

CHAPTER 3

Observations and Analysis

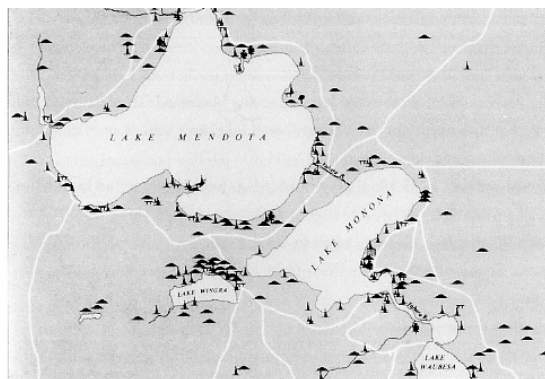
In this first step of the planning process, the quantitative and qualitative aspects of the campus were analyzed. A clear understanding of the physical campus, including the study of both the natural and built systems, was established. Studies focused on elements including historic campus development, land, cultural resources, topography, soils, watershed/drainage patterns, vegetation, pedestrian and vehicular circulation, building use patterns, and transit, among others. Coinciding with this physical analysis, interviews of the campus community were held. These interviews provided the master planning team with a wide range of perspectives on the future needs and desires for the University of Wisconsin-Madison.

A. HISTORICAL DEVELOPMENT OF THE CAMPUS

1. The Birth of a Campus

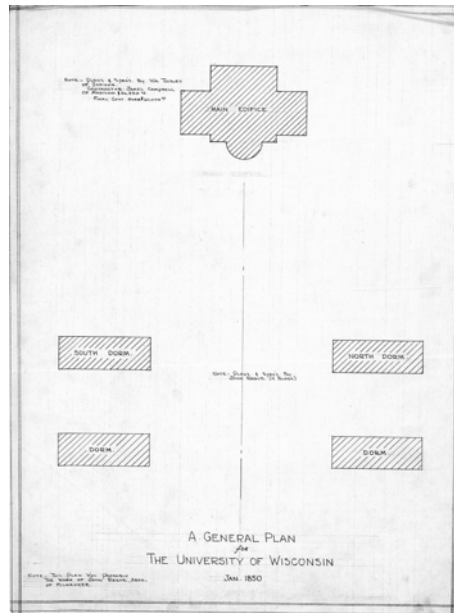
The University of Wisconsin at Madison was established by the Wisconsin legislature within months of the territory becoming a state of the union in May of 1848. By the end of that summer, a chancellor was selected and a governing board of regents were defined. The first campus building, North Hall was completed in September 1851 for a projected enrollment of 256 young men. That first year, the university was comprised of about 30 students, 3 faculty and a janitor. By 1855 North Hall's twin, South Hall had been finished and in 1859 Bascom Hall opened as the "main edifice" for the university and enrollment had increased to over 175 students. By 1892, the university had topped one thousand students and boasted nearly 20 buildings.

Since the first master plan for the University of Wisconsin was prepared in 1850, the concept of a strong relationship between "town and gown" has provided a framework for campus planning. The 1850 campus plan, attributed to Architect John Rague and the university's first chancellor, John H. Lathrop, proposed situating the campus on Madison's "second hill," facing the nearby state capital building which was located on the "first hill." The hills overlook the city of Madison surrounded by beautiful lakes and natural areas, created by the glaciers some 15,000 years ago. The effigy mound cultural, so prevalent on this campus and throughout the Midwest, also occurred over 1,000 years ago. These relationships have served as a structure for the physical development of the campus landscape we have know for over the last 150 years.



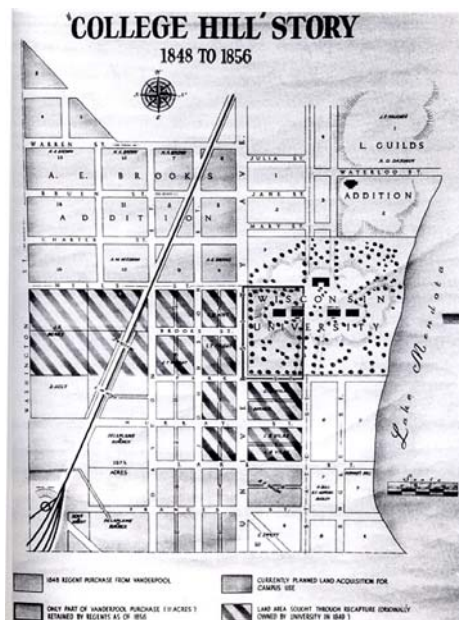
Native American mounds and habitation sites in the Madison area.

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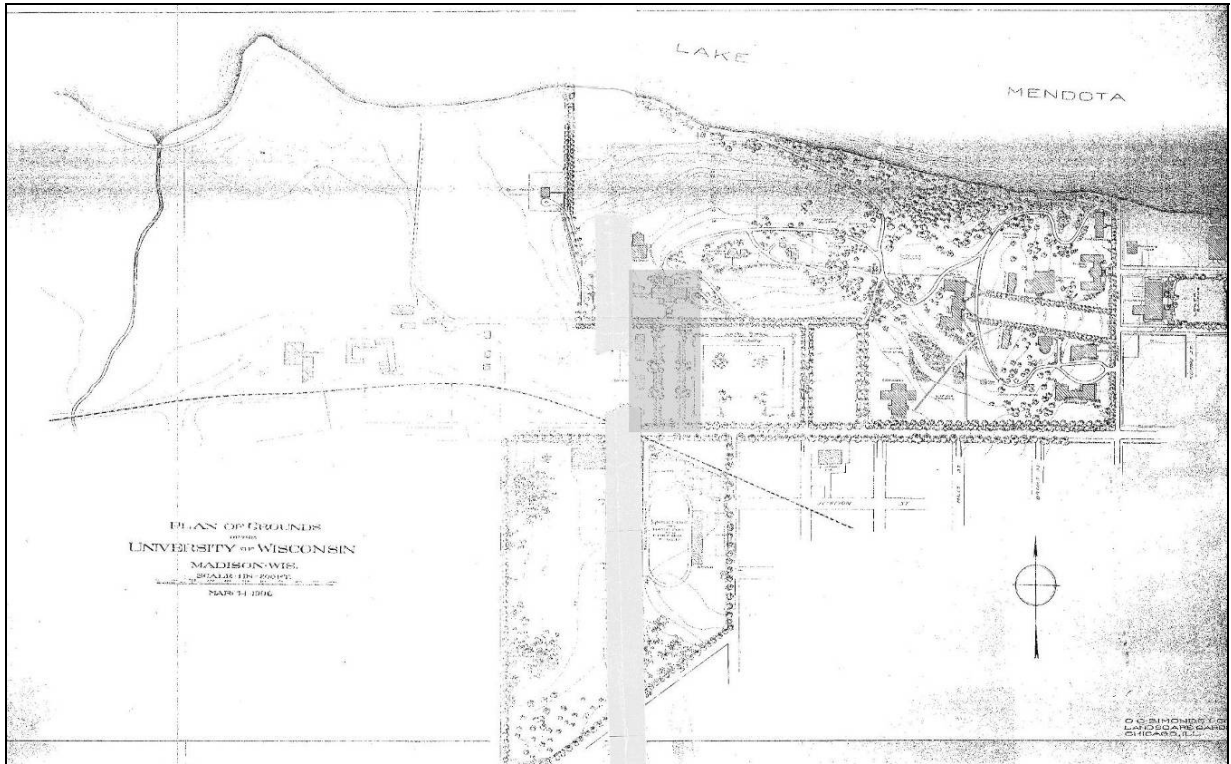
Plan attributed to Milwaukee architect, John Rague (January 1850)

Over time, the campus grew from these first three buildings (North, South and University (a.k.a. Bascom) Halls) on what would become Bascom Hill, to over the present day 300 buildings spanning 933 acres in downtown Madison. Growth of campus facilities were clearly directed by several master planning efforts: some were followed rather closely while others because of political pressures and the necessity of campus growth to meet basic demands, were basically disregarded. The “college on the hill” met with success early on and enrollment increased steadily as projected by the regents.



“College Hill”, an early land acquisition map

Expansion of the university was fairly regular until 1890 to 1900 when the number of new buildings were built and student enrollment doubled. In early 1900, Ossian. C. Simonds, a prominent Chicago landscape gardener, was hired to consider future development of the campus. He completed his plans in 1906. Simonds was the first to address the entire campus as Rague's earlier plans focused on the Bascom Hill area before the campus began to expand to the west.



O.C. Simonds 1906 Plan for the Grounds of the University of Wisconsin.

Simonds plan picked up on some of the earlier formal planning concepts but took on a more pastoral and curvilinear layout reflecting his training as a landscape gardener. Simonds plan was curiously devoid of projected major new buildings and more expertly concentrated on the grounds, which he was much more comfortable with pursuing.

In the mean time, President Van Hise was out scouting for much broader based planning and found Arthur Peabody, a supervising architect at the Chicago World's Columbian Exposition. In 1906, the Board of Regents created an Architectural Commission consisting of then university architect Arthur Peabody, consultant Warren P. Laird, and Laird's colleague, Paul Philippe Cret, a University of Pennsylvania professor of design. This was to be the first significant, comprehensive campus master plan for the university, eventually being completed in 1908. Laird had actually come to campus in 1903 to provide consulting services on the new Chemistry building which began a lengthy partnership with he and Peabody.



General Design for Future Development, 1908 Laird & Cret Plan

Peabody explained the 1908 plan by saying *“The design attempts to forecast and visualize the physical development of the University during the next forty or fifty years, by laying out in a large ground plan the general form and location of departmental buildings in the logical groups. It is aimed to secure harmony of aspect among the groups through emphasizing their unity as parts of onee great University. The plan determines the prevailing architectural style.”* The architectural style being proposed was the Beaux-arts classical revival style made famous by Daniel Burnham’s grand White City at the Chicago Columbian Exposition of 1893 and the subsequent City Beautiful Movement.

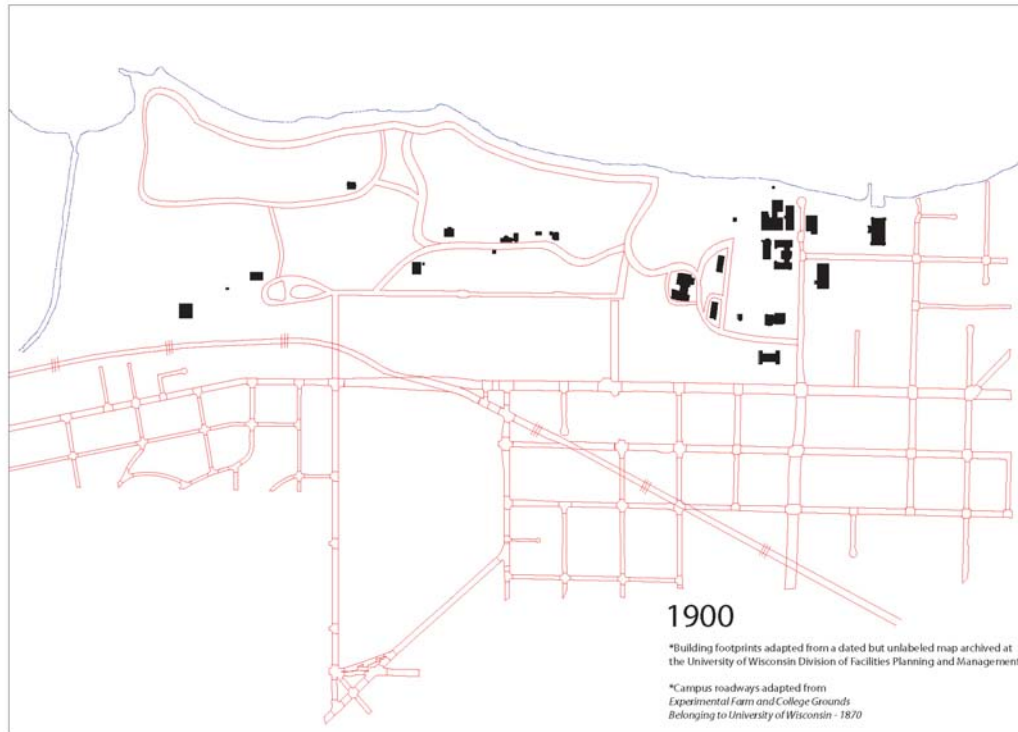
Unfortunately, little of the 1908 Laird & Cret plan was ever implemented. Henry Mall, including the iconic Agricultural Hall at its apex, is one of the few features that actually came to fruition.

2. Historical Growth Patterns and Prior Campus Plans

The following are figure-ground maps of the campus showing historical growth patterns and how the campus grew over time.

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Most notably, in the Laird & Cret plan, the majority of campus development was to occur north of University Avenue. Only the Service Building, Heating Plant, a recreation field and three academic buildings were shown south of University Avenue. The grand beaux-arts classic revival Agricultural Hall had been completed in 1903 under the design of then university architect J.T.W. Jennings along with his work on King Hall (1896) and the old Dairy Barn (1897) on the agriculture campus. Jennings also designed the classic Chamberlin Hall in 1903 (as the Chemistry building, then the School of Pharmacy and now the new home of the Physics Department).

The 1908 Campus Plan called for a series of well defined districts, each with its own character but based on the major academic units they comprised. For example, the “eastern section” would include public functions (library, theatre, and administration) and the liberal arts. The “northern section” would include residence halls and athletics. The University Avenue section, including the south facing slopes and westerly levels, were to include the pure sciences, pre-medical and applied sciences along with agriculture. The “southern section” including Randall Field and contiguous properties to the east would be for general service building, engineering and military science. The “western section” would mainly be comprised of agricultural research fields and general farm fields. Those farm fields, even then, were considered as a potential for “indefinite expansion.” Curiously, mention was made in the plan to note “Future buildings should be held to a careful consonance with the general design by conforming to its plan scheme, producing, in each single group or unit composition, a unity of effect in treatment of mass and line.” Each district would take on its general design character but with a basis of buff toned limestone and yellow/tan brick colors. The districts today still are visible if one looks closely. The buildings of

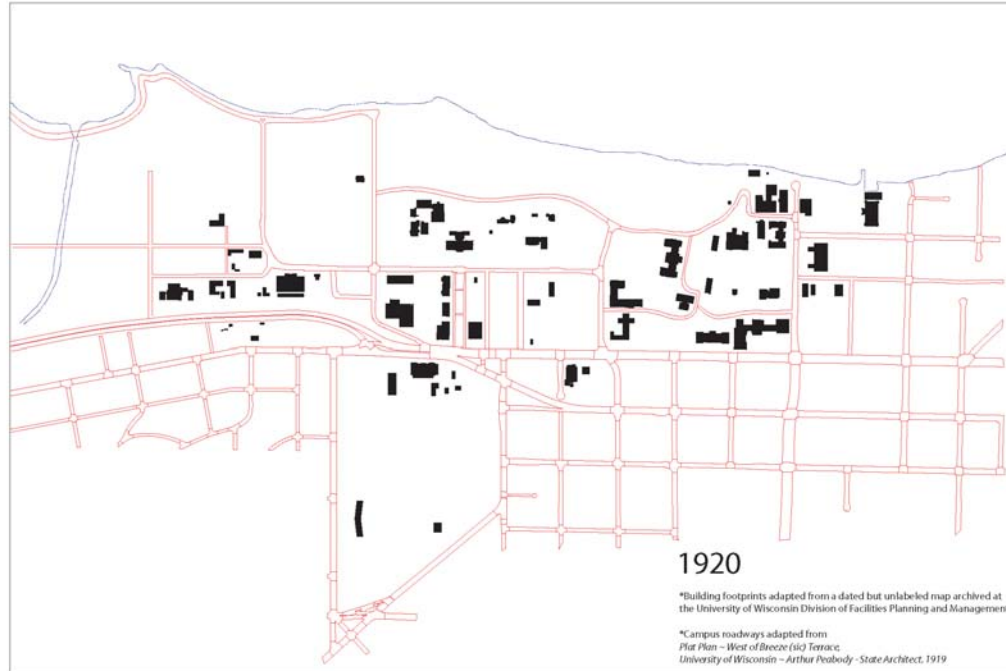
the “old campus” are mainly comprised of the Madison sandstone with metal roofs. Buildings on the Ag campus are brownish red brick with red tile roofs. Buildings on the Engineering campus are of buff brick with flat roofs.

The 1908 plan also proposed development of the “Greater” and “Lesser” malls, large green spaces framed by classic buildings and forming collegiate quadrangles of space. The “Lesser Mall”, later named Henry Mall after Agricultural Dean William Henry, was developed using the 1903 Agricultural Hall as its figure head and the new Ag Science buildings marching down the west face of the mall creating the classic quadrangle of green space. Jennings had just completed the Engineering Building on Bascom Hill (now known as the Education Building), in 1899 also in the Beaux-Arts style. Home Economics, east of Ag Hall, was designed by Arthur Peabody along with Laird & Cret in 1912. Both Ag Hall and Home Economics (now the School of Human Ecology), helped form the basis of the “Greater Mall” stepping back and away from Linden Drive up the green hillside.

Peabody replaced J.T.W Jennings as the university architect in 1905 and went on to design many of the most famous historic buildings on campus today, (see list below). Along with the new university president, Charles Van Hise, Peabody instigated one of the largest building programs for the early campus. Van Hise had just begun expounding on the popular “Wisconsin Idea” as “the boundaries of the University are the boundaries of the State” which lives on today at the forefront of every strategic plan for the University of Wisconsin.

Peabody’s work includes the buildings along the west side of Henry Mall, Old Agronomy (a.k.a., Ag Journalism, 1906), Agricultural Engineering (1906) – his first two solo works – and Biochemistry (with Laird & Cret in 1912), the old Heating Plant on University Avenue (1907), Birge Hall (with Jarvis Hunt in 1910), the Service Building (1910), and Horticulture (1910). Laird & Cret designed their own classical style buildings for the campus including the Stock Pavilion (1909) and Lathrop Hall (1909). Peabody teamed with Laird & Cret to develop such classic buildings as Biochemistry on Henry Mall (1912), Barnard Hall (1913), Wisconsin High School (1913), Sterling Hall (1914), and the Soils Annex (1915).

With the departure of Laird & Cret in the late nineteen-teens’, Arthur Peabody went on to complete designs for the Wisconsin General Hospital (c. 1921, now the Medical Sciences Center), Nurses Dormitory (1924), the Van Hise Dormitories (a.k.a. Tripp & Adams Halls, 1925), Service Memorial Institute (1927), Memorial Union (1927), UW Fieldhouse (1929), Mechanical Engineering (1929), and the historic Carillon Tower (1936). No architect or team of architects would have such a profound impact on the design and future growth of the University of Wisconsin campus than Arthur Peabody, Phillipe Paul Cret and William Laird, all based on their classic revival plan of 1908. Peabody continued to serve as the university architect, updating the 1908 plan in 1927. Their work in the early 1900’s clearly guided development of the campus up through the 1930s.



From 1875 through to the 1940's the campus saw a major shift from its humble beginnings as a small land grant college to what would become a modern university. Buildings were typically planned and designed to fit an immediate need and a departure from the historic academic village was seen. From 1910 to 1920 many new buildings were dedicated to Agriculture and to the Sciences. The 1920's saw the building for the College of Medicine (now the Medical Sciences Center) and the new Field House was completed. The first men's dormitories were also constructed during this period (Tripp & Adams Halls). In 1927 modifications to the campus master plan were made which involved placing Intercollegiate Athletics at Camp Randall and the Medical School, as noted above, in its current home. The original 1908 Master Plan called for Engineering to be where the hospital and medical school was eventually built. Engineering eventually was placed south of University Avenue, north of Camp Randall. In the 1930's most new buildings were for residential, social and athletic purposes (Kronsage Dorms, Elizabeth Waters Hall, the Carillon Tower and completion of the Stadium).

In November 1940, President Clarence A. Dykstra requested the development of a new plan to guide future development and growth for the campus. The objective of the plan was clearly defined to provide a pattern for new growth in such a way that "construction will be guided along lines which will insure continuous direction toward a harmonious unity, embodying both physical and spiritual values."

