



AcademicHealthCenter

UNIVERSITY OF MINNESOTA

Predesign Study for

Educational Facilities in the Academic Health Center

University of Minnesota
Twin Cities Campus

September 2003

"We cannot train tomorrow's professionals in yesterday's facilities."

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Executive Director

Accreditation Council for Graduate Medical Education

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EXECUTIVE SUMMARY

Introduction

This predesign study takes an initial look at the educational facilities needed in the Academic Health Center for the health professional schools on the Twin Cities Campus – College of Veterinary Medicine in St. Paul, and the College of Pharmacy, School of Nursing, School of Dentistry, School of Public Health and the Medical School in Minneapolis.

The AHC's educational facility problems are many. AHC classrooms have not been substantially improved since they were originally constructed, now more than twenty five years ago. Classroom facilities are also spread out throughout the Academic Health Center and are mixed in with research, clinical and patient care areas making it difficult to achieve any efficiencies in educational support.

More importantly, existing educational facilities do not meet either current or future AHC instructional needs. Substantive changes are required in the AHC's educational facilities in order to support the health professions curriculum and changes in teaching pedagogy – changes that are the result of rapid advances over the past decade in our understanding of human and animal health and in the provision of care. These changes require more flexible and adaptable space that allows for a range of learning environments from less didactic to more small group learning and problem based teaching that are supported by current information and health sciences technology. The learning environments must support the major goals of the health science curriculum, which are the learning of core information in each of the health professions plus critical thinking and analysis, problem solving, resource identification, and self learning.

The scope of this study will analyze existing facilities and will make specific recommendations to improve the following spaces –

- ❑ AHC Classrooms
 - Renewal and Renovation of Existing AHC classrooms
 - Renovation of space for small problem-based teaching classrooms
 - Renovation of space for a Physical Assessment Teaching & Simulation Classroom
- ❑ Mayo Auditorium Building and Classrooms
- ❑ Veterinary Medicine Educational Facilities: Renovation of Old Dairy Barn in St. Paul

Programmatic Background

The intended outcome of the curricula of the AHC schools is to develop health professionals who can meet the needs of the current health care system while working to improve it and to promote health. To do so, students must develop professional competencies as identified through national consensus and accreditation standards at the same time that they develop core inter-professional

competencies that include: (a) providing patient-centered care; (b) working in interdisciplinary teams; (c) employing evidence-based practice; (d) applying quality improvement principles; and (e) utilizing informatics. (Institute of Medicine, 2003) Graduates of AHC programs should also learn and practice methods to maintain a balanced and healthy physical and emotional life as a health professional committed to life-long learning.

During the past ten years, advances in health and cognitive sciences research, the technology revolution, outcomes assessment, accountability movements, and accreditation standards have transformed health professional and higher education. The contemporary health professions curriculum now includes critical thinking, problem-solving, integration and assimilation of content and process, cultural competence, community-based education, and global health. The University of Minnesota has a wealth of technological and intellectual resources to develop a world-class educational program that must train the next generation of health professionals for the state and region. To develop this program, however, will require significant investments in faculty and staff development, in technology, and in facilities.

The programmatic goal in this facilities predesign is to take existing classrooms and create flexible and adaptable learning spaces for our health professional students. These learning environments will be a first step in providing the facilities needed for preparing them as health professionals.

The facility improvements in this predesign are the vital next steps in improving and revitalizing the educational environment in the Academic Health Center. Additional educational facilities, including renovation of the Biomedical Library, will be needed in the future.

Alternatives Evaluated – The Academic Health Center’s Strategic Facility Plan and District Plan documented the core challenges and guiding principles to be used in educational facility development as well as provided some optimal solutions as the campus develops over the next two decades.

Core challenges related to Educational Facilities – from the Strategic Facility Plan

- ❑ The facilities are outdated and require significant investment.
- ❑ Educational spaces must remain flexible and adaptable so they continue to meet future needs.
- ❑ Classrooms, offices, and research labs must better connect and relate to each other.
- ❑ Common spaces are needed for students to study, meet, and interact.

Guiding Principles related to Educational Facilities – from the Strategic Facility Plan

- ❑ AHC cares about its students, faculty, staff, and patients and will provide facilities that support its education, research, and clinical care missions.
- ❑ Facilities must foster learning, collegiality and discovery.
- ❑ The curriculum must drive the design of new and renovated spaces.
- ❑ The AHC needs flexible spaces that can respond to programs as they change and grow.
- ❑ The AHC needs “short streets” between its education, research and clinical programs to encourage collaboration, and to facilitate the integration of education, research, and patient care.

District Plan Solutions

In 2000, the Academic Health Center completed a district plan for the Minneapolis health science campus. This plan proposed a new 28,000 gsf student services building that would replace the Mayo Garage and establish a new south entrance to the Molecular and Cellular Biology Building from a new central square in the Academic Health Center. As an alternative to new construction at this time, the Academic Health Center is reviewing opportunities to improve existing facilities to meet new curriculum requirements.

The AHC's second floor concourse level currently provides access to about 40% of the classrooms scattered throughout the Academic Health Center. This level also provides direct access to the Biomedical Library, a major learning facility. All planning efforts should seek to organize the educational facilities at this level throughout the Academic Health Center, either adding small additions or renovating existing space where needed, rather than abandoning this corridor and creating all new educational facilities.

Planning and Programming Process

The development of educational facilities builds on the AHC's previous plans. The Academic Health Center's Strategic Facility Plan conducted in 1997 attempted to measure the organization's need for facilities based on strategic priorities. This study documented serious quality and programmatic problems in the AHC's educational space (Exhibit A). The Academic Health Center also developed a District Plan, which proposed development options for the Minneapolis Campus and formulated these options on the guiding principles of the Strategic Plan.

The planning and programming for this predesign assumes the renovation of existing facilities, under those same guiding principles and responds to the programmatic drivers as articulated by the educational leadership of the Academic Health Center. A Steering Committee, charged with completing the predesign study for these facilities looked at best practice models in other Academic Health Centers, specifically at the University of Iowa (which recently built a new educational facility for its health sciences), quantified the curriculum drivers for facilities by surveying AHC faculty and conducted a visioning session with educational facility experts. The results of these planning steps are included in this predesign study.

STATEMENT OF NEED

INTRODUCTION

The Academic Health Center's Strategic Plan, which was adopted by the Board of Regents and endorsed by the state legislature in 2000-2001, clearly defines our challenge and vision for the education of health professionals .

"The acceleration of dramatic changes in health research, scientific and technological tools, the economics of health and the education of health professionals have brought Minnesota and the Academic Health Center to an unprecedented crossroads. Never has there been more promise and potential for growing and sustaining a healthy Minnesota. Yet never has there been more peril in our capacity to deliver on the promise. Health education and research in Minnesota and nationally are in crisis.

Changes in the health care market place, with intense competition for patients, profound cost pressures and greatly reduced reimbursements are threatening the viability of our mandated academic mission. The crisis has been building for the past five years, and the AHC has responded with a variety of cost-cutting measures. Without new investments, we will simply have to cut core educational, research and service programs.

Minnesota faces shortages of key health professionals it confronts the necessity of finding new ways to sustain and increasingly complex, indispensable health research enterprise. It encounters an urgency to educate health professionals for an increasingly complex scientific, multidisciplinary and economic environment. And it faces more than ever the need to build links among the basic, clinical and population sciences.

We offer in this document a vision to sustain and grow Minnesota's health, to reduce the uncertainty of rapid change, and to assure that the state maintains its deserved reputation for health innovation and quality.

The Academic Health Center of the University of Minnesota is one of the nation's most comprehensive centers with schools of dentistry, medicine, nursing, pharmacy, public health and veterinary medicine and programs in the allied health sciences. It is one of only nine such centers in the United States and, thus, is in an almost unique position to play a leadership role in establishing a new paradigm of health education, research and service. Our future rests on maintaining and furthering the excellence of our individual schools and leveraging their strengths in new multidisciplinary efforts to improving the state's health."

The Academic Health Center's first response to this challenge is to:

1. "Create and prepare the new health professionals for Minnesota.
The future of Minnesota's health rests with our health professional students. With rapid change as the norm, the next generation of health professionals will require new skills, new knowledge

and competencies. We propose to bring a new orientation to health professional education at Minnesota that:

- ❑ Emphasizes skills and competencies across the health professions and the development of a truly team approach to personal and community health. These interdisciplinary efforts depend on maintaining the integrity and enhancing the excellence of the core disciplines of the schools and colleges of the AHC.
- ❑ Prepares health professionals to be flexible, adaptive and have a full range of skills and competencies from basic to clinical to the population sciences.
- ❑ Places greater emphasis in the education of all our health professionals on health promotion and disease prevention, the needs of an increasingly diverse population, and the health and chronic diseases of an aging population.
- ❑ Prepares our students to be life-long learners and supports the life-long learning of working health professionals.
- ❑ Trains our students in community settings where the majority of health professionals spend their professional lives. We propose to develop rural and urban community health laboratories for training of health professionals and developing new models of health promotion and care.
- ❑ Expands enrollments to address Minnesota's worsening workforce shortfalls.
- ❑ Recruits and trains the next generation of academic health science faculty."

A key difficulty faced in accomplishing these objectives is that the AHC's current educational facilities do not support these efforts. Minimal improvements have been made in recent years. Substantive changes are required in educational facilities in order to support the academic mission. The Academic Health Center educates nearly 7,000 full year equivalent students (FY02 data) which is over 15% of the University of Minnesota's Twin Cities campuses. Improved facilities must become part of the solution so that the Academic Health Center can accomplish its strategic vision, mission and plan on behalf of the State of Minnesota.

HISTORICAL BACKGROUND

"Much has been written about how teaching methods are changing. These changes are driven in large part by economic need. However, other contributing factors include improved understanding of cognition (Gardner, 1983; Rever, 1993), attitudes regarding the nature of knowledge (Davenport & Prusak, 1998; Gardner, 1999); the role of context in learning and behavior (Brown & Duguid, 1997; Suchman, 1987) and the importance of social learning (Ormrod, 1998; Wenger, 1999) – just to name a few. This research is summarized in the following table, which addresses the shift taking place in education today." "New Directions in Teaching and Learning", Number 92, Winter 2002.

Table 1. Emerging Paradigm of Teaching and Learning

<i>From an Industrial Economy</i>	<i>To a Knowledge Economy</i>
Passive learners.....	active learners
Directed learning.....	facilitated learning
Knowledge revealed.....	knowledge discovered
Explicit knowledge.....	explicit and tacit
Knowledge is discrete.....	knowledge is embedded
Single assessments.....	multiple assessments
Single intelligence.....	multiple intelligences
Instructor technology.....	ubiquitous technology
Alone.....	alone and together
Just in case.....	just in time
Content.....	content and process
Linear and planned.....	planned and chaotic

During the past ten years, advances in health and cognitive sciences research, the technology revolution, outcomes assessment, accountability movements, and accreditation standards have also transformed health professional and higher education. The contemporary health professions curriculum now includes critical thinking, problem-solving, integration and assimilation of content and process, cultural competence, community-based education, and global health. The University of Minnesota has a wealth of technological and intellectual resources to develop a world-class health professions program to train the next generation of health professionals for the state and region. To develop the program will, however, require significant investments in faculty and staff development, technology, and facilities.

The goal of the curricula of the AHC schools is to develop health professionals who can meet the needs of the current health care system while working to improve it and promote health. To do so, students must develop newly emerging professional competencies identified through national consensus at the same time that they develop core inter-professional competencies that include: (a) providing patient-centered care; (b) working in interdisciplinary teams; (c) employing evidence-based practice; (d) applying quality improvement principles; and (e) utilizing informatics. (Institute of Medicine, 2003) Graduates of AHC programs should also learn and practice methods to maintain a balanced and healthy physical and emotional life as a health professional committed to life-long learning.

Current facilities in the Academic Health Center are still configured to reflect a traditional didactic learning pedagogy that is passive, highly directive, and relies heavily on lectures. Nearly two thirds of the classroom space in the Academic Health Center is configured as fixed, tiered, large lecture halls offering little flexibility or adaptability for small group interaction and problem based learning. There is approximately 50,000 square feet of classroom space and less than 20% of this space is for groups smaller than twenty five students. And only the large auditorium classrooms have current technology to support teaching. AHC classrooms have not been substantially improved since they were originally constructed, now more than twenty five years ago. And, classrooms are

spread throughout the AHC, mixed in with research, clinical, and patient care areas making it difficult to achieve any efficiencies in educational support.

MISSION AND OBJECTIVES

In a recent planning charette with the educational leadership and facility planners of the Academic Health Center, key goals and objectives for educational facilities were articulated. This planning session, along with a visit to University of Iowa, helped form the mission and vision for future educational facilities in the Academic Health Center. (The University of Iowa recently built a new educational facility for its health sciences that was based on a contemporary redesign of its curriculum.)

AHC stakeholders, who include our students, faculty, patients, and those who employ our graduates, expect that the AHC will have the facilities to support a contemporary curriculum.

Changes in the curriculum and pedagogy require changes in facilities and technology to support effective and efficient learning. Teaching and learning must be different in order to keep pace with the "oceans of information" now available to educators and students.



Drives technology and facilities	Team and collaboration skills	Flexible & Adaptability are key – seating, tables, lighting, environmental control
Constant change and improvement	Rapid learning	Community good with service and people oriented nurturing
Informed clinical decision making skills	Communities of learning	Access to world-class information resources
Coordination between disciplines and collaboration of care givers	Requires adaptable learning	Faculty must have the facilities for educational experience and support for new modalities and student types
Changing knowledge base in research and clinical environments must be translated to the classroom	Diverse population – ethnic, disabilities, learning types, educational background	Distance education is critical to remote programs – be connected to the community.
Find and process knowledge as the context to learning	Student experience must be great	Space must be safe, feel secure and be easy to use
Solve problems with high critical thinking skills		Small group interaction
Learn important skills and competencies		Outcomes based testing
Support self actuated learning		Accessible resource and study areas

New learning environments are:

- ❑ Experimental laboratories that accelerate learning and educational solutions.
- ❑ Incubators for new ideas focused on developing student centered education
- ❑ Laboratories for evaluating and analyzing the effectiveness of learning strategies and learning space designs.
- ❑ Portals for creating customized educational experiences

PROGRAM ANALYSIS

To understand the program requirements for health professional education, the predesign team conducted a series of activities–

- Tour to the University of Iowa

- Programming Questionnaire of AHC Educational Leadership

- Educational Facility planning charette conducted on July 23 and 24, 2003

Participants in these activities are listed in Appendix B

University of Iowa – Lessons learned

The purpose of visiting the University of Iowa was to experience and study a facility that had been recently designed, and constructed for contemporary health professional education. Participants were able to ask questions of both facility planning partners as well as academic faculty. Perhaps the most unique feature of both the design and curriculum at Iowa was the developing of “Learning Communities” which were designed to facilitate peer to peer support, peer to peer education, service-learning activities and informal learning experiences. These learning communities featured increased interaction among students as well as between students and faculty. A summary of the tour is provided in Appendix C

Programming Questionnaire-

In order to gain a better understanding of how the impending changes in pedagogy would need to change facilities here at the University of Minnesota, a questionnaire was sent to faculty in the Academic Health Center. Responses affirmed the team’s planning assumptions , including the need for more small group spaces, more large group spaces that are flexible and adaptable, more mobility within classroom spaces and increased use of technology within all types of spaces for teaching and learning. A summary of the questionnaire responses can be found in Appendix D.

Educational Facility Planning Charette – Lessons Learned

Conducted on July 24 and 25, 2003, over thirty representatives of the planning and academic community of the AHC turned out for the first ever educational facility planning charette. This charette included facilitated discussions regarding the limitations of our current facilities and visioning of the new learning environments needed to support changes in health science pedagogy. Documentation of this planning activity can be found in Appendix E.

Based on these findings, the Academic Health Center’s educational facilities programmatic needs are -

Highest and Most Immediate Needs –

- 100-140 person classrooms that are flexible and can be adapted to provide break-out spaces. (All schools are moving towards case study and problem based learning.)

- Computer based testing facilities

- Computer labs – wired, wireless, flexible with teaching demonstration

- Small group rooms for problem based learning

- Simulation and Cave (Explain what that means) facilities

- Integrated Biomedical Library facilities

- Community spaces for study, interaction, socialization

From this listing of needs, planning staff have reviewed existing facilities to determine where and how to make the highest and best use of what we have in meeting these objectives. This review recommends improvements to existing facilities where either converting poorly used space to new classroom facilities or making upgrades in seating, lighting, technology and infrastructure to existing classrooms can make dramatic improvements in supporting the health science curriculum today. Spaces recommended for these improvements are:

- AHC Classrooms
 - Renewal and Renovation of Existing AHC classrooms
 - Renovation of space for small problem-based teaching classrooms
 - Renovation of space for a Physical Assessment Teaching & Simulation Classroom
- Mayo Auditorium Building and Classrooms
- Veterinary Medicine Educational Facilities: Renovation of Old Dairy Barn in St. Paul

A full program description for each of these spaces follows in this report.

Summary of net changes in educational facilities

Currently, there are approximately 50,000 square feet of classroom space in the Academic Health Center representing 3900 seats and 48 classrooms. Nearly 75% of this, or 18 rooms for 3200 students, is tiered and inflexible space. The remaining 25% is either large flat classrooms (3800 sf for 230 seats) or small flat classrooms (9300 sf for 486 seats).

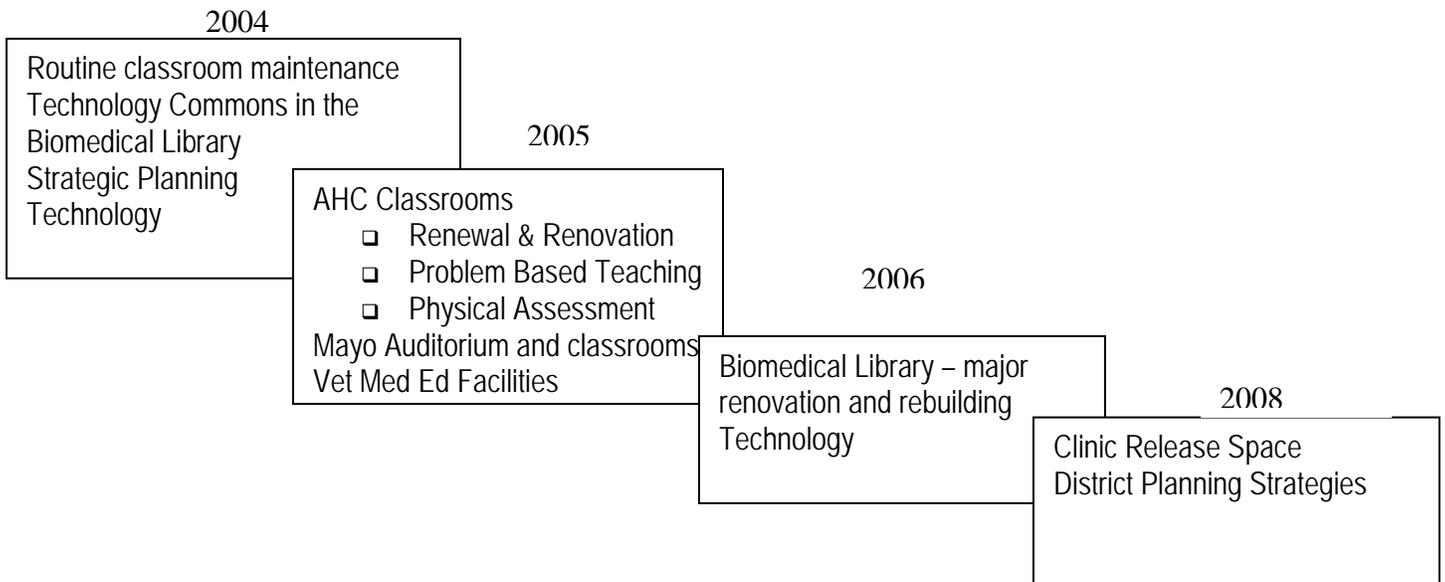
The revised program in this predesign will add approximately 10,000 sf of new, flexible and adaptable classroom space. Most of this square footage will be large flat rooms that can be adapted to smaller learning environments (increased from 2 rooms to 8 such rooms). We will also increase the number of small flat classrooms from 28 to 32. In addition, existing classrooms will be improved environmentally and technologically.

Below is chart summarizing the current capacity and proposed changes in AHC educational facilities.

Tiered	CAP	SQFT	Small Flat-Exst.	CAP	SQFT	Large Flat	CAP	SQFT
VM 125	84	1,647	BSBE 1-250A	8	192	BSBE 2-101	100	1,212
VM 135	115	1,969	BSBE 2-254A	10	227	Mayo D325	60	1,482
Jackson 2-137	100	1,744	Mayo D260	16	565	WD 4-180	70	1,114
Todd Mayo	125	1,368	Mayo A270	20	502	SUB-TOTAL-Exst.	230	3,808
Moos 2-520	87	1,304	Mayo A381	30	614			
Moos 2-530	200	2,230	Mayo A387	25	535	Mayo D230 Eustis **	140/70	1,636
Moos 2-580	40	682	Mayo 1250	40	695	New PWB 2 Sim. Lab	80	1,850
Moos 2-620	236	2,579	Moos 2-107	10	210	New PWB Bsmt.	218	6,000
Moos 2-650	346	3,644	Moos 2-113	10	201	New CVM Dairy Nut. #1	60	1,200
Moos 2-690	236	2,580	Moos 2-672	12	207	New CVM Dairy Nut. #2	60	1,200
Moos 5-125	105	2,204	Moos 2-629	12	207	SUB-TOTAL NEW	448	10,250
PWB 2-470	315	3,008	Moos 2-633	6	134	TOTAL LARGE FLAT	678	14,058
Vet Sci 145	88	2,293	Moos 2-639	12	219			
WD 7-135	105	2,635	Moos 2-676	7	138			
SUB-TOT. TIERED	2,182	29,887	Moos 2-680	12	220	**Assumes Eustis is converted to flat floor		
			PWB 6-210	18	330	Currently, Eustis is a tiered classroom with		
			PWB 6-224	30	440	capacity for 140 - old operating suite.		
Mayo 100	178	1,445	WD 2-110	25	391			
Mayo 125	178	1,445	WD 2-120	25	387			
Mayo Audit.	549	3,185	WD 2-130	25	387			
MAYO TIERED	905	6,075	WD 2-140	25	391			
			WD 4-150	14	219			
			WD 2-155	16	297			
TOTAL TIERED	3,087	35,962	WD 4-178	16	329			
			WD 6-194	20	506			
			WD 7-193	16	291			
			WD 7-195	16	294			
			WD 9-105	10	200			
			SUB-TOTAL-EXST.SM.,	486	9,328			
			New CVM Dairy Nut. #1	12	285			
			New CVM Dairy Nut. #2	16	312			
			New CVM Dairy Nut. #3	16	300			
			New CVM Dairy Nut. #4	16	295			
			SUB-TOTAL-NEW SM.	60	1,192			
			TOTAL SMALL FLAT	546	10,520			

Future Development

Educational Facilities Planning is an on-going effort in the Academic Health Center....a revitalization of existing facilities that can be used to support, enhance and advance professional health science education in the future. We envision this planning process to cover several years of investment and upgrades -



PREDESIGN NARRATIVE
FOR
THE RENOVATION OF EXISTING INVENTORY OF AHC CLASSROOMS
UNIVERSITY OF MINNESOTA

Statement of Need

The existing inventory of Academic Health Center classrooms are scattered throughout the AHC campus and represent a significant amount of space at 45,000 sf. Most of them were designed and constructed during a time when teaching was primarily focused on lectures and didactic teaching. Instruction varied little, and furniture was often fixed and inflexible. Technology was limited to overheads and slide projectors and visual aids to chalkboard. Minimal improvements have been made to these facilities since their original construction over twenty five years ago.

Substantive changes are required in the AHC's core educational facilities in order to support the academic mission and rapid changes in teaching pedagogy. These changes require more flexible and adaptable space that allows for a range of learning environments from less didactic to more small group learning and problem based teaching that are supported by current technology and connectivity. These learning environments will support the major goals of the health science curriculum, which are the learning of basic science as the data base for health professionals plus critical thinking and analysis, problem solving, resource identification and self-actualized learning.

The Academic Health Center educates nearly 7,000 full year equivalent students (FY02 data), which is over 15% of the University of Minnesota's Twin Cities campuses. Improved facilities must become part of the solution in allowing the Academic Health Center to live its strategic vision, mission and plan on behalf of the State of Minnesota.

Stakeholders of the Academic Health Center want and expect the best learning resources. The stakeholders have been defined as students and parents, health professionals, faculty, health systems, patients, the community including physicians, hospitals, clinics and people of Minnesota, employers, Alumni, the National Institutes of Health, the Regents, "Medical Alley", State Government and University administration.

Facilities must improve to meet the changing vision of health education. These changes include pedagogy and facilities to support efficient learning. Creating and preparing courses will be different in order to keep pace with the "oceans of information" now available to educators and students.

Program Analysis

Programmatic Background

The programming goal in this predesign is to take existing classroom environments and create flexible and adaptable environments and connections for health professional learning. These learning environments will support the major goals of this curriculum, which are the learning of basic science as the database for health professionals plus critical thinking and analysis, problem solving and resource identification and self-actualized learning. While additional planning, programming and renovations will be required in future years to yet existing facilities such as the Biomedical Library, these improvements are seen as vital next steps in improving and revitalizing the educational environments within the Academic Health Center.

In order to make the existing inventory of classrooms functional and usable the following improvements need to be made:

- Provide wireless access in all learning spaces.
- Provide technology that is state of the art, lasting and easy to operate for both the instructors and students.
- Provide flexible and durable furniture, allowing the rooms to be arranged in a variety of configurations to enhance contemporary learning and support the new academic mission and pedagogy.
- Provide lighting that allows various levels of illumination to support a wide range of tasks and activities.
- Provide an environment that promotes learning, is functional and can withstand extensive use over time.
- Provide as many linear feet of whiteboard and in as many locations as possible, to facilitate group study and enhance higher collaboration levels between instructors and students.
- Improve room acoustics, temperature control and ventilation.
- Improve way finding and space identification means.

Uses and modes of learning planned for these classrooms include, lectures, seminars, distance learning, basic learning, problem based learning and computer based testing.

Cost Estimate

Project Cost: ***\$3,581,620***

Funding

To be funded as part of the 2004 HEAPR Request.

Schedule

To be determined by funding availability.

Attachments:

1. *Project Budget documentation*

2. *AHC-Educational Resources Predesign Conditions and Recommendations Document*

Date: "8-19-03
 File Description: AHC ED FAC PRE-DESIGN class room inventory----- renovations
 Project No:
 Name:
 Proj Mgr: Archibeque
 Phase: P.D. estimate of possible costs

Cost Update

SUB ORG	Description	(A) Sub Org Amount	(B) Budget Amount	(C) Encumber / Cost to Date	(D) Estimate to Finish	(E) Estimated Total Cost (C+D)	(F) Variance (B-E)	Column (D) notes
Total Funds Available								
6	Land Acquisition							
CONSTRUCTION			\$2,022,775	0	0	\$0	2,022,775	
12	GME Construction	1,330,106				0	1,330,106	
14	UMC estimate-mayo d 230	458,669				0	458,669	
16	Hazardous Abatement	50,000				0	50,000	
19	Construction Contingency	184,000				0	184,000	
CONSULTANTS			\$194,400	0	0	\$0	194,400	
21	Consultant Basic Services	179,400				0	179,400	
24	Special Inspections	3,000				0	3,000	
25	Material Testing	800				0	800	
26	Hazardous Abatement Services	8,200				0	8,200	
27	Hazardous Air Monitoring	3,000				0	3,000	
28	Special Consultants					0	0	
29	Consultant Contingency					0	0	
PERMITS & FEES			\$30,600	0	0	\$0	30,600	
31	Building Permit included in UMC					0	0	
32	SAC					0	0	
33	University Review Fee	600	\$0			0	600	
34	Project Development Fee	30,000			0	0	30,000	
35	Advertisement for Bid					0	0	
36	Miscellaneous Permits					0	0	
39	Permit & Fees Contingency					0	0	
SITE WORK			\$0	0	0	\$0	0	
42	Geotechnical					0	0	
44	Survey					0	0	
46	Miscellaneous Site Work					0	0	
49	Site Contingency					0	0	
INTERIORS			\$1,145,345	0	0	\$0	1,145,345	
52	Furnishings included in GME estimate					0	0	
54	Equipment	1,135,345				0	1,135,345	
56	Graphics	10,000				0	10,000	
59	F & E Contingency					0	0	
UNIVERSITY PROVIDED SERVICES			\$188,500	0	0	\$0	188,500	
61	BSAC	5,000				0	5,000	
62	Coord Campus Construction Admin					0	0	
63	Telecommunications	100,000				0	100,000	
64	Building Investigation	8,500				0	8,500	
65	Utility Outages	65,000				0	65,000	
66	Keys & Keying	10,000				0	10,000	
67	Miscellaneous Services					0	0	
69	U/M Services Contingency					0	0	
MISCELLANEOUS			\$0	0	0	\$0	0	
71	Moving Expense					0	0	
72	Swing Space Accommodations					0	0	
74	Travel Expenses					0	0	
75	Art					0	0	
76	Incidental Expenses					0	0	
78	Unallocated Funds					0	0	
79	Miscellaneous Contingency					0	0	

Project Budget

\$3,581,620

Budget Balance 3,581,620

Cost to Date \$0

Estimate to Finish \$0

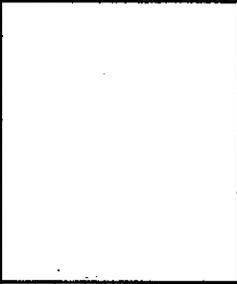
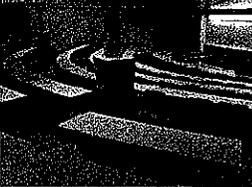
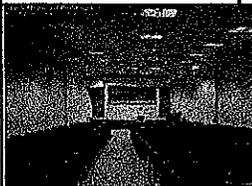
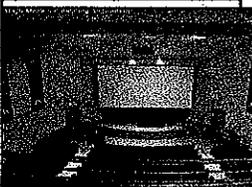
Estimated Total Cost \$0

Technology Recommendations for for AHC Classroom Inventory***

***NOTE: Assumptions made: The technology estimates for the AHC classroom inventory are based on the size of the room. Generally, small rooms get the seminar costs, medium sized rooms get the basic, large class rooms get the smart costs, and ITV or Distance rooms get the distance learning costs. I also did not include video conferencing in the seminar rooms. Of course, the costs would go upward if that was in the program for the space.

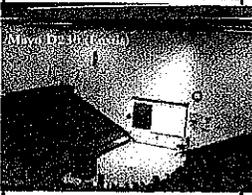
Seminar Learning	19	\$	136,800.00
Basic Learning	13	\$	338,390.00
Smart Learning	10	\$	446,850.00
Distance Learning	2	\$	168,620.00
Eustis	1	\$	44,685.00
Total:	45	\$	1,135,345.00

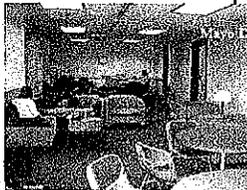
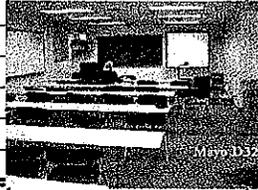
Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
Animal Science Vet Med 125					
Room Type	Tiered Lecture - Medium				
Department/Unit/School	Central Classroom Scheduling				
Capacity	84				
SQFT	1,647				
Technology	Add wireless capability		(Ross)		
Seating	94 new chairs, armless, w/casters	\$300	\$28,200		
OR Fees/Conting. 10%			\$2,820		
Notes	Room was remodeled within last 5 years				
Total		\$300	\$31,020	\$31,020	
Animal Science Vet Med 135					
Room Type	Tiered Lecture - Large				
Department/Unit/School	Central Classroom Scheduling				
Capacity	115				
SQFT	1,969				
Technology	Add wireless ITV system capabilities		(Ross)		
Notes	Room was remodeled within last 5 years				
Total		\$0	\$0	\$0	
BSBE 1-250A					
Room Type	Conference				
Department/Unit/School	Research Building Management Services				
Capacity					
SQFT	192				
Floorcovering	Clean carpet	\$250	\$250		
Walls, doors, frames	Paint walls	\$850	\$850		
OR Fees/Conting.10%			\$110		
Total		\$1,100	\$1,210	\$1,210	
BSBE 2-101					
Room Type	Seminar - Large ITV				
Department/Unit/School	Research Building Management Services				
Capacity	100				
SQFT	1,212				
Notes	Improvements in progress as part of ITV upgrade for Fall '03				
Total		\$0	\$0	\$0	

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
5	BSBE 2-254A				
<i>Room Type</i>	Conference				
<i>Department/Unit/School</i>	Research Building Management Services				
<i>Capacity</i>	10				
<i>SQFT</i>	227				
<i>Floorcovering</i>	Clean carpet	\$250	\$250		
<i>Walls, doors, frames</i>	Paint walls	\$850	\$850		
<i>OR Fees/Conting. 10%</i>			\$110		
Total		\$1,100	\$1,210	\$1,210	
6	Jackson Hall 2-137				
<i>Room Type</i>	Tiered Lecture - Large				
<i>Department/Unit/School</i>	Central Classroom Scheduling				
<i>Capacity</i>	100				
<i>SQFT</i>	1,744				
<i>Floorcovering</i>	Repair carpet	\$1,250	\$1,250		
<i>Walls, doors, frames</i>	Wipe smudges from walls, touch up paint	\$750	\$750		
<i>Seating</i>	25 new chairs to match existing	\$275	\$6,875		
<i>OR Fees/Conting. 10%</i>			\$887		
Total		\$2,275	\$9,762	\$9,762	
7	Mayo 100				
<i>Room Type</i>	Tiered Lecture - Large				
<i>Department/Unit/School</i>	Central Classroom Scheduling				
<i>Capacity</i>	178				
<i>SQFT</i>	1,445				
<i>Notes</i>	Improvements part of Mayo Auditorium Renovation				
Total		\$0	\$0	\$0	
8	Mayo 125				
<i>Room Type</i>	Tiered Lecture - Large				
<i>Department/Unit/School</i>	Central Classroom Scheduling				
<i>Capacity</i>	178				
<i>SQFT</i>	1,445				
<i>Notes</i>	Improvements part of Mayo Auditorium Renovation				
Total		\$0	\$0	\$0	
9	Mayo Auditorium				
<i>Room Type</i>	Tiered Auditorium				
<i>Department/Unit/School</i>	Central Classroom Scheduling				
<i>Capacity</i>	549				
<i>SQFT</i>	4,300				
<i>Notes</i>	Improvements part of Mayo Auditorium Renovation				
Total		\$0	\$0	\$0	

AHC - Educational Resources
Predesign Conditions and Recommendations

10/1/2003

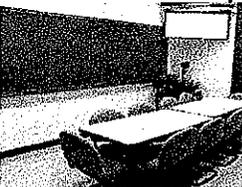
Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
10	Mayo D-230 (Eustis)				
Room Type	Tiered Lecture - Large				
Department/Unit/School	Medical School				
Capacity	140				
SQFT	1,636				
Ceiling	Replace missing tiles, cover large, hole, touch-up paint	\$350	\$350		
Floorcovering	Install new carpet and wall base/or replace corridors	\$13,090	\$13,090		
Walls, doors, frames	Patch and paint	\$4,410	\$4,410		
Visual Aids	New 4' x 8' whiteboard system	\$857	\$857		
Technology	Need A/V package "A" smart System	\$44,685	\$44,685		
Technology - Electrical	Electrical conduit and power provisions for A/V	\$3,700	\$3,700		
Seating	Replace seating with fixed theater style and tablet arms	\$325	\$45,500		
Tables	1 each 30' x 72" front table	\$425	\$425		
Miscellaneous	New standard signage at room entrance and misc. signage within room	\$60	\$120		
			\$4,286		
OR Fees/Conting. 10%			\$9,774		
Notes	Provide structure for a new flat floor		\$458,669		
Total		\$67,902	\$585,866	\$585,866	
11	Mayo C-231 (Todd)				
Room Type	Tiered Lecture - Large				
Department/Unit/School	Medical School				
Capacity	125				
SQFT	1,368				
Ceiling	Install new 2' x 2' ceiling grid and tegular tiles, repair leaks	\$2,300	\$2,300		
Lighting	Install new 2' x 2' parabolic fixtures and recessed cans on dimmers (31 ea.)	\$21,000	\$21,000		
Lighting -Emergency	Add emergency wall pack, 4 eac.	\$650	\$650		
Floorcovering	Install new carpet and wall base		\$25,800		
Walls, doors, frames	Patch and paint (remove whiteboard by wall phone)		\$4,500		
Visual Aids	4' x 15' whiteboard system	\$1,650	\$1,650		
Technology	Need A/V package "A", wireless	\$25,000	\$25,000		
Technology - Electrical	Electrical conduit and power provisions for A/V, add data/power @each seat				
Seating	Replace seating with fixed theater style and tablet arms	\$375	\$46,875		
Tables	1 each 30' x 72" front table	\$450	\$450		
Miscellaneous	New standard signage at room entrance and misc. signage within room	\$66	\$66		
OR Fees/Conting. 10%			\$13,219		
Total		\$51,491	\$141,510	\$141,510	

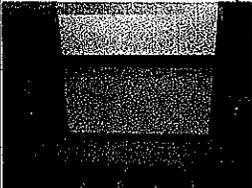
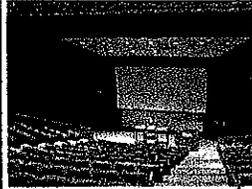
Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
12	Mayo D260/D262				
Room Type	Conference				
Department/Unit/School	Public Health				
Capacity	16				
SQFT	565				
Ceiling	Replace stained ceiling tiles	\$300	\$300		
Miscellaneous	Install outlet covers	\$150	\$150		
OR Fees/Conting. 10%				\$45	
Total		\$450	\$495	\$495	
13	Mayo A270				
Room Type	Conference				
Department/Unit/School	Public Health				
Capacity	20				
SQFT	502				
Ceiling	Replace stained tiles				
Visual Aids	4'x16' whiteboard	\$2,900	\$2,900		
Seating	20 new chairs, w/arms on casters	\$300	\$6,000		
Tables	10 new tables, 24x60	\$400	\$4,000		
Miscellaneous	New podium	\$1,000	\$1,000		
	Window coverings for 3 windows	\$300	\$900		
OR Fees/Conting. 10%				\$1,480	
Total		\$4,900	\$16,280	\$16,280	
14	Mayo D 325/327				
Room Type	Seminar - Medium				
Department/Unit/School	Public Health				
Capacity	60				
SQFT	1,482				
Technology	Wireless??				
Notes	Space was renovated by SPH in 2002				
Total		\$0	\$0	\$0	

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
15	Mayo C-381				
Room Type	Seminar - Medium				
Department/Unit/School	Public Health				
Capacity	30				
SQFT	614				
Ceiling	Paint grid and install new 2' x 2' tegular tiles	\$1,200	\$1,200		
Lighting	Install 2' x 2' parabolic fixtures with recessed cans on dimmers, 12 each	\$520	\$6,240		
Floorcovering	Replace carpet and vinyl base	\$2,456	\$2,456		
Walls, doors, frames	Patch and paint	\$1,250	\$1,250		
Visual Aids	1 each 4' x 6' and 2 each 4' x 12' white board systems	\$4,000	\$4,000		
Technology	Needs A/V Package "B" (to include podium/ethernet, overhead video, VCR, screen, projection controls and computer projection)	\$16,000	\$16,000		
Technology - Electrical	Electrical conduit and power provisions for A/V	\$3,780	\$3,780		
Seating	30 each new arm chairs	\$300	\$9,000		
Tables	6 each 18 x 72 tables and 4 each 18x96	\$450	\$4,500		
Miscellaneous	Replace air conditioning units OR put on building central air Windows are in poor condition, caulk or install storm windows	\$8,500	\$8,500		
OR Fees/Conting. 10%			\$5,892		
Total		\$38,456	\$62,618	\$62,618	
16	Mayo A387/389				
Room Type	Conference				
Department/Unit/School	Public Health				
Capacity	25				
SQFT	525				
Ceiling	Replace stained ceiling tiles	\$500	\$500		
Floorcovering	Replace carpet and vinyl base	\$2,100	\$2,100		
Walls, doors, frames	Paint walls, doors and frames	\$1,250	\$1,250		
Visual Aids	4'x16' whiteboard	\$2,900	\$2,900		
Seating	25 new chairs, w/arms on casters	\$300	\$7,500		
Tables	10 new tables, 24x60	\$400	\$400		
Miscellaneous	New A/V cart	\$600	\$600		
OR Fees/Conting. 10%			\$1,525		
Total		\$8,050	\$16,775	\$16,775	
Total		\$0	\$0	\$0	

AHC - Educational Resources
 Predesign Conditions Recommendations

10/2/2003

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
18	Mayo 1250				
Room Type	Seminar - Medium				
Department/Unit/School	Public Health				
Capacity	40				
SQFT	695				
Ceiling	Replace missing ceiling tiles and paint		\$400	\$400	
Lighting	Install new updated fixtures, 12 each			\$5,860	
Floorcovering	Install new carpet and wall base		\$3,785	\$3,785	
Walls, doors, frames	Patch and paint		\$1,325	\$1,325	
Visual Aids	2 each 4' x 6' and 1 each 4' x 16' white board systems		\$41,154,320	\$4,320	
Technology	Needs A/V Package "B" (to include podium/ethernet, overhead video, VCR, screen, projection controls and computer projection - NOT wireless)		\$16,000	\$16,000	
Technology - Electrical	Electrical conduit and power provisions for A/V		\$3,465	\$3,465	
Seating	40 new chairs, w/arms on casters		\$300	\$12,000	
Tables	14 new tables, 24x72		\$400	\$5,600	
OR Fees/Conting. 10%				\$5,457	
Total			\$41,179,995	\$58,212	
19	Moos 2-107				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	10 capacity				
SQFT	210				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total			\$0	\$0	\$0
20	Moos 2-113				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	10 capacity				
SQFT	201				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total			\$0	\$0	\$0

