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Students signing a beam before it was included in the construction of the Student Union in 2017.
Photo courtesy of www.uis.edu.

Students at the 2018 Student Involvement Expo on look to get involved with student organizations, campus departments and non-profits. Photo courtesy of www.twitter.com/uisstudentlife

Volume 1a

Campus Overview

UNIVERSITY OF ILLINOIS SPRINGFIELD

Overview

The UIS 2020 Master Plan identifies and prioritizes key planning and project opportunities unique to the University of Illinois Springfield. It outlines the overarching ideas and broader vision into a series of understandable plans and diagrams.

The goals build upon the strengths of the current campus including its premier educational experience with world class academic programs, the vibrant campus life at the Main Quad anchored by the Student Union as the hub, enrollment growth, evident with the University's largest Freshman class in history in Fall 2019. As a prominent member of the community, the UIS 2020 Master Plan identifies opportunities to further strengthen those partnerships.

The UIS 2020 Master Plan is adaptable and provides flexibility as needs and priorities evolve and change. The following diagrams and plans represent UIS's vision for future campus development, renewal, and growth.

The plan incorporates several strategies to ensure the University can accommodate its existing needs and projected growth through the effective and efficient use of existing space and prioritized economically prudent investments in capital improvements. This practice emphasizes investment of resources into the quality of existing spaces, shared resources, improving departmental adjacencies, and right-sizing academic units to support new interdisciplinary teaching, learning, and research environments. Increased utilization and gained efficiencies will offset the need for new facilities.

Students gathered in front of the Colonnade in the Main Quad to spell "UIS."
Photo courtesy of www.uis.edu.

Specific strategies include:

Learning Environments

- Improve classroom utilization.
  - Right-size learning environments
  - Prioritize strategic renovations
- Modernize existing classrooms and teaching labs to increase utilization and support interdisciplinary and experiential teaching and learning.

Office Space

- Consolidate, relocate, and renovate departmental office space to improve adjacencies and build better synergies
- Adopt new work place models to increase efficiencies and share resources
- Consolidate storage needs

Renovate & Reinvest

- Invest resources in existing facilities to enhance overall quality (i.e. East Quad single story buildings)
- These enhancements will modernize teaching and learning environments, and relocate and realign programs and departments to improve departmental synergies

Replace or Remove Outdated Facilities

- Under performing facilities that are not economically sound capital investments will be demolished

Construct New Energy Efficient, Flexible, & Sustainable Buildings

- New facilities will provide efficient, flexible footprints that are adaptable, sustainable and support future University needs

UIS 2020 MASTER PLAN GOALS

CULTIVATE A PREMIER EDUCATIONAL EXPERIENCE

- **Innovative**, experiential, teaching, and learning environments
- **Strategic** new facility and renovation initiatives
- **Establish** new Student Services One Stop

SUPPORT A VIBRANT CAMPUS LIFE AND CULTURE

- **Strengthen** high-impact practices (formal and informal interactions)
- **Elevate** campus life experience
- **Create** an intuitive, welcoming campus experience

IMPLEMENT GROWTH STRATEGIES

- **Expand** student enrollment growth opportunities
- **Re-align** academic units to enable collaboration among faculty, staff, and students
- **Recruit and retain** top talent
- **Create** adaptable, responsible, sustainable infrastructure to support future development

FOSTER PARTNERSHIPS

- **Enhance** local, regional, and global partnerships
- **Increase** collaboration among partners
- **Strengthen** local and regional economic growth
- **Identify and capitalize** on new partnership opportunities

UIS 2020 Master Plan

The UIS 2020 Master Plan provides an intentional outline for renewal, growth, and development of the University of Illinois Springfield. UIS anticipates steady growth of 2% per year over the next 10 years, on campus and on-line. The UIS 2020 Master Plan focuses on priorities and strategic renovations, new construction, enhanced campus green space, and identifies partnership opportunities.

The UIS 2020 Master Plan is intended to serve as a road map for the University's future decision marking. The recommendations embody UIS's vision to do:

- Cultivate a premier educational experience
- Support a vibrant campus life and culture
- Implement growth strategies
- Foster partnerships regionally, nationally, globally

Future program needs and funding sources will ultimately determine timing and scope of the recommendations. Many projects are multi-faceted and triggered by various criteria that will dictate when they occur. The Master Plan has been divided into the following three categories:

- Immediate Needs
- Near Term Needs
- Stand Alone Requirements & Opportunities

Hundreds of students graduate during the 47th annual UIS commencement ceremonies in Downtown Springfield in May 2018.
Photo courtesy of news.uis.edu

Projects identified as "Immediate Need" address specific campus needs related to creating a welcoming, intuitive campus arrival experience; strategic building renovations to realign departments and divisions to build better synergies; enhance academic teaching and learning; as well as construct new facilities to support safety and security, interdisciplinary teaching and learning, and support a vibrant campus life and culture.

Upon completion of the "Immediate Need," "Near Term" projects have been identified to address program realignment. For example, upon completion of the Library, Learning and Student Success Center, the UIS 2020 Master Plan recommends Brookens Building be renovated to create a Student Affairs and Wellness Center, and provide modern work space to relocate the Office of Business Financial Services (OBFS) and Human Resource departments. Additional strategic recommendations have been identified and prioritized that will cultivate a premier educational experience, support a vibrant campus life and culture and implement growth strategies to create an adaptable, responsible, and sustainable infrastructure to support future development.

The UIS 2020 Master Plan identifies several strategic site, building renovation, and new construction projects that are important to the future of the University of Illinois Springfield. These "Stand Alone Requirements and Opportunities" are triggered by various criteria including: need, enrollment growth and/or funding sources to name a few. These new facilities currently do not have appropriated capital funds, but are part of the University's Capital Project requests. New building locations have been identified to plan for future site development and campus utility and infrastructure needs. Completion of the strategic renovations and new construction provide modern interdisciplinary teaching and learning environments, allow for program and department realignment and improve synergies allowing inefficient, under-performing buildings such as: the Police Department Building (PDB), Cox Child Care (CCC), Human Resources Building (HRB), and WUIS Building to be emptied and demolished.

Students gathered in the Student Union.
Photo courtesy of www.uis.edu.

Campus Evolution

Campus Buildings
(BRK) Brookens Building
(BSB) Business Services Building
(CCC) Cox Children's Center
(DBS) Dixie Barn & Shed
(FSL) UIS Field Station on Lake Springfield
(HBC) Homer L. Butler Commons
(HRB) Human Resources Buildings
(HSB) Health & Sciences Building
(KIW) Kiwanis Building/Stadium
(KPB) Kiwanis Press box & Bleachers
(MB) Maintenance Building
(PAC) Public Affairs Center
(PDB) Police Department Building
(REC) Recreation Park
(RSL) Residential Simulation Lab
(SAB) Student Affairs Building
(SB) Storage Buildings
(SLB) Student Life Building
(SPH) Spencer House, Barn, & Garage
(SSH) Strawbridge-Shepherd House, Barn, & Garage
(TC) Tennis Complex
(TRAC) The Recreation & Athletic Center
(UHB) University Hall Building
(UNION) Student Union
(VPA) Visual & Performing Arts Building
(WUIS) WUIS Building

Student Housing
(BBL) Bluebell Court
(CLV) Clover Court
(FRH) Founders Residence Hall
(FXG) Foxglove Court
(LKR) Larkspur Court
(LRH) Lincoln Residence Hall
(MGR) Marigold Court
(PRL) Pennyroyal Court
(SFL) Sunflower Court
(TRL) Trillium Court

CAMPUS BEGINNING

The University of Illinois Springfield was founded in 1969 as Sangamon State University after a group of central Illinois citizens, united in their goal of bringing a four-year university to the capital city, formed the Springfield Committee for Higher Education.

The first university President, Robert C. Spencer, had grand visions for the institution. Beyond cultivating a spirit of innovation, openness and adaptability, Sangamon State University was committed to the following specific objectives:

- To make good teaching the preeminent standard by which the university, the faculty and the academic programs are judged.
- To emphasize liberal learning.
- To be a public affairs university.

On July 1, 1995, it became a campus of the University of Illinois, thereafter known as the University of Illinois Springfield.

The site of the university is 740 acres of prairie located six miles southeast of Springfield, adjacent to scenic Lake Springfield and to the 340-acre campus of Lincoln Land Community College.

The campus began with six one-story buildings on the east side of campus, known today as “Legacy Campus.” The first “permanent construction” was Brookens Library, which was completed in 1975. Campus today is comprised of 1.2M GSF in 86 buildings with an enrollment of 4,575 undergraduate and graduate students enrolled on-campus & on-line.

FOUNDING VISION

The vision of University of Illinois Springfield has remained consistent: cultivate a spirit of innovation, openness, and adaptability, providing world class teaching and learning focused on public engagement and entrepreneurship.

UIS TODAY

Ranked by *U.S. News & World Report* in 2019 as the *#1 Regional Public University in Illinois* and the *#4 Best Regional Public University in the Midwest,* the campus has grown to include 1.2M square feet in 86 buildings. Its focus remains dedicated to being a leader in student-centered teaching and learning both on campus and on-line.

Campus Today

Student walking through the Main Quad.
Photo courtesy of www.uis.edu.

POPULATION

The Fall 2018 enrollment snapshot was used as the base line for the analysis and growth projections. In the Fall of 2018, there were 3,287 full time equivalent (FTE) student enrolled on campus and on-line. Student head count totaled 4,575. The University employs 348 faculty.

SPACE

The University occupies 740 acres, including 1.2M gross square feet among the 86 buildings it owns. Off the main campus, academic and museum facilities include:

1. Therkildsen Field Station at Emiquon National Wildlife Refuge
2. UIS Field Station on Lake Springfield
3. Barber Observatory, near Pleasant Plains, IL
4. UIS Peoria, Peoria, IL

ORGANIZATION

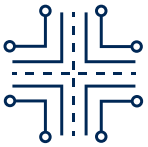
Surrounded by farmland and prairie restoration, the academic core is situated in buildings at the Main Quad and East Quad. Student Housing is located at the West Quad and southeast edge of campus, with Athletics and Campus Recreation to the south and west.

3,287

Full Time Equivalent

4,575

Headcount



1.2M GSF

Space

740

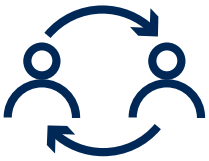
Acres

86

Buildings

348

Number of Faculty



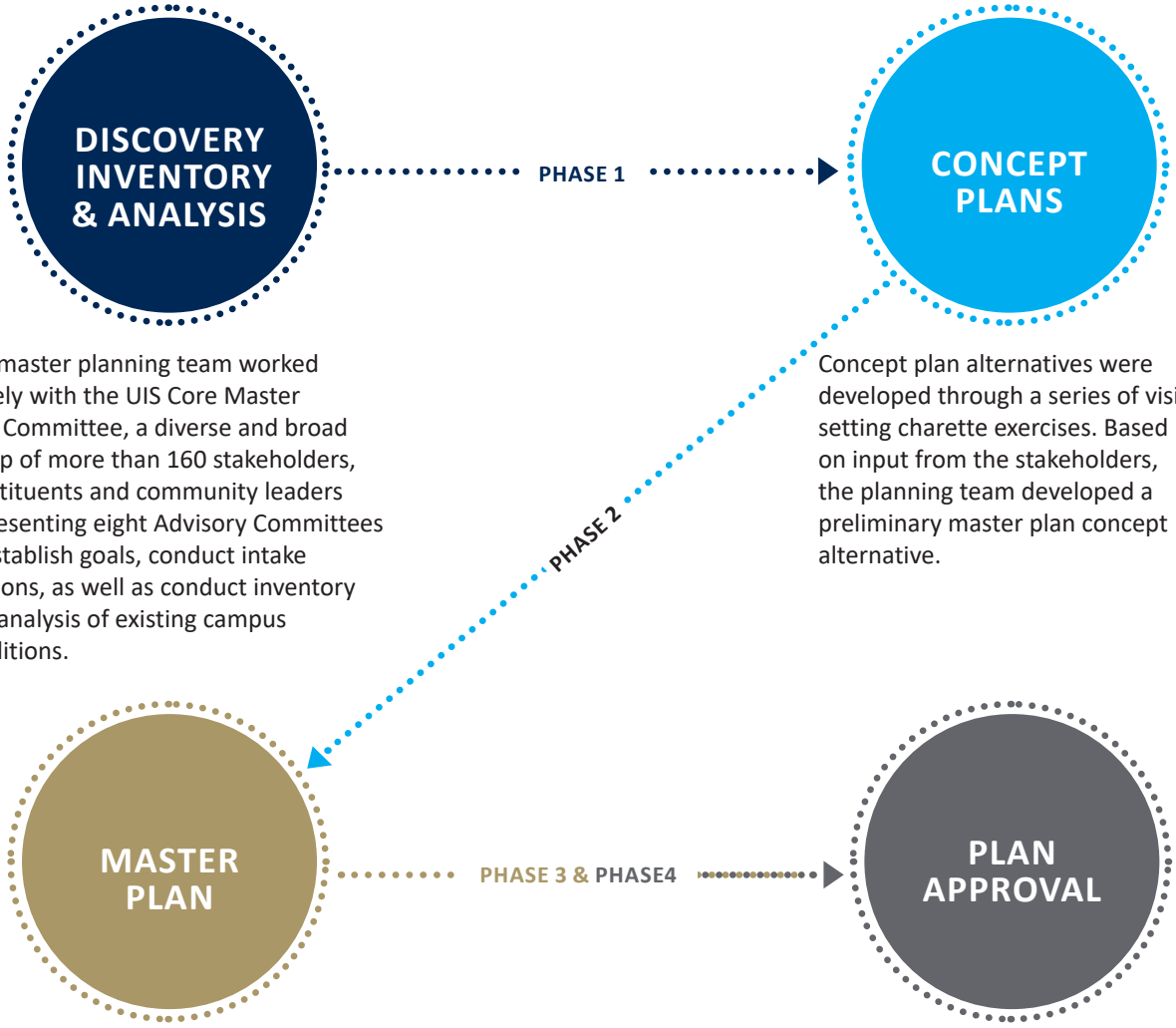
761

Number of Staff

UIS 2020 Master Plan Process

UIS 2020 MASTER PLAN

The UIS 2020 Master Plan was completed over a 15 month time period that consisted of four planning phases. It kicked off in October 2018 with the Discovery, Inventory, and Analysis phase, followed by Concept Development, Master Planning, and Plan Approval. The process provided opportunity to arrive at a shared vision for the UIS 2020 Master Plan and develop a flexible framework that will prioritize future development and expansion.



The master planning team worked closely with the UIS Core Master Plan Committee, a diverse and broad group of more than 160 stakeholders, constituents and community leaders representing eight Advisory Committees to establish goals, conduct intake sessions, as well as conduct inventory and analysis of existing campus conditions.

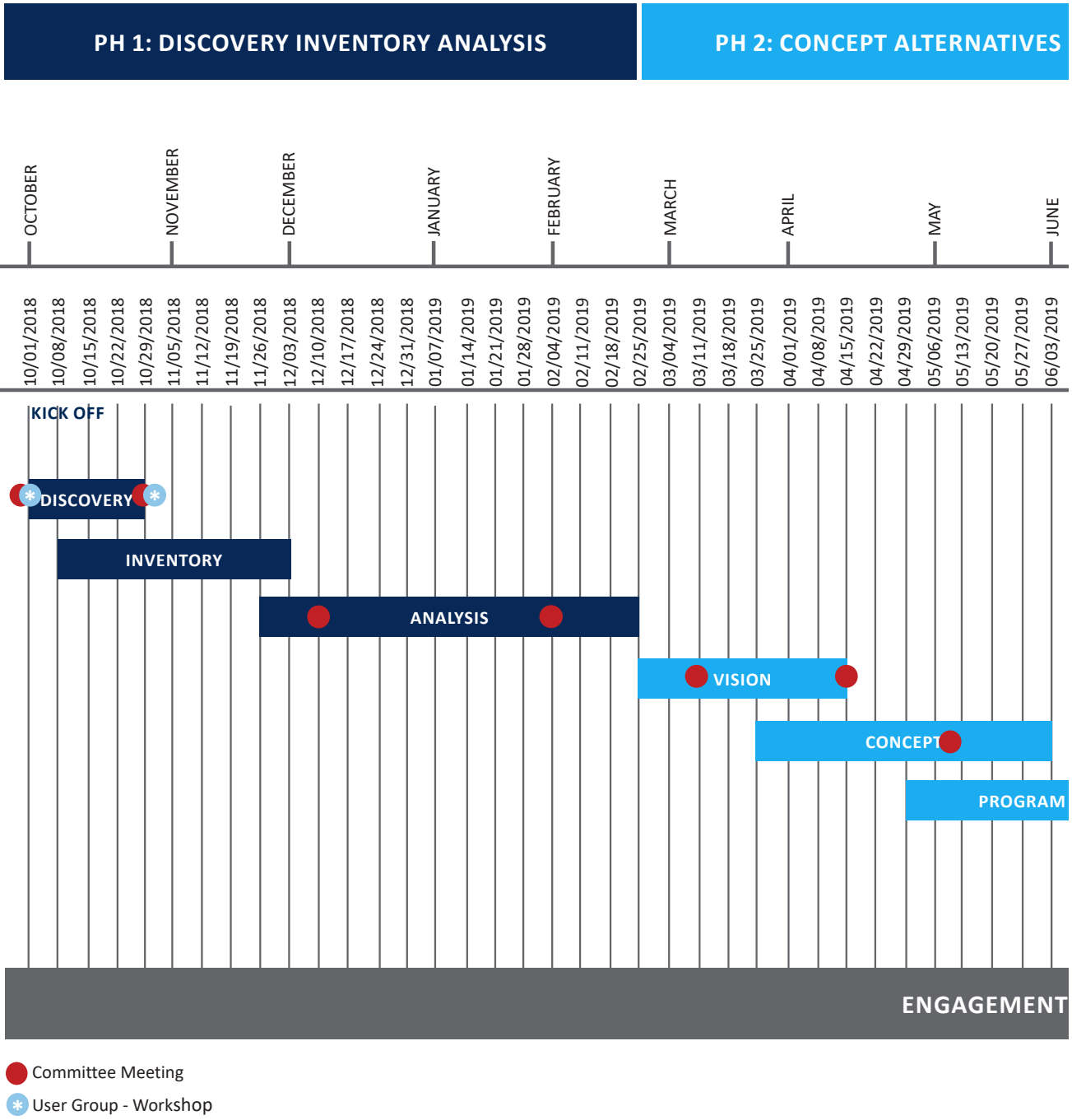
Concept plan alternatives were developed through a series of vision setting charette exercises. Based on input from the stakeholders, the planning team developed a preliminary master plan concept alternative.

During the master planning phase, the plans was further developed and executed to ensure vision alignment, test assumptions, and arrive at a single plan that supports the shared vision.

In the final phase, the Planning Team summarized key findings and recommendations to establish a final Master Plan report for approval by the Board of Trustees. This document summarizes key findings and highlights opportunities and recommendations in a physical campus plan, along with implementation strategies.

Stakeholders and consultants during Campus Visit #2 in November 2018.
Photo courtesy of Lawrence Group

Master Plan Schedule

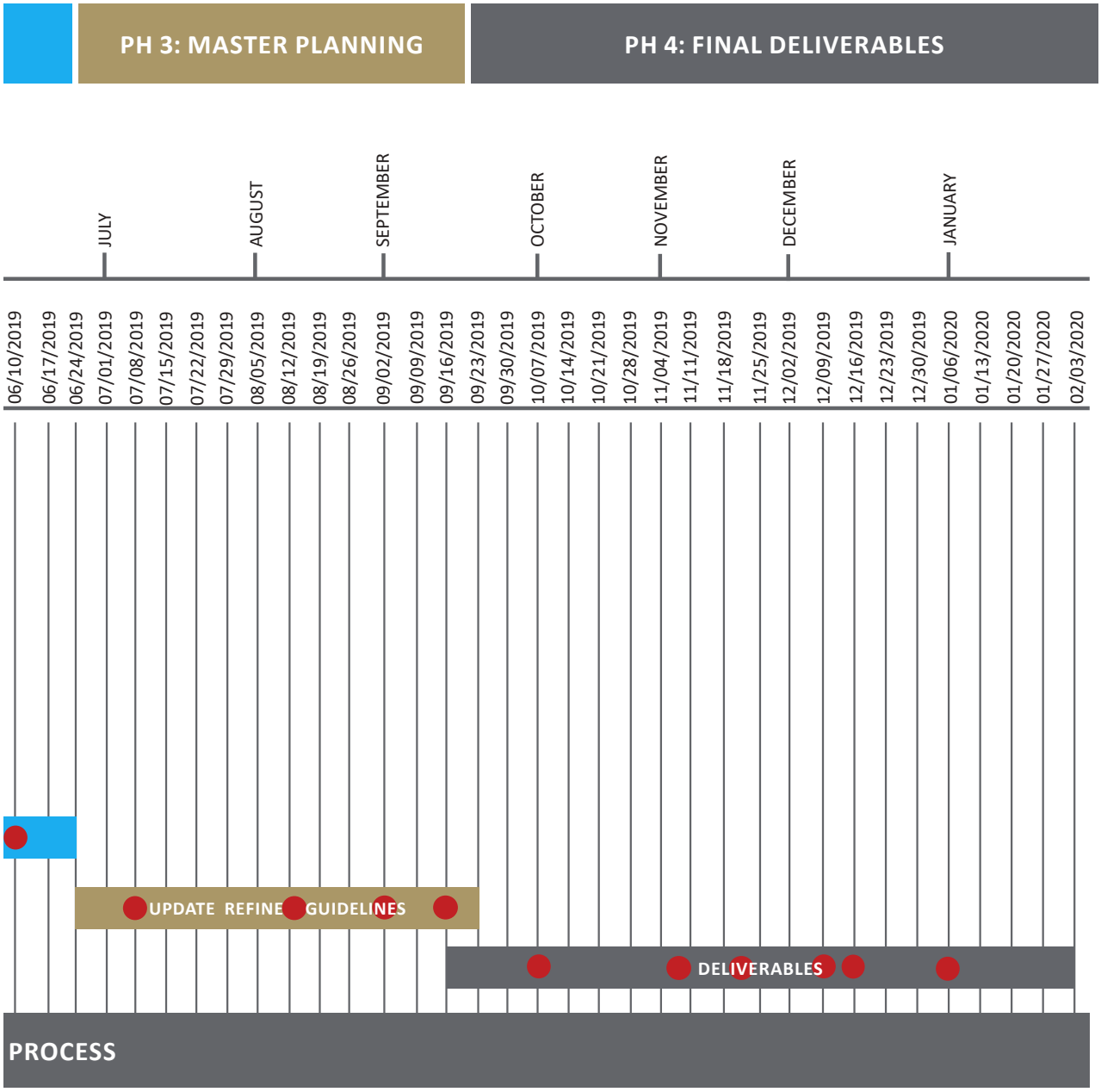


8

Public Forums

54

Committee Meetings



70

Stakeholder Meetings

160

Stakeholders

Campus & Community Engagement

Stakeholders at Campus Visit #2 in November 2018.

Chancellor Koch & Vice Chancellor Papini at Campus Visit #4 in March 2019.

Members of the community at a Public Forum at Campus Visit #2 in November 2018.

Stakeholders at Campus Visit #4 in March 2019.

Stakeholders at Campus Visit #3 in February 2019.

Stakeholders at Campus Visit #4 in March 2019.

Photos courtesy of Lawrence Group

Stakeholders at Campus Visit #5 in April 2019.

DECISION MAKING

Early in the planning process, decision making and advisory-level stakeholder groups were established. Led by a core committee group of constituents, representing a diverse and broad group of individuals, the planning process remained open and transparent. This process required on going commitment and dedication by committee members, along with active participation from the campus community, including faculty, staff, and students. This diverse group of individuals provided input that guided the master planning process.

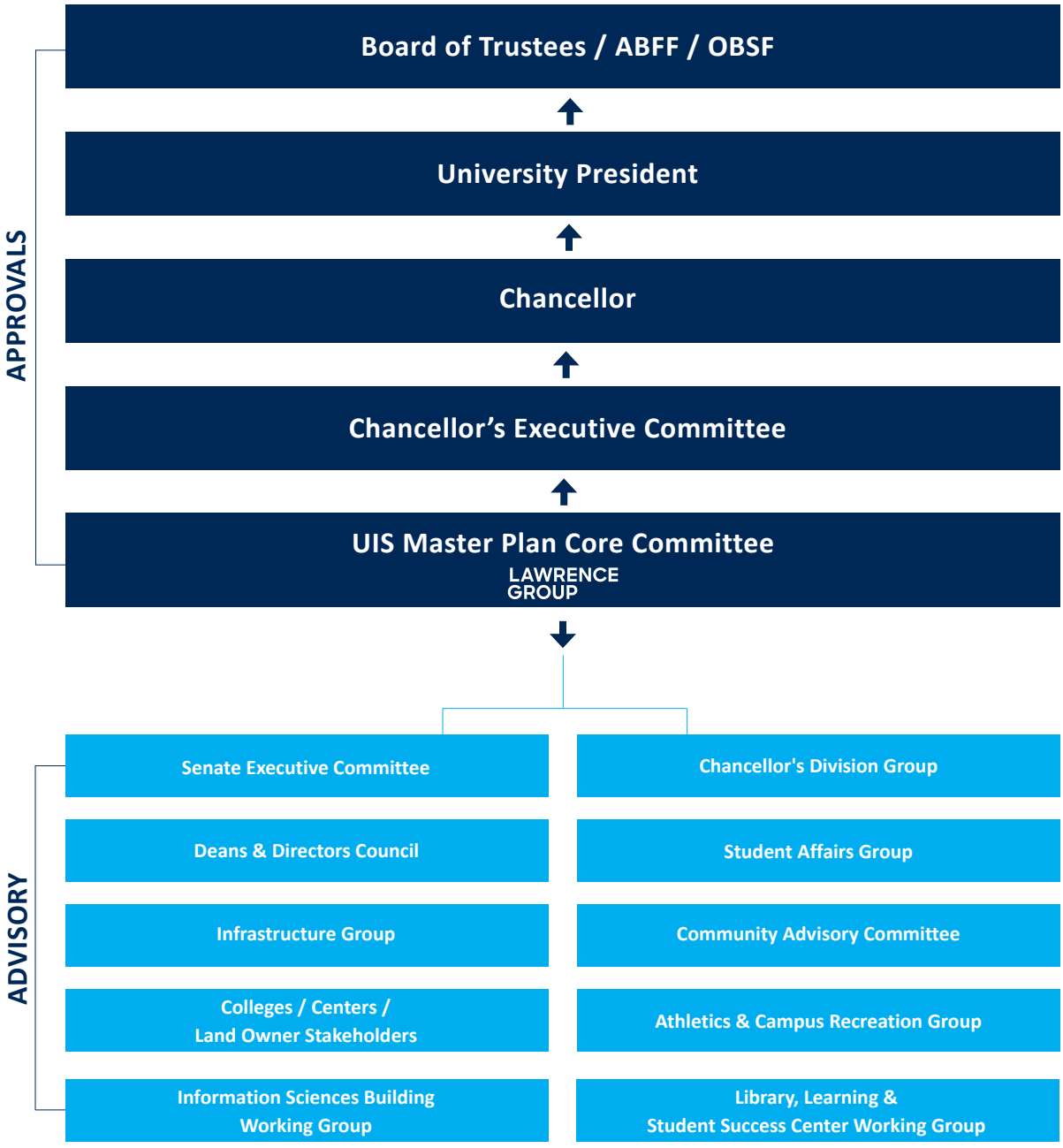
Stakeholders at Campus Visit #6 in June 2019.

