Chapter 1
Data Collection
Historic buildings and landscape on the Lawrence campus
The Data Collection phase of the planning process helped the planning team develop a deep understanding of existing campus culture, conditions, assets, deficiencies, strengths, issues, and desired growth aspirations. This understanding provided the basis from which to begin analyzing campus patterns, and ultimately develop planning concepts to support the strategic plan.

This chapter presents an overview of existing campus context and conditions. It broadly describes the regional context of Lawrence, the host community. It then gives an understanding of the important and rich history of planning on the Lawrence campus, from KU’s founding to present day. Academic and social context provides perspective on the campus experience.

Current conditions of multiple campus systems, such as land use, facilities and grounds, circulation and parking, infrastructure, and space are examined to provide a baseline understanding of physical issues and opportunities.

The information presented within this chapter relates to the Lawrence campus. More general information regarding the current academic climate is applicable to the Edwards campus as well.

A full description of the Edwards campus can be found in Chapter 3.
REGION: NATURAL HISTORY AND THE SHAPING OF THE LAND

The Lawrence region’s natural history, with fertile river valleys shaped by glaciation and other long-term forces of nature, illustrates how towns, trails and railroads, and ultimately KU, developed where they did. The siting of roads, buildings, and spaces are pragmatic site responses to the Kansas landscape, shaped over millennia.

THE PRAIRIE LEGACY

When European settlers first gazed on the tall grasslands of the Midwest, they had no word for “prairie.” There was nothing in Western or Central Europe that was comparable in terms of its scale. Nor was there any landscape like this in the eastern United States from which many of Lawrence’s first settlers and KU’s founders emigrated. Some early settlers originally used the Latin term *Terra Patria*, which meant “pasture land,” because it reminded them of little pasture lands. The prairie’s shallow soils do not contain much moisture, nor do they support large forest trees, but they do support grasses.

This region experiences hot, humid summers, with rainfall peaking at an average of about six inches during June. Daily high temperatures exceed 90 degrees in July. Winters are cold with little precipitation, and temperatures fall well below freezing, occasionally dropping into the negative digits. Winds tend to be gusty for much of the year, with prevailing southerly winds in June, and alternating between southerly and northerly winds in the winter.
LAWRENCE

Lawrence lies between the Kansas and Wakarusa rivers, about 45 minutes west of the greater Kansas City area, along Interstate 70 (Kansas Turnpike). The founders chose this site for its natural beauty, and because the large hill, now known as Mount Oread, served as a landmark and lookout for travelers along the Oregon Trail. The town was founded during the years of tumult preceding the Civil War by members of the New England Emigrant Aid Company, in an effort to preserve Kansas as a slave-free territory. Conflicts between pro- and anti-slavery factions culminated in a series of bloodletting raids that came to be known as “Bleeding Kansas.”

Modern Lawrence is known for its livability, its picturesque and vital downtown district, and the presence of an arts and music scene. The city’s website makes note of several highlights. According to the National Endowment for the Arts [2006-2010 data], Lawrence ranks 12th among U.S. cities for the percentage of professional artists in its workforce. The population is highly educated, ranked sixth in the nation by the U.S. Census Bureau for per capita bachelor degrees. While KU is the largest public employer, the two largest private employers are General Dynamics and Hallmark. Lawrence has been named one of the best places to retire by U.S. News & World Report [2007] and one of America’s ten best college towns by the College Enquirer [2014].

Mount Oread remains the predominant landmark in the Lawrence vicinity. It rises 170 feet above downtown Lawrence, and the iconic silhouette of Fraser Hall’s twin flagpole towers is visible for miles. The University of Kansas occupies the whole of Mount Oread.
HISTORY OF PLANNING AT KU

THREE PERIODS OF HISTORICAL DEVELOPMENT

It is important to understand how the Lawrence campus developed, and the intentions of previous planning efforts, for the 2014-2024 Campus Master Plan to find its place in this continuum.

George Kessler and Henry Wright of St. Louis designed the first campus master plan in 1904. The plan helped the university evolve from a series of “outdoor rooms,” enclosed by campus buildings with focused entry points from the community, to a more linear vision.

The main feature of Kessler’s campus plan was a formal grand mall running north between a main academic building (occupying the site where Wescoe Hall is located today) to a recreation complex at the bottom of the hill (near the current location of Memorial Stadium). The plan proposed naturalistic parks flanking the mall on both sides. Although never implemented, this imaginary axis can be identified today as an informal definition of the Hill Walk route, a walk traditionally made by graduates at commencement. Potter Lake and Marvin Grove continue to serve as important preserved park elements.

Views outward to the horizon were very clear and prominent in early years, due to the unique ridge-top location of the campus on a mostly barren prairie. Many of these views remain, save for the growth of vegetation and buildings within historic viewsheds.

1904 George Kessler Master Plan drawing
The Kansas City landscape architectural firm of Hare and Hare was hired to produce the second campus development plan of 1928 and subsequent update in 1932. The firm also completed numerous site plans, planting plans, and details for campus development. One example of Hare and Hare’s influence was a stand of American Elms lining Jayhawk Boulevard; these were lost to Dutch elm disease in the 1970s.

1930s – 1970s
Planning was handled internally at KU after Hare and Hare. The first campus landscape architect, Alton Thomas, served the campus from 1948 to 1983. Thomas sought balance in the use of deciduous and evergreen plantings, many of which have now been lost due to age, disease, and storm damage.

Both Thomas and Keith Lawton, Vice Chancellor and Director of Facilities Planning, influenced post-World War II development, including the construction of Memorial Drive, the location of residence halls, and the development of land between Jayhawk Boulevard and Sunnyside Avenue. In the 1950s, Lawton strove to meet the needs unique to a public institution of higher education in times of tremendous social and economic transformation. Lawton maintained sound basic concepts and continuity for the physical planning process, and was instrumental in the 1973 campus master planning process.
CONTEMPORARY PLANNING INITIATIVES

The 1973 Physical Development Plan
This plan established many of the planning assumptions held today, including recognizing Jayhawk Boulevard as the campus’ academic center and prioritizing preservation of green spaces. The plan was completed with the assistance of Caudill Rowlett Scott, and VanDoren Hazard Stallings Schnacke. The Physical Development Planning Workbook, and the Planning Manual, contained long-range physical recommendations for campus development, interpreting the campus program and institutional needs in terms of physical concepts. These included land use, circulation and utility systems, environmental design guidelines for buildings, and general landscape elements. The 1973 plan sought to optimize the academic mission, improve functional efficiency, visual appearance, campus-community relationships, and unify the physical elements of campus into a clearly defined, human-scale, usable environment. Major themes included:

- Reinforcement of the academic core, creating a sense of physical unity through organizing buildings, landscape elements, spaces, and their associated activities in such a manner that the overall physical needs of the academic mission were served efficiently in the central campus.
- Placement of service and support functions and the heavily research-oriented and specialized, non-traditional teaching facilities on the periphery of campus to free the academic core for traditional teaching and interrelated activities.
• Improvement of vehicular and pedestrian circulation systems, enhancing campus access, providing for the smooth diversion of cross-city traffic around campus, and reducing points of vehicular and pedestrian conflict.

The 1997 Campus Plan
This plan was developed internally and provided guidelines for the physical development of the Lawrence campus for 20 years. The 1997 plan set the groundwork for future development for land use, access, image, and environment. There were two guiding principles:
• Preserve the beauty of Mount Oread.
• Create an environment that demonstrates respect for learning.

The plan focused on the physical development process and addressed:
• A means to involve campus constituencies in the formulation of a campus plan.
• The future quality and character of the physical campus environment.
• A plan for the visual quality of the campus, including landscape enhancement and overall campus beautification.
• Campus development guidelines regarding future land use and development patterns.
• Facility needs, including academic, research, student service, and institutional support programs.
• Future buildable sites and adjacent areas of potential growth.
• Long-term concerns regarding the safety and physical design of the campus.
• Transportation needs with the physical layout and use of the campus.