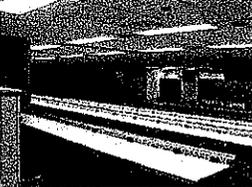
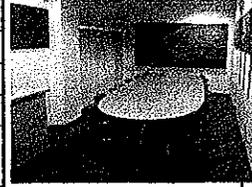
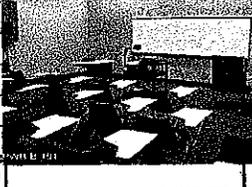
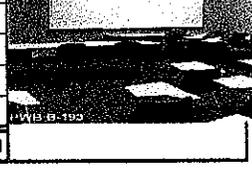
Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
21	Moos 2-520				
Room Type	Tiered Lecture - Medium				
Department/Unit/School	Central Classroom Scheduling				
Capacity	87				
SQFT	1,304				
Floorcovering	Install new carpet	\$12,587	\$12,587		
Seating	Replace existing auditorium seating/tablet arms	\$350	\$30,450		
Total		\$12,937	\$43,037	\$43,037	
22	Moos 2-530				
Room Type	Tiered Lecture - Large				
Department/Unit/School	Central Classroom Scheduling				
Capacity	200				
SQFT	2,230				
Floorcovering	Install new carpet	\$23,973	\$23,973		
Seating	Replace existing auditorium seating/tablet arms	\$350	\$70,000		
Total		\$24,323	\$93,973	\$93,973	
23	Moos 2-580				
Room Type	Tiered Lecture - Small				
Department/Unit/School	Central Classroom Scheduling				
Capacity	40				
SQFT	682				
Floorcovering	Install new carpet	\$6,964	\$6,964		
Seating	Replace existing auditorium seating/tablet arms	\$350	\$14,000		
Total		\$7,314	\$20,964	\$20,964	
24	Moos 2-620				
Room Type	Tiered Lecture - Large				
Department/Unit/School	Central Classroom Scheduling				
Capacity	236				
SQFT	2,579				
Floorcovering	Install new carpet	\$26,500	\$26,500		
Seating	Replace existing auditorium seating/tablet arms	\$350	\$82,600		
Total		\$26,850	\$109,100	\$109,100	
25	Moos 2-650				
Room Type	Tiered Lecture - Large				
Department/Unit/School	Central Classroom Scheduling				
Capacity	346				
SQFT	3,644				
Floorcovering	Install new carpet				
Seating	Replace existing auditorium seating/tablet arms	\$350	\$121,100		
Total		\$350	\$121,100	\$121,100	

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
26	Moos 2-672 (Small Group Study)				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	12 capacity				
SQFT	207				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total					
27	Moos 2-629 (Small Group Study)				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	12				
SQFT	207				
Floorcovering	New carpet and vinyl base	\$830	\$830		
Walls, doors, frames	Patch and paint	\$700	\$700		
Visual Aids	Install new 4'x8' whiteboard	\$943	\$943		
Technology	Install new 4' ceiling mounted screen	\$200	\$200		
Seating	12 new sled base chairs	\$150	\$1,800		
Tables	2 new tables, 42 x 66	\$600	\$1,200		
Miscellaneous	New room signage	\$66	\$66		
OR Fees/Conting. 10%			\$573		
Total		\$3,489	\$6,312	\$6,312	
28	Moos 2-633 (Small Group Study)				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	6				
SQFT	134				
Floorcovering	New carpet and vinyl base	\$600	\$600		
Walls, doors, frames	Patch and paint	\$600	\$600		
Visual Aids	Install new 4'x6' whiteboard	\$720	\$720		
Seating	6 new sled base chairs	\$150	\$900		
Tables	1 new table	\$600	\$600		
Miscellaneous	New room signage	\$66	\$66		
OR Fees/Conting. 10%			\$348		
Total		\$2,736	\$3,834	\$3,834	

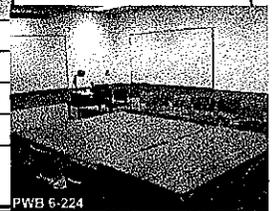
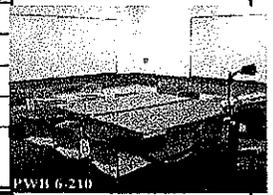
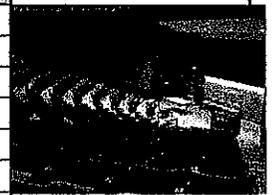
Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
29	Moos 2-639 (Small Group Study)				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	12				
SQFT	219				
Floorcovering	New carpet and vinyl base	\$830	\$830		
Walls, doors, frames	Patch and paint	\$700	\$700		
Visual Aids	Install new 4'x8' whiteboard	\$943	\$943		
Technology	Install new 4' ceiling mounted screen	\$200	\$200		
Seating	12 new sled base chairs	\$150	\$1,800		
Tables	2 new tables, 42 x 66	\$600	\$1,200		
Miscellaneous	New room signage	\$66	\$66		
OR Fees/Conting. 10%			\$573		
Total		\$3,489	\$6,312	\$6,312	
	Moos 2-676 (Small Group Study)				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	7 capacity				
SQFT	138				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	
	Moos 2-680 (Small Group Study)				
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	15 capacity				
SQFT	220				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	
	Moos 2-690				
Room Type	Tiered Lecture - Large				
Department/Unit/School	Central Classroom Scheduling				
Capacity	236				
SQFT	2,580				
Floorcovering	Replace carpet and vinyl base	\$26,113	\$26,113		
Seating	Replace existing auditorium seating/tablet arms	\$350	\$82,600		
Total		\$26,463	\$108,713	\$108,713	

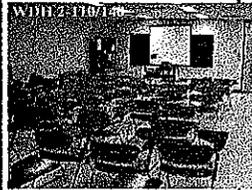
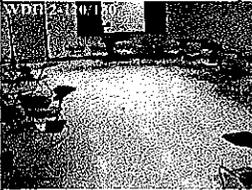
AHC - Education Resources
 Predesign Conditions Recommendations

10/2/2003

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
Moos 5-125					
Room Type	Tiered Lecture - Large				
Department/Unit/School	AHC Office of Facilities				
Capacity	105 capacity				
SQFT	2,204				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	
PWB B-185					
Room Type	Seminar - Large				
Department/Unit/School	AHC Office of Facilities				
Capacity	50 capacity				
SQFT	955				
Notes	Improvements part of AHC Education - New Classrooms Request				
Total		\$0	\$0	\$0	
PWB B-190					
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	15 capacity				
SQFT	235				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	
PWB B-191					
Room Type					
Department/Unit/School	AHC Office of Facilities				
Capacity	30 capacity				
SQFT	588				
Notes	Improvements part of AHC Education - New Classrooms				
Total		\$0	\$0	\$0	
PWB B-193					
Room Type					
Department/Unit/School	AHC Office of Facilities				
Capacity	25 capacity				
SQFT	479				
Notes	Improvements part of AHC Education - New Classrooms				
Total		\$0	\$0	\$0	

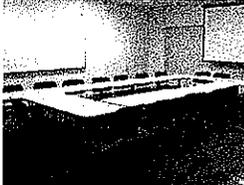
Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
PWB B-195					
Room Type	Conference				
Department/Unit/School	AHC Office of Facilities				
Capacity	10				
SQFT	137				
Notes	Improvements part of AHC Education - New Classrooms Request				
Total		\$0	\$0	\$0	
PWB 2-470					
Room Type	Tiered Lecture - Large				
Department/Unit/School	Central Classroom Scheduling				
Capacity	315				
SQFT	3,008				
Lighting	Increase lighting level at entrance	\$1,500	\$1,500		
Floorcovering	Replace existng carpet	\$30,172	\$30,172		
Visual Aids	Additional whiteboards	\$8,000	\$8,000		
Seating	Replace existing auditorium seating/tablet arms	\$350	\$110,250		
Notes	Relocate insightly bulletin boards at room entrance	\$200	\$200		
Total		\$40,222	\$150,122	\$150,122	
PWB 6-210					
Room Type	Seminar - Medium				
Department/Unit/School	AHC Office of Facilities				
Capacity	18 capacity				
SQFT	330				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total					
PWB 6-224					
Room Type					
Department/Unit/School	AHC Office of Facilities				
Capacity	30 capacity				
SQFT	440				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	



Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
Veterinary Science 145					
Room Type	Seminar - Large				
Department/Unit/School	Central Classroom Scheduling				
Capacity	88				
SQFT	2,293				
Seating	94 new chairs on casters, w/arms	\$300	\$28,200		
Tables	Replace 22 table tops on existing fixed bases	\$250	\$5,500		
OR Fees/Conting. per SQFT			\$3,370		
Notes	Replacing table tops will allow for more seats				
Total		\$550	\$37,070	\$37,070	
Weaver Densford 2-110 (shares movable wall with 2-140)					
Room Type	Seminar - Medium				
Department/Unit/School	AHC Office of Facilities				
Capacity	30 capacity				
SQFT	391				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total					
Weaver Densford 2-120 (shares movable wall with 2-130)					
Room Type	Seminar - Medium				
Department/Unit/School	AHC Office of Facilities				
Capacity	30 capacity				
SQFT	387				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	
Weaver Densford 2-130 (shares movable wall with 2-120)					
Room Type	Seminar - Medium				
Department/Unit/School	AHC Office of Facilities				
Capacity	30 capacity				
SQFT	387				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	
Weaver Densford 2-140 (shares movable wall with 2-110)					
Room Type	Seminar - Medium				
Department/Unit/School	AHC Office of Facilities				
Capacity	30 capacity				
SQFT	391				
Notes	Work authorized in 7/03 as part of AHC Classroom Improvements				
Total		\$0	\$0	\$0	

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
Weaver Densford 4-150 (Movable wall between 4-150 and 4-176)					
Room Type	Conference				
Department/Unit/School	Nursing				
Capacity	14				
SQFT	219				
Floorcovering	Install new carpet and wall base	\$1,100	\$1,100		
Walls, doors, frames	Patch and paint	\$850	\$850		
Visual Aids	1 each 4' x 10' white board systems	\$1,000	\$1,000		
Technology	Install new 4' ceiling mounted screen, data jack	\$1,400	\$1,400		
Technology - Electrical	Electrical conduit and power provisions for A/V	\$900	\$900		
Seating	14 chairs, w/arms on casters	\$300	\$4,200		
Tables	4 each 24" x 60" tables	\$400	\$1,600		
Miscellaneous	Repair baffle on movable wall door	\$140	\$140		
OR Fees/Conting. 10%				\$813	
Total		\$6,090	\$12,003	\$12,003	
Weaver Densford 4-176 (Movable wall between 4-176 and 4-150)					
Room Type	Conference				
Department/Unit/School	Nursing				
Capacity	14				
SQFT	219				
Floorcovering	Install new carpet and wall base	\$1,100	\$1,100		
Walls, doors, frames	Patch and paint	\$850	\$850		
Visual Aids	2 each 4' x 10' white board systems	\$1,000	\$1,000		
Technology	Install new 4' ceiling mounted screen, data jack	\$1,400	\$1,400		
Technology - Electrical	Electrical conduit and power provisions for A/V	\$900	\$900		
Seating	14 chairs, w/arms on casters	\$300	\$4,200		
Tables	8 each 24" x 60" tables	\$400	\$1,600		
Miscellaneous	Repair baffle on movable wall door	\$140	\$140		
OR Fees/Conting. 10%				\$1,233	
Total		\$6,090	\$12,423	\$12,423	

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
Weaver Densford 4-155					
Room Type	Conference				
Department/Unit/School	Nursing				
Capacity	16				
SQFT	297				
Floorcovering	Install new carpet and wall base	\$2,140	\$2,140		
Walls, doors, frames	Patch and paint	\$800	\$800		
Visual Aids	1 each 4' x 8' and 1 each 4' x 12' white board systems	\$1,825	\$1,825		
Technology	Install new 4' ceiling mounted screen, data jack	\$1,470	\$1,470		
Seating	16 new chairs w/arms on casters	\$300	\$4,800		
Tables	4 each 24" x 96" flip-top tables	\$600	\$2,400		
OR Fees/Conting. 10%			\$1,343		
Total		\$7,135	\$14,778	\$14,778	
Weaver Densford 4-178					
Room Type	Conference				
Department/Unit/School	Nursing				
Capacity	16				
SQFT	329				
Lighting	Replace burned out lamps (Zone 3)	N/C	N/C		
Floorcovering	Install new carpet and wall base	\$2,030	\$2,030		
Walls, doors, frames	Patch and paint	\$780	\$780		
Visual Aids	2 each 4' x 8' white board systems		\$1,540		
Technology	Install new 4' ceiling mounted screen, data jack	\$1,475	\$1,475		
Tables	6 each 30" x 60" tables	\$450	\$2,700		
OR Fees/Conting. 10%			\$852		
Total		\$4,735	\$9,377	\$9,377	
Weaver Densford 4-180					
Room Type	Seminar - Large				
Department/Unit/School	Nursing				
Capacity	70				
SQFT	1,114				
Floorcovering	Install new carpet and wall base	\$6,285	\$6,285		
Walls, doors, frames	Patch and paint	\$1,213	\$1,213		
Visual Aids	1 each 4' x 12' and 1 each 4' x 14' white board systems	\$2,264	\$2,264		
Technology	Need A/V package "A"	\$25,000	\$25,000		
Technology - Electrical	Electrical conduit and power provisions for A/V	\$2,730	\$2,730		
Tables	5 each 30" x 60" tables	\$450	\$2,250		
Miscellaneous	Construct new shroud around screen	\$1,260	\$1,260		
OR Fees/Conting. 10%			\$4,100		
Total		\$39,202	\$45,102	\$45,102	

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
Weaver Densford 6-194					
Room Type	Conference				
Department/Unit/School	Nursing				
Capacity	20				
SQFT	506				
Lighting	Add 6 light fixtures	\$550	\$3,300		
Floorcovering	Clean existing carpet				
Walls, doors, frames	Patch and paint	\$1,500	\$1,500		
Visual Aids	New 4'x12' and 2 each 4'x6' whiteboards	\$2,880	\$2,880		
Seating	30 new chairs, w/arms on casters	\$300	\$9,000		
OR Fees/Conting. 10%			\$1,668		
Total		\$5,230	\$18,348	\$18,348	
Weaver Densford 7-135					
Room Type	Seminar - Large	ITV			
Department/Unit/School	Pharmacy				
Capacity	105				
SQFT	2,635				
Floorcovering	Replace carpet on access covers to 3 recessed outlet covers at back of room	\$125	\$125		
Walls, doors, frames	Install wood chair rail at back of room	\$475	\$475		
Visual Aids	4'x20' whiteboard	\$2,400	\$2,400		
Tables	40 new tables, 24" deep	\$600	\$24,000		
Miscellaneous	New larger sign at entrance	\$150	\$150		
OR Fees/Conting. 10%		\$2,715	\$2,715		
Notes	ITV has recently been added to room.				
Total		\$6,465	\$29,865	\$29,865	
Weaver Densford 7-193 (Moveable wall between 7-193 and 7-195)					
Room Type	Conference				
Department/Unit/School	Pharmacy				
Capacity	16				
SQFT	291				
Walls, doors, frames	Remove chalk boards, patch and paint	\$800	\$800		
Visual Aids	2 each 4' x 6' white board system	\$1,920	\$1,920		
Technology	Install new 4' ceiling mounted screen, data jack per room	\$1,400	\$1,400		
Miscellaneous	Install wood chair rail	\$1,500	\$1,500		
OR Fees/Conting. 10%			\$662		
Total		\$5,620	\$6,182	\$6,182	

Condition/Recommendation		Unit Cost	Extended Cost	Estimated Total Cost	Photo
Weaver Densford 7-195 (Moveable wall between 7-195 and 7-193)					
Room Type	Conference				
Department/Unit/School	Pharmacy				
Capacity	16				
SQFT	294				
Floorcovering	Clean existing carpet				
Walls, doors, frames	Remove chalk boards, patch and paint	\$800	\$800		
Visual Aids	1 each 4' x 16' white board system	\$1,920	\$1,920		
Technology	Install new 4' ceiling mounted screen, data jack per room	\$1,400	\$1,400		
Miscellaneous	Install wood chair rail	\$1,500	\$1,500		
OR Fees/Conting. 10%				\$562	
Total		\$5,620	\$6,182	\$6,182	
Weaver Densford 9-105					
Room Type	Conference				
Department/Unit/School	Pharmacy				
Capacity	10				
SQFT	200				
Floorcovering	Install carpet and vinyl base	\$800	\$800		
Walls, doors, frames	Patch and paint	\$800	\$800		
Visual Aids	2 each 4'x10' wite boards	\$2,400	\$2,400		
Seating	16 new chairs, sled base with arms	\$150	\$2,400		
Tables	4 new tables, 24 x 60	\$450	\$1,800		
OR Fees/Conting. 10%				\$820	
Total		\$4,600	\$9,020	\$9,020	

\$1,788,775.00

PREDESIGN NARRATIVE
FOR
THE RENOVATION OF BIOMEDICAL GRAPHICS SPACE FOR NEW
CLASSROOM FACILITIES
UNIVERSITY OF MINNESOTA

Statement of Need

Located in the Phillips Wangensteen Building lower level, this 6,000sf OF real estate is critical to meeting the AHC's needs for large flexible space for problem based learning and other new pedagogy.

Program Analysis

- State of the art, flexible flat floor classroom, with movable furniture of 130 persons minimum capacity. It should be provided with ITV and Distance Education capabilities and wireless connection to the Internet. Uses include lectures; groups' study, problem based learning, and computer based testing.
- State of the art, flexible flat floor classroom, with movable furniture of 110 persons capacity, capable to be subdivided to two classrooms of 60 and 50 persons capacity each. It should be provided with ITV and Distance Education capabilities and wireless connection to the Internet. Uses include lectures; groups' study, problem based learning, and computer based testing.
- Two to three breakout/conference rooms of 5-10 persons capacity.
- Audio/Visual equipment room.
- ADA accessible toilet room facilities.

Cost Estimate

Project Cost: *\$1,329,119*

Funding

To be funded as part of the 2004 HEAPR Request.

Schedule

To be determined by funding availability.

Attachments:

1. *Project Budget documentation*
2. *Existing Floor Plan*
3. *Design Documentation with alternate floor layout configurations.*

Date: "8-19-03
 File Description: Bio-Medical Graphics renovation
 Project No:
 Name:
 Proj Mgr: Archibeque
 Phase: P.D. Est of possible cost

Cost Update

SUB ORG	Description	(A) Sub Org Amount	(B) Budget Amount	(C) Encumber / Cost to Date	(D) Estimate to Finish	(E) Estimated Total Cost (C+D)	(F) Variance (B-E)	Column (D) notes
Total Funds Available								
6	Land Acquisition							
CONSTRUCTION			\$942,049	0	0	\$0	942,049	
12	GME Construction					0	0	
14	Misc. Construction inspection d	851,849				0	851,849	
16	Hazardous Abatement	5,000				0	5,000	
19	Construction Contingency	85,200				0	85,200	
CONSULTANTS			\$14,800	0	0	\$0	14,800	
21	Consultant Basic Services in 512	0				0	0	
24	Special Inspections	2,000				0	2,000	
25	Material Testing	800				0	800	
26	Hazardous Abatement Services	3,000				0	3,000	
27	Hazardous Air Monitoring	4,000				0	4,000	
28	Special Consultants	0				0	0	
29	Consultant Contingency	5,000				0	5,000	
PERMITS & FEES			\$16,400	0	0	\$0	16,400	
31	Building Permit in 512					0	0	
32	SAC					0	0	
33	University Review Fee	600	\$0			0	600	
34	Project Development Fee	15,800			0	0	15,800	
35	Advertisement for Bid					0	0	
36	Miscellaneous Permits					0	0	
39	Permit & Fees Contingency					0	0	
SITE WORK			\$0	0	0	\$0	0	
42	Geotechnical					0	0	
44	Survey					0	0	
46	Miscellaneous Site Work					0	0	
49	Site Contingency					0	0	
INTERIORS			\$319,370	0	0	\$0	319,370	
52	Furnishings	170,000				0	170,000	
54	Equipment	136,370				0	136,370	
56	Graphics	6,000				0	6,000	
59	F & E Contingency	7,000				0	7,000	
UNIVERSITY PROVIDED SERVICES			\$36,500	0	0	\$0	36,500	
61	BSAC	3,500				0	3,500	
62	Coord Campus Construction Admin					0	0	
63	Telecommunications	15,000				0	15,000	
64	Building Investigation	2,000				0	2,000	
65	Utility Outages	3,500				0	3,500	
66	Keys & Keying	2,500				0	2,500	
67	Miscellaneous Services					0	0	
69	U/M Services Contingency	10,000				0	10,000	
MISCELLANEOUS			\$0	0	0	\$0	0	
71	Moving Expense	????				0	0	
72	Swing Space Accommodations					0	0	
74	Travel Expenses					0	0	
75	Art					0	0	
76	Incidental Expenses					0	0	
78	Unallocated Funds					0	0	
79	Miscellaneous Contingency					0	0	

Project Budget

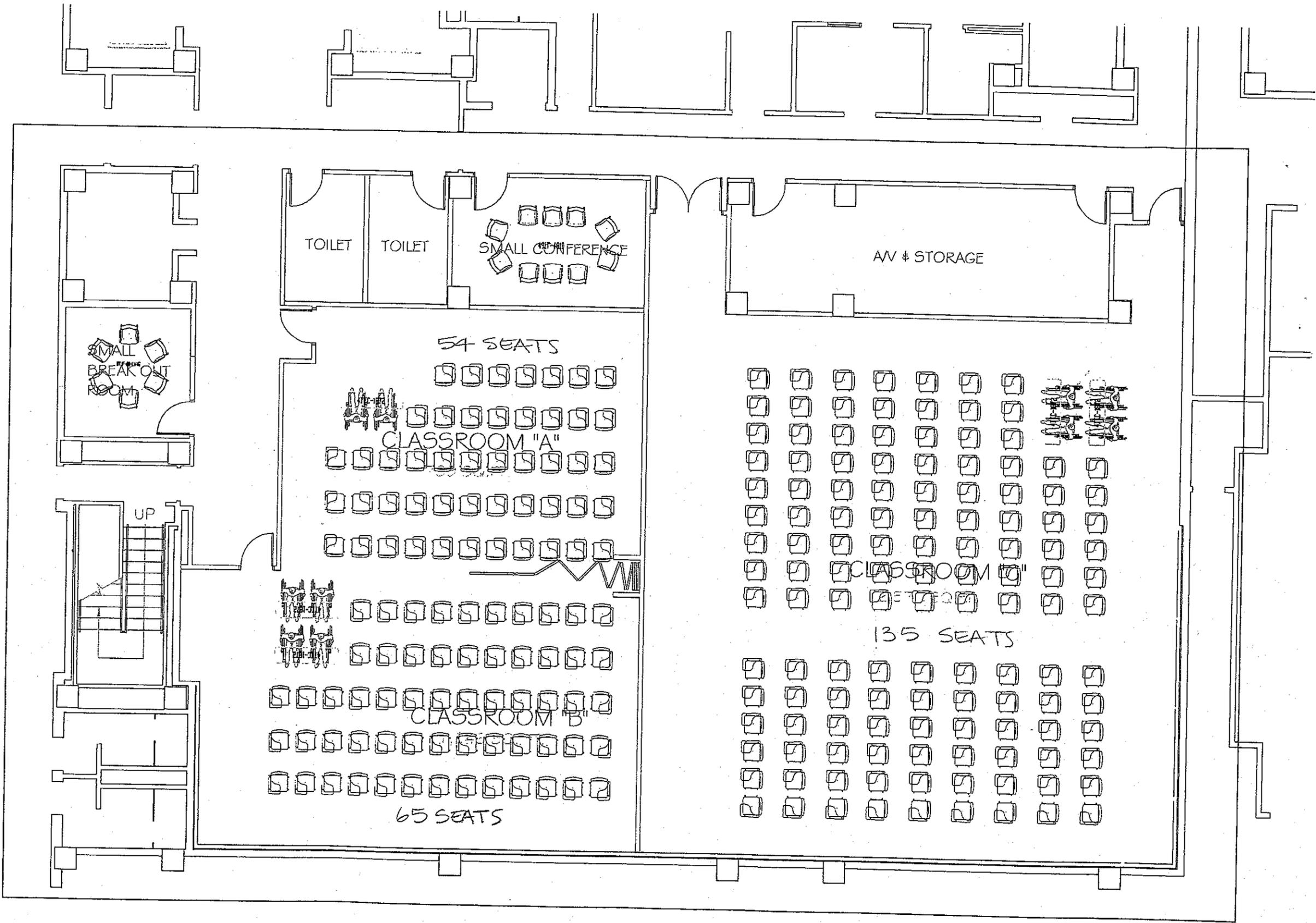
\$1,329,119

Budget Balance 1,329,119

Cost to Date \$0

Estimate to Finish \$0

Estimated Total Cost \$0



TOILET TOILET

SMALL CONFERENCE

AV & STORAGE

SMALL BREAK-OUT ROOM

UP

54 SEATS

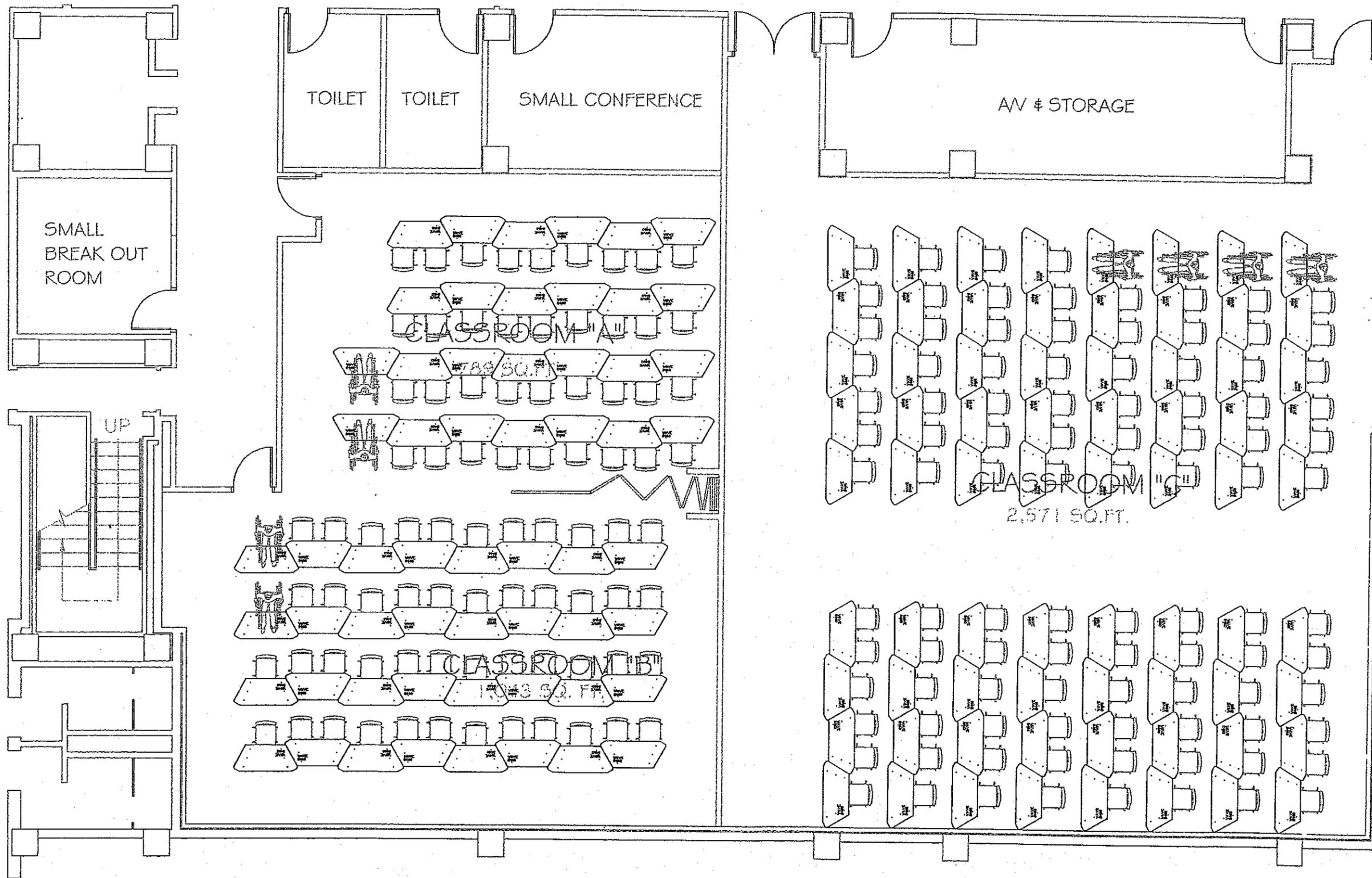
CLASSROOM "A"

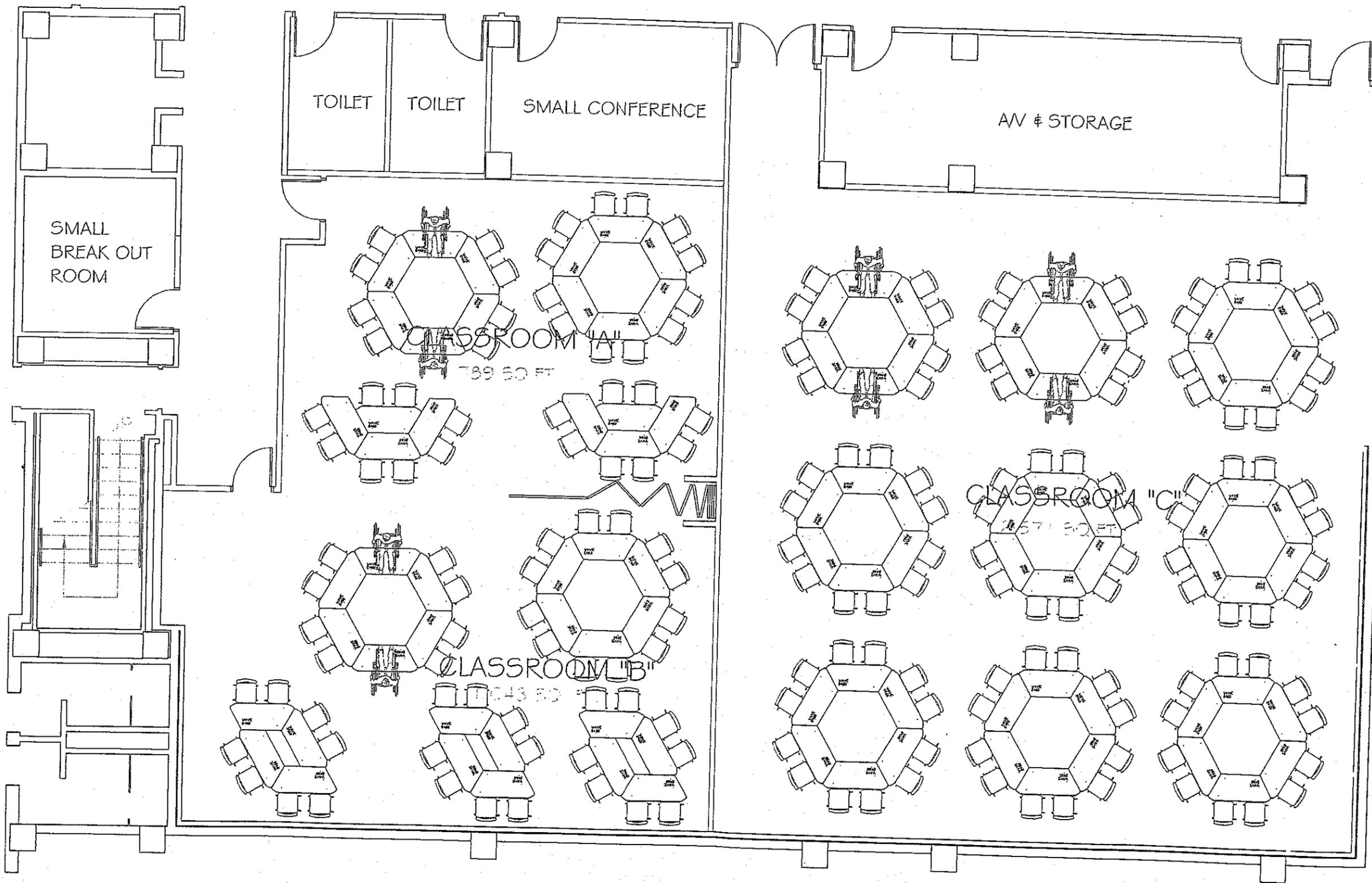
CLASSROOM "B"

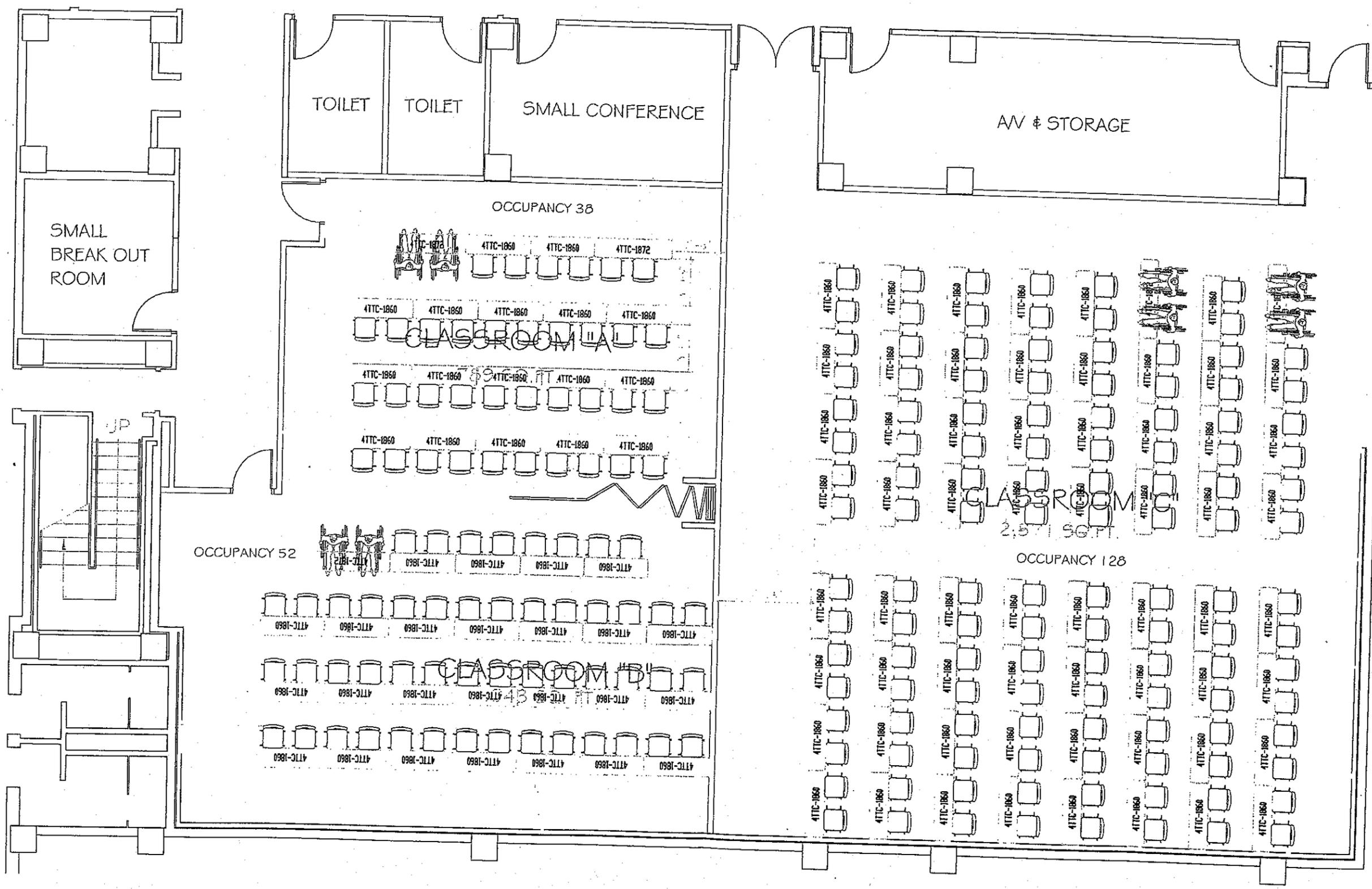
65 SEATS

CLASSROOM

135 SEATS







TOILET

TOILET

SMALL CONFERENCE

AV & STORAGE

SMALL
BREAK OUT
ROOM

OCCUPANCY 38

CLASSROOM A

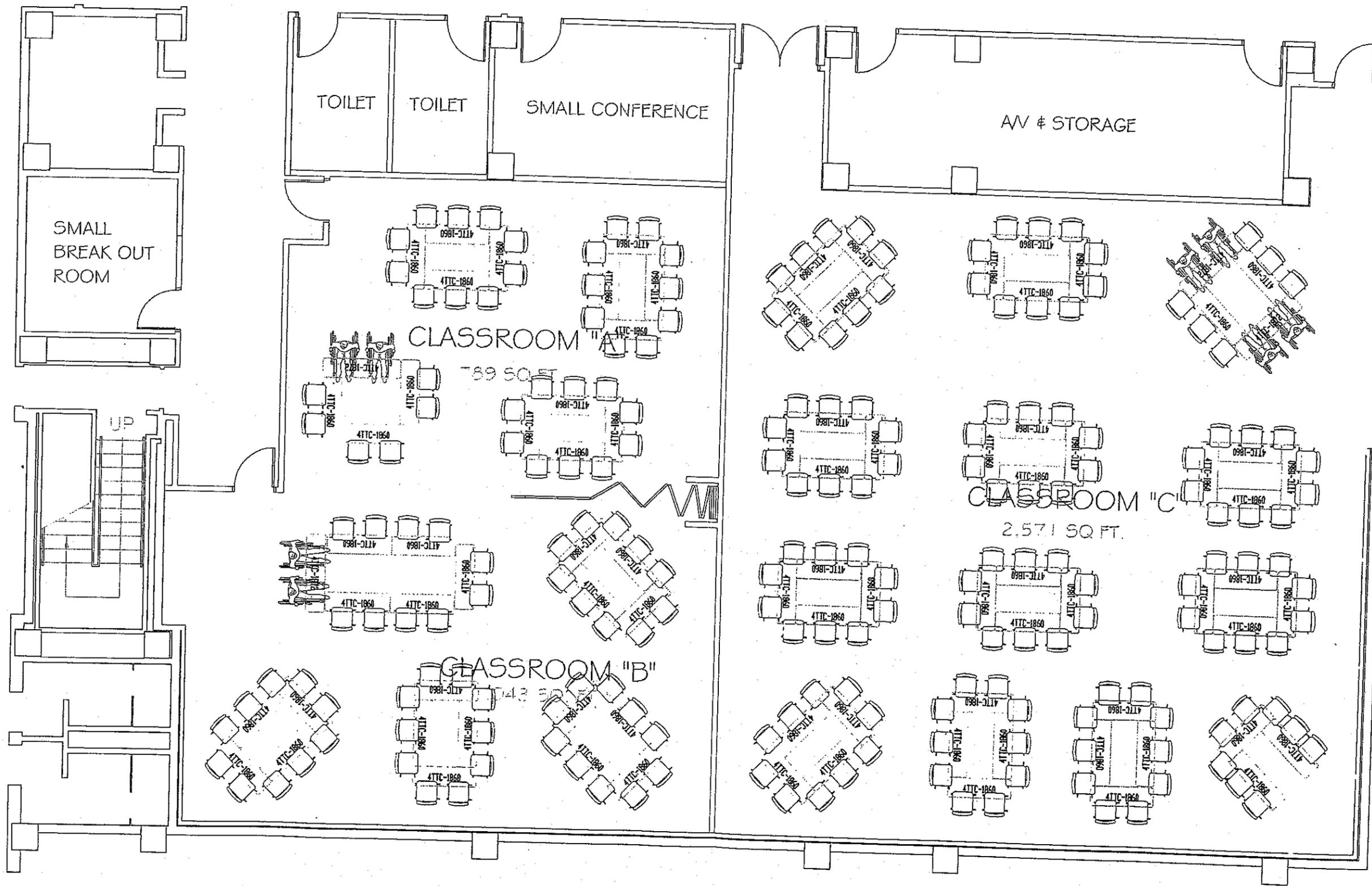
OCCUPANCY 52

CLASSROOM B

CLASSROOM C

OCCUPANCY 128

JP



PREDESIGN NARRATIVE
FOR
THE DEVELOPMENT OF PHYSICAL ASSESSMENT TEACHING AND
SIMULATION LAB AND
THE RELOCATION OF THE MEDICAL SCHOOL COMPUTER LAB
UNIVERSITY OF MINNESOTA

Statement of Need

The Academic Health Center's Inter-professional Educational Resource Center (IERC) located on the 2nd level of Phillips Wangesteen Building, teaches clinical skills to all future health care professionals across all AHC schools and colleges. Phase I of this center was planned to provide clinical exam rooms and live patient learning and teaching experiences; this Phase is complete. Phase II will provide clinical skill and physical assessment experience to health science students using simulation equipment. As the clinical skills lab receives ever-increasing and varied use, the need for this instructional space is becoming increasingly critical and urgent to the Center's academic vision and mission fulfillment. Virtually all users of the IERC need a large open gathering space to orientate students for medical school OSCEs, conduct lectures, or issue instructions to faculty observers. Within this same space, the IERC will add sophisticated virtual simulation techniques and digital recording equipment, required to fulfill IERC's mission, which can only be accomplished within a large open flexible teaching space.

Program Analysis

- Renovate 2,000sf Moos 1-752 space, for the relocation of the existing Medical School Computer Lab from its current PWB 2-134 suite location.
- Renovate the 1,850sf, PWB 2-134 suite as the Phase II extension of the new interdisciplinary Clinical Skills Center (IERC), for the Physical Assessment Teaching and Simulation Lab.
- This space needs to be large, entirely open, and flexible in every aspect, from infrastructure to illumination levels, technology variables, and furniture and simulation equipment configurations.
- It will require the purchase of highly sophisticated and costly simulation equipment and installation, such as:
 1. METI Human Patient Simulator:
A computer driven full size mannequin that blinks, speaks, breaths, has a heartbeat and a pulse and accurately mirrors human responses to such procedures as CPR, intravenous medication, ventilation, intubation and catheterization.
 2. PediaSim:
Accurately simulates children's' unique physiology, anatomy, reaction to drugs, different types of injuries and underlying conditions

3. Clinical Equipment:

Gurneys, workstations and other necessary medical equipment required, for demonstration and assessment of skills.

These simulation techniques and equipment are needed to satisfy the Medical School competencies required for graduation in Spring of 2004 and of the other AHC schools and colleges for graduation by 2006.

These competencies include the following:

Ventilatory support, insertion of a nasogastric tube, basic life support, obtaining an arterial puncture, insertion of an IV cannula, insertion of a central venous catheter, insertion of an endotracheal tube, use of an external defibrillator, manual external cardio version, performance of injections, insertion of arterial cannula, thoracentesis, and establishing an emergency airway.

Programmatic Uses

Teaching and lectures: The IERC is often used for teaching clinical skills, including patient communications, physical assessment, and procedural skills in a variety of medical settings. Classes are limited to 15 students due to current space limitations. Phase-II would allow the Center to accommodate larger groups of 30 or more persons for lectures, seminars, and small group work necessary for clinical skills training.