CONSENSUS BUILDING

Building consensus is an important part of the master planning process. As a means to build consensus among stakeholders and constituents, a series of charrettes, public forums, stakeholder and committee meetings, along with biweekly conference calls were facilitated to gather input and share out information at key decision making points.

Acknowledgments

Stakeholders



UNIVERSITY OF ILLINOIS SPRINGFIELD 2020 MASTER PLAN
JANUARY 2020

Prepared by: Lawrence Group, Inc.

With guidance from:

- University Office of Capital Programs & Real Estate Services
- University of Illinois Springfield Master Plan Core Committee
- Planning input also provided by additional stakeholders and professional services consultants credited in a later section.

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Acknowledgments

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David Mason & Associates
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Juneau Associates
Cost Estimating

Statue of former President Abraham Lincoln stands proudly in the middle of the Main Quad between the Public Affairs Center & University Hall.
Photo courtesy of www.uis.edu.

Students walking to class through the Main Quad.
Photo courtesy of www.uis.edu

UIS's mascot, Orian, is ready to cheer on the Prairie Stars.
Photo courtesy of www.uis.edu.

Volume 1b

UIS 2020 Master Plan

UNIVERSITY OF ILLINOIS SPRINGFIELD

UIS 2020 Master Plan Project List

(BBL) Bluebell Court
(DBS) Dixie Barn & Shed
(FRH) Founders Residence Hall
(FXG) Foxglove Court
(HBC) Homer L. Butler Commons
(LKR) Larkspur Court
(LRH) Lincoln Residence Hall
(MB) Maintenance Building
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(RSL) Residential Simulation Lab
(SB) Storage Buildings
(SSH) Strawbridge-Shepherd House, Barn, & Garage
(TRAC) The Recreation & Athletic Center
(TRL) Trillium Court
(UNION) Student Union

EXTERIOR – IMPROVEMENTS

1. Enhance University Gateways
2. West Quad development
3. East Quad development
4. Land reserved for future solar energy farm
5. Construct recreation & athletics practice fields
6. Richard Wright Drive, Carl Sandburg Lane & Parking Lot F realignment
7. William Maxwell Lane realignment

STRATEGIC RENOVATIONS

8. **University Hall Building (UHB)**

   1st Floor
   - Construct Student Services One Stop

   2nd Floor
   - Modernize classrooms
   - Construct GIS Lab

   3rd Floor
   - Construct Social & Mixed Media Labs
   - Relocate Math Department

   4th Floor
   - Construct Sales & Trading Labs

9. **Public Affairs Center (PAC)**

   1st Floor
   - Construct Art Gallery
   - Establish Center for Lincoln Studies
   - Construct Sangamon Experience
   - Modernize conference rooms

   2nd Floor
   - Renovate Sangamon Auditorium Lobby
   - Replace Sangamon Auditorium Seats

   3rd Floor
   - Renovate for College of Education & Human Services

10. **Brookens Building (BRK)**

    1st Floor
    - Renovate Brookens Auditorium (concert hall)
    - Relocate & renovate Archives Technical Services & Library Systems, Construct Digital Humanities Lab

    2nd Floor
    - Construct Student Affairs & Wellness Center

    3rd Floor
    - Expand Center for Lincoln Studies
    - Relocate Online Professional & Engaged Learning (OPEL)
      - Relocate Faculty Development Resource Office (FDRO)
      - Renovate Continuing & Professional Education (CAPE)
      - Modernize Center for Online Learning, Research Services (COLRS)
    - Modernize classrooms

    4th Floor
    - Relocate Human Resources, Ethics & Office of Business & Financial Services (OBFS)

STRATEGIC RENOVATIONS (CONT.)

11. **Health & Sciences Building (HSB)**
    - Modernize teaching & research labs
    - Construct student collaboration space *(1st & 2nd floors)*
12. **Visual & Performing Arts Building (VPA)**
    - Repair building façade/envelope
    - Modernize classrooms, practice rooms & studios
13. **Student Life Building (SLB)**
    - Repair building façade/envelope
    - Modernize classrooms
14. **Business Services Building (BSB)**
    - Repair building façade/envelope
    - Relocate WUIS Radio Station
15. **Student Affairs Building (SAB)**
    - Repair building façade/envelope
16. **Spencer House (SPH)**
    - Construct Center for Experiential & Problem Based Learning
17. **UIS Field Station on Lake Springfield (FSL)**
    - Construct Phase 2 Science Lab
18. **Clover Court 100 & 200 Apartments Renovation (CLV)**
19. **Sunflower Court Apartments Renovation (SFL)**

NEW CAPITAL CONSTRUCTION PROJECTS

20. Public Safety Building (PSB)
21. Library, Learning & Student Success Center (LLSSC)
22. UI Springfield Innovation Center
23. Child Development Center (CC)
24. Information Sciences Building (ISB)
25. Human Performance Center (HPC) - addition to TRAC
26. Business Building (BB)
27. Future Student Housing (FSH)
28. Multi-Activity Center Gym (MAC) - addition to TRAC
29. Natatorium (NAT) - addition to TRAC
30. Athletics Field House (AFH) (exploring two sites)
31. Resurface Kiwanis Stadium with synthetic turf (KIW)
32. Soccer & Lacrosse additions (Kiwanis) (KIW)
33. Kiwanis Press box & Bleachers (KPB)
34. Golf Training Facility (GTF)
35. Baseball/Softball Complex (BSC)
36. Tennis Complex (TC)
37. Land reserved for Commercial Development
38. Land reserved for Research Park
39. Future Academic Expansion (FAE)
40. Central Receiving & Warehouse (CRW)
41. Maintenance Storage (MS)

DEMOLITION

42. Cox Children's Center (CCC)
43. Police Department Building (PDB)
44. Human Resources Building (HRB)
45. WUIS Building (WUIS)
46. 1/3 of Parking Lot B

Immediate Need

Immediate Need projects address specific campus needs related to constructing new facilities to support safety and security; enhancing academics, interdisciplinary teaching and learning; supporting a vibrant campus life and culture; strategic building renovations to realign departments and divisions to build better departmental synergies; and creating a welcoming, intuitive campus arrival experience.

Specific projects include:

EXTERIOR – IMPROVEMENTS

1. Enhance University Gateways
3. East Quad development
6. Richard Wright Drive, Carl Sandburg Lane & Parking Lot F realignment
7. William Maxwell Lane realignment

NEW CAPITAL CONSTRUCTION PROJECTS

20. Public Safety Building (PSB)
21. Library, Learning, & Student Success Center (LLSSC)
22. UI Springfield Innovation Center
23. Child Development Center (CC)

STRATEGIC RENOVATIONS

8. **University Hall Building (UHB)**
   - 1st Floor
     - Construct Student Services One Stop
   - 2nd Floor
     - Modernize classrooms
     - Construct GIS Lab
9. **Public Affairs Center (PAC)**
   - 1st Floor
     - Relocate Art Gallery
     - Establish Center for Lincoln Studies
     - Construct Sangamon Experience
     - Modernize Conference Rooms (partial)
   - 3rd Floor
     - Renovate for College of Education & Human Services Offices
   - 4th Floor
     - Modernize Conference Room / Classroom
10. **Brookens Building (BRK)**
    - 1st Floor
      - Relocate & renovate Archives Technical Services & Library Systems, construct Digital Humanities Lab
    - 3rd Floor
      - Relocate Online Professional & Engaged Learning (OPEL)
        - Renovate Continuing & Professional Education (CAPE)
        - Relocate Faculty Development Resource Office (FDRO)
        - Modernize Center for Online Learning Research and Service (COLRS)
        - Renovate shared work & collaboration spaces
      - Modernize Classrooms
11. **Health & Sciences Building (HSB)**
    - Modernize teaching & research labs
    - 1st Floor
      - Construct student co-working & collaboration space
    - 2nd Floor
      - Construct student co-working & collaboration space
12. **Visual & Performing Arts (VPA)**
    - Repair building façade/envelope
13. **Student Life Building (SLB)**
    - Repair building façade/envelope
15. **Student Affairs Building (SAB)**
    - Repair building façade/envelope

Immediate Need: Site Improvement

UNIVERSITY GATEWAYS 1

Primary Gateway Concept

Secondary Gateway Concept

The UIS 2020 Master Plan establishes an intuitive and welcoming arrival experience for all visitors. It starts with working with the Illinois Department of Transportation to identify locations for key branded directional signage along major highway interstates 55 and 72 directing visitors to campus.

Landmark gateways strengthen the University's connections to the Springfield community. Primary gateways occur along 11th Street at key locations, as well as on the north edge of campus at West Lake Shore Drive and Edgar Lee Masters, and to the south along Shepherd Road provide a defined entry to the campus.

Secondary gateways at key locations on the campus ring road in conjunction with campus wayfinding signage, guide vehicular traffic. Focus should be placed on using consistent palette materials, lighting, and landscape to create a strong sense of place that supports UIS's campus character.

The intent of the gateways is to identify the University through signage, landscaping, and other design elements, but also to transition multi-modal traffic (i.e., vehicles, bicycles, and pedestrians) to the campus environment. Through the various recommendations identified through the master planning process, multi-modal safety, access, and mobility was emphasized. The gateway features should be designed to provide wayfinding for key campus destinations but also visual cues to drivers to be alert for increased pedestrian and bicyclist activity.

EAST QUAD PLAZA 3

Conceptual aerial view of East Quad looking northwest.

The facilities at the East Quad consist of several single-story buildings that are home to many important academic programs such as Art, Music and Theatre, as well as Allied Health and Nursing. UIS is committed to investing capital resources to improve the quality of the exterior plaza to create an informal gathering plaza with increased green space, improved accessibility and comfortable furnishings to foster collaboration, gathering or quiet study. These improvements further build prominent connections to the Main Quad as well as elevate the campus life experience.

KEY

- Existing Building - No Renovation
- Existing Building - Renovation
- New Construction

Concept: Repaired building facade and envelope repair at East Campus buildings include sustainable materials and include updated landscaping and furnishings.

Immediate Need: Strategic Renovation

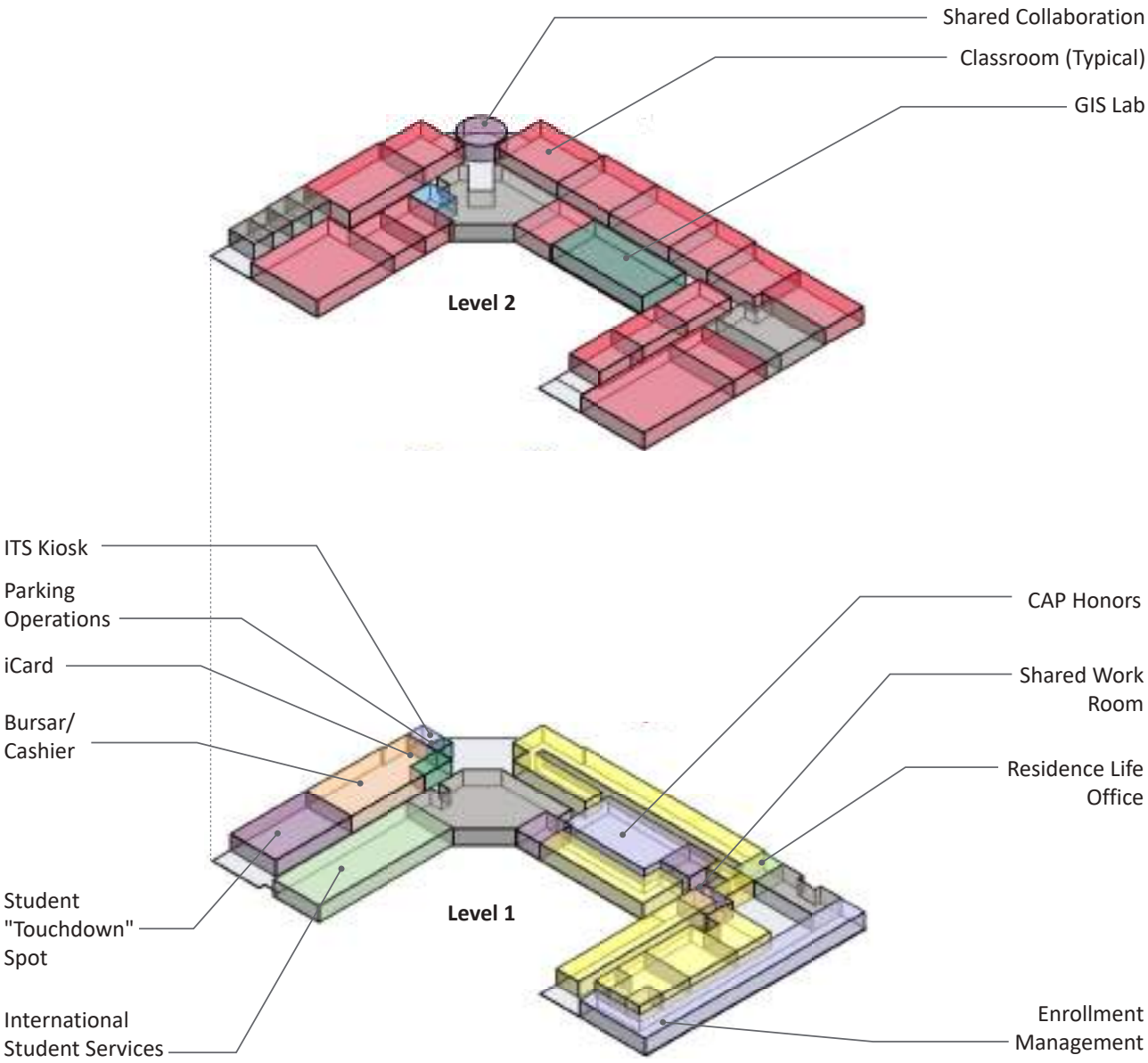
UNIVERSITY HALL BUILDING 8

The UIS 2020 Master Plan includes several strategic building renovations to cultivate a premier educational experience, including renovating University Hall Building (UHB) to establish a Student Services One Stop, modernize classrooms and labs, improve utilization and over all quality, and make way for new Geographic Information Systems (GIS) interdisciplinary learning environments.

Several key departments including Parking Operations, iCard, Bursars/Cashiers Office, International Student Services, Capital Honors, a Residence Life Office, and Information Technology client service office will be relocated adjacent to Enrollment Management to establish a new Student Services One Stop at Level 1 in University Hall.

Concept of Student Services One Stop
Photo Courtesy of Lawrence Group.

Concept of Student Services One Stop
Photo Courtesy of Lawrence Group.



KEY

- Classroom
- Interdisciplinary Lab
- Student Affairs
- Business & Financial Services
- Administrative Affairs
- Academic Affairs
- Student Affairs
- Shared Space/General Use
- Existing Space/Project

Immediate Need: Strategic Renovation

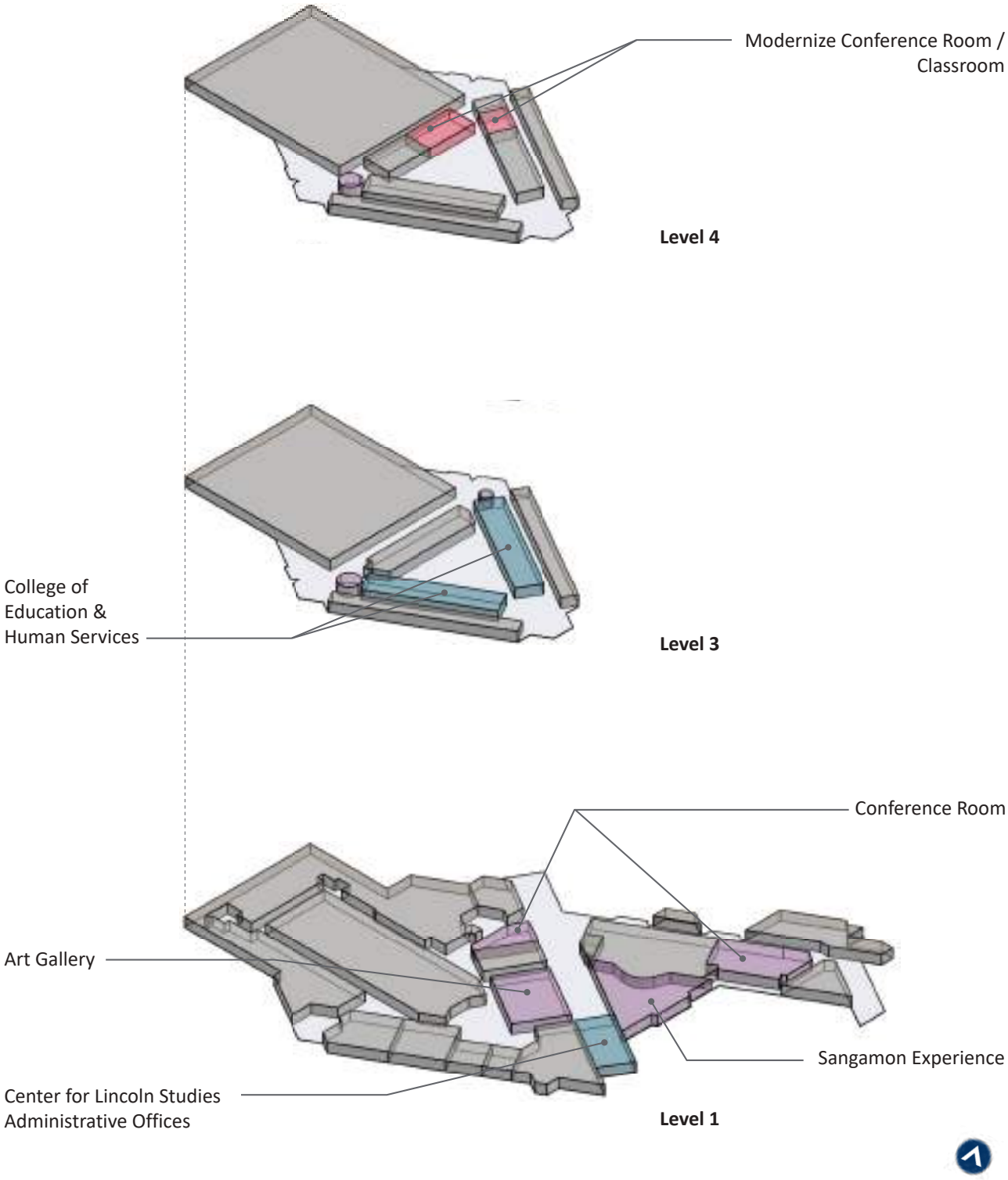
PUBLIC AFFAIRS CENTER 9

Several projects are recommended to support a premier educational experience and elevate the campus life experience. In order to make way for program needs within the Health & Sciences Building (HSB), the plan recommends the HSB Art Gallery be relocated to the Public Affairs Center (PAC). The Art Gallery will be strategically positioned adjacent to the new donor funded Sangamon Experience, an interactive display highlighting the community's history.

Other key projects include the Center for Lincoln Studies administrative offices, modern work space for the College of Education and Human Services faculty on Level 3, and modernization of existing classrooms, computer labs, and teaching labs that will remain on the Level 4.

Concept: Sangamon Experience at PAC.
Image courtesy of FWAI.

Concept: Sangamon Experience at PAC.
Image courtesy of FWAI.


Modernize Conference Room / Classroom
Level 4
College of Education & Human Services
Level 3
Conference Room
Art Gallery
Sangamon Experience
Center for Lincoln Studies Administrative Offices
Level 1
KEY
Classroom
Academic Affairs
Shared Space/General Use
Existing Space/Project

Immediate Need: Strategic Renovation

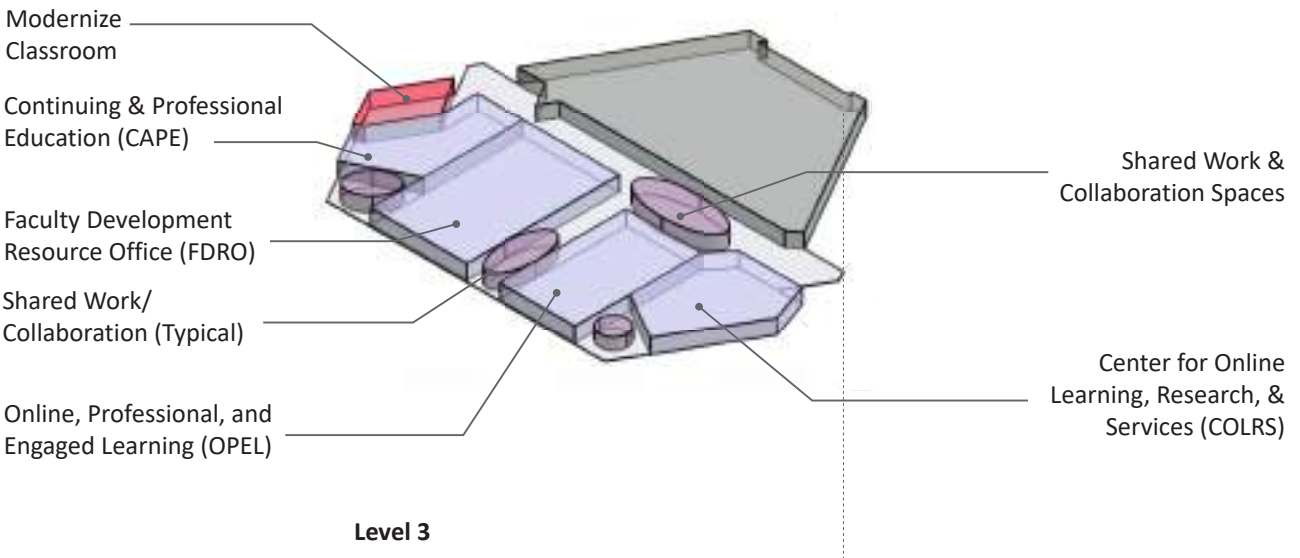
BROOKENS BUILDING 10

Several key renovation projects are recommended at the Brookens Building (BRK) to increase visibility, improve access, and better align departmental units to improve adjacencies and enhance synergies.
Key projects include:

- Renovating Level 1 to include Technical Services & Library System, along with Archives, Library Services & Digital Humanities Lab.
- Constructing modern offices with shared resources for the Online, Professional, & Engaged Learning (OPEL) to include:
    - Faculty Development Resource Office (FDRO)
    - Continuing & Professional Education (CAPE)
    - Center for Online Learning Research and Service (COLRS)
    - Classroom
    - Shared work & collaboration spaces

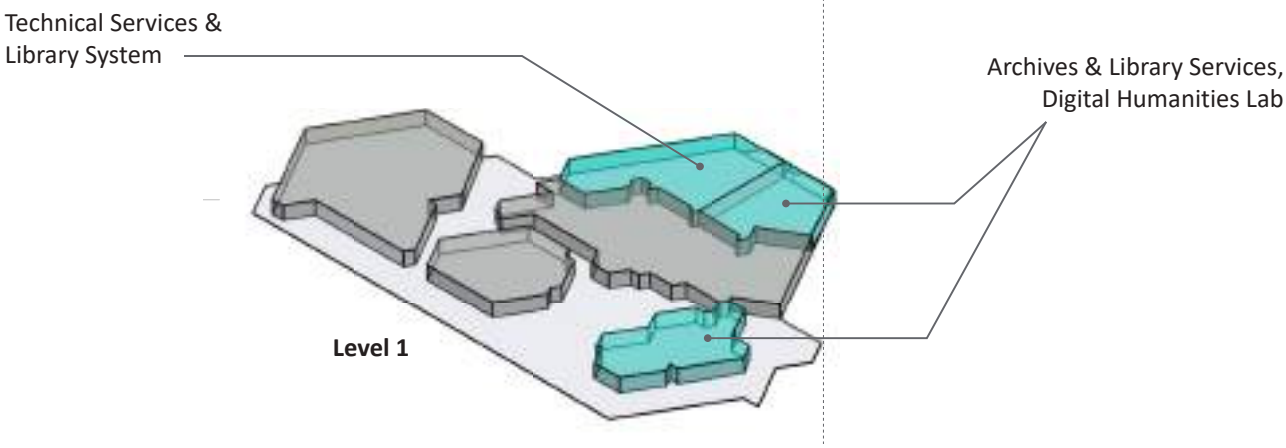
Concept of a modern office.
Image courtesy of www.reynoldsmaerican.com

Concept of a modern office.
Image courtesy of www.designtrends.com



Level 3

Level 2: No Renovation



Level 1

KEY

- Classroom
- Library Support/Service
- Shared Space/General Use
- Academic Affairs
- Existing Space/Project

Immediate Need: Strategic Renovation

HEALTH & SCIENCES BUILDING 11

The Sciences at UIS have two general laboratory needs: teaching laboratory space and research laboratory space.

