



AcademicHealthCenter

UNIVERSITY OF MINNESOTA



**University of
Minnesota**

**Academic Health Center
Minneapolis District Plan
2000 to 2020**



AcademicHealthCenter

UNIVERSITY OF MINNESOTA

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Academic Health Center
University of Minnesota Capital Oversight Group

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Academic Health Center Minneapolis District Plan 2000 to 2020

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Preface

May 2001

This document represents the initial phase of the ongoing development process for the University of Minnesota Academic Health Center (AHC) Minneapolis District. Based on principles contained in the U of M Campus Master plan and the goals articulated in the AHC Strategic Facility Plan, this development plan for the district is a “blueprint” for making the programs and the facilities that support them as efficient and effective as they can be.

With programmatic initiatives in education, research and service, and new interdisciplinary relationships already beginning to take shape, it was relatively easy for stakeholders and decision makers within the AHC to identify exactly what physical transformations need to be made. The development opportunities for the four square block Academic Health Center Minneapolis campus are built around the following five objectives:

1. Provide the quality and types of space within the Minneapolis district to support the current and future needs AHC’s educational, research and clinical service functions.
2. Improve the AHC visibility and ease of accessibility.
3. Replace inefficient facilities that are not capable of sustaining technology intensive programmatic activities.
4. Transform the built environment into an aesthetically pleasing and intellectually energizing place.
5. Strengthen the “linkage” between collaborative programs and clarify circulation routes.

RSP Architects and Planners of Minneapolis and Phoenix helped the AHC and University planning staffs formulate the district plan using a simple five-step development approach: (1) review and assess that which exists today, (2) listen to the stakeholders and other interested groups, (3) envision what might be, (4) develop concept and project specific plans for achieving agreed-upon objectives, and (5) begin prioritized project implementation based on the desired timing of programmatic initiatives and financial feasibility as approved in the capital plan and budget.

All of the land use (built form, building massing, open space and landscaping), transportation, and infrastructure requirements for the AHC Minneapolis campus are addressed in this District Development Plan in the context of the physical and financial plans for the adjacent areas of the East Bank Campus. The instructional, research, administrative, clinical services, and support service space required by the AHC is planned for in the proposed remodeling and / or expansion of existing buildings, the razing of functionally obsolete and construction of more appropriate facilities. Sequential implementation of this long range development plan for the district will eventually maximize the amount of development that can be contained within the boundaries of the AHC Minneapolis campus. While it will be expensive, redevelopment of this portion of the Academic Health Center with this, or a similar plan, appears to be something the University can’t afford to delay.

Harvey Turner
Director of Campus Planning
University of Minnesota

Executive Summary

“We must recognize that our efforts to anticipate the future help to shape it.”

John Sawbill

“A campus is created which fosters academic pursuits, which is welcoming and walkable, and which provides the opportunity for leisure and social activities to occur spontaneously.”

*From “A Livable Campus –
University of Minnesota Twin
Cities Campus Master Plan”*

“The new strategic vision and accompanying six-year plan for the AHC will position us to prepare Minnesota’s new health professionals who can improve the health of our communities, discover and deliver new treatments and cures, and strengthen the economic vitality of our health industries. To succeed will require a new covenant between the Academic Health center, the state and federal governments, the private sector, and the health care community. By working together we have made Minnesota one of the nation’s healthiest states. Shaping and sustaining Minnesota’s health in the future will require an even greater shared commitment.”

*Frank B. Cerra, MD
Senior Vice President
for Health Services*

The University of Minnesota has initiated the first ever district planning effort of the institution’s Academic Health Center. The intent of this plan is to breathe life back into the physical body of the AHC Minneapolis district and to create a physical sense of community that supports the professional schools in medicine, pharmacy, public health, nursing, dentistry and allied health sciences. The AHC Minneapolis District Plan is based on fundamental planning concepts of eliminating structures which no longer support the programmatic mission of the institution, creating social and physical organizing elements to the campus and developing, over the next twenty years, physical capacity and quality space to support the projected growth and programmatic needs. It is a plan which proposes the highest and best use of the available real estate.

The nation’s academic health centers have extraordinary planning challenges in their portfolio because of the need for relationship and community not only between faculty and students, but between faculty and students and patients. The education, research, clinical, and service missions of academic health centers require greater multi-dimensionality considerations to the planning process. We call them “short-streets.” Faculty must be close to

their students and their patients, placing even greater demand on the precious urban real estate of most academic health centers. This problem is particularly acute at the University of Minnesota. In addition, professions must work together in multi-disciplinary teams that bridge research, education, and clinical functions.

Finally, creating a sense of community for graduate students is extremely important to the students and to the quality of educational experience. Repeated graduation questionnaires point to the fact that the facilities of the Academic Health Center do not often portray a sense of community for these adult learners. The Academic Health Center can improve the sense of community and multi-disciplinary interaction by creating and connecting these “short streets” in a long-term district planning effort.

There are several major deliverables from this District Planning activity:

1. The plan assumes the eventual replacement of obsolete and inefficient structures and maximizes the available real estate.
2. The plan creates a landscaped central square with a variety of functional areas for use by students, staff and patients.
3. The plan organizes internal and external circulation networks around the new central square for efficient wayfinding. It also differentiates and extends pedestrian, vehicular and service circulation systems throughout the complex and into adjoining districts. A structure of spaces, landmarks and unifying architectural elements reinforces the new circulation concepts.
4. The plan provides a framework, schedule and locations for identified upcoming projects over the next 15-20 years. It replaces approximately 1 million square feet of obsolete and inefficient space with 1.3 million square feet of new construction.

Work on the AHC District Plan embodies the following Campus Master Planning Principles:

- Creating and maintaining a distinctive and aspiring vision for the physical development of each campus;
- Enriching the experience of all who come to the campus;
- Maximizing the value of existing physical assets while responding to emerging/changing physical needs;
- Adherence to an inclusive, accountable, and timely process for creating and implementing the master plan vision.

University of Minnesota Twin Cities Campus Academic Health Center



Introduction

The intent of this plan is to breathe life back into the physical environment of the Academic Health Center (AHC) Minneapolis District. The AHC Minneapolis District Plan addresses fundamental planning issues, many of which have been overlooked or ignored during the AHC's past 20 years of growth.

The Academic Health Center Minneapolis District occupies the southeast corner of the University of Minnesota's East Bank Campus. It is part of the Health Sciences and Residences Precinct and is bounded by the I.T. District, the South Mall and the Mississippi River.

Washington Avenue, which is a major thoroughfare for both the University and the City of Minneapolis, separates the AHC District from the remainder of the East Bank Campus.

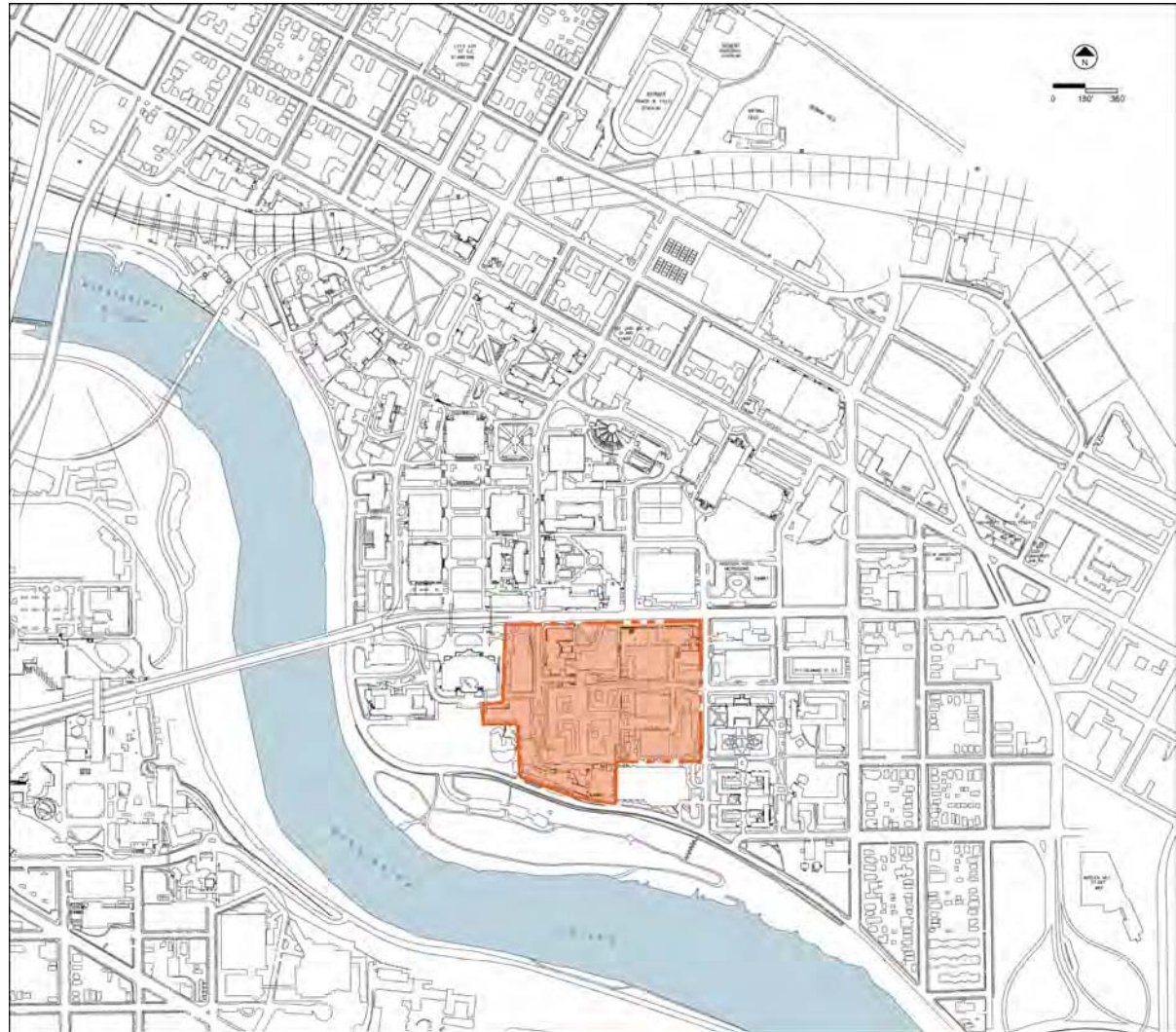
University of Minnesota - East Bank Map

The South Mall, with Coffman Memorial Union and Riverbend Commons, is immediately west of the AHC District. The boundary line between Riverbend Commons and Coffman Memorial Union is blurred.

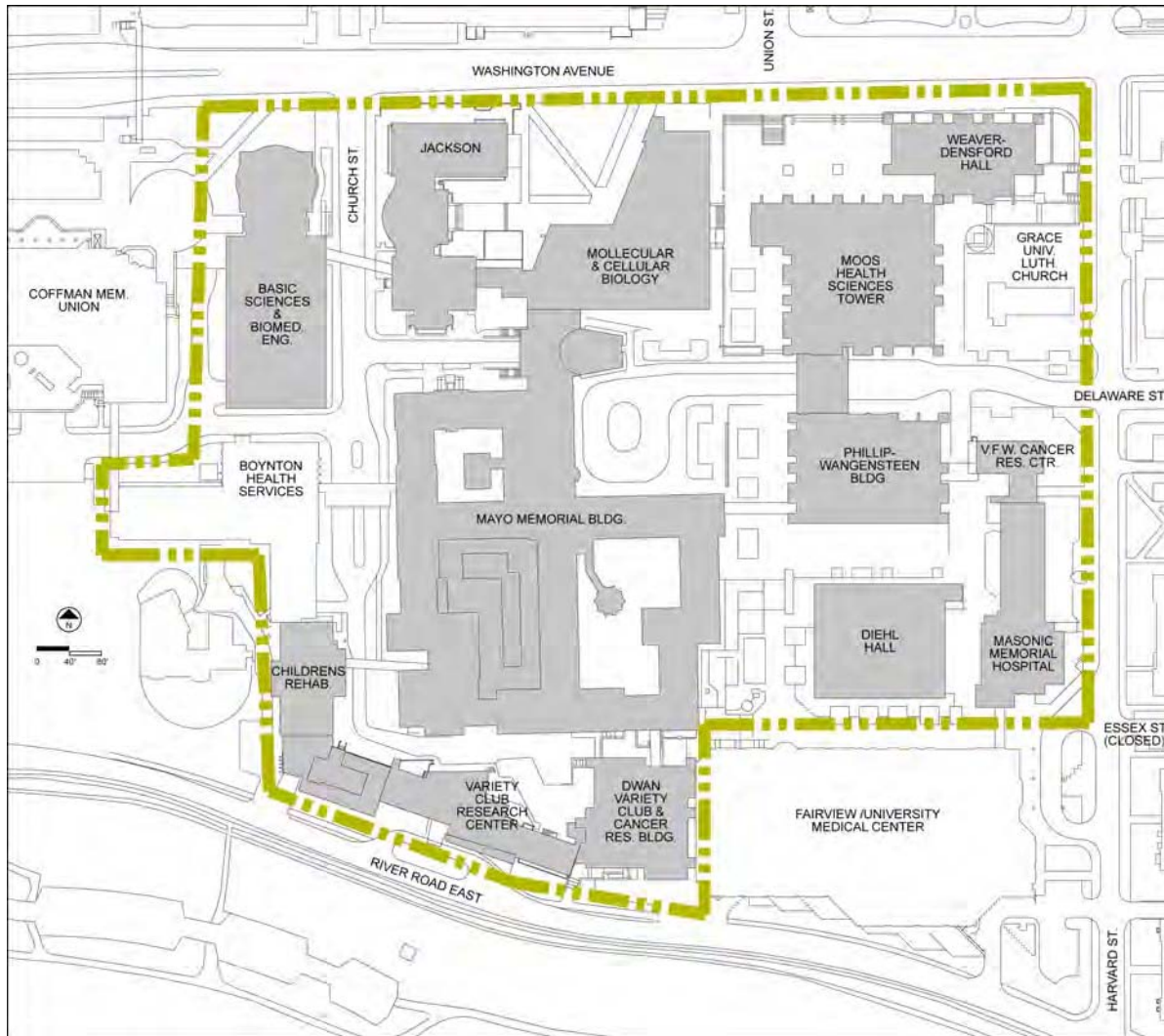
The Mississippi River forms a natural boundary for the southern edge of the AHC District. East River Road runs parallel to the river and separates the AHC District on the north from the green open space on the river flats below.

In turn, Harvard Street is the eastern boundary and helps to concentrate all AHC facilities into a single zone or core campus. Harvard Street separates the AHC core campus from housing, parking and the retail establishments in Stadium Village.

Additional AHC facilities are located on the University of Minnesota St. Paul Campus, Duluth Campus, and at remote leased locations. The AHC District Plan only deals with the space and functional needs of the Minneapolis campus.



Academic Health Center - Minneapolis Campus



1

The AHC Minneapolis District Plan

Concept Development and Circulation Plan

The diagram on page 5 depicts the proposed 20-year district development plan for the Academic Health Center. It portrays this plan at the Washington Avenue level of the campus, and envisions a major transformation via three governing strategies:

1. The plan assumes the eventual replacement of functionally obsolete and inefficient structures.

2. The plan creates a landscaped central square with a variety of amenities to make the District a “livable place” for students, staff and patients.
3. The plan organizes circulation for improved accessibility and ease of wayfinding around a new central square.

Bold red outlines on the diagram indicate where new construction will occur. New buildings will replace pre-1960 structures that have code deficiencies, inefficient floorplate configurations, and uncompromisingly low floor-to-floor heights.

The plan proposes gradual replacement of the following structures:

1. The low-rise portions of the Mayo Memorial Building that surround the central tower.
2. Variety Club Research Center, which is located along East River Road.
3. VFW-Masonic Memorial Hospital on Harvard Street.

4. Boynton Health Services Building.
5. Children’s Rehabilitation Center.

Removing proposed structures and replacing them with new educational, research, clinical, and office buildings that have larger floor plates and greater density will create more efficient functional floors and increase the total space in the district. Placing additional space in new, taller structures also makes it possible to create meaningful open space within the district.

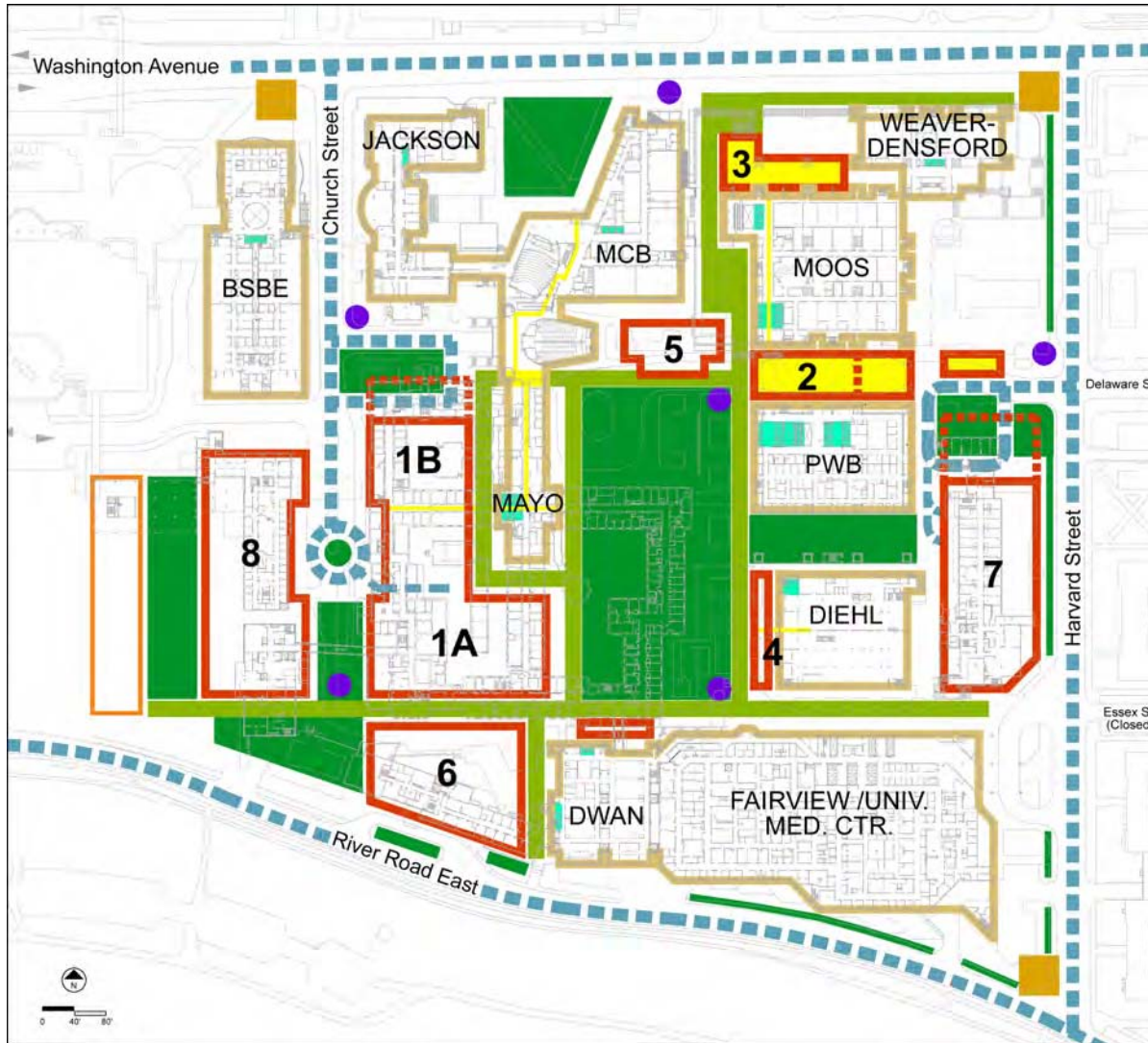
Proposed new construction projects include (refer to diagram on p.5):

1. Research and office towers to replace the low-rise portion of the Mayo Memorial Building in two phases of construction.
2. Infilling the opening between Moos Tower and Phillips-Wangensteen Building. This space will be open to the concourse level.











3. An open and transparent entrance between Moos Tower and Molecular/Cellular Biology Building leading from Washington Avenue to the concourse level.
4. A new multi-story entrance lobby for Diehl Hall facing the central square. The remainder of Diehl Hall will be renovated.
5. A new student services pavilion to partially replace the Mayo Garage and establish a new south entrance to the MCB Building from the central square.
6. A new office/research/clinical facility to replace the Variety Club Research Center.
7. A new office/clinical facility to replace the VFW-Masonic Memorial Hospital.
8. A research/office/student health services facility to replace Boynton Health Service and Children’s Rehabilitation Center.

The large central square that will be established at the concourse level serves as the principal organizing element of the AHC District Plan. Construction of this

CONCEPT PLAN - STREET LEVEL (WASHINGTON AVENUE)



LEGEND

-  Existing Building
-  Proposed Building
-  Exterior Pedestrian Circulation
-  Interior Pedestrian Circulation
-  Vehicular Circulation
-  Vertical Circulation
-  Central Square/Landscaping
-  Entry Pavilion
-  District Monument
-  Information Kiosk

New AHC Facilities by Year 2020

Bldg		Gross Sq Ft	No. of Levels	No. of Parking Levels	
1A	Research/Office Bldg	324,000	12	2	Note: All parking levels are underground.
1B	Research/Office Bldg	367,000	12	2	
2	Moos & PWB Infill	15,000			
3	Moos & Weaver-Densford Entry	8,400			
4	Diehl Hall Addition	6,160	2		
5	Student Center Addition	28,000	2		
6	AHC Facility	271,125	8		
7	AHC Facility/Clinical	177,000	6	3	
8	AHC Facility	245,000	8	2	
9	Service/Animal Facilities	105,000			
		1,546,685	GSF		
Net Gain on Core Campus		381,206	GSF		

The central square is also the focus of a simple and clearly organized circulation concept:

1. An internal loop of corridors at the concourse level (one level below Washington Avenue) will surround the central square and provide access to all adjoining buildings. The square side of this corridor system will be transparent to facilitate visual orientation and access to the exterior open space.
2. An external pedestrian and a bicycle loop network on the decks above the internal concourse will facilitate visual access to the central square. This system will be connected to Washington Avenue and create an east-west link between Harvard and Church Streets along the north face of Fairview University Medical Center.
3. Service access to all of the major buildings in the AHC

AHC Facility to be Removed by Year 2020

Bldg	Gross Sq Ft
Mayo SE Wing and Garage	300,000
Mayo SW Wing	260,000
Mayo NW Wing	203,200
Masonic Memorial Hospital - VFW	89,299
Children's Rehabilitation	70,845
Variety Club Research Center	99,260
Boynton Health Service Building	142,875
	1,165,479 GSF

square will require removal of the southeast quadrant of the Mayo Memorial Building and the Mayo Garage. The central square will be developed as a landscaped space suited to active outdoor use by students, staff, faculty, patients, and the public. It will act as the central organizing space, town plaza, and collegiate quadrangle by providing a place for people to gather and interact within the AHC community.

The new central square will serve as the formal identity element for the AHC District. Most of the major existing and new AHC buildings will border this landscaped area and orient their entrances toward it.

District will be provided through a new set of service docks located in deep mined space below the AHC District. These docks will be connected to an internal service circulation network, one level below the concourse level. As an alternative to the service system provided in deep mined space, the AHC Minneapolis District Plan can be accomplished through the creation of a central loading dock facility placed directly below the south half of the central square.

Existing surface service locations will be transformed into usable space for more appropriate health center functions. The perimeter access loop at street level consists of Church Street, Washington Avenue, Harvard Street, and the extended Essex Street corridor. This network will provide access to and ease of orientation throughout the AHC. This network should have:

1. Identifying monuments at the four corners of the district, and at entrances to the major buildings. These welcoming elements can provide information and depict the history and purpose of the Academic Health Center.
2. New vehicular drop-off turn-arounds at each end of the east-west internal corridor.
3. An open green space at the end of Church Street overlooking the Mississippi River to provide visual orientation to and from East River Road. Church Street should be designed in a way that better links the AHC with the rest of the campus to the north. The portion of Church Street north of Washington Avenue is currently being redesigned to function as a pedestrian corridor for the academic campus. The portion of Church Street south of Washington Avenue within the

Academic Health Center should be designed to simulate the character of the redesigned portion of Church Street north of Washington Avenue. This entire corridor should feel like a continuous street space, from the gateway entrance near the Armory at University Avenue all the way to the new green space park at the south end of Church Street overlooking the Mississippi River.

4. An entrance marker at River Road and Harvard Street to identify the AHC for persons approaching from the southeast.

“Twenty years from now you will be more disappointed by the things you didn’t do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover.”

Mark Twain

Concourse Level Plan

The concourse level plan shows the principal public level and main internal circulation network for the Academic Health Center. The concourse level includes (refer to diagram on p.9):

1. The main lecture halls and classrooms for academic instruction.
2. The front desk entrance at Diehl Hall Library.
3. A new enclosed gathering space between Moos and PWB.
4. Retail food service and student common areas.
5. Primary access to vertical circulation cores.
6. The new Central Square space.

The concourse level is organized as follows:

1. The internal circulation corridor loop around the Central Square.
2. The internal, east-west connection between the Church Street entrance below Mayo Auditorium and the new arrival

plaza at the intersection of Harvard and Delaware Streets.

3. The multistory gathering space created between Moos and PWB.

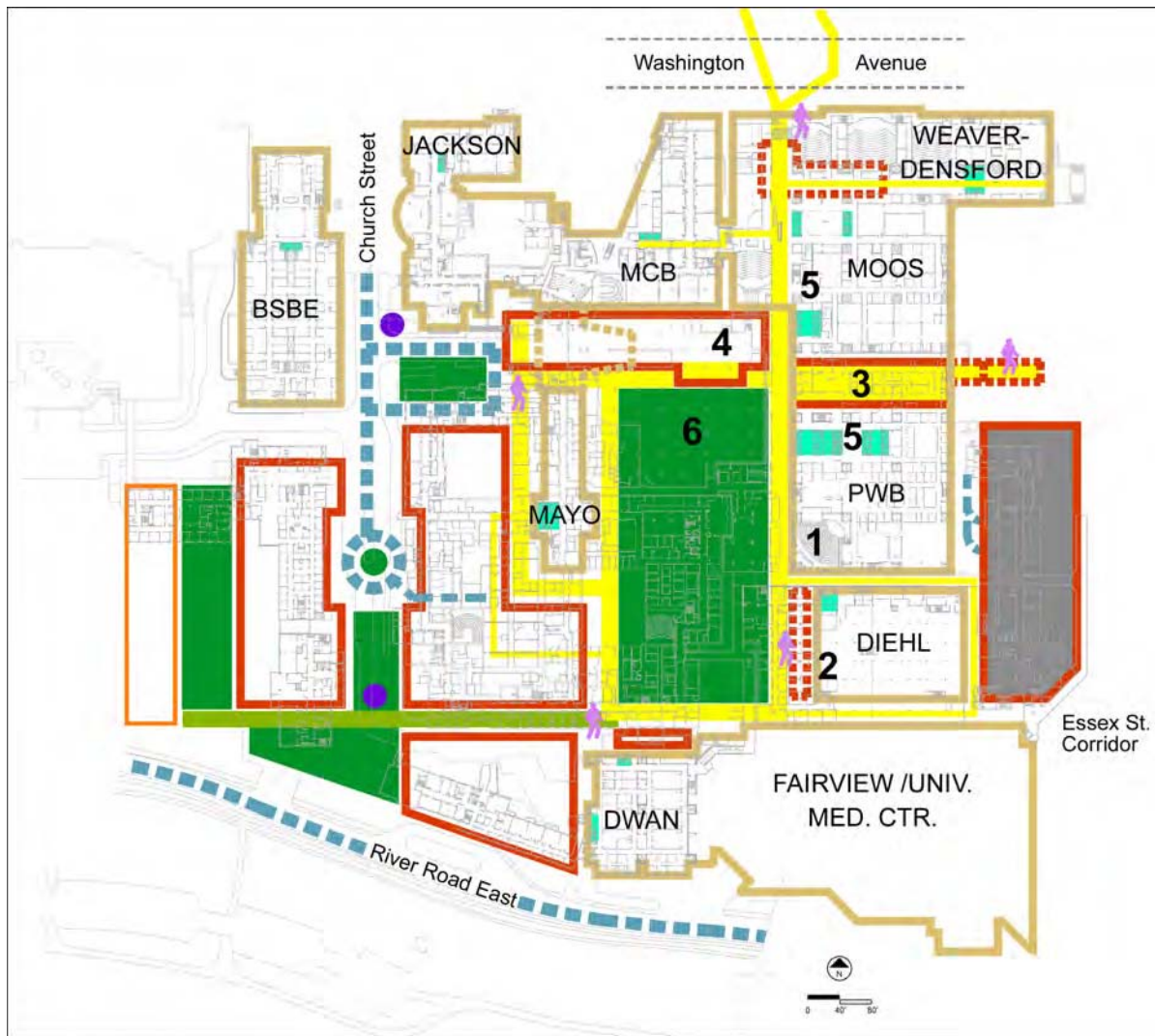
Public entrances to this circulation network will improve visual orientation and facilitate ease of access to the AHC. The entrances can be described as follows:

1. A new and more transparent pavilion that encloses the stairs dropping from Washington Avenue through Moos to the concourse along the east edge of the Central Square. A tunnel connection currently exists from the elevator core of the parking garage north of Washington Avenue to the concourse level of the Academic Health Center. The district development plan proposes an additional link be made from this tunnel to the Electrical Engineering and Computer Science Building (EECS) corner of the intersection of Washington Avenue and Union

Street. Access from grade to the tunnel connection on the north side of Washington Avenue should be through a glazed and inviting entry pavilion that matches the architectural character of the glass pavilion proposed for the main entrance to the Academic Health Center south of Washington Avenue. This new access point should be close to the intersection at the corner of the EECS plaza. The pavilion should be situated to conveniently intercept pedestrian traffic coming diagonally through the EECS Building and also sidewalk traffic along both Union Street and Washington Avenue. The purpose of the connection is to avoid pedestrian and vehicular conflicts in this congested location.

2. A formal entrance developed at the current Mayo Garage entrance on Church Street in conjunction with the rehabilitation of Mayo Auditorium.

CONCEPT PLAN - CONCOURSE LEVEL
(ONE FLOOR BELOW WASHINGTON AVENUE)



LEGEND

-  Existing Building
-  Proposed Building
-  Exterior Pedestrian Circulation
-  Interior Pedestrian Circulation
-  Vehicular Circulation
-  Vertical Circulation
-  Parking Facilities
-  Central Square/Landscaping
-  Entry Pavilion
-  Information Kiosk
-  Public Entrance

3. A transparent pavilion entrance at Harvard Street north of the vehicular drop-off plaza at Delaware Street. This entrance will allow pedestrians to proceed along a ramp down to the concourse level while passing through the new Moos/PWB gathering space.
4. A formal entrance from the Essex Street corridor to a multistory lobby on the west facade of the renovated Diehl Hall.
5. A southwest corner entrance to the concourse level where the Essex Street corridor intersects the green space at the south end of Church Street.

The Central Square and the concourse level are the primary public spaces of the Academic Health Center. The concourse loop around the square will make it easy for students, staff, faculty, patients, and the public to find their way by allowing visual connections to the outdoors and to the buildings surrounding the space.

The simplicity of the loop and the east-west spine along the north side of the square will facilitate wayfinding and improve visual connections to activity hubs and key destinations.

Consistency of signage, materials, colors, lighting, and interior design throughout this network will be essential to achieve a sense of campus unity. This consistency of spatial development will also create an appropriate backdrop to emphasize individual points of unique interest.



These images are of an existing outdoor space on the University's West Bank Campus. The Pierson and Florence Grieve Courtyard is similar in concept to the Central Square proposed for the AHC District.



Service Level Plan

The district development plan for the service level, two levels below Washington Avenue, will utilize the existing service corridor network and extend it into the new construction (refer to diagram on p.13).

The network will also be transformed via the creation of an internal truck-marshalling and service dock facility located in deep-mined space and accessed via a connection from East River Road (refer to diagram on p.14). This will enable dock facilities to be removed from their current valuable space locations on grade. It will also give service vehicles access to the center of the circulation network and provide efficient connections to all vertical service elements.

The service level plan proposes that most new structures include multiple levels of parking from the service level downward, depending on practical and efficient construction conditions.

A ramp leading down from the Church Street turn-around will provide

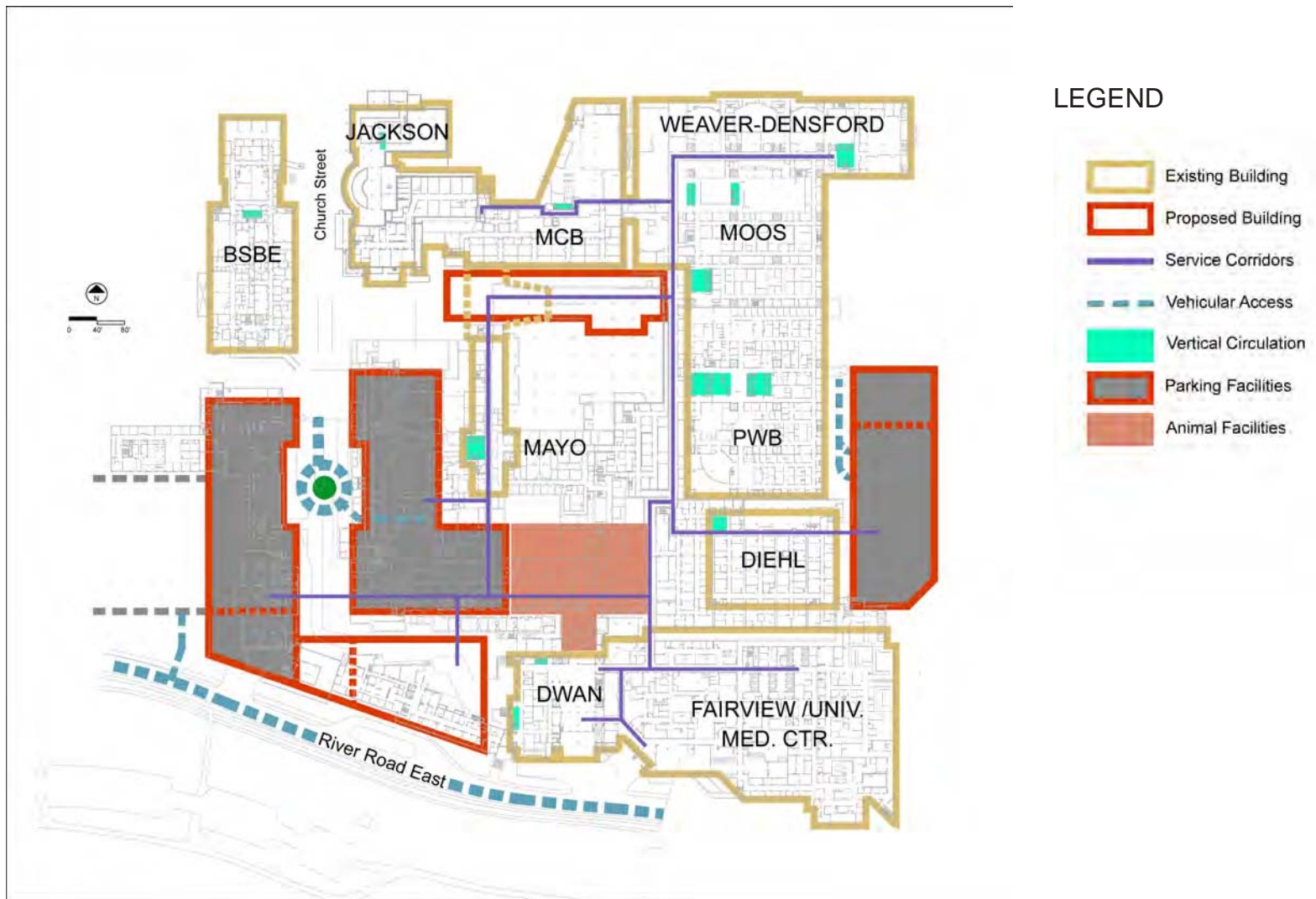
vehicular access to the parking levels below the new office/research blocks around the Mayo Tower.

The replacement facility for Boynton and Children's Rehabilitation Center must provide vehicular access from River Road to parking below the new facility.