The 2002 Landscape Master Plan
This plan was pursued as a recommendation of the 1997 plan to formulate a vision and strategy for improving the campus image, to encourage an appreciation of its existing conditions and potential, and to provide a general direction for preserving and enhancing the campus landscape. The plan was created with the assistance of Jeffrey L. Bruce and Company, Forcade and Associates, Mark M. Mahady and Associates, and Turf Diagnostics and Design. It uses the term “landscape” in its broadest sense to cover all aspects of the landscape, including open space, plant materials, the contour of the land, and the nature of walls, steps, pavements, buildings, and furnishings. The specific objectives of the Landscape Master Plan included:

• Coordinating elements and concepts of the 1997 Campus Plan, including parking, vehicular movement, pedestrian access, and bicycle routes.
• Illustrating specific landscape recommendations, incorporating organizational principles of land use, access, image, and environment.
• Establishing concepts and recommendations for improving the exterior environment of the campus that reflect an appropriate scale and variety of materials to support the campus image and environmental quality.
• Providing design guidance to improve the functional characteristics and visual appearance of the component elements that comprise the exterior environment of the campus.
• Identifying and designing, to the schematic level, certain elements of the campus landscape plan, such as campus entries, Jayhawk Boulevard, Mid-Hill Walk, and Memorial Drive.
• Evaluating maintenance practices and making recommendations to support maintenance procedures, including cost analysis.
• Establishing a wayfinding system supported by an updated campus graphics system.

The 2008 Campus Heritage Plan

This plan was funded by a grant from the Getty Foundation to develop a consistent strategy and process for the approach to historic preservation and conservation for campus projects of all scales. The consulting firms of Treanor Architects and Jeffrey L. Bruce and Company worked closely with the steering committee to develop a plan to identify the best way to allow necessary growth, while preserving the historic integrity of campus.

It maintains a strong focus on “landscape” history, per the broader definition in the Landscape Master Plan. Within this landscape, the structures, notable historic buildings, and various other campus features all play a role in defining the campus context.
Five Lawrence campus buildings are currently listed in the National Register of Historic Places: Strong Hall, Bailey Hall, Lippincott Hall, Dyche Hall, and Spooner Hall. The study examined timeframes of historical significance for the university, specifically in three major “Periods of Development” ending in 1901, 1928, and 1957. During these significant periods, the work of a previous generation came to fruition, and the plans, visions, and next wave of social action, led to a new set of significant physical changes.

The year 1957 was selected as the study process end date, because it coincided with the 50-year requirement to qualify buildings and sites for National Register of Historic Places eligibility.

The objectives of the Campus Heritage Plan included:

- Understanding the unique role of the Mount Oread site in the founding and growth of the campus.
- Identifying “Periods of Development,” when the campus exhibited significant changes in formative characteristics related to site, architectural, and landscape development.
- Creating historic contexts for understanding the value and relative importance of sites, buildings, and landscapes from all periods.
- Documenting the most important remaining vestiges and lost features of the historic campus to assess their relative importance within given historic contexts.
- Clarifying the Environ review and capital planning processes by identifying the most appropriate, sustainable, and cost-effective treatments for historic resources.
- Creating a base of historic understanding of the evolution of campus and its historic resources to inform future projects that may impact the campus environment.
- Committing to stewardship of the historic physical attributes of the KU campus in Lawrence.

The complete Campus Heritage Plan can be found at dcm.ku.edu/campus-heritage-plan
The Campus Sustainability Plan: Building Sustainable Traditions

KU’s Campus Sustainability Plan, completed in 2011, was commissioned by Chancellor Bernadette Gray-Little. The plan sets overarching goals and outlines specific strategies for creating a more sustainable campus in nine key areas: administration, planning and development, curriculum and research, student life, energy, built environment, campus grounds, procurement, waste, and transportation. Guiding these goals is a broader vision of the campus as a living laboratory to foster an engaged, adaptive, and efficient campus community. By incorporating sustainable practices into core functions, the university will be able to make decisions that protect its natural ecosystems, create economic prosperity, and treat all people with equality and respect.
Key goals of the plan that support planning initiatives for the Lawrence campus include:

- Integrate environmental, economic, and social sustainability in ongoing administrative, developmental, and institutional planning decisions.
- Utilize the campus as a living laboratory.
- Establish a framework for making long-term energy-related decisions.
- Reduce energy consumption throughout campus.
- Transition from a carbon-based system to a reliable renewable energy system.
- Create a built environment that enhances and sustains the human, environmental and economic well-being of the campus.
- Preserve campus and community culture, history, and space.
- Maintain the campus landscape using sustainable practices.
- Reduce stormwater runoff.
- Encourage the purchase of more sustainable products.
- Reduce the amount and impact of landfill waste.
- Create an environment that supports a multi-modal transportation system.

The plan approaches “sustainability” in the broadest interpretation of the term. Planning with sustainability as a core value is viewed as an opportunity to build a healthy, resilient community, where everyone has access to necessary resources to achieve a high quality of life. Implementing the plan under this definition also considers KU’s impacts on its relationship with the surrounding community.

More about the Campus Sustainability Plan can be found at sustain.ku.edu/sites/sustain.ku.edu/files/docs/sustainabilityplanweb.pdf

ADA Review Task Force Report

By law, KU must comply with the 2010 Americans with Disabilities Act Accessibility Standards for all new construction. However, KU aspires to do more than meet the letter of the law. The recommendations of the review are intended to position KU to become a more inclusive and accessible campus community and to help achieve Bold Aspirations Goal 5: Developing Excellence in People.

A comprehensive review of the KU Lawrence campus, including facilities design and construction, was completed by a special task force and submitted to the Provost in July 2011. The report emphasizes the value of universal accessibility for all new construction.

More about the ADA Review Task Force Report can be found at provost.ku.edu/sites/provost.drupal.ku.edu/files/docs/ada-review-task-force-report-201107.pdf
Provisions to create a university in Kansas were included in the constitution when Kansas became a state in 1861. Property for the university was donated privately by former Governor Charles L. Robinson. The institution opened in 1866, initially as a preparatory school, adding college-level classes three years later. The first matriculating class included 26 women and 29 men, making KU one of the earliest schools to admit men and women equally.

The university continued to grow in size and significance in the following decades. Schools of Engineering and Law were added in the 1890s, and a four-year medical school was established in 1905. In 1909, the University of Kansas joined the prestigious Association of American Universities. In 1938, the Governor and Board of Regents took early action to promote civil rights by establishing a policy to enable African American students to complete educational programs at the KU School of Medicine.

Today, KU boasts 13 schools, covering more than 345 degree programs, including nearly 50 nationally ranked graduate programs. KU has more than 30 recognized research centers and institutes, including the Center for Remote Sensing of Ice Sheets and Life Span Institute. KU is ranked 47th among public universities by *U.S. News and World Report* [2014].
There are many campus traditions that KU students, faculty, and staff have developed over the history of the institution. Some, such as swimming in Potter Lake, have not survived, but most continue to thrive. The buildings and grounds of campus play a major role in stimulating these social events and cultural traditions, which range from daily routine to once in a lifetime experiences. Memories of these experiences foster alumni loyalty.

Any discussion of KU traditions must include the university’s relationship to basketball. James Naismith, inventor of the game, brought his fledgling sport to KU in 1898, establishing one of the great legacies in collegiate sports. Many KU traditions center on athletic events, including the world famous “Rock Chalk” chant, “Waving the Wheat,” and the Jayhawk mascot, a mythical and iconic figure. Allen Fieldhouse is the site of many continuing traditions for students, alumni, and the Lawrence community.
On a daily basis, the end of hourly classes is announced by a steam whistle, originally nicknamed “Big Tooter.” First used in 1912 to signal wake-up and curfew calls, it quickly became an efficient means of synchronizing class changes. It remains a unique KU campus tradition, serving as a reminder that the total sensory experience of a place creates the strongest memories and feelings of attachment.

The Campanile Hill graduation walk, often identified by students as “Walking the Hill,” is a commencement tradition. New graduates stream through the Campanile and down the slope of Mount Oread to the ceremony in Memorial Stadium. This momentous event combines campus history, beauty, and celebration into one of the defining traditions on the Lawrence campus.

As new campus places are developed in the master plan, both in Lawrence and at Edwards, they will be designed to facilitate functional and civic uses that enhance learning, engage the campus community, and promote new traditions.
KU’s Lawrence campus is considered to be one of the most beautiful in the nation, with forested slopes and significant historic green spaces and buildings arrayed along Mount Oread. The historic core of Main Campus is located along Jayhawk Boulevard, an alignment first envisioned in the 1904 George Kessler master plan. This thread of road, running in a horseshoe along the Mount Oread ridgeline, connects a series of historic stone and brick structures that frame stunning vistas over the Kansas plain. The campus and its iconic buildings can be seen for miles.