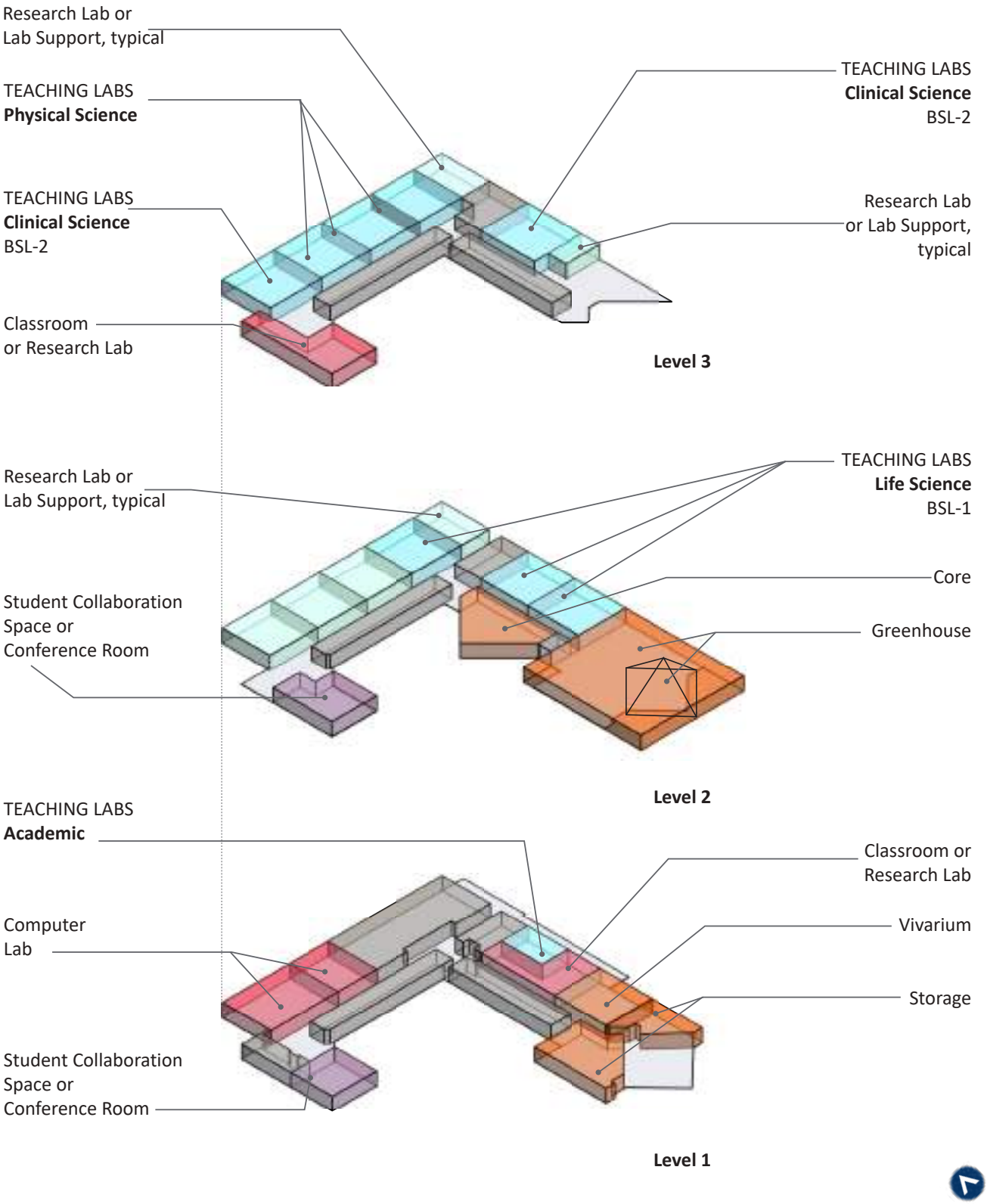
Teaching laboratory spaces have a specific set of guidelines for use, safety, etc. that assumes frequent use by a cohort of students (about 16) with a variety of different backgrounds, e.g. biology, nursing, chemistry. Therefore, the level of training, sophistication of equipment, and general resource needs are less sophisticated. These spaces are used for teaching laboratory instruction and/or demonstration.

Research laboratory spaces are utilized by principle investigators (PI) for primary research or are core facilities. These spaces typically require more complicated, delicate, and/or expensive resources necessitating more unique training and safety protocols for faculty, staff, and/or students who work in these areas. They can be used for teaching and instruction, but excluded for use by upper level undergraduate curricula or smaller groups under the supervision of the responsible PI of faculty manager. Furthermore, they are used for primary research and/or global support for research on the campus.

The segregation of the Sciences for the common purpose of teaching science will allow for a much stronger and coherent effort moving forward. This will necessitate interdisciplinary cooperation among current departments and will benefit the students and UIS by providing a more integrated science curricula, better use of resources, more attractive proposals for external funding opportunities and ultimately a functional facility that allows for greater student outcomes.

Concept of a modern science lab.
Image courtesy of www.google.com

Concept of a modern science lab.
Image courtesy of www.geocall.co.uk



KEY

- Classroom Computer Lab
- Teaching Lab
- Research Lab
- Shared Space/General Use
- Program Support
- Existing Space/Project

Immediate Need: New Capital Project

PUBLIC SAFETY BUILDING 20

The Public Safety Building (PSB) is home to the Campus Police Department. This project was reappropriated in the State's Fiscal Year 2020 budget. It is 100% designed and ready to bid pending release of funds from the State of Illinois.

The Public Safety Building (PSB) is a one story structure with a footprint of approximately 10,045 gross square feet (GSF). The facility will be a LEED Certified Silver project located at the northwest corner of University Drive and Eliza Farnham Drive. Spaces include a secure vestibule, dispatch command and control center, briefing/training room, evidence storage, records storage, interview rooms, locker rooms, administrative offices, holding area, a two car sally port and storage.

FAST FACTS:

- 10,045 GSF
- 1 Floor

LIBRARY LEARNING & STUDENT SUCCESS CENTER 21

View from the Student Union.

The Library Learning and Student Success Center (LLSSC) funding was appropriated in Public Act 101-0029. This new strategic facility frames the main quad. The design and construction goal will be to achieve LEED Gold Certification. It includes shared space that enables and fosters collaboration. The LLSSC will house:

- Library Services & Collections
- Center for Academic Success (CAS)
  - The Learning Hub
  - Office of Advising Services, Information & Support (OASIS)
  - Graduate Public Service Internships
  - Experiential & Service Learning Program
  - Testing Services
  - Tutoring Center
  - Writing Lab
  - Math Lab
  - Offices
- Career Development Center
- Experiential teaching and learning labs
- Imaginaseum & Maker Space
- Information Technology Services (ITS Client Services)

The Library will need shelving/collection space, as well as a main service desk. Students and the community will be provided a maker space (exploration space) for both high-tech activities (3D printing, vinyl cutters, robotics, etc) and low-tech reflective study and collaborative group areas. ITS will need secure storage and repair facilities as well as a Help Desk area. CAS's Testing Center will need dedicated computers and quiet space. This facility will house tutoring spaces, conference rooms, and computer labs/classrooms. Lastly, it will accommodate a 200-seat classroom/conference space.

The Career Development office will include interview rooms for one-on-one and small group meetings, as well as, serve simulation space to support academic programming.

FAST FACTS:

- 63,500 GSF
- Multi-story

Immediate Need: New Capital Project

UI SPRINGFIELD INNOVATION CENTER 22

The UIS Innovation Center is the first hub of the Illinois Innovation Network, a system of connected university, community and industry based hubs that will work together to drive innovation and economic development across Illinois.

With an expanded Innovate Springfield at its heart, the UIS Innovation Center will advance the regional economy by working with industry, government and other partners to build a robust and inclusive human capital and innovation pipeline.

The Center will be a modern space. Every facet of the Center, from its design to the activities that occur within the facility and outside its walls, will inspire an innovative culture, and contribute to a vibrant community by strengthening community connections and building a more robust economy. The design and construction goal will be to achieve LEED Gold Certification.

Activities and programs will attract entrepreneurs to develop and launch locally based businesses and will Support the development of evidence- based, impact-driven programs aimed at advancing the social and economic welfare of the region.

To increase economic vitality and growth and to attract, retain and develop talent, the Center will focus on FIVE strategic areas through the expansion of existing programs and creation of new initiatives:

1. Business Incubation & Acceleration
2. Technology & Research Commercialization
3. Social Innovation
4. Public Safety Research
5. Undergraduate, Graduate & Professional Education

FAST FACTS:

- 62,000 GSF
- Multi-story

CHILD DEVELOPMENT CENTER ㉓

UIS, along with University leadership, is developing the finance model for a new Child Development Center (CC). This new auxiliary facility will allow for 20% growth and will serve approximately 115 children including after school programs and summer break offerings. It will greatly improve services to university faculty, staff and student families. The existing Cox Children's Center is a leading and highly decorated child care provider in the state of Illinois. It is licensed through the State of Illinois and accredited through the National Association for the Education of Young Children. The center is a site for practicum experiences for university students seeking scholar-practitioner experience in the field of social work, community health, and education. The design and construction goal will be to achieve LEED Silver Certification. Additionally, William Maxwell Lane will be realigned to accommodate the facility and its new location.

The Child Development Center would house:

- Classrooms
- Observation areas inside and outside
- Infant care specialized areas
- Multi-use learning/exploring space with interactive technologies
- Entrance lobby with reception desk,
- Administrative office spaces
- Staff break room
- Full function kitchen with toy disinfectant station
- Separate pantry
- Basement for safety and weather related threats
- Supply storage locations for indoor and outdoor toys and learning materials
- Site work
- Expanded parking
- Enlarged outdoor play areas with stationary and mobile play yard equipment
- All areas will be monitored and require secure access controls.

FAST FACTS:

- 14,900 GSF
- 1 Floor

Immediate Need: Strategic Renovation

VISUAL & PERFORMING ARTS 12
STUDENT LIFE BUILDING 13 STUDENT AFFAIRS BUILDING 15

Conceptual aerial view of East Quad looking northwest.

The facilities at the East Quad consist of several single-story buildings that are home to many important academic programs such as Art, Music and Theatre, as well as Allied Health and Nursing. New affordable, sustainable and attractive building envelope materials consisting of brick, simulated wood and metal panels elevate the design and modernize the aesthetics of the building exterior further connecting the architectural context of East Quad facilities to the rest of campus. Increasing the amount of glazing will improve daylighting and learning environments.

KEY

- Existing Building - No Renovation
- Existing Building - Renovation
- New Construction

Concept: Repaired building facade and envelope repair at East Campus buildings include sustainable materials and include updated landscaping and furnishings.

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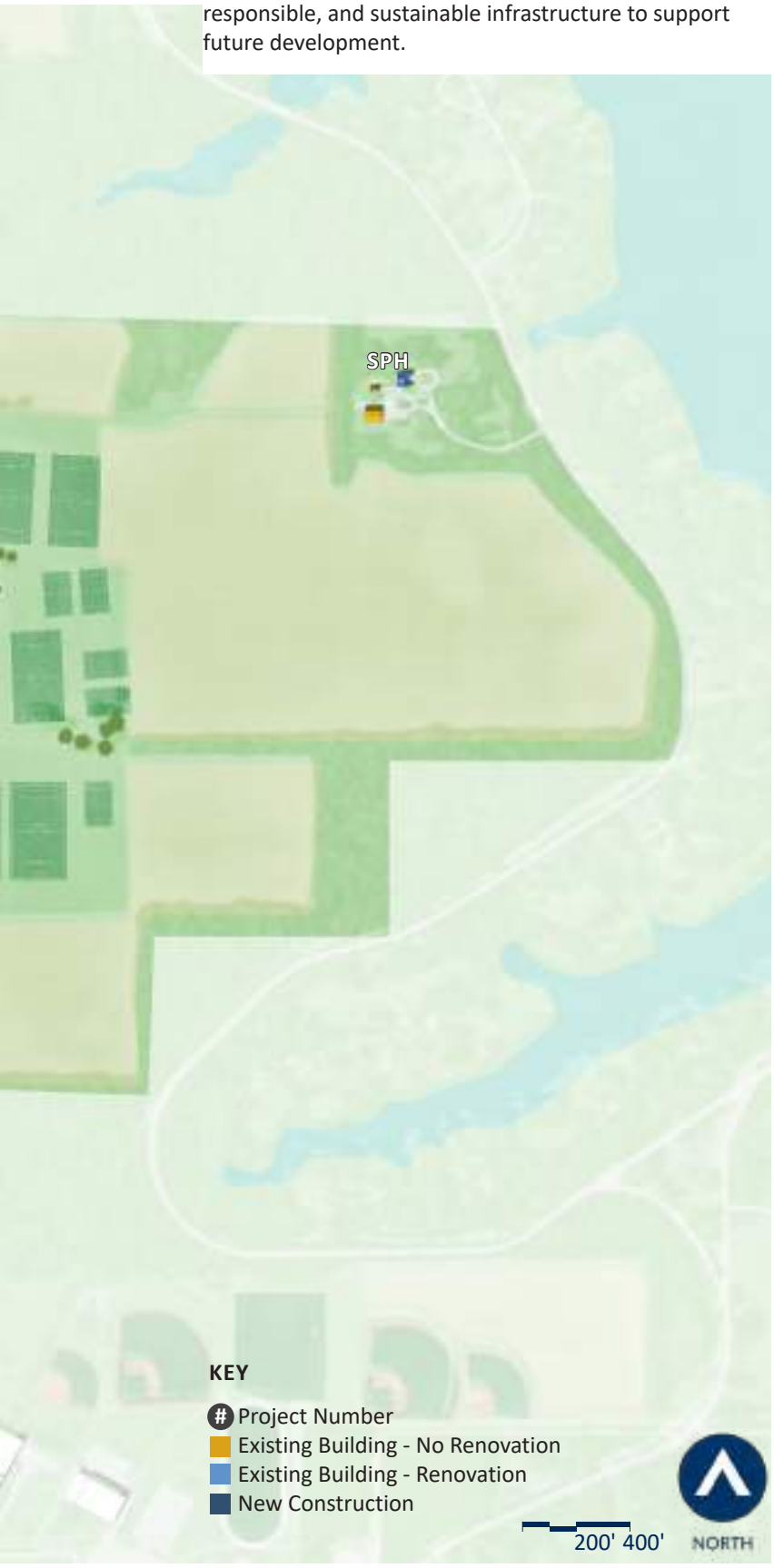
Near Term


Downtown Springfield
US Field Station
DBS
RSL
SB
MB
10
BRK
WUIS
SLB
BSB
14
PAC
REC
2 West Quad
LRH
HSB
East Quad
HRB
Main Quad
CC
VPA
12
SAB
FXG
PRL
FRH
UHB
8
LLSSC
TRL
MGR
BBL
UNION
HBC
18
CLV
19
SFL
TRAC
KIW
LKR
KPB
PSB
BSC
SSH
SB

Near Term recommends the strategic relocation of several departments to cultivate a premier educational experience; support a vibrant campus life and culture; and implement growth strategies to create an adaptable, responsible, and sustainable infrastructure to support future development.



EXTERIOR – IMPROVEMENTS

2 West Quad development

STRATEGIC RENOVATIONS

8 **University Hall Building (UHB)**

3rd Floor

- Construct UHB Social Media Lab
- Construct UHB Mixed Media Lab
- Construct UHB Math Dept. Relocation

10 **Brookens Building (BRK)**

2nd Floor

- Construct Student Affairs & Wellness Center
  - Inter-Cultural Center
    - Diversity Center
    - International Student Services - student event programming
    - Gender & Sexuality Student Services
    - Women's Center
  - Campus Health Services
    - Counseling Center
    - Medical Clinic
    - Office of Disability Services
  - The Journal (student newspaper)
  - Mother's Room
  - Podcast technology studio
  - Blog/technology studio
  - Multi-purpose room
  - Prayer room
  - Veterans' room

3rd Floor

- Expand Center for Lincoln Studies
  - Portion of Archives
  - Work & research space
  - Special collection exhibit displays
  - Illinois Regional Archives Depository (IRAD) Collection
  - Reading Room
  - Oral History Lab
  - Seminar/Conference room

4th Floor

- Relocate Human Resources, Ethics, & Office of Business & Financial Services (OBFS)
  - All Human Resources, Ethics from HRB, & OBFS from BSB
    - Asst. Controller, UI Acct & Financial Reporting/Director, Business Services
    - Accounting Services
    - Accounts Payable
    - University Audits
    - University Payables
    - Grants & Contracts Accounting
    - Purchasing

12 **Visual & Performing Arts (VPA)**

- Modernize classrooms, practice rooms & studios

14 **Business Services Building (BSB)**

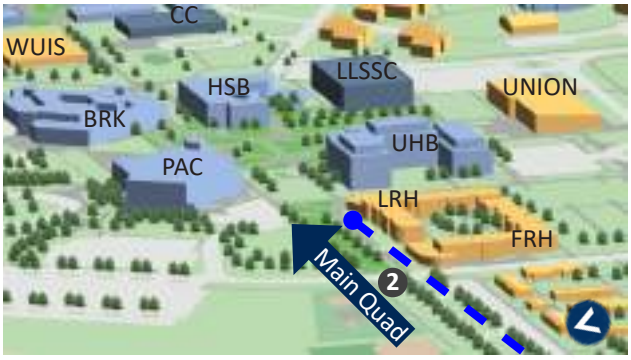
- Relocate WUIS Radio Station
- Repair building façade/envelope

18 **Clover Court 100 & 200 Apartments Renovation (CLV)**

19 **Sunflower Court Apartments Renovation (SFL)**

Near Term: Site Improvement

WEST QUAD ❷



Conceptual aerial view of West Quad looking southeast.

KEY

- Existing Building - No Renovation
- Existing Building - Renovation
- New Construction

The new West Quad provides a pedestrian friendly corridor between the Residence Halls and recreation fields to the northwest.

Planters can be removed during busy move in/move out times to allow for vehicular access, but this area will remain largely a pedestrian corridor.

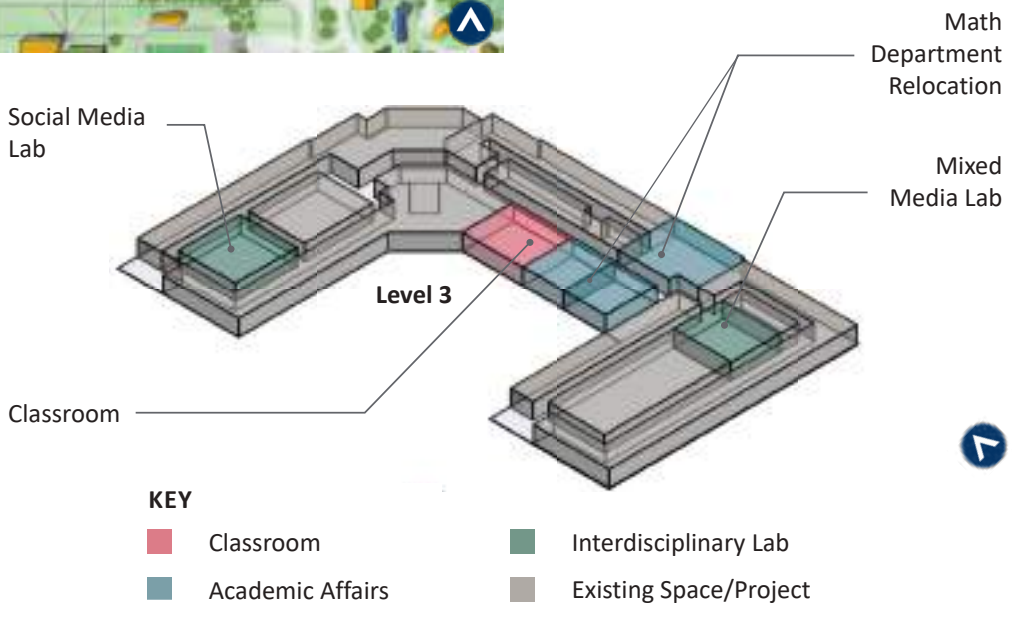
The rendering shows the new West Quad looking east on Vachel Lindsay Drive towards the Public Affairs Center, where the statue of the Young Lawyer, Abraham Lincoln, is located at the Main Quad.

Concept: New West Quad at Vachel Lindsay Drive and Eliza Farnham Drive.

UNIVERSITY HALL BUILDING 8

The UIS 2020 Master Plan includes several critical renovations to improve classroom utilization, overall quality of learning environments, makes way for new interdisciplinary learning environments and departmental shifts to improve adjacencies. Key Near Term projects in UHB recommended to achieve these goals include:

- Construct new Social Media Lab
- Construct new Mixed Media Lab
- Relocating the Math Department from the WUIS Building



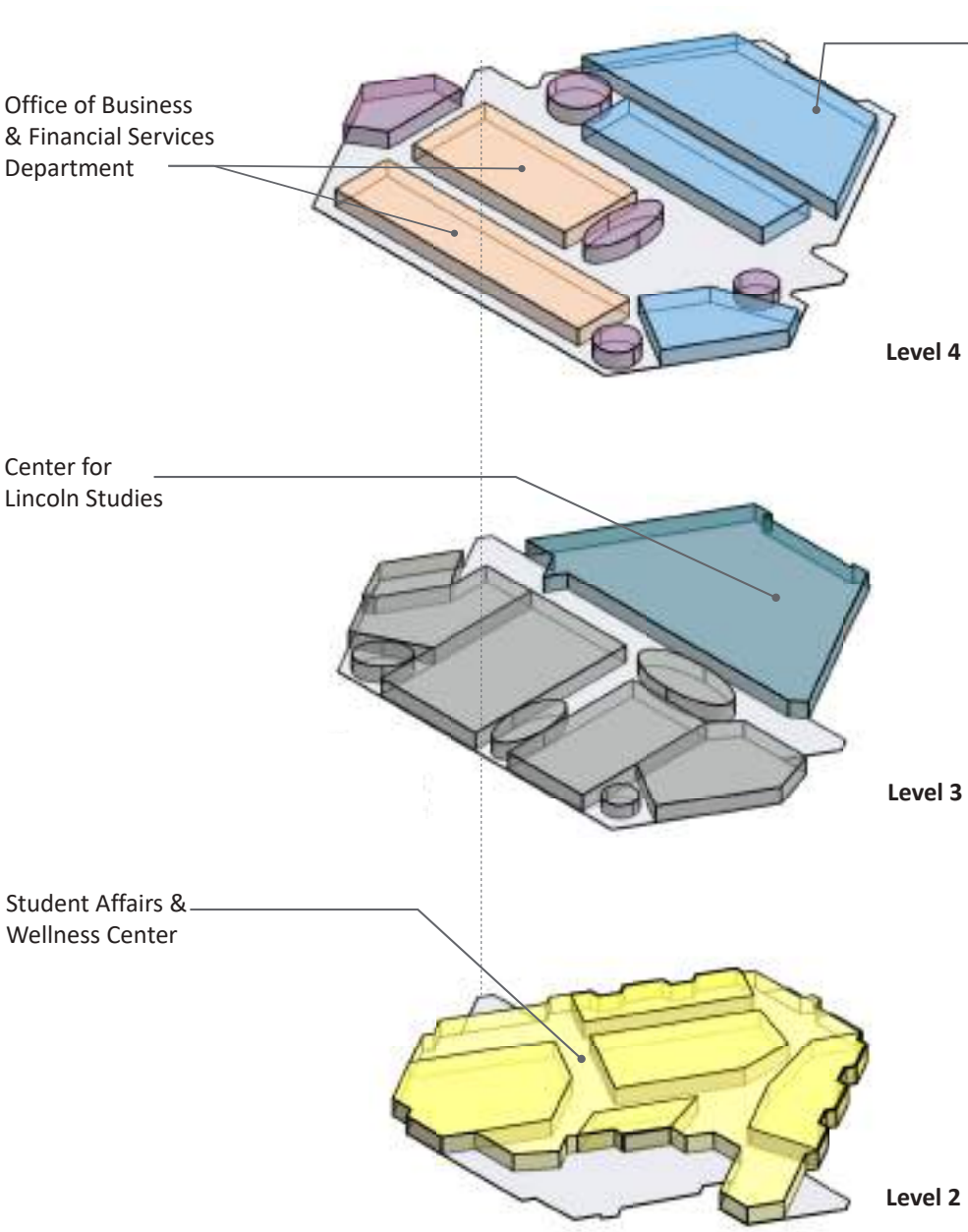
Concept of a modern learning environment.
Image courtesy of www.herainc.com

Near Term: Strategic Renovation

BROOKENS BUILDING ⑩

Upon completion of the Library, Learning, & Student Success Center (LLSSC), several key Near Term projects recommended for the Brookens Building (BRK) will improve departmental adjacencies to create a Student Affairs and Wellness Center on the second floor, the Center for Lincoln Studies on the third floor, and enhanced departmental synergies with the planned relocation of the Office of Business and Financial Services (OBFS), Human Resources and Ethics to new modern work places with shared resources and increased views to campus on the fourth floor.

Concept of a modern office,
Image courtesy of www.fastcompany.com


Human Resources, Ethics
Office of Business & Financial Services Department
Level 4
Center for Lincoln Studies
Level 3
Student Affairs & Wellness Center
Level 2
Level 1: No Renovation
KEY
Student Affairs
Chancellor's Division
Shared Space/General Use
Interdisciplinary Lab
Business & Financial Services
Existing Space/Project

Near Term: Strategic Renovation

VISUAL & PERFORMING ARTS 12

Several key renovation projects at the Visual and Performing Arts Building include classroom and practice studio modernization to increase utilization and enhance overall quality for faculty and students.

Concept of a performance space.
Image courtesy of www.stringsmagazine.com

Concept of a visual art studio space.
Image courtesy of www.bc.edu

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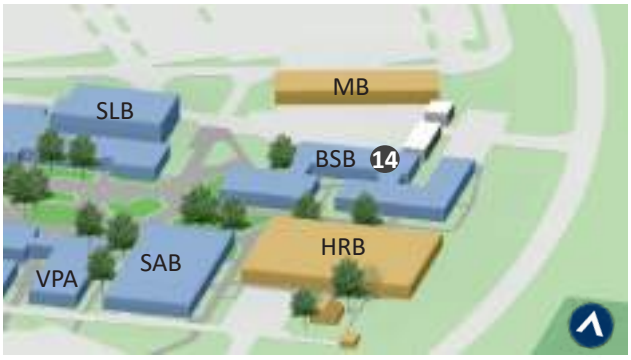
Near Term: Strategic Renovation

BUSINESS SERVICES BUILDING 14



Conceptual aerial view of East Quad looking northwest.