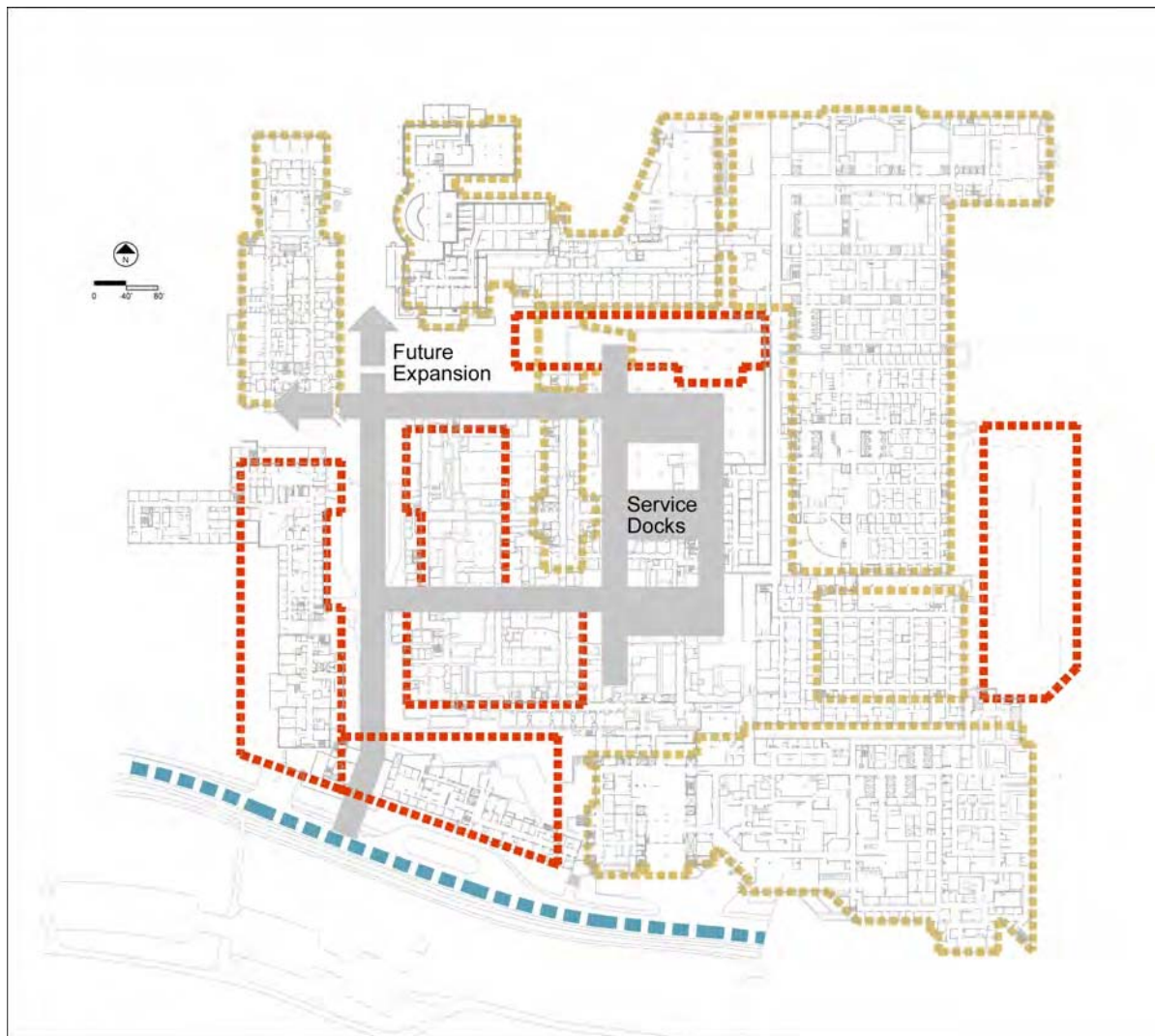
The arrival plaza at the intersection of Harvard and Delaware Streets can also provide access to visitor and staff parking below the new clinical facility on the current site of Masonic Memorial Hospital. This configuration will make it easy for visitors to drop off patients at Moos and PWB before entering the visitor parking facility.

As an alternative to the service system provided in deep-mined space, the AHC Minneapolis District Plan can be accomplished by creation of a central loading dock facility placed directly below the south half of the central square (refer to diagram on p.15). This new facility can be linked below grade and under the south end of Church Street and then directly to River Road. Service access to this facility would occur directly from River Road to avoid further congestion in the regular Academic Health Center campus. This service dock location would allow direct access from loading docks to the internal network of service corridors at this level. The development of this service dock can be linked to the development of a new office/research facility south of the Mayo Tower, or could be executed independently of other proposed district projects.

CONCEPT PLAN - SUB-CONCOURSE (TWO FLOORS BELOW WASHINGTON AVENUE)



CONCEPT PLAN - SERVICE LEVEL (SUBTERRANEAN - ELEVATION +732')



Refer to the Appendix for additional information on Mined Space.

CONCEPT PLAN - ALTERNATIVE SERVICE LEVEL (TWO FLOORS BELOW WASHINGTON AVENUE)



Facilities to be Removed in the Future

When creating development opportunities covering a 20-year period, it is critical to identify which structures are practical and appropriate to preserve and which should be considered for removal. Reasons for removal might include:

1. The structure's location blocks major district plan objectives.
2. Renovation required to bring the building up to appropriate standards costs more than new construction.
3. The building's architectural character or historic heritage are insufficient to justify investment that exceeds the cost of replacement.
4. The building plan and structural bay sizes are inappropriate to efficiently layout planned functions.
5. The building floor-to-floor height is inadequate to serve the planned function and/or accommodate the normal technical systems located above ceilings.

6. The building is low-rise and located where a building with multiple floors could be built.

Experience indicates that most buildings not designed for fully integrated air conditioning and ventilation systems are not suitable for long term reuse. These structures have inadequate floor-to-floor heights and narrow floorplates to promote cross ventilation. Floor-to-floor heights are often 10' to 12' instead of the preferred 13' to 15' for office/instructional/research buildings.

Due to such dimensional deficiencies, these buildings are typically modified on a piecemeal basis, with substandard changes made over the years. Generally, it is unlikely that buildings designed before 1955 would have properly integrated air conditioning and ventilation systems.

The following buildings have been identified as candidates for removal based on some or all of the listed criteria:



The Mayo Memorial Building is a composite of many structures built from 1924 to 1957. With the possible exception of the main tower, the floor layout and floor-to-floor height for these buildings are inappropriate for current and future functions. The building has significant code and engineering systems deficiencies that will require large expenditures to remedy and will result in a net loss of space.

These structures are relatively low buildings occupying a site that could appropriately accommodate facilities as tall as the Mayo Central Tower. Their presence on this site blocks many of the planning objectives and open-space needs of the 20-year district plan.



Constructed in 1949, the Variety Club Research Center on East River Road has a very narrow floorplate configuration and floor-to-floor heights less than 10'-6". It occupies an extremely desirable site along the river, but does not block any of the major planning objectives for the AHC's campus center. Since it is a likely candidate for removal later in the 20-year period, new investment in this facility should be carefully reviewed.



The Masonic Memorial Hospital-VFW Cancer Research Center dates from 1957. It has narrow floorplates, and inadequate floor-to-floor heights of approximately 11'. It is located on a site that could accommodate a facility with significantly greater floor area. This site is also on an edge of campus that is a main arrival point for clinical visitors. A new facility could improve access to the AHC and accommodate three levels of parking below grade. Investment in the existing facility should be carefully weighed in view of its likely eventual removal.



The Children's Rehabilitation Center was constructed in 1962. It occupies a prime location at the southeast corner of the AHC district. The facility has marginal floor-to-floor heights and a relatively small floor plate size. It represents an under-utilized site and limits future opportunities for the development of a defining corner of the AHC district. These limitations suggest that any future investment in this facility should be weighed against the greater goals of the district plan.

The Boynton Health Service Building dates back to the late 1940's, with later additions that repeated some earlier problems. It has floor-to-floor heights of only 10'-6" in many areas. The building's mechanical and electrical systems require substantial replacement to accomplish any re-use. Renovation efforts would also need to address significant code deficiencies, and the exterior skin needs to be replaced or upgraded to meet current energy standards.

Finally, this building occupies a very prominent site adjoining the new South Mall and Coffman Union. Due to the University's significant investment in replacing and remodeling the major structures in this critical core area, it would be appropriate to eventually replace Boynton with a facility of appropriate quality and functionality.



Facilities to be Removed in the Future



LEGEND

- Existing Building to Remain
- Mayo SE Quad and Garage
- Mayo SW Quad
- Mayo NW Quad
- Facility to be Removed by Year 2020

AHC Facility to be Removed by Year 2020

Bldg	Gross Sq Ft
Mayo SE Wing and Garage	300,000
Mayo SW Wing	260,000
Mayo NW Wing	203,200
Masonic Memorial Hospital - VFW	89,299
Children's Rehabilitation	70,845
Variety Club Research Center	99,260
Boynton Health Service Building	142,875
Total	1,165,479 GSF

Use Locations

The activities that occur on the AHC campus revolve around three basic functions:

1. Research
2. Education
3. Clinical and Outreach Services

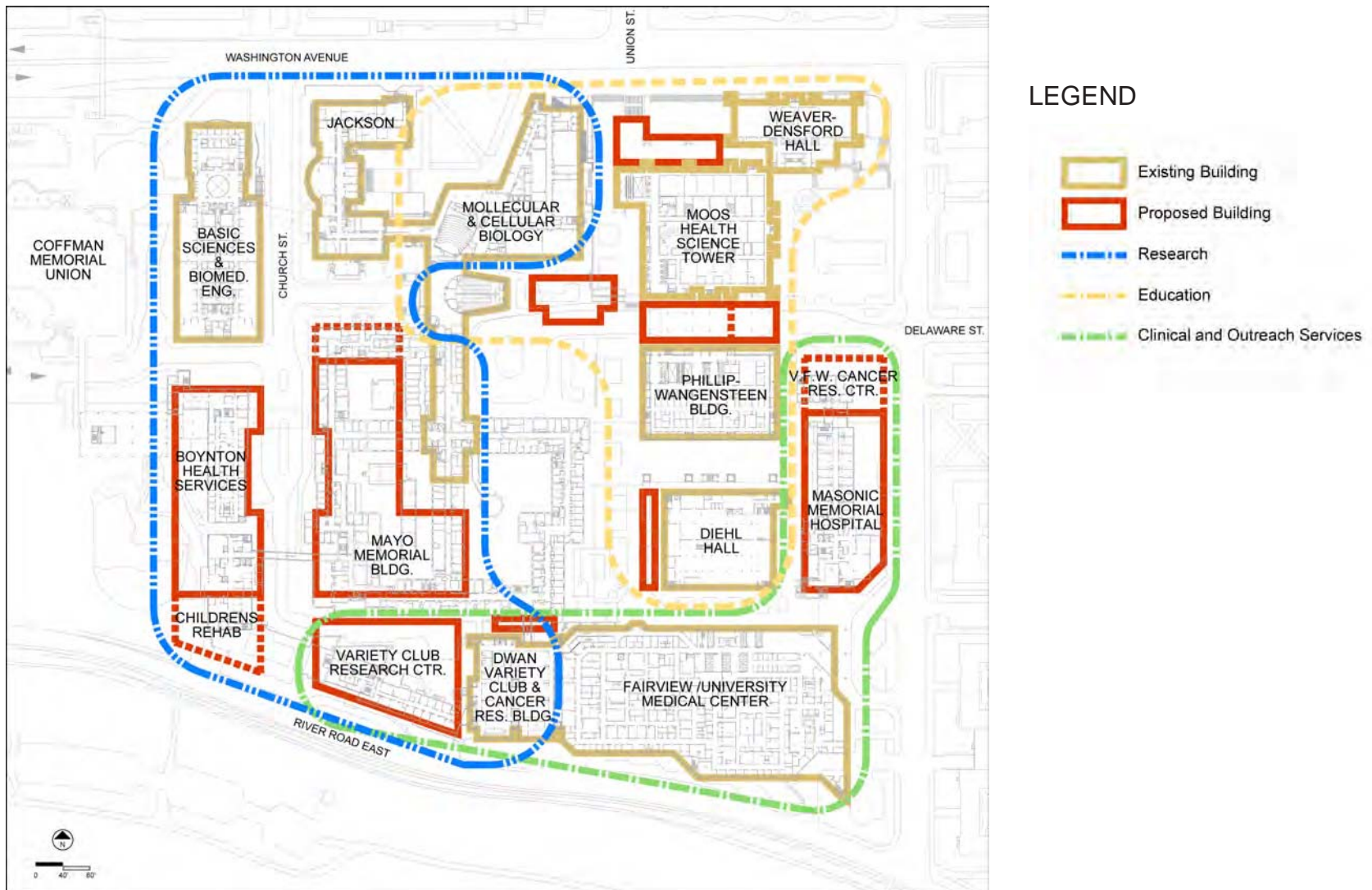
The synergistic interface that occurs between these three functions is ongoing and substantial.

However, there is also a need to ensure each function has a distinct identity. Each function's unique energy and activity level requires a degree of separation.

Thus, providing zones of activity for each basic function, while still facilitating interaction to strengthen the AHC as a whole, is an important goal for the physical plan.

Suggested locations or zones for these functions provide a core organizational structure for the District Plan. The Use Location diagram identifies these zones and the areas where interaction is likely to occur.

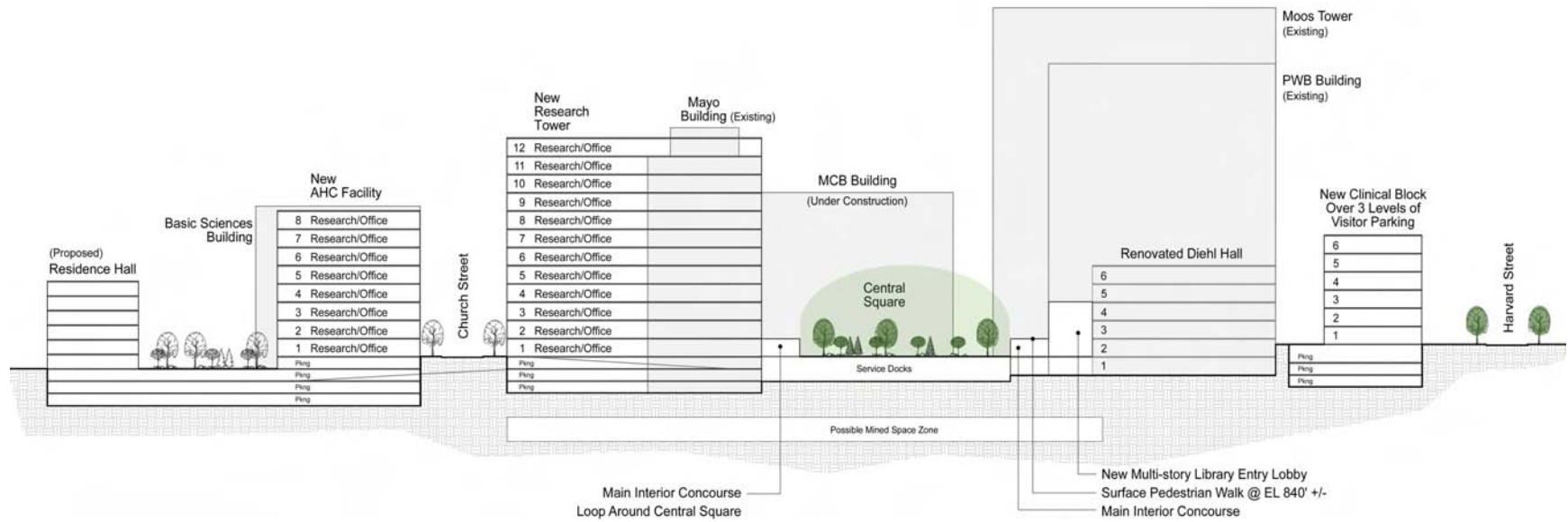
Use Locations



Site Section

This site section is intended to provide further understanding of the activities that occur simultaneously on different vertical levels within the AHC campus.

Site Section Through AHC Campus Looking North



Green Space

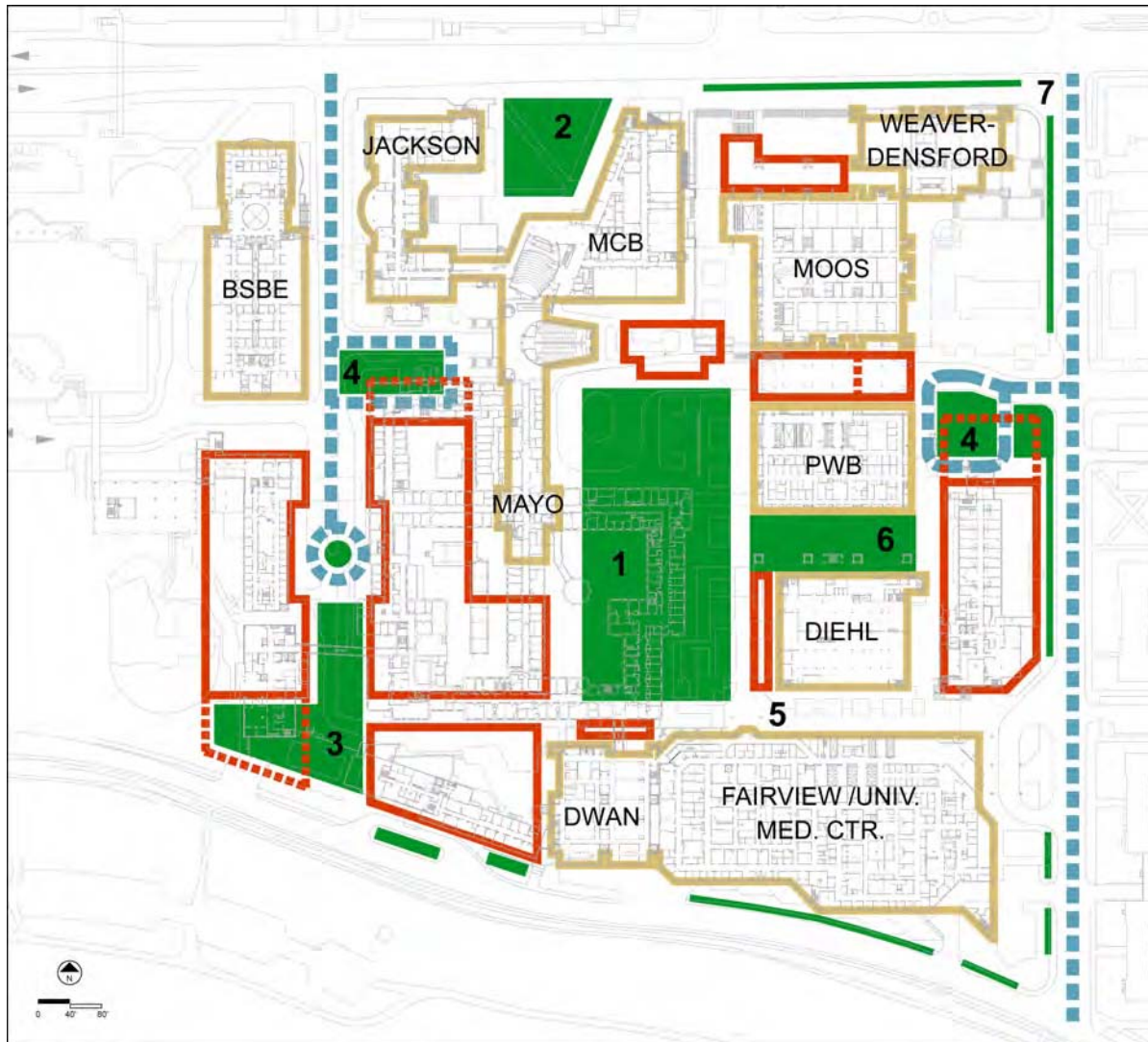
The Academic Health Center is a very high density campus complex with little significant tree canopy, landscape planting areas, or pedestrian-scale plazas.

The district plan emphasizes the importance of creating new and larger green spaces to both organize built forms and provide visual and physical relief from the mass of facilities in a way that is both restful and energizing for the students, staff, faculty, patients, and the public who use the AHC complex.

The new green space network should include:

1. A Central Square with both landscaped and hard surface areas to encourage frequent use throughout the year.
2. A green lawn in front of MCB (now under construction) to help link the AHC to the campus and invite people into the district.
3. A park overlooking the river gorge at the end of Church Street.
4. Pedestrian friendly vehicular drop-off locations at Church and Harvard Streets that include significant tree canopy, colorful planting, and lawn areas.
5. The extended Essex Street Corridor as a landscaped, pedestrian and bicycle circulation path connecting the Housing Superblock with Riverbend Commons.
6. The existing green lawn south of PWB, a quiet and contemplative green space.
7. Enhanced Washington Avenue and Harvard Street with new planting areas along the heavily used pedestrian corridors.

Green Space



LEGEND

- Existing Building
- Proposed Building
- Central Square/Landscaping
- Vehicular Circulation

Density and Massing

The district plan proposes increasing the density and massing of the structures on sites where new construction will replace obsolete and inefficient facilities.

This strategy will make it possible to expand the total gross square footage of functional space in the AHC district while decreasing building footprints, thereby allowing for the creation of new green spaces.

The height of structures on the perimeter should be kept consistent with the surrounding campus, while structures in the core of the AHC could be allowed to rise to the approximate height of the existing Mayo Tower.

This approach allows for development of:

1. A 12-story research office tower of 324,000 gross square feet, with two levels of parking below.
2. A 12-story research office tower of 367,000 gross square feet, with two levels of parking below.

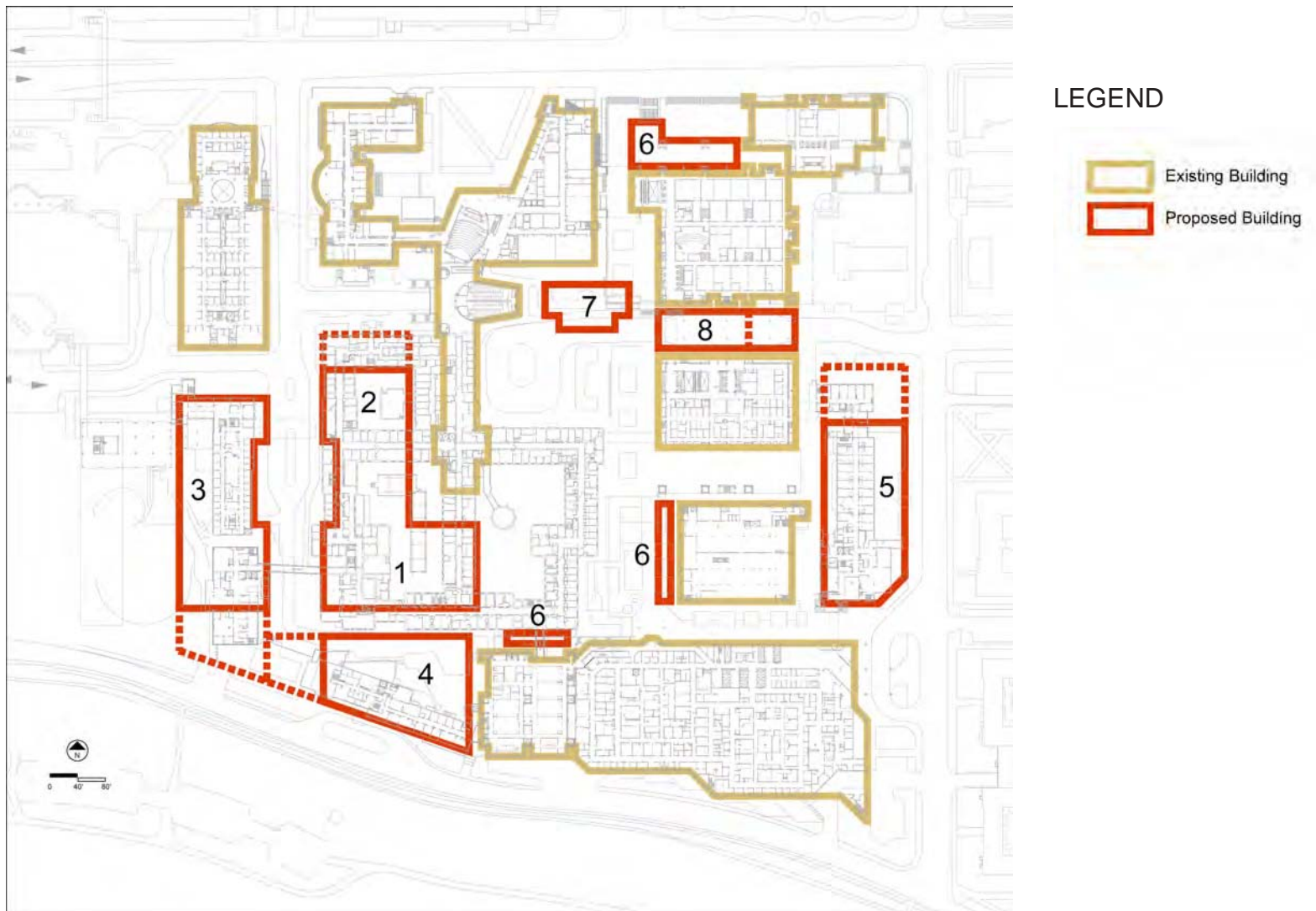
3. An eight-story research office building of 245,000 gross square feet, with two levels of parking below.
4. An eight-story research office and clinical facility of 271,000 gross square feet.
5. A six-story clinical services facility of 177,000 gross square feet, with three levels of parking below.

Implementation of the District Plan would remove 1,165,000 gross square feet of obsolete and inefficient buildings and replace them with 1,547,000 gross square feet of new construction. The net gain of 382,000 gross square feet of efficient space approaches the amount of space that the AHC is projected to need in its Minneapolis campus. It is the maximum amount of space that can be added to the core while still maintaining the aesthetic and functional integrity of the campus.

6. New entry pavilions of 20,000 gross square feet.

7. A two-level student services center of 28,000 gross square feet.
8. Infill between Moos and PWB of 15,000 gross square feet.

Density and Massing



Relationships

South Mall, Housing Superblock, I.T., Stadium Village, and Grace-University Lutheran Church

South Mall and Housing Superblock

The Academic Health Center's campus is situated between the Housing Superblock to the east and the developing South Mall project to the west. These three areas share a northern boundary, Washington Avenue, and a southern boundary, the Mississippi River. The AHC campus is a connecting element between these two heavily populated student activity areas.

The route between Coffman Union and the Superblock needs to be a short, aesthetically pleasing, experience for pedestrians. The Washington Avenue Corridor connects the AHC to Stadium Village and separates it from the Institute of Technology (I.T.) section of the East Bank Campus.



Stadium Village

Stadium Village is a thriving commercial and entertainment district located just a few blocks east of the AHC campus.

The Alumni Gateway Center and Stadium Village retail establishments continue to provide services and entertainment options that attract students, faculty, and staff from the entire southern half of the East Bank campus, including the AHC.

AHC activities run virtually round-the-clock and its users rely on Stadium Village to meet many of their needs.

A key element of the proposed district plan is to make the connection along the south side of Washington Avenue between the AHC and Stadium

Village safer and more aesthetically attractive.

This might include a covered arcade and improved streetscape as suggested in the 1996 Campus Master Plan.

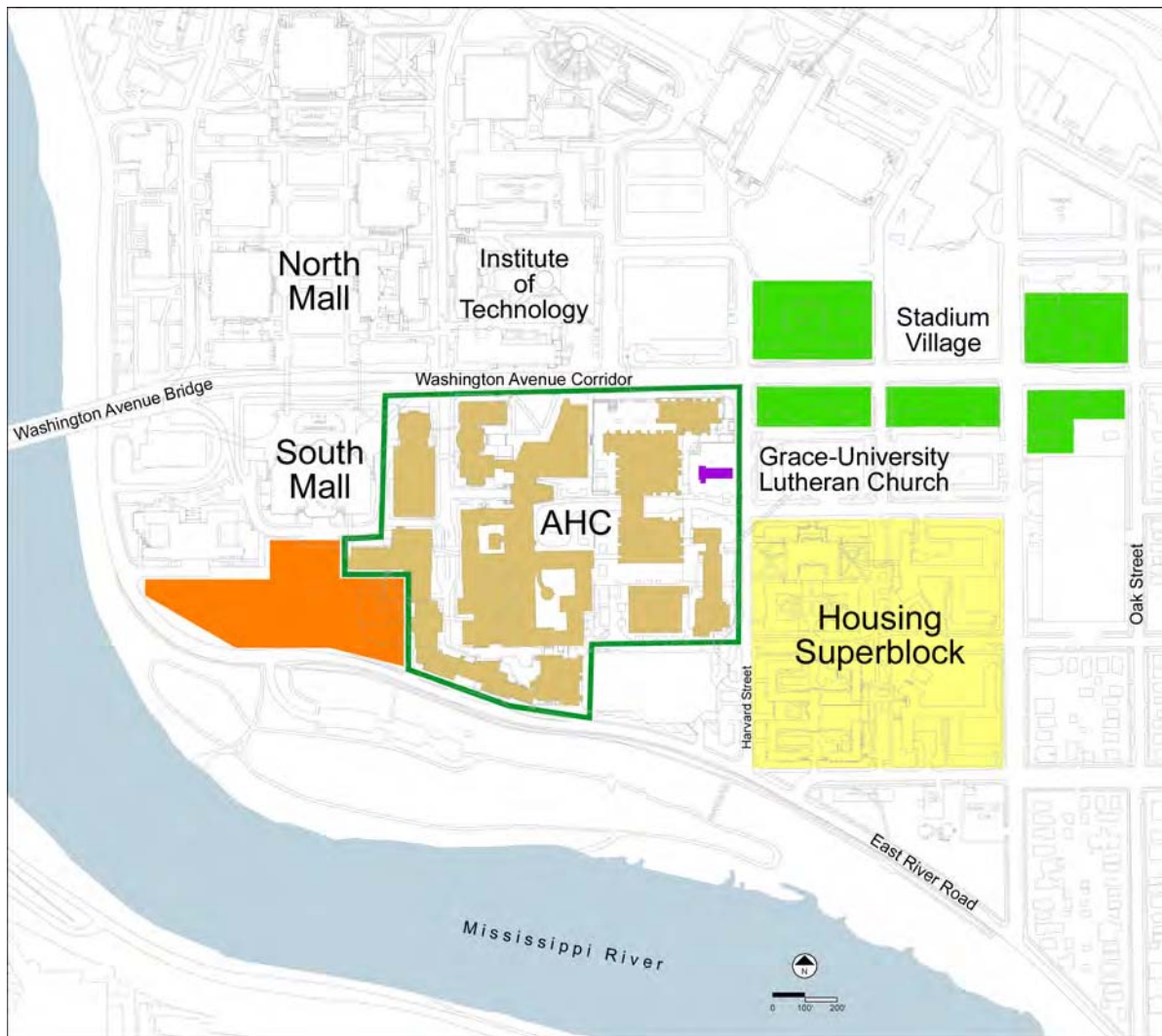
The AHC is expected to attract an additional 5,000 students over the next few years and it needs to provide access to services that meet the daily needs of its population. One way to accommodate those needs is to work with business owners and developers in the Stadium Village commercial area to attract the kinds of businesses and services to the neighborhood that the students will support.



Grace-University Lutheran Church

Since the laying of its cornerstone on June 4, 1916, at its current location, Grace-University Lutheran Church has

Adjacencies



shared a life with the University of Minnesota, particularly the Academic Health Center.

Ties between the church and the AHC have developed over the years through entities such as the AHC's Center for Spirituality and Healing.

However, during the early 1970's, construction in the Health Science forever changed the physical relationship between Grace-University Lutheran Church and the AHC.

The AHC district plan provides a more gracious and open arrival area to the south of the church building. The church is currently planning an addition to the south and will also benefit greatly from the visibility of a new arrival area.



Development Steps

The future success of the AHC depends heavily on a clearly defined plan of action that presents a series of sequential *development steps* and breaks implementation into two categories: Critical Path and Other Projects.

The steps listed under each of these categories will result in the creation of a programmatically functional facilities plan in the context of a livable AHC campus.

Development steps listed under the heading “Critical Path” either address the stated program priorities of the Academic Health Center or are the infrastructure steps required to develop the plan.

The steps listed under the heading “Other Projects” represent planning ideas that, when implemented, will serve to reinforce the core area development plan.

A diagram with supporting narrative illustrates each step.

