MASTER PLAN

DAVID ECCLES SCHOOL OF BUSINESS

UNIVERSITY OF UTAH

Prepared for:
University of Utah Facilities Planning and
Campus Design and Construction
David Eccles School of Business

Project Number:
074-10739

April 2000

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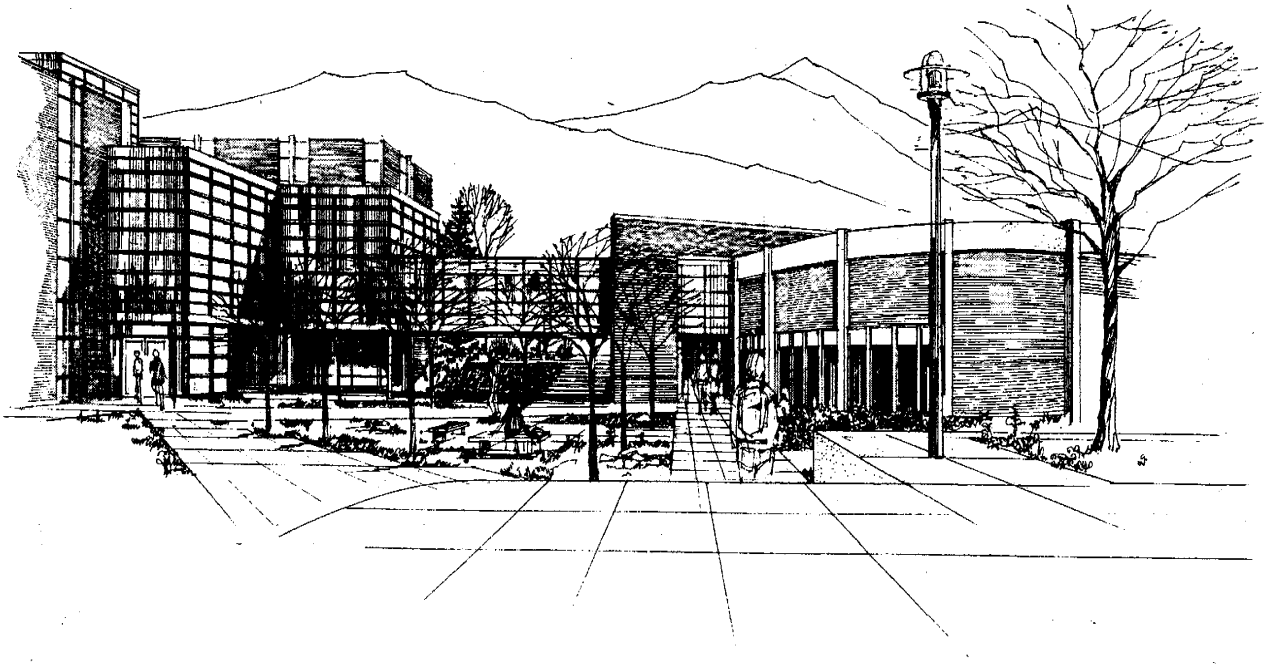

Master Plan Document
David Eccles School of Business
University of Utah

April 2000
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This Master Plan Document was prepared jointly by the David Eccles School of Business, Facilities Planning, Campus Design and Construction, ajc architects and consultants.

We have reviewed the Master Plan Document and warrant that it adequately represents our requests to fulfill our mission and master planning needs. All appropriate parties representing the University have reviewed it for completeness and accuracy.

Arnold B. Combe 4/11/00
Arnold B. Combe — Date
Vice President for Administrative Services

David W. Pershing 4/10/00
David W. Pershing — Date
Senior Vice President, Academic Affairs

Anne Racer APRIL 05, 2000
Anne Racer — Date
Director, Facilities Planning

John W. Huish
John Huish — Date
Director, Campus Design and Construction

Jack Brittain April 5, 2000
Jack Brittain — Date
Dean, David Eccles School of Business

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1. Introduction and Mission Statement

The University of Utah's David Eccles School of Business has a strong tradition of excellence. The School is named in honor of David Eccles, one of Utah's most prominent and productive pioneer industrialists. The legacy and entrepreneurial spirit of David Eccles are embodied in the rich academic experience at the School. The David Eccles School of Business is committed to its ability to offer an outstanding education at a great value, preparing students to compete in a complex and demanding business environment. The School is fully accredited by the AACSB: The International Association for Management Education.

Mission

The David Eccles School of Business remodeling project's mission is to enhance the University of Utah's research, educational and service missions by developing facilities that promote world class student services, facilitate technology-enhanced learning, promote inter-active learning, generate a sense of community, and support faculty research with an increased emphasis on technology and computing support. Because the School's facilities are shared with the larger campus community, everyone is welcome to use the anticipated remodeled study spaces, computer labs, and other community areas as an enhanced campus-learning environment. With successful project completion, the facilities will also become a gathering point for students from nearby schools, who can take advantage of the café and numerous study and interactive areas. The new conversation areas will also build a sense of a U community that transcends both programs and individual schools.

Project Justification

The buildings that house the David Eccles School of Business (DESB) are a prominent part of the University of Utah's image in the community, and an important part of the U's program delivery. The BUC, KDGB and FAMB buildings are places where business leaders, community groups, and the U's administration, faculty, and students mingle at events that range from DESB's Spencer Fox Honors Convocation to professional group board meetings. They house faculty offices, research centers, student services, an executive education center, large auditoriums used for public events, and classrooms shared by all the U's programs. The four building Business complex is the U for many in the community, since numerous activities take place there. What visitors see is not a research powerhouse image.

Built in the mid and late 1960's, the three buildings that were the DESB complex prior to the addition of the Christensen Center, are tired and in need of updating. In addition to numerous building code problems that include seismic and life-safety related issues, and ADA access problems, the buildings have outdated mechanical systems that are increasingly expensive to operate, lack the infrastructure to support the technology (a vital support to educational delivery), and include materials and finishes that are difficult to clean and maintain.

In addition to the image projected for the U, the DESB complex is an important part of the U's infrastructure, especially education that is supported by network resources and technology enhanced learning models. Retrofitting new learning environments into the building is becoming prohibitively expensive since it is not designed to support technology-based instructional methodologies, nor is it particularly suited to the

discussion-method teaching that is increasingly used in areas that do not utilize technology enhanced learning methodologies.

Finally, the David Eccles School of Business' faculty and programs are growing, and the space currently occupied is not configured in a way that is conducive to growth. One of the dilemmas currently faced is lack of space; while at the same time our space is used inefficiently. Remodeling current interiors with modular business furniture and moveable wall systems for easy adaptation, is expected to provide both more and flexible space that can be reconfigured to meet changing needs. In addition, implementing concepts like hotelling for adjunct faculty and faculty part time appointments will allow us to use space more efficiently as we expand our faculty and programs.

School of Business is comprised of the following:

School of Accounting
Department of Finance
Department of Management
Department of Marketing

BEBR (Bureau of Economic and Business Research)
CIBER (Center for International Business and Educational Research)
Global Business Development Center
Computer Center
MBA Career Services
Undergraduate Studies
Masters Programs
Executive Education
Ph. D. Programs

The Economics Department is currently located in the BUC and KDGB Buildings, but is not part of the School of Business. Sections of this Master Plan are based on the possibility of the Economics Department relocating to another space/building on Campus. This will potentially "free-up" +/- 20 offices, classroom space, and possibly support a portion of the anticipated future growth needs of the David Eccles School of Business.

The student enrollment:	Current	Next 5- 10 years
Under Grad	2000	2000
MBA	350	600
Ph.D.'s	30	60
Faculty	54 Tenure Track	8 additional
	12 Non Tenure	
	12 Adjunct	3-5 additional

To assist in determining the best course for the School of Business into the next generation, the University requested assistance to produce a long-range Master Plan Document. ajc architects has been contracted to review the current facilities and their use, and create recommendations for changes and additions to the current physical plan to meet the University's and School of Business' stated mission.

In order to thoroughly access the needs of the David Eccles School of Business, a planning committee was formed to discuss current issues and possible solutions. This planning committee included: **(In alphabetical order by last name)**

David Eccles School of Business

Russ Belk	Professor of Marketing
Joe Bentley	Management Department
Nick Bollen	Assistant Professor of Finance
Christine Botosan	Assistant Professor of Accounting
Jack Brittain	Dean
Jerry Carvalho	Computer Center
Susan Chesteen	Professor of Management
Janeen Costa	Marketing Department
Kathy Kunz	Assistant to the Dean
Leslie Morgan	Faculty, Op. Management
Kay Nelson	Assistant Professor of Information Systems
Debra Scammon	Associate Dean
Rich Semenik	Professor of Marketing
Seth Shaner	Student
Michael Smalley	Student
Harris Sondak	Associate Professor Management
Sheila Steiner	Director, MBA Career Services
Jennifer Stevens	External Relations
Christine Watson	Student
Vicki Windes	Academic Advisor

University of Utah

Cyndi Johansen	Scheduling Office Manager

Community/Business Participants

Alan Peterson	Vice President, Layton Construction

Campus Design and Construction/Facilities Planning

David Tanner	Campus Design and Construction
Kari Astle	Facilities Planning

ajc architects

Jill A. Jones, AIA	ajc architects
Liz Blackner, AIA	ajc architects
Paul D. Brown, AIA	ajc architects
Jerry Jensen	ajc architects

Additional team member included Structural, Mechanical and Electrical Engineers:

Dunn Associates, Structural Engineers
Bennion and Associates, Mechanical Engineers
Key Engineering, Electrical Engineers

This document represents the general consensus of the planning committee, Campus Design and Construction, Facilities Planning, and the consultants.

2. Observations and Issues

The David Eccles School of Business is housed in a complex of four buildings located near the academic center of campus. The new C. Roland Christensen Center (Building 77 CRCC) will be occupied spring of 2000, and is a state-of-the-art teaching and learning facility. The other three buildings consist of:

Building 74 BUC
Building 75 KDGB
Building 76 FAMB

This Master Plan Document will focus mainly on the evaluation, future renovation and possible expansion for these three buildings.

General Building Structure/Architecture

Architecture

Building 74 BUC, Building 75 KDGB, and Building 76 FAMB were designed and constructed between 1962 and 1964. Due to the period of construction of these buildings, all three currently contain asbestos. Campus Design and Construction has provided testing for asbestos in two of the buildings and has confirmed:

Building 75 KDGB:	Asbestos found in floor tile and mastic of first level floor tile.
Building 76 FAMB:	Asbestos found in ceiling materials on all levels.

The University has not performed any testing for the Building 74 BUC. However, it is assumed that asbestos will also be found. The obvious impact of this information is the cost implications to any renovation/remodel work; the asbestos will need to be abated and those costs have been included in the overall construction cost projections.

The age of the buildings also create many life-safety issues due to the fact that the building codes have changed over the past 40 years, and the current facilities are not in compliance with current building codes and accessibility guidelines. While some of the non-compliant code issues are minor, others are serious life-safety concerns and should be high priority in consideration for renovation/remodel work. A complete list of Uniform Building Code and Accessibility Items are included for each building in Section 11 under *Architectural.*

Along with the architectural life-safety issues, complete evaluations have been included for the existing structural, mechanical and electrical systems of all three buildings. This information is also available in Section 11 under each respective title.

It is remarkable to see that many of the original finish materials still exist in all three buildings. These materials, 36-38 years old, are long over due for replacement and upgrade due to aesthetics and poor conditions. Carpet, ceiling tile, and paint have been replaced over the years, but are still old and worn, and lack continuity from space to space, floor to floor, and building to building.

The exterior finishes are in much better state than the interior finishes. All three buildings consist of exterior brick veneer, with cast stone accents at vertical columns, copings, and

other architectural elements. The existing masonry veneers of all three buildings match, and though in good condition, would need to be power-washed cleaned. The window system and shading system is perhaps the most "dated" exterior element, and in great need of replacement. The existing roofs of all three buildings should also be fully replaced.

Relationships of Materials

With the design and construction of the new CRCC Building, there has been considerable discussions on the need to tie the four-building complex together architecturally. The materials used on the CRCC Building are not compatible with the current materials of the three older buildings. Brick is used on the CRCC Building, but a darker, richer color than what is found on BUC, KDGB and FAMB. Aluminum and metal is used extensively on the CRCC, and does not exist on the three older buildings. Tinted glass is also utilized on CRCC, in a shade of blue, once again not found on BUC, KDGB or FAMB. Therefore, when moving forward with the renovation or adding future growth space to the three older buildings, careful study should be made of the pallet of existing materials to help tie all four buildings together architecturally.

Functional Observations / Issues

Image

Throughout the course of meetings and correspondence with the Master Plan Committee, the one consistent theme that continually existed throughout all topics was ***IMAGE.*** The David Eccles School of Business, through it's buildings/facilities,-----lacks an IMAGE.

The approach to the buildings from key points on Campus---needs IMAGE.
The Main Administration Lobby----needs IMAGE.
The Dean's Office-----needs IMAGE.

Due to the age and poor condition of the existing interior and exterior environments created by the BUC, KDGB and FAMB, there does not exist a "sense of place", or any kind of positive emotional attachment. It also does not help to have a newly constructed building so close in proximity to the three older buildings. This new relationship creates a stronger focus on the deficiencies of the older buildings.

Flow

With the David Eccles School of Business now being a complex of four buildings, great consideration needs to be given to flow; internal and external relationships. Areas of flow to be considered are:

Flow between relationships: Student vs. Ph.D. vs. Faculty vs. Administration
Flow between Office Areas to Classroom Areas
Flow from building to building

Flow between Public and Private areas/spaces

	Private Semi Public	Students Faculty Ph.D.'s Administration
Classrooms	Semi	Students Faculty Ph.D.'s
Computer Labs	Public	Students Faculty Ph.D.'s Administration
Specialized Centers		
BEBER	Semi	Administration
GLOBAL	Semi	Administration
Management Communications Center	Semi	Students Faculty Ph.D.'s

		Administration
KITO	Public	Students Faculty Ph.D.'s Administration
CIBER	Semi	Students Faculty
Conference/Meeting Rooms	Semi	Students Faculty Ph.D.'s Administration
Social Areas	Public	Students Faculty Ph.D.'s Administration
Study Areas	Public	Students
Tutoring	Semi	Students
PhD Offices	Private	Ph.D.'s Faculty
Administration Offices	Controlled Public 70% Semi 30%	Students Faculty Ph.D.'s Administration
Advising Offices	Public	Students Faculty Administration
Departmental Offices	Controlled Public	Students Faculty Ph.D.'s Administration
Faculty Offices	Private	Students Faculty
Storage	Private	Administration Faculty
Copy Center	Public	Students Faculty Ph.D.'s Administration

Mechanical/Utility	Private	Administration
Circulation/Restrooms	Public	Students Faculty Ph.D.'s Administration

Morale

A less tangible result of the current condition of the BUC, KDGB and FAMB, is the overall morale of students, faculty, and administration. The Master Plan Committee stated a strong relationship exists between one's environment and the morale factor of those that participate within that environment. Once again, there is concern over the possible negative impact the new CRCC can have on the three older buildings in regards to function and quality of space.

Flexibility

In the 1960's when the BUC, KDGB and FAMB were built, the concept of flexible space did not exist. Now, in the twenty-first century, it is paramount for quality design to include the concept of flexible space in order to extend the life span of any particular building. Flexible space is needed to accommodate:

Different people, with potentially different needs, occupying the same space/work area at different times, including:

- Adjuncts ("Hotelling"concept)
- Temporary Offices
- Student Workers

There is the need to create more flexible spaces for multi-purpose uses and classrooms; the horse shoe shape Case Study classroom is not necessarily the best layout for all teaching styles.

As the David Eccles School of Business grows and evolves, future needs and future functions are created, and defined spaces will need to change. In the past, this meant complete, expensive and time-consuming interior renovation of a space to accommodate the new function(s). With proper planning and use of flexible wall systems, these renovations could be handled economically over a minimal period of renovation time, utilizing existing systems.

Relocation of Service Related Functions

Service related functions, ranging from academic advising to administration, are spread out between the BUC Building and the KDGB Building, and are located on multiple floors. The Master Plan Committee identified the need for these service related functions to be located centrally, and perhaps all on the ground floor. This will assist in accessibility to the students and also economize on the number of receptionists required.

Improved Light: Natural and Artificial Lighting Systems

In the 1960's, when the BUC, KDGB and FAMB were built, the use of quality natural light was not a major design concept. Architects and designers have since learned the value of appropriate use of natural light, and the quality it adds to the proper interior environment.

There has been expressed a strong desire to increase the amount of natural light into the existing three buildings. It is understood that certain areas will need "controllable" natural light, in areas such as classrooms and lecture halls. And it still may be inappropriate for some areas to have any natural light, such as in computer labs. But overall, more natural light is highly desired.

Also, vast improvements need to be made to the existing artificial lighting systems. More will be addressed on artificial lighting in the Electrical Division under Section 10.

Technology

The new CRCC Building is considered completely "wired". With every student utilizing a laptop, it has now become essential to have the capabilities to create a working environment by "plugging in" and "logging on". Through the renovation of the BUC, KDGB and FAMB, all technology within those buildings will need to be updated to current standards, and more important, be flexible enough to keep up with unknown future standards.

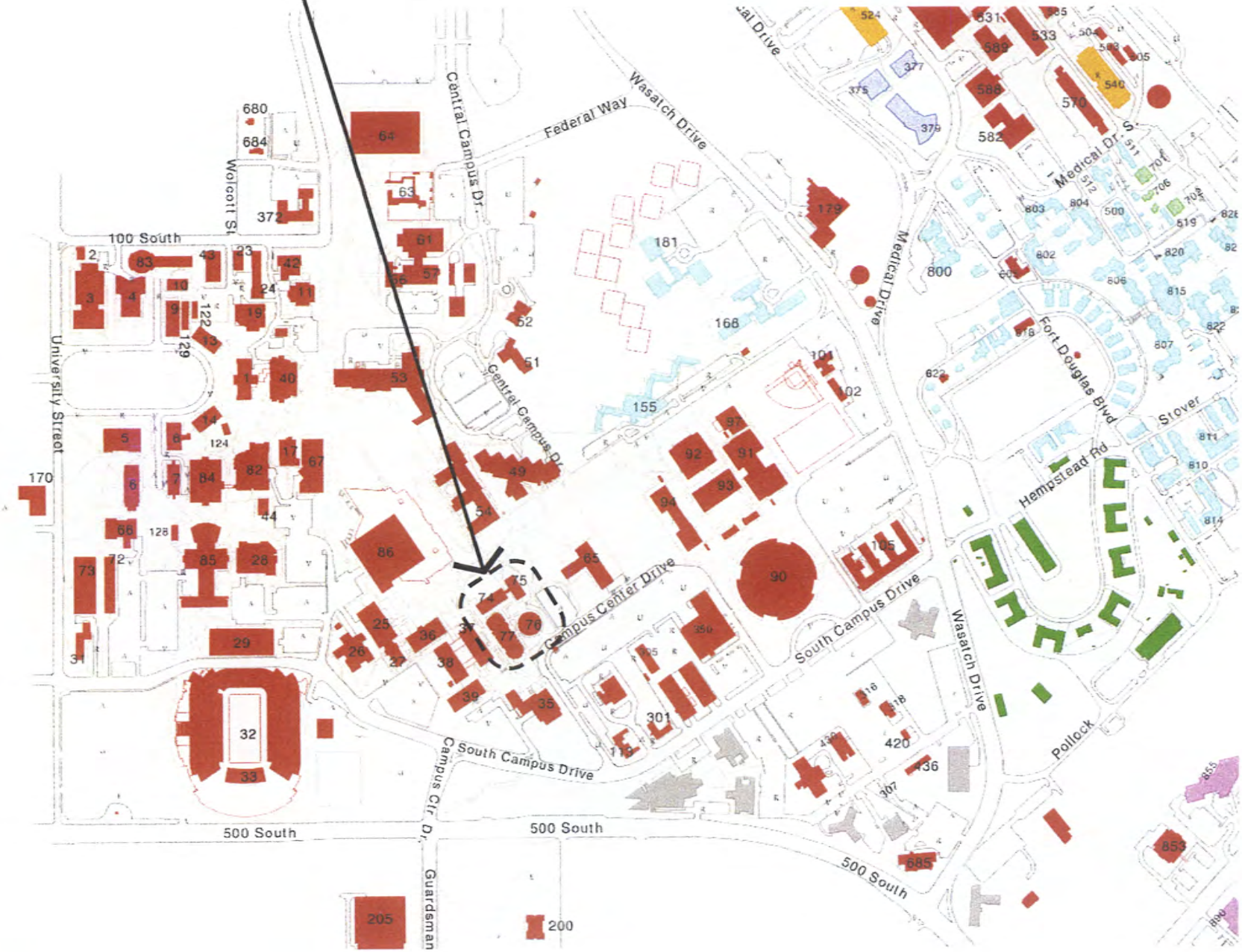
Future Growth and Space Deficiencies

It is a difficult time for the David Eccles School of Business to compile a list for future growth. At the writing of this Master Plan Document, the School of Business has not yet moved into the new CRCC Building, and therefore has not had the opportunity to experience how this new facility will accommodate the School of Business' current needs. The School of Business is also in the process of fine-tuning their current Academic Plan, which would also be a valuable tool in trying to determine future spatial needs. However, regardless of these limitations, an effort by the Master Plan Committee was made to determine the following potential future needs:

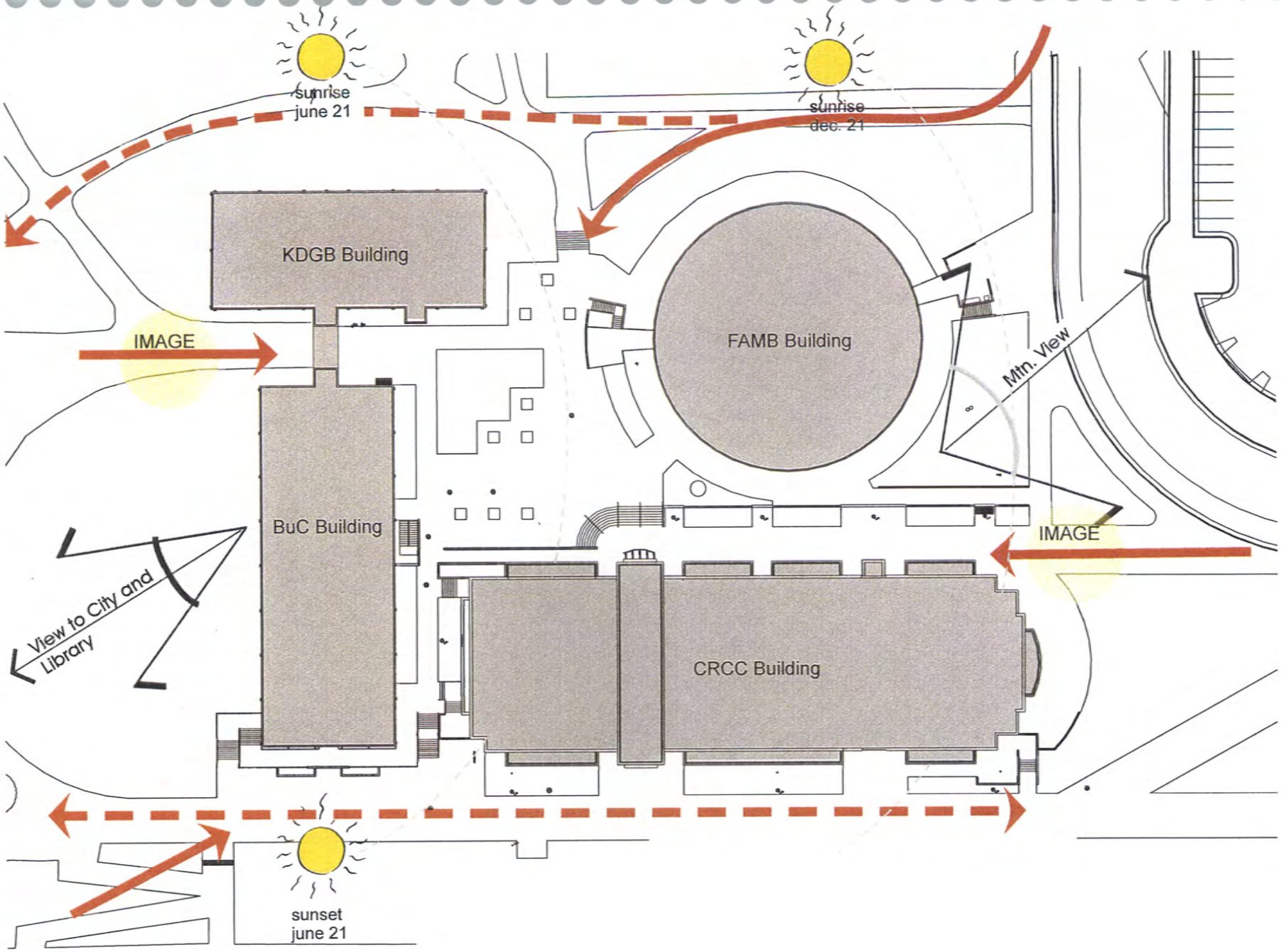
# of Spaces	Name of Space	Capacity
(1)	Research Center for Info. Tech.	(8-10)
(2)	Research Centers (future grants)	(8-10)
(4)	Seminar Rooms (Multi-use/Conference Rooms)	(20)
(2)	Computer Classroom for teaching (Ability to divide space in half)	(100)
(1)	MDF Room	
(2)	IDF per floor of each building (approximately 10 x 10 rooms)	
(1-2)	Faculty Copy Center/Workroom	
(1)	Administration Copy Center/Workroom	
(1)	Faculty/Staff Break Area	
Multiple Locations	Social Areas/gathering spaces Multi-zones Student-Student Student-Faculty Faculty-Faculty Faculty-Ph.D.	
(18)	Small Meeting Rooms	(6-8)
(19)	Ph.D. Offices	
(20)	Faculty Offices	
30% Increase	Advising Offices/Area	
	LOTS AND LOTS of storage Remote/Individual Storage Building Storage Computer receiving/staging area (80 machines)	

The purpose of identifying these "Issues" is to create a Master Plan Document that consolidates the Architectural, Structural, Mechanical and Electrical solutions with the functional solutions within the School of Business, in order to benefit the faculty, students and administration, and to support the University's goal of creating an academic environment where the highest standards of scholarship and professional practice can be realized.