The 1941 plan's major recommendations included thoughts that:

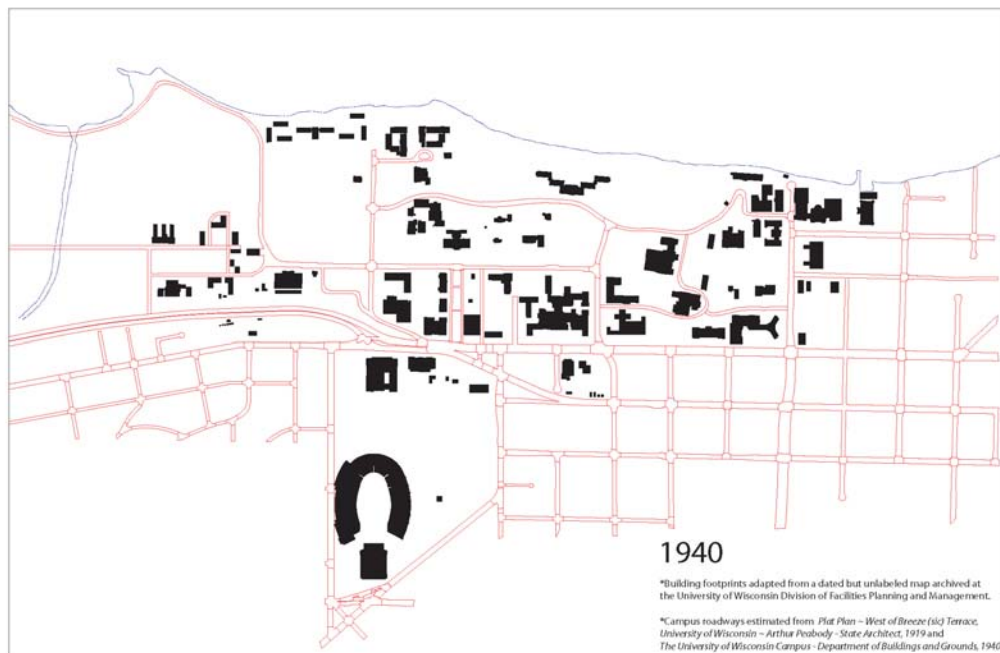
- the plan should facilitate the integration of related activities by college
- the unique topographic features of the campus shall be preserved and enhanced

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- ample open spaces should be maintained within the developed areas
- the plan be achieved without significant land acquisition adjacent to the existing campus
- new construction be primarily devoted to the College of Agriculture

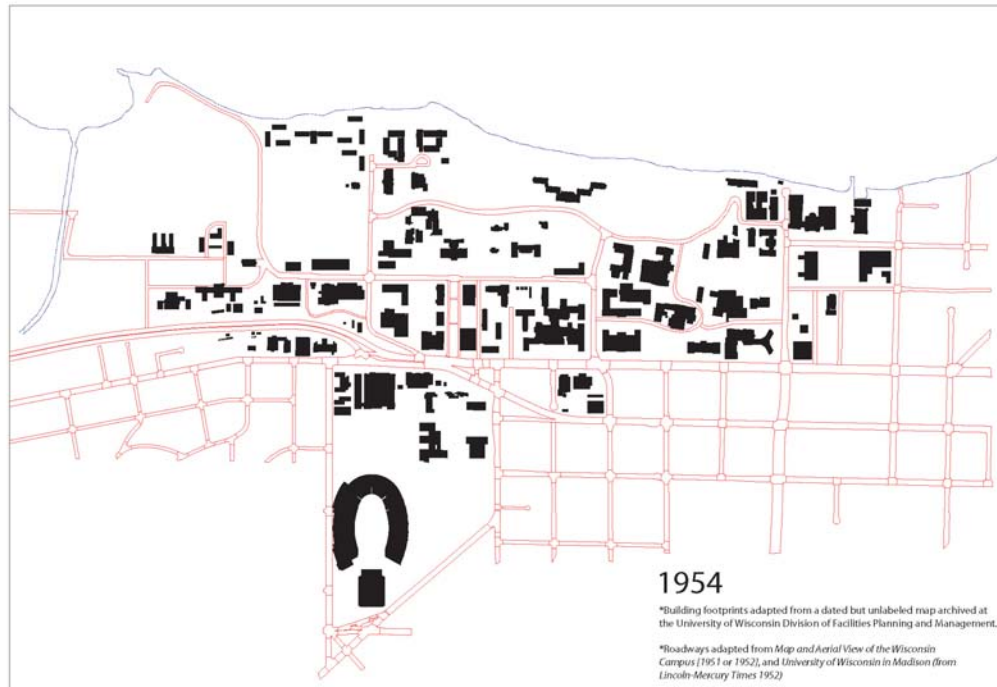
No attempt was made to provide for architectural details in the 1941 plan. It was up to the commissioned architect and the University authorities to make decisions with respect to the architecture. The plan was to be flexible and allow for change over time but the broader objectives would be maintained. The planning team suggested the development of a group of individuals to carry out the program, something similar to a City Plan Commission. The “University Plan Commission” was to include regents, alumni, university staff, and state staff as ex-officio members. The charge to the commission would be to review all proposals for construction of new buildings or alterations of old ones. Today, we contemplate the formation of a similar body in the form of a Design Review Board.

In the 1940’s, growth was seen late in the decade with Babcock Hall and several Physical Plant service buildings being built. The University Houses complex was built in 1948 as was Babcock Hall, and Engineering Hall in 1949. Taylor, Humphrey and Jorns Halls were also built in 1949. In May 1946, the Regents requested that the University Plan Commission (aka Campus Planning Commission) work with the city of Madison to develop plans for the area of expansion south of University Avenue and east of Park Street. Many months of discussion ensued with the eventual outcome of a master plan approved by the Board of Regents in August 1949. The design basically followed the 1908 plan but due to ever increasing enrollments it indicated an expansion of the university to the south and east.



In the early 1950’s several new buildings were added to the campus including the Memorial Library, Stovall Hall, University Health Service, and the Dairy Cattle Center. Ingraham Hall

(then Commerce Hall) was built in 1954, as was the Camp Randall Sports Center (The Shell). In 1955, the campus saw the Bardeen Labs being built along with the Harvey Street apartments for graduate students. In the late 1950's, more residence halls were added (Holt Commons, Cole Hall, Sullivan Hall in 1957 and the Elm Drive Dorms – Bradley, Goodnight, Friederick and the associated dining hall facility were all built in 1958) and the beginning phases of the Eagle Heights married student housing complex was begun. Poultry Research and the Ag Engineering Shop were also added on the Agriculture campus.



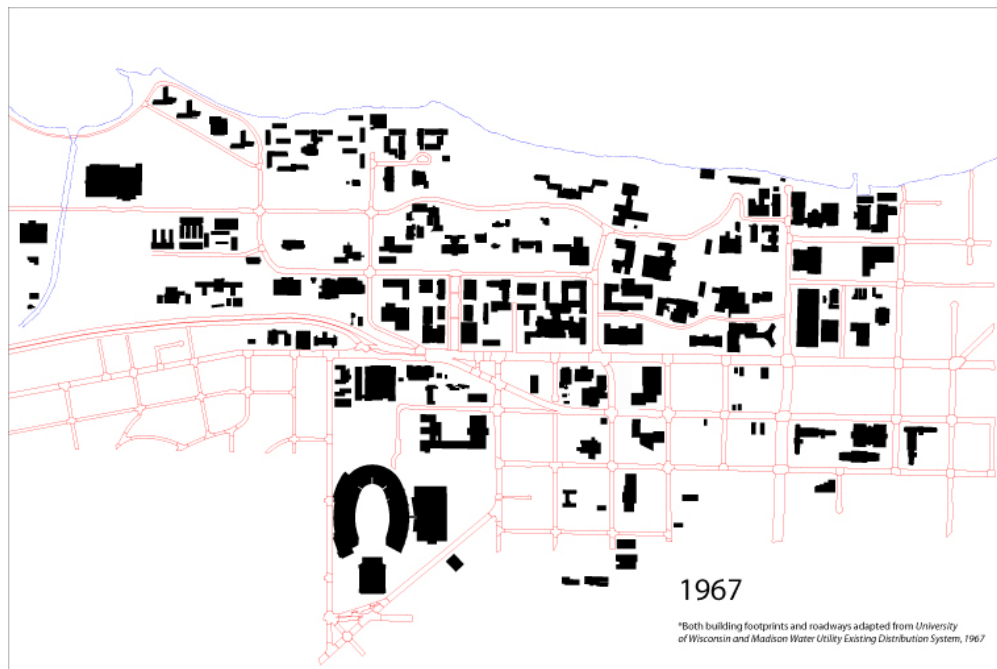
In 1959, the Board of Regents adopted a “Sketch Plan for the University of Wisconsin-Madison”. Goals of that plan were “to define succinctly the kind of physical environment deemed most desirable for the various activities of the University” and “to serve as a framework for more detailed site plans for the future development of the campus.” The plan set about several planning principles that strove to utilize the natural beauty of the campus making sure new buildings enhance that setting and that the campus “does not spread unnecessarily.” The functional distribution of activities was important such that related functions would be grouped together in the most efficient manner.

Expansion of existing facilities was planned and site reserved for future growth of established departments on campus. Density standards were established for various areas on campus and the concept “to minimize conflict between pedestrian and vehicular circulation, to eliminate excess vehicular traffic on campus and to develop separate pedestrian systems” was first introduced. New boundaries for the campus were established by the Board of Regents in anticipation of growth of the campus south of University Avenue. Adequate space for parking was important as was the planning for non-university service facilities. In the 1959 Sketch Plan, they also wanted

to “separate University residential housing from academic and research functions” on campus. In 1959, enrollment stood at about 17,000 with an expectation to grow to 30,000 by 1970. In fact, by 1970, enrollment had actually grown to nearly 36,000 students.

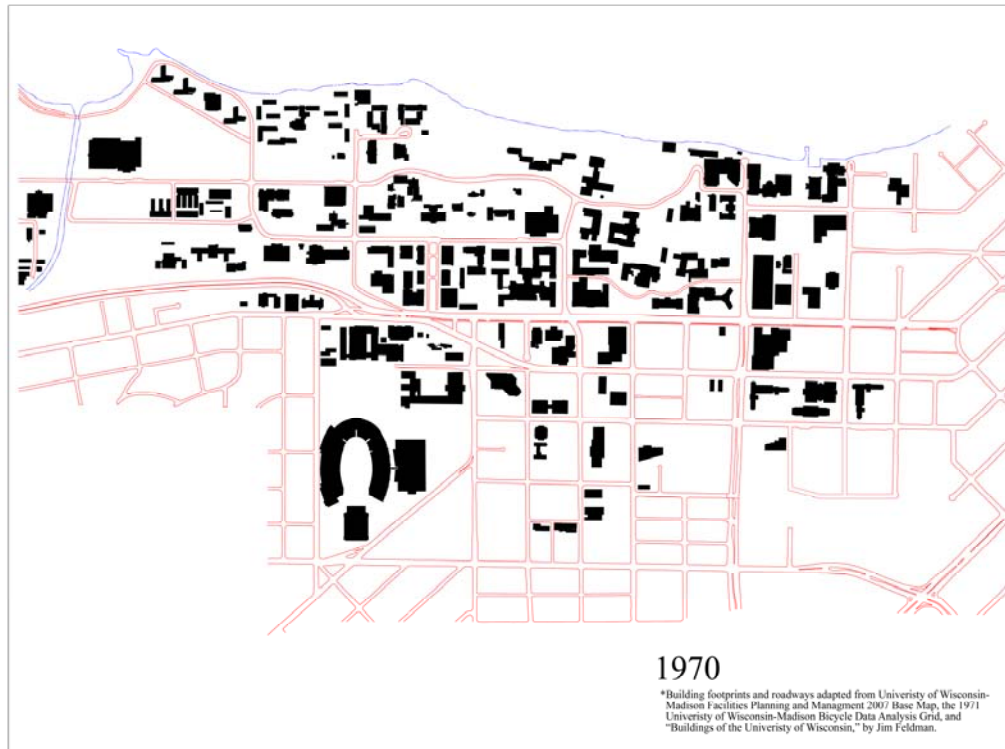
The early 1960’s saw a boom in construction with larger buildings being built for the first time on campus. The average size of facilities built since 1960 are over twice the gross square footage of earlier developed facilities. (It is interesting to note that over half of the existing campus building were constructed between 1950 and 1979.) The early 1960’s saw the development of: Susan B. David House, Social Sciences Building, Van Vleck Hall, Genetics, and the Limnology Building on Lake Mendota all in 1961; Henry Rust House, Hi Ray Hall, Veterinary Sciences, AW Peterson Building, McArdle Labs, Gym/Natatorium Unit I & II, and UW Extension Services in 1962; the Mifflin Street Warehouse, Russell Labs, Zoology Research Building in 1963; Brodgen Hall, Biotron, Primate Center in 1964; and Daniels Chemistry Building, Bock Labs, Computer Sciences Building, Van Hise Hall and Middleton Medical Library in 1965.

In 1965, plans for enrollment growth were projected to an astounding 40,000 students, a level unprecedented in prior thinking. An intensive space needs study was implemented to look at what it would take to provide facilities for this burgeoning student population. Talk of the need for a second satellite campus, utilizing the Charmany and Reider farms on the western edge of the city, were being contemplated. Teaching workloads were analyzed and projected space deficits were looming on the horizon. A study of circulation patterns, both vehicular and pedestrian, was started with City of Madison officials. The great building boom of the late 1960’s and early 1970’s was finally beginning to meet the needs of the baby boomers coming to campus. In 1966, the Eagle Heights married student housing was finally completed.



In 1970, a new Campus Development Plan was developed by an internal staff team that reached out to meet the goal of having a campus population of 40,000 students. Major proposals coming out of that plan included continuing efforts to preserve and upgrade the traditional feel and atmosphere of the original campus north of University Avenue and spreading outward from Bascom Hill. South of University Avenue, the plan called for a fresh approach to integrating campus and community development yet meet the needs of the ever expanding campus. Growth in on-campus housing was projected and thoughts of adding more residence halls were discussed. A major development was also afoot to develop a new medical school teaching hospital on the far west campus just east of University Bay Drive.

Parking capacity levels were contemplated to have up to 15,000 spaces on campus, again with most of them being in structured parking ramps. The university's long tradition of preserving its natural areas was also codified and included a suggestion to add the lands of then called "Second Point" (now Frautschi Point) to the 250 acres of already set aside natural areas. Their preservation and protection remained as a major planning goal for the campus. Service and utility areas, then spread across several sites, was to be consolidated in and around the Charter Street Heating Plant and on a site near Walnut Street, the latter being the future home of the Walnut Street Heating Plant constructed to serve the growing west campus. Removal of the railroad tracks that bisect the campus was also being discussed along with the development of a major vehicular bypass that would handle the large volumes of community wide traffic coming into downtown Madison. The bypass would connect at Highland Avenue on the west and the Gorham-Johnson pair on the east (luckily this never came to pass). The bypass would also act as a city-community redevelopment initiative that would spur integrated development along this large, 200-foot wide transportation corridor. Mass transit was all the rage in the planning circles of the day, with elevated trams, mono rails and duo-rail rapid transit. Funding for such a large scale endeavor would always be an issue.



In 1973, a campus planning workbook for the University of Wisconsin-Madison was adopted by the Campus Planning Committee as culmination of the planning efforts started in 1970 by university facilities staff. The 1973 “Madison Campus Development Plan” envisioned a projected enrollment of 35,350 students by 1982 and a maximum enrollment of 42,000 students (as predicted by the Wisconsin Coordinating Council on Higher Education). Enrollment projections were starting to stabilize after the extreme growth in the late 1960’s. Some boundary changes were suggested through joint City-University negotiations. The majority of campus development was again focused around the main central campus with additional development starting around the newly opened UW Hospital’s Clinical Sciences Center.

The extensively detailed 1973 Campus Master Plan including the following planning efforts:

- increase density of building in the central campus and on the west campus related to the Medical School and hospital
- design new buildings and replace obsolete old buildings so as to facilitate use by different departments and programs with a minimal amount of remodeling
- work toward reducing pedestrian-vehicular conflicts by locating facilities that need extensive vehicular access (Medical Center & Athletic complexes) on the periphery of the campus

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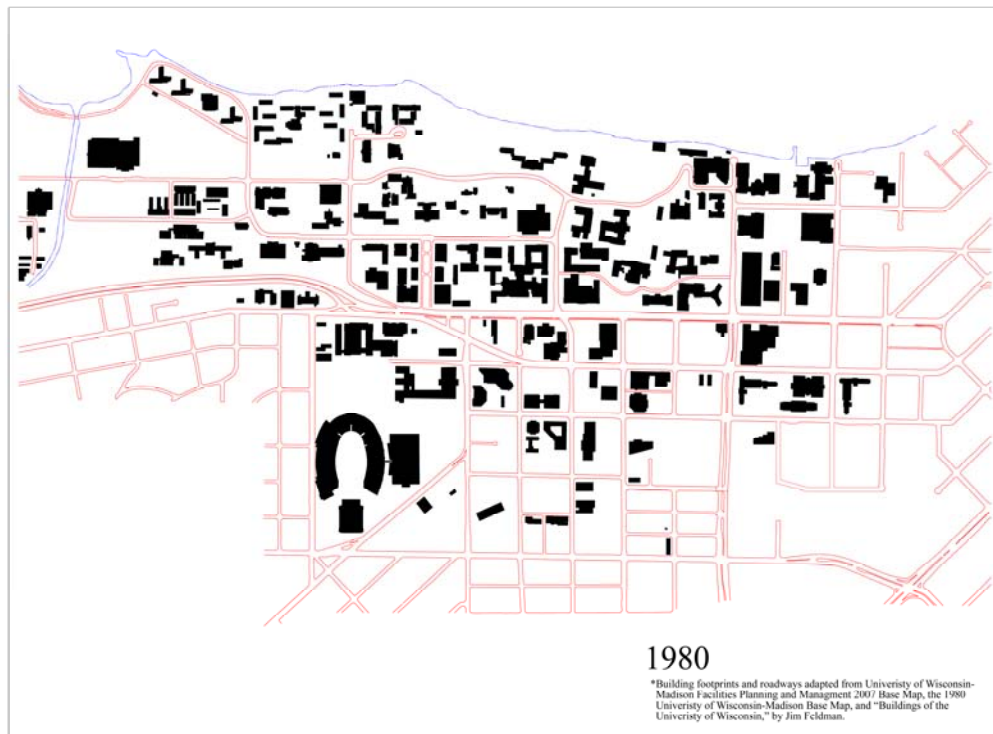
- maintain or increase pedestrian malls, natural areas, recreational land and green spaces across campus; protect from development the natural and park-like areas of John Muir Woods, Picnic Point and Camp Randall
- incorporate more public art, construct more pedestrian malls and other works of landscape architecture
- increase on-campus student housing from 7,550 beds to approximately 10,000 beds
- working with the city and local developers, increase near-campus private student housing
- increase available parking on campus from 6,800 to 13,500 spaces, creating more structured parking to reduce the number of acres devoted to surface parking from over 62 acres to around 40 acres; locate new parking on the fringe of the campus to reduce congestion and traffic including two large shuttle lots, one on the east and one on the west end of campus (each with 3,000 spaces)
- close University Avenue from Lake Street on the east to Henry Mall on the west to provide a more pedestrian friendly campus; redirect vehicular traffic to Johnson Street and a proposed four lane highway system via Dayton Street connecting back up to “old” University Avenue on the west and to Johnson Street on the east
- improve vehicular circulation around campus and possibly remove/relocate the existing railroad tracks that bisect the campus
- improve the campus transit system to serve remote parking areas and reduce on-campus vehicular traffic; work with the city to improve the regional and city-wide transit systems
- on the south campus (south of Dayton Street) continue to work with the city to partner on redevelopment initiatives

Through 1979 and 1980, facilities staff updated the 1973 plan with a final plan being adopted by the Campus Planning Committee in September 1980. The primary focus of the 1980 plan centered on the south campus area for which the City of Madison established a joint planning area with the university in 1979. Those efforts resulted in a land use plan being adopted by the Campus Planning Committee on January 17, 1980 and by the Madison Common Council in April 1980. Major conclusions of that plan and the 1980 Campus Development Plan include:

- undergraduate enrollments will continue to decline somewhat over the next decade and then begin to increase again with little to no effect on campus facilities; research programs will continue to grow on campus

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- the building program for the next decade will focus on remodeling and upgrading existing facilities with selective new space to complement existing programs
- the parking program has stabilized on campus at the existing level of approximately 10,000 spaces
- considerable emphasis will need to be placed on alternative modes of transportation to and from campus to accommodate user needs
- the university continues its strong commitment to maintaining open space and preserving campus natural areas
- the university will continue to work with the City of Madison and the private sector to resolve issues around the need for more and improved student housing close to campus; first step has been made in the jointly developed land use plan for the south campus
- the boundaries of the campus will not change dramatically from those approved in 1959; principal modifications will be in the south campus area and in modest land acquisition to meet programmatic needs



During the fall of 1983 and spring of 1984, the Campus Planning Committee spent considerable time and effort in identifying the most pressing needs of the University's colleges, schools and service units. The department of Planning & Construction identified a disconcertingly large

amount of facility deficiencies for a number of programs across campus. As a result, a number of the issues and critical projects identified had to be deferred to future biennia based on the difficult fiscal climate with the State at the time. Obsolescence of facilities was a major concern as over 56 percent of the major permanent buildings on campus were constructed prior to 1960 and approximately 38 percent of those were over 40 years old. The buildings of the campus were becoming expensive to maintain and operate based simply on the fact they were getting old. A backlog of repairs and improvements, antiquated control systems, and lack of flexibility needed to accommodate modern teaching and research methods all contributed to a substandard report on the state of the campus facilities.

In 1984, a series of campus master development plans were completed as part of an overall UW System effort to bring all of the campus master plan up-to-date and define the pressing need of facility improvements to the state legislature. A two-year, six-year and ten-year plan were developed, the latter two of which included extensive amounts of information pertinent to the anticipated program directions and corresponding future needs of the campus. All of these documents are available for review in the current offices of Facilities Planning & Management.