AHC DISTRICT PLAN DEVELOPMENT STEPS

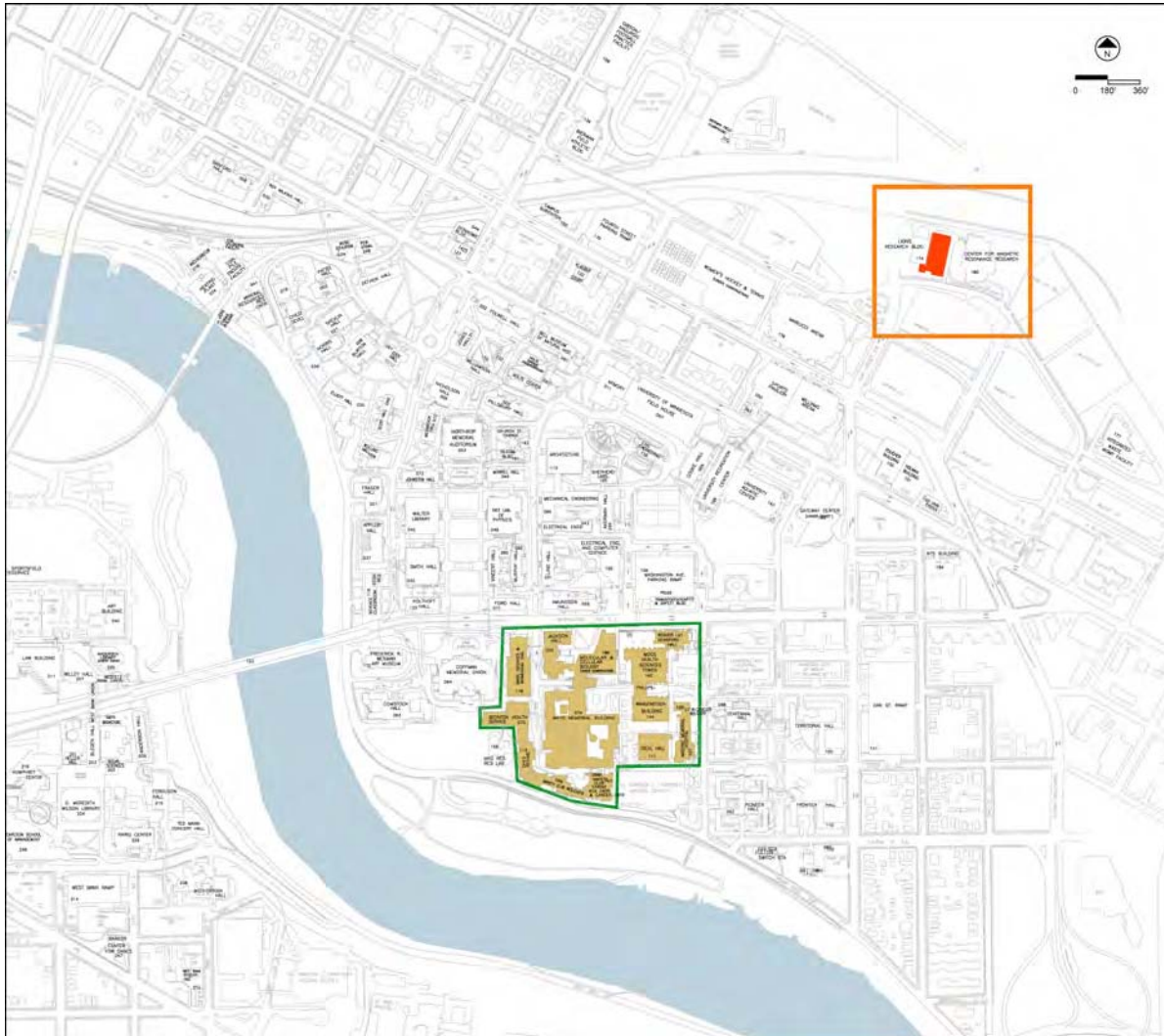
(Refer to the subsequent pages for diagrams and additional information)

CRITICAL PATH

- | Development Steps | Description |
|-------------------|--|
| 1. | Build New Translational Research Facility |
| 2. | Vacate and Demolish SE Wing Mayo Building and Garage
· Swing Space Leases |
| 3. | Build Central Square |
| 4. | Free up Space for Future Development & Programmatic Needs |
| 5. | Build AHC Learning and Education Center |
| 6. | Vacate and Demolish SW Wing Mayo Building
Obtain Planning Funding - Item #7
· Swing Space Leases |
| 7. | Build 12 Level Research/Office Tower in Vacated SW Quadrant of Mayo |
| 8. | Vacate and Demolish NW Wing Mayo Building
Obtain Planning Funding - Item #9 |
| 9. | Build 12 Level Research/Office Tower in Vacated NW Quadrant of Mayo |

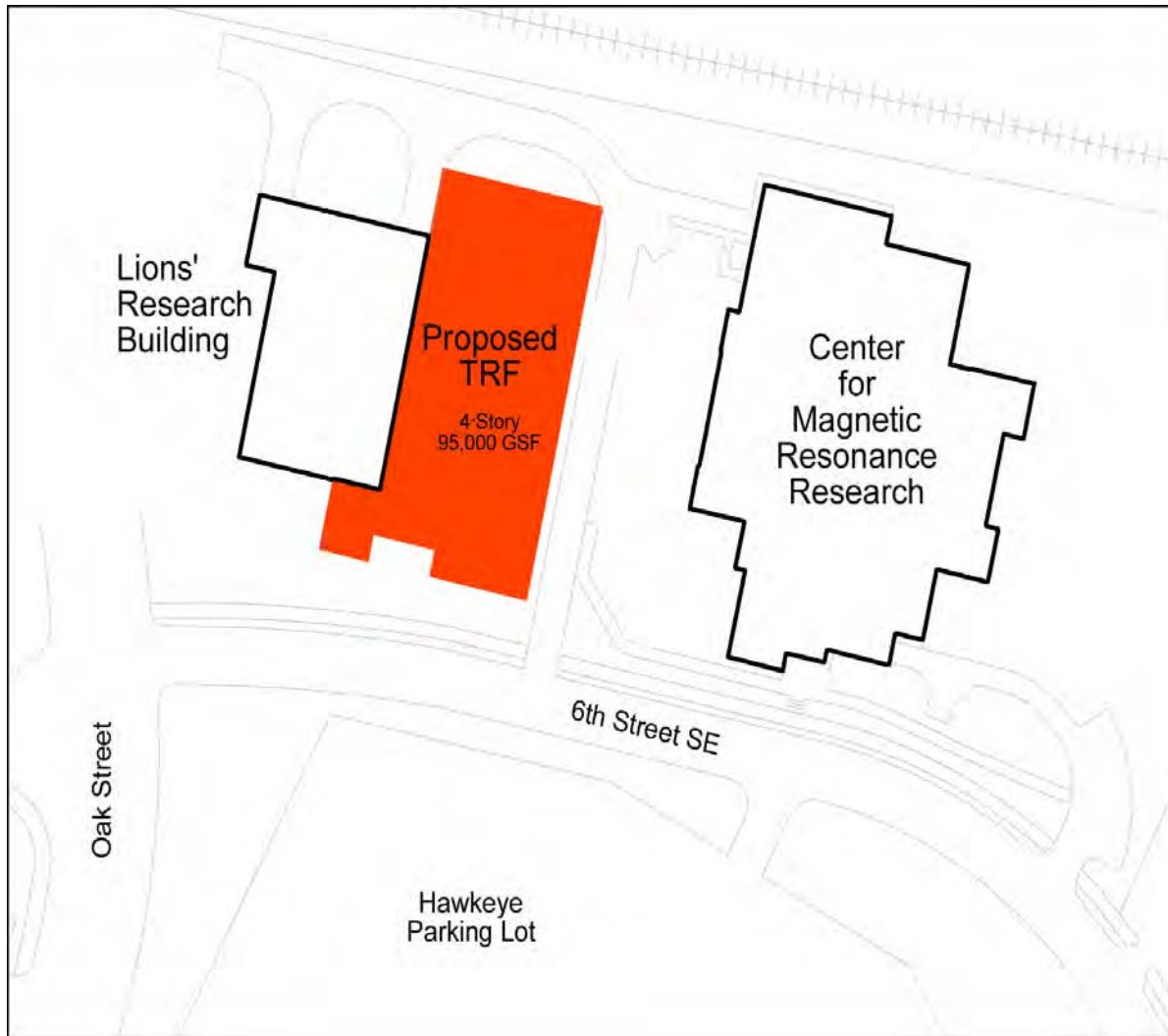
Step 1: Build New Translational Research Facility (TRF)

University of Minnesota - East Bank Map



Development Steps - Critical Path

Step 1: Build New Translational Research Facility (TRF)



Identifying a site for the Translational Research Facility program is a primary goal of the AHC District Plan.

The planning process has explored multiple options for locating the TRF on potential sites within the AHC core campus as well as outside the core campus.

After careful consideration of alternatives, the site adjacent to the Lions Research Building was selected for the new TRF. This selection was made for the following reasons:

1. The site was available and previously prepared for expansion when Lions Research Building was built, making it available for construction.
2. The site is adjacent to other research facilities.

The new facility will be constructed as an *addition* to the Lions Research Building.

Step 2: Vacate/Demolish SE Wing Mayo Building and Garage

Step 3: Build Central Square Space

The organizing element of the district plan is the Central Square. The concept and rationale for this element is thoroughly addressed in the “Green Space” section of this document.

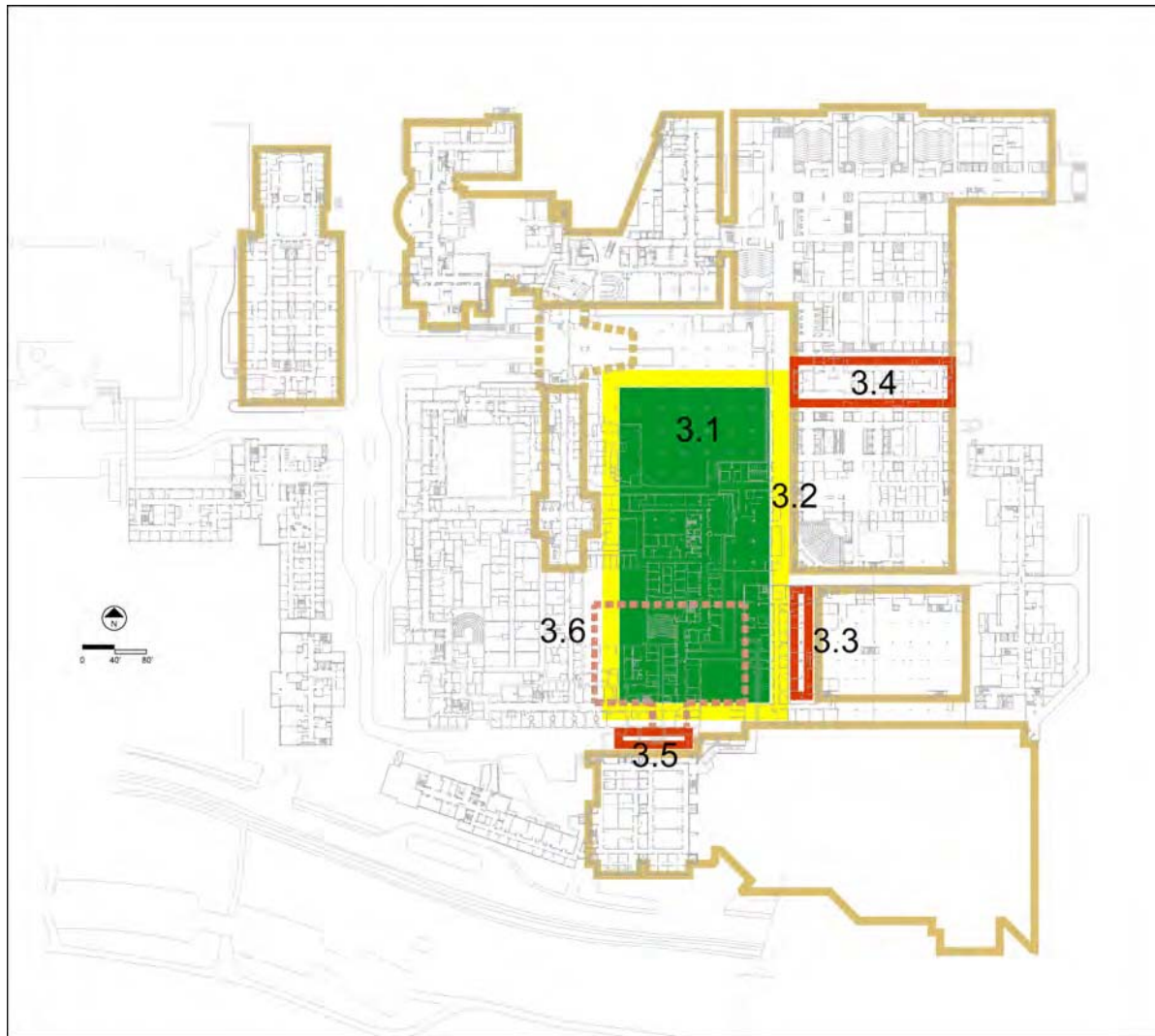
The Central Square gives identity to the AHC and provides clear circulation and orientation for visitors, faculty, students, and staff.

Implementing this portion of the district plan requires demolition of the southeast quadrant and parking garage of the Mayo Building.

Obtaining swing space for the displaced occupants of the Mayo Building will be a significant issue. Finding replacement space is another.

Securing parking space in the Riverbend Commons Parking Facility (under construction) or the Washington Avenue Ramp and providing off-site parking with a shuttle service should be considered.

Development Steps - Critical Path
Step 2: Vacate and Demolish SE Wing Mayo Building and Garage
Step 3: Build Central Square Space
Concourse Level



KEY

- 3.1 Landscape Area
- 3.2 Circulation Corridor
- 3.3 Diehl Hall Addition
- 3.4 Infill Drive/Patient Arrival Lobby Moos and PWB
- 3.5 Dwan Entry
- 3.6 Animal Holding Below Central Square

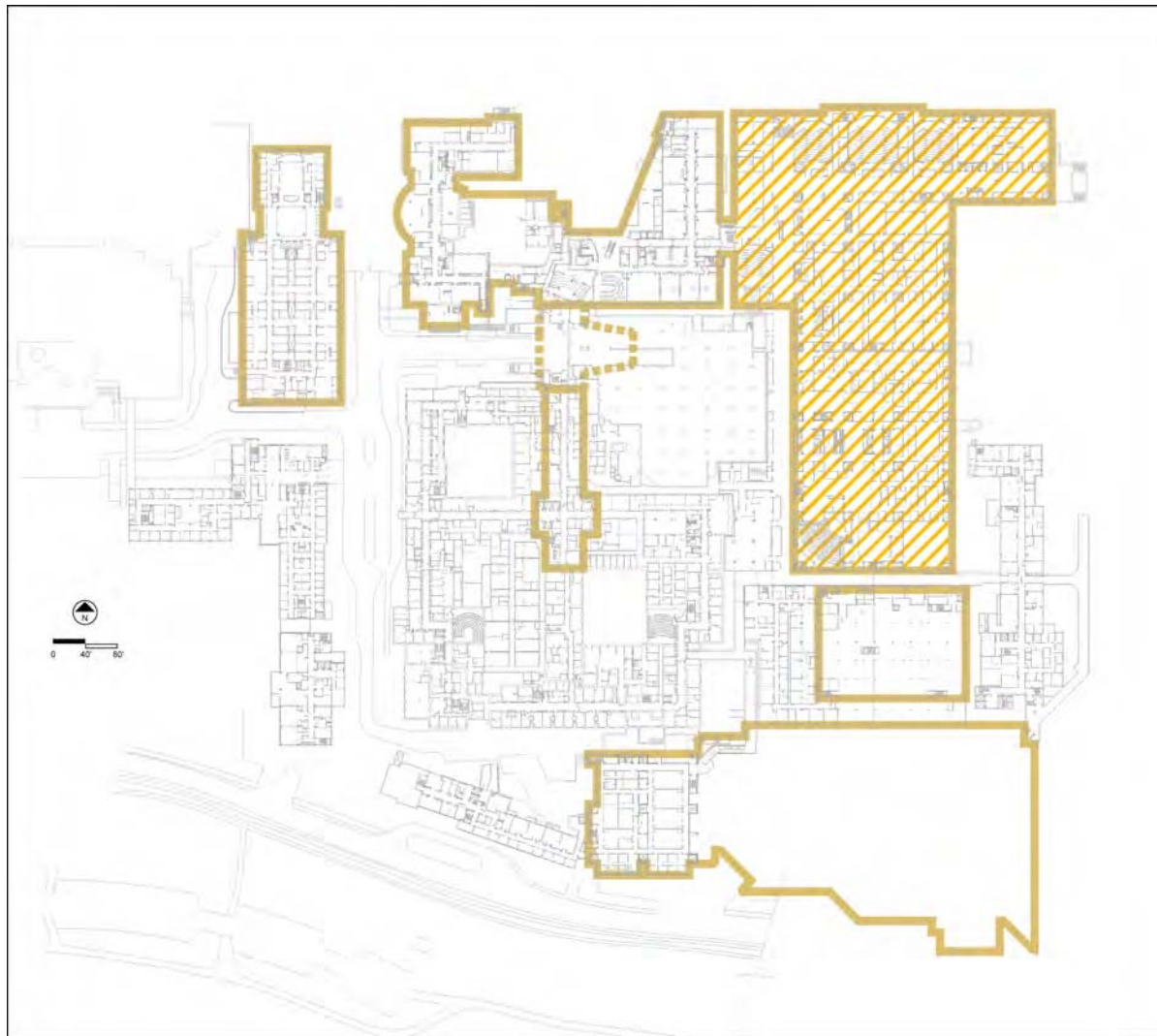
Step 4: Free Up Space for Future Development and Programmatic Needs

A second major goal of the AHC District Plan is to identify space for the proposed AHC Learning and Education Center (LEC). The nature of the instructional activities dictates that the LEC be within the core of the AHC campus. This means some existing space must be selected and vacated before construction of proposed projects such as the LEC may begin.



Step 2 initiates the process of vacating space within PWB and Moos to form the spine of the LEC or provide homes for other AHC program needs.

Development Step 5 more thoroughly describes the program requirements and concept of the LEC.

Development Steps - Critical Path
Step 4: Free Up Space for Future Development and Programmatic Needs
Concourse Level



LEGEND

-  Existing Building
-  Potential Future Reorganization

Step 5: Build the AHC Learning and Education Center (LEC)

The Academic Health Center Learning and Education Center is part of a strategic planning effort at the University of Minnesota to develop facilities that will allow the seven schools of the AHC to meet their strategic initiatives in research, education, and service.

The new Learning and Education Center will enhance and expand existing instructional, library, and student support facilities for the Medical School, the College of Pharmacy, the School of Public Health, the Nursing School, and the School of Dentistry and AHC Allied Health Programs.

The project will provide a total of 157,500 g.s.f. or 110,250 a.s.f. between renovation of existing facilities and construction of new facilities. It will focus on the development of modern classrooms, teaching labs and student support spaces to meet the changing curriculum needs and to replace outdated and obsolete facilities. The project will also provide an identity for the educational mission of the Academic Health Center.

It is also critical that the AHC

Learning and Education Center be created as early as possible in the development sequence.

The need for a strong relationship to the existing biomedical library in Diehl Hall and the curricula of other programs drive the need to locate the LEC within the core of the AHC campus.

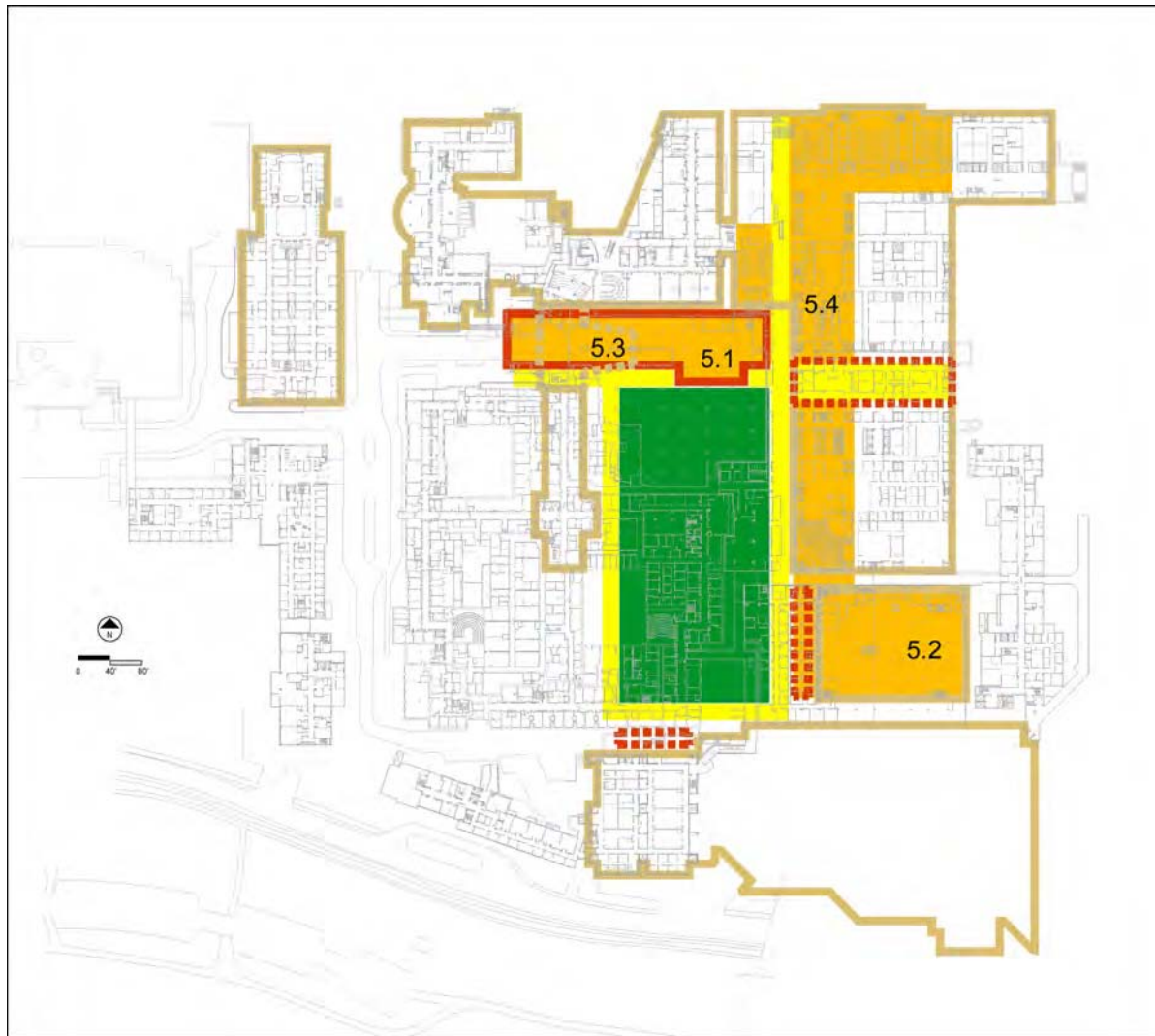
The ability of the LEC to create vitality and activity at the heart of the campus is a significant asset. New construction of approximately 72,000 g.s.f. at the north end of the Central Square can be combined with a remodeled Diehl Hall to create a natural spine off which classrooms, teaching labs, and other student functions can be located.

Reallocating space to achieve the necessary square footage for the LEC will require ongoing investigation and discussion.

Potential options include, but are not limited to the following:

- 1) Vacated clinic space in PWB
- 2) Consolidating Fairview lease space
- 3) Other lease agreements

Development Steps - Critical Path
Step 5: Build AHC Learning and Education Center (LEC)
Concourse Level



KEY

- 5.1 Student Services Center
- 5.2 Remodel Diehl Hall
- 5.3 Remodel Mayo Auditorium
- 5.4 Remodel PWB Concourse and plaza

Step 6: Vacate and Demolish SW Wing Mayo Building

Step 7: Build 12 Level Research/Office Tower

Step 6 entails vacating and demolishing the southwest wing of the existing Mayo Building and initiating the funding process for Step 7. As in previous steps, a major issue will be identifying swing space for displaced occupants of the Mayo Building.

Step 7 represents the first major replacement of space within the core AHC campus. The new 12-story building will provide 324,000 g.s.f. of research, office, and support space. Defining the actual ratios of these spaces will be part of the programming effort for the new facility.

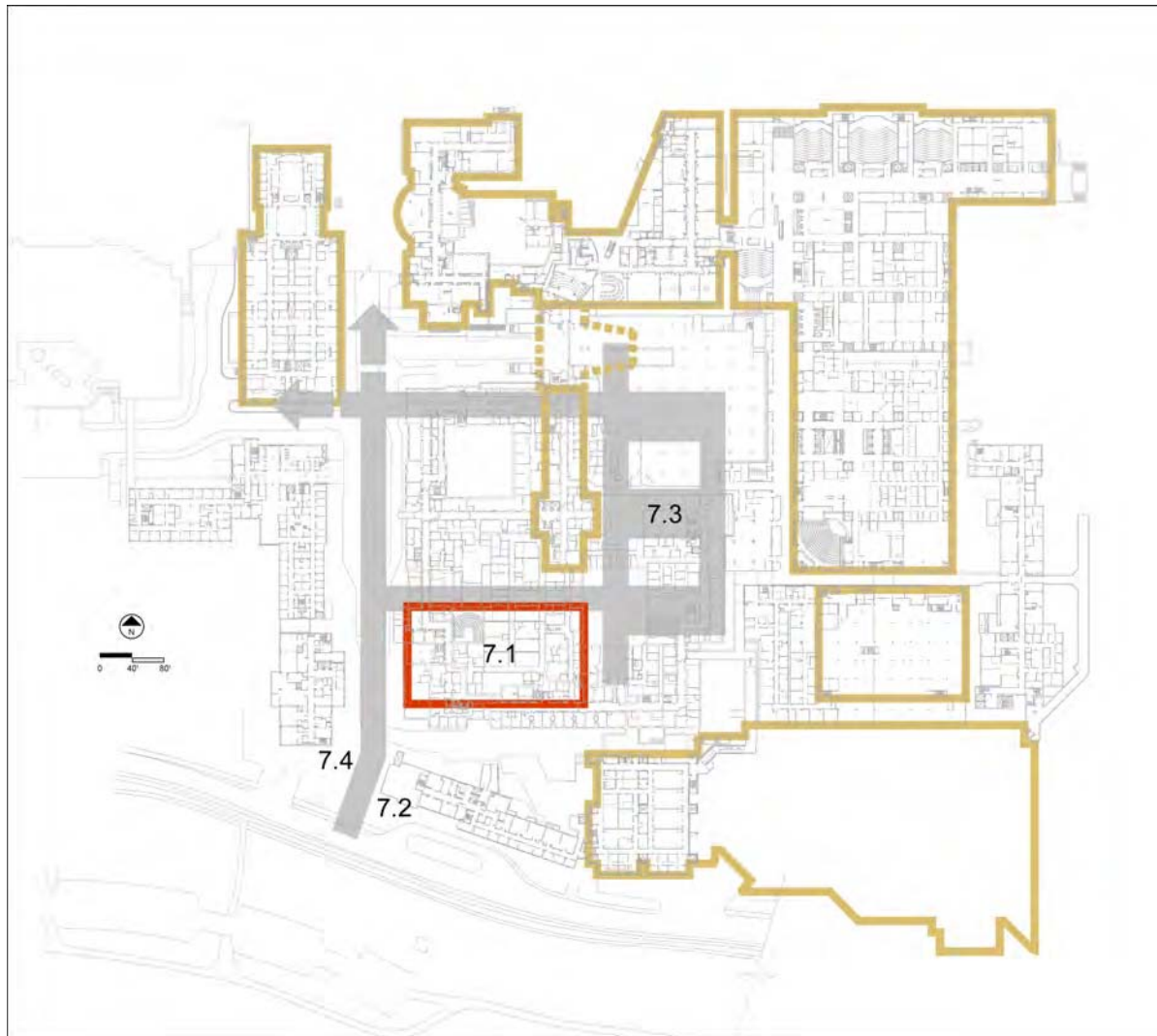
This development step also involves creating new service access and loading dock space in deep-mined space below the AHC District. Access to the mined space will be from East River Road. The new service docks will eliminate the need for the existing docks, currently accessed from East River Road.

Removing the service docks from their existing location provides three benefits:

- 1) Service functions will be centralized within the core campus
- 2) Space will be freed for program needs
- 3) There will be an opportunity to create a much more aesthetically pleasing image along the East River Road, one of the defining edges of the AHC campus.

When combined with Steps 1 - 5, Step 7 completes the creation of the Central Square concept, the defining element of the Academic Health Center campus.

Development Steps - Critical Path
Step 6: Vacate and Demolish SW Wing Mayo Building
Step 7: Build 12-Level Research/Office Tower
Concourse Level



KEY

- 7.1 12-Level Research/Office Tower - 324,000 GSF
- 7.2 Demolish west end of VCRC
- 7.3 Service Dock in Deep-Mined Space
- 7.4 Service Access Drive

Step 8: Vacate and Demolish NW Wing Mayo Building

Step 9: Build 12-Level Research/Office Tower

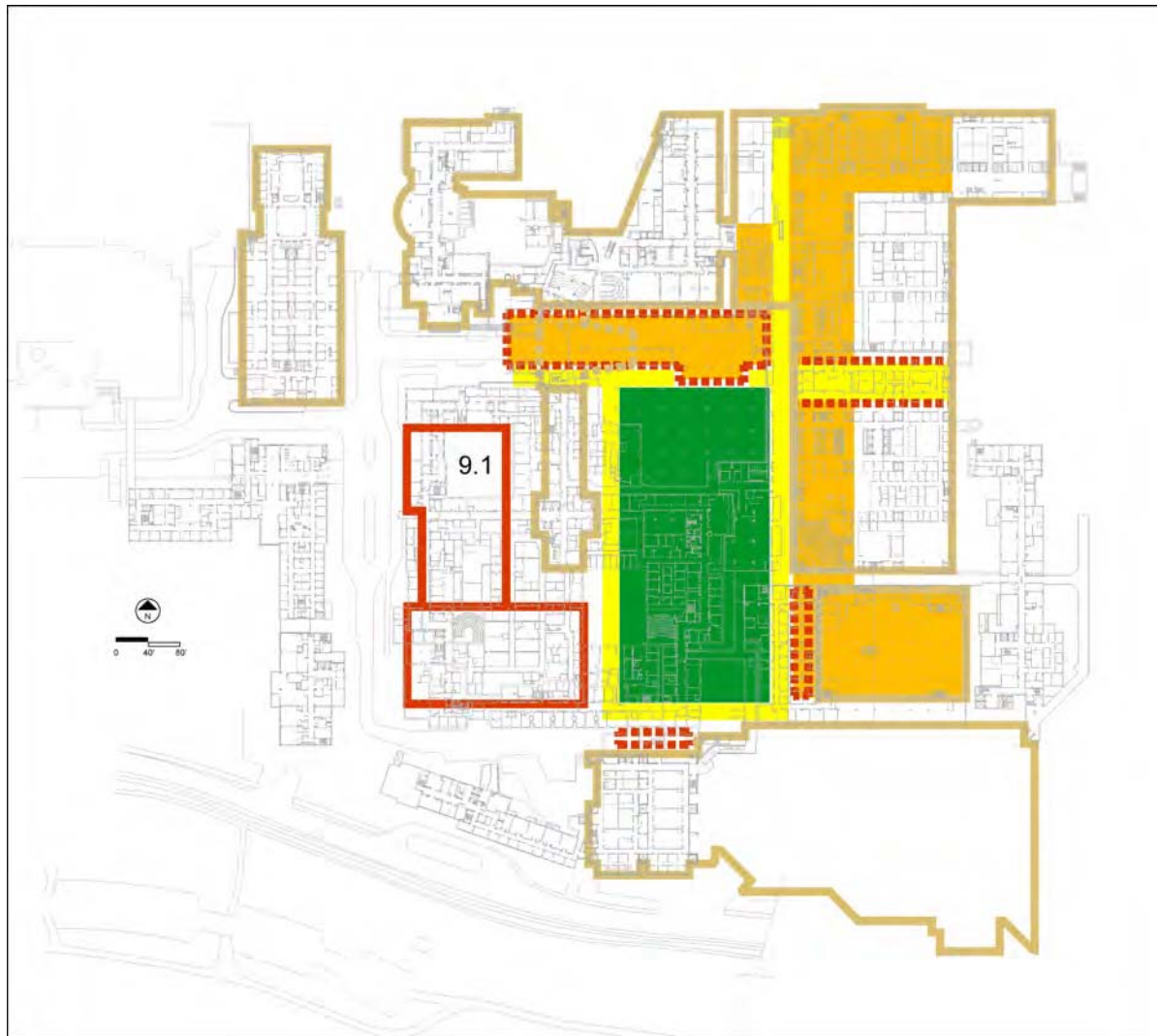
Step 8 entails vacating and demolishing the northwest wing of the existing Mayo Building and initiating the funding process for Step 9. As in previous steps, a major issue will be identifying swing space for displaced occupants of the Mayo Building.

Step 9 represents the second major replacement of space within the core AHC campus. The second of two 12-story buildings, this facility will add 367,000 g.s.f. of research, office, and support space.

Again, the ratio of the various program spaces will be determined as part of the programming effort for the new facility.

Completing this development step firmly establishes a zone of research activity consistent with the “Use Locations” diagram presented on *p. 21* of this document.

Development Steps - Critical Path
Step 8: Vacate and Demolish NW Wing Mayo Building
Step 9: Build 12-Level Research/Office Tower
Concourse Level



KEY

9.1 12-Level Research/Office
Tower - 367,000 GSF

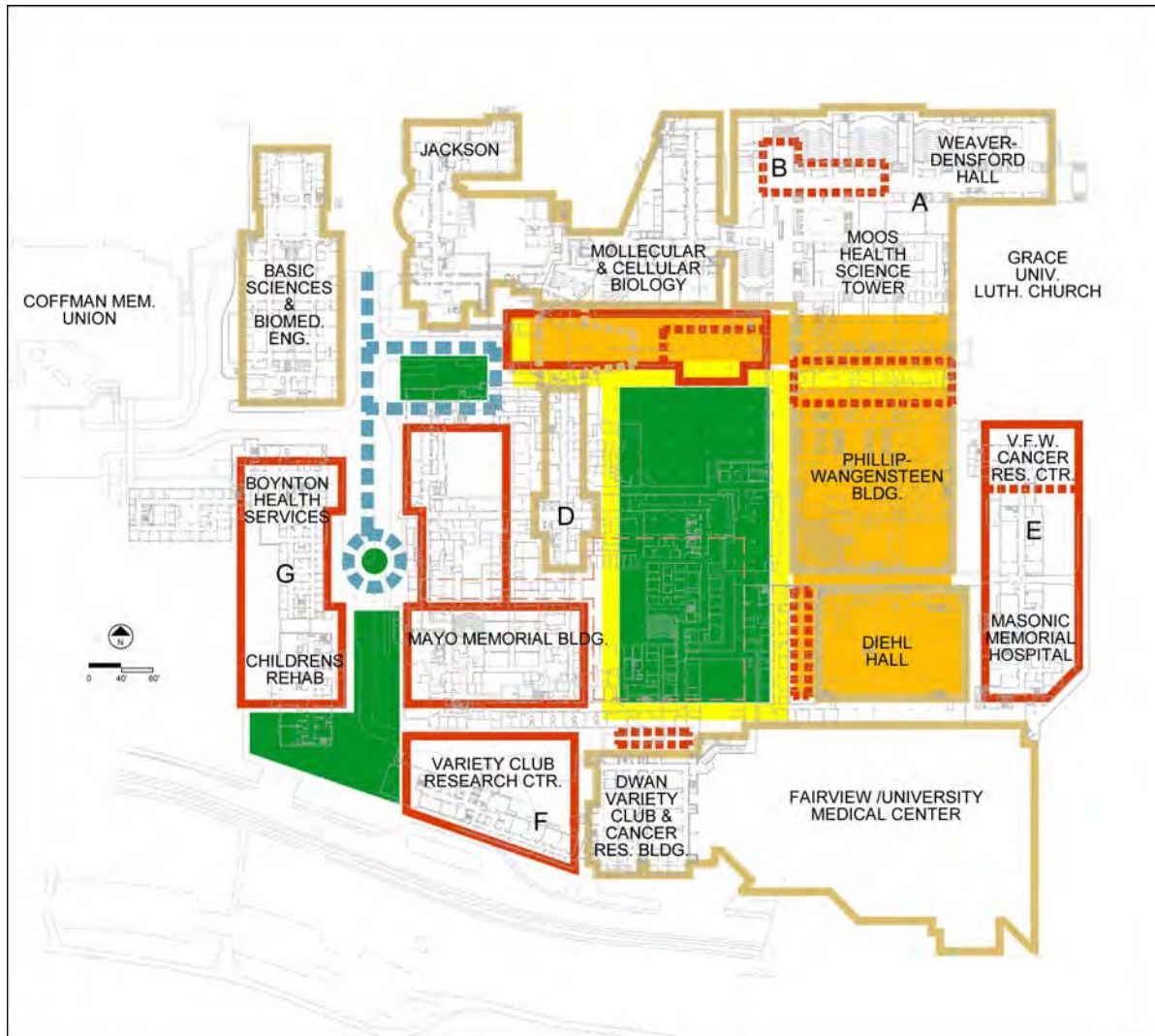
AHC DISTRICT PLAN DEVELOPMENT STEPS

(Refer to the subsequent pages for diagrams and additional information)

OTHER PROJECTS

- A. **Renovate Weaver-Densford Hall and Moos Tower to accommodate program growth and changes in the schools of Pharmacy, Dentistry, and Nursing**
- B. **Moos and Weaver-Densford Entry Pavilion with Washington Avenue Streetscape Improvements**
- C. **Expand North Research Park**
- D. **Remodel Remaining Mayo Tower**
- E. **Replace Masonic Memorial Hospital - VFW Cancer Research Center
Build Harvard Street entrance to the AHC**
- F. **Replace Variety Club Research Center (VCRC)**
- G. **Replace Boynton Health Building and Children's Rehabilitation Center**
- H. **Infrastructure Upgrades**

Development Steps - Other Projects
Steps A, B, D, E, F & G
Concourse Level



KEY

- A. Renovate Weaver-Densford Hall and Moos Tower to accommodate Pharmacy, Dentistry, and Nursing
- B. Moos and Weaver-Densford Entry Pavilion with Washington Avenue Streetscape Improvements
- C. Expand North Research Park (refer to p.46)
- D. Remodel Remaining Mayo Tower
- E. Replace Masonic Memorial Hospital - VFW Cancer Research Center, Build Harvard Street entrance to the AHC
- F. Replace Variety Club Research Center
- G. Replace Boynton Health Building and Children's Rehabilitation Center
- H. Infrastructure Upgrades

Development Steps - Other Projects Step C



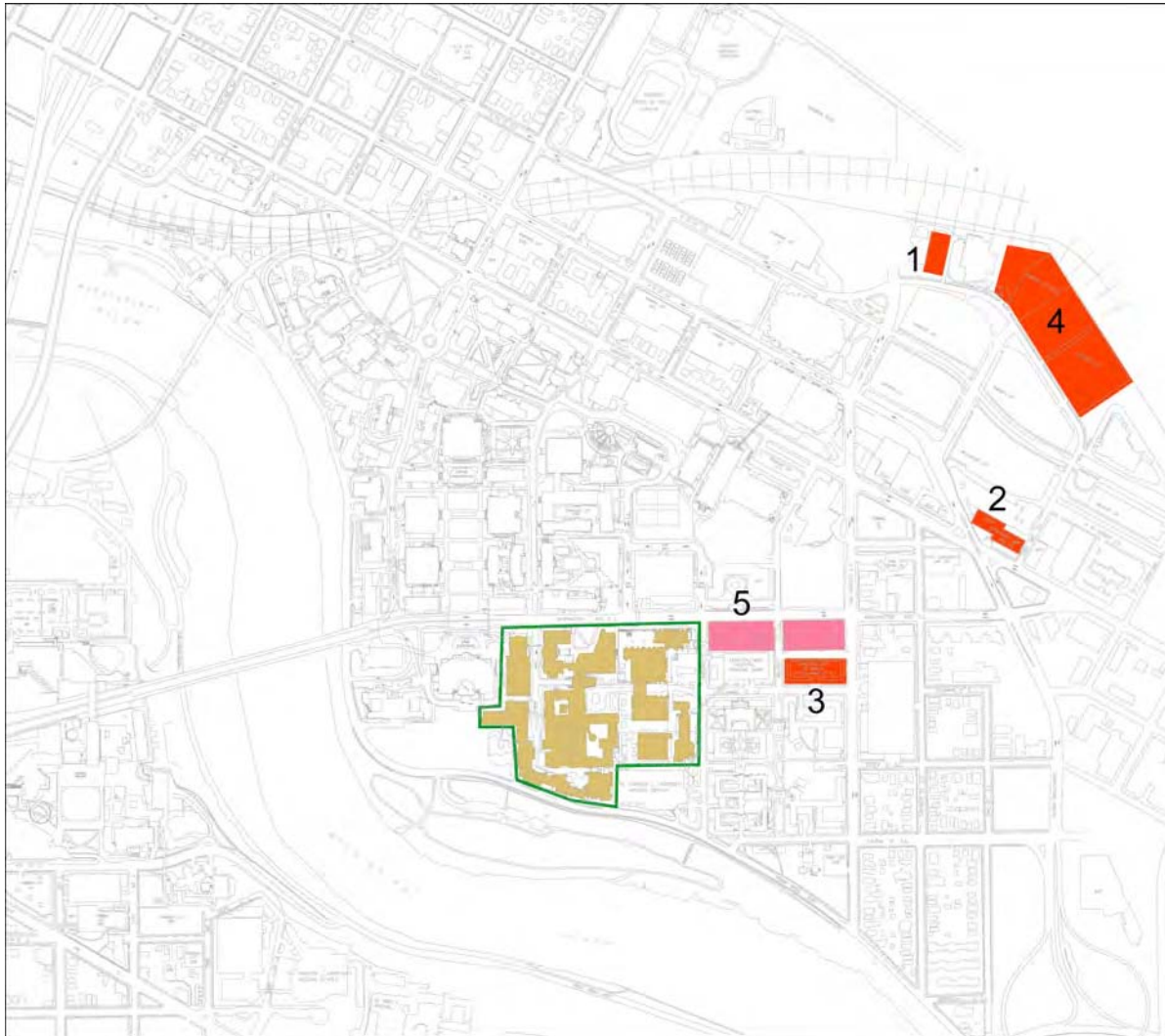
Growth Options Outside the Core AHC Campus

Throughout the planning process for the AHC District, many options for future expansion were discussed. The proposed district plan, when implemented, will maximize the amount of building area within the AHC Minneapolis campus. The expected growth of AHC programs will eventually require creative solutions to finding space beyond the boundaries of the core campus. The 1998 Strategic Facility Plan for the AHC showed that the University was leasing almost 180,000 square feet of space in the Twin Cities area, at an estimated annual cost of \$2.78 million. The University also rents, toward ownership, another 54,397 square feet, at an estimated annual cost of \$1.06 million. Based on information available, the most viable options at this time for expansion space outside the core of the AHC campus include:

<u>Location</u>	<u>GSF</u>
Translational Research Facility	95,000
2221 University Avenue	129,160
State Health Building	197,260
<u>Develop North Research Park</u>	<u>120,000</u>
Total	541,420

The AHC has identified a need for additional square feet of leased space for its programs. In addition, there are retail services not presently available in the area that could benefit AHC students, staff, and visitors to the AHC community. These represent private development opportunities which could enhance the Stadium Village commercial district and the City of Minneapolis. The AHC would like to work with the Stadium Village community and local planning officials to develop a vision for the area that could accommodate this growth.