Marvin Grove and Potter Lake, naturalized green spaces preserved in the bowl to the north, slope down and merge into the land surrounding Memorial Stadium. These are the signature elements of the Lawrence campus. This typology is unique in campus design and defines the campus experience.

The heart of the KU campus was listed on the Register of Historic Kansas Places in 2012 and on the National Register of Historic Places in 2013.
The University of Kansas Historic District is the only one of its kind in the state. It covers the period of 1863 to 1951 and is comprised of 52 resources including buildings, landmarks, and landscapes. Gaining new recognition through inclusion in the district are buildings such as Watson Library, landmarks such as the World War II Memorial Campanile, and landscapes such as The Hill. The boundaries of this district encompass the academic core on each side of Jayhawk Boulevard and include historic components of the KU landscape, principally the green space to the north of Memorial Drive and the scholarship hall area to the east.

The East Historic District also received a National Register of Historic Places designation in 2014. The district covers the period of 1912 to 1963 and contains 15 contributing buildings and objects related to student housing and student life. The district includes eight scholarship halls, the Chancellor’s residence, and Danforth Chapel.

Figure 1-1 outlines both Historic Districts.

See more at dcm.ku.edu/ku-buildings
CAMPUS STRUCTURE

Even with KU’s defining ridge and valley landforms, there is an informal integration between the campus and the small town urban street grid on the north and east campus edges. The city of Lawrence grew outward from downtown and the river to meet the campus at the top of the hill at Oread Avenue. To the north, the city lies beyond the stadium in the valley.

The campus has grown considerably beyond the ridge, down the slope, onto the plain to the south, and across to Daisy Hill to the west. Campus growth over time, to the south and west, parallels that of Lawrence. Land availability was the primary factor for growth in this direction. Figure 1-2 shows the movement of the center of campus to the southwest.

The grid of greater Lawrence, which reflects an agricultural model used by land planners, uses sections of one square mile, which can then be further divided. This grid influences the larger campus structure, especially the West District, which is comprised of three quarter sections. (For reference, the master plan defines three campus districts as mapped in Figure 1-3). The Central District, from Naismith Drive to Iowa Street, and 15th Street to 19th Street, comprises one quarter section as smaller blocks give way to a more suburban form. The district disrupts and imposes a different value to the streets, reflecting the scale of different periods of development and land use.

While development of the West District began more than 40 years ago, there has been a relatively recent growth of programs and activities due to limited sites in the campus core and the availability of KU Endowment owned and managed land. This has shifted KU’s center of balance dramatically toward the Central District around the sites of engineering, law, and athletics. The West District continues to constitute a tremendous land bank opportunity.

The three districts each have different densities reflective of historic growth patterns and periods of development. The suburban development pattern of the Central District, the district with the most mixed use, including housing, classrooms, recreation, and large-scale parking, has utilized a majority of the land there, prompting newer campus growth to cross Iowa Street into the West District. Moving research and academic programs to the west has provided the opportunity for growth, but distances these programs from the academic core. It has also created the need for extended infrastructure and transit service.
FIGURE 1-3: CAMPUS DISTRICTS
Figure 1-4 illustrates the topographic challenges that have faced the University of Kansas as it has grown. The brick-brown color is the ridgeline along Mount Oread, where the core campus was established. It is the highest point on campus. Subsequent development occurred on the North District hillside south of Jayhawk Boulevard. The most recent growth in the Central District has occurred in the valley, wrapped by the ridgeline. Future campus growth will continue in this flatter area, as well as in the West District, where it is easier to construct large footprint buildings required by science and research.
The ridgeline and “fingers” produce six different watersheds across campus, as shown in Figure 1-5. The West District has the only remaining natural drainage system. Natural drainage patterns have largely been engineered in the North and Central districts, especially on the north and east edges, where the original landform has been urbanized. Stormwater runoff affecting the neighboring community, especially south of the Naismith Watershed, is an issue that KU and the City of Lawrence are working to resolve.
LAND USE

FIGURE 1-6: EXISTING LAND USE

- ACADEMIC/RESEARCH
- HOUSING
- OUTREACH
- SUPPORT
- RECREATION
- ATHLETICS
- PARTNERSHIP
- OPEN/GREEN SPACE
- UNDEVELOPED
LAND USE
Figure 1-6 shows existing land use by function to understand patterns, placement, adjacencies, and overlap of land uses. This allows analysis of where different types of new development might be placed.

FUNCTIONAL AREA DEFINITIONS
Academic and/or Research
• Primary locations and facilities for the academic/research units of the university. Includes some other ancillary uses, such as parking, administration, and support.

Housing
• Primary locations and facilities for the residence life programs to include room and board functions. Includes ancillary uses, such as parking, recreation, administration, and support.

Outreach
• Mixed-use containing those functions and facilities that attract, appeal to, and serve a broader constituency of the university community. A theater is a good example of a facility that has both academic and public functions. Includes visitor parking.

Support
• Support land uses are ancillary to the teaching, research, and service functions of the university to include parking, operations, and physical plant/support functions of the institution.

Recreation
• The concentrated land use of playing surfaces and buildings for organized recreation and club sports activities.
• Some formal and much informal recreation generally is distributed among other land use categories.

Athletics
• Stadia and playing surfaces dedicated to the student athlete for practice and competition.
• Athletic facilities frequently are used for other assembly functions and programing. They can and do overlay with outreach functions.

Partnership
• A relatively new land use, partnership, can be defined by the need of an institution to leverage land and resources in a way that supports the university’s mission through collaboration with private sector development and/or other public, governmental, and institutional entities. An existing example of partnership is the Bioscience and Technology Business Center.

Mixed-Use
• A combination of uses is accommodated to create an environment that is greater than the sum of its parts and somewhat more urban. Housing, retail, food service, support, and even academic uses sometimes are integrated in this way.

Open Space
• The intentional reservation of land for passive uses, iconic value, and/or environmental quality. Sometimes these accommodate recreation.

Undeveloped
• Land that has not been assigned value for future development, for example, forest, fallow fields, or temporary agricultural use.

As Figure 1-6 indicates, the 960-acre KU campus is a fully mixed-use environment that spans academic/research, residential, recreational, outreach, partnership, and support land uses, among others. However, individual use areas generally do not overlap and have clear boundaries. This indicates consolidation of resources in specific areas, but also requires individuals to move from one area to another to access different uses during the day.

The vast majority of the academic/research area is contiguous, with its heart on the ridge along Jayhawk Boulevard, but also to its south and west. The West District supports some academic functions, particularly the School of Pharmacy.

Student housing is located outside of core campus at the perimeter of the North and Central districts. Historic housing locations are embedded in surrounding neighborhoods to the north, east, and northwest, while post-war era housing resides at the edge of the Central District to the south and west.
This arrangement requires large-scale movement of students between housing and academic areas throughout the course of the day. “Wescoe Beach,” a plaza outside of Wescoe Hall, is a good example, having periods of intense activity during the day and very little activity at night.

Academic/research, housing, athletics, recreation, and outreach areas are generally compact land uses and individually walkable. Distances between areas and topography (slope) create challenges and some disconnects for pedestrians. The robust campus transit system efficiently moves large volumes of people, but at a cost.

This land use arrangement is not atypical of other institutions, but it may be more pronounced on the Lawrence campus due to the land form. Topography is a key factor in consolidating similar land uses in order to facilitate ease of movement. Sharing resources through adjacency is clearly another important factor.

Outreach areas have a degree of overlap with other uses, especially in association with athletics and performing arts. These uses are defined by having both academic and event spaces serving students and the larger community. Outreach areas are well located adjacent to campus gateways.
Support functions are mostly sited appropriately in perimeter locations. Large surface parking areas, defined as support, are situated adjacent to campus access points. Clear pathways connecting parking to the academic/research areas have been established, but are not fully accessible.

New campus access points have developed as the campus has grown to the south and west. Historic campus gateways, such as the Chi Omega Fountain entrance, are still considered iconic gateways. However, important new gateway conditions occur at 15th Street and Iowa Street, and 19th Street and Iowa Street. The most developed arrival sequence is along Naismith Drive, north of 19th Street to Sunnyside Avenue. West District boundaries are much clearer, as they coincide either with major city roadways or woodlands.