Demonstrations: One method for teaching procedural skills is for a practiced faculty member or other clinician to demonstrate the correct execution of a technique. Having a large open space, where faculty could demonstrate proper examination, diagnostic, or medical testing techniques to a large audience group, would substantially expand the Center's ability to meet students' needs across the AHC.

Simulations: With the acquisition of a SimMan, and other simulators, the IERC has expanded its ability to meet educational needs, improving skills and patient safety before students reach the wards and clinics. This facility does not currently have space for the use of this equipment, either for demonstration or assessment. Completing phase-II would allow the Center to leverage this investment and use this equipment much more systematically and effectively.

Cost Estimate

Project Cost: ***\$901,557***

Funding

To be funded as part of the 2004 HEAPR Request.

Schedule

To be determined by funding availability.

Attachments:

1. *Project Budget documentation*
2. *Existing Floor Plans*

Date: "8/19/2003
 File Description: Renovation for the relocation of medical school computer lab and development of physical accessment and teaching lab
 Project No:
 Name: Renovation for the relocation of medical school computer lab and development of physical accessment and teaching lab
 Proj Mgr: Archibeque
 Phase: **P.D. est of possible cost**

Cost Update

SUB ORG	Description	(A) Sub Org Amount	(B) Budget Amount	(C) Encumber / Cost to Date	(D) Estimate to Finish	(E) Estimated Total Cost (C+D)	(F) Variance (B-E)	Column (D) notes
Total Funds Available								
6	Land Acquisition							
CONSTRUCTION			\$261,010	0	0	\$0	261,010	
12	GME Construction	84,775				0	84,775	
14	FMC PWB-2-134--Moos1-752	147,235				0	147,235	
16	Hazardous Abatement	5,000				0	5,000	
19	Construction Contingency	24,000				0	24,000	
CONSULTANTS			\$10,800	0	0	\$0	10,800	
21	Consultant Basic Services	10,000				0	10,000	
24	Special Inspections	100				0	100	
25	Material Testing	100				0	100	
26	Hazardous Abatement Services	500				0	500	
27	Hazardous Air Monitoring	100				0	100	
28	Special Consultants					0	0	
29	Consultant Contingency					0	0	
PERMITS & FEES			\$18,879	0	0	\$0	18,879	
31	Building Permit	5,000				0	5,000	
32	SAC	200				0	200	
33	University Review Fee	600	\$0			0	600	
34	Project Development Fee	12,579			0	0	12,579	
35	Advertisement for Bid	500				0	500	
36	Miscellaneous Permits					0	0	
39	Permit & Fees Contingency					0	0	
SITE WORK			\$0	0	0	\$0	0	
42	Geotechnical					0	0	
44	Survey					0	0	
46	Miscellaneous Site Work					0	0	
49	Site Contingency					0	0	
INTERIORS			\$595,368	0	0	\$0	595,368	
52	Furnishings	22,368				0	22,368	
54	Equipment	570,000				0	570,000	
56	Graphics	3,000				0	3,000	
59	F & E Contingency	0				0	0	
UNIVERSITY PROVIDED SERVICES			\$15,500	0	0	\$0	15,500	
61	BSAC	1,000				0	1,000	
62	Coord Campus Construction Admin					0	0	
63	Telecommunications ph1	7,000				0	7,000	
64	Building Investigatioposs.trvrse	2,000				0	2,000	
65	Utility Outages	3,500				0	3,500	
66	Keys & Keying	2,000				0	2,000	
67	Miscellaneous Services					0	0	
69	U/M Services Contingency					0	0	
MISCELLANEOUS			\$0	0	0	\$0	0	
71	Moving Expense A.P.b.o.	0				0	0	
72	Swing Space Accommodations					0	0	
74	Travel Expenses					0	0	
75	Art					0	0	
76	Incidental Expenses					0	0	
78	Unallocated Funds					0	0	
79	Miscellaneous Contingency					0	0	

Project Bud. \$901,557

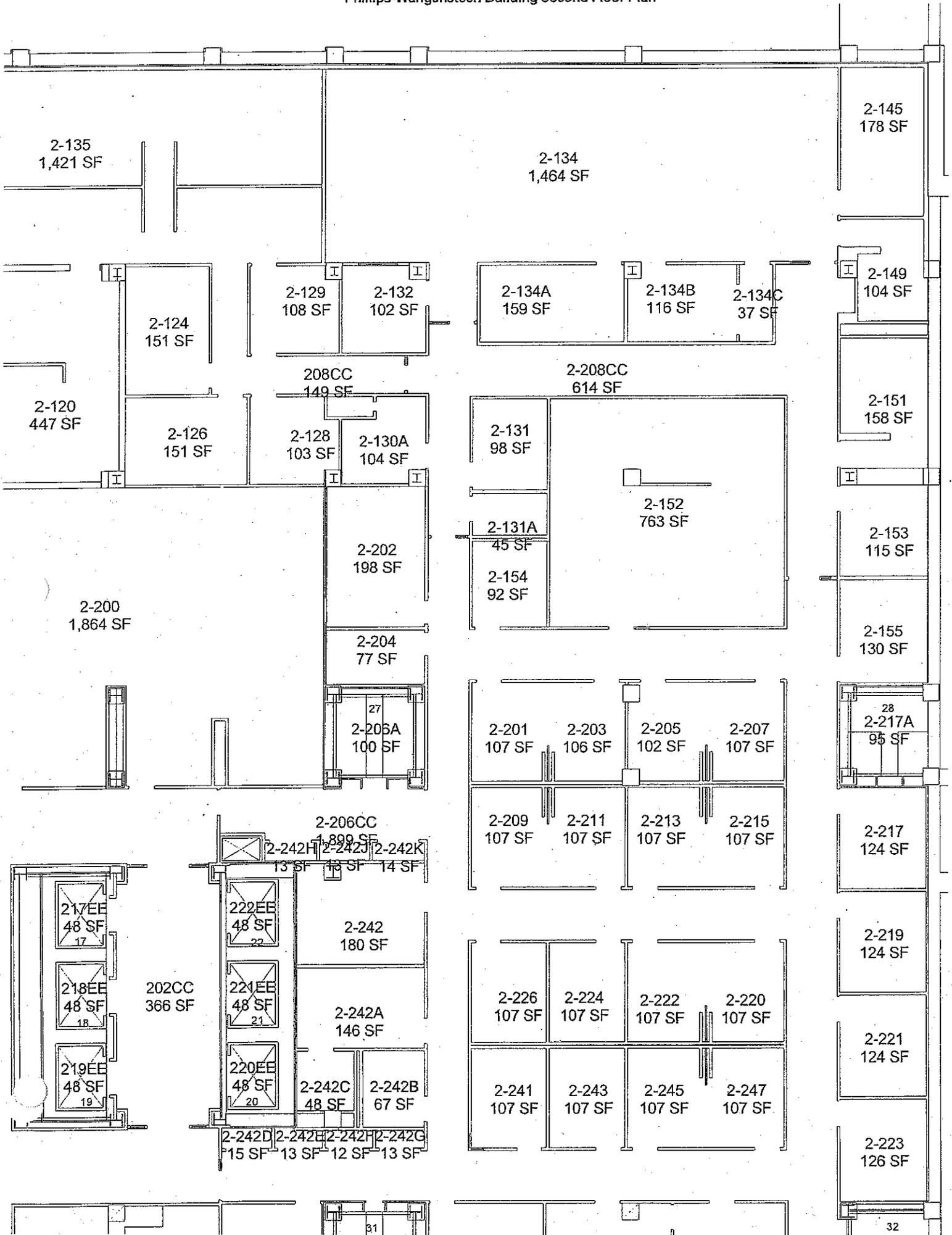
Budget Balanc 901,557

Cost to Date \$0

Estimate to Finish \$0

Estimated Total Cost \$0

Phillips-Wangensteen Building Second Floor Plan



PREDESIGN NARRATIVE
FOR
THE RENOVATION OF MAYO AUDITORIUM
UNIVERSITY OF MINNESOTA

Statement of Need

The Mayo Auditorium is a critical component of the AHC's educational facilities. Designed by C.H.Johnston Architects in the Art Deco/International style and built in 1954 as part of the Mayo Memorial Medical Center. The Mayo Auditorium has since been the largest lecture, teaching and other major indoor academic events facility on the AHC campus. At grade level it contains two side-by-side slopped lecture rooms of 178 and 198 seats capacity each. The upper level houses the 391 seat main auditorium and it's 158 seat capacity balcony.

The auditorium's significant size and capacity, central location within the AHC campus and its direct connection to the new Molecular Cellular Biology Building establishes the renovation of Mayo Auditorium as an immediate, high and urgent building priority.

The Mayo Auditorium is structurally sound; however it's physical state has deteriorated significantly. Minor repairs of the ground level lecture rooms have kept them just functional. Everything else in the facility is in need of major repair and renovation including significant ADA provisions required by building code and updating of its audio-visual and technological capabilities. The AHC now requires resources to renovate and restore for maximum benefit in meeting our educational goals.

Program Analysis

Future Uses for Mayo Auditorium

- Large class/group teaching and lectures for all schools of AHC and MCB students.
- Continuing and Distance Learning Education large group seminars.
- Computer based testing.
- Grand Rounds presentations.
- Medical School White Coat ceremony.
- Certain Graduations/Celebrations.
- Mini Medical School Program.
- AHC Lecture Series.
- Community Events.
- Alumni Events.
- Cultural Events.
- Arts of Healing and Spirituality Exhibits and Events.
- Medical Exhibits
- Leased for certain size seminars and events to outside professional medical associations and conferences during nights and weekends.

General Program Scope

The general renovation scope consists of 18,244 total square feet, broken down as follows:

- Level-3 (Grade level) : 7,983 sf
- Level-4 (Upper level) : 8,066 sf
- Balcony Level : 2,195 sf

The scope of renovation addresses the following general work areas and aspects:

- Certain exterior building elements.
- Some structural work associated with a new elevator.
- Interior finishes and furnishings.
- Electrical and Mechanical systems upgrades and additions. (This does not include sprinklers provision. The sprinklers provision project will be fully implemented and completed by September 2003, funded from a separate funding source through the University Building Code Office.
- ADA and Building Code required upgrades and additions.
- Technology upgrades and additions both, in infrastructure and equipment.

Cost Estimate

Project Cost: ***\$4,544,824***

Funding

To be funded as part of the 2004 HEAPR Request.

Schedule

To be determined by funding availability.

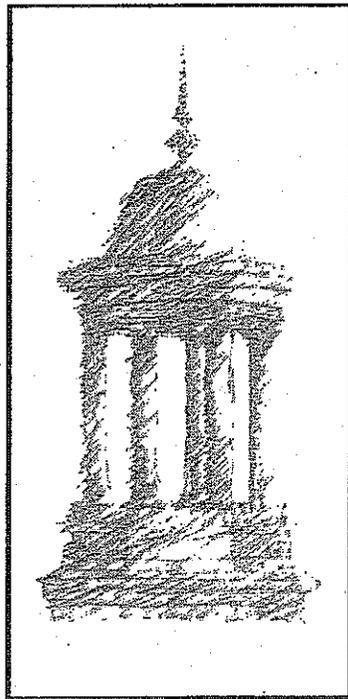
Attachments:

- 1. Program for Mayo Auditorium Renovation-August 2003*
- 2. Project Budget documentation*
- 3. Existing Floor Plans*
- 4. Design Documentation-Proposed*



AcademicHealthCenter

UNIVERSITY OF MINNESOTA



**Program
for
Mayo Auditorium Renovation**

August 2003

Project Description and Scope

MAYO AUDITORIUM RENOVATION

PROGRAM STATEMENT AND BACKGROUND

The Mayo Auditorium is a critical and inherent component of the new proposed AHC Education Facilities and Learning and Education Center. Designed by C.H. Johnston Architects in the Art Deco/International style and built in 1954 as part of the Mayo Memorial Medical Center. The Mayo Auditorium has since been the largest lecture, teaching and other major indoor academic events facility on the AHC campus. At grade level it contains two side-by-side sloped lecture rooms of 178 and 198 seats capacity each. The upper level houses the 391 seat main auditorium and its 158 seat capacity balcony.

Although Mayo Auditorium has no national historical value due to its relative young age, its historical significance and landmark status are of monumental value to the entire AHC campus and the University. It is also a fundamental core link and an icon for the AHC District Plan.

This aspect combined with the facility's unique and elegant original design, significant size and capacity, central location within the AHC campus and its direct connection to the new, recently completed, Molecular Cellular Biology Building establishes the renovation of Mayo Auditorium as an immediate, high and urgent building priority within the Academic Health Center.

The Mayo Auditorium has seen many glory days in the past, but it has been underutilized in recent years and its physical state has deteriorated significantly. A recent partial renovation of the ground level lecture rooms has kept them just functional. Everything else in the facility is in need of major repair and preservation including significant ADA provisions required by building code and updating of its audio-visual, technological, food serving, lounging and social event staging capabilities and amenities.

Future Uses for Mayo Auditorium

- Large class/group teaching and lectures for all schools of AHC and MCB students.
- Continuing and Distance Learning Education large group seminars.
- Computer based testing.
- Grand Rounds presentations.
- Medical School White Coat ceremony.
- Certain Graduations/Celebrations.
- Mini Medical School Program.
- AHC Lecture Series.
- Community Events.
- Alumni Events.
- Cultural Events.
- Arts of Healing and Spirituality Exhibits and Events.
- Medical Exhibits
- Art Exhibits.
- Leased for certain size seminars and events to outside professional medical associations and conferences during nights and weekends.

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The general renovation scope consists of 18,244 total square feet, broken down as follows:

- Level-3 (Grade level) : 7,983 sf
- Level-4 (Upper level) : 8,066 sf
- Balcony Level : 2,195 sf

The scope of renovation addresses the following general work areas and aspects:

- Certain exterior building elements.
- Some structural work associated with a new elevator.
- Interior finishes and furnishings.
- Electrical and Mechanical systems additions and upgrades. (This does not include sprinklers provision. The sprinklers provision project will be fully implemented and completed by

September 2003, funded from a separate funding source through the University Building Code Office.

- ADA and Building Code required upgrades and additions.
- Technology upgrades and additions, both in infrastructure and equipment

Specific Program Scope

1. Exterior Renovations

- Replace upper level's original glass exterior with new of identical design and frame profile.
- Replace lower level's existing tinted bronze glass storefront with clear glass to match the upper level's original glass exterior design and frame profile.
- Replace top round drum's recent metal roof coping with the original stone one.
- Clean and tack point exterior brick skin and stone banding- including exterior stone stairs and parapet over the Mayo garage-where needed.
- Replace existing center handrail at exterior stairs with brass handrail of design complimentary to the building's original design. Provide integral lighting as part of the exterior stairs.
- Remove all existing signs from the stone wall fascia above the Mayo garage entrance and replace them with permanent signs that befit the building design.
- Repair existing roofing where needed.

2. Interior Renovations

A. ADA AND BUILDING CODE IMPROVEMENTS

- Provide new hydraulic elevator at the outside corner junction of the south circular stair-222SS and the existing Kitchen -207 to facilitate wheelchair access to the auditorium level-4 from ground level-3. Ideally this new elevator should also connect level-2 (upper level) of the Mayo garage and therefore the Church Street entrance. The previous UBC Building Code prohibited this, without the provision of a dedicated elevator lobby on each floor. The new IBC Building Code may not require such provision, and in this case, the new elevator will be extended to level-2 of the Mayo garage.
The auditorium lobbies shall also serve as elevator lobbies by bringing up to building code the following doors:
 - a. At the two circular doors on all floors.
 - b. At the auditorium entrances on level-4
 - c. At the lecture rooms entrances on level-3
 - d. At the entrance to Mayo on level-3
- In addition to an elevator, provide a horizontal ramp connection between the auditorium level-4 and the 4th floor of Mayo, at the current Kitchen-207 location.
- Provide all doors with hardware conforming to ADA requirements.
- Provide the required by current building code Men and Women toilets with wheelchair accessible water closets and lavatories.
- Provide wheelchair accessible drinking fountains in both lobby areas.
- Provide seating space for wheelchairs in both the auditorium and the lecture rooms as required by building code by creating 4 such spaces grouped in each of the lecture rooms on level-3 and dispersed in the auditorium on level-4.

B. MECHANICAL IMPROVEMENTS AND ADDITIONS

- Provide HVAC for level-3 lobby
- Upgrade HVAC on level-3 for the lecture rooms.
- Upgrade HVAC on level-4 for both the lobby and auditorium including the balcony.
- Provide plumbing for drinking fountains on level-3 lobby.

C. ELECTRICAL IMPROVEMENTS AND ADDITIONS

- Upgrade and add to all electrical systems to support new and existing to remain lighting, power and technology requirements in the entire building.

D. STRUCTURAL MODIFICATIONS

- Cut and reinforce floor slab openings for new elevator shaft.

E. ASBESTOS ABATEMENT

- Perform asbestos abatement as required when and where encountered and exposed.

F. INTERIOR FINISHES AND FURNISHINGS

Stairs (all levels)

- Paint existing walls and ceiling.
- Repair and maintain existing light fixtures.
- Clean and buff existing stair rails.
- Paint frames of glass entrance walls.

Level-3

Lounge/Lobby Area 124CC

- Provide new glass vestibules for all 4- floor entrances. At the northeast entrance, the vestibule shall be an exterior addition to avoid conflict or modifications to the already designed ramp and stair connection from MCB to Mayo Auditorium.(see-Perkins & Will drawings A1.03, A2.03B & A7.22).
- Provide new ceiling lighting to fit lobby's new multi-activity function.
- Provide new carpet flooring and carpet base-except on the interior face brick and stone walls.
- Repair and paint existing suspended cement plaster ceiling and round columns.

Lecture Rooms 100 & 125

These two classrooms are planned for the "computer based testing" function in addition to their lecture hall function, and need to be provided with wireless capability.

- Remove perforated tiles from the underside of wall soffits and replace it with gypsum board. Provide mechanical access panels as may be required.
- Remove perforated hardboard wall panels from the projection booth's wall facing the lecture room and replace it with new acoustical wall panels wrapped in fabric.
- Remove and replace all existing floor carpet and carpet base with new on the aisles, stage and under seating.
- Provide wooden step down wall chair rail with acoustical wall fabric bellow.
- Paint all exposed plaster and gypsum board walls and soffits.
- Existing seating:
 - Reduce the total number of seats in each classroom to 150 from their current capacity of 178 and 198 respectively. This will reduce congestion, length of seating rows, proximity of seats to the podium and it will provide for amore functional learning environment. To this effect it is proposed that:
 - a. Remove all seats - and
Clean and repaint all metal components.

Refinish and stain wooden backs.
Reupholster seats with fabric.
Reinstall seats after new carpet installation is complete.

Or alternatively:

- b. Remove all seats - and
Replace with new wider, more comfortable seats with tablet arms.

Projection booths 130 & 135

- Remove perforated hardboard ceiling panels and replace them with suspended 24"x 24" tegular acoustical ceiling tiles.
- Remove existing surface mounted lights and replace them with 24"x 24" recessed parabolic light fixtures.
- Remove existing carpet and carpet base and replace it with new.
- Paint walls.

Vestibule 125CC and Sound Equipment/ Exit stairs spaces 126CC,100-1 & 125-1

- Paint walls, ceiling and stair rails.

Level-4

Lounge/Lobby Area 232CC

- Remove existing ceiling acoustical tiles adhesively applied to the existing suspended metal lath and plaster ceiling. Clean and repair plaster ceiling. Apply a new plaster finish coat and paint.
- Repair and paint original ceiling plaster moldings and walls.
- Remove existing carpet and carpet base and mastic floor tile (VAT). Provide new carpet and carpet base throughout this area.
- Remove and replace surface mounted light fixtures with new to fit and compliment the space's character and design.
- Remove and replace entirely the existing wood HVAC registers cover.

Auditorium Vestibule/Lobby 200-3, Auditorium Main Floor 200 & Balcony 300

- Refinish all vestibule/lobby and auditorium wood paneling and doors.
- Clean and buff stairs and balcony rails.
- Repair and paint all existing exposed plaster walls, ceilings and soffits.
- Remove and replace all ceiling linear diffusers in auditorium.
- Improve and upgrade auditorium lighting.
- Remove all existing mastic floor tile (VAT) including the balcony stairs treads and replace it with carpet. Provide carpet base where marble base does not exist.
- Provide carpet flooring throughout these areas.
- Remove existing mastic floor tile (VAT) from the stage and replace it with wood.
- Existing seating:
Remove all seats - and
Clean and repaint all metal components.
Refinish and stain all wooden components.
Reupholster seats and backs with fabric.
Reinstall seats after new carpet installation is complete.

Vestibule 200-1 and Sound Equipment/ Exit stairs spaces 200-2, 214SS & 215SS

- Paint walls ceiling and stair rails.

Projection Room 310

- Paint existing plaster walls, ceiling doors and exposed mechanical ducts.
- Cut large projection glass area on the interior booth wall facing the seating.
- Remove perforated hardboard wall panels from the projection booth's wall facing the auditorium and replace it with new acoustical wall panels wrapped in fabric.
- Provide carpet and carpet base for existing concrete floor.
- Improve and upgrade lighting.
- Equip for- state of the art-audiovisual technology.
- Replace exterior windows glazing with new thermo brake frames and insulated glass.

Check Room 226 and Men Toilet Room 224

- Redesign and modify these two areas for the Women Toilet room and provide a wheelchair accessible water closet and lavatory as part of a required by building code total of 9-water closets and 3-lavatories. This will result to a smaller Check Room.
- Gut existing toilet room 224.
- This renovation/modification shall provide the following new finishes and fixtures:

Walls: Ceramic tile wainscot and painted gypsum wallboard or plaster.

Floor: Ceramic tile and ceramic tile base.

Ceiling: Painted gypsum wallboard or plaster.

Mirrors and accessories

Plumbing fixtures

Light fixtures

Women Lounge 205 and Women Toilet Room 205-1

- Redesign and modify these two areas for the Men Toilet room and provide a wheelchair accessible water closet and lavatory as part of a required by building code total of 3-water closets, 2-urinals and 3-lavatories.
- Gut existing rooms 205 and 205-1.
- This renovation/modification shall provide the following new finishes and fixtures:

Walls: Ceramic tile wainscot and painted gypsum wallboard or plaster.

Floor: Ceramic tile and ceramic tile base.

Ceiling: Painted gypsum wallboard or plaster.

Mirrors and accessories

Plumbing fixtures

Light fixtures

Kitchen 207

- Demolish the existing Kitchen space to provide for new elevator and ramp as per attached proposed floor plans.

Furnishings for 3rd & 4th Level Lobbies

44-Upholstered lounge chairs, leather or synthetic leather covering, attached seat and back cushions or tight seat and back and stainless steel base.

2-Upholstered 3-seater sofas, leather or synthetic leather covering, attached seat and back cushions or tight seat and back and stainless steel base.

5-Occasional tables, large, granite top, and stainless steel base.

8-Occasional tables, small, granite top and stainless steel base.

1-Bench approximately 96Wx22D, leather or synthetic leather covering, granite table surface in middle, and stainless steel base.

11-Textured fiberglass/resin planters.

4-Portable display units.

Technology Program

Mayo Auditorium Audio Visual Technology Features:

In order to address the increasing technological needs of the AHC the following technology provisions would be essential in achieving full space utilization.

Presentation System:

- a. Computer/Video Projector
 - i. 5,000 Lumen (minimum) Light Output
 - ii. 3-chip DLP (True SXGA 1280x1024 chip resolution) Technology
 - iii. Source Compatibility: All resolutions from VGA to UXGA and HDTV
- b. Document Camera
 - i. True SXGA Resolution with Analog RGB (SXGA-75Hz) & NTSC video outputs
 - ii. Progressive-Scan CCD Pickup
 - iii. Optical Zoom plus Electronic Magnification
 - iv. Manual & Auto Focus.
- c. Laptop (VGA & Mac) Hookup with Data connections
- d. Dedicated Computer with LCD Monitor/ Pen Tablet System (optional)
- e. DVD Playback
 - i. Compatible with DVD Video, CD, CD-R/RW and Video CD
 - ii. Component Video, Composite Video and S-Video Outputs
- f. S-VHS playback with Closed Captioning capability
- g. Campus Cable system with Closed Captioning capability
- h. Fiber Connection from U of M CODEC Farm
- i. DTV Tuner
- j. Enhanced Program Audio System
 - i. Dolby Digital Surround (AC-3)
 - ii. Speaker Cavities would be desirable
- k. Speech Reinforcement System
 - i. Wired Lectern Microphone
 - ii. Several Microphone Inputs on Stage for Panelists
 - iii. UHF Wireless System
- l. Assistive Listening System (for both Program and Speech Audio)
- m. Dual 35mm Xenon Slide Projectors
- n. Overflow capability to Rooms 100 & 125
- o. New Screen
 - i. 16:9 Aspect Ratio

2. Video Production & Videoconference System:
 - a. 3 Camera System
 - i. 1/2" 3-CCD Pickup
 - ii. Integrated Pan/Tilt System with Lens Control
 - iii. Genlock Capability
 - b. Production Switcher (SEG)
 - c. Scan Conversion for Hi-Resolution Sources
 - d. Fiber Connection to U of M CODEC Farm
 - e. S-VHS Recorder
 - f. Slide to Video Converter
 - g. Campus Cable Connection
 - h. ISDN CODEC (optional)
 - i. Audio conference System (optional)
3. Control System (AMX Based):
 - a. Custom Programmed System for control of Presentation System hardware
 - b. Lectern Control Panel
 - c. Booth Control Panel
4. Architectural Considerations:
 - a. Screen:
 - i. To achieve desired size, architectural changes may be necessary
 - ii. May want to position screen so bottom is 6-7' above the stage
 - b. Projection/Control Booth:
 - i. Best location would be at rear of room on main level
 - ii. Eliminate existing audio mixer console
 - iii. May want to remove existing room on upper level and replace with seating

Preliminary Room Description (Audio Visual)

Overall:

The room will be equipped with a new 20' wide by 11-1/4' high, 16:9 projection screen. Dual Xenon Slide Projection will be employed from a rear projection/control booth. The audio system will be a monaural, distributed ceiling type for speaker reinforcement and an Enhanced Program Audio System (Dolby Digital Surround). The A/V system will be controlled by an AMX system with control points in the Presenter's Lectern and the Rear Projection/Control Booth. The majority of the Program Source A/V equipment will be located inside Lectern with the balance of the supporting equipment in a rack in the Projection/Control Booth (signal switcher/ router, amplifiers and control system). An overhead projector and cart will be provided. The room will also be equipped with a video production system that will allow both recording and broadcasting of events.

Video Projection System:

The video system will be equipped with a new video projector capable of at least 5000 ANSI lumens, accepting inputs from Composite Video, S-Video and Computer (RGBHV) sources. The projector's native resolution shall be a minimum of 1280 x 1024 pixels. The projector's resolution capabilities will have a minimum range of 640x480 pixels on the low end up to 1600x1200. The projector will be located in the Rear Projection/Control Booth. The following are the inputs for the system:

Lectern – this is an option)	Laptop (located in the Presenter's Lectern)
Lectern)	Dedicated Computer (located in the Presenter's Lectern)
	Document Camera (located in the Presenter's Lectern)
	DVD (located in or near the Presenter's Lectern)
	S-VHS (located in or near the Presenter's Lectern)
	Campus Cable
	CODEC Farm Fiber Feeds
	Off-Air & Digital TV Broadcasts
Booth)	Auxiliary Video (located in the Projection/Control Booth)
Booth)	Auxiliary RGBHV (located in the Projection/Control Booth)

Video Production System:

This video system will consist of three ½" (3-CCD pickup) video cameras with remote controlled Pan/Tilt mechanisms and the associated electronics to enable both S-VHS recording of presentations and dissemination of signals for Distance Learning, ITV, etc. as well as overflow to Rooms 100 and 125. Outbound signals can be sent over the Campus Cable System or fiber to the CODEC farm or other campus destinations for video streaming or videoconferencing. The associated electronics will reside in the Rear the Projection/Control Booth where an operator will be stationed. The operator will be required for recording, camera switching and positioning, and audio levels for the outbound signals.

Audio System:

The Speech Reinforcement system will be accomplished by a wired lectern gooseneck microphone as well as a UHF wireless lavalier microphone system. A minimum of two auxiliary microphone inputs will be located at the front of the auditorium.

The program surround sound system will utilize Dolby Digital 5.1 technology to achieve "theater" quality. Speakers will be positioned in the front of the auditorium for Left /Right Center channels as well as one or two subwoofers and rear Left/Right "surround" speakers for both the main floor as well as the balcony.

Two-way audio conferencing will be possible although audience participation will be difficult from a microphone perspective. An Assistive Listening system will be provided with a minimum of three receivers.

Control System:

The AMX control system will consist of an integrated controller located in the projection/Control booth. A Control Panel will be located in the Presenter's Lectern. The following functions will be programmed into the system:

- Video Projector Power Control
- Projector Source Selection
- Program Volume Control
- Slide Projector Power Control
- Slide Projector Forward, Reverse and Focus
- Lighting – Scene Selection

A level of automation will be programmed into the system in order to simplify room usage for the Presenter. In order to save video projector lamp life the system will be programmed to shut down after 4 hours of no touch panel activity.

A Control Panel will also be located in the Projection/Control Booth. It will be programmed to duplicate the functions of the Presenter's Lectern panel along with other functions required to facilitate the Video Production system.

Architectural Considerations:

It may be possible to locate the front speakers behind a perforated projection screen if projection quality would not be adversely affected, otherwise it may be necessary to place the speakers in front in cavities covered with an acoustically transparent material.

Because of the 16:9 aspect ratio of the new screen, architectural changes may be needed to the front wall. Furthermore it may be advisable to position the screen so that the bottom is 6-7' above the stage so not to constrain activities on stage.

A Projection/Control Booth on the main level and below the balcony in the rear of the auditorium is recommended for proper projection angles, video production operator sightlines and improved booth access during events. Although not thoroughly researched, a heat rise in the booth of 20,000 to 30,000 BTU can be expected. Creation of the new booth will permit the present audio console to be converted to permanent seating, as well as the present projection booth in the balcony.

The following are some acoustics standards we give for classrooms and Auditoriums.

NC Ratings for Auditoriums & Lecture Halls: NC 25 or better.

Acceptable Reverb time for Large Auditoriums: RT60 of 1.5 seconds or better.

HVAC Considerations:

Diffusers must have a rating of 10dB lower than room NC rating at rated flow.

Fan noise must be minimized either by distance or Silencers.

Date: 8-19-03
 File Description: Mayo Auditorium Renovation
 Project No:
 Name:
 Proj Mgr: Archibeque

Phase: Pre-Design Estimate of Possible cost of construction.

Cost Update

SUB ORG	(A) Sub Org Description Amount	(B) Budget Amount	(C) Encumber/ Cost to Date	(D) Estimate to Finish	(E) Estimated Total Cost (C+D)	(F) Variance (B-E)	Column (D) notes
Total Funds Available							
6	Land Acquisition						
CONSTRUCTION		\$3,058,040	0	0	\$0	3,058,040	
12	GME Construction	2,768,219			0	2,768,219	
14	Misc. Construction inspection demo/patch				0	0	
16	Hazardous Abatement	13,000			0	13,000	
19	Construction Contingency	276,821			0	276,821	
CONSULTANTS		\$294,500	0	0	\$0	294,500	
21	Consultant Basic Services	280,000			0	280,000	
24	Special Inspections	0			0	0	
25	Material Testing	1,500			0	1,500	
26	Hazardous Abatement Services	3,500			0	3,500	
27	Hazardous Air Monitoring	2,500			0	2,500	
28	Special Consultants	0			0	0	
29	Consultant Contingency	7,000			0	7,000	
PERMITS & FEES		\$79,824	0	0	\$0	79,824	
31	Building Permit	25,000			0	25,000	
32	SAC				0	0	
33	University Review Fee	600	\$0		0	600	
34	Project Development Fee	53,724		0	0	53,724	
35	Advertisement for Bid	500			0	500	
	Miscellaneous Permits				0	0	
39	Permit & Fees Contingency				0	0	
SITE WORK		\$0	0	0	\$0	0	
42	Geotechnical				0	0	
44	Survey				0	0	
46	Miscellaneous Site Work				0	0	
49	Site Contingency				0	0	
INTERIORS		\$1,080,160	0	0	\$0	1,080,160	
52	Furnishings	150,000			0	150,000	
54	Equipment	867,160			0	867,160	
56	Graphics	3,000			0	3,000	
59	F & E Contingency	60,000			0	60,000	
UNIVERSITY PROVIDED SERVICES		\$32,300	0	0	\$0	32,300	
61	BSAC	2,000			0	2,000	
62	Coord Campus Construction Admin				0	0	
63	Telecommunications	13,000			0	13,000	
64	Building Investigation	2,000			0	2,000	
65	Utility Outages	5,000			0	5,000	
66	Keys & Keying	300			0	300	
67	Miscellaneous Services				0	0	
69	U/M Services Contingency	10,000			0	10,000	
MISCELLANEOUS		\$0	0	0	\$0	0	
71	Moving Expense				0	0	
72	Swing Space Accommodations				0	0	
74	Travel Expenses				0	0	
75	Art				0	0	
76	Incidental Expenses				0	0	
78	Unallocated Funds				0	0	
79	Miscellaneous Contingency				0	0	

Project Budget

\$4,544,824

Budget Balance 4,544,824

Cost to Date \$0

Estimate to Finish \$0

Estimated Total Cost \$0

Kraus-Anderson Construction Company
 Minneapolis Division
 525 South Eighth Street, Minneapolis, Minnesota

University of Minnesota Mayo Auditorium Renovation

Architect:
 Date:

SBA / RSP
 August 14, 2003

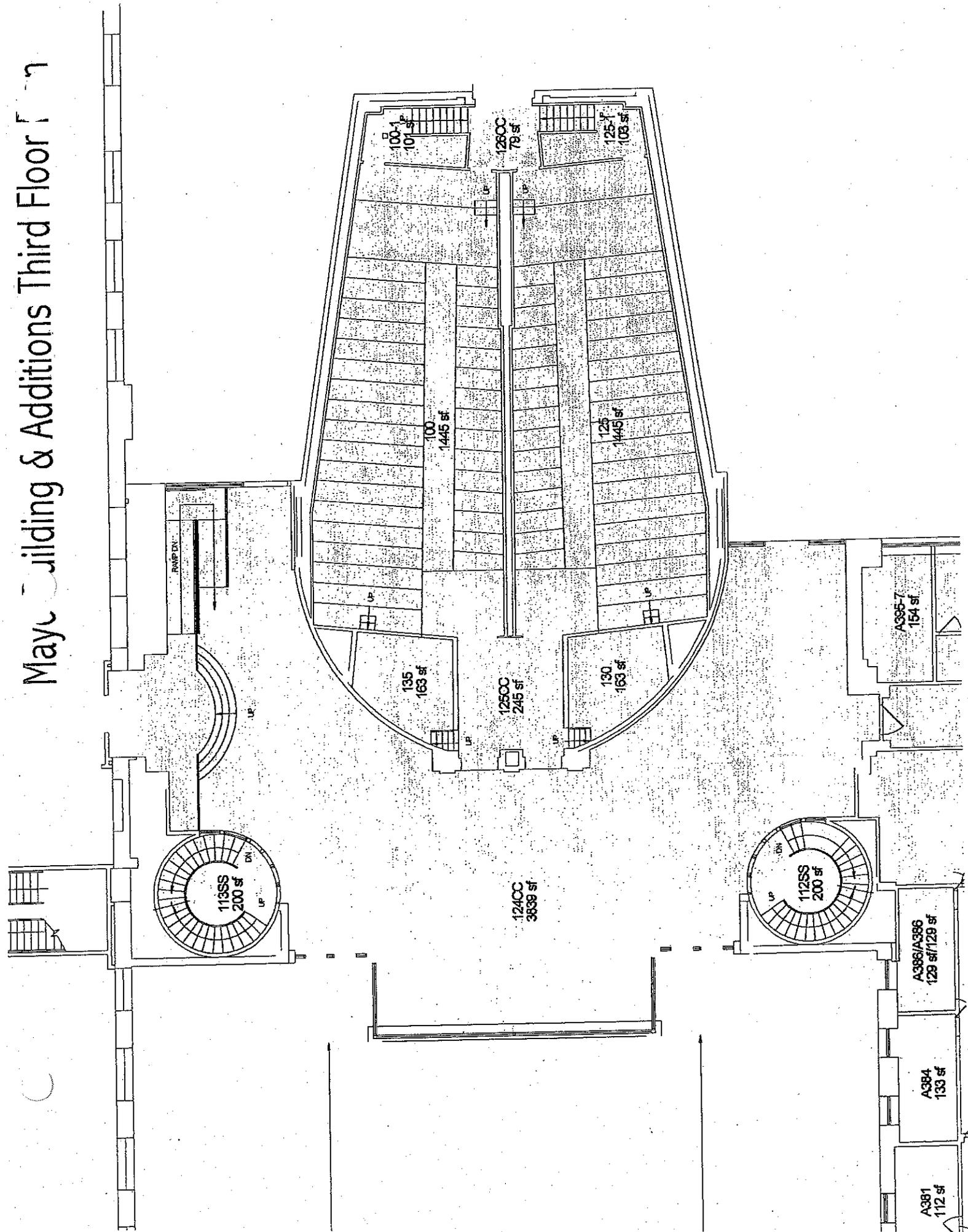
18,244 Gross Square Feet

Conceptual Preliminary Estimate - Summary

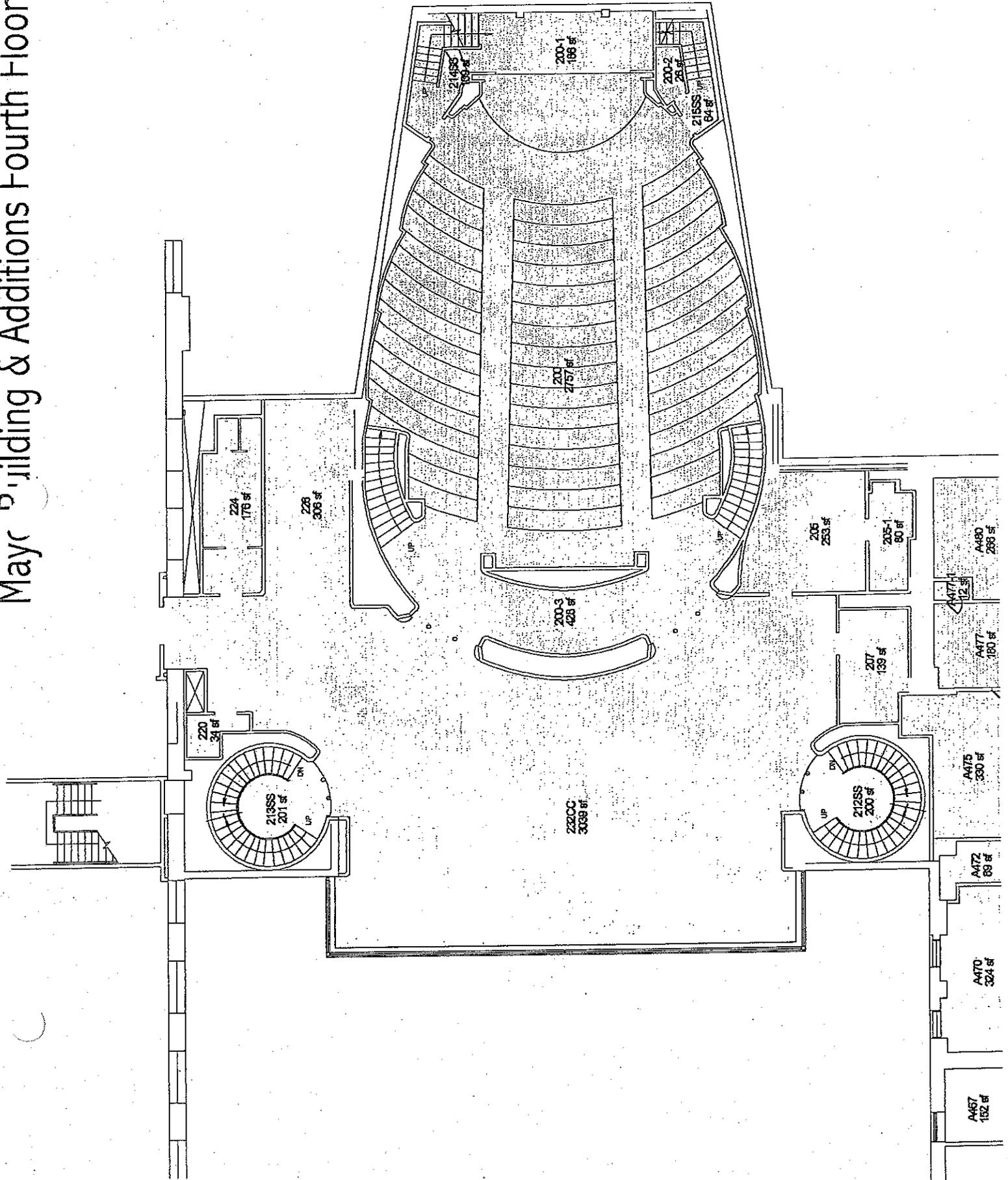
<u>Section of Work</u>	<u>Amount</u>	<u>% of Total</u>	<u>\$/SF</u>
General Conditions	\$197,851	7.15%	\$10.84
Exterior Renovations	\$107,080	3.87%	\$5.87
Elevator	\$93,980	3.39%	\$5.15
Vestibules	\$57,276	2.07%	\$3.14
Asbestos Abatement - BY OWNER	\$0	0.00%	\$0.00
Main Stairs	\$37,580	1.36%	\$2.06
Level 3 - Lounge/ Lobby Area 124CC	\$103,502	3.74%	\$5.67
Level 3 - Lecture Rooms	\$139,799	5.05%	\$7.66
Level 3 - Projection Booths 130 & 135	\$10,879	0.39%	\$0.60
Level 3 - Back Stage 125CC, 126CC, 100-1 & 125-1	\$2,933	0.11%	\$0.16
Level 4- Lounge / Lobby Area 232CC	\$109,566	3.96%	\$6.01
Auditorium	\$234,923	8.49%	\$12.88
Vestibules 200-1, 200-2, 214SS & 215SS	\$6,312	0.23%	\$0.35
Projection Room 310	\$18,907	0.68%	\$1.04
New Women's Restrooms / Coat Room	\$94,896	3.43%	\$5.20
New Men's Restrooms	\$60,309	2.18%	\$3.31
New Access Ramp	\$21,210	0.77%	\$1.16
Mechanical Room Expansion	\$57,755	2.09%	\$3.17
Mechanical - 2nd Level Garage	\$293,950	10.62%	\$16.11
Mechanical	\$447,500	16.17%	\$24.53
Electrical	\$235,000	8.49%	\$12.88
BLDG PERMITS / TESTING / OTHER FEES	\$5,828	0.21%	\$0.32
Fee	<u>\$70,111</u>	<u>2.53%</u>	<u>\$3.84</u>
Total w/o Contingency	\$2,407,147	86.96%	\$131.94
Construction Contingency @ 15%	<u>\$361,072</u>	<u>13.04%</u>	<u>\$19.79</u>
ESTIMATE TOTAL	\$2,768,219	100.00%	\$ 151.73