DAVID ECCLES
SCHOOL OF BUSINESS



Location Map



Site Analysis

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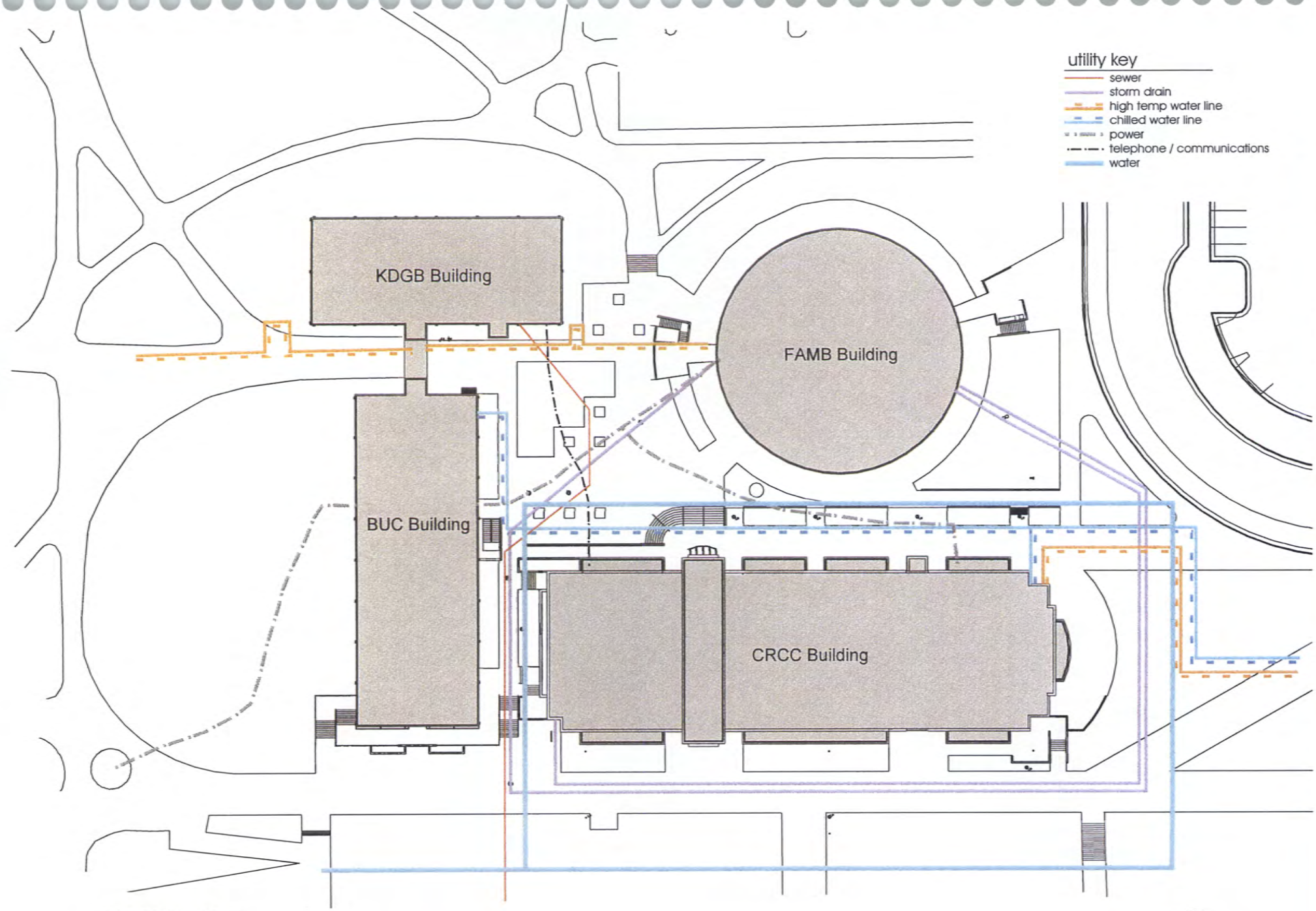


Site Utility Plan

scale: 1" = 60'-0"

3. Summary of Existing Space Building 74 BUC

Total Existing Net SF	45,238 SF	
Total Existing Gross SF	**49,222 SF**	(Includes Interior and Exterior Walls)

Basement

Offices		4,246 SF
General Business Faculty	*357 SF*	
Faculty, Accounting	*587 SF*	
Faculty, Finance	*115 SF*	
Faculty, Management	*1,035 SF*	
Faculty, Marketing	*208 SF*	
Faculty, Economics	*582 SF*	
Grad. Student, Gen. Business	*569 SF*	
Grad. Student Finance	*115 SF*	
Grad. Student Economics	*678 SF*	
Printing Shop		82 SF
Circulation		2,022 SF
Restrooms		170 SF
Custodial		25 SF
Mechanical/Utility		2,376 SF
Total		**8,921 SF**

Main Level

Classroom		3,148 SF
Computer Labs		3,013 SF
Offices		474 SF
General Business Admin.	*474 SF*	
Circulation		1,908 SF
Restrooms		191 SF
Custodial		50 SF
Mechanical		58 SF
Total		**8,842 SF**

Second Level

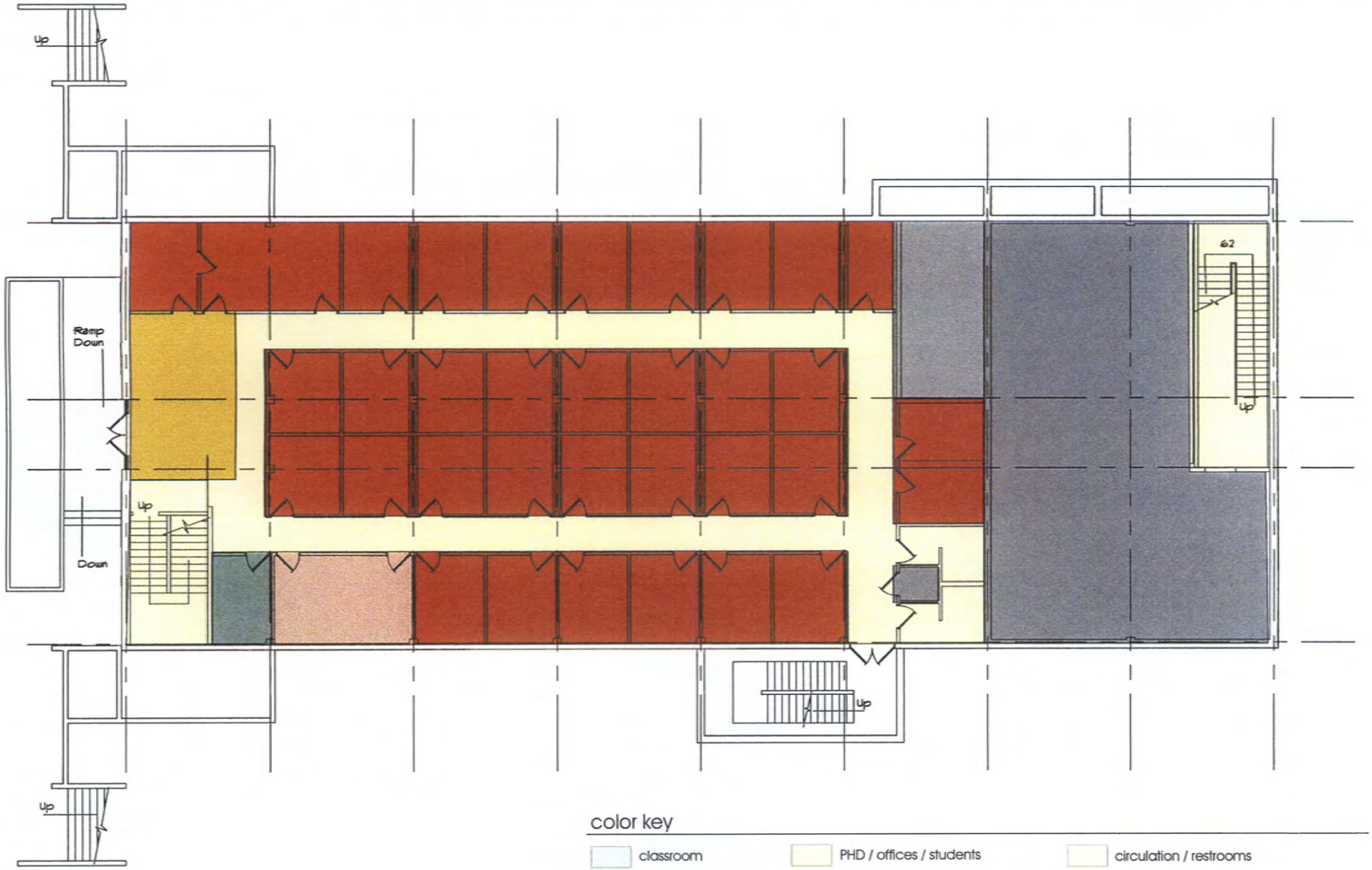
Classroom		4,952 SF
Conference Room		1,188 SF
Vending		302 SF
Student Lounge		485 SF
Circulation		2,241 SF
Restrooms		256 SF
Custodial		98 SF
Mechanical		58 SF
Total		**9,580 SF**

Third Level

Classroom		4,056 SF
Economics Computer Lab		336 SF
Economics Seminar Room		522 SF
Economics Conference Room		182 SF
Offices		1,563 SF
Faculty, Finance	*204 SF*	
Economics, Admin.	*1,359 SF*	
Circulation		2,256 SF
Restrooms		197 SF
Custodial		47 SF
Mechanical		58 SF
Total		**9,217 SF**

Fourth Level

Computer Lab		1,252 SF
Open Lab		1,066 SF
Video Control and Observation		239 SF
Conference Room		514 SF
Offices		3,165 SF
General Business Admin.	*1,834 SF*	
Faculty, Accounting	*154 SF*	
Faculty, Marketing	*471 SF*	
Faculty, Gen. Business	*706 SF*	
Storage		107 SF
Circulation		1,930 SF
Restrooms		256 SF
Custodial		72 SF
Mechanical		77 SF
Total		**8,678 SF**



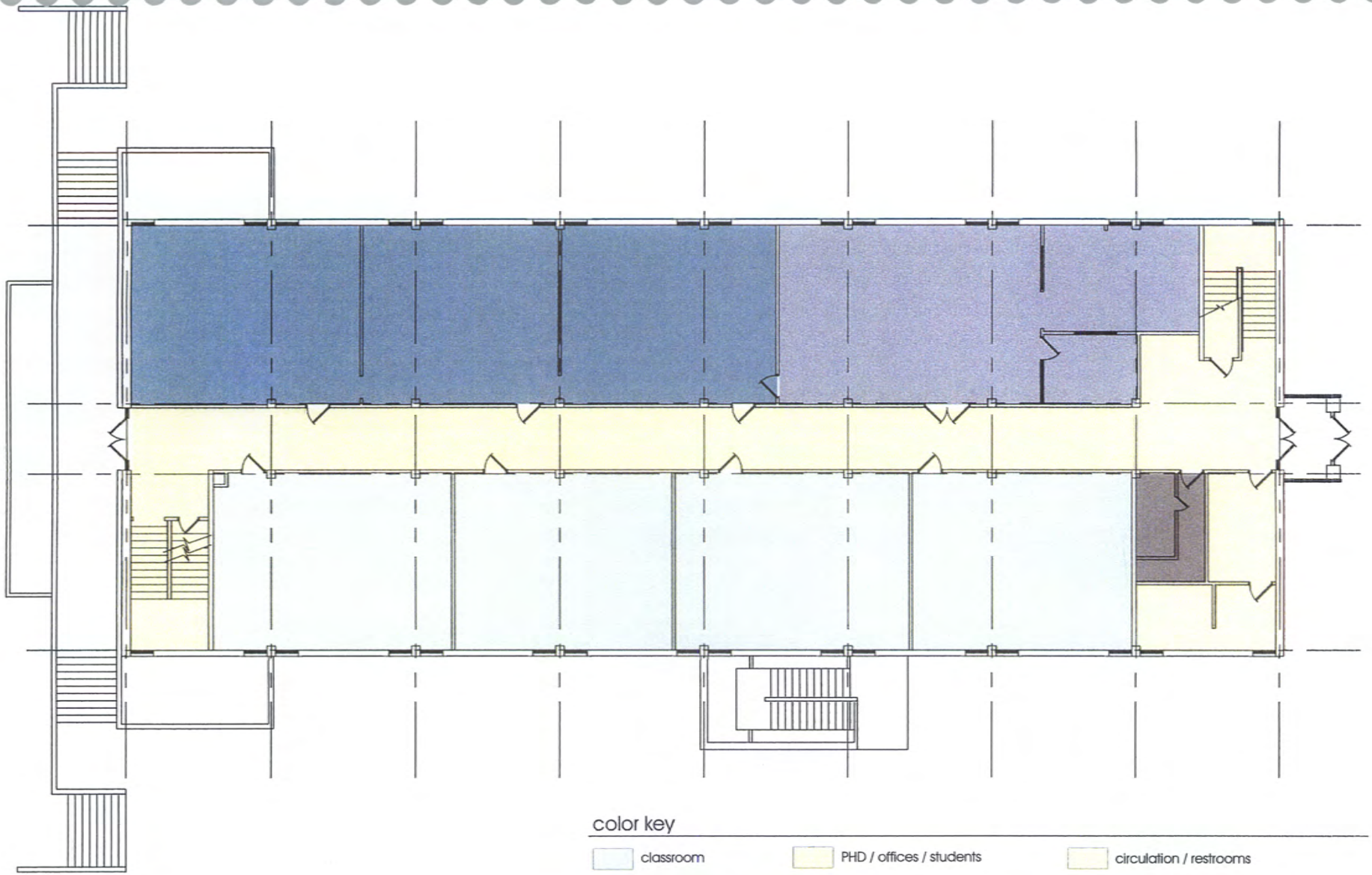
color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

Basement

BUC Building #74

scale: 1" = 20'-0"



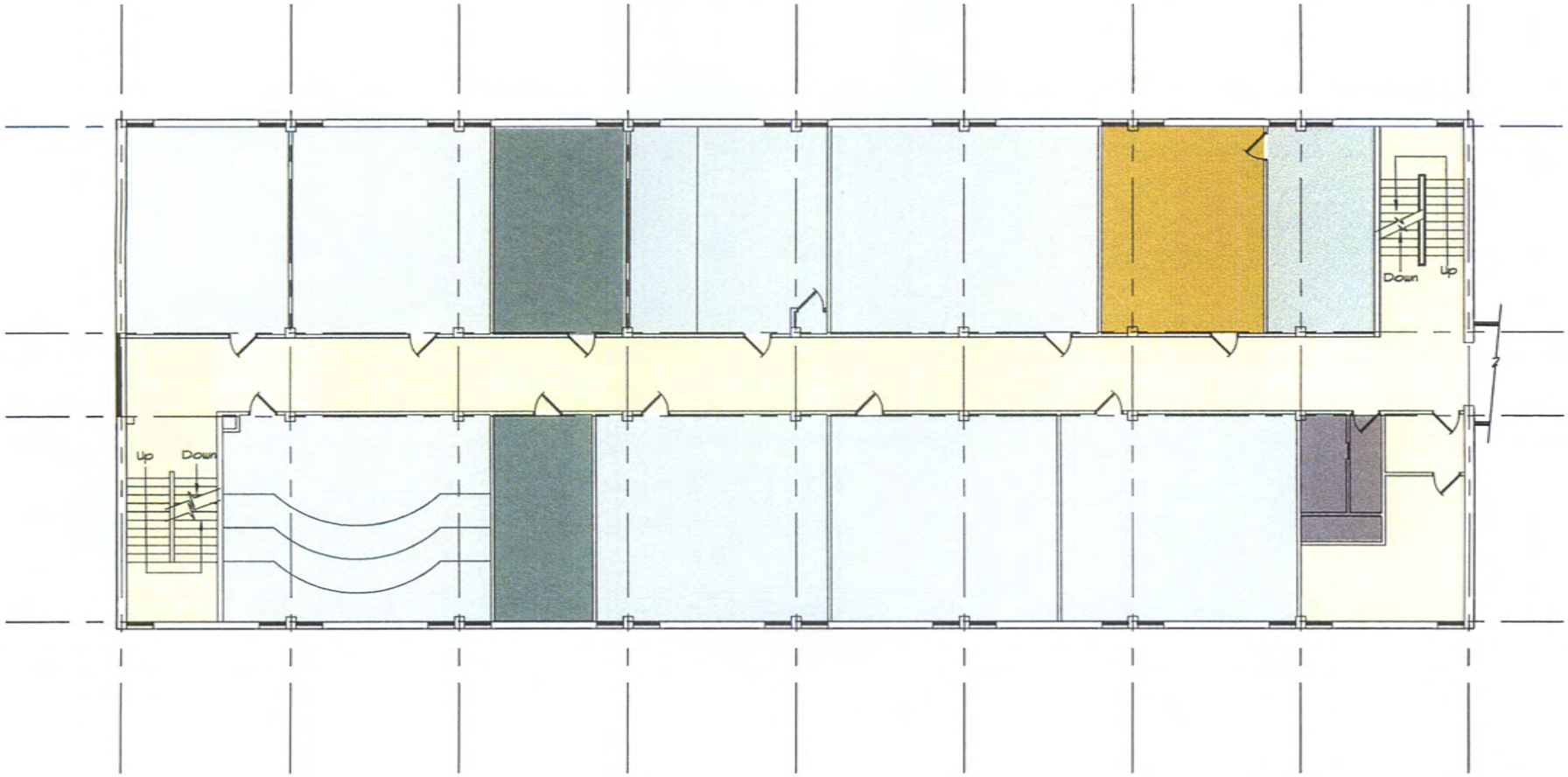
color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- computer center & computer offices
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

First Floor

BUC Building #74

scale: 1" = 20'-0"

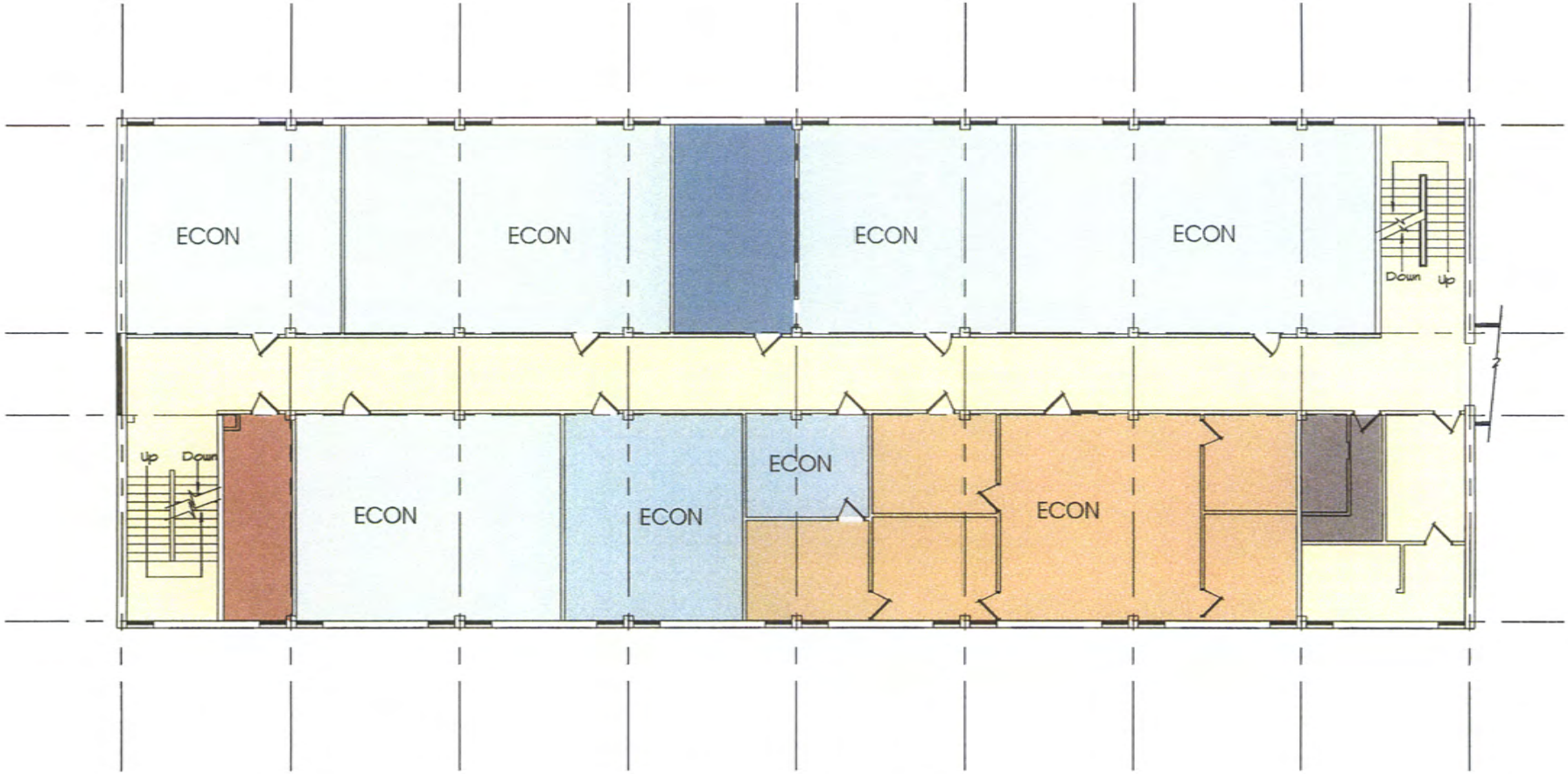


color key

classroom	PHD / offices / students	circulation / restrooms
computer classroom	admin. offices	social area
computer lab	advising offices	study areas / formal & informal / tutoring
specialized centers	departmental offices	storage
library	faculty offices/ service areas - fax copy/ faculty lounge	copy center / vending
conference / meeting		mechanical / utility

Second Floor
BUC Building #74

scale: 1" = 20'-0"



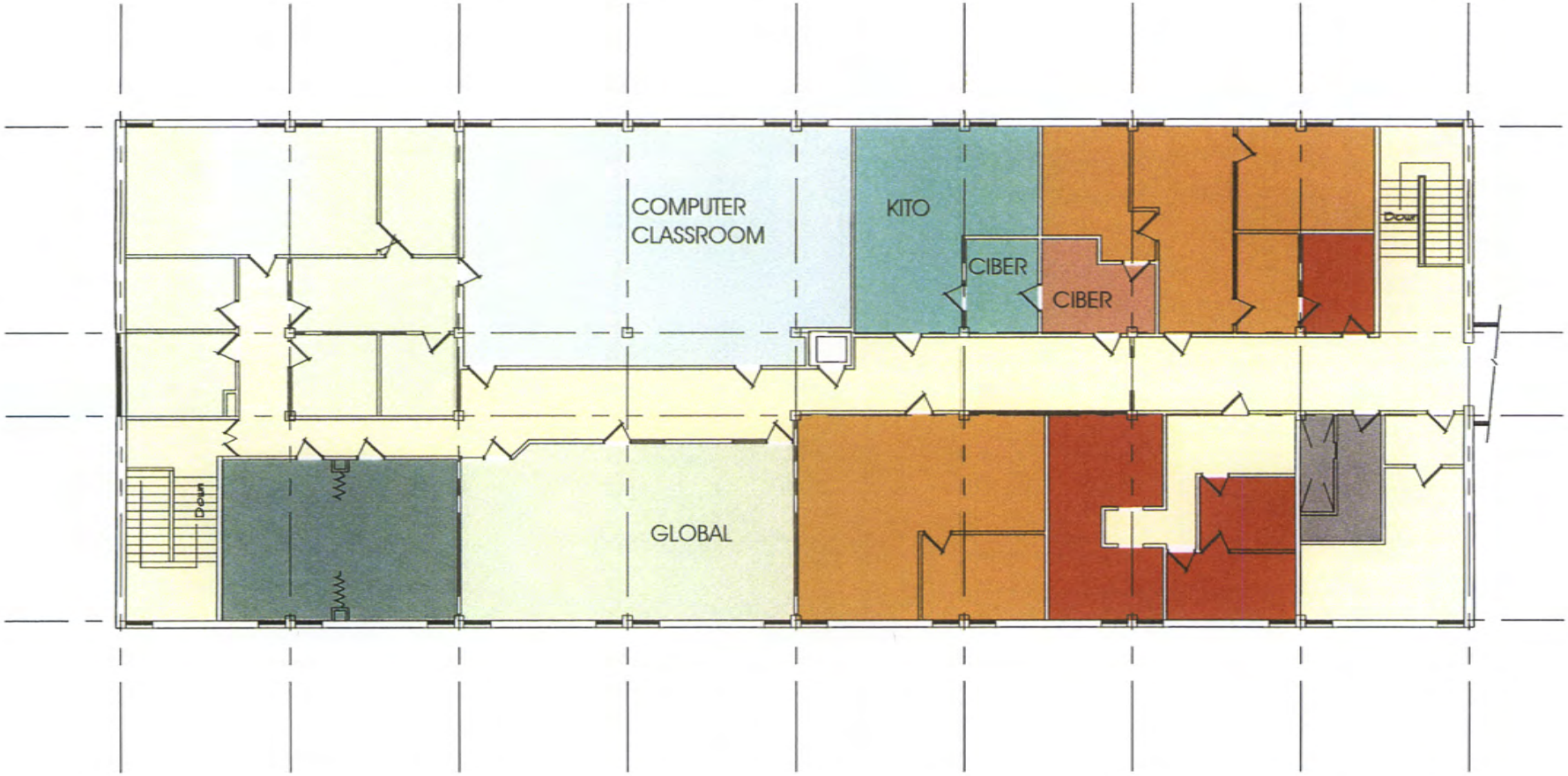
color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

Third Floor

BUC Building #74

scale: 1" = 20'-0"



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- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

Fourth Floor
BUC Building #74

scale: 1" = 20'-0"

4. Summary of Existing Space Building 75 KDGB

Total Existing Net SF	26,946 SF	
Total Existing Gross SF	**32,884 SF**	(Includes Interior and Exterior Walls)

Basement

Offices		2,005 SF
Grad. Student, Accounting	*302 SF*	
Grad. Student, Finance	*154 SF*	
Grad. Student, Management	*597 SF*	
Grad. Student, Marketing	*202 SF*	
Grad. Student, Economics	*750 SF*	
Print/ Copy Center		386 SF
Storage		341 SF
Circulation		1,190 SF
Mechanical/Utility		1,586 SF
Custodial		20 SF
Total		**5,528 SF**