Upon relocation of the Office of Business and Financial Services (OBFS) units located in BSB to Brookens Building (BRK), recommendations include the relocation of the Radio Station from the WUIS Building to the Building Services Building (BSB). Additional improvements include a full building envelope repair.

KEY

- Existing Building - No Renovation
- Existing Building - Renovation
- New Construction

Concept: Repaired building facade and envelope repair at East Campus buildings include sustainable materials and include updated landscaping and furnishings.

CLOVER COURT APARTMENTS (100 & 200 BUILDINGS) 18
SUNFLOWER COURT APARTMENTS 19

The Facility Condition Assessment of the Clover Court Apartments (100 & 200 Buildings) and the Sunflower Court Apartments determined that both facilities are in need of interior and exterior updates. The UIS 2020 Master Plan recommends that the Clover Court Apartments (100 & 200 Buildings) and the Sunflower Court Apartments are renovated to provide a better living experience for the residents.

On-campus residents share a laugh in the living room of their on-campus apartment.
Image courtesy of sj-r.com

Stand-Alone Requirements & Opportunities

The UIS 2020 Master Plan identifies several strategic site, renovation, and new construction projects that are important to the future of the University of Illinois Springfield. The projects outlined are triggered by various criteria including need, enrollment growth and/or funding sources to name a few. Many of the new academic facilities currently do not have appropriated Capital Funds, but are part of the University's Capital Project requests.

Several renovations and new facilities are proposed for both training and competition venues to support the increasingly successful Division II athletics program. These recommended projects planned for the south edge of the campus will help recruit top talent and support student athletes.

UIS is committed to sustainability and being good stewards of renewable energy. To show visual commitment to this initiative, several future projects are proposed including a future solar farm at the north edge of Campus and innovative stormwater management practices.

EXTERIOR – IMPROVEMENTS

4 Land reserved for future solar energy farm
5 Construct recreation & athletics practice fields

STRATEGIC RENOVATIONS

8 **University Hall Building (UHB)**
4th Floor
- Construct Sales & Trading Labs

9 **Public Affairs Center (PAC)**
1st Floor
- Modernize conference rooms

2nd Floor
- Renovate Sangamon Auditorium Lobby
- Sangamon Auditorium Seat Replacement

10 **Brookens Building (BRK)**
- Renovate Brookens Auditorium (concert hall) (1st Floor)

13 **Student Life Building (SLB)**
- Construct additional classrooms

16 **Spencer House (SPH)**
- Construct Center for Experiential & Problem Based Learning

17 **UIS Field Station on Lake Springfield (FSL)**
- Construct Phase 2 Science Lab

List continued on next page.

Stand-Alone Requirements & Opportunities

NEW CONSTRUCTION: ACADEMIC

24 Information Sciences Building (ISB)
25 Human Performance Center (HPC) - addition to TRAC
26 Business Building (BB)
39 Future Academic Expansion (FAE)

NEW CONSTRUCTION: STUDENT AFFAIRS

27 Future Student Housing (FSH)
28 Multi-Activity Center Gym (MAC) - addition to TRAC
29 Natatorium (NAT) - addition to TRAC

NEW CONSTRUCTION: ATHLETICS

30 Athletics Field House (AFH) (exploring two sites)
31 Resurface Kiwanis Stadium with synthetic turf (KIW)
32 Soccer & Lacrosse additions (Kiwanis) (KIW)
33 Kiwanis Press box & Bleachers (KPB)
34 Golf Training Facility (GTF)
35 Baseball/Softball Complex (BSC)
36 Tennis Complex (TC)

NEW CONSTRUCTION: NEW CAPITAL CONSTRUCTION PROJECTS

37 Land reserved for Commercial Development
38 Land reserved for Research Park
40 Central Receiving & Warehouse (CRW)
41 Maintenance Storage (MS)

DEMOLITION

42 Cox Children's Center (CCC)
43 Police Department Building (PDB)
44 Human Resources Building (HRB)
45 WUIS Building (WUIS)

RECREATION & ATHLETICS PRACTICE FIELDS 5

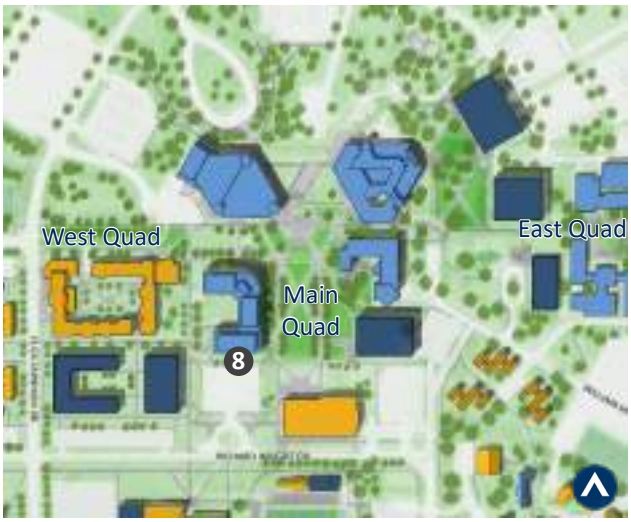
In an effort to provide additional recreation and athletics practice fields in appropriate locations accessible to students and student athletes, the UIS 2020 Master Plan recommends locating them near Future Student Housing (FSH) north of University Drive and adjacent to proposed Athletics Field House (AFH).

Image courtesy of www.uis.edu

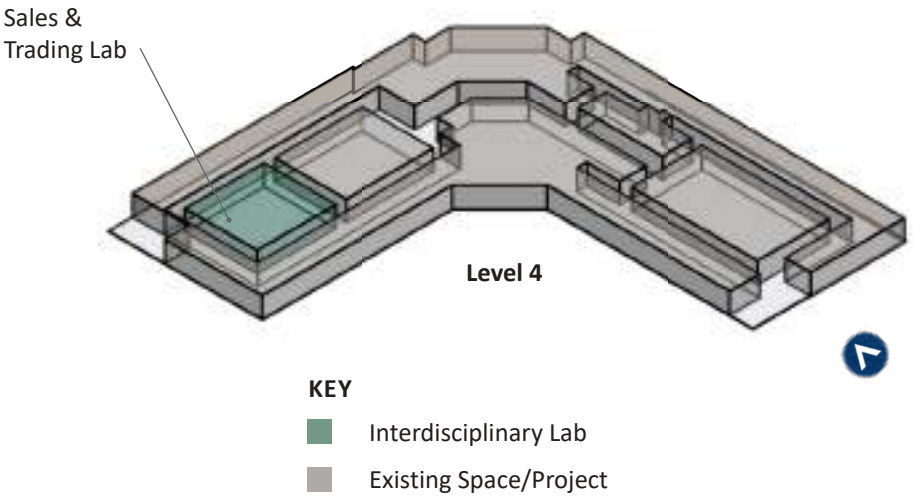
Image courtesy of www.uis.edu

Stand-Alone Requirements & Opportunities

UNIVERSITY HALL BUILDING 8



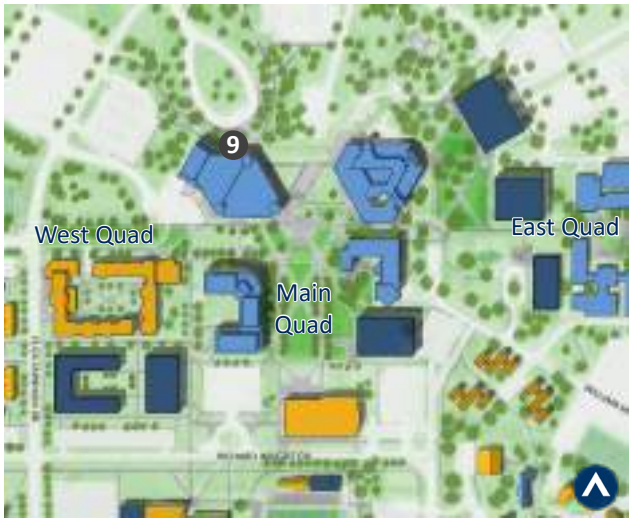
The UIS 2020 Master Plan includes several critical renovations to improve classroom utilization, overall quality of learning environments, make way for new interdisciplinary learning environments and departmental shifts to improve adjacencies. Key Stand-Alone Requirements & Opportunities projects in University Hall (UHB) recommended to achieve these goals include locating the new interdisciplinary experiential teaching learning lab in UHB: Sales and Trading Lab near the College of Business.



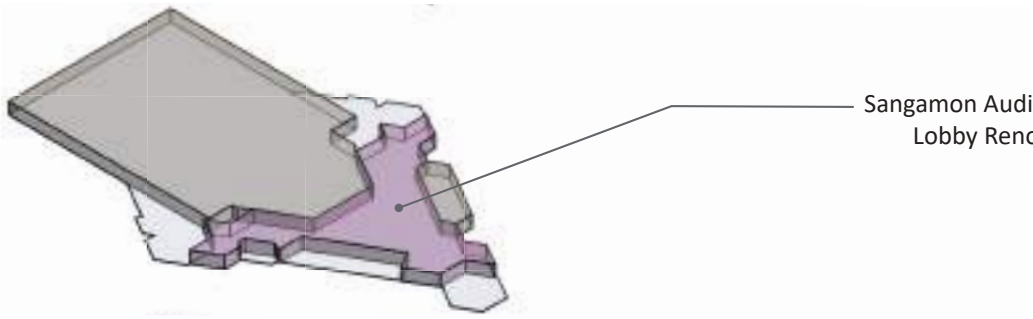
Concept of a modern learning environment.
Image courtesy of www.madeenah.co

Concept of a modern learning environment.
Image courtesy of www.brightspotstrategy.com

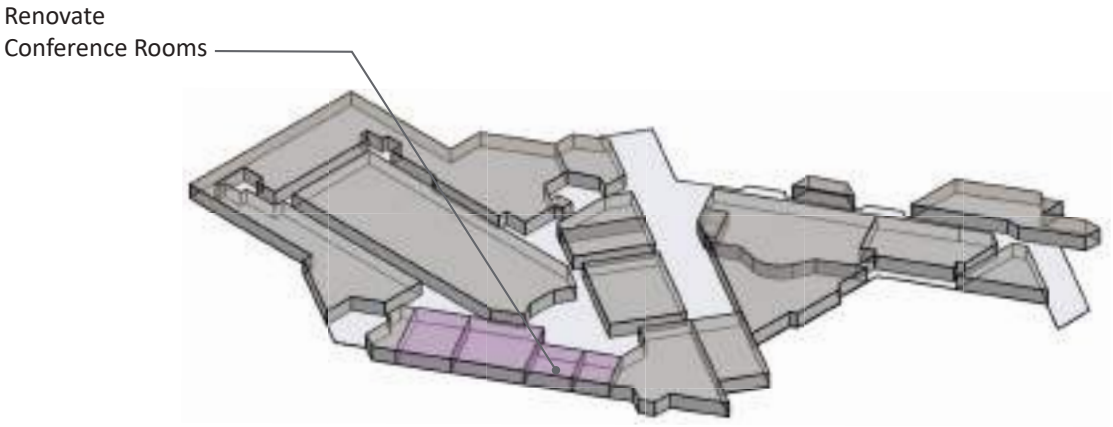
PUBLIC AFFAIRS CENTER 9



The focus of this project will be to invest in the modernization of the conference spaces in the Public Affairs Center (PAC) so they can easily host a wide variety of technology-rich, flexible, interactive and interdisciplinary teaching, learning and conference opportunities and experiences.



Level 2



Level 1

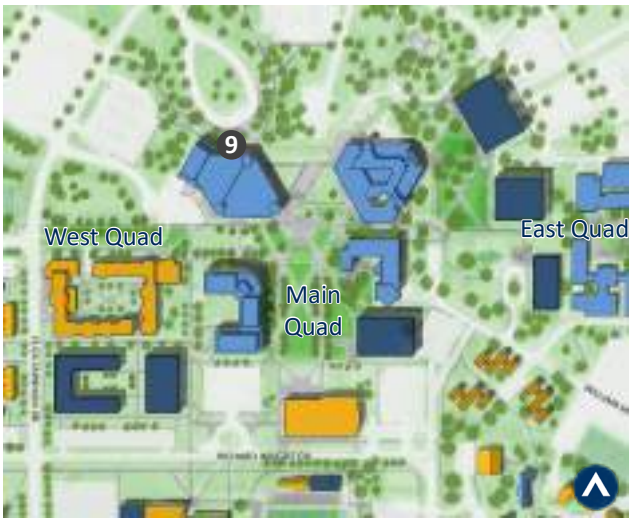
KEY

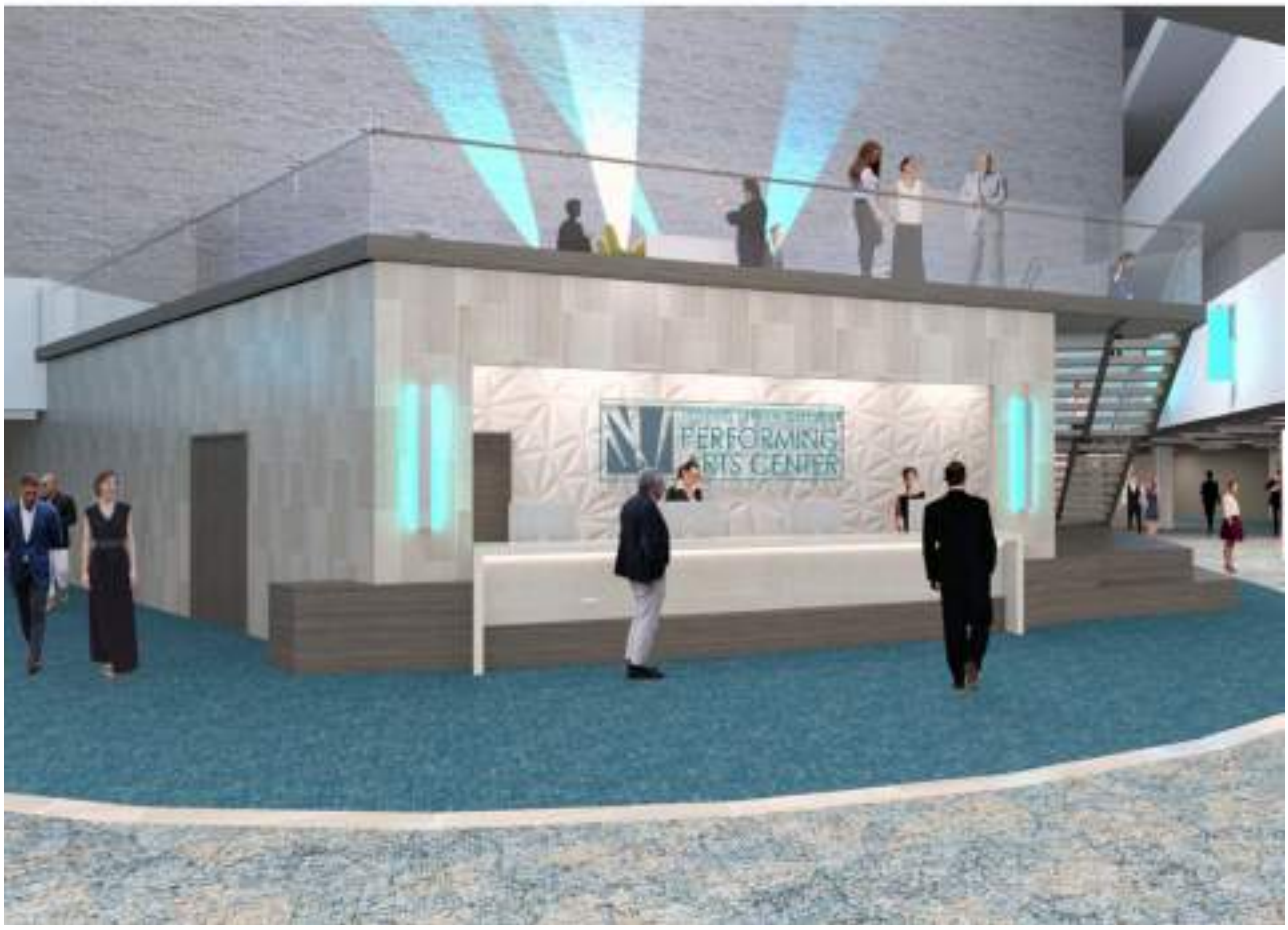
- Renovation
- Existing Space/Project

PUBLIC AFFAIRS CENTER SANGAMON AUDITORIUM 9

Concept: Renovation of PAC Level 3 pre-function space.

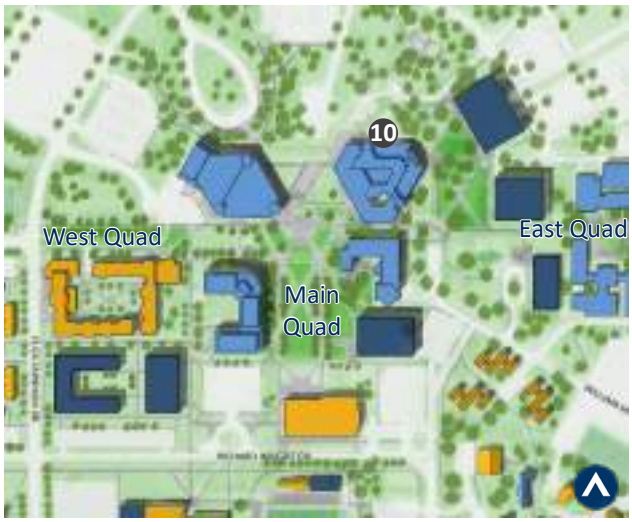
As Central Illinois's largest performing arts venue, recommended renovations to the Sangamon Auditorium Lobby include ticketing along with intuitive access to the pre-function space on the third floor. This will enhance the patron and performance experience.



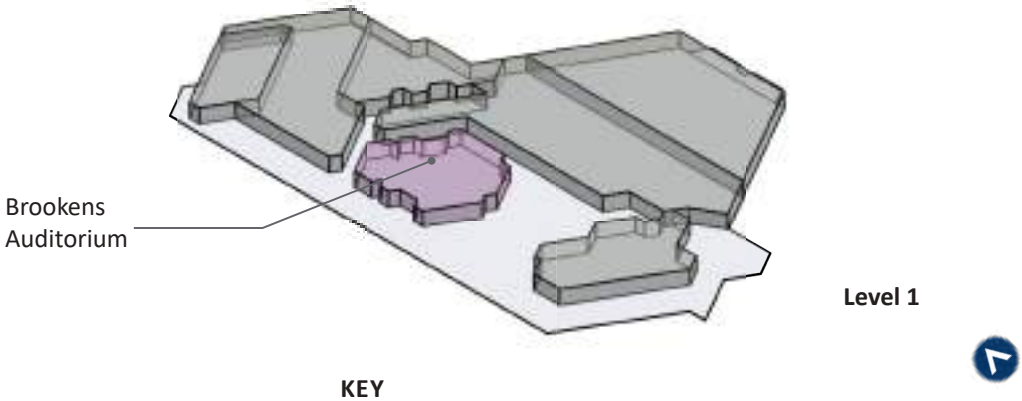


Concept: Renovation of PAC Level 2 lobby.
Rendering courtesy of UIS.

BROOKENS AUDITORIUM ⑩



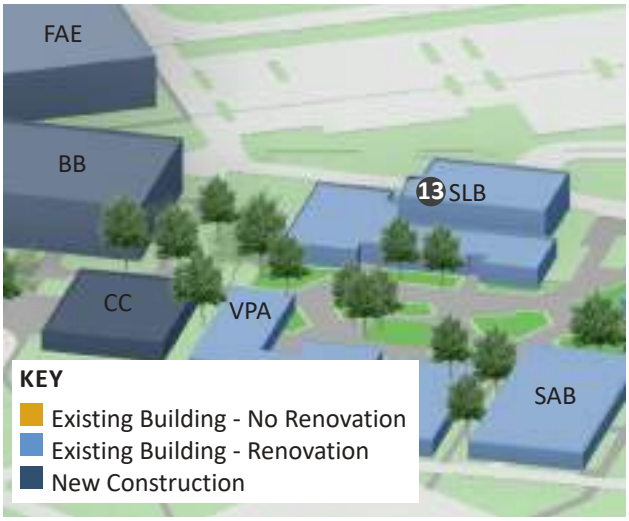
One of the key projects for the Brookens (BRK) Building is the creation of a medium sized music venue which does not exist on campus. This renovation will expand the existing stage to accommodate a wider range of performing arts activities and performances. The project will update the existing finishes to include modern acoustical treatments, flooring, wall and ceiling coverings, stage lighting, and upgraded audio visual equipment. This renovation would expand the capabilities of Brookens Auditorium and enable the various music ensembles at UIS to include the Chorus, Band, and Orchestra to practice and perform in a "right sized" venue on campus.



Concept of a collegiate music venue.
Image courtesy of bora.co

Stand-Alone Requirements & Opportunities

STUDENT LIFE BUILDING 13



Upon relocation of the Intercultural Center to Brookens as part of the new Student Affairs and Wellness Center, the vacated space would be best repurposed as new modern learning environments to support the University's growing academic programs such as Nursing, Allied Health, etc. The Student Life Building (SLB) will remain the academic hub with modernized classrooms, while the Human Performance Center (HPC) at TRAC will include world-class learning labs to support the Allied Health programs.

Concept of a modern learning environment.
Image courtesy of wolfcre.com

Concept of a modern learning environment.
Image courtesy of google.com

SPENCER HOUSE 16

Spencer House
Image courtesy of uisjournal.com

The Center for Experiential Problem-Based Learning will provide unique and innovative learning spaces that take students and community partner professionals out of more traditional classrooms and into experiential environments where they can tackle problems similar to those they will encounter in their careers. The active learning, hands-on critical thinking process of Problem-Based Learning (PBL)-Simulations challenges students and professionals to identify solutions to complex problems within a realistic environment.

The Spencer House will serve as the host facility where faculty, students, and professionals can engage in experiential learning using PBL and simulations. With minor renovations, including technology upgrades to support PBL-Simulations, the facility will feature a large "smart" classroom with remote learning capabilities and an adjacent residential simulation lab that will complement the existing Sim Labs utilized by the Child Protection Training Academy on campus. Discussions with community leaders and UIS faculty have captured numerous ways to construct simulations around some of the more challenging problems and situations facing the community:

- Trauma-informed practices
- Law Enforcement and Implicit Bias training
- Poverty and Homelessness
- Immigration and Global Advocacy Issues
- Teacher Education & Early Childhood
- Multidisciplinary Team Training
- Interviewing and Counseling Skills
- Home visiting nurses

The Center for Experiential Problem-Based Learning is a critical intersection between practice and practitioner, developing life-long skills with broad application. Community agencies are anxious to engage in more innovative workforce development strategies and the Center for Experiential Problem-Based Learning provides the environment and the skills for the next generation of public service providers.

UIS FIELD STATION ON LAKE SPRINGFIELD ⓱

Concept rendering courtesy of UIS.

Concept of a modern science lab.
Image courtesy of www.gcu.ac.uk

This project will complete the renovation the interior and exterior of this recently acquired property and provide a multipurpose facility that will provide education, research, recreation and public engagement opportunities for students, faculty and visitors. The Field Station sits on 2.32 acres with 440 feet of shoreline on Lake Springfield and is about a 10 minute walk from campus. This renovation will add teaching laboratories associated with courses and research in Biology, Chemistry, and Environmental Sciences. Educational and research opportunities for students in the Humanities, Social Sciences, Visual Arts, and other academic programs are available. The development of the property will also allow for wide range of Campus Recreation activities to include water-related recreational offerings such as canoing/kayaking instruction, sailing, fishing, fitness classes, and a challenge course, as well provide a place for social events for the students, faculty and community.

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Stand-Alone Requirements & Opportunities

INFORMATION SCIENCES BUILDING 24

View from the Student Union.

The Information Sciences Building (ISB) is UIS's #1 priority on the State's Capital Budget Request. It will support academics in the science, technology, and math related fields, which encompass the largest enrolled programs at the University.