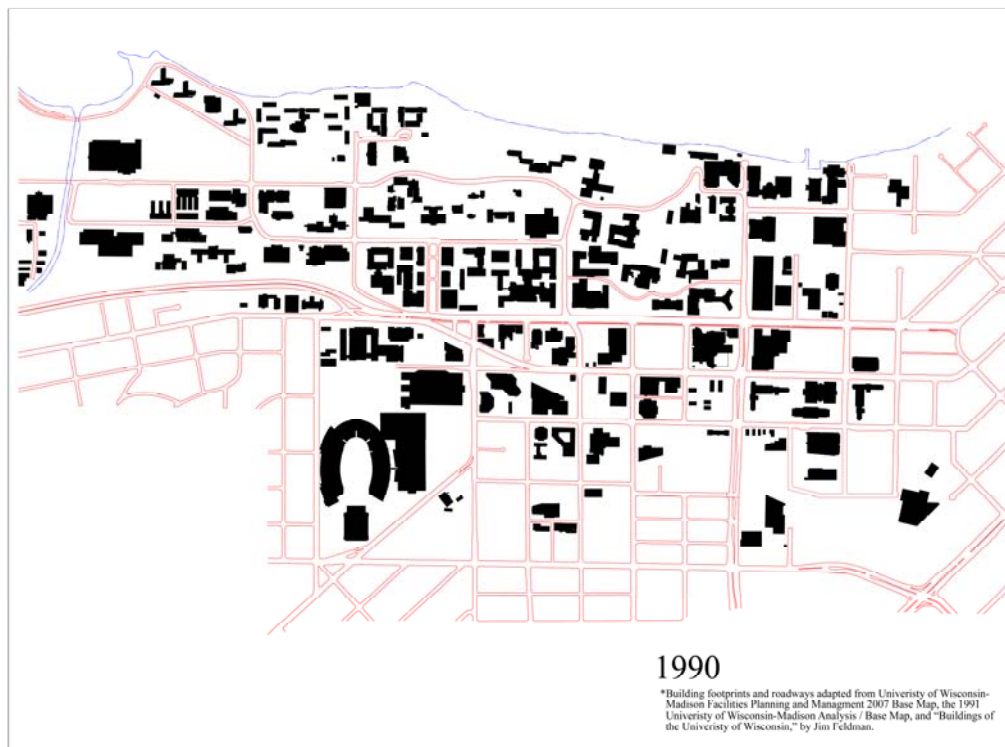
These series of plans, outline in 1984, included the following major themes:

- undergraduate enrollments were expected to dip somewhat in the 1980's and begin to stabilize in the 1990's
- minor changes in the campus plan boundary in the south campus area, mainly for housing redevelopment; property acquisition within the boundary continued to occur based upon program needs
- a number of improvements for bicycle and pedestrian enhancements were considered including the development of new bicycle routes and a series of overhead pedestrian bridges connecting much of the lower (east) campus to Bascom Hill
- a comprehensive transportation planning effort was developed with Dane County
- parking supply was held at a steady state of 9,383 parking spaces for the campus realizing some parking will continue to be moved into parking structures to free up future space for development or new open space
- wherever possible, existing buildings would continue to be utilized for programmatic needs; in some instances buildings would need to be removed for better land use, or a replacement for a facility whose operational and on-going maintenance costs were unreasonable
- preservation of key historic buildings that possess a high degree of architectural or historical integrity was identified as important to the campus community

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- a shortage of research and instructional program space was being seen across campus as well as a shortage of service facilities
- affordable, private sector student housing in the campus area was seen as an issue forcing many students to reside further away from campus where rents were less expensive
- emphasis on upgrading and expanding utility systems (electrical, heating & cooling) were being discussed
- energy conservation was a key component in all facilities planning efforts; stability and reliability of energy sources was seen as a concern

Updates to the 1984 plans were completed in 1986 & 1988 with minor revisions along the way as part of the biennial capital budget process.



The next major campus planning effort occurred in 1996, when Johnson Johnson & Roy (JJR) was hired to develop a comprehensive campus master plan for UW-Madison, a first for the campus in many years. A new strategic plan has been developed for the campus by then Chancellor David Ward entitled “*A Vision for the Future*”. This plan identified priorities for the campus including a need to encourage unified interrelationships among the University’s highly specialized activities all while encouraging a common goal of learning. The learning experience including developing “community” and an improved learning “environment” through well

planned facilities. The learning environment must be flexible and adaptable to changing circumstances and be flexible programmatically. The new campus physical master plan would provide a solid framework for organizing and enhancing the campus' physical environment for the next 10-30 years as the University faced the challenges of the future.

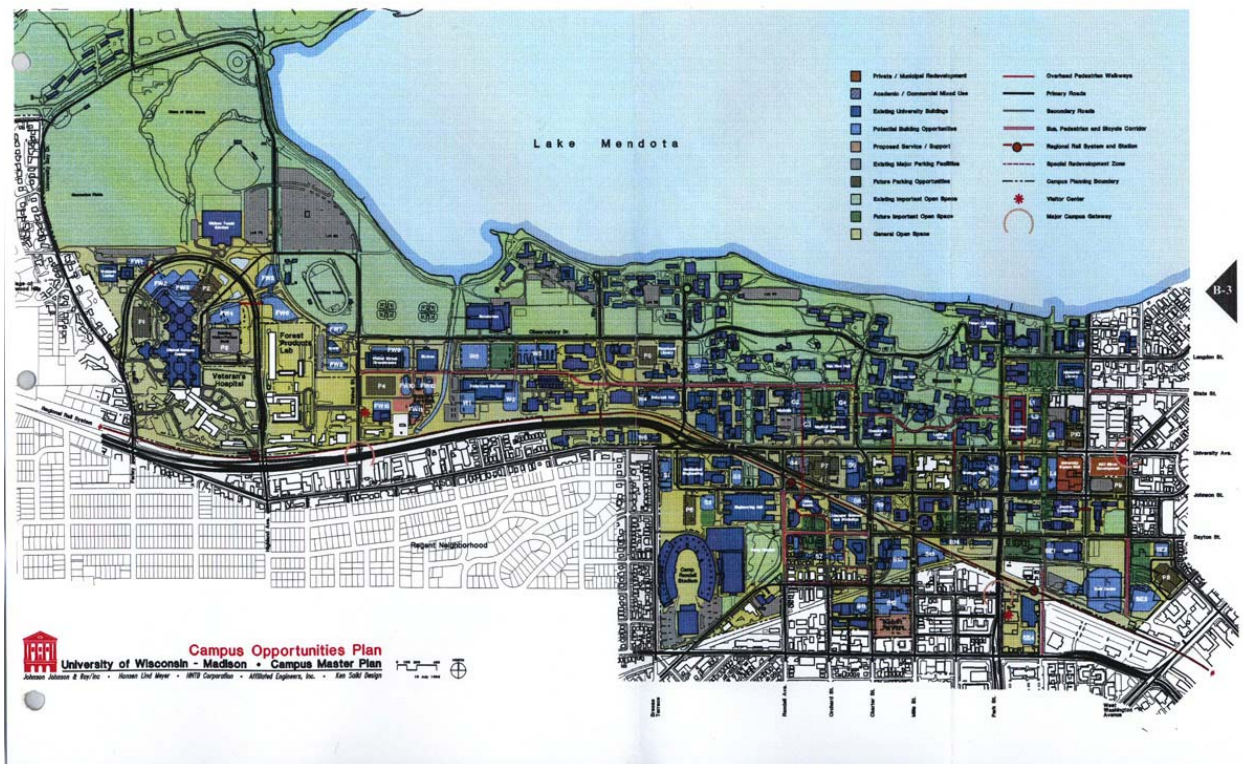
The major planning issues discussed include:

- enrollment will continue to be held stable under Board of Regent Enrollment Management Initiatives at approximately 42,000 students.
- the location of the Medical School and other health science related facilities in relation to the hospital on the west campus
- visitor reception is needed on the east campus
- improved pedestrian linkages of the campus north-south and east-west and improve transit service on campus
- promote non-automotive travel modes to and from campus
- creation of a new major sports arena on the southeast campus
- balance development with properly scaled open spaces
- protect and preserve the waterfront, sensitive environmental areas and open spaces
- eliminate vehicular conflicts and configure roads for efficient traffic flow; roadways were defined as “at capacity” with several upgrades to intersections and roadways planned with the City of Madison
- locate parking in close relationship to major campus destinations; a deficiency of 2,500 spaces for parking was found on campus
- build relationships between the campus and surrounding community via improved visual gateways, edges and boundaries, etc.
- respect adjacent neighborhoods
- utility capacities were analyzed with 1.5 million GSF of chilled water demand and 1.0 million GSF of steam demand found

From a building opportunity perspective, the 1996 Campus Plan provided 50 new potential building sites across campus with an estimated growth potential of approximately 4.7 million gross square feet. In 1996, the campus had approximately 15.8 million gross square feet in

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existing buildings. Campus growth since 1986 was at a rate of about 1 million gross square feet per decade. The 1996 plan therefore suggested a growth rate of approximately 3 million gross square feet would last 30 years. Today (2005), by comparison, the campus is at about 18.5 million gross square feet. Little did they know then that the university would be in store for another era of major new building across campus. Over 80% of the recommendations made in the 1996 master plan were actually implemented and are seen today in the development of the many new buildings on the main campus.



1996 Campus Master Plan

From 1996 to 2005, biennial capital building programs continued to be developed that started to implement the 1996 Campus Master Plan. Each two years, a new Campus Physical Development Plan was updated and submitted as part of the capital budget process through the Campus Planning Committee, the Chancellor's office, UW System Administration, the Board of Regent and eventually on the Department of Administration to help provide support and back ground information on each of the proposed projects in each subsequent capital budget. Enrollment management continued keeping student head count enrollments around 40,000 students. Faculty staff remained stable as well at approximately 19,000 individuals.

In 1999, through a mandatory self-study as part of the campus wide 10-year reaccreditation process, "*Targeting Tomorrow*" was published identifying five strategic trends for the university: promote research, advance learning, accelerate internationalization, amplify the Wisconsin Idea, and nurture human resources. The University will again need to go through the national reaccreditation process starting in 2008.

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In an effort to facilitate approvals for new campus research facilities, especially related to the sciences, several capital funding initiatives were started. In the early 1990's, a new effort began with the State of Wisconsin and the University to joint commit to funding major facility improvement initiatives. These funding initiatives allowed projects to occur on a more streamlined approach and solidified funding over a longer period of time for a number of projects. The projects included:

WiStar (1991-93 biennium)

This \$150 million program required a 50/50 match of private to state dollars and lasted for 8 years focusing efforts on improving and upgrading biological and basic science facilities.

Biochemistry/NMR
Biochemistry/NMR Instructional Greenhouses
Conservancy Greenhouse
Primate Res Center Animal Housing Addition
Biotron Greenhouses
Shared Aging Rodent Addition
Biotech/Genetics
Bock Lab Renovation
Chemistry Addition & Remodeling
Engineering Centers Building
Material Science Building
Research Greenhouses
School of Pharmacy, Phase I

HealthStar (1997-99 biennium)

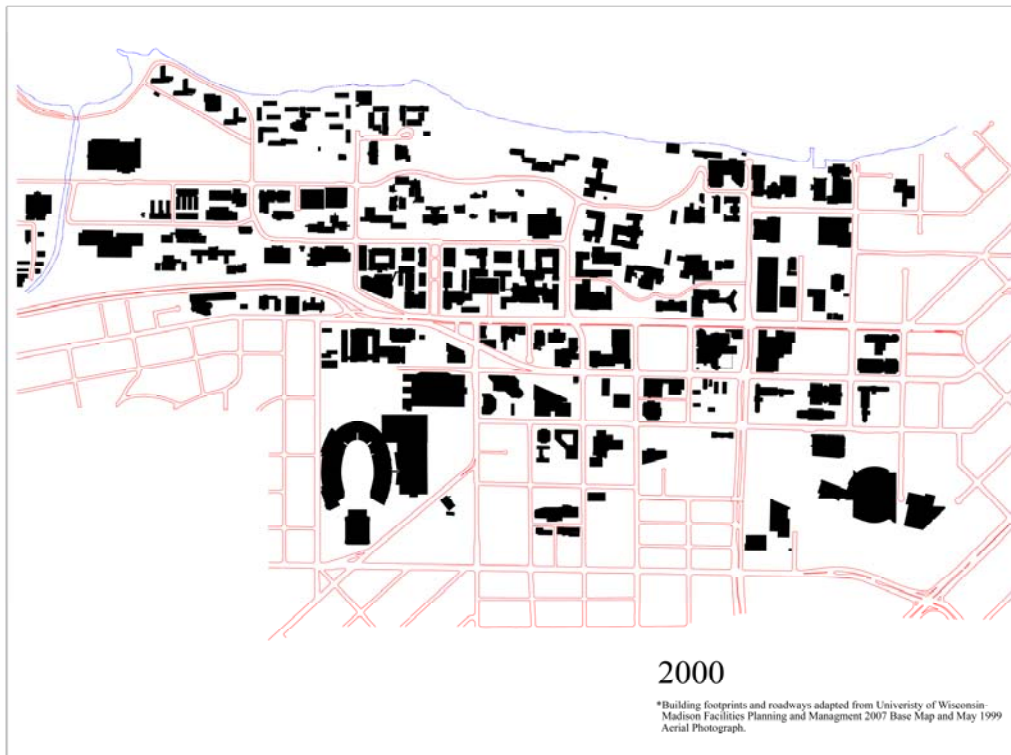
This \$210 million program required a 1/3 GFSB to 2/3 Gift/Grant/PRB split funding that lasted for 6 years focusing on the Medical School and Health Sciences facilities on the west campus.

School of Pharmacy, Phase II
Health Sciences Learning Center
Utility (Boiler and Chiller) Upgrade project
Interdisciplinary Research Complex, Phase I
Lot 76 Parking Ramp

BioStar (2001-03 biennium)

This \$317 million program required a 50/50 match of private to state dollars and lasted for 10 years and focused on new biological and interdisciplinary science facilities. *NOTE: The Hiram Smith Renovation project was an enabling project for the Wisconsin Institutes for Discovery, a major interdisciplinary, public-private research facility in the heart of campus.*

Biotech/Genetics Bldg
Microbial Sciences Bldg
Biochemistry II Bldg
Wisconsin Institutes for Discovery
Hiram Smith Renovation



3. Historic Preservation Planning

With this significant historical perspective of the campus and how it developed, comes the need to develop a historic preservation plan for the university. This rich history today is codified in the recognition of two historic districts and 18 buildings listed by themselves on the National Register of Historic Places. Four of these buildings have also reached National Landmark status with the National Park Service. In addition, 45 buildings are currently listed on the Wisconsin Architecture & History Inventory by the Wisconsin Historical Society as having potential historic value to the State of Wisconsin. Some of these are the already noted National Register buildings as shown below.

Per Wisconsin Statute 44.40 the University and State of Wisconsin are required to consider any proposed action that may affect a historic property listed on the inventory or on any locally designated list of historic properties. The university then works cooperatively with the Wisconsin Historical Society to review the project details, mitigate the affect and provide a final determination on if the project creates an adverse affect on the historic building or property.

Buildings on the National Register are listed below followed by the dates they were listed.

National Register Districts

Bascom Hill Historic District (1974)

Essential to the District (contributing)

North Hall

South Hall

Bascom Hall

Music Hall (aka Assembly Hall & Library Building)

Science Hall

State Historical Society Building

Historically Significant (contributing)

Armory and Gymnasium

Radio Hall (aka Mining & Metal Engineering & Heating Station)

Carillon Tower

Memorial Union

Non-Essential to the District (non-contributing)

University Club (needs to be reconsidered as contributing)

Lake Lab (aka Hydrobiology Lab)

Water Chemistry (aka Sanitary Engineering & Pumping Station)

Key Site & Replacement Critical

(both of which need reconsideration as contributing)

Birge Hall

Education Building (aka Engineering Hall)

Contemporary Buildings “Contributing” (sic) to the District

Humanities Building

Elvehjem Art Center (aka Chazen Museum of Art)

Helen C. White Hall

Limnology Laboratory Building

Contemporary Non-contributing Buildings

Law Building

** It should be noted that the Bascom Hill Historic District nomination papers were completed early in the NRHP documentation process and some of the above references to contributing and non-contributing may require reconsideration in the future.*

Henry Mall District (1992)

Contributing

Biochemistry (Ag Chemistry)

Agronomy (aka Ag Journalism)

Agriculture Engineering

Agriculture Hall

Wisconsin High School (removed 1993)

Henry Mall

Hoard Statue
William A. Henry Memorial Boulder

Non-contributing
Stovall State Lab of Hygiene
Genetics Building
1956 Wing, Biochemistry
1985 Wing, Biochemistry

Buildings on the National Register

Agriculture Dean's Residence (1984)
Agricultural Engineering (1985)
Agricultural Hall (1985)
Agricultural Heating Station (1985)
Camp Randall Memorial Park (1971)
Biochemistry (aka Ag Chemistry Building) (1985)
Hiram Smith Hall & Annex (1985)
Lathrop Hall (1985)
Materials Sciences Building (aka Old US Forest Products Lab) (1985)
North Hall (1974 & 1977) National Landmark Status (1966)
Observatory Director's Residence (1985)
King Hall/Soils (aka Horticulture, Ag Physics and Soil Science) (1985)
Red Gym/Armory (1974) National Landmark Status (1993)
Science Hall (1993) National Landmark Status (1993)
Stock Pavilion (1985)
UW Fieldhouse (1998)
Washburn Observatory (1985)
Wisconsin Dairy Barn (2002) National Landmark Status (2005)

Buildings on the Wisconsin Architecture & History Inventory (date surveyed)

All of the above buildings listed on the National Register or in a NRHP District
(including all contributing and non-contributing buildings)
Barnard Hall (1974)
Chadbourne Hall (1973)
Chamberlin Hall (1974)
Engineering Research Building (1973)
Heating Station (aka Old Heating Plant) (1974)
Home Economics Building (aka School of Human Ecology) (1974)
Horticulture Hall (1973)
Mechanical Engineering (1974)
Primate Center (1985)
Sea Grant Institute (1973)
Sellery Hall (1973)
Service Building (2003)
Sterling Hall (unknown)

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University Life Saving Station (1997)
Vilas Hall (1998)
WARF Building (1974)
Weeks Hall (aka Geology Building) (1973)
Wisconsin General Hospital (aka Medical Sciences Center) (1974)

Buildings Eligible for National Register Designation

(as determined by the Wisconsin Historical Society staff)

Adams Hall
Barnard Hall
Biotron
Camp Randall Memorial Sports Center (aka The Shell)
Carson Gulley Commons
Central Heating Station (aka Heating Plant, Old Heating Plant)
Children's Hospital/Orthopedic Hospital
Commerce Building (aka Ingraham Hall)
Home Economics Building (aka School of Human Ecology)
Home Economics Practice House
Horse Barn
Institute for Enzyme Research
Max Kade Institute (aka Keystone House)
Kronshage Dormitories (Chamberlin, Conover, Gilman, Jones, Kronshage, Mack,
 Showerman, and Swenson)
Mechanical Engineering Building
Meiklejohn House
Primate Laboratory and Addition
Short Course Dormitories (Humphrey and Jorns)
Slichter Hall
Sterling Hall
Tripp Hall

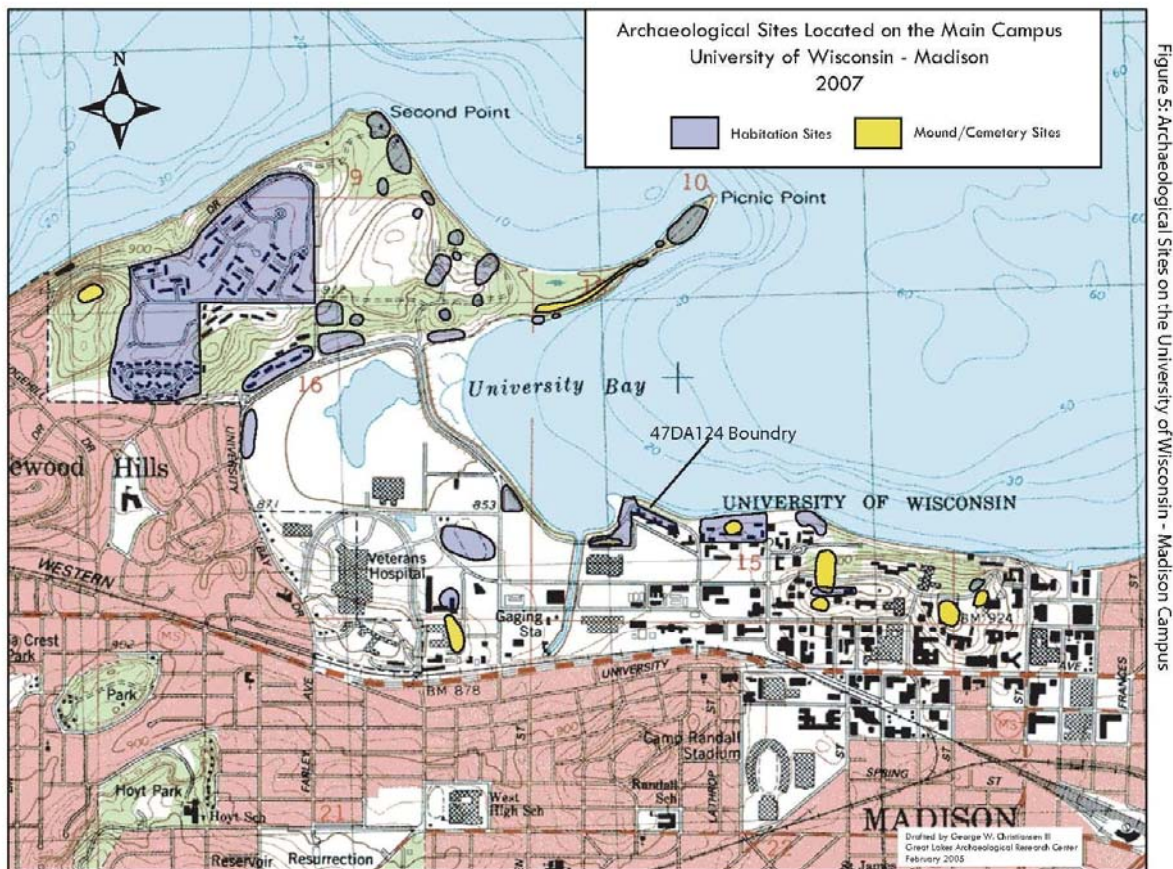
There are also several important archaeological sites on campus which are mapped and inventoried by the Wisconsin Historical Society (see following map of sites). Several are on the National Register of Historic Places and others are inventoried and catalogued. Some of those major sites include (with their State Archaeological Site Number and Year Cataloged, if known):

Willow Drive Mounds (DA-119)
Picnic Point Grove Mounds (DA-120)
Picnic Point Mound Group (DA-0121) (2006)
Stevens (DA-122)
Unnamed Group (eastern end of Picnic Point) (DA-123)
Unnamed Group (west lakeshore residence halls & the Natatorium) (DA-124)
Picnic Point Bay Mounds Group (DA-125)
University Ridge Mound Group (DA-126)
Breitenbach (along University Bay Drive, west of the Recreation fields) (DA-128)

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Eagle Heights Group (DA-0130) (2006)
Eagle Heights Field (DA-413)
Picnic Point (DA-501)
Observatory Hill Mound Group (DA-0571) (2006)
Bascom Hill Mound Group (DA-573)
North Hall Mounds (DA-819)
Agricultural Hall Mounds (DA-820)
South Slope (on Picnic Point) (DA-1168)
Unnamed (on Picnic Point) (DA-1169)
Observatory Hill Village (DA-1207)
Muir Knoll (DA-1208)

Further detailed information is available on all of these sites, including a map with all of the catalogued sites, in the Campus Planning office of Facilities Planning & Management.