Main Level

Offices		3,353 SF
General Business Admin.	*2,135 SF*	
Faculty, Accounting	*305 SF*	
Faculty, Finance	*344 SF*	
Faculty, Management	*302 SF*	
Faculty, Marketing	*267 SF*	
Conference		290 SF
Lobby		1,023 SF
Circulation		777 SF
Restrooms		153 SF
Custodial		30 SF
Total		**5,626 SF**

Second Level

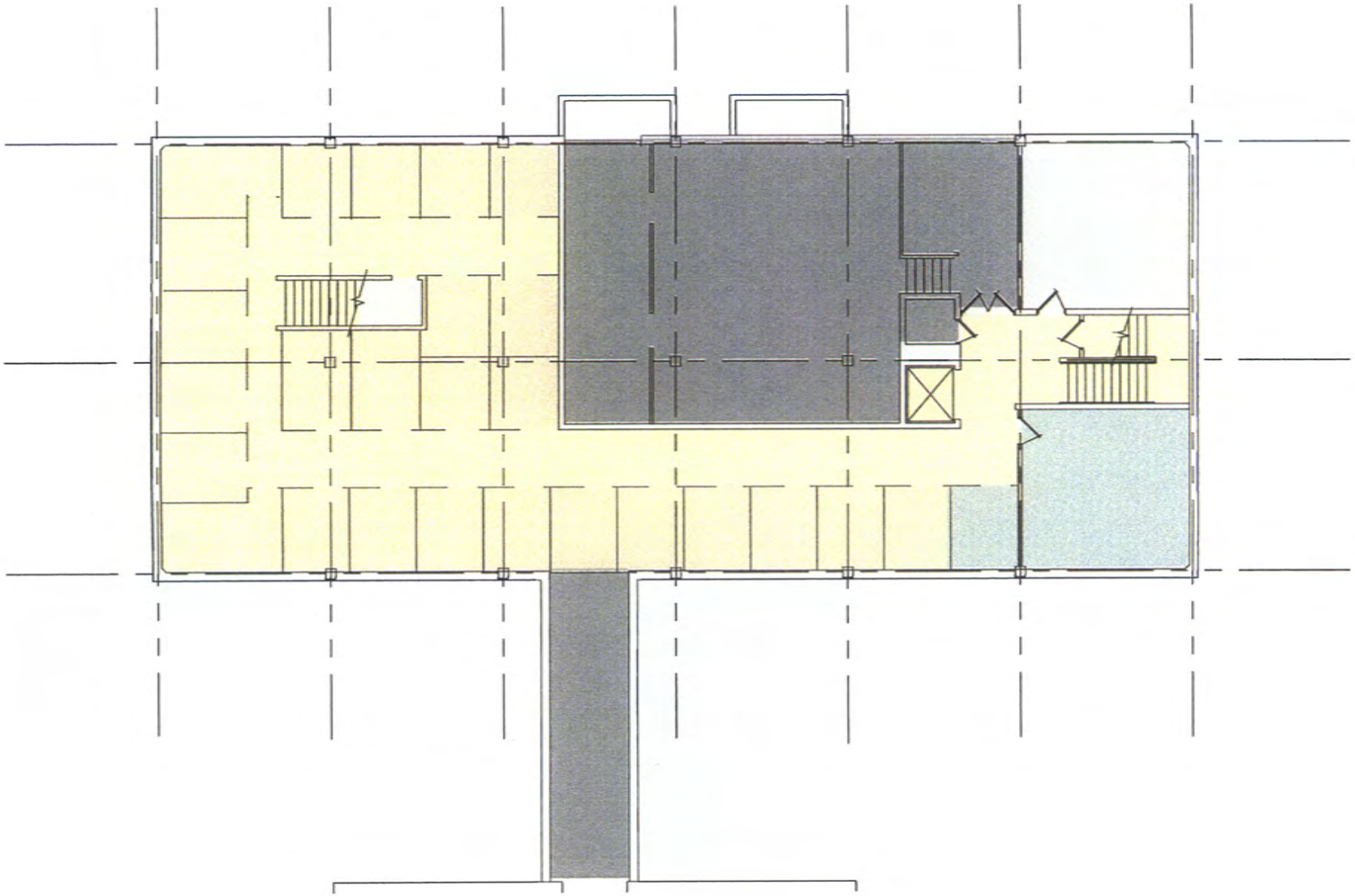
Offices		3,633 SF
General Business Admin.	*120 SF*	
General Business Faculty	*191 SF*	
Faculty, Accounting	*974 SF*	
Faculty, Finance	*567 SF*	
Faculty, Management	*1,365 SF*	
Faculty, Marketing	*416 SF*	
Circulation		1,352 SF
Restrooms		148 SF
Printing Shop		113 SF
Total		**5,246 SF**

Third Level

Offices		3,812 SF
Faculty, Finance	*572 SF*	
Faculty, Management	*216 SF*	
Faculty, Marketing	*108 SF*	
Faculty, Economics	*2,916 SF*	
Circulation		1,349 SF
Restrooms		169 SF
Total		**5,330 SF**

Fourth Level

Offices		3,639 SF
General Business Admin.	*3,415 SF*	
Faculty, Accounting	*110 SF*	
Faculty, Human Resource	*114 SF*	
Printing Shop		227 SF
Conference Room		231 SF
Storage		39 SF
Circulation		943 SF
Restrooms		119 SF
Custodial		18 SF
Total		**5,216 SF**



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- conference / meeting
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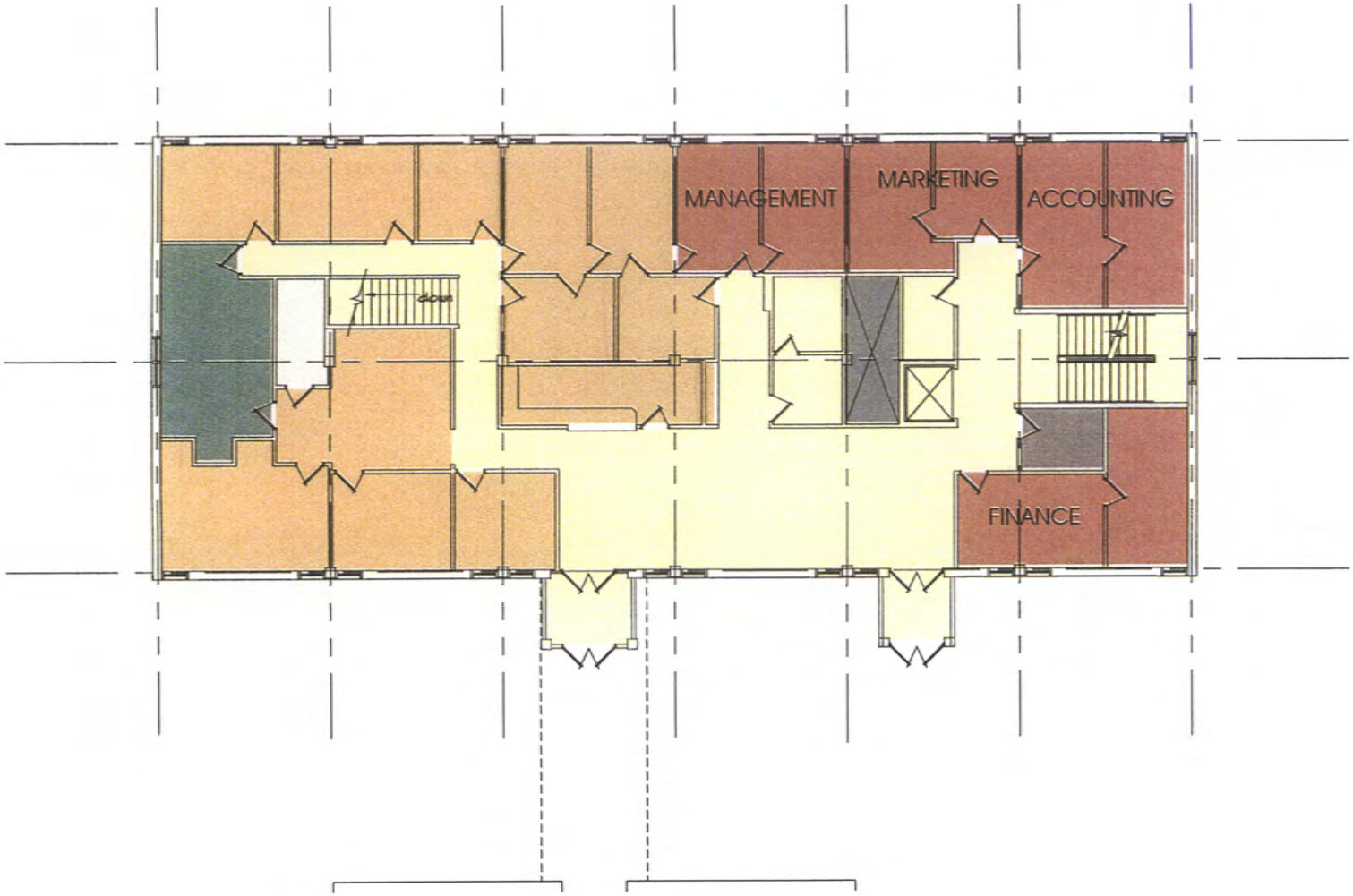
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

Basement

KDGB Building #75

scale: 1" = 20'-0"



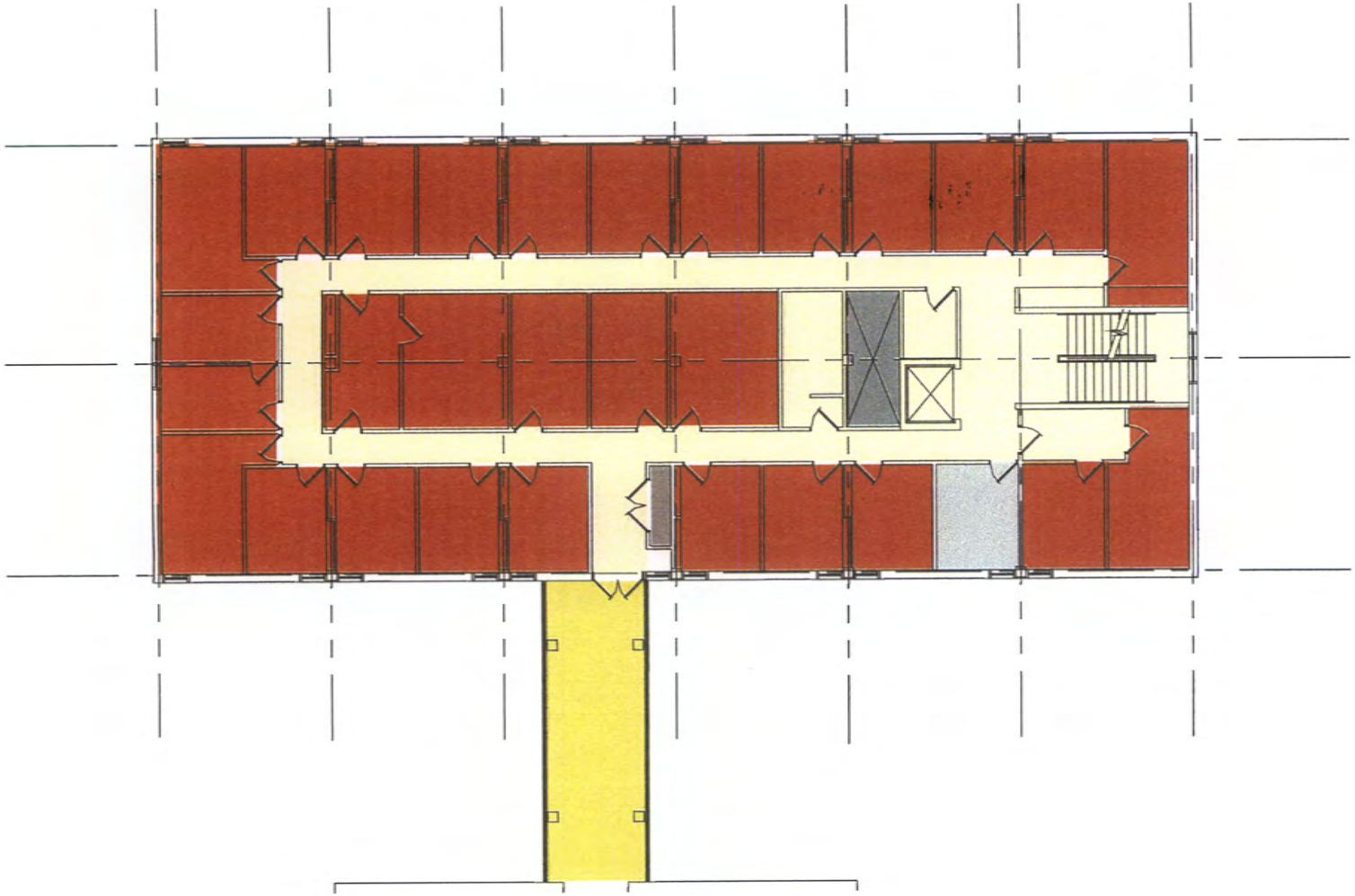
color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

First Floor

KDGB Building #75

scale: 1" = 20'-0"



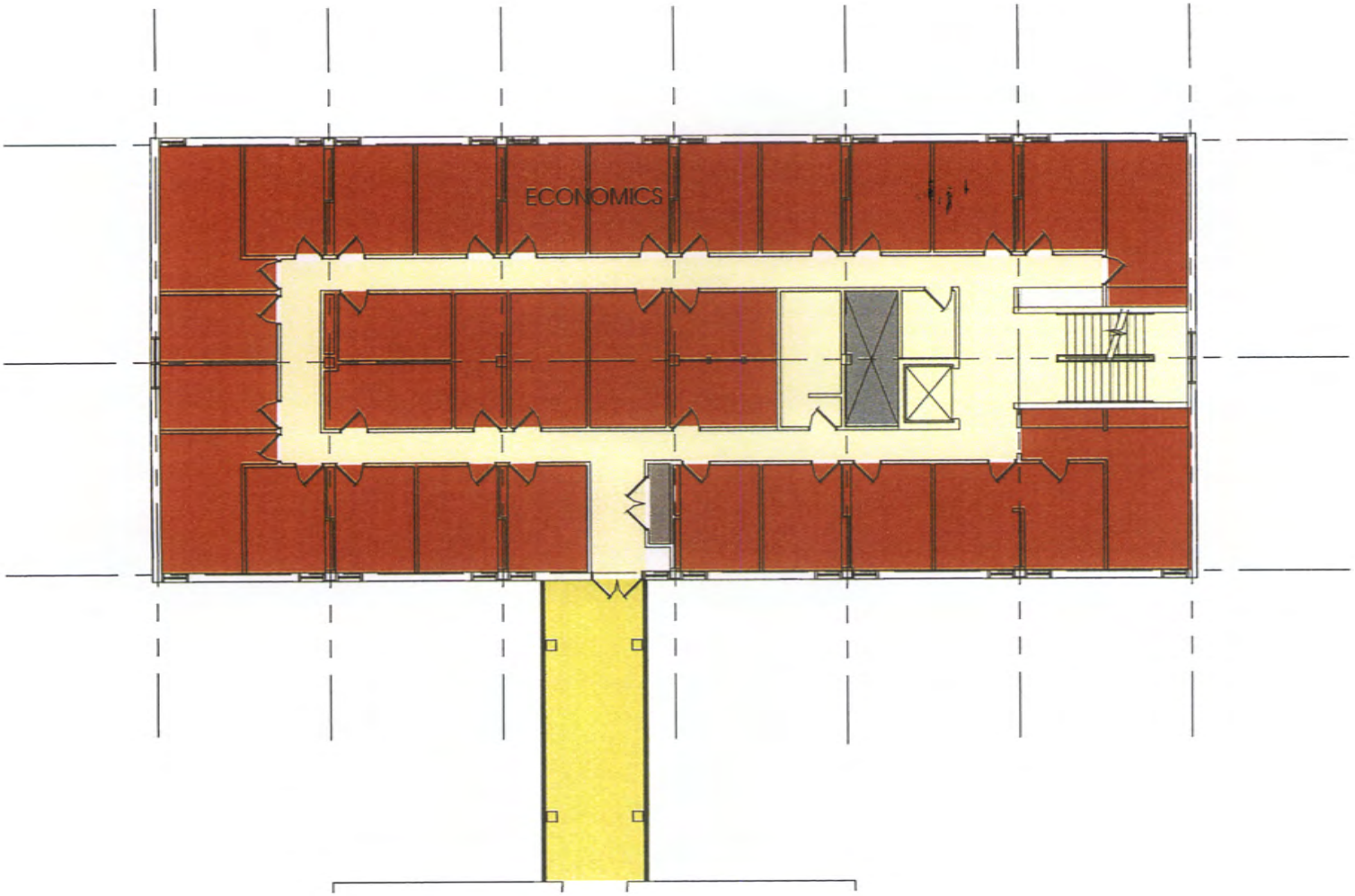
color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

Second Floor

KDGB Building #75

scale: 1" = 20'-0"

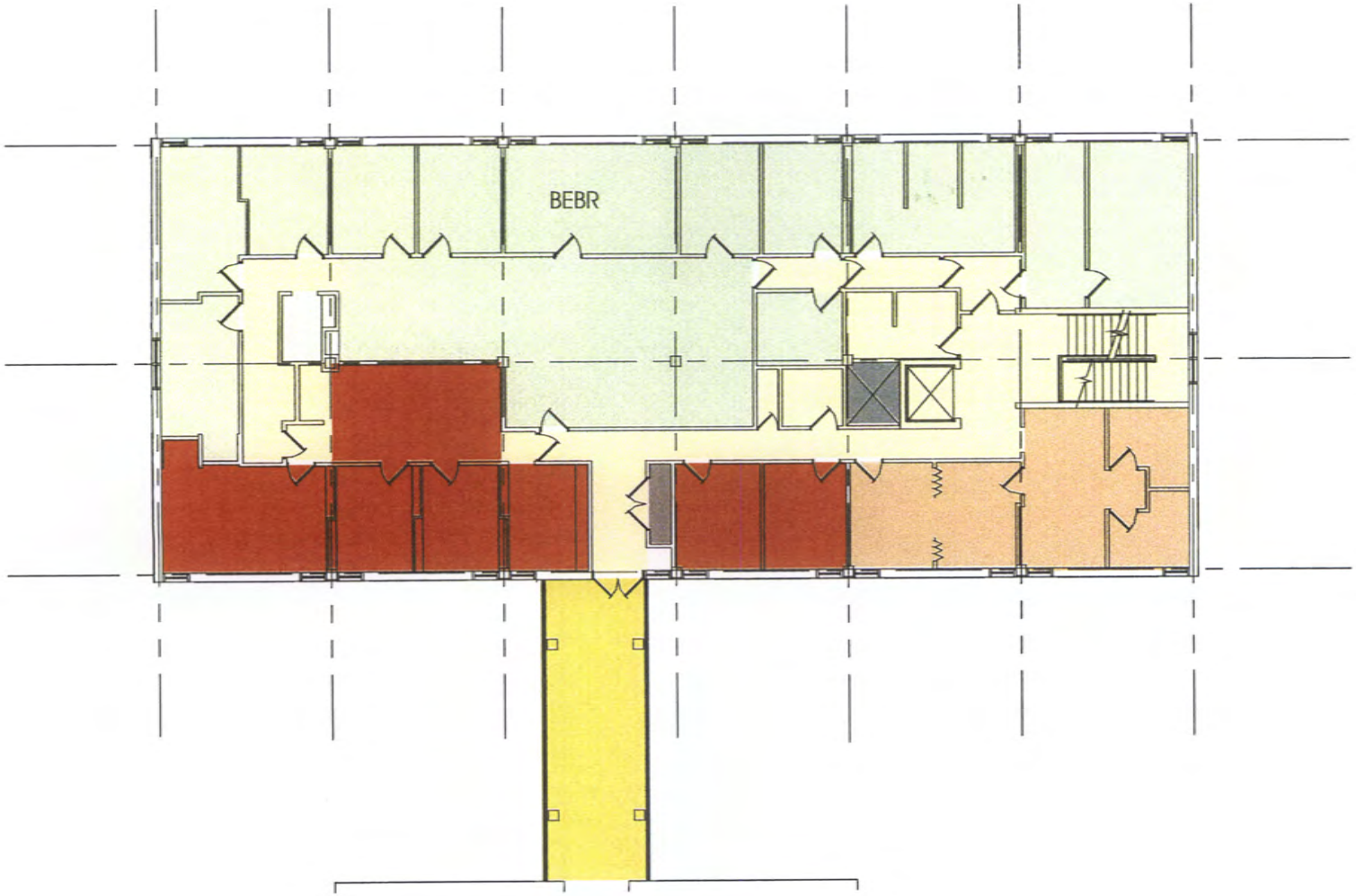


color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

Third Floor
KDGB Building #75

scale: 1" = 20'-0"



color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility

Fourth Floor
KDGB Building #75

scale: 1" = 20'-0"

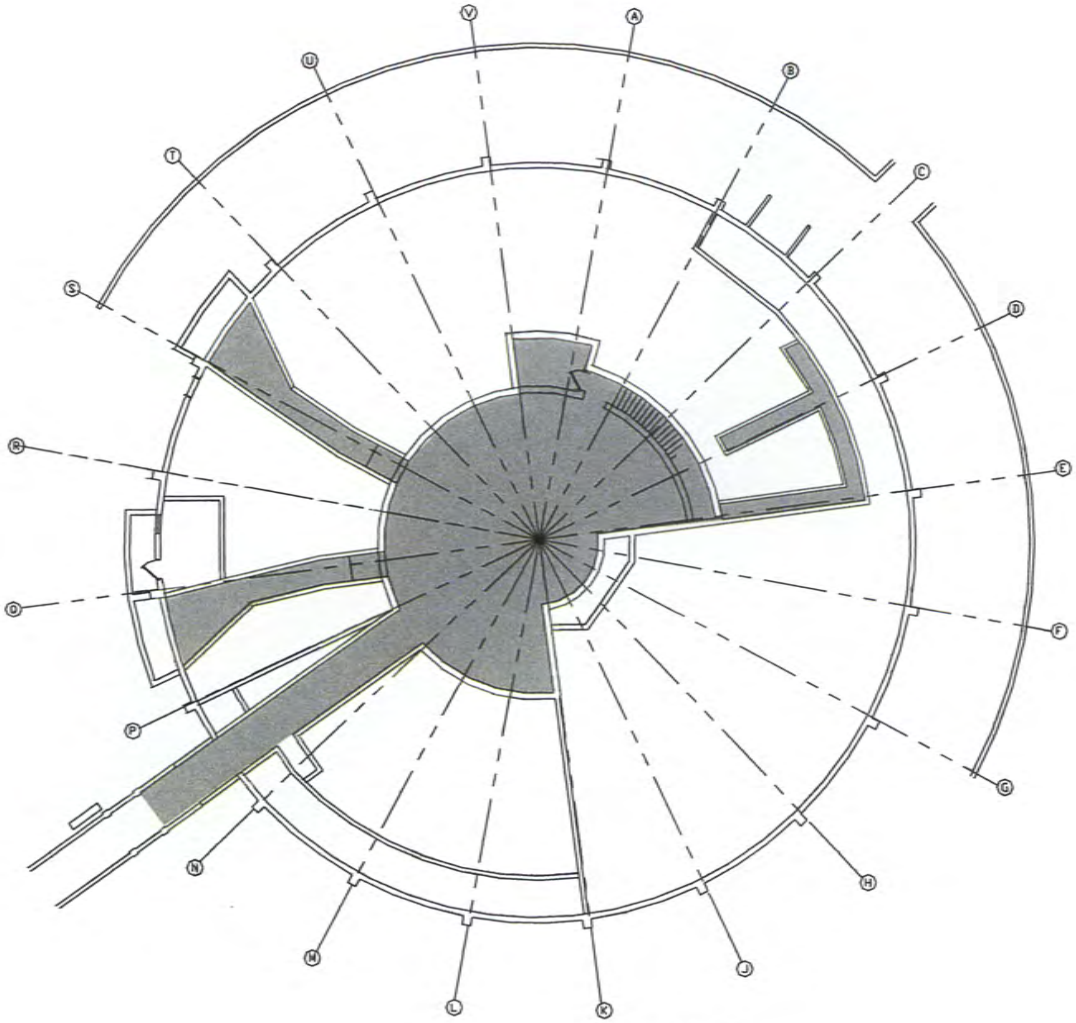
5. Summary of Existing Space Building 76 FAMB

Total Existing Net SF	21,481 SF	
Existing Gross	**23,727 SF**	(Includes Interior and Exterior Walls)

Basement	
Circulation	111 SF
Mechanical/Utility	2,273 SF
Total	2,384 SF

Main Level	
Classroom	6,178 SF
Lounge	1,009 SF
Custodial	28 SF
Circulation	2,082 SF
Restrooms	373 SF
Total	9,670 SF

Second Level	
Classroom	6,887 SF
Custodial	57 SF
Circulation	2,218 SF
Restrooms	265 SF
Total	9,427 SF