Though the Central and West districts are separated only by Iowa Street, a U.S. highway cut through the ridge, this condition makes the two feel disconnected, despite being contiguous. The West District contributes to the overall functional needs of KU as a land resource for programs that could not be sited in the campus core. Many programs sited in the West District were chosen because they operate somewhat independently. For example, KU Endowment, Lied Center, and the Robert J. Dole Institute of Politics are a few of the major occupants.

West District is comprised of three quarter sections, which are connected to the Central District along Iowa Street between Bob Billings Parkway and 19th Street. Most development has occurred along the eastern edge at Iowa Street containing academic/research, outreach, support, and recreation uses. Support uses also occur along Bob Billings and the Yankee Tank Creek. Approaches to campus from the west and south are increasingly important, driven by Lawrence’s growth and extended regional roadway improvements.

Open space in the North and Central districts is amassed on the hillside sloping to Memorial Stadium. Potter Lake, Marvin Grove, and the Campanile provide an inward park-like perspective contrasted with the Mount Oread ridge, which provides exceptional encompassing views to the horizon. The vistas in and out give a strong sense of visual space to the campus. With the exception of some favorite lawn areas, such as that in front of Strong Hall, there is a notable absence of classic collegiate quadrangle and interstitial space, as it is difficult to develop on the steeper slopes. The lawn area between Jayhawk Boulevard and Sunnyside Avenue lacks a coherent spatial network, but presents an opportunity for better defined and usable open spaces. There are great front lawns and more formalized civic open spaces associated with landmark buildings, such as Fraser Hall and Allen Fieldhouse. There are other smaller spaces, such as Mississippi Terrace and Prairie Acre, that contribute to a more personally scaled social realm.

The West District has significant amounts of undeveloped open space, as well as the legacy Pioneer Cemetery near the Irving Hill Road overpass. Hilltop and hillside development patterns, with natural drainage and forested slopes, present a pleasing aesthetic and an opportunity to reinforce naturalistic environments. These stand in significant contrast to large fields of parking at the Lied Center and the Park & Ride facility at the north and south ends of the district. Every effort needs to be made to develop the remainder of this land with respect for the natural land form, sustainable development, and drainage patterns.
Built on the ridge of Mount Oread, long views to the horizon always have been one of the defining features of the North District. The open spaces that exist can be characterized as cultural landscapes which have taken on meaning beyond their function and beauty to become integral parts of the university’s institutional identity. Marvin Grove, the Hill, and Potter Lake are the best examples.

As the oldest part of campus, the North District includes superb examples of landscape architectural styles of the last 150 years. These can help to inform planting and material selections for the entire campus. Design precedents also include some contemporary expansion areas within the Central and West districts of campus.

The university’s Campus Heritage Plan studied the North District’s landscape architectural legacy in depth and developed an understanding of the major periods and influences.

Relevant landscape precedents from the three distinct periods of campus landscape development are seen in all directions from the ridge. The historic core of campus along Jayhawk Boulevard transitions down the slope to the north into a pastoral setting characterized by scattered specimen plantings of mature trees and open lawns. Naturalistic groves of overstory trees were planted in the 1800s to provide shade from the summer sun.

Jayhawk Boulevard, with its consistent building setbacks and simple sidewalks paralleling the street, defines the primary landscape function for movement and circulation. Only the plaza on the north side of Wescoe, and the plaza in front of the Memorial Union, are heavily utilized as social spaces for students and activities. The North District has few other passive recreation spaces for more intimate and personal reflection.

A long-time challenge for the university has been to provide accessible pedestrian routes to the top of the hill. The slope from Jayhawk Boulevard south to Sunnyside would benefit from a central pedestrian corridor, helping to clarify navigation and improve accessibility.

Study of early landscape treatments on campus reveal that the steep slopes surrounding the ridge were forested with a rich diversity of plants and trees. Restoration of these plant communities not only returns a historic element to the campus, but also mitigates the impact of stormwater runoff, improves biodiversity, stabilize erodible soils, and reduces landscape maintenance.

The historic landscape legacy that has defined the North District for the past 150 years is in danger of disappearing, due to pressure from many diverse forces that are degrading the landscape. Reinvestment in these landscape assets is critical to ecosystem balance, while stabilizing the loss of plant material within the cultural landscape and stemming the reduction of ecological function.

The most dramatic threat is the declining health and viability of the campus’ mature trees. Limited efforts have been undertaken to plant new vegetation at a rate that offsets the ravages of Kansas’ severe climate and the ultimate maturation and succession of the urban forest. Designed landscapes in the historic core, such as Marvin Grove, have reached maturity, with large portions of the plantings of uniform age. Programs are needed to interplant these historic landscapes so that age diversity ensures a healthy forest succession plan into the next generation.
THE CENTRAL DISTRICT

Bounded by Iowa Street on the west and post-war residential Lawrence neighborhoods to the south, the Central District is a collection of sub-zones planned at various times. This campus district is visually complex and varied in composition, as a transition between the density of Sunnyside Avenue, south to the gentle, open terrain of 19th Street. Despite its lack of visual recognition, the Central District, much like Mount Oread in the North District, is built on a topographically dramatic site with significant grade changes moving to the west. The essential nature of this area as a slope is not well articulated by existing development patterns. Subtle vistas that exist to the south and east would provide greater orientation, if revealed.

Entering campus from the south, and emerging north in tandem with the city grid, Naismith Drive is the primary open space corridor defining the Central District. As a historically important open space, Naismith Drive should be preserved and enhanced. It functions as an important, though congested, vehicular corridor, but underserves pedestrian circulation and activities. Apart from Naismith Drive, the character of the Central District lacks structured open space, with very few outdoor social spaces to enliven the educational experience.

There are limited natural landscape expressions and relatively low biodiversity in the vegetation of the Central District. The most important examples of the post-modern work of landscape architect Alton Thomas along Sunnyside Avenue, Naismith Drive, and on Daisy Hill are past maturity and in decline. These heritage plantings best define the character of the district and should be restored.

Lined by mature sycamore trees, and a wall of buildings on its north side, Sunnyside Avenue is a powerful landscape statement. South of Sunnyside Avenue, as the topography flattens, opportunities exist for larger usable spaces and strengthening the open space network to connect campus districts.

Pedestrian access east to west in the Central District is not well articulated, as circulation meanders around parking lots, services areas and streets. Clarity in pedestrian corridors would help provide organizational structure to the district. To the west of Naismith Drive and Burge Union, the land where Stouffer Place Apartments are currently located follows the floor of a ravine which could provide access to the western ridge line at Daisy Hill and the student residence halls.

Attempts to preserve legacy trees and plant massing in the Central District (if redevelopment occurs at Stouffer Place Apartments) should be a priority. The challenges to create open space in this location are the steep slopes and accessibility issues. However, Central District attributes lend themselves to a dramatic defining open space, reflecting campus tradition in a contemporary expression.

Set atop Irving Hill along Iowa Street, Templin, Lewis, Hashinger, Ellsworth, and McCollum residence halls tower over the landscape, isolated by large surface parking areas and service drives. The area lacks outdoor social and recreational spaces, which are important to the residential life experience. Passive interconnected social spaces and pedestrian corridors should be a priority for the Central District.

As the campus grows to the southwest, the campus edge from the south becomes more important as a way of defining the university image. Campus edges and gateways along 19th, Iowa, and 15th streets provide some differentiation from the surrounding neighborhoods, but the identity and presence of the university could be improved and strengthened at these edges. Each campus edge represents a unique composition and context that will result in edge treatments of varied scale, context, and identity.
THE WEST DISTRICT

The West District is currently built to accommodate vehicles more than pedestrians. Its built character is low-density suburban surrounded by naturalized fields and emergent woodlands. However, there is a sense this is an area in transition.

Whereas the Central District lends the impression of several individual growth phases, much of the West District feels bisected with two characters: a naturalized landscape that presides in the west half of the district along Kasold Drive, and an office park type development along the north, east, and south edges.

There is a sense of potential and promise in the ravines and curving hill forms that mirror the outline of Mount Oread. The ecological basis of this area is perfect for living laboratories and research, although there is no easy access by foot to the North and Central districts. The benefit of ecological mitigation to offset the environmental impact of carbon, stormwater, urban heat island, air quality, and biodiversity only increases in value over time.

Many of the woodland slopes and drainage patterns in the West District are not culturally managed, and are still in the process of ecological succession. The importance of these assets is without question; it requires active forest management for them to become stable or self-perpetuating ecological communities. Active management increases the ecological function and resilience of this asset. These natural processes provide the West District its primary character defining features. Restoration and integration of these processes into the built environment should be a primary goal.