Archaeological Sites on the Main Campus of the University of Wisconsin-Madison

B. CULTURAL LANDSCAPE RESOURCES

In 2005, the University developed a Cultural Landscape Resources Plan as one part of a collaborative project entitled the Cultural Landscape Resource Project (CLRP). The CLRP developed a base of knowledge and resources to protect the significant cultural landscapes on campus. The CLRP was funded through a grant from the J. Paul Getty Trust and supported by the University of Wisconsin-Madison Facilities Planning and Management. The CLRP was developed under the guidance of the Wisconsin Department of Administration, Quinn Evans Architects, faculty and students from the UW-Madison Department of Landscape Architecture and staff of Facilities Planning & Management. Portions have been excerpted from the planning documents developed by that process and included in this comprehensive campus master plan. A complete copy of the analysis and recommendations in the CLRP can be found for reference in the UW-Madison Facilities Planning & Management office or in the UW-Madison Library system.

The cultural landscapes on the UW-Madison campus are places that provide touchstones to the past. Stories related to past activities bring the history of these places to life for people who use, visit, and explore these sites today. The campus today can be compared to a fabric woven of historic and contemporary landscapes that are intertwined. The historic landscapes retain the ability to conjure the past as three-dimensional entities that display a sense of place and contain physical reminders of the activities that occurred. As such, the preservation of historic landscapes takes on the same responsibility as the preservation of historic buildings.

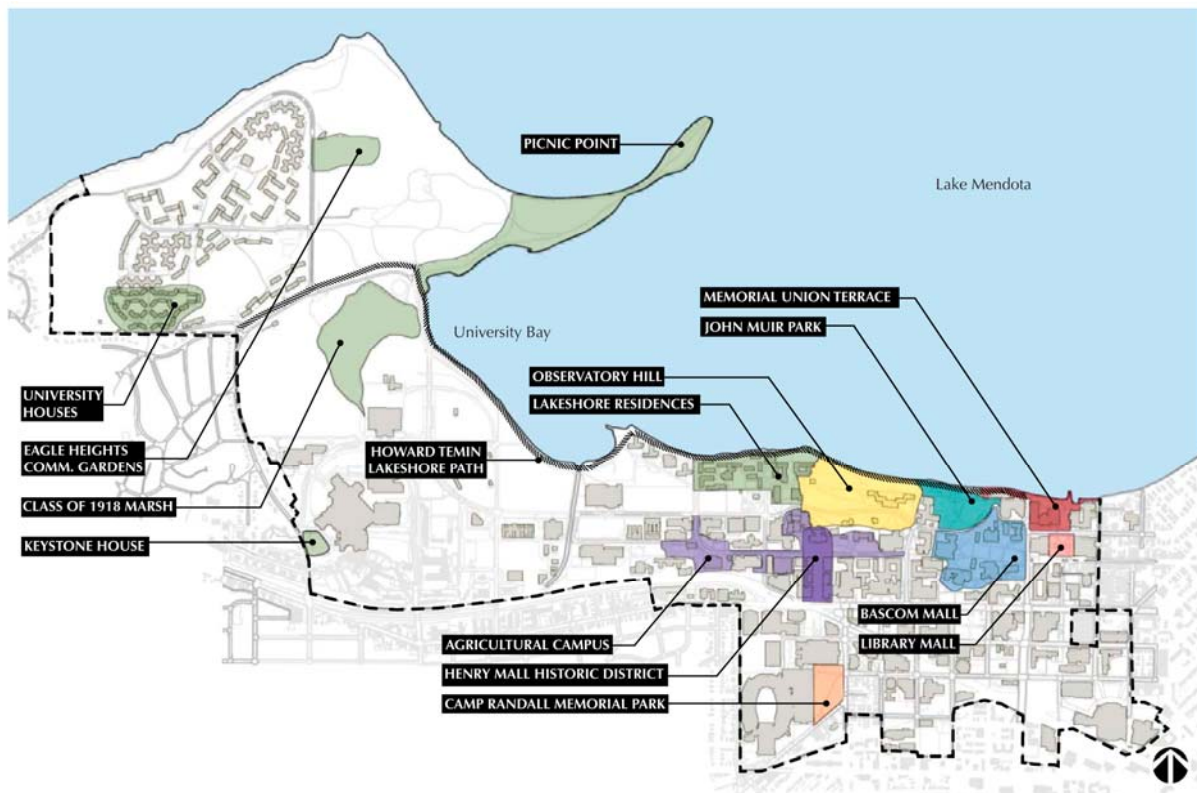
The university is undergoing a period of change that requires updated and new facilities to address the needs of advancing education and research. Since the campus is surrounded by the city of Madison on three sides and Lake Mendota on the fourth, only limited opportunities for expansion of boundaries exist. A major goal of the current master planning effort is for the campus to “recreate itself in place” with the physical planning needs met within the current campus boundaries. Identification of the historic landscapes on campus has played an important role in the master planning process in two ways: 1) it has increased understanding of these landscapes through historical research and analysis and helped to identify the aspects that are most essential for preserving their character and integrity; 2) it has identified the characteristics and features that are components of the historic landscapes providing guidance for planning and design for future development on campus. The protection of historic landscapes already has taken a step forward by integrating these newly identified resources into the current comprehensive master plan process.

The Cultural Landscape Resource Project, completed in fall 2005, includes a number of documents and that are available to provide information about the historic landscapes on campus. A Cultural Landscape Report (CLR) was developed addressing:

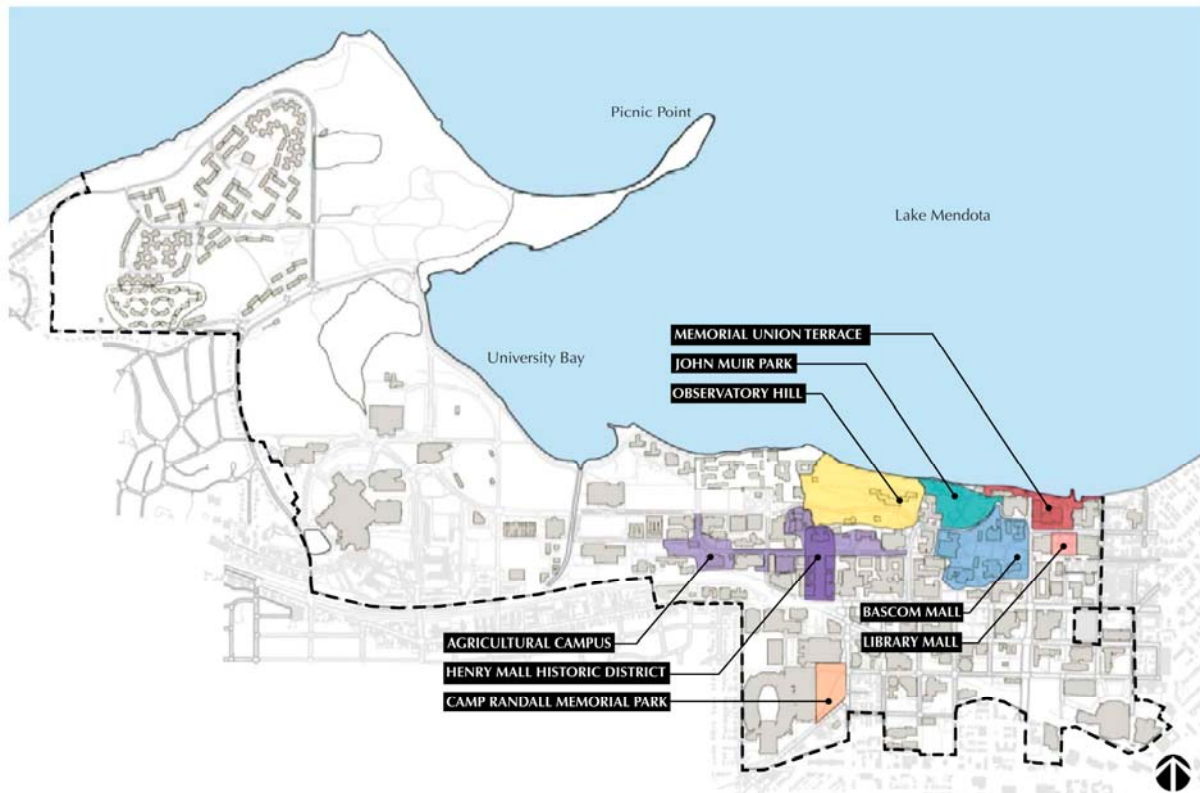
- The historical context for the development of cultural landscapes on campus.

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- Archaeological resources on campus (details of the site investigations conducted as part of the project and management recommendations for archaeological resources).
- Individual Cultural Landscape Inventories (CLI) for eight sites: Bascom Mall, Library Mall, John Muir Park, Memorial Union Terrace, Observatory Hill, Henry Mall, the Agricultural Campus, and Camp Randall Memorial Park. The CLIs each include: a historic narrative and graphics documenting the physical development of the site; documentation of existing conditions; evaluation of the significance and integrity of the site; and landscape preservation recommendations.
- A summary of the reconnaissance survey for additional sites including: Temin Lakeshore Path, Lakeshore Area Residence Halls, Class of 1918 Marsh, Picnic Point, Keystone House, Eagle Heights Community Gardens, and University Houses.



Fifteen Potentially Significant Sites Identified by the CLRP Reconnaissance Survey



Eight Sites Selected for In-Depth Analysis under the Cultural Landscape Resource Project

In addition to the CLR, efforts associated with preparing the CLRP have included

- Historical image and map gallery website:
<http://digital.library.wisc.edu/1711.dl/UW.UWCulturalLand>
- UW-Madison cultural resources website:
<http://www2.fpm.wisc.edu/planning/culturalresources>
- Press package with information regarding cultural landscapes
- Walking Tour brochure of significant campus landscapes
- Interpretive exhibit posters for the eight sites studied
- A power point presentation that provides an overview of the CLRP findings.

(The materials listed above are housed at the office of UW-Madison Campus Planning & Landscape Architecture, Facilities Planning & Management, 856 WARF Building, 610 Walnut Street, Madison, WI 53726, www.fpm.wisc.edu. Address inquiries to the Planning Director at 608-263-3023.)

The documents address two audiences interested in the cultural landscapes on campus. One is the general public. The other includes the facilities managers, planners, designers, and others involved in the implementation of treatment applications and facilities development on campus. These range from everyday maintenance including mowing, pruning, and building repairs; to restoration, rehabilitation and construction of new buildings and landscapes within the historic site boundaries. The CLRP was a tremendous first attempt to identify, evaluate, and determine appropriate future management for the historic landscapes on campus. An emphasis has been

placed on compiling as much information as possible for providing access for future researchers and the general public. The CLR is a technical document supplying a large amount of information in a simple format. The cultural landscapes and archaeological sites at the University of Wisconsin-Madison campus are tremendously valuable historic resources. The Cultural Landscape Resource Project has also provided a basis for future research and management of these sites.

C. NATURAL SYSTEMS

1. Topography

The topography of campus was formed in the last glaciated period in Wisconsin, not more than 15,000 year ago. The result was the rolling topography found on the campus today, some relatively steep slopes and the Madison lakes. A glacial drumlin runs east-west through the eastern portion of campus basically from Babcock Drive to Park Street. It provides a magnificent overlook of Lake Mendota but causes accessibility issues in the heart of the older sections of campus particularly for pedestrians and bicycles. The other major topographic feature is the western area of campus, Eagle Heights. Here again, steeper topography challenges pedestrian and bicycle access. Both of these large topographic features also set up the major drainage patterns of the campus, discussed below.

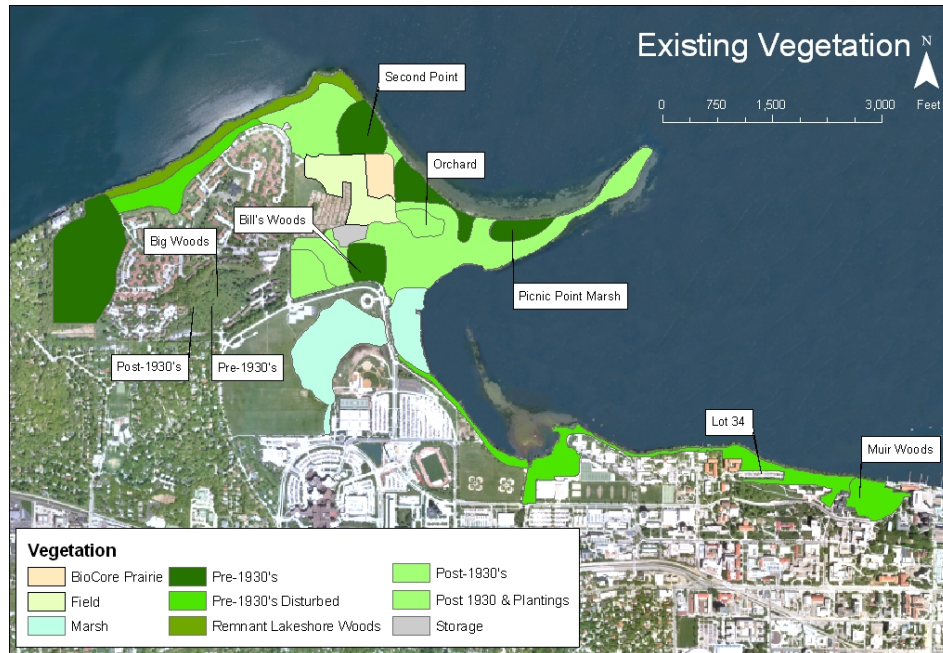


Existing topography (lighter areas are higher in elevation).

2. Vegetation

The native landscape for campus was likely prairie and oak savanna. While there is no clear documentation of pre-settlement vegetation prior to the 20th Century, there are specimen trees

that are indicative of this assumption. Today, the campus vegetation generally consists of successional undeveloped areas, building specific foundation plantings, semi-formal quadrangles and formal garden spaces. Invasive species, namely buckthorn, honeysuckle and garlic mustard, are a significant problem in the undeveloped Lakeshore Nature Preserve areas. There has not been an organized effort for re-forestation of the city and campus streets following the Dutch Elm decline of the 1960's. This represents a major opportunity for new vegetation both on the campus and the City of Madison as a whole.



Existing vegetation of the Lakeshore Nature Preserve

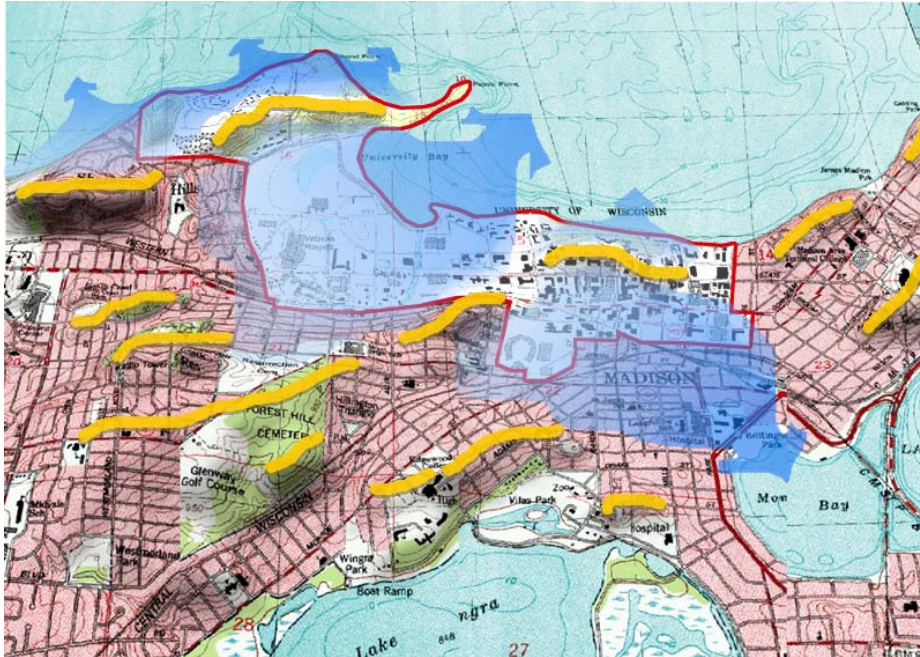
3. Soils

Soils in Madison are a result of glacial deposits and tend to be glacial till uplands with some prairie soils to the east and north of the city. Specifically on campus, soils tend to be high in alkaline due to the prominent limestone sub-soil features in the area. Many of the soils around buildings are also highly disturbed due to construction compaction and never fully regain their native condition after construction. In general, soils types range from silt loams to loam with a prevalence of Dodge and McHenry silt loams in the general campus area. In sloped areas, where grades exceed 6 to 12 percent, soils are highly erodable.

Bearing capacities of the local soils tend to be acceptable for standard spread footings for buildings. In areas of the west campus, namely in the area of Parking Lot 60 and around the west campus recreation fields, soils had been drained and filled for agricultural purposes. The area was also historically filled with construction debris which makes construction difficult without having to drive pilings.

4. Drainage

In general, the campus is divided into two major drainage areas with water flowing north of the line along the glacial drumlins that form Observatory Hill and Bascom Hill. Stormwater on the north side of the hill flows toward Lake Mendota and on the south toward Lake Monona. A secondary watershed exists on the north west side of the campus near Eagle Heights, splitting stormwater north toward Lake Mendota and south toward University Bay.



Existing topography with major ridgelines in yellow & drainage in blue.

It is important to note that a significant amount of stormwater is also directed to University Bay from the city of Madison and points south and west of the campus all the way to Tokay Boulevard. This watershed, nearly 2,000 acres in size, dumps untold amounts of sediment into the lake and has degraded the outfall to the point of forming a delta of land. The university continues to work with the city and county on a solution to this difficult environmental impact.

The university controls stormwater runoff under NR 151 standards as regulated by the Wisconsin Department of Natural Resources. These requirements, in general, aim to reduce total suspended solids in stormwater runoff, reduce peak flow discharges and increase infiltration whenever possible. The campus also participates in a joint cooperative stormwater discharge permit with the surrounding municipalities in and around Madison which defines stormwater management strategies and best management practices for handling stormwater.

In October 2003, as a result of increased public awareness to reduce runoff, increase infiltration and mitigate erosion control problems on campus, the Campus Planning Committee adopted a stormwater policy that states *“The University of Wisconsin-Madison should commit to a policy that ensures that the amount of runoff from newly developed and redeveloped areas be no*

greater than the amount that occurred under native conditions.” The goal of this policy is to realize a long-term reduction in the University’s impact on the surrounding lakes. Methods of stormwater management would be funded through the construction costs associated with all major building projects. More importantly, the University is providing strong leadership at a critical stage in the development of the Yahara Lakes Watershed. Implementation of this policy will be achieved by the use of stormwater conservation on site, by improving stormwater management practices elsewhere on campus, or by a combination of on- and off-site BMP’s.

In some cases, university development in the more urbanized areas of the campus will find it difficult to meet this policy and therefore should mitigate as much of the on-site stormwater as possible before resorting to conventional methods of stormwater control.

5. Views

From the time that the University was sited on top of Madison’s second hill to now, views and view sheds have been important as an identifying feature of UW-Madison campus. Many people remember it as “the university on the lake.” In the 1941 Campus Master Plan the view from Observatory Hill had been noted as an important icon for the campus. The plan notes that the view is “*as fine as on any University Campus anywhere, in reality, nothing short of magnificent. Its aesthetic value is incalculable and its magnificence is essential to the integrity of the character of the campus.*” We also know this high ground was used by Native Americans centuries ago. Nearby effigy mounds tell an important story and link us all to this hallowed ground. Decades later, the Washburn Observatory was sited on this high point to view the night sky and the many constellations of stars. Today, the view from Observatory Hill continues to be a key stopping point for visitors and alumni alike. Under the right conditions, the *aurora borealis* or “northern lights” can even be seen brilliantly lighting the sky from this vantage point.



Observatory Hill Overlook

As typical with many cities and downtowns in the Midwest, the campus never took advantage of these views over the last century, instead constructing its buildings facing downtown Madison (Bascom Hall) and along important urban view sheds. Today, we look for ways to connect the campus back to the views out toward Lake Mendota and capitalize on this unique setting.



Existing important view sheds on campus.



Open Space Map showing natural areas and urban open spaces

6. Open Space

The open space structure on campus is extremely varied and clearly depends on the area of campus you are in at the time. From the woodlands, open fields and marsh lands of the Lakeshore Nature Preserve, to the maintained lawns, recreation fields and quadrangles of the traditional collegiate campus and the urban courtyards and streetscapes of the urban campus, open space on campus continues to be as important as the buildings on campus. The urban open spaces mixed with the traditional lawns and urban courtyards provide an integrated network of outdoor rooms that are used by thousands every day. These areas of respite also provide a wide variety of experiences demanded by a modern university. Small sitting areas, benches, tables & chairs, as well as the large lawn areas act as informal gathering spaces for students, faculty and staff alike as they venture out into the campus landscape. They more importantly provide space for impromptu learning opportunities and areas for collegial debate on the current topic of the day. Much is learned outside the classroom in discussion with your peers and the campus should continue to foster this type of ad hoc learning.

The west campus is dominated by the large acres of open recreation fields north of the Waisman Center. Here many organized intramural events occur from flag football, soccer, rugby, ultimate frisbee, and field hockey. In the southeast corner of this complex, just northwest of Waisman, intercollegiate athletics uses a portion of the fields for sport training camps and for visiting team practices. Additional intramural sport fields exist both east and west of the Natatorium on Observatory Drive. A smaller area of open space also exists south of Cole Hall, affectionately known as “Cole Beach” for all the sunbathers who use this area. All of these open recreation fields should be protected and maintained for future use.

On the corner of Observatory and Babcock Drives lies the Allen Centennial Gardens, a 2.5 acre outdoor classroom managed by the Horticulture Department as a teaching garden. The garden is open to the public and often used for events and weddings. Dedicated in 1989, the garden is designed to complement the historic Dean’s residence.