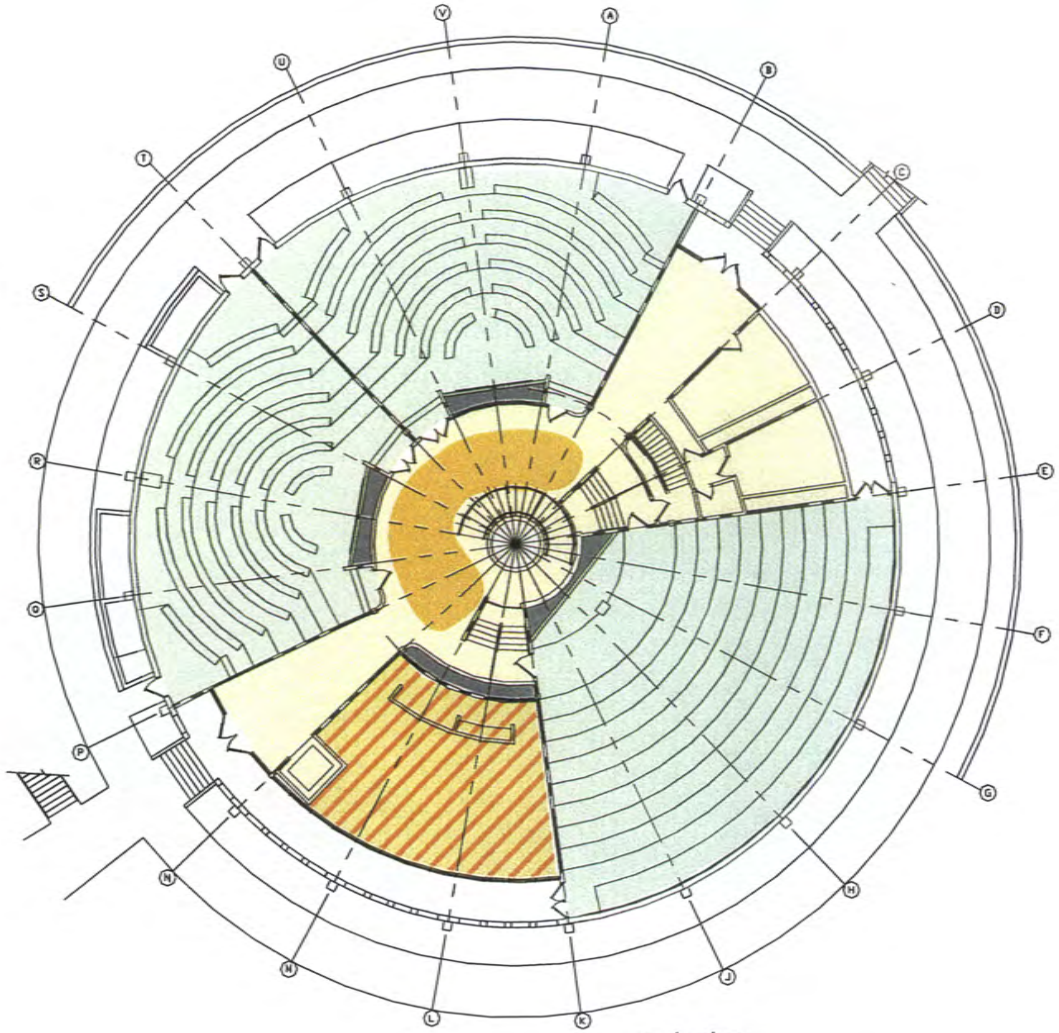
color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility
- dining

Basement

FAMB Building #76

scale: 1" = 30'-0"



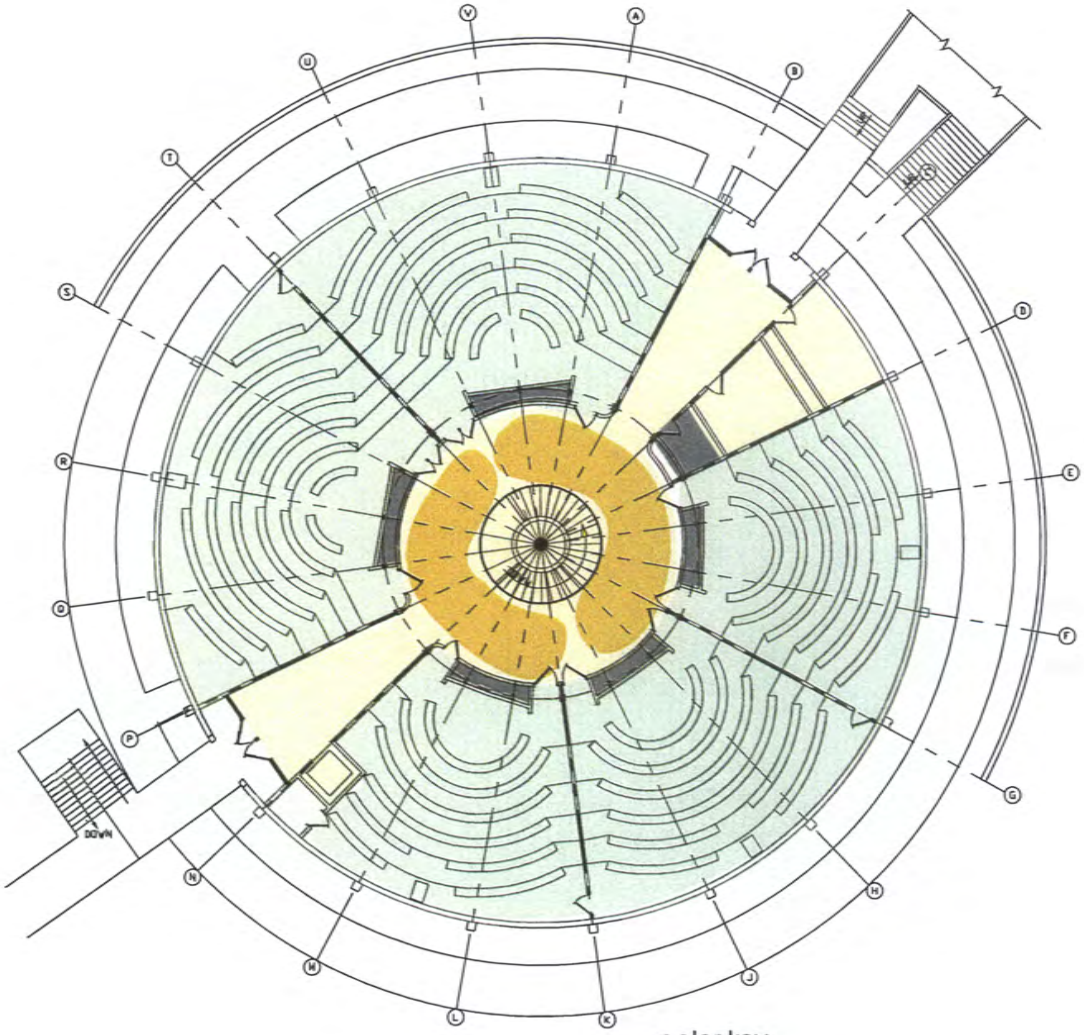
color key

- classroom
- computer classroom
- computer lab
- specialized centers
- library
- conference / meeting
- PHD / offices / students
- admin. offices
- advising offices
- departmental offices
- faculty offices/ service areas - fax copy/ faculty lounge
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- storage
- copy center / vending
- mechanical / utility
- dining

First Floor

FAMB Building #76

scale: 1" = 30'-0"



color key

classroom	PHD / offices / students	circulation / restrooms
computer classroom	admin. offices	social area
computer lab	advising offices	study areas / formal & informal / tutoring
specialized centers	departmental offices	storage
library	faculty offices/ service areas - fax copy/ faculty lounge	copy center / vending
conference / meeting		mechanical / utility

Second Floor

FAMB Building #76

scale: 1" = 30'-0"

Summary of Spaces

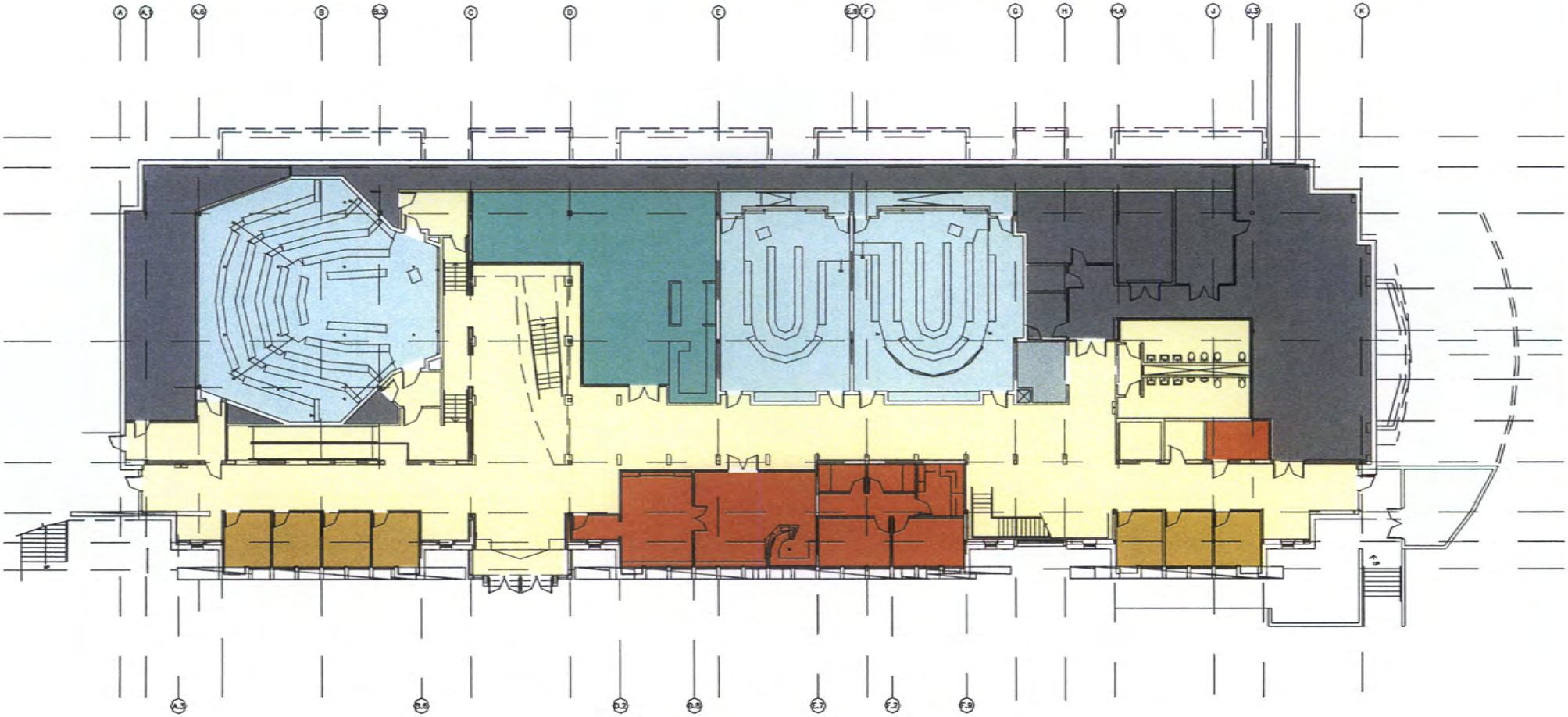
Total Existing Gross SF 42,479 SF

First Level

Vending	150 SF
Library	1,410 SF
Faculty Work Area	1,450 SF
Classroom	4,470 SF
Study Areas	1,120 SF
Storage	351 SF
Mechanical	4,538 SF
Circulation/Restrooms	6,431 SF
Exterior Wall Structure	710 SF
Total	20,630 SF

Second Level

Kitchen	1,369 SF
Dining	2,356 SF
Executive Dining	450 SF
Classroom	6,450 SF
Study Areas	2,400 SF
Social Areas	1,048 SF
Storage	950 SF
Mechanical	410 SF
Circulation/Restrooms	5,681 SF
Exterior Wall Structure	735 SF
Total	21,849 SF



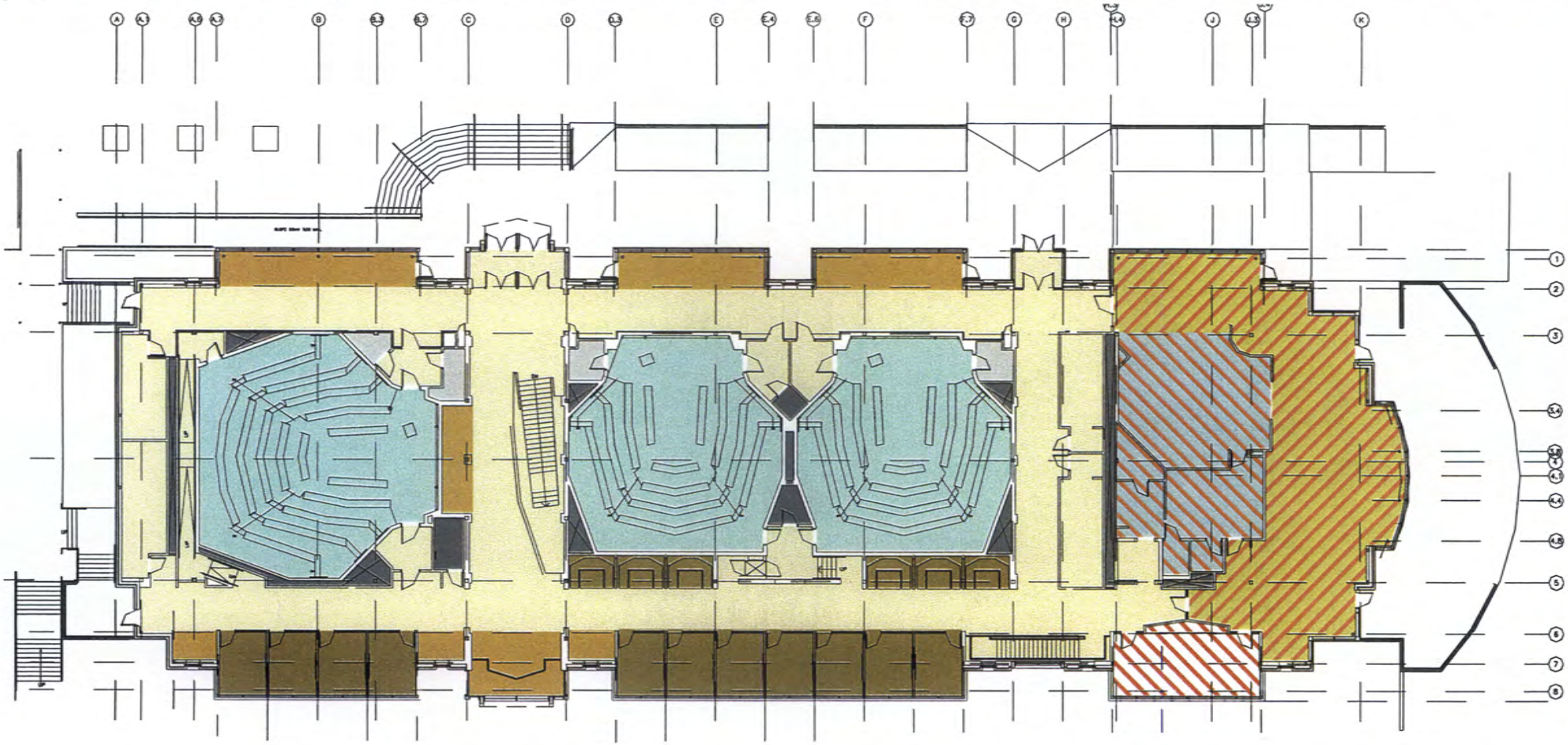
color key

- classroom
- library
- faculty offices/ service areas - fax copy/ faculty lounge
- storage
- copy center / vending
- mechanical / utility
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- kitchen
- dining
- executive dining

First Floor

CRCC Building #77

scale: 1" = 30'-0"



color key

- classroom
- library
- faculty offices/ service areas - fax copy/ faculty lounge
- storage
- copy center / vending
- mechanical / utility
- circulation / restrooms
- social area
- study areas / formal & informal / tutoring
- kitchen
- dining
- executive dining

Second Floor
CRCC Building #77

scale: 1" = 30'-0"

Overall Summary of Spaces

	BUC Bldg #74	KDGB Bldg #75	FAMB Bldg #76	CRCC Bldg #77
Classroom	12,156 SF		13,065 SF	10,920 SF
Computer Labs	5,331 SF			
Conference/Meeting	1,702 SF	521 SF		1,410 SF
Circulation	10,357 SF	5,611 SF	4,411 SF	10,612 SF
Restrooms	1,070 SF	589 SF	638 SF	1,500 SF
Social Areas				1,048 SF
Study Areas				3,520 SF
Offices	6,829 SF	12,776 SF		1,450 SF
Video Control and Observ.	239 SF			
Lounge	485 SF		1,009 SF	
Storage	107 SF	380 SF		1,301 SF
Print/Copy Center		386 SF		
Mechanical/Utility	2,627 SF	1,586 SF	2,273 SF	4,948 SF
Vending/Kitchen	302 SF			1,519 SF
Dining				2,356 SF
Printing Shop	82 SF	340 SF		
Custodial	292 SF	68 SF	85 SF	
Main Lobby		1,023 SF		
Economics Classroom	858 SF			
Economics Offices	2,619 SF	3,666 SF		
Economics Conference	182 SF			

Exterior/Interior Walls	3,984 SF	5,938 SF	2,246 SF	1,895 SF
Totals	**49,222 SF**	**32,884 SF**	**23,727 SF**	**42,479 SF**

Table Identifying Scheduling of Classrooms

Classrooms Currently Scheduled by David Eccels School of Business

CRCC Building	All Classrooms
BUC Building	BUC 104 BUC 108 BUC 204 BUC 205 BUC 420 BUC 450
FAMB Building	NONE

Classrooms Currently Scheduled by Central Scheduling

CRCC Building	NONE
BUC Building	BUC 105 BUC 106 BUC 107 BUC 203 BUC 206 BUC 207 BUC 208 BUC 209 BUC 210 BUC 211 BUC 212 BUC 301 BUC 302 BUC 303 BUC 304 BUC 305
FAMB Building	FAMB 101 FAMB 102 FAMB 103 FAMB 201 FAMB 202 FAMB 203 FAMB 204 FAMB 205

8. Identification of Future Space Needs

The following spaces have been identified as potential future needs:

# of Spaces	Name of Space	Capacity	Size
(1)	Research Center for Info. Tech.	(8-10)	200 SF
(2)	Research Centers (future grants) 200 SF Each x 2 Total	(8-10)	400 SF
(4)	Seminar Rooms (Multi-use/Conference Rooms) 400 SF Each x 4 Total	(20)	1,600 SF
(2)	Computer Classroom for teaching (Ability to divide space in half) 1,200 SF Each x 2 Total	(100)	2,400 SF
(1)	MDF Room		100 SF
(2)	IDF per floor of each building 100 SF Each x 13 Total		1,300 SF
(1-2)	Faculty Copy Center/Workroom 250 SF Each x 2 Total		500 SF
(1)	Administration Copy Center/Workroom		250 SF
(1)	Faculty/Staff Break Area		300 SF
Multiple Locations	Social Areas/gathering spaces Multi-zones Student-Student Student-Faculty Faculty-Faculty Faculty-Ph.D.		2,500 SF
(18)	Small Meeting Rooms 150 SF Each x 18	(6-8)	2,700 SF
(19)	Ph.D. Offices 100 SF Each x 19		1,900 SF
(20)	Faculty Offices 150 SF Each x 20		3,000 SF
30% Increase	Advising Offices/Area		500 SF
	LOTS AND LOTS of storage Remote/Individual Storage Building Storage Computer receiving/staging area (80 machines)		2,500 SF

New 5 Stop Elevator	1,800 SF
Additional Restrooms	3,200 SF
Subtotal	***25,150 SF***
Circulation and Support Space (30%) x 1.30	***32,695 SF***

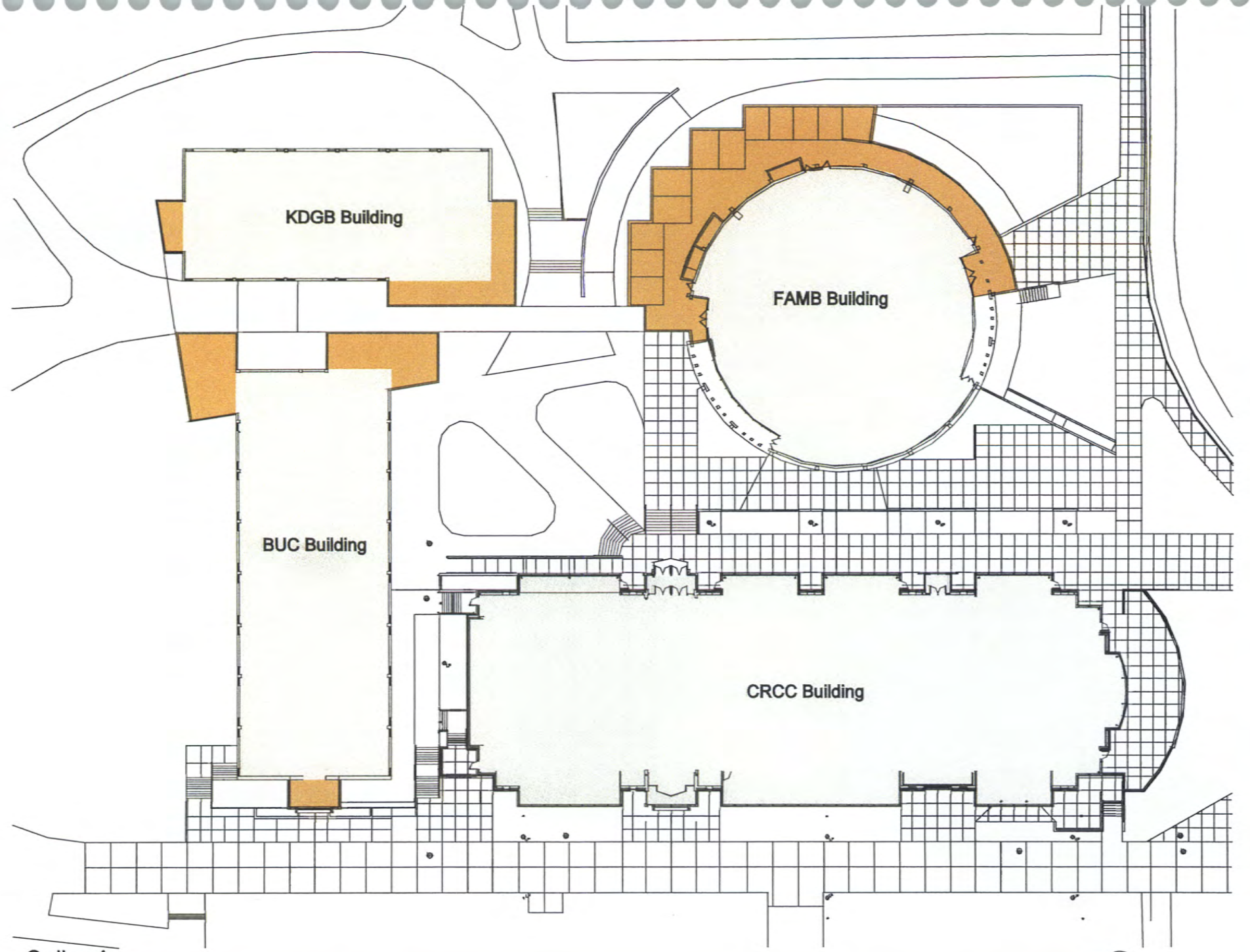
Existing Totals	BUC	49,222	SF
	KDGB	32,884	SF
	FAMB	23,727	SF
	CRCC	42,479	SF

If it is possible to relocate the Economics Department out of BUC and KDGB, this would "free-up":

BUC	3,659 SF
KDGB	3,666 SF
Total	**7,325 SF**

Therefore, if the future space needs = **32,695 SF**, less **7,325** that can be accounted for with Economics leaving the BUC and KDGB

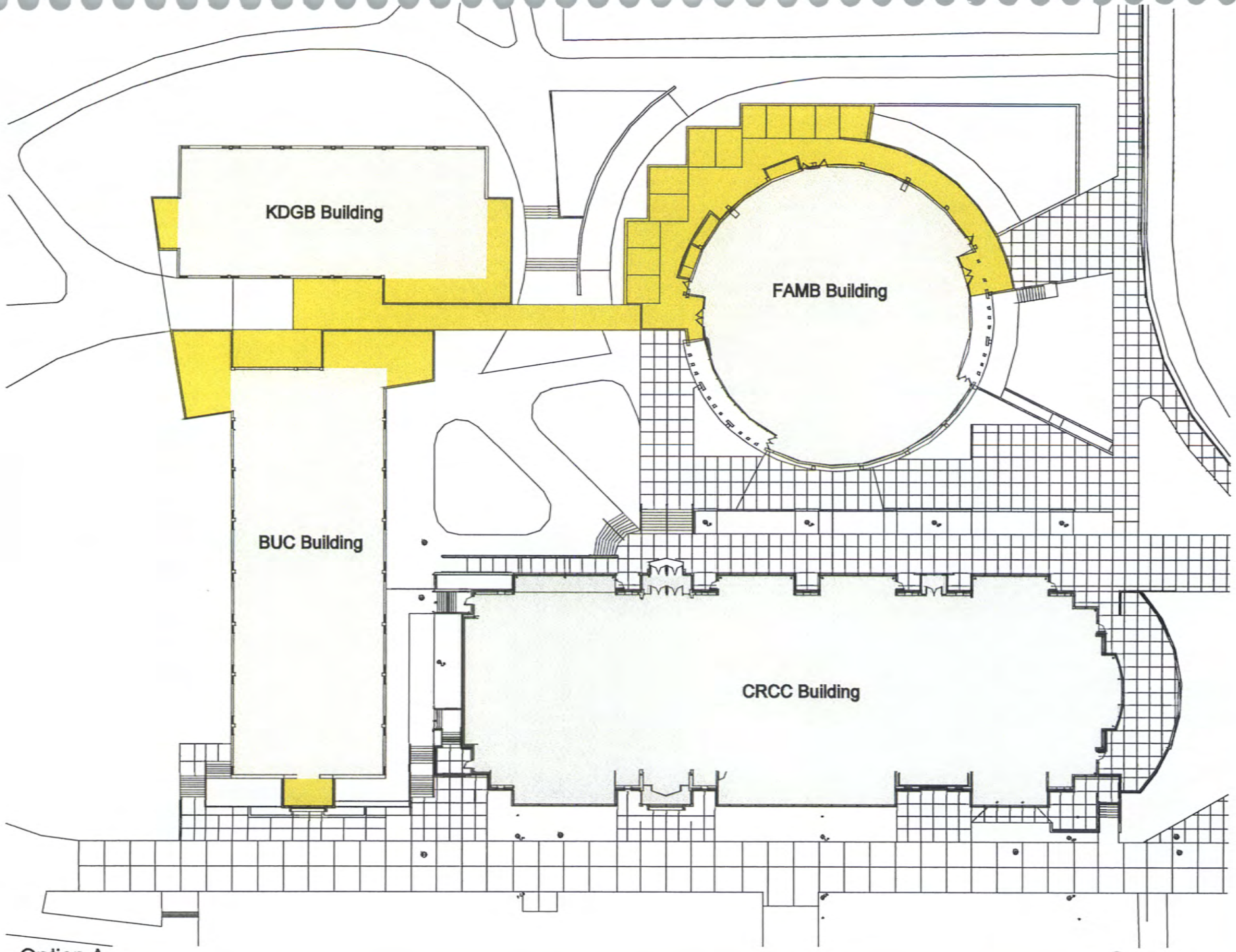
The total new addition space needs is approximately 25,370 SF. The following 4 pages show potential addition space, per floor, and totals 25,500 SF in new additions.



