

A strong course in Forestry and also one in Home Economics, of an advance and scientific nature, have been added during the past biennial period.

2) Board of Regents 13th Biennial Report, 1904:

There is a long felt need of a building on the campus devoted to the exclusive use of women, for rest, comfort, social intercourse, association meetings, and such other purposes as it may be found useful for.

The need of such a building is so strongly felt by the young ladies of the University, that they have undertaken to raise the money necessary for its construction, through their own efforts; and by entertainments and other agencies have, after two years of effort now on hand a fund of $1,000 for the purpose. It is evident that the burden of such an enterprise is too great for them, and that they should be relieved of it. They are ready, however, if such a building shall be erected, to assume the burden of furnishing it, which, with the fund now on hand, would seem to be within their resources.

From President's Report 1902:

A BUILDING FOR WOMEN

There are in the University more than eight hundred women, most of whom are in the College of Science Literature and Arts, and during the day are present in the buildings or on the grounds of the Campus. There is no building specially devoted to the comfort of these women. It has seemed to these women, and to the large and influential body of women in Minnesota known as the Minnesota Federation of Women's Clubs, that a special building ought to be provided for women. With entire unanimity the women of the State ask that an appropriation of twenty-five thousand dollars may be made for this purpose by the legislature and they request the Board of Regents to include this in their legislative budget. It is a reasonable request. I am sure it will seem so to the Regents and I am equally sure the men of Minnesota in the legislature will not refuse to grant the request if it is made and is known to be the request of the women of Minnesota.

procedural suggestions

C

The following is an excerpt from "New Life for Old Buildings," an article in the January 1972 College and University Magazine.[26]

- Consider the possibility of using a contractor as a consultant on the evaluation team. Because of past experience, he can often pinpoint technical and structural danger areas that will result in higher bids.

- Use a contractor - or cost estimator - prior to bidding or negotiation. This rather obvious decision is closely tied to the point above, but is too often overlooked, resulting in embarrassment when prices come in. He will advise on bidding at the right time of year, the business outlook for the area, and the availability of qualified subcontractors.

- Try to supply as-built drawings. According to the age of the building, this if often impossible. It does point up the need to revise drawings as building revisions are made, no matter how minor.

- If new space is indicated, be sure it is designed to enhance the existing structure. There are too many school additions which have no relation to the existing structure, resulting in ugly, awkward over-all plans.

- Phase the building program for a minimum of construction time. From the standpoint of the contractor, the best of all possible worlds is an empty building, permitting rapid construction. If you can empty the building, it will save time and usually result in lower bids.

- Set up a procedure for on-the-spot decision making for minor changes. Any modernization project results in the need for changes in the original plans. Speed of construction and cost savings will result if decisions can be made on the site or by telephone.

- A modernization program offers the educator the opportunity to question what is really wanted by the institution. To justify interior space changes, analyze what is working in other buildings. Can you afford what you want? How little can you do to satisfy your educational aspirations?

- If legal restrictions do not make it impossible, explore the possibility of negotiating the modernization contract on a fee basis.

- Remember, the decision you make to retain a building where it is can influence the entire future of the campus.

- If mechanical requirements become more sophisticated, complete replacement may be indicated. Old buildings offer an advantage: High ceilings permit new units to be hidden or inserted through walls.

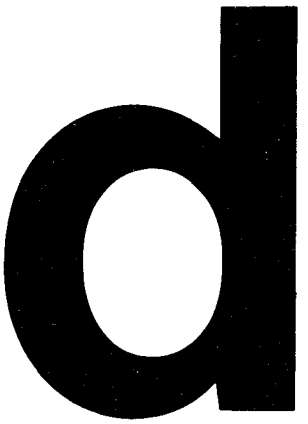
- Depending on the condition of the electrical system, it is often more economical in an old building to cut if off and start over.

- High ceilings offer opportunities to add or update plumbing and other mechanical systems.

- High ceilings can be an asset - don't automatically lower them. They give a chance for change in heights, with resulting visual excitement.

Above all, have confidence in the planning and construction team. If the educational goals are well defined, the professional team should be able to deliver a modernized building that will ba an asset to the campus for several more generations.

structural remodeling



An article by Anthony Nessetta called "What you should know before approving structural remodeling". [25]

Unlike wiring, plumbing, heating systems, windows, doors, roofing, and finishes, the structural framing system of a building does not "wear" out. Generally, if deterioration through damage or severe exposure has not occurred, a building is as structurally sound today as the day it was built.

Structural considerations do not, as a rule, become important factors unless structural changes, such as elimination of columns or bearing walls, addition of a penthouse or story, increasing floor load capacity, and so forth, are required by the program of remodeling.

When, however, modernization involves structural changes, there are many factors which should be considered.

Buildings under consideration for modernization usually fall into three age groups: Buildings built prior to 1900, buildings built between 1900-1920, and buildings built between 1920-1940.

Structurally, buildings built prior to 1900 should not be seriously considered for remodeling. All timber or timber and masonry bearing wall structures with extremely limited remodeling capabilities are likely to be encountered. Updating to meet modern city building codes will undoubtedly outweigh all other considerations.