This new facility will house:

- Computer Science
- Math
- Graphic Information Systems (GIS)
- Management Information Systems (MIS)

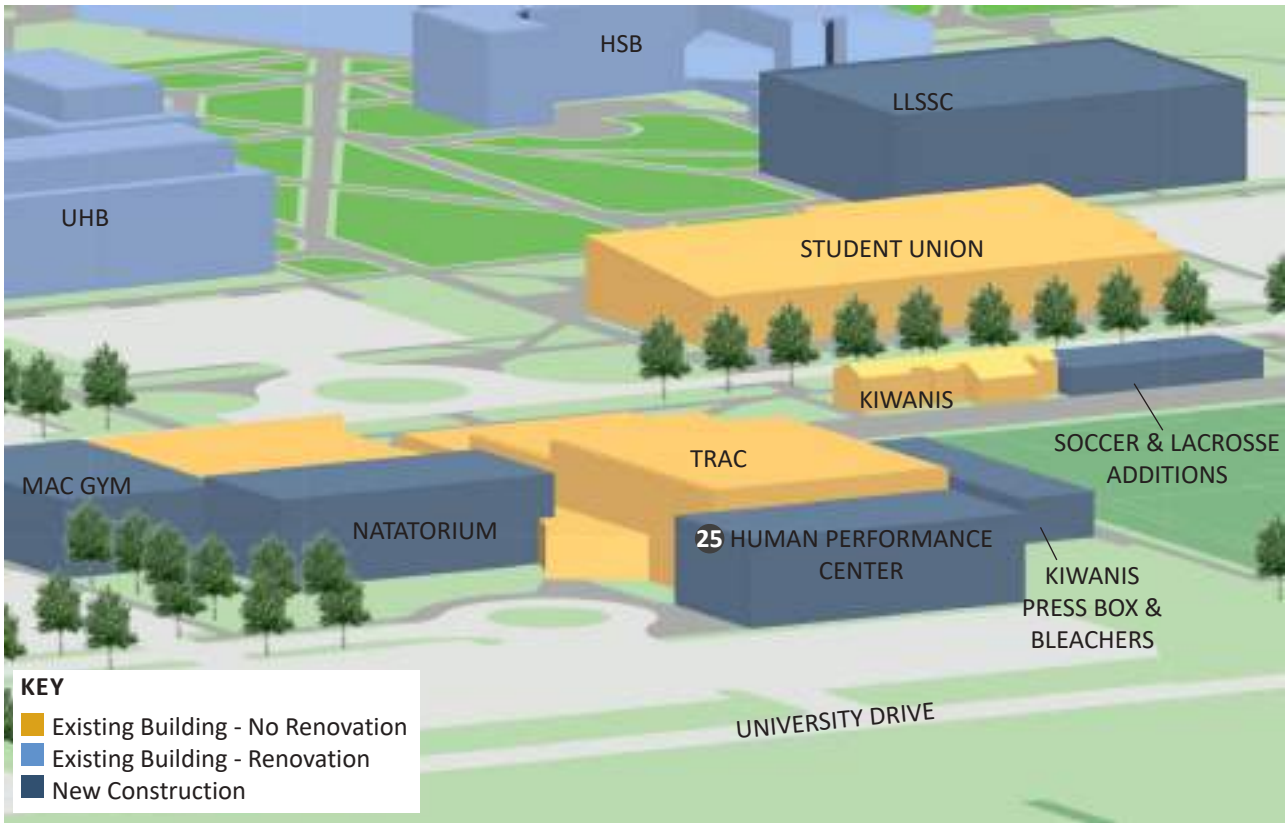
It will include many state of the art research and specialized interdisciplinary teaching and learning labs:

- Computer Science Teaching Labs
- Computer Science Research Lab
- Management Information Systems (MIS) Teaching Lab
- MIS Research Lab
- Maker Space
- Cyber and Homeland Security
- Geographic Information Systems (GIS) teaching and research labs
- CISCO Labs
- Robotics Lab
- Data Analytics
- Cyber Security Management
- Visualization Lab
- Artificial Intelligence Lab
- Shared Classrooms
- Collaboration/Conference Rooms

FAST FACTS:

- 57,600 GSF
- Multi-story

HUMAN PERFORMANCE CENTER 25



The Human Performance Center (HPC) is UIS's #2 priority on the State's Capital Budget Request. It consists of an addition to TRAC that will house the specialized experiential labs of the Allied Health Programs.

HPC will house the following academic programs and student support functions:

- Allied Health programs to include
  - Exercise Science
  - Athletic Training
  - Sports Biomechanics Lab
  - Physiology & Psychophysiology Performance Labs
  - Imaging Labs
  - Neuromuscular Labs
  - Anthropometry Labs
  - Recovery & Rehabilitation Labs
  - Kinesiology Labs
  - Physical Diagnostic & Therapy Labs

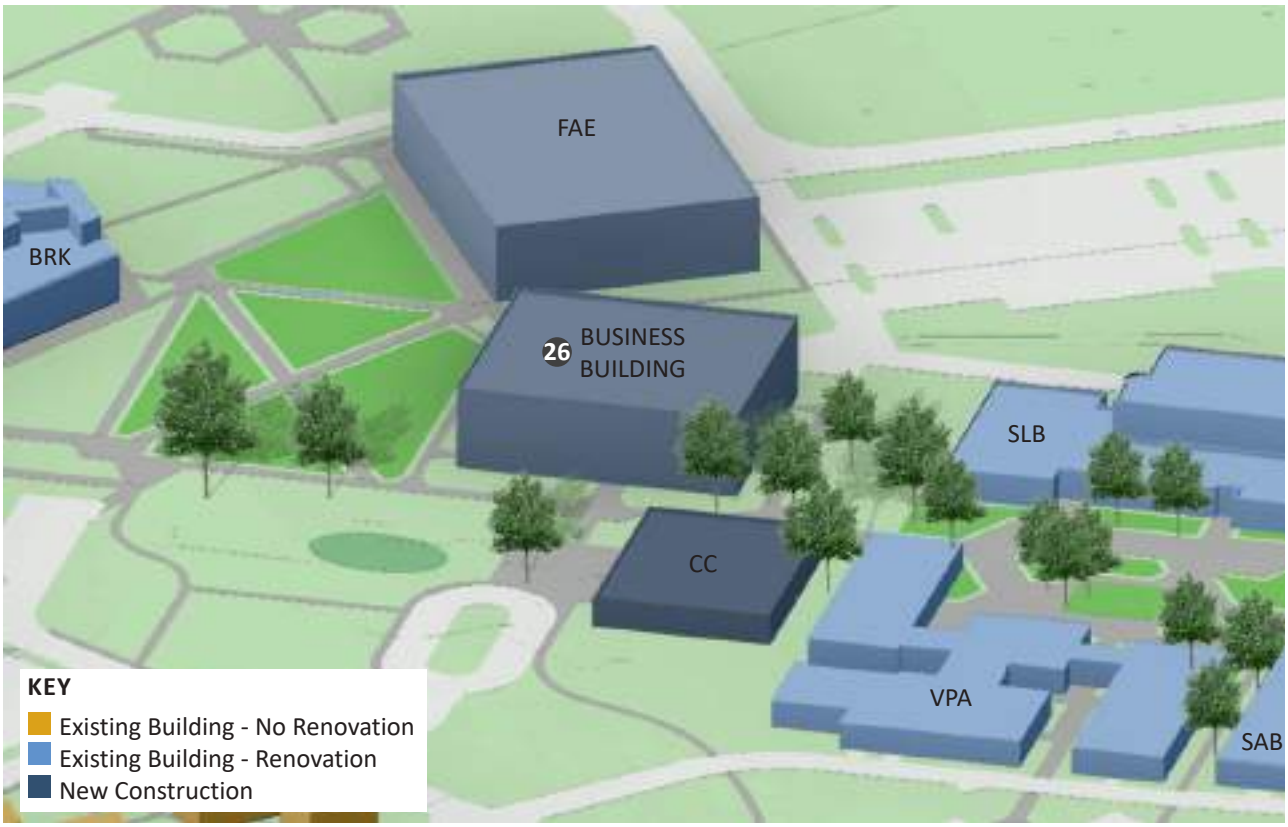
The facility will contain multiple flexible multi-use state of the art classrooms, faculty and staff offices, student study and collaboration spaces and teaming rooms. This facility will also provide the required storage, showers and locker room space needed to support student programs and functions.

FAST FACTS:

- 30,000 GSF
- Multi-story

Stand-Alone Requirements & Opportunities

BUSINESS BUILDING 26



The Business Building (BB) is UIS's #3 priority on the State's Capital Budget Request and will house the following departments and degree programs:

- Accountancy
- Business Administration
- Master of Business Administration
- Economics
- Management
- The Center for Business and Regulation
- The Illinois Center for Entrepreneurship

It will also house the following classrooms, labs, and support spaces:

- Investments/Trading Lab
- Econometrics Simulation Lab
- Business Modeling Lab
- Case Study Competitions Lab
- Product Design and Prototyping Lab
- Marketing Simulation Lab
- Management/HR Observation Areas
- Management/HR Simulation Lab
- Focus Group Observation areas
- Computer Aided Development and Project Management modeling/prototyping and simulation lab
- Social Media Modeling
- Analysis and Evaluation Lab
- Informatics/Analytics Modeling Lab
- Sports Management Event Simulation Lab
- Emerging Solutions Lab
- Informal meeting spaces for students and faculty
- Classrooms and computer labs
- Lecture/Student Presentation Recording Studio
- 250 seat lecture hall
- Faculty and administrative offices
- Conference and breakout rooms

FAST FACTS:

- 50,000 GSF
- Multi-story

LAND RESERVED FOR FUTURE ACADEMIC EXPANSION 39

To plan for the future growth and/or academic program additions and/or changes, land has been reserved and campus utilities and infrastructure have been planned to support future academic expansion.

Concept of an informal social space where students can interact between classes.

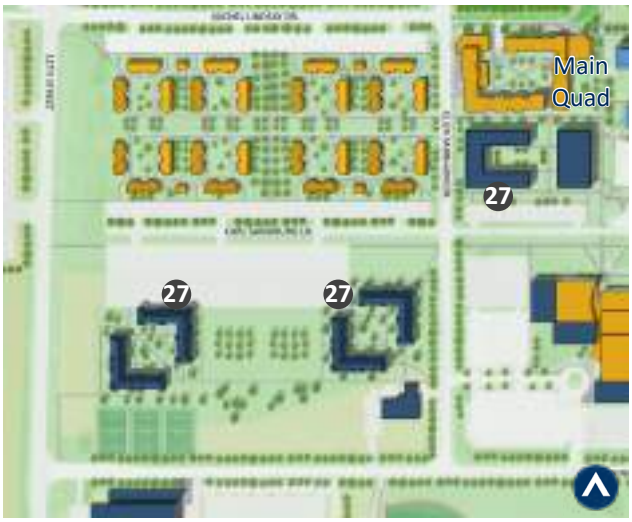
Image courtesy of consupt.com

Concept of a modern learning environment.
Image courtesy of architizer.com

Concept of a modern learning environment.
Image courtesy of www.google.com

Stand-Alone Requirements & Opportunities

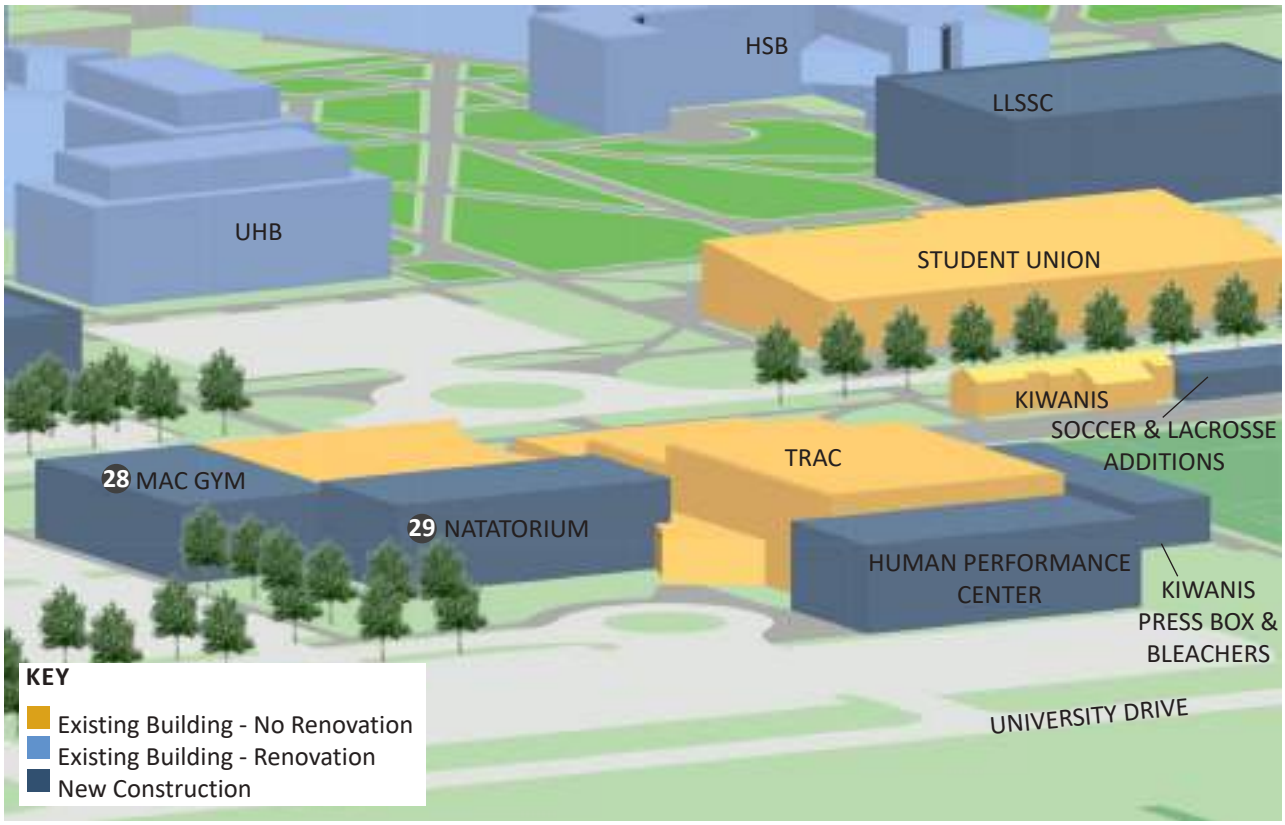
FUTURE STUDENT HOUSING 27



The UIS 2020 Master Plan considers locations for new Student Housing to prepare for potential enrollment growth. A new residential hall is sited south of Founders and Lincoln Residence Halls along with residential units sited south of Carl Sandburg Lane. Housing capacity is factored on FTE (Full-Time Equivalent Enrollment). Based on Fall 2018 FTE (3,287), 10% enrollment growth is the threshold were demand starts to outweigh capacity. Based on a 2%/per year growth projection, it is anticipated that 50+/- additional beds will be needed by 2027.

Image courtesy of www.uis.edu

MULTI-ACTIVITY CENTER GYM 28 & NATATORIUM 29



The Multi-Activity Center Gym (MAC) is an addition to TRAC. It is a shared multipurpose facility to support student indoor recreation, as well as serve as a host site for a variety of community events.

This multi-purpose facility will support a multitude of student indoor recreation including:

- Indoor cricket
- Basketball
- Badminton
- Volleyball
- Pickleball
- Tennis
- Indoor soccer with goals built into the walls
- Spectator seating for 150
- Storage

MAC GYM FAST FACTS:

- 25,000 GSF
- 1 Floor

The Natatorium (NAT) supports campus recreation and the community at large. It is planned as a 20,000 GSF addition to TRAC. This type of facility enhances campus life and culture by providing recreational swimming and diving activities for all faculty, staff, and students. It is a valuable community resource that allows the University to foster partnerships, bringing visitors to campus for recreational and competitive swimming and diving activities which would support campus outreach programs.

NATATORIUM FAST FACTS:

- 20,000 GSF
- 1 Floor

Stand-Alone Requirements & Opportunities

ATHLETICS FIELD HOUSE 30

An Indoor multi-sport training Athletics Field House (AFH) will allow for year-round training for the University's Division II athletics programs with spectator seating and concessions.

The Athletics Field House will allow for a premier athletic training and recruitment program for the rigorous training demands of today's collegiate athletes. Furthermore, this new facility will have a direct impact on the competitive performance for all of the University's athletics programs. It will improve recruiting and can generate facility rental revenue with the proposed 10,000 GSF retail space. It will be shared by Campus Recreation for all students to use.

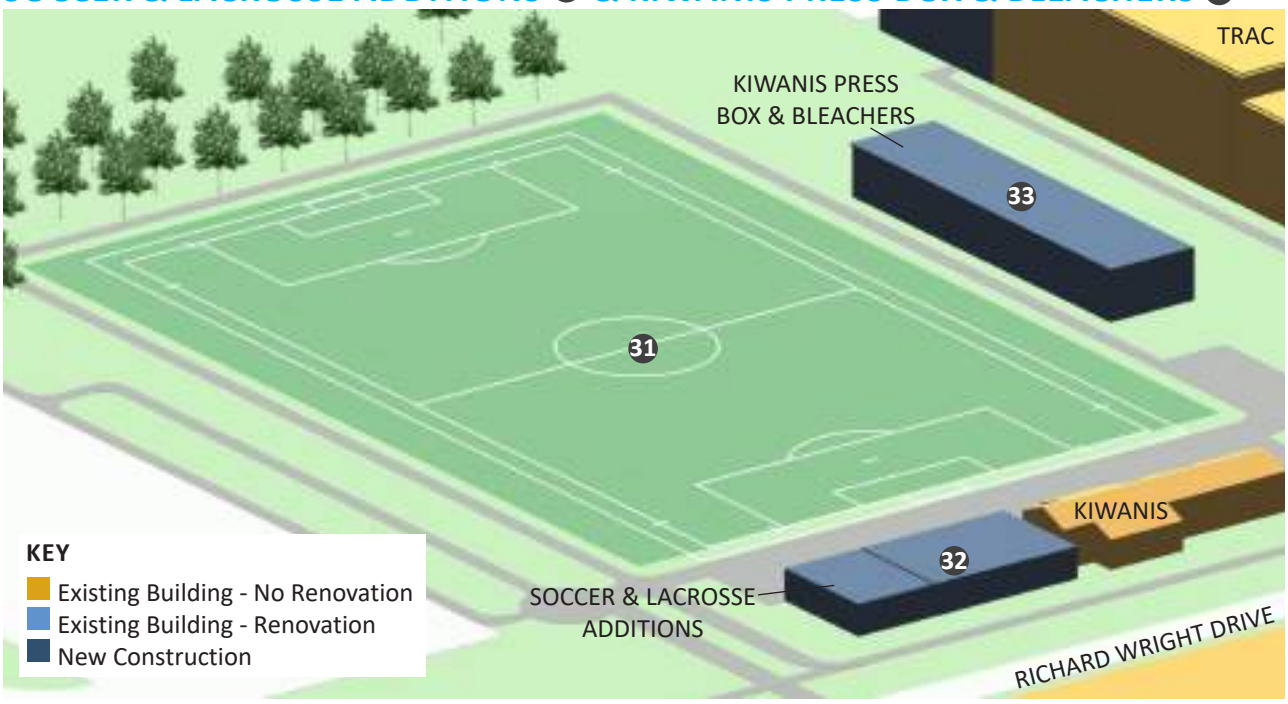
FAST FACTS:

- 92,000 GSF

Concept of a track around a soccer field in a field house.
Photo courtesy of mbdbuildings.com

Concept of indoor an baseball hitting and pitching facility in a field house.
Photo courtesy of liberty.edu

RESURFACE KIWANIS STADIUM WITH SYNTHETIC TURF 31
SOCCER & LACROSSE ADDITIONS 32 & KIWANIS PRESS BOX & BLEACHERS 33



Renovation and new construction at Kiwanis Stadium (KIW) will include:

- Spectator seating up to 2,000 – 3,500
- Game Operations & Press Box
- Synthetic Turf
- Field lighting & audio
- Expansion of Soccer Clubhouse
- Locker Rooms
- Coaches Offices
- Restrooms
- Concessions
- Meet multi-sport requirements
- Construction of 150 space spectator parking area for tailgating and Student Union overflow parking

FAST FACTS:

- 2,600 GSF

The Facility Condition Assessment of the Pressbox determined that the existing facility is at the end of its useful life. The UIS 2020 Master Plan recommends that the Pressbox along with the bleachers be replaced to enhance both the operations and patron game day experience.

This project has a direct impact on the men's and women's Soccer and future Lacrosse programs. The facility will enhance UIS's ability to recruit and retain top talent as a premier NCAA Division II and GLVC facility with amenities that are the envy of other institutions. Furthermore, it will reflect the world class reputation of the University of Illinois. It will work in cooperation with the campus to create a synergistic effect in the recruitment and retention of all students through on-campus partnerships as a shared facility. As a premiere facility, it will draw in community partnerships and present opportunities for collaboration, funding, and generating revenue, as well as develop and enhance bonds with the community.

GOLF TRAINING FACILITY 34

Construction of the new Golf Training Facility (GTF) will provide:

- New training facility with driving range and putting green. The facility would house indoor and outdoor hitting bays, coaches' offices, equipment storage, and restrooms.
- Construction of a 50 space parking lot to support the golf facility.

Concept of a driving range.
Image courtesy of synthetic-turf.com

BASEBALL & SOFTBALL COMPLEX 35

Renovations and new construction of the Baseball/ Softball Complex (BSC) will include:

- Upgrade to the existing collegiate baseball field with the addition of a synthetic turf outfield, lighting and bleachers
- New collegiate softball field with lighting and bleachers
- New outdoor hitting area
- New clubhouse with locker rooms, showers, restrooms, concessions
- Parking adjacent to the new field location
- Site work including pedestrian corridors, crosswalks, drainage, and lighting

This project has direct impact on competitive performance for the baseball and softball programs, will improve recruiting, and can generate rental revenue. Student athletes' safety and providing competitive playing conditions is the driver for this project as well as opportunities to host community high school games, tournaments and training camps.

FAST FACTS:

- 26,000 GSF

Stand-Alone Requirements & Opportunities

TENNIS COMPLEX 36

New construction of a Tennis Complex (TC) will include:

- Men's and women's clubhouse with showers, storage, coaches' office space and public restrooms
- Twelve collegiate tennis courts, fencing, playing surface, and athletic lighting
- 140 space spectator parking
- Site work and area lighting

FAST FACTS:

- 1,850 GSF
- 1 Floor

SUSTAINABILITY: SOLAR FARM 4

KEY

- Existing Building - No Renovation
- Existing Building - Renovation
- New Construction
- Land reserved for Commercial Development
- Land reserved for Commercial Development (UI Foundation)
- Land reserved for Research Park
- Land reserved for Future Solar Energy Farm
- Existing Prairie Restoration
- Bioretention Basin
- Drainage Flow
- Permeable Paving System
- Vegetative Swale / Stormwater Garden
- Reforestation

Concept of a Solar Farm.
Photo courtesy of www.cleanchoiceenergy.com.

Concept: Stormwater management.
Photo Courtesy of David Mason + Associates.

Fostering and continuing to expand the University's culture of sustainability is important for UIS to invest in adaptable, responsible infrastructure to support future development.

The University is committed to sustainability and continuing its tradition of being good stewards of the environment. UIS is exploring several sustainable projects, as well as, possible future renewable energy initiatives. Land reserves are identified in the Master Plan for these potential projects should they prove to be financially responsible and align with the University's commitment to the long term sustainability of the environment.

UIS's Student Union serves as a great example of how UIS sustainably manages stormwater run-off, through green roofs, and rain water capture. The University is leading the way with establishing many sustainable initiatives.

Stand-Alone Requirements & Opportunities

COMMERCIAL DEVELOPMENT CONCEPT ALONG 11TH STREET 37

The University of Illinois Springfield has an opportunity to be a leader in commercial development along 11th Street including retail opportunities at the Athletics Field House (AFH). Land has been reserved to bring mixed-use retail, dining, living facilities, as well as, a research park. This development could be an opportunity for a public/private partnership. It will enhance both student and visitor experience and keep them close to campus.

CENTRAL RECEIVING WAREHOUSE & ROADWAY/PARKING UPDATES 40

A new Central Receiving Warehouse (CRW) is needed adjacent to the existing maintenance building to support the daily services it provides. Additionally, the roadway to the new CRW will need to be adjusted to allow for deliveries to the warehouse. Parking Lot B will be reduced due to the addition of the CRW and adjustment to the roadway.

MAINTENANCE STORAGE 41

Additional storage is needed at the south end of the campus adjacent to the existing maintenance storage as campus grows to store necessary equipment.

LAND RESERVED FOR RESEARCH PARK 38

In support of its goal to Foster Partnerships, The University of Illinois Springfield has a unique opportunity to bring a Research Park to its campus along 11th Street. Surrounded by proposed mixed use retail development, dining, and living facilities, a research park could provide space for community businesses to have a presence on the campus of UIS. This space could serve startup companies, local entrepreneurs, business/industry training or a variety of other business support needs.

Demolition Projects

Completion of strategic renovations that provide modern interdisciplinary teaching learning environments, allow for program and department realignment and improve synergies allow for poor performing buildings to be emptied and demolished.

DEMOLITION PROJECTS

- 42 Cox Children's Center (CCC) (3,292 GSF)
- 43 Police Department Building (PDB) (4,380 GSF)
- 44 Human Resources Building (HRB) (25,576 GSF)
- 45 WUIS Building (22,589 GSF) (site for future Business Building (BB))
- 6 Parking Lot F (with Richard Wright Drive Repair)

Academic Space Strategies

The University of Illinois Springfield is committed to growing enrollment. For the purpose of the Master Plan, University leadership is projecting a 3% per year growth over 10 years.

In order to better understand the University's future academic goals, the planning team met with an academic leadership focus group. It is anticipated that 22 of the 31 undergraduate programs will grow over the next 10 years, along with growth in 12 graduate programs with Public Affairs reporting 50% growth.

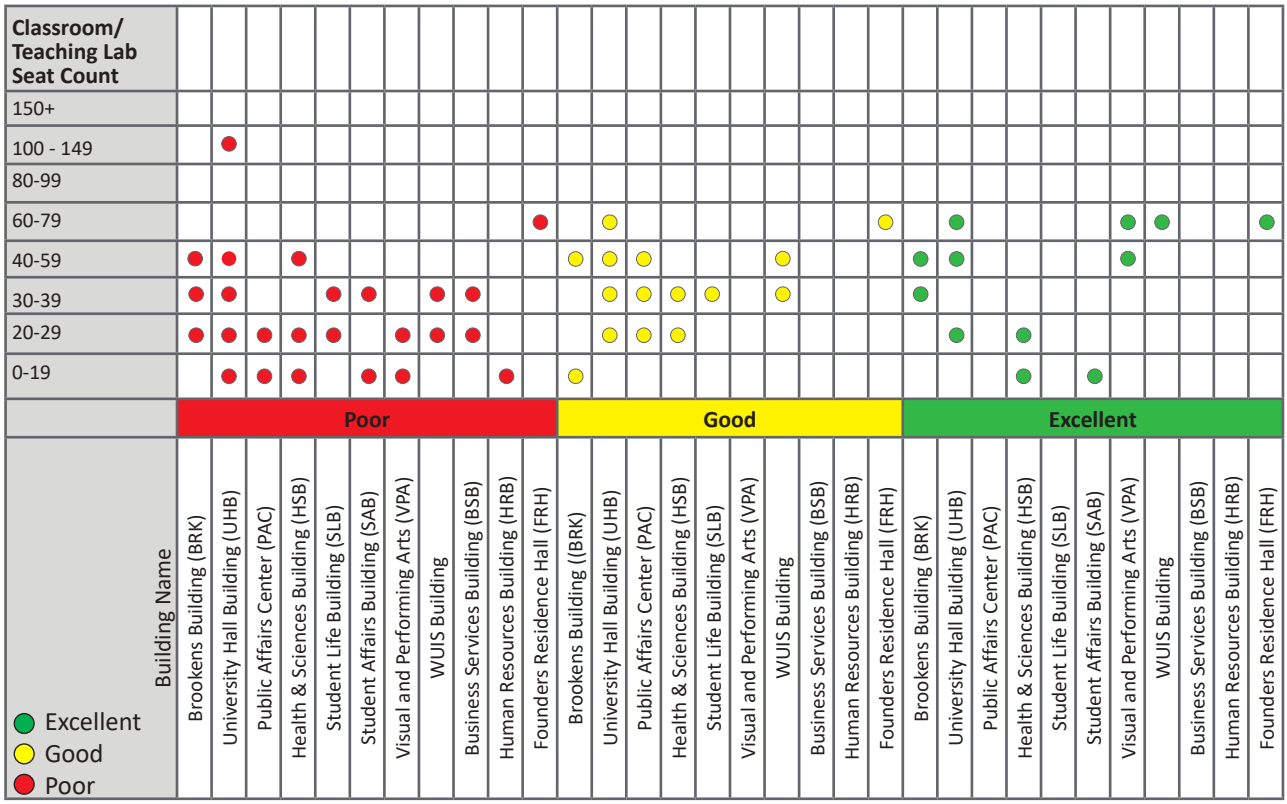
As the University anticipates future enrollment growth it recognizes that classroom and lab inventory represents a valuable campus asset and is important real estate that supports academic performance.