Option A

Future Growth - 1st Floor, 7,069 sf

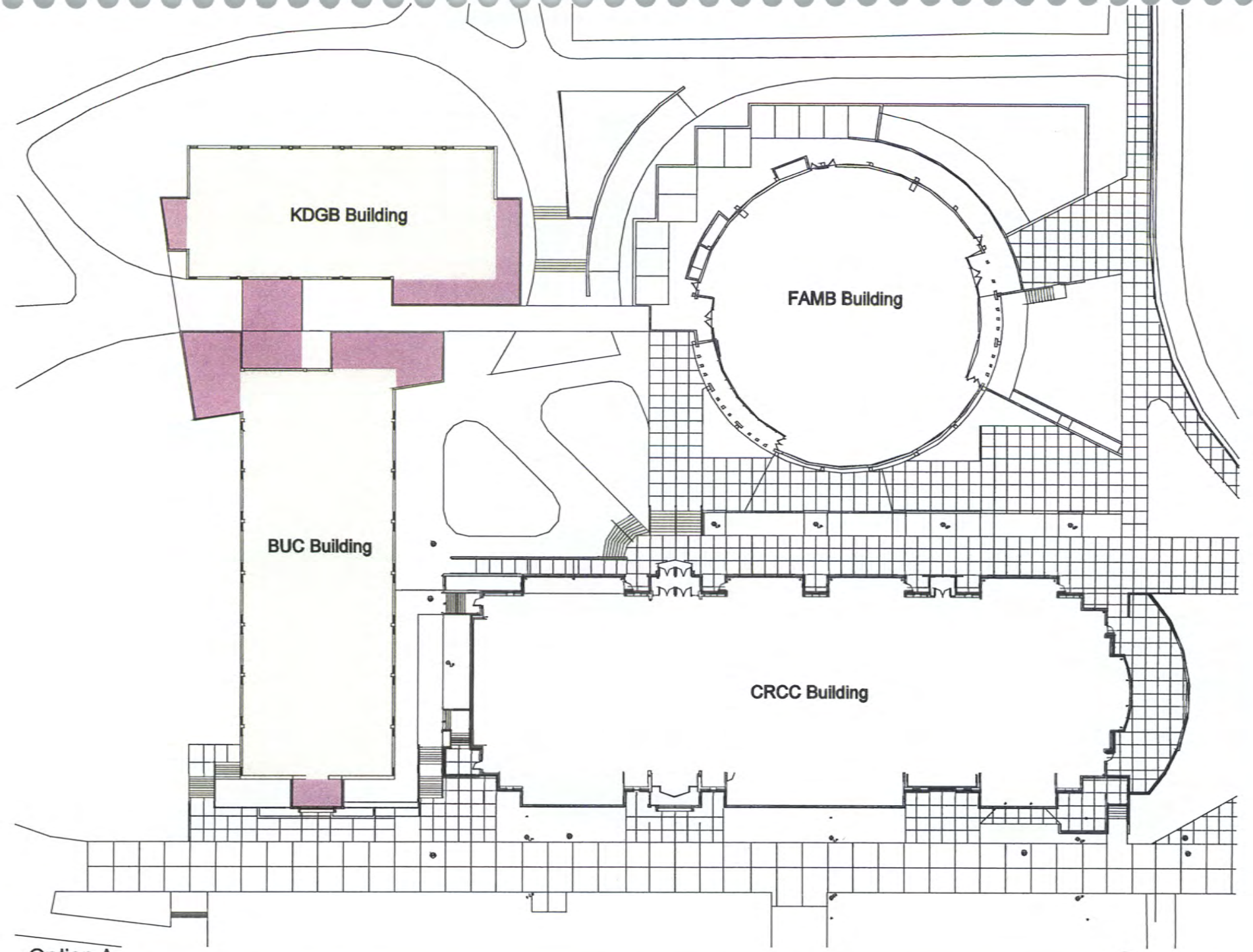
scale: 1" = 50'-0"



Option A

Future Growth - 2nd Floor, 10,164 sf

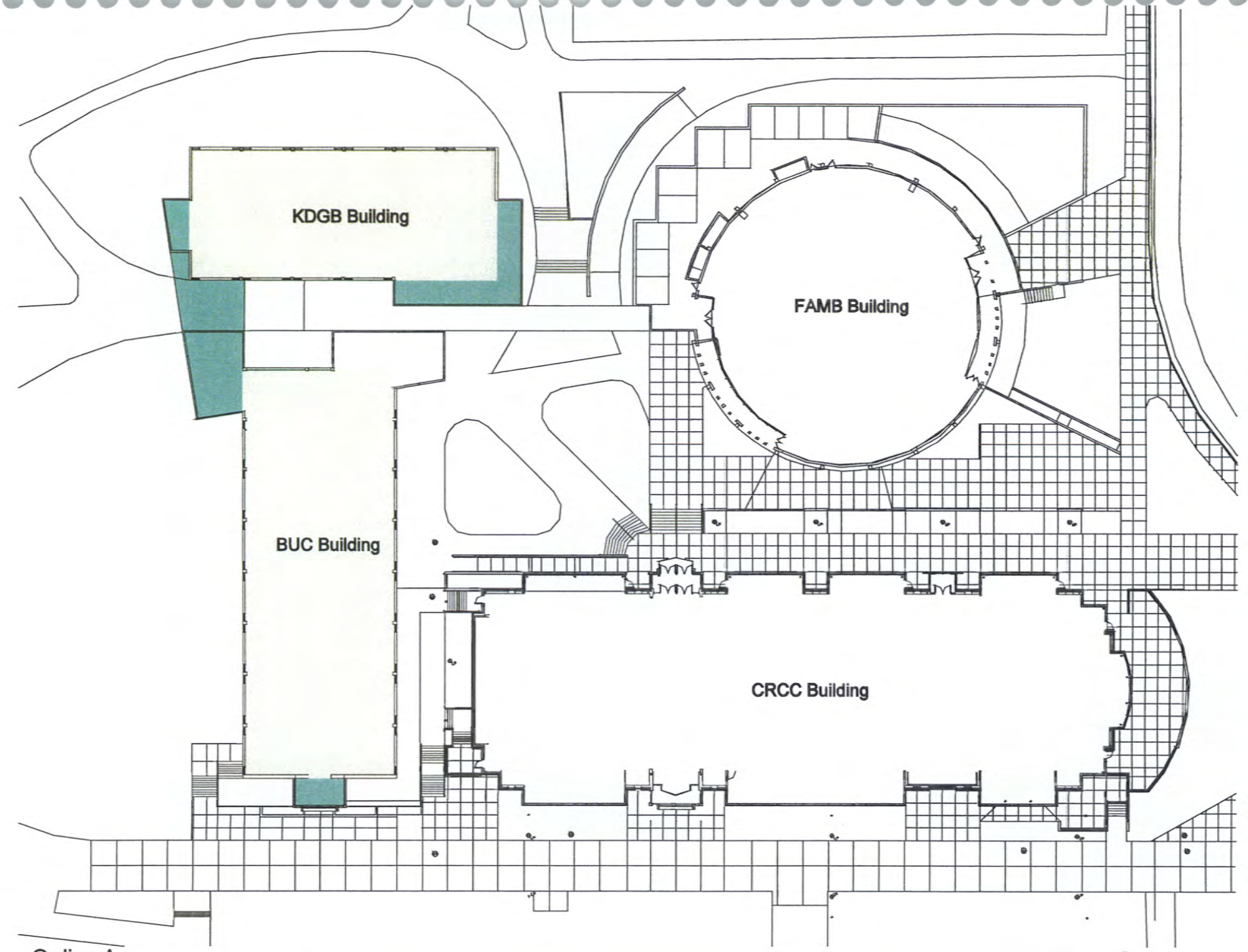
scale: 1" = 50'-0"



Option A

Future Growth - 3rd Floor, 3,219 sf

scale: 1" = 50'-0"



Option A

Future Growth - 4th Floor, 2,487 sf

scale: 1" = 50'-0"

9. Proposed Master Plan Approach

In summarizing all the data and interview materials during the Master Plan process, an overall "approach" was determined by the Master Plan Committee Members and the design consultants. The following list itemizes the overall Approach for the Proposed Master Plan:

1. BUC and KDGB

   Interior

   a. Essentially "gut" the interior floor plates.
   b. Re-Zone the two buildings:

      BUC- Classrooms
      Labs
      Specialized Centers
      Study Areas
      Student Offices

      KDGB- Administration Offices
      Faculty Offices
      Advising Offices
      Ph.D. Offices
      Departmental Offices

   c. All new finishes, new electrical and mechanical upgrades. (Complete renovation of interior)
   d. Provide structural/seismic improvements.

   Exterior

   e. Structural modifications as necessary for seismic and allow more openings for windows.
   f. Keep and clean existing exterior materials/Enhance for compatibility.

2. FAMB
   a. Maintain existing spatial functions and upgrade with all new finishes and systems.
   b. Propose a way to allow natural light into the center of the building.
   c. Keep and clean existing exterior materials/Enhance for compatibility.
   d. Provide structural/seismic improvements.

3. Relocate the Economics Department out of BUC and KDGB. This will "free-up" approximately 7,325 SF.

4. Develop design concepts for additional space, (Approximately 25,000 additional SF has been identified as required for current/future needs). Option A for additional square footage is included in Section 8. Two other Options(B and C) have been included in the Appendix. The design and materials used for any additional space would relate to the new design and materials of the CRCC, which will help bring the 4 buildings together architecturally.

   The additional space will also be utilized as connectors between the buildings, enhance flow and create more social/gathering/new image type spaces.

5. Provide a more human scale for the courtyard and orient public spaces toward the courtyard. Utilize the courtyard to tie together all 4 buildings.

Prior to creating design solutions for the renovation/remodel and additions to the BUC, KDGB and FAMB, thorough programming, site analysis, and study of utility relocation impacts will be required for each building. However, overall "feeling" sketches have been provided to direct the future design and planning efforts in the proper direction. These renderings are located in the Appendix of this document.

10. Re-zoning of BUC and KDGB

BUC	Existing	Mechanical	2,627 SF
		Circulation/Restrooms	11,427 SF
		Exterior Walls	2,210 SF
		Subtotal	***16,264 SF***

These spaces, for master planning purposes only, shall remain within BUC. It is anticipated with quality programming, that the designated square footage for circulation would be more efficient, and therefore less square footage.

BUC would then be re-zoned to include all existing classrooms, computer labs, and specialized centers, which is currently :

Subtotal	***20,375 SF***
The existing total SF for BUC:	49,222 SF
Space to Spare would then be:	12,583 SF

KDGB	Existing	Mechanical	1,586 SF
		Circulation/Restrooms	6,200 SF
		Exterior Walls	1,730 SF
		Subtotal	***9,516 SF***

These spaces, for master planning purposes only, shall remain within KDGB. It is anticipated with quality programming, that the designated square footage for circulation would be more efficient, and therefore less square footage.

BUC would then be re-zoned to include all existing offices and student services related functions, which is currently :

Subtotal ***23,121 SF***

The existing total SF for KDGB: 32,884 SF

Space to Spare would then be: 247 SF

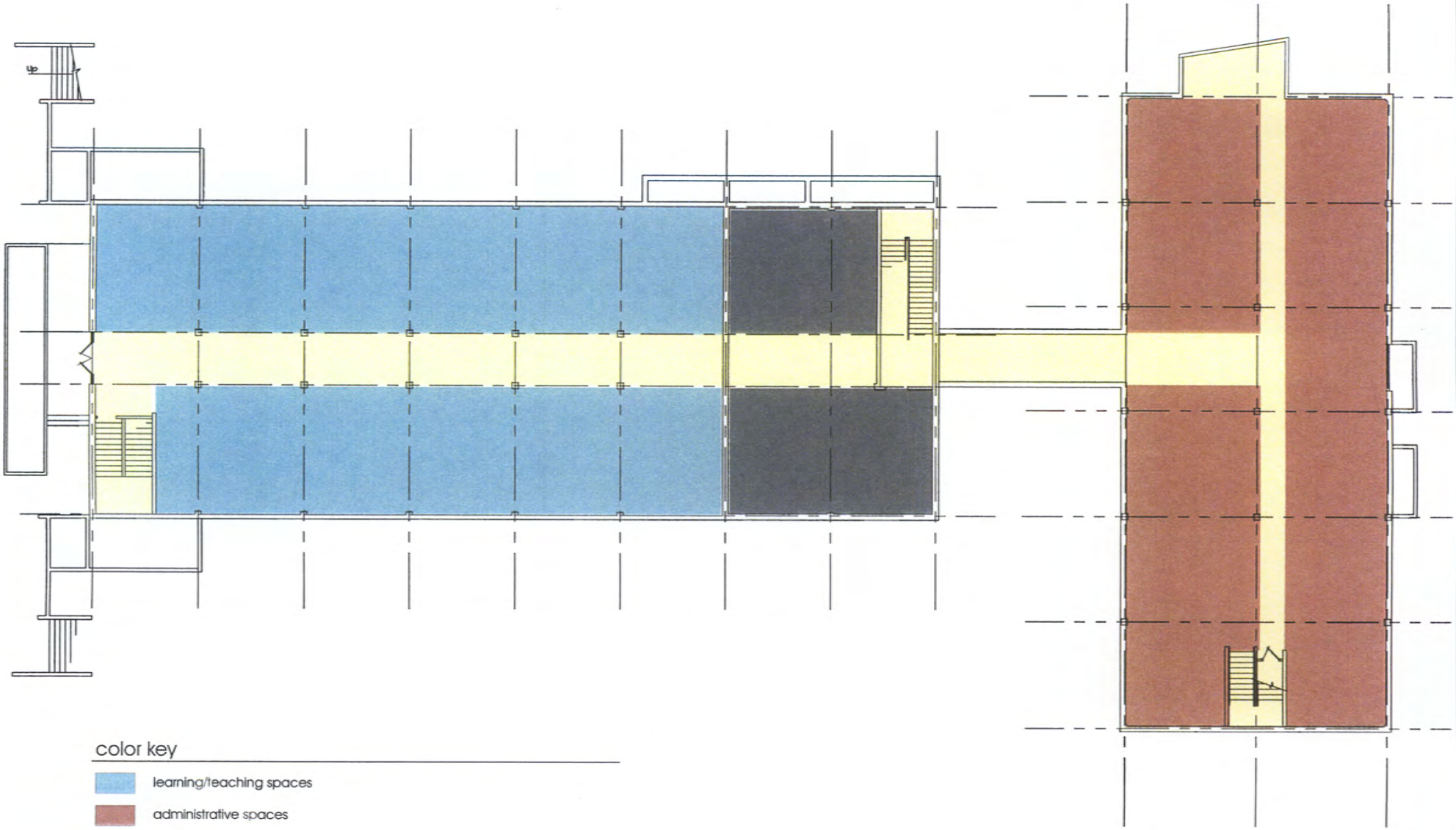
The spare spaces of both buildings (12,583 SF + 247 SF = 12,830 SF) would then be utilized for:

Existing Custodial	360 SF
Interior Walls	4,356 SF
Existing Storage	487 SF
Existing Vending	302 SF
Subtotal	***5,505 SF***

The space currently occupied by the Economics Department in BUC and KDGB:

Subtotal	***7,325 SF***

Therefore, if you add up all the subtotals listed above:	16,264 SF
	20,375 SF
	9,516 SF
	23,121 SF
	5,505 SF
	7,325 SF
Overall total for BUC and KDGB	**82,106 SF**

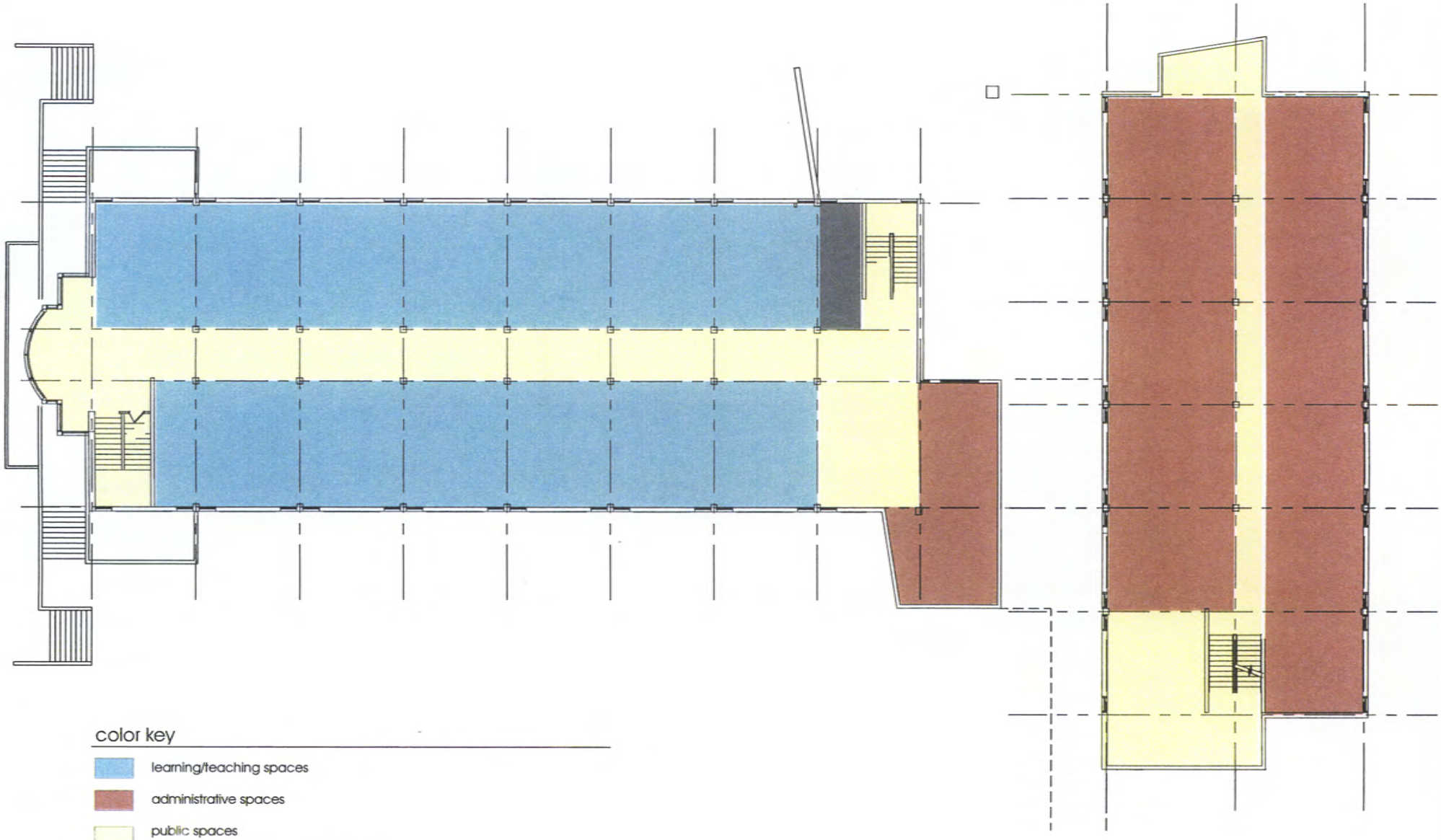


color key

- learning/teaching spaces
- administrative spaces
- public spaces (circulation, gathering, restrooms, etc.)
- utility spaces (mechanical, storage, etc.)

Basement

scale: 1" = 20'-0"

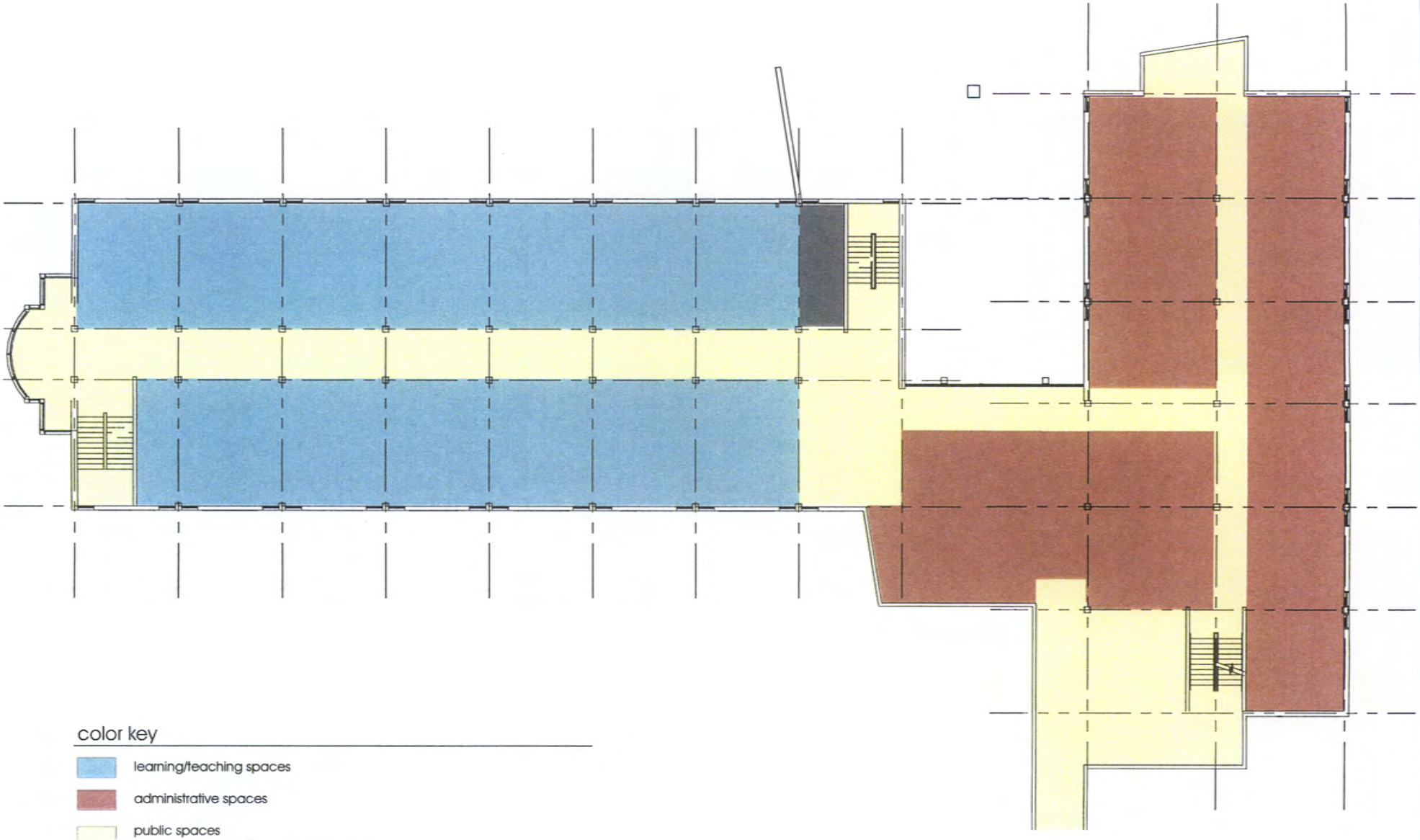


color key

- learning/teaching spaces
- administrative spaces
- public spaces (circulation, gathering, restrooms, etc.)
- utility spaces (mechanical, storage, etc.)

First Floor

scale: 1" = 20'-0"

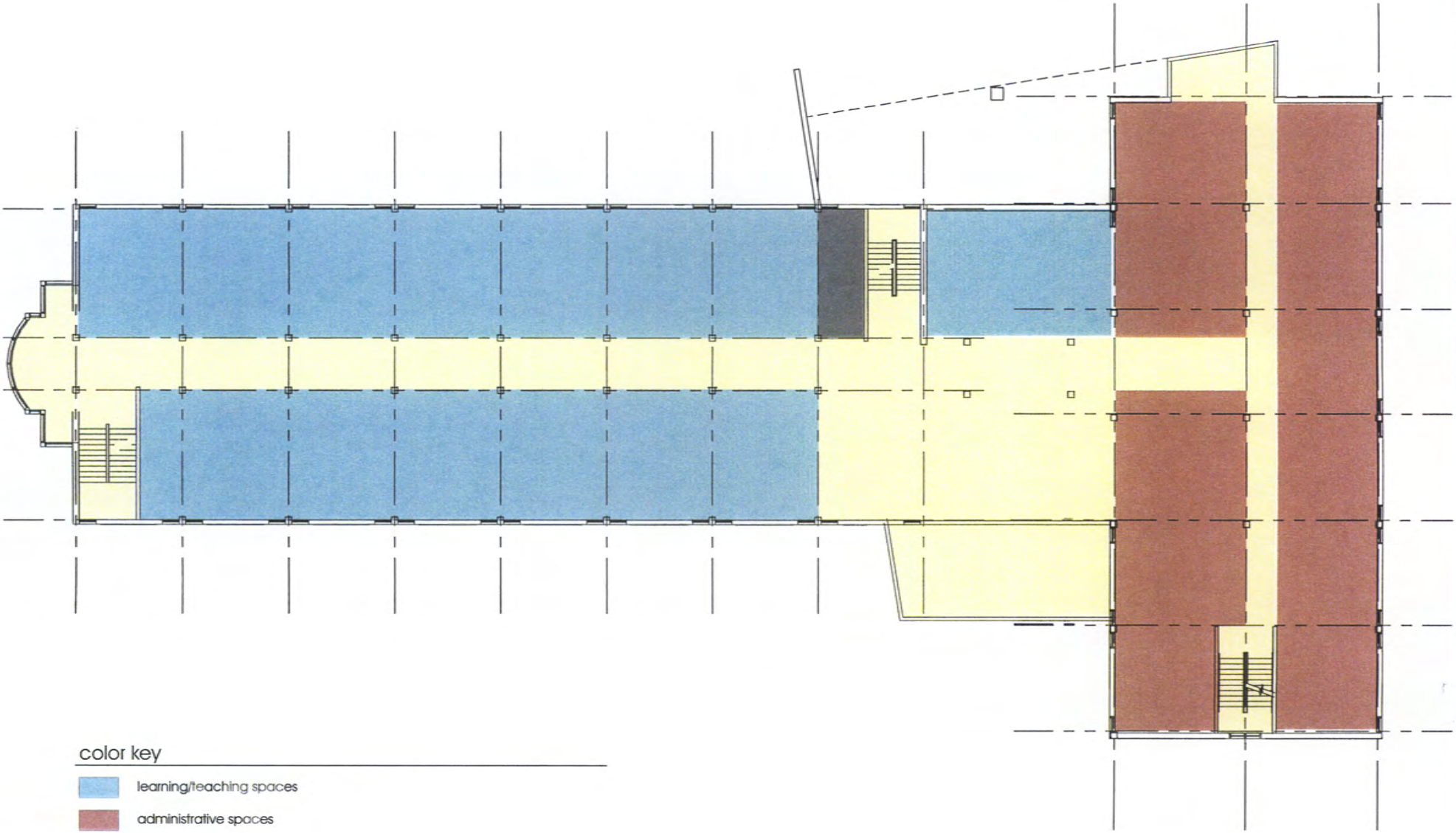


color key

- learning/teaching spaces
- administrative spaces
- public spaces (circulation, gathering, restrooms, etc.)
- utility spaces (mechanical, storage, etc.)

