

UNIVERSITY OF MINNESOTA

BOARD OF REGENTS

Facilities Committee

Thursday, February 12, 2009

1:15 – 3:15 p.m.

600 McNamara Alumni Center, West Committee Room

Committee Members

David Metzen, Chair
Dallas Bohnsack, Vice Chair
Anthony Baraga
Maureen Ramirez
David Larson
Patricia Simmons

Student Representatives

Erick Elgin
Emma Olson

A G E N D A

1. Resolution Related to the Campus Master Plan for the University of Minnesota Rochester - Action - S. Lehmkuhle/K. O'Brien (pp. 2-58)
2. Twin Cities Campus Master Plan - Review - K. O'Brien/J. Martin/O. Miller/L. Krueger/M. MacKenzie (pp. 59-152)
3. Capital Budget Amendment - Review/Action - K. O'Brien/S. Cawley (pp. 153-157)
 - A. West Bank Office Building Data Center
4. Capital Budget Amendment - Review - K. O'Brien (pp. 158-161)
 - A. Walter Library Supercomputer Cooling & Power Increase Project
5. Energy & Utilities: Principles & Progress Update - K. O'Brien/M. Berthelsen/J. Malmquist (p. 162)
6. Consent Report - Review/Action - K. O'Brien (p. 163)
7. Information Items - K. O'Brien (pp. 164-173) REVISED



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS**

Board of Regents

February 12, 2009

Agenda Item: Resolution Related to the Campus Master for the University of Minnesota Rochester

review review/action action discussion

Presenters: Chancellor Stephen Lehmkuhle
Vice President Kathleen O'Brien

Purpose:

policy background/context oversight strategic positioning

The campus master plan for the University of Minnesota Rochester (UMR) establishes an educational and research framework, analyzes expected space requirements and operating costs, outlines necessary partnerships, and determines the requirements for a downtown site that is capable of expanding to 1,500 students in the short-term and ultimately to 5,000 students.

Outline of Key Points/Policy Issues:

The vision of UMR recognizes that higher education and research will be central to Minnesota's future, and that medicine, biology, and technology will dominate the country's research agenda for the foreseeable future. As competing demands for public funds increase, higher education must find ways to address its needs at reduced cost. The plan for UMR is partnership-driven, cost effective, and designed to support economic growth in the region. The City of Rochester offers the unique synergy of three of the world's great names in education, medicine, and technology -- U of M, Mayo Clinic Rochester, and IBM -- to achieve this vision.

Key findings of the master planning process are:

- There is agreement among leadership at U of M, Mayo Clinic Rochester, and the City of Rochester as to the mission, vision, size, and general location.
- The proposed focus on health-related signature programs supports the stakeholders' vision for UMR.
- The proposed pedagogy at UMR represents a distinct new national model for higher education.
- Anticipated university, state, and city funding will be insufficient to support initial capital development of UMR campus. Development partnerships with public and private entities and the City of Rochester will be essential.
- Mayo Clinic Rochester and the U of M can enhance their individual and collective capabilities through enhanced coordination and collaboration.

- UMR is excellently positioned to represent the U of M in developing academic and research interests with the objective of enhanced U of M-Mayo partnerships.
- A downtown location for UMR is imperative because it represents commitment to partnerships. A distributed model of campus design will concentrate academic activity close to Mayo Clinic and provide opportunity for less-critical adjacencies to occur in proximity to the academic core.

Background Information:

In 1993, the Board of Regents adopted the following principles to guide the preparation and implementation of campus master plans:

- Create and maintain a distinctive and aspiring vision for the physical development of each campus
- Enrich the experience of all who come to the campus
- Maintain the value of existing physical assets while responding to emerging/changing physical needs
- Ensure an inclusive, accountable, and timely process for creating and implementing the master plan vision

In spring 2007, the University convened a steering committee composed of University faculty and staff, the City of Rochester, Mayo Clinic Rochester, and other civic stakeholders to develop a master plan for UMR. Since UMR is a new campus, this campus master plan departs from the typical physically-oriented plan, focusing instead on integrating an innovative academic program structure into a new model for future campus development that is dependent upon public-private partnerships.

The draft plan was reviewed at the December 2008 Facilities Committee. No substantive changes have been made since this review.

President's Recommendation for Action:

The President recommends that the Board approve the Resolution related to the Master Plan for the University of Minnesota Rochester.



REGENTS OF THE UNIVERSITY OF MINNESOTA

RESOLUTION RELATED TO THE CAMPUS MASTER PLAN FOR THE UNIVERSITY OF MINNESOTA ROCHESTER

WHEREAS, in 1993, the Board of Regents adopted the following four campus master planning principles to direct the development of campus master plans on each of the University of Minnesota campuses:

The principle of creating and maintaining a distinctive and aspiring vision for the physical development of each campus;

The principle of enriching the experience of all who come to the campus;

The principle of maximizing the value of existing physical assets while responding to emerging/changing physical needs;

The principle of an inclusive, accountable, and timely process for creating and implementing the master plan vision; and

WHEREAS, in spring 2007, the University convened a steering committee composed of University faculty and staff, the City of Rochester, Mayo Clinic Rochester, and other civic stakeholders to develop a master plan for UMR; and

WHEREAS, since UMR is a new campus, this campus master plan departs from the typical physically-oriented plan, focusing instead on integrating an innovative academic program structure into a new model for future campus development that is dependent upon public-private partnerships; and

WHEREAS, the vision of UMR recognizes that higher education and research will be central to Minnesota's future, and that medicine, biology, and technology will dominate the country's research agenda for the foreseeable future; and

WHEREAS, there is agreement among leadership at U of M, Mayo Clinic Rochester, and the City of Rochester as to the mission, vision, size, and general location; and

WHEREAS, the administration from the University of Minnesota Rochester campus has recommended the adoption of this Master Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Board of Regents directs that the University of Minnesota Rochester Campus Master Plan be used to support the University's academic mission and guide future land use and capital project decisions in accordance with the four planning principles.



UNIVERSITY OF MINNESOTA ROCHESTER

Master Plan Report DRAFT | February 2009

S A S A K I

February 2, 2009

Sasaki Associates

Oliver & Associates, Inc

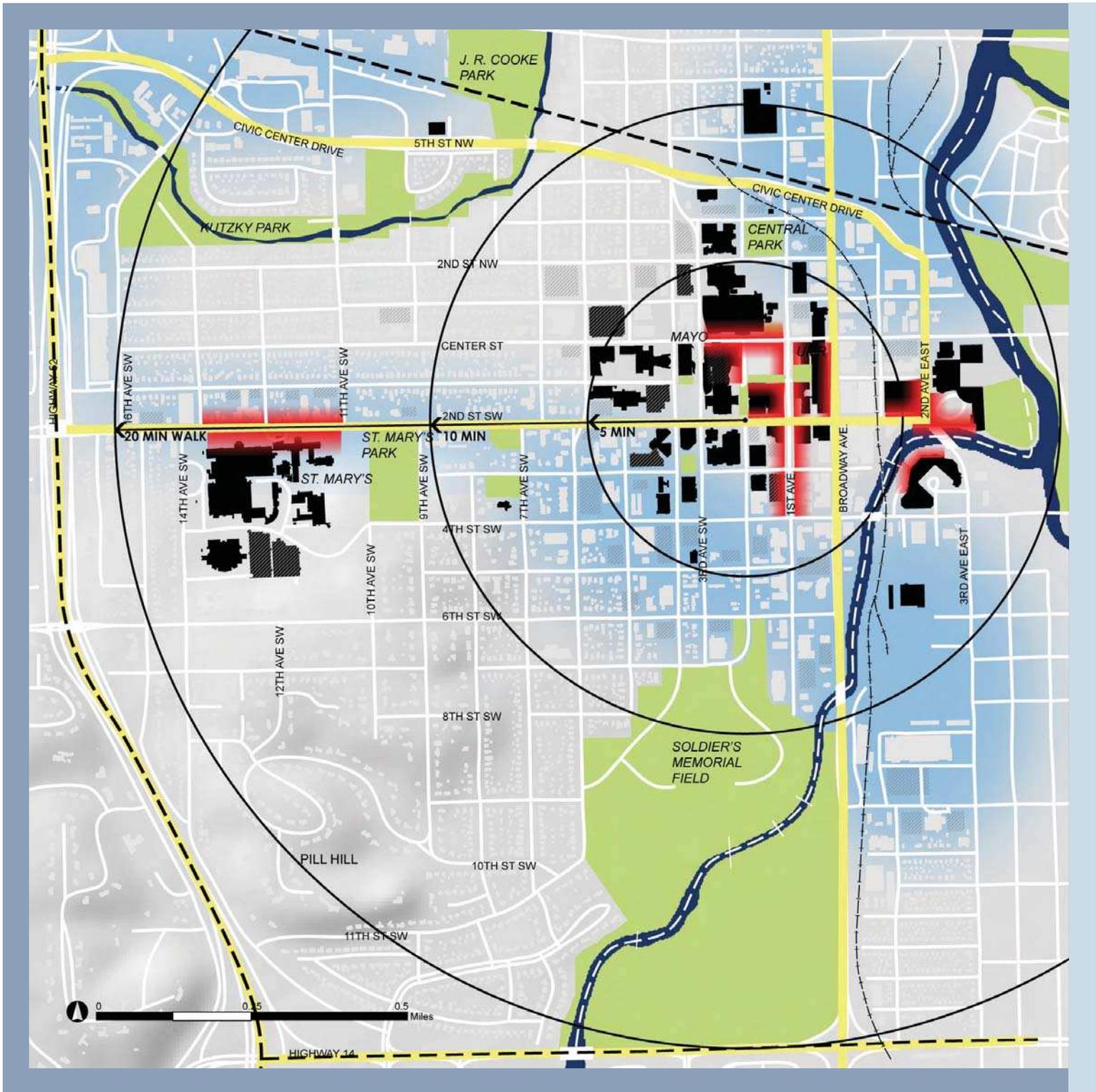
RSP Architects

Bryan D. McSweeney

Development Strategies

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EXECUTIVE SUMMARY

The vision that motivates creation of the University of Minnesota Rochester (UMR) is the University of Minnesota's (U of M) goal of becoming one of the top three public research institutions in the world. This vision recognizes that higher education and research will be central to Minnesota's future, and that medicine, biology, and technology will dominate the country's research agenda for the foreseeable future. Establishment of the University of Minnesota Rochester (UMR) also addresses a long-felt need for a University of Minnesota (U of M) presence in the City and creates a variety of unique opportunities for the Mayo Clinic Rochester, the University of Minnesota (U of M), the State of Minnesota, and the City of Rochester.

The City of Rochester offers the unique synergy of three of the world's great names in education, medicine, and technology: U of M, Mayo Clinic Rochester, and IBM. UMR will become an entrepreneurial bridge between U of M and the larger partnership potential of the private sector, particularly Mayo Clinic Rochester and IBM.

Creation of UMR is undertaken with the conviction that for American higher education to continue to lead the world, it must adapt to changing realities. Higher education can no longer stand apart, but must be collaborative and partnership-driven; walls between the academic sector and the private sector must be pulled down. If the ideas that will fuel the future come from building bridges between work, research, and education, then UMR cannot rely on the organization of a traditional university; the rhetoric of cross-disciplinary collaboration must be supported by new forms of education and new structures for research. As competing demands on public funds become more clamorous, higher education must find ways to address these new demands while reducing cost. The plan for UMR

is partnership-driven, cost-effective, and designed to support economic growth in the region.

Finally, the vision for UMR recognizes that cities and their institutions are increasingly co-dependent. The revitalization of downtown Rochester, resulting from the University's presence, will in turn accelerate the success of UMR. This document confirms the appropriateness of the planned aca-

Rochester offers the unique synergy of three of the world's greatest names: the University of Minnesota, Mayo Clinic, and IBM.

dem focus at UMR to the economy of the City of Rochester and the State of Minnesota, and documents the anticipated positive direct and indirect economic impact of UMR on the regional and local economy.

The master plan for UMR establishes an educational and research framework, analyzes expected operating costs and space requirements, outlines necessary partnerships, and determines the requirements for a downtown site, capable of expanding to 1,500 students in the short-term and ultimately to 5,000 students. UMR Programs will complement the strengths offered by its partner institutions. It will also allow the university to quickly develop a national reputation for specialized and innovative programs in an area of high demand – health sciences. Post-baccalaureate programs will be similarly focused and will include a new U of M offering, the

Biomedical Informatics and Computational Biology Program. This strategy has the added benefit of positioning UMR as host to programs that supplement, rather than compete with other institutions in the U of M system.

The structure of UMR will offer a unique and cost-effective system of pedagogy, based on current research on learning. Faculty knowledge in particular fields will be supplemented by expertise in learning and course development. A highly focused curriculum for students contemplating a broad range of careers in the health sciences and professions will provide students with a broad multi-disciplinary exposure, giving them a more holistic understanding of the context for the health professions while using project-based learning to ensure real mastery of core skills and knowledge. Larger lectures will be balanced by individual and group study. This foundation will be followed by specialized work in a chosen field, including practical experience and internships, along with focused learning and research. A collaborative and self-reliant approach will be emphasized throughout. The approach developed in the initial pilot program in the health sciences will be generalized to other areas, and additional modules of this kind are contemplated. A detailed cost model developed to support this study indicates the cost effectiveness of the structure.

At the post-baccalaureate level, UMR will function as a catalyst

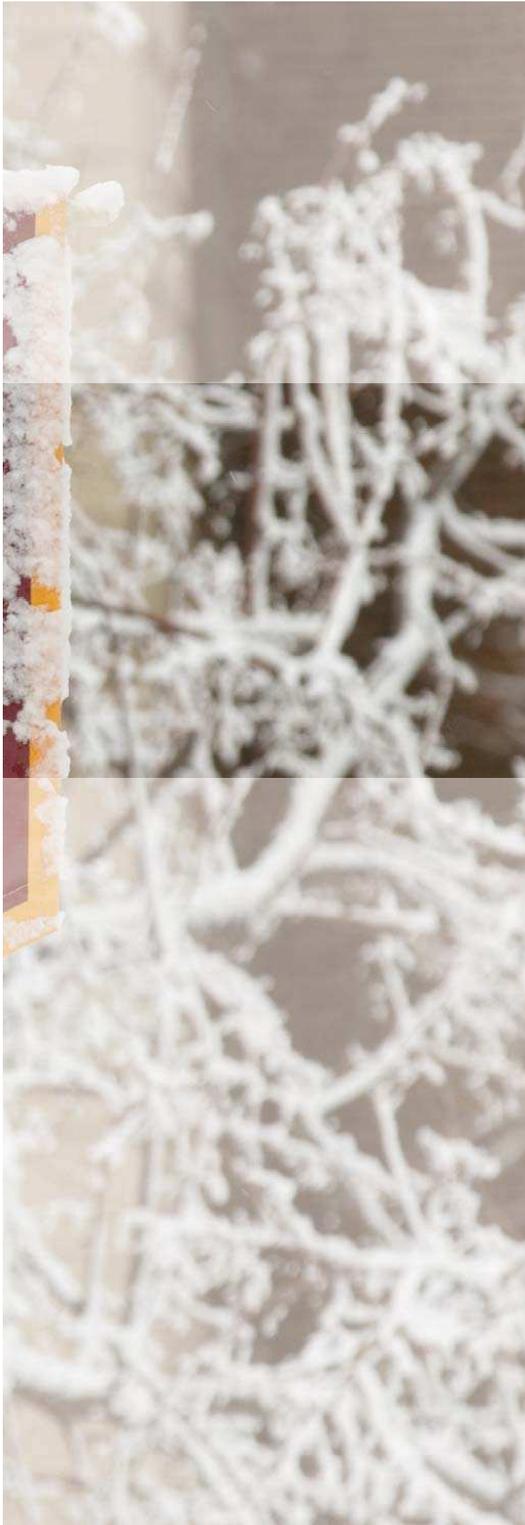
for collaboration across many institutions, while incurring minimal local cost. UMR will host cross-disciplinary symposia and conferences, and will in time develop professional continuing education programs, with the goal of attracting national and international participation, while generating additional revenue.

While a specific site has not been proposed, the report concludes that a downtown location proximate to Mayo Clinic Rochester is essential, as distinct from a more traditional suburban campus, which would be less able to capitalize on synergies with Mayo Clinic Rochester. Both capital financing and land assembly constraints indicate that while the core of UMR's academic activity will be concentrated and relatively dense, support services, such as residential facilities, can be more distributed within the downtown area. The core of UMR will require the assembly of between four and five city blocks. Siting alternatives for UMR will be explored in the next phase of planning.

This document is a record of the process and direction for development of UMR. Among its key findings are:

- 1** There is agreement among leadership at U of M, Mayo Clinic Rochester, and the City of Rochester as to UMR's mission, vision, size, and general location.
- 2** The proposed focus on health-related signature programs supports the stakeholders' vision for UMR and is responsive to state, local and national growth trends and workforce demands.
- 3** The proposed pedagogy at UMR represents a distinct new national model for higher education.
- 4** Anticipated university, state, and city funding will be insufficient to support initial capital development of UMR campus. Development partnerships with public and private entities and the City of Rochester will be essential and can be structured to benefit all parties.
- 5** Mayo Clinic Rochester and U of M, as the state's leaders in bioscience research, can greatly enhance their individual and collective capabilities through enhanced coordination and collaboration.
- 6** UMR is excellently positioned to represent U of M in developing academic and research interests with the objective of enhanced U of M-Mayo Clinic Rochester partnership.
- 7** A downtown location for UMR is an imperative as it represents the commitment to partnership that gave birth to this development. A distributed model of campus design will concentrate academic activity close to Mayo Clinic Rochester and provide opportunity for less-critical adjacencies to occur in near proximity to this core. The campus form will be traditional, with building heights responsive to the urban character of the existing setting and the anticipated challenges of land assembly.
- 8** The City of Rochester is well-positioned to accommodate this new campus. It has the political will, adequate infrastructure, and under-developed land to host UMR campus.





LETTER FROM THE CHANCELLOR

I want to extend my appreciation to our partners who have helped shape the Master Planning document. Partnerships involving the City of Rochester, Olmsted County, Mayo Clinic, IBM, and Rochester community leaders gave birth to the new coordinate campus in Rochester, and these partnerships will nurture and grow the campus in the future.

Collectively, we have crafted a vision for a distinctive campus to be a pioneer in a new approach to higher education, delivering improved learning opportunities at lower cost, and capitalizing on mutually beneficial partnerships to strengthen the state's economy and enrich the city and region. I have the real sense that the planning process has deepened our collective commitment to take the next steps outlined in the report to build our future university.

I also want to extend a special thanks to our consultants, Sasaki Associates, Inc. Willa, Dan, Greg, Phil, and others played key roles assembling information, framing the discussions, and performing the analyses and due diligence that has resulted in this consensus report, which provides a framework for the next phase of planning for UMR.

Finally, I want to thank Vice President O'Brien and members of her team, Harvey and Orlyn, for being part of the journey. I would be overwhelmed if I traveled this road without their support.

Chancellor Stephen Lehmkuhle
November 2008

UMR MASTER PLANNING STEERING COMMITTEE

Kathleen O'Brien, Co-Chair
VP, University Services, University of Minnesota

Stephen Lehmkuhle, Co-Chair
Chancellor, U of M Rochester

Ardell Brede
Mayor, City of Rochester

Dr. John Huston III
Mayo Clinic

Doug Holtan
Mayo Clinic

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BUY Rochester, Chamber of Commerce

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Commissioner, Olmsted County

Mark Utz
RAEDI

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Vice Provost, Distance Education & Instructional Technology
University of Minnesota

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Sue Weinberg
Director, Real Estate, University of Minnesota





INTRODUCTION

Rochester is Minnesota's third largest city and is home to leading medical and technology institutions, including Mayo Clinic and one of IBM's largest development facilities. City of Rochester municipal and business leaders have long advocated for a strong U of M presence in Rochester. Their position is that U of M, whose campus was moved to the outskirts of the city in 1993 in collaboration with Rochester Community and Technical College and Winona State University at University Center Rochester, could contribute far more to the quality of life and economic vibrancy of Rochester.

Governor Pawlenty used his 2005 State of the Senate address to indicate his concurrence and, in May, 2005, the Minnesota Legislature signed the Omnibus Higher Education Act, which included \$3.2 million to study Rochester's higher education needs. The Governor then formed the eleven-person Rochester Higher Education Development Committee (RHEDC), and charged this group to recommend an approach to higher education for UMR to leverage resources of the southeast Minnesota region. In their January, 2006 report, this group described a campus that would offer signature academic and research programs that lead to appealing occupational opportunities and contribute to the state's healthcare and biotechnology industries. The RHEDC recommended study be offered in: biomedical informatics; computational biology; biomolecular engineering; computer gaming/simulation; nanotechnology; allied health; nursing, pharmacogenomics; pharmacotherapeutics; genomics; molecular biology, and business entrepreneurship, innovation and leadership. They called for \$3 million in initial funding with an additional \$16.3 million over the following three years. The legislature recognized the importance of ongoing support and authorized a recurring budget of \$6.3 million for UMR. Their model predicted that the campus would otherwise operate on traditional sources of financial support.

While RHEDC's effort to formulate the new identity for UMR was underway, U of M took action; the upper floors of the University Square shopping mall in downtown Rochester were renovated to become the site for an interim campus (Figure 1). While an unorthodox site for a university, its location—



UM twin cities campus

2 INTRODUCTION

immediately proximate to Mayo Clinic Rochester—symbolizes the university's intent and commitment to a partnership with Mayo Clinic Rochester.

Both the city and the state were quick to show their support for the new vision of UMR. As evidence, Rochester City Council voted unanimously to devote \$11.3 million in sales tax revenue to fund facility planning, land acquisition, and construction. The state demonstrated its commitment by appropriating \$16.3 million.

In July 2007, Dr. Stephen Lehmkuhle was named the first chancellor for UMR and, in September 2007, UMR opened for classes in University Square, offering more than thirty academic programs, including engineering, computer science, business, education, graphic design, public health, and social work. In addition, collaborative cross-disciplinary research projects for graduate students from University of Minnesota Twin Cities (UMTC), Mayo Clinic Rochester, and Hormel Institute were established under the umbrella of UMR. The accreditation process was initiated in the fall 2008 to allow the university to confer degrees through UMR. Full recruitment and admissions cycles are scheduled for fall 2009.

Consistent with recommendations of RHEDC, U of M and Mayo Clinic Rochester developed a Memorandum of Understanding (MOU) to guide future and mutually beneficial educational collaborations and to capitalize on partnership opportunities. The parties established common processes for communication and planning through the mechanism of the MOU's development. As a component, each institution pledged to identify the curriculum components it will pursue independently and those areas to pursue collectively. The MOU commits the two parties to the biosciences and health sciences as the trademark of their collaborative efforts.

The U of M initiated development of a master plan for a new Rochester campus. Memorialized in this document, it was undertaken as a collaborative process of approximately sixty

individuals representing Mayo Clinic Rochester, IBM, the City of Rochester, Olmsted County, and representatives of the city's business community. The process involved exploration of stakeholders' interests regarding UMR's mission and direction, of their opinions about potential partnerships, and of means to bring disparate goals and priorities into alignment. Through this process, the university and its stakeholders collectively developed enthusiasm for the group's shared vision, supported by common principles, a programmatic understanding, a campus model, site selection criteria, and a development framework.

A model was developed for the campus that describes the financial (both operating and capital) and space requirements generated by particular academic and research strategies. It was used throughout the master planning process to engage university leadership and project stakeholders in testing various pedagogical approaches with different levels of contact time and class size, varied enrollment levels and mixes for each year of enrollment. Other variables include incentives for national and international student contingents, student faculty ratios and staff levels, different program mixes and combinations of new signature programs and ongoing existing programs, and facility funding strategies, including potential partnerships with the city and other stakeholders such as Mayo Clinic Rochester.

The result of the master planning process is a plan for UMR that describes opportunities, strategic considerations, facilities requirements, principles for physical development of the campus, phasing, and financial structures to support U of M's goals. The plan maximizes opportunities for the new campus to be fully integrated into the life of the City of Rochester, and to draw from and contribute to its cultural and economic vitality. While a long-term site has not yet been identified, criteria for site selection set the stage for future phases of the master plan in which a location for the new campus will be selected and a phased physical plan for the campus will be detailed.



university square

*University
Structure,
Programs, &
Finance*

*Urban Context
Analysis,
Campus Form,
Siting and Land
Requirements*

*Opportunities for
Economic Growth*

This document establishes a record of the master plan, the growth strategy for UMR, and is organized into three sections:

1 University Structure, Programs, & Finance

The UMR master plan recommendations are supported by the development of a model that integrates programming and financial variables and is coordinated with U of M goals. After testing a variety of enrollment scenarios, the model calls for a near-term enrollment goal of 1,500 students in Rochester and an ultimate enrollment of 5,000 students. Programmatic and financial decisions embodied in the model support offerings in the health sciences arena through signature programs with a distinctive approach to learning. The model incorporates the goal of enhancing research partnerships with Mayo Clinic Rochester, IBM, and U of M system, and builds collaborative, inter-institutional research into UMR's long-term growth plan. These programs are designed using approaches to instruction and research organization that are cost-effective and resource-efficient.

2 Urban Context Analysis, Campus Form, Siting and Land Requirements

The master plan recommends that the university campus be sited downtown, proximate to Mayo Clinic Rochester and to

Rochester's Civic Center, the Zumbro River, and the central business district. This location positions UMR to leverage non-university growth in the downtown. The vision for UMR's campus is of a contiguous campus core that is home to essential academic and administrative activities supported by distributed activities such as housing, student services, and research. Thus, the campus size requirement is limited. An urban density of four- to eight-story buildings in combination with generous allocation of campus open space is recommended for the physical development of the core campus. To achieve this preferred design and density, four to five city blocks must be assembled to develop a campus core.

3 Opportunities for Economic Growth

A university presence in Rochester will bring significant benefits to both state and city economies by stimulating investment by government and the private sector. The University presence in Rochester will act as a catalyst for collaboration between the university and businesses relating to bioscience research and to enhanced commercialization activity within the State of Minnesota. It represents an opportunity for the state to better capture the economic development potentials of enhanced coordination of efforts of U of M, Mayo Clinic Rochester and IBM.



Goal I: Expand UM Educational Programs in the Health Sciences

Goal II: Enhance Partnerships in Research Built on the Strengths and Interests of the Mayo Clinic, IBM, and the UM System

Goal III: Offer Innovative and Cost-effective Approaches to Education and Research, Establishing UMR as a Progressive, Entrepreneurial Leader in the University of Minnesota System

Goal IV: Contribute to Economic Growth

UNIVERSITY STRUCTURE, PROGRAMS AND FINANCE

Specialized and distinctive programs will set UMR apart from comprehensive universities.

Planning for UMR relies on development of a comprehensive model that integrates academic, research, financial, and physical considerations. The plan has to be financially viable, and must meet the expectations of U of M, Mayo Clinic Rochester, and the City of Rochester. Extensive testing of the model created a profile for UMR that positions it to meet its goals, as described below.

GOAL I: EXPAND UNIVERSITY OF MINNESOTA EDUCATIONAL PROGRAMS IN THE HEALTH SCIENCES

Undergraduate and Masters Programs

UMR campus will occupy a special place in U of M system, with a strong commitment to academic excellence and a unique approach to higher education that will attract national and international attention. Chancellor Stephen Lehmkuhle in collaboration with Vice Chancellor for Academic Affairs Claudia Neuhauser, led their colleagues in developing a unique academic vision for UMR.

The vision proposes signature program offerings centered on the health sciences. The programs will be unique in structure and curriculum, and will harness innovative pedagogies to produce graduates able to contribute to a wide variety of health science professions. UMR will become a pioneer and a model for innovation in teaching, learning and supporting

technologies, adding marked value to the academic offerings and reputation of U of M within the state, nationally, and internationally.

The initial signature program is a Bachelor of Science in the Health Sciences (BSHS), which is taught using a shared curriculum model of core modules in:

- social sciences humanities (international perspectives, sociology, psychology, language, history, etc.),
- sciences (biology, chemistry, physics, etc.),
- math (algebra, calculus, statistics, etc.), and
- communications and management (administration, management, composition, speech, economics, etc.).

UMR—An inventive approach to graduate education in fields that are inherently cross-disciplinary.

These base modules prepare students for health science modules including anatomy, bioethics, biochemistry, epidemiology, genetics, medical terminology, physiology, pharmacology, microbiology, clinical research, and public health. The degree will then be completed with a capstone experience tailored toward the anticipated career trajectory of each student. Students pursuing a health professional career such as cytogenetic technology, respiratory care, or radiography will focus on clinical core content and clinical rotations. Those students intending to enter health graduate professions, such as dental or medical school, physical therapy or pharmacy programs, or life science or health science graduate programs, will participate in directed research, and study research methodology, statistics, cellular biology and molecular biology. The

final capstone will be an accelerated (3+2) masters program, such as occupational therapy, health journalism, public health or bio-informatics and computational biology.

Additional signature programs will be added to offer greater specialization and flexibility. While the health sciences program will remain the biggest program, degrees will also be offered in:

- Health, Informatics & Technology,
- Business, Entrepreneurship, Health Care Administration and Policy,
- Human Development,
- Health Communications and Journalism.

UMR's existing programs will continue in place, and may be expanded. These include undergraduate studies in nursing and fine arts and masters programs, in professional and continuing education. These programs are generally sponsored by other institutions, and are thought of as "partnership programs".

Doctoral Programs

While cross-disciplinary, collaborative research is endorsed by most universities, the great majority of graduate degree programs remains discipline-specific and reward the individual graduate student's work rather than collaborative efforts. UMR will develop a different model, with the added component of cross-institutional integration. Graduate education of this type will be supported by incentives for faculty and other professionals to develop cross-disciplinary, cross-institutional research initiatives, providing the research basis for the doctoral programs.(All Ph. D. degrees will still be conferred by UMTC, as is true throughout the U of M system.)

A pilot signature graduate program for this cross-disciplinary model, Biomedical Informatics and Computational Biology

(BICB), was recently initiated at U of M. Contemplated to be a model for future signature graduate programs, in its pilot form this program tests an inventive approach to resource use and graduate education delivery in fields that are inherently cross-disciplinary, and for which the demand for new research activity is significant. The combined resources (academic, medical, and technological) of Rochester and the Twin Cities offer a unique opportunity to exploit all of the state's best resources in realizing this program's objectives.

BICB was conceived of by a multi-disciplinary academic committee, which drew membership from numerous university departments, Mayo Clinic Rochester, Hormel Institute, and IBM's leaders in software development. The committee was chaired by Vice Chancellor for Academic Affairs Claudia Neuhauser, with contributing support from Chancellor Stephen Lehmkuhle. The program, launched in 2008, is an interdisciplinary, graduate program for all U of M campuses that employs faculty from a network of partners, including U of M, Hormel Institute, Mayo Clinic Rochester, and IBM. At U of M, participating departments include Biochemistry, Molecular Biology and Biophysics, Biostatistics, Chemistry, Chemical Engineering and Materials Science, Computer Science and Engineering, Ecology, Evolution and Behavior, Electrical and Computer Engineering, Genetics, Cell Biology and Development, Linguistics, Psychiatry, Psychology, and the Supercomputing Institute.

BICB-related research focuses on development and applications of computational methods and offers internships in industry or laboratories designed to prepare students for an interdisciplinary and collaborative work environment. The program involves a two-year trainee program that immerses students in a research experience driven by co-advisors from U of M, Mayo Clinic Rochester, IBM, Hormel Institute, and other institutions.

The program involves graduate students from the life and health sciences, physical and chemical sciences, and engi-

neering, creating a diverse mixture of traditional graduate students, Ph.D. students enrolled in Mayo Clinic Rochester graduate program, and full-time employees from IBM and other area industries pursuing advanced degrees at U of M. In addition, the program offers business leadership and technology management training. Modular and evening courses are contemplated to provide for the needs of non-traditional students.

The BICB program organization relies on a number of creative strategies that efficiently use existing resources and technology; planning for other UMR signature graduate programs is expected to incorporate similar approaches. The graduate program combines current courses at UMTC and Mayo Clinic Rochester with new courses to establish a comprehensive curriculum in biomedical informatics and computational biology. The program allows UMR students to take courses at Mayo Clinic Rochester and enables graduate students pursuing a degree from Mayo Clinic Rochester to take courses in biomedical informatics and computational biology through U of M.

Seed money is in place to stimulate the formation of interdisciplinary, inter-institutional collaborative research projects in BICB, and the first grants have been distributed. The financial implications of the BICB initiative are still under review, but it is expected that the program will be largely, if not entirely, funded by existing commitments from the various institutions involved. UMR will serve as a location for symposia and conferences, and as a coordinating center.

Additional Programs

The UMR program model anticipates offering executive, extension, and continuing education offerings. This responds to Mayo Clinic Rochester and IBM's indications that there are significant opportunities for UMR to provide continuing education for their workforce as well as the general population. Given the reputations of these three institutions, educational

BICB Graduate Program Steering Committee

John Carlis (Computer Science and Engineering, UMTC),

Lynda Ellis (Laboratory Medicine and Pathology, UMTC)

Drew Flaada (IBM),

Peter Li (Mayo Clinic).

Carlos Sosa (IBM),

Darrin York (Chemistry, UMTC),

BICB Scientific Advisory Committee

Administrative Leader:

Dr. Claudia Neuhauser

University of Minnesota Twin Cities:

Dr. Vipin Kumar, Professor and Head, Computer Science and Engineering

Dr. Darrin York, Associate Professor, Chemistry

Mayo Clinic

Dr. Eric Wieben

Dr. Diane Jelinek

Hormel Institute

Dr. Zigang Dong, Professor and Executive Director, Cellular and Molecular Biology

Dr. Ann Bode, Research Associate Professor and Associate Director, Cellular and Molecular Biology

IBM

Drew Flaada, Director Mayo Collaboration, Life Sciences, and BlueGene Software Development

Mike Good, Manager, BlueGene Software Development

Post-doctoral Associate Fellow

Dr. Madhusoodanan Mottamal, Hormel Institute

BICB Graduate Student

Sue Van Riper, University of Minnesota Twin Cities

offerings could be developed that would draw from a national and perhaps even an international pool. Short-term residential professional development programs could be offered, generating an additional positive revenue stream.

GOAL II: ENHANCE PARTNERSHIPS IN RESEARCH BUILT ON THE STRENGTHS AND INTERESTS OF THE MAYO CLINIC ROCHESTER, IBM, AND THE UNIVERSITY OF MINNESOTA SYSTEM

The viability of Rochester-based University-industry research collaboration has already been demonstrated. In 2003, Minnesota Governor Pawlenty announced an agreement between Mayo Clinic Rochester and U of M to implement a multiyear research partnership which resulted in the formation of the Minnesota Partnership for Biotechnology and Medical Genomics. The research synergies that can be realized through an enhanced partnership between the university and Mayo Clinic Rochester are remarkable. The university is currently ranked 15th nationally in federal research dollars and Mayo Clinic Rochester is ranked 30th. Both have experienced double digit annual growth in research space demands over the last decade. To best capitalize on their shared opportunities, U of M and Mayo Clinic Rochester should create a MOU relating to research which establishes how their respective strategic research plans represent opportunities for enhanced research partnerships in the arenas of healthcare delivery and biotechnology.

Entrepreneurial activity generated from this research will continue to contribute significantly to the regional and state economies. The City of Rochester and state representatives, eager to support UMR in this endeavor, expect the commercialization of partnership based research to stimulate growth of in-state research and development companies. Acting through the mechanism of a proposed University Institute for the Advancement of Research Partnerships in Rochester, UMR will build on the model of the Minnesota Partnership and

the contemplated research MOU with Mayo Clinic Rochester. This institute will be committed to creating additional means of enhancing the university's role as university-industry facilitator, identifying and building research collaboration driven by both U of M and Mayo Clinic Rochester.

GOAL III: OFFER INNOVATIVE AND COST-EFFECTIVE APPROACHES TO EDUCATION AND RESEARCH, ESTABLISHING UMR AS A PROGRESSIVE, ENTREPRENEURIAL LEADER IN THE U OF M SYSTEM

In addition to the academic benefits inherent to the signature undergraduate and masters programs, the signature program approach represents significant operational cost-savings when compared to a traditional structure. Because a common curriculum characterizes the first two years of the UMR program, resources that would normally be distributed among a large number of unequally populated courses and electives are concentrated, and used to develop project-based, collaborative learning and individualized academic support for students. In addition, students will have a shared and coherent experience, with general education courses tailored to the program's emphasis on the health sciences. UMR signature programs will be staffed by tenure and tenure-track positions.

The *learning design faculty*, primarily supporting curriculum development, will be complemented by content specialist *student-focused faculty*. This group, with aid from *learning fellows* (post-doctorates), will teach each of the four core modules: social science, science, math, communication and management. Because of the high level of support provided by the learning fellows in informal learning environments, the more traditional lecture-based material in the core modules will be delivered in large but efficient class sections of around 80 students.

With cost-effectiveness and innovation as criteria, it was decided that UMR's existing programs will continue as needed

Mayo Clinic

Mayo Clinic has a history of numerous successful partnerships with academic institutions. The Mayo Clinic collaboration with Arizona State University represents inspiration for Minnesota to consider in order to take advantage of the presence and activity of the University of Minnesota and Mayo Campus Rochester. In 2004, Arizona State University and the Mayo Clinic campus in Scottsdale, Arizona, embarked on formal collaborations in medical research and education, which include a seed fund for collaborative research, shared faculty appointments, joint educational programs, and shared office space. The seed grants are intended to allow researchers to generate initial findings that will help them win larger federal grants for continued investigations.

The partnership draws upon the existing strengths of each organization: ASU's programs in biodesign and biotechnology at the Arizona Biodesign Institute, and Mayo's extensive clinical experience and medical education programs. Similarly, ASU and Mayo Clinic had precedents for collaborations throughout the years, including an earlier agreement to work together to jointly advance specific areas of research, including neuro-imaging, receptor biology, microdevices and vaccine development.

but with limited growth. Hybrid learning, which uses technology to supplement educational delivery, will be employed to reduce the amount of needed classroom space and attract a broader spectrum of students. UMR graduate and special programs will be taught by university faculty, faculty jointly appointed by the university and Mayo Clinic Rochester, and Rochester industry leaders.

The signature approach represents significant savings over a more traditional structure.

The cost of space—land assembly and construction or leasing—is an influence on university decision-making about student population. The initial enrollment target of 1,500 students by 2014 and long-term goal of 5,000 students was found to be the optimal cost model. This model introduces more graduate students after a decade, as the fiscal stability to be realized in the early years will create the platform for the more expensive research curriculum needed to support graduate studies.

A commitment to sharing facilities represents another innovation related to the cost of space for the UMR. It is anticipated that the UMR will share space and costs for provision of recreation, housing, cultural venues, research and even instructional facilities. With these partnerships and through the hybrid learning model established for UMR, its space requirements are limited as compared to a traditional campus. The model, applying modified national and state space standards, estimates these space requirements are shown in the table to the right.

GOAL IV: CONTRIBUTE TO ECONOMIC GROWTH

UMR will add its energies to that of the Minnesota Partnership for Biotechnology and Medical Genomics and others working to catalyze the state's research and commercialization in this arena. The University is currently ranked 15th nationally in federal research dollars and Mayo Clinic Rochester is ranked 30th. Their combined forces represent a potential international research powerhouse.

At the municipal level, UMR will catalyze both direct and indirect job creation and capital investment. By locating the campus downtown, UMR will invigorate demand for goods and services in the city's core. The attractiveness of the campus will stimulate demand for non-university growth in the downtown, curbing the recent history of sprawling growth.

A key incentive for U of M to build a new campus in Rochester is the opportunity to partner with Mayo Clinic Rochester. Therefore, it is ideal that the new campus be proximate to the clinic. Leadership at Mayo Clinic Rochester and in the City of Rochester recognizes that this new campus is a critically valuable city-building opportunity. They expect to see the UMR campus also work to diversify the economy and stimulate private investment in the city's core.