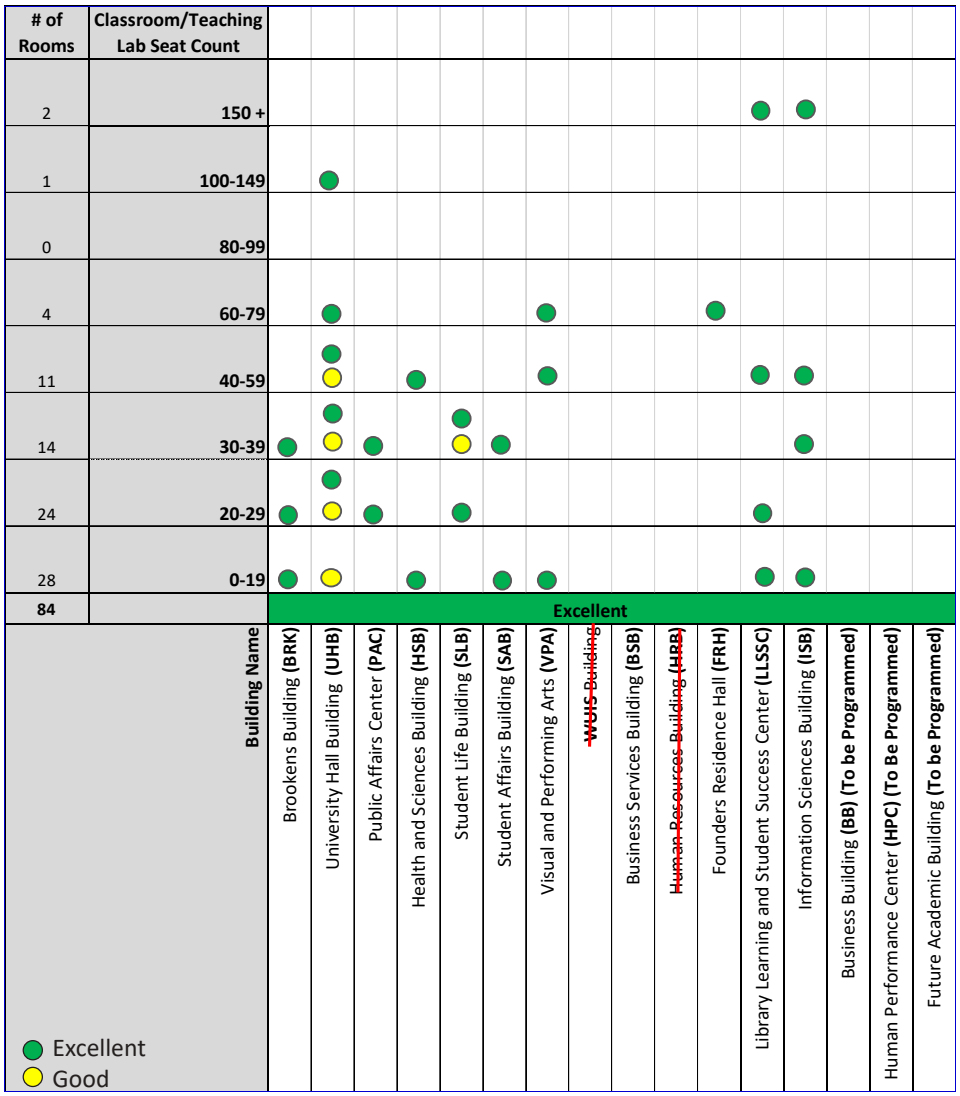
The matrix below ranks existing classroom as Poor, Good or Excellent.

Like other universities, UIS is challenged with inefficient use of classroom and labs due to several factors such as: scheduling preferences, ownership and/or control of the space, and poor quality.

Nearly half of the total 69 classrooms or labs with scheduled activity fell into the "poor" category due to poor use, poor seat fill and/or quality. These learning environments with a poor rating often times were not sized properly to support a specific teaching/learning style, were not flexible, included poor lighting and/or antiquated technology.

EXISTING CLASSROOM/LAB RATING





An overarching goal of the UIS Strategic Compass is to cultivate a premier educational experience. UIS is committed to investing in and upgrading its learning environments to improve quality and maximize utilization.

The UIS 2020 Master Plan responds to the needs of the bricks and mortar with recommendations focused on:

- Strategic renovations at University Hall Building, Health & Sciences Building, Public Affairs Center, Brookens, Student Life Building, Visual and Performing Arts, Spencer House, and UIS Field Station on Lake Springfield to modernize learning environments and improve classroom utilization. Keeping flexibility in mind in both renovation and new construction will be important in supporting current and future pedagogies.
- Program shifts to strengthen adjacencies and departmental synergies, including relocating the Office of Online Professional and Engaged Learning (OPEL) including the Faculty Development Resource Office (FDRO), Continuing and Professional Education (CAPE), and Center for Online Learning Research and Services (COLRS) to name a few. All other program re-alignments are captured within Volume 1b Master Plan
- New Construction, including Library Learning and Student Success Center, Information Sciences Building, Human Performance Center, and Business Building bring new interdisciplinary, flexible, and multi-use teaching, and learning spaces, along with research labs

To improve quality and maximize utilization, this Master Plan will:

1. Right size learning environments
2. Prioritize strategic renovations and new construction projects

Academic Space Strategies

ACTIVE LEARNING ENVIRONMENTS

Strategies to improve existing classrooms through renovation into interdisciplinary learning environments include:

- Combine smaller classrooms into larger spaces.
- Add and/or invest in flexible furnishings that can be easily reconfigured.
- Increase views to daylight in classrooms at building exterior.
- Add transparency into classrooms from corridors with the addition of glass.
- Invest in replacing antiquated, outdated technology with adaptable, state of the art technology to support new pedagogies.

Concept of an active learning environment.
Image courtesy of er.educause.edu

Concept of an active learning environment.
Image courtesy of www.quinnevans.com

Concept of an active learning environment.
Image courtesy of archinect.com

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Accessibility, Mobility, Connectivity

Exhibit 1: Future Pedestrian Connectivity

Through the master planning process, opportunities to enhance campus mobility and accessibility were identified. With the improvements identified on the pages that follow, the multi-modal transportation network is expected to encourage the University's academic, physical, economic, and cultural development.

PEDESTRIAN AND BICYCLE

A number of modifications were identified through the master planning process to address pedestrian and bicyclist access, safety, and comfort. A summary of the future pedestrian and bicycle facilities identified through the master planning process is outlined below and depicted in Exhibit 1. These facilities would provide connectivity to the existing sidewalk, trail, and bike path network, thereby providing continuous access to key campus destinations.

- **Sidewalk**
  New concrete sidewalk will fill existing gaps in the pedestrian network and define pedestrian routes. Based on existing and planned campus facilities, including buildings and parking lots, a network of primary and secondary sidewalks has been identified. Primary sidewalks serve as corridors between popular campus destinations and generally carry higher pedestrian volumes. Primary sidewalks should provide a minimum width of ten (10) feet. Secondary sidewalks provide connections between building/facility access and primary sidewalks. These facilities should provide a minimum width of six (6) feet. The campus sidewalk network should be concrete with appropriate lighting and wayfinding signage provided to direct pedestrians to key destinations.

- **Multi-Use Sidepath/Trail**
  Off-street multi-use sidepaths or trails provide separation from vehicle traffic and should be designed for two-way traffic. These facilities support both recreation and transportation needs for pedestrians and cyclists.

  A sidepath is a bidirectional shared use trail located immediately adjacent and parallel to a roadway. A two-way multi-use sidepath or trail should be constructed of asphalt and provide a minimum width of ten (10) feet. For sidepaths, a minimum five (5) foot separation from roadways is recommended. The sidepath may be separated from traffic lanes through the use of landscaping or striping.

The existing UIS-LLCC Trail is an example of an existing multi-use trail that provides north-south access through campus to LLCC.

In order to increase recreational opportunities and provide connectivity for both pedestrians and cyclists, the existing shoulder on 11th Street should be modified to provide a multi-use sidepath. Currently, this is used as a bike lane only. To accommodate cyclists and pedestrians and provide connectivity to the future uses along 11th Street, a sidepath will be provided. A sidepath will also be provided along University Drive between 11th Street and Ernest Hemingway Drive. In order to accommodate a sidepath along University Drive, modifications to the existing unimproved shoulder are recommended.

- **Shared Lane/Markings**
  Shared Lane Markings or "sharrows" will be provided along Eliza Farnham Drive and Richard Wright Drive in order to indicate shared use for both bicycles and vehicles. These markings are expected to enhance bicyclist connectivity on campus and increase motorist awareness of bicycles. Installation should include high-visibility pavement markings and appropriate signage, consistent with the Manual on Uniform Traffic Control Design (MUTCD). The shared lane markings could be installed in the near-term or alternatively could be incorporated into the future realignment of Richard Wright Drive.

- **Two-Way Cycle Track**
  A cycle track is an exclusive bicycle facility that is physically separated from vehicle traffic and allows bicycle traffic in both directions on one side of the road. A cycle track is distinct from the sidewalk and provides a higher level of safety as compared to on-street bicycle lanes and multi-use sidepaths or trails. The cycle track may be raised or separated from the roadway through the use of a concrete median, landscaping, striping, bollards, or other barriers. A two-way cycle track should be constructed of asphalt and provide a minimum width of ten (10) to twenty (20) feet. A two-way cycle track is recommended along the north side of Vachel Lindsay Drive, from 11th Street to Eliza Farnham Drive.

Raised two-way cycle track and sidewalk
Photo courtesy of Kimley-Horn.

Shared lane markings or "sharrows" to designate shared use of roadway for vehicles and bicycles.
Photo courtesy of Kimley-Horn.

CROSSING IMPROVEMENTS

In order to support pedestrian and cyclist safety and comfort, existing and future crossings were evaluated. A number of measures have been identified to minimize conflicts with vehicles and enhance pedestrian and cyclist visibility. A summary of the crossing improvements is outlined below.

Curb Extensions

Curb extensions will be provided for key intersection corners or at mid-block crossings to increase the visibility of pedestrians, minimize the crossing distance and exposure to vehicle conflicts, reduce pavement width, and accommodate gateway features. Based on a review of existing conditions, curb extensions have been identified for the following campus locations:

- Mid-block crossings along Eliza Farnham Drive and Richard Wright Drive
- Intersection corners at 11th Street/Vachel Lindsay Drive
- Intersection corners at Eliza Farnham Drive/Vachel Lindsay Drive
- Intersection corners at future intersection of Eliza Farnham Drive/Carl Sandburg Lane/Richard Wright Drive

Installation of curb extensions should be incorporated into the roadway and intersection improvements identified through the Master Planning process.

Striping / Signage Modifications

With the existing and future crosswalks, consistent application of pavement markings and signage is encouraged. As crosswalks are restriped or new crosswalks are installed, continental markings (see existing markings at Eliza Farnham Drive/University Drive) will be used in order to increase the visibility of these crossing locations.

Based on a review the future pedestrian and bicycle network, striping modifications were identified for the following crossings. The crosswalk striping should be modified in coordination with the previously identified pedestrian and bicycle improvements.

- **All-Way Stop-Controlled Intersections**
  - 11th Street/Ernest Hemingway Drive
    - o Install new striped crosswalks on the west and south legs of the intersection
  - Eliza Farnham Drive/Ernest Hemingway Drive
    - o Install new striped crosswalks on the north, east, and west legs of the intersection
  - Shepherd Road/University Drive
    - o Install new striped crosswalks on the north, south, and west legs of the intersection
- **Two-Way Stop-Controlled Intersections**
  - 11th Street/Vachel Lindsay Drive
    - o Install new striped crosswalks on the north and east legs of the intersection
  - 11th Street/University Drive
    - o Install a new striped crosswalk on the east leg of the intersection

Curb extension located at mid-block pedestrian crossing. Photo courtesy of NACTO via Kimley-Horn.

Curb extension located at intersection. Photo courtesy of NACTO via Kimley-Horn.

- Eliza Farnham Drive/Richard Wright Drive/Carl Sandburg Lane
    - o Install new striped crosswalks on the north, south, and east legs of the future intersection
- Shepherd Road at Lot H Access
    - o Modify the existing standard crosswalk on the south leg of Shepherd Road to provide continental markings and increase visibility of pedestrians and cyclists in this location

- **Uncontrolled Mid-block Crossings**
    - University Drive at Lot I Access
        - o Install a new crossing on the east leg of University Drive at Lot I in order to provide connectivity between The Recreation and Athletic Center and the soccer fields to the south
    - University Drive at Lot B Access
        - o Install a new crossing on the north leg of University Drive at Lot B in order to provide connectivity between the parking lot and soccer fields to the east
    - University Drive south of Lot B Access
        - o Modify the existing standard crosswalk striping to provide continental markings and increase visibility of pedestrians and cyclists in this location
    - Eliza Farnham Drive at Lot C Access and Lot D Access
        - o Modify the existing standard crosswalk on Eliza Farnham Drive at Lot D to provide continental markings
        - o Modify the existing standard crosswalk on Eliza Farnham Drive at the west entrance to Lot C to provide continental markings
        - o Install a new crosswalk on Eliza Farnham Drive at the east entrance to Lot C
    - Richard Wright Drive
        - o Consolidate the existing mid-block crossings to minimize conflicts between vehicles and pedestrians/cyclists. The crossing locations would be located opposite The Recreation and Athletic Center and immediately east of the Student Union.

In addition to the striping modifications, signage will be provided for uncontrolled mid-block crossings. These crossings should include high-visibility pavement markings and appropriate signage, consistent with the MUTCD. For each mid-block crossing, the following signage will be installed:

- Advance Pedestrian Crossing (W11-12) signs, including a supplemental plaque AHEAD (W16-9P).
- At crosswalk, Pedestrian Crossing (W11-2) warning sign with pedestrian-activated flashing LEDs in the sign border is encouraged. The sign should include a supplemental plaque with a diagonal downward pointing arrow (W16-7P).

Additional crossings may be evaluated by the University with future capital projects. Review of future crossings should be located where a pedestrian route currently exists or in close proximity to a popular campus destination. These crossings should be limited to priority locations in order to minimize vehicle/pedestrian conflicts.

Enhanced Lighting

With future development of the south Athletics Field House at the southeast quadrant of 11th Street/ University Drive, increased pedestrian and cyclist activity is anticipated. In order to facilitate crossings on University Drive at Eliza Farnham Drive, Lot I Access, and Shepherd Road, installation of enhanced pedestrian-scaled lighting should be considered. This intersection currently operates with an all-way stop and provides striped crosswalks on each leg. Additional lighting is expected to increase the visibility of pedestrians and cyclists at this location. With realignment of Richard Wright Drive, pedestrian-scaled lighting conditions will be provided.

BICYCLE ACCESS

In addition to the improvements to the bicycle infrastructure, opportunities to increase usage of these facilities were explored. The University currently provides a limited number of bicycles available for student use, free of charge. In order to strengthen connections between the UIS campus and downtown Springfield, the University recently partnered with Gotcha to establish a formal bike share program.

In coordination with the City of Springfield, Downtown Springfield, Inc., Springfield Bicycle Club, and the Springfield Park District, the University should continue to encourage establishment of new bicycle hub locations. The additional hubs would strengthen the program and increase connectivity between the campus and the community.

Mid-block crossing with recommended signage at crosswalk. Advance Pedestrian Crossing signage is also recommended.
Photo courtesy of Kimley-Horn.

Madison BCycle is an urban bike sharing program which includes stations throughout the City and University of Wisconsin-Madison campus. Reduced memberships are offered to University students and employees.
Photo courtesy of Kimley-Horn.

Exhibit 2: Future Transit Connectivity: Bus & Shuttle Network

PUBLIC MASS TRANSIT

Based on a review of existing transit conditions and future building and campus programming plans, opportunities to enhance the existing transit system were identified. As shown in Exhibit 2, extension of transit service south on 11th Street to University Drive should be provided to facilitate access to the following future campus destinations:

NEW CONSTRUCTION	LOCATION
Athletics Field House (Option 1)	Southwest quadrant of 11th Street/Vachel Lindsay Drive
Athletics Field House (Option 2)	Southeast quadrant of 11th Street/University Drive
Student Housing	Northwest quadrant of Eliza Farnham Drive/University Drive

Table courtesy of Kimley-Horn.

Based on existing boarding and alighting data provided by SMTD, a number of stops are currently underutilized. Furthermore, a number of these stops are not accessible to pedestrians (i.e., lack of sidewalk connectivity, ADA ramps, or transit amenities). A summary of the opportunities for stop consolidation is presented in Exhibit 2.

With future campus improvements, the University should continue to partner with SMTD to review transit stops and amenities. Once stop locations are identified, improvements should be implemented as feasible. At a minimum, each bus stop should be ADA accessible with a concrete pad for waiting. Based on a review of current ridership and planned capital improvements, shelters should be considered for the existing transit stops on Richard Wright Drive at The Recreation and Athletic Center. As capital improvements are completed and transit ridership increases, additional consideration should be given to shelters at other stop locations. Generally, shelters should be located at priority stop locations with higher ridership levels; installation of shelters at every stop is not recommended due to installation and maintenance costs.

The University should continue to work with SMTD to monitor ridership, complete outreach campaigns, assess barriers to transit in the study area, and incorporate transit-supportive design elements into future campus projects. Further, the pedestrian and bicycle improvements identified through the master planning process are expected to enhance transit access and potentially encourage new ridership. Additional coordination with SMTD is recommended in order to continually review transit data and implement the suggested transit improvements.

VEHICULAR ACCESS AND CIRCULATION

During the master planning process, a number of roadway improvements were identified to enhance vehicular access and circulation. A summary of these improvements is outlined below.

Intersection Improvements

With a focus on improved safety, access, and mobility, key intersection improvements were identified through the master planning process. While these improvements are expected to enhance conditions for motorists and provide a more intuitive street network, they also provide for bicycle and pedestrian access. A summary of the key intersection improvements is outlined below.

- *Monitor traffic control at Vachel Lindsay Drive / Eliza Farnham Drive* as capital improvements are completed. In order to evaluate traffic and pedestrian movements at these intersections, the University should complete regular multi-modal counts in order to consider potential future traffic control modifications. The intersection currently operates under minor-leg stop-control (i.e., free-flow traffic on 11th Street). As traffic and pedestrian volumes changes, traffic control warrants should be conducted to consider installation of an all-way stop, traffic signal, or other traffic control options. Modifications to the existing traffic control would require review and approval from the Illinois Department of Transportation.
- *Modify the intersection of William Maxwell Lane/ University Drive* in order to minimize conflicts between pedestrians and vehicles. On the west leg of the intersection (William Maxwell Lane), the existing channelized turn lanes should be removed in order to reduce the pavement width and provide a more direct pedestrian route. The west leg of the intersection should be designed to provide a single inbound lane and single outbound lane (similar to the east leg of the intersection). The intersection should be designed to accommodate truck movements; however, channelized turn lanes are not required. With this improvement, the crosswalk on the south leg of the intersection should be realigned to provide a standard perpendicular crossing.
- *Enhance multi-modal access at Vachel Lindsay Drive/ Eliza Farnham Drive* in order to support pedestrian circulation and connectivity to the transit stop and adjacent student housing. In order to prioritize pedestrians at this location, a raised intersection should be considered. The raised intersection would increase the visibility of pedestrians and serve as a traffic calming measure. With or without the raised crosswalk, the following pedestrian improvements should be prioritized:
  - Relocate the crosswalks on the north and south legs to the curb return of Vachel Lindsay Drive. On the north leg, the crosswalk should be installed south of the stop bar. On the south leg, the crosswalk should be installed north of the stop bar.
  - Provide consistent crosswalk striping on all four legs of the intersection.
  - Install new sidewalk on the southwest corner of the intersection in order to provide connectivity to the relocated crosswalk.

  Opportunities to create a shared street along the east leg of Vachel Lindsay Drive should be explored in order to further emphasize pedestrians and to create a transition to the Campus Core. The shared street should be designed to accommodate truck access to the Public Affairs Center loading docks.
- *Realign Richard Wright Drive with Carl Sandburg Lane at Eliza Farnham Drive* in order to create a 4-leg intersection, minimize turning conflicts, and create a more intuitive roadway network. To accommodate these improvements, modifications to Lot F would be required. With the planned improvements, sidewalk should be installed along both the north and south sides of Richard Wright Drive in order to minimize pedestrian cut-through activity in Lot G, provide connectivity to the existing sidewalk network, and plan for the future sidewalk extension along Eliza Farnham Drive.

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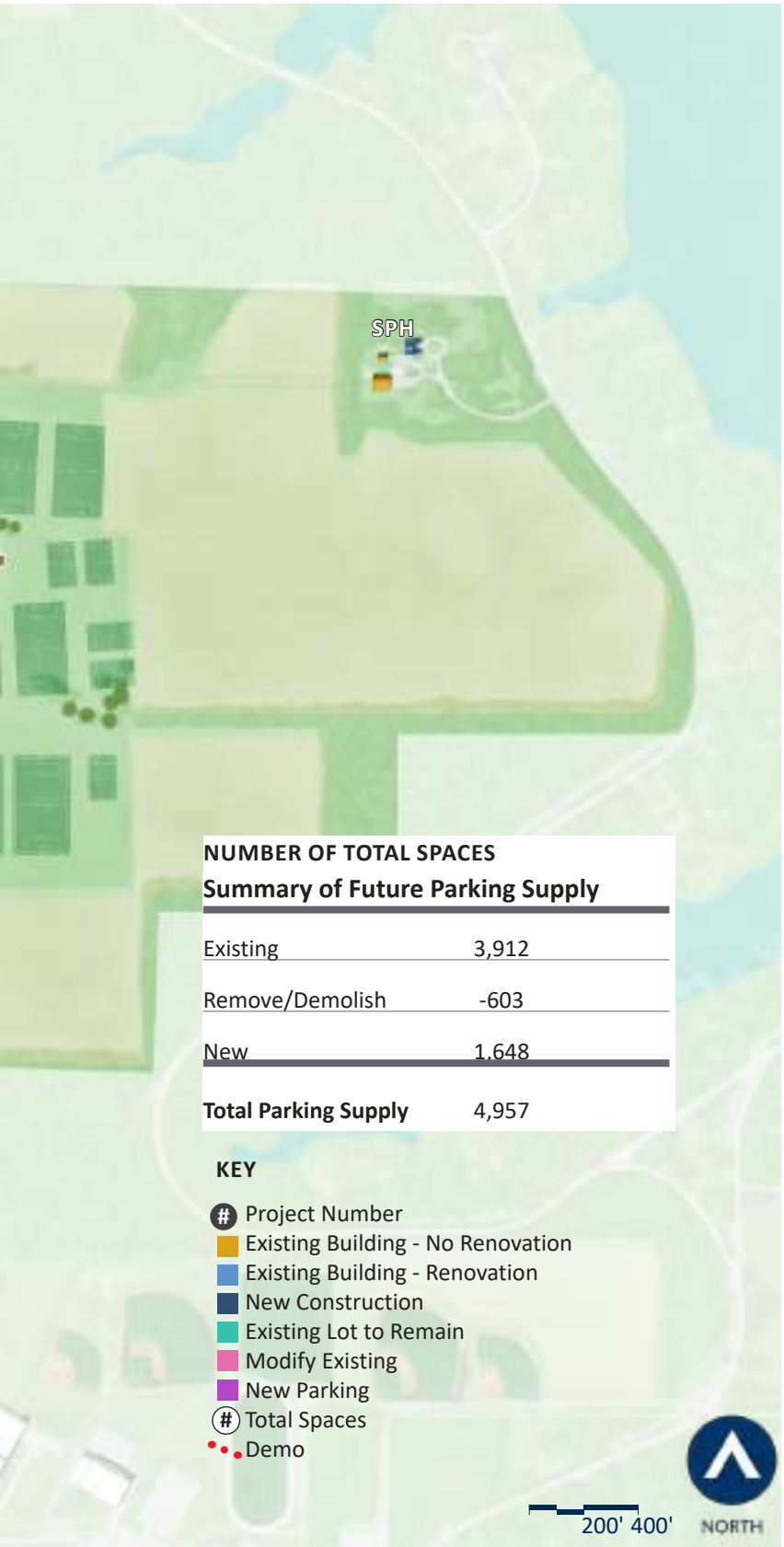
Parking

Exhibit 3: Estimated Future Parking Supply



PARKING

As described under *Facilities & Campus Analysis*, the existing parking supply exceeds campus demand and provides flexibility to accommodate plans for enrollment growth, new buildings, and programming changes. In order to estimate future parking demand and identify opportunities to optimize the parking supply, an analysis of future conditions was completed.

The analysis of future parking demand was based on the following enrollment growth projection:

- Annual 3% increase in student enrollment through Year 2029

With the growth projections, faculty and staff were assumed to increase from 952 persons to 972 persons. For purposes of this analysis, this increase was assumed to occur in Year 2020. Therefore, the analysis of future parking demand captures this fixed increase in faculty and staff levels. Additionally, visitor parking demand was estimated to increase at a rate consistent with student enrollment growth (i.e., 3%). A summary of the projected enrollment levels is presented in Table 1.