Second Floor

scale: 1" = 20'-0"

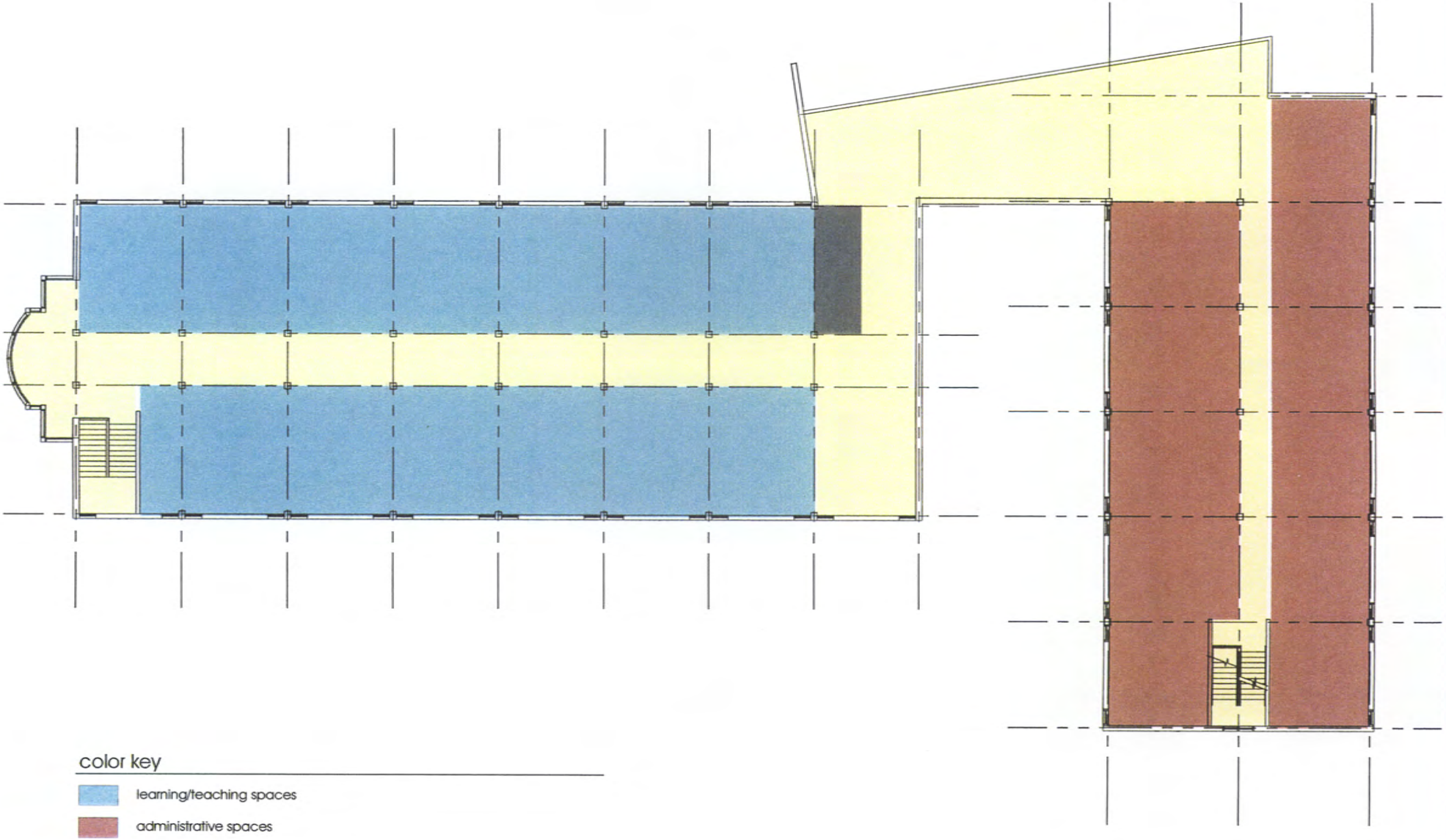


color key

- learning/teaching spaces
- administrative spaces
- public spaces (circulation, gathering, restrooms, etc.)
- utility spaces (mechanical, storage, etc.)

Third Floor

scale: 1" = 20'-0"



color key

- learning/teaching spaces
- administrative spaces
- public spaces (circulation, gathering, restrooms, etc.)
- utility spaces (mechanical, storage, etc.)

Fourth Floor

scale: 1" = 20'-0"

11. Budget Cost Estimates

Two cost estimates have been provided based on two different methods of delivery of design and construction: Design/Build
Design/Bid/Build

Design/Build

ITEM	GSF	BUDGET	COST/GSF
Base Cost			
Renovation of BUC	49,222 SF	$6,644,970	$135.00
Renovation of KDGB	32,884 SF	$4,439,340	$135.00
Renovation of FAMB	23,727 SF	$2,135,430	$ 90.00
New Additions	25,500 SF	$4,717,500	$185.00
Utility Relocations		$ 300,000	$ 0.00
Subtotal	***131,333 SF***	***$18,237,240***	***$138.86***
Completion of Courtyard		$ 144,000	$ 0.00
Hazardous Materials		$ 300,000	$ 2.19
Subtotal		***$18,681,240***	***$142.24***
Escalation to 2,002	7.00%	$ 1,307,687	$ 9.96
Total Construction Cost		**$19,988,927**	**$152.20**
Construction Design Fees	6.00%	$ 1,199,336	$ 9.13
Furnishings & Equipment	12.00%	$ 2,398,671	$ 18.26
Furnishings Design Fee	6.00%	$ 143,921	$ 1.09
Contingency	5.00%	$ 999,446	$ 7.61
Value Engineering		$ 10,000	$ .08
Testing/Inspection		$ 165,000	$ 1.20
Geotech/Soils Report		In Above	$ 0.00
Moving/Occupancy Cost		NIC	$ 0.00
Programming		$ 120,000	$ .88
Legal Services		$ 2,600	$ .02
Insurance		$ 1,500	$ .01
Planning Fund Reimbursed		$ 0	$ 0.00
Specialty Consultants		$ 0	$ 0.00
Arts		$ 0	$ 0.00
Telecommunications		$ 185,000	$ 1.41
Other Costs			
Construction Management		$ 120,000	$ .92
Utility Shutdowns		$ 10,000	$ .07
Lock Cylinders		$ 20,000	$ .15
Signage		$ 45,000	$ .34
Elect. Terminations		$ 80,000	$ .61
Campus Work Orders		$ 18,500	$ .14
Totals		$ 5,518,974	$ 42.02
Total Project Costs	**131,333 GSF**	**$ 25,507,901**	**194.22**

Design/Bid/Build

ITEM	GSF	BUDGET	COST/GSF
Base Cost			
Renovation of BUC	49,222 SF	$6,644,970	$135.00
Renovation of KDGB	32,884 SF	$4,439,340	$135.00
Renovation of FAMB	23,727 SF	$2,135,430	$ 90.00
New Additions	25,500 SF	$4,717,500	$185.00
Utility Relocations		$ 300,000	$ 0.00
Subtotal	***131,333 SF***	***$18,237,240***	***$138.86***
Completion of Courtyard		$ 144,000	$ 0.00
Hazardous Materials		$ 300,000	$ 2.19
Subtotal		***$18,681,240***	***$142.24***
Escalation to 2,003	10.50%	$ 1,961,530	$ 14.94
Total Construction Cost		**$20,642,770**	**$157.18**
Construction Design Fees	9.50%	$ 1,961,063	$ 14.93
Furnishings & Equipment	12.00%	$ 2,477,132	$ 18.86
Furnishings Design Fee	6.00%	$ 148,628	$ 1.13
Contingency	5.00%	$ 1,032,138	$ 7.86
Value Engineering		$ 10,000	$ .08
Testing/Inspection		$ 165,000	$ 1.20
Geotech/Soils Report		In Above	$ 0.00
Moving/Occupancy Cost		NIC	$ 0.00
Programming		$ 120,000	$ .88
Legal Services		$ 2,600	$ .02
Insurance		$ 1,500	$ .01
Planning Fund Reimbursed		$ 0	$ 0.00
Specialty Consultants		$ 0	$ 0.00
Arts		$ 0	$ 0.00
Telecommunications		$ 185,000	$ 1.41
Other Costs			
Construction Management		$ 120,000	$ .92
Utility Shutdowns		$ 10,000	$ .07
Lock Cylinders		$ 20,000	$ .15
Signage		$ 45,000	$ .34
Elect. Terminations		$ 80,000	$ .61
Campus Work Orders		$ 18,500	$ .14
Totals		$ 6,386,561	$ 48.70
Total Project Costs	**131,333 GSF**	**$ 27,029,331**	**205.88**

12. Proposed Phasing

Design/Build Phasing

The main time saving element for doing this Project as Design/Build is the design time. A Design/Build team approach includes creating necessary construction documents while the actual construction is taking place. (Obviously the Architect stays slightly ahead of the Contractor/Construction Manager).

It is recommended for the David Eccles School of Business to commence the Programming Phase during the Fund Raising Phase. The Programming Phase could take 4 – 6 months.

To Start Immediately
Fund Raising
Programming

Phase 1 Finish Courtyard
Renovation of FAMB
Renovation of BUC **12 months**

Reschedule the existing classroom utilization of the BUC into the new CRCC;

Relocate the Economics Department out of BUC and KDGB, and utilize the third floor Economics Offices of KDGB for temporary relocation of offices and Specialized Centers from BUC.

Timing is critical. FAMB could potentially be renovated during the summer when the need for the classroom spaces in this building are not in high utilization.

Phase 2 Renovation of KDGB
All New Construction **12 months**

Utilized removable partitions to set up necessary office space in the BUC during the renovation of KDGB.

Total time for Design/Build Option **24 months**

Design/Bid/Build

With this option, the Architect and Engineers complete the design and construction documents, which then are let out for competitive bidding. A General Contractor is selected based on low bid, and construction begins.

Once again, it is recommended for the David Eccles School of Business to commence the Programming Phase during the Fund Raising Phase. The Programming Phase could take 4 – 6 months.

To Start Immediately
Fund Raising
Programming

Phase 1 Design and Construction Documents by Architects and Engineers
Bid the Project **12 months**

Phase 2 Finish Courtyard
Renovation of FAMB
Renovation of BUC **12 months**

Reschedule the existing classroom utilization of the BUC into the new CRCC;

Relocate the Economics Department out of BUC and KDGB, and utilize the third floor Economics Offices of KDGB for temporary relocation of offices and Specialized Centers from BUC.

Timing is critical. FAMB could potentially be renovated during the summer when the need for the classroom spaces in this building are not in high utilization.

Phase 3 Renovation of KDGB
All New Construction **12 months**

Utilized removable partitions to set up necessary office space in the BUC during the renovation of KDGB.

Total time for Design/Bid/Build Option **36 months**

13. Evaluations of Existing Buildings

The following evaluations have been completed on Buildings 74 BUC, 75 KDGB, and 76 FAMB. An evaluation for Building 77 CRCC was not required due to the fact that it is still under construction and has been designed and constructed to comply with all current codes and requirements.

Architectural:	Report by ajc architects
Structural:	Report by Dunn Associates
Mechanical:	Report by Bennion and Associates
Electrical:	Report by Key Engineering

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ajc architects

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BUILDING 74 BUC
General

1. Existing stairs are not within a rated stair enclosure(s).

2. Building not sprinkled. (New construction would require the building to be fully sprinkled.)

3. Interior partition walls on 1st, 2nd, and 3rd floors are cmu block. 4th floor walls are framed/gyp. bd.

4. Minor improvements have been made to restrooms - i.e.: lever style faucets

5. Entry vestibule on East Side is compliant for accessibility with inside clear dimension of 7'-2".
   West Side entry is currently non-accessible, enter via stairs to main level.

6. West side basement level entry is accessible from outside grade, but there is not an elevator in the building to access the upper floors from the basement level.

7. Lay-in ceilings are not seismically braced.

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BUILDING 74 BUC
Basement

1. Building does not have an accessible elevator.

2. Handrails at stairs do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

3. Existing door hardware throughout entire floor is not ADA lever style.

4. Basement level does not have any men's or women's restrooms.

5. All signage throughout entire floor is non-compliant with ADA.

6. Basement does not have a water fountain compliant with ADA.

7. Exit doors with closures are not within ADA maximum allowed pressure/force.

8. Lay-in ceilings are not seismically braced.

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BUILDING 74 BUC
First Floor

1. Building does not have an accessible elevator.

2. Handrails at stairs do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

3. Existing door hardware throughout entire floor is not ADA lever style.

4. Main level does not have a men's restroom; only a women's restroom which is not ADA compliant. (100C, 100D).

5. All signage throughout entire floor is non-compliant with ADA.

6. Main level does not have a water fountain compliant with ADA.

7. Exit doors with closures are not within ADA maximum allowed pressure/force.

8. Guardrail at top of stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (100 A and 100B).

9. Handrail/guardrail at stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (100 A and 100B).

10. Guardrail at window at landing not within required 4" maximum opening for intermediate railing spacing for code compliance. (100 A and 100B).

11. Glass at windows at landings is not tempered.

12. Doors swing out into hallway into required clear space exit path.

13. Lay-in ceilings are not seismically braced.

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BUILDING 74 BUC
Second Floor

1. Building does not have an accessible elevator.

2. Handrails at stairs do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

3. Existing door hardware throughout entire floor is not ADA lever style.

4. Second level does not have a women's restroom; only a men's restroom which is not ADA compliant. (200C, 200D).

5. All signage throughout entire floor is non-compliant with ADA.

6. Second level does not have a water fountain compliant with ADA.

7. Exit doors with closures are not within ADA maximum allowed pressure/force.

8. Guardrail at top of stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (200 A and 200B).

9. Handrail/guardrail at stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (200 A and 200B).

10. Guardrail at window at landing not within required 4" maximum opening for intermediate railing spacing for code compliance. (200 A and 200B).

11. Glass at windows at landings is not tempered.

12. Doors swing out into hallway into required clear space exit path.

13. Missing 12"/18" clearances at doors 200C.

14. Lay-in ceilings are not seismically braced.

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BUILDING 74 BUC
Third Floor

1. Building does not have an accessible elevator.

2. Handrails at stairs do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

3. Existing door hardware throughout entire floor is not ADA lever style.

4. Third level does not have a men's restroom; only a women's restroom which is not ADA compliant. (300C, 300D).

5. All signage throughout entire floor is non-compliant with ADA.

6. Third level does not have a water fountain compliant with ADA.

7. Exit doors with closures are not within ADA maximum allowed pressure/force.

8. Guardrail at top of stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (300 A and 300B).

9. Handrail/guardrail at stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (300 A and 300B).

10. Guardrail at window at landing not within required 4" maximum opening for intermediate railing spacing for code compliance. (300 A and 300B).

11. Glass at windows at landings is not tempered.

12. Doors swing out into hallway into required clear space exit path.

13. Missing 12"/18" clearances at doors 300C, 300D.

14. Lay-in ceilings are not seismically braced.

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BUILDING 74 BUC
Fourth Floor

1. Building does not have an accessible elevator.

2. Handrails at stairs do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

3. Existing door hardware throughout entire floor is not ADA lever style.

4. Fourth level does not have a men's restroom; only a women's restroom which is not ADA compliant. (400C, 400D).

5. All signage throughout entire floor is non-compliant with ADA.

6. Fourth level does not have a water fountain compliant with ADA.

7. Exit doors with closures are not within ADA maximum allowed pressure/force.

8. Guardrail at top of stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (200 A and 200B).

9. Handrail/guardrail at stairs not within required 4" maximum opening for intermediate railing spacing for code compliance. (200 A and 200B).

10. Guardrail at window at landing not within required 4" maximum opening for intermediate railing spacing for code compliance. (200 A and 200B).

11. Glass at windows at landings isnot tempered.

12. Doors swing out into hallway into required clear space exit path.

13. Missing 12"/18" clearances at door 435.

14. Lay-in ceilings are not seismically braced.

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BUILDING 75 KDGB

General

1. Basement only is sprinkled.

2. Existing stairs are not within a rated stair enclosure(s).

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BUILDING 75 KDGB

Basement

1. Cubicle offices with doors are not accessible - door hardware not ADA lever style.

2. Handrails at stairs do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

3. Basement level does not have a water fountain compliant with ADA.

4. Existing Elevator not ADA.

5. No restrooms on this level.

6. Door hardware not ADA lever style throughout.

8. 2 exits are provided to main level, but neither go directly to the exterior.

9. Lay-in ceilings are not seismically braced.

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BUILDING 75 KDGB

First Level

1. Handrails at stairs 100C and 100P do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

2. Existing water fountain not ADA.

3. Existing elevator not ADA.

4. Men's faculty restroom - 100D - not ADA; door not 3° wide, restroom fixtures and accessories are not accessible.

5. Door hardware not ADA lever style throughout.

6. Missing 12"/18" clearances @ doors for rooms 108,101F,101C,104,101E, 101B, 101A.

7. South vestibule inside clear = 6'-9" - does not meet ADA.

8. North vestibule inside clear = 7'-3" - meets ADA.

9. Women's restroom 100J/100K - doors not 3° wide, restroom fixtures and accessories are not accessible.

10. Main reception counter 112 - accessible counter not provided.

11. Guardrail @ stairs 100P - not high enough - not within required 4" maximum opening for intermediate railing spacing for code compliance.

12. Two exits are required - the two existing exits are provided but are too close together.

13. Doors with closures - not adjusted to 5 lb. maximum force

14. No ADA signage provided throughout.

15. Lay-in ceilings are not seismically braced.

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BUILDING 75 KDGB
Second Level

1. Handrails at stairs 200C do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

2. Existing water fountain not ADA.

3. Existing elevator not ADA.

4. Men's restroom - 200J - not ADA; door not 3° wide, restroom fixtures and accessories are not accessible.

5. Door hardware not ADA lever style throughout.

6. Missing 12"/18" clearances @ doors for rooms 205,209.

7. Women's restroom 200D - doors not 3° wide, restroom fixtures and accessories are not accessible.

8. Guardrail @ stairs 200 C- not high enough - not within required 4" maximum opening for intermediate railing spacing for code compliance.

9. Doors with closures - not adjusted to 5 lb. maximum force.

10. No ADA signage provided throughout.

11. Landing @ stairs 200C - guardrail @ window not to code - spacing is greater than 4". Windows @ landing not tempered.

12. Bridge connection @ 2nd floor - aluminum doors to bridge - hand pulls do not meet ADA.

13. Second floor only has one exit; (2 are required).

14. Lay-in ceilings are not seismically braced.

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BUILDING 75 KDGB
Third Level

1. Handrails at stairs 300C do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

2. Existing water fountain not ADA.

3. Existing elevator not ADA.

4. Men's restroom - 300J - not ADA; door not 3° wide, restroom fixtures and accessories are not accessible.

5. Door hardware not ADA lever style throughout.

6. Missing 12"/18" clearances @ doors for rooms 309, 321, 321A.

7. Women's restroom 300D - doors not 3° wide, restroom fixtures and accessories are not accessible.

8. Guardrail @ stairs 300 C- not high enough - not within required 4" maximum opening for intermediate railing spacing for code compliance.

9. Doors with closures - not adjusted to 5 lb. maximum force

10. No ADA signage provided throughout.

11. Landing @ stairs 300C - guardrail @ window not to code - spacing is greater than 4". Windows @ landing not tempered.

12. Bridge connection @ 3rd floor - aluminum doors to bridge - hand pulls do not meet ADA.

13. Third floor only has 1 exit; (2 are required).

14. Lay-in ceilings are not seismically braced.

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BUILDING 75 KDGB
Fourth Level

1. Handrails at stairs 400C do not have correct gripping diameter, and do not extend correct length at top and bottom of stairs.

2. Existing water fountain not ADA.

3. Existing elevator not ADA.

4. Men's restroom - 400J - not ADA; door not 3° wide, restroom fixtures and accessories are not accessible.

5. Door hardware not ADA lever style throughout.

6. Missing 12"/18" clearances @ doors for rooms 401G,440,406.

7. Women's restroom 400D - doors not 3° wide, restroom fixtures and accessories are not accessible.

8. Guardrail @ stairs 400 C- not high enough - not within required 4" maximum opening for intermediate railing spacing for code compliance.

9. Doors with closures - not adjusted to 5 lb. maximum force

10. No ADA signage provided throughout.

11. Landing @ stairs 400C - guardrail @ window not to code - spacing is greater than 4". Windows @ landing not tempered.

12. Bridge connection @ 4th floor - aluminum doors to bridge - hand pulls do not meet ADA.

13. Fourth floor only has 1 exit; (2 are required).

14. Lay-in ceilings are not seismically braced.

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BUILDING 76 FAMB
First and Second Level

1. Building has a 2-stop elevator that has been "upgraded" to be as accessible as possible.

2. First level restrooms are not accessible--men's & women's. Signage has been added to designate/locate accessible restrooms on 2nd floor.

3. First level classrooms are not accessible.

4. First level water fountain not accessible.

5. First level to second level stairs - not to code -open risers, handrails do not extend @ top and bottom, and gripping surface are not accessible.

6. Second level men and women's restrooms have been modified for accessibility.

7. Second level classrooms have been modified for accessibility.

8. No ADA signage provided throughout.

9. Lay-in ceilings are not seismically braced.

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CONSULTING STRUCTURAL ENGINEERS

University of Utah School of Business Master Plan

STRUCTURAL

March 27, 2000

Condition of Structural Systems:

Summary

The three School of Business buildings analyzed in this report were built in the mid-1960's. They were designed and constructed in a manner common to that period. Much less was known about seismic resistant design, at that time. Incorporating any deliberate seismic design was new in the Salt Lake City area.

The design of each building is well defined in the available drawings. All three buildings have serious problems with their ability to resist seismic forces required in the current Uniform Building Code. The varying problems can be significantly improved with seismic strengthening measures for reasonable construction costs. The one exception is the bridge connecting the Kendall D. Garff Building with the Business Building. This bridge has very little seismic resistance, and very high potential seismic overturning forces. It is recommended to consider replacing this structure. Its potential seismic strengthening costs will be very high on a square foot basis.

The main problem with the Kendall D. Garff Building, and the Business Classroom Building is the unreinforced masonry infill walls. These walls will provide some seismic force resistance for the seismic force they are parallel to, but there will always be some walls that are more perpendicular to the seismic forces. The lack of reinforcing, and the lack of being anchored to the building at the top and bottom of these walls makes them vulnerable to collapse in a strong earthquake. There are various available methods of strengthening unreinforced masonry walls.

The probability of seismic hazard and risk to public safety and property in these, and any, building depends of many factors. These factors include the strength and ductility of the building, the soil profile characteristics of the specific site, the sites proximity to active faults,

and many other occupancy and use factors. Despite all of these factors, special consideration should be given to apparent hazards that could prevent the safe egress of the buildings.

The Francis A. Madsen Building, (No. 76)

Existing Conditions:

The original building drawings were obtained from the University's Campus Design and Construction Department. The structural and architectural drawings were reviewed as a portion of the analysis described in this report. Specifications were not available. The structural drawings are dated September 1964, the structural design firm was Hoffman C. Hughes and Associates.

The building is a 120-foot diameter circular building, with 2 stories and a partial basement. The drawings are complete enough that vertical load capacities could be determined from an analysis of the framing. No design capacities are listed in the drawings. The second floor and roof are framed with structural steel, and concrete slabs on steel deck. The drawings specify the steel connections. The main floor over the basement is framed with concrete beams and slabs. The building can be analyzed adequately to allow for the potential design of modifications to the building.

The masonry walls that surround the building provide lateral force resistance. These walls appear to be reasonable shear walls, however, the drawings do not indicate any rebar dowels, Nelson studs, or bolts, anchoring the second floor to the walls. There is a detail showing the roof deck welded to an embed plate at the top of the masonry walls, but this detail appears significantly inadequate to support the out of plane wall anchorage forces, and the shear transfer forces required by the current seismic code. The masonry walls are 12-inch thick cavity walls with face brick on the exterior and 4-inch concrete block on the interior. The drawings call for the cavity to have reinforced, grouted regions at 72 inches on center each way, and for horizontal joint reinforcing at 16 inches on center. The reinforcing called for, does not meet current code requirements for minimum reinforcing.

The drawings show one main lecture hall, and seven smaller classrooms. The only irregularities in the framing are that 4 of the radial girders over the main lecture hall carry transferred column loads. Also, the other girders cantilever to the center stair opening. The roof framing relies on a compression ring / tension ring system to create a column free space 50 feet in diameter. The building does not appear to qualify for any of the current seismic code's lists of plan or vertical irregularities in the lateral force resisting system, so this is not a concern.

The decorative cast stone fascia is shown in the drawings to have one line of ¼" plate strap anchors at about 24-inches on center horizontally. This likely does not meet current code requirements for supporting this type of heavy architectural element. The building has exterior concrete bridges and stairs at 2 locations. These have been recently rebuilt and appear to meet current seismic requirements.

Previous Reports:

This building is included in 2 previous campus wide seismic evaluation reports by Reaveley Engineers and Associates. The first report is from 1989, and is titled Rapid Seismic Evaluation of University of Utah Buildings. The Madsen Building is classified in this report as a steel frame with masonry infill, and is rated as " Poor" in it's ability to resist seismic forces. The other report is from 1990 and is titled Evaluation of Building Systems for Seismic resistance, Strengthening and Bracing. This report describes how most of the buildings on campus rank in their priority for seismic strengthening of non-structural elements, and a seismic strengthening retrofit of the structural systems, and gives programmatic estimates of the potential costs of these seismic upgrades. The priority rating was based on number of people normally in the building, building height, importance, and seismic performance rating. The Madsen Building was ranked 37 out of 50 buildings. This shows that the University has more than 30 buildings thought of as being a greater risk to more people than the Madsen Building.