	ENROLLMENT OF 1,500	ENROLLMENT OF 5,000
CLASSROOM	19,000 ASF	53,000 ASF
TEACHING LABS	49,000 ASF	190,000 ASF
OFFICES	22,000 ASF	84,000 ASF
LIBRARY, STUDY, INFORMAL LEARNING	23,000 ASF	84,000 ASF
TOTAL	113,000 ASF	411,000 ASF



URBAN CONTEXT ANALYSIS, CAMPUS FORM, SITING AND LAND REQUIREMENTS

Urban Form and Land Use Patterns

The city core – defined as the district that is within one-half mile of the heart of Mayo Clinic Rochester and centering on the intersection of 2nd Street SW and 2nd Avenue SW – is characterized by the dominance of Mayo Clinic Rochester and the commercial activity that supports it. The city's largest employer, Mayo Clinic, benefits from zoning initiatives designed to provide for its growth and development. These include zoning overlays for the Central Sub-District (Downtown Campus), West Sub-District (Saint Mary's Campus), and Mayo Support Campus. (Figure 1) The overlay zones reinforce the significance and unique situation afforded by Mayo Clinic Rochester's downtown location, as well as its particular operational needs related to land development of a campus style, with multi-block ownership and common use. (Figure 2, page 16) Mayo Clinic Rochester represents a densely built campus of large building footprints and heights up to twenty-six stories, within a context of low-rise buildings and a multitude of parking garages and surface parking lots. (Figure 3, page 17)

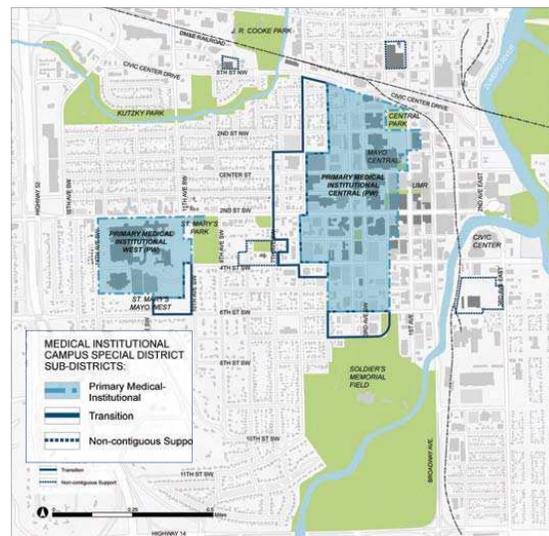


figure 1. special use zones

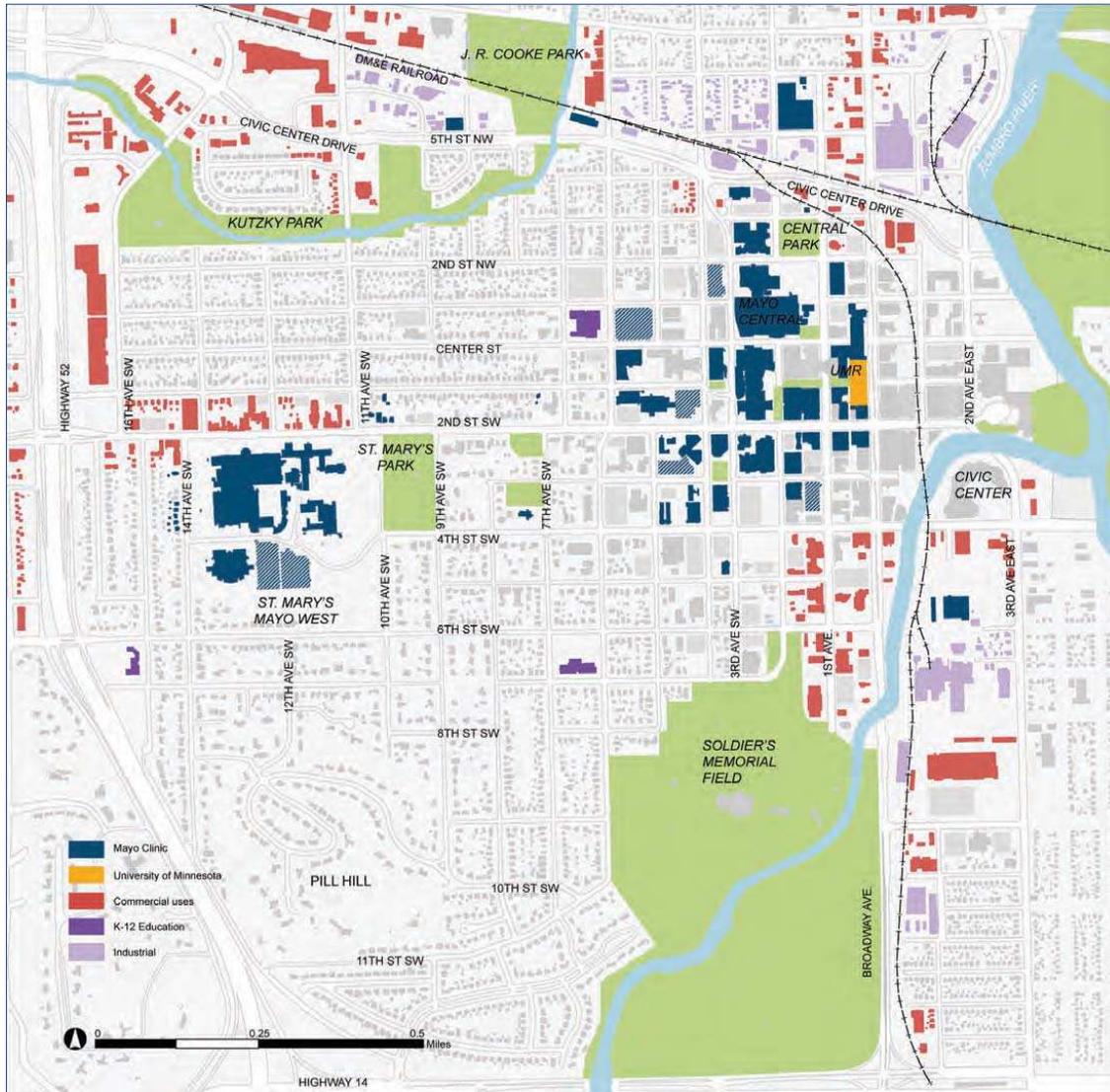


figure 2. research and education adjacencies

16 URBAN CONTEXT ANALYSIS, CAMPUS FORM, SITING, AND LAND REQUIREMENTS

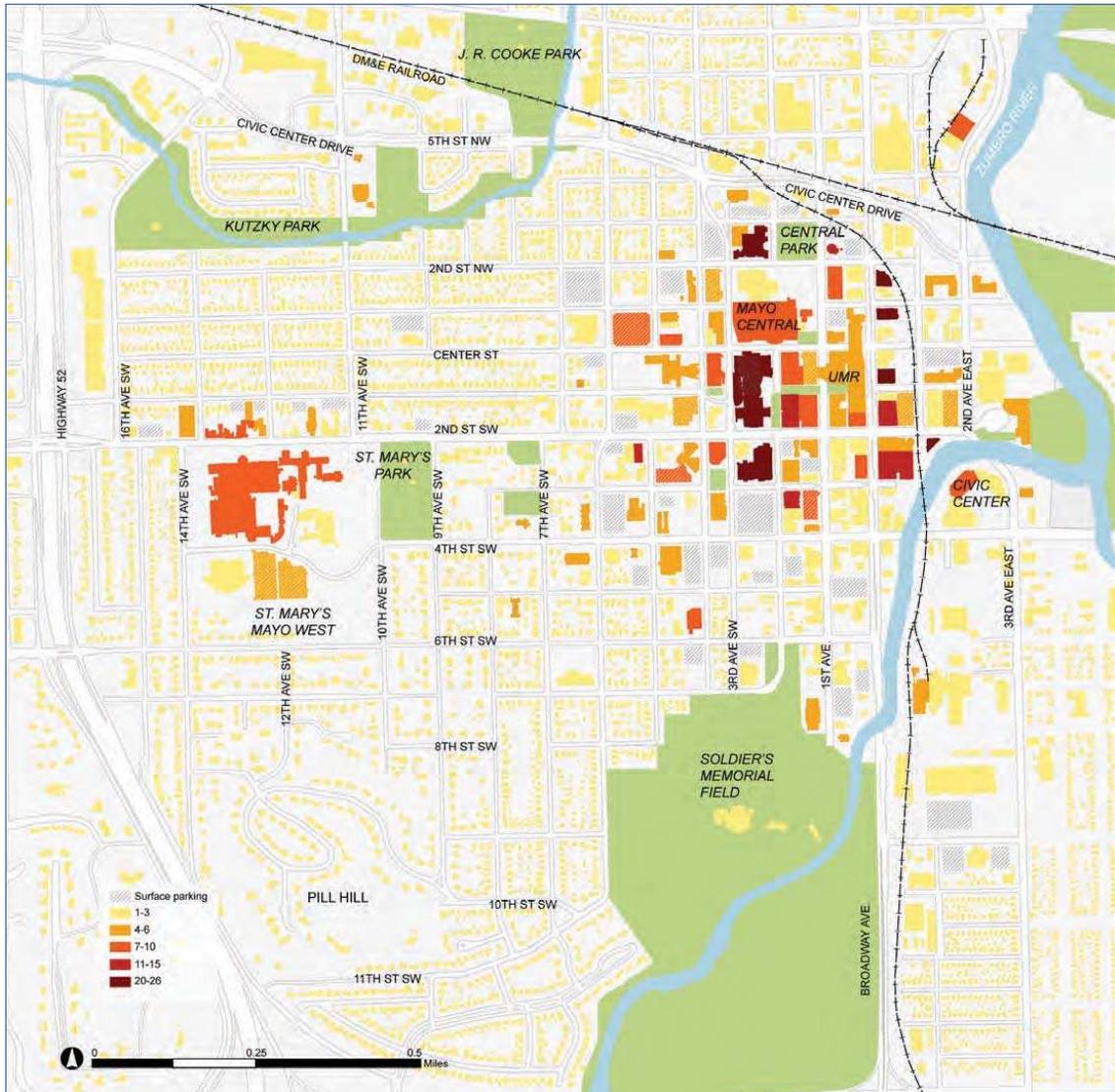


figure 3. building heights

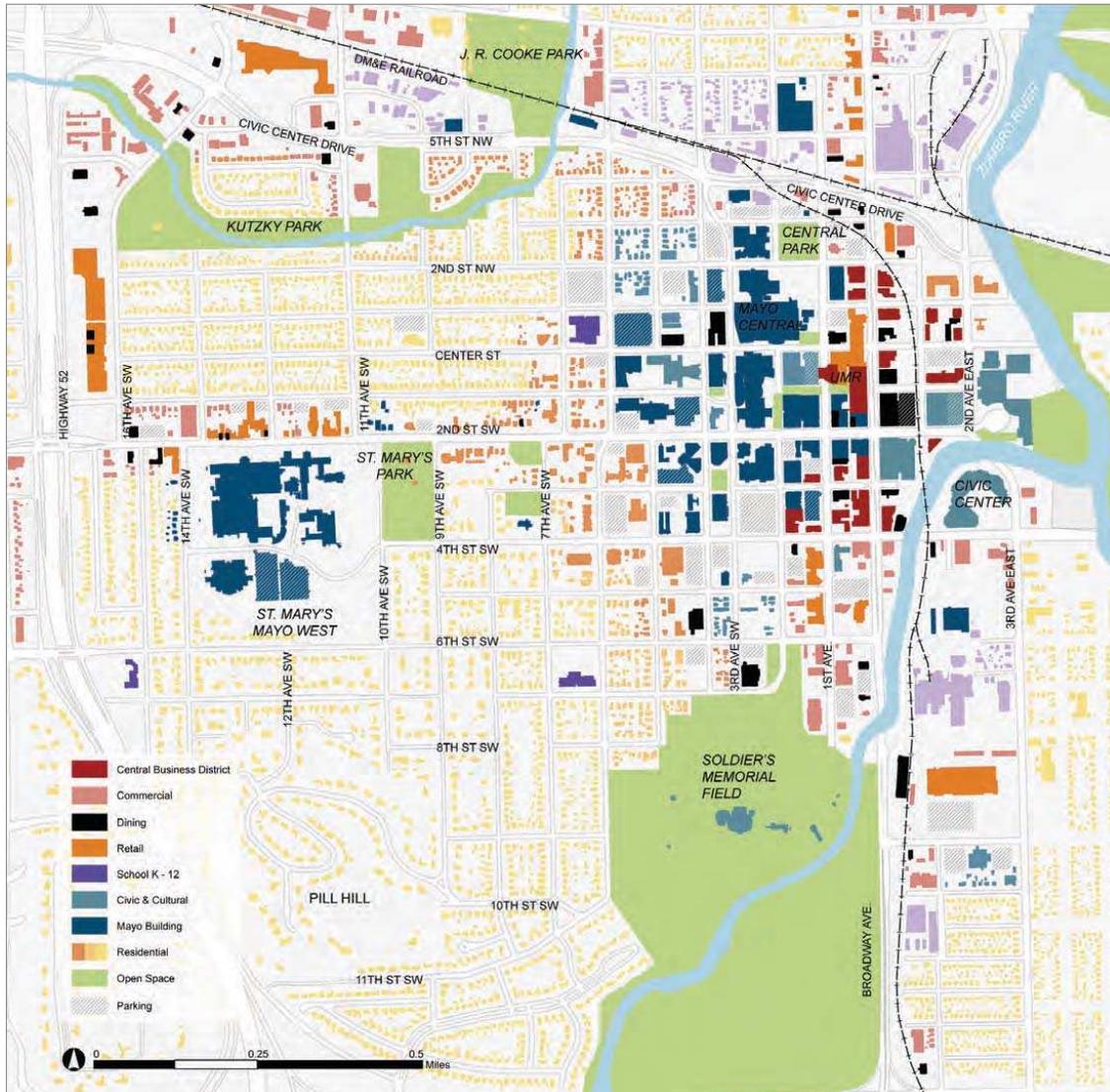


figure 4. land use

18 URBAN CONTEXT ANALYSIS, CAMPUS FORM, SITING, AND LAND REQUIREMENTS

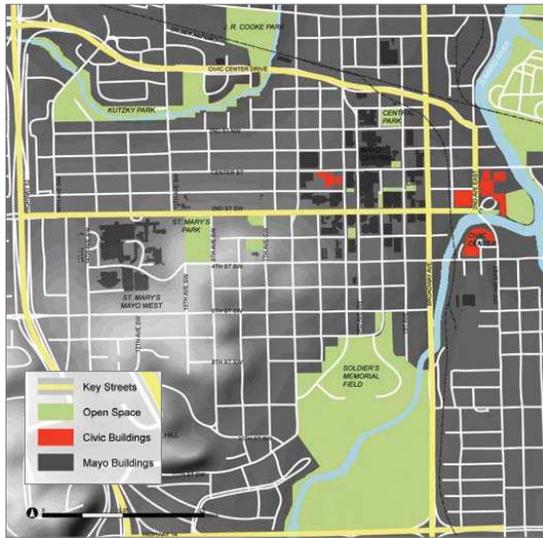


figure 5. land use adjacencies



figure 6. topography

Mayo Clinic Rochester's larger scale development and pattern of single ownership has resulted in the agglomeration of several blocks into super-blocks. This area of the city is host to business uses (largely hotels and short-term residential accommodations) and single-family residential neighborhoods (Figure 4, left).

Beyond the boundaries of the downtown core, there is a pattern of lower density, intact neighborhoods. Clusters of commercial, civic, and educational land uses have also been created (Figure 5, above) within walking distance of Mayo Clinic Rochester's zoned growth areas. The area includes a concentration of structured and surface lots in the blocks

south of Mayo Clinic Rochester downtown and north of Soldier's Memorial Field Park.

Hilly terrain defines the district west of Soldier's Memorial Field Park, with the highest being Pill Hill. (Figure 6, above) Immediately to the south and east of Mayo Clinic Rochester campus is an emerging neighborhood, referred to in Rochester's planning documents as the "Urban Village". This area is distinct as an investment area within the downtown. Here, plans call for a neighborhood of residential, commercial and retail land uses, woven together through scale of 2-to-5 story structures, interesting architecture and independently owned small stores and restaurants.

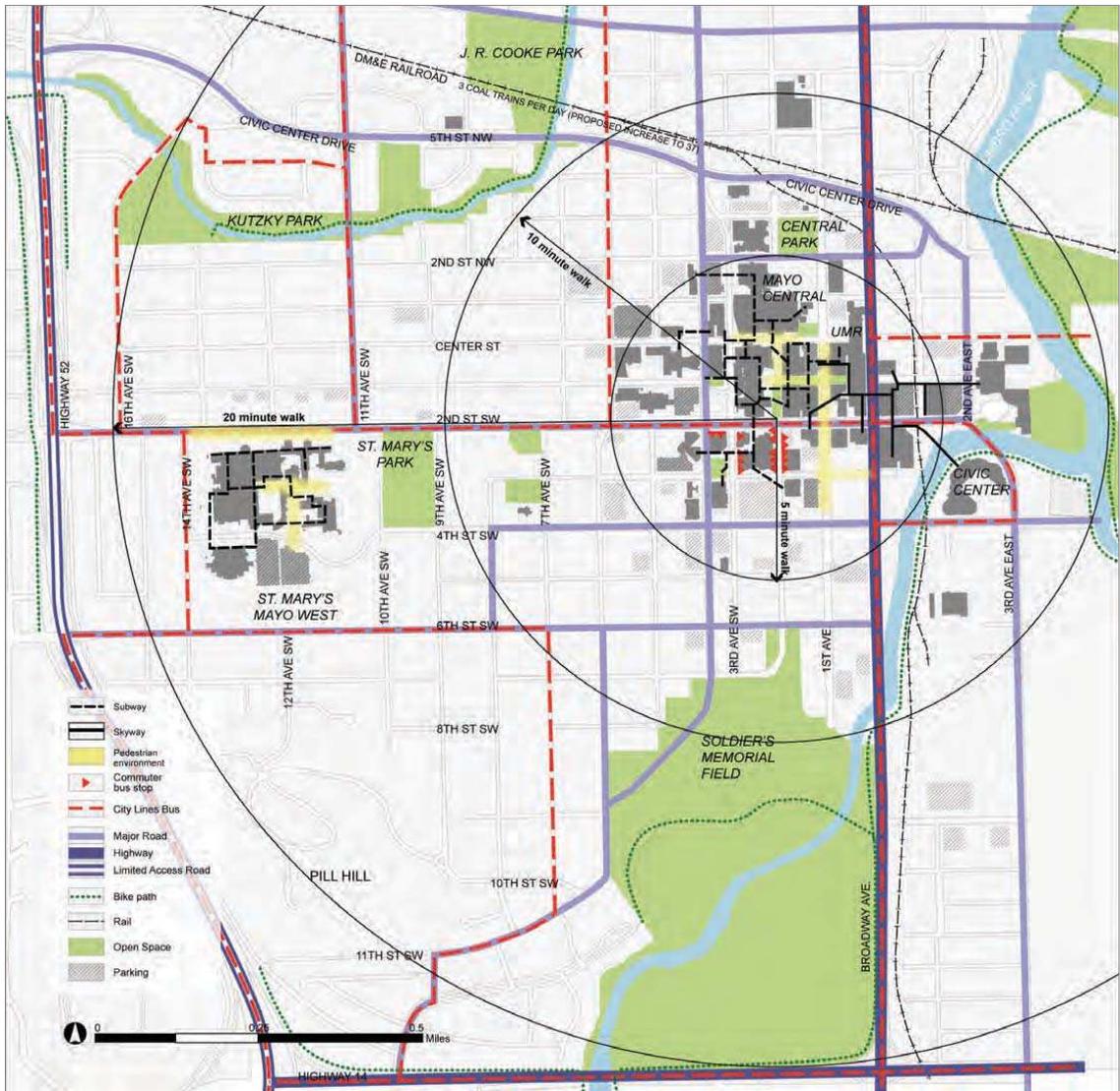


figure 7. transportation systems and pedestrian connections

Transportation

Several major corridors, including U.S. Routes 14, 52 and 63, pass through the City of Rochester and Interstate 90 runs east-west just outside of the city's southern boundary. These routes serve as the primary connections to the Twin Cities, Wisconsin and Iowa. The city is served by the Rochester International Airport, eight miles south of the downtown core, and the Minneapolis-St. Paul International Airport, ninety miles to the north-west. The Dakota Minnesota and Eastern (DM&E) freight railroad traverses the city just north of Mayo Clinic Rochester. Currently, three trains per day run along the railroad; however, DM&E has proposed service increases that would bring up to thirty-seven trains per day along the track running parallel to Civic Center Drive. The rail line and highways function as physical barriers that campus urban design and site decisions must consider and mitigate.

The City of Rochester contracts with a private vendor to operate thirty-six fixed bus routes throughout the Rochester region, each of which services downtown Rochester. (Figures 7 and 8) A combination of federal, state and local funds helps to pay for the service. Local funds include guarantees by Mayo Clinic Rochester, among other non-municipal entities, to ensure demand for specific routes and services. Public transportation also operates on a very local, central business district scale. Mayo Clinic Rochester operates an employee shuttle that takes staff between St. Mary's Hospital and Mayo Clinic Rochester downtown campus. Additionally, a Mayo Clinic Rochester patient shuttle operates between the downtown and St. Mary's campuses. For visitors, these services are augmented by hotel shuttles.

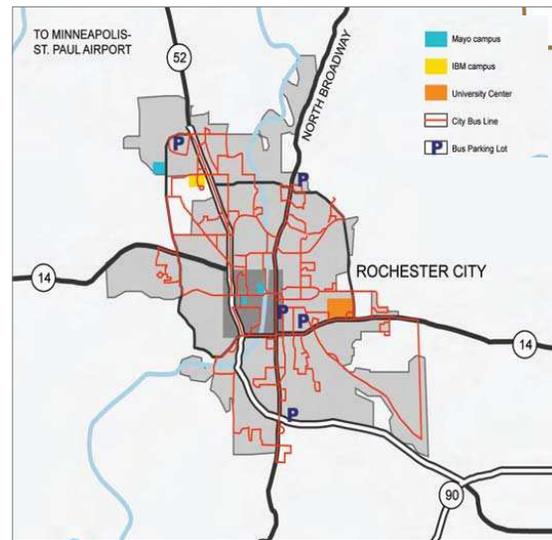
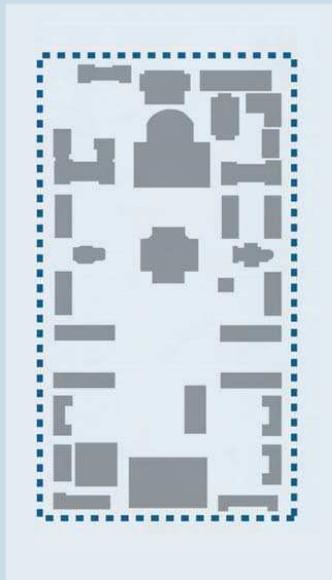


Figure 8. regional transportation systems.

Underground walkways (referred to as “subways”) and skyways connect buildings in a seventeen block area centered on Mayo Clinic Rochester's downtown campus, connecting venues and providing pedestrians with a moderate climate as an alternative to Minnesota's winter weather. The main zones of street-level pedestrian activity are clustered within and around Mayo Clinic Rochester, including St. Mary's Hospital. (Figure 7)



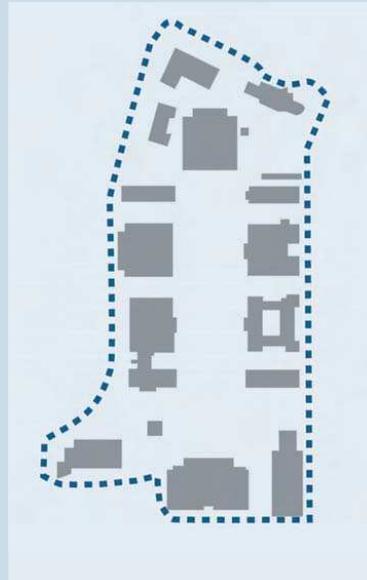
COLUMBIA UNIVERSITY

Building area=3,028,000 gsf

Campus area=29 acres

DENSITY = 2.43 FAR

figure 9. columbia university density



UMTC ACADEMIC QUAD

Building area=1,950,000 gsf

Campus area=28 acres

DENSITY = 1.53 FAR

figure 10. umtc academic quad density

Campus Design and Development Strategy

The UMR model of program and student population was used to describe and test physical plan options for a range of densities and development strategies that address Rochester's city block sizes, the land costs in the downtown core, and the university's desire to maintain a campus experience as key to its urban design strategy. The process explored a traditional campus in a location with the capacity to house all university functions on-site at a low density. However, after weighing UMR's goals, particularly the partnership opportunities inherent in proximity to Mayo Clinic Rochester, it was agreed that a location in the downtown core is a priority for site selection.

The vision for UMR's campus is of a contiguous campus core that will host key academic and administrative activities in combination with distributed real estate holdings in Rochester's downtown core where supporting uses like housing, student services, and research can be located. For urban design purposes, an acceptable walking distance for additional campus functions will be within six of Rochester's downtown blocks. These support functions will be developed with partners and may be located within their facilities. For example, the university might commit to a long-term lease for its community's use of a gym facility in exchange for that facility's upgrade or expansion. In this way, the university will both create a strong physical identity and promote investment beyond its campus.

To establish a target density and urban design strategy for the core campus development, a number of existing urban campuses were considered, from moderate density examples—such as the majority of mid-western land-grant universities, University of Chicago, or Northwestern University—to high-rise examples in New York City and Toronto. It was determined that a mid-rise campus, with buildings generally ranging from four to eight stories, best suits UMR's circumstances. Successful examples of comparable campuses are embedded

in an urban context, such as Columbia University in New York City, or University of Texas in Austin, Texas, or the academic quad area at U of M, where mid-rise buildings are balanced against generously-scaled open spaces. (Figures 9, 10)

A design strategy of classic proportions and high quality architecture is appropriate to UMR's mission and vision as an institution of national and even international appeal, in a setting of an improved urban core. By designing the campus with an urban density and limiting the core campus to essential academic purposes, land assembly requirements and development costs can be limited, allowing the University to concentrate its investment on academic programs and opportunities for collaboration. At UMR, the program for the campus will be accommodated in buildings averaging heights of five stories and an open space system that covers fifty-percent of the land. Green spaces can be developed at a variety of sizes, with a single space large enough to host major events such as convocation. Following these criteria, the eventual assembly of between four and five of Rochester's city blocks is regarded as an objective for the campus. This level of density also provides the benefit of providing a needed transition within downtown Rochester's disparate urban fabric, providing an interim scale between Mayo Clinic Rochester's campus and the surrounding neighborhoods.

If the university, instead, were to be committed to developing a traditional campus, where all University community needs were accommodated within the campus and density was lower, the University would need to assemble 14 city blocks. For comparison, Mayo Clinic Rochester's land holdings in the downtown campus total approximately 26 city blocks. Land assembly on this scale would be beyond the capacity of the university, and undesirable for the Rochester community.

Guidelines for Site Selection

- Land assembled for campus cores should be of a size to accommodate core programs and provide ample open space with a density typical of an urban campus*
- Location of campus core and research facilities should be within walking distance, or six standard city blocks of Mayo Clinic campus in Rochester's core facilities, centered at 2nd Avenue SW and 2nd Street West.*
- Location of core and non-core campus facilities should have easy connections to transit, bike travel, and well-trafficked pedestrian routes*
- Real estate assembly (acquisitions and/or lease arrangements: core campus and other parcels) should capitalize on opportunities to partner within the community on facility development*
- Real estate assembly should capitalize on existing City attributes such as attractive architecture and open space, appropriate urban scale, vibrant commercial and civic activity, and natural features of their context*
- Real estate should support municipal plans for investment*
- Real estate assembly (acquisitions and/or lease arrangements: core campus and other parcels) should not displace provision of goods and services that contribute significantly to the city's functions.*

CAMPUS PLANNING AND DESIGN PRINCIPLES, CRITERIA FOR SITING

Through the planning process, U of M committed to creating a campus that contributes to the quality of its urban setting. In selecting a site for its core campus, developing its physical plan and, ultimately, its landscape and architecture, the university is advised to follow the principles outlined below.

Urban Integration

The university envisions creation of a core campus that houses academic and key administrative functions and possess many of the design attributes of a traditional campus. Other campus activity—such as residential, recreational, parking, and support commercial—will be within walking distance, but distributed within the city's urban fabric. The core campus strategy will work to enhance the urban character of the downtown. Currently, much of Rochester's downtown is characterized by variable scales of building footprints, a pattern of relatively standard block sizes interrupted by larger blocks that serve Mayo Clinic Rochester, and a mixture of building densities and quality of building (both architecturally and as a function of maintenance). This existing urban texture offers an opportunity for the design of UMR campus to introduce an interim scale of buildings that will represent transition of scale and improved building quality.

Quality of Life

The university will contribute to the city's foundation of culture, business, and recreation through a strategy of shared facilities throughout the downtown. UMR will work with the city to establish guidelines for stimulating private investment in residential and commercial facilities that both support the university's

needs and enhance the quality of facilities for community use. The university will participate actively in community plans and support efforts to limit reliance on automobiles as a prime means of transportation.

Synergy

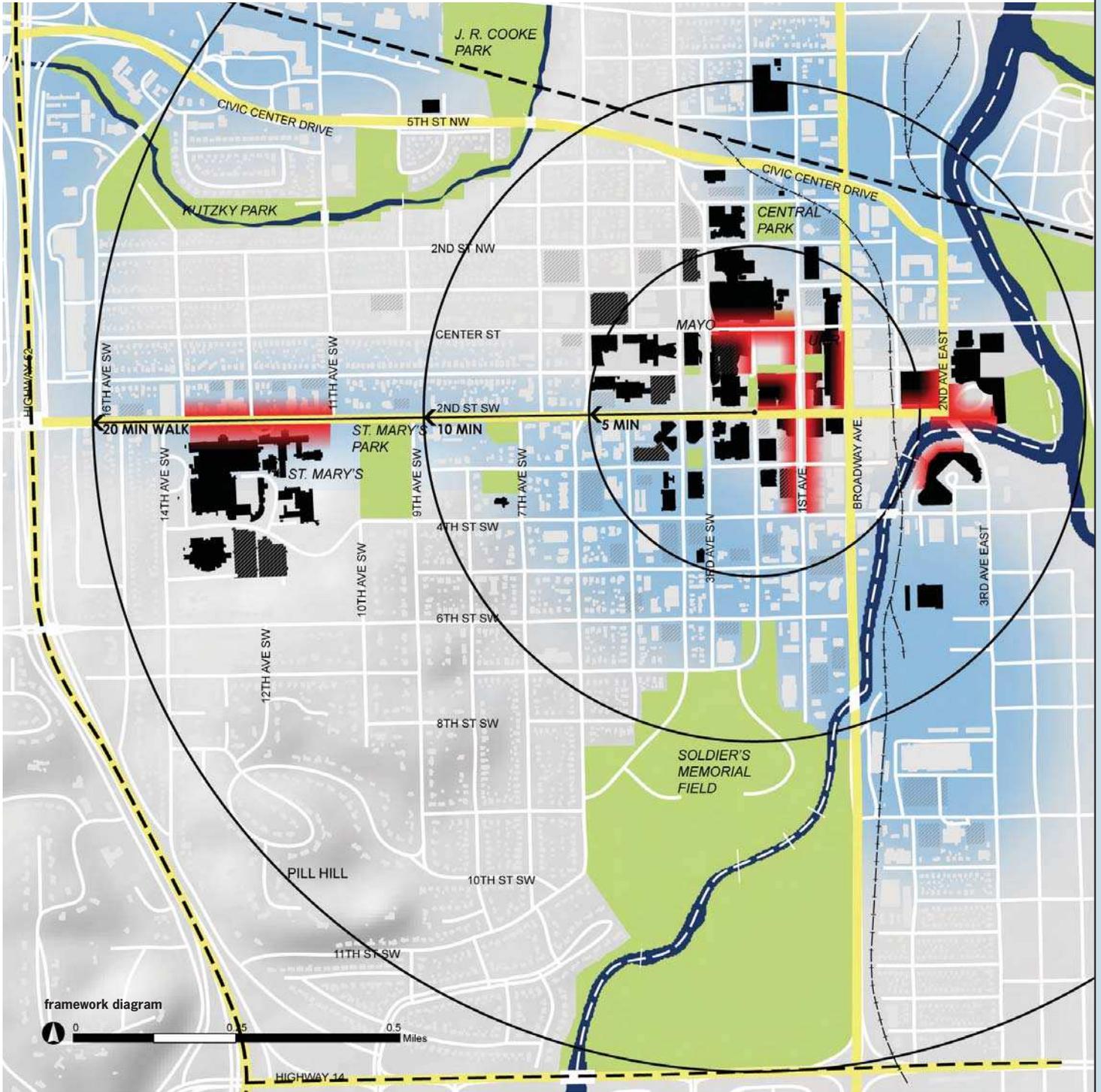
Partnerships of UMR, Mayo Clinic Rochester and others in Rochester for education, training, and research will generate significant synergies. Through these partnerships, UMR can function as a leader in stimulating the regional economy in the arena of health sciences and technology. Physical proximity of the UMR campus to its primary partners is necessary to achieve the full benefits of the partnerships. Close proximity among the partner institutions enables the spontaneous encounters that are essential to creating these synergies between people, institutions, and ideas.

Connectivity

UMR campus must be easily accessible to its surroundings and support a transportation network that promotes pedestrian activity in the immediate area, and connectivity through transportation systems within the larger community.

Sustainability

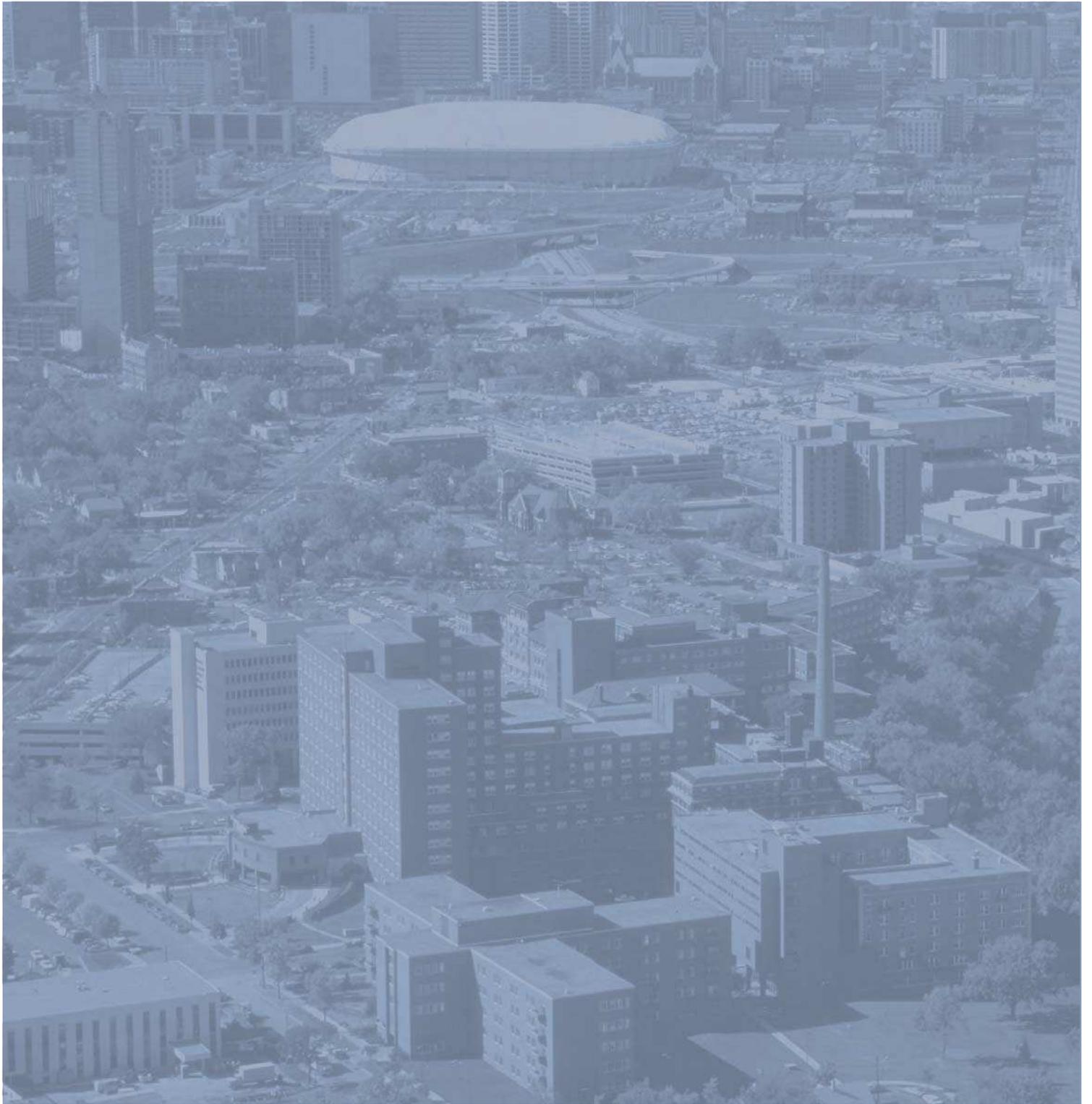
The planning and design principles developed through this planning process will shape a campus that is culturally and climatically responsive to the Rochester context, integrated with the local community, and exemplary of sustainable design in buildings and landscape systems. Compactness and proximity to major partners, downtown services, and transportation will contribute to a sustainable approach.



Framework

The urban design framework for a new University campus in Rochester's downtown core underscores the opportunity for university development to stimulate city-building. It calls for the University to draw from existing seeds of urban vitality and contribute to locations in need of improved amenities. As a distributed campus, the UMR campus must be well-connected with the existing network of key streets and with areas with active pedestrian environments, indicated in red on the framework diagram.

Within a ten-minute, 6 block walking radius of the heart of Mayo Clinic, there exist zones with apparent development potential, where a University campus intervention can bring vitality and order to underutilized land. These zones, depicted in blue, are transitions between more fixed areas, and have a mixed character that is defined by varied building scales, a proliferation of surface parking lots, and mixed or industrial uses. Operating within this framework, the UMR campus environment can harness and enhance the diversity of urban conditions in Rochester to help build a City that attracts creative people and their families, and provides a rich civic, cultural, aesthetic and social experience.



OPPORTUNITIES FOR ECONOMIC GROWTH

In a knowledge-based economy, universities are increasingly seen as catalysts for economic growth. Analysis of the growth model for UMR concludes that the campus growth will generate growth of 2,356 jobs (full and part-time employment), resulting in \$6.7 million in state income tax and \$40 million in retail sales.

UMR and the State's Bioscience Industry

Most major bioscience clusters in the US are immediately proximate to research universities, where effective melding of resources, including university research, a talented labor force, available capital, and prominent local business institutions, results in a strong bioscience industry at a municipal and state level. In these settings, the bioscience industry has immediate access to a talent pool of specialists supported by a more generalized workforce mix to provide organizational, problem solving, data management, and record keeping skills.

Analysis concludes that campus growth will generate growth of 2,356 jobs (full and part-time employment), resulting in \$6.7 million in state income tax and \$40 million in retail sales.

While not following the ideal model of proximity, UMR should be viewed as a very important opportunity to both enhance provision of education in the health sciences and to build on the region's and state's strength in related research and development. The Minnesota Department of Employment and Economic Development (DEED) asserts that opportunities for collaboration with research institutions, such as U of M and Mayo Clinic Rochester, are a major strength for Minnesota and that the Minnesota Partnership for Biotechnology and Medical

Details and methodology supporting expectations for economic benefits are included in the technical appendix.



Genomics “leverages the scientific leadership of U of M and Mayo Clinic Rochester into a powerful research collaboration to position Minnesota as a world leader in biotechnology and medical genomics.”¹

UMR assumes its commitment to research and development partnerships in the biosciences within an impressive setting.² Investments in the future growth of Minnesota’s biotechnology industry are substantial. U of M and Mayo Clinic Rochester have invested nearly \$500 million in genomics and biotechnology. State support between 2000 and 2005 included approval of \$240 million in bond funding for bioscience-related laboratories. This has created U of M entities such as the Biotechnology Institute, Developmental Biology Center, Biomedical Engineering Institute, and the Biomedical Genomic Center. At Mayo Clinic Rochester it helped create the Genomics Research Center.

A 2008 study by the Battelle Institute indicates Minnesota is a leading state in the bioscience sector.³ It specifically identifies Minnesota as a state leader in the medical devices and equipment subsector, in bioscience venture capital investments and by the number of bioscience-related patents. Minnesota is second of three states that are identified as both large and specialized in the medical devices and equipment subsector and is one of four states that created more than 1,000 jobs in this subsector over the five year period 2001-2006. Biomedical sciences represent 31.9% of the state’s employment growth in the last decade.

The following Minnesota programs and initiatives are hallmarks of the state’s support for the bioscience industry.

1 Department of Employment and Economic Development (MN). “Minnesota’s Health Care Services Sector: A Fact Sheet for Businesses”. December 2006. www.deed.state.mn.us/facts/PDFs/Healthcare.pdf Accessed: 7/2008.

2 Battelle Technology Partnership Practice and State Science & Technology Institute. “Growing the Nation’s Bioscience Sector: State Bioscience Initiatives 2006.” April 2006.

3 “Technology, Talent and Capital: State bioscience initiatives 2008.” Battelle Technology Partnership Practice and BIO-Biotechnology Industry Organization. June 2008.

National comparisons allow for the consideration of relative investment.