Clarifications attached

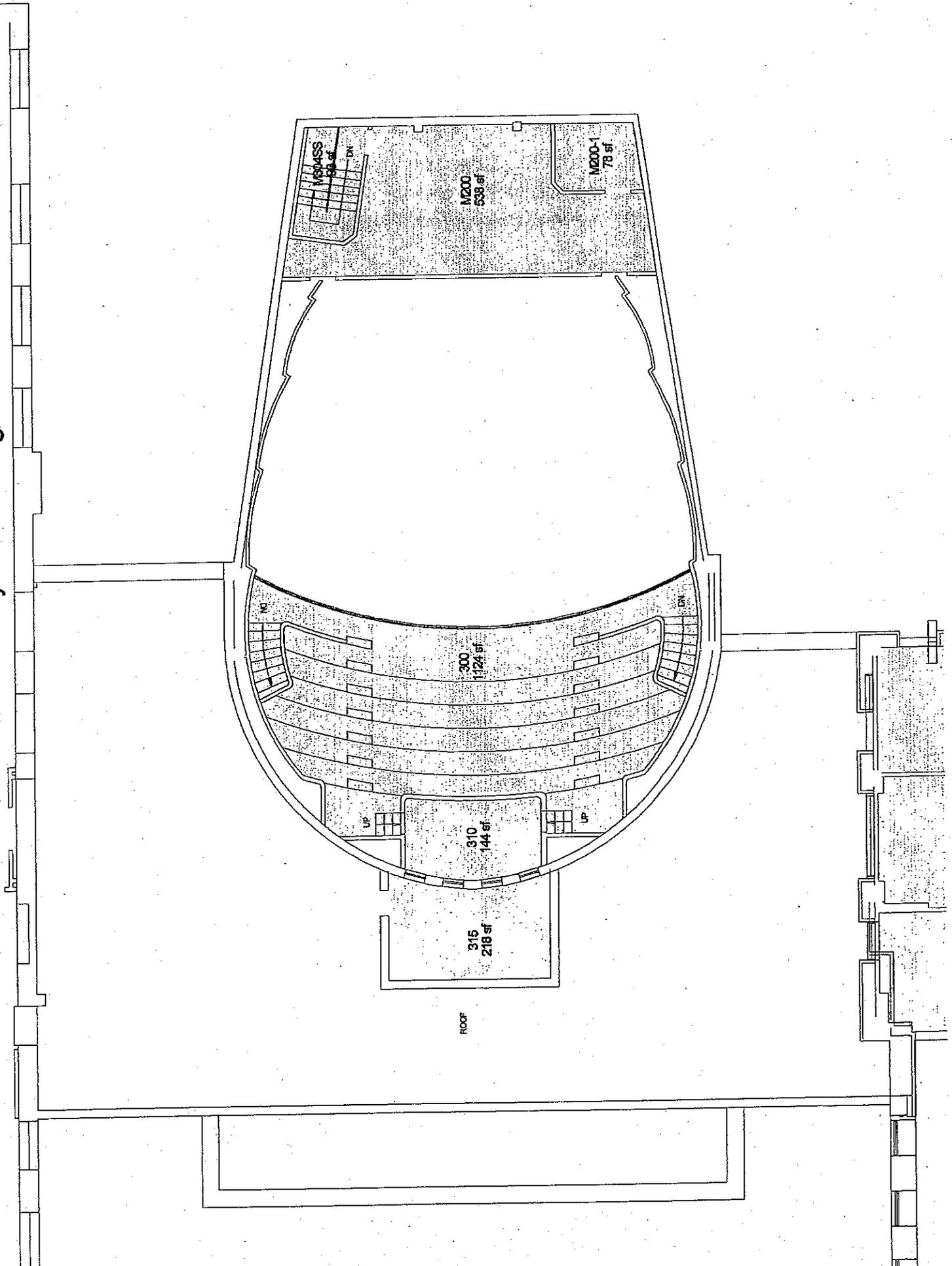
May Building & Additions Third Floor



May Building & Additions Fourth Floor Plan



Mayo Building & Additions Fifth Floor Plan





RSP Architects
1225 Marshall Street, NE
Atlanta, GA 30309
404.525.1255
818.677.2100
www.rsparch.com

Consultants

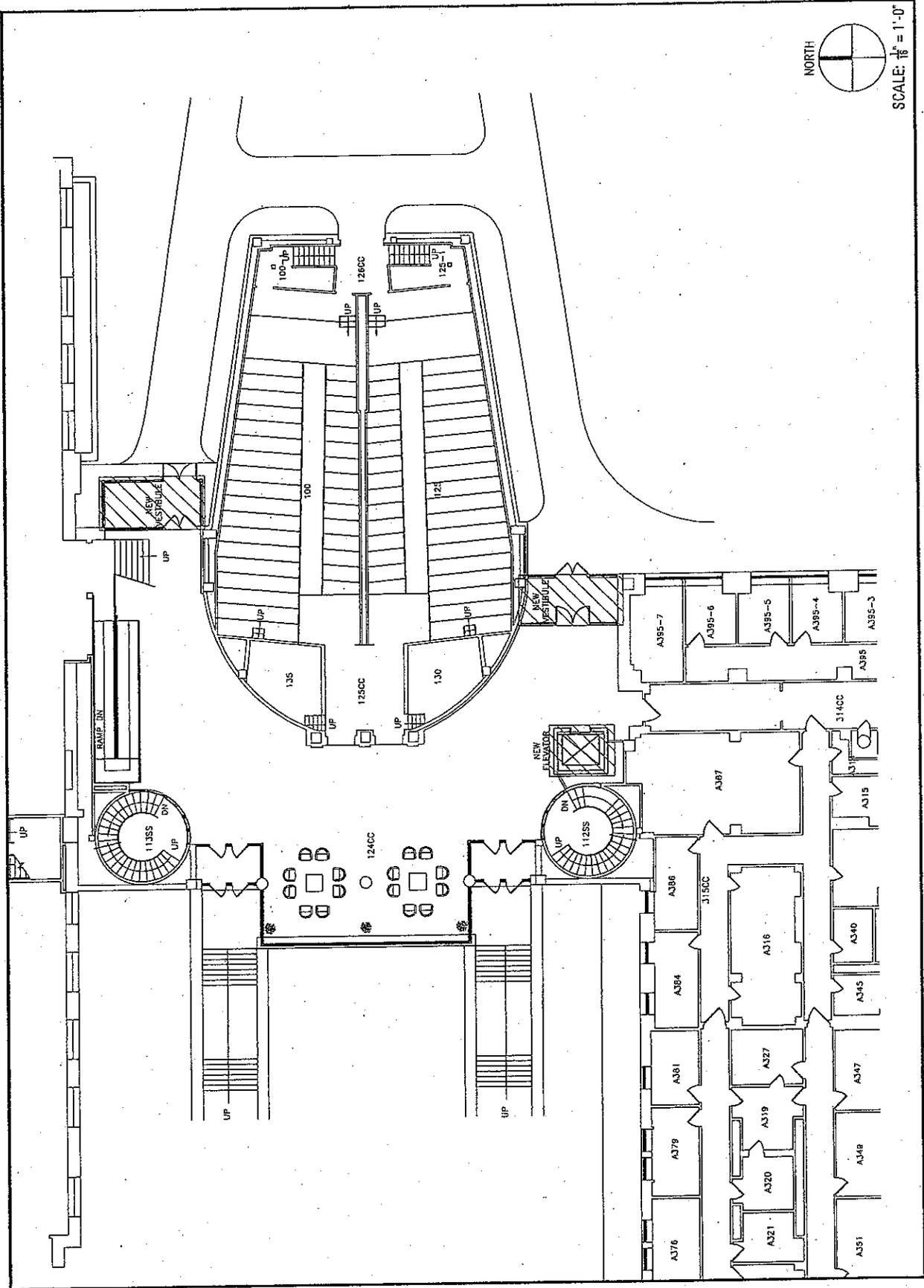
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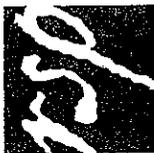
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Drawn By DAB
Checked By BG
Date 19 AUGUST, 2003

MAYO AUDITORIUM
RENOVATION
UNIVERSITY OF
MINNESOTA

THIRD FLOOR

A3





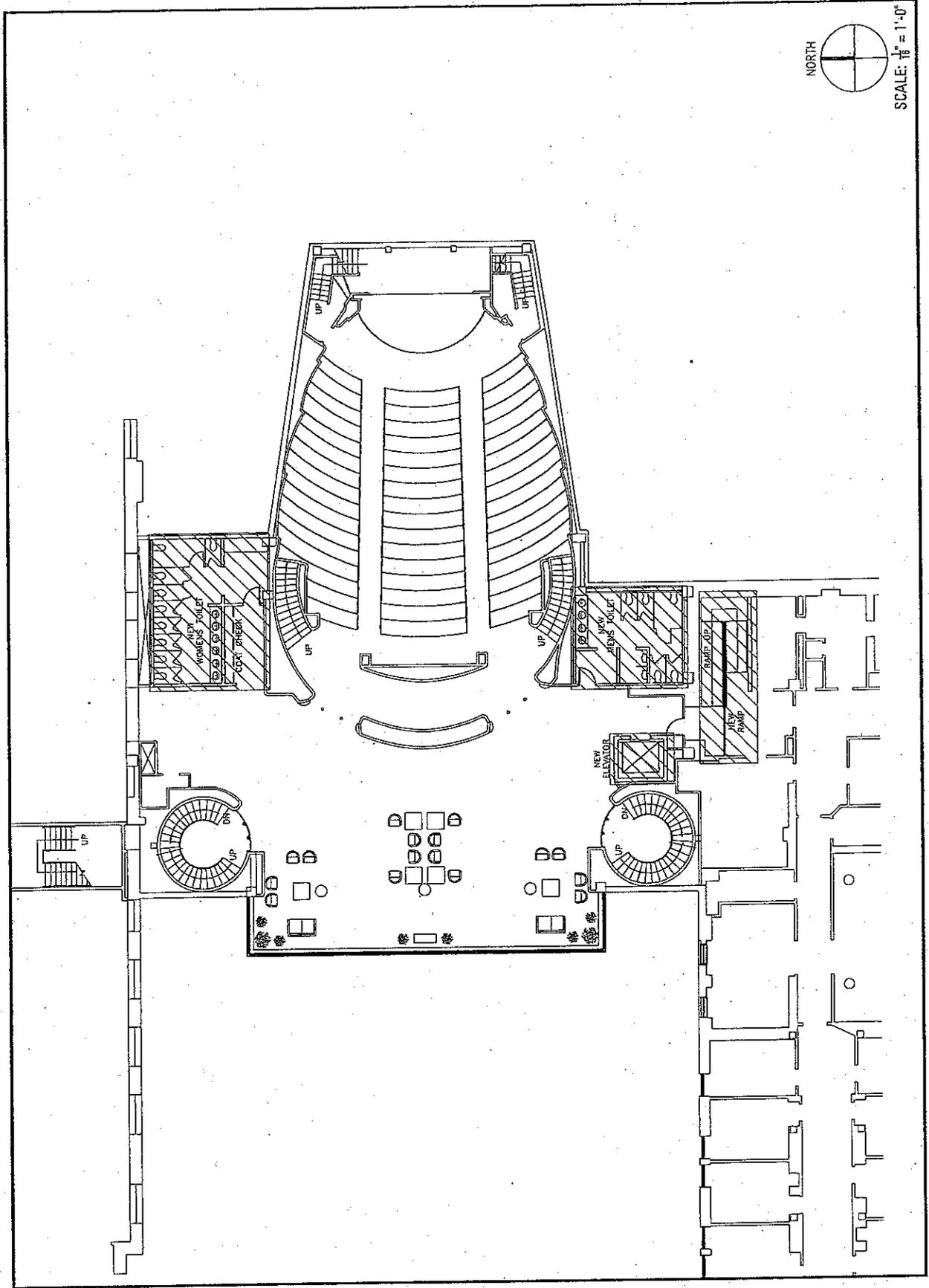
RSP Architects
420 Marquette Street
Minneapolis, MN 55415-1836
612.872.7100
612.872.7105 fax
www.rsparch.com
Cranford, MN

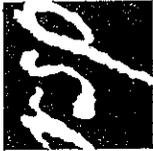
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Project No. 6059,900.00
Drawn By DAB
Checked By BG
Date 19 AUGUST, 2003

MAYO AUDITORIUM
RENOVATION
UNIVERSITY OF
MINNESOTA
FOURTH FLOOR

A4





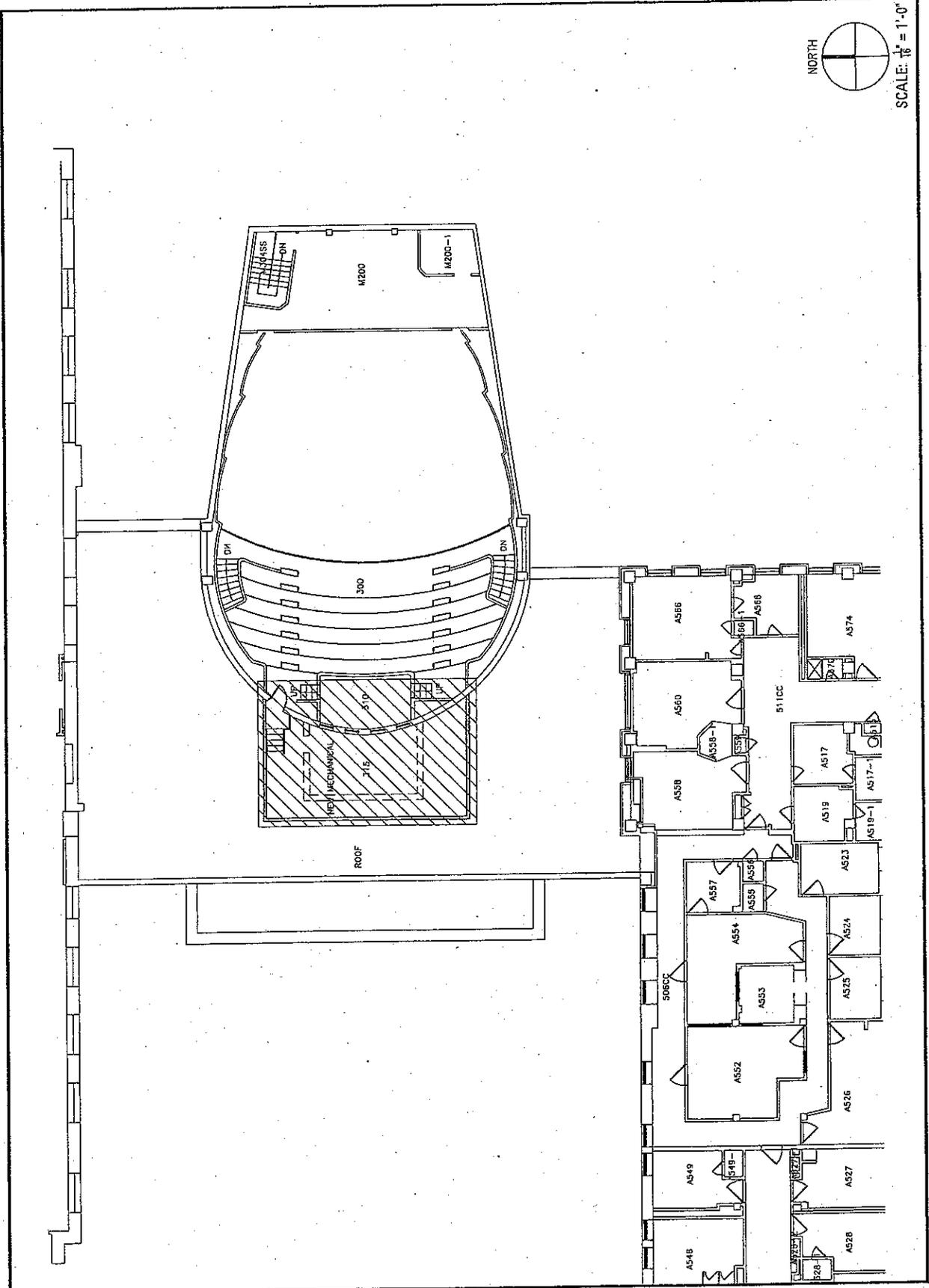
RSP Architects
120 Memorial Street
St. Paul, MN 55102-1005
612.677.7100
612.677.7099 (fax)
www.rsparch.com

Consultants

Project for

Project No. 6059.900.00
Drawn By DAB
Created By DG
Date 19 AUGUST, 2003
MAYO AUDITORIUM
RENOVATION
UNIVERSITY OF
MINNESOTA
FIFTH FLOOR

A5

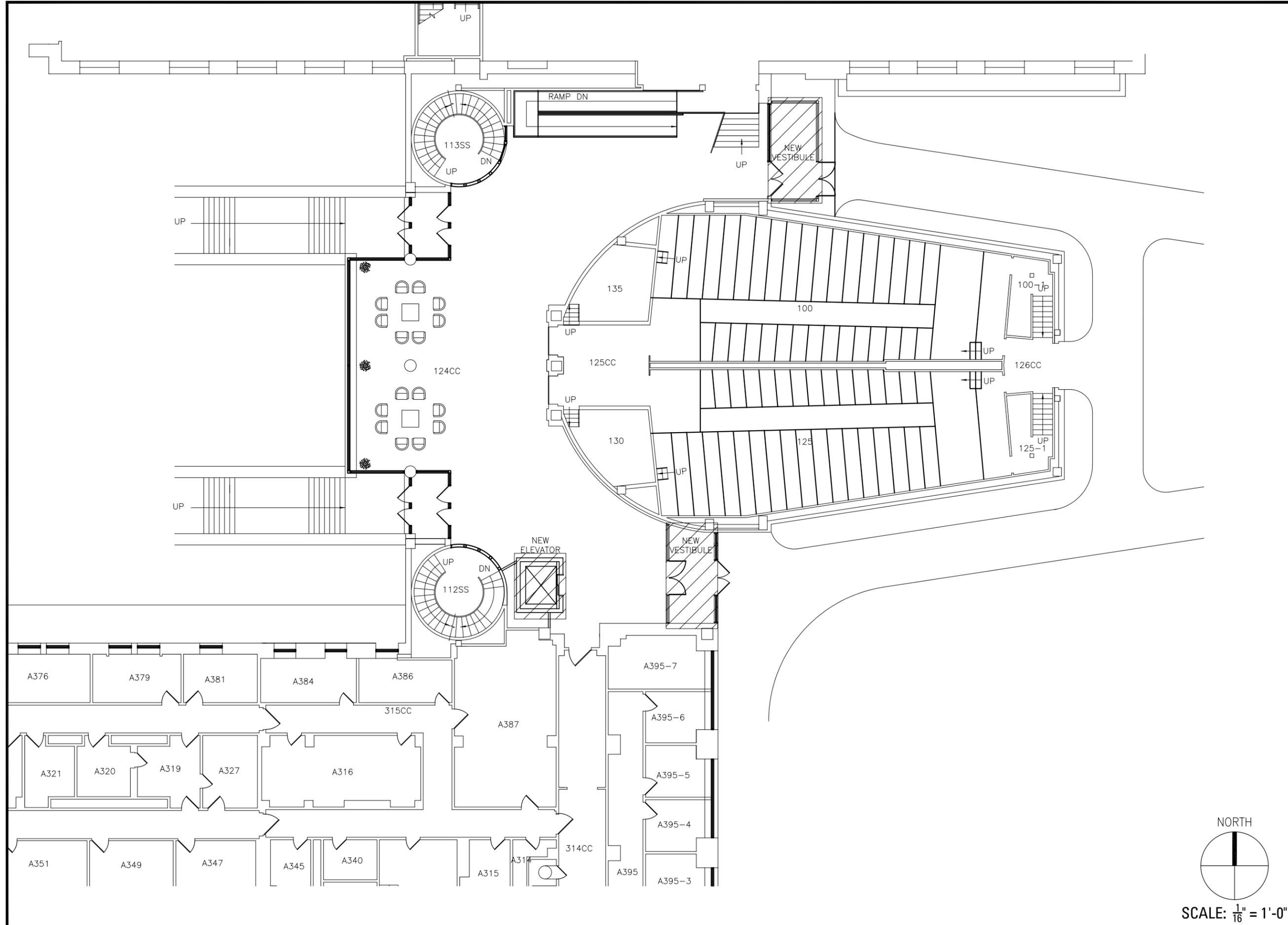




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 612.677.7499 fax
 www.rsparch.com

Consultants

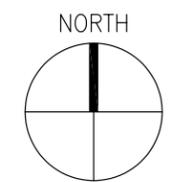
Project For



Project No. **6059.900.00**
 Drawn By **DAB**
 Checked By **BG**
 Date **19 AUGUST, 2003**

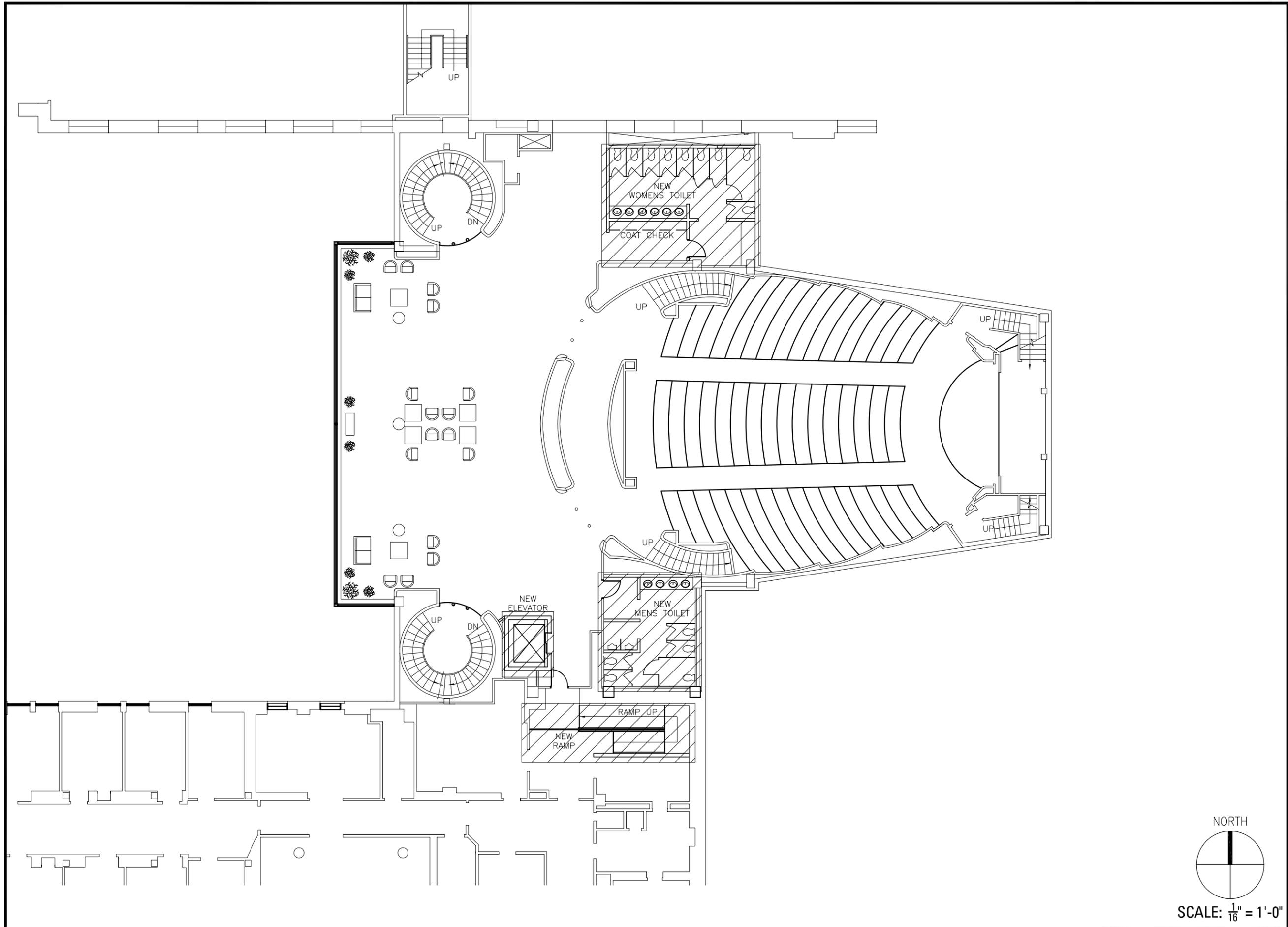
**MAYO AUDITORIUM
 RENOVATION**
**UNIVERSITY OF
 MINNESOTA**

THIRD FLOOR



SCALE: 1/16" = 1'-0"

A3



RSP Architects
 1220 Marshall Street NE
 Minneapolis
 MN 55413-1036
 612.677.7100
 612.677.7499 fax
 www.rsparch.com

Consultants

Project For

Project No. 6059.900.00

Drawn By DAB

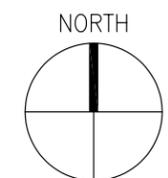
Checked By BG

Date 19 AUGUST, 2003

**MAYO AUDITORIUM
 RENOVATION**

**UNIVERSITY OF
 MINNESOTA**

FOURTH FLOOR



SCALE: $\frac{1}{16}'' = 1'-0''$

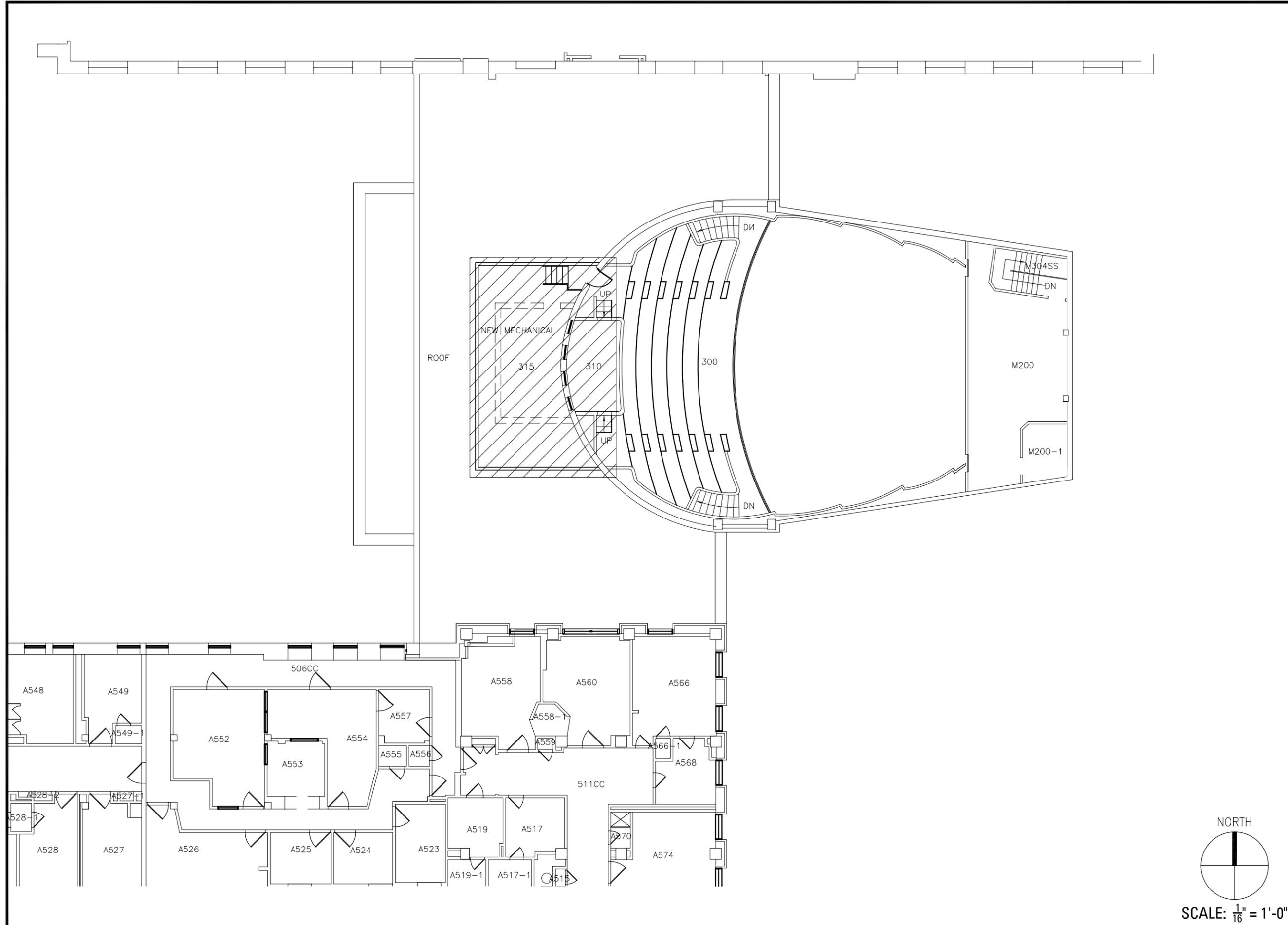
A4



RSP Architects
 1220 Marshall Street NE
 Minneapolis
 MN 55413-1036
 612.677.7100
 612.677.7499 fax
 www.rsparch.com

Consultants

Project For



Project No. **6059.900.00**
 Drawn By **DAB**
 Checked By **BG**
 Date **19 AUGUST, 2003**

**MAYO AUDITORIUM
 RENOVATION**
**UNIVERSITY OF
 MINNESOTA**

FIFTH FLOOR

A5

PREDESIGN NARRATIVE
FOR
VETERINARY MEDICINE EDUCATIONAL FACILITIES –
Renovation of Old Dairy Barn
UNIVERSITY OF MINNESOTA

Statement of Need

Built in 1907, the Dairy Barn is one of the few “Jacobean” style buildings remaining at the University. Early in the 20th century, it served as a center for the study of dairy cattle as well as a source of pride for the St Paul Campus and its expanding agricultural programs.

Minnesota’s vibrant dairy industry assured that the Barn would continue to serve agriculture faculty, staff and students plus the larger agricultural community. Over the course of time, the dairy industry has been consolidated and current teaching techniques include methodologies that are far more advanced than were the case 90 years ago. The St Paul Campus has likewise changed. When the Dairy Barn was completed almost a century ago, the campus included many barns, coops and sheds. Today, nearly all of those structures have been demolished, replaced by modern classrooms, research facilities and service centers. The Dairy Barn stands as a reminder of a by-gone era. That by-gone era can be melded with today’s programs. The College of Veterinary Medicine, as part of its facilities development planning process, identified a strong need for commons space – a place for students, faculty, staff, alumni and friends to gather, to learn, to teach and to share experiences and ideas. Presently, the College lacks such a space. There is no single facility that is large enough to accommodate either the faculty or the student body in one place. The college’s four student classes are segregated into different buildings and different lecture halls. The Dairy Barn, renovated into a commons, learning and recreational new facility, will admirably fulfill this need. A renovated Dairy Barn will add 12,000 ASF to the College and University. The functions identified above can be easily designed into the building. Two full floors of unimproved space are readily available and can be rehabilitated without significant structural adjustments.

Furthermore, the barn is located literally across the street from the new Gortner Avenue Parking Ramp thereby enabling easy and safe access to visiting alumni, friends and visitors.

The College of Veterinary Medicine is very excited about renovating the Dairy Cattle Barn. It will enhance student’s learning experiences and provide a community resource to be used by anyone who has a connection to the veterinary and agricultural communities.

Program Analysis

- State of the art, flexible flat floor classroom, with movable furniture of 200 persons capacity, capable to be subdivided to two classrooms of 100 persons capacity each. It should be provided with ITV and Distance Education capabilities

- and wireless connection to the Internet. Uses include lectures; groups' study, problem based learning, and computer based testing.
- Minimum of 4-flexible seminar rooms, 12-15 persons capacity each, with movable furniture and capable to open up to a large space of 50 persons capacity. It should be provided with wireless connection to the Internet. Uses include lectures; groups' study, and problem based learning.
 - A computer lab of 50 persons capacity, with hard-wired and wireless connection capabilities to the Internet.
 - Office space for Academic and Student Affairs and Outreach staff, consisting of 4-administrators and 6-support staff.
 - Commons/cafeteria social collision-gathering/meeting space for students, faculty and alumni, staff and friends.
 - Outdoor gardens/gathering space.

Cost Estimate

Project Cost: *\$5,102,352*

Funding

To be funded as part of the 2004 HEAPR Request.

Schedule

To be determined by funding availability.

Attachments:

1. *Project Budget documentation*
2. *Design Documentation-Proposed*

Date: "8-18-03
 File Description: AHC ED CTR Dairy Barn Renovation
 Project No:
 Name:
 Proj Mgr: Archibeque
 Phase: Pre-Design estimate of possible cost

Cost Update

SUB ORG	Description	(A) Sub Org Amount	(B) Budget Amount	(C) Encumber / Cost to Date	(D) Estimate to Finish	(E) Estimated Total Cost (C+D)	(F) Variance (B-E)	Column (D) notes
Total Funds Available								
6	Land Acquisition							
CONSTRUCTION			\$4,084,397	0	0	\$0	4,084,397	
12	GME Construction	3,543,790				0	3,543,790	
14	Misc. Construction					0	0	
16	Hazardous Abatement	186,228				0	186,228	
19	Construction Contingency	354,379				0	354,379	
CONSULTANTS			\$403,000	0	0	\$0	403,000	
21	Consultant Basic Services	360,000				0	360,000	
24	Special Inspections					0	0	
25	Material Testing	5,000				0	5,000	
26	Hazardous Abatement Services	9,000				0	9,000	
27	Hazardous Air Monitoring	5,000				0	5,000	
28	Special Consultants peer	6,000				0	6,000	
29	Consultant Contingency	18,000				0	18,000	
PERMITS & FEES			\$108,000	0	0	\$0	108,000	
31	Building Permit	31,500				0	31,500	
32	SAC	6,000				0	6,000	
33	University Review Fee	2,000	\$0			0	2,000	
34	Project Development Fee	63,000			0	0	63,000	
35	Advertisement for Bid	500				0	500	
36	Miscellaneous Permits					0	0	
39	Permit & Fees Contingency	5,000				0	5,000	
SITE WORK			\$77,000	0	0	\$0	77,000	
42	Geotechnical					0	0	
44	Survey	5,000				0	5,000	
46	Miscellaneous Site Work	72,000				0	72,000	
49	Site Contingency					0	0	
INTERIORS			\$357,555	0	0	\$0	357,555	
52	Furnishings	146,900				0	146,900	
54	Equipment	195,310				0	195,310	
56	Graphics	8,000				0	8,000	
59	F & E Contingency	7,345				0	7,345	
UNIVERSITY PROVIDED SERVICES			\$70,900	0	0	\$0	70,900	
61	BSAC	5,000				0	5,000	
62	Coord Campus Construction Admin					0	0	
63	Telecommunications	50,000				0	50,000	
64	Building Investigation	3,000				0	3,000	
65	Utility Outages	5,000				0	5,000	
66	Keys & Keying	1,500				0	1,500	
67	Miscellaneous Services					0	0	
69	U/M Services Contingency	6,400				0	6,400	
MISCELLANEOUS			\$1,500	0	0	\$0	1,500	
71	Moving Expense	1,500				0	1,500	
72	Swing Space Accommodations					0	0	
74	Travel Expenses					0	0	
75	Art	?????				0	0	
76	Incidental Expenses					0	0	
78	Unallocated Funds					0	0	
79	Miscellaneous Contingency					0	0	

Project Budget

\$5,102,352

Budget Balance 5,102,352

Cost to Date \$0

Estimate to Finish \$0

Estimated Total Cost \$0



Pre-Design Estimate

Date: August 15, 2003
 Project: University of Minnesota Dairy Nutrition Barn
 UMO307

Schedule: Approval:
 Design:
 Construction:

13,570	Existing GSF
1,357	Additional SF
14,927	Total GSF

Status: Pre Design

Item	Description	Qty.	Unit	Unit cost	Item total	Section Sub-Totals	Division Totals	Cost / SF
DIVISION 1 - GENERAL CONDITIONS							\$266,250	
	General Conditions (10%) - Div 1-16	1	ls	\$266,250	\$266,250	\$266,250		
DIVISION 2 - SITE WORK							\$481,805	
	General Site Work					\$116,089		
	fire lane drive base	6186	sf	\$2	\$9,279			
		70000	sf	\$2	\$105,000			
	Drain Tile	362	lf	\$5	\$1,810			
	Environmental					\$0		
	Soil Remediation in Division 13		sf	\$0.00				
		0	ls	\$0.00				
	Selective Demolition					\$67,850		
		13570	sf	\$5.00	\$67,850			
	Landscaping					\$297,866		
	Trees & Shrubs	1	ls	\$40,000.00	\$40,000			
	Sod / Mulch / edging	1	ls	\$20,000.00	\$20,000			
	Pavers	10886	sf	\$9.00	\$97,974			
	Concrete Sidewalks	5556	sf	\$7.00	\$38,892			
	Irrigation	1	ls	\$15,000.00	\$15,000			
	Landscape Furnishings	1	ls	\$6,000.00	\$6,000			
	Gazebo	1	ls	\$15,000.00	\$15,000			
	Pergola	1	ls	\$15,000.00	\$15,000			
	Enclosed Walkway	1	ls	\$50,000.00	\$50,000			
DIVISION 3 - CONCRETE							\$29,268	
	Concrete					\$29,268		
	Cutting & Patching	1	ls	\$15,000.00	\$15,000			
	Floor Prep	7134	sf	\$2.00	\$14,268			
DIVISION 4 - MASONRY							\$97,084	
	Masonry					\$97,084		
	Tuck pointing	3042	sf	\$12.00	\$36,504			
	Brick Replacement	1	ls	\$7,500.00	\$7,500			
	Sill Replacement	15	ea	\$800.00	\$12,000			
	Sill Resetting	14	ea	\$200.00	\$2,800			
	CMU Partitions	3828	sf	\$10.00	\$38,280			
DIVISION 5 - METALS							\$70,000	
	Structural Steel					\$30,000		
	Allowance	1	ls	\$30,000.00	\$30,000			
	Misc Metals					\$15,000		
	Metal Stud Partition in division 9							
	Louvers	1	ls	\$15,000.00	\$15,000			
	Metal Pan Stairs					\$25,000		
	Straight Run	2	lf	\$6,000.00	\$12,000			
	Reverse Run	1	lf	\$8,000.00	\$8,000			
	Short run sections on upper level	2	ea	\$2,500.00	\$5,000			

Pre Design Budget

Description	Qty.	Unit	Unit cost	Item total	Section Sub-Totals	Division Totals	Cost / SF
DIVISION 6 - WOOD AND PLASTICS						\$75,505	
Rough Carpentry					\$50,505		
exterior cornice; new	123	lf	\$40.00	\$4,920			
exterior cornice; repair	239	lf	\$15.00	\$3,585			
Rafter tails	1	ls	\$5,000.00	\$5,000			
Rebuild copula	1	ls	\$7,500.00	\$7,500			
Rebuild Dormers	7	ea	\$3,500.00	\$24,500			
North Elevation Gable repairs	1	ls	\$5,000.00	\$5,000			
Finish Carpentry					\$25,000		
	1	ls	\$25,000.00	\$25,000			
DIVISION 7 - THERMAL AND MOISTURE PROTECTION						\$192,942	
Roof Insulation					\$42,700		
Spray-on Polystyrene	12200	sf	\$3.50	\$42,700			
Roofing					\$126,480		
Replace Decking	2240	sf	\$2.00	\$4,480			
Cedar Shingles	12200	sf	\$10.00	\$122,000			
Flashing & Sheetmetal					\$20,262		
Gutters	336	lf	\$16.00	\$5,376			
Downspouts	217	lf	\$14.00	\$3,038			
Drip edge	600	lf	\$12.74	\$7,644			
Reglets	145	lf	\$11.75	\$1,704			
Copula	1	ls	\$2,500.00	\$2,500			
Misc Sealants					\$3,500		
	1	ls	\$3,500.00	\$3,500			
DIVISION 8 - DOORS AND WINDOWS						\$241,400	
Windows					\$145,000		
at dormers; 13SF per	7	ea	\$2,500.00	\$17,500			
12/4 @ 35 sf per	13	ea	\$4,500.00	\$58,500			
8/2 @ 20 sf per	2	ea	\$2,200.00	\$4,400			
2/2 @ 12 SF per	12	ea	\$1,800.00	\$21,600			
transom windows at 14 SF per	9	ea	\$1,500.00	\$13,500			
transom windows at 15 SF per	2	ea	\$1,500.00	\$3,000			
transom windows at 18 SF per	1	ea	\$1,500.00	\$1,500			
Interior Glazing	10	ea	\$2,500.00	\$25,000			
Doors					\$96,400		
Exterior 5 panel	4	ea	\$2,500.00	\$10,000			
Entrance door system	570	sf	\$80.00	\$45,600			
Interior - single	26	ea	\$900.00	\$23,400			
Interior - double	2	ea	\$1,200.00	\$2,400			
Power door operators	1	ls	\$15,000.00	\$15,000			
DIVISION 9 - FINISH						\$280,901	
Stucco					\$14,265		
Exterior upper elevations	1585	sf	\$9.00	\$14,265			
Gypsum Drywall					\$80,148		
Lower Level Partitions	4995	sf	\$5.50	\$27,473			
Upper Level Partitions	3170	sf	\$5.50	\$17,435			
Mez Partitions	560	sf	\$5.50	\$3,080			
Lower Level Furring 308lf X 15'	4620	sf	\$4.00	\$18,480			
Upper Level Furring 342lf X 10'	3420	sf	\$4.00	\$13,680			
Gypsum Soffit					\$10,500		
all areas	1500	sf	\$7.00	\$10,500			
Gypsum Ceiling					\$23,405		
Lower Level	1915	sf	\$7.00	\$13,405			
Upper Level	1000	sf	\$10.00	\$10,000			
Suspended Ceiling					\$42,624		
Lower Level	3812	sf	\$2.00	\$7,624			
Upper Level	10000	sf	\$3.50	\$35,000			