The West District is an excellent opportunity to implement advanced sustainability practices in new facilities with the greatest potential for natural systems integration.

In contrast to the North and Central districts, the West District still maintains a large percentage of its natural hydrology and watershed. While this should be an objective for the entire campus, restoration of West District systems requires less effort, due to the limited alteration of the natural features. The bioswales at Park & Ride, and naturalized detention in the southwest corner of the district, provide prime examples of how natural hydrology can be preserved and incorporated as a defining feature of the district.

The West District pond is a residual research area and should be integrated to the larger hydrological system. These isolated improvements and features should be extended and connected with the remaining watershed features. Future development should embrace the concepts of sustainability as a signature expression of the university’s mission of stewardship and creation of a learning environment of living laboratories.

Because of isolated development patterns, naturalized fields, channeled streams, and curvilinear roads, there is little visual sense of how the West District fits together. Yet, when driving north on Constant Avenue, the land opens up at Pioneer Cemetery, with views to the Lied Center and eastward across Iowa Street. There is a sense of the prairie as it existed before campus and community development. Pioneer Cemetery is the primary historic landmark of the West District, with important connections to the origin of Lawrence as a community.
Perhaps the most public facility in the West District, the Lied Center, stands on a high point surrounded by a crescent of parking lots to the south and west. Although highly visible from Irving Hill Road, it is largely screened from Bob Billings Parkway to the north. The Lied Center feels disconnected from the rest of campus due to Iowa Street as well as the expansive parking that surrounds the building. Pedestrian and multi-model connections to the Lied Center and other public facilities need to be strengthened and clarified. The same can be said for the West District and its connections with the adjacent community.

The landscape treatments of the West and Central districts differ, leading to the perception they are not part of the same campus. This separation is compounded by Iowa Street, which acts as a physical east-west barrier to pedestrian circulation. Iowa Street can become a signature arrival to campus instead of an unassociated corridor bisecting the campus. Elements of the historic landscapes of Daisy Hill and Pioneer Cemetery could be blended with the native ecologies of the West District to erase the demarcation.

Framed by woods, the ridge running west from the Lied Center is natural and open, with expansive views to the horizon as important as any on campus. Woods and ravines just beyond to the west, provide a sense of the prairie woodlands here, a sense of an edge, and a long-term future yet to be made. The ridge forms a western terminus at the radio tower, and support functions, diminishing its contribution to the historic typology of the adjoining North District. Careful planning and development patterns are required to capture the potential of this dramatic site. Application of 150 years of institutional experience building on the ridge can set a new standard for integrated excellence.
Classroom in Summerfield Hall
INFLUENCING FACTORS
Many of the goals defined in Bold Aspirations will influence space needs at KU. Goal 2: Elevating Doctoral Education and Goal 3: Driving Discovery & Innovation will increase the need for research funding, thus the need for research space. Goal 1: Energizing the Educational Environment will affect learning pedagogy and class size, thus the need for more and larger active learning teaching spaces. Goal 6: Developing Infrastructure & Resources could have a profound effect on the quality of space. And finally, larger enrollment would increase the need for all types of space throughout campus.

DATA COLLECTION: CAMPUS CONDITIONS

ANALYSIS AND PROJECTIONS
The Fall 2012 student headcount at the Lawrence campus used for this analysis was 23,044 students, with 18,250 undergraduate students and 4,794 graduate students. The Lawrence on-campus Fall 2012 full-time equivalent (FTE) student enrollment used was 21,424 FTE.

The enrollment projection used for this analysis was 26,289 students on the Lawrence campus in 10 years, which includes 20,440 undergraduate and 5,849 graduate students. The projected student FTE used was 24,451. This represents a 12 percent increase in enrollment for undergraduates and a 20 percent increase for graduate students.

KEY FINDINGS

Classroom Utilization
In Fall 2012, the 236 classrooms analyzed for the Lawrence campus averaged 29 hours of scheduled use per week, with 55 percent of the student stations filled. The expected range for weekly room hours is 35 to 40 hours per week of scheduled use, with 65 percent to 70 percent of student stations filled. Classrooms average 18 assignable square feet (ASF) per student station. This average of 18 ASF per station was standard 15 years ago. With modern student-focused and project-based learning, the average ASF per seat has been increasing steadily. The expected average is now closer to 22 ASF per student station. Classrooms are over-utilized at peak periods, thus creating the perception that there is a shortage of classrooms on campus.

Class Laboratory Utilization
The 168 class laboratories analyzed for the Lawrence campus averaged 18 weekly room hours of use. Student station occupancy averaged 53 percent. The average of 18 weekly room hours of utilization is at the low end of the range the consultant would expect to see. An expected range is 20 to 25 weekly room hours of scheduled use in class laboratories. The average class laboratory student station occupancy of 53 percent is well below the expected range of 70 to 80 percent occupancy.

Space Needs Analysis
This analysis assists in determining the magnitude of space needed for the current level of campus enrollment and activity, per Figure 1-7. The analysis also includes a projection of space needs for the future planning horizon, per Figure 1-8. To calculate the space needs, the consultant applied KU’s space allocation guidelines, adapted and augmented as appropriate during the analysis. This analysis did not include residence life or athletics spaces.

The space needs analysis calculated the space requirements, looking at findings for the Lawrence campus as a whole, as well as each of the academic schools, colleges, and major administrative divisions. Based on fall 2012 data, results generated a total space need of just over 133,000 assignable square feet (ASF). Please note that ASF is the space that is typically used by and assigned to building occupants. It does not include areas such as public corridors, mechanical rooms, stairs, and public restrooms. It also does not include wall thickness or structural area typically identified in building gross square footage (GSF).

The space category with the greatest need is research, both laboratory and research office space. The student center and class laboratory categories also show a significant need for additional space. Student center space is generally defined as that typically found in a union-type setting. Class laboratories are teaching spaces with specialized equipment that limit the type of class that can be scheduled. Examples of class labs are architecture studios and chemistry teaching labs.

Edwards Campus space analysis is found in Chapter 3.
Residence life and athletics facilities, inactive, conversion, and unfinished space, and Edwards campus space have been shown at the bottom of the space needs analysis table, but are not calculated in the overall space needs analysis. The Edwards campus has been analyzed separately.
### FIGURE 1-8: FUTURE SPACE NEEDS ANALYSIS

<table>
<thead>
<tr>
<th>SPACE USE CATEGORY</th>
<th>FUTURE ASF</th>
<th>PROJECTED ASF</th>
<th>DIFFERENCE ASF</th>
<th>DIFFERENCE PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classrooms &amp; Service</td>
<td>285,193</td>
<td>260,867</td>
<td>24,326</td>
<td>9%</td>
</tr>
<tr>
<td>Class Laboratories &amp; Service</td>
<td>242,151</td>
<td>310,020</td>
<td>(67,869)</td>
<td>(28%)</td>
</tr>
<tr>
<td>Open Laboratories &amp; Service</td>
<td>204,774</td>
<td>226,765</td>
<td>(21,991)</td>
<td>(11%)</td>
</tr>
<tr>
<td>Research &amp; Service</td>
<td>954,136</td>
<td>1,345,500</td>
<td>(391,364)</td>
<td>(41%)</td>
</tr>
<tr>
<td>Office &amp; Service</td>
<td>966,418</td>
<td>1,053,569</td>
<td>(87,151)</td>
<td>(9%)</td>
</tr>
<tr>
<td>Study/Library</td>
<td>466,672</td>
<td>496,115</td>
<td>(29,443)</td>
<td>(6%)</td>
</tr>
<tr>
<td>Physical Education</td>
<td>109,052</td>
<td>72,700</td>
<td>36,352</td>
<td>33%</td>
</tr>
<tr>
<td>Recreation</td>
<td>103,745</td>
<td>142,255</td>
<td>(38,510)</td>
<td>(37%)</td>
</tr>
<tr>
<td>Special Use</td>
<td>40,654</td>
<td>49,025</td>
<td>(8,371)</td>
<td>(21%)</td>
</tr>
<tr>
<td>Assembly &amp; Exhibit</td>
<td>142,856</td>
<td>144,160</td>
<td>(1,304)</td>
<td>(1%)</td>
</tr>
<tr>
<td>Student Center</td>
<td>166,981</td>
<td>236,600</td>
<td>(69,619)</td>
<td>(42%)</td>
</tr>
<tr>
<td>General Use</td>
<td>71,107</td>
<td>73,360</td>
<td>(2,253)</td>
<td>(3%)</td>
</tr>
<tr>
<td>Support</td>
<td>236,443</td>
<td>268,965</td>
<td>(32,522)</td>
<td>(14%)</td>
</tr>
<tr>
<td>Health Care</td>
<td>25,390</td>
<td>24,451</td>
<td>939</td>
<td>4%</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>4,015,572</td>
<td>4,704,352</td>
<td>(688,780)</td>
<td>(17%)</td>
</tr>
</tbody>
</table>