On the central campus, additional open spaces provide relief, especially along Observatory Drive and the Observatory Hill overlook. These once former orchards flowing down the hillside to the lake, provide a panoramic view to the north of Lake Mendota and Picnic Point in the distance. South of Agriculture Hall lies Henry Mall reaching out and over University Avenue to the Engineering campus via the Engineering Mall. Remnants of the “Greater Mall” still exist with the setbacks from Linden Drive for Ag Hall and the School of Human Ecology. Large lawns still exist in those areas that provide open space that should be not only retained but enhanced.

Also on the central campus is the iconic Bascom Mall with its grand easterly facing slope down to Park Street and State Street extended toward the State Capitol building. This is one of the most iconic and picturesque areas of campus not only for its view but for the history as this is where the original buildings of the campus were developed. This is the heart of the historic campus and the open space created by the three-sided quadrangle of buildings defines the university yesterday and today. The hill is used extensively in warmer months (and even in the height of winter) by students, faculty and staff. Informal classes are often seen held out under the trees.



Bascom Mall

Almost as iconic as Bascom Mall is the Memorial Union Terrace along the shores of Lake Mendota north of the Memorial Union as it spills out toward the lake. Almost every alum, faculty, staff and community member pride themselves with having experienced “The Terrace” on a Friday evening in late summer or early fall. The majestic oak trees, union terrace chairs and the ever flowing brats and beer define the truly Wisconsin experience.



Memorial Union Terrace and Library Mall

Library Mall, just to the south and east, is also a large community gathering area utilized by thousands on any given day. Not to be confused with the State Street Mall which runs east-west south of the clock tower, Library Mall is centered on the Hagenah Fountain with radial sidewalks bisecting the greenspace. It is the site of many impromptu performances, political activism, art exhibitions, demonstrations, and sales. A memorial service here recognized the events of September 11, 2001 when over 20,000 participants gathered.

Library Mall bisects the newly named East Campus Mall (a.k.a. Murray Mall), a 7-block pedestrian and bicycle mall from Regent Street on the south to Lake Mendota on the north. This mainly pedestrian spine connects many student service facilities (Red Gym Visitors Center, Financial Aids, Registrar, Bursar, and University Health Services (in 2009)) with the many students living in the southeast residence halls, users of the Kohl Center, the SERF and the Memorial Union, all along a well defined urban open space.

Along University Avenue, just west of Lathrop Hall is the UW Botany Garden, a cornucopia of plants arranged by family, genus and species. It also serves as a wonderful gathering area and refuge from the daily grind of the university with a series of ponds, waterfall, gazebo and art.



UW Botany Garden

On the south campus, Camp Randall Memorial Park lies to the east of Camp Randall Stadium and is on the National Register of Historic Places. This once Civil War encampment is overseen by the Wisconsin Veterans Affairs office. On most days it is used as an informal recreation space but on football game days it is busy with vendors and hordes of people making their way to the stadium.

The north front lawn of the Kohl Center is another large open space on the south campus. It is also used by the local residence hall students for pick-up games of touch football, frisbee and many sunbathers. The open space is also used by the thousands of patrons attending sporting events, concerts and commencement ceremonies through the year.

The nearby southeast residence halls also provide open space areas for informal recreation with sand volleyball, basketball, softball and other leisure sport activities in this very active part of campus.

7. The Lakeshore Nature Preserve

In 2005, the university completed a comprehensive analysis of the 300+ acre Lakeshore Nature Preserve. This was a separate study beyond the campus master plan but again, this process informed the comprehensive plan much the same way the Cultural Landscape Project did.

The Lakeshore Nature Preserve Master Plan provides a framework for managing the Preserve over the next decade. The plan seeks to maintain and improve the biotic health of Preserve lands and ecosystems while enhancing the Preserve's educational and recreational benefits for all who visit it. The plan analyzes the biological and cultural resources of the Preserve and proposes site-specific designs and strategies for meeting the following goals of the Preserve Committee:

- Preserve, restore and interpret natural plant and animal communities in conjunction with UW-Madison's educational mission;
- Protect signature landscapes and views that are vital to defining the university campus and the city of Madison;
- Establish management priorities that maximize educational benefits while minimizing the impacts of educational use.

Much of the work in the Lakeshore Nature Preserve Master Plan process influenced the overall campus master plan process including discussions of views and view sheds, natural areas protection, erosion control and stormwater management principals. Further information about the Lakeshore Nature Preserve and the Master Plan process developed for this are of campus can be found on-line at: www.lakeshorenaturepreserv.com

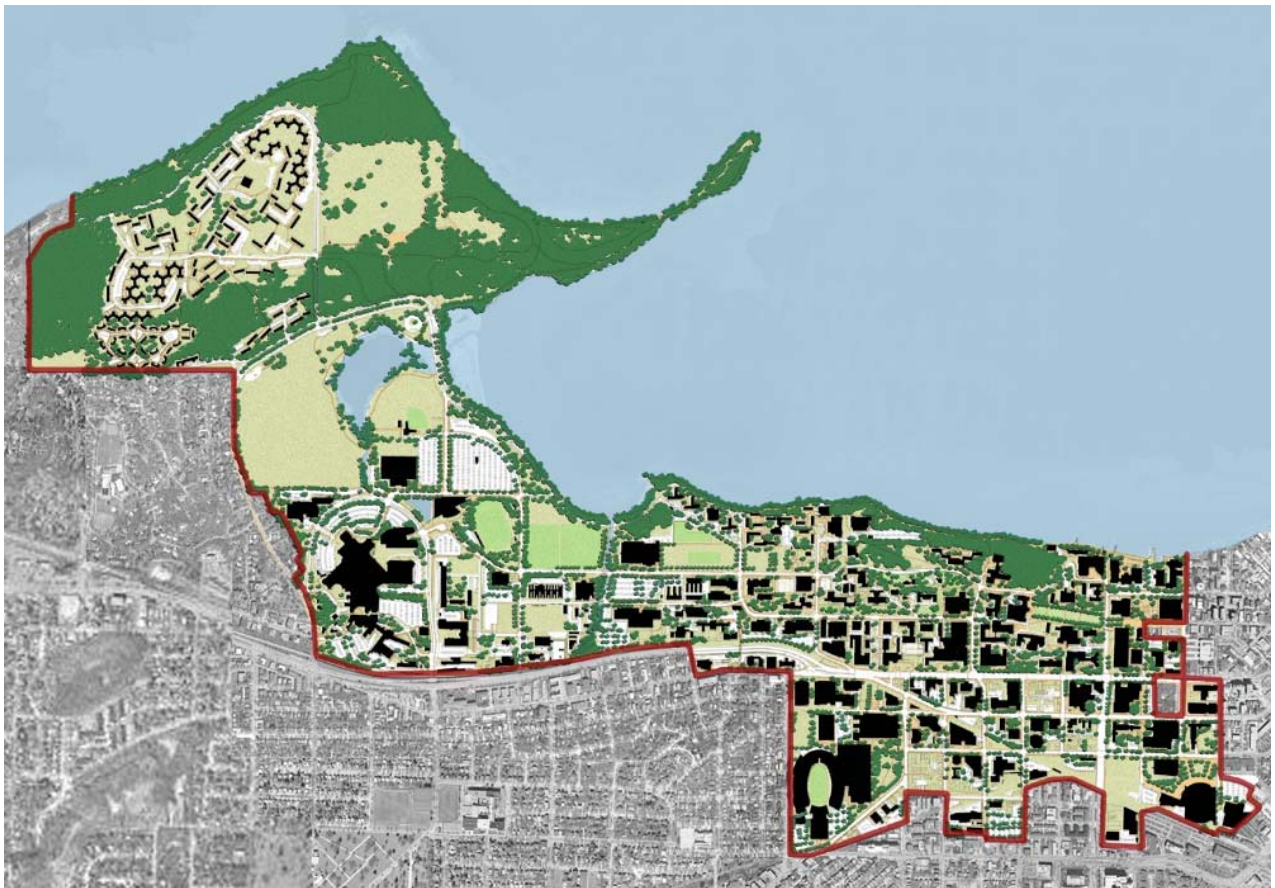


The Lakeshore Nature Preserve Boundaries

D. LAND HOLDINGS

Main Campus Lands, Land Acquisition and the Campus Development Plan Boundary

The University of Wisconsin-Madison's main campus currently includes approximately 933 acres within a Campus Development Plan Boundary defined by the Board of Regents with the approval of the 1996 Campus Master Plan. The last change to the campus master plan boundary occurred in September 2005 with the inclusion of the University Square redevelopment block bounded by North Lake Street, University Avenue, West Johnson Street and North Murray Street (vacated). The current planning process calls for no changes in the boundary as it is currently defined.



The UW-Madison campus today (2005) with the campus plan boundary shown in red.

NOTE: Boundary was changed in Sept. 2005 to include the University Square block west of Lake Street.

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Within the Campus Development Plan Boundary, certain parcels continue to be held privately. Of those parcels, several are not currently being considered for future acquisition by the University of Wisconsin-Madison. Those parcels not considered for future acquisition by the Board of Regents include:

- 433 North Murray Street (Pres House Apartments site)
- 701 University Avenue (University Square development)
- 108 & 110 North Murray Street (MG&E South Campus Substation)
- 1001 West Dayton Street (Dayton Street private apartments)
- block bounded by University Ave., N. Mills St., W. Johnson St. & N. Brooks St.
- 1127 University Avenue (The Crossing)
- 1437 Monroe Street (City of Madison Fire Department)
- 1435 Monroe Street (UW Credit Union)
- 202 North Charter Street (private apartments)

Additionally, several parcels are held by the federal government and not currently being considered for acquisition, namely the William F. Middleton Memorial Veterans Administration Hospital and the USDA Forest Products Lab facilities. If at such time the federal government decides to relocate and/or liquidate their property interests in these locations, the university would be interested in acquiring the land.

Also, within the approved Campus Development Plan Boundary, several private parcels are being considered for future purchase when available from willing sellers. It is the desire of the University to, over time, purchase these parcels for future development. These include parcels not currently owned by the Board of Regents (see map below):

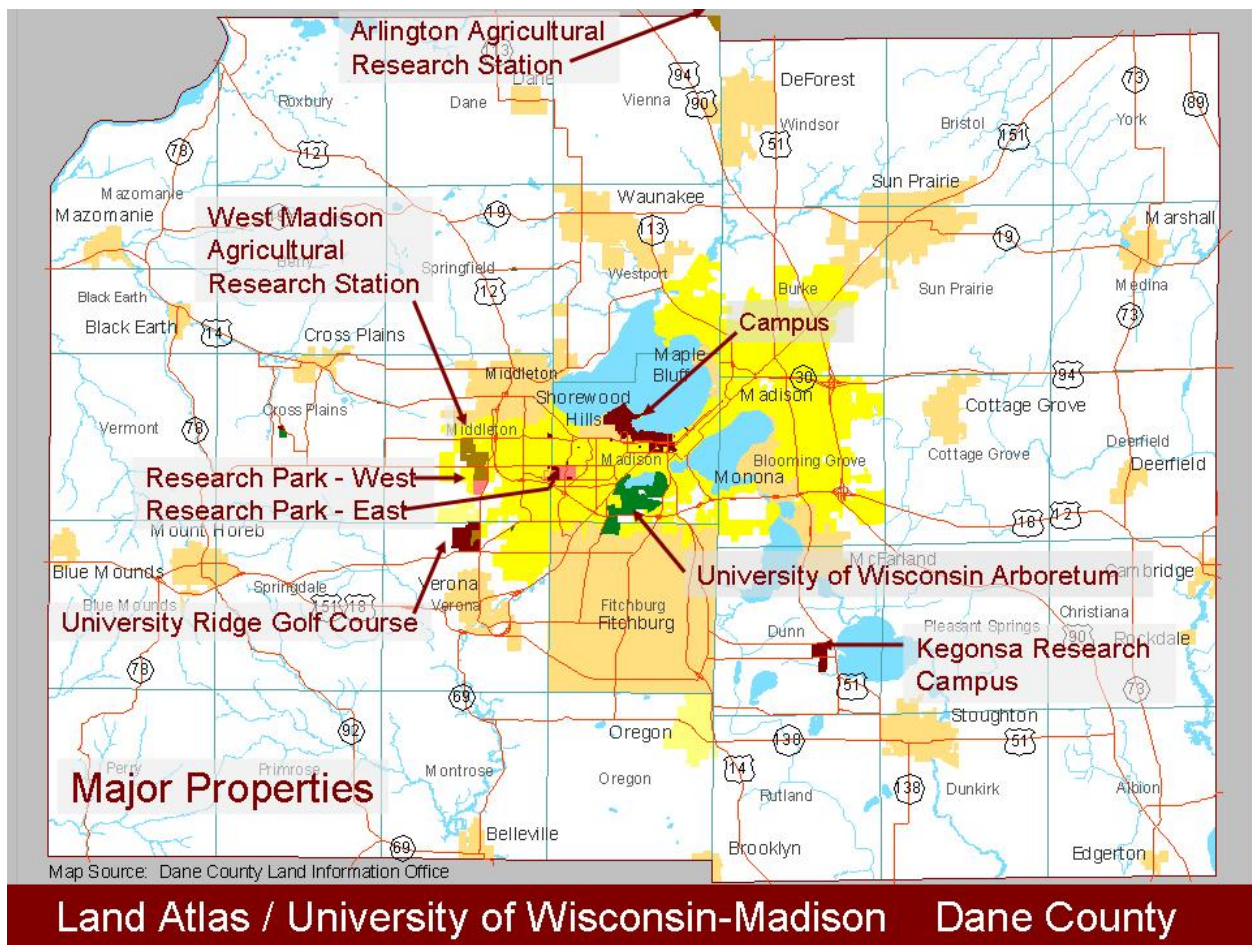
- Two parcels in the 700 block of University Ave, north side
- In the block bounded by N. Park St, W. Johnson St, N. Brooks St & W. Dayton St
- Three parcels near the corner of N. Brooks St and W. Dayton St
- Three parcels on Spring St. west of N. Mills St
- One parcel on N. Charter Street, north of Capitol Court
- All parcels in the 1200 block of Spring Street, both sides of the street
- All parcels in the block bounded by N. Randall Ave, W. Dayton St, N. Orchard St and Spring Street (long term acquisition, out past 25+ years)
- Three parcels at the corner of N. Randall Ave and Monroe Street
- Two parcels at N. Randall Ave and University Ave
- One parcel at N. Charter St and W. Dayton Street

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Dane County Properties

The University of Wisconsin-Madison manages several properties in Dane County outside the 933-acres main campus in downtown Madison. The major parcels include (as shown on the following map):

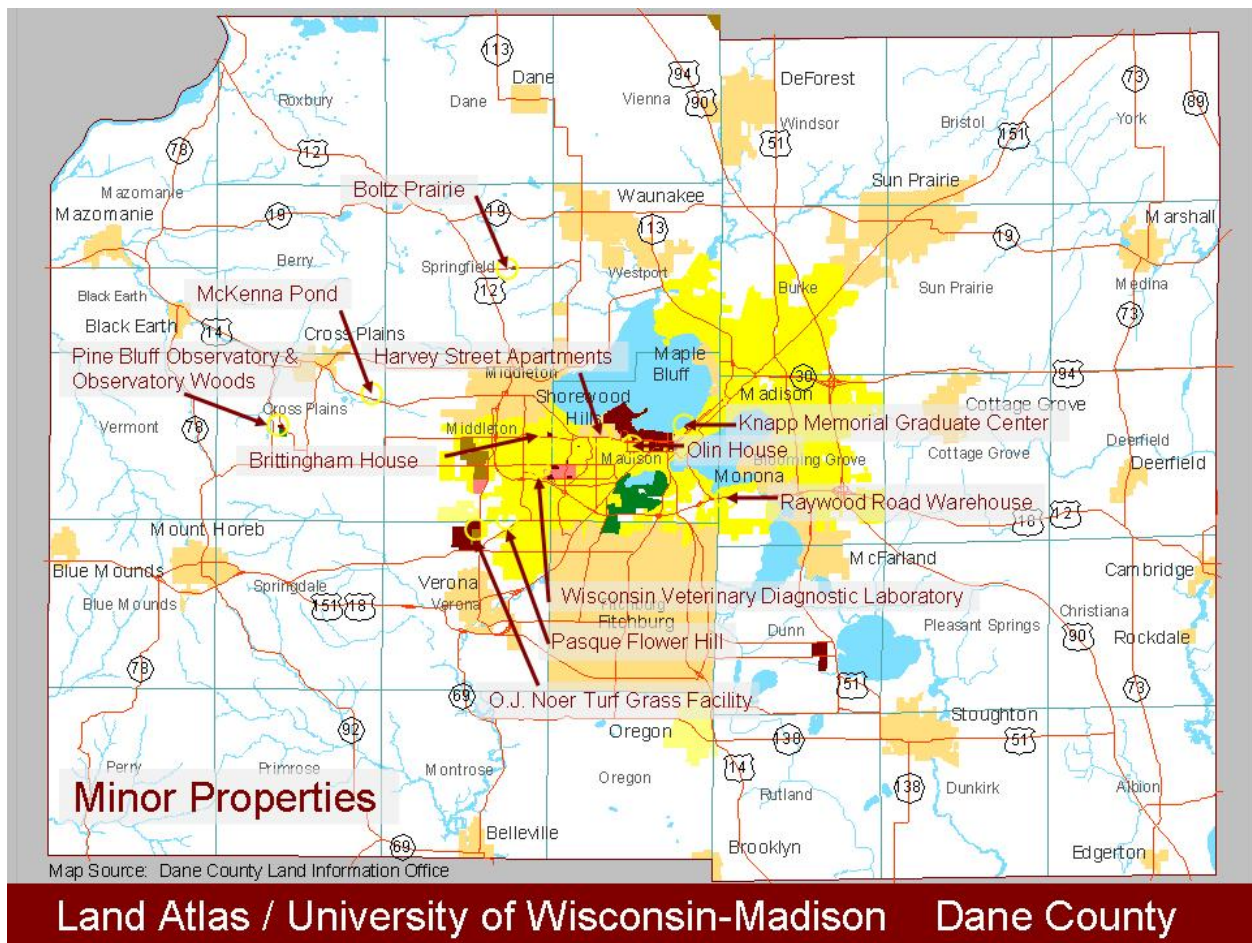
- Arlington Agricultural Research Station (south of Arlington, Wisconsin)
- Kegonsa Research Campus (northwest of Stoughton, Wisconsin)
- University Research Park, East (central Madison, west of the main campus)
- University Research Park, West (far west side of Madison)
- UW Arboretum (central Madison, south of the main campus)
- University Ridge Golf Course (north of Verona, Wisconsin)
- West Madison Agricultural Research Station (far west side of Madison)



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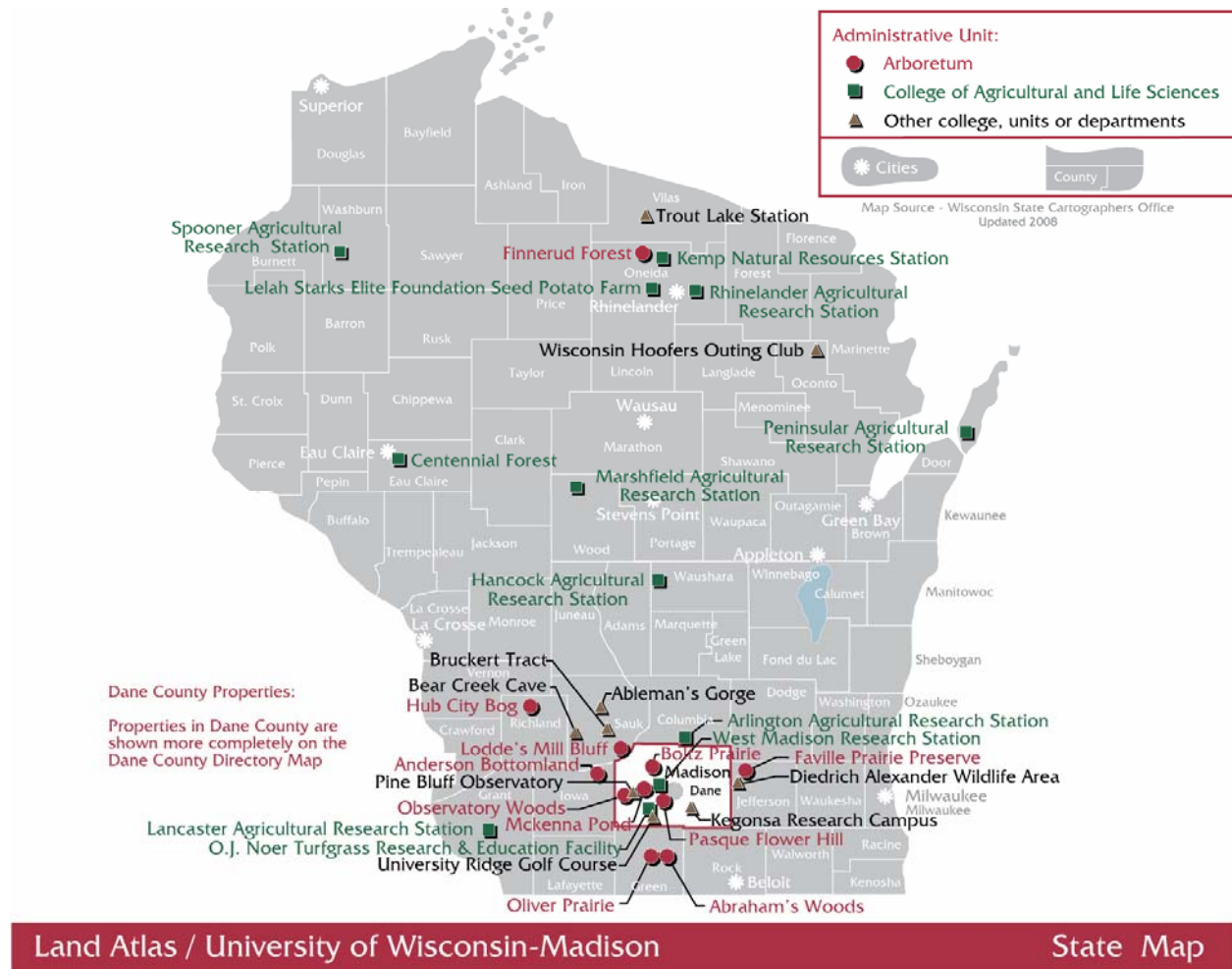
Additional smaller, minor properties in Dane County are also managed by the campus and include:

- Boltz Prairie (UW Arboretum)
- McKenna Pond
- Harvey Street Apartments (UW Housing)
- Pine Bluff Observatory (UW Astronomy)
- Observatory Woods (UW Arboretum)
- Brittingham House (UW System President's House in The Highlands)
- Olin House (Chancellor's residence in University Heights)
- Knapp Memorial Graduate Center (old governor's mansion on Gilman Street)
- Raywood Road Warehouse (UW Housing)
- Pasque Flower Hill
- O.J. Noer Turf Grass Facility
- Wisconsin Veterinary Diagnostic Lab (recently moved to campus in a new building)



Other Non-Contiguous Properties

The University of Wisconsin-Madison also has management responsibilities for over 29 additional properties outside of the main campus in Madison. Eleven of those sites are managed by the UW Arboretum, including four in Dane County. Eleven additional sites are managed by the College of Agricultural and Life Sciences, including two in Dane County, and eight further sites are managed by other units or departments across campus. A map of those sites is included below for reference.