Pre Design Budget

Description	Qty.	Unit	Unit cost	Item total	Section Sub-Totals	Division Totals	Cost / SF
Painting					\$49,127		
Lower Level Partitions	7992	sf	\$1.50	\$11,988			
Upper Level Partitions	3170	sf	\$1.50	\$4,755			
Lower Level Gyp. Ceiling	855	sf	\$2.00	\$1,710			
Lower Level Furring	3696	sf	\$1.50	\$5,544			
Upper Level Furring	3420	sf	\$1.50	\$5,130			
Exterior Painting	1	ls	\$20,000.00	\$20,000			
Carpet - Teaching Areas					\$17,249		
Lower Level	289	sy	\$40.00	\$11,547			
Upper Level	143	sy	\$40.00	\$5,702			
Carpet - Office Areas					\$5,873		
Lower Level	0	sy	\$26.00				
Upper Level	226	sy	\$26.00	\$5,873			
Tile Floor					\$27,450		
Lower Level	3050	sf	\$9.00	\$27,450			
Upper Level	0	sf	\$9.00				
Tile Wainscot					\$10,260		
Lower Level 6' high	1140	sf	\$9.00	\$10,260			
Upper Level	0	sf	\$9.00				
DIVISION 10 - SPECIALTIES						\$65,598	
Access Flooring					\$65,598		
Computer Lab deck	2523	sf	\$26.00	\$65,598			
DIVISION 11 - EQUIPMENT						\$0	
	0	ea	\$0.00		\$0		
DIVISION 12 - FURNISHINGS						On separate spreadsheet	
DIVISION 13 - SPECIAL CONSTRUCTION						\$0	
Abatement shown on separate document							
DIVISION 14 - CONVEYING SYSTEMS						\$86,000	
Elevators					\$86,000		
4 stop hydraulic elevator	1	ea	\$86,000.00	\$86,000			
DIVISION 15 - MECHANICAL						\$540,000	
Mechanical System					\$540,000		
HVAC, plumbing and fire protection	1	ls	\$410,000	\$410,000			
Steam Utility Connection	1	ls	\$50,000	\$50,000			
Exterior water/sewer utilities	1	ls	\$30,000	\$30,000			
Computer Lab dedicated AC system	1	ls	\$50,000	\$50,000			
DIVISION 16 - ELECTRICAL						\$502,000	
Electrical Systems					\$502,000		
Electrical service, distribution equipment, lighting, power, fire alarm/detection, data/communications and electrical demolition	1	ls	\$341,000.00	\$341,000			
Electrical vault and ductbank	1	ls	\$90,000.00	\$90,000			
Security System	1	ls	\$25,000.00	\$25,000			
Lightning Protection and TVSS	1	ls	\$16,000.00	\$16,000			
Uninterruptible Power Supply (UPS)	1	ea	\$30,000.00	\$30,000			
DIVISION 17 - COMMUNICATIONS						\$0	
							Pricing to be completed by U/M

SUMMARY			
Project Estimate Sub-Total	\$2,928,752	\$2,928,752	\$2,928,752
Contractor Overhead and profit (10%)	\$292,875	\$292,875	\$292,875
Subtotal	\$3,221,628	\$3,221,628	\$3,221,628
Contractors Contingency (10%)	\$322,163	\$322,163	\$322,163
Project Estimate Total	\$3,543,790	\$3,543,790	\$3,543,790

PROJECT:

**UNIVERSITY
OF
MINNESOTA**

**DAIRY
NUTRITION BARN**

ST. PAUL, MINNESOTA

REVISED:

Mark	Date	Description

Comm. No. UM0307

Date: AUGUST 15, 2003

Drawn: JND

Checked: MJB/JDM

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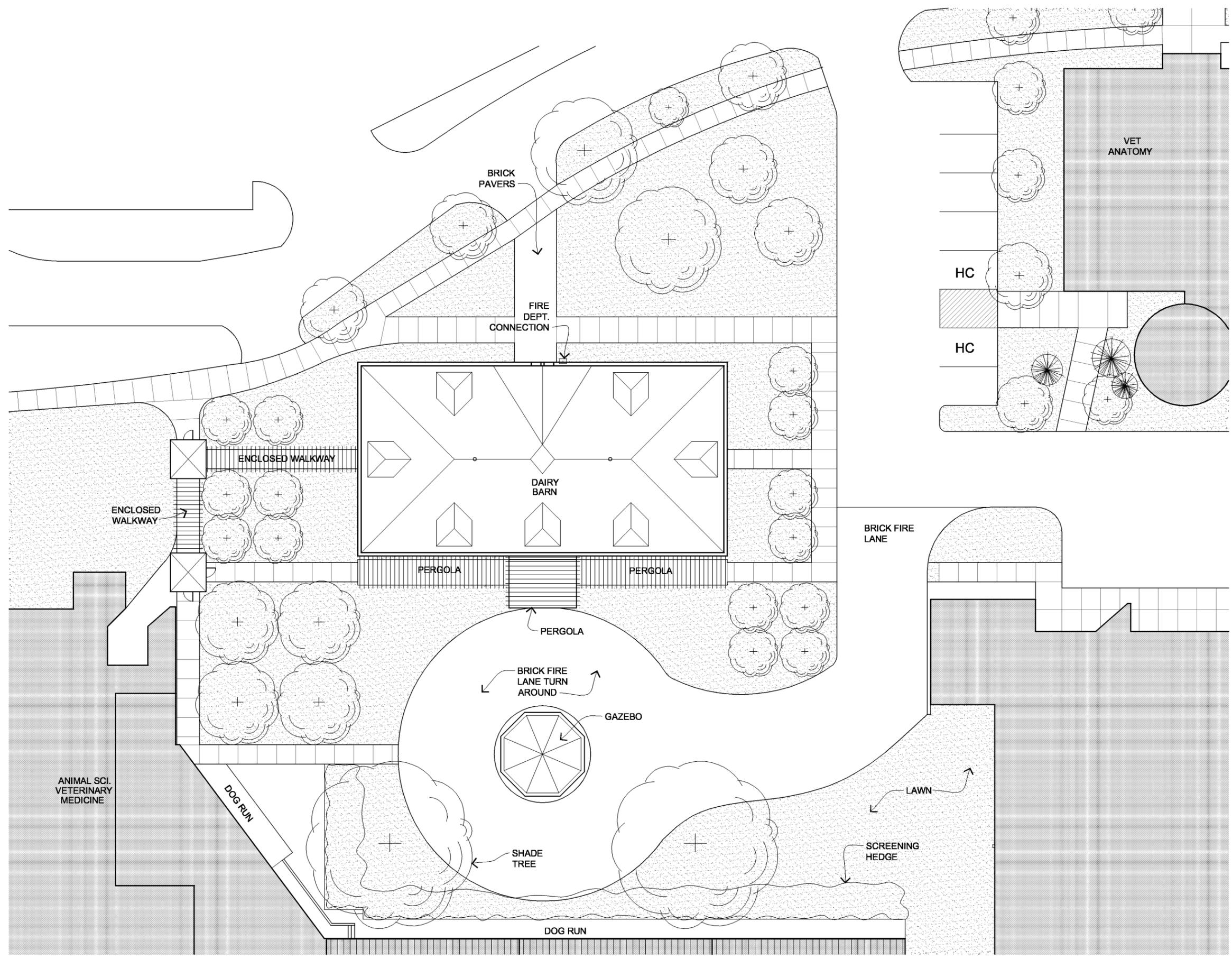
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SITE PLAN

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DRAWING NUMBER:

A0



1 SITE PLAN
A0 1" = 30'-0"



PROJECT:

UNIVERSITY OF MINNESOTA

DAIRY NUTRITION BARN

ST. PAUL, MINNESOTA

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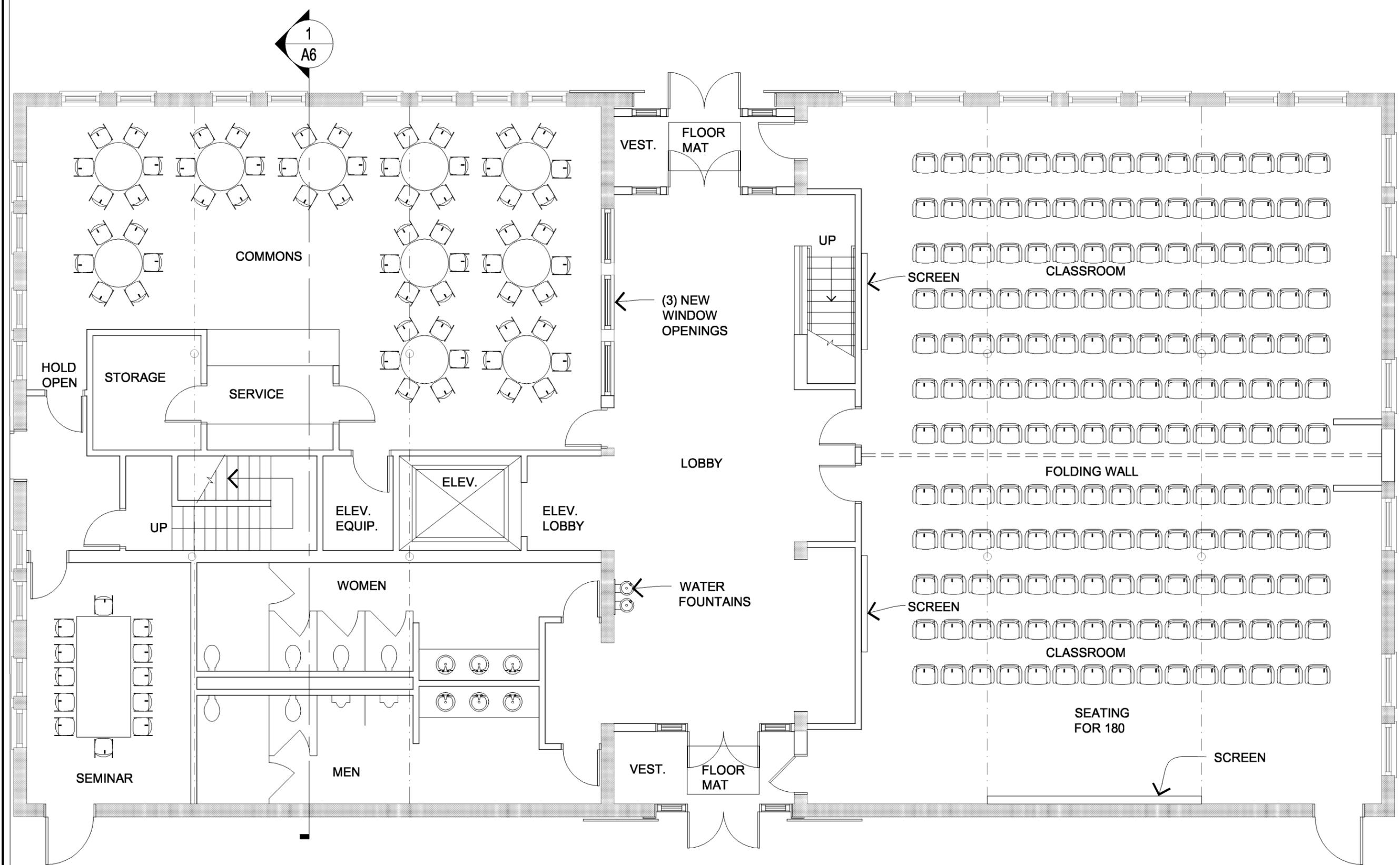
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DRAWING TITLE:

FIRST FLOOR PLAN

DRAWING NUMBER:

A1



1 FIRST FLOOR PLAN
A1 1/8" = 1'-0"

PROJECT:

**UNIVERSITY
OF
MINNESOTA**

**DAIRY
NUTRITION BARN**

ST. PAUL, MINNESOTA

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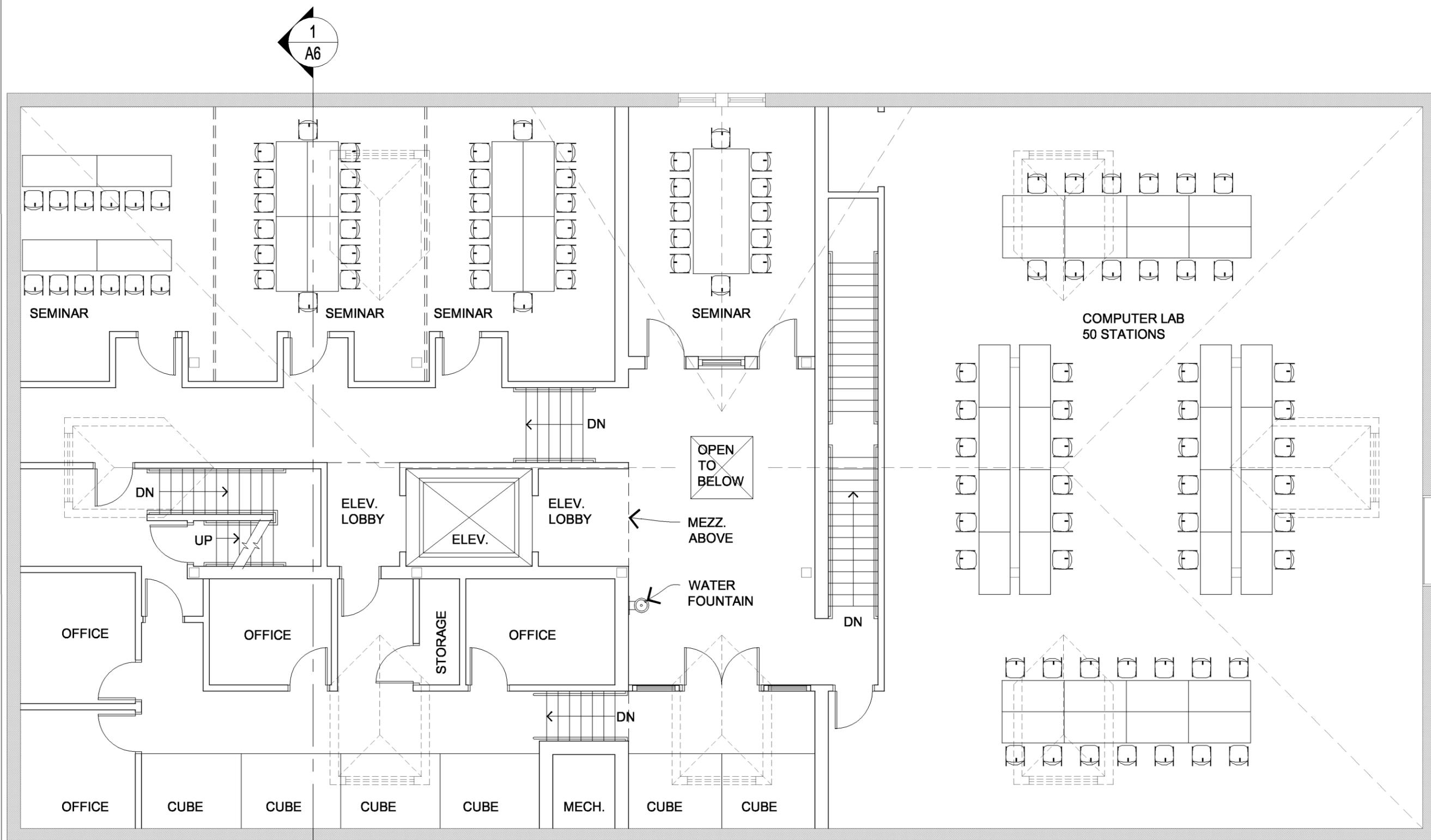
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**SECOND
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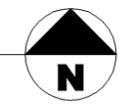
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DRAWING NUMBER:

A2



1
A2 **SECOND FLOOR PLAN**
1/8" = 1'-0"



PROJECT:

**UNIVERSITY
OF
MINNESOTA**

**DAIRY
NUTRITION BARN**

ST. PAUL, MINNESOTA

REVISED:

Mark	Date	Description

Comm. No. UM0307

Date: AUGUST 15, 2003

Drawn: JND

Checked: MJB/JDM

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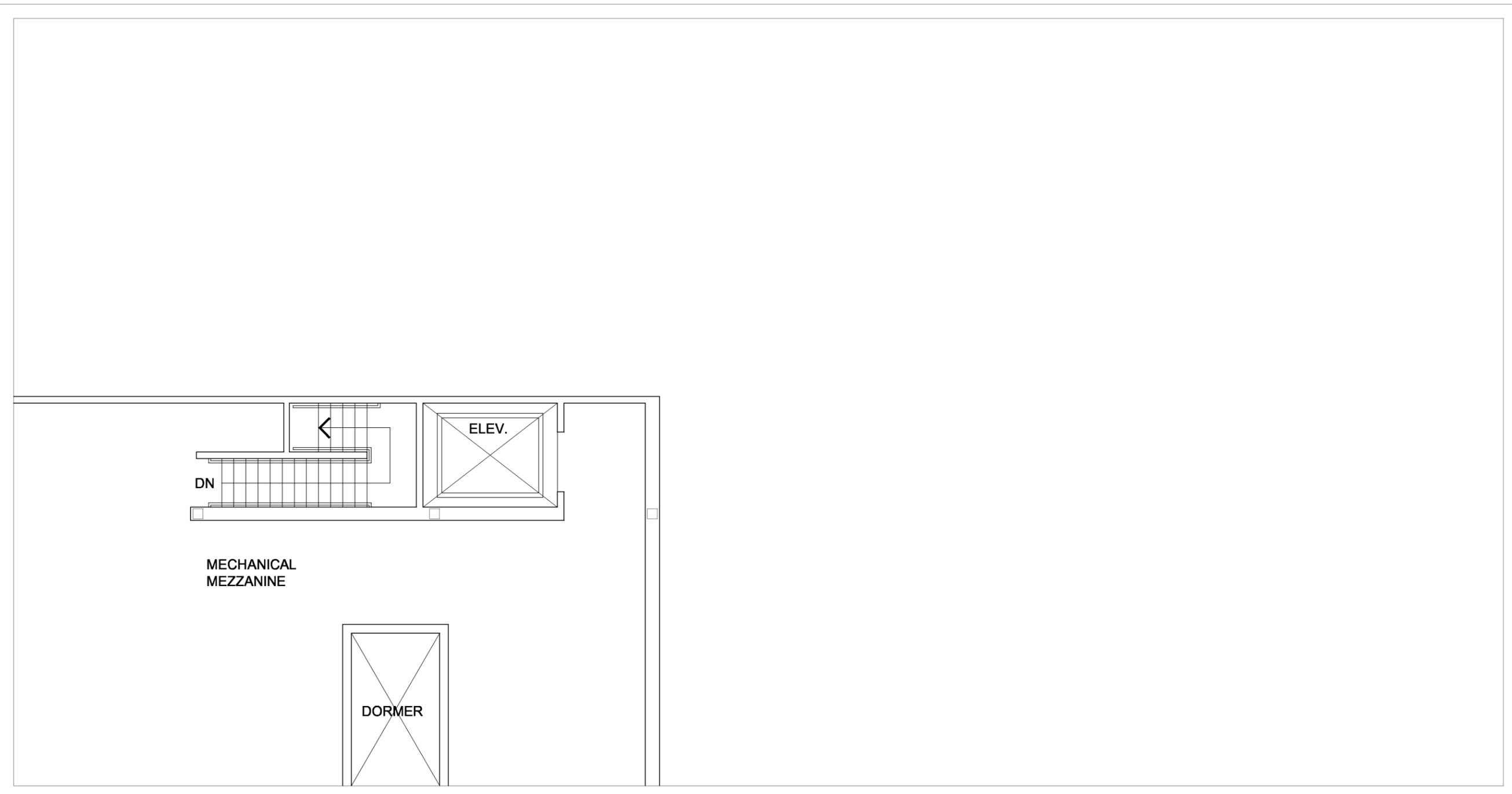
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**MEZZANINE
FLOOR PLAN**

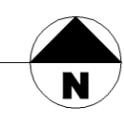
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DRAWING NUMBER:

A3



1 MEZZANINE FLOOR PLAN
A3 1/8" = 1'-0"



PROJECT:

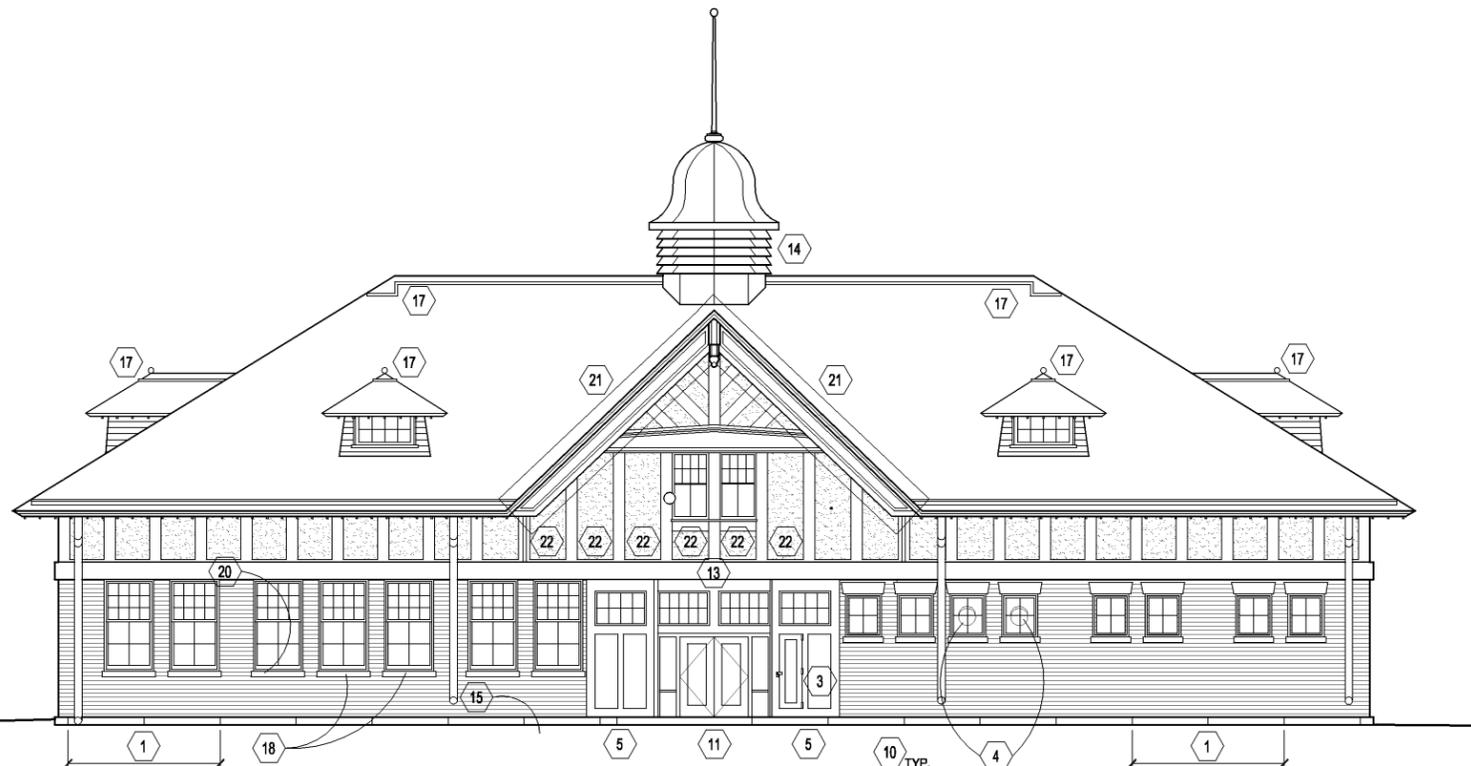
**UNIVERSITY
OF
MINNESOTA

DAIRY
NUTRITION BARN**

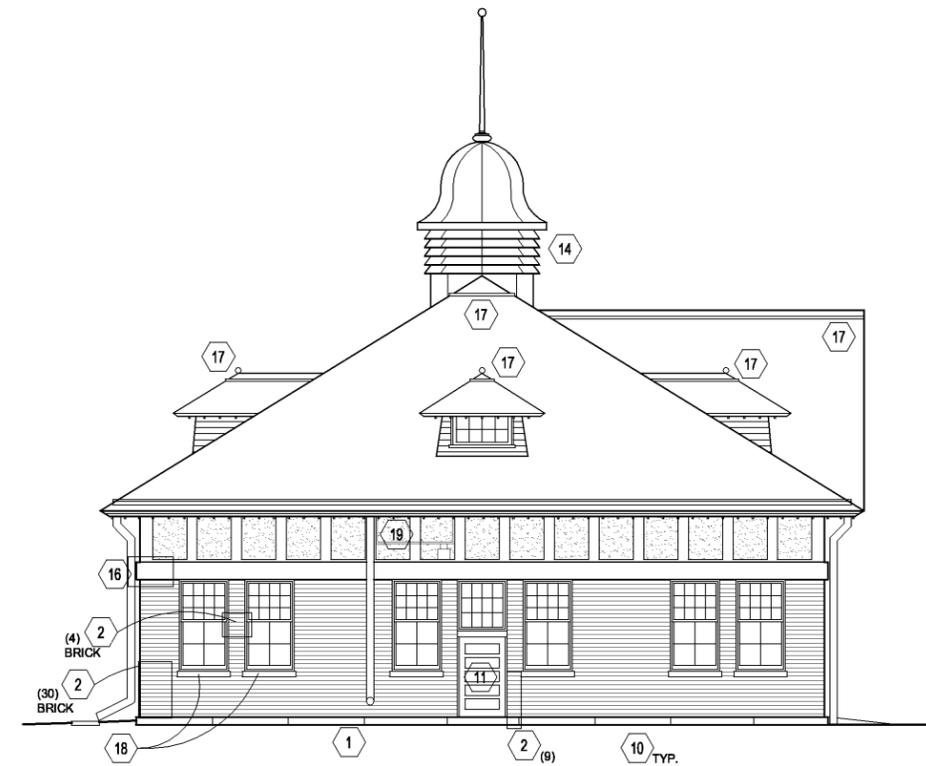
ST. PAUL, MINNESOTA

REVISED:

Mark	Date	Description



1 NORTH ELEVATION
A4 1/16" = 1'-0"



2 EAST ELEVATION
A4 1/16" = 1'-0"

GENERAL NOTES	EXTERIOR KEYNOTES
1.) REMOVE ALL EXISTING WINDOWS AND REPLACE WITH MATCHING ALUM. CLAD UNITS	1 RESET DISPLACED STONE WATER TABLE & BRICK COURSES AS INDICATED. RESET DAMAGED STONE & REPLACE BRICK. REPOINT REMAINING STONE WATER TABLE.
2.) CLEAN & REPOINT ALL BRICK. MATCH MORTAR TO ORIGINAL. REPLACE DAMAGED & MISSING BRICK AS NOTED TO MATCH ORIGINAL.	2 REMOVE DAMAGED BRICK & REPLACE WITH BRICK TO MATCH EXISTING (SEE AREA FOR #)
3.) REMOVE ROOF SHINGLES & REPLACE WITH A WOOD SHINGLE ROOF SYSTEM	3 REPAIR DOOR UNIT - MATCH EXISTING
4.) REMOVE ALL GUTTERS & DOWNSPOUTS. REPLACE WITH RADIUS PROFILE LEAD-COATED COPPER. ALL PERIMETER DRAINAGE & DOWNSPOUTS TO SANITARY.	4 REMOVE FAN ASSEMBLIES, REPLACE WITH WINDOW TO MATCH EXISTING
5.) REPAIR WOOD RAFTER TAILS AS REQUIRED WITH EPOXY PUTTY, ASSUME 20 %	5 FIX DOOR IN OPEN POSITION
6.) REPAIR WOOD BEADED T & G ROOF EAVES, ASSUME 20 %	6 REMOVE EXISTING EXTERIOR DOORS - SALVAGE TO OWNER
7.) CLEAN DEBRIS FROM & AROUND ALL WINDOWS & DOORS. APPLY SEALANT AT ALL WINDOW SILLS & FRAMES.	7 EXTEND ROOF EAVES TO ORIGINAL LENGTH WITH NEW DECORATIVE 2 X 4 RAFTERS WITH T & G ROOF SHEATHING ALL TO MATCH OTHER HISTORIC ELEVATIONS.
8.) PREP, PRIME, & 2 FINISH PAINT COATS ALL NEW & EXISTING WOOD. ALL NEW WOOD TO BE BACK PRIMED.	8 REPLACE MISSING FACIA BOARD ALONG SOUTH ELEVATION. MATCH ORIGINAL - PAINT
	9 STRIP PAINT FROM ENTIRE SOUTH ELEVATION USING GENTLEST CHEMICAL STRIPPER
	10 LOWER GRADE 6" TO BOTTOM OF STONE WATER TABLE COURSE ALONG ENTIRE ELEVATION
	11 NEW DOOR & TRANSOM
	12 REMOVE ROOFING MASTIC FROM STUCCO & RE-STUCCO ENTIRE SOUTH ELEVATION
	13 REMOVE WALL PACK LIGHT & CONDUIT, PROVIDE NEW PERIOD LIGHT FIXTURES
	14 REPLACE WOOD LOUVERS & SIDING, ASSUME 100% REPLACEMENT. REPLACE METAL CUPOLA ROOF & SPIRE WITH LEAD-COATED COPPER. REPAIR UNDERLYING WOOD STRUCTURE.
	15 REPAIR STEAM TUNNEL ROOF @ BUILDING ENTRY
	16 INFILL MISSING WOOD CORNICE - MATCH EXISTING PROFILE. ATTACH TO NEW SECURED TREATED WOOD BLOCKING.
	17 REPLACE MISSING METAL ROOF METAL CAPS - MATCH EXISTING. REVIEW PROFILE WITH ARCHITECT.
	18 REPLACE LIMESTONE SILLS - MATCH EXISTING MATERIAL & PROFILE
	19 REMOVE PLYWOOD, WOOD TRIM TO MATCH ORIGINAL - RE-STUCCO
	20 PATCH EXISTING LIMESTONE SILL
	21 REPLACE WOOD BARGE BOARD TO MATCH ORIGINAL
	22 REPAIR STUCCO PANELS

Comm. No. UM0307

Date: AUGUST 15, 2003

Drawn: JND

Checked: MJB/JDM

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DRAWING TITLE:

**EXTERIOR
ELEVATIONS**

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DRAWING NUMBER:

A4

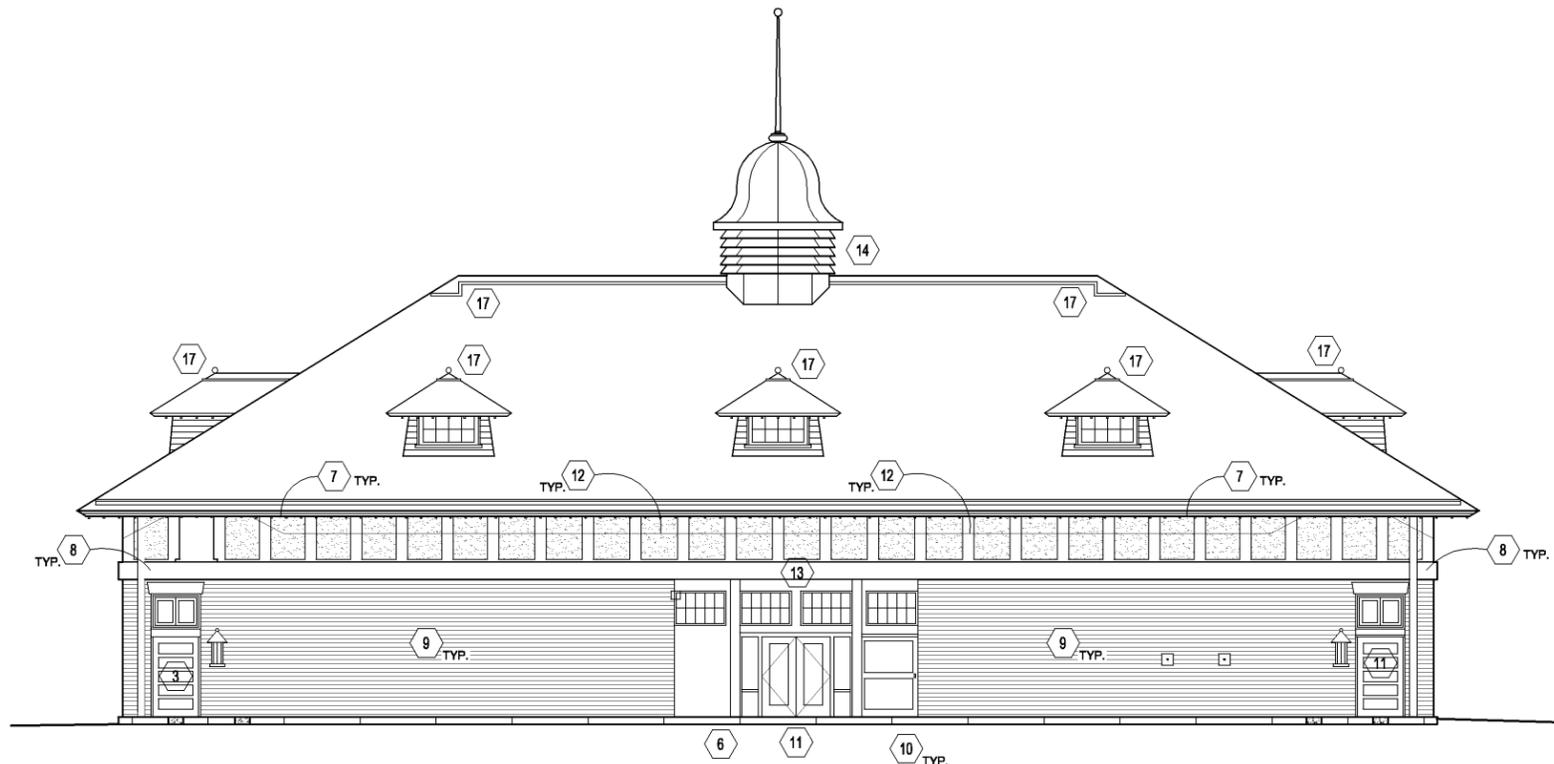
PROJECT:

**UNIVERSITY
OF
MINNESOTA**
**DAIRY
NUTRITION BARN**

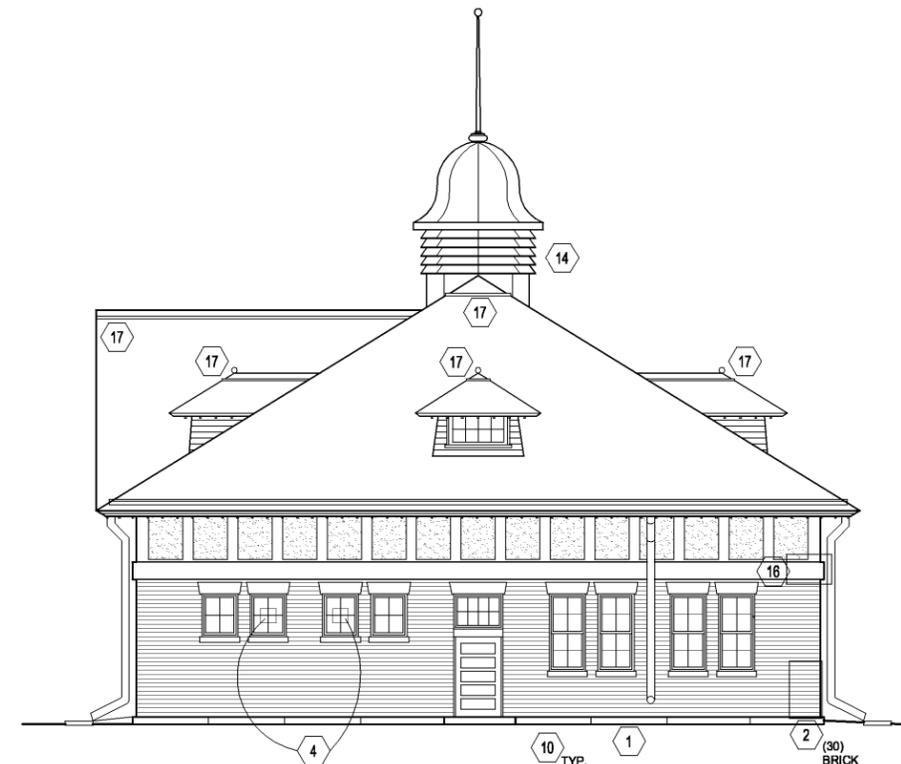
ST. PAUL, MINNESOTA

REVISED:

Mark	Date	Description



1 SOUTH ELEVATION
A5 1/16" = 1'-0"



2 WEST ELEVATION
A5 1/16" = 1'-0"

GENERAL NOTES	EXTERIOR KEYNOTES
1.) REMOVE ALL EXISTING WINDOWS AND REPLACE WITH MATCHING ALUM. CLAD UNITS	1) RESET DISPLACED STONE WATER TABLE & BRICK COURSES AS INDICATED. RESET DAMAGED STONE & REPLACE BRICK. REPOINT REMAINING STONE WATER TABLE.
2.) CLEAN & REPOINT ALL BRICK. MATCH MORTAR TO ORIGINAL. REPLACE DAMAGED & MISSING BRICK AS NOTED TO MATCH ORIGINAL.	2) REMOVE DAMAGED BRICK & REPLACE WITH BRICK TO MATCH EXISTING (SEE AREA FOR #)
3.) REMOVE ROOF SHINGLES & REPLACE WITH A WOOD SHINGLE ROOF SYSTEM	3) REPAIR DOOR UNIT - MATCH EXISTING
4.) REMOVE ALL GUTTERS & DOWNSPOUTS. REPLACE WITH RADIUS PROFILE LEAD-COATED COPPER. ALL PERIMETER DRAINAGE & DOWNSPOUTS TO SANITARY.	4) REMOVE FAN ASSEMBLIES, REPLACE WITH WINDOW TO MATCH EXISTING
5.) REPAIR WOOD RAFTER TAILS AS REQUIRED WITH EPOXY PUTTY, ASSUME 20 %	5) FIX DOOR IN OPEN POSITION
6.) REPAIR WOOD BEADED T & G ROOF EAVES, ASSUME 20 %	6) REMOVE EXISTING EXTERIOR DOORS - SALVAGE TO OWNER
7.) CLEAN DEBRIS FROM & AROUND ALL WINDOWS & DOORS. APPLY SEALANT AT ALL WINDOW SILLS & FRAMES.	7) EXTEND ROOF EAVES TO ORIGINAL LENGTH WITH NEW DECORATIVE 2 X 4 RAFTERS WITH T & G ROOF SHEATHING ALL TO MATCH OTHER HISTORIC ELEVATIONS.
8.) PREP, PRIME, & 2 FINISH PAINT COATS ALL NEW & EXISTING WOOD. ALL NEW WOOD TO BE BACK PRIMED.	8) REPLACE MISSING FACIA BOARD ALONG SOUTH ELEVATION. MATCH ORIGINAL - PAINT
	9) STRIP PAINT FROM ENTIRE SOUTH ELEVATION USING GENTELEST CHEMICAL STRIPPER
	10) LOWER GRADE 6" TO BOTTOM OF STONE WATER TABLE COURSE ALONG ENTIRE ELEVATION
	11) NEW DOOR & TRANSOM
	12) REMOVE ROOFING MASTIC FROM STUCCO & RE-STUCCO ENTIRE SOUTH ELEVATION
	13) REMOVE WALL PACK LIGHT & CONDUIT, PROVIDE NEW PERIOD LIGHT FIXTURES
	14) REPLACE WOOD LOUVERS & SIDING, ASSUME 100 % REPLACEMENT. REPLACE METAL CUPOLA ROOF & SPIRE WITH LEAD-COATED COPPER. REPAIR UNDERLYING WOOD STRUCTURE.
	15) REPAIR STEAM TUNNEL ROOF @ BUILDING ENTRY
	16) INFILL MISSING WOOD CORNICE - MATCH EXISTING PROFILE. ATTACH TO NEW SECURED TREATED WOOD BLOCKING.
	17) REPLACE MISSING METAL ROOF METAL CAPS - MATCH EXISTING. REVIEW PROFILE WITH ARCHITECT.
	18) REPLACE LIMESTONE SILLS - MATCH EXISTING MATERIAL & PROFILE
	19) REMOVE PLYWOOD, WOOD TRIM TO MATCH ORIGINAL - RE-STUCCO
	20) PATCH EXISTING LIMESTONE SILL.
	21) REPLACE WOOD BARGE BOARD TO MATCH ORIGINAL
	22) REPAIR STUCCO PANELS

Comm. No. UM0307

Date: AUGUST 15, 2003

Drawn: JND

Checked: MJB/JDM

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DRAWING TITLE:

**EXTERIOR
ELEVATIONS**

-
-
-
-

DRAWING NUMBER:

A5

PROJECT:

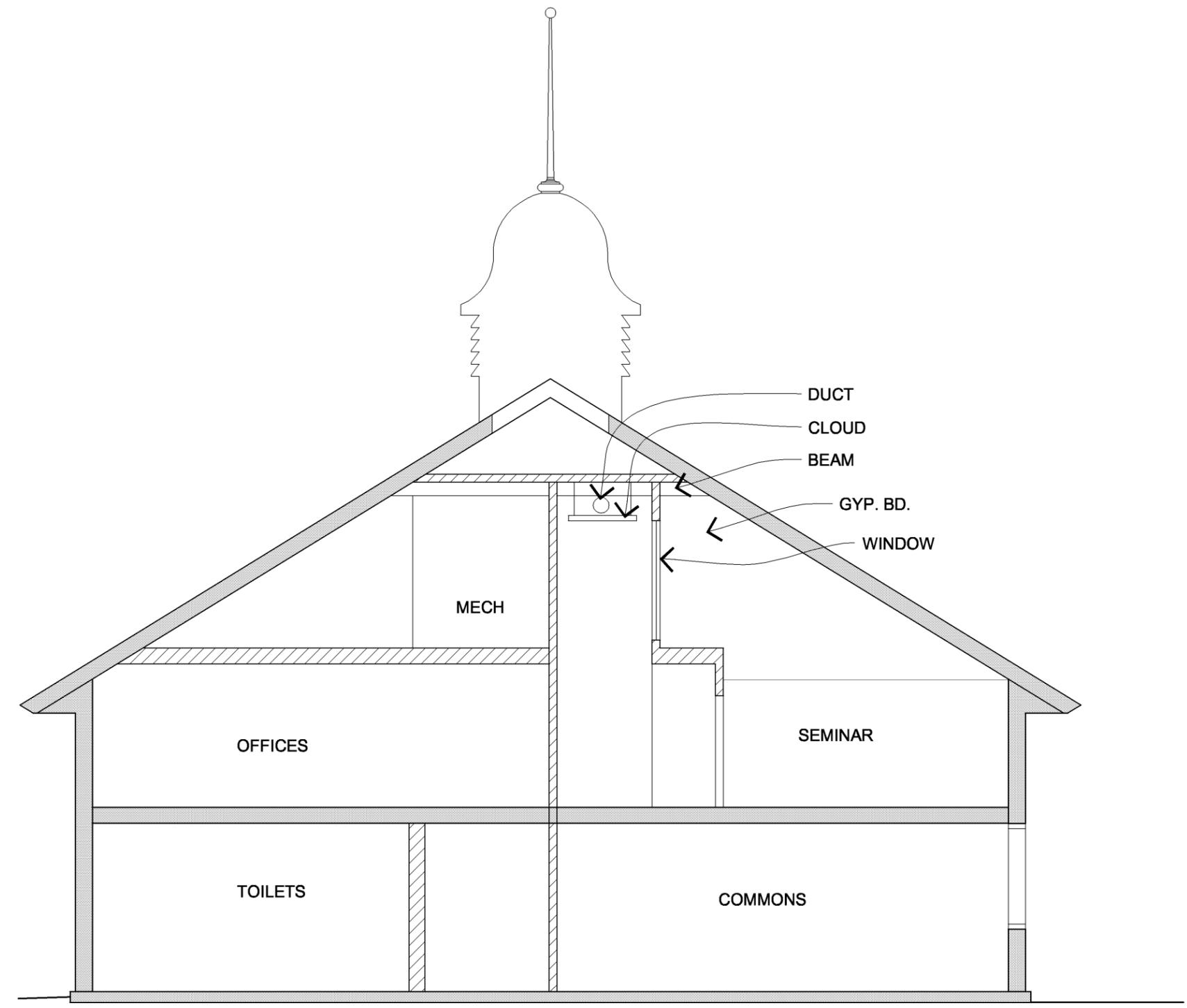
**UNIVERSITY
OF
MINNESOTA**

**DAIRY
NUTRITION BARN**

ST. PAUL, MINNESOTA

REVISED:

Mark	Date	Description



1 BUILDING CROSS SECTION
A6 1/8" = 1'-0"

Comm. No. UM0307

Date: AUGUST 15, 2003

Drawn: JND

Checked: MJB/JDM

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DRAWING TITLE:

**BUILDING
SECTION**

-
-
-
-

DRAWING NUMBER:

A6

FINANCIAL ANALYSIS

All classroom space at the University of Minnesota is supported space and therefore, utilities and maintenance costs are born by Facilities Management. All space proposed in this predesign, except the Veterinary Medicine Educational Facility, is already occupied space within the Academic Health Center; therefore, these costs are already budgeted and funded by Facilities Management.