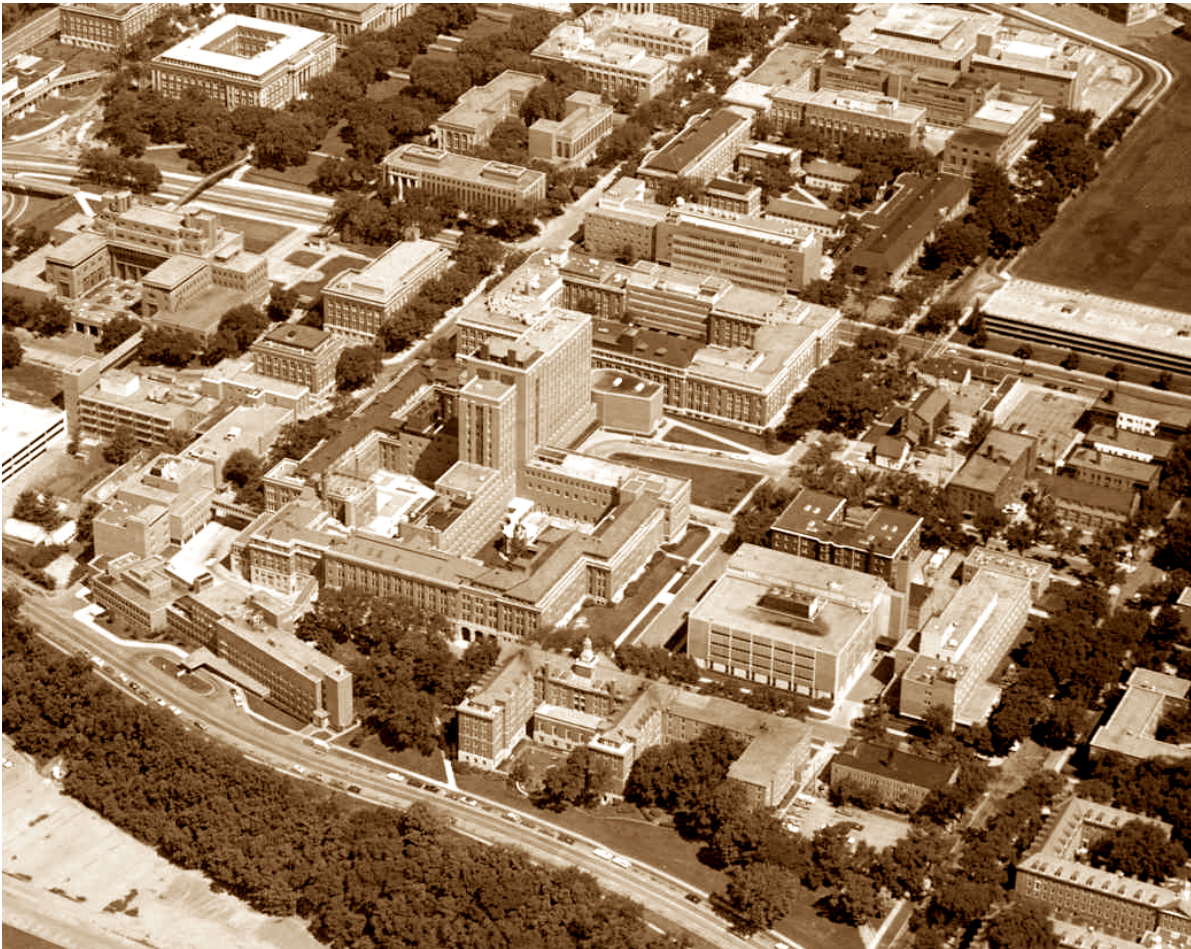
Growth Options Outside the Core AHC Campus



KEY

1. Translational Research Facility
2. 2221 University Avenue Building
3. State Health Building
4. North Research Park
5. Stadium Village Improvements

Academic Health Center circa 1950's



2 Architectural Character Heritage

In 1911, Elliot Memorial Hospital, the first building on the current AHC Minneapolis campus, opened its doors to the university community. The following years brought rapid growth and expansion to the area. In accordance with Cass Gilbert's plan for the expansion of the University of Minnesota, Minneapolis campus, the health science buildings began construction in 1911. Following Elliot Memorial Hospital, the School of Anatomy opened in 1912, in part of what is now Jackson Hall. The same year the Department of Medicine opened New Millard Hall after the Old

Millard Hall was destroyed by fire on March 1, 1912 (it was later rebuilt and renamed Wulling Hall). The Hospital Service Building was added in 1915, and was connected to Elliot Memorial in the same year.



University Hospitals 1920

In 1924, Todd Memorial Hospital was built as an addition to the eastern side of Elliot Memorial Hospital. In 1925, the University's first specialty hospital was built, George Chase Christian Memorial Cancer Hospital, to help fulfill the needs for greater specialization in a progressing field of medicine. Similarly, in 1928, the Minnesota Hospital and Home for Crippled Children (later renamed the Eustis Children's Hospital) was built as a western wing to the ever-enlarging Elliot

Memorial Hospital. In 1929, the Health Service- North Clinic was added to the northern end of the Eustis Children's Hospital.

In 1932, The New Medical Science Building (later renamed Owre Hall) was built as a southern addition to New Millard Hall, bringing the College of Dentistry to the growing medical area. In that same year, Powell Hall, a dormitory for student nurses, was completed, the first building to expand the medical area beyond Union Street. Further expansion in 1936, resulted in the construction of the Psychopathic Hospital, which was built on the roof of the Todd Memorial and Christian Hospital wings.

The Fifties brought a resurgence of construction to the health science area. In 1950, the first Student Health Service was constructed and later expanded in 1957. In 1954, the Mayo Auditorium and Medical Building were added to the area.

In 1951, the Variety Club Heart Hospital was constructed on East River Road. In 1945, Millard Hall was connected to the Institute of Anatomy (Jackson Hall) when the Elias P. Lyon Laboratories were completed.

Additionally, the Mayo Memorial Building and Auditorium were completed the same year. In 1958, the Cardio-Vascular Laboratory was constructed by remodeling a residence at 305 Union Street, and the Masonic Memorial Hospital construction was completed. In 1959, the Veterans of Foreign Wars Cancer Research Center was opened. The Fifties came to a close with the completion of the Diehl Hall Medical Library and Animal Research Center in 1960.

In 1960, the Jackson-Owre Addition connecting the two buildings was erected.



Medical Science Buildings 1932

The next additions to the health science campus would not occur until Medical Health Unit A (Moos Health Sciences Tower) was completed in 1976.

Its neighbor, the Phillip-Wangensteen Building, was completed 2 years later in 1978 and Unit F (Weaver-Densford Hall) was completed in 1981. In the same year, Powell Hall was demolished to prepare for the construction of the Medical Health Unit J (Fairview-University Hospital). The construction was delayed and the first phase of the building was not opened until 1984, and construction went on until 1986.

Further construction came in 1995-96, with the completion of the Basic Sciences and Biomedical Engineering building and the Dwan Variety Club and Cancer Research Building. In 1999, Lyons Laboratory, New Millard Hall and Owre Hall were demolished to create space for the Molecular and Cellular Biology Building scheduled to be completed in spring 2001.



Powell Hall 1933



Mayo Building 1954



Jackson Hall 1913

Creating Future Exterior Spaces

This development plan for the Academic Health Center will create a sense of character-defining architectural unity. It will transform the AHC Minneapolis campus from a cold, uninviting place to a warm, welcoming, easy-to-understand and secure campus. It visually and physically connects the AHC to the rest of the East Bank Campus and increases transparency to the interior of AHC buildings.

The architectural guidelines for renovated as well as replacement buildings are:

1. Use red brick and limestone as the principal exterior materials (e.g. be consistent with the core campus of the University). In addition to this warm palette of brick and limestone, glass should be a warm hue of gray-green or blue-green with frames of champagne or bronze anodized aluminum.
2. Create exterior building elevations with a tripartite pattern of base, middle, and top, again consistent with the core of the

- University's campus. The base and top should be primarily of limestone. The middle portion and detail at the base and top should utilize red brick.
3. Maintain a higher density of texture and detail at grade level. The base of a building is closest to the user and it should carry the most texture and detail.
 4. Maximize the amount of window area at grade level for all buildings.
 5. Align interior circulation corridors with the exterior walls of existing buildings to maximize the connection from interior circulation to outdoor spaces.
 6. Make building entrances dominant on their façades and largely transparent to visually connect interior and exterior spaces.

In 1902, Frederick Law Olmstead made a statement to the Board of Trustees of the University of Chicago which relates to one of the things that has been lost on the AHC Minneapolis campus. At the same time, he points to what can be done to reclaim that loss:

"No amount of beauty in each individual building can ever compensate for the loss of the essential element of harmony and unity in the whole group of buildings. This harmony is to be secured by the unity of quality and color of materials and reasonable unity of style and design."

Frederick Law Olmstead

Aerial Image of Central Square



Image of Arrival Court and Moos-PWB Infill

Viewed from Delaware Street and Harvard Street

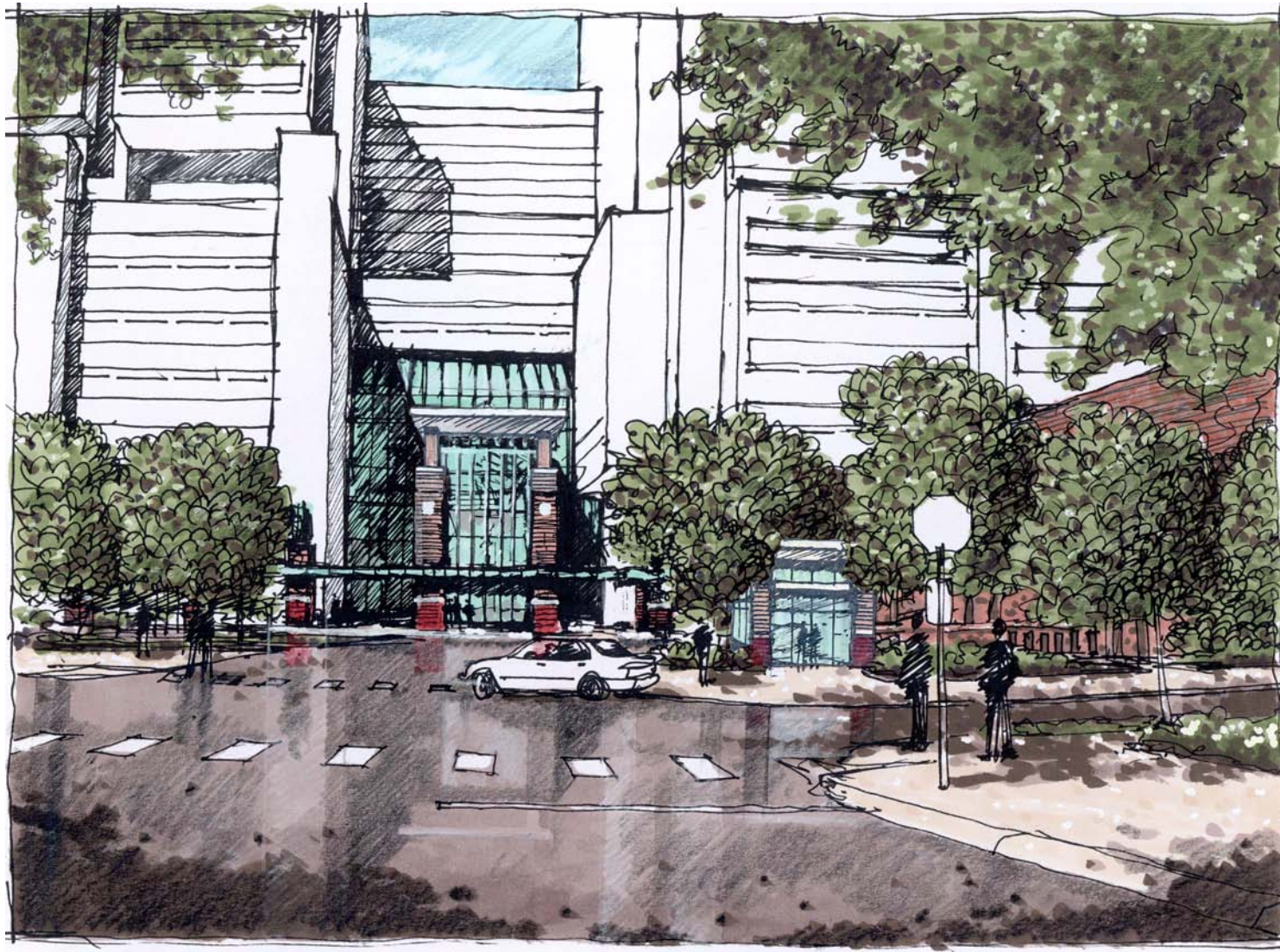
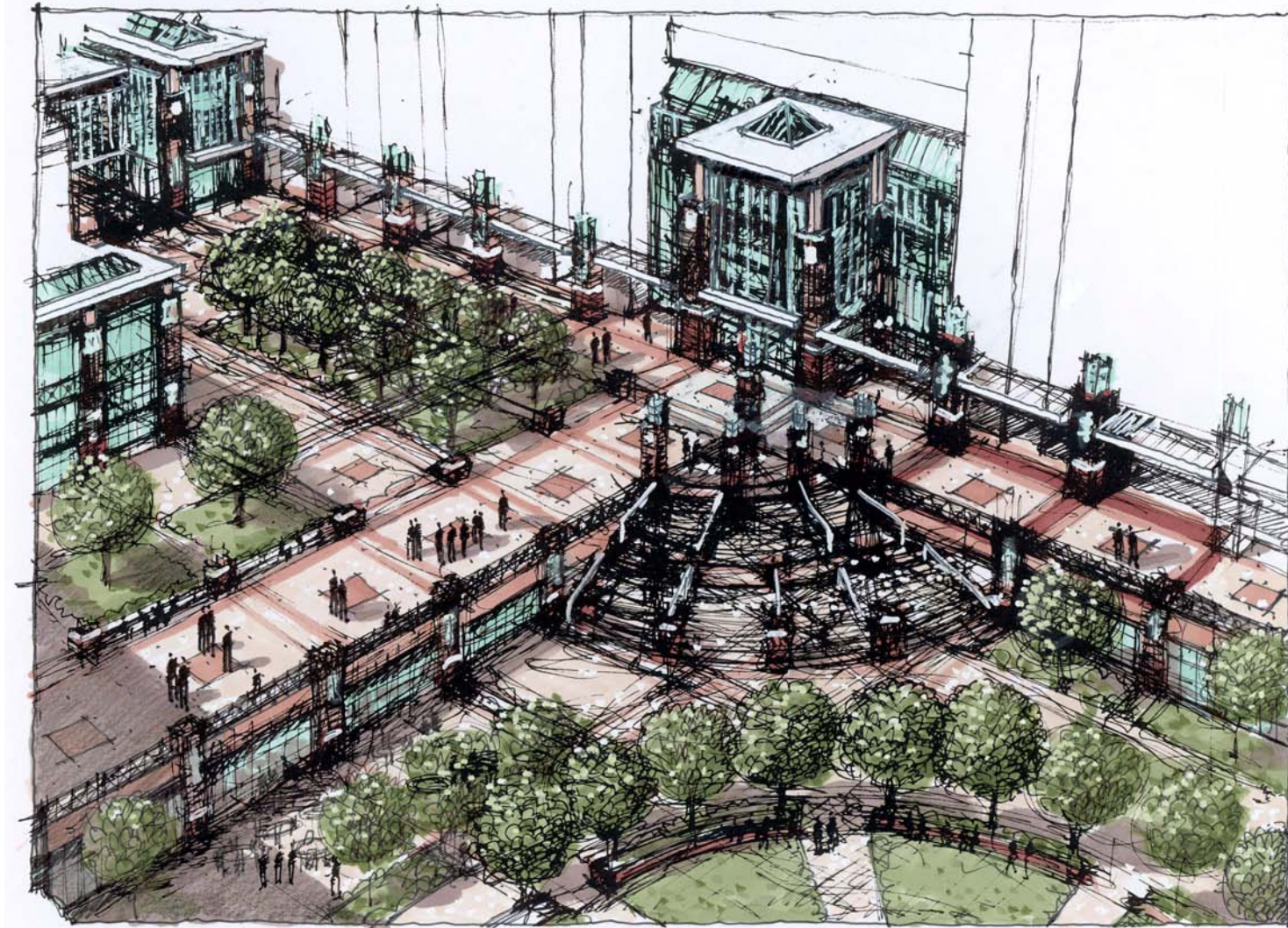


Image of Central Square and Moos-PWB Infill

Viewed from the Mayo Tower



Creating a Future Streetscape and Edge Definition

Like its architectural character, the streetscape adjacent to and within the AHC should promote a sense of community, warmth, personal security, and comfort. It should also make it easier for students, staff, faculty and visitors to find their way to and through the AHC campus. The principles for streetscape development are listed as follows:

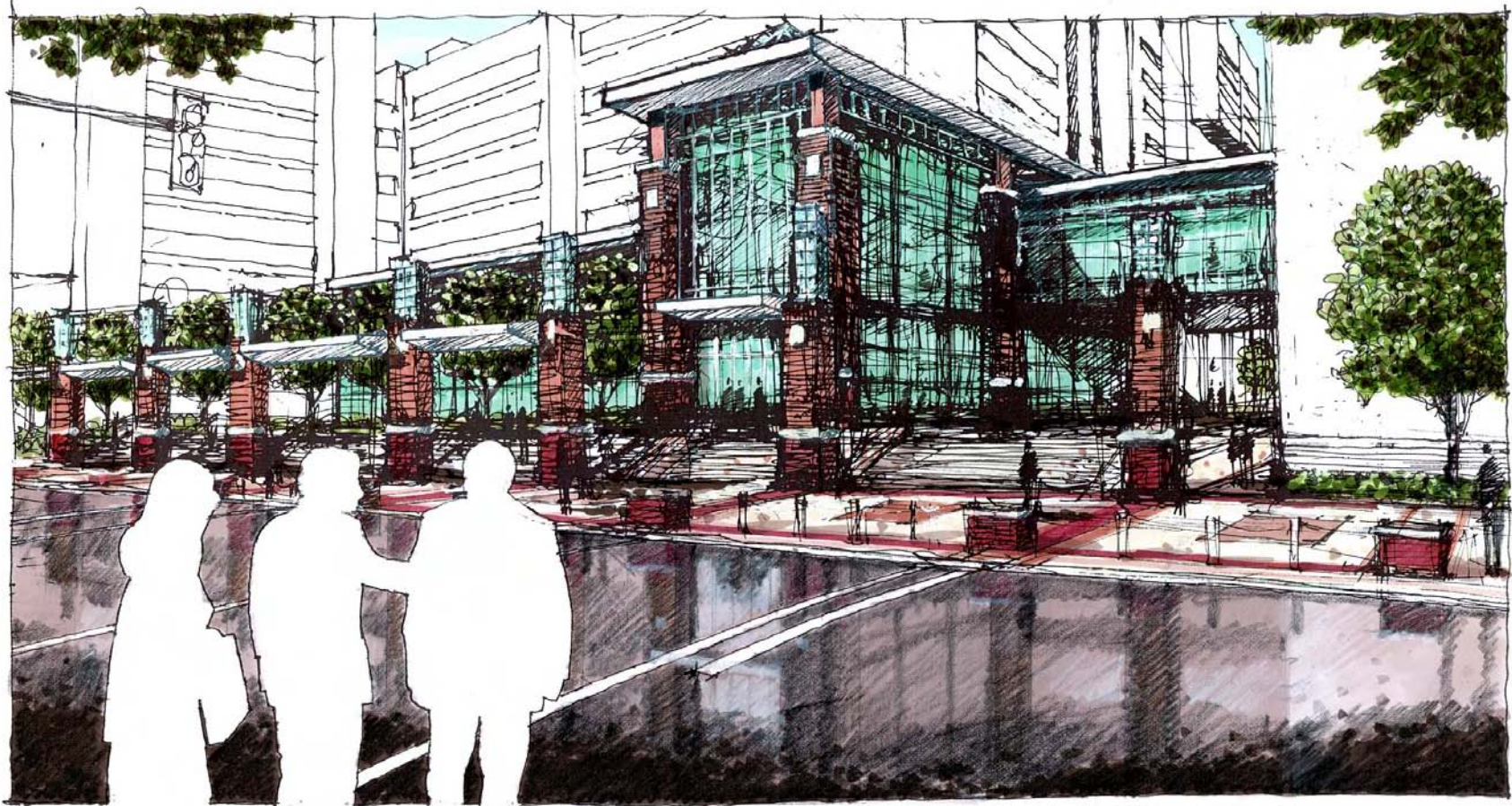
Image of Proposed Washington Avenue Pedestrian Tunnel North Entry



1. Establish monuments at important AHC gateways that provide directional and historical information.
2. Subtly redirect pedestrians away from street edges to create room to protect them from vehicular traffic, noise, dirt, and debris.
3. Increase the quantity and size of landscape planters by adding low and colorful plantings that do not restrict visibility along streetside edges.
4. Create covered arcades over sidewalks that are integrated into building facades.
5. Integrate covered arcades with the development of bus shelters to facilitate the use of public transportation.
6. Maintain a consistent vocabulary of signage, trash containers, bike racks, lighting, seating, and other street accessories.
7. Use practical, easy to maintain, and consistent terrace and sidewalk paving.

Image of Moos and Weaver-Densford Entry Pavilion

Viewed from Washington Avenue and Union Street



Creating Future Interior Spaces

The development of public spaces inside buildings must help to unify the AHC campus, convey comfort and security, and provide clear wayfinding.

The background colors and materials should be light, simple, and easy to maintain. Unique features will stand in contrast to the general background.

The principal public circulation corridors on the concourse levels must be linked. Connections should be clarified via designed themes. Health, biology, DNA, or the river could all be sources for creating an iconic motif.

The principles to maintain for interior design include:

1. Use practical, easy to maintain, and light colored finishes as a unifying background for public corridors.
2. Use neutral colors to establish graphic continuity and simplify signage.
3. Reduce glare in brightly lit corridors by screening or concealing light sources.

4. Use patterns and colors of flooring to conceal soiling, provide effective traction, and simplify maintenance.

5. Use consistent detailing for doors, windows, and accessories throughout public spaces.

6. Maximize windows and doors that connect to exterior areas.

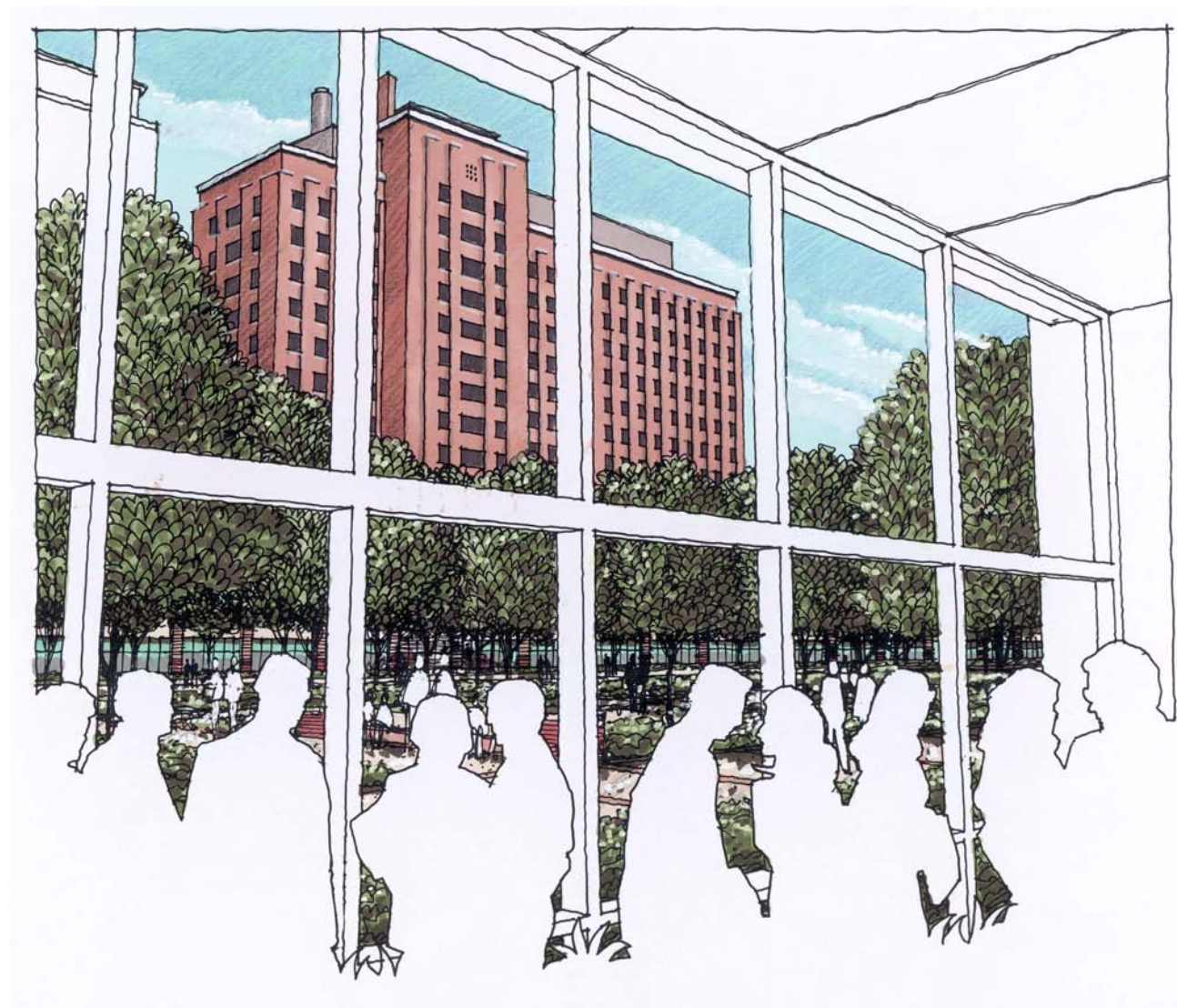
The interior public corridors should promote connectivity between the interior and exterior.

7. Avoid trendy or unusual furniture and details. Interior design should be simple and timeless.

8. Create a consistent system for locating directional signage and communication/information panels.

Image of Central Square and Mayo Tower Beyond

Viewed from the Concourse Level Circulation Loop



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3 Cost Summary

Assumptions

The AHC Minneapolis District Plan was developed by RSP Architects Ltd., Academic Health Center staff, and the University of Minnesota Planning and Programming Group. The unit costs represent the function of the intended program and have been developed from CPPI's data base of projects worked on and with other consultants in the field.

Additional utility infrastructure costs were developed by Sebesta Blomberg & Associates, Inc. The base costs are as of August 2000. These costs are escalated to a midpoint of construction established from the fiscal funding year and an estimated completion year.

Escalation is based on an assumed yearly rate of 5%. The multipliers for administrative costs,

professional design fees, infrastructure costs beyond the building perimeter, hazardous abatement, FF&E (furniture, fixtures and equipment), telecommunications, security, moving and contingencies are assumed to be: 1.25 to 1.30 for new construction; 1.30 to 1.35 for remodeling; and 1.20 to 1.25 for demolition/infrastructure/exterior revamp.

PROGRAM SUMMARY - CRITICAL PATH			TOTAL PROJECT COST	FUNDING	ESCAL.	PROJECT COST @ MID CONSTRUCTION
REMODELING & NEW CONSTRUCTION SCOPING ESTIMATES	QUANTITY	PROJECT COST/SF	YEAR 2000	FY YEAR	COST/SF	
DESCRIPTION						
1. Build New Translational Research Facility	95,403 GSF	288.00	27,476,064	2002	335	32,000,000
Infrastructure: Replace Chillers @ Moos Tower			6,250,000	2002		7,031,300
2. Vacate & Demolish SE Wing Mayo Bldg and Garage	300,000 GSF	18.13	5,437,900			
3. Build Central Square Infill/Landscaping	75,000 GSF	34.50	2,587,600			
Diehl Hall Addition	6,160 GSF	284.06	1,749,800			
Animal Holding Below Grade	30,000 GSF	411.13	12,333,800			
Dwan Entry Addition	5,000 GSF	284.06	1,420,300			
Three Story Circulation Loop Corridor	102,000 GSF	156.10	15,921,800			
Infill Drive/Patient Arrival Lobby Moos & PWB	15,000 GSF	282.56	4,238,400			
Subtotal Build Central Square			38,251,700			
Infrastructure: Utility Tunnel/Piping/KE Chiller Addition			4,727,500			
4. Free-up Space for Future Development and Programmatic Needs						
						No Cost Information
5. Build AHC Learning & Education Center						
New Student Services	28,000 GSF	288.42	8,075,800			
Remodel Diehl	50,000 GSF	197.34	9,867,000			
Remodel Mayo Auditorium	20,000 GSF	265.65	5,313,000			
Remodel PWB Concourse & Plaza	59,500 GSF	189.75	11,290,100			
Subtotal AHC Learning & Education Center	157,500 GSF	219.34	34,545,900			
Infrastructure: Steam, Primary Elect, Chilled Water, Replace Chiller @ Moos Tower			3,125,000			

- The scoping estimates contained in this District Plan are offered as a preliminary guide for developing the University’s on-going six year Capital Plan (beyond 2002) and subsequent bi-annual Capital Budgets.
- Pending completion of a comprehensive utilities master plan it is not possible to accurately “scope” the cost of infrastructure elements outside the AHC district boundaries. It is known that the distribution of steam to the AHC district will not be adequate.

PROGRAM SUMMARY - CRITICAL PATH continued			TOTAL PROJECT COST YEAR 2000	FUNDING FY YEAR	ESCAL. COST/SF	PROJECT COST @ MID CONSTRUCTION
REMODELING & NEW CONSTRUCTION SCOPING ESTIMATES	QUANTITY	PROJECT COST/SF				
DESCRIPTION						
6. Vacate & Demolish SW Wing Mayo Bldg Planning Funding for Item #7	260,000 GSF	11.49	2,987,300 805,000			
7. New 12 Level Research/Office Tower @ SW Quad	324,000 GSF	287.79	93,243,200			
Demolish West End VCRC	20,000 GSF	7.48	149,500			
Mined Space Service Dock & Access Drive	75,000 GSF	194.35	14,576,300			
Subtotal SW Quad Research/Office Tower	453,000 GSF	238.34	107,969,000			
Infrastructure: Utility Tunnel/Piping/KE Chiller Addition/Primary Elect/Steam			4,341,300			
8. Vacate & Demolish NW Wing Mayo Bldg Planning Funding for Item #9	203,200 GSF	13.12	2,666,600 895,700			
9. New 12 Level Research/Office Tower @ NW Quad	419,000 GSF	259.12	108,572,100			
Infrastructure: Chilled Water Piping/Addition Moos Cluster/Primary Elect/Steam			3,875,000			
SUBTOTAL CRITICAL PATH PROJECTS			351,926,064			

PROGRAM SUMMARY - OTHER PROJECTS			TOTAL PROJECT COST	FUNDING	ESCAL.	PROJECT COST @ MID
REMODELING & NEW CONSTRUCTION SCOPING ESTIMATES	QUANTITY	PROJECT COST/SF	YEAR 2000	FY YEAR	COST/SF	CONSTRUCTION
A. Weaver-Densford and Moos Tower Masterplan (Refer to U of M Schools of Pharmacy, Nursing and Dentistry Masterplan, March 15, 2000 for detailed information.)	199,400	123.59	24,644,250			
B. Moos & Weaver-Densford Entry Pavilion/Washington Avenue	15,400 GSF	225.06	3,466,000			
C. Expand North Research Park		No Cost Information				
D. Remodel Remaining Mayo Tower	204,000 GSF	164.45	33,547,800			
E. Replace Masonic Memorial & VFW Cancer Infrastructure: Steam/Primary Elect/Chilled Water	265,500 GSF	256.39	68,070,300 250,000			
F. Replace VCRC Infrastructure: Steam/Primary Elect/Chilled Water	271,125 GSF	289.95	78,613,100 350,000			
G. Replace Boynton Health & Children's Rehab Infrastructure: Steam/Primary Elect/Chilled Water Plant & Distribute W of Church Street	528,700 GSF	176.67	93,405,400 6,250,000			
SUBTOTAL OTHER PROJECTS			308,596,850			
TOTAL ALL PROJECTS			660,522,914			

Detailed Scoping Estimate - Critical Path

1. New Translational Research Facility - TRF

Addition to existing Lion's Research Building.