1. Many states have programs to assist start-up companies and entrepreneurs, but only a few are specifically directed towards bioscience. The BioBusiness Resource Network, an initiative of the BioBusiness Alliance of Minnesota, is “focused on supporting companies that provide exponential returns to Minnesota’s quickly evolving bio-industries.”⁴
2. Biodale is U of M’s state-of-the-art imaging and advanced genetic analysis consortium of facilities at U of M St. Paul campus.⁵ The facility provides a multitude of resources and equipment for member departments and companies to use. Only six other states offer similar facilities despite private interest in academic partnership.
3. Minnesota’s BioScience Zone Program, created in 2003, provides tax incentives for bioscience companies to move into areas near university and research centers. Currently, there are BioScience zones in Minneapolis, St. Paul, and in Rochester. To qualify for the tax exemptions, businesses must start-up, relocate to, or expand to the zone. Multiple states have established similar zones to encourage the development of research nodes near universities by providing financial incentives for start-ups.
4. In October 2006, the Mayo Clinic was awarded one of the first Clinical Translational Science Awards (CTSA) offered by the National Institutes of Health. The \$72 million award allowed the Clinic to create the Mayo Clinic

Center for Translational Science Activities which works to integrate and coordinate interdisciplinary resources to support the translation of scientific discoveries into practical applications. To date, more than 35 institutions have received CTSA grants, including medical research facilities across the United States.

5. U of M created the Initiative for Renewable Energy and

A 2008 study by the Battelle Institute indicates Minnesota is a leading state in the bioscience sector

the Environment Program for research on biohydrogen and other renewable energy fuels with \$20 million in state financing.⁶ Biomass and other bioenergy are increasingly promoted by states through bioenergy investments, research and capital funds, and state programs. The U.S. Department of Energy Bioenergy Research Centers awarded funding to three state facilities in Tennessee, Wisconsin/Michigan, and California. Both Kansas and Oklahoma have their own state-funded Bioenergy Research Centers.⁷

6. In 2007, the Minnesota Legislature approved \$10 million to support infrastructure development for research facilities. The majority of the funds, \$8 million, supported construction of the Minnesota BioBusiness Center in Rochester. The anchor tenant is intended to be Mayo Health Solutions (formerly Mayo Medical Ventures), the technology commercialization arm of Mayo Clinic.⁸ Nationally, billions of dollars are spent to support the

4 BioBusiness Alliance of Minnesota. <http://biobusinessalliance.org/BRN/international-business-support-center> Accessed: 7/11/08.

5 Minnesota Department of Employment and Economic Development. “Minnesota’s Bioscience Industry: A Fact Sheet for Businesses.” p. 3.

6 Battelle Technology Partnership Practice and State Science & Technology Institute. “Growing the Nation’s Bioscience Sector: State Bioscience Initiatives 2006.” April 2006. p. 42.

7 “Technology, Talent and Capital: State bioscience initiatives 2008.” Battelle Technology Partnership Practice and BIO-Biotechnology Industry Organization. June 2008.

8 Rochester Area Economic Development, Inc.

development of research facilities and equipment.⁹ California provides the most research funding of any state, including \$3 billion in bond funding to create the California Institute of Regenerative Medicine.¹⁰

Minnesota's support for bioscience research facilities is significant, but 28 states made comparable investments in bioscience research facilities between 2006 and 2008.

7. Twenty-seven states, including Minnesota, report that they provide designated support for bioscience research and development through grants or funding to support research centers or centers of excellence. Minnesota is one of many states with a program such as the Partnership for Biotechnology and Medical Genomics. Its \$15 million of State funding can be used to support improvement of high tech facilities that are used to recruit new scientists to Minnesota and aid commercialization of promising discoveries. According to RAEDI, 14 research teams have been funded by the Partnership.¹¹ The Partnership has tremendous potential for positively impacting the Minnesota economy. For example, the Partnership reports that "a state investment of \$70 million over five years, with mid-range assumptions, will yield an expected overall economic impact returned to the state of \$320

million and 4,300 direct and indirect jobs in 2010."¹²

8. A \$21.7 million Minnesota bond issue created a three-story research facility on the top floors of the Stable Building in Rochester. Dedicated to the Minnesota Partnership for Biotechnology and Medical Genomics, this high tech facility provides general research space, as well as dedicated laboratories for genomics and bioinformatics. Investigators from both Mayo Clinic Rochester and U of M collaborate on research at the facility.¹³ Another partnership in Minnesota is Hormel Institute, a medical research unit of U of M focused on cancer research. Hormel Institute Expansion Project in Mower County is an 89,954 square foot facility that opened in October 2008. The expansion project includes a renovation of the existing 24,000 square foot facility.¹⁴ The expansion includes space for IBM's Blue Gene supercomputer and 100 new researchers.¹⁵ State support for bioscience research facilities is significant, but Battelle reports that 28 states made comparable investments in bioscience research facilities between 2006 and 2008.¹⁶
9. State activity to support and encourage commercialization has been focused on the creation of university-associated

9 Battelle Technology Partnership Practice and State Science & Technology Institute. "Growing the Nation's Bioscience Sector: State Bioscience Initiatives 2006." April 2006. p. 2.

10 Ibid. p. 41.

11 Rochester Area Economic Development, Inc. "Medicine, Technology & Biology." http://www.raedi.org/Reports/Medicine_Technology_Biology.pdf Accessed: 6/26/08.

12 Minnesota Partnership for Biotechnology and Medical Genomics. <http://www.minnesotapartnership.info/about/factsheet.cfm> Accessed: 7/15/08.

13 Ibid. p. 4.

14 "The Hormel Institute Breaks Ground on \$20 Million Expansion Effort Following Large-Scale Donations". Business Wire. August 22, 2006. FindArticles.com. 11 Jul. 2008. http://findarticles.com/p/articles/mi_m0EIN/is_2006_August_22/ai_n26965324 Accessed: 7/11/08.

15 IBM. "The Hormel Institute Buys IBM Supercomputer As it Expands its Role, Scope of Research." February 6, 2008. <http://www-03.ibm.com/press/us/en/pressrelease/23456.wss> Accessed: 7/10/08.

16 Ibid. p. 54.

commercialization centers. The centers support venture formation, recruitment of management teams, strategic planning, and help with accessing capital. For example, the Minnesota Research Fund, an initiative of the Blandin Foundation and U of M, supports the development and commercialization of technology generated by Minnesota's educational institutions. Another state-funded initiative is U of M Innovation Grants Program, which supports translational research not otherwise funded by the federal government or industry. According to Battelle, many states have established funds that provide up to about \$50,000; but, for those focused on the biosciences, some funds provide as much as \$200,000 to \$500,000.¹⁷

10. Today, every state offers some form of enhanced curricula at the post-secondary level designed to encourage pursuit of bioscience careers. Minnesota offers programs in biotechnology research through the Biotechnology Education and Training Initiative at U of M biomedical device workforce development at Anoka-Ramsey Community College; agricultural biosciences through Minnesota West Community and Technical College (a 2-year laboratory technician degree); and biotechnology is also offered at Minneapolis Community and Technical College (a 2-year associate of science degree).¹⁸

In spite of its strengths, Minnesota is not considered to be comprehensive in support of the bioscience industry.

Further, statistics suggest that perhaps the state can better realize its potential in this area given that it is home to U of M, Mayo Clinic Rochester and significant industry leaders such as IBM, 3M, Boston Scientific and Medtronic. The BioBusiness

17 Battelle Technology Partnership Practice and State Science & Technology Institute. "Growing the Nation's Bioscience Sector: State Bioscience Initiatives 2006." April 2006. p. 51.

18 Ibid. p. Minnesota-3-4.

Alliance of Minnesota asserts that Minnesota's competitive advantages in medical research are challenged by the level of biobusiness investment in other states¹⁹. Similarly, the Battelle research reveals Minnesota's weaknesses within the national context, observing a competitive challenge when considering the range of policy initiatives as a qualitative indicator of support for growth²⁰. The following could be considered as indicators or shortcomings of Minnesota's support for the biosciences:

1. The number of higher education degrees in bioscience suggests that the state lags in expenditures in support of academic bioscience. Minnesota ranked 17th in the number of bioscience degrees granted in 2004 and ranked 14th in the number of bioscience occupations in the workforce in 2004.
2. While NIH expenditures in the state grew between 2000 and 2004, this rate was only slightly better than the national average.
3. Battelle ranked Minnesota 23rd for academic research and development expenditures in fiscal year 2006 with \$440 million of its total \$605 million dedicated to biosciences.²¹
4. State action to directly support bioscience entrepreneurs is an imperative. Engagement of research universities is an obvious path as it promises great potential to leverage start-up entities, to support existing bioscience clusters and work to develop a state's bioscience industries.

19 Biobusiness: Minnesota's Present Position and Future Prospects, a report of the Statewide Biobusiness Assessment Project of the BioBusiness Alliance of Minnesota, August 2006.

20 Growing the Nation's Bioscience Sector: State Bioscience Initiatives 2006. Battelle Technology Partnership Practice and State Science & Technology Institute.

21 "Technology, Talent and Capital: State bioscience initiatives 2008." Minnesota State Report. Battelle Technology Partnership Practice and BIO-Biotechnology Industry Organization. June 2008. p. 3. http://bio.org/local/battelle2008/MN_BIO_08.pdf Accessed: 7/14/08.

INDUSTRY OCCUPATION	PERCENT CHANGE			TOTAL CHANGE		
	US	MN	SE MN	US	MN	SE MN
Total, All Occupations	13.00%	12.80%	11.60%	18,927,569	370,000	30,247
Healthcare Support	33.30%	30.80%	30.10%	1,163,906	24,152	2,659
Computer and Mathematical	30.70%	30.80%	18.70%	967,043	22,140	1,173
Healthcare Practitioners and Technical	25.80%	24.70%	25.90%	1,756,136	34,801	5,063
Business and Financial Operations	19.10%	20.10%	21.30%	1,122,737	30,576	2,089
Other	12.65%	12.22%	9.95%	12,587,743	258,331	19,263

table 1: rochester occupational employment projections 2004-2014

According to the survey by Battelle, the high risk nature of early-stage ventures in the biosciences results in limitations in pre-seed and seed capital, generally less than \$2 million for any single firm.²² To respond to this capital challenge, nearly half of the states, with Minnesota as an exception, encourage investment in early-stage companies or seed capital and venture capital funds, most commonly through tax-credit programs. Some states, again with Minnesota an exception, sponsor seed funds that are provided with the expectation of a long term return before any return on an investment is realized and/or investment is received directly from private venture funds.

Context for Growth: the City of Rochester

The City of Rochester's population growth rate is significantly higher than the state's. From 1990 to 2000, the city grew 17.6%. While the City of Rochester has a population of approximately 90,000, the Rochester Metropolitan Statistical Area (MSA), the third largest metropolitan region in Minnesota,

²² Ibid. Unfortunately, the Battelle report does not specify why \$2 million per firm is a "limitation." It is implied in the report that bioscience startups will require more than \$2 million in capitalization for a typical firm before achieving acceptable rates of return, but specific metrics in this regard are unstated. Development Strategies is unable to remedy this shortfall in information for this report and, therefore, simply accepts for the time being that Battelle's analysis is both defensible and reliable.

represents about 2.5% of the state's total population and is expected to grow to about 256,370 by 2030, an annual growth rate of 1.49%.

The 2007 median household income in the City of Rochester, estimated at \$64,700, is 6% higher than the state and 22% higher than the national median. RAEDI reports the average annual wage of new jobs created in the Rochester MSA is approximately \$50,000 per year.²³ Income levels of a geographic area typically correlate with educational attainment. In the City of Rochester 38.1% of its residents over the age of 25 have a bachelor's degree or higher level of education.²⁴ This compares with 30.4 % in Minnesota and 27.0% nationally.

The Rochester region has experienced strong job growth in the last 35 years. According to U.S. Bureau of Economic Analysis (BEA) statistics, the total number of full and part-time jobs in the Rochester MSA grew from 52,811 in 1970 to 133,975 in 2000.²⁵ Recent growth has slowed slightly compared to the rate of growth in the decades of 1970 to 2000. Still, according to the Rochester Area Economic Development, Inc.

²³ Rochester Area Economic Development, Inc. "Making a Difference in Rochester." http://www.raedi.org/Reports/making_a_difference.pdf Accessed: 6/30/08.

²⁴ 2006 American Community Survey, U.S. Census Bureau

²⁵ Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce. MSA includes Olmsted, Dodge and Wabasha Counties.

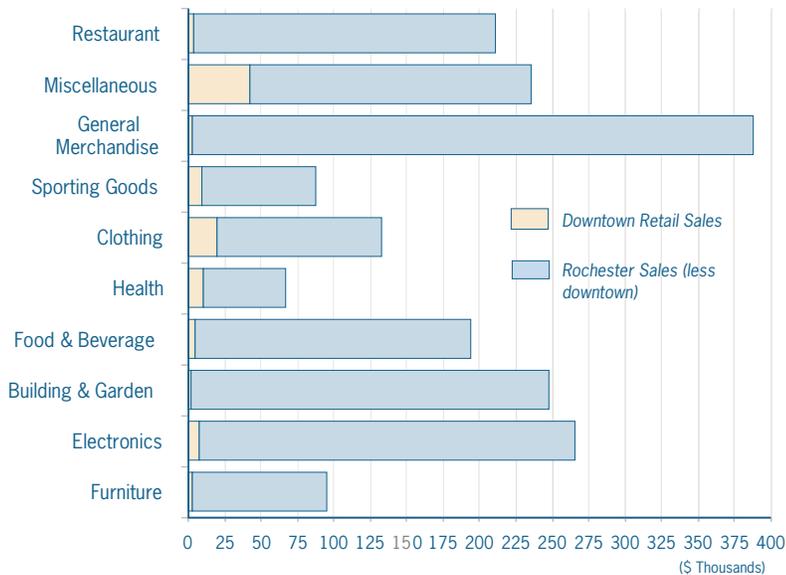


table 2: retail sales in downtown rochester versus surrounding city

(RAEDI), from 1998-2007, the Rochester area created jobs at a rate more than twice that of the nation and the state of Minnesota.

Service employment represents more than 40% of the region's job profile with nearly 70% of these in the health care and social assistance sector. High tech businesses represent a significant sector as well. The city was identified in a 2007 study by RAEDI to have one of the highest concentrations of high tech businesses of all metropolitan areas in the U.S.

National and state employment projections suggest that a strategic economic development plan for Rochester include expanding the UMR campus to better serve the existing health care industry and to increase the in-state capture rate of life, physical, and social science occupations, a sector that is

projected to grow in Minnesota by over 5,300 jobs between 2004 and 2014. (Table 1, above)

Location quotient (LQ) analysis is a means of comparing local percentages of employment to national corollaries and is a useful tool in predicting opportunities for growth within a market. The education and health services sector in the Rochester has a location quotient of 2.64 suggesting that the Rochester MSA has 2.64 times the level of employment nationally in that sector. While a presumption of a location quotient analysis is that economies with high location quotients in some sectors are vulnerable to national or international downturns in those sectors, the projection for the Rochester MSA is one of confidence because its economic base is concentrated in state and

national growth sectors. Of note, a subsector level²⁶ examination of educational services relating to health care and social services generates a location quotient of only 0.37, suggesting a significant opportunity to expand Rochester's education sector and professional and technical services sector.

The projected annual growth rates for retail sales²⁷ are 3.1% for Rochester. However, the retail health of the City of Rochester is less evident in its downtown than elsewhere in the city. Table 2 indicates that downtown Rochester captures a low share of the city's overall retail sales except in the "miscellaneous" category that includes medical-related retailers who serve the 1.41 million outpatient visits (2005) generated by Mayo Clinic Rochester.²⁸

The Rochester housing market area vacancy rate for all rental housing is approximately 3%.²⁹ Single-family dwellings dominate the residential market; this housing type represents 70% of the housing units in the area.³⁰ According to the U.S. Department of Housing and Urban Development, demand for new rental units is steady with a total need for 740 new market-rate rental units for the 3-year forecast period August 1, 2006 to August 1, 2009.³¹

26 Sector levels are defined by the classification codes determined by the North American Industrial Classification System (NAICS).

27 In constant dollars

28 Rochester Area Economic Development, Inc. (RAEDI), "Community Profile: Rochester MSA," Summer 2008.

29 "Comprehensive Housing Market Analysis for Rochester, Minnesota." U.S. Department of Housing and Urban Development Office of Policy Development and Research. August 1, 2006. http://raedi.com/Reports/CMAR_RochesterMN.pdf Accessed: 6/26/07.

30 ESRI, 2008.

31 Ibid. p.1

Projections of Employment and Economic Benefits

A study of economic trends and forecasts provides a foundation for projecting the economic benefit to Rochester and the region of this new campus. U of M projections of the average salary for UMR faculty suggest that the UMR will generate \$22 million in wages each year³² and approximately \$1.4 million in state income taxes annually.³³

Projections suggest that UMR will generate \$22 million in wages each year and approximately \$1.4 million in state income taxes annually

Jobs created by UMR and the associated secondary population will support additional jobs and economic activity. Referred to as the indirect impacts, or multiplier effects, these will be experienced at the local, regional, and state levels. UMR is expected to generate an increase of 2,400 jobs (direct and indirect, full and part-time) by 2029. This job growth could generate \$6.7 million in annual state income tax revenue for Minnesota.³⁴ By 2029, UMR's population is predicted to represent \$40 million in annual retail power, which equates to support of 109,000 square feet of retail space. Growth in the Rochester SMA predicts demand for an additional 55 housing units (per year) by 2029³⁵.

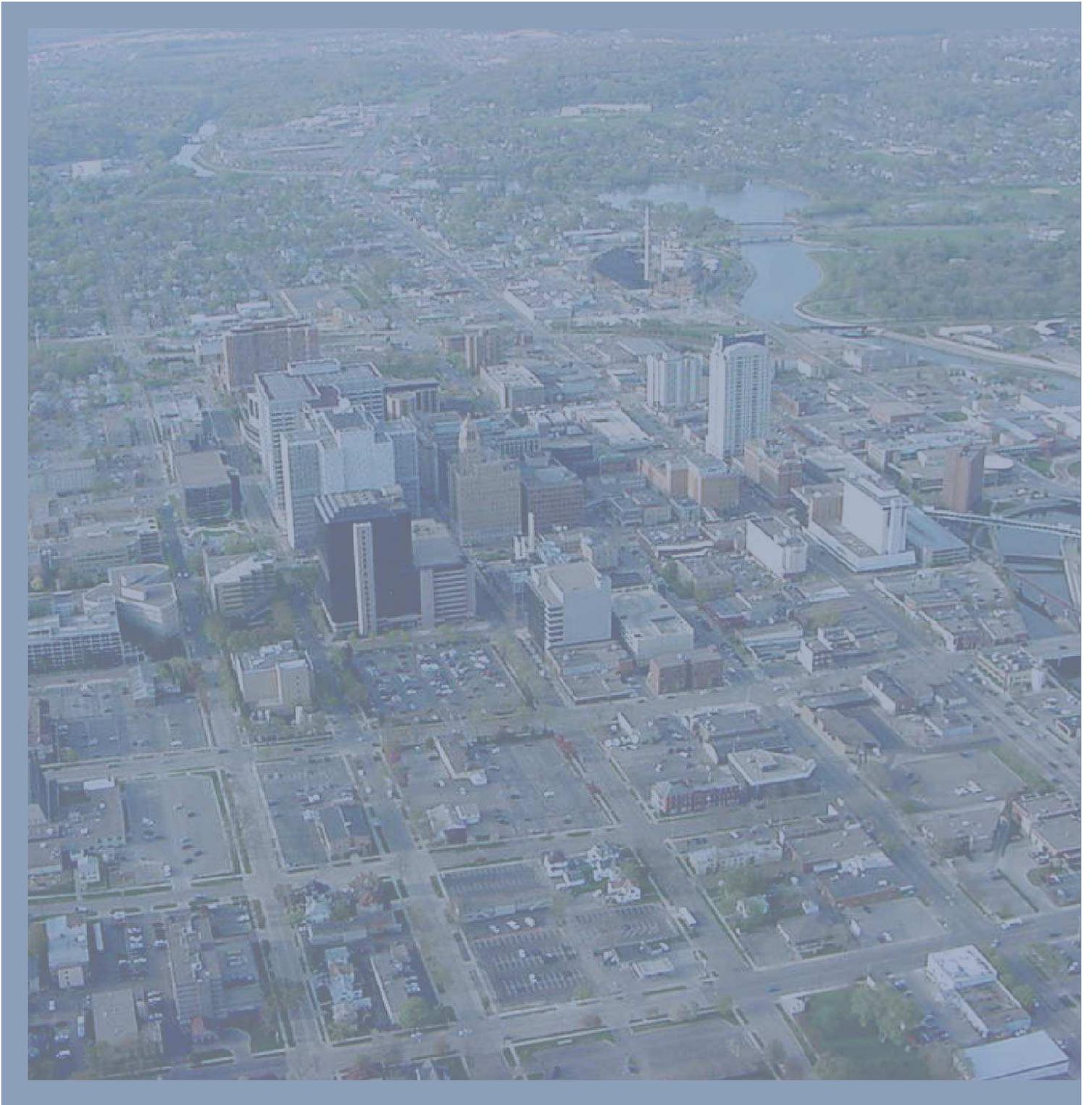
32 This value reflects base salaries only, on which state income taxes are calculated.

33 These estimates assume no wage inflation and a constant state tax withholding of 6.4%, which is the current Alternative Minimum Tax in Minnesota.

34 This applies the current Alternative Minimum Tax rate of 6.4%, and assumes this rate remains constant.

35 Assuming 20% of new jobs will be held by workers living outside of Rochester.

Rochester offers bioscience entrepreneurs the opportunity of access and proximity to Mayo Clinic Rochester, IBM and the Minnesota Partnership. UMR's planned programs will further enhance the city's appeal as a location for entrepreneurs through promise of generating a larger local workforce to serve their scientific research and commercialization needs. Modeling the U of M ratio of research expenditure per researcher and applying it to UMR's growth profile, allows for projection of a related creation of 20 business startups, expected to employ an average of 8 jobs each representing an additional \$10.4 million in earnings and an addition of \$665,000 per year to the state's income tax collections.





REALIZING THE VISION

The process of developing this plan extended the dialogue, exchange of information, ideas and aspirations of the academic, research, private and public entities that are key to UMR's success. While the plan represents a milestone, the open forum that it represents must be sustained to take advantage of the opportunities, both collectively and individually, identified through this planning process. The University must continue in its role as facilitator of dialogue, to create a campus that truly partners with industry to serve its needs and to increase the strength of the University in teaching and research related to the health sciences. Additionally, as established by the RHEDC, the development of this campus must

The vision for UMR is of an institution supported by collaborative and partnership relationships that nurtures creative ideas, entrepreneurship, and innovative approaches to education and research

result from highly targeted and leveraged capital investment from the State or university system. Through many tests, this plan's conclusion is that this leverage requires the full support and engagement of partners to the university.

The vision for UMR is of an institution supported by collaborative and partnership relationships that nurtures creative ideas, entrepreneurship, and innovative approaches to education and research in the health professions, technology, biomedicine, business organizational leadership, and other fields.



The plan for this institution addresses the following imperatives:

- As a member of U of M system, UMR must contribute to the overall success of the system as well as distinguish itself through inventive academic programs, research, and pedagogy.
- As a partner to Mayo Clinic Rochester, IBM, and other industry leaders of southeast Minnesota, UMR must commit itself to innovative collaborations.
- As U of M's Rochester campus, UMR must act as a facilitator linking research activity at UMTC with such partners as Mayo Clinic Rochester and IBM.
- As partners, the state and municipal governments, Mayo Clinic Rochester, and the university must collaborate in developing the financial foundation to realize the plan's vision.
- As an engine of state economic growth, UMR must build signature programs to advance the state's position through contributions to southeast Minnesota's prominence in health sciences, biosciences, engineering, and technology.
- As a major part of the civic fabric of Rochester, the campus must establish a respectful, engaged relationship with the city, neighbors, and business community. The plan is committed to increasing urban vitality of downtown Rochester through the character of the campus' physical design and its successful integration with the city.

Implementation of the plan in the near term asks that the university and its partners undertake the following:

- Advance UMR educational objectives,
- Craft a research MOU between the University and Mayo Clinic Rochester,
- Create the University Institute for the Advancement of Research Partnerships,
- Develop a comprehensive plan for downtown Rochester that contemplates the university's presence, its need for partners in facilities, and its potential impact in stimulating demand for more retail and residential development
- Assemble sufficient land for the campus, and
- Develop and advance a detailed financing plan for the campus.



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS**

Facilities Committee

February 12, 2009

Agenda Item: Twin Cities Campus Master Plan

review review/action action discussion

Presenters: Vice President Kathleen O'Brien
Judith Martin, Professor, Geography
Orlyn Miller, Director, Capital Planning
Leslie Krueger, Associate to the Vice President, University Services
Monique McKenzie, Capital Planning & Project Management

Purpose:

policy background/context oversight strategic positioning

To present to the Board of Regents the updated Twin Cities Campus Master Plan. The Twin Cities Campus Master Plan supports the University's academic mission and guides future land use and capital project decisions over the next decade, ensuring that:

- Unique qualities of the campus will be preserved and enhanced
- Targeted areas will evolve to enhance the long term vision of the campus.
- Individual buildings and landscape improvements will contribute to the order, unity, and image of the campus as a whole.

Outline of Key Points/Policy Issues:

The Master Plan describes a future of the University of Minnesota Twin Cities campus that is driven by the University's strategic vision and academic plan. The Twin Cities campus is a historic physical place that supports a 'sustainable community of discovery' – a community directed toward excellence in the teaching, research and outreach activities that define the University of Minnesota. – and inspires pride in the people who study, work, reside and visit the campus.

The University of Minnesota Twin Cities campus will foster connections as a supportive place for people to do their best academic work and collaborate on issues of mutual interest. The campus is an environment where faculty and students are inspired to excel academically, and feel confident in their process of discovery. Design, management, operations and maintenance practices will sustain the long term environmental, economic, and social viability of the institution. Staff are supported in their use of best available practices and research to make wise decisions about important aspects of the campus' physical features, such as its lands and buildings, energy resources, waste management and environmental remediation.

Guiding Principles

The Master Plan is driven by the belief that an integrated, beautiful, well-maintained university campus will advance the institution's academic mission. A sustainable attractive environment that fosters discovery and connections is integral to the University's reputation and competitiveness in the nation and the world. The foundational principles that describe the Master Plan's core values are:

1. Cultivate a genuine sense of community
2. Strengthen connections to adjacent communities
3. Create a cohesive, memorable system of public spaces
4. Provide a compatible and distinctive built environment
5. Steward historic buildings and landscapes
6. Foster a safe, secure, and accessible campus environment
7. Preserve and enhance natural systems and features
8. Develop integrated transportation systems emphasizing pedestrians, bicycles and transit
9. Optimize the use of campus land and facilities and apply best practices
10. Utilize the campus as a living laboratory to advance the university's mission
11. Develop a campus that is environmentally and operationally sustainable

To effectively guide future campus development decisions and operationalize its directives, the Master Plan will be consulted throughout every planning and design effort to ensure its influence on project formulation, site selection, and design development. It will also inform the University's capital planning process and be the foundation for daily operational decisions.

Background Information:

Board of Regents Policy: *Reservation and Delegation of Authority*, section VIII, subdivision 4, states, "The Board reserves to itself authority to approve campus master plans and amendments thereto."

In 1992 the Chair of the Board of Regents and the President of the University appointed a Master Plan Steering Committee to "design and recommend a set of principles which will discipline and inspire the development of a master planning process."

In 1993, the Board of Regents adopted the following four Campus Master Planning principles as developed by the Master Plan Steering Committee:

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

In September 1996, the Board of Regents adopted a resolution directing the campus master plans reviewed earlier in the year to be used to "guide the future development of the campuses in accordance with the four planning principles and the policies, procedures and strategies therein will be the basis for all future master planning decisions."

In February 2006, President Bruininks charged a faculty/staff steering committee, co-chaired by Vice President Kathleen O'Brien and Professor Judith Martin to begin the process of updating the 1996 Master Plan. In February 2007, the Steering Committee convened the following five work teams, based upon the guiding principles of the 1996 plan, to update components of the plan:

- Enhancing the Campus
- Natural Features and Open Spaces
- Movement and Access
- Safety, Community Connections, & Collaborative Ventures
- Design and Preservation

These teams, consisting of faculty, staff, students and other key stakeholders reframed the guiding principles and developed new guidelines for the plan. They have conducted Campus wide forums and engaged stakeholders in listening sessions. Using internal resources and expertise to update the Twin Cities Campus Master Plan has resulted in the development of a plan that reflects the University community and supports the academic plan of the University.

Since June 2006, the Facilities Committee has received periodic updates as to the progress of the process to update the campus plan. At their December 2008 meeting, the Facilities Committee received a detailed presentation regarding the process followed to update the plan and a preview of key recommendations.



University of Minnesota Twin Cities Campus

discover connect sustain

REGENTS DRAFT



University of Minnesota Twin Cities Campus

discover connect sustain

Prepared for:
University of Minnesota
Board of Regents
February 2009

Charge to the Steering Committee

In 2006, University of Minnesota President Robert H. Bruininks appointed a Master Plan Steering Committee and charged it with the task of updating the 1996 Master Plan. The charge included the following directives:

- Align and integrate the Master Plan with University core processes such as strategic positioning (see textbox), academic planning, and funding expectations
- Take full advantage of the major initiatives scheduled for the next decade
- Focus on “growing a campus” rather than building individual buildings
- Instill the principles of sustainability, so that the new plan leaves the campus better for future students, staff, and faculty
- Optimize the distinction of being the largest research University that bridges the Mississippi River
- Increase ownership of the Master Plan by the University community, and ensure broad and meaningful consultation with key constituencies

Steering Committee

Judith Martin, Professor, Geography & Urban Studies, College of Liberal Arts, Co-Chair
 Kathleen O’Brien, Vice President, University Services, Co-Chair
 Sheila Ards, Associate Vice President, Community Partnerships & Development
 Terry Bock, Associate Vice President, Academic Health Center
 Beverly Durgan, Dean, & Director, Extension Service
 Art Erdman, Professor, Mechanical Engineering, Institute of Technology
 Missy Gettel, Minnesota Student Association Representative
 Denise Guerin, Professor, Design, Housing and Apparel, College of Design
 Bob Johns, Director, Center for Transportation Studies
 Kristi Kremers, GAPSAs representative
 Bob Kvavik, Associate Vice President, Academic Planning
 David Levinson, Associate Professor, Civil Engineering, Institute of Technology
 Orlyn Miller, Director, Planning & Architecture
 Lance Neckar, Professor & Associate Dean, College of Design
 Jerry Rinehart, Vice Provost, Student Affairs
 Suzanne Sobotka, GAPSAs representative
 Becky Yust, Professor & Department Head, Design, Housing & Apparel
 Leslie Krueger, Chief of Staff, University Services, Staff to Steering Committee

Staff Team

Craig Amundsen, Weisman Art Museum
 Tony Brown, Recreational Sports
 Chris Fraser, Institutional Research
 Leslie Krueger, Co-Chair, University Services
 Jim Litsheim, Architecture and Planning- CPPM
 Monique MacKenzie, Architecture and Planning- CPPM
 Orlyn Miller, Co-Chair, Architecture and Planning-CPPM
 Jan Morlock, University Relations
 Andy Phalen, Environmental Health & Safety
 Michael Ramolae, Parking & Transportation Services
 Lorelee Wederstrom, Academic Health Center
 Sally Westby, University Services
 Mapping and Graphics Consult: CLOSE Landscape Architecture +

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Introduction

VISION

The University's ten year vision, approved by the Board of Regents in 2007, is as follows:

- An expanding University, with state-of-the art research facilities and infrastructure that enable us to proactively recruit from peer institutions and even the private sector.
- A distinctive University that emphasizes its own strengths and those of the state of Minnesota to attract the best-prepared and brightest students, faculty, and staff from around the world.
- An agile University, with flexible structures, systems, and processes that enable rapid response to new opportunities and changing problems.
- An engaged University, fostering strong collaborative relationships with the state, federal funding organizations, industry, and donors, all of whom view the University first and foremost as a resource worth protecting.

From Strategic Positioning Report, 2007

Introduction

The Twin Cities Campus Master Plan 2009 establishes a framework for guiding the evolution of the campus environment to support the academic mission. It sets the vision for the future, building upon the existing physical attributes, including natural features, open spaces, existing buildings and infrastructure, land use relationships, and the network for movement to, from, and around the campus.

Role of the Master Plan

The master plan will serve multiple functions for its various audiences.

- It will inform the University community and public of the University's aspirations and development goals
- It will guide decisions of the University Administration and the Board of Regents regarding capital investments, physical improvements, and operational activities on the campus, affecting buildings, landscapes and infrastructure.
- It will be a tool for planners and designers to evaluate all future development proposals to ensure that each capital project contributes to the achievement of the broader campus vision.

Organizing Structure of the Plan

This Master Plan is organized in layers, starting with statements of values and aspirations and moving through progressively more detailed planning and design directives. It is comprised of the following components:

- **Overview:** Existing conditions that establish the current campus structure and the anticipated forces and trends that will influence its change.
- **Guiding Principles:** Eleven key ideas that express the aspirations of the University and provide the foundation for all plan recommendations.
- **Plan Elements:** Application of the guiding principles to key physical systems of the campus – campus districts, natural resources, transportation and circulation, and public spaces and buildings – with strategies and guidelines for achieving those principles.

Drafting the Master Plan

To increase ownership of the Master Plan by the University community, this master plan was developed using the expertise of the faculty, staff and students on campus. The Master Plan Steering Committee representing academic, student life, environmental, and operational perspectives, developed a framework for campus evolution that:

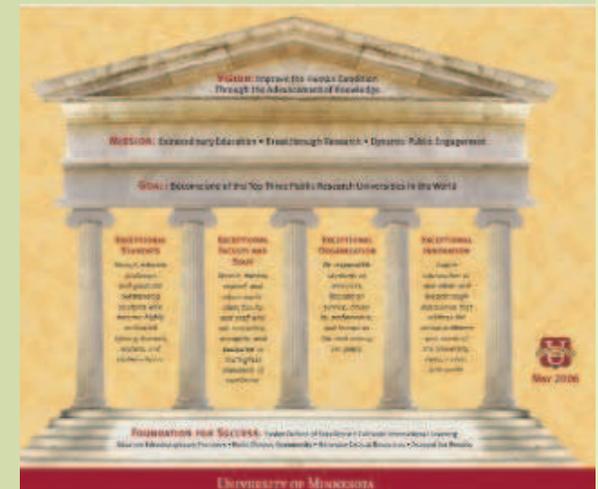
- Established the vision for the future campus
- Defined the programmatic drivers that will create the essence of the campus
- Defined the quality of space and facilities needed to support the research, instructional, and outreach activities
- Identified the infrastructure required to efficiently support academic facilities
- Established design standards for creating a distinctive place where people want to be

- The Steering Committee developed an inclusive process for updating the plan that engaged over 75 additional faculty, staff, students, professional practitioners on five work groups. These five work groups focused on enhancing the campus; natural features and open spaces; design and preservation; community connections, collaborative ventures and safety; and movement and access.

The groups worked for a year to produce recommendations for confirming, revising and enhancing the directives of the 1996 plan to reflect the University's aspirations for the future. In addition to these work groups, the broader University community was engaged at key points in the process through: periodic public forums held on the East Bank, West Bank, and in St. Paul; conversations with key stakeholder groups; consultation with the University Senate Committee on Finance and Planning; and updates to the Board of Regents. During these sessions, input was received and incorporated into the plan.

STRATEGIC PLAN

The 2007 strategic plan for the University of Minnesota is based on four action strategies, fostering exceptional students; exceptional faculty and staff; exceptional organization and exceptional innovation.



Decisions about the buildings, lands, infrastructure, operations and resource consumption associated with the campus will be driven by the primary academic goals articulated in the University's strategic planning documents. The Master Plan provides guidance on the character and role the various physical components of the campus should have relative to the academic goals and surrounding physical context.

Executive Summary

The Twin Cities Campus Master Plan will support the University's academic mission and guide future land use and development decisions over the next decade, ensuring that:

- Unique qualities of the campus will be preserved and enhanced
- Targeted areas that will evolve to enhance the long term vision of the campus.
- Individual buildings and landscape improvements will contribute to the order, unity, and image of the campus as a whole.



Guiding Principles

The Master Plan is driven by the belief that an integrated, beautiful, well-maintained university campus will advance the institution's academic mission. A sustainable attractive environment that fosters discovery and connections is integral to the University's reputation and competitiveness in the nation and the world.

The foundational principles that describe the Master Plan's core values are listed below:

1. Cultivate a genuine sense of community
2. Strengthen connections to adjacent communities
3. Create a cohesive, memorable system of public spaces
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6. Foster a safe, secure and accessible campus environment
7. Preserve and enhance natural systems and features
8. Develop integrated transportation systems emphasizing pedestrians, bicycles and transit
9. Optimize the use of campus land and facilities and apply best practices
10. Utilize the campus as a living laboratory to advance the university's mission
11. Develop a campus that is environmentally and operationally sustainable

Plan Elements and Guidelines Community Connections

Physical, academic and social relationships are the foundation of improved connections within the University and between the University and the adjacent community.

- Apply the published Regent's Boundary to guide future expansion of campus and to convey to the broader community the University's long term plans
- Strategically site new development in locations where it will contribute to defining, consolidating and adding to the vibrancy of campus and the surrounding community
- Participate in initiatives that improve the visual image of the campus along pedestrian access routes
- Support shared interests between the University of Minnesota Twin Cities Campus and adjacent neighborhoods
- Collaborate with other partners to reinvest in near-campus housing initiatives that meet the needs of members of the university community
- Support the continued enlivening of the St. Paul campus.
- Coordinate academic and physical resources to establish learning communities that extend beyond traditional teaching/learning spaces and classrooms
- Design flexible learning, living, working and gathering spaces to support community

Natural Features and Systems

An increasingly sustainable use of resources is an underlying priority of the Master Plan. Strategic decisions about changes to the campus' natural features will be informed by environmental, economic and social considerations.

- Optimize physical and visual connections to the river corridor
- Support the intent of the Critical Area Act and MNRRRA Guidelines.
- Avoid disturbing topography and natural features, and restore to natural conditions in the Mississippi River Corridor wherever possible
- Protect the Mississippi River water quality from negative impacts of campus development and activities
- Use best hydrological practices to protect and restore critical natural areas and other watershed resources
- Manage compliance with state and federal standards, and apply surface water performance standards to guide management, future planning and design
- Use an integrative, multipurpose and conservation approach to resource consumption decisions related to development, infrastructure and operations practices on campus.
- Respect and respond to existing natural systems and green infrastructure elements.

- Manage campus landscapes to achieve energy conservation, emissions mitigation and reduction of other negative environmental impacts.
- Promote the use of campus lands and open spaces as research, teaching and demonstration lab for outreach and scientific endeavors.
- Identify critical areas to be held open in perpetuity based on their environmental significance

Vision Statement: Discover, Connect, Discover

The Master Plan describes a future of the University of Minnesota Twin Cities Campus that is driven by the University's strategic vision and academic plan. The Twin Cities Campus is a historic physical place that supports a 'sustainable community of discovery' – a community directed toward excellence in the teaching, research and outreach activities that define the University of Minnesota. – and inspires pride in the people who study, work, reside in and visit the Minneapolis and St. Paul campus.

The University of MN Twin Cities campus will foster connections as a supportive place for people to do their best academic work and collaborate on issues of mutual interest. The Twin Cities Campus is an environment where faculty and students are inspired to excel academically, and feel confident in their process of discovery. Design, management, operations and maintenance practices will sustain the long term environmental, economic and social viability of the institution. Staff are supported in their use of best available practices and research to make wise decisions about important aspects of the campus' physical features, such as its lands and buildings, energy resources, waste management and environmental remediation.

Movement and Circulation

The campus is well served by a variety of transportation choices. Priority will be allocated in design, operations and construction to pedestrians, bicycles and transit.

- Prioritize pedestrian movement over other modes whenever feasible.
- Provide a barrier-free, safe and accessible experience of moving around on campus.
- Design and build signature streets that reinforce campus identity and identify welcoming routes to and from campus for all modes of travel.
- Enhance wayfinding and orientation for all modes of travel.



- Accommodate bicycles in on-street lanes at critical locations.
- Design other streets and paths so that bicycles share space and circulate safely alongside pedestrians or vehicles.
- Maintain high frequency, easily accessible transit service to link all campus districts and connect the St. Paul and Minneapolis campus
- Limit vehicular access in the core of campus to service, loading or short-term access to buildings.
- Build or retrofit centralized building service and loading facilities whenever possible.
- Encourage use of campus public spaces with high quality design and maintenance.
- Ensure that paths between public spaces and buildings support pedestrian circulation as the primary transportation mode on campus.
- Preserve historic resources through adaptation of new facility needs to existing buildings.
- Remove obsolete buildings when necessary to meet academic goals or to improve relationships between buildings, public spaces and natural features.
- Design buildings to be flexible and adaptable in accommodating the university's academic mission.
- Plan and build new buildings located on the edges of campus to be sensitive to their impacts on adjacent neighborhoods.
- Increase recognition of the river's presence on campus through public space and building design.
- Utilize renewable materials and sustainable methods in campus buildings and landscapes.