The Old Barn in St. Paul, proposed here as additional educational facilities for the College of Veterinary Medicine, has not been occupied for some time. Facilities Management spends \$15,000 annually to service this unoccupied facility. The occupied operating cost is estimated at \$94,500 annually. The difference of \$79,500 will require new operational funds to maintain the building.

All classrooms in the Academic Health Center are scheduled and supported programmatically by the Senior Vice President's Office of Education. New classrooms created for Problem Based Teaching, Physical Assessment Teaching & Simulation, and Veterinary Medicine Educational Facilities will be added to the existing inventory already scheduled and supported by this office. **No additional personnel are required to operate these classrooms.**

PROJECT COST ANALYSIS

Details of each space cost can be found in the previous sections of this study. Average project cost per square foot is \$255. Total project cost is summarized below:

AHC Classrooms		
□	Renewal and Renovation of Existing AHC classrooms	\$3,581,620
□	Renovation of space for small problem-based teaching classrooms	\$1,329,119
□	Renovation of space for a Physical Assessment Teaching & Simulation Classroom	\$ 901,557
	Mayo Auditorium Building and Classrooms	\$4,544,824
	Veterinary Medicine Educational Facilities: Renovation of Old Dairy Barn in St. Paul	<u>\$5,102,352</u>
<u>Total FY04 AHC Classroom Renewal & Development Cost</u>		<u>\$15,459,472</u>

This investment will yield a total of classrooms types as follows:

Type	Quantity	Capacity	Square Feet
Tiered Classrooms	17	3,087	35,962
Small Flat	32	546	10,520
Large Flat	3	230	3,808
Large Flat - Adaptable	5	448	10,250
TOTALS	57	4,300	60,540

PROJECT SCHEDULE

The schedule for this series of renovations throughout the Academic Health Center is detailed on the next page.

Academic Health Center Educational Facilities																						
PROJECT SCHEDULE		Schedule					Funding															
		Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05
Tasks																						
Relocate Medical School Computer Lab (to Moost 1)																						
	Construction Doc's / Cost Estimate / Permit							■	■													
	Construction								■	■												
AHC Classrooms - Physical Assessment Teaching and Simulation Labs (PWB 2)																						
	Construction Doc's / Cost Estimate / Permit							■	■													
	Construction								■	■												
AHC Classroom- Problem Based Teaching																						
	Prepare A+E RFP and select firm						■															
	Construction Doc's / Cost Estimate / Permit							■	■													
	Construction									■	■	■										
AHC Classrooms - Renewal & Renovation of Existing																						
	Determine Work Sequence					■	■															
	Design, CD's (where required)							■	■													
	Construction - Phase 1							■	■													
	Construction - Phase 2												■	■	■	■						
	Construction - Phase 3																	■	■	■	■	■
Mayo Auditorium & Classrooms																						
	Prepare A+E RFP			■																		
	State Designer Selection Board for A+E				■	■																
	Select Construction Manager at Risk						■															
	Construction Doc's / Bidding Permit							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Construction												■	■	■	■	■	■	■	■	■	■
Veterinary Medicine Educational Facilities - Old Dairy Barn Renovation																						
	Prepare A+E RFP			■																		
	State Designer Selection Board for A+E				■	■																
	Select Construction Manager at Risk						■															
	Construction Doc's / Bidding Permit							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Construction												■	■	■	■	■	■	■	■	■	■

DIAGRAMS/CONCEPT PLANS

Diagrams and concept plans for each renovation proposed can be found in the individual program descriptions earlier in this document.

DESIGN GUIDELINES

Design qualities for the educational environments are defined by the educational program and by University standards for classroom environments. These guidelines (Exhibit F) will be referenced during planning and design of these educational facilities.

Other guidelines that were adapted in consultation with educational facility planning consultants during the development of this predesign were:

CONNECTIVITY -

1. Ubiquitous communication capabilities (anytime, anywhere)
2. Universal information resource access (databases, interactive course modules, reference materials)
3. Fosters interpersonal communication (networking, socialization, gaining global perspectives)
4. Creates learning connections (connections pedagogy strategies and technology)

COLLABORATION –

1. Promotes community engagement
2. Access to Learning Resources – self directed, collaborative, consultative, self-evaluative

CUSTOMIZATION

1. Acknowledges individual learning styles and allows for customization
2. Cognitive mapping – development, maturation, optimization
3. Enhances learning productivity

CONTINUOUS LEARNING –

1. Simulates inquiry, discovery, creativity
2. Energizes users
3. Facilitates rewarding intellectual engagement¹

¹ These design guidelines were presented during the educational facility planning charette by ideaReserve, an educational facility and technology consulting firm with offices in Maryland and Boulder, Colorado.

CONSULTATIVE REVIEWS

The University requires consultative reviews on all predesign documents by internal service organizations. Those organizations include Facilities Management, the University Code Official, the Department of Environmental Health and Safety, Networking and Telecommunication Services, Parking and Transportation Services, University Dining Services, Office of Classroom Management and Classroom Engineering, Disability Services.

The owners representative conducted the predesign review with appropriate organizations on August 20, 2003. Minutes of these review are attached.

**CONSULTATIVE REVIEWS
FOR
Mayo Auditorium, Dairy Nutrition Barn (St. Paul)
Existing AHC Classrooms (various locations)
Physical Assessment Teaching and Simulation Labs (PWB 2)
Medical School Computer Lab (Moos 1)
and New AHC Classroom Facilities (PWB 2)**

A project review meeting was held on August 20, 2003 to discuss these projects and review the elements of renovation on each project. The focus of this review was to inform entities within the University about the proposed projects and interview them for possible issues the project team may need to address in the planning stages of this overall Academic Health Center Education Facilities project.

Facilities Management:

In addition to the above noted meeting, individual discussions/interviews were conducted by the project design teams to procure information regarding existing conditions, confirm "as built" documentation, and determine the utility system's capacities. The University of Minnesota Facilities Management building engineering staff participated in these discussions. The specific information procured through these interviews is contained within the programs for each of the projects. For example, the existing HVAC system serving Mayo Auditorium is not adequate for the future use of this space and system improvements are required. The electrical systems were also identified as needing improvements and the requirements are contained within the program for the project.

University Code Office:

The project team conducted project review meetings with the Building Code Office to determine what Building Code requirements the projects will need to address. For example, on the Mayo Auditorium Project, the most significant requirement is the accessibility upgrade and addition of an elevator to access the main auditorium. Elements like this are included in the programs for each of the projects.

Department of Environmental Health and Safety:

The Department of Environmental Health and Safety also attended the meeting on August 20. The comments were noted and will be addressed as the design process progresses. For example, on the Dairy Nutrition Barn in St. Paul DEHS comments were concerning surface water drainage and site development.

Networking and Telecommunication Services:

An individual review was conducted with Networking and Telecommunications Services. The limitations of the existing systems have been identified and the upgrades have been reflected in the project cost estimates. Additional requirements for wireless capability for example are included in the program for each of the projects.

Parking and Transportation Services:

Not applicable

University Dining Services:

Not applicable

Office of Classroom Management and Classroom Engineering:

??

Disability Services :

This area was addressed as part of the building code review meetings.

AHC Educational Facilities Pre-Design Meeting

Wednesday August 20, 2003

406 Children's Rehab.

Attendees:

Bob Uphus	FM/BSAC	5-0385
Les Potts	Landcare	4-4844
Andreas Papanicolau	AHC Facilities	4-8412
Mike Austin	EHS	6-6436
Don Archibeque	FM	4-8972
Sara Prust	FM	4-6188

-Passed out copies of Lorelee Wederstrom's DRAFT

-Andreas gave history/description of project

-Mayo Auditorium

-Dairy Nutrition Barn

-PWB Basement (Bio-Med Area)

-Computer Lab (Clinical Skills Area)

-Auditoriums/Classrooms in AHC existing inventory

-Date: End of September for Final Documents ready for Regents

-AHC did it's best to research on Facilities in inventory at this point

-Limited budget and timeframe

-6 months predesign, halfway there

-21 million dollars

-Diehl Hall has it's own predesign effort, but it is included in the 21 million

-Mike Austin showed concern with ductwork collapsing in this building.

-Dairy Cattle Barn

-Vet anatomy building adjacent: Mike Austin was concerned about

-Andreas noted that this building is not part of the project

-is historic and needs to be renovated

Mayo Auditorium

-Upgrading to meet ADA

-Elevators, HVC in lobby, additional handicapped entrance

-All furnishing/ technology upgrades

-Stand alone air handlers given garage space possibly

-get chilled water from AHC loop.

-Tunnel near MCB possibility for air intake

-Circular stair handrail too low for code

Dairy Cattle Barn

- Decommissioning report available
- Addition of connector breezeway to adjacent classroom building
- Turn around for fire access
 - Mike Austin suggested possibility of back in space for trucks instead of full turn around: may be negotiated with fire department
- Gazebo in middle of turn around, question of FM or Landcare's responsibility
 - landcare would prefer to do the design in-house if they will be responsible
- Already irrigated, but should be cut, capped, and modified
- Soil quality is a question, must get assessment
- Ground water problems, Mike would prefer not to have paved surface for turn around, look into other options
- Sustainability issues are priority in St. Paul
- No Tree removal, except the possibility in the breezeway link
- Memorial Garden to the West can not be disturbed: many stake holders
- Surface Drainage must be looked at
- Site development must be budgeted for
- South of Buford Ave. in St. Paul is run by Johnson Controls
- If plans for coffee cart, must have hard surfaces around the cart.
- NTS fiber structure should have strands dedicated to BSAC/Fire Safety
- Ongoing operation and maintenance issues (cost): who's responsibility?

Les and Bob needed to leave

- Had a discussion with Mike Austin about classrooms
 - Air handlers might need to be cleaned out
 - Noise criteria
 - Emergency generator?

Classroom Development Committee

EXECUTIVE SUMMARY

The Classroom Development Subcommittee of the Academic Health Center (AHC) Facilities Strategic Management Committee was charged in Fall, 1997, with 4 tasks: 1) Determine current status of AHC Classrooms; 2) Determine future needs for AHC classrooms; 3) Recommend a plan for obtaining what we need; and 4) Recommend a plan to manage AHC classrooms.

The Subcommittee focussed its efforts on classrooms in AHC buildings on the East Bank Campus, with limited input on St. Paul Campus facilities. Information was obtained from a variety of resources including survey of AHC schools, the Central Scheduling Office, the Health Sciences Learning Resources Office, University Facilities Management, and all of the Subcommittee members. Information was sought on all space used for scheduled instructional purposes, including space not traditionally considered to qualify as a classroom. However, information on the latter was limited.

After consideration of the information obtained on AHC classrooms, it became apparent that issues fell into 4 major categories: 1) Existing classroom space available; 2) Methods of access; 3) Instructional equipment; and 4) Support of room function. The report which follows addresses the Subcommittee charges in relation to these 4 categories. This executive summary will provide an overview of the perceived deficiencies and recommendations for future management as they apply to all 4 categories.

Current Status and Future Needs

Existing classroom space does not match current or future AHC instructional needs. This reflects changing programmatic needs, limited inclusion of classroom considerations in construction planning, lack of upkeep of some of the larger classrooms, and competition for AHC space between AHC and non-AHC programs. Attempts to meet emerging needs on a patchwork basis through recruitment of departmental space have only partially addressed deficiencies.

Effective access for all AHC programs to existing AHC classroom space is hindered by multiple contact points, outmoded scheduling and prioritization systems, competition for space with non-AHC programs, and lack of knowledge of all available classrooms.

Equipment and means of access vary by source of classroom control (Central, AHC or departmental) and building. Most rooms lack on-site basic presentation equipment and distribution of higher technology is limited to a few rooms. Equipment use is limited by lack of timely support services.

Room support, including cleanliness, short-term maintainance (replacement of light bulbs, repair of broken chairs, restocking, etc.), regular facility and furnishing upkeep (painting, carpet repair, etc.), and equipment support and maintainance, was considered to be largely inadequate.

In general, there is a perceived disconnect between responsibility for classroom development/management, accountability for effective classroom function in the delivery of instructional programs, and authority to achieve effective classroom function.

Recommendations for Management

The Subcommittee charges of recommending a plan to achieve future needs (#3) and developing a management program (#4) were found to overlap and have been combined for the purposes of this summary and final report. The following recommendations address all categories assessed.

- 1) **Establish a single office and director responsible for AHC Classrooms.**
This office/officer should have the responsibility for function of all classrooms in AHC facilities, including regular monitoring of function, strategic planning, scheduling, equipment and support. This office/officer should be held accountable to AHC classroom users and administration for effective classroom function. This office/officer should have the authority and budget to either move functions into the AHC or use existing University services (examples: janitorial services, Media Resources, etc.).
- 2) **Establish a Web/Server based scheduling calendar displaying all AHC Classrooms.**
This calendar should display all available classrooms with relevant selection information including location, seating capacity, structure, on-site and accessible equipment, and any standing restrictions in scheduling (departmental classrooms). As classes or activities are scheduled, they should also be displayed on the calendar. This will allow more effective scheduling and assessment of equipment and capacity needs.
- 3) **Reconsider the qualifications of a classroom for access to Central Classroom support funds.** The limitation of centrally allocated funds to centrally scheduled classrooms results in a lack of University support for many classrooms that are meeting all of the qualifications for support with the exception of scheduling site. This problem will increase if scheduling of current central classrooms are moved under the auspices of the AHC.
- 4) **Reevaluate the methods by which classroom needs are met.** As classroom needs have changed and grown, departments have assumed a growing responsibility for providing space, equipment and support without any specific incentives or access to central classroom funds. This has relieved the University of building large amounts of new classroom space.
- 5) **Reevaluate the prioritization system used for room scheduling.** AHC (and partner department) classes should have the opportunity to identify appropriate AHC classrooms and class times before the rooms are opened to non-teaching purposes or to non-AHC classes. Access should be based on educational needs and should not result in continued disadvantage for any specific AHC program.
- 6) **Establish a set of expectations for basic instructional equipment in each of the AHC classrooms.** Ensure that all rooms have a minimal level of presentation equipment and that higher technology resources are sufficiently accessible in enough rooms in different locations, of different seating capacities, and of different instructional set-ups that classes that need this technology can find an appropriate room.
- 7) **Establish a set of expectations for short- and long-term room maintainance that is enforced for all AHC Classrooms.** Responsibility/accountability and authority for monitoring and enforcing adequate maintainance should reside with the AHC Classroom Office/Officer, identified in recommendation #1 above.

Educational Facilities Planning and Predesign Activities

Steering Committee Members

Terry Bock, Associate Vice President and Chief of Staff, Academic Health Center
Barbara Brandt, Assistant Vice President for Education, Academic Health Center
Lorelee Wederstrom, Director, AHC Office of Facilities
Andreas Papanicoloau, Senior Planner, AHC Office of Facilities
Brenda Trebesch, Senior Planner, AHC Office of Facilities
Harvey Turner, Director of Planning and Programming, University of Minnesota
Ross Janssen, Director of Educational Technology, Academic Health Center
Don Archibeque, Project Manger, University of Minnesota Facilities Management

AHC Associate Deans of Education

Barbara Brandt
John Finnegan, School of Public Health
Ron Hadsall, College of Pharmacy
Richard Hoffman, School of Medicine in Duluth
Michael Rohrer, College of Dentistry
Marilee Miller, School of Nursing
Laura Molgaaard, College of Veterinary Medicine
Greg Vercellotti, Medical School

Tour of the University of Iowa's Medical Education and Research Facility – July 15, 2003

Barbara Brandt
Joe Weisenberger, Public Health
Stuart Speedie, Medical School
Paul Olin, Dentistry
Micky Trent, Veterinary Medicine
Ron Hadsell, Pharmacy
Janet Schanedling, AHC Office of Education
Andreas Papanicoloau, AHC Office of Facilities
Harvey Turner, University Planning and Programming
Ross Janssen, AHC Office of Education
John Jenson, AHC Office of Education
Ruth Lindquist, Nursing

AHC Educational Facilities Planning Charette – July 24-25, 2003

Lorelee Wederstrom, Convener – AHC Office of Facilities
Jon Kendall, ideaReserve – Facilitator
Ken Marcoux, ideaReserve – Facilitator
Linda Jorn – Office of Information Technology
Colby Reese – AHC-Information Systems
Lisa Shefchik – Dentistry
Mike Madden – Dentistry
Dick Ford – Dentistry
Don Archibeque – Capital Planning and Project Management
Harvey Turner – Capital Planning and Project Management
Andreas Papanicoloau – AHC Facilities
Brenda Trebesch – AHC Facilities
Micky Trent – Veterinary Medicine
Ellen Naegle – Mio-Medical Library
Janet Shganedling – AHC Office of Education
Judy Beniak – Health Career Center
Jack Grundtner – University Architect
Joe Weisenburger – School of Public Health
Donald Adderley – AHC Facilities
Laura Molgaard – Veterinary Medicine
John Finnegan, Jr. – Public Health
Ron Hadsall – Pharmacy
Ruth Lindquist – Nursing
Marilee Miller – Nursing
Rick Hoffman – School of Medicine, Duluth
Jane Miller – Interdisciplinary Education Resource Center
Jenny Meslow – CHIP Student Center
Jelene Horwitz – Medical School
Eric Celeste – University Libraries
Ross Janssen – AHC Office of Education
Barbara Brandt – AHC Office of Education
John Jensen – AHC Office of Education

**University of Minnesota
Academic Health Center
Educational Facilities Predesign**

Lessons Learned from Trip to Iowa

- ◆ Tour Objectives
- ◆ Questions and Answers
- ◆ Iowa Facilities Overview
 - Learning communities
 - Classrooms
 - Clinical skills Lab
 - Educational Technology

Tour Objectives:

- ◆ See facility designed for contemporary health profession education
- ◆ Gather information for UofM AHC predesign
- ◆ Learn from mistakes

Questions and Answers

- ◆ What facility design features are specific to the current or planned pedagogy?
- ◆ Is curriculum using all aspects of facility?
- ◆ What kind of class labs have been built in the facility?

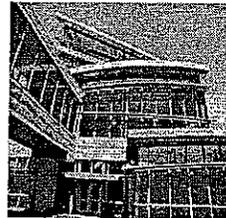
Questions and Answers

- ◆ What are the technology features of the facility?
- ◆ What interdisciplinary education curriculum?
- ◆ What kind of faculty development was/is needed to optimize use of the new facilities?
- ◆ How is facility staffed?
- ◆ How are classrooms scheduled?

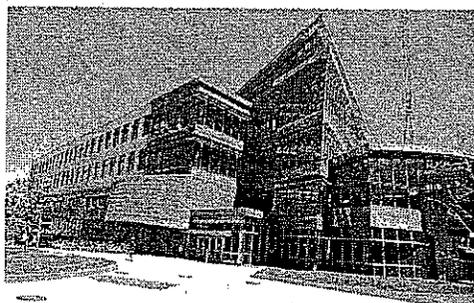
Questions and Answers

- ◆ What works well?
- ◆ What would you change about this facility?
- ◆ What would you do differently?
- ◆ Other observations?

Medical Education & Research Facility Overview

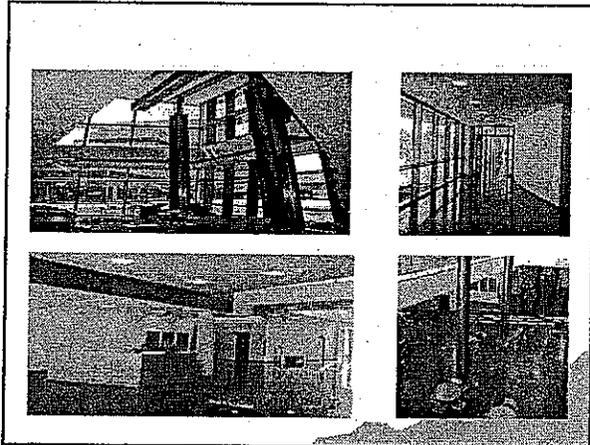
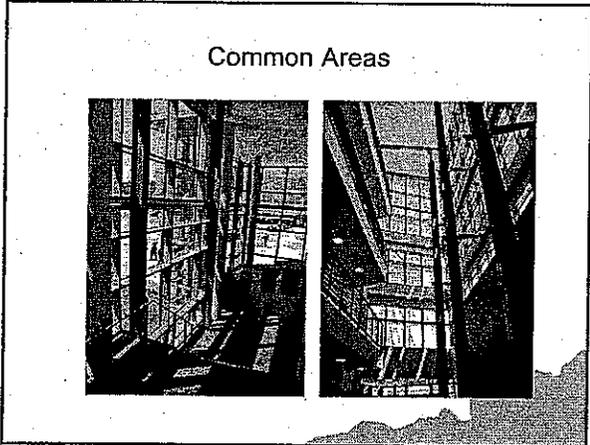
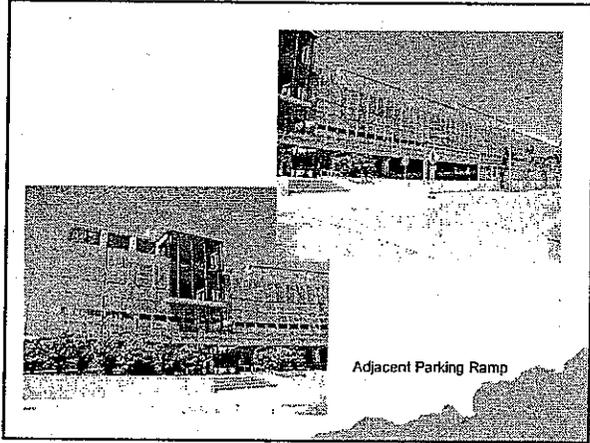
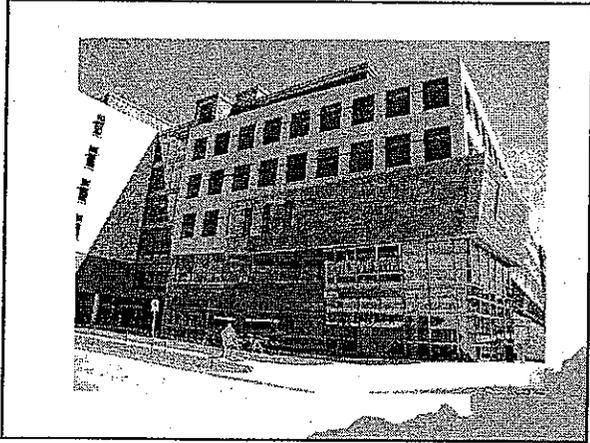


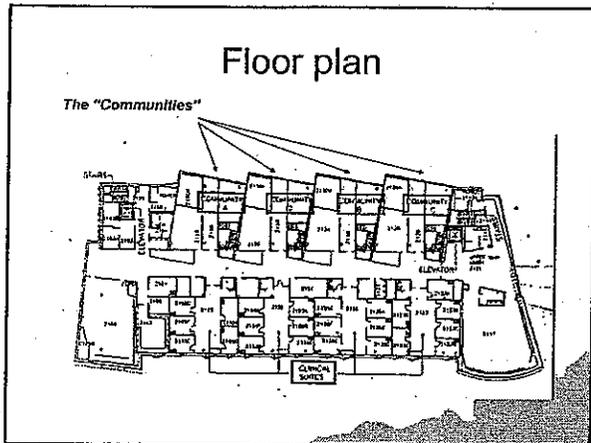
- ◆ Medical School "Flagship"
- ◆ Built 1999-2001
- ◆ 215,000 GSF
- ◆ Largest Capital Project in University of Iowa's history
- ◆ 1st two floors devoted to medical education
- ◆ Center for Molecular Science Research and Cancer Research Center
- ◆ Total Cost = \$56 million



Front Entrance







Excellence in Learning and Leadership for Society (CELLS)



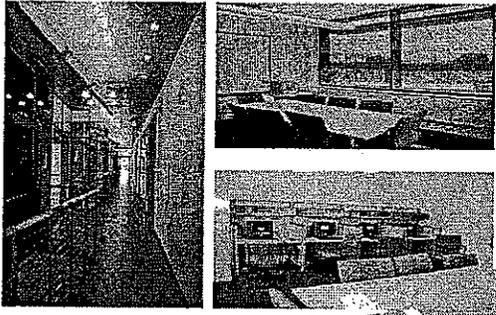
Learning communities designed to facilitate:

- ◆ Peer to peer support
- ◆ Peer to peer education
- ◆ Service-learning activities
- ◆ Informal learning experiences

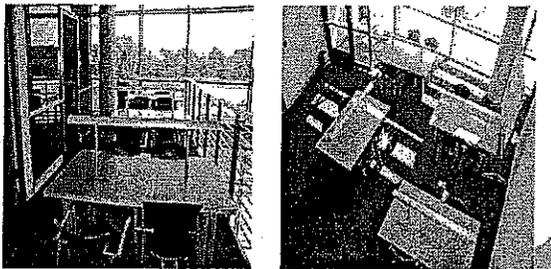
Learning Community Features

- ◆ "Vertical Integration"
- ◆ Increased interaction
- ◆ Formal and informal learning activities
- ◆ Small group room & study areas
- ◆ Examination room & computer lab
- ◆ Administrative support facilities

"Communities" – classrooms



"Communities" — study areas



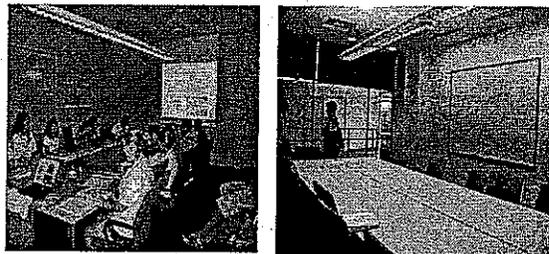
"Communities" — administrative support

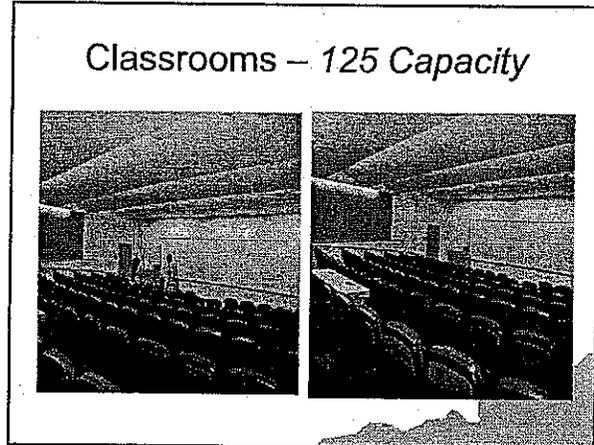
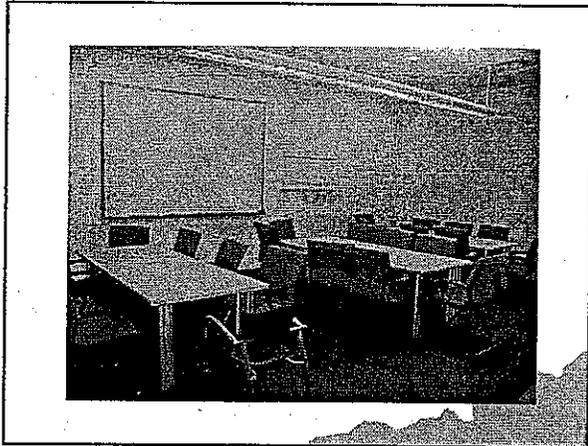
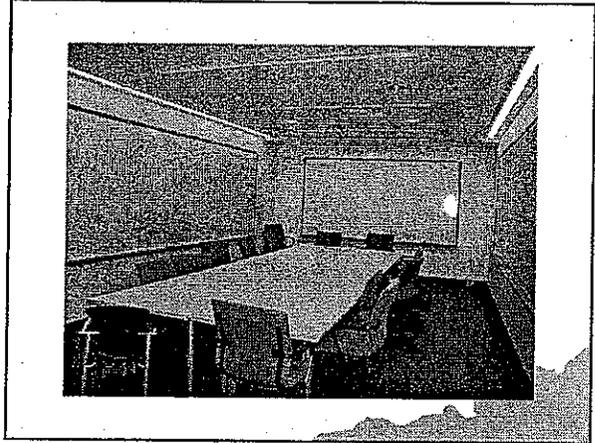
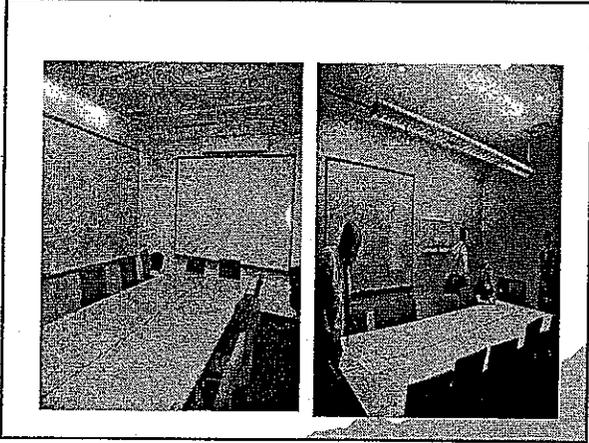


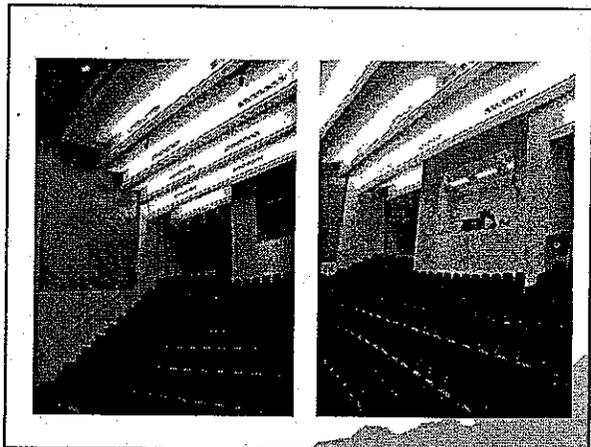
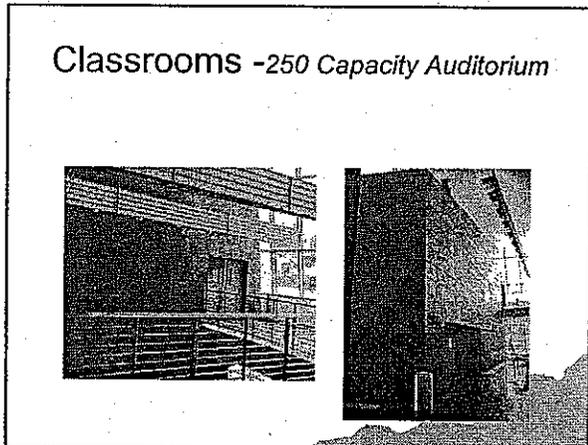
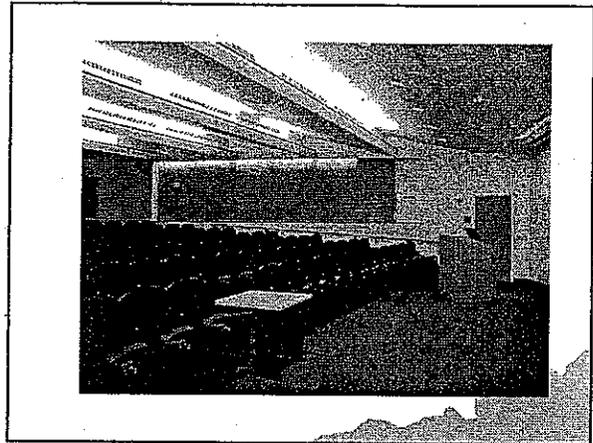
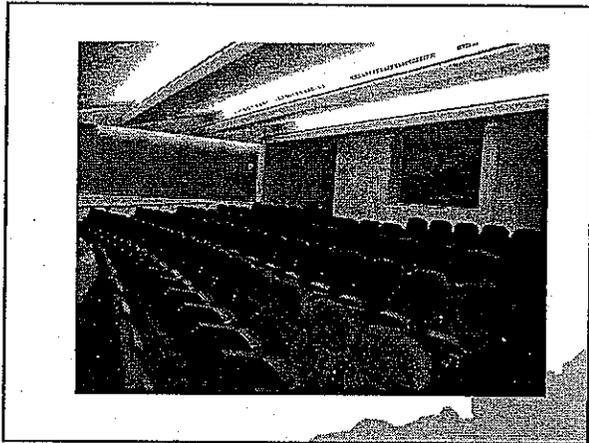
Classrooms

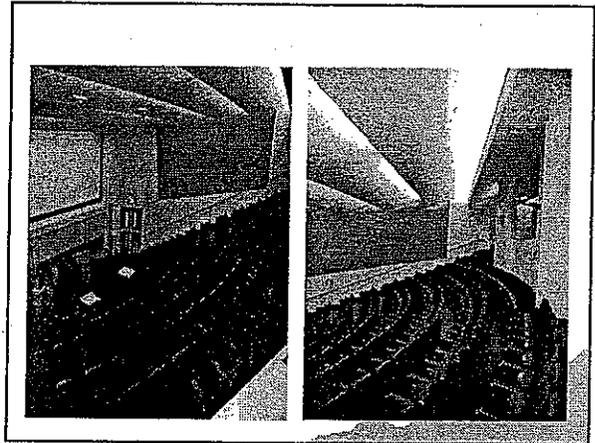
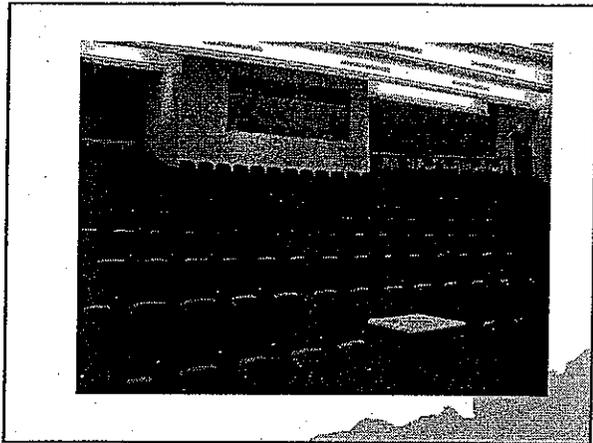
- ◆ Many 15-25 person seminar rooms
- ◆ 1 – 125 seat classroom
- ◆ 1 – 250 seat classroom
- ◆ Clinical skills suites
- ◆ Classroom for computer based learning/assessment

Seminar Rooms – 15-25 People









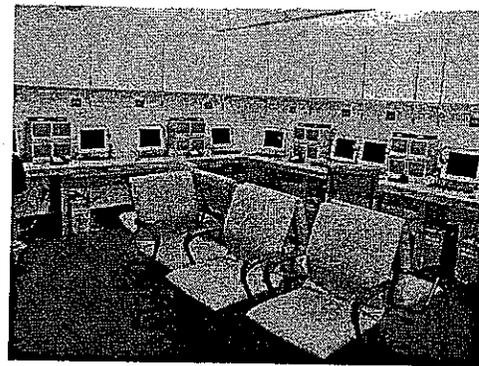
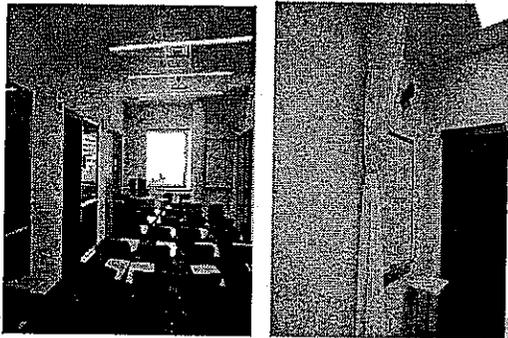
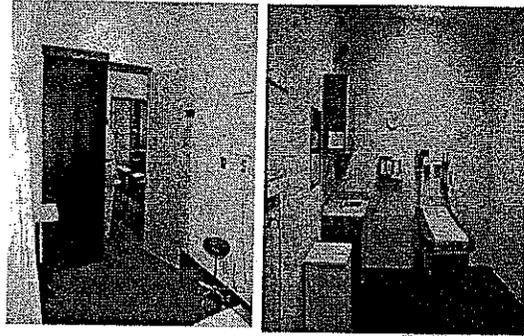
Computer Classroom

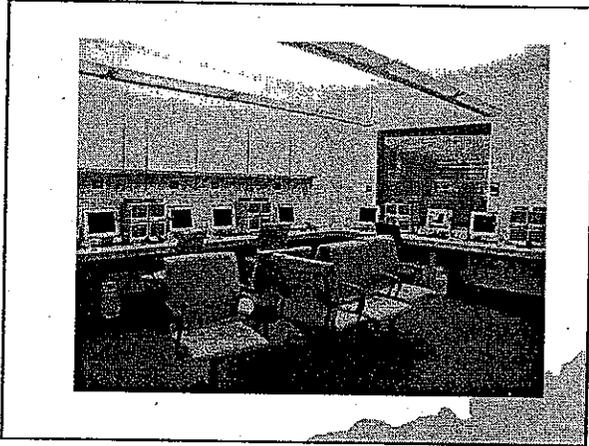
- ◆ Performance based Assessments



Clinical Skills Lab

- ◆ 4 suites each with 25 seat demonstration/teaching area and exam rooms
- ◆ 23 exam rooms total (20 of which are fitted with digital video)
- ◆ Computers with internet connections
- ◆ AV capabilities
- ◆ Waiting area
- ◆ Computer observation room

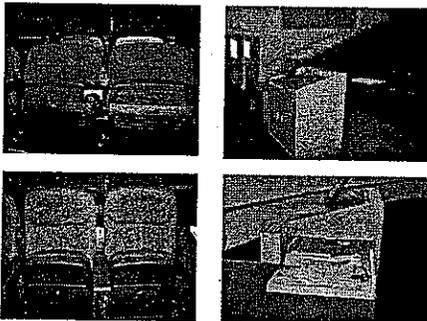




Educational Technology

- ◆ Hardwired and wireless connectivity
- ◆ "magic boxes" installed
- ◆ AV supported by IT group (originally mobile now permanently installing)
- ◆ Cable hook-up should be considered
- ◆ Audio conferencing should be considered
- ◆ Using both WebCT and Blackboard
- ◆ Lecterns with control panel (note placement and wiring needs)
- ◆ Large rooms have standard "smart classroom" equipment
- ◆ Purchasing 200 laptops for cbt
- ◆ No ISDN – do have short circuit
- ◆ Currently no simulations
- ◆ Lectures served on web

Classrooms – details



Summary of the Education Facilities Questionnaire

Eight departments within five AHC schools/colleges responded to the survey;
 Medical School: Occupational Therapy, Mortuary Science, Medical Technology, Medical Education
 School of Nursing; Nursing Program,
 Institute for Allied Health Sciences; Physical Therapy
 College of Veterinary Science; DVM Program
 School of Dentistry: DDS and Dental Hygiene

Questions:

1. Separate data from Ross Janssen
2. Descriptions of your various teaching programs
 2 ½ to 4 year minimum professional programs with classroom and clinical instruction.
3. Types of learning environments are required to fulfill educational mission (yes or no responses).