- Residential Facilities: 1,196,861
- Athletics: 584,320
- Inactive*: 54,919
- Conversion: 3,951
- Unfinished: 10,000
- Edwards: 138,622
- TOTAL: 6,004,245

*Inactive ASF includes 41,680 ASF in Summerfield that is available for reallocation

Projecting into the future, space needs increase by almost 690,000 ASF when Lawrence campus enrollment reaches 26,289 students. Nearly 400,000 ASF of that is in research space. The office space, student center, and class laboratory space categories also show significant need for additional space.
A campus is in a constant state of evolution. With new academic program needs and standards, changing trends in student life, and fast-paced technological advancements, it is vital that campus facilities keep pace for a university to stay competitive. Continuous campus growth has produced a legacy of high quality and functionally built assets with multiple new facilities currently under construction. The Lawrence campus has 215 buildings totaling nearly 10 million square feet, many defined by use per Figure 1-9.
CURRENT CONDITIONS
The contemporary campus is a rich mix of building types and architectural styles. The age and architectural style of buildings within the three campus districts generally are reflective of the history of the Lawrence campus development, from its origins at the historic core in the North District, to post-war development in the Central District, to recent facilities in the West District.

Additions to existing facilities over the last 50 years have significantly developed the existing North District campus core and increased density, leaving little room for additional construction. Pressure for new academic and research space will create demand for new facilities on other parts of campus.

The West District has assumed a more suburban character, contrasting with the more traditional feel of the historic core. With the demand for new academic, residential, recreational, and athletic facilities, there are many infill opportunities. The placement of new buildings will help to define the open spaces and create a more pedestrian friendly environment. Provision of student amenities will be important.

New facilities continue to be constructed in the West District, where effort has been made to create a central collegiate space within the research area to help build community. Buildings are sited to front the green space and create a true sense of campus. Alternatively, the Lied Center and Dole Institute of Politics are isolated within a sea of parking.

ONGOING PROJECTS
As with any vibrant university setting, there were a number of projects already in the process of being planned, designed, or constructed as this master planning process began. To establish a point in time for determining and crafting the future development of the campus, the following projects were assumed to be already underway, and were not significantly altered by the master planning effort:

- Jayhawk Boulevard Reconstruction Phases 1-4
- School of Business
- Earth, Energy and Environment Center North
- Earth, Energy and Environment Center South
- Replacement Tennis Courts
- Learned Engineering Expansion Phase 2 (LEEP 2)
- Freshman Housing on Daisy Hill
- McCollum Demolition
- DeBruce Center
- Hill Engineering Research & Development Center
- Bioscience Technology Business Center Phase 2
- Engineering High Bay

Spooner Hall, North District
**Data Collection: Campus Conditions**

**Deferred Maintenance**

The maintenance of existing facility assets continues to compete for funding with other programs and capital needs at KU. Maintenance funds are typically deferred when appropriations are not available, or they are directed to other priorities. The failure to perform needed maintenance leads to asset deterioration, higher costs, and possible health and safety violations. The current estimate for deferred maintenance on the Lawrence campus is over $300 million.

Figure 1-10 illustrates deferred maintenance needs for mission-critical facilities. Upgrading science facilities is a priority for health and safety reasons. Learned Hall, Malott Hall, and Haworth Hall are mission-critical academic buildings that must undergo renovations and/or repurposing in the near future.
Figure 1-11 illustrates deferred maintenance needs for non-mission critical facilities. Memorial Stadium, Stouffer Place Apartments, and McCollum Residence Hall fall into this category. McCollum is scheduled for demolition, when replacement freshman residence halls are complete in 2015. Stouffer Place Apartments are not viewed as having long-term viability, and will be phased out of use.

As deferred maintenance and renovation costs reach an unsustainable level, and if the facility is non-contributing as a historic resource, the building should be considered for demolition. From a land use perspective, Stouffer Place Apartments underutilize important real estate for mission critical facilities. Memorial Stadium is currently undergoing analysis for renovation. Potential renovations include removal of the existing track around the football field, extending the seating bowl, and enhancing box seating areas. Recommendations are forthcoming.

The Kansas Board of Regents 2012 Report on State University Deferred and Annual Maintenance was used in this planning process.
The campus generally has a good transportation network and only limited circulation, access, and safety issues. KU has long acknowledged the challenges of a road system limited by the topography. Overall, however, the road network provides good vehicular circulation and access to key campus areas and parking, with fairly low congestion for a campus of this size. The university’s extensive transit system, coordinated with the City of Lawrence, serves the campus and community.

One of the main issues is the conflict between pedestrians and vehicles along Naismith Drive and between pedestrians, bicycles, and buses on Jayhawk Boulevard. A second issue is poor connectivity, for all modes, between the North and Central districts, and within the West District.

**PEDESTRIAN CONDITIONS**

In general, the pedestrian experience is a positive one with good connectivity and safety. Particularly in the heart of the campus, there is a robust network of pedestrian pathways, sidewalks, and well-marked crosswalks. Vehicular speeds are reasonable in most locations. However, there remain conflict points, particularly along major streets such as Naismith Drive and Jayhawk Boulevard.

There are existing areas of concern for pedestrian connectivity, and several barriers remain in the pedestrian network. The following movements are challenging for pedestrians:

- When moving between Carruth-O’Leary or JRP and the Memorial Union, pedestrians have the option to follow Jayhawk Boulevard or Memorial Drive, neither of which is direct. Or they must walk down and back up the steep hillside for a direct route.

- In order to travel the hillside between Jayhawk Boulevard and Sunnyside Avenue as well as from Malott Hall to Watson Library, a direct path would require the use of service roads and a worn path in the grass. The same hillside also poses many accessibility challenges, with one circuitous route available through buildings, elevators, and exterior sidewalks. Though not fully ADA-compliant due to slopes, the route does provide a barrier-free path.

- There is a disconnect between the West and Central districts. The West District is not well-connected, and many of the pedestrian routes are inconvenient and sometimes incomplete. Iowa Street remains a major barrier with limited crossings, and pedestrians are not always well-accommodated at existing crossings.

- Pedestrian connections to adjacent neighborhoods are missing or incomplete. There are several locations where pedestrians will still make the journey, but they may be traveling in the road, in front yards, or through private property to access campus.
Jayhawk Boulevard presents the biggest and most serious pedestrian conflict area, despite being closed to most vehicular traffic during weekday class times. Frequent buses and the large number of pedestrians are regularly in conflict. In addition to the numerous marked crossings, many pedestrians jaywalk or dart out from behind parked cars.

Naismith Drive, particularly between 15th Street and Sunnyside Avenue, is problematic due to the high volume of vehicles and pedestrians channeled into a narrow area of converging streets. There are similar conflict points on 15th Street between Engel Road and Naismith Drive.

Crescent Road, which allows students from the Daisy Hill residence halls to stay on top of the ridge to reach the campus core, is a popular pedestrian route through off-campus residential streets, but lacks sidewalks in places. This creates a dangerous condition, as vehicles seeking to avoid congested campus streets often speed along this segment.

Pedestrian conflict issues around the Chi Omega Fountain were addressed in phase 1 of Jayhawk Boulevard reconstruction, which included upgrading the intersection to a modern roundabout.

Vehicle speed on campus is generally not an issue for pedestrians, with the following exceptions. From the west, 15th Street regularly sees high speed traffic as vehicles transition into the campus from the more suburban Bob Billings Parkway. Speeding is also a concern along W. Campus Road, though the existing speed tables help to control this. Speed limits are high and frequently exceeded along Iowa Street, reinforcing the challenges of this federal highway as a barrier through campus. The 40 m.p.h. speed limit along Clinton and Bob Billings Parkways is not pedestrian friendly, even less so as it is regularly exceeded.