Site Observations:

The site observation that was conducted as a part of this analysis confirms the information found in the structural and architectural drawings as much as possible. Obviously, much of the information in the structural detailing is impossible to gain access to, and verify.

The structural elements that were observed appear to be in good condition. There is very little cracking in the masonry walls. The design of the recently reconstructed exterior concrete stairs and bridges appears to be seismic resistant. The building framing was not accessible because no ceiling access panels were found.

The building was found to contain many non-structural seismic hazards. These include mechanical equipment, ceilings, and fixtures. Because of the age of the building, the ceilings are not hung in a way that meets current seismic requirements. The same is true for the piping, ductwork and light fixtures in the ceiling space. All of these have the potential to sway and come loose in a strong earthquake. This becomes a very significant hazard when these items fall and restrict access to exit-ways. The mechanical equipment in the basement also appears to be un-braced and could therefore be unstable in an earthquake. The piping appears to be suspended and connected completely rigid and therefore is likely to experience some breakages during strong ground motions.

The connection between the second floor framing and the exterior masonry wall could not be determined from a non-destructive site observation, so this remains a mystery. There is likely some type of anchorage, but it not apparent from the structural or architectural details.

Analysis:

Determining the actual vertical and lateral load capacities of this building is beyond the scope of this report. Drawings are available from which the structural capacities can be analyzed. It is likely that the live load capacities are similar to the modern live load requirements. Snow drifting was rarely taken into account in the 1960's but drifting doesn't appear to be a concern for this building.

The building's design appears to have some thought given to seismic design. The second floor and roof should have good ability to serve as seismic load diaphragms, and the exterior walls have more reinforcing called for than is found in many buildings of this time period in the Salt Lake City area. The unfortunate part of the seismic design is the missing detail between the second floor diaphragm, and the exterior walls, and the detail of the roof's connection to the masonry walls appears inadequate. The second floor connection problem can be solved by breaking away some of the slab at the perimeter to check for anchorage, or by assuming the connection to be inadequate and designing a retrofit anchorage detail.

Conclusions:

The Madsen Building is straight forward, and nicely laid out, with minimal structural challenges, with the exception of being circular. It appears to be in good condition and well maintained.

The building's vertical load carrying capacity has been in service since construction in the mid-1960's with no apparent problems. If needed, the actual live load capacity could be determined by analyzing the original building drawings.

The lateral force resisting system of this building appears to have 2 main weaknesses as follows:

1. The connection of the second floor diaphragm to the exterior masonry walls is not detailed, so it's adequacy is not known and should be considered poor.
2. The connection of the roof deck to the top of the exterior masonry walls appears to be significantly inadequate.

In addition to these main items, the exterior masonry walls do not have enough reinforcing to meet the minimum requirements in the current code. This minimum requirement is intended to increase ductility. Ductility is required to maintain stability during strong, extended ground motions. This problem appears to be minor compared to the roof and floor deck connection weakness. If the roof and floor deck connections are strengthened, the expected seismic performance would be raised from poor to fair without doing anything to the exterior walls.

Non-structural elements such as ceilings, mechanical equipment (pipes and ductwork), and light fixtures pose a sway and fall hazard in this building. This hazard becomes compounded because of how these items can block or restrict access to exit-ways.

The Kendall D. Garff Building (No. 75)

Existing Conditions:

The original building drawings are also available from the Campus Design and Construction Department. The structural and architectural drawings were reviewed as a part of this analysis. Specifications were not available. The structural design firm was Hoffman C. Hughes and Associates for this building also. The drawings are dated August 1963.

The building is rectangular, 121 feet by 52 feet. It has 4 stories and a complete basement. This building also includes a four-story bridge that links the building to the neighboring Business Classroom Building. Each floor of the building is framed with concrete pan joists, concrete beams and concrete columns. The roof has open web steel joists, and steel deck in lieu of the concrete pan joists. It still has concrete beams and columns. The bridge is framed with concrete beams, columns, and slabs at each level. The bridge is open at the first floor and enclosed at the other floors. The live load capacity of the building and bridge framing is not listed in the drawings, but the design is complete enough that the capacity of each member could be determined by analysis. The drawings are also complete enough to allow for adequate design of possible modifications to the building.

The design of this building appears to have a deliberate lateral force resisting system, but it appears inadequate to resist the lateral loads required by current seismic codes. The lateral load design criteria are not listed in the drawings, but the capacity could be determined by analysis. There are concrete shear walls on the east and west sides of the stair shaft on the south end of the building. There are also short concrete shear walls on the north and south sides of the building. The footings below the walls each side of the stair shaft appear to be sized based only on vertical loads. They are probably inadequate to resist overturning forces.

There are also 12 inch concrete block infill walls on the north and south sides of the building which will provide shear strength for east / west seismic forces. These block infill walls could, however, be a seismic risk for north / south seismic forces. There are no rebar dowels or any other details showing anchorage of these walls to the framing, except that the exterior face brick might be hooked to dovetails cast into the concrete framing. These walls could be in danger of collapsing in a strong north / south earthquake.

The east and west sides of the building have masonry infill walls which appear to be a greater risk of collapse because they are 2 wythe walls which are not shown to be tied together wythe to wythe. These have a greater danger of collapse because the height to thickness ratio is based on a 4-inch thickness. The exterior wythe is face brick, the interior wythe is 4-inch concrete block. Four-inch thick masonry walls are extremely unstable in a strong earthquake. If joint reinforcing had been used, the collapse hazard would be much smaller, but joint reinforcing is not shown in the drawings. These walls also do not have anchorage called for except for the possibility that the face brick is tied to dovetails in the concrete faming. This anchorage would not meet modern code requirements, but is would help some. The adequacy of the anchorage of the pre-cast decorative columns and facia elements is also questionable.

The bridge connecting this building to the classroom building does not appear to have a lateral force resisting system. Its connection to the building does not show any special reinforcing so that tie in should be considered weak. It can get some lateral force capacity from the concrete frame, but the frame does not have modern ductile detailing so there is no lateral capacity in a manner allowed by the code. The main building's concrete frame can also be thought to have some lateral force capacity, but it is not valid by the code because of the lack of modern ductile detailing. The bridge's extreme height to width ratio, as well as its weight gives the bridge extreme seismic shear and overturning weaknesses.

Previous Reports:

This building is included in the 2 previous campus wide seismic evaluation reports by Reaveley Engineers and Associates. In the first report, the building is classified as a concrete frame with masonry infill, and is rated as " Poor" in its ability to resist seismic forces. In the other report, the building was ranked 23 out of 50 buildings on campus, in seismic strengthening priority by the factors previously described herein. The bridge structure should be considered a higher priority because of its extreme weaknesses. It should be classified as extremely poor.

Site Observations:

The site observation that was conducted as a part of this analysis confirms the information found in the structural and architectural drawings as much as possible. Obviously, much of the information in the structural detailing is impossible to gain access to, and verify.

The structural elements that were observed appear to be in good condition. There is minimal cracking in the masonry walls. The exterior concrete has some minor cracking and spalling, but appears to be in reasonable condition. The building framing was observed through ceiling access at 2 locations, and appeared to be in good condition.

The building was found to contain many non-structural seismic hazards. These include mechanical equipment, ceilings and fixtures. Because of the age of the building, the ceilings are not hung in a way that meets current seismic requirements. The same is true for the piping, ductwork and light fixtures in the ceiling space. All of these have the potential to sway and come loose in a strong earthquake. This becomes a very significant hazard when these items fall and restrict access to exit-ways. The mechanical equipment in the basement also appears to be un-braced and could therefore be unstable in an earthquake. The piping appears to be suspended and connected completely rigid and therefore is likely to experience some breakages during strong ground motions.

Analysis:

Determining the actual vertical and lateral load capacities of this building is beyond the scope of this report. Drawings are available from which the structural capacities can be analyzed. It is likely that the live load capacities are similar to the modern live load requirements. Snow

drifting was rarely taken into account in the 1960's so the long canopy at the main entrance likely does not meet modern snowdrift requirements.

The building's design appears to have some thought given to seismic design. The floors should have good ability to serve as seismic load diaphragms. The steel roof deck, however, is likely not adequate for the current seismic force requirements. The connections of the deck to the shear walls, both direct and through possible drag elements do not meet current code requirements. It is likely the concrete and masonry shear walls in the building are inadequate to resist current seismic force requirements, but they can provide a certain level of resistance.

The masonry infill in the building does not appear to be connected to the building in a manner that would satisfy current code requirements. The canopy at the main entrance to the building doesn't have a mechanism preventing it from swaying in a strong earthquake. If it collapsed, it could seriously impede safe egress of the building.

The bridge connecting this building to the Business Classroom Building appears to have serious seismic weaknesses. It is a tall slender heavy structure with no lateral capacity valid in the current code. It has some lateral load capacity from its non-ductile concrete frame. Successful seismic strengthening of the buildings like the Garff Building can be accomplished for reasonable construction costs. It is recommended to consider a complete replacement of the bridge structure rather than trying to strengthen it.

Conclusions:

The Garff Building is straight forward, and nicely laid out, with minimal structural challenges. It appears to be in good condition and well maintained. The concrete has some minor cracking, but this is to be expected.

The building's vertical load carrying capacity has been in service since construction in the mid-1960's with no apparent problems. If needed, the actual live load capacity could be determined by analyzing the original building drawings.

The Garff Building, and the bridge have demonstrated a certain level of lateral force resistance since construction by resisting the wind forces and minor ground motions that have occurred to date. The lateral force resisting system of the building appears to have 3 main weaknesses as follows:

1. The roof deck's gauge, and the connections detailed appear to be inadequate to carry the roof diaphragm shear forces, and inadequate to deliver the forces to the shear walls. The deck's attachment to the framing is not specified, and could not be determined from a non-destructive site observation.
2. The concrete shear walls appear to be designed for a lower force level than would be required by the current seismic code. The footings under the interior walls appear to be sized based only on gravity loading. They are probably inadequate for seismic overturning forces.

3. The masonry infill walls on the building's exterior don't appear to have sufficient anchorage the concrete framing. The walls on the east and west appear to be (2) 4-inch thick wythes that are not tied together. This creates a high height to thickness ratio, which means they have a significant probability of collapsing in a strong earthquake.

It is possible to successfully strengthen this type of building for current seismic requirements with reasonable construction costs. It is probably more economical to remove the interior unreinforced masonry walls, and replace them with steel stud walls.

The bridge connecting the Garff Building to the classroom building is tall narrow, and heavy. The bridge doesn't have a lateral force resisting system with the ductility required by the code. Since it is a relatively small and simple structure, it is recommended to consider completely replacing it with a ductile moment frame of either steel or concrete.

Non-structural elements such as ceilings, mechanical equipment (pipes and ductwork), and light fixtures pose a sway and fall hazard in this building. This hazard becomes compounded because of how these items can block or restrict access to exit-ways. This is particularly true of the canopy at the main entrance.

The Business Classroom Building (No. 74)

Existing Conditions:

The original building drawings are also available from the Campus Design and Construction Department. The structural and architectural drawings were reviewed as a part of this analysis. Specifications were not available. The structural design firm was Hoffman C. Hughes and Associates for this building also. The drawings are dated April 1962.

The building is rectangular, 161-feet by 61-feet. It has 4 stories and a complete basement. Each floor of the building is framed with concrete pan joists, concrete beams and concrete columns. The roof has open web steel joists, and steel deck in lieu of the concrete pan joists. It still has concrete beams and columns. The live load capacity of the building framing is not listed in the drawings, but the design is complete enough that the capacity of each member could be determined by analysis. The drawings are also complete enough to allow for adequate design of possible modifications to the building.

The design of this building appears to have a deliberate lateral force resisting system, but it appears inadequate to resist the lateral loads required by current seismic codes. The lateral load design criteria are not listed in the drawings, but the capacity could be determined by analysis. There are concrete shear walls on three sides of the stair shafts that occur at the northeast, and the southwest corners of the building. The concrete walls on the north and south sides of the building are quite short. The footings below the walls around the stair shaft appear to be sized based only on vertical loads. They are probably inadequate to resist overturning forces.

There are also 12 inch concrete block infill walls on the east and west sides of the building which will provide shear strength for north / south seismic forces. These block infill walls could, however, be a seismic risk for east / west seismic forces. There are no rebar dowels or any other details showing anchorage of these walls to the floor framing, except that the exterior face brick might be hooked to dovetails cast into the concrete framing. These walls could be in danger of collapsing in a strong east / west earthquake.

The north and south sides of the building have masonry infill walls that appear to be a greater risk of collapse because they are 2 wythe walls which are not shown to be tied together wythe to wythe. These have a greater danger of collapse because the height to thickness ratio is based on a 4-inch thickness. The exterior wythe is face brick, the interior wythe is 4-inch concrete block. Four-inch thick walls are extremely unstable in a strong earthquake. If joint reinforcing had been used, the collapse hazard would be much smaller, but joint reinforcing is not shown in the drawings. These walls also do not have anchorage called for except for the possibility that the face brick is tied to dovetails in the concrete faming. This anchorage would not meet modern code requirements, but it would help some. The adequacy of the anchorage of the pre-cast decorative columns and fascia elements is also questionable.

The corridor and classroom partitions in the building are typically 4 and 6-inch concrete block masonry. These walls have little if any bracing at the top, and no anchorage at the bottom. They are a significant danger because they could collapse with moderate to strong ground motions.

Previous Reports:

This building is included in the 2 previous campus wide seismic evaluation reports by Reaveley Engineers and Associates. In the first report, the building is classified as a concrete frame with masonry infill, and is rated as " Poor" in its ability to resist seismic forces. In the other report, the building was ranked 19 out of 50 buildings on campus, in seismic strengthening priority by the factors previously described herein.

Site Observations:

The site observation that was conducted as a part of this analysis confirms the information found in the structural and architectural drawings as much as possible. Obviously, much of the information in the structural detailing is impossible to gain access to, and verify.

The structural elements that were observed appear to be in good condition. There is minimal cracking in the masonry walls. The exterior concrete has some cracking and spalling, but appears to be in reasonable condition. The building framing was observed through ceiling access at 3 locations, and appeared to be in good condition.

The building was found to contain many non-structural seismic hazards. These include equipment ceilings and fixtures. Because of the age of the building, the ceilings are not hung in a way that meets current seismic requirements. The same is true for the piping, ductwork and light fixtures in the ceiling space. All of these have the potential to sway and come loose in a strong earthquake. This becomes a very significant hazard when these items fall and restrict access to exit-ways. The mechanical equipment in the basement also appears to be un-braced and could therefore be unstable in an earthquake. The piping appears to be suspended and connected completely rigid and therefore is likely to experience some breakages during strong ground motions. The cooling tower on the roof appears to be inadequately anchored to resist overturning in a strong earthquake.

Conclusions:

The Classroom Building is straight forward, and nicely laid out, with minimal structural challenges. It appears to be in good condition and well maintained. The exterior concrete has some cracking and spalling, but this is to be expected with a building this age.

The building's vertical load carrying capacity has been in service since construction in the mid-1960's with no apparent problems. If needed, the actual live load capacity could be determined by analyzing the original building drawings.

The Classroom Building has demonstrated a certain level of lateral force resistance since construction by resisting the wind forces and minor ground motions that have occurred to date. The lateral force resisting system of the building appears to have 3 main weaknesses as follows:

1. The roof deck's gauge, and the connections detailed appear to be inadequate to carry the roof diaphragm shear forces, and inadequate to deliver the forces to the shear walls. The deck's attachment to the framing is not specified, and could not be determined from a non-destructive site observation.
2. The concrete shear walls appear to be designed for a lower force level than would be required by the current seismic code. The footings under the interior walls appear to be sized based only on gravity loading. They are probably inadequate for seismic overturning forces.
3. The masonry infill walls on the buildings exterior don't appear to have sufficient anchorage the concrete framing. The walls on the east and west appear to be (2) 4-inch thick wythes that are not tied together. This creates a high height to thickness ratio, which means they have a significant probability of collapsing in a strong earthquake. The corridor and classroom partitions are constructed from 4 and 6-inch concrete block. These walls could easily collapse in an earthquake.

It is possible to successfully strengthen this type of building for current seismic requirements with reasonable construction costs.

Non-structural elements such as ceilings, mechanical equipment (pipes and ductwork), and light fixtures pose a sway and fall hazard in this building. This hazard becomes compounded because

of how these items can block or restrict access to exit-ways. This is particularly true of the canopy at the east entrance. Another major concern is the cooling tower on the roof. It does not appear to be adequately designed to resist seismic overturning forces.

The probability of seismic hazard and risk to public safety and property in this, and any, building depends of many factors. These factors include the strength and ductility of the building, the soil profile characteristics of the specific site, the sites proximity to active faults, and many other occupancy and use factors. Despite all of these factors, special consideration should be given to apparent hazards that could prevent the safe egress of the building.

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CONSULTING STRUCTURAL ENGINEERS

Francis A. Madsen Building, (No. 76)

STRUCTURAL SEISMIC STRENGTHENING COST ESTIMATE

ITEM	UNIT COST	TOTAL COST	BUILDING S.F. COST
Strengten roof Deck connection to exterior walls	40 $ per s.f.	$ 15,080.00	1.33 $ per s.f.
Strengthen floor Deck connection to exterior walls	40 $ per s.f.	$ 15,080.00	1.33 $ per s.f.
Strengthen precast Facia connection	20 $ per s.f.	$ 7,540.00	0.66 $ per s.f.
Total		$ 37,700.00	3.33 $ per s.f.

NOTES

1. These costs do not include the demolition required to access the work.
2. These costs do not include the repair or replacement of architectural finishes, roofing, mechanical equipment, or electrical equipment, which may need to be removed to accomplish the work.

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CONSULTING STRUCTURAL ENGINEERS

Kendall D. Garff Building, (No. 75)

STRUCTURAL SEISMIC STRENGTHENING COST ESTIMATE

ITEM	UNIT COST	TOTAL COST	BUILDING S.F. COST
Provide additional concrete shearwalls	35 $ per s.f. (wall)	$ 135,000.00	4.30 $ per s.f.
Strengthen the steel roof deck and improve attachment to framing	1.50 $ per s.f. (roof)	$ 9,500.00	0.30 $ per s.f.
Anchor top and Bottom of unrein-Forced masonry	60 $ per s.f.	$ 74,400.00	2.40 $ per s.f.
Strengthen double Wythe masonry walls	10 $ per s.f.	$ 96,800.00	3.10 $ per s.f.
Total		$ 315,700.00	10.10 $ per s.f.

NOTES

1. These costs do not include the demolition required to access the work.
2. These costs do not include the repair or replacement of architectural finishes, roofing, mechanical equipment, or electrical equipment, which may need to be removed to accomplish the work.

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CONSULTING STRUCTURAL ENGINEERS

The Business Classroom Building, (No. 74)

STRUCTURAL SEISMIC STRENGTHENING COST ESTIMATE

ITEM	UNIT COST	TOTAL COST	BUILDING S.F. COST
Provide additional concrete shearwalls	35 $ per s.f. (wall)	$ 273,000.00	5.60 $ per s.f.
Strengthen the steel roof deck and improve attachment to framing	1.50 $ per s.f. (roof)	$ 14,7.00.00	0.30 $ per s.f.
Anchor top and bottom of unreinforced masonry (Interior)[3]	60 $ per s.f.	$ 156,600.00[3]	3.20 $ per s.f.[3]
Strengthen interior unreinforced masonry[3]	10 $ per s.f. (wall)	$ 261,000.00[3]	5.30 $ per s.f.[3]
Anchor top and bottom of unreinforced masonry (exterior)	60 $ per s.f. (wall)	$ 89,300.00	1.80 $ per s.f.
Strengthen exterior unreinforced masonry	10 $ oer s.f. (wall)	$ 148,800.00	3.00 $ per s.f.
Total		$ 943,400.00	19.20 $ per s.f.

NOTES on Page 2

1. These costs do not include the demolition required to access the work.
2. These costs do not include the repair or replacement of architectural finishes, roofing, mechanical equipment, or electrical equipment, which may need to be removed to accomplish the work.
3. It is recommended to remove the interior partitions and replace them with stud walls. The strengthening mechanism will likely be to fasten the masonry to a new stud wall anyway.

BENNION
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U OF U BUSINESS BUILDING COMPLEX

Mechanical Report
March 29, 2000

GENERAL

Building 74 BUC was built in about 1963. Building 75 KDGB was built in about 1963. Building 76 FAMB was built in about 1964. In general, the original mechanical equipment and systems are still in use.

DESCRIPTION OF EXISTING MECHANICAL SYSTEMS

Heat Source:

The heat source for all three buildings is the campus high temperature hot water (HTW) system. 4" HTW pipes enter the building complex into the tunnel under the bridge. 2" lines run to each of the three buildings. Each building has a HTW-to-hot water heat exchanger. The tube bundle in Building 74 BUC has been replaced within the last year. The automatic valves on the HTW heat exchangers have been replaced in the past year.

Cooling Source:

Currently, all three buildings are served by a satellite chiller located in the new Art Museum Building. This system is new as of February, 2000. Until now, a chiller located in the basement of Building 74 BUC has served all three buildings. The chiller is a Trane Centravac with R-11 refrigerant. The chiller is served by a cooling tower located on the roof of Building 74 BUC. The cooling tower is a Ceramic brand tower with a fiberglass shell and ceramic fill. It has been installed within the last 10 years. It is in good condition.

HVAC Systems:

Building 74 BUC has a dual duct constant volume system with hot water perimeter finned tube radiation. The ceiling spaces are used as a return air plenum. The corridor ceiling space is used as a return air plenum. A field-built air handler located in the basement serves the building. The air handler has hot water and chilled water coils and an outside air economizer system. There is a return air fan. Supply air is ducted up the return air shaft. There are two rooftop packaged air conditioners which serve Computer Labs. A Mitsubishi split DX system serves Room 101.

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Building 75 KDGB has a dual duct constant volume system with hot water finned-tube perimeter radiation. A field-built air handler located in the basement serves the building. The air handler has hot water and chilled water coils and an outside air economizer system. The system differs from Building 74 BUC in that return air trunks are run through the center of the building. The ceiling spaces are still used as return air plenums.

Building 76 FAMB has a constant volume multi-zone system. There are ten zones. The ceiling space is used as a return air plenum. Supply air is ducted up five or six return air shafts located around the inner circle. A multi-zone unit located in the basement serves the building. The unit has hot water and chilled water coils and an outside air economizer system. There is a return air fan.

Automatic Temperature Controls:

All three buildings have the original automatic temperature controls systems, with some limited upgrades. The controllers and actuators are pneumatic. The current University Standard is Direct Digital Controls (DDC) by Johnson or Staefa.

Plumbing Systems:

Originally, each building had a high temperature water (HTW)-to-domestic water heater. The domestic water heater in Building 75 KDGB failed and is now served by the Building 74 BUC water heater. Within the last three years, the water closets and urinals, including flush valves have been replaced in all 3 buildings. The lavatory faucets have also been replaced. The lavatories are original. There is not an overflow roof drain system on any of the 3 buildings. In general, the main hot and cold water lines are galvanized steel and the branch lines are copper.

FIRE PROTECTION SYSTEMS

Building 74 BUC has a fire hose cabinet system. It does not have fire sprinklers, even in the Basement.

Building 75 KDGB has a fire hose cabinet system with fire sprinkling in the Basement only.

Building 76 FAMB has a fire hose cabinet system. It does not have fire sprinklers.

UTILITIES

The three-building complex is served by an 8" sanitary sewer main, a 6" water main and 4" HTW lines. The 4" HTW lines connect to 10" mains just north of the complex. The roof drain lines are connected to storm drains. The 6" water main connects to a 10" water main just north of Building 74 BUC. Each building is served by a 4" line from the 6" main.

ASBESTOS

It appears that the insulated pipe fittings contain asbestos insulation. It is possible that the water heaters and heat exchanger insulation contains asbestos also.

CODE ISSUES

If the existing buildings were to be brought up to current codes, the following mechanical issues would need to be addressed:

1. The existing fire dampers at shaft penetrations would have to be replaced with combination fire/smoke dampers.

2. Corridor ceiling spaces could not continue to be used as return air plenums. The ceiling would have to be a rated barrier or return air ductwork added.

3. An overflow roof drain system would have to be added.

4. A more positive means of measuring and documenting minimum outside ventilation air would have to be provided.

5. The constant volume air systems would have to be converted to variable volume.

6. The single pane glass would have to be replaced with double pane.

7. Insulation would have to be added to the walls and the roof.

ANALYSIS

Generally, the mechanical systems, including air handlers, coils, fans, pumps, heat exchangers, water heaters, hot and chilled water piping, domestic hot and cold water piping, dual duct boxes, finned tube radiation, and automatic temperature controls have reached the end of their average useful life.

The constant volume air handling systems consume substantially more energy than the current VAV systems. DDC control systems save energy, reduce maintenance, and improve comfort. The Code Issues mainly deal with life safety and need to be addressed.

RECOMMENDATIONS

The entire mechanical system should be replaced. New plumbing fixtures and brass could be salvaged. The new chilled water service should be maintained. The existing chiller should be demolished. The ceramic cooling tower could be salvaged. A wet pipe fire sprinkling system should be added to all three buildings.

The HTW service to the complex is adequate and should be maintained. A flow analysis and test will have to be made on the existing 6" water main serving the three buildings. The 6" main may have to be replaced with an 8" main to accommodate the fire sprinkling system. The 8" sanitary sewer serving the three buildings is adequate. An overflow roof drain system will need to be added.

ESTIMATED MECHANICAL CONSTRUCTION COSTS

The estimated mechanical construction costs are $23.00 per gross square foot.

BUILDING ENVELOPE

Building 74 BUC and Building 75 KDGB:

> The existing roof has 1-1/2 inches of rigid insulation for an estimated R Value of 4.5. To comply with the Energy Code, insulation should be added to the roof to obtain an R Value of 20.0.
>
> The typical existing wall is 4" brick on 12" block with 3/4" furring and 5/8" sheet rock. There is no insulation. To comply with the Energy Code, insulation with an R Value of 10 should be added to the interior of the wall.

The existing glass is clear single pane. To comply with the Energy Code, it should be replaced with double pane glass with a Low E coating.

Building 76 FAMB:

The existing roof has 1 inch of rigid insulation with an estimated R Value of 3.0. To comply with the Energy Code, insulation should be added to the roof to obtain an R Value of 20.0.