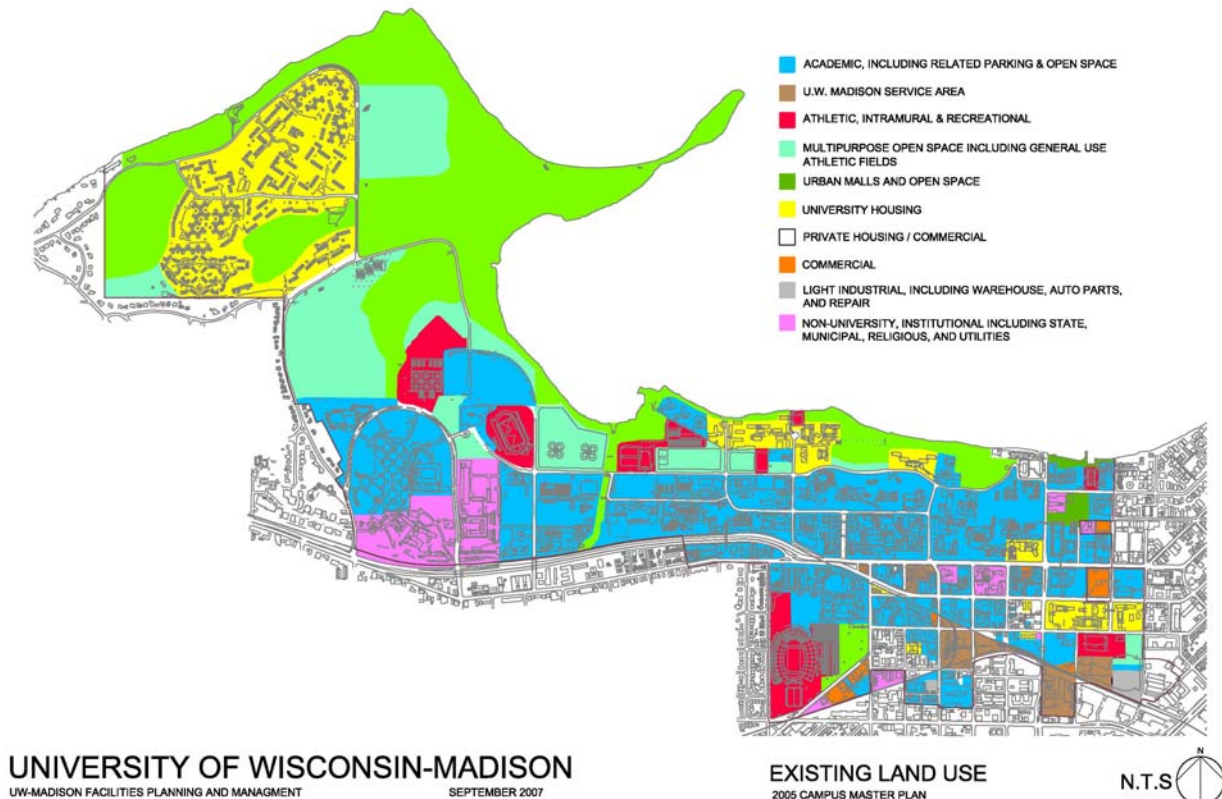


BUILT SYSTEMS

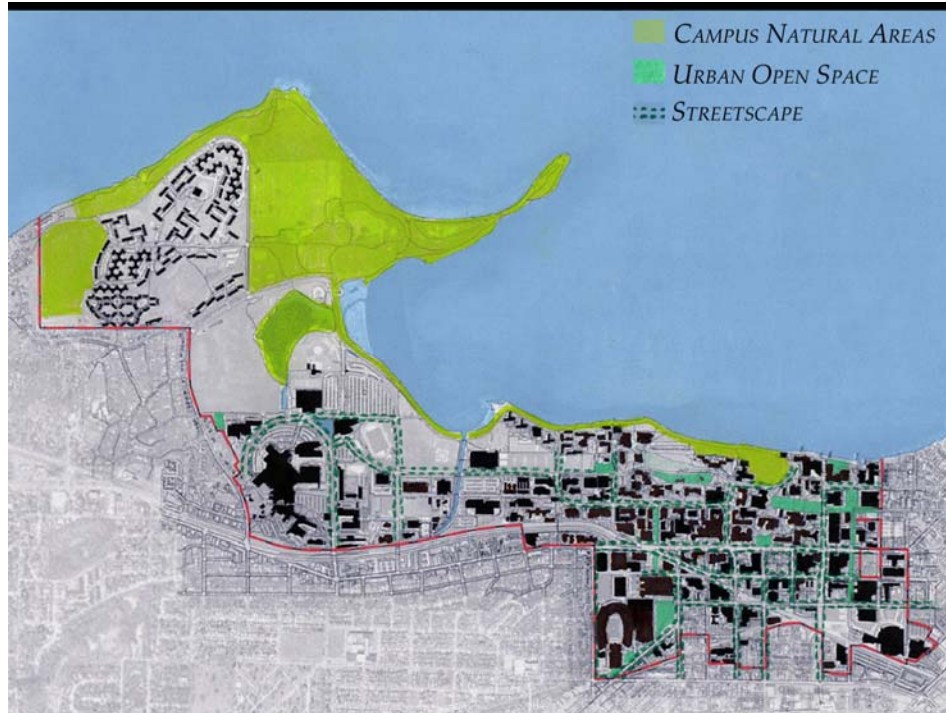
1. Existing Land Use

Current building uses on campus were analyzed and mapped to provide an understanding of distribution across campus. Buildings were defined as either academic/research, athletics/recreation, general support, health sciences, housing, parking, utility, or non-university.

Clearly the majority of buildings in the center of the campus are academic facilities with a mix of core administration and student support facilities. Recreation and sports facilities tend to be on the edges of the campus as are service facilities. Housing is grouped in three locations, Eagle Heights on the west (mostly graduate student housing), the Lakeshore Residence Hall complex along the Lake Mendota shoreline from Elm Drive east to Charter Street (Elizabeth Waters Hall), and the Southeast Residence Hall complex along West Dayton and West Johnson Streets. Chadbourne and Lathrop Halls, with its connected dining facility, are more central at the intersection of North Park Street and University Avenue.



2. Existing Open Space Structure



Open Space Map showing natural areas and urban open spaces

Current open spaces were also analyzed and mapped to show how they connect across campus and how they support the buildings and the spaces between them. The main campus currently has approximately 300 acres in the protected Lakeshore Nature Preserve, over 14 miles of streetscapes, almost 8 acres in pedestrian malls, 80 acres of open recreation fields, 4 acres of botanical gardens, and 13 acres of major open lawn areas.

Most of the large open spaces are on the west campus with more traditional collegiate lawns and quadrangles in the central and historic campus. On south campus, the majority of the open spaces are based on the city street grid, are more linear in fashion and rely heavily on the building projects and their setbacks.

F. EXISTING TRANSPORTATION SYSTEMS

***NOTE:** Much of the information in this section has been excerpted from the 2005 UW-Madison Long Range Transportation and Transportation Demand Management Plan (rev. 2007) developed in concert with the 2005 Campus Master Plan process. Further details can be found in this document as an appendix of the overall campus master plan report.*

Pedestrian Walkways

The City of Madison has a robust sidewalk network. Thus, in most locations, the campus is accessible from all directions along city streets or multi-use paths. Exceptions to this general rule include a lack of sidewalks along the east side of two parts of Highland Avenue and, as in the case of bicycle routes, the very indirect connections to the campus from neighborhoods west of the campus caused by the “super blocks” associated with the University Hospital and the Veterans Administration Hospital on the one hand, and the Forest Products Laboratory on the other hand.

The other problem besetting pedestrians accessing the campus is the relatively bleak streetscape along certain streets. Closely related to the campus concern for quality open space and landscape, the lack of street trees, terraces, and other amenities along much of University Avenue, West Johnson Street, Charter Street, Highland Avenue, and other major roadway entrances to the campus leaves the pedestrian in a hard and uninviting environment. Moreover, in some cases, including on University Avenue, the absence of street trees creates a lack of “verticality” along the street and encourages faster vehicular speeds, creating dangerous conditions for the pedestrians that must cross those streets. In other respects, this harsh streetscape decreases a pedestrian’s feeling of safety, an important if intangible factor in an individual’s decision to walk somewhere. A similar issue is the lack of “pedestrian scale” on some parts of campus, especially to the west, near Campus Drive and its interchanges.

Pedestrians on campus do benefit from the Lightway Walking Paths and Emergency Phones. The lightway is a network of well-lighted sidewalks and paths for pedestrians. Many sidewalks are adjacent to campus buildings that are heavily used at night. The University encourages walking along lightway paths when walking around the campus at night. Lightway routes are marked with reflected lightway logs affixed to light poles. Over 60 emergency telephones are located throughout the campus. All phones, with the exception of those in Memorial Library and the Chemistry Building, have a blue light above them and are labeled “911-Emergency.”

Finally, as it is for bicyclists, the biggest impediment to increased access to the University by foot is distance. Most individuals will elect not to walk if the distance exceeds two miles. As noted earlier, because of evolving housing supply and price dynamics, more and more employees now live further away where affordable housing can be found.

As part of the site analysis phase of the campus master plan, the consulting team provide several graphics of the existing built systems on campus. The graphic below defines major pedestrian patterns across the campus in red with the thickness of the lines defining densities of pedestrian

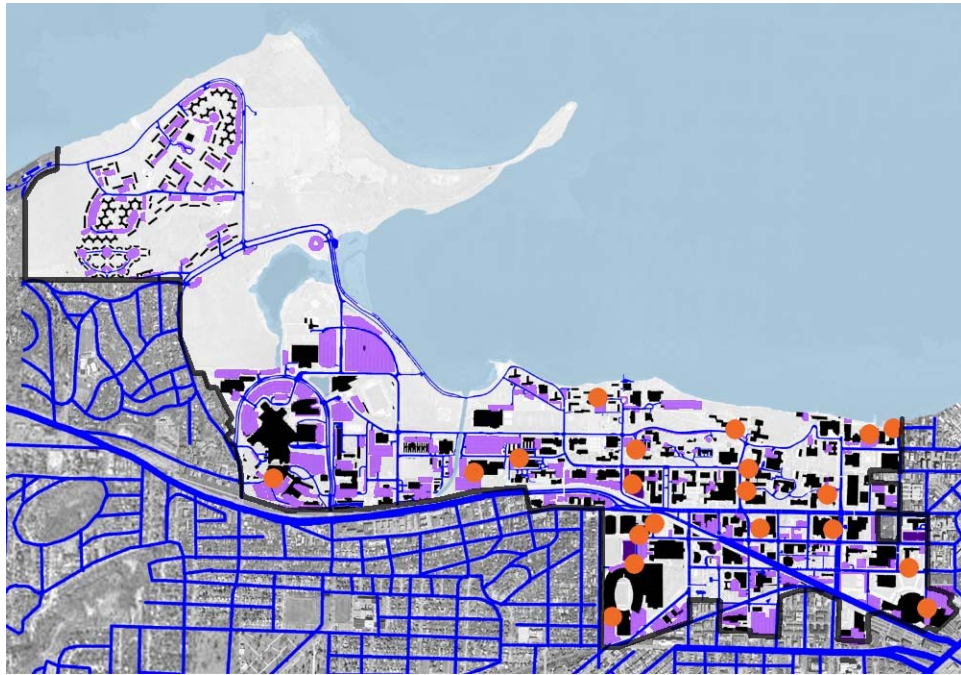
traffic. The background grid shows five-minute walking distances, clearly showing that it would take approximately 30 minutes to walk from one end of the campus to the other east to west. The following graphic shows walk radii from major destinations across the campus.



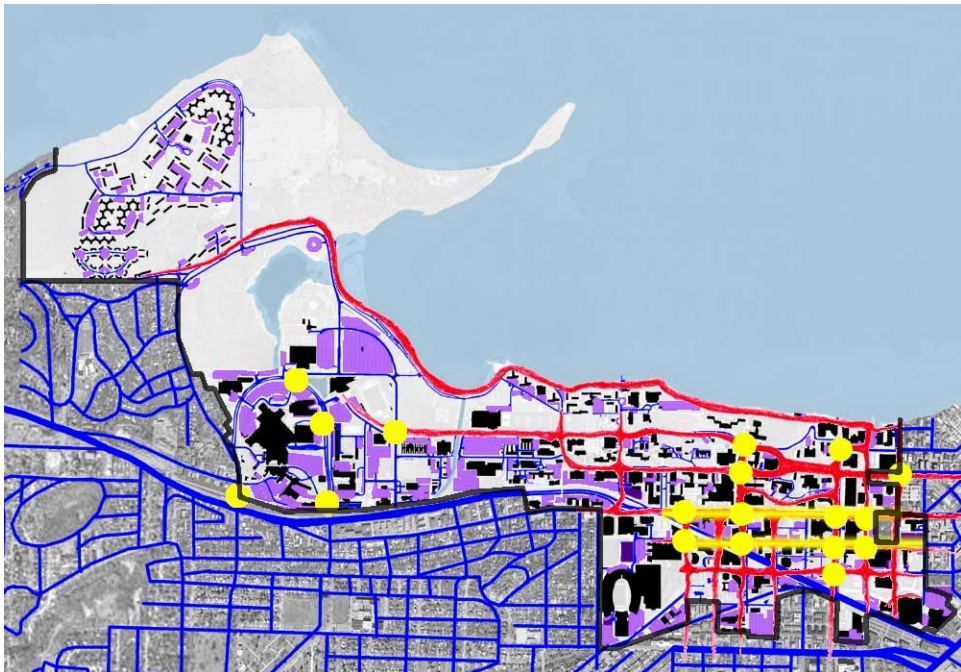
Major pedestrian patterns



Pedestrian walking distances.



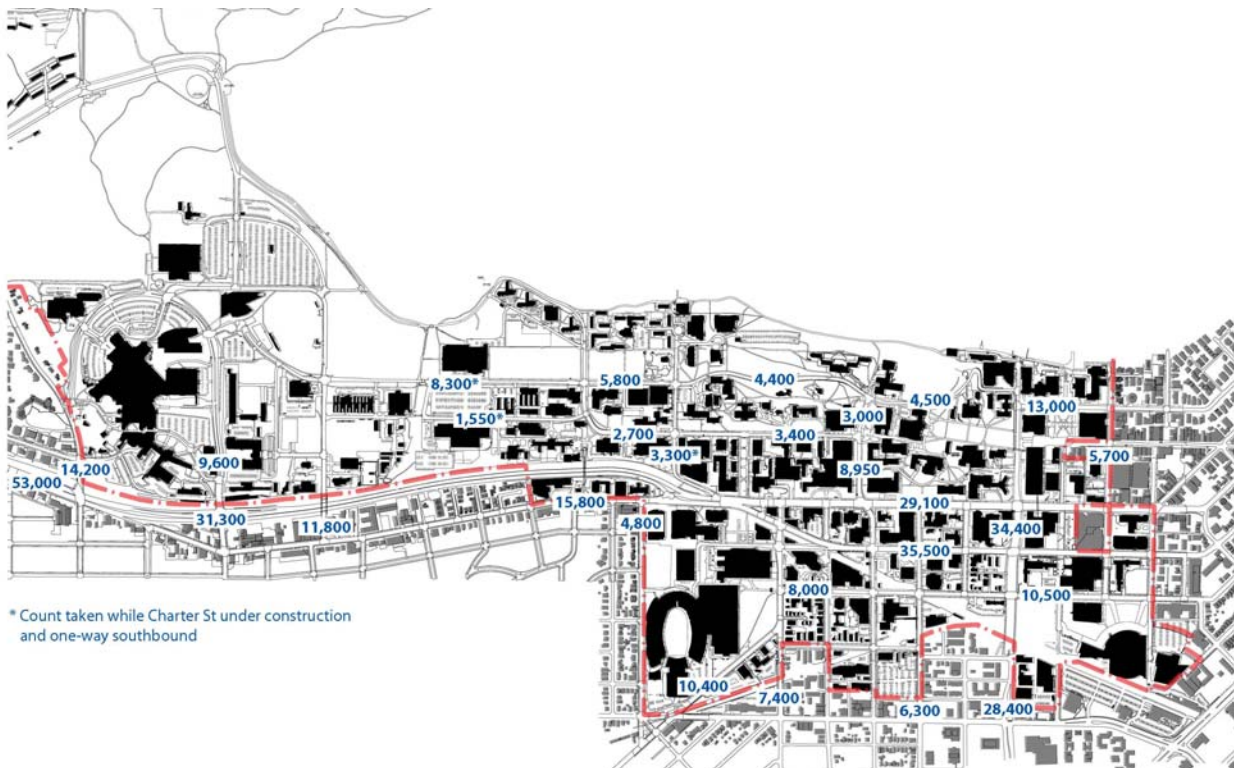
Vehicular street grid system with major loading/service docks in orange.



Combined map showing conflicts in yellow.

Roadways

Important as TDM is to the University's approach to getting around on campus, it's the existing roadways that really frame the opportunities and challenges confronting not only motorists, but also pedestrians, bicyclists, and transit users. Although the majority of the campus is in an urban setting, the western portion is bordered by suburban style development and is itself more suburban in design. In particular, the road network in the western campus is characterized by the lack of a regular grid, curving roads, and much longer blocks that impede pedestrians, bicyclists, and even motorists at times. Meanwhile, the southern campus consists of a traditional grid system dominated by the east-west urban arterial pair of University Avenue and West Johnson Street. Together these streets carry in excess of 65,000 vehicles each day and present major obstacles to all modes of travel moving north and south.



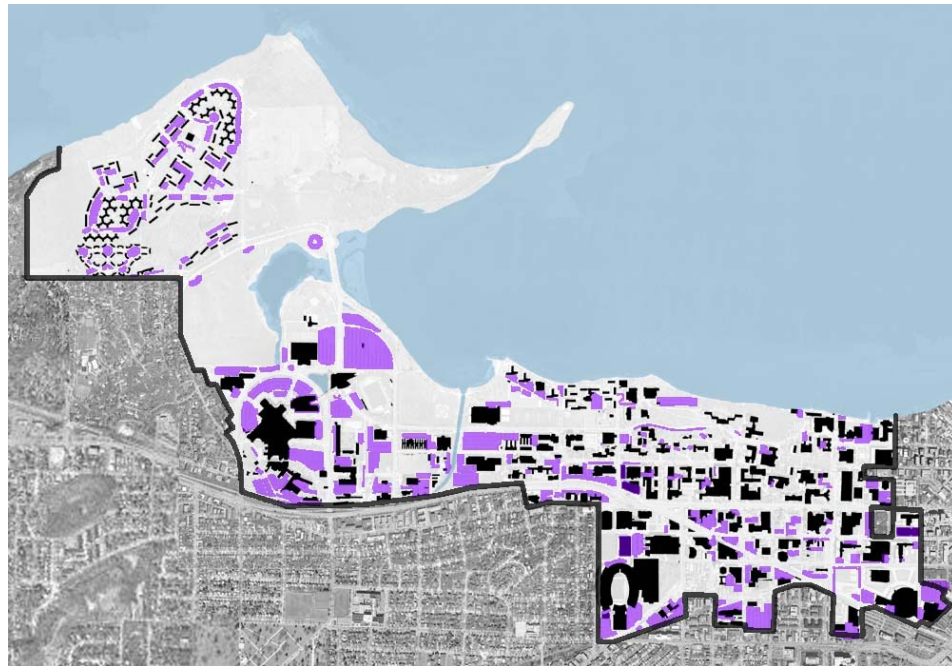
Average Daily Traffic Counts on UW-Madison Campus in 2004.