Public Spaces and Buildings

The distinct character of the Twin Cities campus will be enriched as new open spaces and buildings are developed. Public spaces between buildings will be well-connected, designed with an understanding of the connective tissue of paths, axes and human scale open spaces.

- Make the campus a safe, coherent, comfortable, convenient place.
- Enhance the unique character of the campus through preservation of key unifying visual patterns.

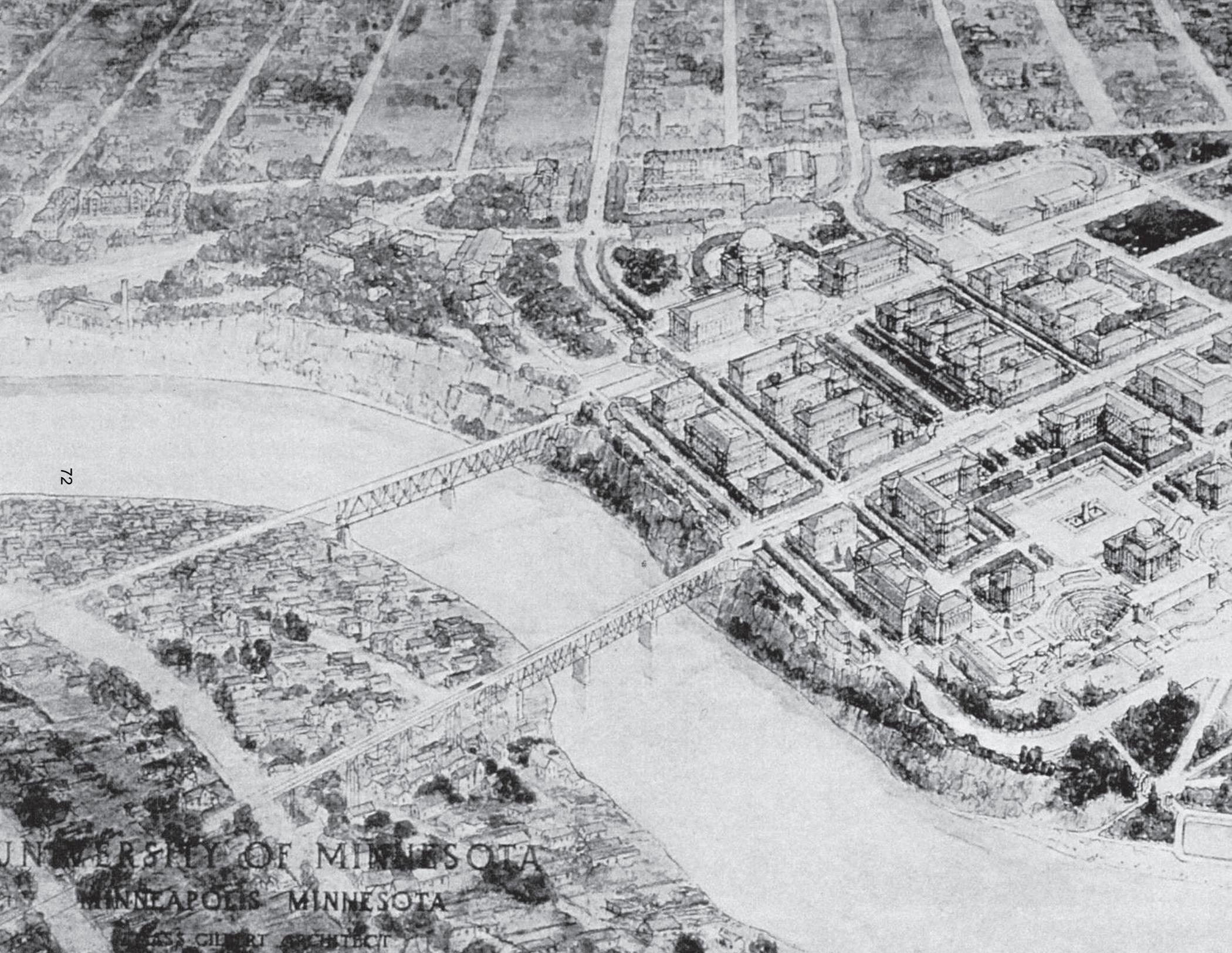
Implementation Summary

To effectively guide future campus development decisions and operationalize its directives, the Master Plan will be consulted throughout every planning and design effort to ensure its influence on project formulation, site selection, and design development. It will also inform the University's capital planning process and guide daily operational decisions.

Key Guidelines:

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- The University will apply extensive research and best practices in the implementation capital projects and the management of operations
- All initiatives that affect the land use, buildings, open spaces, landscape and infrastructure of the campus shall be subject to a formal review and approval process to ensure conformance with the Master Plan.
- Guiding principles of the Master Plan shall be applied to specific and unique conditions of the campus through the development of more detailed district plans.
- Increase recognition of the river's presence on campus through public space and building design.
- Utilize renewable materials and sustainable methods in campus buildings and landscapes.



UNIVERSITY OF MINNESOTA

MINNEAPOLIS MINNESOTA

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Overview

Evolution of the Campus

The Twin Cities Campus consists of three distinct locations: East Bank, West Bank and St. Paul. In Minneapolis, the University's holdings span one of the few true gorges the Mississippi River forms in its entire 2,200-mile length. About 4 miles east of the Minneapolis campus, the agricultural experiment station was established on the edge of the city of St. Paul in the late 1880s. The 22 million square feet and 392 acres of land that comprise the Twin Cities contiguous campus have been evolving since the first buildings were erected in the 1880's. Taken as a whole, the campus in its three parts can be understood as a learning environment in which all resources, specifically the physical ones, are considered part of a web of sustaining cultural practices and systems comprising a public research University.

Minneapolis

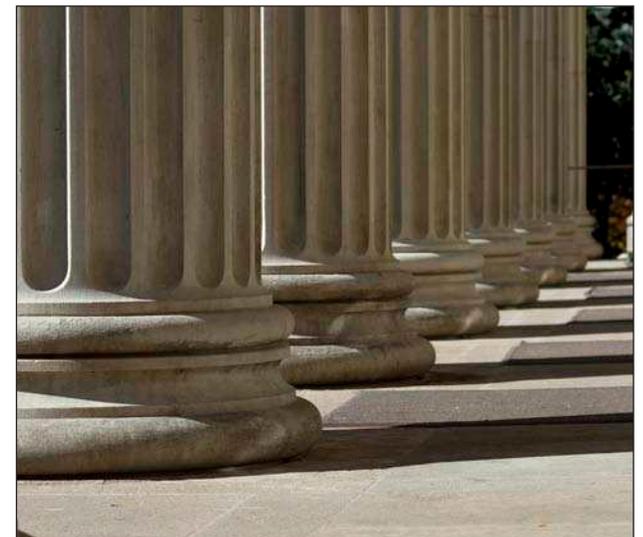
The Knoll and the Mall are the traditional heart of the Twin Cities campus, defining an iconic campus landscape for generations of students and offering the university community remarkable architectural buildings that link present-day campus life to the original days of the institution. The Knoll contains some of the campus' oldest buildings, constructed on the foundation of H. W. S. Cleveland's landscape plan created in the last decade of the 19th century. In the first decade of the 20th century, the plan for the Northrop Mall, a formal north-south open space flanked by symmetrically arranged neo-classical buildings, was prepared and executed by Cass Gilbert and

Clarence Johnson respectively. These places constitute the historic core of the Minneapolis campus. Their role in creating an enduring image, a sense of place and a sense of history for the campus has dominated the Twin Cities campus for decades.

The East Bank has traditionally housed the liberal and design arts, humanities, technology and engineering as well as the medical school. The Academic Health Center is one of the most intensely developed areas on campus, supporting a diverse range of activity including teaching, research, clinical practice and in-patient/out-patient hospital activity. Since the Medical School was established, growth in the teaching and research functions has fueled expansion and infill development, moving to the east as resources and demand evolves.

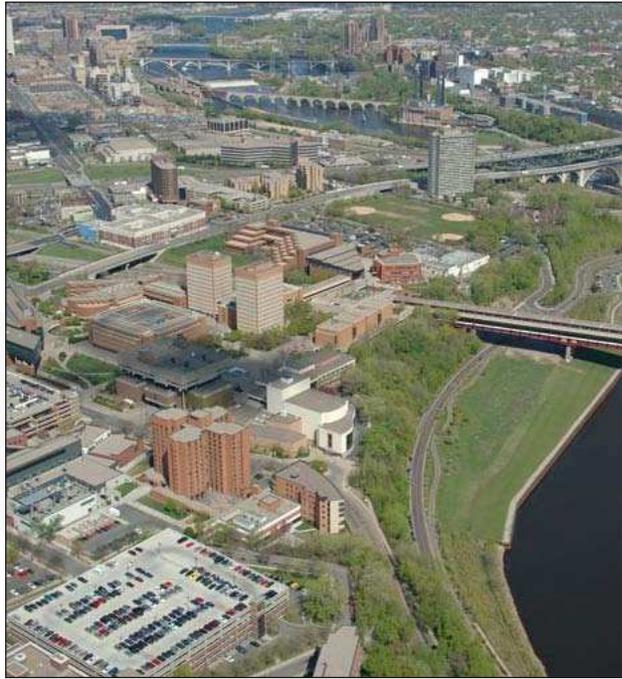
A cluster of residence hall neighborhoods are found at a number of East Bank locations, along University Avenue, the River Road and in the residential 'superblock' east of the Academic Health Center.

Athletics facilities have defined the northwestern edge of the Minneapolis campus since the early days of the campus. The original Memorial Stadium, demolished in 1992, has been replaced as of 2009 by a new football stadium located east of the original location. Other facilities for University athletics and recreational and intramural sports cluster together in what had been the edge of the campus until the late 1990s.



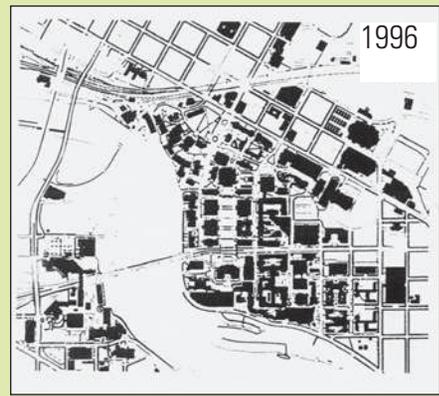
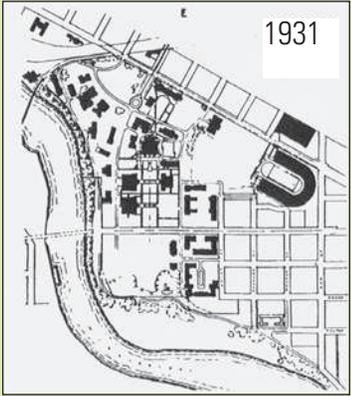
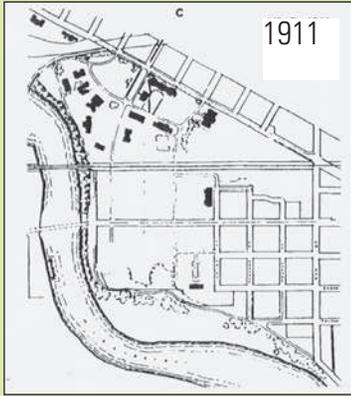
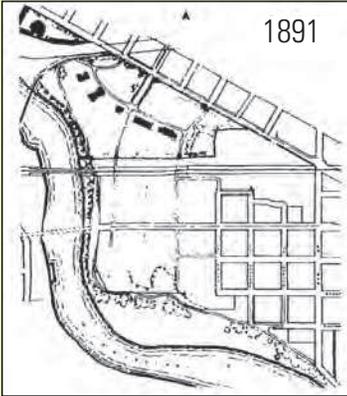


Plans for a campus expansion across the Mississippi River to its western banks were first drafted in the late 1930's. In the 1960's, two West Bank buildings (Blegen Hall, Social Science tower) as well as the Washington Avenue bridge were constructed. Today it is the home of arts and humanities, social sciences, and professional schools. A smaller campus residential neighborhood clustered around Middlebrook Hall sits on top of the river bluff. The physical characteristic of the West Bank reflects the architectural concepts of the time. It consists of a handful of buildings built on landscaped and hard-surfaced podiums with little vehicular access. Grade separation of the Washington Avenue roadway from the campus separates the pedestrian and bicyclist from vehicles as they cross the bridge, but makes it difficult to access transit from the 'upper deck' of West Bank paths and skyways.



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Campus Evolution: Minneapolis



The Twin Cities campus consists of approximately 1,100 acres located in the heart of the metropolitan Twin Cities region. The Minneapolis districts flank the Mississippi River just down river of downtown and historic St. Anthony. Two and a half miles away, the St Paul districts are clustered around the original site of the University Farm and the first agricultural station, adjacent to the State Fair Grounds.

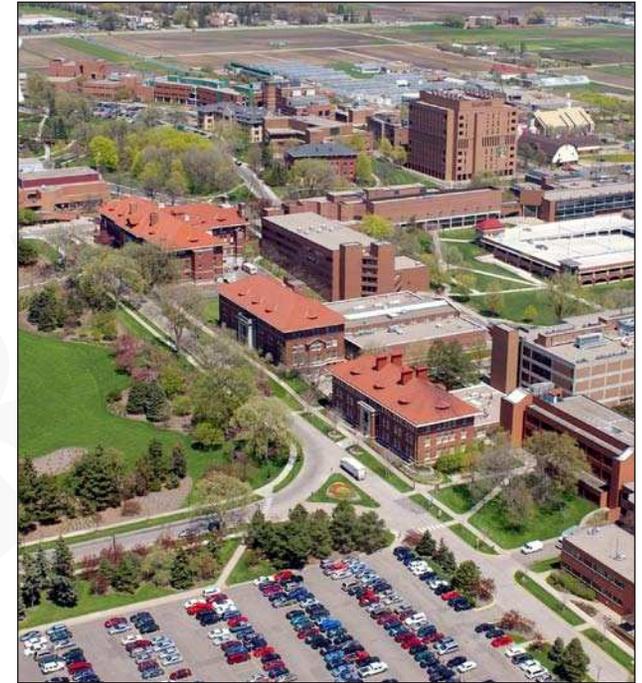
St. Paul

The St. Paul campus was established several decades after the Minneapolis East Bank location as a farm campus and agricultural experiment station. The oldest buildings on the St Paul campus date from the late 1880's. The rolling moraine topography heavily influenced the first arrangement of buildings, which were located on a ridge oriented towards the 'south bowl', which eventually became the Lawn. Later 19th century buildings were sited on remaining ridge top sites circling the north bowl. Today that bowl is occupied by recreational fields, to the south of the St. Paul gym.

The St. Paul campus is noted for its vast areas of open spaces and naturally occurring features, such as the edge of existing bluffs, like trails along the east river road, wooded ravines or the restored Sarita wetland. Other spaces that support recreation and gathering, such as the Lawn and Bowl, smaller quadrangles and plazas bring a distinctive identity to St. Paul.

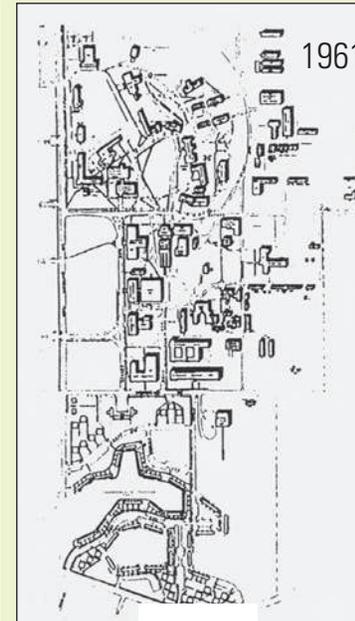
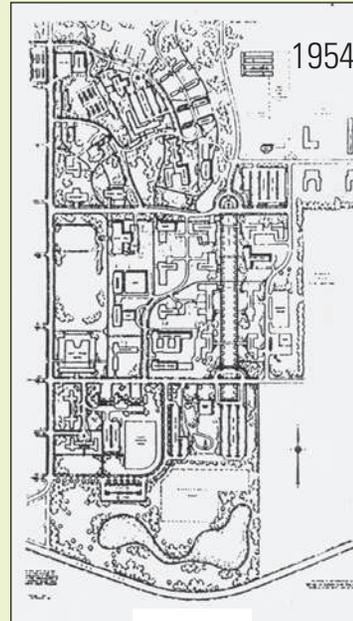
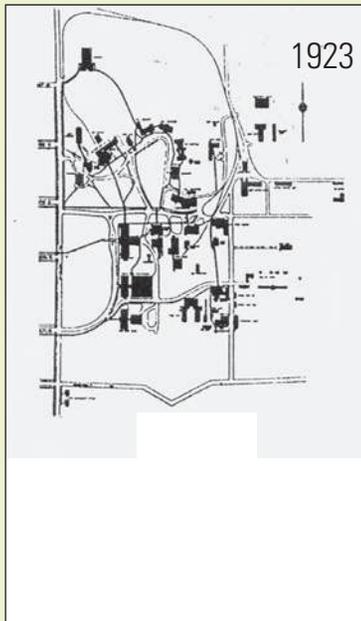
Between the 1930's and 1950's, the St. Paul Campus was planned as a campus landscape with formal, linear and rectangular open spaces and perimeter buildings located to reinforce the effect of primary public open spaces. At the same time, a new generation of buildings rose in St. Paul, including academic and residential buildings such as Bailey Hall, the Agriculture Library and the Poultry Building. A large acreage was built as Commonwealth Terrace Student and Family Housing in 1958, following the platting of University Grove as an architect-designed neighborhood in the 1920's. Land purchases made between the 1930's and 1950's expanded the campus to the north and the lands acquired were primarily used for agricultural research and to support livestock.

Today the St. Paul campus incorporates the agriculture and natural resources, biological sciences, extension



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Campus Evolution: St. Paul



services, veterinary medicine, and design in a leafy academic setting that was once an arboretum. It continues in its role as an agricultural experiment station, with research conducted in the fields, greenhouses and laboratories of the area.

Changes since the 1996 Master Plan

Beginning in the early 1990's on the East Bank, the University acquired underutilized land from the railroads, built roads and installed utilities, and demolished unused grain elevators and storage silos.

The University has re-urbanized former railroad areas by building a regular street grid and additional utility infrastructure concluded in 2007. A new football stadium was built in 2007-2008, and will open in late 2009 to host major athletic and social events on campus.

This area of the campus, the East Gateway, began to develop as flagship biomedical research locations in the mid 1990s. By 2000 there were two buildings devoted to this work located in the neighborhood. A new wave of development between 2005 and 2013 will result in an additional three biomedical buildings in the district.

On the West Bank, an emerging Arts District reaching down to Riverside Avenue created a home for performance and studio arts in the early 2000s. The Carlson School of Management has located along Riverside Avenue over the last 10 years.

Renovation of Key Historic Buildings

Renovation of key historic buildings on the East Bank has resulted in upgrades to Jones Hall, Nicholson Hall, Education Sciences Building, Walter Library, Murphy Hall, Ford Hall and Coffman Union. On the St Paul campus, the new Cargill Plant Genomics Building and the Equine Center have been developed. Historic renovations of Haecker Hall, Peters Hall, and Snyder Hall have renewed these buildings' academic purpose while preserving the established physical character of the campus.

Master Plan Assumptions

Stable Student Population

The current undergraduate population of approximately 28,000 has remained constant over the last five years, after an earlier period of growth. Looking forward to the next 10 years, state demographers project that the number of high school graduates will decrease due to declining numbers within the school-age population. Consequently, Minnesota's universities will have a smaller pool of Minnesota high school graduates from which to recruit members of new freshman classes.

The University intends to maintain a stable student population. In order to maintain the equivalent population of undergraduate students on campus, the University of Minnesota will compete for college-bound high school graduates who currently reside in other states and countries while keeping Minnesota students a priority. In this way, the University will be able to recruit and import talent for Minnesota workforce needs. While this could lead to greater diversity within the student population, it will not significantly affect the physical use of campus facilities.



Growth in Faculty and Staff based on Academic Plan

The graduate and professional student population consists of approximately 35% of the full and part time student population on the Twin Cities campus. Growth

in the graduate student population is anticipated as a tool to support advanced research and create succession plans for retiring faculty, and improve the talent pool for workforce needs in the state. About 40% of the current faculty of approximately 3,500 people will reach retirement age between 2005 and 2015.

In response to this potential for change in the faculty ranks, the University's strategic planning effort identified a goal of hiring 1,000 new faculty by 2012. In 2008, two years into the effort, close to 460 new faculty had been hired across multiple disciplines and colleges.

Wise Use of Resources in Facilities and Operational Practices

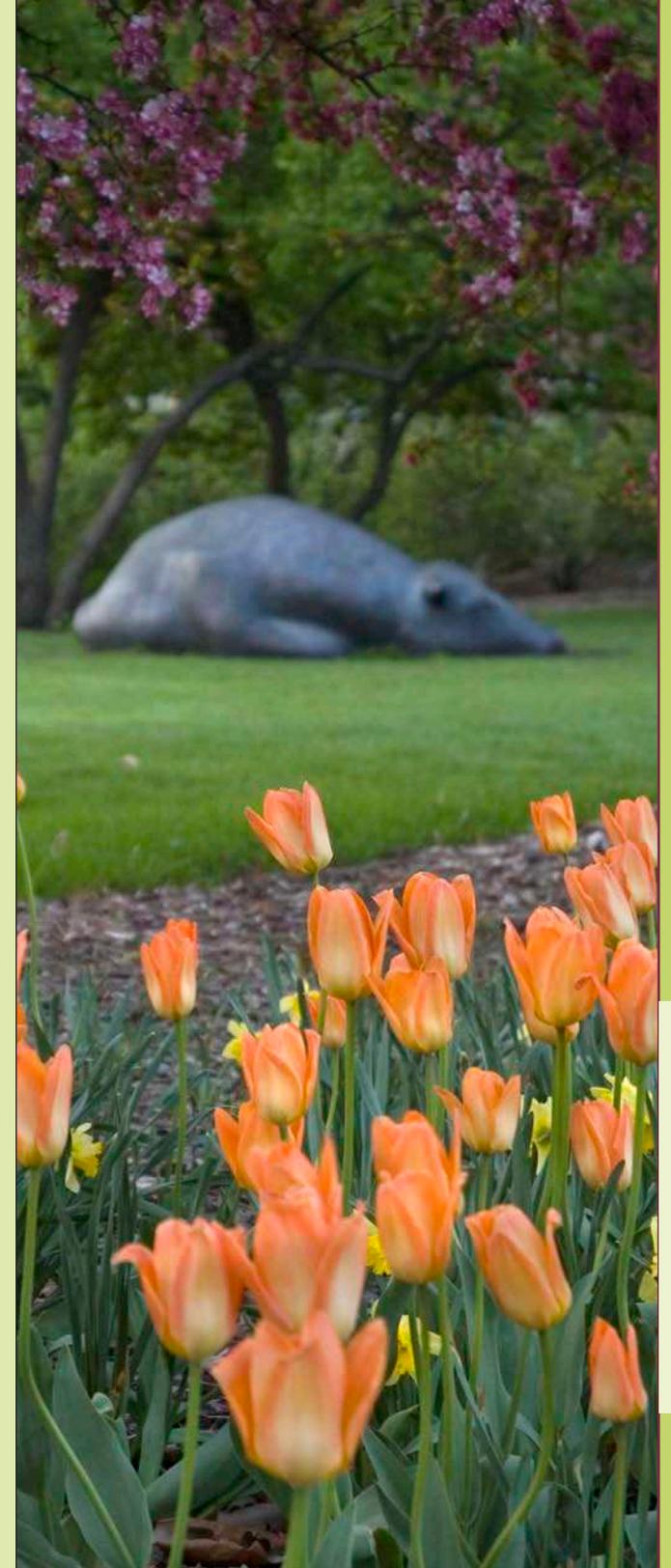
Resources and design, operations and management practices used everyday to support and service buildings and operations at the University are being studied to achieve the University's sustainability goals.

These initiatives to conserve, reduce and change practices are critical because of the significant investment made annually in the buildings, lands and infrastructure of the academic enterprise that is the University of Minnesota.

In future years, aging buildings and infrastructure will require strategically timed investment, and a careful weighing of positives and disadvantages associated with each potential change in the campus' supportive utilities so that they achieve the highest level of reliability, sustainability and cost-effectiveness. The Utility Master Plan suggests that a new power generation plant will be required to replace existing equipment by approximately 2020. In planning for this need, a range of alternatives will be considered including continued use of the existing SE plant as well as creation of a new NE campus plant. Evaluation will be balanced among economic, environmental and social criteria prior to the University making a decision about that investment.

Summary of Master Plan Update Assumptions:

- Stable undergraduate student population
- Increase in graduate and research population
- Minor increase in faculty population
- Stable on-campus housing neighborhoods
- On campus housing occupied by undergraduate or transfer student
- Physical expansion of biomedical research facilities: new construction and occupancy
- Continued demand for physical upgrades and investment in U facilities based on code requirements, sustainability objectives and programmatic needs
- Engage adjacent communities in new U development projects
- Physical expansion of clinical services: new construction and occupancy





UNIVERSITY OF MINNESOTA

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Guiding Principles

A VISION FOR THE FUTURE

The Master Plan sets out a vision that will sustain the Twin Cities campus through the next stage of its evolution. This vision is directly tied to the institution's academic goals.

The Twin Cities Campus is an historic physical place that supports a 'sustainable community of discovery' – a community directed toward excellence in the teaching, research and outreach activities that comprise the University of Minnesota – and inspires pride in the people who study, work, reside in and visit the Minneapolis and St. Paul campus.

The University of Minnesota Twin Cities campus will foster connections as a supportive place for people to do their best academic work and collaborate on issues of mutual interest. The Twin Cities Campus is an environment where faculty and students are inspired to excel academically, and feel confident in their process of discovery. Design, management, operations and maintenance practices will sustain the long term environmental, economic and social viability of the institution. Staff are supported in their use of best available practices and research to make wise decisions about important aspects of the campus' physical features, such as its lands and buildings, energy resources, waste management and environmental remediation.

Guiding Principles

The Campus Master Plan Guiding Principles interpret and amplify the Board of Regents Master Planning Principles established in 1993. They direct future planning and design decisions to reinforce the vision of a sustainable community of discovery set forth in this Campus Master Plan.

Eleven guiding principles are presented as four themes: Building Community; Creating a Model Campus; Integrating Local and Regional systems; and Using Resources Wisely.





Guiding Principle One

Building Community

Guiding Principle One

Cultivate a genuine sense of community

The University aims to provide a welcoming experience, accessible to all. On our campus, human connections which are the essence of a sense of community are nurtured by the physical environment. The physical campus is comfortable, yet stimulating, and evokes a sense of openness and belonging. Campus spaces provide venues for academic and artistic expression.

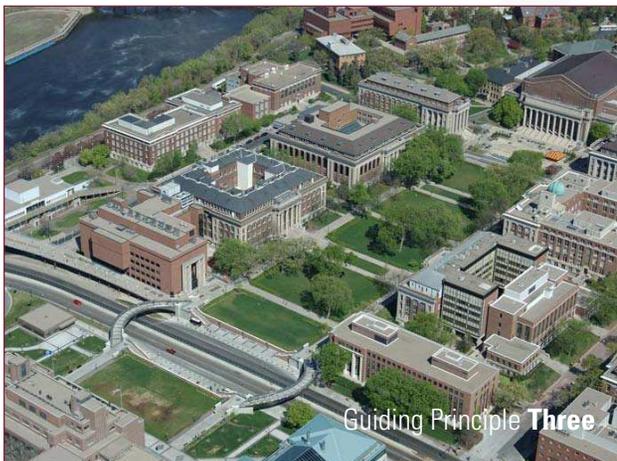


Guiding Principle Two

Guiding Principle Two

Strengthen connections to adjacent communities

The University of Minnesota Twin Cities campus is situated within the vibrant urban core of the metropolitan region. The entwining of the surrounding cities with the campus creates opportunities and connections for the campus community and adjacent communities. The goal of strengthening these ties will guide future efforts and development. As the campus and surrounding communities change, these connections will ensure they both flourish.



Guiding Principle Three

Creating a Model Campus

Guiding Principle Three

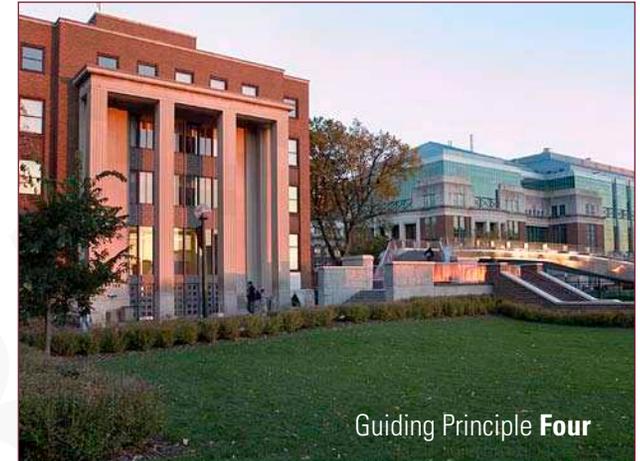
Create a cohesive, memorable system of public spaces

The public spaces of the Twin Cities Campus integrate it and provide diverse, attractive areas for all aspects of academic and community life. These public spaces contribute to the character of the Twin Cities campus and create a comfortable welcoming experience. From grand civic gathering spaces, to green and vibrant streets, to intimate courtyards, and indoor atria, these public spaces support and enrich this community of interactive human activity. These and other public spaces should be flexible, sustainable, and supportive of the academic mission of the University.

Guiding Principle **Four**

Provide a compatible and distinctive built environment

Our campus is an ensemble of buildings and landscapes that work in concert to create a collective experience of place. Individual buildings are understood as important elements within comprehensive building, landscape, and transportation systems. Every campus building has multiple roles to play, balancing the needs of interior function with the need for appropriate character and relationships. High quality architecture defines the campus and new buildings are flexibly designed to respond to the functional requirements of the current programs served, as well as future academic programming.



Guiding Principle **Five**

Steward historic buildings and landscapes

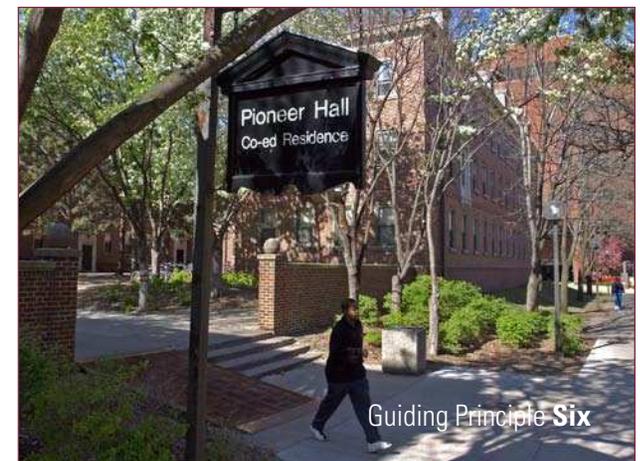
The University's historic resources provide the residents of the State with a sense of history and identity. Adaptive reuse of these buildings and landscapes contributes to the image of the campus as an enduring institution and its sense of place. The promotion of a broad understanding, awareness, enjoyment and continued use of its historic resources is important to the stewardship of the University, and to the University's commitment to sustainability.



Guiding Principle **Six**

Foster a safe, secure and accessible campus environment

The University of Minnesota Twin Cities campus ensures equal opportunities for access through the design and retrofit of its facilities. The real and perceived sense of safety is enhanced through a diversity of design and construction actions including the inclusion of a mix of land uses, landscaping, wayfinding, and the configuration and detailed design of individual buildings and open spaces. Nighttime use is supported with well designed lighting in the open spaces and along pathways. Corridors accommodating various modes of travel are preferred because they are safer and more vibrant. Pedestrian movement is given the highest priority.



Guiding Principle **Seven**

Integrating Local and Regional Systems

Guiding Principle **Seven**

Preserve and enhance natural systems and features

The Twin Cities Campus has a number of important and in some cases spectacular natural features. The Mississippi River, native plant communities, and topographic features contribute to the quality of life on campus and in the surrounding communities. Stewardship of these natural features requires balancing conflicting needs and desires for recreation, research, and contemplation. Such balance can be achieved through development that preserves, enhances and respects the value of these features within the broader regional ecosystem.

Guiding Principle **Eight**

Guiding Principle **Eight**

Develop integrated transportation systems emphasizing pedestrians, bicycles and transit

Integrated transportation systems that ensure pleasant and safe access and movement give priority to pedestrians and bicyclists, followed by mass transit and then automobiles. Such systems facilitate human interactions to promote a sense of community within the campus and between the campus and adjacent neighborhoods. They are integrated into the campus design and land use system in such a way that it enhances campus movement as well as the overall design of campus.

Guiding Principle **Nine**

Guiding Principle **Nine**

Optimize the use of campus land and facilities and apply best practices

Campus facilities must be used efficiently and effectively in support of the academic mission. Assignment of space should encourage interdisciplinary use. Space needs are met first in ways other than building new facilities. Space is flexible and adaptable to ensure buildings can meet academic needs. The development and utilization of University facilities is guided by best practices as well as by the private sector.

Using Resources Wisely

Guiding Principle **Ten**

Develop a campus that is environmentally and operationally sustainable

A sustainable campus integrates ecological conservation, economic viability, and social equity through design, planning, and operational organization to meet current needs without compromising the ability of future generations to meet their own needs. The University strives to become a local, regional, and national leader in the application of sustainability practices, bringing appropriate methods and measures into all areas of our teaching, research, and outreach, and making sustainability a key component of our Master Planning efforts. Sustainability goals must inform campus decisions on energy, development and maintenance of buildings, protection of indoor and outdoor environments, and relationships with adjoining communities. Special attention is given to the University's sensitive location on the Mississippi River.

Guiding Principle **Eleven**

Utilize the campus as a living laboratory to advance the university's mission

The academic mission of the University is demonstrated through the use of the campus as a living laboratory. Open spaces and natural features become opportunities for research and discovery. Teaching is conducted through the use of on-campus examples and the application of knowledge. Operating units partner with academic leadership to bring the best research of the University to guide changes made to the campus environment.



discover connect sustain



Plan Elements and Guidelines

Community Connections

The University of Minnesota Twin Cities Campus is recognized as an educational, research and economic center in the metro area and the state. As the campus changes over the next 10-15 years, one of the primary planning goals is to advance the University as a regional hub of activity, research, teaching and outreach, while enhancing the sense of community within the Twin Cities Campus and with our neighbors. This physical campus provides a space for people to work, create, learn, and gather together. Cultivating a genuine sense of community in planning our physical spaces and in our campus operations will evoke a sense of openness and belonging within Campus and with the broader University community.

A Welcoming Campus Environment

The University of Minnesota Twin Cities Campus is a special place for those who live, work, learn and visit here. The sense of place that is experienced on campus brings us together as a community. To better cultivate this sense of community, the University must continue to provide a well-maintained, attractive, welcoming campus environment. Such an environment is achieved through focused effort and planning and is enriched by the implementation of the guidelines found throughout the master plan.

Guidelines

- Give priority to comfortable, safe, and accessible environments that dignify and show respect for all members of the university community and that encourage ongoing, frequent involvement in programs and services.
- Continue to support teaching, applied research and service learning connections within the Twin Cities campus and surrounding communities.
- Design flexible learning, living, working, and gathering spaces to support community
- Promote the use of certain campus areas as a 24/7 learning environment
- Coordinate academic and physical resources to establish learning communities that extend beyond teaching/ learning spaces and classrooms
- Leverage use of technology- enabled learning spaces for use by the University and its community partners.
- Promote and enliven special spaces that define the University and enhance community
- Support the continued enlivening of the St. Paul campus following recommendations of the St Paul Campus Planning report (Feb 2008)

Guiding Principles

The guidelines laid out in this section address key community connections challenges, consistent with the following Guiding Principles:

- Cultivate a genuine sense of community
- Strengthen connections to adjacent communities
- Create a cohesive, memorable system of public spaces
- Foster a safe, secure and accessible campus environment



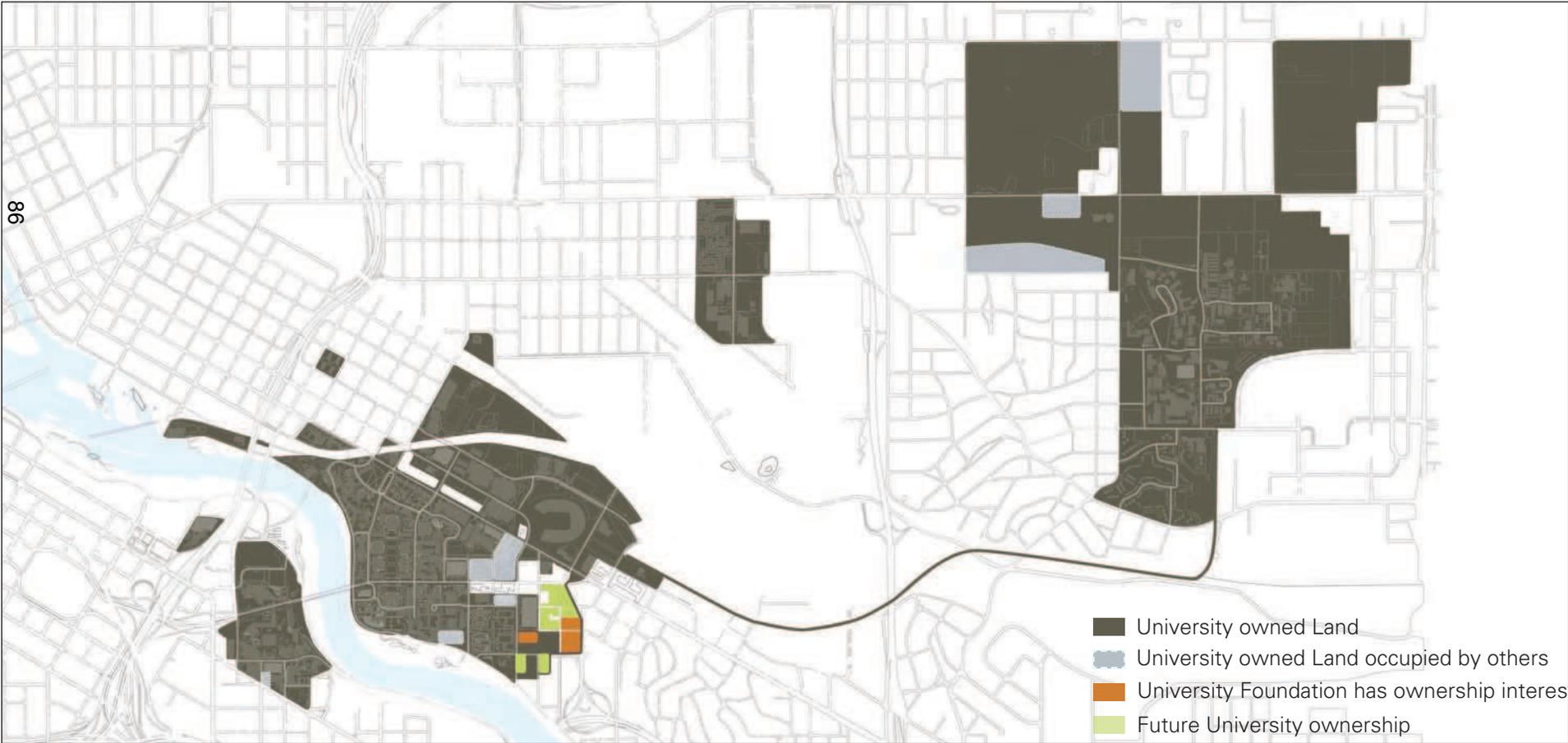
Boundaries & Integration with Surroundings

This Master Plan projects the University’s growth over the next 10 years to promote an understanding of the University’s plans for the future growth and to reduce the potential for distortion in land values and unanticipated demands on street and utility infrastructure. Neighbors and private property owners near campus desire more predictability about where the boundaries will be in the foreseeable future.

The figure below, Campus Lands, provides a guide to the University’s future expansion plans. It indicates (a) land that the University currently owns, including land occupied by other entities, (b) land in which the University of Minnesota Foundation has ownership interests, and (c) land that the University may consider owning within the ten-year time horizon of the master plan. Anticipated and potential acquisitions are concentrated in the area between Oak Street and Huron Boulevard north of Fulton Street. Additional acquisitions within the plan’s time horizon for which specific parcels have not been identified include:

- A site for a new energy plant east of campus
- Land for potential replacement of University service facilities currently located west of 25th Avenue SE and south of Como Avenue in the Como Service Area if this land is transferred to the Minneapolis Park and Recreation Board for park purposes.