4 levels, lab & office space

	95,403 SF	239.60	22,858,700
Construction Cost July 2001	95,403 GSF	239.60	22,858,700
Escalation To Midpoint of Construction - 6.2%		14.85	1,417,200
(Start 6/2002, 24 months, Midpoint 6/2003)		254.46	24,275,900

Total Project Cost TRF

335.42 32,000,000

2. Vacate & Demolish SE Wing Mayo Bldg and Garage

(Assume floor to floor height average 13 feet)

Demolish/Temp Protection SE Quad	210,000 SF	5.00	1,050,000
Demolish/Temp Protection Garage	90,000 SF	3.50	315,000
Allowance For Infrastructure Reorganization for Buildings Left During Demolition SW & NW Quad	463,200 SF	0.75	347,400
Mayo Tower To Remain Level -3 to +3 & +4	95,000 SF	2.50	237,500
Modifications for Temporary/Permanent Exterior Materials (Assume 30% glazing/70%brick/stone @ Above Grade)			
Mayo Tower Remaining	12,000 SF	60.00	720,000
SW Quad Temporary	7,800 SF	35.00	273,000
Below Grade Moos/PWB to East, North & South	21,000 SF	40.00	840,000
Subtotal Clear Mayo SE Quad	300,000 GSF	12.61	3,782,900
Contingency - 15%		1.89	567,400
SubTotal Mayo SE Quad August 2000		14.50	4,350,300
Project Cost Multiplier 1.25		3.63	1,087,600
Total Project Cost Mayo SE Quad August 2000		18.13	5,437,900

3. Build Central Square Infill/Landscaping

Import Soil/Dewater/Shoring	30,000 CY	25.00	750,000
Central Square - Landscape/Amenities/Pedestrian Circulation/Kiosks/Utilities/Lighting	75,000 SF	15.00	1,125,000
Sub Total	75,000 GSF	25.00	1,875,000
Contingency - 15%		3.75	281,300
SubTotal Central Square August 2000		28.75	2,156,300
Project Cost Multiplier 1.20		5.75	431,300
Total Project Cost Central Square August 2000		34.50	2,587,600

3. Diehl Hall Addition

Diehl Hall Addition - Two Story (Concourse & Plaza)	6,160 SF	190.00	1,170,400
Sub Total	6,160 GSF	190.00	1,170,400
Contingency - 15%		28.51	175,600
SubTotal Diehl Hall Add August 2000		218.51	1,346,000
Project Cost Multiplier 1.30		65.55	403,800
Total Project Cost Diehl Hall Add August 2000		284.06	1,749,800
Same Time Frame As Central Square			

3. Animal Holding Below Grade

Animal Holding Below Grade	30,000 SF	275.00	8,250,000
Sub Total	30,000 GSF	275.00	8,250,000
Contingency - 15%		41.25	1,237,500
SubTotal Animal Holding August 2000		316.25	9,487,500
Project Cost Multiplier 1.30		94.88	2,846,300
Total Project Cost Animal Holding August 2000		411.13	12,333,800
Same Time Frame As Central Square			

3. Dwan Entry Addition

Dwan Entry Addition - Two Story (Concourse & Plaza)	5,000 SF	190.00	950,000
Sub Total	5,000 GSF	190.00	950,000
Contingency - 15%		28.50	142,500
SubTotal Dwan Entry Add August 2000		218.50	1,092,500
Project Cost Multiplier 1.30		65.56	327,800
Total Project Cost Dwan Entry Add August 2000		284.06	1,420,300
Same Time Frame As Central Square			

3. Three Story Circulation Loop

Circulation Loop - Service Level	32,000 SF	125.00	4,000,000
Circulation Loop - Concourse	35,000 SF	150.00	5,250,000
Circulation Loop - Plaza above Concourse With Rails/Lighting	35,000 SF	40.00	1,400,000
Sub Total	102,000 GSF	104.41	10,650,000
Contingency - 15%		15.66	1,597,500
SubTotal Circulation Loop August 2000		120.07	12,247,500
Project Cost Multiplier 1.30		36.02	3,674,300
Total Project Cost Circulation Loop August 2000		156.10	15,921,800
Same Time Frame As Central Square			

3. Infill Drive Patient Arrival Lobby Between Moos & PWB

New Curtain Wall At East & West Ends			
Step Back With Roof At East Side			
New Floor & Wall Material To Create Interior Quality			
Program Patient Arrival Lobby	15,000 SF	195.00	2,925,000
Sub Total	15,000 GSF	195.00	2,925,000
Contingency - 15%		29.25	438,800
SubTotal Moos/PWB Infill August 2000		224.25	3,363,800
Project Cost Multiplier 1.26		58.31	874,600
Total Project Cost Moos/PWB Infill August 2000		282.56	4,238,400
Same Time Frame As Central Square			

5. New AHC Learning & Education Center

Remodel Diehl Hall - General & Computer Study	50,000 SF	130.00	6,500,000
Remodel Mayo Auditorium (Historic Renovation)	20,000 SF	175.00	3,500,000
Remodel PWB Concourse & Plaza - Education/Classrooms	59,500 SF	125.00	7,437,500
New 2 Story Addition @ MCB			
Student Services	28,000 SF	190.00	5,320,000
Subtotal Remodel & New	157,500 GSF	144.49	22,757,500
Contingency - 15%		21.67	3,413,600
SubTotal L&EC August 2000		166.17	26,171,100
Project Cost Multiplier 1.32		53.17	8,374,800
Total Project Cost L&EC August 2000		219.34	34,545,900

**6. Vacate & Demolish SW Wing Mayo Bldg
Obtain Planning Funding For Item #7**

(Assume floor to floor height average 13 feet)

Demolish/Temp Protection SW Quad	260,000 SF	5.00	1,300,000
Allowance For Infrastructure Reorganization for Buildings Left During Demolition			
NW Quad	203,200 SF	0.50	101,600
Mayo Tower To Remain Level -3 to +3 & +4	95,000 SF	1.00	95,000
Modifications for Temporary/Permanent Exterior Materials (Assume 30% glazing/70%brick/stone @ Above Grade)			
Mayo Tower Remaining	5,900 SF	60.00	354,000
NW Quad Temporary	6,500 SF	35.00	227,500
Subtotal Clear Mayo SW Quad	260,000 GSF	7.99	2,078,100
Contingency - 15%		1.20	311,700
SubTotal Mayo SW Quad August 2000		9.19	2,389,800
Project Cost Multiplier 1.25		2.30	597,500
Total Project Cost Mayo SW Quad August 2000		11.49	2,987,300

Planning Funding For Item #7

Pre-design Study			805,000
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7. New 12 Story Research/Office Tower in SW Quad

Demolish West End VCRC - 5 Floors (SF not in total area)	20,000 SF	5.00	100,000
Mined Service Dock & Access Drive	75,000 SF	130.00	9,750,000
Parking Levels Below - 2 Levels	54,000 SF	38.00	2,052,000
Research Program (50% of Total)	162,000 SF	225.00	36,450,000
Office Administration Program (50% of Total)	162,000 SF	160.00	25,920,000
Sub Total	453,000 GSF	163.96	74,272,000
Contingency - 15%		24.59	11,140,800
SubTotal Tower SW Quad August 2000		188.55	85,412,800
Project Cost Multiplier 1.30		56.56	25,623,800
Total Project Cost Tower SW Quad August 2000		245.11	111,036,600

**8. Vacate & Demolish NW Wing Mayo Bldg
Obtain Planning Funding For Item #9**

(Assume floor to floor height average 13 feet)

Demolish/Temp Protection NW Quad	203,200 SF	5.00	1,016,000
Allowance For Infrastructure Reorganization for Buildings Left During Demolition			
Mayo Tower To Remain Level -3 to +3 & +4	95,000 SF	1.00	95,000
Modifications for Temporary/Permanent Exterior Materials (Assume 30% glazing/70%brick/stone @ Above Grade)			
Mayo Tower Remaining	12,400 SF	60.00	744,000
Subtotal Clear Mayo NW Quad	203,200 GSF	9.13	1,855,000
Contingency - 15%		1.37	278,300
SubTotal Mayo NW Quad August 2000		10.50	2,133,300
Project Cost Multiplier 1.25		2.62	533,300
Total Project Cost Mayo NW Quad August 2000		13.12	2,666,600

Planning Funding For Item #9

Pre-design Study			895,700
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9. New 12 Story Research/Office Tower in NW Quad

Research Program (50% of Total)	183,500 SF	225.00	41,287,500
Office Administration Program (50% of Total)	183,500 SF	160.00	29,360,000
Parking Levels Below - 2 Levels	52,000 SF	38.00	1,976,000
Sub Total	419,000 GSF	173.33	72,623,500
Contingency - 15%		26.00	10,893,500
SubTotal Tower NW Quad August 2000		199.32	83,517,000
Project Cost Multiplier 1.30		59.80	25,055,100
Total Project Cost Tower NW Quad August 2000		259.12	108,572,100

Detailed Scoping Estimate - Other Projects

A. Weaver-Densford and Moos Tower Masterplan for the Schools of Pharmacy, Nursing and Dentistry

College Of Pharmacy	62,275 SF	180.74	11,255,625
Infrastructure			150,000
School Of Nursing	28,225 SF	128.81	3,635,625
Infrastructure			150,000
School Of Dentistry	108,900 SF	86.80	9,453,000
Project Cost Pharmacy, Nursing, Dentistry	199,400 SF	123.59	24,644,250

NOTE: The square footages and costs shown for the schools of Pharmacy, Nursing and Dentistry were provided as part of a masterplan prepared by another consultant and represent the midpoint of a cost range given in that masterplan. These numbers do not reflect additional project costs assumed in the district plan to be:
Escalation of 4% per year from 10/1999; Construction Contingency @ 20%; Soft Costs @ 28%.

B. Moos & Weaver - Densford Entry Pavilion/Washington Avenue

Build Over Existing Plaza Deck With Glass Enclosure			
Program Student Lounge & Study	8,400 SF	180.00	1,512,000
Washington Ave Improvements MCB To Harvard - Open Arcade/Paving - 200 Ft.	4,000 SF	175.00	700,000
Washington Ave Improvements MCB To Harvard - Streetscape Paving - 150 Ft.	3,000 SF	60.00	180,000
Sub Total	15,400 GSF	155.32	2,392,000
Contingency - 15%		23.30	358,800
SubTotal Entry Pavilion August 2000		178.62	2,750,800
Project Cost Multiplier 1.26		46.44	715,200
Total Project Cost Entry Pavilion/Wash Ave. August 2000		225.06	3,466,000

C. Expand North Research Park

No Cost Information

D. Remodel Remaining Mayo Tower

Remodel 17 Floors Remaining Mayo Tower w/Office/Education Functions	204,000 SF	110.00	22,440,000
Sub Total	204,000 GSF	110.00	22,440,000
Contingency - 15%		16.50	3,366,000
SubTotal Remaining Mayo Tower August 2000		126.50	25,806,000
Project Cost Multiplier 1.30		37.95	7,741,800
Total Project Cost Remaining Mayo Tower August 2000		164.45	33,547,800

E. Replace Masonic Memorial Hospital & VFW Cancer Research

Demolition	114,800 SF	5.00	574,000
Parking Levels Below	88,500 SF	38.00	3,363,000
Program - Clinical Facility	177,000 SF	235.00	41,595,000
Sub Total	265,500 GSF	171.50	45,532,000
Contingency - 15%		25.72	6,829,800
SubTotal MMH/VFW Replace August 2000		197.22	52,361,800
Project Cost Multiplier 1.30		59.17	15,708,500
Total Project Cost MMH/VFW Replace August 2000		256.39	68,070,300

F. Replace VCRC

Demolition	79,300 SF	5.00	396,500
Research Program (50% of Total)	135,500 SF	225.00	30,487,500
Office Administration Program (50% of Total)	135,625 SF	160.00	21,700,000
Sub Total	271,125 GSF	193.95	52,584,000
Contingency - 15%		29.09	7,887,600
SubTotal VCRC Replace August 2000		223.04	60,471,600
Project Cost Multiplier 1.30		66.91	18,141,500
Total Project Cost VCRC Replace August 2000		289.95	78,613,100

G. Replace Boynton Health & Children's Rehab

Demolition	213,700 SF	5.00	1,068,500
Program - Health Services (65% of Program)	160,000 SF	245.00	39,200,000
Program - Children Rehab (35% Of Program)	85,000 SF	230.00	19,550,000
Parking Levels Below - 2 Levels	70,000 SF	38.00	2,660,000
Sub Total	528,700 GSF	118.17	62,478,500
Contingency - 15%		17.73	9,371,800
SubTotal CHR/BHS Replace August 2000		135.90	71,850,300
Project Cost Multiplier 1.30		40.77	21,555,100
Total Project Cost BHS/CHR Replace August 2000		176.67	93,405,400

RE-DEVELOPMENT OF UTILITY INFRASTRUCTURE (OPTIONS)

1. Replacement Chillers

Replace Chillers @ Moos Tower	1 LS	5,000,000	<u>5,000,000</u>
Sub Total			5,000,000
Project Cost Multiplier 1.25			<u>1,250,000</u>
SubTotal August 2000			6,250,000
Escalation To Midpoint of Construction - 12.50%			
(Start 4/2002 for 20 Months Midpoint 2/2003)			<u>781,300</u>
Total Project Cost Infrastructure - 2002			7,031,300

3. Tunnel/Piping/Chiller Addition

Utility Tunnel Through infilled Mayo Garage Area	1 LS	642,000	642,000
Chilled Water Piping to Mayo Tower	1 LS	640,000	640,000
Chiller Addition @ Unit K/E	1 LS	2,500,000	<u>2,500,000</u>
Sub Total			3,782,000
Project Cost Multiplier 1.25			<u>945,500</u>
Total Project Cost Infrastructure August 2000			4,727,500

5. Replacement Chiller

Replace Chiller @ Moos Tower	1 LS	2,500,000	<u>2,500,000</u>
Sub Total			2,500,000
Project Cost Multiplier 1.25			<u>625,000</u>
Total Project Cost Infrastructure August 2000			3,125,000

- Pending completion of a comprehensive utilities master plan it is not possible to accurately “scope” the cost of infrastructure elements outside the AHC district boundaries. It is known that the distribution of steam to the AHC district will not be adequate.

7. Tunnel/Piping/Electrical/Chiller Addition

Utility Tunnel Unit K/E to North Border of New Mayo Tower	1 LS	458,000	458,000
Chilled Water Piping To Unit K/E	1 LS	240,000	240,000
Primary elec & Duct Bank Unit K/E to Delaware & Church St.	1 LS	275,000	275,000
Chiller Addition @ Unit K/E	1 LS	2,500,000	<u>2,500,000</u>
Sub Total			3,473,000
Project Cost Multiplier 1.25			<u>868,300</u>
Total Project Cost Infrastructure August 2000			4,341,300

9. Moos Cluster & Chilled Water Piping

Chilled Water Piping To Mayo Tower	1 LS	1,100,000	1,100,000
Chiller Addition Moos Cluster	1 LS	2,000,000	<u>2,000,000</u>
Sub Total			3,100,000
Project Cost Multiplier 1.25			<u>775,000</u>
Total Project Cost Infrastructure August 2000			3,875,000

G. Replace Boynton Health & Children's Rehab/Church Street Chilled Water Plant

Chilled Water Plant & Distribution West of Church St.	1 LS	5,000,000	<u>5,000,000</u>
Sub Total			5,000,000
Project Cost Multiplier 1.25			<u>1,250,000</u>
Total Project Cost Infrastructure August 2000			6,250,000

4 AHC Minneapolis Campus Needs and Goals

Purpose of the District Use and Development Plan

The AHC District Plan provides a 20-year strategic approach that will render real the vision presented by the AHC Strategic Facility Planning document (published in May 1998).

The District Plan should help guide decisions about the future growth of the AHC Minneapolis campus and ensure that all proposed future development concurs with established objectives and design standards. The plan prescribes a list of sequential steps needed to achieve many of the stated goals of the Academic Health Center.

Some issues, brought to light by the Strategic Facility Plan, require further discussion, consideration, and policy decisions within the AHC, specifically, and the University in general.

The plan does not attempt to design buildings or spaces. Rather it conceptualizes the following planning issues derived from the primary goals for the Academic Health Center Minneapolis campus:

- 1) Understand and define programmatic needs. Examples include: facilities for Translational Research, an AHC Learning and Education Center, consolidation of the School of Public Health, and facility improvements to enhance efficiency and effectiveness of existing schools and programs.
- 2) Develop new building massing options.
- 3) Develop density options for new buildings.
- 4) Create a strong architectural image for the AHC.
- 5) Define and create open space and landscaped areas to dramatically improve the aesthetic appearance of the AHC and provide visual relief from the building density.
- 6) Clarify and simplify pedestrian, vehicular, and service circulation.
- 7) Identify infrastructure issues that arise from the Plan.

“We must recognize that our efforts to anticipate the future help to shape it.”

John Sawhill

“It simply never occurs to us to make streets into oases rather than deserts. In countries where their function has not yet deteriorated into highways and parking lots, a number of arrangements make streets fit for humans...”

**Bernard Rudofsky,
Architecture Without Architects**

AHC Strategic Facility Plan Considerations

The AHC Strategic Facility Planning document, published in May 1998, provides the basis for the AHC District Plan. The Strategic Plan summarizes the results of an initiative started in April 1997 that involved input from a broad spectrum of participants.

The Steering Committee for the Strategic Facilities Planning Process used four broad themes to develop a facility vision for the Academic Health Center Minneapolis campus. These are:

1. Core Challenges – What We Have...
2. Guiding Principles – What We Desire...
3. Primary Themes – What It Could Look Like...
4. Major Objectives – How to Get There...

A complete description of the four themes is included in The Strategic Facility Planning document that is available in the AHC Office of Facilities. The following lists summarizes the themes of the Strategic Plan:

Core Challenges

- Common spaces lack ownership and are not adequately maintained.
- The labs, offices, and classrooms need to better relate to each other.
- The AHC needs criteria for space allocation and a space plan.
- The development capacity should be quantified. How much more can be built?
- The District Plan should address the safety, capacity, and location of parking and traffic.
- Spaces should remain flexible and adaptable so they continue to meet future needs.
- What are the incentives and disincentives -- financial and other -- associated with changing the status quo?
- Maintenance should be an integral part of ongoing operations.
- Outdated facilities require significant investment.
- Creating utilization standards would help schools optimize their use of existing spaces.

Guiding Principles

- AHC cares about its people.
- Facilities should aesthetically foster learning, collegiality, and discovery.
- The AHC's students, staff, faculty, and visitors need gathering spaces to create sense of community.
- The AHC needs vital spaces that can respond flexibly to program and grant requests.
- All facilities need to be clean and to work properly.
- The AHC should have a sense of "here" provided by a common theme, circulation spaces, or identifiers within each school.
- Curriculum needs should drive the design of new and renovated spaces.
- Creating common areas for students outside of faculty office zones would make these offices more accessible to students.
- "Short streets" should link clinical and basic science researchers.

Primary Themes

- Create a large central “people” park/piazza to provide an identity for the AHC.
- Improve connections within the AHC campus and beyond it to the entire University.
- Develop a visual vocabulary and design standards that effectively communicate the AHC’s identity and define the edges and major entry points to its campus.
- Identify patient, visitor, and student orientation areas and activity zones.
- Improve the quality and uses of spaces with natural light and fresh air.
- Provide student gathering spaces.
- Enhance visual and physical cohesiveness of the AHC.
- Make the major entries welcoming, easy to identify, and useful for orientation.

Major Objectives

- Provide an ongoing assessment, “a working vision” with immediate, short, and long term goals.
- Rebuild AHC by replacing buildings that cannot support functional requirements.
- Allocate Fairview release space in a manner to assist efficiencies.
- Improve AHC classroom facilities.
- Resolve the needs of Public Health consolidation.
- Enhance and simplify circulation and wayfinding patterns within the AHC.
- Maintain/improve patient access to all areas of the AHC.
- Create a space allocation usage and utilization policy.
- Create an off-campus property development logic that pays attention to on-campus access.

5

Existing AHC Minneapolis Campus Summary

Site Analysis

Adjacencies

Although the AHC Minneapolis campus contains five related collegiate units, this district has few academic connections with other campus buildings in neighboring precincts. Campus services in Coffman Memorial Union and other nearby buildings are patronized by students and faculty from the AHC.

Parking decks to the west, north, and east serve auto-dependent personnel.

Washington Avenue is a divisive element through the University, separating the AHC from the rest of the East Bank Campus. The corridor provides access to commercial districts to the East. Campus and neighborhood housing lie to the immediate southeast. The open recreational areas of the Mississippi River Flats offer those on the AHC campus opportunities for contemplative relaxation and leisure activities.



Architecture around the AHC is composed primarily of low-rise buildings built in the mid-1930's. The housing blocks to the east are also low-rise structures, which are clad in brick and

have narrow, double-loaded corridor floors configured around open courtyards.

With the exception of Electrical Engineering Computer Sciences, the academic buildings across Washington Avenue, Ford Hall and Amunson Hall are also low-rise brick structures.



Completed in 1939 and located on the South Mall, Coffman Memorial Union is a mid-rise, brick-faced structure that acts as the southern terminus for the campus' historic Northrop Mall. Plans are currently underway for the extension of the Mall to East River Road as well as the development of Riverbend Common.

Large and monolithic mid-rise massings best characterize the nature of the nearby parking ramps that tend to block views of other nearby precincts to the north and northeast.

Terrain Features

Although most of the AHC District sits on relatively level ground, the southwest corner of the district rapidly falls away and follows the natural terrain of the Mississippi River gorge. Most AHC buildings have street level entrances relative to Washington Avenue, with the exceptions of Boynton Health Services and the Children's Rehabilitation Center that have main entrances one level below those of the northern AHC buildings.

Both the Dwan Variety Club Cardiovascular Research Center and the Variety Club Research Center have main building entrances that face East River Road, well below those of the other AHC facilities.



The total drop in grade from Washington Avenue to the Variety Club Heart and Research Center entrance on East River Road is roughly 55 feet. The southeast corner of the AHC, occupied by Fairview-University Medical Center, is nearly level with Washington Avenue, making the change in grade from southeast to southwest nearly 55 feet as well.

Landscape (Green vs. Plaza)

There are too few green open spaces within the AHC District. Only minor courtyard areas exist between Jackson Hall and the new Molecular and Cellular Biology Building, between PWB and

Diehl Hall, and between the wings of the Mayo Building.

The informal green spaces that fill voids between buildings along the Harvard and Church Street (east and west) sides of the AHC campus are so lacking in “design amenities” that they detract from the landscaped environment of the district.

The hard surface plaza that connects Diehl Hall, Fairview-University Medical Center, the Mayo Building, and the soon-to-be-completed Molecular and Cellular Biology Building is an unfriendly environment that discourages interface.

A network of sidewalks, bike paths, and pedestrian bridges -- most of which relate to vehicular corridors -- channel

pedestrian traffic to and through the AHC. Major pathways identified for pedestrians include Washington Avenue, Harvard Street, and Church Street. The Delaware passage running through the middle of the AHC is interrupted by the Mayo Auditorium.

Pedestrian Access

Within the district, secondary paths link all of the AHC buildings. Pathways along East River Road are best suited to bicycle travel because their connections to other paths and campus buildings are minimal.

Pedestrian travel through AHC buildings -- a network of interior walkways, skyways, and tunnels -- is circuitous. Students, faculty, staff, and visitors are not always able to go from building to building in the AHC without setting foot outside.

Main facility entrances for several of AHC buildings are accessible from the urban plaza between the Mayo Building and the Health Sciences Center. Mayo, Moos Tower, Phillips-Wangensteen, Diehl Hall, and Fairview-University



Medical Center all face this plaza.

The Molecular and Cellular Biology Building will share an entrance courtyard with Jackson Hall.

Basic Sciences, Boynton Health Services, and Children's Rehabilitation all have main entrances off Church Street. The VFW Cancer Research Center and the Masonic Memorial Hospital have main entrances facing Harvard Street, away from the core of the AHC.

Due to the descending grade of the AHC site, both Dwan and The Variety Club facility have building facades and main entrances off of East River Road. Church Street terminates behind these buildings and provides access to secondary pedestrian entrances.

Vehicular Access



East River Road

Many visitors to the AHC park in the Washington Avenue Ramp and, therefore, use the Washington Avenue Corridor. Washington Avenue, a major east/west artery connects with the regional network via University Avenue, Huron Boulevard/I-94, and Interstate 35.

East River Road is a direct route to the AHC where capacity far exceeds the amount of traffic currently on the roadway. It is, however, a Minneapolis Park Board Street. It will be essential to use this route for service vehicles in the future.

East River Road allows direct vehicular access to various AHC Buildings. The Variety Club Heart & Research Center, Dwan Variety Cardio Research Center and the Fairview-University Hospital all have significant service and visitor connections along this road.

Harvard and, to some extent, Church Street provide access to the District's east and west edges. Both of these streets afford drop-off access to perimeter buildings in the AHC. Harvard connects to East River Road. Church Street terminates within the district. Those

traveling to AHC interior facilities can reach them by way of the truncated, east/west Delaware Street.

A service alley allows access to the backs of Diehl Hall, VFW Cancer Research Center, and the Masonic Memorial Hospital. A new service drive from Church Street will allow vehicular access to a loading facility at the intersection of Jackson Hall and the New Molecular and Cellular Biology Building.



East River Road Service Docks



Washington Avenue Corridor

Parking

General parking within the AHC district is limited to on-street metered spaces. A below-grade garage beneath the Mayo drop-off loop is not open to the public. A parking ramp for Fairview-University Medical Center is located just outside the AHC District on Delaware Street.

Two additional ramps are located nearby yet outside of the Health Sciences/Residential Precinct. Both offer public and contract parking options. These facilities are accessible to the AHC, with one located directly across Washington Avenue from the AHC and the other just two blocks east of Harvard Street on Oak Street.

To the west, the South Mall will conceal a below-ground parking garage.



Church Street



Harvard Street



Facility Entrance off East River Road

Mass Transit

The District Plan assumes the modal split (percent of auto versus transit) will continue to be approximately the same as it is today. This means that the visitor population is predominantly accessing the district by car. Students, faculty, and staff are using various modes including transit, bicycle, and walking.

As is the case now, those taking the bus to the district will arrive or depart at designated stops along Washington Avenue.



Washington Avenue Parking Ramp

Intra-Building Circulation

Though they were constructed over a period of many years, the various AHC facilities do allow for movement between buildings. Historically, AHC buildings have been situated to align interior corridors and provide connecting points for linked structures.

Buildings separated by streets, service drives, or surface pedestrian pathways use skyways as enclosed, weather-shielded links. Interconnected floors below grade erode discernible building limits and create a vast zone of underground development.

Incorporating design features such as these helped establish a singular identity for the departments that make up the AHC.

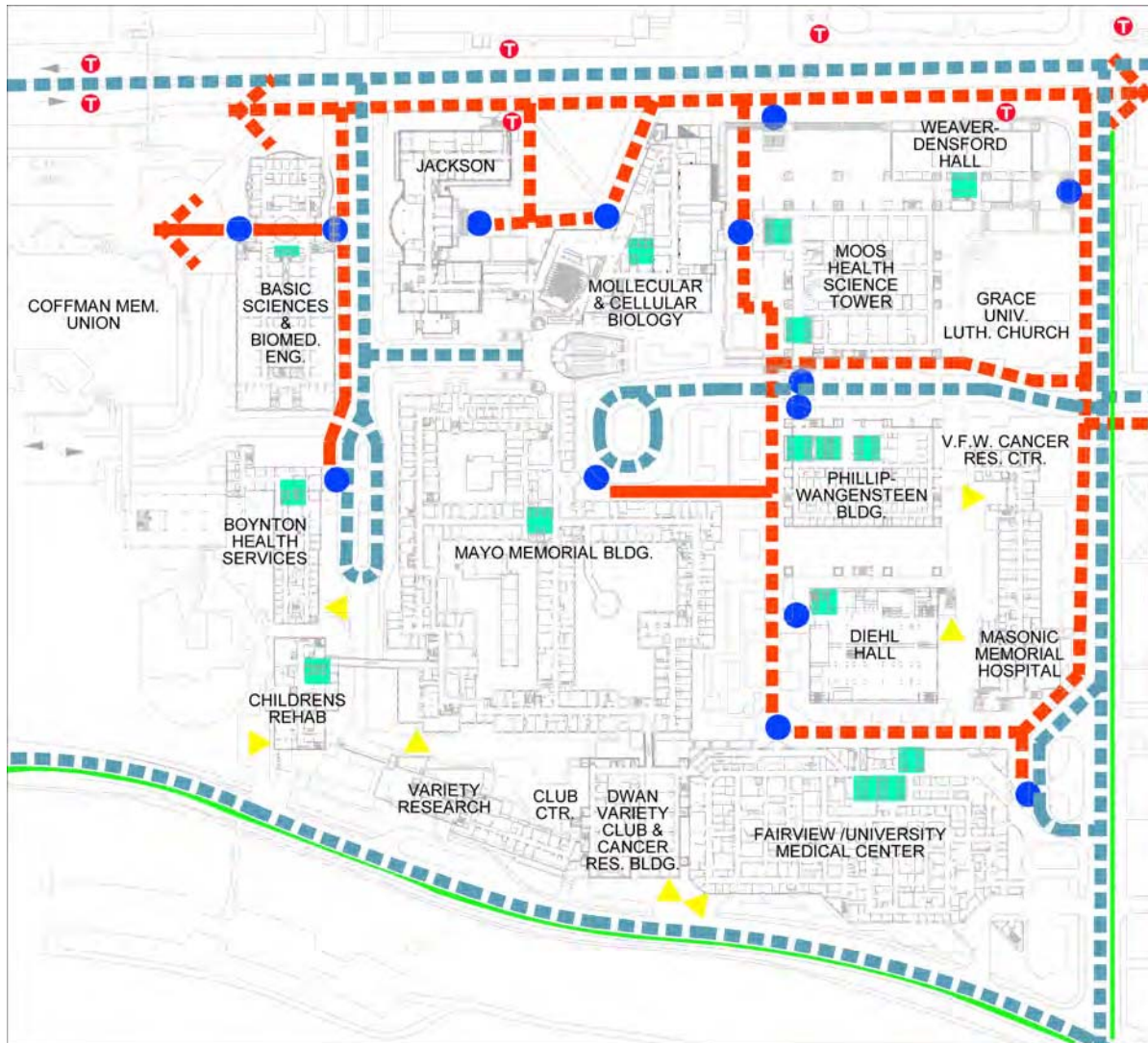
Most AHC facilities have grade level floors that relate to each other. This has resulted in a consistent floor numbering system. Topographic changes cause a few deviations from this standard. Some buildings do not share common floor levels.

AHC buildings east of Church Street are interconnected at both one and two levels below the common level of the urban plaza. People can pass circuitously

from the northern-most building of the AHC to Fairview-University Medical Center. Skyways are required to reach the buildings west of Church Street.

The Variety Club Heart & Research Center is the only building not directly linked to others via a skyway. The Variety Club does, however, directly connect to the neighboring Dwan Variety Cardio Research Center at all levels below Dwan's third floor.

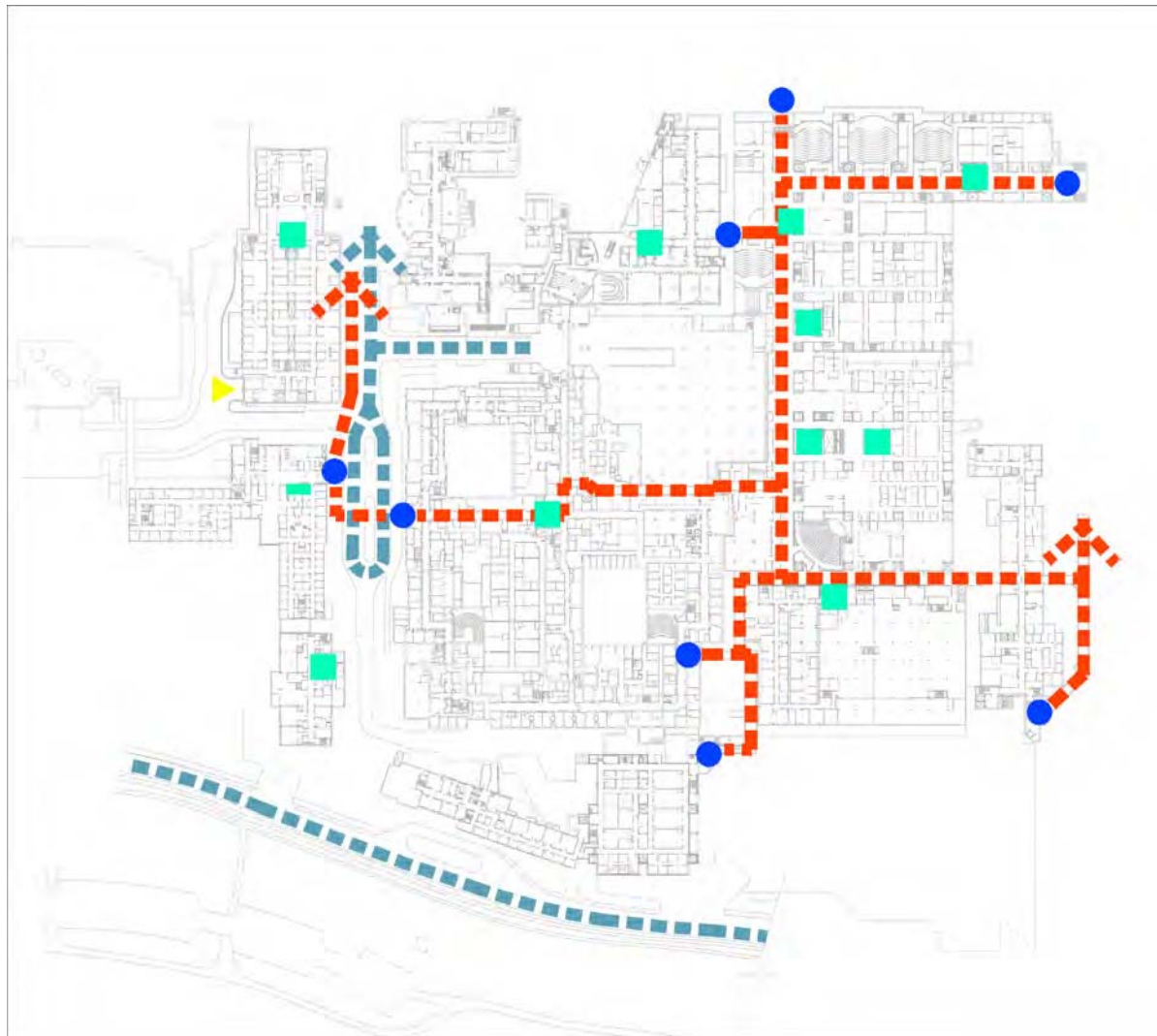
EXISTING CIRCULATION - STREET LEVEL (WASHINGTON AVENUE)



LEGEND

- - - Primary Pedestrian Circulation
- - - Primary Vehicular Circulation
- ▲ Primary Service Entrances
- Primary Vertical Circulation
- Primary Building Entrances
- T Metro Transit Stop
- Bike Path

EXISTING CIRCULATION - CONCOURSE LEVEL (ONE FLOOR BELOW WASHINGTON AVENUE)



LEGEND

- Primary Pedestrian Circulation
- Primary Vehicular Circulation
- Primary Service Entrances
- Primary Vertical Circulation
- Primary Building Entrances

EXISTING CIRCULATION - SERVICE LEVEL (TWO FLOORS BELOW WASHINGTON AVENUE)



LEGEND

- Primary Vehicular Circulation
- Primary Service Entrances
- Primary Vertical Circulation
- Primary Building Entrances
- Service Routes

Condition/Usability of Buildings

Basic Sciences/Biomedical Engineering Building



BSBE was completed and occupied in 1997. It meets current construction, accessibility, and energy standards and complies with the University's own data and communications systems technologies.

Boynton Health Services



Completed in 1949, this building was first expanded in 1958, and again in 1966. It does not fully comply with current building codes. Most notably, its developed area exceeds the maximum allowed by code and the building is not fully sprinklered.

Future remodeling will require that the entire facility be sprinklered, the roof structure be updated to a two-hour fire rated construction, and all existing corridor and exits be brought up to a one-hour fire rating.

The Boynton Health Services building appears to provide total mobile accessibility. It also has an appropriate number of toilet fixtures and most are accessible to the disabled.

General floor-to-floor depths are shallow relative to modern standards,

with some existing depths as low as ten feet. Taking into account floor slab depths, little space is available for above-ceiling HVAC systems, sprinkler lines, recessed lighting, and power or communications conduits. Significant upgrades to these building systems will be impossible without sacrificing some whole floors.

Children's Rehabilitation



Completed in 1962, this facility has inadequacies similar to those listed for the Boynton Health Services Building.

Diehl Hall

Future remodeling will require that the entire facility be sprinklered to meet current minimum code standards. All existing mechanical duct shafts and crawl spaces would also need to be brought up to a one-hour fire rating.

The Children's Rehabilitation Building appears to provide total mobile accessibility. While it has an appropriate number of toilet fixtures, some facilities will need to be modified to be universally accessible.