Learning Environments	# of Yes	# of No	Blank
Distance Education	8		
Computer Based Learning	6	1	1
Simulation Labs	7		1
Traditional Classrooms	8		
Interdisciplinary Education	7		1
Collisions for Social Aspects	6		2
Small Group Learning	8		
Class Laboratories	8		
Student Amenities	6		2
Computer Labs	8		

4. Extent of interactive learning required by schools
 Students interact with computer software programs, distance education, skills labs, web learning, small group interaction and clinical training.
5. Teaching models
 Collaborative learning, distance education, small group learning, clinical training, and self direction.
6. Changes in these models?
 Increasing in each area and use of technology
7. Technology requirements to support curriculum.
 Access to laptops for students, wireless connections to internet, more use of PowerPoint in instruction, widescreen monitors, streaming video, distance education, ITV, simulation labs, and web based learning.
8. The most common capacity of classroom spaces required by your School/College, based on past experience, current practices and anticipated future needs, consider changes in curriculum and or pedagogy. Total responses listed in table below

	# Rooms (Current)	# Rooms (Future)	# Seats (Current)	# Seats (Future)	Shape of Rooms (Current)	Shape of Rooms (Future)	Configuration of Technology (Current)	Configuration of Technology (Future)
Distance Education	2	12	100	540				
Small Group Learning	48	97	152	140				

Interdisciplinary Education	8	204	8	286				
Traditional Classrooms	39	45	623	765				
Computer Based Training	5	7	48	457				
Simulation Labs	19	31	71	311				
Class Labs	23	17	284	380				
Computer Labs	6	11	93	320				
Collision for Social Aspects (social spaces)	8	14	109	520				

9. Daily range of teaching hours Monday through Friday.

Monday Hours	8:00-4:00
Tuesday Hours	8:00-4:00
Wednesday Hours	8:00-4:00
Thursday Hours	8:00-4:00
Friday Hours	8:00-4:00

10. The most critical hindering/limiting factors of your current teaching spaces, within the AHC campus -including central classroom management, AHC and departmental classrooms.
 Limited small group learning spaces, adequate technology in classrooms as well as support, lack of adequate traditional teaching spaces, discontinuity between curriculum and classroom scheduling, inadequate lab space, environmental problems in classrooms, desks/chairs uncomfortable, and classrooms dirty.
11. Classrooms currently within the AHC campus that work well or better than others for your teaching programs and why.
 Jackson 2-137, 125 and 135 AS/VM, Moos Tower 2-650, 2-690, 2-530, PWB 2-470, WDH 7-135, MCB 2-210- tiered large rooms adequately equipped with technology.
 WDH 4-180 - Good for small groups / comfortable with windows and carpeting
12. Definitions of classroom flexibility
 The physical ability to reconfigure seating and room arrangements within a room creating larger/smaller teaching spaces, wireless technology, user friendly A/V equipment and technology.
13. How do you perceive classroom flexibility support changes in teaching?
 Easier to keep the curriculum current with greater flexibility in classroom space, interactive labs to incorporate newer techniques into curriculum, room mobility to create small groups which allows the instructor to be student-centered.
14. Describe the day light provision requirements for certain general-purpose classroom types and capacities?
 Six responses stated that day light was not a factor in classrooms. Two responded that their current classrooms have windows or they would prefer natural lighting. Students would benefit from natural light in social spaces
15. Describe the acoustics and illumination requirements?
 Acoustics must be at a level that minimally amplified speech can be heard and understood throughout the space. P/A systems should be available in all of the rooms. Illumination must

be organized so that a projected image is easily visible in an illuminated room. Carpeting decreases noise level in rooms.

16. Describe finishes requirements?

Good quality materials that can withstand the work taking place in the rooms. Professional looking rooms.

17. Are there equipment requirements other than Audio Visual/Technology equipment?

Able to maintain reasonable room temperatures in labs, fume hoods in labs, walk in refrigerators and freezers,

School	Veterinary Medicine	Institute for Allied Health Sciences	Medical School	Nursing	Medical School	Medical	School of Medicine	Dentistry	Total
Department	DVM program	Physical Therapy	Occupational Therapy	Nursing	Mortuary Science	Medical Technology	Medical Education	DDS and Dental Hygiene	
Name	Laura Molgaard	Jim Carey	Peggy M. Martin	Marilee Miller	Michael LuBrant	Donna J. Spannaus-Martin	Stuart Speedie	Lisa Shefchik/Michael Rohrer	
Email Address	molga001@umn.edu	carey007@umn.edu	marti370@umn.edu	mille006@umn.edu	mpl@umn.edu	spann003@umn.edu	speed002@umn.edu	shefc003@umn.edu	
2. Please give a narrative description of your various teaching programs.	Four year professional program. First three classroom instruction, fourth clinical.	Doctor of Physical Therapy, Doctor of Philosophy (PhD) in Rehabilitation Science program, and outreach program for area clinicians.	The 21/2 year Program's primary purpose is the preparation of entry-level professionals capable of the creative and independent critical thinking required for clinical practice and research in occupational therapy.	Baccalaureate Program, Nursing Post Baccalaureate Program, Masters Program, PhD Program	We teach primarily theory and lab courses related to funeral service and death scene investigation.	One is a B.S. in Medical Technology which is a conventional 4 year degree. The other is a Bachelors of Applied Science (B.A.S.), which is an articulation program for laboratory professionals who currently have a two year Associates degree.	MD Program, Graduate medical education, Allied Health Professions programs, Continuing Medical Education program	No mandatory post dental school internship or residency is required for licensure, our graduates must be competent in all aspects of surgical and non-surgical dentistry, radiology, office management, etc., when they graduate.	
3. What types of learning environments are required to fulfill your educational mission? (Yes/No)									
Distance Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8
Computer Based Learning	Yes	Yes	No	Yes		Yes	Yes	Yes	7
Simulation Labs	Yes	Yes	Yes	Yes	Yes		Yes	Yes	7
Traditional Classrooms	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8
Interdisciplinary Education	Yes	Yes	Yes	Yes		Yes	Yes	Yes	7
Collisions for Social Aspects	Yes		Yes	Yes		Yes	Yes	Yes	6
Small Group Learning	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8
Class Laboratories	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8
Student Amenities	Yes	Yes	Yes	Yes			Yes	Yes	6
Computer Labs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8
4. What is the extent of interactive learning required by your school?	All four years	Students interact with computer software programs, distance education, skills labs, and anatomy lab.	Do not know	All Classes	Case Study Programs, Clinical Problem Solving, Interaction with Professionals	Class Labs needed, computers and web enhanced learning is utilized to assist in teaching. Small Group	Require extensive interactive learning, labs, small group interactions and clinical training with simulated and standardized patients.	All pre-clinical and clinical training is interactive between individual students or small groups and faculty. computer-based interactive learning is gradually taking place but is hampered by the lack of technological and equipment support.	
5. What is your teaching model, regarding the degree of collaboration and self-direction teaching methods?	Some courses use more collaborative learning (for example Professional Skills) than others. Self-direction is most obvious in our "directed studies" during the 4th year. Tracking (by species) has made our program more self-directed in the last decade or so.	Pharmacotherapy, Ethics, and Pathophysiology) through distance education, which involves self-direction. Collaboration occurs with College of Pharmacy, Dept. of Lab Medicine and Pathology, and School of Public Health. Clerkships occur in which students go to area nursing homes and outpatient clinics to practice evaluation and treatment skills on patients under faculty supervision.	Adult education teaching models. Students collaborate regularly in small teams. We expect students to self-critique, independently identify learning needs, and self-evaluate their effectiveness in learning	We use a variety of models such as didactic, small group work, on-line group work, group presentations, individual papers, etc.	We use several models, from traditional lectures to problem case studies. A lot depends on the subject being taught, and the models that the instructor prefers to use. Self direction becomes more evident to students as part of their clinical activities as they increasingly do more work with less preceptor supervision as time goes on.	Within the laboratory setting, students are encouraged to solve problems on their own. However, because much of what we teach involves the handling of potentially infectious body fluids, students must also be carefully directed by laboratory professionals. Collaboration is encouraged for some laboratory assignments and simulations.	Our primary teaching model is now the lecture during years 1 and 2 of the undergraduate medical curriculum with clinical training at patient care sites during the last two years. We intend to make use of collaborative teaching in terms of small group activities and independent learning modules during the first two years.	The dental curriculum does not lend itself very well to self-directed teaching. This has been tried over the years in many schools but too much of the dental curriculum needs direct instruction of students by faculty (not residents).	

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Department	DVM program	Physical Therapy	Occupational Therapy	Nursing	Mortuary Science	Medical Technology	Medical Education	DDS and Dental Hygiene	
Name	Laura Molgaard	Jim Carey	Peggy M. Martin	Marilee Miller	Michael LuBrant	Donna J. Spannaus-Martin	Stuart Speedie	Lisa Shefchik/Michael Rohrer	
6. How do you see this changing?	Increasing in both counts.	Distance Education, increased support personnel, better access to clinical education.	increase in interdisciplinary education, or learning activities that are shared with other health professions students, curriculum as being more accessible to students in the greater midwest region as we are able to access more non-traditional students. The transition to a clinical doctorate is expected to somewhat change our current student market. We would like to offer portions of the curriculum in other areas of the state to better meet the needs of rural and non-traditional students. this would require enhancing our self-direction teaching methods	The model will be similar but with increasing use of technology to enhance learning including ITV, on-line courses, and web enhancements.	We have, over the past two years, hired several new adjunct faculty. We are in the process now of discerning which kinds of models of teaching work best, given the subject matter at hand. Because these efforts at assessment are so new, we are still in a "discovery" period. As time progresses, we will know better what are needs are for the future.	I would like to incorporate more activities with other healthcare professions to develop better teamwork skills not just in the laboratory but throughout the healthcare environment. I would also like to begin converting the didactic courses to web-based courses in order to facilitate the B.A.S. program to a distance learning program to help meet the need for trained laboratory professionals in rural Minnesota.	There will be an increasing trend away from the lecture as the sole mode of instruction with a greater mixture of small group activities, both faculty lead and student lead as well as a much greater emphasis on independent learning. We anticipate a growing role for simulations in clinical training and would expect a significant increase in the use of distance learning technologies to reach students a scattered training sites throughout the state.	With the increased technology in the area of pre-clinical simulation laboratories, the amount of learning that could take place without the direct supervision of a faculty member would greatly increase.	
7. How do you see technology requirements changing to support your curriculum?	The content of our courses has gotten much more technology-rich over the last few years. Students need access to computers (laptops with wireless, etc.) and are using hand-held devices more and more.	There is a need for tiered classrooms to allow students a better line of site to presenter. Easy implementation of powerpoint and other electronics such as closing of window blinds, wide screen, etc. Jackson Hall 2-137 is a model lecture room. Internet wireless will be needed to allow student/faculty connection in each classroom. Streaming video is outstanding but can't guarantee that each student's home computer will be able to access it. Patient evaluation rooms to allow students/faculty to do procedures on patients without a whole class being present physically. Instead, they would view the techniques through camera images. Camera would project both locally and at a distance. Collaboration with area hospitals needed to allow them to project images of their patients to students here. Of course the usual permissions would be obtained.	I see all classrooms and laboratories being at a minimum of Level 3. This would allow each classroom and clinical laboratory to have direct contact with clients and clinicians in a "telemedicine" mode. I don't see OT as having a significant need for simulation or advanced specifications such as immersion classrooms. I see all courses as having web extensions of teaching/learning activities. The availability of consultant support for faculty learning in the use of technology to support instruction is needed. We would like to expand some of our course offering to greater Minnesota through distance education. This would allow us to better reach our rural areas and better serve the non-traditional student population. This goal requires the use of distance education classrooms. At the same time, we envision each student having wireless laptop computers to augment learning throughout each portion of the curriculum. This would allow us to better integrate interactive computer based (simulations) throughout every aspect of the curriculum.	The basic multimedia package will be expected in all classrooms. Internet wireless will be used by courses with enrollment less than 30 (unless it can accommodate classes of 100). ITV will be used for teaching between TC and Rochester with increased use of web-based learning. Electronic simulation in the skills labs will be increasingly expected by students and faculty, e.g. Sim-Man, Sim-baby. Increased use of "polycom" for small groups.	We need to have teaching space that allows for full multi-media. None of our teaching spaces have hard-wired multimedia resources, and we have no funds to buy such hardware at the present time.	As I mentioned above, I would like to see our B.A.S. degree program converted to a distance learning program, so having access to ITV and streaming video would be very useful. Currently, we only utilize Powerpoint presentations, but we may integrate internet wireless technology this year.	We see level 3 (Videoconferencing - VC - Capable) as the basic level required for any classroom used for undergraduate medical education. This does not mean that they need to be permanent VC facilities with wall mounted cameras and displays but rather must be network capable and have appropriate lighting control to bring a videoconference into the room. We also anticipate the need for special purpose simulation facilities similar to hospital rooms and OR suites to house various mannikins.	We are definitely moving up the levels of requirements for technology. As more of our students are being based in off-site outreach facilities, the requirement for Level 3 will greatly increase. There is tremendous need for simulation training for all of the dental surgical procedures (our competitor schools are far ahead of us in this area and we are losing top students to these institutions).	
Describe the most common capacity of classroom spaces required by your School/College, based on past experience, current practices and anticipated future needs. Please consider changes in curriculum and or pedagogy. (8-16)									
8. Distance Education									
Number of Rooms (Current)				2 ITV	none				
Number of Rooms (Future)	1	1	1	2-3 ITV	1	2	1		

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Name	Laura Molgaard	Jim Carey	Peggy M. Martin	Marilee Miller	Michael LuBrant	Donna J. Spannaus-Martin	Stuart Speedie	Lisa Shefchik/Michael Rohrer	
Number of Seats (Current)				100			n/a		
Number of Seats (Future)	At least 150	40	30	10-100	30	20	20		
9. Small Group Learning									
Number of Rooms (Current)	None dedicated, approx 10 sometimes available	2	2	25		1	16		
Number of Rooms (Future)	4 rooms (subdividable)	2	6	30	1	2	40		
Number of Seats (Current)	10-20 per room	10	12	6-26		32	15-60		
Number of Seats (Future)	25 people (subdivided into smaller groups)	10	10	6-30	15	32/room	15		
10. Interdisciplinary Education									
Number of Rooms (Current)	0 here, IERC	same as 9	1 (computer lab with PT)	4					
Number of Rooms (Future)	Any of our rooms could potentially be used		1	6	1		unknown		
Number of Seats (Current)			8	12-300	30		n/a		
Number of Seats (Future)			PT + OT or MD + OT- at least 100	12-300	30			2	
11. Traditional Classrooms									
Number of Rooms (Current)	3	1	4 (one shared with PT)	22	2	1	2	150	
Number of Rooms (Future)	At least 1 more	2	4	25	3	1	2	2	
Number of Seats (Current)	90-100	30	26; 20; 25; 30	20-100	30	32	200-300	12	
Number of Seats (Future)	180+	40	30; 30;30; 50	20-100	30	70	250	30	
12. Computer Based Training									
Number of Rooms (Current)	1 computer lab, 3 classrooms with some access			1				10-15	
Number of Rooms (Future)	All (wireless)	1	1- shared and networked	2	1	1	1	4	
Number of Seats (Current)	10 in lab, 30 or so per classroom			8			n/a	4	
Number of Seats (Future)	All	40	30	24	301	32	30	100+	
13. Simulation Labs									
Number of Rooms (Current)	None dedicated			18			IERC	100+	

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Name	Laura Molgaard	Jim Carey	Peggy M. Martin	Marilee Miller	Michael LuBrant	Donna J. Spannaus-Martin	Stuart Speedie	Lisa Shefchik/Michael Rohrer	
Number of Rooms (Future)	1	1	possibly one interdisciplinary	20	2		IERC + 4 mannikin rooms	1	
Number of Seats (Current)				2-48			n/a	2	
Number of Seats (Future)	50	40	30	2-48	16		n/a	46	
14. Class Labs									
Number of Rooms (Current)	4	2	0- adapt lecture spaces	1	1	6	8	150	
Number of Rooms (Future)	At least 1 more	2	1	1		3	4	2	
Number of Seats (Current)	Approx 80-90 in each	30		50	8	16/room		1	
Number of Seats (Future)	100	40	plinths and 30 chairs	50		35-40/room		95	
15. Computer Labs									
Number of Rooms (Current)	1		1 (see above); plus Med School computer lab	1			1	100	
Number of Rooms (Future)	At least 1 more	1	interdisciplinary computer lab	1	1		1	1	
Number of Seats (Current)	10		8	10			40	3	
Number of Seats (Future)	100 would be ideal, or 50	40	30 for OT	30	30		40	25	
16. Collision for Social Aspects (social spaces)									
Number of Rooms (Current)	5 (if you stretch your imagination)	????		1		1	1	50	
Number of Rooms (Future)	1		1 interdisciplinary	3	1	32	4	1	
Number of Seats (Current)	~20, ~40, ~10, ~20		30	30			unknown	4	
Number of Seats (Future)	As large as possible			12-100	50		80-100	25	
Shape of Rooms (Current)	3 atria, 1 tiny lounge, one entryway			square with multi-use	N/A	rectangle		40	
Shape of Rooms (Future)	?		offering corners and quiet spaces	shape with multi-use capability	flexible			square	
Configuration of Technology (Current)	Kiosks, wireless in one area			1 kiosk, 3 computers	N/A	Level 1	network access	none	
Configuration of Technology (Future)	wireless access, ethernet jacks, kiosks		internet connections	1 kiosk, 6 computers, wireless capability	Full multimedia		network access, projection	internet access, wireless	
17. Describe your general acceptable daily range of teaching hours Monday through Friday.									
Monday Hours	8AM-5PM	6	8-5	8-6 plus evening clinical hours to 11 pm	8	9 AM-5 PM	8am-5	7	
Tuesday Hours	8AM-5PM	6	8-4	8-6 plus ev cln hrs to 11 pm	10	9 AM-5 PM	8am-5	7	
Wednesday Hours	8AM-5PM	6	8-4	8-6 plus ev cln hrs to 11 pm	8	9 AM-5 PM	8am-5	7	
Thursday Hours	8AM-5PM	6	8-5	8-6 plus ev cln hrs to 11 pm	10	9 AM-5 PM	8am-5	7	
Friday Hours	8AM-5PM	6	8-4	8-3	8	9 AM-5 PM	8am-5	7	

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Department	DVM program	Physical Therapy	Occupational Therapy	Nursing	Mortuary Science	Medical Technology	Medical Education	DDS and Dental Hygiene	
Faculty	Laura Molgaard	Jim Carey	Peggy M. Martin	Marilee Miller	Michael LuBrant	Donna J. Spannaus-Martin	Stuart Speedie	Lisa Shefchik/Michael Rohrer	
1. What are the most critical hindering/limiting factors of your current teaching spaces, within the AHC campus confining classroom management, HC and departmental classrooms?									
9. Are there any classrooms currently within the AHC campus that work well or better than others for your teaching programs? If so, which are they and why do you think they serve your teaching needs well?	125 and 135 AS/VM are our best rooms. 280 VDL is also pretty good (but may not be an AHC room). They serve our needs because they are big enough and have decent technology.	Jackson Hall 2-137 is outstanding because it has easy connection to powerpoint, easy control of lights and window shades, easy voice volume control, spacious and tiered.	Lecture halls available in Moos Tower or P. W, etc. are well set-up for interdisciplinary learning experiences and lecture. However, these rooms are not in physical proximity to smaller break out rooms or the lab spaces that we need associated with the lectures. This makes it very difficult for us to use these spaces. One lecture hall in Children's Rehab would reduce this hinderance.	PWB auditoriums - have AV resources available WDH 7-135, - layout of room plus AV Jackson Hall 2-137 - layout of room and ability to have small group discussions MT 3-110 - layout of room MT 5-125 - generally acceptable for ITV with equipment update; chairs could be more comfortable for classes lasting 3-4 hrs; can accommodate small groups WDH 4-180 - accommodates small group work, carpeting, windows	We have never used rooms other than the ones we have in the program, so I have nothing to compare.	There is one lecture room in Moos Tower that has a higher quality of projector for showing blood smear pathology. If you need the room number, I can get that from our hematology instructor. MCB 2210 also works well. We would love to have the chance to teach our labs in the MCB building, as they could hold all of our students at one time.	2-650 and 2-470 work well for large group lectures. They are adequately equipped and lighting control is generally good. They are the two places where an entire class of medical students can come together. In addition the IERC promises to be very useful for clinical teaching and evaluation since it provides the types of examination rooms that facilitate teaching with "real" patients, there are sufficient numbers for the students and there is the ability to remotely observe student performance.	The larger lecture rooms in MST (2-530, 2-620- 2-650, 2-690) work better because they provide the necessary space for the class size.	
20. How do you define classroom flexibility?	The physical ability to reconfigure seating for multiple purposes and even to move walls to open up smaller spaces into bigger spaces.	Ability to work as lecture room, wireless electronics if needed, patient accessible	The ability to use the space in multiple ways. Our classes are taught so that instructors move between lecture, large group discussion, laboratory application or small group discussion frequently throughout a class period. We seek classroom space that allows large group and smaller break out sessions in the same class. Moveable chairs and tables. AV equipment that allows for ease of use in type of projection- power point, overheads, videos, dvds, and computers that allow for use of CD, zip disk or other.	Ability to use multiple teaching methods, e.g. lecture, break into small groups, have good view of AV, wireless computer capability for students	It is possible to reconfigure seating for different uses. The multi-media hardware can be connected in different places in the room.	I define it as the extent to which a classroom is adaptable for a variety of uses. For example, it is difficult to have small group discussions in many of the lecture rooms, or it is difficult to show a Powerpoint presentation in some of the laboratory rooms.	This is a good question. Flexibility first of all means available when needed on a day by day basis rather than being committed for an entire semester. Secondly it means that a classroom can be used successfully for more than one type of teaching. Flexibility usually does not mean that the room is capable of being subdivided by movable walls. Our experience has been this this is largely unsuccessful and unused.	1. The ability to break a large group room into areas where smaller groups can meet and then turn it back into a large group space (all within a one-hour period). 2. The ability to carry out various types of teaching in one space - that can be altered by flexible seating or other alterations.	

School	Veterinary Medicine	Institute for Allied Health Sciences	Medical School	Nursing	Medical School	Medical	School of Medicine	Dentistry	Total
Department	DVM program	Physical Therapy	Occupational Therapy	Nursing	Mortuary Science	Medical Technology	Medical Education	DDS and Dental Hygiene	
Name	Laura Molgaard	Jim Carey	Peggy M. Martin	Marilee Miller	Michael LuBrant	Donna J. Spannaus-Martin	Stuart Speedie	Lisa Shefchik/Michael Rohrer	
21. How do you perceive classroom flexibility support changes in teaching?	?		When I know that the physical space is flexible, I can structure my learning activities around what I think will best help the students learn rather than what type of teaching is possible. Flexible space allows me to be student-centered in my teaching. Structured space forces me to be teacher-centered.	As above with particular emphasis on small group work and use of wireless computers	By being able to move desks, it is possible to more things in the same space -- be it a traditional lecture, or "break down" session in small groups.	It would be helpful to have labs be interchangeable between wet lab areas and labs set up for interactive technology. It would allow us to better incorporate some of the newer techniques into our curriculum.		It would be easier to keep the curriculum current if we had more flexible classroom space.	
22. Describe the day light provision requirements for certain general-purpose classroom types and capacities?	Day light is a good thing. We don't have much of it. Our students are in class all day every day and it's hard for them to never daylight and forget by the end of the day what season they are in. However, it is important that room-darkening shades be available because image projection is central to our curriculum.		Natural lighting or fluorescent without the "buzzing".	Of course windows are desirable, e.g. Jackson Hall 2-137	Presently, the rooms we use have windows, so this is not an issue.	We don't need day light. We are more concerned with making sure there is not too much daylight to prevent students from seeing fine cell morphology details.	This has not been a consideration to date in the undergraduate medical education or the classrooms they use. However, common areas (collision spaces?) would certainly benefit from natural daylight such as in the MCB building.	Daylight is not a big factor for the School of Dentistry curriculum.	
23. Describe the acoustics and illumination requirements?	Good acoustics and flexible illumination. Our good rooms have this, our bad ones don't.		Good acoustics - especially from the front of the room.	Critical elements in all classrooms. Lighting is critical and the ability to hear. Long, narrow rooms, e.g. Mayo 100/125 do not work. Carpeting is a big plus - decreases noise level and enhances the environment. At least as important would be the ability to control temperature. Often the auditoriums and MT 5-125 are too cold and air becomes stagnant	All rooms should have a PA system. In bigger rooms, especially those with A/C chase runs, it can be hard to hear a soft-spoken lecturer.	Students just need to be able to hear instructor and see slide or projection details.	Acoustics must be at such a level that minimally amplified speech can be heard and understood throughout space. Illumination must be organized so that projected images are easily viewable in an illuminated room. Too often there are light sources shining on the screen or one cannot darken that portion of the room where the projection surface is located.	In the simulation labs and clinics the noise from the ultra-high speed surgical equipment is a distractor, as well as a hearing injury problem. In the simulation labs and clinics illumination needs to be of operating room quality, but heat production is a major factor.	
24. Describe finishes requirements?	Ideally flooring would be easily cleaned so we could include animals if needed. This may be an acoustics problem though.		NA- so it looks professional	Don't understand this question	N/A	We have students working with biohazardous, potentially infectious blood and body fluids. Our main concern is safety. Countertops must be suitable for working with chemicals, and for frequent disinfection from blood and body fluids. Chairs must also be able to be disinfected, so no cloth chairs or stools in laboratories.	Finishes should be of good quality and resistant to hard use that classrooms receive. They should provide a friendly and comfortable environment where the student will feel welcome.	Material that can withstand the work taking place in the room, especially the laboratories.	

University of Minnesota Academic Health Center (AHC) Planning Charette
July 24 & 25, 2003

Notes from 7-24-03 meetings:

Define and Clarify Goals and Objectives for the Project

Individual Expectations:

Get the project on-time and under-budget

Define what the schools think they want and need.
Understand and share information.
Begin questions assumptions and current processes.
Program and pre-design for funding.
Support the pedagogy.
Analyze gaps.
Solve a problem.

Planning for educational needs.
Integrate Library into the Learning Community.

Learn some options for technology in education.

The Process – Understand it and move through the steps to reach our goals.
The Budget.

Retention and recruiting

Students

Faculty

Staff

Current look and feel is “looking tired”.

What is the real problem?
What is the justification for this project?
What are the problems and priorities?
We need to focus on the outcomes.
Learning happens everywhere, how do we capture and nurture it?

Explore the Iowa project.

Daughter is going to A School of Nursing in 3 years.
Want the best learning available.
Want to improve the education opportunities.

What is possible?

Get past the current problems.
Shift the understanding of learning.
Enhance learning process.
Shift in market.

Training in Public Health skills – update skills
Formal credential – professional degree program
Continuing life-long learning.

Stakeholders want and expect the best learning resources.
Facilities must improve to meet the changing vision.
Creating rapid efficient learning.

Creating and preparing courses will be different.
Flexible facilities are required.
Constant improvement is necessary.

What are future technologies and possibilities?

Curriculum should drive technology.
Space now drives the education.
Project is out 5 years so provide flexibility for the unknown.
Can space help interdisciplinary learning?

Visioning is important.
Where is Minneapolis campus going with connectivity and technology?
Do not make short sighted decisions.

Build team and collaborative skills.
Stake holders are asking for real-world skills.

Improve the students life.
Interdisciplinary direction is critical.
We feel the students pulse.

Accreditation-
Process
Space and amenities
Weaknesses

Library-
Partner in teaching and learning
Introducing new technology
What is AHC future?
Needs for technology and support?

How can the Library help?

Define outcomes and needs.

Stakeholders?

Report analysis define the problems.

What are the Health Professions needs?

This is the beginning of on-going dialog.

Political process-

Priorities

Provost and President

Capital budget

The "Educational Program" is required by Sept 1

The rooms should have flexibility in seating, tables, lighting, environmental control.

In July 2004 we may be able to start design of the project.

Iowa Project Review:

Light is very nice, open and airy.

Layout is logical.

Teaching is:

Interdisciplinary within the med school.

Have 4 community pods.

Staff of 1-3 for community pod support.

Signal that instructional activities are important at IOWA

They made an important statement.

It's important as research.

The facilities are attractive.

They are flexible, inviting, and open.

It's a sense of "place" and forms a relationship.

But, they didn't go far enough with technology or vision. Was budget the problem?

They provided holistic thinking

Designed a "learning goals" space.

They draw students together.

Have an interactive space

Provide vertical integration.

It is stand-alone and doesn't communicate outside of building. It's a silo of education.

They have a strong alumni connection through support and financial gifts.

It facilitated unstructured learning.

Not planning for interdisciplinary teaching.

A mobile clinic ties to pharmacy and nursing.

Auditorium is too comfortable, one would fall asleep.
But the acoustics were great.

Openness is great, lots of glass and limited walls.

Legacy technology to support teaching, projectors and computers. Not cutting edge, the thinking was limited to current and legacy technologies.

Clinical support and skills lab is good.

They said use fixed permanent technology not movable.

Learning Pods-

The community pods are self governed.

Furniture is movable and does get moved.

The idea was implemented before building was finished.

Small classes are common.

No research connections.

No telehealth connections.

They have the UMinn's "Short Streets" concept and the research and hospital are close.

Iowa Project Pros and Cons:

- "Nice" facilities
 - o Light - daylight
- Flexible building
 - o The way they teach.
- Community
 - o Levels - maximize communications
 - o Groups - one on one mentoring peer to peer
 - o Problem solving
 - o Curriculum staff in community

- Instructional activities
 - Important at Iowa - Facilities demonstrate as important as research.
 - Facility attractive to students
 - Informal and Formal
 - Creation of sense of place
 - Didn't go far enough
 - "Cold"
 - Appropriate space learning community
 - Drawing students to learning community facilitates _ interaction
 - Not facilitation planned interaction
 - Technology
 - Wiring adequate
 - Future driven
 - Not using technology well
 - Integrate - vertically (alumni)
 - 90% funded from outside sources. Donor base missing here
 - Facilitated unstructured learning outside of class
 - Didn't plan
 - Clinical rooms, group rooms, community rooms open 24/7 to students.
 - 4th and 1st year students together
 - Comfortable auditorium. Acoustics good
 - Glass instead of walls
 - Openness
 - Energy
 - Classroom and small teaching space
 - Information Desk
 - Pods
 - Kiosk
-
- Access design?
 - Wasted space - no seating in corridor
 - Staircase safety
 - Lack of natural materials
 - No center aisle in auditorium
 - "Open" community
 - Put a basement in
 - Portable AV - not optional
 - Don't phase in occupancy
 - No cable / not accessible
 - Computer lab - ITV
 - Computer based testing

Stakeholders for this project and the Academic Health Center (AHC):

- Students and Parents
- Health Professionals
- Faculty
- Health Systems
- Patients
 - o Community
 - Physicians
 - Hospitals
 - Clinics
 - People of Minnesota
 - o Employers
- Alumni
- NIH
- Regents
- University Administration
- “Medical Alley”
- State Government
- NSF
- DHHS
- 2005

Expectations for this project and the Academic Health Center (AHC):

- Competent Graduates
- Professionalism
- Pursuit of happiness
- Outcomes
- Satisfied “graduate” (customer)
- Accessibility
 - o Financial
 - o Physical
- Coordination of care
- Leaders in the industry
- Sense of community good
- Access to world class information
- Good facilities
- Entry level
- Achieve compensation
- Manage compensation
- Experience
- Applicability
- Diversity of population
- International consumers/students
- Global health issues
- People with disabilities

- Faculty shortages - aging
- Distance education / multiple campuses
- Curricula
- Number of students vs. resources - balance
- Access to on-going knowledge improvement
- Who in workforce?
- Cost efficiency / value
- Be challenged
- Rewarding / fulfilling
- Energizing
- On-going
- Not frustrated
- Efficient / fun/ rewarding
- Scientifically sound
- Latest research / new ideas

Communalities

- Changing
- Knowledge base
- Learning styles

Discussion of AHC Project – Planning, Visioning, and Requirements:

Skills matching.

Performance-on-demand.

Lifestyle and professionalism training.

Business training.

Competency-

Entry level training
 Functional competency
 Maintain competency

Outcomes-

Clinical
 Interpersonal
 Language
 Measurable

Informed clinical decision making skills

Expectations of accessibility both physical and financial

Consumers want coordination between disciplines and collaboration of care givers.

UMinn should be a leader at AHC.

Manage the "oceans of information."

Gain experience with skills, judgment, process and the applying this to the real world.

Do community good with service and people oriented nurturing.

Expectations of experience to access world-class information resources.

Faculty must have the facilities for educational experience and support for new modalities and student types.

Gatekeeper role of the faculty to vet who can be a doc or nurse or?

Must be cost effective and provide value for the dollar.

Students need:

- Adaptable learning

- Challenges

- No BS

- Rewarding and fulfilling

- Energizing

Changing knowledge base in research and clinical environments must be translated to the classroom.

Diverse population and community (faculty, staff and students, and visitors, and?)

- Ethnic

- Disabilities

- Learning styles

- Educational background

- Etc

Need a global perspective along with the local politics

The project must create efficient, fun and rewarding experiences.

Public expectations-

Scientifically sound and solid learning environments

Curriculum change (tweaking) is daily for most faculty in the classroom.

Whole-scale change is every 15 years.

Distance education is critical to the remote programs. Be connected to the community.

Dual degree programs are a prime users of technology.

Balance the resources-to-student ratio across the AHC.

Use it to deliver educational content to many and keep contact. High tech and high touch.

Enhance the efficiency of delivery.

The AHC faculty are chiefly clinicians and researchers...NOT teachers. They do not know how to teach.

This works before but not now. Technology can allow these faculty to adjust and enhance their teaching. They will need academic professional staff to bring knowledge and teaching content skills to the content expert faculty.

Feeding new content through the technology. We must not segregate the tech-based teaching from the traditional teaching. They can be techno-phobic and faculty for the moment but it will have to change.

The role of the faculty is changing and students are driving the change. Faculty need support to continue to be content experts.

Research-

The University reward system favors the researcher. Teaching does and must continue to focus on the research lab and clinic for experience and teachable-moments. The faculty must have a mixed bag of teaching tools in their "quiver".

Will the faculty change from research-oriented to teaching-oriented?

It's reward system based, and revenue vs. expense based, and responsibility based. No one can under-value teaching, but it must be at least a zero-sum game. And it must be gotten right the first time, we cannot waste money on bad classrooms and support tools.

There is a business side of the academy.

Flexibility and Adaptability are key. The rooms and systems must be easily modified as needs will change and infrastructure will change. These are key renovation issues.

Good enough may be good enough. Perfect will not be possible.

We must "push" beyond what we know and do today. Go "outside the box" and provide just-in-time, not just-in-case educational experiences.

The spaces must be safe. They must feel secure and safe and easy to use.

The student experience, if it's not great they will not come back and give back.

Connection to the outside world is crucial. The schools rely on practice to educate mostly from external resources and part-time faculty. They must rely on the existing

professional community. Some connections like the hospital are not as open and warm as they should or could be.

Nursing needs specific training and they must teach good thinking skills and ability to allow the nurses to figure stuff out.

The graduate level of education must be supported too. They are educating future scientists.

Outreach to clinics, to the high schools for incoming students, and to older professional students.

Small group learning with student-to-student teaching has a 90% knowledge retention. Very impressive. Does it need to be facilitated directly by a faculty member or not? Research will need to be done.

What are the key drivers to AHC education?

- 1-Find and process knowledge as the context to learning.
- 2-Solve problems with high critical thinking skills.
- 3-Learn important skills and competencies.
- 4-Support self actuated learning.

Adapt to change easily.

The AHC classroom scheduling is being brought in-house to the planning office(?) Because of high utilization by AHC and a lack of recognition of the AHC unique requirements and users needs. A customizable solution is required. There is an on-going problem now with poor rooms not equipped correctly and/or in bad physical condition. One must overbook the room to be sure to have adequate space so rooms are inadequately used now. It has been a low priority up to now. A new or updated scheduling system is planned.

Classroom problems include HVAC, lighting, writing surface, limited network access, plumbing, and hardware.

Statewide Issues will impact classroom design and planning. The statewide bandwidth available is very limited. And an example of a problem area is the Rochester to Duluth network connection is of poor quality causing immediate concerns for existing programs. This infrastructure is a real-world problem.

The campus infrastructure is also an issue that needs to be addressed. The goal is to have the technology as a utility on campus as ubiquitous as the lights and heat. The wireless initiative is progressing with ever increasing availability, but security is being a concern. The campus is upgrading to a 100BaseT network architecture will help reduce any

problems. Connection to the Mayo Clinic is currently a problem due to limited bandwidth.

The on-going upkeep and maintenance of the classrooms is a critical concern. The funding and support budget must be a part of any request for classroom technology and hardware.

The infrastructure is updated only once every 10 years on campus so the pathways and conduit to support the classrooms are important too.

This project needs to support both the Vanguard Users (the early adopters) and the more "seasoned" faculty to fill a variety of student learning needs.

The Learning Spaces must have an intuitive user interface that is "faculty proof" and very easy to use for all. New users must feel comfortable and confident in using the technology. The technology must support the redefinition of the teacher-student roles. And the spaces must be reconfigurable for use in a wide variety of dramatically different ways, with multiple uses for each space. The vision is to borrow from Negroponte, Moving the Bits of Knowledge not the Atoms of the Physical World. And the spaces and technology must support the laggards, those who will not change. The learning environment should provide Focused Learning.

The classrooms should have all capabilities from the Stone Age to the Information Age. Chalk-to-virtual reality, a variety of technology tools.

They should be an incubator for educational research in the health professions, and experimental learning environment.

A faculty development, or Faculty Migration Program should be implemented to assist the faculty in the integration of appropriate technology into the academic program.

The ideaReserve concept of Technology Burden was introduced to the group. That is the idea that the technology is and will be a burden because of support and repair issues, both now and into the foreseeable future. The burden of the technology too often falls on the faculty and wastes the most precious resource of any learning institution, the classroom time or Teachable Moment. The burden should be engineered and designed to fall on the support staff and the technology to self.

Adaptable technologies and artificial intelligence should manage the technology systems and when possible the maintenance too. The staff should be free to assist with courseware design and production, the hardware upgrades, and assessment and research.

The learning spaces must be:

For the students:

1st Comfort-Nice chairs, proper HVAC

2nd Quality of finishes

3rd Ease of use

for the faculty:

1st Efficiency

2nd Ease of use

3rd Scope of Teaching Delivery

The AHC's content management system will allow the sharing of digital resources. WebCT as the management tool. Curriculum databases must be included.

The current trend is for learning to be less associated with a large institution and more to a just-in-time learning and skills based "knowledge web". This is a transition to instant gratification for learning needs. The classrooms and technology must support this model too.

The students do expect and will continue to expect a more media savvy educational experience. They see technology as a utility, a given, not something special or extraordinary.

Face-to-face "eyeball time" is critical to retaining learning. Small group interaction and "community" interaction, and technological capabilities that are not available anywhere else (like the dorm room or the home). Make the social aspect of learning and advanced tech be key motivators for students to come to AHC.

What will the clinical environment be like in 15 to 20 years?

More Home healthcare and point-of-service applications pushing healthcare to the patient.

Individual medical information, treatment, and monitoring with connection to the provider.

Healthcare systems and delivery within communities.

Location-based patients providing clear, multimedia, information and stats (visual, tactile, aural) to the provider.

More distance consultations and telehealth.

Digital asset management and HIPAA.

Clinical environment will change rapidly to even less patient time for fewer patients, with fewer "common" ailments in the hospital.

Health insurance companies will dictate even more the direction and efficiency of healthcare delivery. They will push economic drivers for less costly, more efficient, best practices pushed to the patient.

Professions must be prepared to "retool" on the fly. The clinicians will need to keep learning and improving their skills "on site" where ever they are at the time.

Education must change to meet this need with new efficient delivery methods, and new pedagogical models utilizing old and new technologies.

Notes from 7-25-03 morning meeting:

Classroom sizes expected:

95-165 seat – Large Group classrooms, more open less fixed and didactic.

60 seat

48 seat

1-20 seat – high quality, small group conferencing/breakout rooms, mediated.

Key Phrases:

Community Space

Equipment and Room Security

Identity to Education

Point-of-Need Learning

Show Piece Spaces

Learning Environment Types:

Traditional – Mediated “Legacy Classroom”

“Dinner Theater”

Lecture Hall - Mediated

Flat Floor – Mediated “Ballroom”

Flat Floor – Immersion Board™

Flat Floor – Immersion Classroom™

Case Study with related breakout rooms

Collaborative, mediated “round table”

Social, community space (commons)

Computer/Teaching labs

Computer Imaging Lab

Educational Development Shop – Content and Faculty Development

VR Skills Lab

Black Box Learning Environment

CAVERN, DOME™, GEOWALL™ Environment

Support space:

Offices

Master control

Server/Equipment Farm

Final Group Thoughts:

The Library is a critical component to be integrated as a partner in education and collaboration.

The Technology must be standardized and well as the supporting infrastructure.

We must push our vision for the future of education and the required tools.

Support incremental changes NOW to get where we need to be.

Design spaces to support traditional education but be adaptable to change to meet needs of tomorrow.

Next steps must be implemented, the need is great.

The existing rest rooms are awful, fix them

There are too many limitations given the current proposed spaces and locations. Open the thinking.

Tie this project to the Academic Leadership.

We need immediate "new thinking" about teaching, this is a common problem across the campus. There are common problems across the campus in the support of teaching.

APPENDIX DD – REQUIREMENTS FOR UNIVERSITY CLASSROOMS

1. General

1.1. The University of Minnesota uses a wide range of classroom facilities to meet the needs of its teaching and learning mission. General-purpose classrooms are centrally scheduled and managed, and are designed to serve the entire campus community. General-purpose classrooms (also referred to as central classrooms) include rooms that range from small seminar classrooms to large auditoria. They include a wide range of equipment, technology and resources. General-purpose classrooms are sufficiently flexible to meet pedagogical requirements of the many departments, faculty and students who use them.

1.2. In contrast, departmental classrooms serve more specialized needs of a smaller segment of the university. Examples of departmental classrooms are studios, labs, specialized or unique teaching facilities, and computer labs dedicated and optimized to the requirements of a particular department, discipline or program. Departmental classrooms are managed and scheduled by the respective departments.

1.3. University of Minnesota classrooms are intended to be of the highest quality. They provide an environment in which the instructors' and students' chosen teaching and learning methods are fully supported by the physical space and its technological appointments.

1.4. The Office of Classroom Management (OCM) is the central point of contact, and primary point of responsibility, for all general-purpose classrooms on the Twin Cities campus. This includes defining the requirements, specifications and FF&E of general-purpose classrooms, as well as the responsibility for operating, scheduling, and coordinating the maintenance in these classrooms.

1.5. OCM is a resource that is available during all phases of project design and construction regarding general-purpose classroom issues. Given the complexity of design issues in classrooms, coordination between the A/E and OCM during the design phase is encouraged. The primary contacts within OCM are the facilities coordinator for all facilities/FF&E, room layout and furnishing-related issues and Classroom Technical Services for audio-visual, technology, acoustic or technical matters.

1.6. The standards contained in this appendix are required for all Twin Cities general-purpose classrooms. They may be specified by cognizant university officials for other classrooms or other locations as appropriate.

2. Specifications

2.1. General-purpose classroom design definitions and requirements preface:

2.1.1. **Projection Capable Classroom:** A classroom that has data/video projection capabilities, Internet connectivity at the instructor's station, a VCR and/or other input device, a user-friendly laptop interface/control system, and capabilities for other add-on modular features. Projection-capable classrooms use standardized control/interface systems and employ a standardized operational protocol. All general-purpose classrooms must meet this minimum standard. Contact OCM for additional technical detail on Projection Capable Classroom standards.