Finally, although the southern campus has a robust road network, directly to the north the campus is dominated by a large quadrangle (Bascom Hill) encircled by roads (Observatory Drive and Lathrop Drive) that follow the hilly topography and a rural pattern typical at the time of the University's founding. To the west, roadways continue to follow a more rural approach so that there are very few roads through this part of campus in any direction. The relative lack of both east/west and north/south connectivity between University Avenue and Lake Mendota means that some motor vehicle congestion occurs during peak hours in some corridors. However, most intersections operate at an LOS of "C" or better and average daily traffic is still acceptable for the University's mainly two-lane roads. More importantly, the lack of connectivity on campus

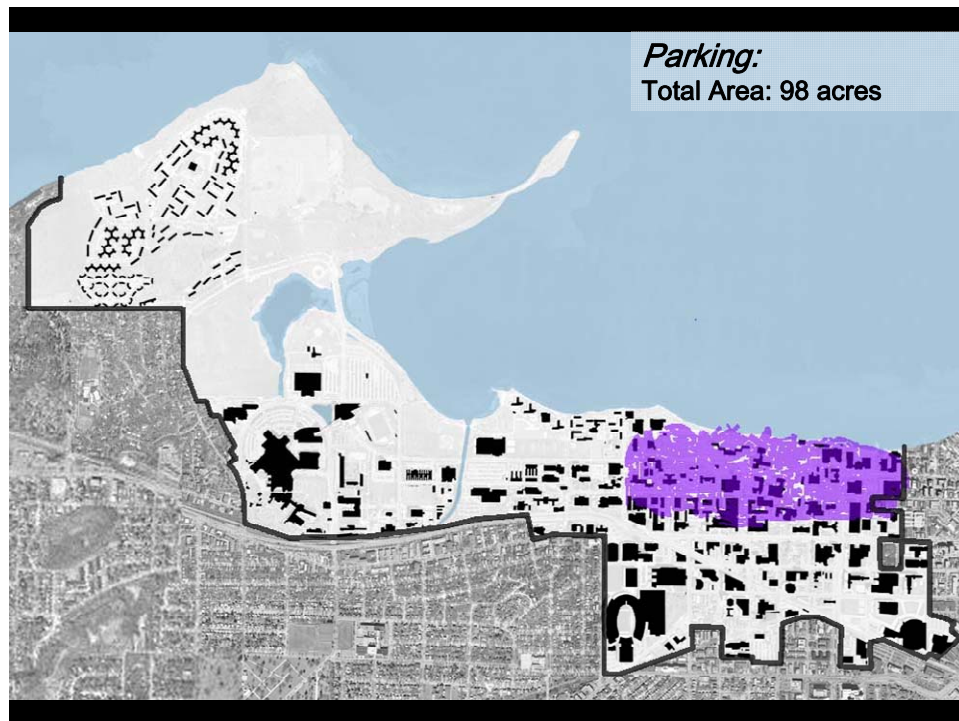
severely limits transit route options, increases travel times, and generates significant conflicts between motorists and bicyclists and pedestrians.

Parking Facilities

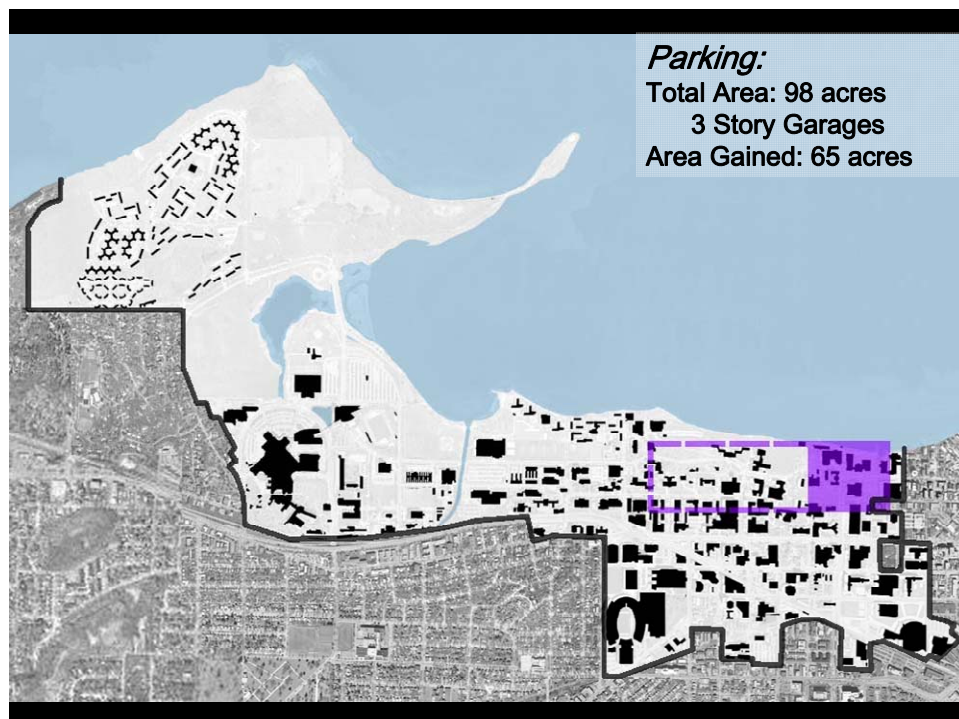
The following graphics were developed as part of the master plan process to identify all surface parking across campus. As shown, the university has currently some 98 acres of surface parking, over 10% of our land area on the main campus. If all that surface parking was placed end to end in one area of campus, it would more than cover the historic central campus from Lake Street on the east to Babcock Drive on the west. If all that parking was converted to covered garage or ramp parking that was just 3 stories tall, it would reduce the impact of all this surface parking to less than 33 acres, saving the campus over 65 acres of potential new open space or developable space for new campus facilities. The value of that land is well into the millions of dollars in today's real estate market, something the campus can ill afford when looking for room to grow within its boundaries. For this reason, the campus master plan recommends moving more of the surface parking lots to concentrated, garage/ramp parking when ever and where ever possible.



Surface parking on campus shown in purple. – some 98 acres of asphalt.

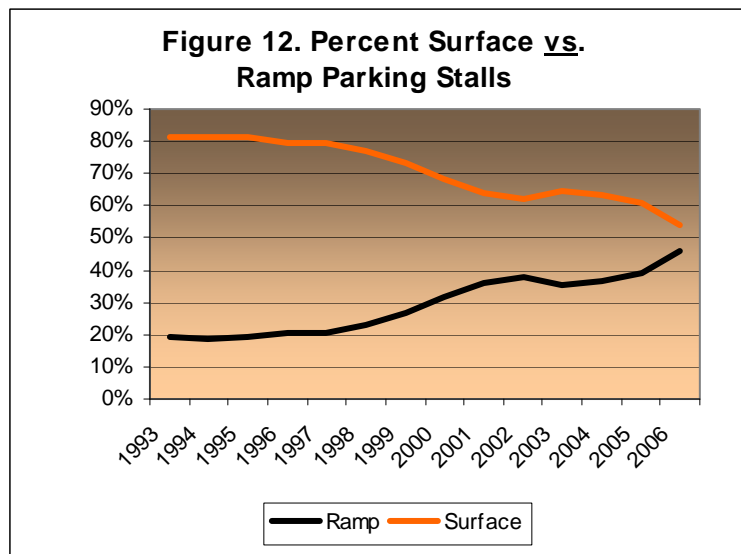


Surface parking grouped as a single unit of land area, covering the entire historic campus.



The campus has kept records of the parking infrastructure on campus since the creation of the Transportation Services Department in 1924. Since that time, campus parking spaces have grown from 750 spaces to approximately 13,000 permit spaces in 2005. Despite this substantial growth,

the University of Wisconsin – Madison has the lowest faculty and staff ration to the number of parking stalls of any public agency in the state, the lowest rate of any Big Ten university, and one of the lowest ratios of spaces per member of the campus community of any university in the entire country at 0.22 spaces per person. Part of the reason for this parking efficiency is that only a very small number (approximately 300) of permits are awarded to students, and then only in cases of disability or significant need. Importantly, the University’s strong parking management polices form the backbone for its exceptional TDM record. Moreover, this same management has allowed the campus to avoid the struggles over more and “closer” parking that now dominate many major universities elsewhere in the United States.



Trend of Surface vs. Structured Parking, 1993 to 2005.

University parking is divided into four major categories: permit, visitor, accessible, and departmental parking. Permit parking is made available primarily to faculty and staff at a cost of \$445 to \$1,045 for a specified base lot. (See table below.) Permits are assigned in a relatively decentralized fashion based on a parking priority as established by an individual’s department or other administrative unit. As the table below shows, 8,637 permits were issued in 2005 amounting to about 67% of all available parking on campus.

Type of Stall	Number	Percent of Total
Permit (Annual and Short Term)	8,637	67%
Visitor:	2,747	21%
<i>Daily Permits</i>	1,827	14%
<i>25 minute meters</i>	225	2%
<i>2-10 hour meters</i>	695	5%

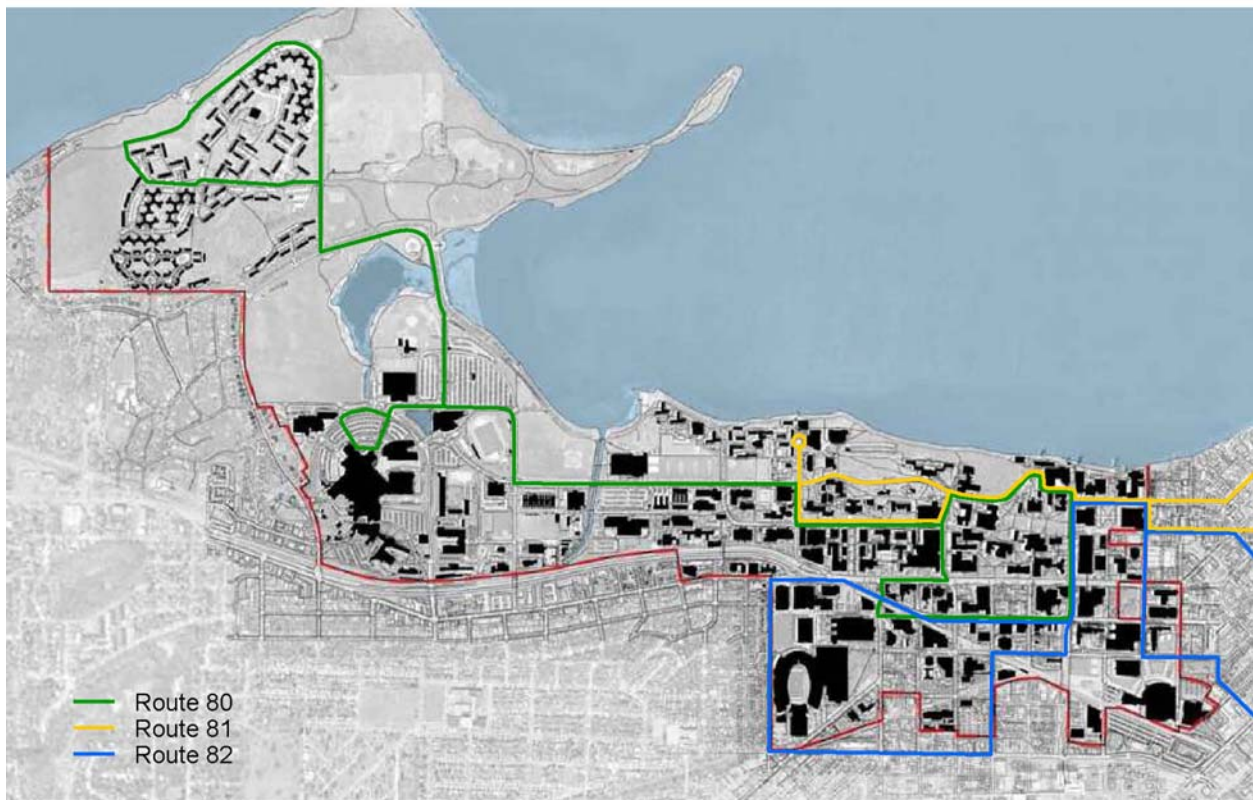
¹ Data for 2005 are skewed by the closure of Lot 63 prior to the construction of Lot 76.

Accessible (Persons with Disabilities)	483	4%
Departmental (Reserved and Others)	723	6%
Motorcycle	374	3%
TOTAL	12,964	100%

As Table 1 also shows, a significant portion of campus parking, 21%, is reserved for visitors in the form of metered parking stalls and daily permits. About 4% of all parking stalls are designated for persons with disabilities, and this exceeds the federal ADAAG requirement of roughly 2%. Many University departments also buy stalls near key buildings which they reserve for their own use as they choose. Finally, nearly 400 stalls are reserved for motorcycles, which are considered separately from mopeds which have their own parking policies and requirements.

Mass Transit Options

Even after commuting faculty, staff, and students have reached the campus, its sheer geographic size presents a special challenge to those who then need to travel within the campus from one activity to another. The campus spans more than two miles from east to west and nearly a mile from the edge of Lake Mendota to a variety of residence halls, offices, academic buildings, and athletic facilities to the south. Because of this distance, traveling on foot from one activity to the next on the campus is often not feasible when time is short.



UW-Madison Intra-Campus Bus Routes Operated by Madison Metro in 2005.

A key element in the University's effort to connect people across such a big campus is the Route 80 bus operated by Madison Metro. It connects the Memorial Union with Linden Drive, the Health Sciences campus, graduate student housing at Eagle Heights, and Union South. At night, two additional routes, the Route 81 and Route 82, provide service from the Lakeshore Residence Halls to the east side retail areas and neighborhoods, as part of a SAFERide Bus program designed to help students and staff traveling at night to and from popular nearby destinations. All three of these campus-oriented bus routes are free. On an average school day, the Route 80 bus served approximately 7,500 passengers per day in 2003, while the combined ridership of the Route 81 and Route 82 was about 2,000 passengers per day for the same year.

Supplementing the campus' primary transit service is an express shuttle between the Hospital and the Medical Sciences Center (MSC). The MSC-CSC shuttle operates every 20 minutes and serves only the endpoints of the route. Although it serves a very small fraction of the community, it has a solid ridership base and is very important to those who use it. Its ultimate future is uncertain, however, as all of the medical staff will eventually leave the MSC for facilities closer to the Hospital.

Compared to many other major campuses across the nation, the University of Wisconsin-Madison's campus has relatively few separate bus routes. For the most part, this is the natural result of the campus' unique geography and roadway grid. First, compared to most campuses, this University is quite dense. While it is about two miles long, it is only one mile wide at the same time that other universities are often several miles on a side and/or are split up among various separate campuses located in different places that must be connected by some sort of transit. In addition, as noted earlier, the very limited number of east/west and north/south roadway corridors crossing the campus severely restricts the number of route options available to transit planners.

Even so, the intra-campus transit system suffers from a number of significant problems. First, although the Route 80 bus succeeds in serving the entire campus, precisely because it tries to do so along a fairly limited selection of thoroughfares, the bus takes 50 minutes to complete its route. For those wanting to travel from Memorial Union to South Campus or from South Campus to West Campus or Eagle Heights, the bus is impractical and does not come close to meeting the students' need to travel across the campus within the 15 minutes typically allowed for changing classes.

Second, the bus also suffers from capacity problems, principally during class changes. This is particularly noticeable during poor weather when campus bus ridership increases dramatically. Student usage increases seven-fold (from 3% to 22%) and employee usage nearly triples (from 9% to 25%) at these times. Moreover, even during seasonable weather, the Route 80 can be over-capacity for the trip up Bascom Hill from Memorial Union. These situations of severe overcrowding mean that dwell times at individual bus stops can regularly exceed one minute and that passengers must be left standing at crowded stops for lack of room on the bus. This overcrowding also severely impacts the ability of the Route 80 bus to accommodate users with disabilities. To a considerable extent, excessive dwell times also reflect the limitations of a

traditionally sized bus doors and Metro's requirement that students board the bus from only the front door.



Crowded campus bus loads.

Third, although frequent by most transit standards, the headway or time between Route 80 buses is sufficiently high at seven to eight minutes that many users do not feel that they can rely upon it to get them to classes or to meetings on time. Notably, University surveys indicate that 35% of the students and 20% of the employees who do not now ride the bus on campus would do so regularly if it came more frequently, for example every four minutes. In addition, 26% of the students and 12% of employees feel that they would need to know the schedule in order to regularly ride the bus on campus, assuming the present headways. Of course, if the bus came every four minutes, the schedule would become a moot point, as long as the gaps between the arrival of buses was regular.

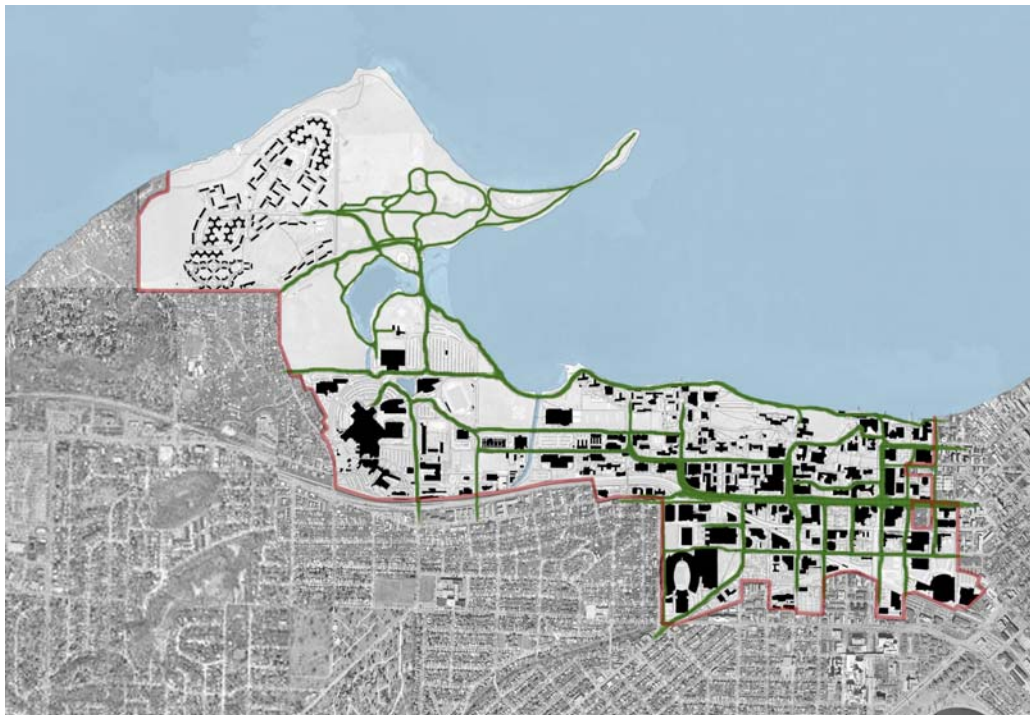
Fourth, transit routes are limited by the physical constraints of the road system it must use. For example, the tightness of the steep curve on Observatory Drive going up Bascom Hill prevents two buses from passing. Without reconfiguring this somewhat historic curve, routes cannot be regularly scheduled in both directions in this segment of Observatory Drive. Moreover, the campus lacks the kind of robust street grid that allows for a variety of different ways of crossing the campus. For example, Babcock Drive is one-way northbound from University Avenue north and, although Henry Mall allows for southbound travel, the median in University Avenue prevents a bus from crossing that street to reach Union South more directly. Thus, there is nearly a mile between southbound exits from the campus between Walnut Street and North Charter Street. The effect of this constrained pattern of streets is that a bus traveling to Union South must

continue east to North Charter Street (effectively past the Union) and then turn west on University Avenue, effectively reversing direction through a number of traffic signals.

Finally, unlike many other campuses with both commuter and intra-campus bus service, the University of Wisconsin-Madison's intra-campus buses have no clear or uniquely visible identity. As a result, infrequent or inexperienced bus riders cannot quickly distinguish a commuter bus from the bus that they feel they can trust to get them around on campus. The result is that they often avoid riding the bus altogether.

Bicycle Routes, Paths and Lanes

Not only is the University of Wisconsin-Madison well known for the number of commuters who use bicycles, but it is also well-known for the number of people who ride bicycles to and from activities on the campus itself. Facilities such as the Howard Temin Lakeshore Path and the contra bike lane on University Avenue conveniently connect many destinations within the campus itself as well as serve commuters to the campus. As a result, the number of bicycles moving on campus approaches 500 per hour in some locations. For example, every 15 minutes almost 150 bicycles cross University Avenue at North Park Street and North Charter Street in the middle of the afternoon, most of them in the same direction depending on class shifts. More typically, streets such as Walnut Street, Linden Drive, and Observatory Drive experience 20 to over 100 bicycles during peak 15-minute periods. Of course, these counts reflect bicycling during the Spring, Summer, and Fall when the weather is not inclement. During the winter and in inclement weather, most bicyclists seek other modes of transportation, although a significant number, for example, 3-5% of students, continue to bicycle even in "bad weather."



Bicycle Traffic Flows on UW-Madison Campus in 2004.

As good as the intra-campus bicycle system is, a number of obstacles confront those who now bicycle that also incline others to avoid bicycling on campus in the first place. Some of these problems are listed in the Campus Bicycle and Pedestrian Task List kept by the Campus Bicycle Pedestrian Sub Committee (See Appendix D.) In most respects, these problems are identical to those discussed earlier that also confront commuters who bicycle. Of course, cold winters and otherwise inclement weather compel a majority of bicyclists to leave their bikes at home—at least temporarily. Second, those who bicycle now as well as those who might otherwise be interested in bicycling are discouraged by a lack of efficient, direct routes in the western portion of the campus generally and in some other parts of the rest of campus as a result of few options for both north/south and east/west travel. These include east/west travel in the Bascom Hill area and north/south travel between Babcock Drive and Walnut St.

Third, parts of campus lack routes that many current and would-be bicyclists consider safe—that is, not exposed to automobile traffic. As noted earlier for bicycle commuters, many individuals do not feel comfortable traveling in the westbound bike lane on University Avenue between the bus lane and traffic lane. Although most do feel comfortable in the eastbound contra-flow lane on University Avenue, it is out of the way for many traveling from the southwestern campus to points east and north of University Avenue, including the Memorial Union and Red Gym. Additionally, making left turns north across University Avenue from the contra lane can be dangerous, particularly since pedestrians waiting to cross University Avenue will often spill into the bike lane. Although the lakeshore path provides a pleasant option for east/west bicycle travel, it does not directly serve parts of the campus further to the south. Meanwhile, Lathrop Drive does serve part of the campus between University Avenue and the lakeshore path, but many bicyclists find its steep hills too challenging and the street extends only between Park and Charter Streets. Just as problematic, many high-volume University streets lack bike lanes, including portions of Observatory Drive, Highland Avenue, Walnut Street, Linden Drive, and University Bay Drive.

Most other of the issues facing bicyclists apply to the campus in general. In some locations, the capacity of bike racks is insufficient. This has become a bigger problem in recent years such that in most locations the demand for bicycle racks exceeds supply. Moreover, as mentioned earlier for bicycle commuters, many bicyclists are eager to see amenities such as covered parking. Finally, the University lacks a comprehensive system of clearly signed bicycle routes that indicates where routes start and end.