**BICYCLING ON CAMPUS**

Bicycling has not been a major focus of past campus planning efforts. However, there is a committed and active cycling community and a sustained interest in improving the bicycle network, amenities, and conditions on campus and in the city.

The North and Central districts have no signs, paths, striped lanes, or other on- or off-road bicycle facilities, while the West District has limited off-road paths that connect to the city’s network. The city’s bicycle lanes and paths typically terminate at the campus edge, including the recently completed multi-use path on the south side of Bob Billings Parkway between Iowa Street and Kasold Drive. Steep campus slopes present a challenge for finding acceptable and comfortable paths. There are informal paths used by many cyclists, but these are not marked in any way as preferred bike pathways or routes, nor do most of these existing routes have adequately wide roads to comfortably accommodate both vehicles and cyclists.

There are bike racks in generally convenient locations near most buildings, but some of the most desirable racks lack sufficient capacity, for example Budig Hall. There is limited covered bike parking. There are no bike lockers, and residence halls lack sufficient bike parking, particularly protected bicycle parking. Shower facilities also are limited, and the only self-fix station, which provides some tools for simple bike maintenance and repair, is outside the Ambler Student Recreation Center.

This lack of bicycle accommodations causes safety concerns. For example, Jayhawk Boulevard’s importance in the campus transportation network and flat profile (once the rider reaches the top of the ridge) makes it desirable for biking, but there is no separation from bus and delivery vehicle traffic. The most important entrance corridors to campus lack bicycle routes or designated paths, and city bike routes end at the campus boundary. In addition to lacking the desired width to accommodate both bicyclists and vehicles, campus streets also do not have “share the road” signage to help increase the visibility of cyclists or mark the route as a preferred biking option. Rules for pedestrian-bicycle interactions are unclear, with no clear direction on dismount zones where shared paths become sidewalks. Because some pedestrian paths have desirable elevation profiles, some cyclists use them to navigate the campus. Additionally, the lack of on-road facilities encourages cyclists to use sidewalks.
The University of Kansas and the City of Lawrence partner together to provide coordinated transit service, which helps ensure good connectivity between the city and university. This coordination offers passengers a seamless network, including the Transit Guide and the reciprocal fare agreement. University faculty, staff, and students can ride city buses for free, and all university buses accept city bus passes. Figure 1-12 shows the fully coordinated bus network.
University routes generally operate from 7 a.m. to 6 p.m. during the fall and spring semesters, and provide extensive and (mostly) frequent service on campus and to major student apartments and nearby off-campus shopping locations. On campus, service is concentrated along Jayhawk Boulevard.

Routes that serve off campus areas enter the campus from several different streets and concentrate on a few key gateways: 15th Street, Naismith Drive, and Oread Avenue. Routes 41, 42, and 43 serve only on-campus locations and act as high frequency campus circulators. There is a potential branding issue with Route 41, which serves the Park & Ride parking lots; the shuttle provides high frequency circulator service, but it is confused by some as only a Park & Ride shuttle, not a circulator.

Figure 1-13 shows the routes that serve Jayhawk Boulevard, a major transit spine that is restricted from general traffic between 7:45 a.m. and 5 p.m. on weekdays. All university routes serve at least a portion of Jayhawk Boulevard, with more than 60 buses per hour at peak times, and about 700 buses per day.
Transit ridership has been strong and growing since the system went fare-free in fall 2008, although growth has begun to taper. The system averaged 15,300 daily fixed-route rides in November 2013, with a few buses at capacity during peak times requiring riders to wait for the next bus. Transit service is highly utilized by students, who represent the majority of riders with more than 45 percent of university students riding the bus at least once per week, according to a fall 2012 Parking & Transit survey. However, anecdotal evidence suggests that faculty and staff seem less familiar with the service, and also seem less willing or able to use it.

Figure 1-14 illustrates daily bus ridership for campus routes and Figure 1-15 shows annual ridership on university and coordinated routes. The highest ridership levels are through the core of campus along Jayhawk Boulevard and connecting to the Central District and Daisy Hill.
FIGURE 1-15: CAMPUS TRANSIT ROUTES AND FY 2013 RIDERSHIP

- LESS THAN 100,000 RIDERS
- 100,000 TO 300,000
- 300,000 TO 600,000
- 600,000 TO 1,000,000
- MORE THAN 1,000,000 RIDERS
View looking east on Jayhawk Boulevard
The university also operates two nighttime services funded solely by student fees. SafeRide gives students a ride home from 10:30 p.m. until 2:30 a.m. nightly during the fall and spring semesters and Thursday through Saturday, during the summer semester. SafeBus, which grew out of SafeRide, offers four nighttime fixed routes from 9 p.m. until 3 a.m. Thursday through Saturday, during the fall and spring semesters.

City routes generally operate from 6 a.m. to 8 p.m. Monday through Saturday. Four of the eleven city routes connect the city and university, two of which are coordinated routes operated using a combination of university and city funding and buses. Like the university routes arriving from off campus, these four routes all travel across Jayhawk Boulevard.

Additionally, a successful pilot project, Nightline, provides demand-response service all night for those who do not work normal business hours and call ahead to schedule rides. However, the future of this service is unknown.

VEHICLES ON CAMPUS

Vehicle circulation, access, and connectivity is generally very good, with comparatively little congestion for a school of KU’s size. Most destinations and parking areas are accessible by vehicle, and bottlenecks occur for relatively short durations. The primary areas of congestion are along Naismith Drive, particularly at the intersections with Sunnyside Avenue, Irving Hill Road, and 15th Street, notably during class-change periods. These congested areas have remained problematic over time, although there is some anecdotal evidence of improvement in recent years, possibly due to increased transit use. Jayhawk Boulevard is restricted from general traffic during the day, which helps transit timing and pedestrian and bicycle safety, but limits east-west vehicular connectivity. Permit sales suggest there are possibly some gold permit purchasers who buy it to primarily drive through the restricted zone. The connection between Central District and West District is also a concern, with Iowa Street acting as a barrier to vehicular traffic.

Visiting drivers face several challenges. There is limited wayfinding, which can make a visit confusing and difficult, particularly when searching for parking. Additionally, visitor parking is concentrated in the two parking garages and the Visitor Center at 15th and Iowa; these are not always convenient to visitors’ final destinations. In addition, visitors may be unaware that Jayhawk Boulevard is restricted during the day, which is a frustrating discovery when trying to visit buildings on or near Jayhawk Boulevard.
FIGURE 1-16: PARKING SPACES BY LOT

- 1-25
- 26-100
- 101-250
- 251-500
- MORE THAN 500 SPACES
Overall, campus parking is plentiful for students, faculty, and staff, although not always in a location where most desired. There are approximately 15,000 parking spaces located primarily outside the campus core area. With the exception of the Mississippi Street Garage, most of the large parking areas are located to the south or west of the campus core, with smaller lots closest to the campus core. Figure 1-16 shows the number of parking spaces by lot.

The campus currently has an overall parking occupancy of roughly 63 percent for commuter spaces on a typical midweek class day. However, demand is not evenly distributed through campus, with very high occupancy rates in the core areas of campus and low in the outlying areas. Predictably, the more desirable core areas all have an occupancy rate of more than 90 percent, meaning they are at practical capacity. Comparatively, the zone around the Lied Center has an occupancy rate of only 22 percent on a typical class day. Consequently, while excess commuter parking exists, it is not in the locations where it is most desired. Residence hall parking demand remains high, but has been decreasing slightly in recent years. A small portion of the Lied Center lot is available to housing, and continues to see a small, but decreasing, demand of roughly 50 to 75 permits a year.

While the impacts of typical day events are included in the above analysis, there are days where the campus is host to large events that can place a greater strain on the parking system, particularly when hosted in the North District. These can fill one or both of the parking garages. Afternoon and early evening sporting events, in particular basketball games, can result in a substantial increase in demand; at the same time, unlike other events, most on campus are well aware of the game schedules and will shift their schedule to minimize the impact. Figure 1-17 shows the parking occupancy by zone.