Based on the building and programming improvements identified through the master planning process, modifications to the existing parking supply are anticipated. Table 2 summarizes the projected removal and addition of parking spaces. These changes are also depicted graphically in Exhibit 3.

The future parking supply estimates were based on a number of factors as summarized below.

- Estimated the future parking supply for infill lots planned adjacent to the following new buildings / facilities based on the available land area / conceptual parking footprint:
  - Library, Learning & Student Success Center
  - Natatorium
  - Human Performance Center
  - Multi-Activity Center Gym
  - Golf Training Facility
  - Tennis Complex
- Assumed empirical parking demand collected at existing parking lots provided for Foxglove Court, Pennyroyal Court, Marigold Court, and Trillium Court to estimate the future supply for the new student housing.

- Applied an average parking ratio of 5 spaces per 1,000 square feet to estimate the parking supply for the future Athletics Field House. This parking ratio is based on data provided by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 5th Edition and Urban Land Institute (ULI) Shared Parking Manual, 2nd Edition for recreational community centers, arenas, and health clubs.

As projects are implemented on campus, additional review of the proposed parking supply is recommended. The parking supply should reflect the actual size of the proposed building and planned programming or unique operational characteristics. The assumptions used to estimate the future parking supply are intended to be planning-level only; additional analysis would be required as part of the design process.

The estimated future parking supply of 4,957 spaces was used in the analysis of future parking conditions. This future supply was compared to parking demand estimated for the 10-year planning horizon. For purposes of this analysis, peak parking demand was reviewed for both typical (i.e., non-event) weekday conditions and event conditions.

Typical (Non-Event) Conditions
Future peak parking demand for a typical (i.e., non-event) weekday was calculated using empirical parking demand rates estimated for various user groups on campus (e.g., commuter students, resident students, and faculty/staff). A summary of future peak parking demand is presented in Figure 1.

When planning for an appropriate number of parking spaces, it is important to consider effective capacity. This factor incorporates a buffer to account for user convenience in terms of access and circulation (so that parkers are not looking for the last few available spaces) and temporary losses of parking spaces resulting from instances such as maintenance, inefficient parking with vehicles encroaching into adjacent spaces, and snow storage. For purposes of this analysis and in order to reflect parking demand associated with visitors who may not be familiar with the UIS campus, an 85 percent effective capacity factor was applied.

As shown in Figure 1, peak parking demand is expected be approximately 2,246 spaces in Year 2029, which reflects a 45 percent occupancy rate (based on an estimated future parking supply of 4,957 spaces). Under peak conditions, approximately 2,711 spaces would be available on campus. This projected occupancy rate is significantly below the industry-accepted thresholds for functional capacity (85 to 95 percent); and therefore, the future parking supply is expected to support the overall campus parking demand.

Consistent with existing conditions, some parking lots are expected to continue to experience high utilization throughout a significant portion of the day. These lots are expected to be concentrated near the Public Affairs Center and Student Union. It is anticipated the new buildings and multi-modal improvements identified through the Master Planning process will enhance campus connectivity and may encourage use of currently underutilized parking lots.

It should be noted that the future parking supply assumed for this analysis is an estimate and subject to change as plans for the future buildings are developed. As part of the plan development and review process for each new building, a review of facility-essential parking needs should be completed.

As noted under *Facilities & Campus Analysis* and reiterated in the analysis of future parking conditions, the overall campus parking supply is expected to exceed peak demand. In effort to optimize the parking supply and minimize the construction and maintenance costs, the service needs of future buildings should be evaluated in order to determine actual parking needs. This may include a review of accessible parking requirements, faculty and staff parking needs, temporary parking or loading demand, or other unique circumstances which may warrant parking adjacent to a new building.

Event Conditions

As the UIS campus hosts a number of recreational, arts/cultural, and community events, a review of projected peak parking conditions under event conditions was also completed. Based on information obtained from the University, a number of special event conditions were identified for the UIS campus as summarized in Table 3.

As noted in Table 3, these events are typically scheduled outside peak academic periods. Based on the Fall 2018 class schedule provided by the University, enrollment levels on campus typically decline after 6:00PM. This condition was verified during the parking occupancy counts conducted in November 2018, which revealed lower weekday parking demand after 6:00PM (23 percent as compared to peak demand of 34 percent). As limited classes are provided on Saturdays, typical (i.e., non-event) weekend parking demand is expected to be similar to weekday morning and evening conditions.

In order to estimate future parking demand under peak event conditions, the existing parking demand observed at 6:00PM (891 spaces) was used as the baseline condition. Similar to typical conditions, the baseline condition was then increased to reflect future peak parking demand using empirical parking demand rates estimated for various user groups on campus (e.g., commuter students, resident students, and faculty/staff). In addition, the future parking demand was increased by an effective capacity ratio of 85 percent in order to account for user convenience and temporary losses of parking spaces resulting from maintenance and operations.

For purposes of event-related parking demand, the soccer/softball event condition was assumed. This is expected to be a conservative estimate of peak parking demand under event conditions as the 2,550 children estimated for the soccer and softball events were assumed to be on campus simultaneously; staggered game start times were not considered. For purposes of the analysis, an occupancy rate of 1.25 children per vehicle (i.e., carpools, siblings) was applied for an estimated parking demand of 2,040 vehicles for the soccer/softball condition. A summary of the projected peak parking demand under event conditions is shown in Figure 2.

As shown in Figure 2, under the event condition peak parking demand is expected be approximately 4,286 spaces in Year 2029, which reflects an 86 percent occupancy rate (based on an estimated future parking supply of 4,957 spaces). Under peak Year 2029 event conditions, approximately 671 spaces would be available on campus. This projected occupancy rate is within the industry-accepted thresholds for functional capacity (85 to 95 percent); and therefore, reflects an optimal parking supply to support overall campus parking demand during special events.

The analysis of event conditions assumes efficient use of the overall campus parking supply. In order to support parking demand during event conditions, a parking management plan is recommended. The parking management plan would provide a standardized approach to improve use of the campus parking system. A summary of key recommendations to consider as part of the parking management plan is provided in Table 4.

Table 1: Summary of Enrollment Projections

USER TYPE	FALL 2019	FALL 2020	FALL 2021	FALL 2022	FALL 2023	FALL 2024	FALL 2025	FALL 2026	FALL 2027	FALL 2028	FALL 2029
Residential Students	952	981	1,000	1,020	1,041	1,061	1,083	1,104	1,126	1,149	1,172
Commuter Students	1,480	1,524	1,570	1,617	1,666	1,716	1,767	1,820	1,875	1,931	1,989
Faculty/Staff*	346	358	358	358	358	358	358	358	358	358	358
Staff	606	614	614	614	614	614	614	614	614	614	614

**Includes full-time and part-time.*
Table courtesy of Kimley-Horn.

Table 2: Summary of Projected Parking Improvements

EXISTING LOT	CAPITAL CONSTRUCTION PROJECT	PARKING SUPPLY				
		EXISTING	REMOVED	ADDITION	NET CHANGE	FUTURE PARKING SUPPLY*
--	Public Safety Building (PSB)	--	--	+30	+30	+30
--	Library, Learning & Student Success Center (LLSSC)	--	--	+50	+50	+50
Lot B	Partial Demolition Future Academic Expansion (FAE) Business Building (BB)	809	-290	+1^^	-289	+520
Lot F	Richard Wright Drive, Carl Sandburg Lane realignment	94	-94	--	-94	--
Lot H	Multi-Sport Field Kiwanis Building/Stadium (KIW)	27	-27	+150	+123	+150
Lot I	Human Performance Center (HPC) Multi-Activity Center Gym (MAC) Natatorium (NAT)	301	--	+265^	+265	+566
Marigold Court	N/A**	175	-95	--	-95	+80
Trillium Court	N/A**	188	-95	+2^^	-93	+95
--	Future Student Housing (FSH) Townhomes (Carl Sandburg Lane)	--	--	+350	+350	+350
--	Future Student Housing (FSH) (Richard Wright Drive)	--	--	+100	+100	+100
--	Golf Training Facility (GTF)	--	--	+50	+50	+50
--	Athletics Field House (AFH) Retail at Athletics Field House South	--	--	+500	+500	+500
--	Baseball/Softball Complex (BSC)	2	-2	+150	+148	+150
	ESTIMATED PARKING IMPACTS	**1,596**	**-603**	**+1,648**	**+1,045**	**+2,641**
	EXISTING PARKING TO REMAIN (NO IMPROVEMENTS)	**2,316 spaces**				
	ESTIMATED FUTURE SUPPLY	**4,957 spaces**				

**Estimate; actual future parking supply subject to preparation of design plans for parking lots.*
***Modifications to existing lot to accommodate Richard Wright Drive / Carl Sandburg Lane Realignment at Eliza Farnham Drive.*
^Estimated addition includes 190 spaces north of existing Lot I and 75 spaces south of existing The Recreation and Athletic Center.
^^Adjustment to account for estimated (rounded) future parking supply.

Table courtesy of Kimley-Horn.

Figure 1: Future Peak Parking Demand - Typical Conditions (Annual 3% Student Enrollment Growth)

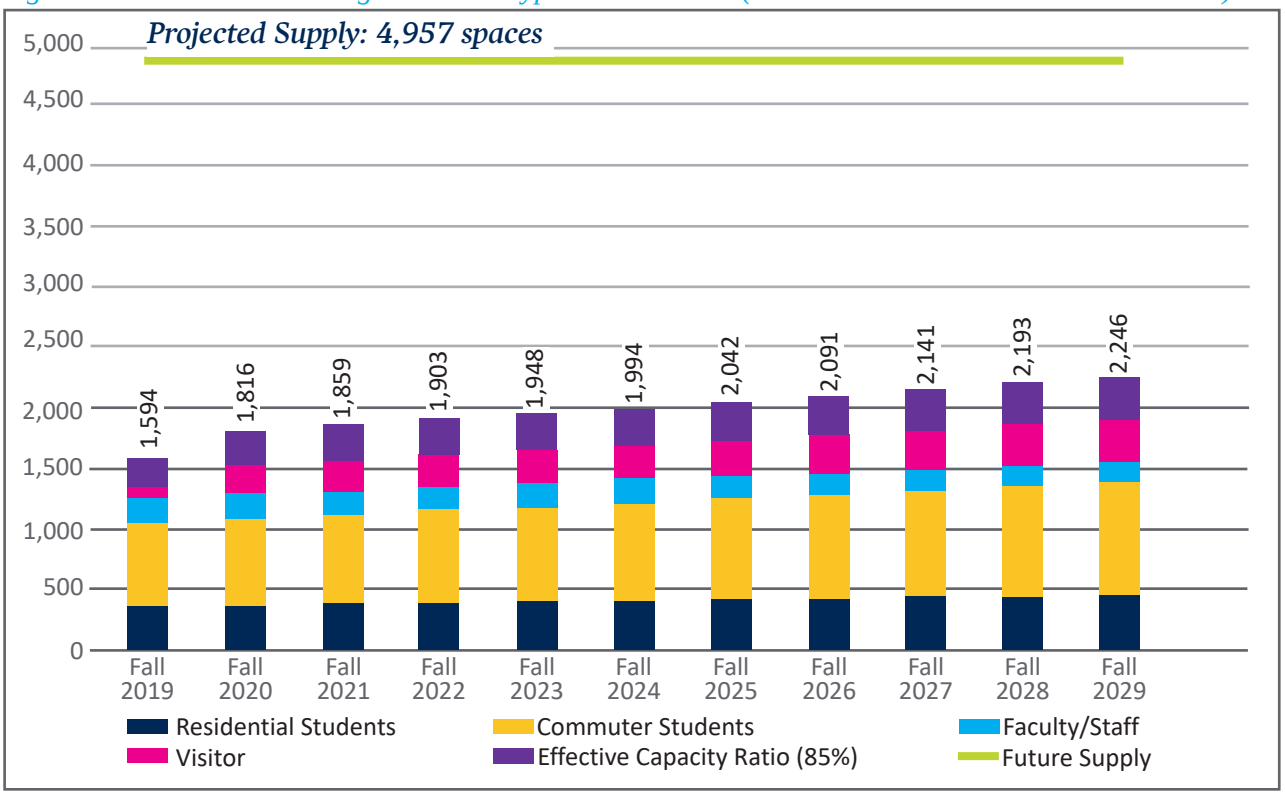


Table courtesy of Kimley-Horn.

Figure 2: Future Peak Parking Demand - Event Condition (Annual 3% Student Enrollment Growth)

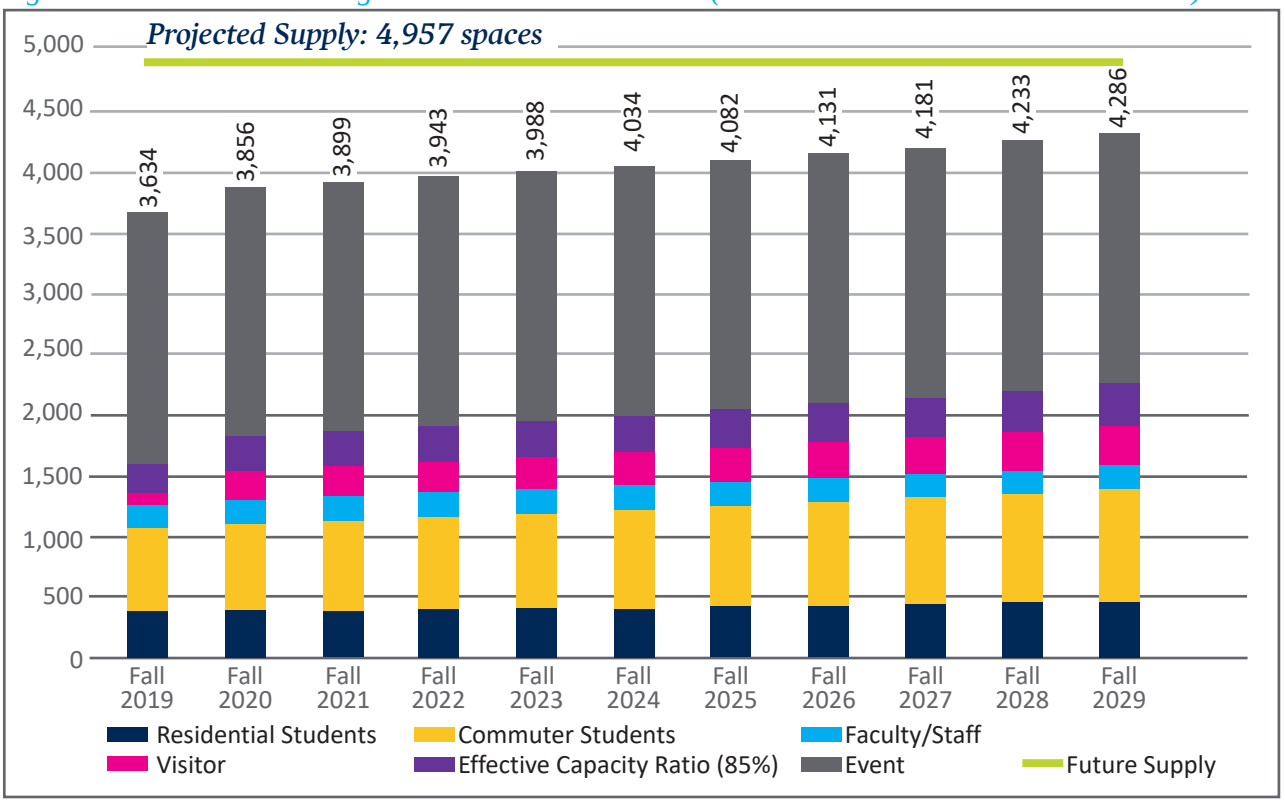


Table courtesy of Kimley-Horn.

Table 3: Summary of Campus Events

EVENT	LOCATION	DAY	TIME PERIOD	ESTIMATED ATTENDANCE	ESTIMATED PARKING DEMAND
Soccer/Softball Events	East Soccer & Softball Complex	Weekends (March - October)	8:00 AM to 3:00 PM	2,550 *	2,040 Vehicles*
Arts/Culture	Sangamon Auditorium	Weekends Weekdays	Midday/Evenings Evenings	2,050**	1,640 Vehicles**
High School Graduations Government Events	Sangamon Auditorium	Weekends Weekdays	Varies	2,100^	1,680 Vehicles^

**Per the University, typical attendance is 600+ children on the east side and 1,950 children in the YMCA leagues on the west side. For purposes of this analysis, a total of 2,550 children was assumed and each kid was assumed to drive alone (i.e., no carpools) for a total parking demand of 2,040 vehicles.*
***Per the University, seating capacity is 2,000 persons plus an addition 30-50 employees and performers. For purposes of this analysis, an average vehicle occupancy rate of 1.25 persons was assumed for an estimated parking demand of 1,640 vehicles.*
^Per the University, seating capacity is 2,000 persons. An additional 100 people was assumed for event staffing/management. For purposes of this analysis, an average vehicle occupancy rate of 1.25 persons was assumed for an estimated parking demand of 1,680 vehicles.

Table courtesy of Kimley-Horn.

Table 4: Recommended Strategies for Improved Parking System Operation

OPPORTUNITY	POTENTIAL BENEFITS
Identify temporary off-site parking facilities (e.g., non-agricultural fields, LLCC, Capital Area School of Practical Nursing, existing development north on 11th Street) to support potential parking spillover during unique events. As needed, provide remote parking transportation (e.g., shuttles).	• Increase parking supply temporarily as needed to support unique conditions. • Encourage use of off-site shared parking. • Enhance availability of on-site parking spaces for visitors with mobility challenges. • Minimize construction and maintenance costs of new campus parking facilities.
Explore opportunity to provide shuttles or transit between campus parking lots and special event locations such as Sangamon Auditorium and East Soccer and Softball Complex.	• Encourage use of transit. • For events at Sangamon Auditorium and East Soccer and Softball Complex, consider parking lots within the East Quad and/or the future Athletics Field House as remote parking options during events outside peak academic periods.
Establish temporary student and faculty/staff parking restrictions in high-demand locations.	• Increase spaces available for visitors in desirable locations. • Reserve spaces for student and faculty/staff permit holders (as needed) only.
Develop a wayfinding plan to communicate information about parking locations during unique events.	• Reduce vehicle circulation and direct visitors to on-campus parking lots further from event destinations. • Increase convenience for visitors.
Communicate parking information via the University or event website and/or a custom app for smartphones.	• Provide improved direction for visitors searching for available parking. • Reduce vehicle circulation through heavily parked areas on campus where pedestrian traffic is high.

Table courtesy of Kimley-Horn.

Implementation Plan for Mobility Improvements

Based on the improvements identified to enhance campus mobility and accessibility, opportunities to coordinate implementation with the capital construction projects were reviewed. The following implementation matrix outlines the anticipated phasing for the mobility improvements. The following phasing program was identified, consistent with the capital construction projects:

- **Immediate Need** mobility improvements are urgently needed to address specific campus needs related to creating a welcoming, intuitive campus arrival experience; strategic building renovations; and construction of prioritized new facilities (refer to *Immediate Need* map in Volume 1b). Additional mobility improvements which address existing access, safety, and comfort challenges are also identified as Immediate Need.
- **Near Term** identifies mobility improvements which support the capital construction projects identified to cultivate a premier educational experience; support a vibrant campus life and culture; and implement growth strategies to create an adaptable, responsible, and sustainable infrastructure to support future development (refer to *Near Term* map in Volume 1b). Additional improvements which facilitate multi-modal campus connectivity have been identified as Near Term.
- **Stand-Alone** identifies projects which may be implemented as an individual capital construction projects.

In addition to implementation of the mobility improvements identified through the master planning process, establishment of an asset management plan is recommended. The asset management plan would include a robust inventory and quality assessment of existing infrastructure, which would inform allocation of limited resources for maintenance and replacement. In combination with the master plan, the asset management plan could be used to develop the University's annual Capital Budget Request.

CAPITAL CONSTRUCTION PROJECT	MOBILITY IMPROVEMENT
STAND-ALONE	
Roadway Repair Projects	• University Drive Streetlight Replacement Phase I • Ernest Hemingway Drive Phase I • Ernest Hemingway Drive / Edgar Lee Masters Drive Phase II • University Drive Repairs • University Drive Streetlight Replacement Phase II • University Drive Streetlight Replacement Phase III • Vachel Lindsay Drive Repair

Table courtesy of Kimley-Horn.

CAPITAL CONSTRUCTION PROJECT	MOBILITY IMPROVEMENT
IMMEDIATE NEED	
Richard Wright Drive / Carl Sandburg Lane Realignment at Eliza Farnham Drive	• Remove Lot F (94 spaces) (Exhibit 3) • Install new crosswalks at future intersection (north, south, and east legs) • Consolidate mid-block crossings and provide curb extensions on Eliza Farnham Drive and Richard Wright Drive • Install curb extensions at future intersection corners • Provide shared lane markings (i.e., sharrows) on Eliza Farnham Drive and Richard Wright Drive • Work with SMTD to eliminate the underutilized transit stop at the northeast corner of Richard Wright Drive / Eliza Farnham Drive (Exhibit 2) • Install new sidewalk along Richard Wright Drive (Exhibit 1)
William Maxwell Lane Realignment	• Reconfigure William Maxwell Lane / University Drive intersection • Install new sidewalk along William Maxwell Lane (Exhibit 1)
East Quad development	• Install new sidewalk connections between the East Quad and Student Union (Exhibit 1)
Public Safety Building	• Construct new parking lot (estimated 30 spaces) (Exhibit 3)
Library, Learning, & Student Success Center	• Construct new parking lot (estimated 50 spaces) (Exhibit 3)
Other Pedestrian / Cyclist Access and Mobility Improvements	• Install new crosswalks at Eliza Farnham Drive / Ernest Hemingway Drive (north, east, and west legs) • Modify the existing standard crosswalk striping on University Drive south of Lot B to provide continental markings • Review all signage at existing pedestrian crossings and modify to align with the MUTCD and to provide consistency across the campus (see "Accessibility, Mobility, Connectivity" section) • Install new sidewalk along the northwest side of Ernest Hemingway Drive, from University Drive to Eliza Farnham Drive (Exhibit 1) • Install sidewalk in existing gap location on the southeast side of Eliza Farnham Drive between Lot E and Ernest Hemingway Drive (Exhibit 1) • Install sidewalk in existing gap locations on both sides of Ernest Hemingway Drive south of Eliza Farnham Drive (Exhibit 1) • Modify the existing standard crosswalk on Eliza Farnham Drive at Lot D to provide continental markings • Modify the existing standard crosswalk on Eliza Farnham Drive at the west entrance to Lot C to provide continental markings • Install a new crosswalk on Eliza Farnham Drive at the east entrance to Lot C

Refer to Volume 1b for referenced Exhibits.

Table courtesy of Kimley-Horn.

Implementation Plan for Mobility Improvements

CAPITAL CONSTRUCTION PROJECT	MOBILITY IMPROVEMENT
NEAR TERM	
West Quad development	• Vachel Lindsay Drive / Eliza Farnham Drive Intersection Improvement • Install curb extensions at corners of Eliza Farnham Drive/Vachel Lindsay Drive
Other Pedestrian / Cyclist Access and Mobility Improvements	• Work with SMTD to eliminate underutilized transit stops on Vachel Lindsay Drive (Exhibit 2)
STAND-ALONE OPPORTUNITIES	
Human Performance Center Multi-Activity Center Gym Natatorium	• Expand Lot I (estimated 265-space increase) (Exhibit 3) • Install a new mid-block pedestrian crossing on the east leg of University Drive at Lot I • Install new sidewalk along the east side of Eliza Farnham Drive, from Richard Wright Drive to University Drive (Exhibit 1) • Install new sidewalk along the north side of University Drive, from Eliza Farnham Drive to Shepherd Road (Exhibit 1)
Future Academic Expansion Business Building	• Modify Lot B (estimated removal 290 spaces) (Exhibit 3) • Install a new mid-block pedestrian crossing on the north leg of University Drive at Lot B
Future Student Housing	• Construct new parking lots (estimated total 450 spaces) (Exhibit 3) • Modify Marigold Court and Trillium Court parking lots (estimated removal 190 spaces) (Exhibit 3)
Athletics Field House (North)	• Construct a new parking lot (estimated 500 spaces) (Exhibit 3) • Consider a multi-use sidepath along 11th Street • Install new crosswalks at 11th Street / Vachel Lindsay Drive (north and east legs) • Install curb extensions at corners of 11th Street / Vachel Lindsay Drive • Install new striped crosswalks at 11th Street / Ernest Hemingway Drive (west and south legs) • Work with SMTD to explore new transit route along 11th Street and University Drive (Exhibit 2)
Athletics Field House (South)	• Construct a new parking lot (estimated 500 spaces) (Exhibit 3) • Install new crosswalk at 11th Street / University Drive (east leg) • Work with SMTD to explore a new transit route along 11th Street and University Drive (Exhibit 2) • Install new sidewalk between the Athletics Field House (South), Baseball/Softball Complex, and Golf Training Facility (Exhibit 1) • Install new sidewalk along the west side of Shepherd Road south of University Drive (Exhibit 1)
Golf Training Facility	• Construct a new parking lot (estimated 50 spaces) (Exhibit 3) • Install new crosswalks at Shepherd Road / University Drive (north, south, and west legs)
Baseball/Softball Complex	• Construct a new parking lot (estimated 150 spaces) (Exhibit 3)

Refer to Volume 1b for referenced Exhibits.

Table courtesy of Kimley-Horn.

CAPITAL CONSTRUCTION PROJECT	MOBILITY IMPROVEMENT
STAND-ALONE OPPORTUNITIES (continued)	
Multi-Sport Field Kiwanis Building / Stadium	• Expand Lot H (estimated total 150 spaces) (Exhibit 3) • Modify the existing standard crosswalk on the south leg of Shepherd Road at Lot H to provide continental markings
Other Pedestrian / Cyclist Access and Mobility Improvements	• Install new sidewalk along the northwest side of Eliza Farnham Drive, between Lot D and Ernest Hemingway Drive • Install new sidewalk along the south side of Eliza Farnham Drive, between Ernest Hemingway Drive and Lot C • Provide a multi-use sidepath along University Drive between 11th Street and Ernest Hemingway Drive • Construct a two-way cycle track on the north side of Vachel Lindsay Drive, between 11th Street and Eliza Farnham Drive • Install new sidewalk along the west side of Eliza Farnham Drive, from Vachel Lindsay Drive to University Drive (Exhibit 1) • Monitor multi-modal conditions at the intersection of Vachel Lindsay Drive / Eliza Farnham Drive to evaluate future traffic control modifications

Refer to Volume 1b for referenced Exhibits.