Within the plan’s horizon there may be additional acquisitions that are unforeseen at this time. Such activity would take advantage of specific opportunities for strategic purposes. These scenarios may include:

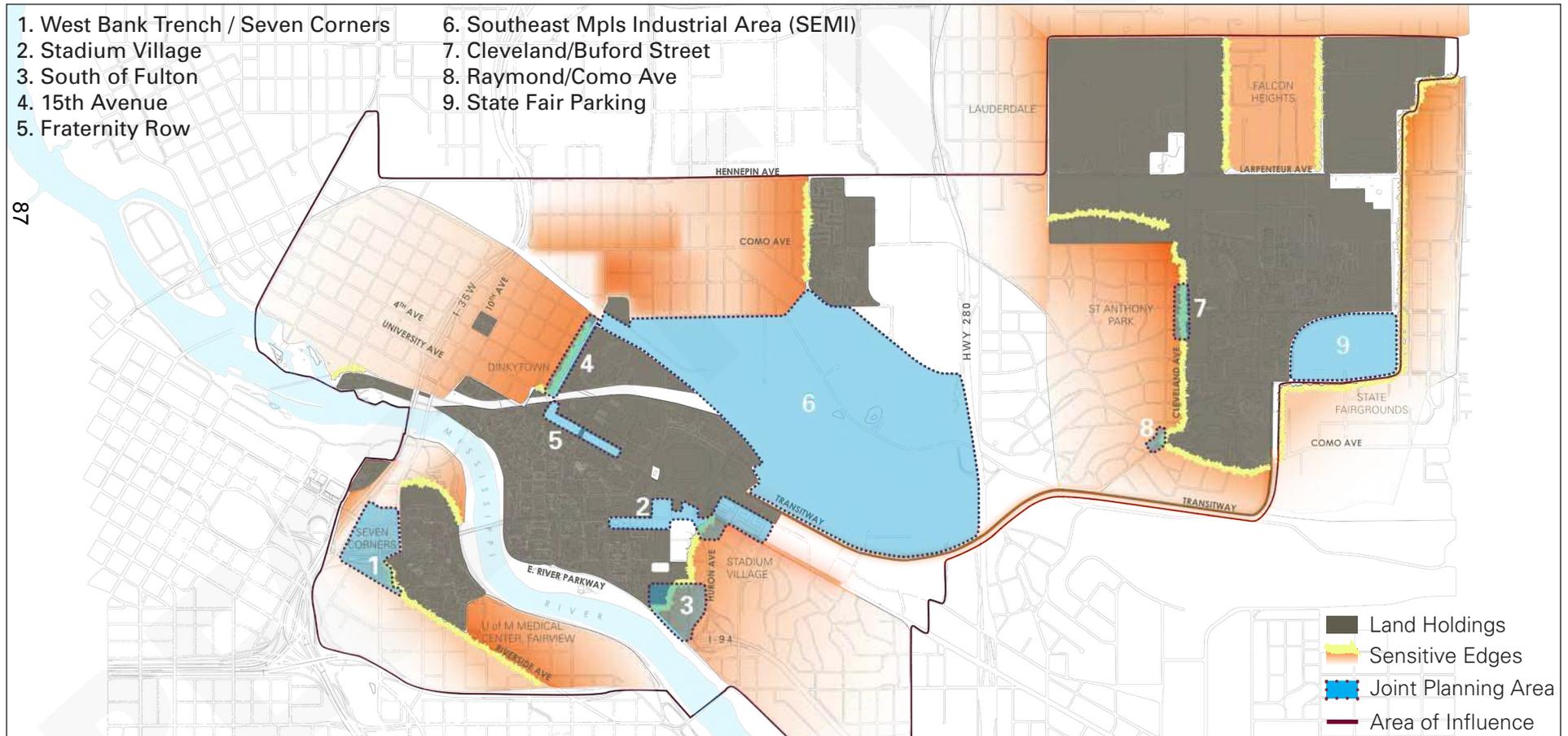


Open Space Framework - Minneapolis Campus

- Land adjacent to the transitway that could be used to expand the University’s research activities or to provide support services for the campus.
- Properties that can be adapted to accommodate expanding University programs.
- Properties for which short or long term holding by the University would advance the objectives of the University Alliance.
- Land and facilities located within a joint planning area that have strategic value to the University and would stimulate redevelopment of the district.

Guidelines

- Apply the published Regent’s Boundary to guide future planning and expansion of campus activities and to convey to the broader community the University’s long term plans.
- Strategically site new University and University-affiliated development in locations where they will contribute to defining, consolidating and adding to the vibrancy of campus and the surrounding community.



Areas of Influence - Twin Cities Campus

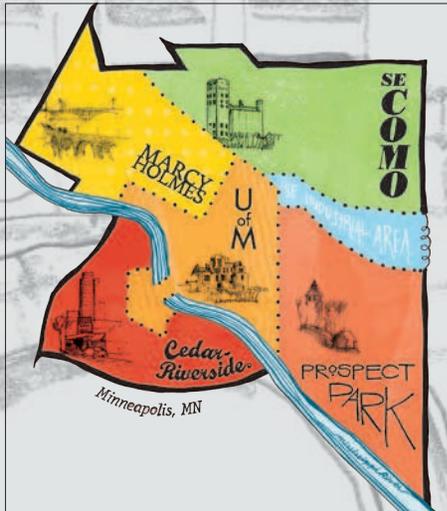
University Alliance

In the 2006 MN legislative session, approval of funding for the construction of an on-campus football stadium spurred a comprehensive partnership between stakeholders including the University, immediately adjacent neighborhoods, the City of Minneapolis and Hennepin County. Out of this partnership, a series of shared values and objectives for evolution of the area in and around the campus emerged.

“The destiny of the University is inextricably linked to the destiny of the adjacent neighborhoods. If the University of Minnesota is to achieve its mission, with maximum positive impact on the state, the City of Minneapolis, and the neighborhoods surrounding its campus, there is a need to create a new relationship that focuses on mutually beneficial and collaborative action.”

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Source: Moving Forward Together: U of M Minneapolis Area Neighborhood Impact Report 2006, p. 4



The University District Partnership includes housing, planning and coordinated initiatives between the University of MN Twin Cities Campus, adjacent neighborhoods, the City of Minneapolis and Hennepin County.

Shared Geography and Areas of Influence

Figure Y, Areas of Influence illustrates the University’s area of influence on adjacent neighborhoods. It shows the University’s landholdings, sensitive edges between the campus and adjacent neighborhoods, and proposed joint planning areas.

Areas of Influence are described as locations where the land and housing markets are affected by university-affiliated populations (students, faculty and staff), and where transit service or high volume streets make neighborhoods as conveniently accessible to the campus. Most of the land within the ‘area of influence’ is not owned or controlled by the University. Partnerships and project collaboration are needed to foster a mutually beneficial, positive environment.

Sensitive edges are mapped to indicate real estate, environmental, research or activity impacts experienced by neighborhoods and the campus itself.

Joint planning areas are districts immediately adjacent to the campus that are in transition and may accommodate future redevelopment. Many of these areas have been identified as strategic locations by neighborhoods or municipalities. By identifying these locations, the University is communicating its desire to work with landowners, neighborhoods and respective municipalities to plan for the mutual benefit of University and the community. Additional land acquisition by the University within these boundaries may occur at some future time. Whenever possible, these activities will be informed by a collaborative planning process with area stakeholders.

One of the key objectives of the 2009 Master Plan is to better define and present the University’s physical image to the broader community. The peripheral areas of the

campus which may traditionally have been viewed as a back door function as a front door to adjacent property owners and neighborhoods. The types of uses and activities that locate on the edges contribute greatly to the nature of the University’s relationship with its neighbors. Building architecture and relationship to public streets is another key component of compatibility and integration.

Guidelines

- Ensure new development located at the edge of campus conveys the campus’ image and physical identity, while acknowledging and respecting the adjacent urban environment.
- Participate in initiatives that improve the visual image perceived along student and visitor pedestrian access routes.
- Support efforts to promote local businesses and community services to students, staff and faculty as potential patrons of these enterprises.

Support for Diverse, Vibrant Neighborhoods

People are drawn to communities that have a strong mix of options for learning, culture, employment, and living. The neighborhoods surrounding the University of Minnesota need to be of vital and attractive, so that staff, faculty and students find many reasons to choose to live in the neighborhoods adjacent to campus. Long-term residents and students deserve safe, affordable, quality housing. Commercial areas in Dinkytown, Stadium Village, and Cedar-Riverside can be enhanced by customer traffic originating from the University community. The neighborhoods adjacent to the University campus need well-cared for public assets such as schools, libraries, and parks. These qualities are closely linked to the University’s attractiveness

Guidelines

- Support the mutually reinforcing relationships as well as shared interests between activities on the Twin Cities Campus and in adjacent neighborhoods
- Collaborate with other partners to reinvest in near-campus housing initiatives that meet the needs of members of the university community.

Attention to Essential Livability Issues

In an urban setting, basic livability issues are core to how students, staff, faculty, and visitors experience campus, as well as how the campus impacts our neighbors. Safety and security are critical to the livability of the campus and the surrounding community. The University also recognizes its impact on the surrounding community and is working to better mitigate potential negative impacts and leverage opportunities to present the University as a welcoming environment for all.

Guidelines

- Promote community building and awareness among multiple stakeholders who live, work, visit, or own property in key neighborhoods adjacent to the University and ensure strong communications linkages with the University.
- Expand community policing strategies and collaboration with other jurisdictions authorities to provide crime prevention and enforcement resources that address issues such as property crime, nuisance noise infractions and other critical livability issues.
- Incorporate crime prevention through environmental design (CPTED) principles in planning for new buildings, campus paths, entrances and gateways.

Draft 2-1-2009



Natural Features and Systems

Natural features that exist within an urban setting can physically and conceptually build links between people's experience of the built environment, such as lookout points on the River bluff paths and larger regional ecosystems, such as the regional Mississippi River watershed. The Twin Cities Campus is unique in its abundance of natural features in such an urban setting. As such, its sustainability is critical to daily activities occurring on campus - teaching, research, civic engagement, and operations - and requires a multi-layered planning process to steward its interconnected resources. This planning process underpins the Regents' policy on sustainability.

The University is committed to positively impacting natural resources. The opportunities from such a commitment can result in environmental benefits that can generate positive results. A philosophy of restorative investments in ecosystem and hydrological features that transcend the boundaries of the campus reflects the Master Plan's priorities on sustainable design, planning and operations.

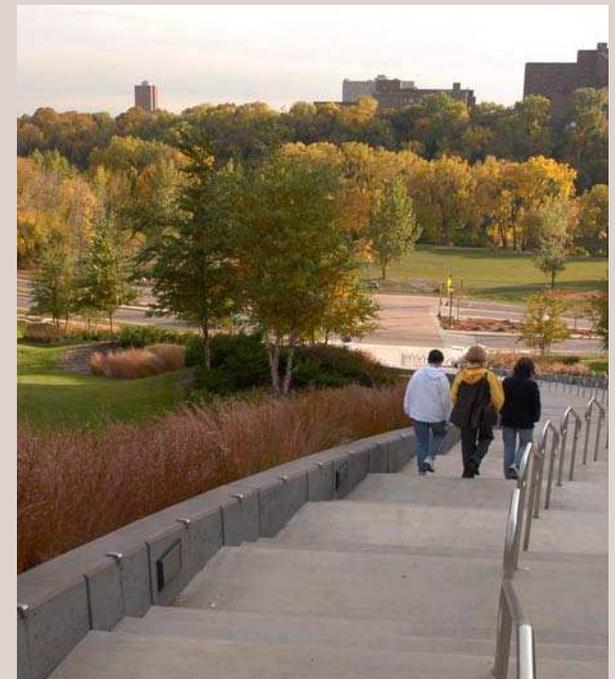
This section of the master plan addresses the natural setting and unbuilt spaces of the campus. These outdoor spaces provide both literal and metaphorical grounding for all of the principal purposes of the University. The Twin Cities campus' natural setting, overlaid by an open and welcoming civic realm and fitted with a resilient and sustainable infrastructural system, is alternately backdrop and systemic foundation for the University's work.

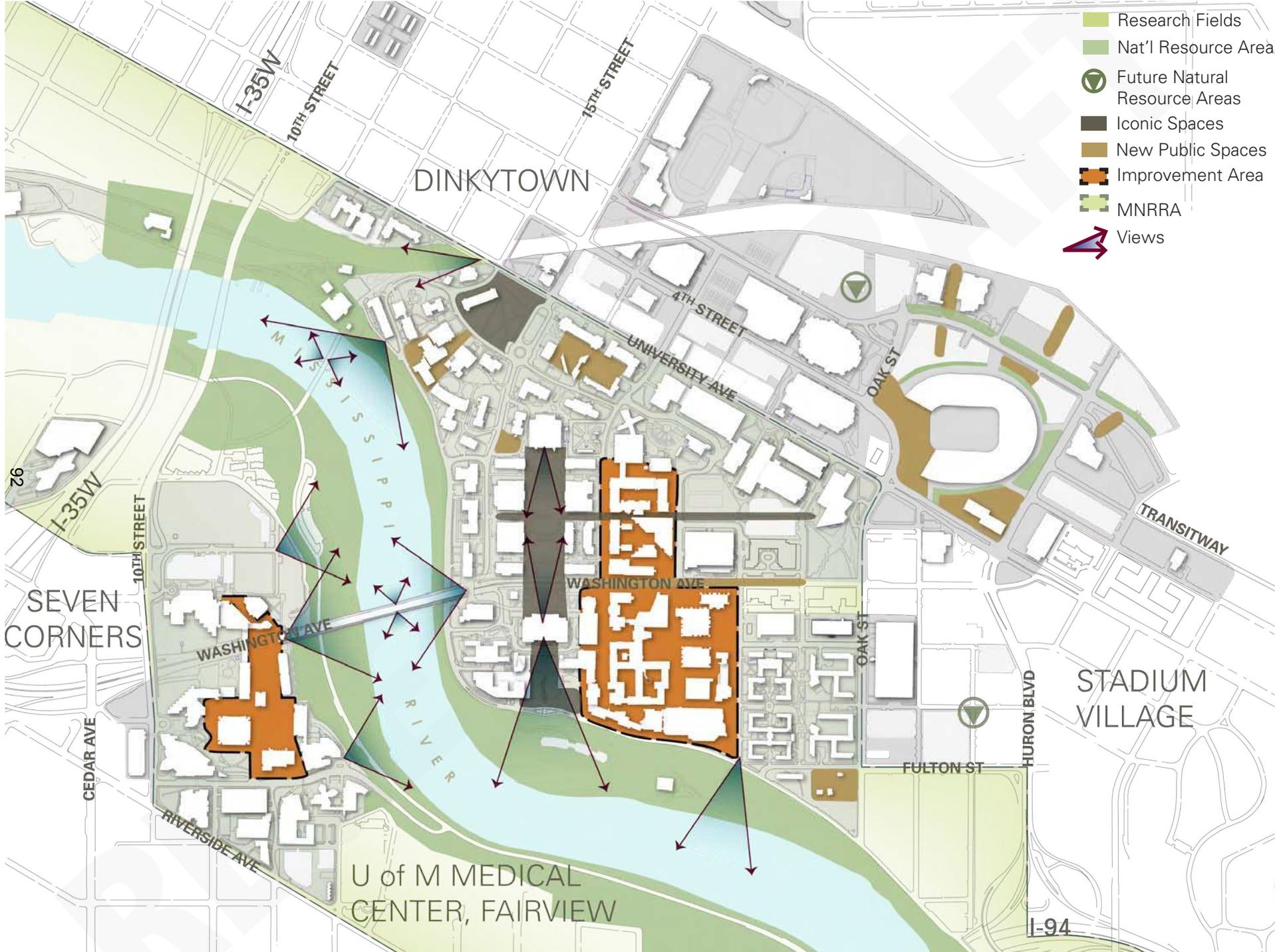


Guiding Principles

The guidelines laid out in this section address key natural systems and features challenges, consistent with the following Guiding Principles:

- Preserve and enhance natural systems and features
- Develop a campus that is environmentally and operationally sustainable
- Create a cohesive, memorable system of public spaces
- Utilize the campus as a living laboratory to advance the university's mission





Open Space Framework - Minneapolis Campus

Mississippi River Corridor

The Mississippi River is a powerful natural feature, and as the river has been transformed from an industrial waterway to ecologically restored corridor, it offers opportunities for recreation and experiential learning. The Knoll shaped the identity of the campus for 19th century campus users, and the Northrop Mall and the West Bank elaborated on that character in the 20th century. The Mississippi River corridor will become known as the open space that integrates the East and West Bank locations in the 21st century.

The campus comprises the largest contiguous block of single-owner publicly held developed space in the Mississippi National River and Recreation Area. As such, it provides a unique opportunity to serve as a “best practices” laboratory for sustainable physical development, based on the assumption that all development on the bluff will have a direct impact on one of the most important and fragile developed river systems in the world.

Guidelines

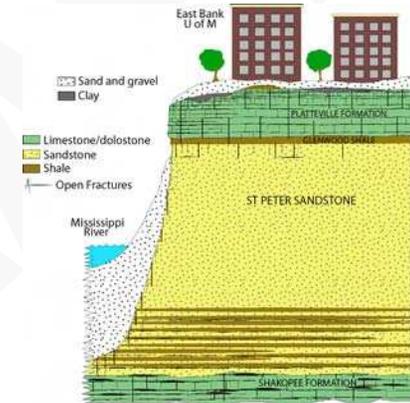
- Optimize physical and visual connections to the river corridor through:
 - feasible extension of access corridors (e.g. Scholars Walk, Washington Ave Bridge, West Bank 4th Street to the riverfront recreational area).
 - creation of new views from existing bridges, over looks and buildings;
 - orienting new buildings and building ensembles to respond to unique riverside locations;
 - use of the river flats and steam plant corridor (Dinky

town underpass) for sports and recreation facilities;

- creation of multipurpose utility corridors, boulevards, parks and streets as a way to preserve public views of the river corridor;
- selective demolition in the Knoll and on the West Bank to create visual and physical links;
- Support the intent and spirit of the Critical Area Act and MNRRRA guidelines by:
 - protecting and preserving the River as a unique and valuable state and regional resource for the benefit of

the health, safety, and welfare of the citizens for the state, region, and nation;

- preventing and mitigating irreversible damage to this resource;
- preserving and enhancing its natural, aesthetic, cultural, and historical value for public use;
- protecting and preserving the River as an essential element in the national, state, and regional transportation, sewer and water, and recreational systems; and
- protecting and preserving the biological and ecological functions of the corridor.
- Avoid disturbing topography and natural features or restore to natural conditions in the Mississippi River corridor wherever possible
- Protect river water quality from negative impacts of development and campus activities through stormwater management, energy development and use, or other ecologically significant development initiatives.



Wetlands and Other Water Resources

Other wetlands and surface water bodies that traverse the St. Paul and Minneapolis campuses contribute to the overall health of the environment. Restoration of these natural features and conservation of existing resources will improve the quality of the local and regional environment.

Guidelines

- Use best hydrological practices to protect and restore critical natural areas and other watershed resources when planning, designing and building new or replacement infrastructure and buildings.
- Manage compliance with state and federal standards and develop surface water performance standards to guide management and future planning and design. This should include surface and ground water interactions, stormwater hydrological capacity, infrastructure connections and capacity, and wetland and surface water conservation among other issues.

Sustainable Use of Resources

Stewards of a livable campus need to focus on both the present and enduring livability of the campus. Sustainability is a continuous effort, integrating ecological conservation, economic viability, and social equity through design, planning, and operational organization to meet current needs without compromising the ability of future generations to meet their own needs. Sustainability research and teaching must inform campus decisions on energy, development and maintenance of buildings, protection of indoor and outdoor environments, and relationships with adjoining communities. The Campus embraces use of local and low impact materials; waste avoidance and recycling; greenhouse gas reductions through energy efficiency and use of renewable energy; water managed as a resource rather than a waste product; and meeting space needs through re-use of existing buildings and design of new buildings that reflect best practices in sustainable building development.

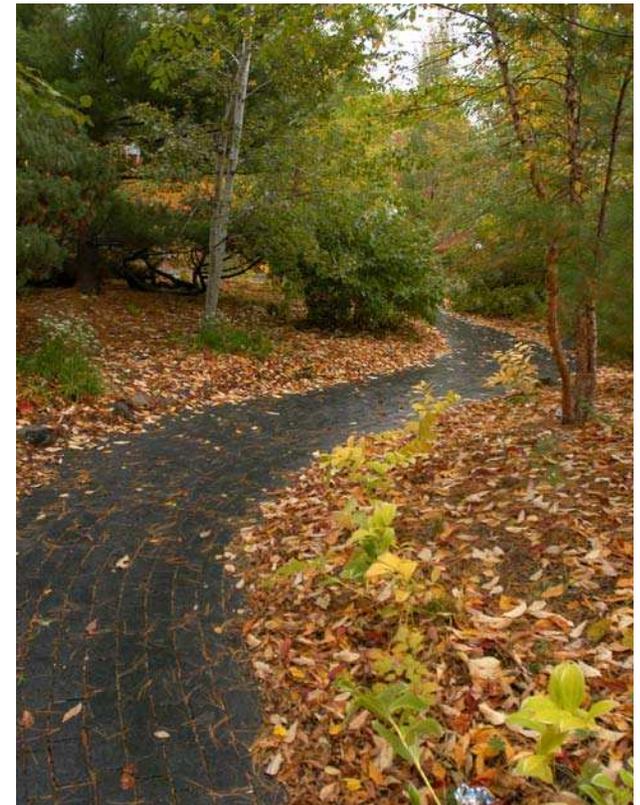


The open space of the St. Paul campus presents an opportunity to establish a 21st century campus community laboratory on sustainable practices. Its form and uses suggest that it could be the model of sustainable multifunctional community environments for this region. The St. Paul campus is structured around open spaces that integrate hydrological, agricultural and ecological systems. It is particularly suited to the use of the campus as a living laboratory in support of the academic focus on water, ecology, natural resource conservation, horticulture and agriculture.

Guidelines

- Use an integrative, multipurpose and conservation approach to resource consumption for all development, infrastructure and operations practices on campus.
- Identify areas that should be held as open spaces in perpetuity based on their environmental significance.
- Respect and respond to existing natural systems and multifunctional green infrastructure elements by:
 - siting buildings and control of building footprint and other impervious surfaces
 - linking infrastructure upgrade projects (e.g. additions to heating and cooling capacity) with green infrastructure projects such as planting, vegetation restoration, and stormwater projects
 - preserving or restoring and managing existing and project-associated vegetation
 - preserving or restoring wetland areas and linked green infrastructure
 - enhancing livability, public accessibility and visual and experiential qualities of campus open spaces

- utilizing the University's subsurface database of geological and hydrological features in planning and development.
- Manage campus landscapes with standards that achieve energy conservation, emission mitigation and reduction of other negative environmental impacts.
- Promote the use of campus lands and open spaces as research, teaching and demonstration spaces for outreach and scientific activities.





Open Space Framework - St Paul Campus

UNIVERSITY
OF MINNESOTA



Movement and Circulation

On a typical day, 80,000 people travel to the Minneapolis and St Paul campus districts. While nearly sixty percent commute from distances less than 5 miles away, approximately 32,000 of these people live more than 5 miles away from the campus. The transportation choices each of these people make for their daily trip to their office, class or laboratory has a direct effect on the physical and environmental conditions found on the Twin Cities campus.

While some areas of each district are well-served by the transportation network, other areas are negatively affected by inconvenient, uncomfortable and unsafe streets and paths. The primary challenges found on the urban Twin Cities campus are:

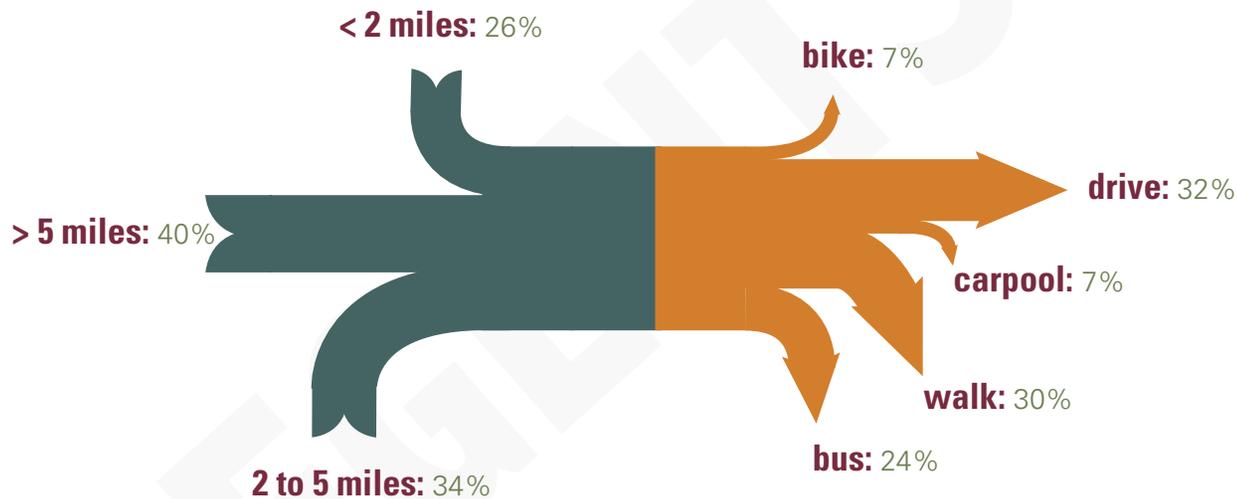
- vehicle congestion stemming from competition for street space and movement;
- managing conflicts between different modes of travel, such as pedestrians and cyclists and
- construction and maintenance of important connecting segments in all circulation networks.

Guiding Principles

The guidelines laid out in this section address key movement and circulation challenges consistent with the following Guiding Principles:

- Develop integrated transportation systems emphasizing pedestrians and transit
- Ensure that campus is environmentally and operationally sustainable
- Provide a compatible and distinctive built environment

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Source: Transportation Fundamental Facts, University of MN Parking and Transportation Services, 2008.

A majority of students, faculty, staff and visitors live less than 5 miles away from campus. More than half walk, bike or take transit to get to the Twin Cities Campus.



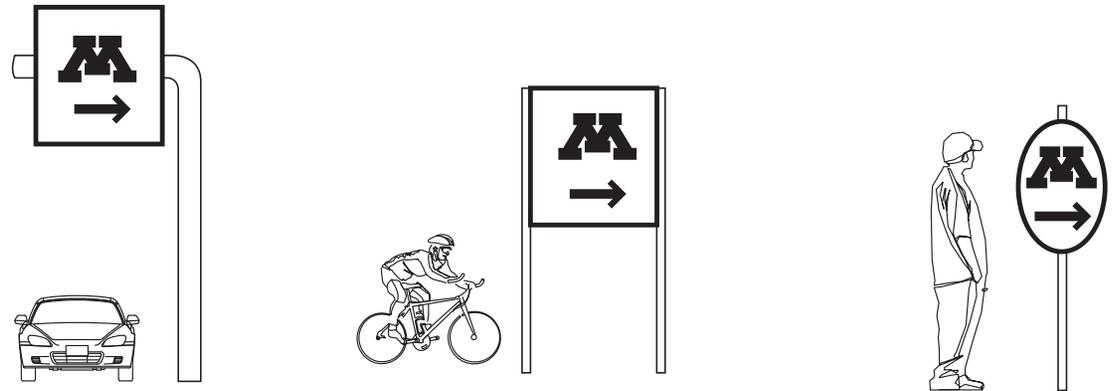


Wayfinding Recognizable Routes Into the Campus

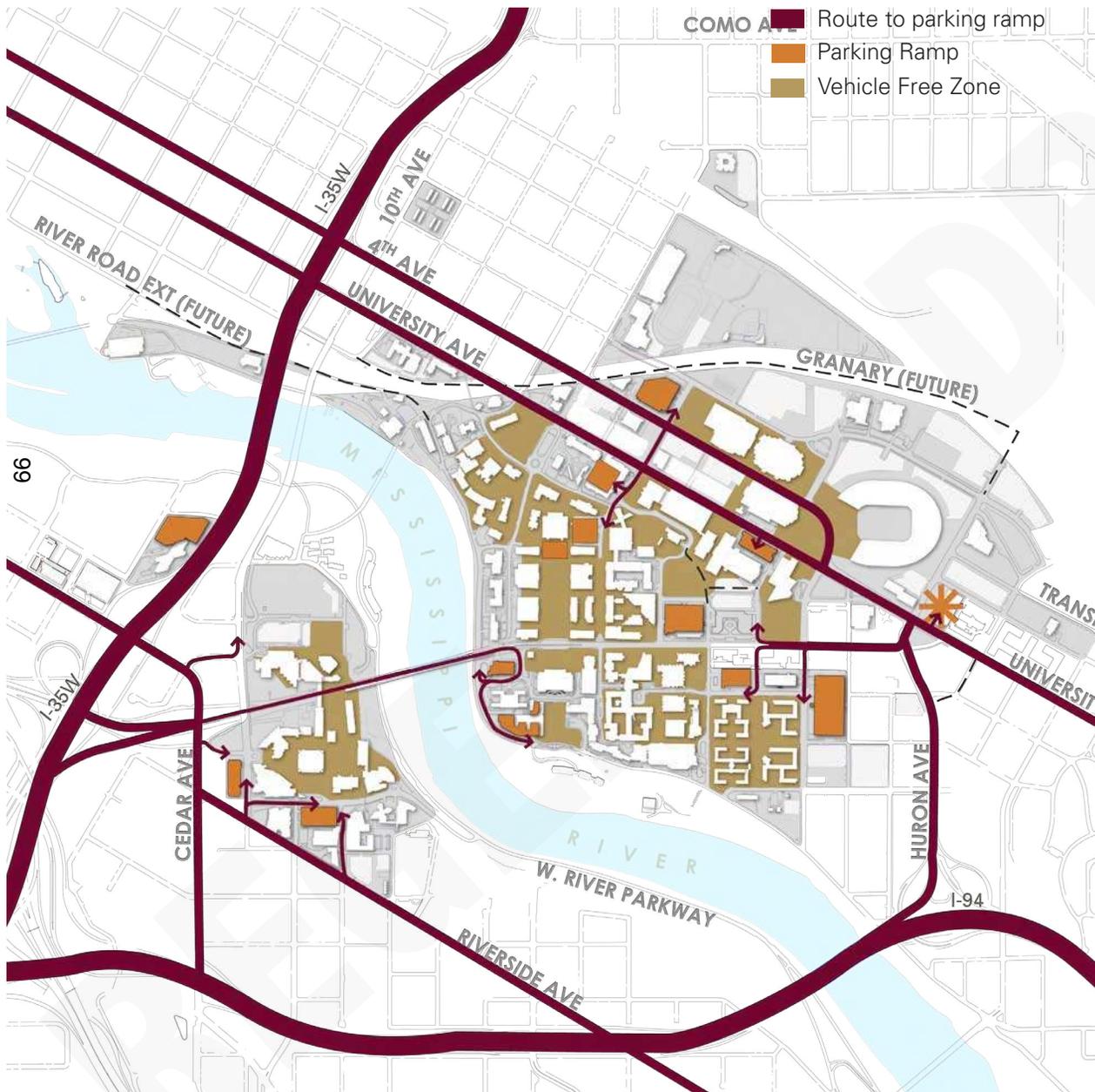
A clear, logical system of wayfinding and directional signage to reach campus from outside campus boundaries and to direct movement within campus will continue to be expanded. Signage placed within existing and new public open spaces will link public destinations to major campus entry points, transit stations, and large public parking facilities. A balance will be maintained between general public access and the need to limit access to certain areas of the campus. Gateway locations are areas where route choices must be made, and are usually found on signature streets. entry points are often identified with monument signs and indicate University land ownership as well as points of access and egress to the campus.

Guidelines

- Develop unified signage and orientation tools designed for each mode of travel so that campus users can better navigate between the two campus areas and within districts.
- Deploy digital and wireless technology when practical to meet wayfinding goals.
- Require legible, safe and welcoming pedestrian connections from public parking sites to centers of campus
- Designate gateway locations and make them readily identifiable by a) using signs and orientation devices to guide users and visitors between destinations such as parking and reception/ welcome sites; b) introducing or expanding landscape features such as fences, planting, sidewalk treatments, lighting;



Use of the University's wordmark at key route choices locations will support branding of the campus and convenient wayfinding for travelers using a variety of transportation modes.



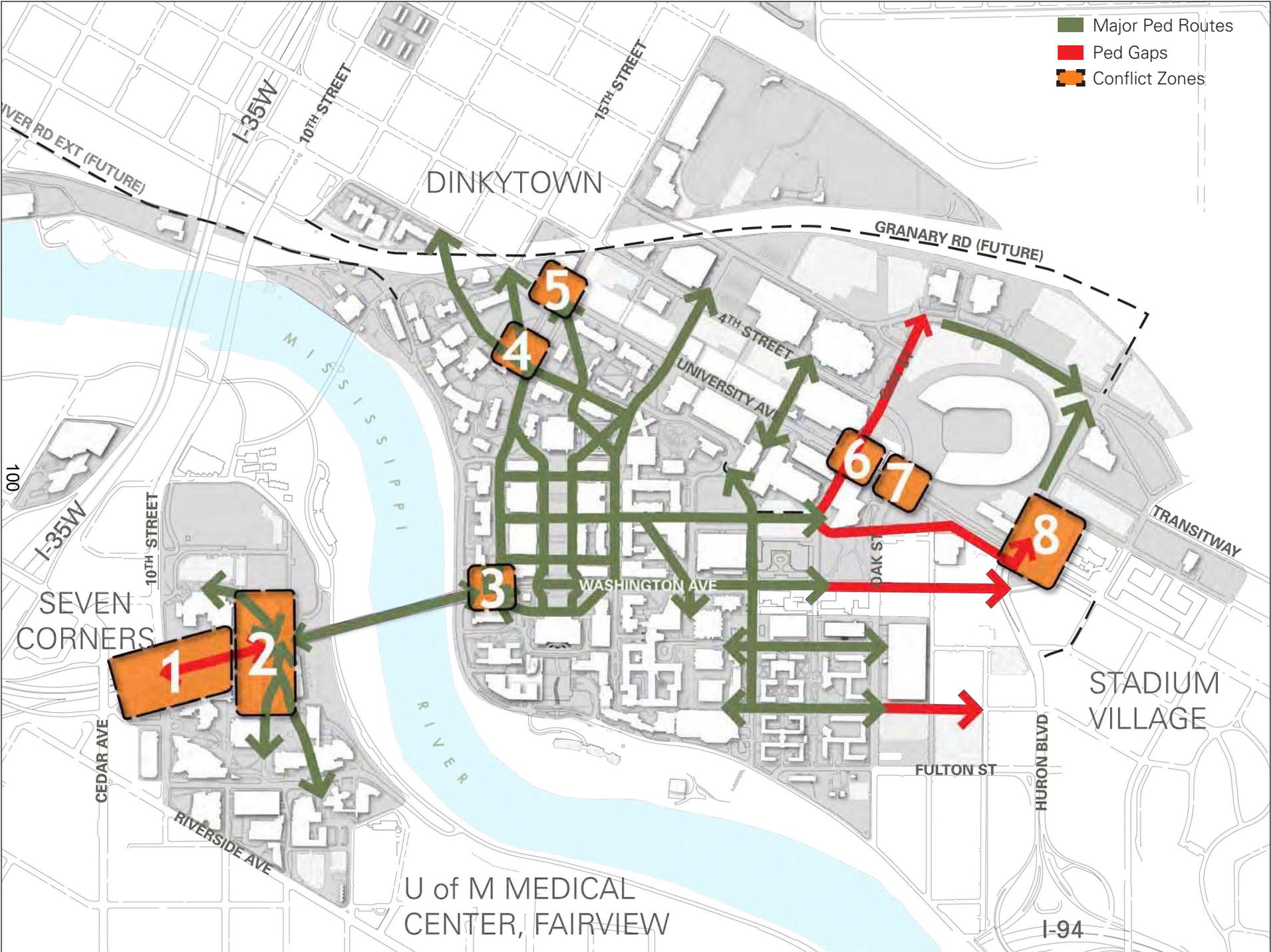
Route to Parking & Vehicle Free Zones - Minneapolis Campus

Pedestrian Priority

Most of the 80,000 people moving around campus daily do so on foot. This situation is due to the historic origins of the campus, a place designed and built to accommodate large numbers of people before vehicles dominated communities and campuses. Investments that support the campus as a pedestrian-dominated place include tree planting and pedestrian scale lighting along streets, the location and treatment of bike trails and sidewalks, preservation of open space in high-traffic pedestrian areas and pedestrian-oriented wayfinding and directional signage.

Guidelines

- Establish vehicle-free zones where pedestrian volumes, iconic open spaces, and adjacent land use patterns preclude use except by pedestrians or cyclists.
- Develop pedestrian connections that will:
 - Continue to share corridors with other modes of movement along streets or paths
 - Enable pedestrians to take the most direct route between major destinations
 - Prioritize pedestrian movement over other modes of travel whenever possible
- Extend the existing network of weather protected environments (tunnels or skyways) in appropriate locations



Pedestrian Framework - Minneapolis Campus

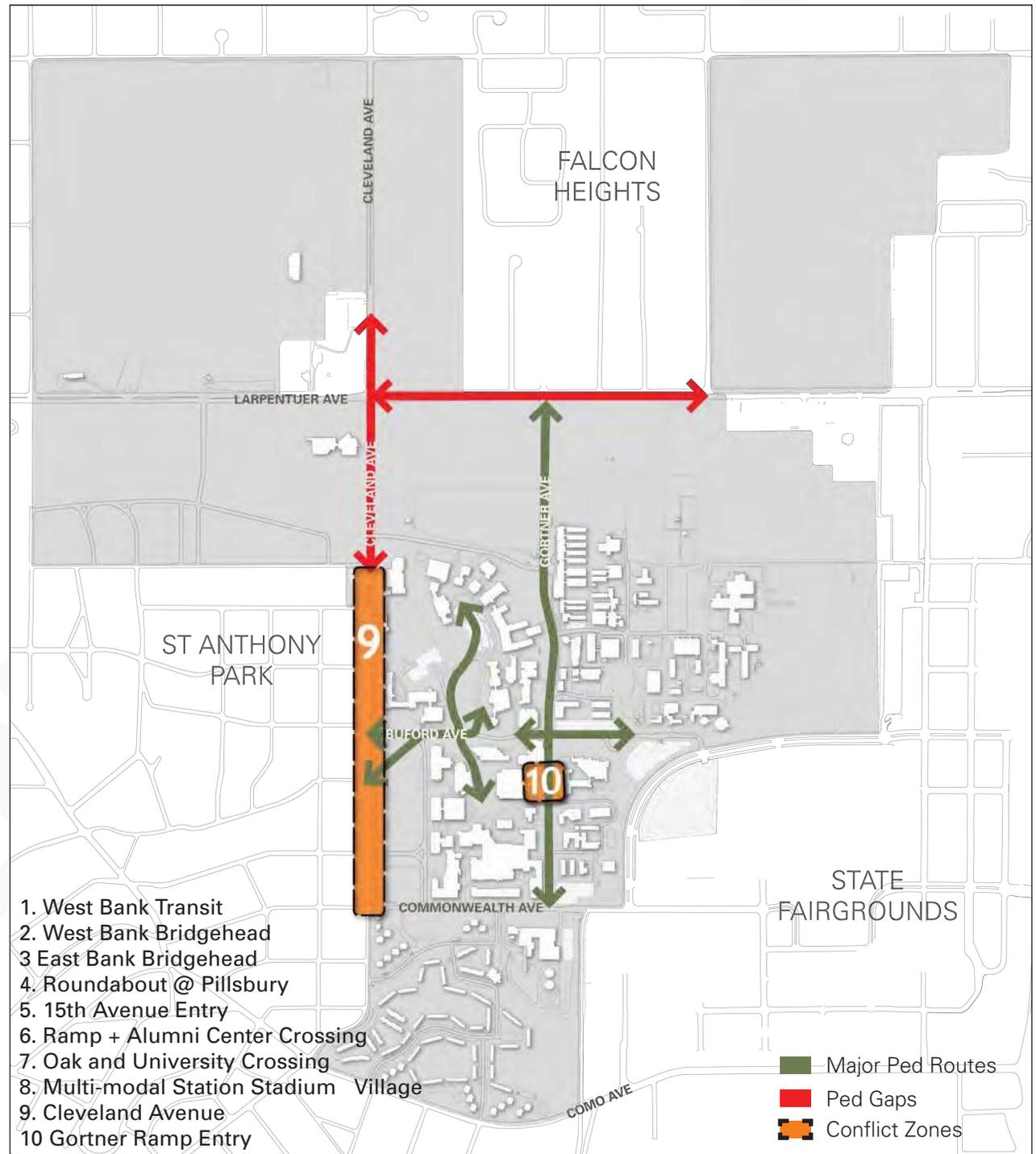
Safe and Accessible Movement on Campus

Pedestrian places will be designed or retrofitted to comply with provision of the Americans with Disabilities Act (ADA). Personal safety through improved design will also be emphasized. Continued retrofitting of historic areas of campus to provide a barrier-free experience to all visitors, students, staff and faculty is a component of the Master Plan.