The existing walls are 4" face brick, 2" batt insulation and 4" block on the inside with a plaster finish. This wall is marginal, but does comply with the Energy Code. It can remain as is.

The existing glass is clear single pane. It should be replaced with double pane glass with a Low E coating.

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UNIVERSITY OF UTAH – COLLEGE OF BUSINESS
ELECTRICAL ELEMENTS OF DESIGN

IX. ELECTRICAL

Design Guide:

The electrical systems for the building will be energy conserving and suitable for the building occupancy. Lighting systems and equipment will have a proven history of providing efficiency and optimal energy conservation. Lighting systems will be designed to comply with the Utah Energy Code.

Power Distribution System:

The existing "BUC" & "KDGB" buildings are served by 480 & 208 volt secondary, distribution transformers located in a basement vault. A 500 KVA, 480 volt bank of tubs and a 208 volt, WYE tub is located in the basement of the "BUC" building. The 208 volt tub serves three (3) branch panels in the "BUC" building only. The 480 volt transformers feed all other loads in the "BUC" building in addition to a separate main distribution panel that serves all of the "KDGB" building. Lowell Fullmer, supervisor of the University of Utah electrical shop has requested these transformers be eliminated and have the buildings served by a pad mounted transformer or transformers. New electrical distribution equipment will need to be designed for the two, 4 story office and classroom buildings because of the extent of the interior remodel.

The existing distribution system for the Francis Armstrong Madsen Building could remain, dependant upon the extent of the interior remodel. The size of the proposed addition does not necessitate an upgrade to this building's service unless new mechanical equipment loads are greater than the existing. Remodeled lighting loads would likely reduce the electrical demand. This building has a 225 KVA, 480 volt bank of tubs, located in a basement vault, that serves all loads.

Emergency Power System:

There is no emergency power system in these buildings.

Emergency power is required for the life safety functions and as a back up for commercial power to critical equipment items. Life safety functions include means of egress lighting, lighting in certain critical spaces, power for the fire alarm system, elevators, and possible sump pumps.

Each area should be supplied with an emergency power panel as required by load. An automatic transfer switch will provide the power source and transfer control for the building. A new diesel generator should have a skid-mounted tank with a 24-hour fuel supply and a weatherproof housing.

Lighting Systems:

New lighting systems for the expanded facility will maximize energy efficiency while providing adequate illumination for performance of specified tasks. Lighting levels should be in conformance with the Recommended Illuminance categories and Illuminance Values for Lighting Design, 1987 IES Lighting Application Handbook. Total lighting load for the facility should not exceed the calculated lighting power budget as determined by the 1995 Model Energy Code and ASHRAE 90.1. Where applicable, task lighting systems should be employed to minimize energy consumption . Energy conserving T8 lamps and electronic ballasts should be used where applicable. Daylighting opportunities will be utilized wherever possible. Because of the nature of the facility, a blend of incandescent lamps and warm fluorescent lamps are required in several of the areas such as scene shops, costume, fitting, etc.

Circuiting and switching will be arranged so that a minimum lighting level can be accommodated without turning on a large area of lighting fixtures.

Economic Comparison: Initial and life cycle costs should be compared for major system types, with emphasis on maximizing efficiency of light sources and utilizing the most efficient luminaire suitable for the task involved. Lamps of standard manufacture (e.g. 265 ma, 4-foot, T8 rapid start) should be used wherever possible to allow ease of replacement from campus stock.

Exterior lighting systems will be compatible with lighting levels and fixture types presently in use on the Campus with a few exceptions where design considerations require changes from the campus standards. Fixtures should be circuited so that a minimum amount of security illumination can be provided from late night to dawn. Control should be photocell on/off.

The design should include seismic restraint wires on existing recessed lay-in light fixture as well as new lay-in fixtures.

Special Systems:

Telecommunications / Data raceway System

A raceway system for signal cabling should be installed throughout the facility. Capacity of the system must be adequate to meet functional requirements of initial installation as well as future expansion. A telecommunications closet should be included in each major area. All buildings shall be interconnected for future computer network.

Four new 4" conduits for telecommunications/data service should be run from the nearest telecommunications manhole to each building. Two new 4" conduit shall be run between all buildings for future computer network.

A separate telephone conduit distribution system should be provided from the devices to the telephone terminal board or accessible ceiling.

A separate data conduit distribution system is desirable. Conduit should run continuously between the devices and the data terminal board or accessible ceiling.

Conduits for telephone and data should be a minimum (2) ¾" to each combination outlet. Devices, cabling, and coverplates will be furnished and installed by the University Telecommunications Department.

A dedicated main telephone/data equipment room should be provided for each building with smaller intermediate distribution frame "IDF" rooms, as conditions require, approximately no greater than 300 feet apart.

Fire Alarm:

New ADA compliant horn/strobe alarm systems were installed in all buildings A new "FCI" addressable fire alarm system will be required to meet the requirements of the University of Utah Life Safety Code for the two 4-story buildings due to the remodel. All fire protection systems must be submitted to the University Fire Marshal's Office for approval and sign off. System must be 100% compatible with the Campus Central System.

Line Conditioning:

Transient overvoltage and "noise" protection will be specified for the service entrance and on selected panelboards in the facility, which will serve computer equipment. Capability will be similar to that provided by standard equipment of EFI Corporation.

Television Distribution:

A television distribution conduit system will be provided. Provisions for cable TV distribution will be part of the TV system. A 120-volt power source will be located at each TV outlet.

Mechanical Equipment:

Service to all large mechanical equipment should be at 480 volts. Electrical design shall include all disconnect devices and starters.

Single phase and reverse phase protection on all motors 5 HP or greater will be required, either at the motor control center or at the motor.

Fractional HP motors should be connected with standard leads, not solid wire, with proper connector fittings at motor terminals.

IX. ESTIMATE OF PROBABLE ELECTRICAL CONSTRUCTION COSTS:

1. "FAMB" Remodel

   33,153 sq. ft. @ $15.50/sq. ft. = $513,872.00

2. "KDGB" Remodel

   32,806 sq. ft. @ $15.50/sq. ft. = $508,493.00

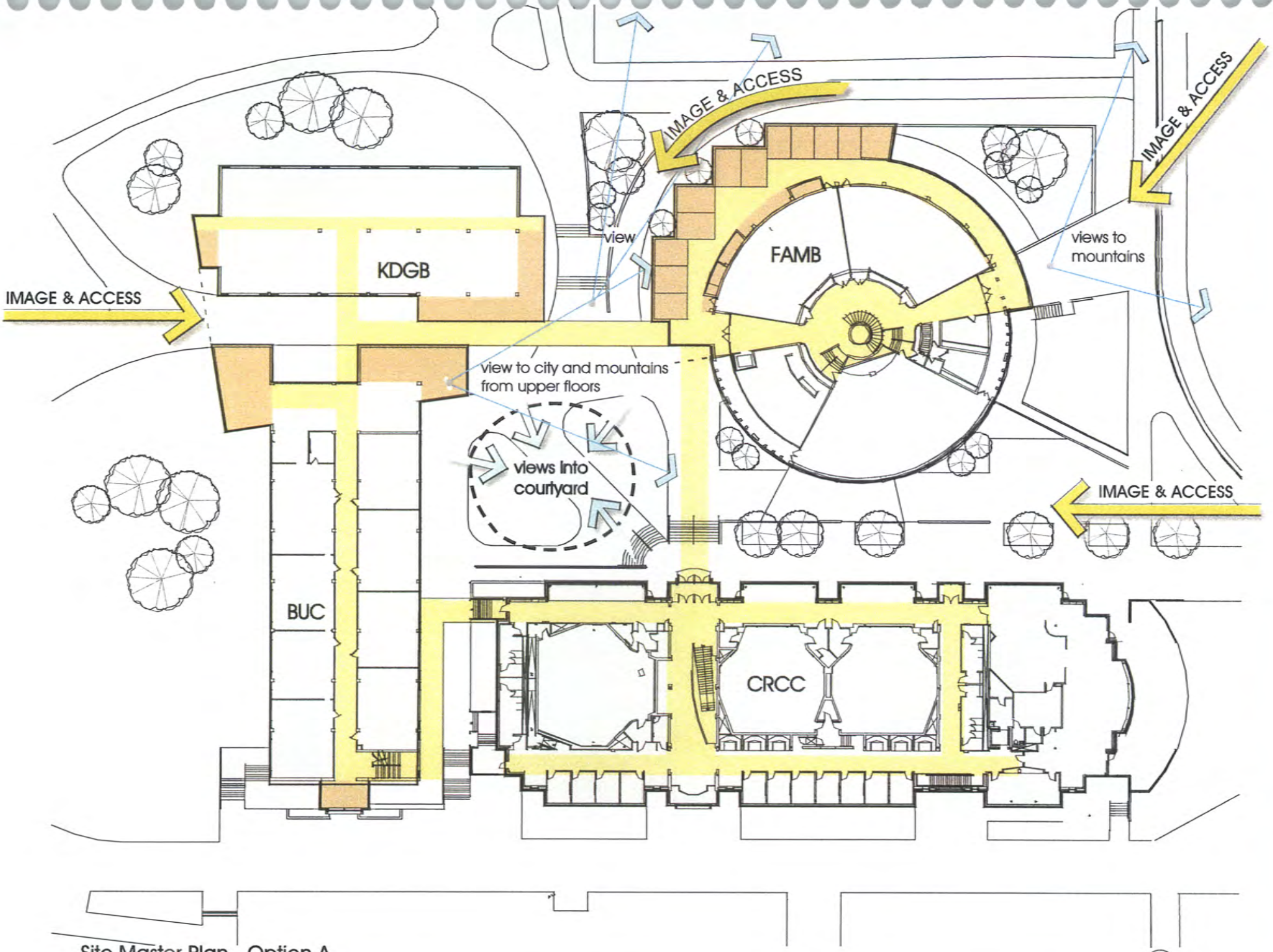
3. "BUC" Remodel, lighting, emergency power, and minimal electrical upgrades

   48,550 sq. ft. @ $10.00/sq. ft. = $485,500.00

4. Additions to above buildings

   20,000 sq. ft. @ $15.50/sq. ft. = $310,000.00

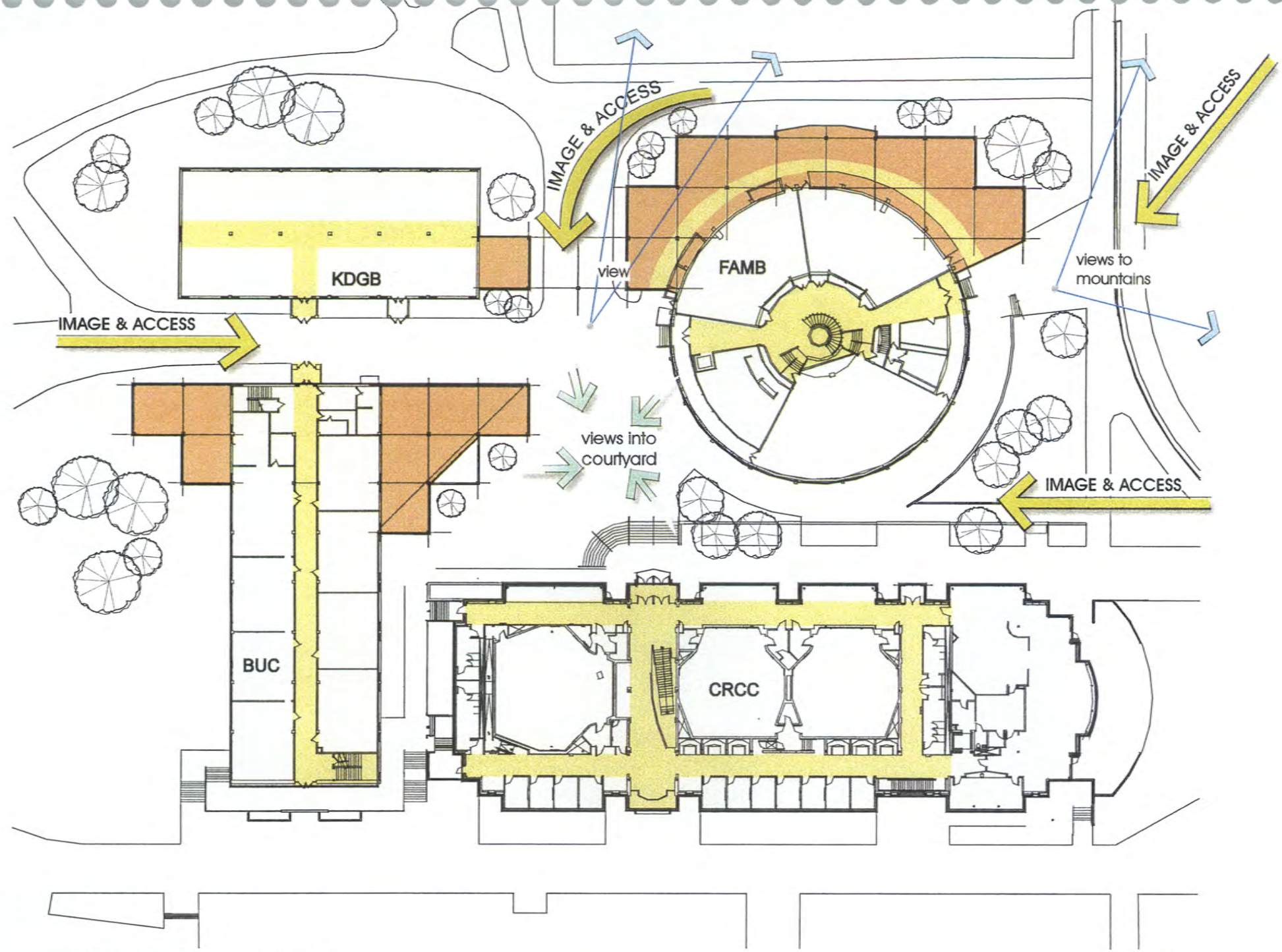
Appendix



Site Master Plan - Option A

25,500 s.f. addition

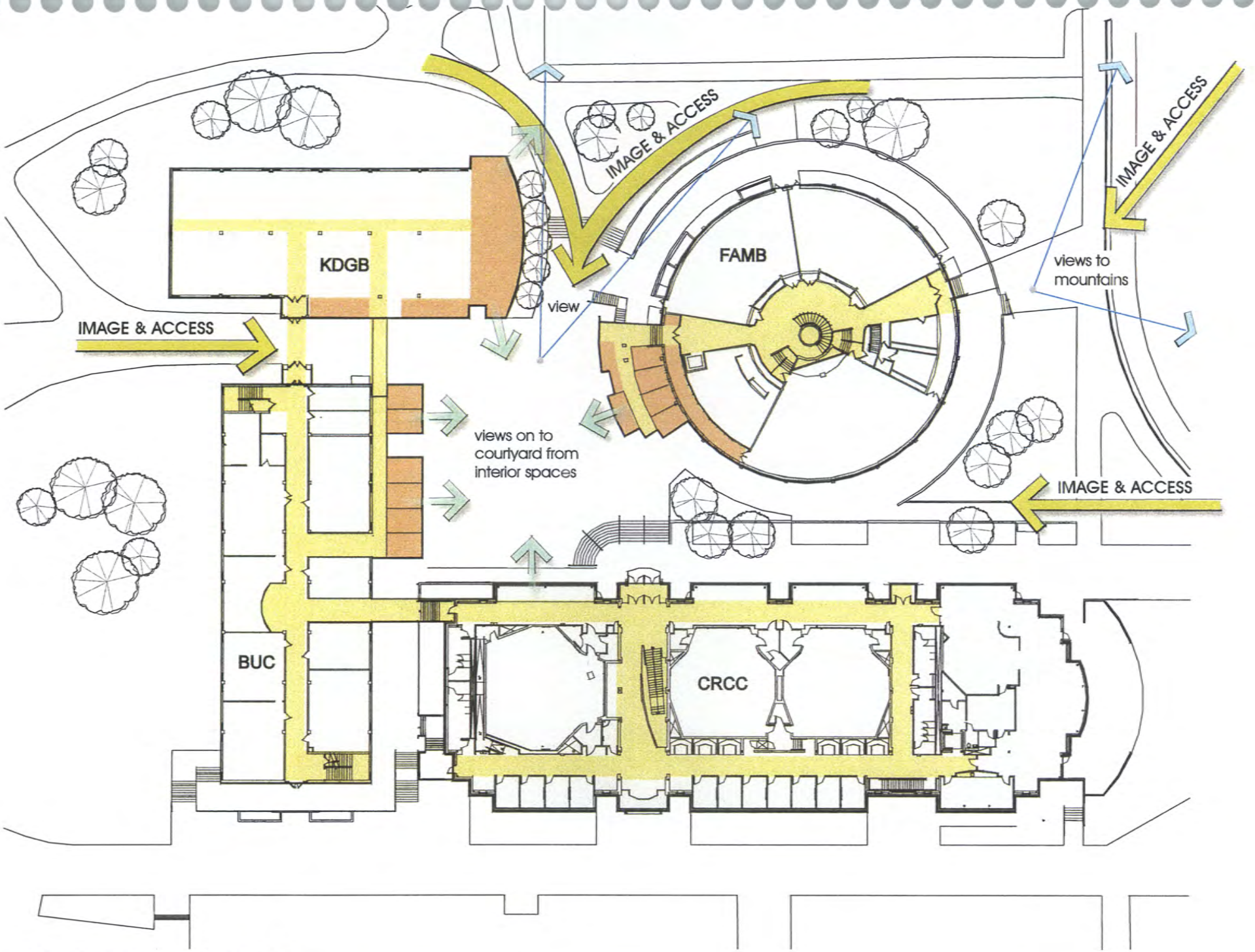
scale: 1" = 50'-0"



Site Master Plan - Option B

19,300 s.f. addition

scale: 1" = 50'-0"



Site Master Plan - Option C

14,500 s.f. addition

scale: 1" = 50'-0"

DAVID ECCLES SCHOOL OF BUSINESS MASTERPLAN

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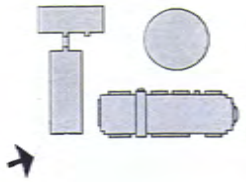

KEY PLAN

DAVID ECCLES SCHOOL OF BUSINESS MASTERPLAN

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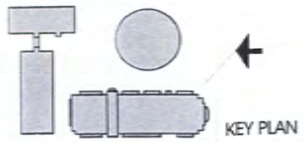

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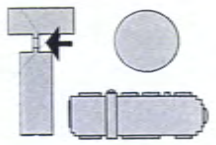

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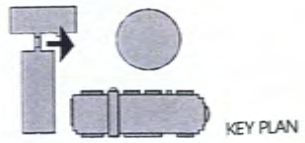

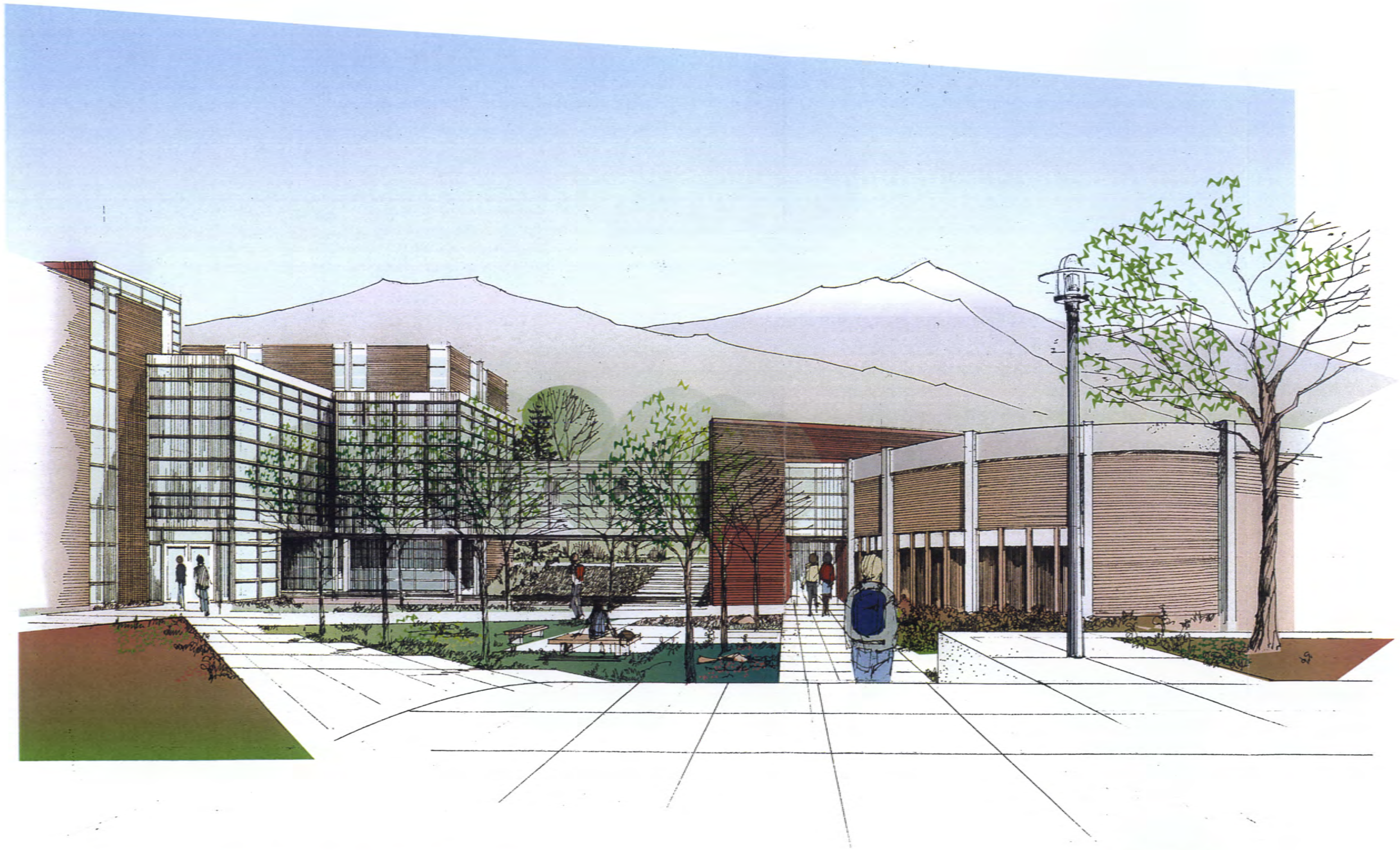

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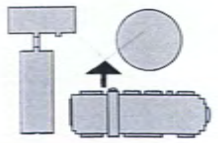

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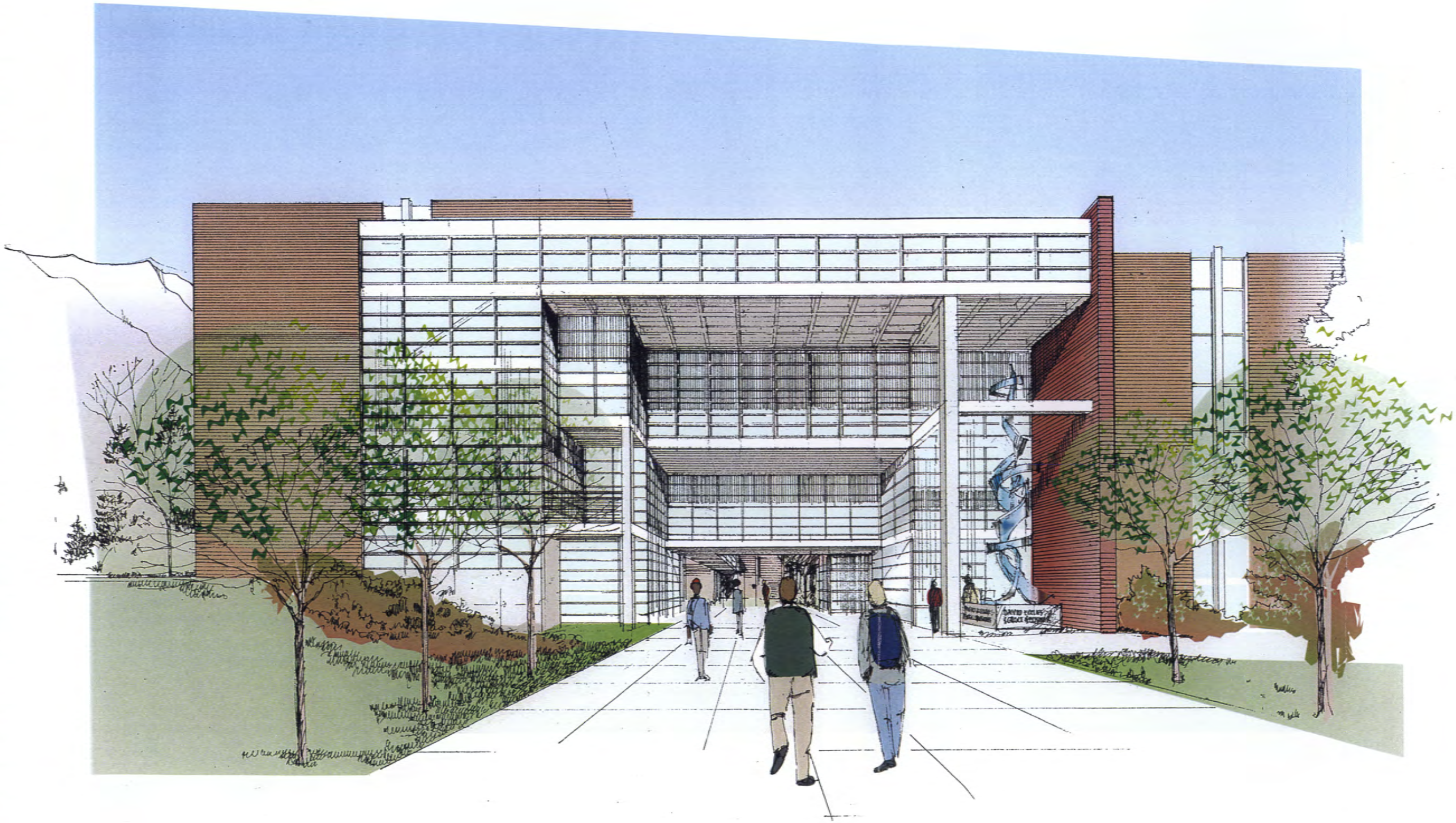

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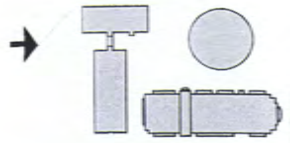

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