Although parking on campus is generally plentiful, the lots themselves are in varying conditions. A separate pavement condition analysis showed that more than one-third of the surface lot area on campus needs full reconstruction, with an additional one-quarter in need of major repairs.
INFRASTRUCTURE & UTILITIES

STEAM, CHILLED WATER, AND ELECTRICITY

The University of Kansas Lawrence campus includes 215 buildings, 187 buildings that are maintained by KU Facilities Services. As illustrated in Figure 1-18, 54 academic buildings receive steam from the campus central plant and the remaining buildings are served by individual boilers. On the west side of Iowa street, the Multidisciplinary Research Building houses the initial district plant that provides steam for its own use and two adjacent buildings, including firm capacity. Chilled water for campus buildings is provided through a combination of building-specific and regional grouped-building systems. Twenty buildings have independent chillers, and 25 buildings are served by five regional systems, including an at-capacity central chilled water plant.

Current data profiles for campus electricity, steam and chilled water systems are:

- 7,402,620 GSF served by electricity
- 4,934,408 GSF served by steam from the central plant
- 4,521,167 GSF served by natural gas
- 2,682,829 GSF served by central/regional chilled water plants systems
- 2,579,969 GSF served by building-based unitary chillers

The university’s central plant has a firm capacity of 115,000 lb/h (pph). Firm capacity, an expression of reliability, is the provision of system components to ensure operation in a situation where the primary system components are not operational. Historically the measured peak steam demand is 108,000 pph. In the last few years, peak steam demand has been reduced to 75,000 pph, thanks to campus investment in energy conservation measures and mild winters. The central plant contains two new boilers with capacity of 75 kpph and two boilers at 40 kpph. One of the smaller boilers is near the end of its expected useful life, and the other has been retired. Typically, campus steam is supplied through operation of a single larger boiler, sometimes with support from one of the supplemental boilers.

Though not substantiated by formal studies, campus staff members understand the fundamental needs of the campus steam and chilled water systems to support the existing building stock:

1. The campus measures utility consumption as a cumulative total, but not as peak demand. While this provides billing data, it fails to provide critical information on peak demand at individual buildings and at the regional-system scale. Peak demand data reveals the actual capacity of existing equipment to support power, steam and chilled water demand.

2. Many buildings with individual boilers do not have appropriate firm capacity as compared with buildings served by the central steam system. Buildings not served by the central steam system have individual boilers that range in age from 1962 to 2011. The campus must maintain a total of 109 building boilers that provide 177 million BTU of heat. Some campus buildings have been designed or supplied with emergency generators to provide power to meet life safety code. The need for standby power to protect research interests on campus has not been addressed consistently.

3. Though problems have not been documented, facilities staff members have experience-based concern that the campus steam distribution system needs investment to adequately provide for growth and would function better with routing modification.

4. The campus no longer has an active program for investment in reducing building energy consumption or demand.

5. Chilled water for campus buildings is provided through a combination of building-specific and grouped-building (regional) systems. Twenty buildings have independent chillers, totaling 7,577 tons, and 25 buildings are served by five regional systems, with a total capacity of 11,190 tons and a firm capacity of 7,160 tons. Twenty of the 50 chillers installed on campus will reach the end of their useful lives by the year 2020.
Provision of chilled water for new or renovated building development over the last 15 years has been through building-specific, unitary chiller systems (many reaching end of life as indicated in Figure 1-19), unless a pre-existing regional chiller plant with spare capacity was accessible. Staff members recognize these systems are less efficient than regional systems and cannot take advantage of load diversity, but the university does not have a process to coordinate planning across buildings as would be needed to support development of new or expanded regional chiller systems.

6. Electrical distribution in the North and Central districts has two feeds from Westar and four loops. Some old transformers on 1960s era buildings are operating but should be replaced. Westar does not currently have the capacity to support the entire campus from the West substation, but it is working to resolve the issue. As additional buildings are added to the North and Central districts, the existing campus loops will reach capacity and a fifth loop may be needed. West District buildings have radial feeds that may not provide the reliability required for research buildings.

7. The university purchases electricity that is largely coal-based. This represents dual problems of price uncertainty, due to regulatory uncertainty about the fate of coal, and a level of greenhouse gas emissions that conflict with the university’s stated objectives for sustainability.
FIGURE 1-19: EXISTING CHILLER AGE

- 0 - 5 YEARS
- 6 - 15 YEARS
- 16 + YEARS
- COOLED - NO CHILLER
CIVIL

Potable Water Distribution
The water supply on the Lawrence campus is provided by the City of Lawrence. The water sources are groundwater from the Kansas River alluvium and surface water from both the Kansas River and Clinton Reservoir. With the exception of housing areas and a few isolated buildings, a single connection point at the power plant serves the entire North and Central districts. This point of connection is served by the city’s low pressure zone. An undersized back-up connection point, normally closed, has also been joined to the city’s high pressure zone.

Flow is pumped from the power plant and distributed into two campus systems, a high and low pressure system. Both are hydraulically independent from the city’s system. The distribution system is a mixture of large and small diameter mains of varying ages. Some lines on campus are plagued by frequent breaks due to age and no on-campus storage is provided.

The West District is served by two independent university-owned distribution systems, each having its own point of connection to the city’s high-pressure zone. Each could be considered a dead end with no secondary feed to provide redundancy.

Sanitary Wastewater Collection
Wastewater flows generated from the Lawrence campus are collected in private wastewater collection mains owned and maintained by the university. These gravity collection systems are topography based, and there are several points of discharge to the City of Lawrence municipal wastewater collection system. Several segments of the university’s system frequently operate in a surcharged mode, even during dry weather. Although it has not been monitored and quantified at this time, significant infiltration and inflow volumes are suspected as the cause of this condition.

In the North and Central districts, wastewater flows generated by the university are a capacity concern relative to the municipal system. For example, wastewater storage and metering is located at Memorial Stadium. Consequently, the City of Lawrence has commissioned a wastewater flow study.

The southern portion of the West District is served by a private university wastewater collection main that is approximately 50 years old. The ultimate capacity of this system requires careful evaluation. In each of the three districts, there are one or more city-owned sewer interceptors that carry upstream flows across the campus.

Stormwater Systems
The University of Kansas has a unique topographical setting. Lying atop Mount Oread and the adjoining ridge to the south and west, stormwater has not been a major concern. The natural topography has historically directed stormwater off the campus as quickly as possible, by connecting to the city’s stormwater system.

During the last 150 years of development in the North and Central districts, the natural stormwater systems have been eliminated and enclosed in pipes of varying age, condition, and capacity. The only open body of water, Potter Lake, is actually man-made.
SUMMARY

A legacy of planning has produced one of the most unique and special university campus environments in the country. Siting the campus on the Mount Oread ridge, with commanding views across the river valleys, a civic structure of landscape features, and a boulevard running through it all, truly inspires a memorable place. Transplanted east coast planning and design strategies gave way to place-based strategies over time. The resultant historic core is the identity of the Lawrence campus.

More recent planning efforts speak to a collective desire to continue to steward the past while embracing a competitive, diverse, inclusive, and prosperous future to serve the citizens of Kansas and the world. These resources provide insight into many of the issues and goals that are addressed in this plan, such as sustainability and accessibility.

Proximity to the Kansas City metropolitan area and the Edwards and Medical campuses, provides multiple outlets for academic programs, research opportunities, and cultural assets. The city of Lawrence provides a vibrant social and cultural counterpoint to the campus experience. It is also a working partner with the university to promote economic development and a connected, safe, and sustainable environment.

Natural systems are an asset to campus both functionally and aesthetically. Views and vistas are an important consideration in all districts, but especially as the West District continues to develop.

Existing land use zones are largely single use in nature. The academic core along Jayhawk Boulevard is bustling during the day and quiet at night, as most students are off the ridge in perimeter residential communities. The Central and West districts provide ample land for campus growth for the foreseeable future. The notable open space of the North District is a good precedent for future development in the other districts. Campus access and circulation are generally satisfactory from a functional perspective, but less clear in terms of hierarchy and wayfinding. As the campus grows, campus circulation will be more congested. Bicycle use is growing, though campus infrastructure could better support this ridership. The transit system is robust, award-winning, and continues to evolve as an important link with the community.

Physical design and campus composition historically have been directed by hilltop and hillside conditions with an emphasis on vistas and viewsheds. Overall, given the iconic character of Jayhawk Boulevard and the historic core, a high bar for campus planning has been set. Future development of the Central and West districts should be of the same standard and will encounter many of the same issues of building on hillsides. Extending successful planning principles from the North District, such as appropriate campus density, balance of buildings and open spaces, and creating connections through views and architectural elements, will inform important new campus places that will become part of the KU campus legacy.