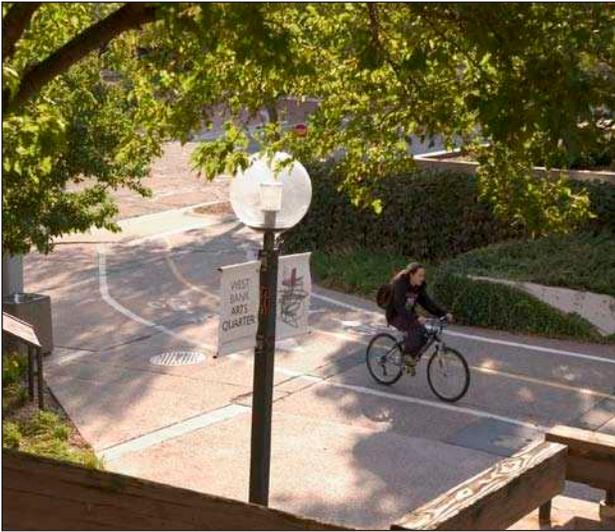
Guidelines

- Meet ADA requirements for pedestrian facility improvements to make all areas and facilities fully accessible.
- Apply the following principles for safe, accessible design of the pedestrian environment:
 - Avoid the creation of isolated dead end spaces, sunken or elevated plazas out of direct view of passers by.
 - Increase the number of centrally monitored security cameras in highly traveled places on campus
 - Ensure ground floor visibility from buildings that allows for a casual means of surveillance of outdoor activity
 - Locate mixed uses such as retail or support services in buildings to extend the hours of activity next to public areas where market demand can support such uses
 - Use multipurpose lighting scaled for pedestrians and vehicles
 - Create unobstructed views, without landscape plantings in a zone between 2' and 6' above grade
 - Provide diverse and abundant places to sit
 - Create a clearly designated system of well-lit and secure after-dark walking routes

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Pedestrian Framework - St Paul Campus



Bike Network

Biking is a heavily used mode of travel to, from, and within the campus, and is considered compatible with pedestrian priority travel. Generally, bikes share sidewalks along streets and paths through public open spaces with, and share streets with vehicles.

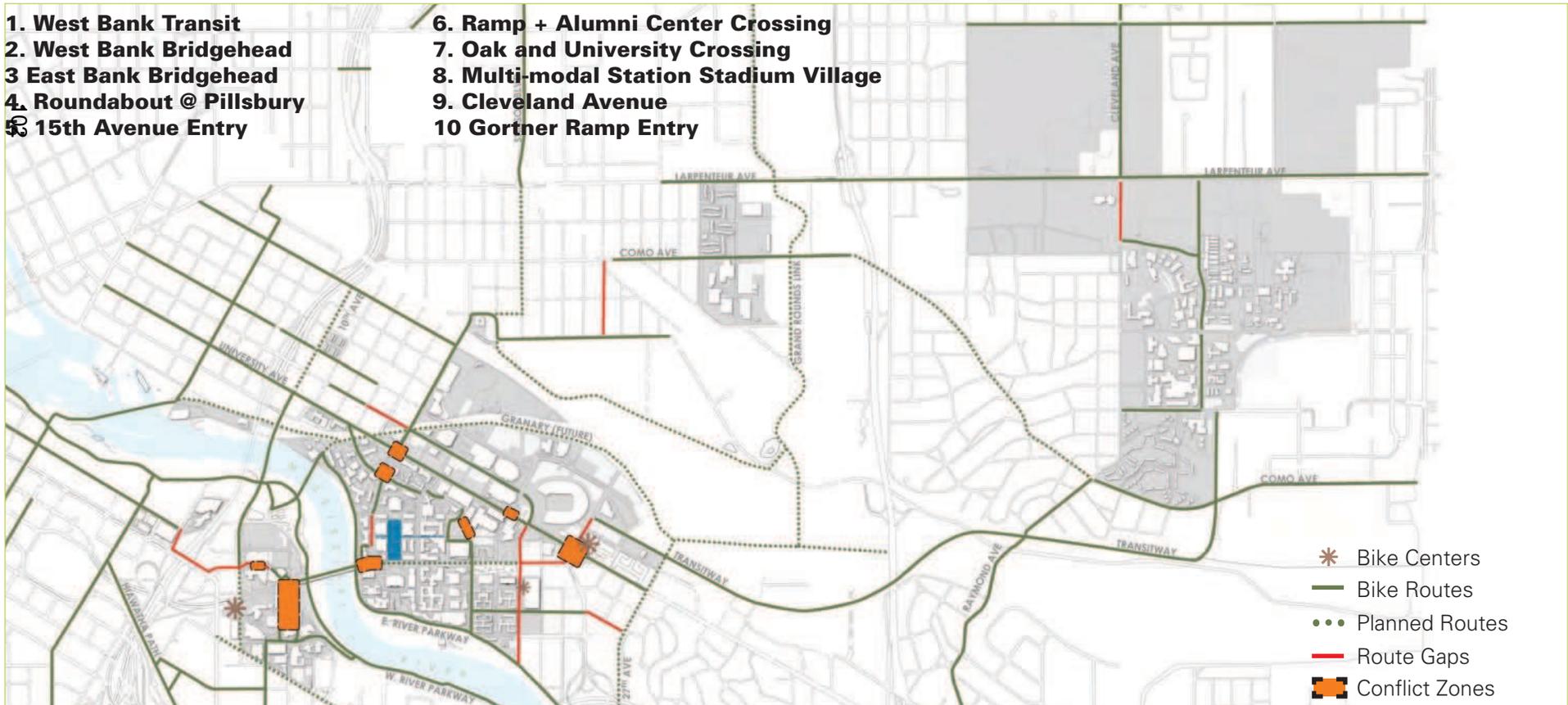
Bicycle Movement on Campus

Bicycle movement on campus is supported in two primary ways. The first is dedicated ‘campus connector’ lanes, on street bike lanes that provide a through-route from regional facilities on both campuses. The second form of bike movement which occurs elsewhere on campus, is expected to co-exist with pedestrians who have first priority. This includes unique dismount locations such as Scholars’ Walk and Northrup Mall.

Guidelines

- Subordinate bicycle travel to accommodate pedestrians within the campus.
- Encourage cyclists to respect dismount zones and to limit speeds (maximum 10 m.p.h) to reduce conflicts in locations where there is high pedestrian traffic
- Separate bike and pedestrian traffic when possible by integrating the bicycle network into the street network with on-street lanes.
- Expand routes for bicyclists to get around within the campus districts.

1. West Bank Transit
2. West Bank Bridgehead
- 3 East Bank Bridgehead
4. Roundabout @ Pillsbury
5. 15th Avenue Entry
6. Ramp + Alumni Center Crossing
7. Oak and University Crossing
8. Multi-modal Station Stadium Village
9. Cleveland Avenue
- 10 Gortner Ramp Entry



Bike Network - Twin Cities Campus

Bicycle Travel to Campus

Bicycle movement to and from the Twin Cities campus is expected to be a significant component of commuter travel into the future. The large undergraduate student population living in residence halls or close to campus will ensure that the bicycling population on campus will continue to be present and visible on the campus. The number of regional facilities that bring people to the Minneapolis or St Paul locations, including on-street bike lanes and regional trails, is growing steadily and is expected to expand as new projects are funded and implemented.

Guidelines

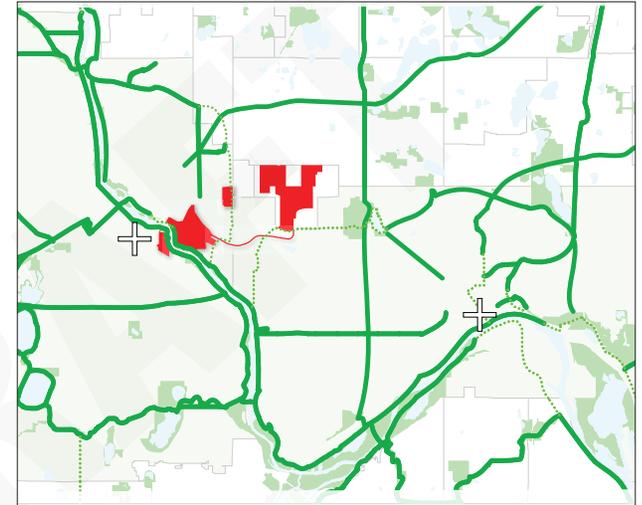
- Collaborate with other governmental units to develop regional bike routes that provide access to campus.
- Provide safe, convenient accommodation for cyclists on paths that are clearly delineated from other modes of traffic.
- Ensure the safety of bicyclists sharing movement space with vehicles by providing signage that recognizes the presence and priority of bicycles in the roadway, especially on campus local streets

Bicycle Support Facilities

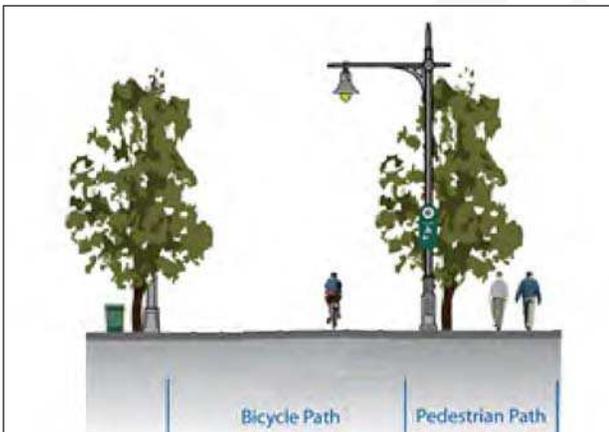
The ability to safely store or park a bicycle and related gear will directly affect the bike commuting population. Co-locating bike storage and service facilities with transit stations and parking facilities saves resources and offers campus commuters improved transportation alternatives. The supply of bike lockers and bike racks should reflect overall campus travel patterns and demand. Location decisions will be based on available space and the extent that these environments are safe, visible, well-lit and weather protected. Appendix H of the University's Construction Standards (XXXX) should be consulted for additional detail.

Guidelines

- Accommodate bike parking facilities at appropriate locations with guidance from the University's Construction Standards. Except in cases where high bike parking will interfere with primary pedestrian paths and public open spaces, parking should be located proximate to building entrances in well-lit visible locations.
- Build bike centers that provide storage lockers, showers, and repair kiosks on each campus – East Bank, West Bank, and St. Paul.



Regional Trail Network



Bike Path



Bike Route



Bike Lane



Light Rail Transit

Planned light rail transit (LRT) service on Washington Avenue will usher in a new era for transit on the Minneapolis campus. Convenient, reliable, and frequent rail service to high volume destinations along the corridor will offer transportation choices previously unavailable to the University community. LRT service will pass through the East and West Bank campuses, closing a portion of the Washington Avenue to accommodate traffic. Elimination of through traffic on one of the two minor arterials on the Minneapolis campus will force traffic on to other campus streets. Improvements are planned to mitigate the adverse effects of rerouted vehicular traffic on and around the campus.

The volume of pedestrian and bicycle traffic on Washington Avenue will increase substantially due to the absence of automobiles. The University will capitalize on the benefits provided by the Central Corridor LRT by creating an attractive pedestrian focused environment on the five block portion of Washington Avenue that will be closed to vehicular traffic. Pedestrian-focused environments will also be developed adjacent to the two LRT stations not located on the West Bank and in Stadium Village.

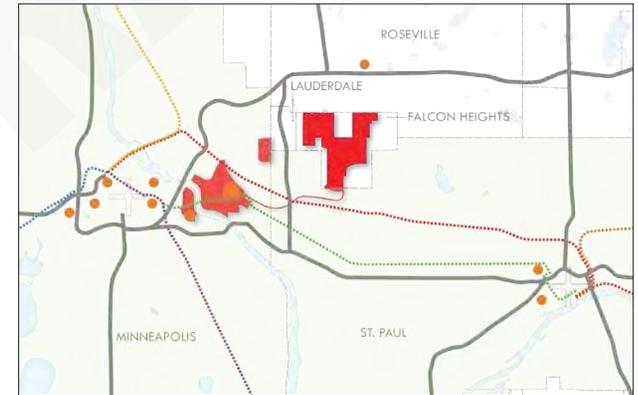
Design of the station areas and LRT operations at three planned campus locations will reinforce the experience of a pedestrian- focused place that accommodates transit and bicycle movement.

Guidelines

- Pursue traffic mitigation on campus streets to minimize negative impacts on campus buildings
- Design streetscapes on LRT corridors to prioritize pedestrian comfort and convenience, wayfinding and visual recognition of the University campus

Transit Network

In the last decade, significant progress has been made to expand employee and student use of transit to get to and from campus. As travel time and the cost to drive alone increase, transit will be favored by a larger share of the university community. Strong transit alternatives allow for economical trips to the campus from all over the metropolitan area, and efficient movement between campuses. Good transit service is essential to future campus development.



Planned Regional Rail Line Expansion



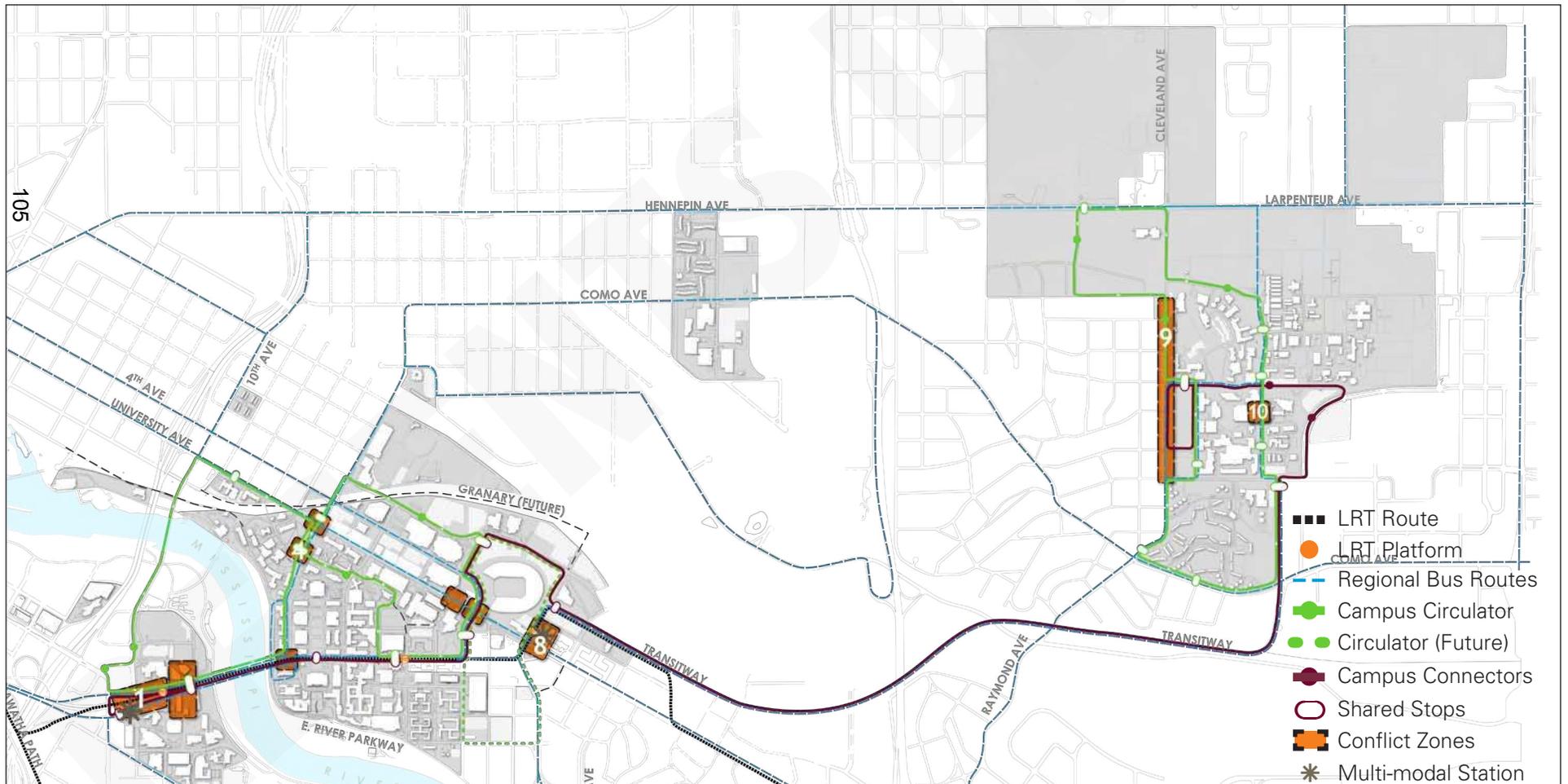
Synchronized Transit Stop

Regional Service

Regional bus transit serves the campus directly from the central cities of Minneapolis and St Paul as well as outlying suburbs. This includes local and express service from the regional transit provider (Metro Transit) as well as suburban routes operated from distant suburbs from all over the metro area.

Guidelines

- Coordinate route and schedule synchronization of intra-campus service with regional transit service providers
- Promote use of regional transit services by offering incentives and low-cost fares.
- Use marketing tools to promote transit use to all members of the University community



Transit Framework - Twin Cities Campus

On Campus Service

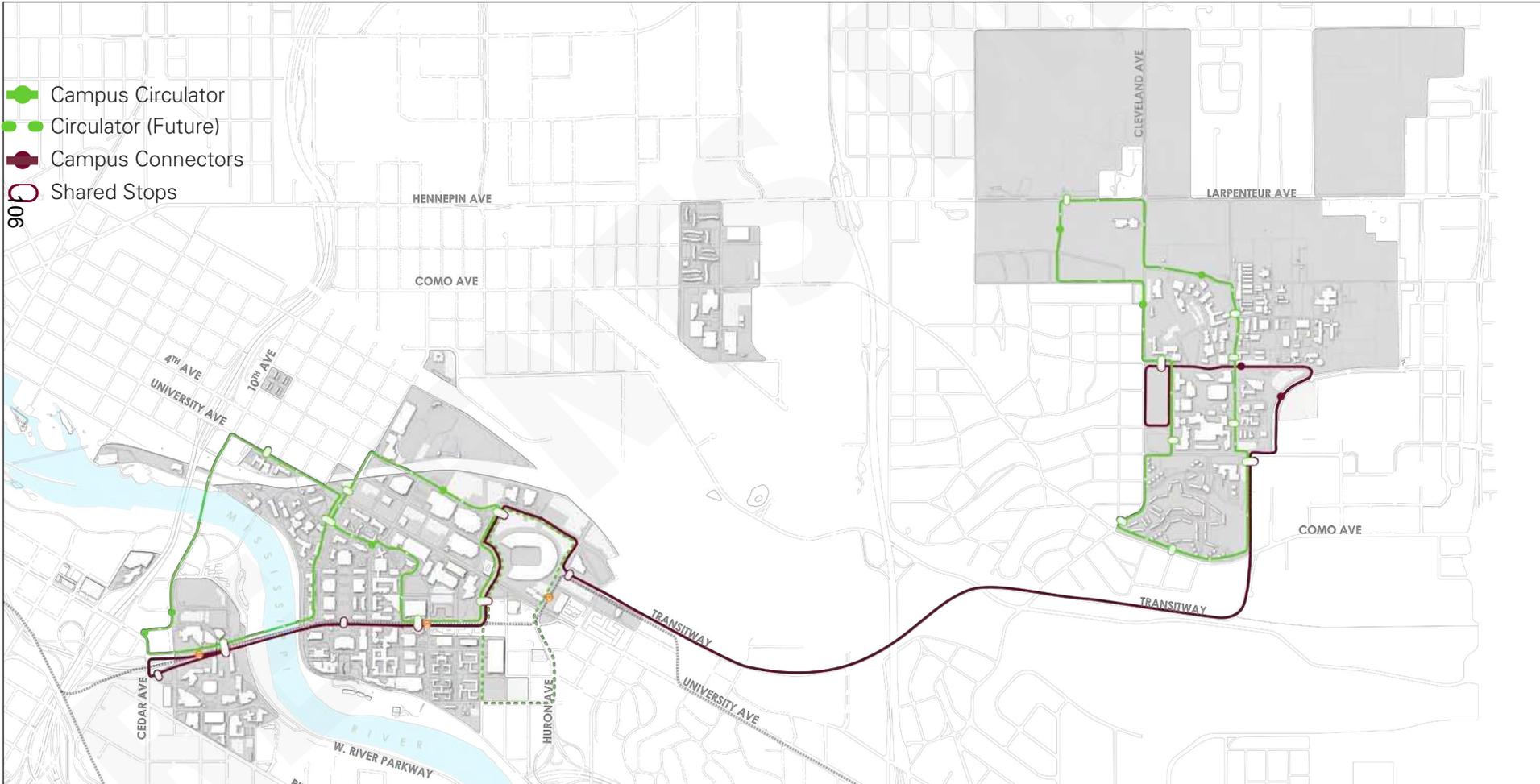
The regional transit system interfaces with the University transit services at transit stops along major arterials that pass through the campus. The University’s on-campus transit system consists of two components: the campus shuttle and the campus connector.

The campus shuttle provides internal circulation loop trips within all districts of campus. The campus connector, which operates on Washington Avenue and the intercampus transitway, serves as the primary connector between all three campuses – West Bank, East Bank, and St. Paul.

Transit service operated by the University is designed to meet intra-campus travel needs on a regular reliable schedule, and to transport people to and from satellite parking lots to the core of campus districts. As the campus grows, service routes within localized areas, especially the East Bank, will realize increases in demand and level of service frequency.

Guidelines

- Continue to operate the intercampus Transitway to accommodate a variety of bus types, and support use of the facility by bicyclists and pedestrians in appropriate locations.
- Use innovative technology, such as hybrid and electric buses, to reduce emissions and improve local environmental conditions



On Campus Transit Routes - Twin Cities Campus

Transit Rider Experience

All components of the transit rider's experience, from shelters to safety to real time information downloads, are the subject of the University's efforts to reinforce the benefits offered by transit found on a high-density urban campus. Improving the transit rider's experience is a high priority and will encourage greater transit use.

Looking forward to approximately 2015, the Central Corridor will bring Light Rail Transit service between Minneapolis and St Paul, and the Minneapolis St Paul International Airport and Mall of America by way of the Hiawatha LRT line with shared service at the Metrodome station. Design of the station areas and LRT operations at three planned campus locations will reinforce the idea of a pedestrian mall that accommodates transit and bicycles movement.

Guidelines

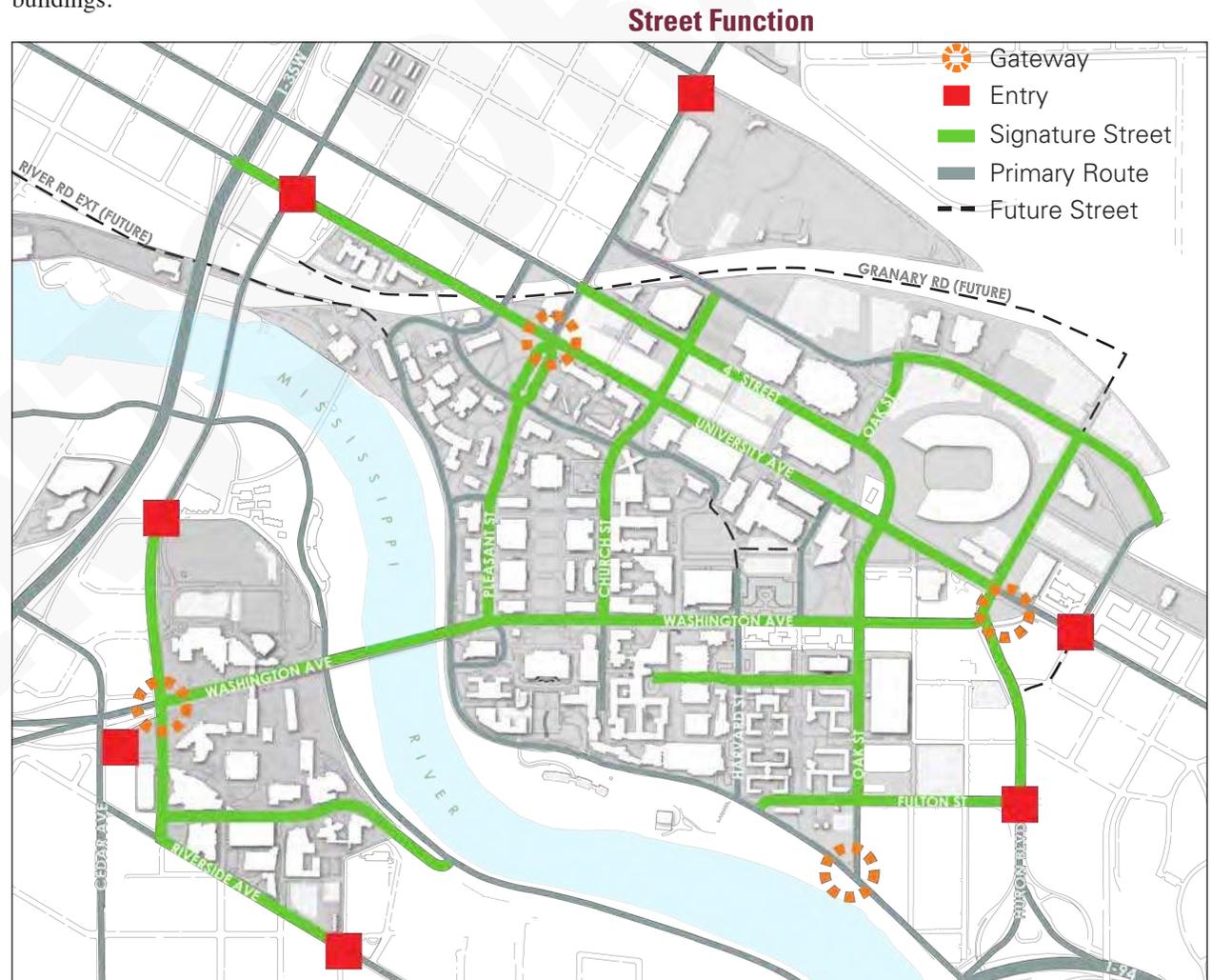
- Adapt the use of innovative technologies to improve transit facilities and service for members of the university community.
- Develop transit shelters/ waiting areas to accommodate rider volume while maintaining appropriate pedestrian thoroughfares in varied sidewalk conditions
- Use signage and shared design elements, including lighting, to identify primary pedestrian routes to and from major transit waiting areas
- Design streetscapes on LRT corridors to prioritize pedestrian comfort and convenience, wayfinding and visual recognition of the University campus

Automobile/ Vehicle Network

Even with the addition of Light Rail Transit and increases in the use of traditional transit service, automobile traffic to and from the Twin Cities campus will continue to stress the capacity of the street system. The street network within and adjacent to the campus must support multiple modes of travel, including transit and bikes, while allowing for reasonable vehicular movement to the campus. Once on campus, vehicles are expected to operate at reduced speeds and with limited access to campus buildings.

Caption for diagram of street network?

The street networks of the Minneapolis and St Paul campus districts are important organizing elements for the University's lands and buildings. Arterial streets serve regional trips and carry high volumes of rapidly-moving traffic which create conflicts with pedestrians and bicyclists. Smaller, less busy streets distribute traffic from arterials to areas of the campus.



Vehicle Framework - Minneapolis Campus

Campus Signature Streets

One of the key objectives of the master plan is to create a transportation network that is responsive to different modes of travel depending on location. Some places on campus are dominated by transit or vehicle traffic. They convey many thousands of daily visitors to campus, creating a lasting impression of entry or exit from the campus. Conversely, in other areas such as Northrop Mall or the Knoll, pedestrians dominate. The core areas of each campus will be primarily pedestrian, cyclist and transit-oriented. The streets that people travel to reach the campus are shared between modes of travel, but the dominant mode on campus is pedestrian and bicycle traffic.

Signature streets must allow vehicle movement while maintaining a safe and comfortable environment for pedestrian and bike travel. Signature streets signal a sense of arrival and campus identity. Design and use of these streets should recognize the functional nature of these routes while providing features and facilities that prioritize pedestrian and bicycle traffic at key locations and within established safety parameters. Gateways and entries that mark the transition between the campus and its surroundings are typically encountered on signature streets. Wayfinding and orientation relies on these streets to provide direction and access to primary campus destinations.

Guidelines

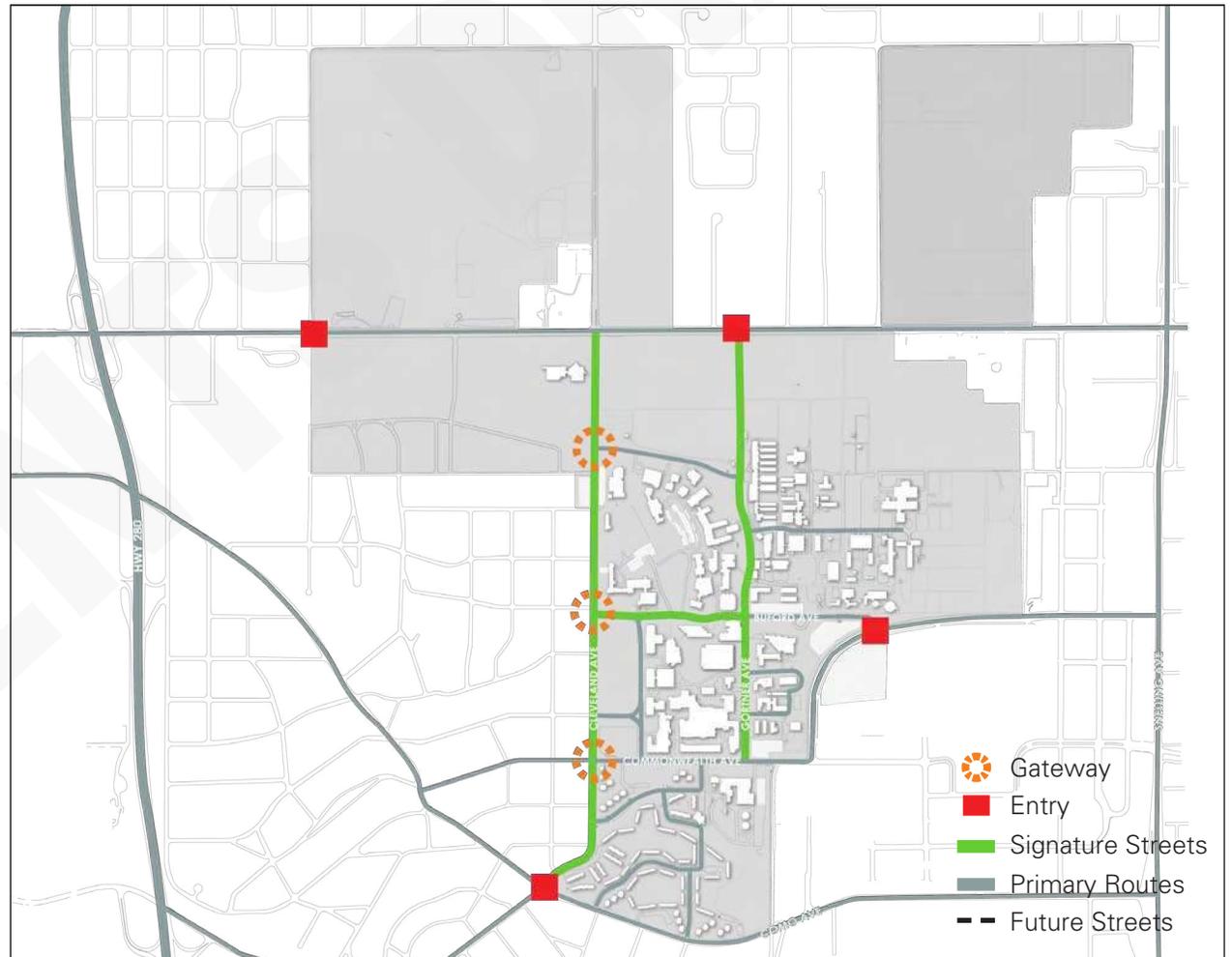
- Provide a broad range of movement options with mode priority dependent on trip function and location.
- Design signature streets to accommodate all modes of travel, with walking as the highest priority followed by bicycling, transit, and private vehicles.
- Invest in streetscapes on signature streets that create meeting places, with spacious sidewalks, trees where feasible and attractive street furniture to foster interaction between people.

Street Function

Throughout the Twin Cities Campus, streets are used by a broad range of modes of travel – automobiles, delivery and service vehicles, emergency vehicles, buses, pedestrians and cyclists. The competition for limited space has created congestion in areas of high demand. New and reconstructed streets on campus must continue to accommodate multiple modes of travel at low-to-medium volumes and speeds, with minimal conflicts. Streets must also provide visibility and security needed on the campus.

Guidelines

- Create a network that is easily understood and well connected for daily users and occasional visitors.
- Design local campus streets for safe and comfortable use by multiple modes of transportation.
- Discourage through traffic on local campus streets using techniques that limit speed.



Vehicle Framework - St Paul Campus

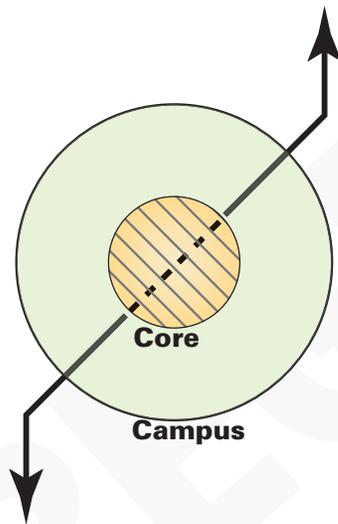
Traffic Management

Reducing congestion on campus streets is dependent on having attractive alternative route and mode choices for campus workers, students, faculty and visitors. By furthering the priority for pedestrian, cyclist or transit movement within the campus, the number of vehicles attempting to reach destinations in the heart of campus is expected to remain steady or decline.

Guidelines

- Encourage appropriate agencies to construct bypass routes to reduce congestion resulting from non-university destined trips.
- Promote and support the regional transit system as a tool to manage vehicular demand on the street network.
- Manage daily and event traffic operations by providing up-to-date traffic and parking condition information to travelers.
- Assist travelers who are not destined to the University in finding alternative routes.

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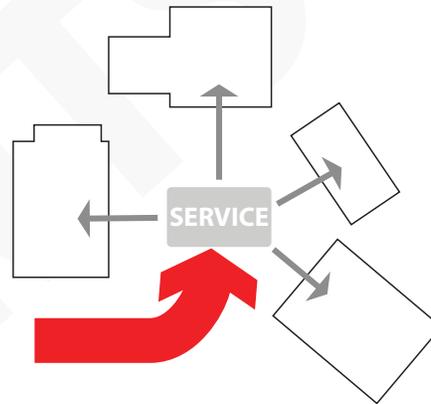
Limited Vehicular Access to Core Streets

Service Access and Loading

Service functions, such as loading docks, trash pick-up, and maintenance access, are essential, but are often unattractive elements of the campus environment. Service traffic creates congestion problems in some high traffic areas. Consolidating service facilities and sharing access routes is encouraged to better utilize land resources, improve operational efficiency, and reduce visual disruption.

Guidelines

- Create centralized building service and loading facilities that support a pedestrian focused campus environment
- Consolidate loading and service facilities to serve multiple buildings
- Accommodate limited short-term delivery functions in areas where traffic and pedestrian movements will not be compromised.



Centralized Service Access

Parking

Major parking facilities are generally located at the periphery of campus adjacent to arterials, with some exceptions at areas of high visitor demand. Frequent circulator bus service brings motorists from the peripheral parking locations to their destinations in the heart of the campus.

As land becomes scarce and existing surface parking lots are used as sites for new academic buildings, there will be fewer surface parking spaces located at the periphery of the campus. The parking demand will be accommodated in limited structured parking at the periphery, serving both the daily and event parking demand as well as providing convenient parking for adjacent academic buildings.

Guidelines

- Promote existing park-and-ride lots and expand park-and-ride service to primary campus destinations.
- Locate parking structures in proximity to arterial streets to minimize conflicts with pedestrian or bicyclist travel.
- Maintain a limited supply of conveniently located short-term parking within a 10 minute walking distance of academic and administrative buildings.





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Public Spaces and Buildings

The purpose of this master plan is to establish a vision for a physical campus that supports a vital community of research and higher learning. Campus buildings and open spaces comprise a learning environment that is both physical and cultural. The public realm of this environment needs to be inviting and promote the value of diverse viewpoints and encourage interaction.

The campus covers a large geographic area and is divided by the Mississippi River valley and a former industrial area. Various campus districts are visually distinguished by architectural styles prevalent at the period in which they were developed and by their function. There is, nonetheless, an visual character that unifies the Twin Cities campus. The campus would benefit from the integration of these districts.

A vital, integrated campus is coherent, connected, comfortable and convenient. It has a clear character. These are elements of identity that will improve the quality of the campus experience.

- Coherence means that the campus is understandable. It has a visual order that is recognizable, with parts that relate to a definable whole.
- Connection is provided through easy pedestrian movement and perceptible cues for finding destinations within and beyond campus.
- Comfort is produced through a physical environment that creates a sense of well being and provides safety, security, and protection from the elements.

- Convenience is established with a broad range of land uses within close proximity or easy reach. Public spaces are designed to encourage interaction and private contemplation.
- Character means that the campus possesses a distinctive visual image that has both continuity and variety. Unity is provided with common materials that recur throughout the campus. Variety emerges through compatible districts that present distinctive styles representative of their architectural heritage. Variety is further reinforced with special features of artistic expression.



Guiding Principles

The guidelines laid out in this section address key public spaces and buildings challenges, consistent with the following Guiding Principles:

- Cultivate a genuine sense of community
- Provide a compatible and distinctive built environment
- Optimize the use of campus land and facilities
- Foster a safe, secure and accessible campus environment
- Steward historic buildings and landscapes
- Create a cohesive, memorable system of public spaces

Campus Organization

The campus is made up of coherent patterns of development that reflect a campus that has evolved over a long period of time. There are recognizable organizing patterns within each district, but the patterns vary from one district to the next, affecting the size and shape and use of the public spaces between buildings. The architectural styles within each district have clear form and character following the trends that were prevalent during the period in which each district was built. These architectural styles set the context for the public spaces that occur between the buildings. Brick is the one overarching unifying element, used as the primary material for buildings throughout campus and gives strong direction to overall campus visual character. As new buildings have been added, care has been taken to relate them visually to

nearby buildings utilizing similar scale, style, window patterns and proportions, and entryway placements. Exceptions have been a few special use or landmark buildings that have been designed to contrast with their neighboring buildings in order to attract attention.

Axes and Paths

An overarching order is essential to providing a sense of orientation. For example, on the Minneapolis East Bank campus, the Mall heavily influences a person's sense of orientation. It is a formal axis on which major campus buildings were placed in the mid-twentieth century, forming the major public space on campus. Many pathways connect the Mall to other areas of campus organized in less formal patterns.

Washington Avenue will become a new axis of significance when it is converted to a pedestrian/transit mall. When light rail begins operations on Washington Avenue, it will become a more dominant arrival space on campus, symbolically making the pedestrian/transit mall a more prominent axis. Paths leading to and from Washington Avenue will become more active.

The Lawn, Buford Avenue and Gortner Avenue are the primary orientation features on the Saint Paul campus. The buildings along the eastern edge of Eckles Avenue are distinctive in architectural style and help define the character for the Lawn and provide orientation on the campus. Other numerous paths on campus make easy movement between uses possible and should be well designed and furnished to encourage pedestrian circulation as the primary mode of movement.



Guidelines

- Preserve iconic public spaces that provide orientation and order
- Give special design attention to pedestrian amenities on dedicated pedestrian pathways.
- Design vertical connections between grade and existing skyways and tunnels to be visible, understandable, and accessible.
- Enhance access and orientation to the below grade network by providing natural light openings (skylights, clerestory windows) and highly visible signage.

Identity and Symbolism

The key unifying visual patterns on campus should be maintained. Careful consideration should be given to creating visual linkages to existing buildings in the design of new public spaces and buildings. Abrupt changes in scale should be avoided. Masonry and brick should be a dominant material in new buildings. Other materials should be similar to those in nearby buildings and landscapes. In order to preserve the overall impression of unity, contrast should be used sparingly. Pressure to be new and different should be resisted. Existing buildings should not be imitated, but should be respected. A good example of this practice is the design of Hasselmo Hall.

Guidelines

- Preserve the existing overarching visual order on campus by maintaining design continuity.
- Create visual linkages between new buildings and existing buildings in their district by utilizing similar scale, materials, style, window patterns and proportions.