Although floor-to-floor heights are slightly higher at 12'-0", above-ceiling plenum spaces appear to be insufficient to accommodate significant remodeling to building mechanical, electrical, data, and communications systems. Ceilings would need to be lowered to accommodate improvements. Lower ceilings throughout this building would make the work spaces less than desirable.



Originally completed in 1958, Diehl Hall received additional floors in 1963. This building exceeds maximum allowable floor area based on its current level of fire protection. To meet today's standards, the entire building will have to be fitted with an automatic sprinkler system. Corridor walls and ceilings will also have to be brought up to a one-hour fire protection status, and shaftways need to be protected by a two-hour fire-rated assembly.

A number of minor accessibility deficiencies can be easily remedied. While the entire facility appears to be mobile accessible, accessible toilet facilities are needed.

Since floor-to-floor heights are slightly higher at 13'-0", there is more volume available for upgrading air distribution and other building systems. A mechanical renovation of basement animal research areas will be necessary. Interior spaces without operable windows will also need to be retrofitted to provide proper ventilation.

Dwan Variety Club Research Center



This early 1970's building was recently remodeled. The quality of construction, programmatic efficiency, and level of building code compliancy are adequate to support its present use.

Jackson Hall



Completed in 1912, this facility was completely renovated in 1999. It houses laboratory and office space, and is fully compliant with current code requirements.

Masonic Memorial Hospital



Masonic Memorial Hospital was first constructed in 1957, with additional floors added in 1965. It has many of the inadequacies listed for other AHC buildings.

Any remodeling to this structure will require that the entire facility be sprinklered to comply with current code standards. Appropriate fire-rated assemblies at all corridors, emergency stairways, and lab separations also need to be provided. All existing mechanical duct shafts and crawl spaces would need to be brought up to code. The facility meets accessibility requirements and the current number of required toilet fixtures. Several of the existing toilet facilities, however, will need to be made accessible.

Floor-to-floor heights are shallow at 11'-0", providing insufficient volume for significant mechanical or technological improvements. Lowering the ceilings to provide adequate above-ceiling space would, once again, create less than desirable space.

Mayo Memorial Building



Completed in phases, this facility dates back to 1924. One of the oldest structures within the AHC, it is currently deficient in a number of code-related areas, including fire-safety. Appropriate fire-rated assemblies at all corridors and emergency stairways must be provided. All existing mechanical duct shafts and crawl spaces need to be brought up to a two-hour fire rating.

Although main entrances to the building are accessible, automatic doors need to be installed at the west entrance. While the balance of the building's interiors appear to be accessible, additional accessible toilet room facilities need to be provided. Other minor

accessibility issues, such as tactile signage locations and door opening pressure adjustments must be addressed.

Floor-to-floor heights below the Sixth Floor range from 11'-0" to 13'-0". Above the Sixth Floor, all distances are a shallow 11'-0". During future remodeling, it may not be possible to conceal air transfer, power, data, communications, fire suppression, and other building systems due to these shallow floor-to-floor depths.

Molecular and Cellular Biology Building

MCB is under construction. It will meet current construction, accessibility, and energy standards, and comply with the University's own data and technology requirements.

Moos Tower



Completed in 1976, Moos Tower is one of the more modern facilities within the AHC. It does not, however, comply with current code requirements in a number of areas, including fire-safety. Upper floors are not currently sprinklered. Appropriate fire-rated assemblies at all corridors and emergency stairways also need to be provided. All existing mechanical duct shafts and crawl spaces need to be brought up to a two-hour fire rating.

Both main entrances to the building and its interior corridors appear to be universally accessible. Toilet facilities are adequate and several are accessible to mobility impaired persons.

Floor-to-floor heights are adequate at 13'-0", providing slightly more volume to facilitate air distribution and other building system improvements.

Phillips-Wangensteen



Phillips-Wangensteen, constructed in 1978, is currently deficient in a few areas

related to egress and fire safety codes. All corridors and emergency exit stairways need to be provided with appropriate fire rated assemblies.

All existing mechanical duct shafts and crawl spaces need to be brought up to a two-hour fire rating. The entire building is protected by an automatic fire sprinkler system.

Both main entrances to the building and its interior corridors appear to be universally accessible. Toilet room facilities are adequate and several are accessible to mobility impaired persons. Floor-to-floor heights are adequate at 13'-0".

VFW Cancer Research Center



This facility was originally constructed in 1958, with floors added in 1968. It is not currently sprinklered, and it has many of the same inadequacies cited for other AHC buildings. Any future remodeling will require that the entire facility be sprinklered to comply with current minimum code standards. Emergency lighting and illuminated exit signage are also inadequate. All corridors and emergency exit stairs should be provided with the appropriate fire-rated assemblies. All existing mechanical duct shafts and crawl spaces would also need to be brought up to a two-hour fire rating.

While the VFW Cancer Research Center appears to be completely

accessible, it does not have the number of accessible toilet fixtures currently required. Elevators are spacious, yet would require more accessible call buttons.

The floor-to-floor heights are a shallow 11'-0". There is not enough volume for any significant mechanical or technological improvements.

Variety Club Research Center



Originally constructed in 1948, The Variety Club Research Center was expanded in 1957. Its inadequacies are similar to those of the Boynton Building

It is not sprinklered and future remodeling will require installation of a fire sprinkler system that serves the entire facility. Emergency lighting and illuminated exit signage are insufficient. All existing mechanical duct shafts and crawl spaces would also need to be brought up to a two-hour fire rating.

This facility is not accessible from the rear Church Street entrance and the Fourth Floor cannot be reached by an elevator. These access issues will need to be addressed. The Variety Club & Research Center has an appropriate number of toilet fixtures and some are accessible. More toilet facilities will need to be modified, however, to meet the mandatory building quota.

General floor-to-floor depths are shallow relative to modern construction standards, with some as low as 10'-0". There is not enough room above the ceiling for air ducts, sprinkler lines, recessed lighting, and power and communications conduits. Significant upgrades to these building systems are not possible without sacrificing floor space.

Weaver-Densford



Weaver- Densford is in excellent condition with relatively few deficiencies. The entire building is protected by an automatic fire sprinkler system. Both the electrical system and mechanical system are adequate.

The entire building is accessible and all toilet rooms have accessible fixtures.

Floor-to-floor heights are adequate at 13'-0".

Space Usage

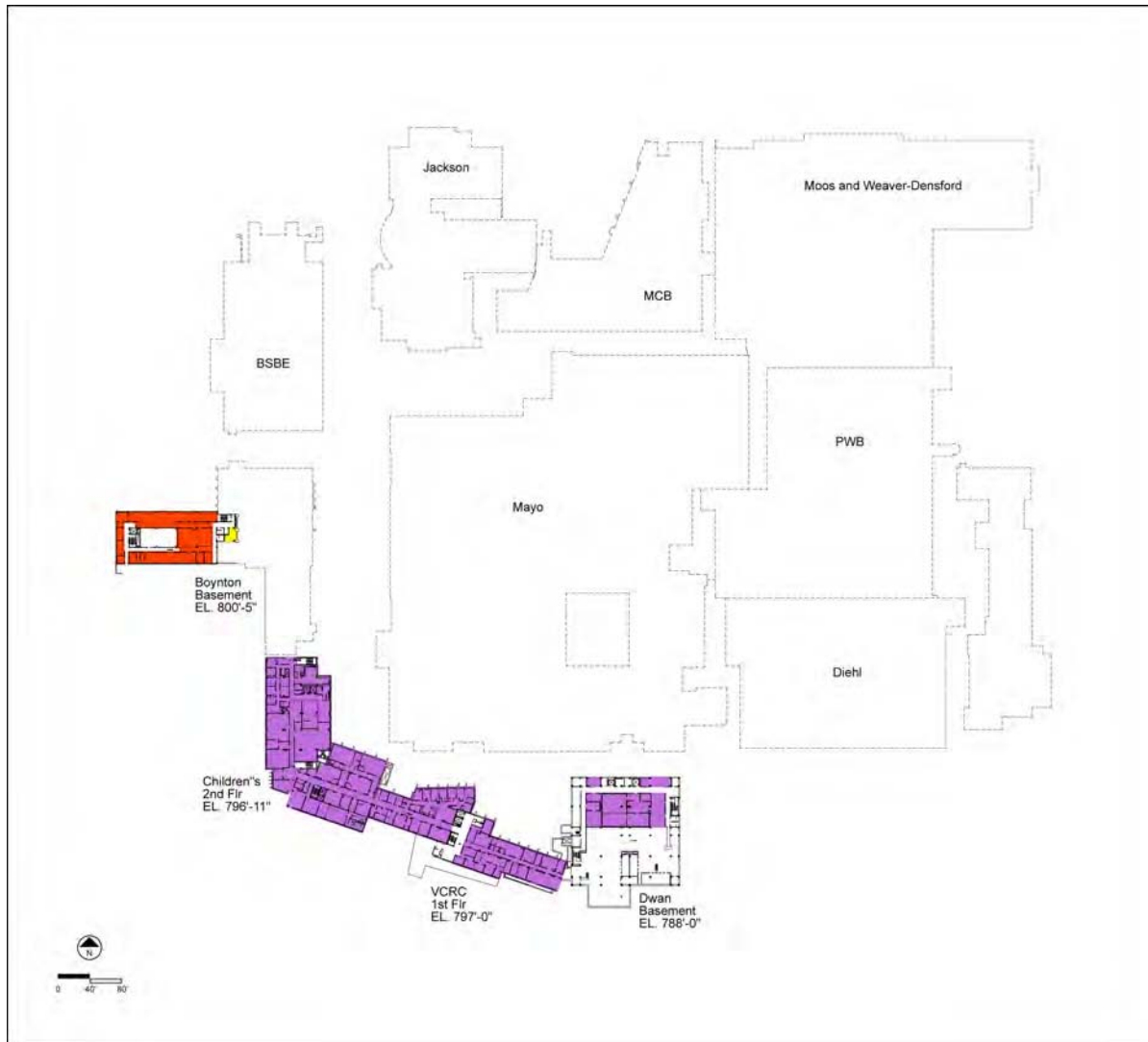
Although only five distinct collegiate units make up the AHC Minneapolis campus, at least a dozen different user groups occupy space in university buildings within the AHC district. The five collegiate units are: Medicine, Nursing, Pharmacy, Public Health, and Dentistry. The office of the Senior Vice President for Health Services and AHC Shared Programs make up a sixth group of personnel common to other units.

AHC District facilities also house student service groups such as the Boynton Student Health Services, the Biomedical Library and Campus Health and Safety. The University also leases significant space to Fairview-University Medical Center and University of Minnesota Physicians.

A few of the AHC user groups are localized within one building or one section of the district while others are dispersed throughout the district. Users who use space in multiple buildings include the Medical School, the School of Public Health, and AHC Shared Programs. Both occupy space in nearly every building at various degrees of concentration.

The School of Public Health is split between the northwest corner of the Mayo complex, a lower level of Moos Tower, and several off-campus space leases. Fairview-University Medical Center occupies large portions of the lower levels of the Mayo complex and the PWB (Phillips – Wangenstein Building). They also occupy significant space in the VFW-Masonic Memorial Building.

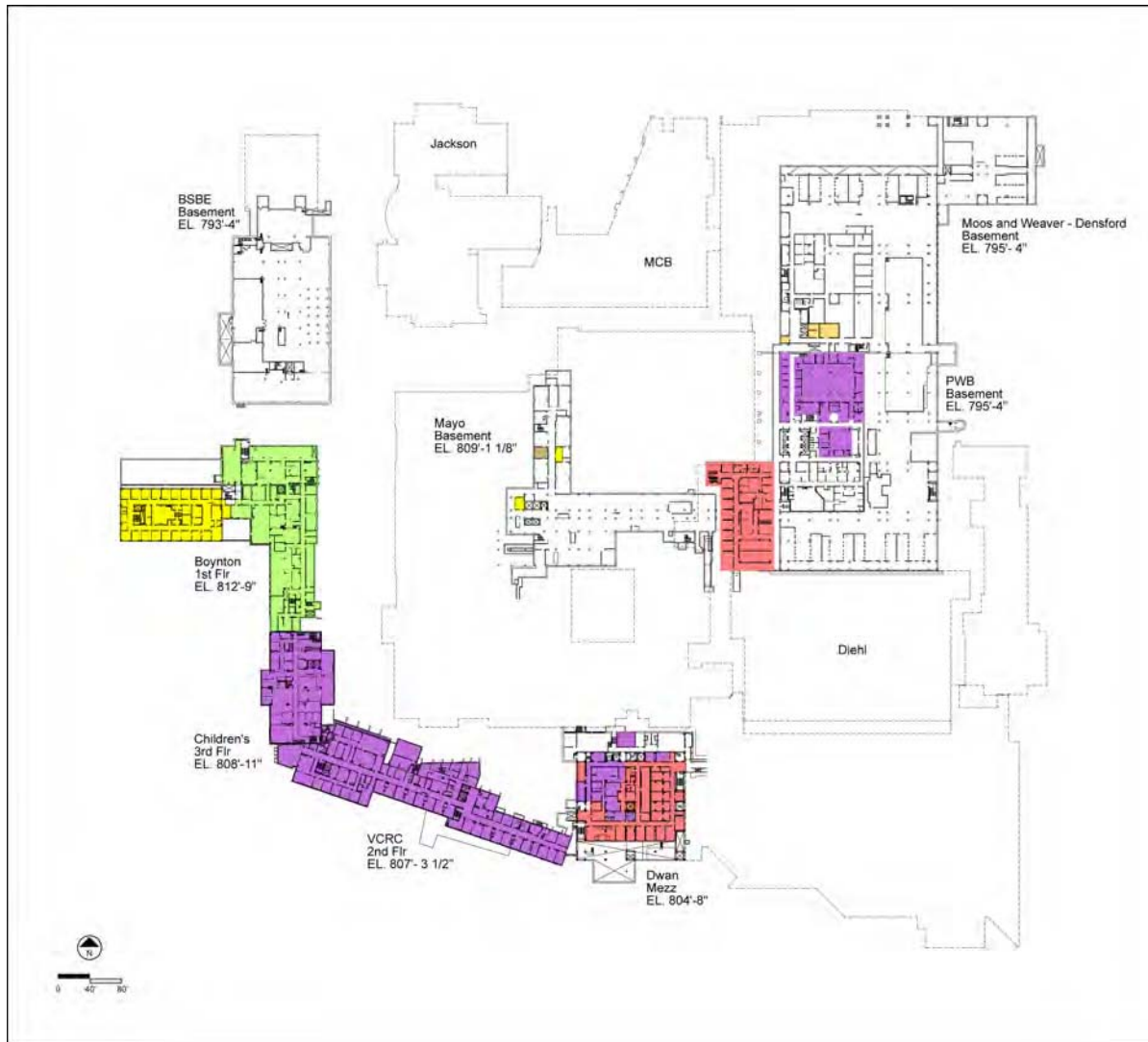
Space Usage - Sub-Level 4 (4 Floors Below Washington Avenue)



LEGEND

- Medical School
- Pharmacy
- Nursing
- Public Health
- Dentistry
- AHC Wide (Shared Spaces)
- Health Science
- Boynton Health Services
- Campus Health
- Libraries
- Fairview - University Hospital
- Non - University

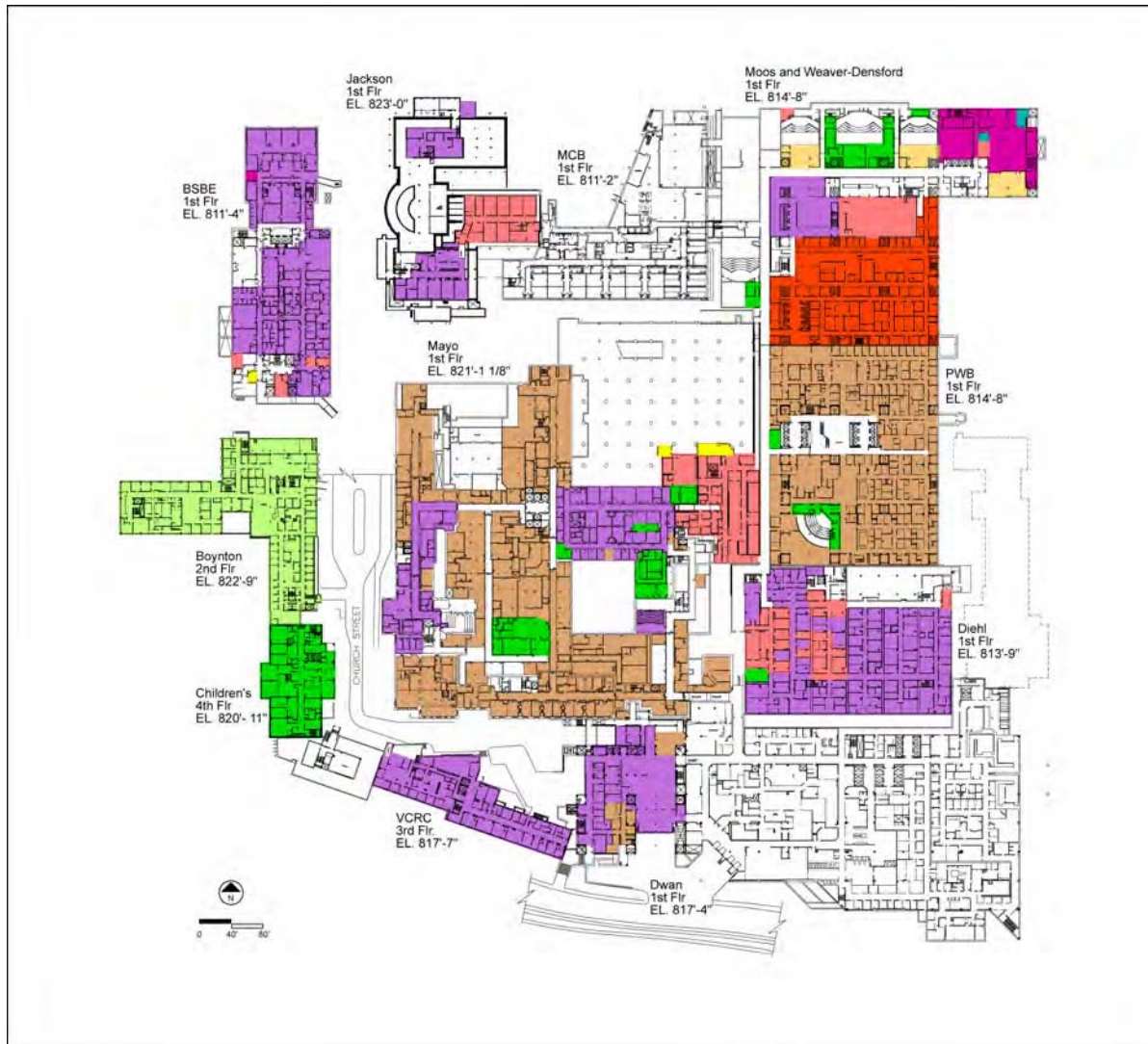
Space Usage - Sub-Level 3 (3 Floors Below Washington Avenue)



LEGEND

- Medical School
- Pharmacy
- Nursing
- Public Health
- Dentistry
- AHC Wide (Shared Spaces)
- Health Science
- Boynton Health Services
- Campus Health
- Libraries
- Fairview - University Hospital
- Non - University

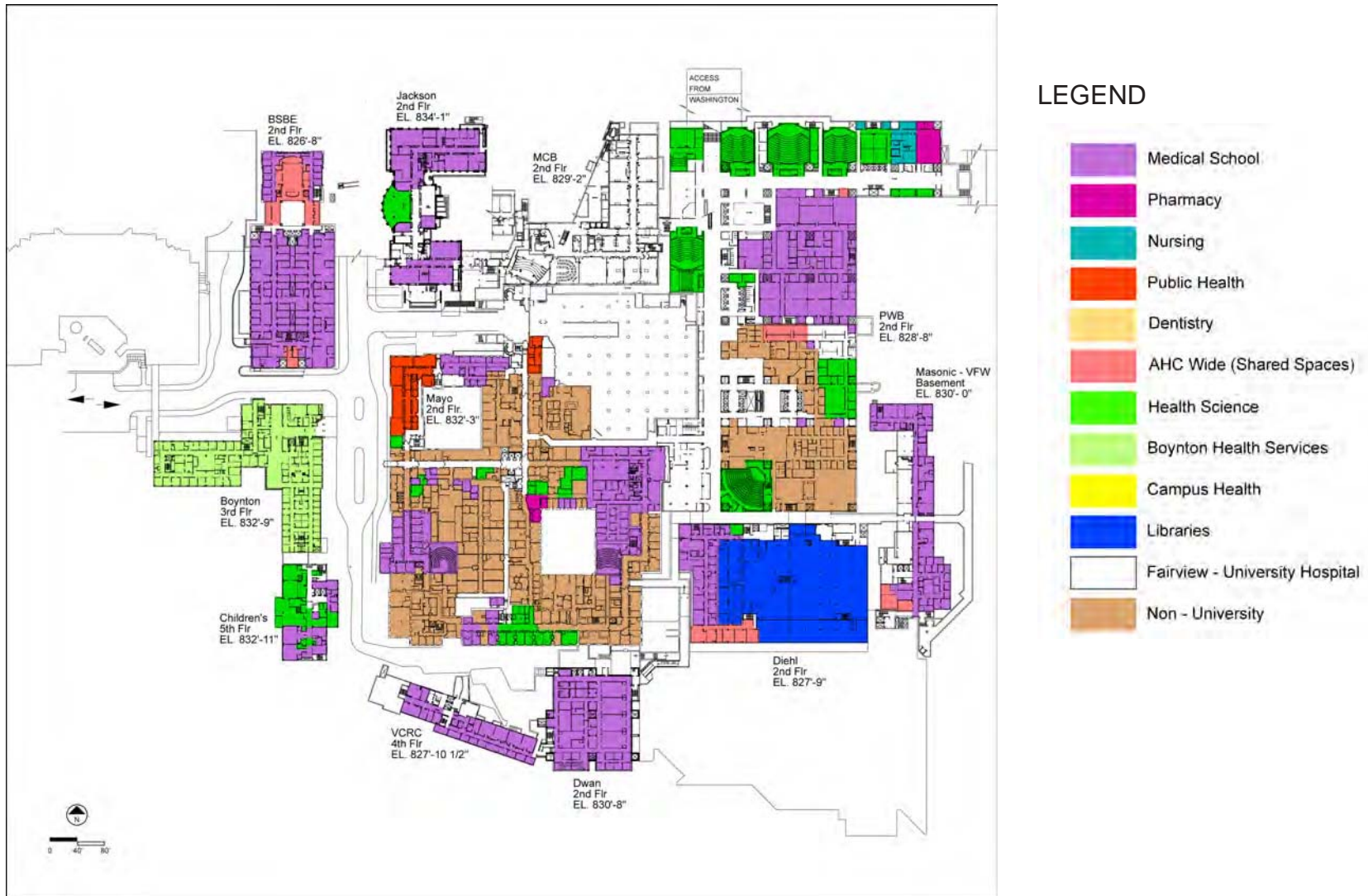
Space Usage - Sub-Level 2 (2 Floors Below Washington Avenue)



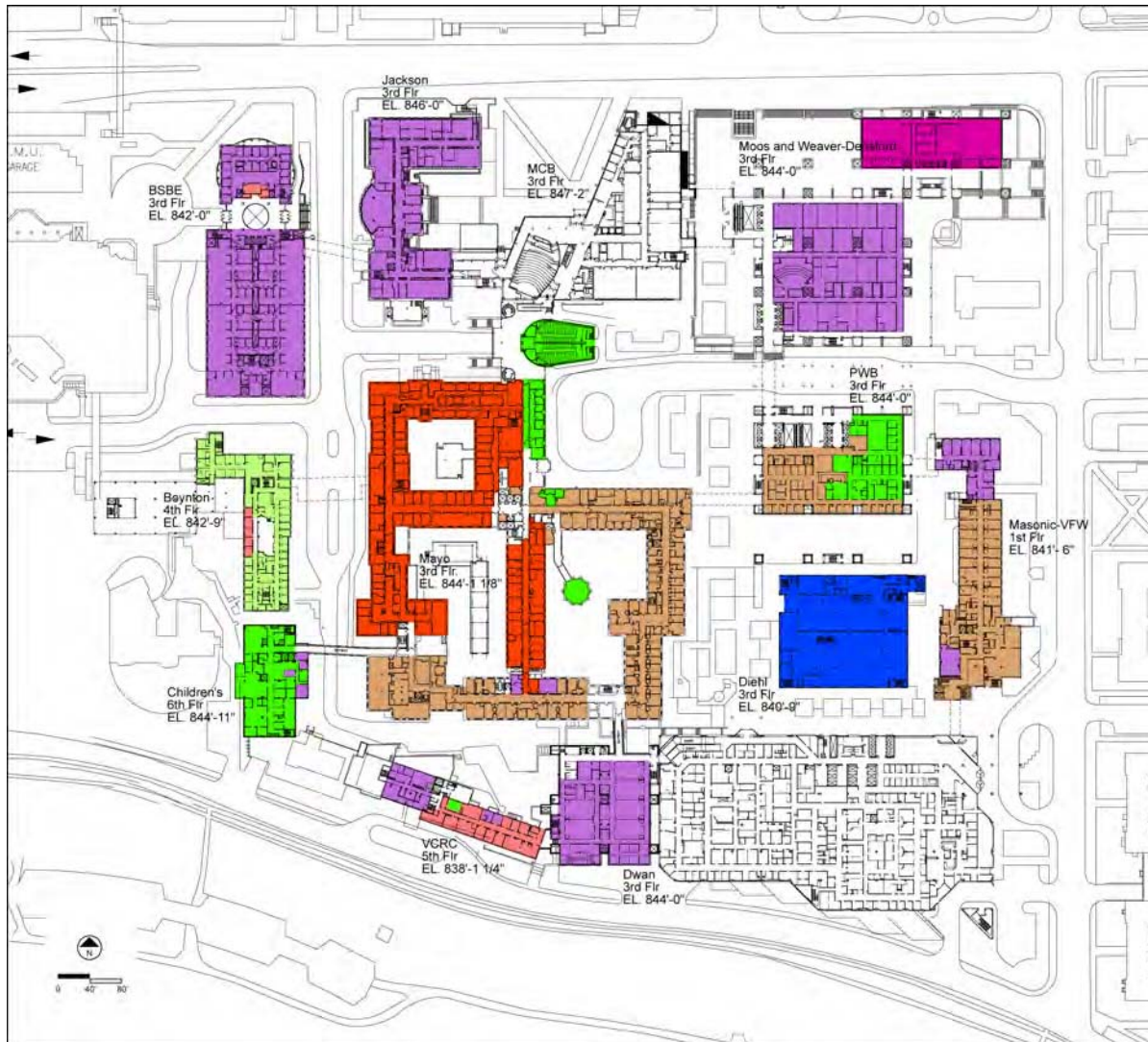
LEGEND

- Medical School
- Pharmacy
- Nursing
- Public Health
- Dentistry
- AHC Wide (Shared Spaces)
- Health Science
- Boynton Health Services
- Campus Health
- Libraries
- Fairview - University Hospital
- Non - University

Space Usage - Concourse Level (1 Floor Below Washington Avenue)



Space Usage - Level 0 (Washington Avenue Level)



LEGEND

- Medical School
- Pharmacy
- Nursing
- Public Health
- Dentistry
- AHC Wide (Shared Spaces)
- Health Science
- Boynton Health Services
- Campus Health
- Libraries
- Fairview - University Hospital
- Non - University

Space Usage - Level 1 (1 Floor Above Washington Avenue)



LEGEND

- Medical School
- Pharmacy
- Nursing
- Public Health
- Dentistry
- AHC Wide (Shared Spaces)
- Health Science
- Boynton Health Services
- Campus Health
- Libraries
- Fairview - University Hospital
- Non - University

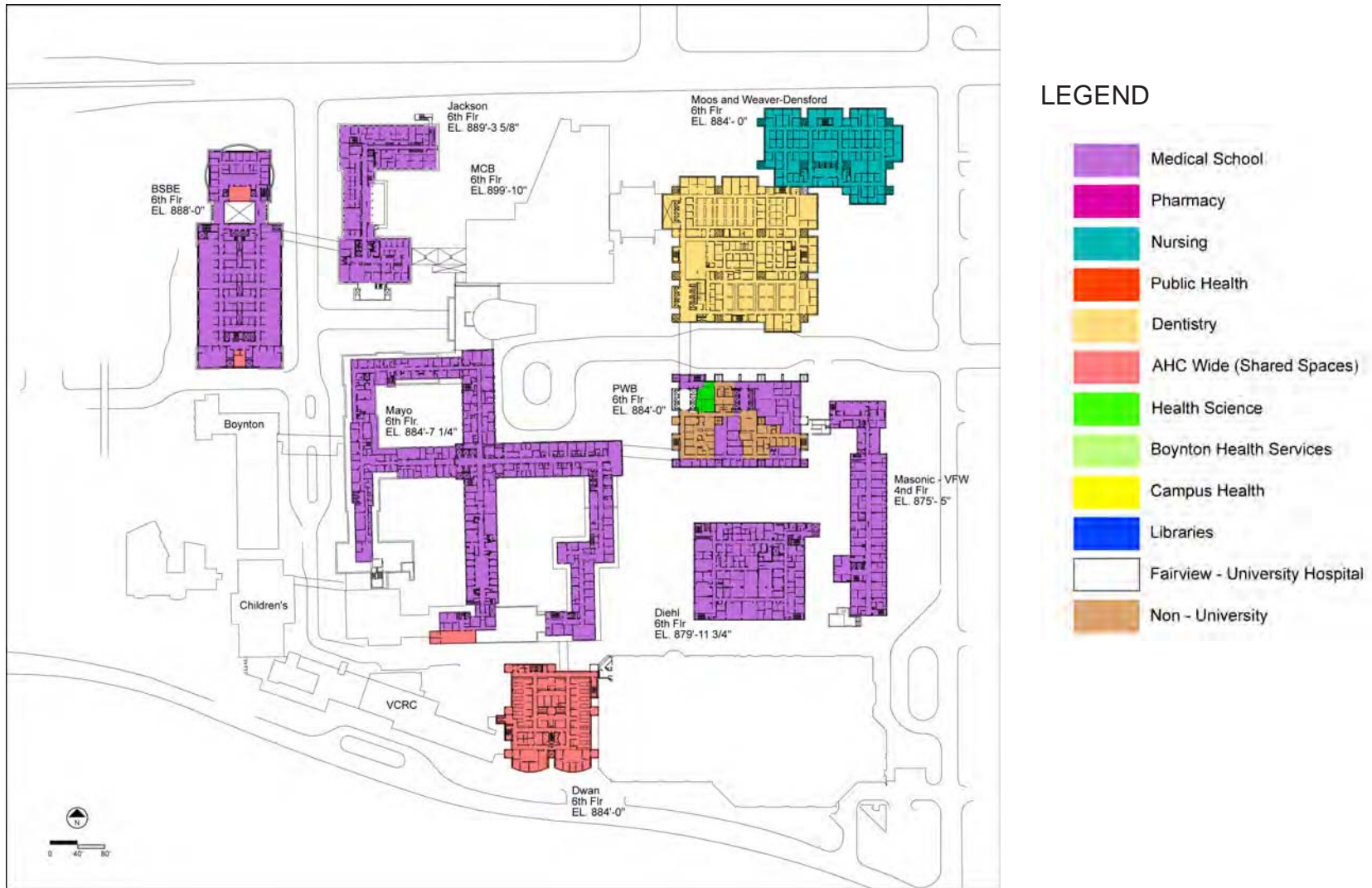
Space Usage - Level 2 (2 Floors Above Washington Avenue)



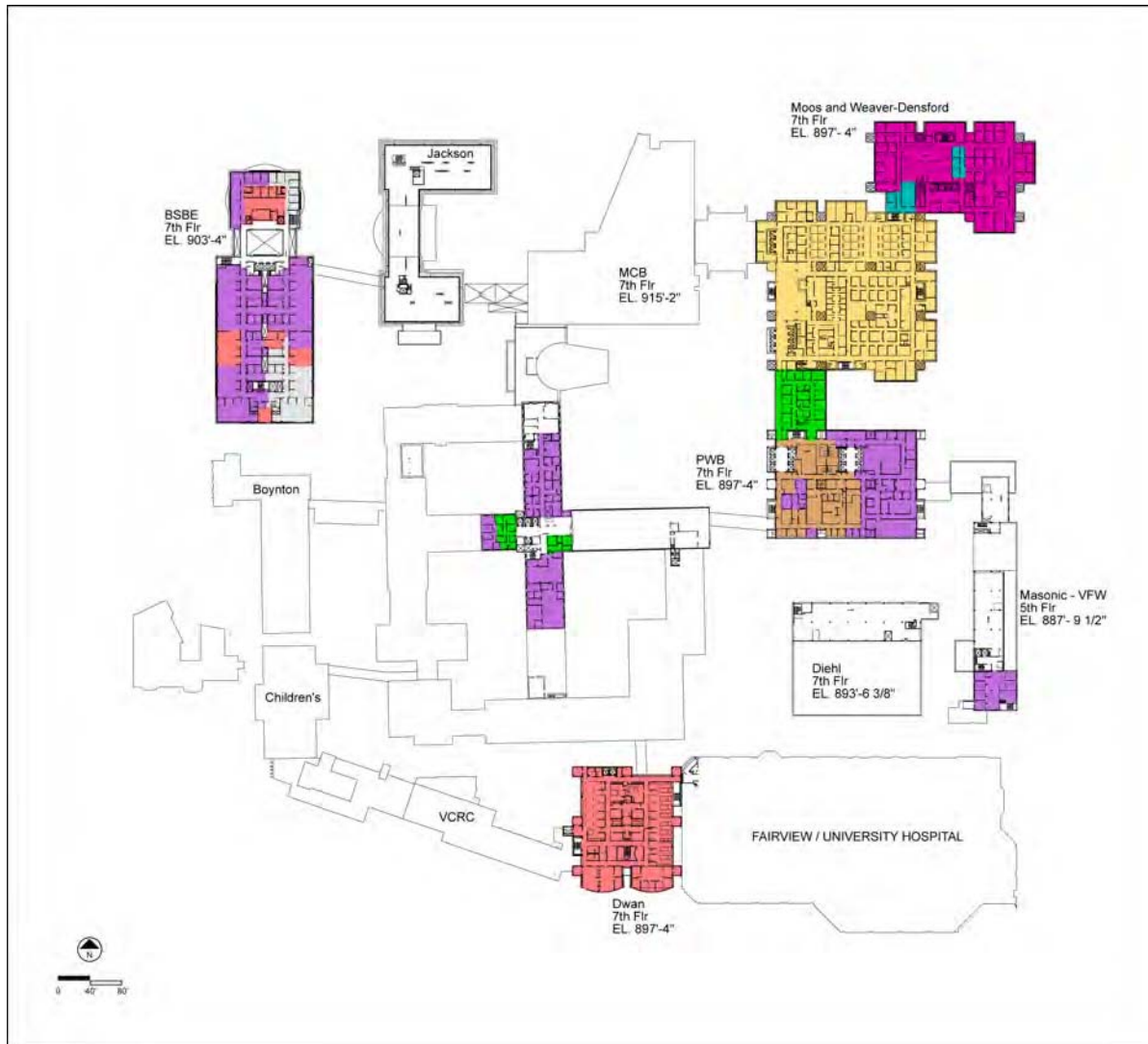
LEGEND

- Medical School
- Pharmacy
- Nursing
- Public Health
- Dentistry
- AHC Wide (Shared Spaces)
- Health Science
- Boynton Health Services
- Campus Health
- Libraries
- Fairview - University Hospital
- Non - University

Space Usage - Level 3 (3 Floors Above Washington Avenue)



Space Usage - Level 4 (4 Floors Above Washington Avenue)



LEGEND

- Medical School
- Pharmacy
- Nursing
- Public Health
- Dentistry
- AHC Wide (Shared Spaces)
- Health Science
- Boynton Health Services
- Campus Health
- Libraries
- Fairview - University Hospital
- Non - University

Space Needs Summary

The Strategic Plan of the Academic Health Center requires growth in strategic areas of research and health outreach, as well as increased health professional school enrollment and greater community integration of the education and training programs. These programmatic areas of emphasis are reflected in the twenty-year District Plan for the Academic Health Center. Based on the Minnesota Facilities Model, there is a current need for about 100,000 more square feet of space, with a growth projection of another 300,00 square feet.

The critical space analysis of the district planning process also addresses the quality of space and the functional ability of space to appropriately support the instructional, research and outreach activities that occur. It became clear that the major space challenge in the Academic Health Center was in precisely these areas of the quality and functionality of the current space. In addition, there is a major challenge in achieving a nurturing campus environment, although the Molecular and Cellular Biology Building area is a clear step in improving this situation.