Mopeds & Moped Parking

Although one could almost count the number of mopeds on campus on two hands just 10 years ago, the campus now counts almost 900 mopeds at academic buildings and other locations at peak class time during the school day. Hundreds of others are parked at residence halls and at apartments near the campus. Although a growing phenomenon at other campuses across the country, it appears that the University of Wisconsin-Madison has perhaps the highest single concentration of mopeds of any institution in the nation. (See Appendix C, Inventory and Location of Moped Parking - Fall 2005)

The results of this mushrooming in the number of mopeds on campus include the following:

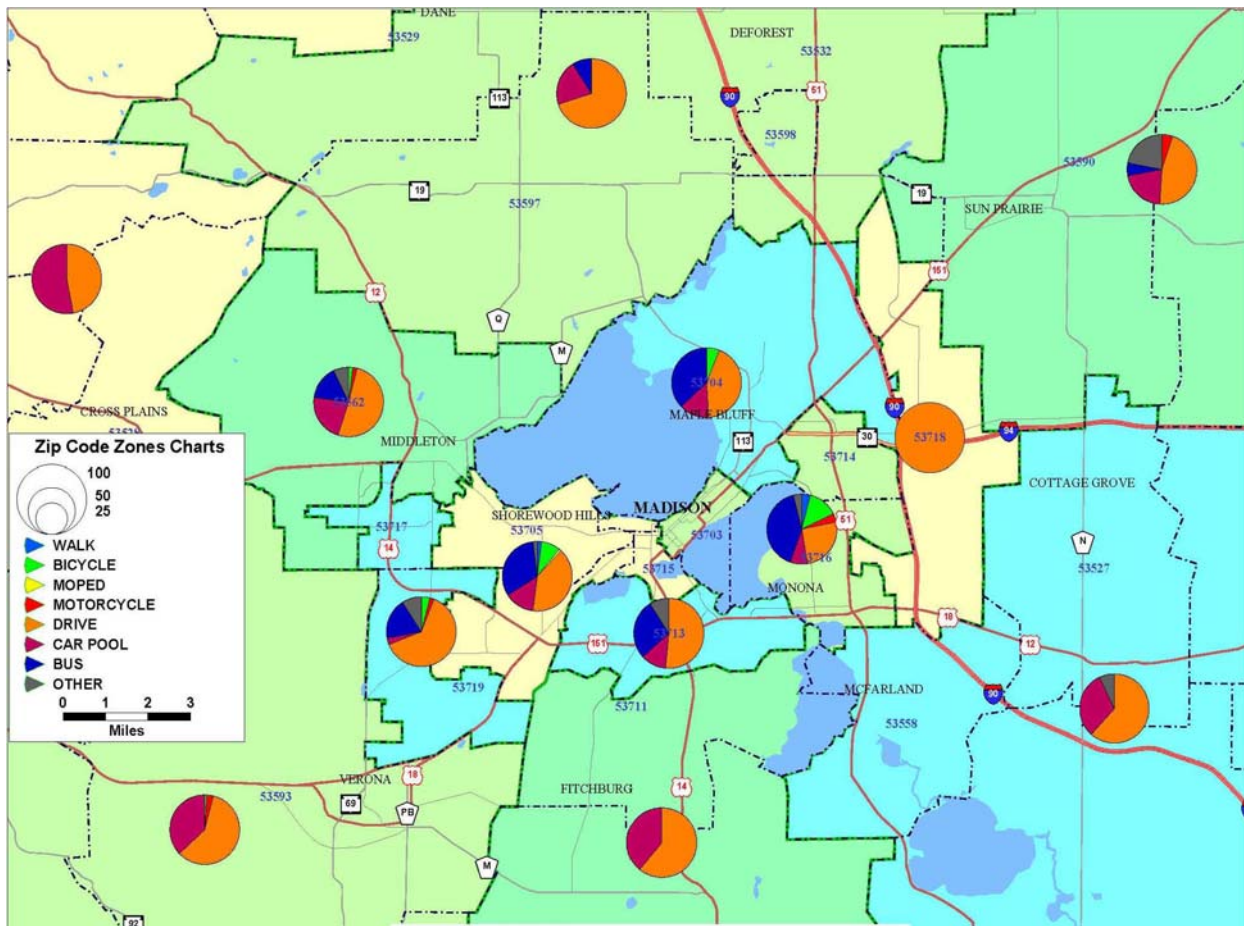
- Widespread conflicts with pedestrians as mopeds drive up wheelchair ramps and down sidewalks to the entrances of buildings.
- Parked mopeds blocking sidewalks and building entrances, including emergency evacuation routes.
- Mopeds parked in numbers that exceed available paved space and that impact landscaped grounds.
- Uncontrolled entry and exits from street traffic as mopeds use wheelchair ramps.
- Other moving violations, including riding with a passenger (which is not legal in Wisconsin), failure to use signals and appropriate lanes and not stopping at a controlled intersection.

Mopeds owned by University students and staff account for nearly all of the crashes in the City of Madison involving mopeds and the vast majority occur within or very near campus boundaries. For the year 2003-2004, there were 37 moped crashes with injuries serious enough to report to police.

Van and Car Pool Program

The University actively promotes carpool and vanpool programs. In addition to access to TDM programs, vanpool participants are automatically granted a parking permit for their first choice parking lot. Carpools are encouraged by access to the Dane County Ride Share program and by allowing participants to split the cost of a parking permit and apply it to more than one car. Van and carpool participants are also eligible for the free emergency ride home program.

In 2004, approximately 9% of employees carpooled to campus while 2% participated in a vanpool. Another 4.5% of all employees are regularly dropped off on campus by someone else in good weather and 6.5% in bad weather. Although rideshare usage is generally related to an employee's distance from the campus, levels of ridesharing are actually higher among those who live within Madison than those living in the surrounding communities.



Distribution of UW-Madison Van/Carpool Users and Other Modes in 2004.

Not surprisingly, the largest perceived impediment to ridesharing is its lack of flexibility relative to traveling alone in one's own private automobile. Thus, the improvement that would prove most attractive to potential van and carpool users is arranging arrival and departure times to more exactly fit the user's schedule, both in terms of non-standard work hours and daily variability. Nearly as important is the ability to occasionally drive themselves and a trip to campus that is fast enough to be nearly equivalent to driving alone. The former is really a function of the carpool's organization with regards to driving responsibilities, cost-sharing, etc. but is typically an implicit part of a carpool. Aside from the possible creation of high-occupancy vehicle (HOV) lanes on roads throughout the region (an effort beyond the University's purview), travel time points back to a need for improved coordination so that willing participants can locate a carpool near their home and achieve lower pickup times.

A final problem is the difficulty that potential vanpool members face with starting one in the first place. Initiators of a new van line must pay for the entire van rental and maintenance cost and any attendant costs no matter how many people are signed up in the beginning. Typical costs for operating a van from one of Madison's nearby suburban or rural towns can exceed \$225 per week (Sauk City). Meanwhile, a van sometimes needs to operate for a while to attract enough members to make the price reasonable on a per person basis. Once a vanpool has been

established with a full contingent of 15 members, costs are typically less than \$15 per week per person.

G. UTILITY SYSTEMS

(NOTE: The following information has been provided from the executive summary of the UW-Madison Utility Master Plan, developed in 2005 by a team of consultants lead by Affiliated Engineers, Inc. The full document can be found in the Facilities Planning & Management offices on campus.)

The UW has a combination of self-generated, municipal and utility owned systems that comprise the utility service on campus. The primary utilities included in this study are steam and condensate, compressed air, chilled water, electric power, IT systems, sanitary and storm sewers and domestic water. These utilities are distributed through a network of underground steam tunnels, direct buried piping systems and manholes/ductbanks for wiring systems. In addition to the piping and wiring distribution systems, there are a number of generation plants for the production of steam, compressed air, chilled water and electrical power. The primary plant locations and capacities are as indicated in the table below:

EXISTING PLANT CAPACITIES					
Plant	Primary Fuel Source	Steam Generation Capacity	Chilled Water Generation Capacity	Electric Generation Capacity	Compressed Air Generation Capacity
Charter Street Plant	Coal	800,000 PPHr	26,000 Tons	9.5 MW	8,300 SCFM
Walnut Street Plant	Natural Gas/ Fuel Oil	600,000 PPH	18,000 Tons	None	1,000 SCFM
West Campus Cogeneration Facility	Natural Gas/ Fuel Oil	500,000 PPH	20,000 Tons Expandable to 50,000 Tons	150 MW	None

There are three thermal energy plants serving the campus – Charter Street, Walnut Street and the West Campus Cogeneration Facility (WCCF). The Charter Street Plant was constructed in 1959 and is in good condition and has been well maintained, as all UW facilities have been. Some equipment replacement in this plant is necessary within the next 10-20 years, as all of the boilers are over 35 years of age and two of the cooling towers are over 30 years old. The Walnut Street Plant was constructed in 1975 and is in good condition and has been well maintained. Some renewal and equipment replacement will be required within the next 10 years as two of the boilers need re-tubing, portions of the cooling tower need replacement and some of the pumps are in need of replacement. The West Campus Cogeneration Facility (WCCF) was commissioned in late 2005 and there is a purchase agreement between Madison Gas & Electric (MGE) and UW for chilled water and steam.

There are over 25 miles of steam and condensate piping serving the campus with two pressure systems at 175 PSIG and 10 PSIG. Just about every building on campus is connected to the

steam system. The majority of the system is in boxed conduits with the remainder in walkable tunnels or direct buried installations with some of the piping dating back to 80 years ago.

The chilled water system is a more modern system with most of the distribution piping less than 40 years old. The system has about 8 miles of piping consisting of a combination of pre-stressed concrete piping and ductile iron piping directly buried or routed in steam tunnels.

The compressed air system on campus is used for temperature controls and other pneumatic outlets in buildings, plus is the motive force for many of the sanitary lift station pumps. The piping is distributed from the generation source in the Charter and Walnut Street plants through the steam tunnels to the buildings.

The campus signal system or information technology (IT) provides service to all buildings. There are three supernodes on campus, located in Computer Sciences, Peterson and Animal Science Buildings. Each supernode is connected to several nodal buildings which are connected to radial buildings. This interconnection is accomplished through a series of underground manholes and ductbanks, plus some wiring in the existing steam tunnels. The majority of this system is less than 20 years old and recent efforts are relocating the cable from the steam tunnels.

The primary electrical system serving UW uses a combination of 4.16 kV and 13.8 kV distribution voltages. Electric power is purchased from MGE at 13.8 kV and transformed on campus where required to the distribution voltage. The power is distributed through a series of underground ductbanks and manholes to transformers at individual buildings.

The sanitary sewer system operated by UW consists of a network of approximately 100,000 LF of underground piping and manholes of various age and condition. This network conveys wastewater from campus facilities to mains owned either by the City of Madison or the Madison Metropolitan Sewerage District. This system is supported by 11 pumping stations at various locations on campus.

The domestic water system on campus consists of approximately 28 miles of underground piping ranging in age from just recently installed to over 80 years old. The water is supplied to the majority of the campus by the City through 12 meter pits, plus 2 additional meter pits in Eagle Heights.

The storm sewer system on campus consists of approximately 23 miles of underground piping ranging in age from just recently installed to over 80 years old. There are two major drainage basins on campus, one that drains approximately 790 acres to Lake Mendota and the other that drains approximately 230 acres to Lake Monona.

H. SPACE NEEDS / EXPENDABLE BUILDINGS ANALYSIS

The UW-Madison requires modern academic and research facilities to meet the needs of its highly complex research and interdisciplinary programs. Several major capital projects in progress or planning will construct new space (Microbial Sciences, Grainger Hall, Interdisciplinary Research Complex, Chazen Museum, Biochemistry, Wisconsin Institute for Discovery, Human Ecology, Nursing, Music) or renovate existing buildings (Sterling Hall, Human Ecology) to meet the requirements of highly specialized academic and research programs in almost every school and college on campus. The new facilities will provide modern research laboratories, vivarium space, museum space, performance space, and contemporary instructional space. As part of this process, projects will remove outdated buildings and replace facilities which have exceeded their useful life and can no longer be retrofitted to meet modern day academic standards.

Major upgrades and additions of space for student and academic services and student life are also a vital component of the master plan. Obsolete and unsafe residence hall space will be removed (Ogg) and replaced with newer modern residence hall designs (Smith, Dayton). Additional residence hall capacity is planned in the lakeshore area to permit the university to house all incoming first year students who wish to live in on-campus residence facilities. The residence hall master plan calls for significant renovations of other halls (Chadbourne) and expands and improves food service operations (Gordon). New and consolidated space on campus (University Square, Park Street-Continuing Studies) seeks to improve the status of several student and academic services units (University Health, Student Activities Center, Registrar, Bursar, Student Financial Services). The Wisconsin Union master plan also proposes significant improvement and expansion of social and meeting space on campus.

The existing buildings on the main campus were analyzed during the master plan process by Facilities Planning & Management (FP&M) staff for their ability to meet the current program needs and serve the campus for many years into the future. In most cases, buildings that were recently built or remodeled were not included in the analysis.

Existing buildings were analyzed for the following items:

- Does the building have historic significance (as defined by being on the National Register of Historic Places or identified by the Wisconsin Historical Society as a potentially eligible building) and/or is it a pivotal or contributing building in an identified historic district?
- Is the building a heritage building or signature building on campus?
- Does the building meet current and projected functional needs and if not, can it be remodeled, renovated or reprogrammed?
- Does the facility have major building inadequacies related to its structure, HVAC, etc.?
- Is the existing site in demand for future development which has a higher & better use?

Based on the evaluation conducted, 13 buildings were identified to be in need of replacement. They include:

- Dairy Cattle Center
- Meat & Muscle Biology Laboratory
- Nutritional Sciences
- 1410 Engineering Drive
- Engineering Research Building
- 45 North Charter Street
- 115 North Mills Street
- Mifflin Street Warehouse
- School of Social Work
- Van Hise Hall
- Zoology Research Building
- Stovall Hall
- Union South

Based on the evaluation, the following buildings were identified to be potentially removed to provide space for new facilities on campus. Buildings are shown for removal in their projected phase over the next 3, six year increments and beyond. Actual timing of removal may change based on funding, approvals and campus priorities. In all cases, obviously, new facilities and locations for existing occupants of these buildings will need to be identified and constructed first to allow for appropriate phasing. The buildings suggested for removal include:

2007-2013

- Biochemistry Building – 1912 partial renovation
- Biochemistry Building – 1937 addition, partial renovation
- Biochemistry Building – 1956 addition
- 45 North Charter Street (UW Extension Bulk Mail Center)
- 1308 West Dayton Street (Hi Ray Hall)
- 1430 Linden Drive (Home Management House)
- Food Research Institute
- Harlow Primate Laboratory
- Meat & Muscle Biology Lab
- Meiklejohn House
- Ogg Hall
- Peterson Office Building
- Pre-School Laboratory
- Primate Center, 1971 & 1988 wings
- 317 North Randall Avenue (Old Safety/Post Office Building)
- 329-333 North Randall Avenue & 1357 University Avenue (Rennebohm)
- Air Force ROTC Building, 1327 University Avenue

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- Rust-Schreiner Hall
- Schuman Shelter (near Goodnight Hall)
- Seed Building
- Service Building
- Service Building Annex
- Union South
- 710, 714, 716 University Avenue (old storefront)
- 720, 722, 724 University Avenue (old storefront)
- 730-736 University Avenue (old storefront)
- 1301-1307 University Avenue (old storefront)
- 1313-1315 University Avenue (old storefront)
- 1319 University Avenue (old storefront)
- 1323-1325 University Avenue (old storefront)
- University Health Services, 1552 University Avenue

2013-2019

- Bradley Memorial Hospital
- Brodgen Psychology Building
- Extension Building
- King Hall Greenhouse
- 1910 Linden Drive, Army ROTC
- Middleton Building (a.k.a. Middleton Library)
- Old Genetics Building
- Poultry Research Laboratory
- Stovall Hall (non-university department moves off campus)

2019 & Beyond

- 115 North Mills Street (Physical Plant)
- 1410 Engineering Drive (Old Highway Lab)
- Agriculture Engineering Laboratory
- Animal Health & Biomedical Sciences Building
- Zoe Bayliss Co-op
- 206 Bernard Court (Bernie's Place)
- Biotron Laboratory
- 209 North Brooks Street
- 215-217 North Brooks Street
- Susan B. Davis Hall
- Mosse Humanities Building
- Engineering Research Building
- 505 Herrick Drive (Beet & Carrot Lab)
- 509 Herrick Drive (Beetles & Saplings Research)
- 525 Herrick Drive (Electrical Storage Facility)
- 925-927 West Johnson Street (old house)

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- 931-933 West Johnson Street (old house)
- 2105 Linden Drive (Pesticide Storage Facility)
- 2115 Linden Drive (Horticulture facility)
- Livestock Laboratory & Silo
- McClimon Memorial Track, press box, ticket booth and stands
- Bardeen Medical Labs
- Medical Sciences Center, Medical Sciences
- Medical Sciences Center, Service Memorial Institute
- Noland Zoology Building
- Nutritional Sciences
- Physical Plant, Grounds Storage Facility
- School of Social Work
- Van Hise Hall
- Kurt F. Wendt Library
- Zoology Research Building

I. CURRENT SUSTAINABILITY INITIATIVES

The University of Wisconsin-Madison continues to make strides in providing a sustainable campus to help us all understand how to have less of an impact on our precious environment. In the past several years, the university has made significant strides in implementing a variety of sustainability initiatives across campus. Those elements include:

Facilities Planning & Management projects

- Motor replacements in HVAC systems
- Occupancy sensors
- High efficiency fluorescent lights
- LED exit lights
- Steam trap repair/replacement
- Digital controls and monitoring
- Toilet replacement to low flow units
- Storm window installation
- Participation in comprehensive stormwater management permit program with all communities in the Lake Mendota watershed
- UW/MG&E cogeneration plant
- Increased cogeneration at Charter Street Heating Plant
- Listed on the “Best Workplaces for Commuters” nationally recognized list
- A reduction of throwaway newspaper waste
- Master plan decision to respect present university boundaries
- Master plan that preserves green space and increases green space in central campus
- Use of cogeneration at Charter St. heating plant and CoGen to reduce greenhouse gas emissions caused by electricity use
- Operable windows combined with switched HVAC in new dorms
- We Conserve program
- Construct sustainable buildings
- Master plan infill development
- Charter Street Heating Plant
 - Short term 15% less coal
 - Long term – new plant equipment to reduce reliance on coal

- Plan for replacing CFCs in chillers
- Transportation Demand Management programs – buses, bike infrastructure, carpools, flex parking, hybrid buses, community car, rail
- Fleet – hybrid cars
- Ultra-low sulfur and biodiesel for physical plant vehicles
- Chemical waste minimization, substitution, recycling
- HVAC upgrades to improve efficiency
- Fume Hood replacement and new safety cabinets
- Transition from paper processes to web applications – E-PRF, work orders, timesheets
- Increase street trees across campus
- Increase open spaces across campus
- Stormwater management – bioretention, porous pavements, rain gardens
- Low-energy lighting in parking garages
- Re-lamping across campus
- CARE/CURB remodeling – extends life of building
- Ozone alert days – limit mowing, replaced gas cans, improved filters
- Electric motor replacement
- Recycling programs

Facilities Planning & Management is also looking at new initiatives to help drive increased sustainability in all that we do and in all the buildings we develop. Some of those initiatives include:

- Develop a campus wide environmental policy
- Develop a campus wide sustainability policy
- Promote more use of telecommuting
- Implement staggered work hours (traffic flows better – less start/stop time)
- Investigate a holiday shutdown of campus
- Provide more incentives for “green education” and pedagogy
- Reduce paper consumptions, especially newspapers on campus that only get read once; encourage reuse and on-line new services
- Increase recycling efforts
- Install recycling containers outside and especially around event centers
- Improve vending machines so they use less energy
- Increase our “green purchasing”

- Build more with “green/sustainable” products.
- Recycle lab plastics
- Reduce use of plastic products
- Install green roofs to help reduce stormwater impacts and increase localized cooling
- Reduce multiple vendor deliveries
- Institute electronic bill paying (receipt of invoices and payment to vendors)
- Purchase green cleaning products
- Investigate alternative de-icing products
- Provide FP&M staff with more education on sustainability
- Hire a sustainability coordinator to increase public relations, provide grant writing and grant administration
- Reduce lawn mowing – create no mow zones
- Provide RFID units in parking garages
- Calculate carbon sink potential of marshes and the lakeshore nature preserve; how would that reduce our overall carbon footprint?
- Consider other plant choices that are more native to this area and have less of an impact on the environment
- Purchase alternate fuel mowers
- Meet more often via teleconferencing/videoconferencing
- Stop idling cars

J. SUMMARY OF OBSERVATIONS

The UW-Madison campus has a powerful setting and heritage that is now sometimes hard to see. The prominence of these features can and should be renewed if the campus wants to grow and continue to maintain its preeminence among the top research universities in the world. There is a strong commitment to the history of this campus and a connection to the historic places that make up this university. Future growth of the campus should preserve these spaces and places and new buildings should emulate the elements of design (scale, material, relationship) found in this historic places that make them so cherished. The heritage of the campus should influence the future.

There is important and prestigious teaching, research, and outreach going on in these buildings and grounds. To continue to thrive, facilities must be periodically retooled to reflect the current needs.

The rapid growth of campus in the 1960's and 1970's has left the campus with many outmoded facilities--built for special uses, with an extreme emphasis on economy of construction rather than flexibility.

The campus is not well connected physically. The scale, quality and character of communal public spaces (inside and out) are important in created a well defined and dignified campus. The integration of the south and west campus to the campus core is an important goal. Enhancements to the campus edges, especially on the south campus, is also important.

No significant enrollment or boundary changes are anticipated.

THEREFORE, we need to “reinvent ourselves in place”.