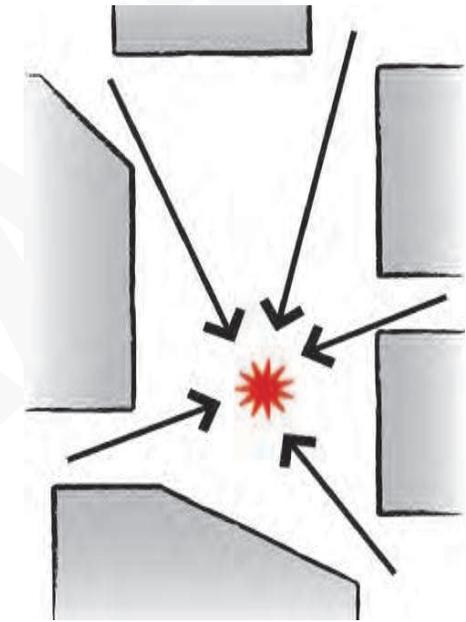
Continuity and Variety

Public spaces should be furnished with common materials to create a definable whole with an overarching common visual character. In limited cases, one-of-a-kind landmark buildings can vary from the norm. They should, whenever possible, be isolated from other campus buildings. A good example of this is the Alumni Gateway Center. Their part in the larger visual scheme should not be overly dominant. Their relationship to other campus buildings is critically important. New buildings on

campus must limit the use of the 'landmark building' approach. The cumulative effect of the fabric of buildings that create the highly desirable and recognizable character of the campus should not be compromised. The same is true of the design of public spaces. Continuity should be the primary concern.

Guidelines

- Preserve iconic public spaces and the buildings that border and define them. Allow only minor changes to the exterior of existing buildings. Design replacement buildings to recall the scale, architectural articulation and massing of their predecessor.
- Provide public space furnishings that are similar in style, materials and scale within each campus district.
- Locate public art to provide focal points and variety within each district.



Public Art located at focal point

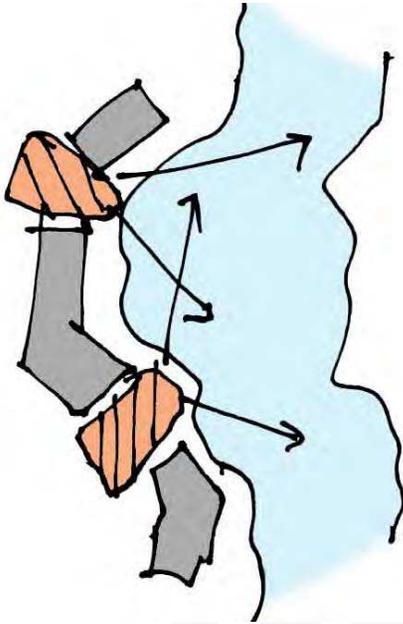


Definition and Borders

Spaces formed by construction of new buildings have the capacity to improve the experience and use of the campus public realm in the way they are shaped, designed, landscaped and furnished. Many existing spaces are exceptional icons of campus design, such as the Mall, the Knoll and the Lawn. The buildings and mature landscape framing these spaces form outdoor rooms. New buildings should not block sunlight to these spaces nor vary significantly in height from existing buildings to avoid compromising the character and established patterns of these spaces. Pedestrian pathways along streetscapes

should be supported with active ground floor uses, visible from the pedestrian paths. Taller buildings along pedestrian ways should have step back profiles to mitigate adverse wind conditions. The presence of natural features, such as the river corridor, should be celebrated in building designs that orient interior public spaces to generous views of these natural features as in the design of the new Science Teaching and Student Services Building. Building placement, massing, form and architectural articulation all affect the character of the spaces between the buildings.

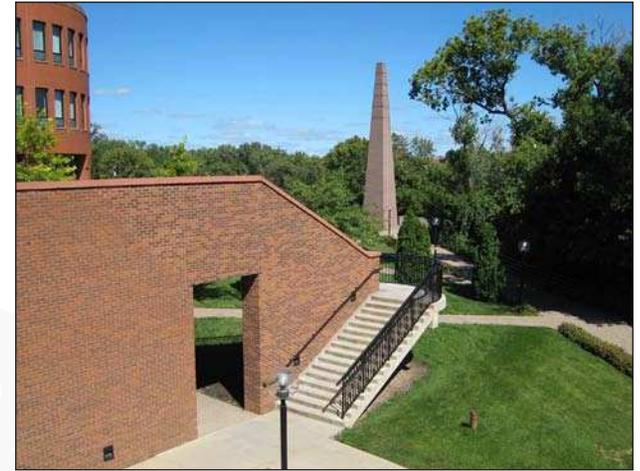
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Views of Mississippi from Outdoor Spaces

Guidelines

- Form new outdoor public spaces to take maximum advantage of natural features, particularly the Mississippi River.
- Evaluate the design of new buildings for their impact on existing and new public spaces.
- Preserve mature trees so that they continue to provide continuity, shade and a sense of enclosure.



Public Space Qualities

Visibility

Public spaces that are bordered by vehicular circulation paths are more visible. Pedestrian circulation through campus public spaces also helps to make them active and safe throughout the day and evening. Visibility is enhanced when public spaces are engaged with adjacent buildings as well as circulation paths. While there are a variety of public spaces on campus, they attract differing types of activities and enjoy varying levels of use. Location, size, flexibility of design and landscape treatment affect these uses. It is highly desirable that visibility of public spaces be maintained and enhanced.

Guidelines

- Border public spaces with vehicular and pedestrian circulation paths to enhance visibility and security.
- Furnish pedestrian circulation paths to be comfortable and safe.
- Landscape and furnish public spaces to avoid interference with views of the spaces from adjacent buildings and circulation paths.
- Celebrate natural features by designing interior and exterior spaces that take maximum advantage of their views.



Unity

Design of campus public spaces presents the opportunity to enhance its unified character while reinforcing district identity. Paving materials and groundcover afford the greatest opportunity for creating visual continuity in the spaces between the buildings. Currently the sidewalks are paved predominantly in concrete, with granite used as accent features or borders in some districts. A highly manicured lawn is the primary groundcover. Pedestrian scale light fixtures and other furnishings vary by district, as do landscape materials. Key locations incorporate feature plantings as focal points and to enhance primary gateways such as on Pleasant Street between University Avenue and Pillsbury Drive and along Cleveland Avenue on the Lawn. Mature shade trees tie much of the Twin Cities campus together with a continuous canopy. There is more potential for use of way-finding and directional signs as a means of creating visual unity and coherence throughout campus as well as highlighting uniqueness between districts. There is a growing collection of public art on the campus that is scattered randomly outside as well as inside buildings in public spaces. These, together with several fountains and monuments, provide special features with symbolic and meaningful messages about what is valued in our academic community.



Guidelines

- Design campus public spaces to enhance the unified character of the campus while reinforcing individual district identity.
- Provide consistent pedestrian-scale light fixtures throughout each campus district.



Flexibility

In order to encourage maximum use of public spaces on campus, flexibility in design is necessary. Adaptability to a large variety of active and passive uses will generate more activity in outdoor as well as indoor public spaces. While size will affect how a space is used, the way it is furnished may have a larger impact. Consideration should be given to varying types of spaces in proximity to each other. Providing a variety of public space types within a district is desirable.



Guidelines

- Provide a wide variety of flexible public space types within each district



Durability

Design of public spaces on campus requires careful consideration of their maintenance and management and the elements used in their design. The tradeoff between short-term construction costs and long-term maintenance should favor the selection of materials and construction techniques that will create easily maintained and long lasting public spaces. Maintenance personnel should be consulted during design. The perception of tidiness and care helps prevent misuse and vandalism. With proper management, use of public spaces on campus will increase because they will be more comfortable and more activity will in itself attract additional use. Proper design will create a vital, integrated campus.

Guidelines

- Design public spaces for durability and ease of maintenance.

Building Qualities Integration

A vital, integrated campus is an ensemble of buildings and landscapes that work in concert to create a collective experience of place. Individual buildings are understood as important elements within building and open space ensembles. Every campus building has multiple roles to play, balancing needs of interior function with the need for appropriate design character and exterior relationships to its neighboring buildings. Groups of buildings form and support a continuous network of campus public spaces. On the Twin Cities campus there is already an abundance of high quality architecture. The architectural styles cover a broad range due to the long period of time over which the campus has evolved. Integrity of campus design has been maintained through the use of brick as a primary building material throughout campus, and through the adherence to predominant architectural styles within each district. New buildings should be designed and evaluated based upon how well they contribute to campus character as a whole, and to the district in which they occur. Landmark buildings should be allowed sparingly.

Guidelines

- Design new buildings to contribute to a unified overall campus character, while reinforcing the identity of the district in which it is located.
- Utilize brick and stone as the primary building materials in buildings throughout campus.
- Limit the number of landmark buildings. Landmark buildings can vary from the norm, but should be the exception. When possible, landmark buildings should be isolated from other campus buildings.

Optimization

Full utilization of existing buildings should be considered before design and construction of new buildings. This applies, whether or not the buildings are considered historic in their design or significance. Opportunities to adapt emerging needs to existing building spaces should become the first priority. Renovation and reuse of existing buildings, requiring limited redesign and construction should also be higher priority than new construction. When new buildings are required, they should be designed flexibly to accommodate identified needs as well as future as yet undefined needs.

Guidelines

- Design new buildings to be flexible and adaptable to changing uses.

Collaboration

Building design decisions on campus are not to be within the purview of a single architect or architectural firm. Architects should work closely with campus staff to assure that broad, long term interests of the campus are properly stewarded. Individual buildings are less important than the overall character of the campus. At the same time, integrity of the campus character is maintained through high quality and appropriate individual building designs. Review of building designs should not be overly directive nor inhibit high quality, rather review should be for the purpose of determining compliance with these guidelines.

Guidelines

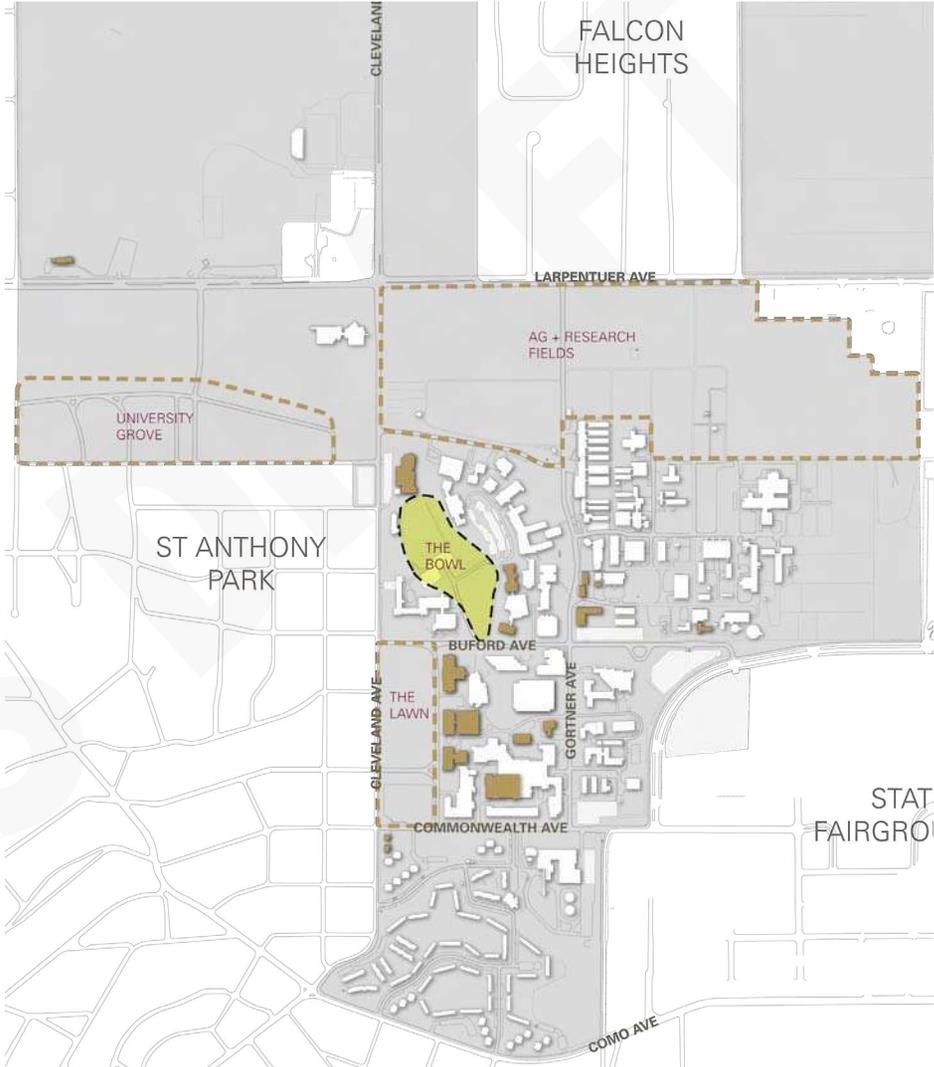
- Design new buildings as a team collaborative process.



- NHRP Listed
- NHRP Eligible
- Expanded Old Campus District
- Mall District - Regents Historic Designation



Cultural Resources - Minneapolis Campus



Cultural Resources - St Paul Campus

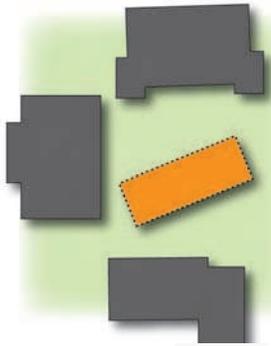
Notes

- Regents Historic Designation includes Mall and buildings facing Mall. The Mall District may qualify for National Landmark Status.
- Washington Avenue Bridge may be eligible for NHRP listing. Documentation is not complete.

Preservation and Adaptive Reuse

Integrity in design also requires preservation of historic buildings and landscapes. Historic buildings and landscapes are a form of living history. They establish a sense of continuity, and promote a feeling of pride in the University's past. Productive reuse of these buildings and landscapes is also aligned with the University's commitment to sustainability, as the greenest building is often one that is already built. Preservation of an historic building also helps preserve the design integrity of the district within which it is located. While opportunities for reuse and preservation should be sought, there will be the occasional need for judicious removal of obsolete buildings in order to meet academic goals with more functional buildings, and to improve relationships between buildings, public spaces and natural features. New buildings that are developed on the edges of campus should be sensitive to their impacts on adjacent neighborhoods, some of which are historic.

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Cultural resources, including historic buildings and landscapes, have been listed on the National Register of Historic places. (See graphic callout box for list and image). This has included physical landscapes, such as (see needed graphic and map). Additional building sites are recommended for consideration based on the recommendations included with the University Preservation Plan.

Guidelines

- Preserve historic buildings whenever possible by adapting buildings to new programmatic needs.
- Remove obsolete buildings judiciously when required to meet academic goals, to improve space relationships between buildings, or to enhance appreciation of natural features.

Sustainable Design and Construction

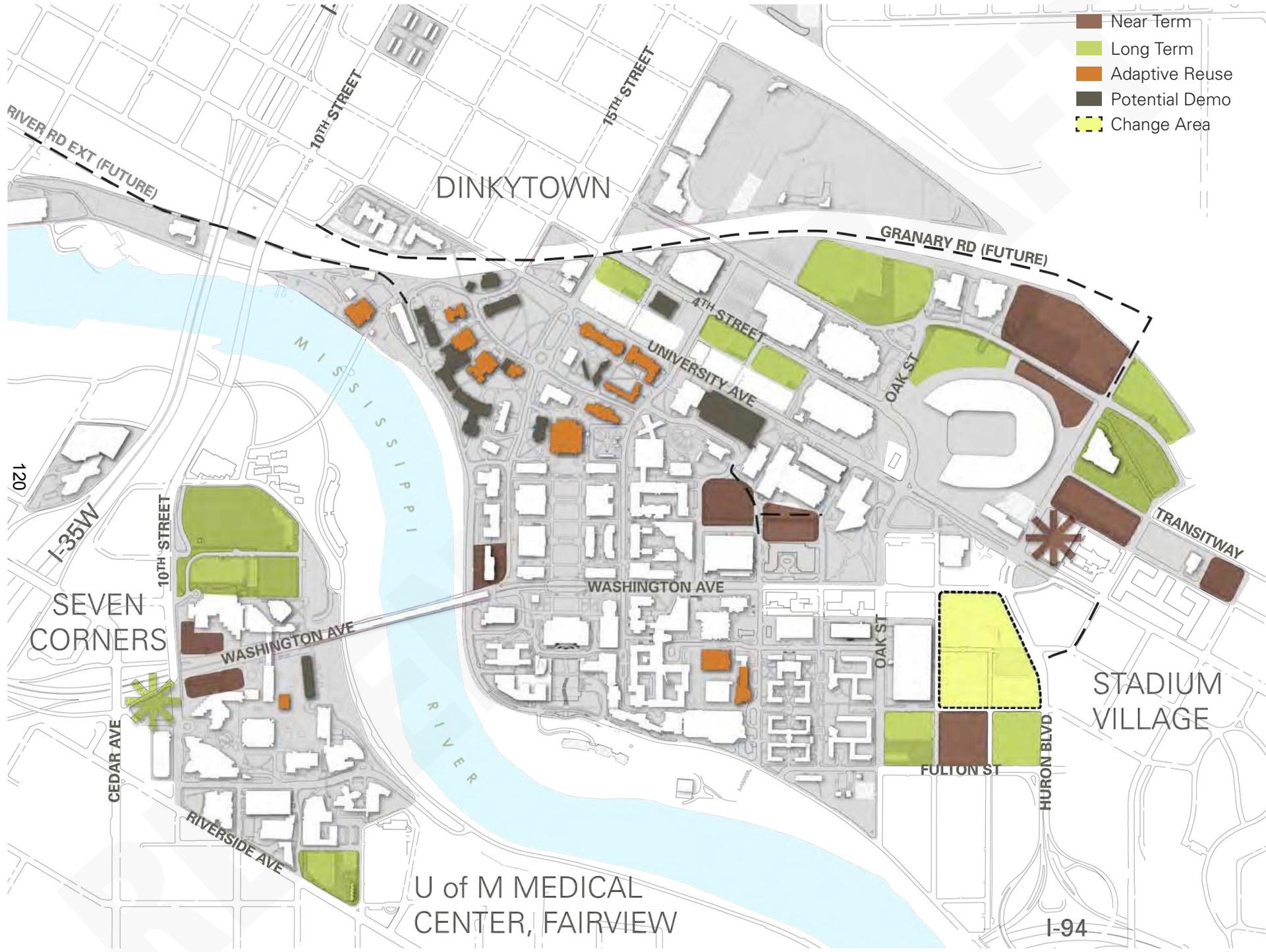
On a vital, integrated campus, building and landscape design decisions should consider potential impacts on the broader community and world not just impacts on the campus itself. Buildings should be designed to fit the environmental conditions present in our northern climate. Campus buildings and landscapes must be environmentally sustainable. Renewable materials and sustainable methods should be used in all campus building construction. Energy efficiency should be maximized. Minimizing campus building environmental impacts is imperative.



Guidelines

- Design new buildings to be environmentally sustainable and responsive to site-specific environmental conditions.
- Maximize energy efficiency in all campus building and landscape design.





Development Framework Map

Near term development means changes that may occur within the 10 year horizon of the 2009 Master Plan. Specific uses and intensities are intended to be defined as an outgrowth of district master planning to be undertaken by the University.

Long term development indicates potential change in a 20 year future. Current activity patterns in these areas are expected to continue as interim uses. Specific uses and intensities will be defined as an outgrowth of district master planning

Adaptive reuse designations reflect priorities for capital investment and renovation of important buildings to support the university's academic mission.

Potential demolition designations indicate buildings that are candidates for removal. Analysis of physical, environmental and adaptive re-use capability as well as campus-wide benefits will be conducted prior to making final decisions about removing campus buildings.

Growth areas are lands that the University will consider acquiring within the 20 year horizon of the plan. Current uses and activity patterns in these areas are not expected to change. Growth areas are strategically important to the University's mission and are designated to inform the broader community of the University's intentions. Growth areas will be defined through district master planning and in joint planning efforts undertaken with other stakeholders.

Selective replacement areas are locations where coordinated planning is needed to address reinvestment through a combination of methods. Demolition, new construction and renovation of existing buildings are all likely tools to be used in renewing these areas.



Development Framework - St Paul Campus

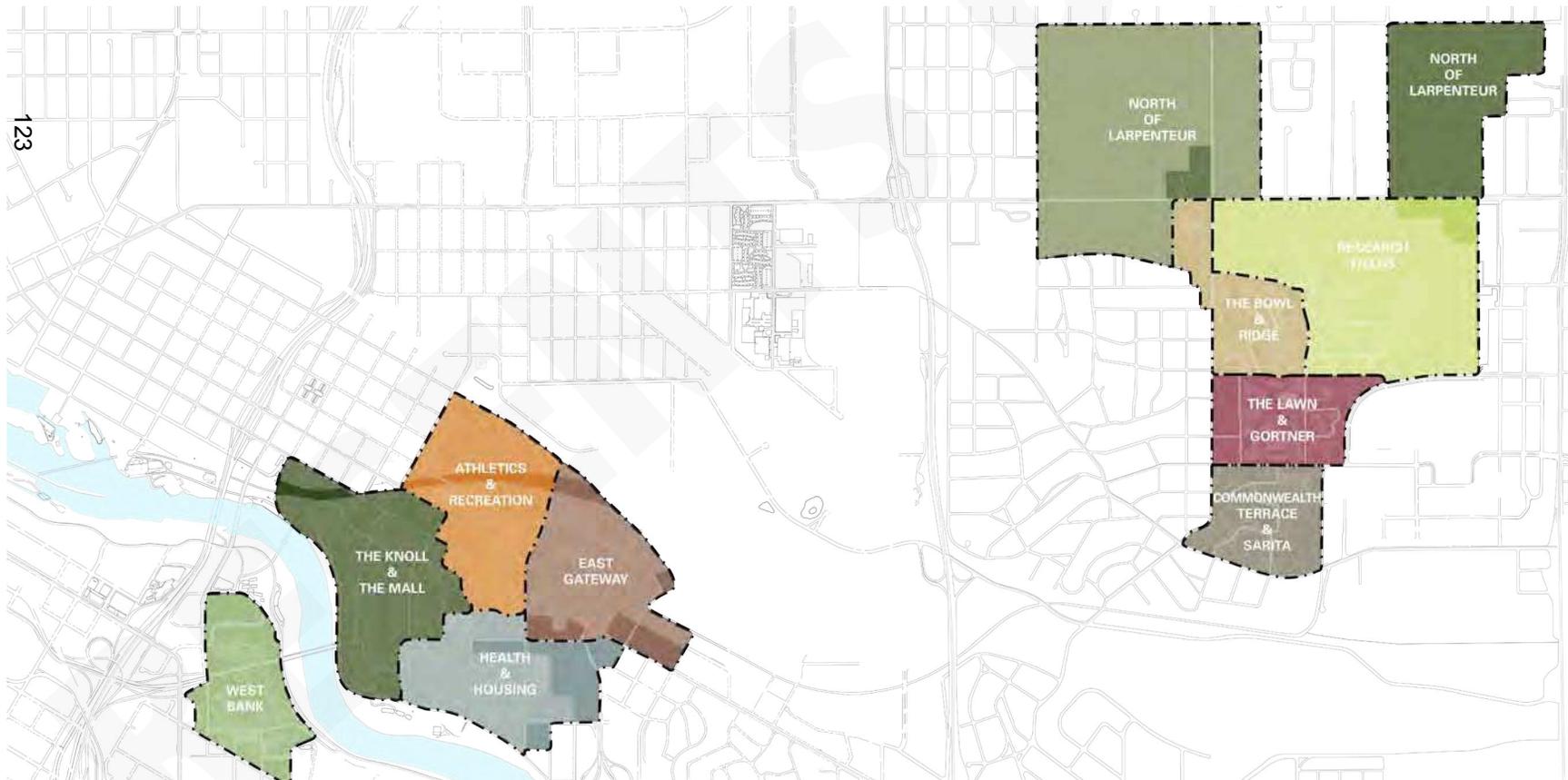
District Planning

The University is comprised of a series of academic neighborhoods, called campus districts for the purpose of the Campus Master Plan. These districts, mapped in Figure X, are defined primarily by similar uses and activity.

Campus Districts Defined

Each of the X districts named in this chapter are defined by their buildings and landscape (historical and other); academic activities; physical geography (river's edge vs core of campus) and circulation pat-

terns. The character and activity pattern in each of the campus districts demonstrates the variety of daily life found throughout the TC campus.



Campus Districts

District Map

Draft 2-1-2009

Minneapolis

The Knoll and the Mall

These districts are the heart of the Minneapolis campus, defining the traditional campus landscape for generations of students and offering the university community remarkable architectural buildings that link present-day campus life to the original days of the institution. The Knoll contains some of the campus' oldest buildings. Thirteen of the buildings in the area are listed on the national Register of Historic Places as unique resources. The park-like Knoll lawn, with its mature tree canopy and undulating topography, is an equally important part of the historic resource. Around the turn of the 20th century the campus expanded to the Northrop Mall. In the Mall area, the spaces between buildings and the architecture of the buildings themselves have been planned as an orderly and regular landscape, containing open-air plazas that are ideal for dialogue, contemplation or active enjoyment of the unique outdoor room.

Recommendations

- Many buildings in the Knoll and the Mall will be the subject of significant reinvestment and adaptive re-use.
- The iconic spaces of the Northrop Mall, the lawn in the Knoll and the Scholars' Walk will be preserved in perpetuity.
- Purposeful building removals will result in new open spaces to reinforce the historic character of the district. A new public space at the site of Norris Hall and Gymnasium will allow views of the River. A new public space at Westbrook will allow for an expanded plaza and improved access to Northrop Auditorium. A new public space at Williamson will reduce paved areas, support pedestrian movement and remove a non-contributing building to support a traditional quadrangle pattern of open spaces to buildings.
- In the 10 year horizon, two new academic buildings will be built on the sites of existing buildings.
- Investments in pedestrian and bicycle travel will reinforce critical thoroughfares on the Mall, Washington Avenue, Scholars Walk and the River Road.
- Future extensions of streets will be considered in this district, to improve access from the north and west of the campus.
- LRT service on Washington Avenue will increase automobile traffic on streets such as the East River Road, Arlington Street, Pleasant Street and Union Street.

District Map

Draft 2-1-2009

Residence Halls

Starting in the 1930's the university began constructing residential buildings on campus. Construction of other residential neighborhoods continued through the 2000's. On the East and West Banks of the Minneapolis campus and in St Paul.. Family housing was constructed at Commonwealth Terrace in the mid 20th century. Most of those locations remain intact from their initial construction, with investment and renovations made as needed to support their ongoing use as student housing. No significant additions to residence halls is anticipated in the near term future.

Academic Health Center

The scale and diversity of the physical environment of the Health Sciences district reflect the size and complexity of the Health Sciences program. It's origins as a teaching center were advanced by the development of new surgical techniques, such as the nation's first open heart surgery in 1952, and development of life-changing medical devices, such as artificial valves and cardiac pacemakers. The vast majority of the state's health care providers, including pharmacists, dentists, public health professionals, physical, respiratory and occupational therapists, are educated at the Academic Health Center. Approximately 500,000 patient and visitors associated with the hospital pass through the district annually. Plans to develop land east of Oak Street and north of Fulton Street as an outpatient clinic were initiated in 2008. Expanded clinics will increase activity in this district in the next five to ten years.

Recommendations

- Growth in the research and clinical functions of the Academic Health Center will result in renovation of existing buildings or construction of new buildings on established sites. Where possible, existing impervious surfaces will be modified to provide raingardens and landscaped spaces.
- New clinic facilities planned to be constructed east of Oak Street and north of Fulton Street will extend the University's presence to Huron Boulevard.
- Potential acquisition of land east of Oak Street, north of Fulton and west of Huron may be considered by the University to support long term academic or strategic goals.
- LRT service on Washington Avenue will increase automobile traffic on streets such as the East River Road, Harvard Street and Fulton Street.
- New public space will be established north of East River Parkway at Oak Street.

District Map

Draft 2-1-2009

East Gateway

This edge of the campus has long been a traffic and activity crossroads and an area of transition from industrial to campus use. Sports venues, including the new football stadium, and the McNamara Alumni Center present a contemporary face of the campus to the surrounding City neighborhoods. Convenient connections to the regional freeway system provided by the Huron Boulevard access to I-94 will accommodate increased campus development with metropolitan and state-level connectivity. This area of campus, referred to as the East Gateway District, will experience the greatest growth within the horizon of this master plan. For example, the emergent biomedical science research facilities and expanded ambulatory care clinics will significantly increase activity in this district within the next five to ten years.

Recommendations

- Near term development will occur along the 23rd Avenue corridor, transforming the area into a vibrant research district.
- Interconnected open spaces will be constructed to support pedestrian and bicycle movement within the district and to other campus destinations. Some of these open spaces will treat stormwater and reinforce the existing 6th Street raingarden swale.
- A multi-modal transit/automobile parking/ bike center with supportive commercial uses at 23rd Avenue and University Avenue will be constructed in conjunction with the Central Corridor LRT line.
- Conflicts between pedestrians and other modes of travel will be addressed at a number of crossings of University Avenue and 4th Street S.E.
- Granary Road construction is anticipated north of the East Gateway District. This route will provide access to the district while offering an alternative to travel on University Avenue and 4th Street.
- Minneapolis Park Board plans to build a connecting segment of the Grand Rounds parkway and trail system will connect to the University through this area, in the vicinity of 27th Avenue and future Granary Road.

District Map

Draft 2-1-2009

West Bank

Even in the 1930s the University anticipated the need to expand its campus, and looked across the river as a potential location to do so because of the relative availability and affordability of land there compared to the immediate surroundings of the East Bank. Initial land acquisition on the West Bank was started in the mid 1950s. The University began building west of the river bluff in the early 1960's and a new 'double-decker' Washington Avenue bridge was constructed in 1965-67.

The plan for the West Bank district was consistent with modernist planning principles of clustered buildings, weather protected walking paths or building connections and limited vehicle access. The original academic occupants remain, and the recent addition of performing and studio art facilities have made the district a culturally richer, more eclectic place, with the development of the Arts Quarter beginning in 1999.

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Recommendations

- Purposeful removal of Anderson Hall will be considered subject to analysis of interim space availability, environmental and economic impacts, and the potential views it will give the West Bank campus to the Mississippi River corridor.
- The Social Sciences tower will be upgraded for more efficient use by academic units.
- Other potential long term development sites on the West Bank include the Washington Avenue Corridor, east of 19th Avenue; on the northern recreational fields and on the parking lots north of the Mondale Hall and on Riverside Avenue east of 20th Avenue.
- The extensive paved plazas of the West Bank will be redesigned to reduce impervious surfaces, improve stormwater treatment , and create a greener pedestrian environment.

District Map

Draft 2-1-2009

Athletics and Recreation District

Planning for reinvestment and redevelopment of some facilities is expected in the near term. This area has served as a transportation crossroads, coexisting with rail transportation corridors and roadway arterials such as the 4th Street/University Avenue pair and the future Granary Road. Pedestrian, bike and vehicular links to the campus are important to the successful integration of the athletics and recreation district with other campus areas. Concerns raised by adjacent neighbors, such as the effect of nighttime playing field lighting, parking, noise and traffic flows, will continue to pose opportunities and challenges for the University as these facilities are operated to meet program needs and desires defined by the University community.

Recommendations

- Reconfiguration, intensification and selective replacement of facilities is anticipated to accommodate the needs of athletics, recreational sports and related academic programs.
- Improvements to the streetscape along minor arterial routes such as University Avenue and 4th Street will be pursued to support the 'signature streets' designation.
- Conflict areas for pedestrian and bicycle crossings will be mitigated at established pedestrian crossings on the minor arterials through changes to signal design or other operational changes.
- Granary Road will increase the visibility of this district to the public. Crossings of future Granary Road at key locations, such as 17th Avenue, will be pursued to better connect existing athletics facilities north of the rail corridor to the campus.

District Map

Draft 2-1-2009

St Paul Districts

Concentration of The Bowl and the Ridge

The historic roots of the St. Paul campus are found in this district. Neo-classical and contemporary buildings located along a ridge create an academic community comprised of agricultural, natural resources, and biological instruction and research facilities. Stable academic programs are anticipated to remain in their physical homes in this district. Some interdisciplinary growth in academic population is expected. The topographical form and open spaces of the Ridge and the Bowl combine to provide key structuring elements that define a sense of place for this area of campus. The ridgetop cluster of buildings when viewed across agricultural fields presents the prominent image of the St. Paul campus.

135

Recommendations

- A new Bell Museum and an associated landscape for teaching and research are will be constructed at the southwest corner of Cleveland Avenue and Larpenteur Avenue.
- Long term development on the site fronting the north side of Buford Avenue west of the Student Center will support the enlivening of the campus as described in the St Paul Campus Strategic Plan (February 2008).
- The Bowl, a designated iconic open space, will be preserved in perpetuity.
- The natural resource areas of Mullins Woods and the wooded slope west of McNeal Hall will be enhanced as part of the campus' natural systems.
- Transportation conflicts along Cleveland Avenue, between transit, pedestrians, bikes and parked cars, will be managed at key crossing locations between Larpenteur Avenue and Folwell Avenue.
- A future north-south bicycle route will be considered on several candidate locations, including Cleveland, Raymond and Gortner Avenue.

District Map

Draft 2-1-2009

The Lawn

In the first decades of the 20th Century, a collection of three classical buildings were constructed along an expansive lawn, creating a formal edge to the campus that remains a signature space and primary entry from the west. The student center and transit hub and the student residence hall borders the north edge of the Lawn and remains the heart of student life and pedestrian traffic on campus. Surface parking at the south border of the Lawn offers opportunities for future development that will further define the historic space.

Recommendations

- The Food Science and Nutrition building is an adaptive reuse priority.
- Selective replacement of buildings nearing the end of their useful life will occur in the area east of the Veterinary Hospital
- The parking lot on the south edge of the lawn is designated as a long term development site.
- The Lawn, designated as an iconic open space, will be preserved in perpetuity.
- Transportation conflicts along Cleveland, between transit, pedestrians, bikes and parked cars, will be managed at key crossing locations at Buford Street, Doswell Avenue and Commonwealth Avenue
- A future north-south bicycle route will be considered on several candidate locations, including Cleveland, Raymond and Gortner Avenue.

REGENT

District Map

Draft 2-1-2009

Experimental Fields

The fields that wrap around the ridge, south of Larpenteur and east of Cleveland, have a long history of accommodating primary research activities for agricultural sciences. The fields have both historical and scientific significance core to the agricultural mission of the University. The area east of the Ridge has historically been dedicated to animal housing and support facilities. Over time, greenhouses and other facilities that support the agricultural sciences were added. Recently, new uses such as the Equine Center and the Cargill Genomics Building have been constructed, and the area is considered as a location for additional research laboratory expansion.

Recommendations

- Selective replacement of buildings that are nearing the end of their useful life will occur in the area east of Gortner and north of Buford..
- Lands on the south side of Larpenteur Avenue will continue to be used to support agricultural research and teaching. They are identified as iconic for their research and aesthetic importance.
- The ponding area adjacent to the Fairgrounds on the eastern edge of the campus will be preserved as a natural resource area and will be integrated into the campus wide system of surface water treatment

District Map

Draft 2-1-2009

Housing: Grove and Commonwealth Terrace

Two residential neighborhoods exist on the St. Paul campus: Commonwealth Terrace and the University Grove. Commonwealth Terrace provides housing for families and has become a diverse, international neighborhood. Reinvestment and renewal over time is expected in the long term without changing the use or land tenure in these neighborhoods. The University Grove, consisting of privately-owned residences for University employees on University-owned land, will remain as a unique single-family neighborhood.

Recommendations

- The interconnected system of wetland features and surface water swales extending from the University Grove to the Sarita Wetland will be preserved and improved as an important natural resource area.
- Transportation conflicts along Cleveland Avenue, between transit, pedestrians, bikes and parked cars, will be managed at key crossing locations at Commonwealth Avenue.
- A future north-south bicycle route will be considered on several candidate locations, including Cleveland, Raymond and Gortner Avenue.

REGENT

District Map

Draft 2-1-2009

Recreational Edges and Support Agricultural Fields: North of Larpenteur

Currently, the recreational facilities north of Larpenteur, such as the Golf Course, the Soccer Stadium, intermural playing fields and other venues, support a well-rounded campus life for students, staff and faculty. The aesthetic and functional value of these green or recreational places for adjacent neighbors and land owners is another significant factor to be considered in planning for change in the future. Other fields north of Larpenteur, east of Fairview, have a research role that, while important, is not as critical as the fields south of Larpenteur.

The Campus Master Plan anticipates that on the St Paul campus, decisions about use of lands that are not essential to the academic or outreach mission of the University will balance pertinent recreational, social, economic and environmental factors associated with a potential change in the land use pattern. Potential land use changes may be considered only for the area north of Larpenteur, if other factors can be addressed to the satisfaction of the University.

Recommendations

- University lands north of Larpenteur Avenue will be considered for potential long term development. Decisions about the nature and intensity of future use will balance community, economic and environmental factors.
- The agricultural research and recreational lands north of Larpenteur Avenue will continue to support campus activities in the near term future.
- Pedestrian, transit and bicycle facilities along Larpenteur Avenue will be improved through coordinated streetscape projects undertaken with adjacent municipalities in Falcon Heights and Lauderdale.



Implementing the Master Plan

This Master Plan will be reviewed and updated in ten to fifteen years, to refocus efforts and priorities. To effectively guide future campus development decisions and operationalize its directives, the Master Plan will be consulted throughout every planning and design effort to ensure its influence on project formulation, site selection, and design development. In implementing the Master Plan, the University will make use of the broadest range of research available and will apply best practices to advance the eleven guiding principles.

Guidelines:

- The University will apply extensive research and best practices in the implementation of the Master Plan.



Administering the Plan

Accountability for implementing the master plan on behalf of the Board of Regents lies with the President and Senior Officers. Responsibility for the day to day administration of the master plan is delegated to the Vice President for University Services who will establish the process and structure for implementing the Master Plan.

The implementation process should be simple and efficient. Current procedures for the formulation, development, review and approval of projects will be supplemented by a more formal and transparent Master Plan review process that establishes specific objectives and strategies for each project. Consultation with the University community will be included in this process.

Capital projects that have a significant affect on the external appearance, function, and operation of the campus will be formally measured against the principles and guidelines of Master Plan. This includes all proposals regarding changes to the land use, buildings, open spaces, landscape and infrastructure of the campus. The Master Plan review and assessment will occur at two critical points in project planning and development:

1. Predisign is the initial stage of planning for a capital project during which the programmatic objectives, space and site requirements, infrastructure needs, and other factors affecting the scope and cost are analyzed and

defined. Predisign studies should include an assessment of pertinent Master Plan directives and recommended responses of the project, establishing a set of requirements that the project must address in its design.

2. Schematic design is the initial stage in the architectural/engineering design of a project, translating written program requirements into site plans, floor plans and three-dimensional images. It is also the point at which the Board of Regents review and approve the site plan and architectural design of a project. The schematic design package should include a direct response to all the Master Plan requirements established by the predisign.

Guidelines:

- All initiatives that affect the land use, buildings, open spaces, landscape and infrastructure of the campus shall be subject to a formal review and approval process to ensure conformance with the Master Plan.
- The Master Plan review and assessment process shall occur during both the predisign and the schematic design stages of each capital project.
- Define the formal Master Plan Review process, including specific steps for consultation with the University community.

Refining and Amending the Plan

The Master Plan provides the broad principles and the basic framework for directing future campus development. Although it provides an understanding of the present and near-term future, the Master Plan does not account for all eventualities, nor is it explicit about the application of its principles and guidelines to each unique condition of the campus. Thus it is essential for the University of Minnesota to have a process by which the Master Plan can be elaborated and amended.

The plan will be elaborated upon and refined through the preparation of district plans that will provide detailed recommendations for future building and infrastructure improvements. Several district plans have already been completed, such as the West Bank Arts Quarter or are in the final stages of preparation, such as East Gateway District. Plans for other districts will be prepared in anticipation of development activity. A master plan for public art on campus will also be prepared. The process of district plan preparation and refinement will ensure that the Master Plan is a continually evolving, living document.

As campus districts are studied in greater detail, as unanticipated changes occur, and as specific building proposals are considered, there may be need to amend the Master Plan. Such amendments will require thorough analysis by planning staff, participation by key stakeholders, review by the President and Senior Officers, and ultimately approval by the Board of Regents.

Guidelines:

- Detailed district plans will be used to:
 - Inform the six-year capital plan of needed investments in campus improvements
 - Guide daily actions related to campus development and construction
 - Guide daily operational activities
- Guiding principles of the Master Plan shall be applied to specific and unique conditions of the campus through the development of more detailed district plans.