Thus, most of the space needs are replacement for existing space that inadequately serves research, education and health outreach, while providing for a modest increase in space over the timeline of the District Plan. The District Plan would also remodel the space in a way that transforms the Academic Health Center into a “livable campus.”

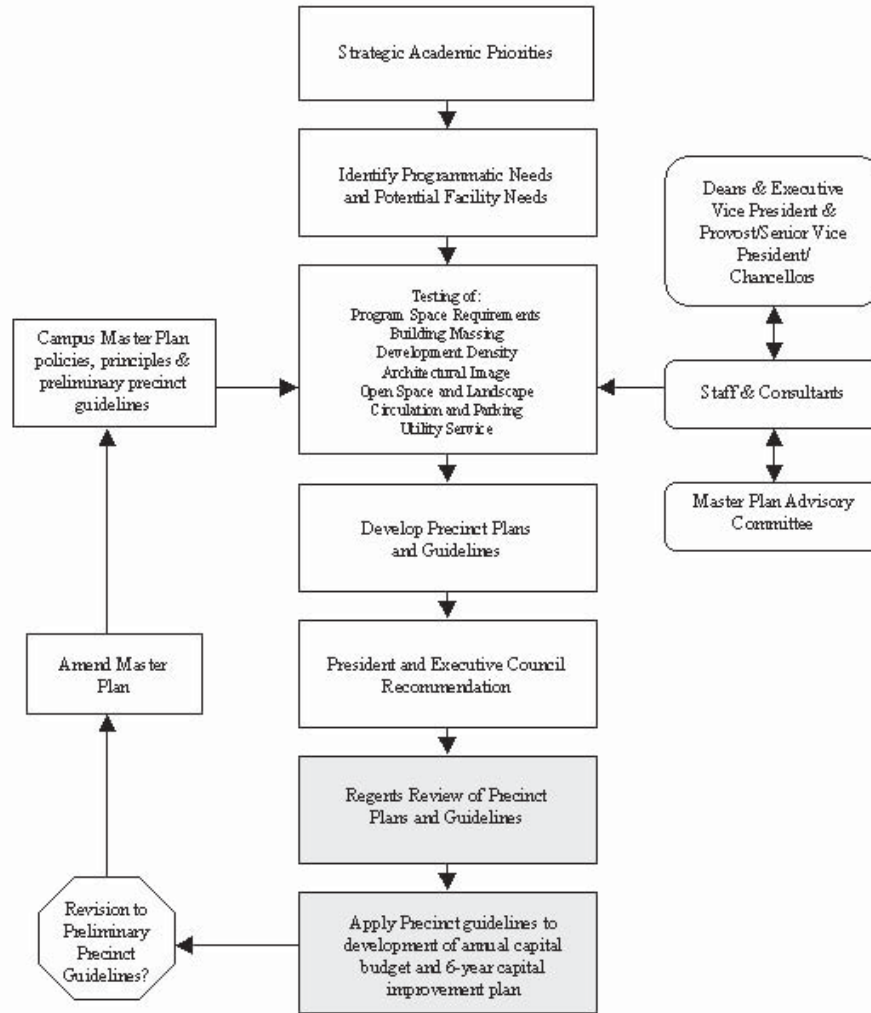
6 Appendix

Planning Process/ Participants

The Academic Health Center Minneapolis District Plan has been created by the project team and follows the criteria set forth by the University Planning and Programming Director, and the AHC Office of Facilities. The following information is intended to summarize the planning process which has been used to achieve the 20-year AHC Minneapolis District Plan.

PRECINCT PLANNING PROCESS

University of Minnesota



The Precinct Planning Process was the basis for a streamlined five-step approach:

1. Review and assess that which exists
2. Listen to stakeholders and other interested parties
3. Envision what might be
4. Develop concept and project specific plans
5. Begin implementation as programmatically and financially feasible

As the first step in the planning process, the project team developed a work plan. The plan established a schedule of project team meetings at two-week intervals beginning in late March 2000 and continuing through late October 2000.

The work plan further refined the planning process into three main parts:

1. Discovery
2. Concepts
3. Refinement

A “Quote of the Meeting,” was delivered at each project team meeting. The intent of the quotes was to keep the team focused on the comprehensive perspective required to understand all of the interrelated issues associated with redevelopment of the AHC by incorporating a little levity into the process.

The planning process included work by the following subcommittees:

- a. Policy Committee
- b. Steering Committee
- c. Faculty Consultative Committee
- d. Student Consultative Committee
- e. Classrooms Committee
- f. Back-of-House / Retail Committee
- g. Adjacent University Stakeholders
- h. Adjacent Non-University Stakeholders

These subcommittees were afforded the opportunity to review and comment on the District Plan during its development. The timing of each subcommittee review was tied to development of the Discovery, Concept Development, and Refinement phases. Feedback was evaluated by the project team and incorporated into the planning process.

4 April 2000

Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with evergrowing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty.

Daniel H. Burnham

14 April 2000

In planning, the 'medical' solutions are a snare and a delusion; they solve nothing, they are very expensive. The 'surgical' solutions solve.

LeCorbusier

If you are not living on the edge, you are taking up too much space.

Unknown

16 May 2000

Between the idea and reality falls the shadow.

T.S. Eliot

13 June 2000

If you have an important point to make, don't try to be subtle or clever. Use a pile driver. Hit the point once. Then come back and hit it again. Then hit it a third time - a tremendous whack.

Winston Churchill

25 July 2000

Higher education is a hundred years of tradition wrapped up in a thousand years of bureaucracy.

Roger Moe

5 September 2000

This is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.

Winston Churchill

19 September 2000

Success on any major scale requires you to accept responsibility...in the final analysis, the one quality that all successful people have...is the ability to take on responsibility.

Michael Korda

The price of greatness is responsibility.

Winston Churchill

3 October 2000

Vitality shows not only in the ability to persist, but in the ability to start over.

F. Scott Fitzgerald

31 October 2000

It ain't over til it's over.

Yogi Berra

The secret to success is constancy of purpose.

Benjamin Disraeli

The Minnesota Facilities Model (MFM) for the Academic Health Center (AHC) was applied as follows: room by room space listings were generated from the SPACE database for each department in the AHC, and given to the department so the existing inventory of space could be updated. The Academic Health Center Office of Facilities then generated and distributed existing staff listings for all Academic Health Center departments. Each department made corrections to its staff listings, and provided data on graduate students in the department. Each department also projected staffing requirements out to 2005. This information was analyzed using applicable standards in the MFM to determine both existing space needs and space needs per staffing projections for 2005.

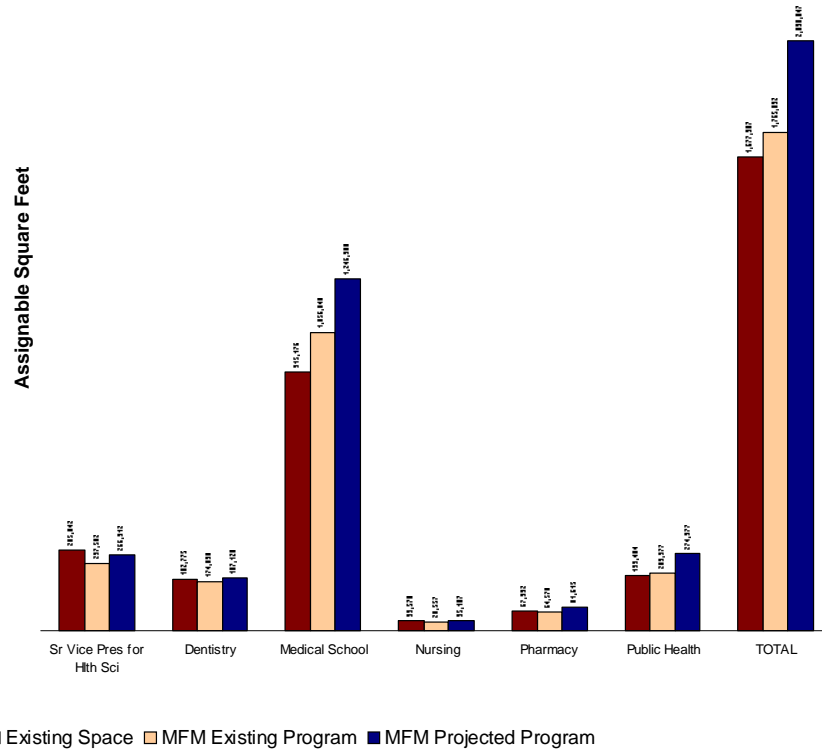
Academic Health Center	Office and Support			Research			Study and Special		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Sr Vice President	91203	56160	73160	50568	43050	54750	137592	138372	138402
Dentistry, School of	55294	50783	56633	28298	33110	39490	85672	79852	79852
Medical School	390026	450962	535842	423730	521100	624600	56004	51403	52483
Nursing, School of	23664	21453	27603	1754	1780	2180	1060	402	402
Pharmacy, College of	23886	32815	43090	29596	25850	32230	7557	5130	5520
Public Health, School of	160132	104736	133956	9199	71800	107190	19629	24872	31262
Total	744205	716909	870284	543145	696690	860440	307514	300031	307921

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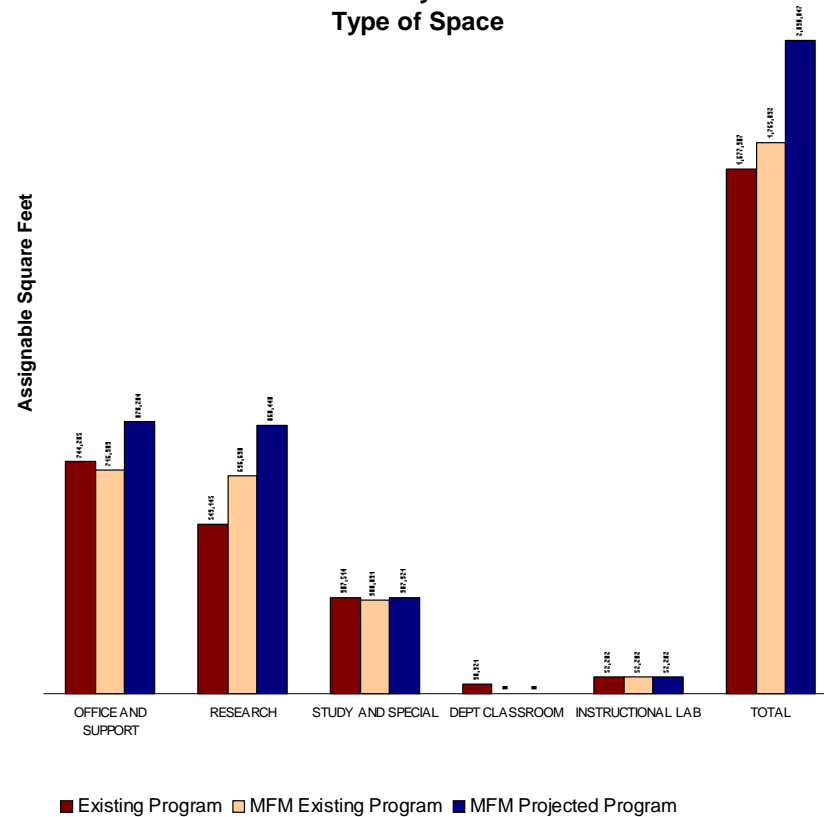
Academic Health Center	Dept Classroom			Instructional Lab			Totals		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Sr Vice President	5679	0	0	0	0	0	285042	237582	266312
Dentistry, School of	2358	0	0	11153	11153	11153	182775	174898	187128
Medical School	12033	0	0	33383	33383	33383	915176	1056848	1246308
Nursing, School of	2178	0	0	4922	4922	4922	33578	28557	35107
Pharmacy, College of	6118	0	0	775	775	775	67932	64570	81615
Public Health, School of	2555	0	0	1969	1969	1969	193484	203377	274377
Total	30921	0	0	52202	52202	52202	1677987	1765832	2090847

Space Inventory/Audit

University of Minnesota
Academic Health Center
MFM Application Results
Minneapolis Campus Colleges
by
College



University of Minnesota
Academic Health Center
MFM Application Results
Minneapolis Campus Colleges
by
Type of Space

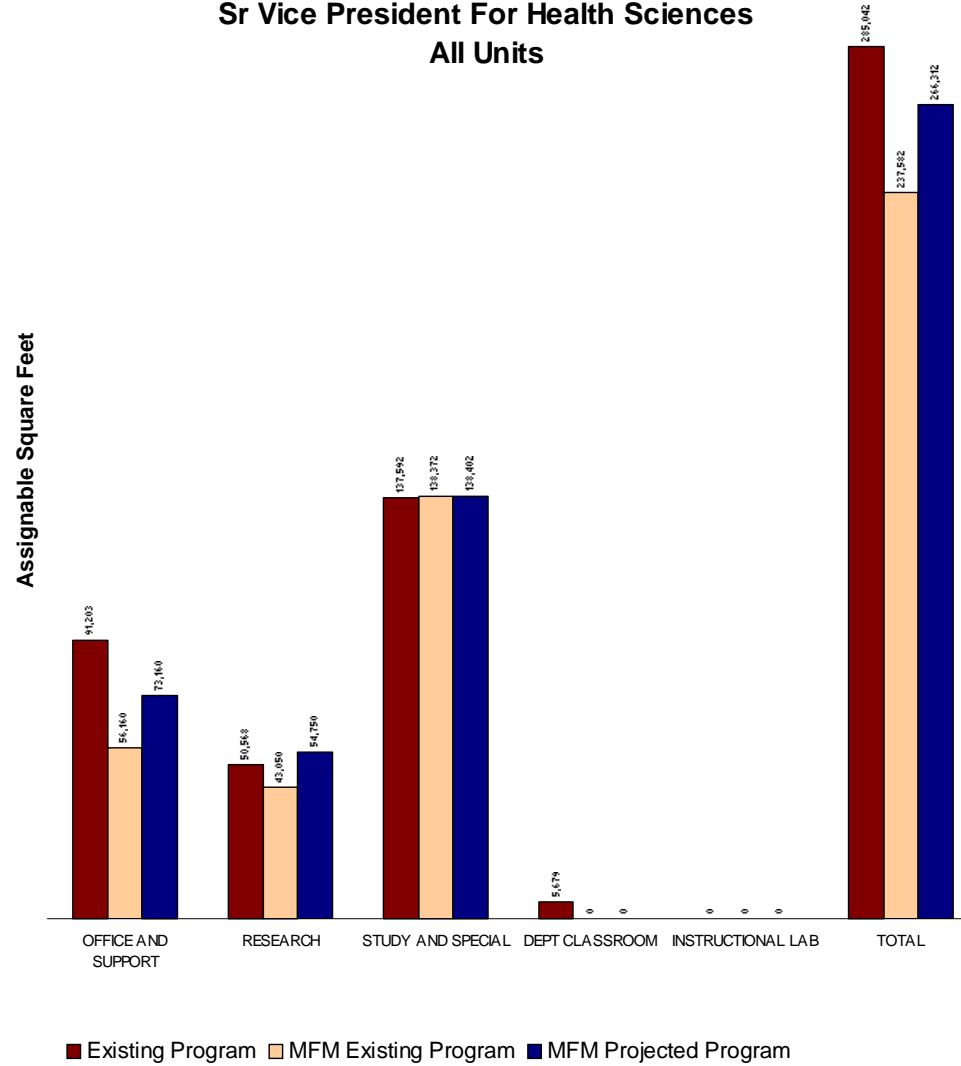


Sr Vice President for Hlth Sci	Office and Support			Research			Study and Special		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Sr Vice President	61406	17930	24830	1753	1650	2850	16371	16371	16371
Center for Bioethics	4012	3030	3520	0	0	0	0	0	0
Cancer Center	16098	30625	38585	29909	37800	47700	3037	3817	3847
Comparative Med/Res An Resou	6147	3825	4575	5129	3300	3600	106295	106295	106295
Comm/Univ Health Care Center	0	0	0	0	0	0	11889	11889	11889
MN Molecular/Cell Therapy Prog	3540	750	1650	13777	300	600	0	0	0
Total	91203	56160	73160	50568	43050	54750	137592	138372	138402

CONTINUED BELOW

Sr Vice President for Hlth Sci	Dept Classroom			Instructional Lab			Totals		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Sr Vice President	5679	0	0	0	0	0	85209	35951	44051
Center for Bioethics	0	0	0	0	0	0	4012	3030	3520
Cancer Center	0	0	0	0	0	0	49044	72242	90132
Comparative Med/Res An Resou	0	0	0	0	0	0	117571	113420	114470
Comm/Univ Health Care Center	0	0	0	0	0	0	11889	11889	11889
MN Molecular/Cell Therapy Prog	0	0	0	0	0	0	17317	1050	2250
Total	5679	0	0	0	0	0	285042	237582	266312

University of Minnesota
Academic Health Center
Sr Vice President For Health Sciences
All Units

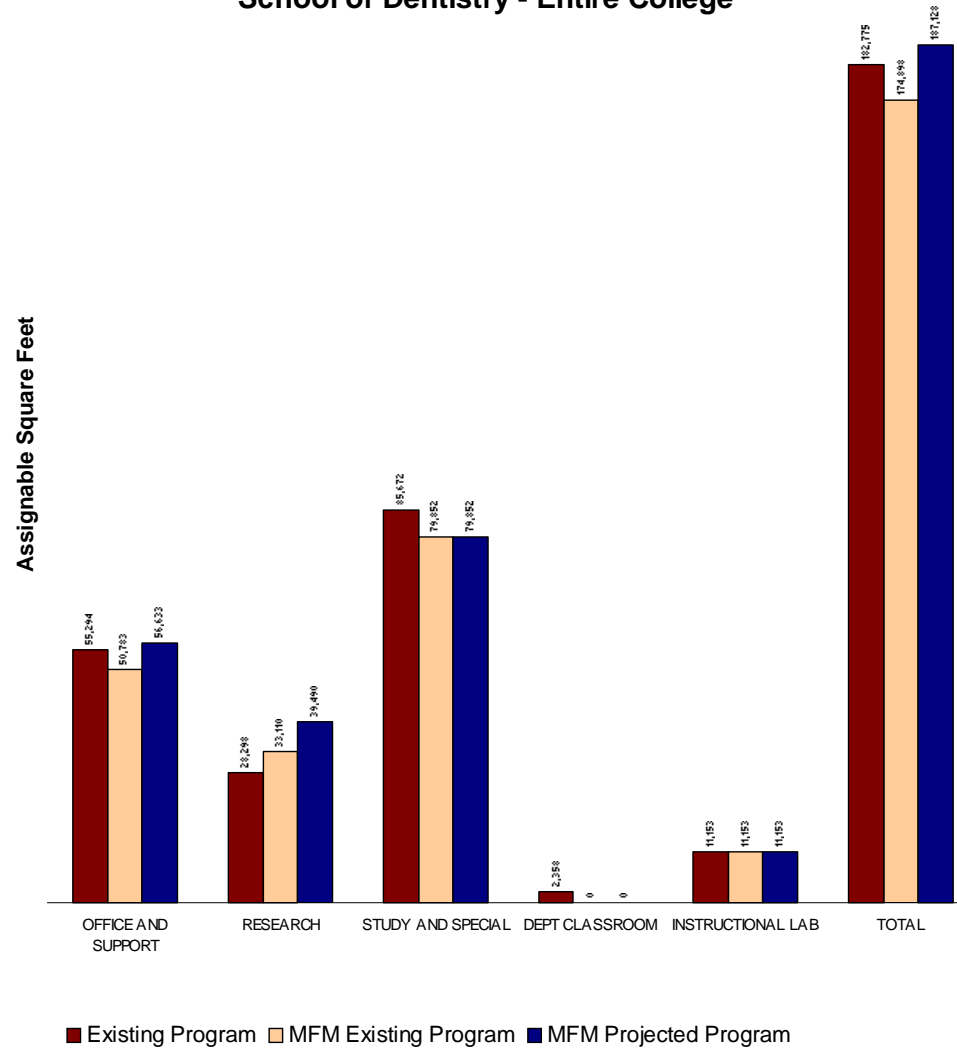


School of Dentistry	Office and Support			Research			Study and Special		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	16987	13340	15590	0	330	1430	28065	20882	20882
Diag/Surgical Sci	6819	7250	8000	0	3410	4510	14608	15041	15041
Cont Dental Education	56	600	600	0	0	0	0	0	0
Oral Sci	8965	7493	8543	22210	8360	9900	1221	1551	1551
Preventive Sci	15172	16355	17405	6088	16280	17820	24862	25462	25462
Restorative Sci	7295	5745	6495	0	4730	5830	16916	16916	16916
Total	55294	50783	56633	28298	33110	39490	85672	79852	79852

School of Dentistry	Dept Classroom			Instructional Lab			Totals		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	0	0	0	10767	10767	10767	55819	45319	48669
Diag/Surgical Sci	0	0	0	287	287	287	21714	25988	27838
Cont Dental Education	2358	0	0	0	0	0	2414	600	600
Oral Sci	0	0	0	0	0	0	32396	17404	19994
Preventive Sci	0	0	0	99	99	99	46221	58196	60786
Restorative Sci	0	0	0	0	0	0	24211	27391	29241
Total	2358	0	0	11153	11153	11153	182775	174898	187128

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University of Minnesota
Academic Health Center
School of Dentistry - Entire College

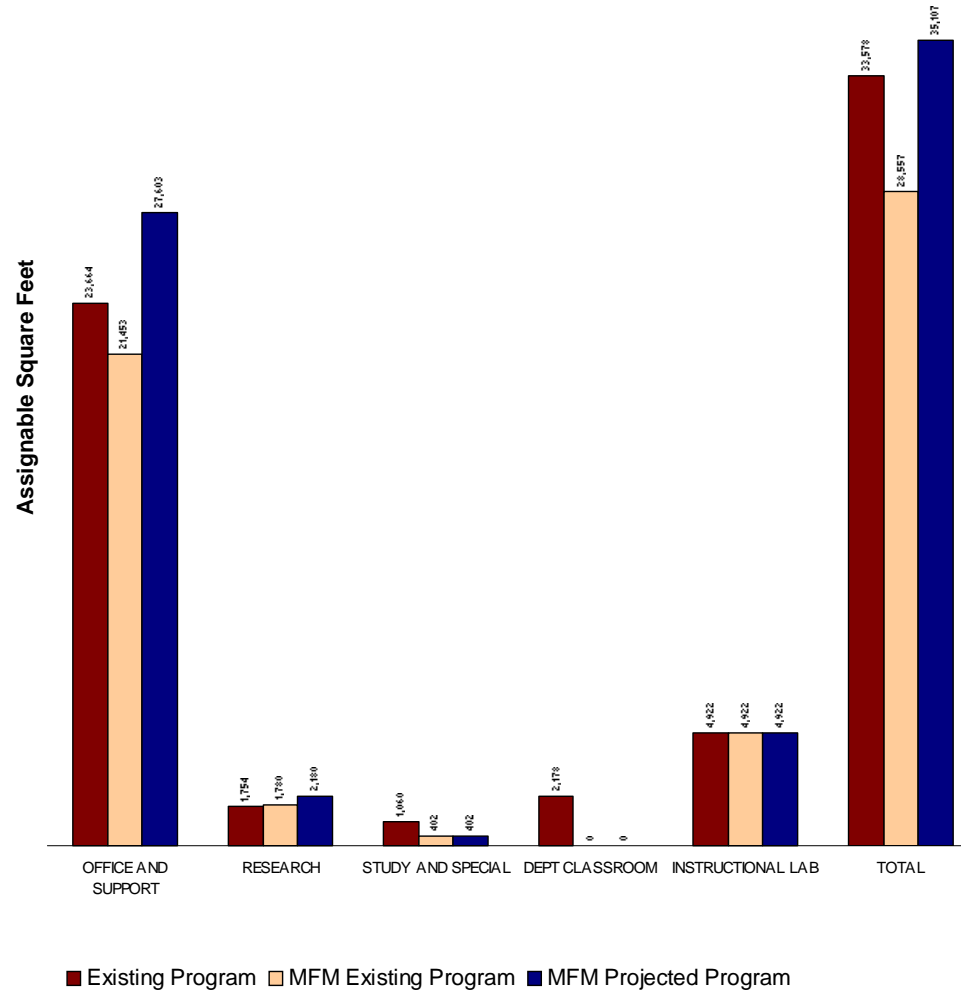


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School of Nursing	Office and Support			Research			Study and Special		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	10749	2775	3675	1754	0	0	1060	402	402
Nursing	12915	18678	23928	0	1780	2180	0	0	0
Total	23664	21453	27603	1754	1780	2180	1060	402	402

School of Nursing	Dept Classroom			Instructional Lab			Totals		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	2178	0	0	4922	4922	4922	20663	8099	8999
Nursing	0	0	0	0	0	0	12915	20458	26108
Total	2178	0	0	4922	4922	4922	33578	28557	35107

University of Minnesota
Academic Health Center
School of Nursing - Entire College

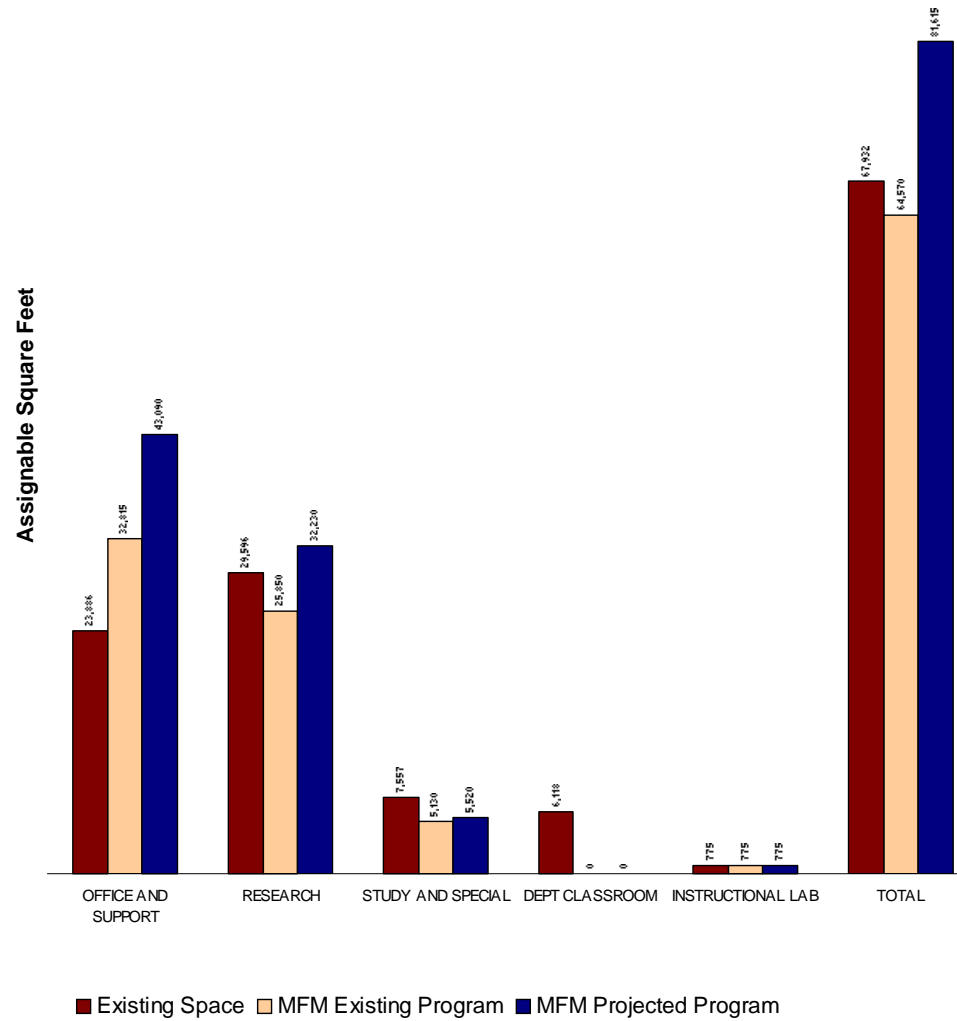


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College of Pharmacy	Office and Support			Research			Study and Special		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Pharmacy, College of	23886	32815	43090	29596	25850	32230	7557	5130	5520
Total	23886	32815	43090	29596	25850	32230	7557	5130	5520

College of Pharmacy	Dept Classroom			Instructional Lab			Totals		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Pharmacy, College of	6118	0	0	775	775	775	67932	64570	81615
Total	6118	0	0	775	775	775	67932	64570	81615

University of Minnesota
Academic Health Center
College of Pharmacy

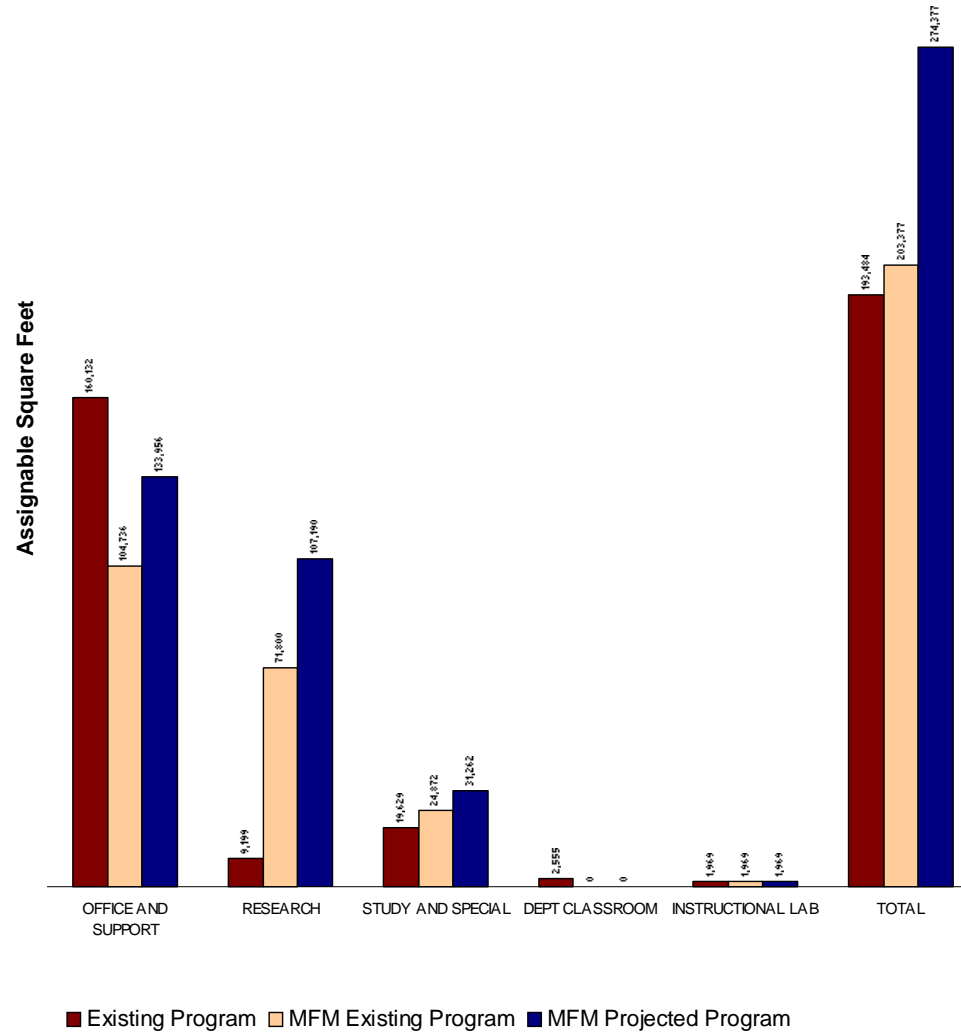


School of Public Health	Office and Support			Research			Study and Special		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	15378	4950	8400	0	0	0	2179	989	989
Biostatistics	26472	13390	16390	676	12760	17600	2631	2918	3488
Environ/Occupational Hlth	20663	22093	25993	6875	16060	22990	1066	1740	2850
Epidemiology	75726	49113	62208	1648	41360	64020	11932	16462	19942
Health Services Research	21893	15190	20965	0	1620	2580	1821	2763	3993
Total	160132	104736	133956	9199	71800	107190	19629	24872	31262

School of Public Health	Dept Classroom			Instructional Lab			Totals		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	2555	0	0	0	0	0	20112	5939	9389
Biostatistics	0	0	0	444	444	444	30223	29512	37922
Environ/Occupational Hlth	0	0	0	618	618	618	29222	40511	52451
Epidemiology	0	0	0	0	0	0	89306	106935	146170
Health Services Research	0	0	0	907	907	907	24621	20480	28445
Total	2555	0	0	1969	1969	1969	193484	203377	274377

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University of Minnesota
Academic Health Center
School of Public Health - Entire College

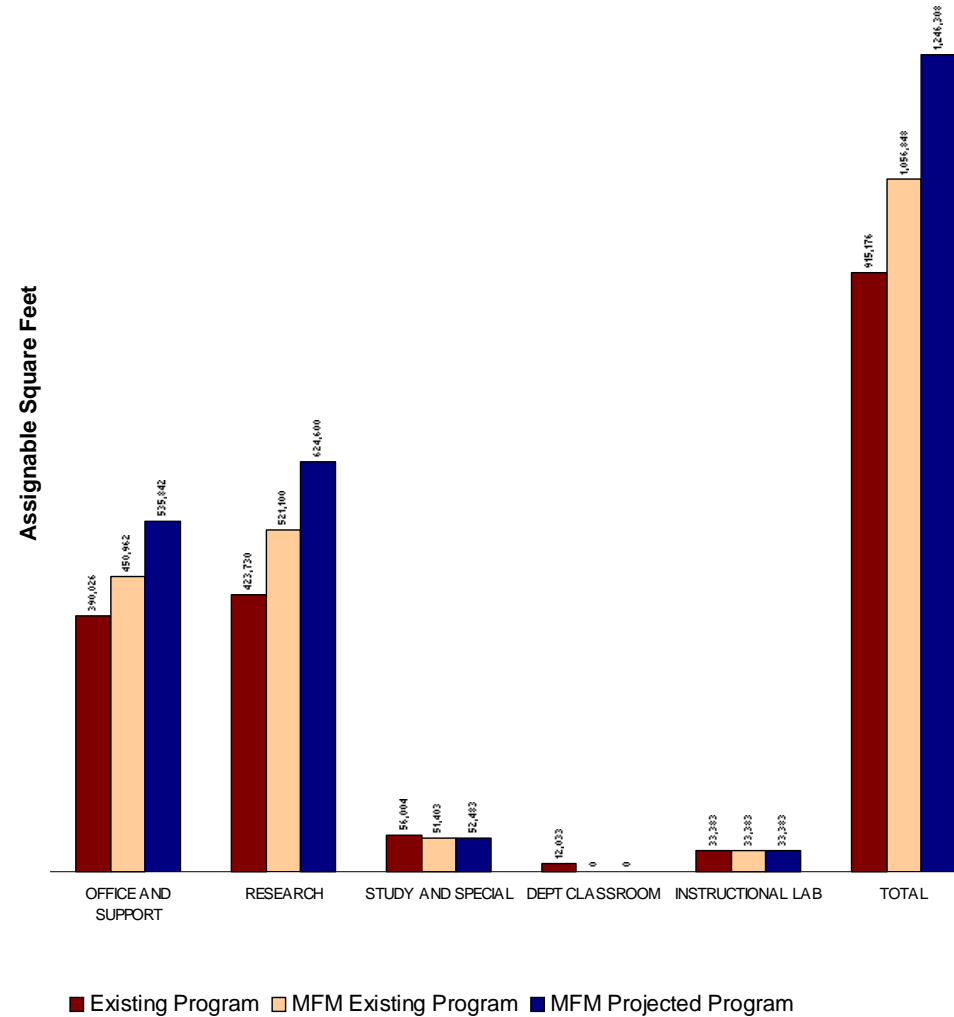


Medical School	Office and Support			Research			Study and Special		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	27358	14615	14615	2312	2400	2400	15088	7612	7612
Anesthesiology	5591	3525	3525	3112	4350	4350	1356	892	892
Biochem, Molec Biol, Biophysics	8316	16730	30230	34188	37350	58050	137	1367	1037
Biomedical Engineering Inst	2247	750	1650	0	900	1200	0	0	0
Continuing Medical Education	2208	0	0	0	0	0	0	0	0
Dermatology	3085	3675	4875	3300	2550	3750	386	108	108
Family Prac/Comm Health	14670	12075	13800	305	900	900	2212	1739	1769
Genetics, Cell Biology	18676	32210	37355	62398	46950	55950	137	497	557
Human Genetics, Inst of	4032	10305	10305	15388	16500	16500	0	600	1410
Lab Medicine/Pathology	31754	29898	41313	33309	41550	58950	2727	3378	3408
Medicine	48899	68540	78070	46673	71700	81600	9041	8570	8570
Microbiology	5087	11110	14025	24957	23250	26850	1085	1535	1535
Minn Medical Foundation	14976	9975	14325	0	0	0	131	131	131
Neurology	13045	11080	12130	10876	13200	14100	2569	2569	2569
Neuroscience	9373	14980	23010	32874	24750	34050	274	1714	1324
Neurosurgery	5669	2400	3150	2895	3600	3600	574	664	604
Obstetrics and Gynecology	5515	9995	11590	3017	11100	12900	2599	2599	2599
Ophthalmology	10167	15510	17460	7038	15300	17400	1247	1194	1194
Orthopaedic Surgery	6247	9115	10765	6508	8550	11550	716	776	926
Otolaryngology	7164	9248	10148	9228	11100	11400	857	210	180
Pediatrics	53194	62120	66960	24857	63450	70050	3501	3262	3262
Pharmacology	6568	19618	23783	28660	28650	35550	1889	2039	1949
Physical Medicine/Rehabilitation	8984	5930	7580	2189	4800	6600	2123	1538	1568
Physiology	4053	3080	3080	8601	4800	5700	513	603	1113
Psychiatry	23205	23503	26128	6254	25650	28950	1572	3132	3342
Radiology	14701	15360	15210	15602	24750	25050	1832	1594	1624
Surgery	27609	30620	33965	32463	27900	30300	2691	2632	2752
Therapeutic Radiology	4406	2895	3345	4137	3600	4500	297	30	30
Urologic Surgery	3227	2100	3450	2589	1500	2400	450	418	418
Total	390026	450962	535842	423730	521100	624600	56004	51403	52483

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Medical School	Dept Classroom			Instructional Lab			Totals		
		MFM	MFM		MFM	MFM		MFM	MFM
	Existing	Existing	Projected	Existing	Existing	Projected	Existing	Existing	Projected
Admin	5516	0	0	13816	13816	13816	64090	38443	38443
Anesthesiology	0	0	0	0	0	0	10059	8767	8767
Biochem, Molec Biol, Biophysics	0	0	0	0	0	0	42641	55447	89317
Biomedical Engineering Inst	0	0	0	0	0	0	2247	1650	2850
Continuing Medical Education	0	0	0	0	0	0	2208	0	0
Dermatology	0	0	0	0	0	0	6771	6333	8733
Family Prac/Comm Health	0	0	0	0	0	0	17187	14714	16469
Genetics, Cell Biology	0	0	0	0	0	0	81211	79657	93862
Human Genetics, Inst of	0	0	0	0	0	0	19420	27405	28215
Lab Medicine/Pathology	1444	0	0	5451	5451	5451	74685	80277	109122
Medicine	0	0	0	0	0	0	104613	148810	168240
Microbiology	0	0	0	8863	8863	8863	39992	44758	51273
Minn Medical Foundation	0	0	0	0	0	0	15107	10106	14456
Neurology	0	0	0	0	0	0	26490	26849	28799
Neuroscience	0	0	0	0	0	0	42521	41444	58384
Neurosurgery	0	0	0	0	0	0	9138	6664	7354
Obstetrics and Gynecology	360	0	0	0	0	0	11491	23694	27089
Ophthalmology	0	0	0	0	0	0	18452	32004	36054
Orthopaedic Surgery	0	0	0	0	0	0	13471	18441	23241
Otolaryngology	0	0	0	0	0	0	17249	20558	21728
Pediatrics	0	0	0	0	0	0	81552	128832	140272
Pharmacology	879	0	0	0	0	0	37996	50307	61282
Physical Medicine/Rehabilitation	2727	0	0	1890	1890	1890	17913	14158	17638
Physiology	843	0	0	3363	3363	3363	17373	11846	13256
Psychiatry	264	0	0	0	0	0	31295	52285	58420
Radiology	0	0	0	0	0	0	32135	41704	41884
Surgery	0	0	0	0	0	0	62763	61152	67017
Therapeutic Radiology	0	0	0	0	0	0	8840	6525	7875
Urologic Surgery	0	0	0	0	0	0	6266	4018	6268
							0	0	0
Total	12033	0	0	33383	33383	33383	915176	1056848	1246308

University of Minnesota Academic Health Center Medical School - Entire College



Infrastructure Issues

Chilled Water

Existing System Description

Chillers located in Moos Tower, Dwan, Mayo and Children’s Rehabilitation Center currently produce chilled water for the Academic Health district. The installed capacity and connected cooling load for the district is 10,000 tons. Chillers are being installed in MCBB, which will be capable of providing 1,300 tons to the district while meeting the 2,600 ton load in MCBB.