Buildings built between 1900-1920 are likely to be constructed with masonry bearing walls, cast-iron columns, built-up steel girders, and footings are likely to be massive stone and brick. Fire-resistive ratings may be questionable and far below modern standards. Limited structural remodeling is feasible, but extensive remodeling may be extremely difficult for buildings in this age group. Upgrading fire=resistive ratings to meet modern building code requirements may prove to be a costly consideration. In buildings built between 1920-1940, rolled steel beams, girders and columns, concrete floor slabs, masonry bearing walls, bar joist systems, all-reinforeced concrete framing systems are typical structural systems likely to be encountered. Fire-resistive ratings are likely to be adequate, and foundation walls and footings are likely to be reinforced concrete. Extensive remodeling for buildings in this age group is quite feasible. Structural remodeling is relatively simple in the all-steel framing systems, but much more difficult in the all-reinforced concrete framing systems.

Once a program of modernization including structural remodeling is decided upon, several important pitfalls and danger signals require careful attention.

1. Fire-resistive ratings. Existing ratings and effect of remodeling on ratings should be evaluated and approved by regulatory authorities obtained at the earliest possible time.

2. Structural deterioration. Nature and extent, if any, should be identified and corrective work established regardless of program. Look for moisture penetration in walls and roofs, sagging floors, sticking windows and doors, and serious cracking of floors and walls.

3. Floor and roof load capacity. Existing floor and roof load capacities should be determined and compared with proposed load requirements, especially where conversion of spaces is under consideration.

4. Structural steel frame. Existing steel frameworks are relatively easy to reinforce, alter and re-frame through the techniques of welding and high strength bolting. To achieve maximum economy, the welding qualities and yield points of the existing steel should be determined. Connection capacities, and column base plates and footing capacities should not be overlooked, particularly when increasing capacities of floors and columns.

5. Reinforced concrete frame. Existing reinforced concrete frameworks are relatively difficult to reinforce, alter and re-frame. Modification can be accomplished through the introduction of structural steel members, but often the range of such modification is extremely limited. Determination of actual concrete ultimate strength by core testing and determination of physical properties of reinforcing steel sometimes permit engineering re-evaluation. Such re-evaluation could result in higher floor and column capacities without the need for any modification. Footing capacities should not be overlooked when increased column capacities are a consideration.

6. Piles or spread footings. Remodeling of pile foundations to increase capacity is apt to be very tricky and generally is limited to the perimeter locations of buildings. Buildings with spread footing type foundations are more readily suited to underpinning in both perimeter and interior locations. New spread footings can easily be installed to support new or relocated columns.

7. Ground water. Existing basements that are designed to withstand hydrostatic uplift pressures and completely waterproofed are not subject to simple remodeling. Undermining of existing footings during pumping operations, restoring the integrity of the existing water proofing systems, and so forth, are some of the problems.

8. Lateral bracing. Remodeling of structural frameworks in which removal of columns, cutting of large floor openings, shifting bearing walls, or enlarging wall openings are contemplated require special attention. Weakening of the lateral bracing systems for resisting wind and seismic forces must be carefully evaluated.

9. Scheduling. Structural remodeling is apt to require heavy, cumbersome construction equipment. Scheduling these operations during periods when building is partially or entirely vacated is a prime requirement.

Several helpful hints for structural remodeling are:

1. Always consider steel when remodeling: steel framing, steel floor deck, steel siding.

2. Convert interior spaces or add penthouses to increase mechanical areas.

3. Avoid enlarging or deepening basements for mechanical areas.

4. Consider adding a story to an existing building when parapets roofing and roof fills can be omitted to reduce dead load. (added story should be of light-weight steel construction.)

5. Obtain as-built drawings and make accurate field measurements and determinations prior to design.

6. Field changes to steel, once fabricated, can be very costly. Steel costs can vary from $0.20 per pound to $2.00 per pound, depending almost entirely on field labor costs.

7. Keep stair and elevator alteration to a minimum.

8. Structural remodeling costs should never exceed 20 to 25% of total cost.

9. Avoid underpinning building on piles.

10. Use only architects and engineers with long and proper experience.

Footnotes

[1]Long Range Development Plan, University of Minnesota: St. Paul Campus; John Andrews Architects, 1971, p. 100-102, 122

[2]"New Life For Old Buildings" College and University Business, Vol. 52, No. 1, p. 33-37, 1972

[3]IBID p. 34

[4]"Renovating" College Management, Oct. 1969, p. 10-20

[5]Minnesota State College Office, Bob Utke

[6]"New Life" p. 44

[7]IBID p. 44

[8]IBID p. 46

[9]"Cutting Costs; Brewery Undergoes Campus Conversion", College Management, Vol. 6, No. 8, p. 22, June 1971

[10]"New Campuses of Old Building", College Management, Vol. 5:11 p. 8

[11]IBID p. 8

[12]Minnesota Historical Society, Charles W. Nelson: Supervisor of Historic Sites Survey

[13]Copyright by McGraw-Hill Inc. 1972, Reprinted from College and University Business, January 1972

[14]Physical Plant Maintenance and Operations Department, University of Minnesota; 200 Shops Building, Minneapolis

[15]"Dining Hall Dedicated", Ariel, Nov. 1895, p. 9

[16]University of Minnesota, Ninth Biennial Report of the Board of Regents, 1896

[17]University of Minnesota, Eleventh Biennial President's Report, 1900

[18]University of Minnesota, Eleventh Biennial Report of the Board of Regents, 1900

[19]IBID

[20]IBID

[21]University of Minnesota, Fourteenth Biennial Report of the Board of Regents, 1900

[22]University of Minnesota, Eighteenth Biennial Report of the Board of Regents

[23]Scheffler, Gustave L., Assistant Professor, Safety Engineering, (Environmental Health), University of Minnesota

[24]The Ariel was the student publication that preceded the Minnesota Daily

[25]IBID Copyright by McGraw-Hill Inc.

[26]IBID