2.1.2. **Seminar Room:** A teaching space for small section classes with a capacity of approximately 20 students. The level of technology necessary shall be confirmed with OCM on a by room basis.

2.1.3. **Case Study Room:** A tiered teaching space with a capacity of approximately 50 students that allows for interaction between instructors and students. Each student has a computer connection to access databases. The level of technology necessary shall be confirmed with OCM on a by room basis.

2.1.4. **Lecture Hall:** A tiered teaching space with a capacity of 100 students to approximately 250 students that is most suitable for traditional lectures, multi-media presentations, basic distance learning and demonstrations. The level of technology necessary shall be confirmed with OCM on a by room basis.

2.1.5. **Auditorium:** A tiered teaching space with a capacity that exceeds 250 students that is most suitable for traditional lectures, multi-media presentations, distance learning and demonstrations. The level of technology necessary shall be confirmed with OCM on a by room basis.

2.1.6. *To provide representative examples of classroom types, sections from the 1995 University of Minnesota Twin Cities Classroom Study are attached in the guidelines section of this Appendix, section 3.*

2.1.7. The teaching and learning environment in classrooms involve many elements. Considerations include, but are not limited to, acoustics, lighting, HVAC, furnishings and audiovisual systems. The following sections provide requirements in these areas for general-purpose classrooms, followed by guidelines on meeting these requirements.

2.2. General Requirements

2.2.1. All general-purpose classrooms shall meet the projection-capable classroom standard.

2.2.2. Classroom Signage

2.2.2.1. Place signs at all classroom doors with room numbers in accordance with Appendix F – Signing and Graphics Standards in this publication of the Standards and Procedures for Construction.

2.2.2.2. Signage at all room doors must clearly indicate the room to be a General Purpose Classroom with the room number. The signage also must meet code and ADA criteria.

2.2.2.3. Emergency signage must be placed in classrooms that indicates university policies and procedures.

2.2.2.4. Signage that indicates how to report problems within the classroom shall be placed in the instructor's area. Contact OCM for details.

2.2.2.5. When moveable seating is used, the capacity of the room shall be posted.

2.2.2.6. Control system cover plates such as lighting switches and projection screen switches shall be labeled or permanently etched clearly in 3/16-inch high lettering.

2.2.2.7. General-purpose classroom signage should be coordinated with OCM.

2.2.3. ADA Compliance (REFER TO UNIVERSAL DESIGN SECTION IN PROGRAM INFO./GENERAL REQUIREMENTS)

2.2.3.1. The principles of Universal Access establish desirable goals in classrooms.

2.2.3.2. New classrooms must be accessible and must meet ADA requirements.

2.2.3.3. Refurbished classrooms shall be brought up to as high a level of accessibility as reasonable.

2.2.4. Classroom Doors

2.2.4.1. PROHIBITED: Door transfer grills in new classrooms.

2.2.4.2. Door hardware must meet building code requirements and ADA accessibility criteria, and operate quietly. Include bumpers, gaskets and nylon bushings to muffle the noise of the doors closing. Ensure that minimal noise is transmitted from corridors into classrooms.

2.2.4.3. Classroom entrance doors shall have a small, tinted, glass observation window panel. Glass sidelights shall not be used.

2.2.5. Mechanical Systems in New Construction

2.2.5.1. All fixtures, including pipes, ducts and conduit, penetrating through walls, ceilings, and floors shall be resiliently caulked at the penetration point.

2.2.5.2. Classroom HVAC ductwork shall not be installed in noisy areas. Careful design shall be employed to reduce exterior noise from entering the room.

2.2.5.3. Classrooms shall have HVAC systems with temperature and humidity control that is sufficient to function year-round without the need for through-window ventilation.

2.2.5.4. Mechanical system design and installation must provide space for classroom technology components that may require space above finished ceilings. Examples include projection screen troughs, projector mounts and conduit.

2.2.5.5. Equipment mounted adjacent to a classroom (either horizontally or vertically) shall be isolated from vibration. Consider that transmitted noise shall be kept at a low frequency when installing mechanical components near classrooms.

2.2.5.6. There shall be no air ducts (diffusers) or intakes close to projection screens.

2.2.5.7. HVAC systems shall be designed so there is minimal need to access the systems via the classrooms for maintenance purposes.

2.2.5.8. The HVAC system that serves classrooms shall operate independently of other system(s) that serve other functions within the same building. Refer to Division 15 – Mechanical for more information.

2.2.5.9. Systems serving classrooms shall be tied to a university central monitoring system. Room occupants shall not be able to

adjust environmental controls in the rooms. Refer to Division 15 – Mechanical for more information.

2.2.5.10. Refer to Appendix DD, Section 6 – Documentation regarding coordination of classroom design documentation.

2.2.6. Mechanical Systems in Renovation

2.2.6.1. All fixtures, including pipes, ducts and conduit, penetrating through walls, ceilings and floors shall be resiliently caulked at the penetration point.

2.2.6.2. For renovation, mechanical systems also shall be considered based on the specifications cited in Section 2.2.5. – Mechanical Systems in New Construction. Systems shall be improved as much as reasonably possible and in accordance with the project scope (that is, full building rehab vs. single room renovation).

2.3. Acoustical Requirements

2.3.1. The acoustics in a classroom can effect how well the listeners can understand verbal communication. Factors include the speaker's voice and the background noise and reverberation time in the room.

2.3.2. Architectural design can greatly effect reverberation time and background noise. A critical goal in the design of any room is to keep noise outside of the building from being audible inside of the classroom. Noise from passing vehicles, as well as internal building (HVAC) and hallway noise, can significantly detract from the learning experience and must be addressed in design.

2.3.3. Room wall and ceiling treatments can greatly reduce the reverberation time in a classroom. This is another critical factor in improving intelligibility in the classroom and must be addressed in design.

2.3.4. Also refer to Section 2.8. – FF&E Requirements.

2.3.5. Minimum acoustical requirements for classrooms are:

2.3.5.1. NC Ratings

- A. General Classrooms: NC 35 or less
- B. Auditorium/Lecture Hall: NC 25 or less
- C. Studio/Distance ED Room: NC 20 or less

2.3.5.2. Acceptable Reverberation Time

- A. Classroom: RT60 of 0.4 seconds or less
- B. Small Auditoriums: RT60 of 0.8 seconds or less
- C. Large Auditoriums: RT60 of 1.5 seconds or less

2.3.5.3. HVAC: Diffusers must have a rating of 10dB lower than the room NC rating at rated flow. Refer to Section 2.2.5 – Mechanical Systems in New Construction.

2.3.6. Commissioning/Compliance Testing: Refer to Section 5 – Testing Procedures.

2.4. Lighting Requirements

(REFER TO DIVISION 16, SECTION 16500)

2.4.1. Illumination Level Standards

2.4.1.1. Overall even illumination of 60 foot-candles is required. ± 15 is acceptable. Even illumination is defined as ± 10 foot-candles from mean.

2.4.1.2. Minimum note-taking illumination of 5 foot-candles is required. +10 is acceptable. Dimming systems or switching individual lighting tubes in a fixture on/off is acceptable to meet specified illumination levels.

2.4.2. Glare in the field of view of the presentation surfaces shall be a contrast ratio of 3:1 or less.

2.4.3. General classrooms shall have two lighting zones:

- A. Zone 1: The presentation (instructor's) area of the room
- B. Zone 2: The student area of the room. (There may be additional student area zones in large classrooms.)

2.4.4. Auditorium/large classrooms shall have four control lighting zones and variable illumination levels.

- A. Zone 1: The presentation (instructor's) area of the room
- B. Zone 2: The student area of the room. (A large room/auditorium may require multiple student area zones and may require different illumination levels).
- C. Zone 3: Instructor spotlights for seeing the instructor while showing slides.

D. Zone 4: Signer illumination (sufficient lighting from presentation writing surface light for a sign language interpreter, from front lighting zone or from a separate spotlight)

2.4.5. Presentation Writing Surface (Markerboard)

2.4.5.1. The markerboard shall be illuminated to 75 foot-candles. Lighting shall be distributed uniformly across the entire writing surface.

2.4.5.2. Installation and selection of board lighting shall ensure that the lamps in the fixtures will not be directly visible from the student seating area. In addition, if the projection screen lowers below the presentation surface lighting fixtures, that section of the lighting system directly behind the projection screen(s) shall be separately controlled.

2.4.5.3. Presentation lighting fixtures shall not directly be in contact with or interfere with the movement of the projection screen(s).

2.4.5.4. Refer to Section 5.4. – Glare Contrast Measurement.

2.4.6. Lighting Controls

2.4.6.1. Locations

2.4.6.1.1. Basic classroom lighting controls shall be placed at all entrances in new construction.

2.4.6.1.2. Provide emergency lighting as required by code.

2.4.6.1.3. Controls for the presentation writing surface lighting must be placed on both sides of the front wall.

2.4.6.1.4. For new construction, lighting controls for the presentation writing surface shall be configured to allow the projection screen and accessible writing surface to be used simultaneously. That is, the lights over the writing surface shall be controlled in separate sections to provide illumination of a portion of the presentation writing surface while a projection screen is in use.

2.4.6.2. Commissioning/Compliance Testing: Refer to Section 5 – Testing Procedures.

2.5. Classroom Dimensional Requirements

2.5.1. Obstructions: There shall be no sight-line obstructions (columns or posts) anywhere in classrooms.

2.5.2. Ceiling Height

Ceiling height for a given square foot of space

Square feet	Ceiling height at front of classroom
Up to 749	11 feet
750 to 999	12 feet
1,000 to 1,599	14 feet
1,600 to 2,800	16 feet

2.5.2.1. New classroom ceilings shall be configured to a minimum 11-foot clearance at the front of the room.

2.5.2.2. The sightline from the Most Distant Viewer (MDV) to the top of the projection screen shall not be obstructed.

2.5.2.3. Classroom ceilings may be reduced in height to a minimum of 10 feet outside the front or room area as long as they do not violate the previous sightline requirement as stated in 2.4.2.2. That is, classroom ceilings may be designed to accommodate classroom height requirements in the front of the classroom and stepped or reduced in height to the 10-foot minimum as required elsewhere in the room.

2.5.2.4. Beyond these minimum design requirements, ceiling height requirements will vary depending on room design and dimensions. Refer to Section 2.7.3. – Projection Screen(s) for more information.

2.5.3. Viewing Based Seating Location Guidelines

2.5.3.1. Based upon screen width (W), the minimum distance from the screen to the first row shall be $.5W$.

2.5.3.2. If lines are drawn out at 45 degrees from the outer edges of the screen (width W), they intersect at a distance of $.5W$ from the center of the screen. These lines continue to diverge and form a cone that consists of optimum viewing positions with a minimal amount of optical distortion. Seating outside of this cone is not desirable. Compromise between the ideal cone of vision and

necessary seating capacity may be required in some circumstances. Contact OCM for clarification on a room-by-room basis.

2.5.3.3. Based upon screen height (H), the distance from the farthest screen edge to the most distant viewer (MDV) should be no more than 8H maximum, 6H preferred.

2.6. Networking and Telecommunications

2.6.1. A telephone shall be installed in the presentation area of the classroom. When a classroom includes a booth, the booth shall also have a telephone.

2.6.2. Telephones shall be wall-mounted in accordance with building codes and ADA requirements.

2.6.3. Classrooms shall have a minimum of four data connections in a single-gang box located in coordination with the A/V system requirements that OCM outlines. When the classroom has a booth, the booth shall have a minimum of two data connections. If a storage room exists within the classroom space, it shall have a minimum of two data connections.

2.6.4. Refer to Section 6 – Documentation for more information.

2.7. Audio Visual System Requirements

2.7.1. Teaching/Control Instructor Station

2.7.1.1. The projection-capable classroom standards specify a Teaching/Control Instructor Station with a 6-inch by 6-inch wallbox that sits alongside the single gang box as described in item 2.6.3. The wallbox shall have a minimum conduit size of 1 ¼ inches to the ceiling projector for signal and control cables. Provide one duplex receptacle that is mounted at the receptacle height and adjacent to the 6-inch by 6-inch wallbox.

2.7.1.2. Said wallbox shall be located in the teaching area on the floor, front or sidewall, at the standard receptacle height above the floor (if wall located), for connection of the umbilical cable to the Instructor Station. Confirm exact location with OCM.

2.7.1.3. Refer to Section 6 – Documentation.

2.7.2. Video/Data Projector(s)

2.7.2.1. The projection-capable classroom standards specify that a ceiling-mounted video/data projector be located on the centerline of the screen. Two exceptions: when special design criteria specify more than one projector or a booth-mounted location is specified.

2.7.2.2. Projector-mount to structure shall consist of two uni-strut rails, 8 inches on center, approximately 4 inches long and perpendicular to the screen.

2.7.2.3. The center of said assembly shall be located approximately 2.7 times the projected video image height from the screen. Confirm exact location with OCM.

2.7.2.4. A 20-amp duplex outlet is needed at the support for the projector-mounting bracket structural ceiling. The outlet shall be co-located and not switched. It also shall be on the same circuit or, at a minimum, the same phase as the instructor station and termination of conduit.

2.7.2.5. Also refer to the section regarding integration of technology and mechanical systems.

2.7.2.6. Coordinate where the projector shall be placed with OCM.

2.7.3. Projection Screen(s)

Room screen size table

Ceiling height	Video height	Screen size	
8 feet	4 feet	52 inch by 92 inch	Manual
10 feet	5 feet	7 feet by 9 feet	Manual
11 feet	6 feet	9 feet by 10 feet	Electric
12 feet	7 feet	9 feet by 12 feet	Electric
13 feet	8 feet	10 ½ feet by 14 feet	Electric
14 feet	9 feet	12 feet by 16 feet	Electric
15 feet	10 feet	13 ½ feet by 18 feet	Electric
16 feet	11 feet	15 feet by 20 feet	Electric

***Note:** Screen limits shall be used to set actual screen height.

2.7.3.1. Screen dimensions shall be organized around a 16 x 9 ratio criteria.

2.7.3.2. Screen sizes 10 feet and larger shall be electrically operated.

2.7.3.3. Screen controls shall be located at switch height next to the lighting controls.

2.7.3.4. For remodeling work, raise the finished ceiling height as high as possible to accommodate screen requirements.

2.7.3.5. In classrooms with high ceilings, it may be desirable to use the wall above the presentation writing surface for the screen surface. This option eliminates the necessity of raising and lowering the screen, the complex control system and the cost of an electric projection screen.

2.7.3.6. As a general guideline, 35 degrees to the top of the projection screen from the seated student viewpoint shall determine the location of the first row of student seats. This grade shall avoid excessively high and uncomfortable viewing angles.

2.7.3.7. Install/maintain mechanical systems (ducts and piping) along sidewalls, so the front central area of classrooms with screens may be constructed as high as possible.

2.7.3.8. Coordinate with OCM on where projection screens shall be placed.

2.8. FF&E Requirements

2.8.1. FF&E items shall be reviewed with OCM beginning in pre-design and following through all design phases of a project.

2.8.2. Classroom Furniture

2.8.2.1. Moveable Seating

A. Tablet-arm chair tablet arms shall have a minimum writing surface area of 144 square inches.

B. Ten percent of tablet-arm chairs in a classroom shall be left-handed. Coverings and finishes must meet current OCM durability and maintainability criteria.

2.8.2.2. Fixed Seating (Drop Arm Auditorium)

2.8.2.2.1. Fixed seating tablet arms shall have a minimum writing surface area of 130 square inches.

2.8.2.2.2. Ten percent of tablet arms shall be configured left-handed. The arms shall be arranged along the left side of the aisle as viewed from the presentation area.

2.8.2.2.3. One percent or at least one of the aisle seating shall be configured with a moveable armrest on the aisle side for accessibility.

2.8.2.2.4. Coverings and finishes must meet current OCM durability and maintainability criteria.

2.8.2.3. Instructor Seating

2.8.2.3.1. There shall be a chair of appropriate height available at the teaching/control instructor station for the instructor.

2.8.2.3.2. The instructor's seating shall be coordinated with the other room furniture regarding finish detail.

2.8.2.4. Tables

2.8.2.4.1. PROHIBITED: Attached or swivel-mount seating in conjunction with fixed tables for new construction.

2.8.2.4.2. Table finish details shall meet the durability and maintainability criteria that OCM uses. Coordinate the table type and arrangement with OCM.

2.8.2.4.3. A table in the presentation area shall be provided for the instructor. The table shall match the finish of the student table/tablet arm writing surface in the classroom. The dimensions of the instructor's table shall be proportional to the available space in the front of the room, but no smaller than 30 inches by 48 inches.

2.8.2.4.4. Moveable student tables shall provide a minimum width of 26 inches per student without interfering with table legs or supports.

2.8.2.4.5. Moveable student tables shall provide a minimum depth of 20 inches.

2.8.2.4.6. Classroom layouts that are designed for moveable student tables may also be designed and installed with a power infrastructure. This additional infrastructure supports multiple layouts if required, and provides the most

flexibility on how the tables are used. Coordinate such layout with OCM.

2.8.2.4.7. Linear continuous fixed student tables shall have a minimum width of 26 inches per student without interfering with table legs or supports.

2.8.2.4.8. Linear continuous fixed student tables shall have a minimum depth of 18 inches.

2.8.2.4.9. Depending upon specific requirements, moveable tables or linear fixed continuous tables may have power capability specified at student stations.

2.8.2.5. Presentation Writing Surfaces

2.8.2.5.1. Markerboards shall be installed across as much of the front (instructor's) wall as possible.

2.8.2.5.2. Additional markerboards may be required on secondary classroom surfaces. Consult with OCM regarding room requirements.

2.8.2.5.3. Markerboards shall be mounted 36 inches above the finished floor.

2.8.2.5.4. Markerboards shall be a minimum of 4 feet high.

2.8.2.5.5. Markerboards shall have trays that run the full length of the markerboards.

2.8.2.5.6. Markerboards shall have non-removable map hooks placed at the top of the boards.

2.8.2.5.7. Markerboard seams shall be flush.

2.8.2.5.8. Refer to lighting requirements of markerboards in this appendix.

2.8.2.5.9. All classroom presentation writing surfaces shall have useable space for the markerboard while the primary projection system is in use.

2.8.2.5.10. A cleaning supply dispenser system shall be mounted near one end of each markerboard.

2.8.2.5.11. Markerboards shall be securely fastened/ mounted on a wall (not freestanding). Large classrooms shall be designed for multi-sectional (side-to-side) markerboards. Such markerboards shall have many horizontal or vertical panels in each section to provide more space for writing.

2.8.2.6. Surfaces for Displays and Conducive for Tacks

2.8.2.6.1. A tack strip shall be placed above the markerboard that runs the full length of the board.

2.8.2.6.2. A tackboard shall be attached at the doorway outside of each classroom so changes in room schedules can be posted.

2.8.2.6.3. Some classrooms may be required to have a mounted tackboard. Consult with OCM regarding such requirements.

2.8.2.7. Finishes Specification for New Construction

2.8.2.7.1. Walls

2.8.2.7.1.1. A chair rail shall be installed on side and rear walls whenever moveable furniture may contact a wall surface.

2.8.2.7.1.2. Wall surfaces shall be washable.

2.8.2.7.1.3. The lower wall surface shall be extremely durable with an epoxy finish, abuse-resistant panels and so on.

2.8.2.7.1.4. Chose finishes for classroom walls that complement the acoustical characteristics of the room. For example, concrete masonry may be used, but may need to be covered by another material for acoustical reasons.

2.8.2.7.1.5. Teaching wall material around the markerboard shall be non-reflective, durable, washable, and resistant to stains from dry erase marker residue.

2.8.2.7.1.6. Sheet rock (drywall) seams fully taped and caulked to floors.

2.8.2.7.1.7. Internal classroom walls shall run deck-to-deck, with a sound transmission class (STC) rating of 50 or better.

2.8.2.7.1.8. Resilient caulking shall be used for all penetrations.

2.8.2.7.1.9. The front wall of the classroom shall have no protrusions into the room, so a presentation surface may run across the entire wall.

2.9. Ceilings

2.9.1. Ceiling finishes shall be of light color and non-reflective.

2.9.2. Ceiling noise reduction coefficient (NRC) shall be .75 or better.

2.9.3. Ceiling attenuation class (CAC) shall be 39 or better.

2.9.4. Ceiling tile shall be sag (humidity) resistant.

2.10. Flooring

2.10.1. Flooring shall comply with the current edition of the Standards and Procedures for Construction, Appendix M – Carpet Specification Guide.

2.10.2. Provide samples to OCM prior to installation.

2.10.3. Floor coverings shall be of medium to light color, and contain some form of subdued pattern or fleck.

2.10.4. Coordinate color selection with OCM.

2.10.5. Choose flooring that complements the acoustical characteristics of the room.

2.11. Windows and Window Treatments

2.11.1. No windows shall be allowed on front (presentation) walls.

2.11.2. Windows shall have an STC rating sufficient to reduce exterior environmental noise levels to meet classroom acoustical standards.

2.11.3. Window treatments, and electrical or mechanical methods that eliminate light from entering the classroom are required in order for projection images to be visible.

2.11.4. Window treatments (shades/blinds) shall be opaque and capable of ENTIRELY eliminating outside light from entering.

2.11.5. A combination of shades and blinds shall be used in new construction.

2.11.6. Shades shall be installed in channels to eliminate light from entering through the sides.

2.11.7. Roller shades shall be of clutch type, chain-operated, and have stops set at the full range of motion (top and bottom).

2.11.8. Specify that the roller shade material be fire-retardant, vinyl-coated fiberglass.

2.12. Miscellaneous

2.12.1. A clock shall be placed on a wall in each classroom (other than the front wall).

2.12.2. The clock shall be self-correcting for accuracy. If DC-powered, the battery shall have an extended (multi-year) life expectancy.

2.12.3. Pencil sharpeners shall be mounted in all classrooms. Larger classrooms shall have multiple sharpeners.

3. Design Guidelines

3.1. General

3.1.1. The success with which a student may receive information from an instructor or can effectively participate in classroom activities will be effected by general factors of classroom design. Site planning and overall building spatial relationships set the stage for development of effective teaching and learning environments.

3.1.2. When determining where to locate a general-purpose classroom in a building, the lower floors are preferred for two reasons. One, students can access it easier, and two, it minimizes disruption from spaces in buildings that are used for multiple functions.

3.1.3. Take into account the location of classrooms when designing entrances, exits, stairs, corridors and exterior approaches. In considering the flow of classroom traffic, account for the students, who generally arrive and depart simultaneously. Therefore, design the classrooms to twice the stated room capacity. If possible, locate large classrooms close to building access points to reduce the flow of traffic, as well as the cost of building design.

3.1.4. If possible, classrooms shall be separated from external and internal sources of noise such as loading docks, parking lots, streets, mechanical and equipment rooms, vending areas, elevators and dining facilities.

3.1.5. Classrooms designed with windows that face south or west shall require a higher degree of blackout capability than classrooms that face north or east.

3.1.6. Classroom doors shall operate quietly and tightly seal out sound when fully closed. They should be installed in the rear or the side of a classroom so the instructor is not disrupted if used while class is in session. It is recommended that doors be equipped with shatter-resistant vision panels to prevent someone from getting injured if opened unexpectedly.

3.1.7. Provide a directory at each entrance to a building that identifies where classrooms are located. This step will ease the heavy flow of traffic to and from classrooms. Also, appropriately place building signage where students can clearly identify and locate classrooms.

3.2. Classroom Design Examples

3.2.1. In the following section, various representative classroom types are described. These are updated descriptions that were contained in the 1995 University of Minnesota Classroom Study. They are provided as representative of some classroom types, and can be used as guidelines to augment the standards section of this document.

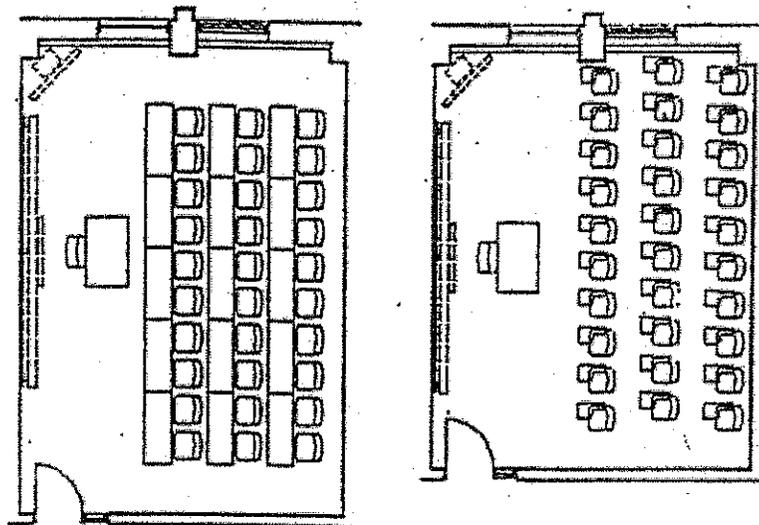
3.2.2. The following factors influence the design of general-purpose classrooms:

- A. The intentional purpose and mission of the individual classroom
- B. Physical dimensions (including room length, width, proportions and ceiling height)
- C. Room characteristics (such as windows, proximity to exterior or interior noise, impact of building structure and lighting)
- D. Furnishings (including type, density, flexibility, mobility, durability, comfort, maintainability and student desktop needs)

- E. Pedagogy (including the type of teaching methodology to be supported)
- F. Technology (including the type, degree of sophistication, power and cooling requirements, future expandability and changing formats)
- G. Space requirements (including square feet per student station, instructor area, available space vs. classroom capacity)
- H. Specific equipment placement parameters (including the location of the projector and screen, student sight line and sight angle requirements, equipment maintenance and security)
- I. Writing surfaces (including markerboard usability, readability, and maintainability)
- J. Acoustics (including room properties and the effects of HVAC and mechanical systems)
- K. Accessibility (including room and its approaches, furnishings and equipment, student and instructor considerations)
- L. Ease of use (including room layout, technology, furnishings, operation of lights and basic controls)

3.2.3. These standards and guidelines can not specify all parameters that apply to all possible classroom scenarios. However, they do provide the basis of general-purpose classroom requirements. It is essential that the A/E and OCM collaborate on the specific classroom needs, issues and solutions sufficiently early in the design process to achieve a favorable outcome of the project in each classroom. The objective is to design and build classrooms that meet the teaching needs of instructors and the learning needs of students.

3.3. Classrooms with Approximately 30 Students



3.3.1. Use: This type of room typically is used for small section classes. It is very flexible to allow for many types of classes, including small section lectures, recitation sections and participatory seminars. Tablet-arm chairs often are used because the students can easily move them around for various purposes. If more desk layout space is needed for students, a table arrangement shall be used. The table arrangement will require some additional room area and should be considered early in the design process. Provide wheelchair access and seating for students and instructors in all general-purpose classrooms. Install ADA-compliant signage at every door to a classroom that clearly indicates that it is a general-purpose classroom (with room number).

3.3.2. Room Size: Area: Approximately 500 square feet for tablet-arm chairs and 575 square feet for tables with chairs (must meet building code requirements).

3.3.3. Proportions: Length equals width. Close-to-square proportion achieves a good balance of sightlines and distance to the back row. A level floor with movable tables allows for a flexible layout at a slight compromise to sightlines. The minimum height for the front of this room is 11 feet.

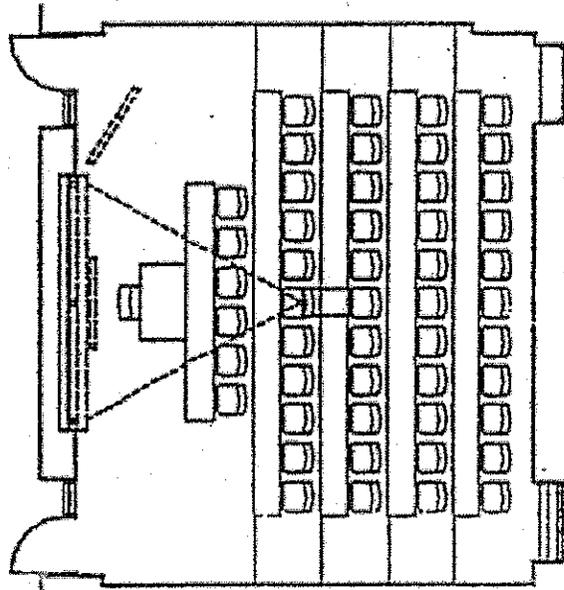
3.3.4. Elements Needed: Furniture: Movable tablet-arm chairs are typical and provide the greatest flexibility. Movable tables with chairs shall be provided if students need more layout space. Provide some wheelchair-height tables. Provide 10 percent left-handed tablet-arm chairs. Provide a movable 30-inch by 48-inch desk with chair for the instructor.

3.3.5. A/V and Information Technology: Must meet projection-capable classroom criteria. Additional technology requirements may apply. Flexibility and ability to accommodate growth in technology in the future, particularly in terms of networking is an important part of room design. Room design must accommodate for increased use of wireless technology.

3.3.6. Considerations: Acoustics: Design room acoustics for optimal speech intelligibility.

3.3.7. Future: Flexibility and potential growth for technology are important design elements. Provide recessed floor boxes in several locations around the room to accommodate computer connections in the future.

3.4. Classrooms with Approximately 50 Students



3.4.1. Use: This type of room is most suitable for traditional lectures, A/V presentations and demonstrations. A level floor provides more flexibility for layout, but a tiered floor may be preferable because of sightlines to displays. Provide wheelchair access and seating for students and instructors in all general-purpose classrooms. Install ADA-compliant signage at every door to a classroom that clearly indicates that it is a general-purpose classroom (with room number). A/V equipment shall be ceiling-mounted and/or wall-mounted.

3.4.2. Room Size: Area: Approximately 750 square feet. At a minimum, the room size must meet building code requirements for square footage per occupant.

3.4.3. Proportions: Length equals width. Approximately square proportions achieve a good balance of sightlines and distance to the back row. A tiered floor with rows of fixed tables provides the best sight lines to the instructor for the students. A level floor with movable tables provides more flexibility in layout at a slight compromise to sightlines. Moveable furniture is increasingly important for instructors' desiring flexibility in teaching pedagogy. The minimum height for the front of this room is 12 feet. The height may need to be increased to 13 feet if a tiered floor is used. Code requirements may specify two doors for occupancy above a 49-person capacity.

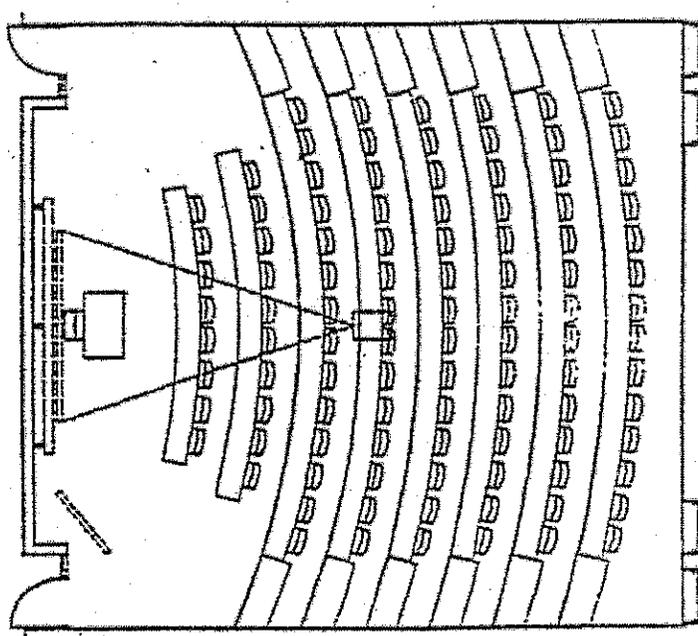
3.4.4. Elements Needed: Furniture: For a tiered room, provide fixed continuous tables and moveable chairs. For a level floor, movable tables with chairs are needed. Provide tables that are the right height for wheelchairs in the front rows. Include a movable 30-inch by 48-inch desk with a chair for the instructor.

3.4.5. A/V and Information Technology: Must meet projection-capable classroom criteria. Additional technology requirements may apply. Flexibility and ability to accommodate growth in technology in the future, particularly in terms of networking is an important part of room design. The room design must accommodate for increased use of wireless technology.

3.4.6. Considerations: Acoustics: Design room acoustics for optimal speech intelligibility. Consider sound reinforcement as an option.

3.4.7. Future: Flexibility and potential for growth in technology are important design elements. Provide recessed floor boxes in several locations around the room for power connections in the future.

3.5. Lecture Hall Classrooms with Approximately 100 Students



3.5.1. Use: This type of room is most suitable for traditional lectures, A/V presentations, basic distance learning and demonstrations. Typically, a sloped floor or tiered floor is required to achieve good sight lines for all seats. Provide wheelchair access and seating for students and instructors in

all general-purpose classrooms. Install ADA-compliant signage at every door to a classroom that clearly indicates that it is a general-purpose classroom (with room number). A/V equipment shall be ceiling-mounted and wall-mounted.

3.5.2. Room Size: Area: Approximately 1,600 square feet. At a minimum, room size must meet building code requirements for square footage per occupant.

3.5.3. Proportions: Length equals width. All seats shall be designed to fall within a 90-degree cone of optimal vision. The slope shall be designed to achieve optimal viewing angles to the board surface and AU/V display units. The minimum height for the front of this room is 16 feet. The height may need to be greater to accommodate for the steeper slope in the floor.

3.5.4. Elements Needed: Furniture

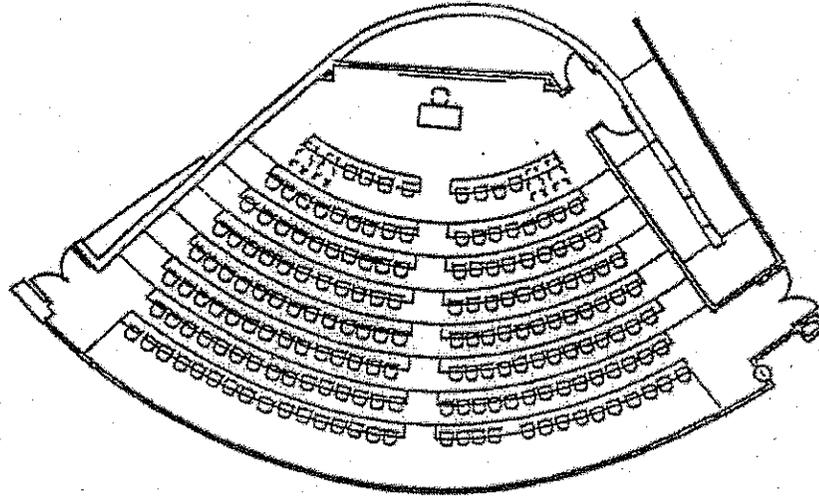
- A. Fixed tables and moveable chairs for student seating
- B. Movable tables and chairs for front rows
- C. Tables that are the right height for wheelchairs in front rows
- D. Movable 30-inch by 48-inch desk with a chair for the instructor

3.5.5. A/V and Information Technology: Must meet projection-capable classroom criteria. Additional technology requirements may apply. Flexibility and ability to accommodate growth in technology in the future, particularly in terms of networking is an important part of room design. Room design must accommodate for increased use of wireless technology.

3.5.6. Considerations: Acoustics: Design room acoustics for optimal speech intelligibility. Sound reinforcement is strongly recommended.

3.5.7. Future: Flexibility and potential growth for technology are important design elements. Provide recessed floor boxes in several locations around the room for power connections in the future.

3.6. Lecture Hall Classrooms with Approximately 175 Students



3.6.1. Use: This type of room is most suitable for traditional lectures, A/V presentations, basic distance learning and demonstrations. Typically, a sloped floor or tiered floor is required to achieve good sight lines for all seats. Provide wheelchair access and seating for students and instructors in all general-purpose classrooms. Install ADA-compliant signage at every door to a classroom that clearly indicates that it is a general-purpose classroom (with room number). A/V equipment shall be ceiling-mounted and wall-mounted.

3.6.2. Room Size: Area: Approximately 2,800 square feet. At a minimum, room size must meet building code requirements for square footage per occupant.

3.6.3. Proportions: Length equals width. All seats shall fall within a 90-degree cone of optimal vision. Tier slope shall be designed to achieve optimal viewing angles to board surface and NV display units. The minimum height for the front of this room is 18 feet. The height may need to be greater to accommodate for a steeper slope in the floor.

3.6.4. Elements needed: Furniture:

- A. Fixed tables and moveable chairs for student seating
- B. Movable tables and chairs in front rows
- C. Tables that are the right height for wheelchairs in front rows
- D. A movable 30-inch by 48-inch desk with a chair for the instructor

3.6.5. A/V and Information Technology: Must meet projection-capable classroom criteria. Additional technology requirements may apply. Flexibility and ability to accommodate growth in technology in the future, particularly in terms of networking is an important part of room design. Room design must accommodate for increased use of wireless technology.

3.6.6. Considerations: Acoustics: Design room acoustics for optimal speech intelligibility. Sound reinforcement is required.

3.6.7. Future: Flexibility and potential growth for technology are important design elements. Provide recessed floor boxes in several locations around the room for power connections in the future.

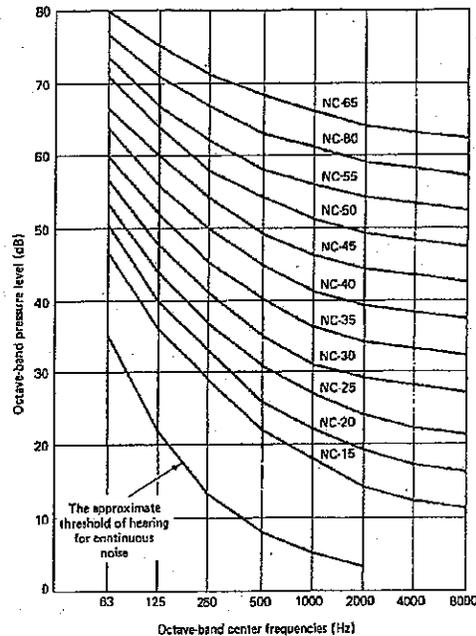
4. References: The Office of Classroom Management, University of Minnesota Web site: www.classroom.umn.edu

5. Testing Procedures

5.1. Acoustical Standard Testing Procedures

5.1.1. Noise Criteria (NC)

5.1.1.1. A reference level based on a chart of frequency vs. sound pressure (dB) curves that displays sound levels perceived by the human ear as equal in magnitude. The highest NC curve touched by a plot is the sound NC level. NC curves apply to sound pressure levels in an occupied space, not equipment sound power levels.



5.1.1.2. Conditions: Windows and doors closed, with the HVAC on in the room and minimal external noise from adjacent locations.

5.1.1.3. Acquire Data: With microphone at 48 inches, AFF located in middle of the instructor location area at the front of the room.

5.1.1.4. Standard: NC of 35 or less for classrooms. A NC of 25 or less for auditoriums.

5.1.2. Reverb Time (RT60):

5.1.2.1. Reverberation time is the time required for the sound level in the room to decay 60 dB. In other words, it is the time needed for a loud sound to be inaudible after turning off the sound source.

5.1.2.1. Conditions: Windows and doors closed, with the HVAC on in the room and minimal external noise from adjacent locations.

5.1.2.2. Acquire Data: With microphone at 48 inches, AFF located in middle of the instructor area at the front of the room.

5.1.2.3. Standard: RT60 of 0.40 seconds or less for standard classrooms, RT60 of 0.80 for small auditoriums (100 to 200 seats) and RT60 of 1.50 seconds for large auditoriums (more than 200 seats).

5.1.2.4. Equipment: TerraSonde Audio toolbox or equivalent.

5.2. Lighting Standard Testing Procedures

5.2.1. Work Surface Lighting Levels: The level of light in foot-candles on the working surfaces of the room.

5.2.2. Conditions: Lights on at full capacity. Room shades and blinds closed.

5.2.3. Acquiring Data: Dividing the floor area up into a 3 by 3 grid pattern evenly dispersed across the student seating area. Measure levels at table height of 30 inches AFF.

Front of room looking down

1	2	3
4	5	6
7	8	9

5.2.4. Standards

5.2.4.1. 60 foot-candles is required. ± 15 is acceptable. All readings shall be mean averaged and noted.

5.2.4.2. Even lighting is defined as ± 10 foot-candles from mean. Deviation within a space is in excess of 10 foot-candles. Shall be noted.

5.2.5. Equipment: Minolta T-10 or equivalent

5.3. Reduced Note-taking Light

5.3.1. Conditions: Lights on at low volume. Room shades and blinds closed.

5.3.2. Acquiring Data: Dividing the floor area up into a 3 by 3 grid pattern evenly dispersed across the student seating area. Measure levels at table height of 30 inches AFF.

5.3.3. Standards: Five foot-candles is required. + 10 is acceptable. All readings shall be mean averaged and noted.

5.3.4. Equipment: Minolta T-10 or equivalent

5.4. Glare Contrast Measurement

5.4.1. Glare is defined as any brightness in the field of vision that causes discomfort, reduction in vision or eye fatigue. Glare is the result of excess light that is in the normal line of sight in the work area. Excess light can be emitted directly from the fixture, or be reflected from a glossy surface.

5.4.2. There can be actual intensity levels exceeding 1:250 within the space, but the ratio of highest intensity to that of background intensity is more crucial in determining glare conditions. A ratio of 2:1 or greater between the peak and the median begins to feel uncomfortable. Any ratio of 3:1 or greater positively produces a sensation of discomfort and should be avoided.

5.4.3. Conditions: Lights on at full capacity. Room shades and blinds closed.

5.4.4. Acquiring Data: Dividing the students field of view up into a 5 by 2 grid pattern evenly dispersed across the field of view from the middle of the student seating area acquire data and note. Then looking at the brightest point in the field of view and note as the peak reading.

Looking at front presentation area

1	2	3	4	5
6	7	8	9	10

5.4.5. Standards: A contrast ratio of 3:1 or less is acceptable. Average the light level in the field of view and note. Give the ratio to the peak measurement.

5.4.5. Equipment: Minolta LS-100 or equivalent

6. Documentation

6.1. During design of general-purpose classrooms, the A/E or design consultant shall provide drawings for OCM to review at each stage of the design review process. These plans may be scale drawings or an electronic CAD file. Classroom layouts shall include detail sufficient to ensure compliance with OCM design specifications. The drawings shall be separate documents that are prepared with furniture and A/V consultants. Coordinate the drawings with the electrical contract documents to indicate conduit runs, the selection and placement of junction and floor boxes, lighting and power.

6.2. Maintenance, care, and repair documentation shall be included for FF&E installations provided by a project. These covered items would include, but not be limited to, furniture, presentation writing surfaces, flooring and wall finishes.

6.3. Lifecycle and projected maintenance cost estimates for FF&E items above shall be provided.

**End of Appendix DD – Requirements for University Classrooms
University of Minnesota Facilities Management
November 2002**