An additional 2,000 tons of chillers and building loads for Basic Science and Boynton are currently outside the defined Academic Health District and may become part of a chilled water district to the west (Riverbend Commons). The chillers in these buildings have 20 years of useful life remaining and can “stand alone” for the foreseeable future.

Future Loads and Capacities

With the addition of MCBB, expanding service to loads in Mayo and Dwan, increased dehumidification loads

and future building area (approximately 300,000 s.f.), the total projected connected load for the AHC district chilled water system is 16,000 tons. The diversified district load estimated to be 13,000 tons. Current planning calls for retiring chillers in Moos Tower, Mayo, Dwan and Children’s Rehabilitation Center. 7,500 tons of new electric chillers will be installed by 2010 for a net installed capacity of 14,000 tons.

Impact of AHC Planning

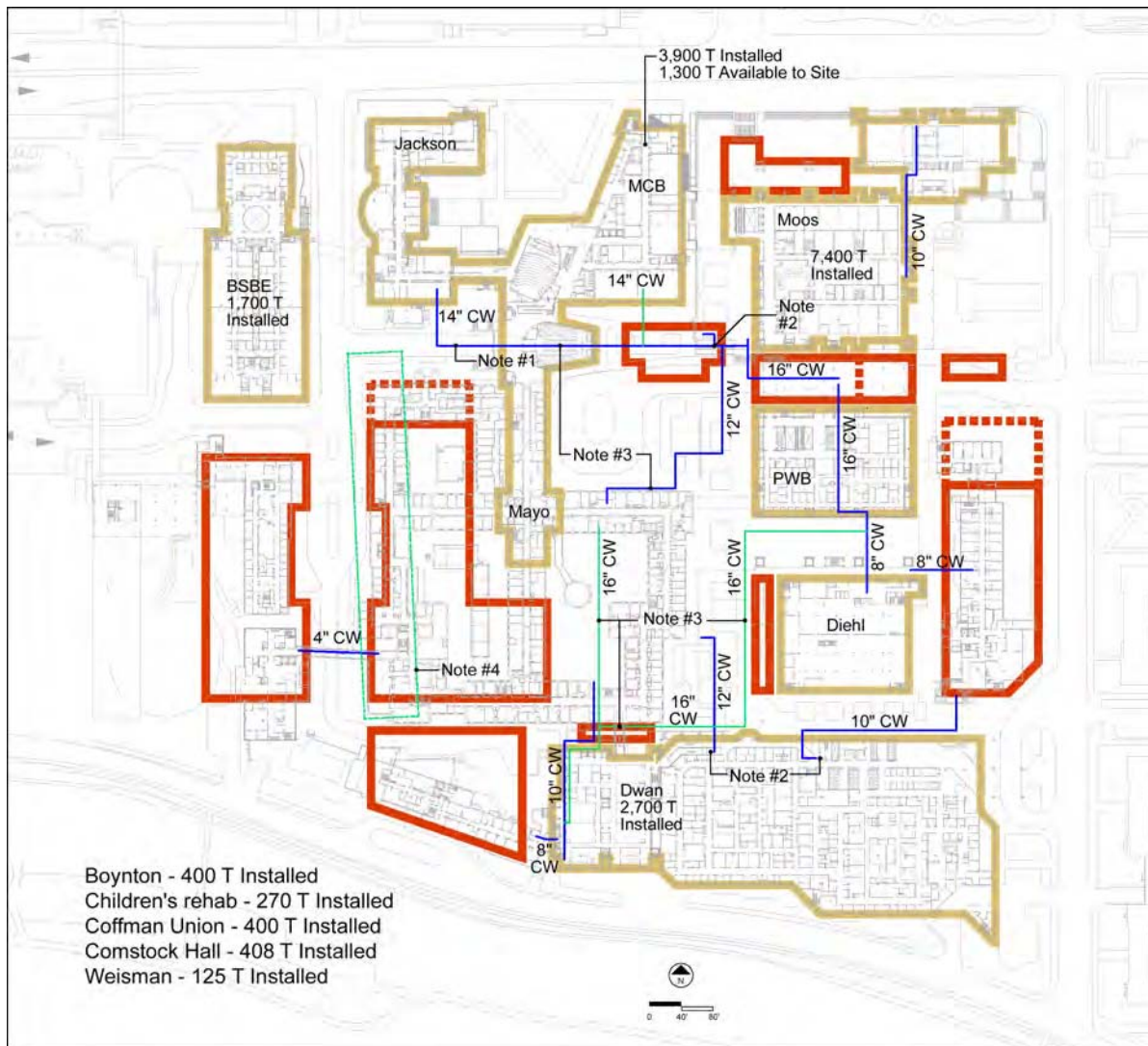
Demolition of the Mayo Building and Garage will impact distribution piping used to interconnect the chiller plants. Existing chilled water piping in the Mayo Garage will connect Moos, MCBB, Jackson and Mayo. A natural route to provide future service to Boynton, Basic Sciences, the new AHC facility buildings would be on the west side of the AHC facility buildings, extending south to Dwan. A currently planned distribution pipe route between Moos Tower and Dwan is through an existing underground

tunnel, and would complete the district cooling loop.

Recommendations

The current Chilled Water Master Plan must be integrated into the AHC District Planning effort. The primary consideration is to determine a workable route for distribution piping. Other components of planning include confirmation of district cooling loads, connection of Basic Science to the AHC Cooling District and coordinating scheduling.

Chilled Water Distribution



LEGEND

- Existing Building
- Proposed Building
- Existing Distribution Duct Bank
- Planned Upgrade Service in 2002

NOTES

1. Line needs to be upsized to connect to Boynton and BSBE in the future
2. Valved off, not available
3. Piping Impacted by Mayo demolition
4. Potential utility corridor for AHC development

Boynton - 400 T Installed
 Children's rehab - 270 T Installed
 Coffman Union - 400 T Installed
 Comstock Hall - 408 T Installed
 Weisman - 125 T Installed

Electrical

Existing System Description

The Academic Health Center District is electrically served from the Fulton Switch Station located at Fulton Street and East River Road. Future Academic Health Center District development must also be served via the Fulton switching and electric distribution system.

Electrical power at the 13.8 kV level is distributed throughout the present Academic Health Center District, from the Fulton Street sub-station via primary feeder systems installed in underground duct banks and manholes. Each major building or building complex in the Academic Health Center District has one or more electrical substations. These substations transform the 13.8 kV primary electrical power to levels for utilization in the buildings.

Primary electric feeders from the Fulton Switch Station serve the Academic Health Center District. There are three east – west and two north – south duct bank/feeder routings through or around the Academic Health Center District.

These routes are: Washington Avenue, Delaware Street, East River Road, Harvard Street, and Church Street respectively.

Impact of Development on Existing Infrastructure

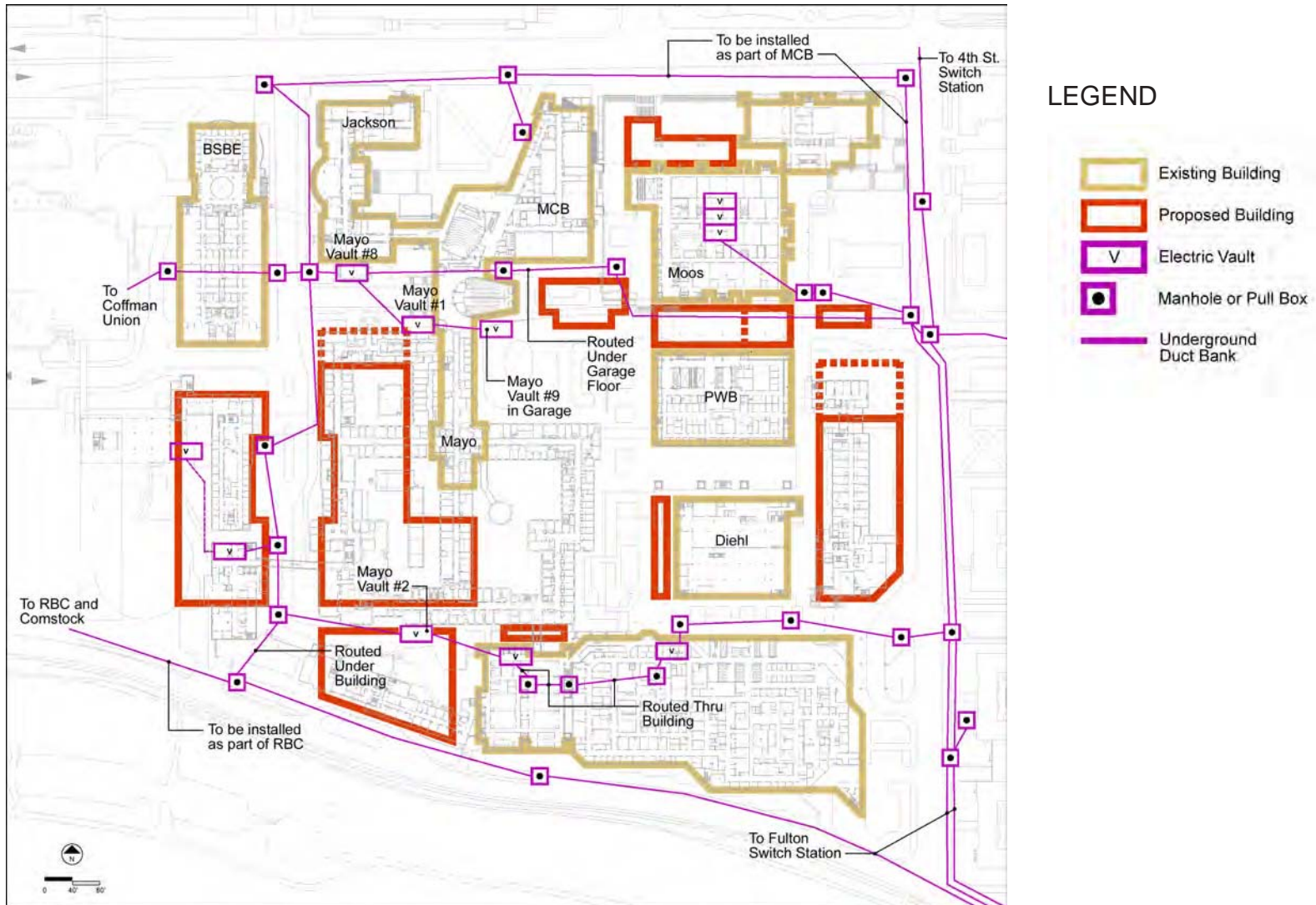
At present, all of the buildings impacted by the proposed Academic Health Center District improvements are served by the Delaware Street duct bank/feeder. This duct bank includes duct installed under the Mayo Garage floor. This routing is in an area scheduled for demolition in the early stages of the Academic Health Center District development.

The Mayo Building contains several substations that serve various areas of the building. The primary feeders that serve VCRC and Unit K/E are also routed through portions of the Mayo Building. It is likely the primary service to some of the Mayo substations, VCRC, and Unit K/E will have to be re-routed to accommodate the proposed Academic Health Center District construction sequence.

The Fulton primary electrical distribution system outside of the Mayo Building will also have to be re-configured to accommodate the Academic Health Center District construction sequence.

The majority of the duct bank needed for the future Academic Health Center District development is in place. The primary electric distribution system will need to be re-configured to provide service at the new district development service points.

Electrical Distribution



Steam

Existing System Description

Steam is supplied to the Minneapolis Campus by the Southeast Plant, located just below the Lower St. Anthony Falls. The Southeast Plant provides all of the Minneapolis Campus steam supply.

The steam and condensate distribution system consists of a complex piping grid routed in deep tunnels from the steam plant to the Minneapolis Campus. Steam is distributed at 200 PSIG. The steam pressure is reduced in several tunnel locations and piped to the campus buildings at approximately 125 PSIG. The buildings in the Academic Health Center District are connected to the steam and condensate piping grids in several locations, as shown in the attached drawings, via vertical shafts. Some of the shafts run directly between the deep tunnels and the buildings. Other shafts run between the deep tunnels and shallow tunnels, which connect to buildings.

Impact of Academic Health Center Development on Existing Infrastructure

Current planning for the Academic Health Center calls for a net increase in building floor space on the order of 300,000 s.f. Taking into account the presumption that the new floor space will experience greater ventilation rates, the increase in campus steam load is anticipated to be approximately 30,000 PPH. This area of the campus is already experiencing steam and condensate problems. These upgrades will also affect areas of the system outside of the Academic Health Center.

In order to preserve the reliability of the campus steam distribution system, it is likely that major upgrades to the steam distribution system will be required. It is probable the high pressure steam (200PSIG) distribution system capacity will need to be upgraded either by increasing distribution pressure or by piping additions.

The 125 PSIG steam distribution system will need to be upgraded through the addition of pressure reducing stations and distribution piping to handle increased local loads.

The need to expand the steam distribution capacity on the Minneapolis Campus becomes immediate, depending on development of other major projects outside the Academic Health Center District. Further load increases will require a more detailed assessment of steam line and plant capacity.

Steam Distribution



LEGEND

-  Existing Building
-  Proposed Building
-  Steam Shaft from Deep Tunnel

Portal & Mined Space Development

Potential Use of Mined Space

The Minneapolis campus at the University of Minnesota has a unique geology that permits the development of tunnels and mined caverns in the St. Peter Sandstone at a depth of 60 to 90 feet below the surface. Since the 1890s, a network of utility tunnels has been developed at this level servicing all buildings on the campus. The potential use of this space for other purposes was incorporated into the University Long Range Plan in the 1980s and again in the 1990s. The following benefits of mined space have been recognized by the planners and University administrators:

1. Surface land can be preserved for educational and other uses. The ability to keep the academic buildings, people, and activities in a more concentrated central area helps give life and vitality of the campus
2. Massive spaces such as research laboratories, parking, service docks, and storage can be placed out of sight but remain in the center of the campus where they are most convenient.
3. Mined space can be easily expanded as needed with minimal disruption to the surface environment.
4. There is sufficient space available to house extensive development, and park thousands of cars with direct elevator connections to buildings above.

The Civil Engineering Building utilizes deep mined space for laboratories and offices, and the new Library Access Center on the West Bank makes extensive use of mined space for storage and provides a portal access for future mined space expansion beneath West Bank facilities. Below grade expansion space in the AHC for research activities including University / Industry partnerships in close proximity to the campus is a viable option. Mined space also can serve as an

underground service network to the buildings above with roads and loading docks located beneath existing and new buildings. The ability to take advantage of all these uses is contingent on providing a good portal access off of East River Road.

Portal Access The Key to Mined Space Development

Vehicular access to mined space on the East Bank must occur through a portal to the south that leads to East River Road. In order to maximize building sites within the AHC District, the portal design may be integrated into the base of any new building. Access through a portal in the river bluffs below the AHC is technically possible. The Park Board could make this portal available for temporary construction access.

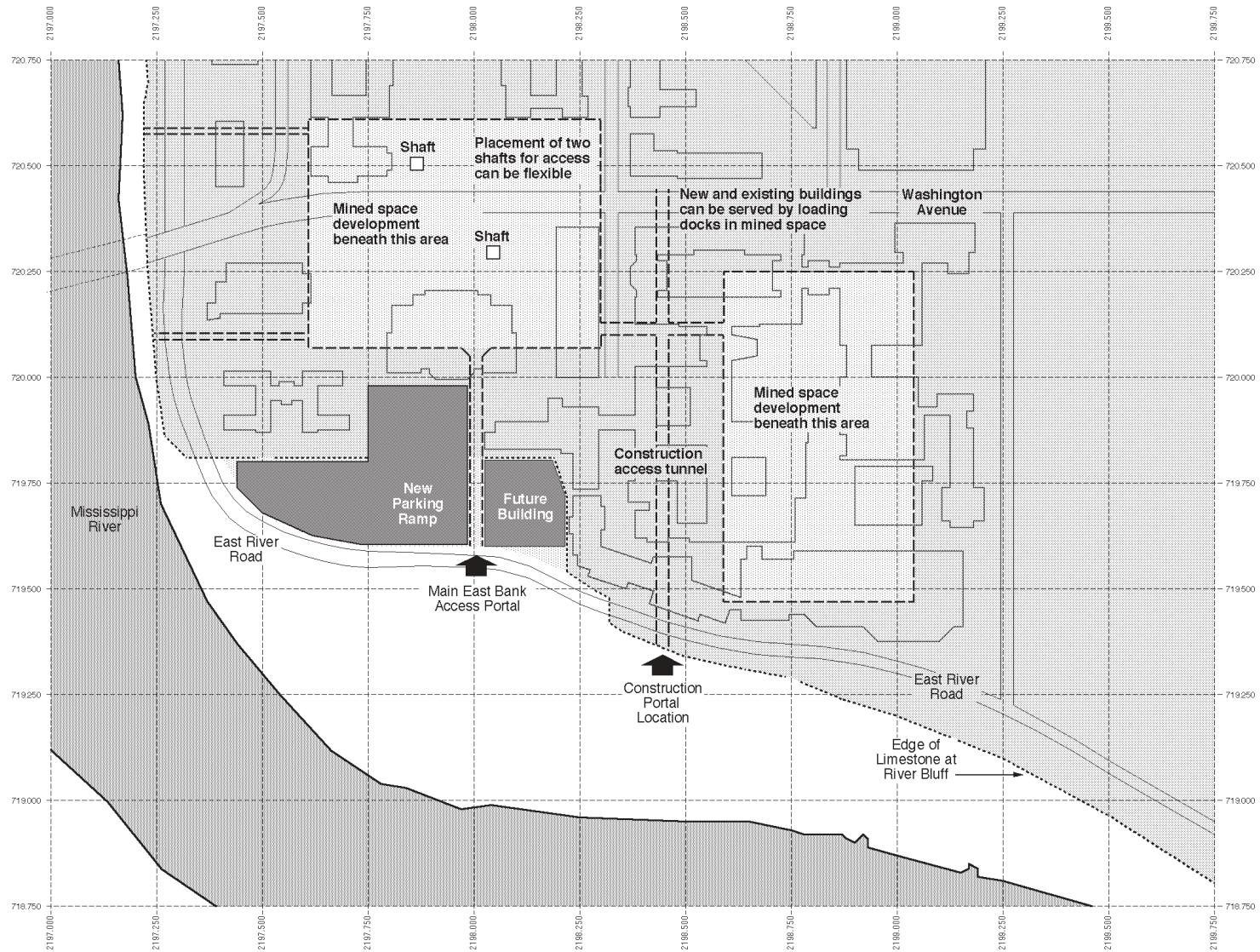
Relation to the Master Plan

Preserving access to and using mined space on the University of Minnesota Campus is part of the 1996 Twin Cities Campus Master Plan as indicated below.

“Deep space, the unique geological features on the Minneapolis Campus, is potentially an important resource and has the long term potential to efficiently meet service parking and storage needs and make the most efficient use of existing land holdings. The intent of the Master Plan is to ensure that use of deep space is considered when appropriate projects arise.”

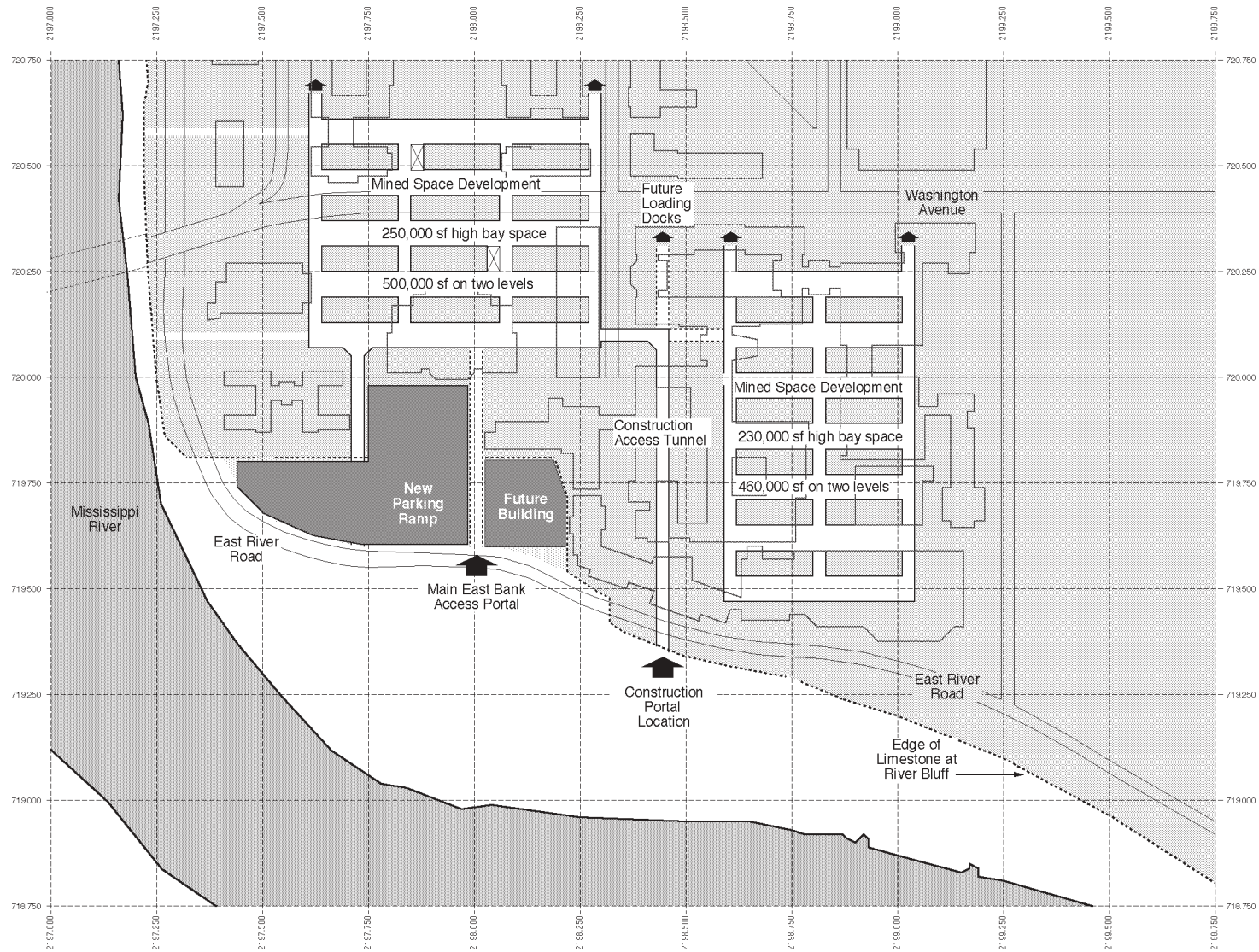
In the Precinct Guidelines for the Mississippi River Corridor, the Master Plan states:

“Portals to mined space should be preserved. (Section 21.11, Master Plan, page 132).” On the map of the Mississippi River Corridor precinct (Master Plan, page 133), a mined space portal is shown along East River Road.

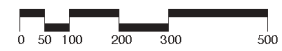


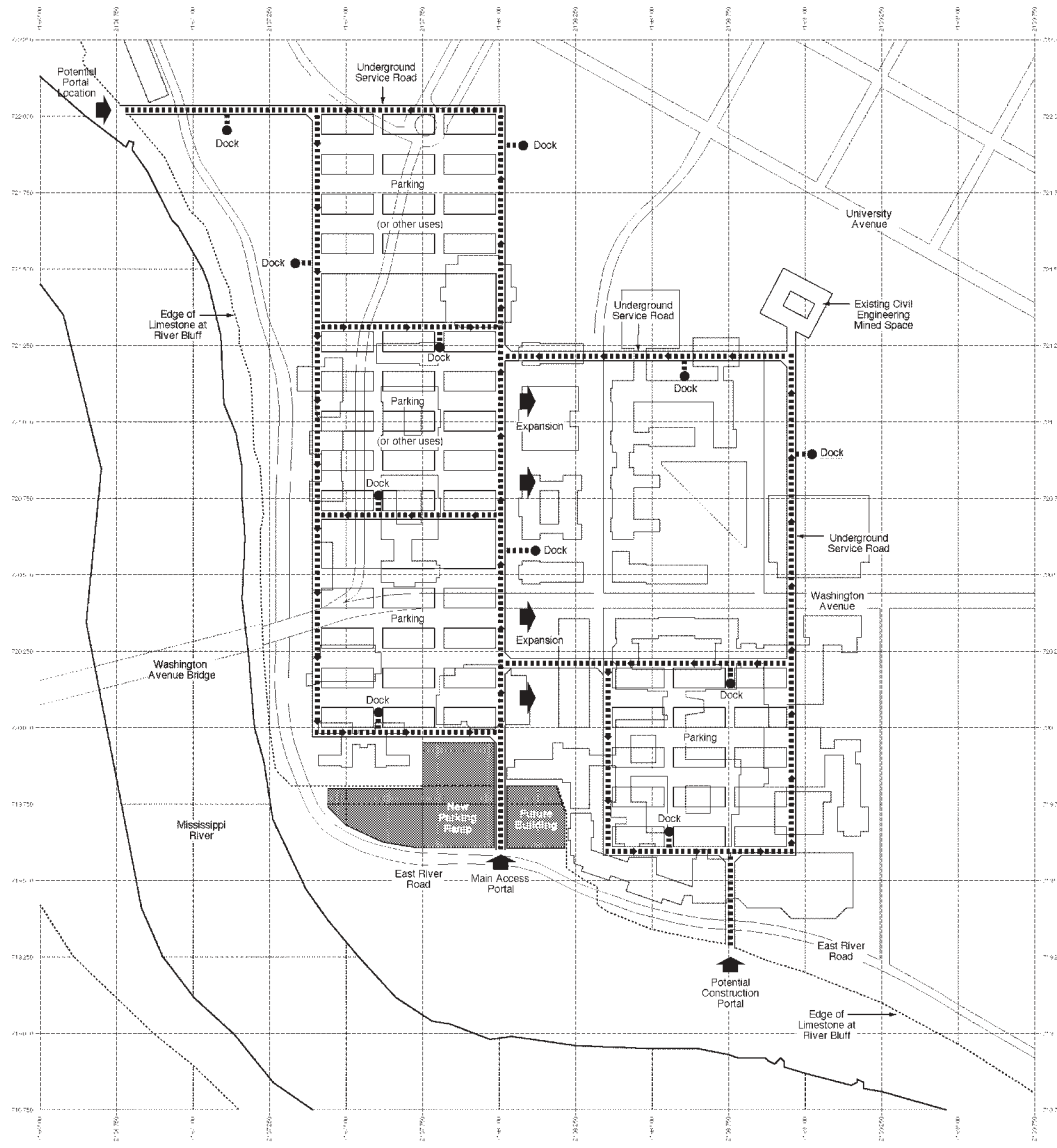
Ground Level Plan—Portal and Mined Space Development
 East Bank—University of Minnesota
 Prepared by John Carmody and CNA Consulting Engineers
 Revised: January 24, 2000



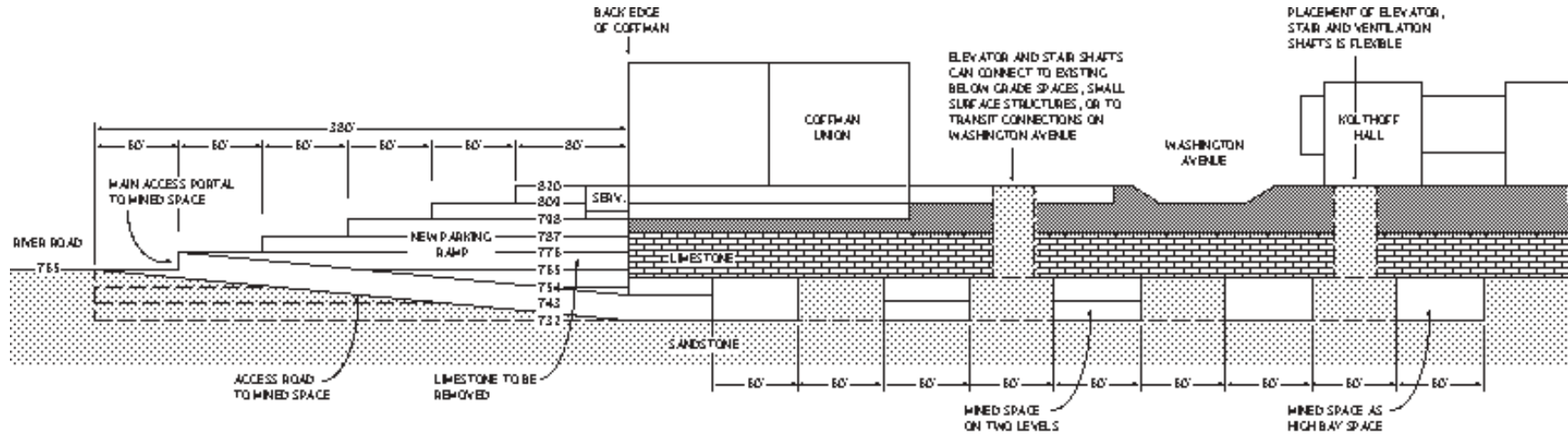


Mined Level Plan—Portal and Mined Space Development
 East Bank—University of Minnesota
 Prepared by John Carmody and CNA Consulting Engineers
 Revised: January 24, 2000

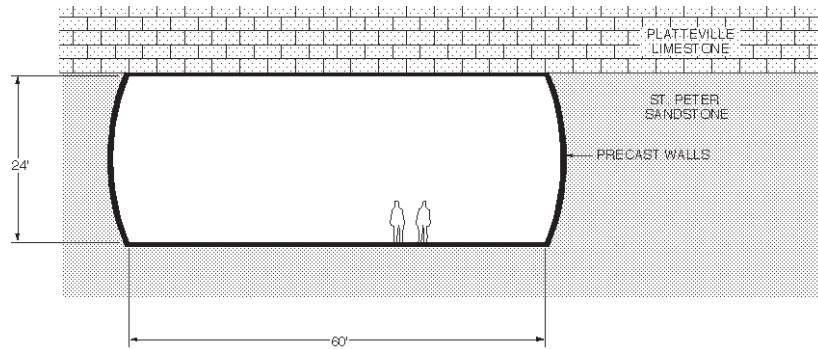




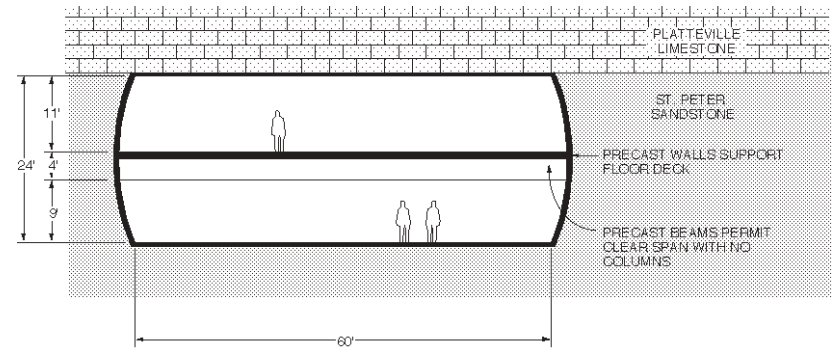
Portal and Mined Space Development Potential
 University of Minnesota — East Bank Campus
 Prepared by CNA Engineers and John Carmody
 Revised: January 24, 2000



Section — Portal and Mined Space Development
 East Bank — University of Minnesota
 Prepared by John Carnody and CNA Consulting Engineers
 Revised: January 24, 2000



Section — Mined Space as High Bay Space
 East Bank — University of Minnesota
 Prepared by John Carnody and CNA Consulting Engineers
 Revised: January 24, 2000



Section — Mined Space on Two Levels
 East Bank — University of Minnesota
 Prepared by John Carnody and CNA Consulting Engineers
 Revised: January 24, 2000