REGENTS DRAFT

Board of Regents Campus Master Planning Principles

In 1993, the Board of Regents determined that all campuses of the University of Minnesota should have master plans, and adopted four principles to guide the preparation and implementation of those plans. The principles and an explanation of how each is to be applied are:

1. Create and maintain a distinctive and aspiring vision for the physical development of each campus.

The campus master plan should:

- 1.1 Establish how the physical setting will embody the distinctive missions of each campus.
- 1.2 Highlight and celebrate the special realities of each campus, including its natural setting and ecological structure, architectural and landscape heritage, and its surrounding settlement patterns. The unique and special qualities of each place should be made an integral part of the educational experience.
- 1.3 Organize the landscape and places to establish a coherent circulation and infrastructure pattern for the campus as a whole.
- 1.4 Determine building location and design guidelines so each incremental addition to the campus will contribute to a distinctive and inspiring vision of the whole.
- 1.5 Encourage exemplary architecture and landscape architecture which demonstrates sensitivity to local conditions and contributes to the master plan vision.
2. Enrich the experience of all who come to campus.

The campus master plan should:

- 2.1 Accommodate the specific needs, experiences and requirements of the various user groups, giving highest priority to students, faculty and staff, while extending hospitality to visitors, surrounding communities, and the people of Minnesota.
- 2.2 Provide coherence to the campus entrances, movement systems, landscape spaces and architectural vocabulary in order to create a sense of welcome, orientation and presence for a special community which celebrates learning.
- 2.3 Create a positive system of campus circulation. This necessitates minimizing conflict between pedestrians and the needs of other vehicular circulation including bicycles, cars, service vehicles, parking and other transit modes, especially buses and LRT. The pedestrian environment should be given special priority and be made comfortable, secure, pleasant, and acceptable so as to dignify and show respect for all participants in campus life.
- 2.4 In creating a positive pedestrian environment, integrate all supporting amenities including information, signage, lighting, phones, outdoor furnishings, landscape into the overall master plan concept.
- 2.5 Organize campus activities into functional and or organizational affinities while supporting the overall aesthetic character and intent of the campus plan.
- 2.6 Devote special attention to non-scheduled campus use by providing informal spaces (interior and exterior) for study, meeting, and participation in campus life. The purpose is to create a campus community where people “want to be” rather than one where they “have to be”.

3. Maximize the value of existing physical assets while responding to emerging and changing physical needs.

The campus master plan should:

- 3.1 Be based on a realistic assessment of all the physical and financial constraints and opportunities on each campus – the assets and liabilities. The assessment should include: a determination of the unique physical assets and enduring features of each campus; a determination of the most significant physical liabilities; an evaluation of the quality and level of maintenance of buildings, landscapes and infrastructure; a determination of which buildings and landscapes are historically significant and worth maintaining and enhancing, and which structures are obsolete and not capable of or worth the investment in adaptive reuse; a determination of priorities for the maintenance of existing buildings, landscapes and infrastructure; and evaluation of the most significant opportunities for physical enhancement of lasting value.
- 3.2 Measure and determine the need for new construction against the following criteria: the need for deferred maintenance; the demand of changing student enrollments; the need for appropriate teaching and research facilities; the opportunities for adaptive reuse and renovation; the opportunities for attracting new capital resources; the need of the pedestrian environment, landscape or vistas.
- 3.3 Anticipate and allow for rapidly evolving development in instructional technology.

3.4 Require that each capital improvement project demonstrate how it contributes to enhancing the specific goals of its campus master plan and adds long-term value to the University. One of the measures of long-term value should be a careful analysis of life cycle costs for any capital project.

3.5. Pay attention to the special role and value of the natural landscape in creating and enhancing the quality of experience on each campus. The natural landscape is one physical asset which, with appropriate maintenance, grows in value.

4. Ensure an inclusive, accountable and timely process for creating and implementing the master plan vision.

The campus master plan should:

4.1 Be developed by an open and inclusive process representing each constituency of campus community. Such representation requires ample time for input and feedback during the entire process.

4.2 Be guided by a Campus Planning Committee representing those important constituents, appointed by the Senior Officers for the Twin Cities Campus or the Chancellors for Duluth, Morris, Crookston and Rochester Campuses, and prepared by professional consultants with staff support.

4.3 Be prepared in conformance with these principles and recommended procedures.

4.4 Be approved by the Senior Office for the Twin Cities Campus or the Chancellors for the Duluth, Morris, Crookston and Rochester Campuses, by a separate Master Plan Oversight Committee and the Board of Regents.

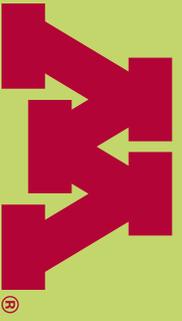
Once the master plan has been completed and approved:

4.5 Each campus must continue to be involved in the implementation of the master plan. Therefore a procedure must be established whereby the plan can be continuously applied to the dynamics of change; subjecting such change to an open and inclusive forum for campus and community participation.

4.6 Each capital project must be in conformance with the master plan. A process for uniformly determining conformance must be established by the Senior Officers, the Chancellors and the President.

4.7 The President, the Senior Officers, and the Chancellors must be held accountable to the Board of Regents for progress in implementing the master plan. For this purpose the Board of Regents needs to be provided an Annual Report which assesses implementation of the campus plan, recommends adoption of minor amendments, cyclical revisions to the plans, and advises on the criteria for designer selection.

REGENTS DRAFT





**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS**

Facilities Committee

February 12, 2009

Agenda Item: Capital Budget Amendment

review review/action action discussion

Presenters: Vice President Kathleen O'Brien
Vice President & Chief Information Officer Steve Cawley

Purpose:

policy background/context oversight strategic positioning

In accordance with Board of Regents Policy: *Reservation and Delegation of Authority*, review and take action on the following Capital Budget Amendment:

- Amend the Fiscal Year 2009 Capital Budget by \$1,500,000 to increase funding for the design and construction of the West Bank Office Building Data Center Heating Ventilation and Air Conditioning Phase II Project on the Twin Cities Campus.

Outline of Key Points/Policy Issues:

The West Bank Office Building Data Center was constructed in 1988 and designed with capacity to handle the data needs at that time. The demands on the cooling capacity have grown dramatically in recent years and the system's redundancy has been significantly compromised. This is the third phase of a project design to significantly increase the capacity, efficiency and reliability of the cooling and electrical system serving the data center. This phase increases the capacity and reliability of the electrical system infrastructure.

Background Information:

Refer to the attached project data sheet for this project.

The Fiscal Year 2009 Capital Budget approved by the Board of Regents in June 2008 included \$1,500,000 for this project. This amendment increases the funding to \$3,000,000.

The size of the replacement generator has been increased from 1750 KW to 2000 KW. The larger unit is needed to provide the backup capacity now needed for the facility. This larger unit requires relocation of the existing generator and the use of a temporary generator to ensure 100% emergency capacity during construction. In addition the following work has been added to the project to ensure its reliability:

- Installation of a new data center electrical service and switchboard electrical distribution upgrade to adapt to the new generator and electrical service.

- New stand alone cooling system for the switchgear and uninterrupted power source room
- Provide electrical system upgrades to increase the capabilities of an existing 300 KW uninterrupted power source.
- Interconnection of the mechanical and electrical equipment to a central monitoring system.
- Interconnect the Office of Information Technology office space lighting and equipment on the 6th floor of the West Bank Office Building to the new emergency generator.

President's Recommendation for Action:

The President recommends approval of the following Fiscal Year 2009 Capital Budget Amendment:

- Amend the Fiscal Year 2009 Capital Budget by \$1,500,000 to increase funding for the design and construction of the West Bank Office Building Data Center Heating Ventilation and Air Conditioning Phase II Project on the Twin Cities Campus to \$3,000,000.

West Bank Office Building Data Center HVAC Upgrades – Phase III
Twin Cities Campus
Project No. 01-218-08-1690, Capital Budget File No. TINF 2974

1. Basis for Request:

One of the University's primary data centers, which support telecommunications systems and central computing services, is located in the West Bank Office Building, 1300 South Second Street, Minneapolis. The Heating Ventilation and Air Conditioning (HVAC) and emergency back-up electrical systems are aging, lack adequate redundancy and are in need of expansion to handle today's environmental demands. The Office of Information and Technology (OIT) is planning improvements to the existing HVAC infrastructure.

OIT identified a phased program to upgrade the data center's environmental and electrical capacity:

- Phase I significantly increased the cooling capacity and reliability with the installation of a new 240 ton air cooled chiller and energy savings winter operations dry cooler – complete summer 2007.
- Phase II added 6 new computer room air conditioners (100 tons of cooling) and 7 new power distribution units – complete winter 2008.
- Phase III (this project) increases capacity and reliability of the electrical system infrastructure – scheduled completion summer 2009.

2. Scope of Project:

The West Bank Office Building Data Center was constructed in 1988 and designed to handle approximately 60 watts per square foot in this 6,500 square foot facility. The demands on the cooling capacity have grown dramatically in recent years and the system's redundancy has been significantly compromised.

This third phase of infrastructure work increases the electrical reliability of both the mechanical cooling systems and server operations. The scope of work includes the following:

- Acquisition and installation of a 2000 KW generator and automatic transfer switch.
- The rental of a temporary generator to accommodate the removal of the existing generator, realignment of the building emergency life safety generator and all necessary site work.
- Installation of a new data center electrical service and switchboard electrical distribution upgrade to adapt to the new generator and electrical service.
- New stand alone cooling system for the switchgear and uninterrupted power source (UPS) room (frees up cooling capacity for the computer rooms, increases cooling capacity for the switchgear and UPS equipment room).
- Provides for modest electrical system upgrades to increase the capabilities of an existing 300 KW UPS.
- Interconnection of the mechanical and electrical equipment to a central monitoring system.
- Interconnection of OIT's 6th floor office space lighting and equipment to the new generator.

3. Environmental Issues:

Based upon building surveys no hazardous materials, such as asbestos, are known to exist at the facility.

4. Cost Estimate:

Construction Cost	\$2,500,000
Non Construction Cost	<u>500,000</u>
Total Project Cost	\$3,000,000

5. Capital Funding:

	<u>Approved</u>	<u>Increase</u>	<u>Revised Total</u>
Office of Information Technology		\$220,000	\$ 220,000
Internal Loan Pool	\$1,500,000	1,280,000	<u>2,780,000</u>
Total	\$1,500,000	\$1,500,000	\$3,000,000

6. Capital Budget Approvals:

The Fiscal Year 2009 Capital Budget included \$1,500,000 for this project and included the work described in the first two bullets of the scope of work. The additional scope of work was added to increase the operational reliability of the data center. The upgraded facility will also provide a more secure server environment.

7. Annual Operating and Maintenance Cost and Source of Revenue:

Networking and Telecommunication Services will be paying the operation and maintenance costs required to operate this data center.

8. Time Schedule:

Complete design	February 2009
Begin construction	March 2009
Complete construction	August 2009

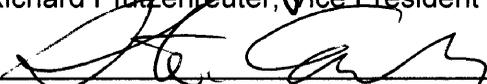
9. Engineer:

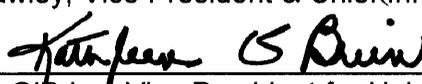
Dunham Associates, Minneapolis, Minnesota

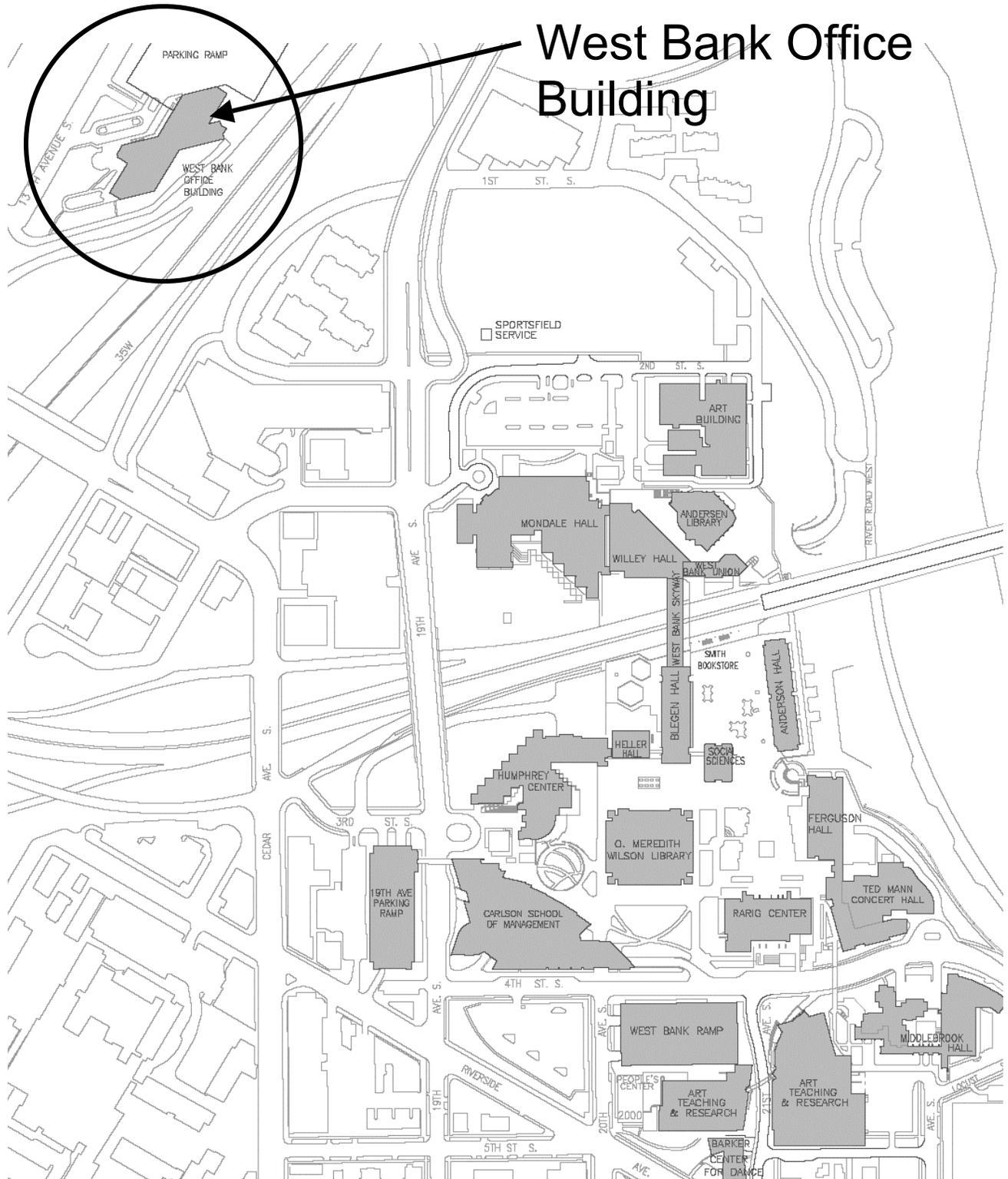
10. Recommendation:

The above described project scope of work, cost, funding, and schedule is appropriate:

 1/29/09
 Richard Pfitzenreuter, Vice President and Chief Financial Officer

 1/30/09
 Steve Cawley, Vice President & Chief Information Officer

 1/29/09
 Kathleen O'Brien, Vice President for University Services



West Bank Office Building

Twin Cities Campus
 1300 2nd Street South



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS**

Facilities Committee

February 12, 2009

Agenda Item: Capital Budget Amendment

review **review/action** **action** **discussion**

Presenters: Vice President Kathleen O'Brien

Purpose:

policy **background/context** **oversight** **strategic positioning**

In accordance with Board of Regents Policy: *Reservation and Delegation of Authority*, review the following Capital Budget Amendment:

- Amend the Fiscal Year 2009 Capital Budget by \$600,000 to increase funding for the design and construction of the Walter Library Supercomputer Cooling and Power Increase Project on the Twin Cities Campus.

Outline of Key Points/Policy Issues:

The Supercomputing Institute for Advanced Computational Research, located in Walter Library, is planning the installation of a new supercomputer. The current cooling and electrical power capacity capacities located in the main computer room B40 are insufficient to accommodate the new supercomputer. The cooling capacity must be increased by approximately 100 tons and the electrical capacity must be increased by 500 KVA. This project will provide the mechanical and electrical infrastructure within Walter Library to cool and power the new supercomputer.

Background Information:

Refer to the attached project data sheet for this project.

Neither the project parameters nor the size of the new supercomputer the Minnesota Supercomputer Institute was planning to purchase were known when the Fiscal Year 2009 Capital Budget was prepared. Therefore, the amount of cooling and power need for the new computer was also unknown.

President's Recommendation for Action:

The President recommends approval of the following Fiscal Year 2009 Capital Budget Amendment:

- Amend the Fiscal Year 2009 Capital Budget by \$600,000 to include funding for the design and construction of the Walter Library Supercomputer Cooling and Power Increase Project on the Twin Cities Campus.

**Walter Library Supercomputer – Increase Cooling & Power
Twin Cities Campus
Project No. 01-042-09-1297**

1. Basis for Request:

The Supercomputing Institute for Advanced Computational Research, located in Walter Library, is planning the installation of a new supercomputer. The current cooling and electrical power capacities located in the main computer room B40 are insufficient to accommodate the new supercomputer. The cooling capacity must be increased by approximately 100 tons and the electrical capacity must be increased by 500 KVA. This project will provide the mechanical and electrical infrastructure within Walter Library to cool and power the new supercomputer.

Installation of this new supercomputer will enable large-scale computations never before possible at the University of Minnesota and will enable MSI (Minnesota Supercomputer Institute) to provide services and resources to a broad range of University researchers. In a communication dated 20 October 2008, President Robert H. Bruininks stated "... enhancement of our research capacity to meet the demand for University resources, equipment, and support by researchers ..." as one of only three "essential areas of investment" for the University. This new supercomputer system is being purchased specifically as a means to enhance the University's research capacity and will significantly do so.

However, MSI needs enhancements to the existing machine room in order to handle the increased power demands and associated cooling requirements. This capital project will provide the necessary enhancements to allow MSI to host this new supercomputing system. There are no existing campus facilities that could appropriately host such a system. It was not known until very recently just how large MSI's next systems procurement would be which is why this project was not included in the last year's fiscal budget.

2. Scope of Project:

This project will utilize the existing computer room B40 in Water Library for the installation of the new supercomputer. The project will install the necessary electrical power systems and mechanical cooling systems. This project does not affect the exterior of Walter Library.

3. Environmental Issues:

There are no environmental issues.

4. Cost Estimate:

Construction Cost	\$500,000
Non Construction Cost	<u>100,000</u>
Total Project Cost	\$600,000

5. Capital Funding:

Supercomputing Institute for Advanced Computational Research \$600,000

6. Capital Budget Approvals:

This project was not included in the capital budget process last year because MSI was not certain of the amount of funding available for the supercomputer procurement until recently. The existing MSI machine would have been capable of handling a smaller system without upgrades. However, the level of funding available for this new supercomputer mandates immediate growth in the power and cooling capabilities.

7. Annual Operating and Maintenance Cost and Source of Revenue:

MSI will pay on-going maintenance costs associated with the new power and cooling equipment as part of its regular operating budget. These costs are typically 5-10% of the equipment costs. For the new uninterruptible power supply (UPS) that will provide an additional 500 kVA, this would roughly be \$15,000 annually. These costs do not vary much year-by-year as maintenance includes changing out bad batteries with new one which are made with newer technology and last longer. These costs are not a significant percentage of MSI's existing annual maintenance costs. Once this project is completed, MSI will have additional capacity for both the new supercomputing system as well as associated growth in storage requirements. Researchers generate more and more data and want to perform more and increasingly complex analyses on that data.

8. Time Schedule:

Complete Design	Feb 2009
Construction Bid/Contract	April 2009
Begin construction	May 2009
Complete construction	July 2009

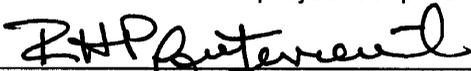
9. Engineer:

Dunham Associates

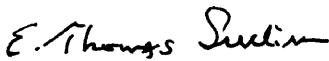
The project delivery method is design-bid-build.

10. Recommendation:

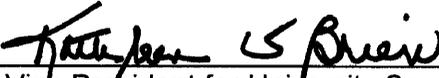
The above described project scope of work, cost, funding, and schedule is appropriate:

 1/29/09

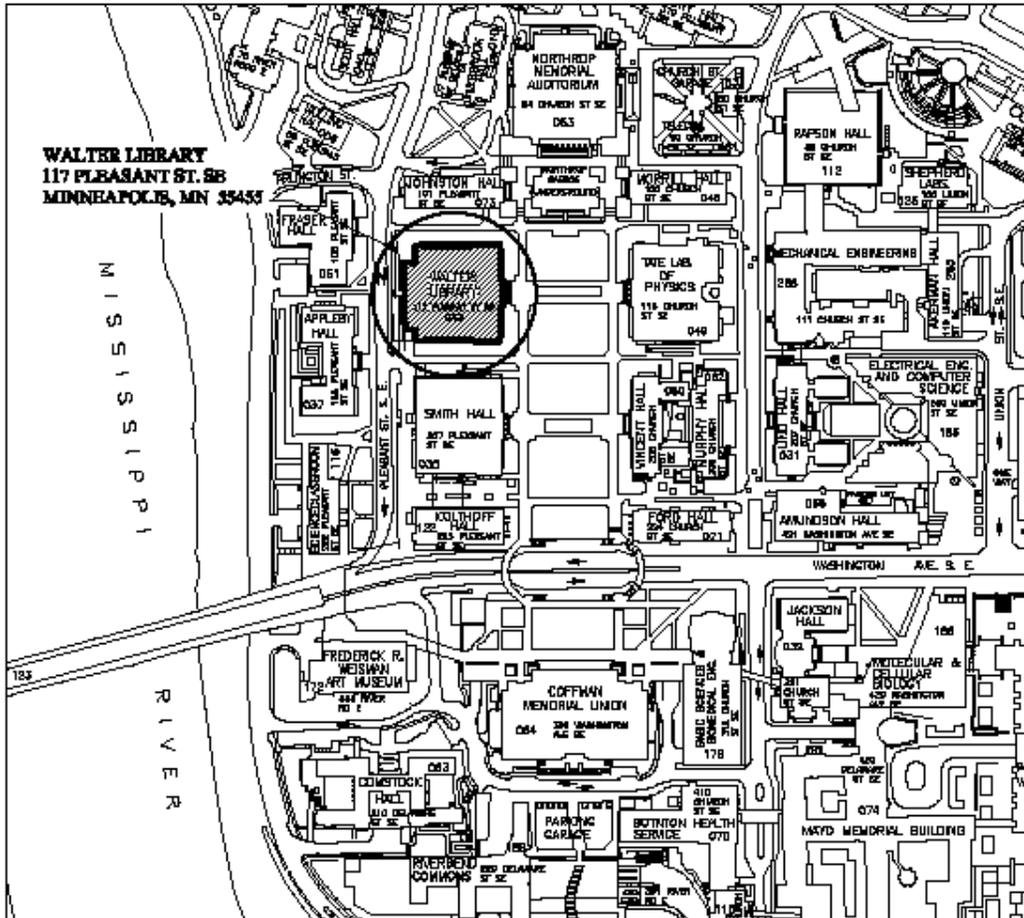
 Richard Pfitzenreuter, Vice President and Chief Financial Officer

 1-29-09

 E. Thomas Sullivan, Senior Vice President for Academic Affairs and Provost

 1/29/09

 Kathleen O'Brien, Vice President for University Services



Twin Cities Campus Walter Library



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS**

Facilities Committee

February 12, 2009

Agenda Item: Energy and Utilities: Principles and Progress Update

review **review/action** **action** **discussion**

Presenters: Vice President Kathleen O'Brien
Associate Vice President Mike Berthelsen
Director Jerome Malmquist

Purpose:

policy **background/context** **oversight** **strategic positioning**

To provide the Facilities Committee with the annual overview of Energy Management including: status of the utility master plan, services provided, cost to deliver the services, conservation and sustainability efforts.

Outline of Key Points/Policy Issues:

The University operates its utilities and energy systems with the three principles of:

- **Sustainability** - The University seeks to select and burn fuels in a manner that meets all government permit restrictions and exceeds industry benchmarks for emissions. The University will manage its facilities in a manner to minimize its overall consumption.
- **Reliability** - The University requires energy supplies and delivery systems to provide for itself and its customers an uninterrupted energy supply.
- **Risk and Cost Management** - The University requires utilities and delivery systems to purchase, produce and deliver energy at a competitive cost while managing its financial risks.

This year's utility presentation will focus upon the completion and recommendations of the Twin Cities Campus Utilities Master Plan.

Background Information:

The administration seeks to regularly update the Board regarding major areas of University activity and management, especially those that have significant risk for the institution. Financial and operational risk to the operation of the University are endemic to energy and utility management.

Each February, the Facilities Committee receives an update on Energy and Utilities management at the University.



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS**

Facilities Committee

February 12, 2009

Agenda Item: Consent Report

review review/action action discussion

Presenters: Vice President Kathleen O'Brien

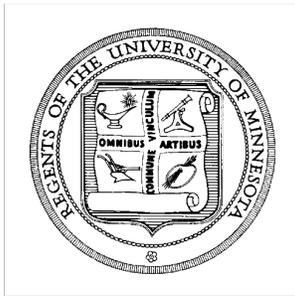
Purpose:

policy background/context oversight strategic positioning

Outline of Key Points/Policy Issues:

There are no consent items this month.

Background Information:



**UNIVERSITY OF MINNESOTA
BOARD OF REGENTS**

Facilities Committee

February 12, 2008

Agenda Item: Information Items - REVISED

review review/action action discussion

Presenters: Vice President Kathleen O'Brien

Purpose:

policy background/context oversight strategic positioning

To update the Board of Regents on the following items:

- A. Final Review for the Science Teaching and Student Services Building, Twin Cities Campus, and the Community Services Building Renovation, Morris Campus
- B. Update on the final purchase price for the Tschimperle Property, 90.07 Acres at 8128 Bavaria Road, Victoria, MN
- C. Information on renovations to research facilities for the Schulze Diabetes Institute

Outline of Key Points/Policy Issues:

Final Review for the Science Teaching and Student Services Building, Twin Cities Campus, and the Community Services Building Renovation, Morris Campus

According to Board of Regents Policy: *Reservation and Delegation of Authority*, Article I, Section VIII, Subdivision 9, "The Board reserves to itself the authority for a subsequent review of approved capital budget project with a value greater than \$5,000,000 prior to award of construction contracts."

In order to maintain the project scope, schedule and budget for the Science Teaching and Student Services Building, the attached project information sheet was reviewed by the Board of Regents Chair and Co-Chair and the Facilities Committee Chair prior to the February facilities committee meeting, so that construction contracts could be awarded.

The final review of the Community Services Building Renovation on the Morris campus is attached. The project currently is within the scope, schedule and budget approved by the Board of Regents.

Update on the final purchase price for the Tschimperle Property, 90.07 Acres at 8128 Bavaria Road, Victoria, MN

In June 2008, the Board of Regents approved resolutions authorizing two alternative mechanisms for the University to acquire the 90.07 acres known as the Tschimperle property and located at 8128 Bavaria Road, Victoria -- a resolution authorizing acquisition by eminent domain and a resolution authorizing the negotiated purchase of the property.

The Regents were advised at the time that a tentative agreement had been reached by both parties which provided for the University to close on the purchase of the property and pay part of the purchase price at the closing, \$3.1 million, with the final purchase price for the property to be determined by binding arbitration. The University closed on the purchase of the property on September 22, 2008. The binding arbitration process was completed in January, 2009, with the arbitration panel determining the final price for the property in the amount of \$6.16 million.

Schulze Diabetes Institute

The purpose of this item is to notify the Board of Regents that the Academic Health Center will be requesting a capital budget amendment for review and action at the March meeting. In December, the University received a \$40 million gift from the Richard M. Schulze Family Foundation to pursue an accelerated cure for type 1 diabetes. This gift necessitates the expedited remodeling of research facilities, which must begin this spring in order to support the accelerated research schedule.

Background Information:

Information items are intended to provide the Board of Regents with information needed for them to perform their oversight responsibilities.

UNIVERSITY OF MINNESOTA
Office of the Board of Regents

600 McNamara Alumni Center
200 Oak Street S.E.
Minneapolis, MN 55455-2020
612-625-6300 (phone)
612-624-3318 (fax)

December 23, 2008

FACSIMILE

To: Vice President Kathleen O'Brien
From: Jon Steadland, Assistant to the Executive Director 
Re: Final Project Review
Pages: 2 (including cover)

By email on December 22, 2008, Chair Simmons, Vice Chair Allen, and Facilities Committee Chair Metzen each reviewed and approved your request for final project review of the Science Teaching & Student Services Building (as described in the attached memorandum).

I understand that this information will be reported to the Board at the February 2009 meetings, as required by Board policy.

c: Robert Bruininks, President (w/o attachment)
Kathryn Brown, Vice President (w/o attachment)
Ann Cieslak, Executive Director (w/o attachment)

UNIVERSITY OF MINNESOTA

Twin Cities Campus

University Services
Office of the Vice President

317 Morrill Hall
100 Church Street S.E.
Minneapolis, MN 55455

Office: 612-624-3557
Fax: 612-626-2278
www.uservices.umn.edu

MEMORANDUM

December 19, 2008

To: Regent Patricia Simmons, Chair, Board of Regents
Regent Clyde Allen, Vice Chair, Board of Regents
Regent David Metzen, Chair, Facilities Committee

From: Kathleen O'Brien 
Vice President, University Services

Subject: **Science Teaching and Student Services, Project Summary**

According to Board of Regents Policy *Reservation and Delegation of Authority*, Article I, Section VIII, Subdivision 9, "The Board reserves to itself the authority for a subsequent review of approved capital budget projects with a value greater than \$5,000,000 prior to the award of construction contracts."

The Science Teaching and Student Services project currently is within the scope, schedule and budget approved by the Board of Regents. In order to maintain the project scope, schedule and budget, it is important that the University award the construction contract prior to the next Board of Regents meeting. Therefore, I am requesting your review of this project outside of the normal Board of Regents meeting schedule. I have consulted with the President, who supports proceeding in this manner to maintain the project scope, schedule and budget.

With the award of this contract we are committing to the first of three "guaranteed maximum price" (GMP) agreements with the contractor to complete the project as approved.

The project is structured as follows:

- December 12, 2008 - GMP #1: Contractor's Fee, General Conditions of Construction, Performance/Payment Bond, General Liability Insurance and Early Procurement of Curtain Wall.
- February 2, 2009 - GMP#2: Demolition of current structure and construction of sub-structure elements.
- April 1, 2009 – GMP #3: Balance of construction.

We will include the attached Project Summary as a part of the information items for the February 2009, Board of Regents Facilities Committee meeting.

Please feel free to contact me if you have any questions or concerns.

C: President Robert H. Bruininks
Ann Cieslak, Executive Director
Jon Steadland, Assistant to the Executive Director

University of Minnesota
Final Review of Capital Projects over \$5 Million

Science Teaching and Student Services

Policy Summary:

According to Board of Regents Policy *Reservation and Delegation of Authority*, Article I, Section VIII, Subdivision 9, "The Board reserves to itself the authority for a subsequent review of approved capital budget projects with a value greater than \$5,000,000 prior to the award of construction contracts."

Project Summary:

The primary objectives of the Science Teaching and Student Services Center (ST+SS) are:

- To provide an innovative, flexible science teaching and learning environment, which will support technology-rich and hands-on, interactive science instruction.
- To provide a consolidated student services center for front-line academic and transactional services that cannot be effectively handled on-line, such as academic counseling and career counseling.

Central Classrooms

Quality central classrooms that serve the needs of students and faculty are an important part of the University's strategic goal to be among the top three public research universities in the world. The University of Minnesota has made a concerted effort system-wide to improve the quality of its general-purpose classrooms. On the Twin Cities Campus, the Office of Classroom Management has recently established classroom standards and begun a systematic effort to improve the basic physical environment and technology in central classrooms. The strategy for improving the quality of the physical environment of Twin Cities central classrooms rests upon capital-funded renovation and construction projects in academic buildings.

The construction of the ST+SS will provide a platform for a new teaching pedagogy. The Active Learning General Purpose Classroom layout provides an innovative, flexible (flat floor) teaching and learning environment, which supports technology-rich and hands-on, interactive instruction. These future-oriented flexible classrooms are envisioned as companions to other room types that make up the diverse landscape of instructional spaces in the Twin Cities central classroom inventory.

Student Services

The University has long sought to consolidate its academic functions that serve students such as advising for undecided/pre-major students, general career counseling, and student engagement planning with student transactional services such as registration, financial aid, and fee payment in a highly-visible, easily-accessible, one-stop location. The student services center located at the Washington Avenue bridgehead site will not only be student-oriented rather than office-oriented, but will provide a functional complement to Coffman Union and its student activities focus. Upon completion, Fraser Hall space will be available for other purposes

Board of Regents Approval Summary:

Six-Year Plan:	November 2007 as a part of the 2007 Six-Year Plan
Capital Budget:	June 2008 as a part of the FY2008 Capital Budget
Schematic Plans:	February 2008

Project Team:

Architect/Engineer Team: KPF Design Architect / HGA Architect of Record

Contractor: McGough Construction

Construction Manager: Chuck McNabney, Hines Interests

Project Budget:

Funding Identification	Total
University Bonds	\$24,200,000
State Bonds	\$48,300,000
Total	\$72,500,000

Project Schedule:

Begin Construction: December 2008

Substantial Completion: August 2010

Consistency of project with approved scope, schedule and budget:

Yes No

**University of Minnesota
Final Review of Capital Projects over \$5 Million
Community Services Building Renovation, Morris
Project Number 04-717-07-1712**

Policy Summary:

According to Board of Regents Policy *Reservation and Delegation of Authority*, Article I, Section VIII, Subdivision 9, "The Board reserves to itself the authority for a subsequent review of approved capital budget projects with a value greater than \$5,000,000 prior to the award of construction contracts."

Project Summary:

The project consists of the adaptive re-use of the existing UMM Community Services Building, which is on the National Register of Historical Places. The building, built in 1915, is structurally sound, but requires total renovation of the interior spaces and utility improvements.

The project will co-locate Admissions, Continuing Education and External Relations functions in a more visible space and provide welcoming, attractive and accessible greeting and meeting areas for external visitors. Renovation of this space will also improve the ability for Continuing Education and Regional Programs and the Center for Small Towns to conduct outreach and better serve the region. Shared common reception areas, meeting rooms, and parking drop offs will offer efficient use of space while creating opportunities for synergistic working relationships between these two externally focused areas, both of which are critical to UMM's financial future. The construction manager will perform the construction and the University will be responsible for high voltage and telecommunication utilities, audio / visual, signage and furniture contracts.

Board of Regents Approval Summary:

Capital Budget: FY2009 Capital Budget
Schematic Plans: February 2008

Project Team:

Architect/Engineer Team: Meyer Scherer Rockcastle Architects, Minneapolis
Construction Manager: J E Dunn Construction, Eden Prairie

Project Budget:

Funding Identification	Total
2008 State Bond Bill	\$ 5,000,000
University Funds	2,500,000
Total	\$ 7,500,000

Project Schedule:

Begin Construction: March 2009
Substantial Completion: January 2010*

Consistency of project with approved scope, schedule and budget:

Yes* No

* Construction was originally scheduled for completion in August 2009. Completion has been delay approximately 4 months due to the need to reconcile the price for the cost of the work to the budget for the work.

**Final Purchase Price for Tschimperle Property,
90.07 Acres at 8128 Bavaria Road, Victoria
(Landscape Arboretum)**

In June 2008, the Board of Regents approved resolutions authorizing two alternative mechanisms for the University to acquire 90.07 acres in Section 7 and 18, Township 116 North, Range 23 West, Carver County, Minnesota, known as the Tschimperle property and located at 8128 Bavaria Road, Victoria -- a resolution authorizing acquisition by eminent domain and a resolution authorizing the negotiated purchase of the property.

The University's interest in acquiring the property began in 1974, and numerous offers in various forms over the years for the University's purchase of the property had been rejected by the owner. The then most recent efforts to purchase the property were largely unsuccessful because of the differences in values for the property suggested by the University's appraisers and the owner's appraisers.

The Regents were advised at the time that a tentative agreement had been reached by both parties which provided for the University to close on the purchase of the property and pay part of the purchase price at the closing, \$3.1 million, with the final purchase price for the property to be determined by binding arbitration. Following the Board of Regents action in June 2008, the parties completed the binding arbitration agreement.

The University closed on the purchase of the property on September 22, 2008. The binding arbitration process was completed in January 2009, with the arbitration panel determining the final price for the property in the amount of \$6.16 million.

The University's uses of the property include expansion of horticultural and ecological research, educational programs and demonstration gardens at the Landscape Arboretum; protection of the maple-basswood forest ecosystem; protection of the Landscape Arboretum's watershed (allowing ecological control of 95% of the watershed from which surface water flow through the Arboretum); preservation of the landscape character and the varied ecosystem fragments at the Arboretum; and connection between the Landscape Arboretum and the Horticultural Research Center property to the northwest, allowing improved internal circulation as well as more efficient and safe operations.

The sources of funds for the purchase of the Tschimperle property are a Legislative-Citizen Commission on Minnesota Resources grant in the amount of \$878,883, donations benefiting the Landscape Arboretum, and an internal loan to the Landscape Arboretum.

Schulze Diabetes Institute

Information Item

Facilities Committee – February 12, 2009

The purpose of this item is to notify the Board of Regents that the Academic Health Center will be requesting a capital budget amendment for review and action at the March meeting. In December, the University received a \$40 million gift from the Richard M. Schulze Family Foundation to pursue an accelerated cure for type 1 diabetes. This gift necessitates the expedited remodeling of research facilities, which must begin this spring in order to support the accelerated research schedule.

Statement of Scientific Purpose

The Schulze Diabetes Institute (SDI) at the University of Minnesota has been established to provide structure, focus, and support for developing a cure for type one diabetes through immunology and transplantation. The mission of the SDI is to accelerate the availability and affordability of islet cell transplants with minimal or no immunosuppression. Islets are clusters of cells that are located in the pancreas and represent the only insulin-producing cells in the body. In people with type one diabetes, all islet cells are mistakenly destroyed by the immune system. To provide an unlimited supply of new islets for transplantation, University investigators will develop three islet cell therapy products: stem cell-derived, pig, and human islets. To minimize, if not eliminate the use of potentially harmful immunosuppressive drugs used to prevent rejection of transplanted islet cells, investigators will develop three new, cutting-edge strategies.

Transplant studies in animal models are a central component of this translational initiative. These studies allow the investigators to examine the safety and efficacy of islet cell therapy products and associated immunotherapy in preparation for planned clinical trials.

Statement of Need

The Schulze Diabetes Institute (SDI) proposes to renovate a total of 5,700 gross square feet for a pre-clinical research area on the St. Paul campus. The space was originally constructed as research animal housing many years ago. The size and contiguous nature of the space presented an opportunity to house an expanded number of research animals in a way that no other space on either campus could accommodate without major expense. The physical layout, HVAC and security systems that are currently in place mitigate the need for a more significant renovation. In addition to the need for fewer dollars required to remodel this location, it brings together all of the research animal components for diabetes research. Additional spaces have been identified on the Saint Paul campus for an islet isolation lab and islet operatory suites to further increase program efficiencies.

Architectural Program and Scope of Work

The architectural program for the project will consist of new and existing spaces:

- Twelve animal holding rooms & support facilities
- Two procedure rooms (new)
- One food prep are (new)
- One soiled and one clean utility room
- One large office area to accommodate 14 people (new)
- One supervisor office (new)

The scope of work includes some wall demolition to reconfigure existing space, making it more efficient. HVAC work requires the installation of new ductwork and fan units to exhaust biological safety cabinets. New thermostats are included in each room. The plumbing scope of work will add new recessed faucets and hoses. Eyewash stations will be added throughout the suite. The electrical program calls for the removal and replacement of all light fixtures. Code upgrades to the space are limited to the installation of smoke detectors and a sprinkler pipe that will be stubbed out to the corridor with dry pipes and no heads. (The sprinkler system will be activated when the rest of the building is sprinkled.)

Project Cost

General Construction	\$272,200
Mechanical Plumbing	\$160,000
Mechanical HVAC	\$79,000
Electrical	\$68,000
Non Construction	\$140,000
Project Cost	\$719,200 (\$126/sqft)

Source of Funds

Financing of the proposed modifications has not been finalized at this time. The Academic Health Center and the University CFO are in active discussions on a strategy to finance the needed improvements and the appropriate business model to support the payback of any short or long term financing.

Project Schedule

- Completion of construction documents February 11, 2009
- Approved by Board of Regent March 12, 2009
- Project out for Bid March 16, 2009
- Contractor proposals due April 6, 2009
- Construction start April 22, 2009
- Construction completion July 10, 2009