Table courtesy of Kimley-Horn.

Campus Landscape

FURNISHINGS

Furnishings at the UIS campus vary in style from place to place, although certain products have been identified by facilities staff as being preferred for future use. Specifically, waste containers have been selected that stand up to the heavy use and are convenient to maintain. Benches were selected for the new Student Union that could be used in other locations on campus. Uniform styles of furnishings should be used throughout central campus area. Specialty furnishings may be used in less public areas such as courtyards, residential areas, and remote pathways and trails to develop character and uniqueness.

Movable furniture should be reserved for areas where its use can be monitored.

LIGHTING

Campus lighting must conform to any specifications in the University's Facilities Standards. Light fixtures and optics should be selected to best illuminate the necessary areas.

Along streets with sidewalks lighting should typically include a combination of high-mast streetlights at regular intervals with lower height pedestrian-scale fixtures between streetlights. The combination is both functional and attractive. Along sidewalks or walkways through open areas, the lower height lights should be uniformly spaced along one side of the walkway. In particular locations where light poles are not wanted for aesthetic reasons, low-profile lights can be used to line a sidewalk, light an outdoor terrace, or highlight areas for improved pedestrian safety.

Special features on the campus landscape such as signs, buildings, entrances, other architectural features, sculpture, and trees can be highlighted with flood or spotlights mounted on structures, on the ground, or in trees or on structures. The number of highlighted elements and intensity of lighting should show restraint.

Selections of new poles and light fixtures should be based on several criteria. First is their overall capability to perform as required. With lighting technology advancing rapidly, consideration should be given to the capability of light sources (bulbs) to be replaced in the future with improved units. A second criteria is the visual compatibility with other light fixtures used within campus. Although there is convenience in using the same fixtures, doing so can be overly repetitious. Use of contrasting fixtures in certain areas can help create a strong visual statement.

Environmental considerations must also be respected. Areas should not be lighted to excess, showing disregard for energy use and economy. Lights should have cut-offs and optics that restrain lights within the areas to be lighted. Economic lighting technologies and controls should be employed where possible to encourage energy conservation.

PAVEMENTS

Pavements within the campus include streets and parking areas, service drives and utility pads, patios and terraces, sidewalks and bikeways. Each has a distinct purpose and use.

Where streets are being widened or new connector streets constructed, attention should be paid to controlling drainage where possible with sustainable approaches to minimize stormwater runoff into storm sewers.
Additionally, attention should be given to providing for associated bicycle and pedestrian circulation. If bicycle routes are provided on-street, adequate lane widths and signage for safety is imperative. Similarly, for sidewalks, separation from vehicle lanes and safe street crossing must be provided.

Terraces, patios and plazas within campus can be built from a variety of materials. Non-permeable concrete, pavers or other surfaces add to the volume of stormwater runoff and drainage conditions within the area. Permeable surfaces can reduce runoff.

PLANTINGS

The following general principles will be used to guide campus planting design:

Throughout campus, tree, shrub, and hedge plantings should be appropriate to the scale of the space. A broad stroke use of plants in large rows and masses is generally preferred to fussy, intricate plantings in order to maintain a proper scale relationship with large university buildings. More intricate and small-scale plantings are only appropriate in smaller courtyard spaces and in proximity to smaller campus buildings.

Throughout campus, plantings should reinforce the basic campus structure (defined by streets, buildings, and in some cases walkways). Plantings should provide structure to open spaces.

In general, plantings should be simple and restrained. The variety of species within a defined area should be limited. Planting should not, however, be monocultures and plants should not be used such that species-targeting insects or disease would adversely affect the design. The currently ongoing devastation of ash trees is such an example. This principle should also apply to the streetscapes and walkways within and approaching the campus.

Throughout campus, plant selections should favor plants that are well adapted to the climate and conditions of the site. Native species and their cultivars are adapted to local conditions when planted in species-appropriate locations. Over the years, many non-native species have been planted on the UIS campus and found to be adapted to site-specific conditions. Because so many species of plants, natives and non-natives, are present the campus has somewhat of an arboretum collection already.

In the future, plant choices for the center of campus could be made to further develop the arboretum-like campus. To do this, species should be grouped or sorted in meaningful ways, ie. plants from a certain region or country could be grouped together. Similarly, native plants could be grouped in other areas. Information could be provided by tours, labels, QR codes, or brochures.

For areas outside the central campus, where forest management and enhancement are recommended, and where prairies are an option in replacing row crops, only native species and in some cases native ecotypes must be used.

For courtyards, residential sites, and other small areas within the campus, planting should be done to suit the character and purpose of each space.

Throughout campus, plantings must avoid creating conditions that cannot be easily seen and monitored for safety.
In vicinities of streets, driveways, and sidewalks, plants should be positioned to avoid obstructing visibility.

SCREENING

To the extent possible, service areas and equipment should not be located in plain view of motorists and pedestrians on campus. Where such areas are visible, screening should be provided. The type of screening should be determined by the nature of the service component, including its frequency of use, the possible generation of noise, and its size and visual impact.

Site walls may be used for screening when they can be attached or visually associated with a building. Walls should be visually compatible with the design and materials of the associated structure. Durable gates may be a necessary component of certain wall enclosures. Trees or other plant material may also be used to soften the appearance of the site walls.

Where service areas are remote, not associated with a building, screening with plant material instead of structural walls is usually more compatible with the campus environment. Evergreen trees or shrubs that are adapted to the Mid-west can be used. Where evergreen screening must have a rigid layout, some deciduous plants may be added for a more naturalistic appearance. This would apply most directly to areas beyond the center of campus where native and naturalistic landscapes are important.

Parking lots should also be screened, or partially screened, to avoid the appearance of vast areas of uninterrupted pavement. Screening with trees and other plants can be done within parking lot islands and around the perimeters. Trees in these areas provide the added benefit of shade for cars and motorists using the areas. The placement and species selected for parking lot areas should not block visibility needed for safe vehicular use or for a sense of security within the areas.

SCULPTURE & FOUNTAINS

Art can be a special element within the campus landscape. The existing UIS Colonnade Terrace and Fountain is a focal center north of the quadrangle. Other works of art and sculpture are located throughout the campus, generally in locations that pertain to the sculptural subject.

Any additional art and sculpture should be located where they have a purpose or a relationship to the campus. Those locations could include prominent positions to highlight the campus entrances, environmental settings to emphasize particular themes, or campus buildings vicinities where they relate to academic studies.

The grounds around any sculpture or artwork can be enhanced to create a more compatible setting. The elevation may be raised, a base built, and restrained lighting provided for nighttime viewing. Generally, elements should not be “dolled-up” with unnecessary accouterments. Fine artwork is complete unto itself.

Generally, sculpture and fountains should be scaled to fit the environment in which they are located. Pieces should generally be selected that will have a timeless quality. If pieces are of a contemporary nature, consideration should be given to whether they will remain significant in the future. This is not to say that temporary or limited-term art should be not be exhibited. Such additions can add a sense of spontaneity, growth, and energy to a campus setting.

TOPOGRAPHY

The UIS Campus is built on flat land that was once tall-grass prairie with woodlands along its shallow drainageways. Because of the minimal topographic change, drainage within the campus is a challenge. Often deep swales and ditches along roadways and large underground storm sewers are necessary to collect and discharge water beyond the developed campus areas. To some degree sustainable stormwater management techniques, such as the permeable pavers, bioswales, rain gardens, and green roofs used at the new Student Union, have reduced stormwater runoff.

To only a limited extent, landforms have been utilized on the campus. The entrance sign is set on a large berm. Additionally, “negative” landforms create sunken courtyards at the Sangamon Auditorium and the Health & Sciences Building. One pond has also been built to provide stormwater detention.

Because this campus is on naturally flat prairie land, use of berms or other landforms should be largely avoided as they appear forced and artificial. Rather, the campus should celebrate the horizontal lines of the land.

PERIMETER CROPLAND & FOREST MANAGEMENT UNITS

It is expected that the University of Illinois at Springfield will continue to lease the existing cropland and will follow the university system’s best farm management practices.

Forest areas located beyond the agriculture fields need to be managed to control invasive species and promote healthy native forest succession. To provide access to the forest units for management operations and security, a turf lane between the fields and forest is recommended. The turf lane could also serve as a firebreak, a cross-country running course, and a nature study trail. The turf lane could connect with existing cross-country race routes near East Lake Drive.

Utilities & Infrastructure: Technology

The existing campus fiber system is installed in a combination of ring and star topology. Currently, there are two data centers serving the campus. Most fiber is routed to the primary data center located in Health & Sciences Building (HSB). Some fiber is routed to a redundant data center in University Hall Building (UHB). All existing fiber is multi-mode and originates in the HSB primary data center. There is a 100 strand fiber connecting the data centers in HSB and UHB. With the current arrangement, there is no redundancy of individual distribution feeds to most campus buildings, and therefore little ability to maintain data service to campus buildings in the event of damage to the building cabling feed.

Future improvements will need to be made to address the redundancy issue. Relocating the existing primary data center is not a feasible option, as this would disrupt the existing campus infrastructure and would result in extensive re-cabling, re-routing, and or splicing of cables at all existing campus buildings. Most campus low voltage systems including, but not limited to, voice/data, access control, video surveillance, emergency notification, CATV etc. are dependent on the existing fiber network infrastructure.

For future planning of data service, all new buildings should have two feeds with single mode fiber. The two feeds are not required to come from different data centers since both data centers are interconnected. This will provide full redundancy for new buildings. Existing buildings should be considered on a case by case basis for upgrade to two fiber feeds as described for new buildings.

As part of future updates to the Spencer House (SPH), this location is planned to be served from the local cable utility network due to its distance away from the main campus fiber system.

The Golf Training Facility (GTF) is planned to be served from a wireless transmitter since it is not near any fiber infrastructure and will have very limited data needs.

Utilities & Infrastructure: Chilled Water & Steam

The existing campus chilled water system is at capacity per UIS. The existing system serves Brookens, Public Affairs Center, University Hall, Lincoln Residence Hall, Founders Residence Hall, Recreation and Athletic Center, and the Student Union.

The piping/pumping arrangement is inefficient and has no redundancy. The chiller pumps cannot be cross-connected, they are dedicated to each chiller, and the piping is not manifolded. This means that each individual piece of equipment is a single source of failure and a leaking pump seal can take an entire chiller offline. The chiller plant piping arrangement and controls programming should be reconfigured so that any pump can serve any chiller.

A future recommendation that would be a benefit to the system would be to connect piping and controls from the Health & Sciences Building (HSB) as well, to increase capacity, redundancy, and efficiency of the campus chilled water systems. If the chillers serving HSB were connected to the campus chilled water piping, they could be used to provide additional chilled water to other buildings whenever the HSB is not operating at peak cooling demand. In addition, piping and electrical infrastructure should be extended to allow a temporary chiller to be located in the Brookens Building dock area and connected to the chilled water distribution system in the event of an emergency (chiller failure).

In the future, new buildings will need to be served from dedicated chillers or direct expansion refrigeration equipment. The Master Plan recommends removing the Student Union from the campus chilled water loop to combine it with new chilled water equipment/systems serving the LLSSC to allow for year-round operation of the heat recovery chiller in the Student Union.

The additions to the Recreation and Athletic Center will need to be evaluated in the future during the design of these additions, when more detailed information is available. The Multi-Activity Center Gym (TRAC) and the Human Performance Center may be able to be served from the campus chilled water in the TRAC building especially if the modifications to the chilled water plant proposed above are incorporated. The Natatorium will need to be served from dedicated air handling equipment with direct expansion refrigeration.

STEAM/HEATING WATER

The existing steam boilers located in Brookens and the Public Affairs Center are cross-connected and piped to serve the Health & Sciences Building (HSB).

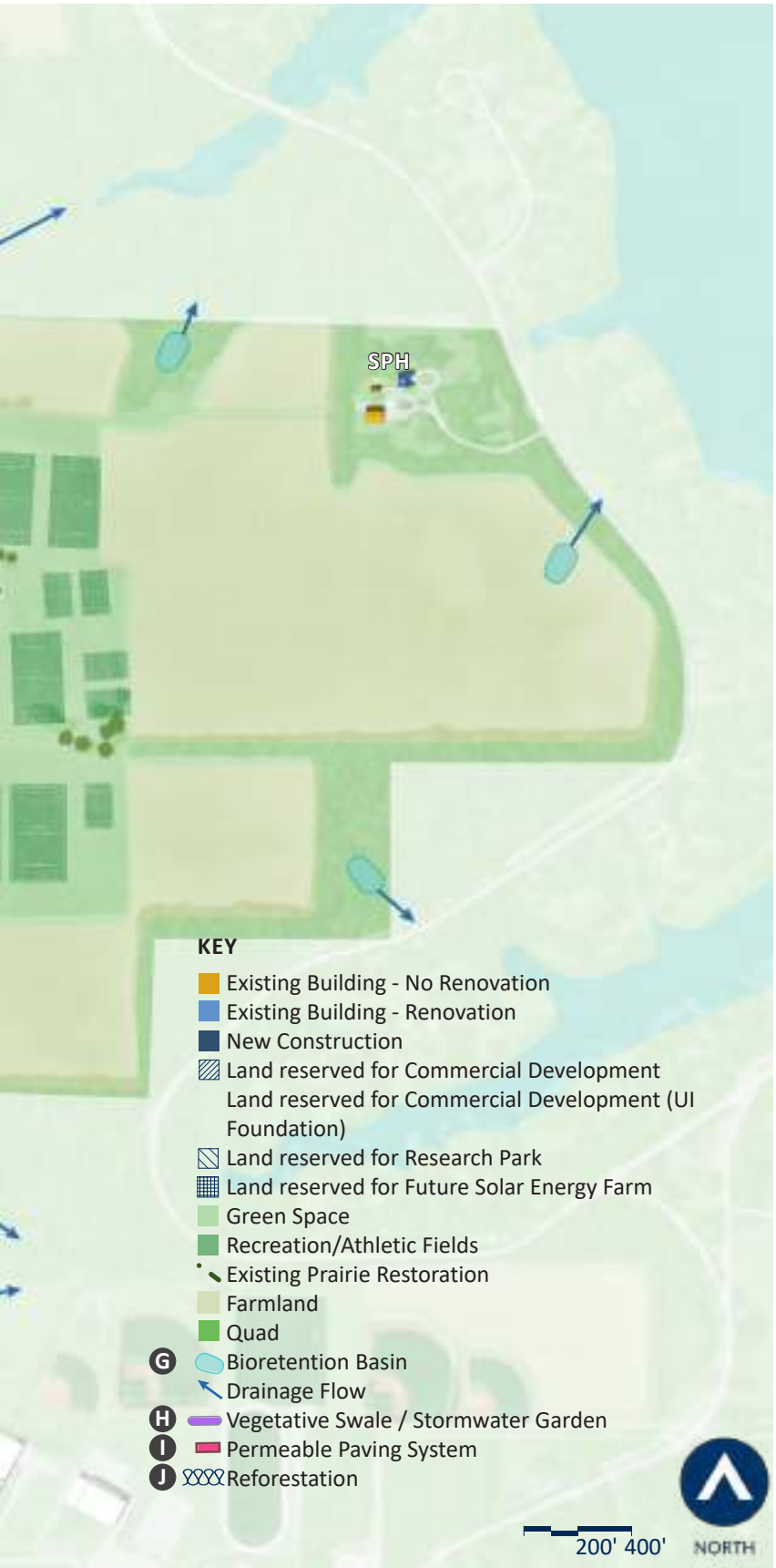
The winter load typically requires one large 500 BHP boiler with another one kept hot for standby redundancy. The summer load is served by one 350 BHP boiler with no redundancy.

The UIS 2020 Master Plan recommends replacing the steam boilers with multiple hot water boilers in the future to increase redundancy and efficiency of these heating systems.

The remainder of the existing campus is served by local gas fired heating water boilers or gas fired air handling equipment. New buildings will need to be served from dedicated gas fired boilers or air handling equipment similar to the majority of campus.

Utilities & Infrastructure: Stormwater

For additional information on items A-J, refer to the following pages.



Site and Utilities measures impact the overall campus as a whole, and the areas surrounding each building. The area between buildings, and the overall campus, is a highly used, inhabited space and has a large impact on the environment. Examples of site and utility sustainable strategies include:

- Use of permeable pavers in strategic locations
- Stormwater runoff mitigation
  - Bioretention basins
  - Vegetated/landscaped swales
  - Stormwater gardens
  - Detention under permeable pavers
  - Capture and reuse stormwater for irrigation

Stormwater management and control are vital concerns on the University of Illinois Springfield campus. Several factors must be considered. First, the campus covers a very large area, a total of 756 acres, and lies along the edge of Lake Springfield, the region's water supply and recreational feature. Drainage from the campus into the lake must be controlled to avoid soil erosion and siltation, chemical contamination, and debris deposits. The lack of topographic change affects the use and development of the campus. The elevation differential within the campus is not much more than 20 feet, leading to difficulty in attaining enough slope for effective stormwater drainage. Swales, roadside ditches, and underground storm pipes are commonly needed for effective campus drainage. Additionally, the deep organic soils of the site resulting from historic prairie growth are rich in organics and nutrients for plant growth, but do not percolate efficiently to drain excess stormwater.

To reduce the amount of stormwater discharge, sustainable stormwater management techniques such as permeable pavers, bioswales, rain gardens, and green roofs should be employed to the extent possible.

The flat prairie topography is the foundation of the campus aesthetic. Campus development should enhance the "prairie style" imagery to celebrate the horizontal lines of the land.

Use and implementation strategies for these initiatives is outlined in each of the project pages, as well as illustrated graphically on the specific campus maps in Volume 1.

Currently, surface water on campus drains to Lake Springfield via a collection system of swales, culverts, and stormwater drainage structures.

- The northern half of campus drains north to University Drive and follows the road along the perimeter of campus to the northeast where the water flows into a creek that leads to Lake Springfield.
- The southern half of campus is directed to and around University Drive where the water drains to the southeast into another creek that continues to Lake Springfield.
- The western portion of campus drains into a storm sewer system that eventually discharges into Lake Springfield.

Areas on campus of drainage concern follow:

A The stormwater collection swale north of the existing detention pond is eroding into relatively deep gullies. The swale can be regraded into a flat-bottom swale with the capacity for the stormwater it is receiving.

B The area between the PAC and Brookens Library is underlain with structures that are affected by percolating stormwater that infiltrates the structures.

C The drainage outfall structure from Parking Lot D has settled and is not functioning properly. It can be repaired.

D The East Quad has extensive pavement and sunken courtyard; it does not drain efficiently. An underground tile and pipe system could improve the rate of drainage during and after rain events.

Concept of stormwater management.
Photo courtesy of David Mason + Associates.

E Areas of campus are underlain with old, deteriorating vitrified clay drainage tile systems that cause areas of ponding water during and after rain events. The baseball and soccer fields are affected by this condition which limits play and is a safety concern. Removal of the old tile and replacement with modern underground tile systems could eliminate these problems.

F The overall central campus area does not drain well, and in several areas stormwater backs-up onto sidewalks during rain events. Areas along the sidewalks can be regraded to establish (or reestablish) swales along these areas and, if needed, tiled to connect with the underground stormwater collection system.

G Detention basins can be positioned to reduce the intensity of water flow from campus core to Lake Springfield. In certain locations along the greenways leading from the campus to Lake Springfield, soil erosion can be prevented with baffle dams that terrace the waterway and allow growth of stabilizing plant material.

H Alongside impermeable pavement and within large paved areas, bioswales or stormwater gardens can be used to collect and filter impurities from storm runoff.

I Permeable pavement can be used that combine infiltration and subsurface detention to reduce runoff.

J Along the greenways, trees and forested conditions should be preserved as a BMP to stabilize the banks and control erosion.

To reduce the amount of stormwater flowing into the existing drainage systems, Best Management Practices (BMPs) can be developed at optimum locations throughout campus. Construction of future facilities to control stormwater runoff should rely on the use of permeable pavers, bioswales, rain gardens, and bioretention basins rather than expanding on the existing underground stormwater collection system on campus.

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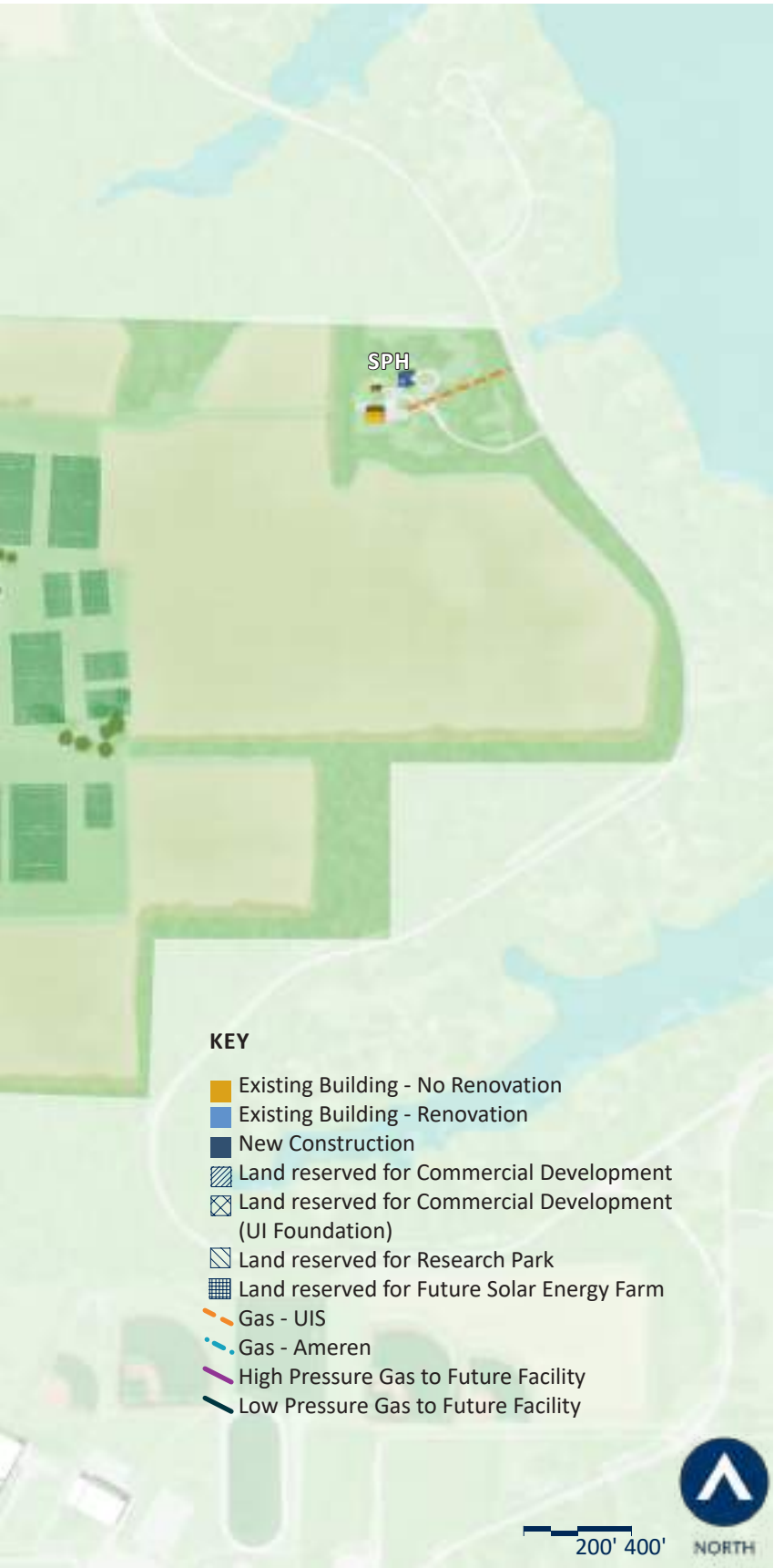
Utilities & Infrastructure: Utility Routes & Alternate Energy

The utilities serving the University of Illinois Springfield Campus are comprised of CWLP (City Water, Light and Power) a department of the city of Springfield, Ameren Illinois and the Sangamon County Water Reclamation District (SCWRD). These utilities are continually updating their infrastructure to provide improved service for the campus as it continues to grow in the future.

Utility Corridors

The campus presently has existing utility corridors established in Vachel Lindsay Drive, Eliza Farnham Drive, Richard Wright Drive and Shepherd Road. The utilities are mainly distributed on each side of these roads. Richard Wright Drive is at capacity for the number of existing utilities in that particular corridor which limits any additions in this section. Expansion in Vachel Lindsay Drive, Eliza Farnham Drive and Shepherd Road have room to allow for expansion of future utilities. A new corridor was established for a 12-inch sanitary main which runs north-south through the quad area between Foxglove, Pennyroyal Court, Trillium Court and Marigold Court. A partial existing/future expansion utility corridor is established in 11th St. and University Dr. This corridor will house water, sanitary sewer, electric and high pressure gas.

Utilities & Infrastructure: Gas



Gas Distribution

The campus gas service is provided by Ameren Illinois and is a high-pressure main providing 100 psi. This is more than enough for the current and future needs of campus. Ameren Illinois has made infrastructure improvements to the mains serving the campus by switching from ductile iron to plastic pipe. Presently, the gas main connection at the campus meter reduces the gas service from high pressure to low-pressure which is around 10 psi. This hinders the university's ability to provide natural gas emergency backup generators at present and future facilities on the campus. A new high-pressure gas main should be installed from the Ameren gas main in Vachel Lindsay Dr. and Eliza Farnham Dr. where a new meter will be placed and the high-pressure gas main can be run along the east side of Eliza Farnham Dr. to University Dr. This allows for service connections to future student housing and the future Athletics Field House on University Dr. Service lines for future Natural Gas Generators at existing buildings on campus can also utilize this high-pressure gas line.

The existing low-pressure campus gas network lacks gas main shut-off valves for each campus building which results in multiple buildings being shut down when gas work is performed. On all future buildings and existing buildings shut-off valves should be added to correct this problem.

Utilities & Infrastructure: Water

Water Distribution

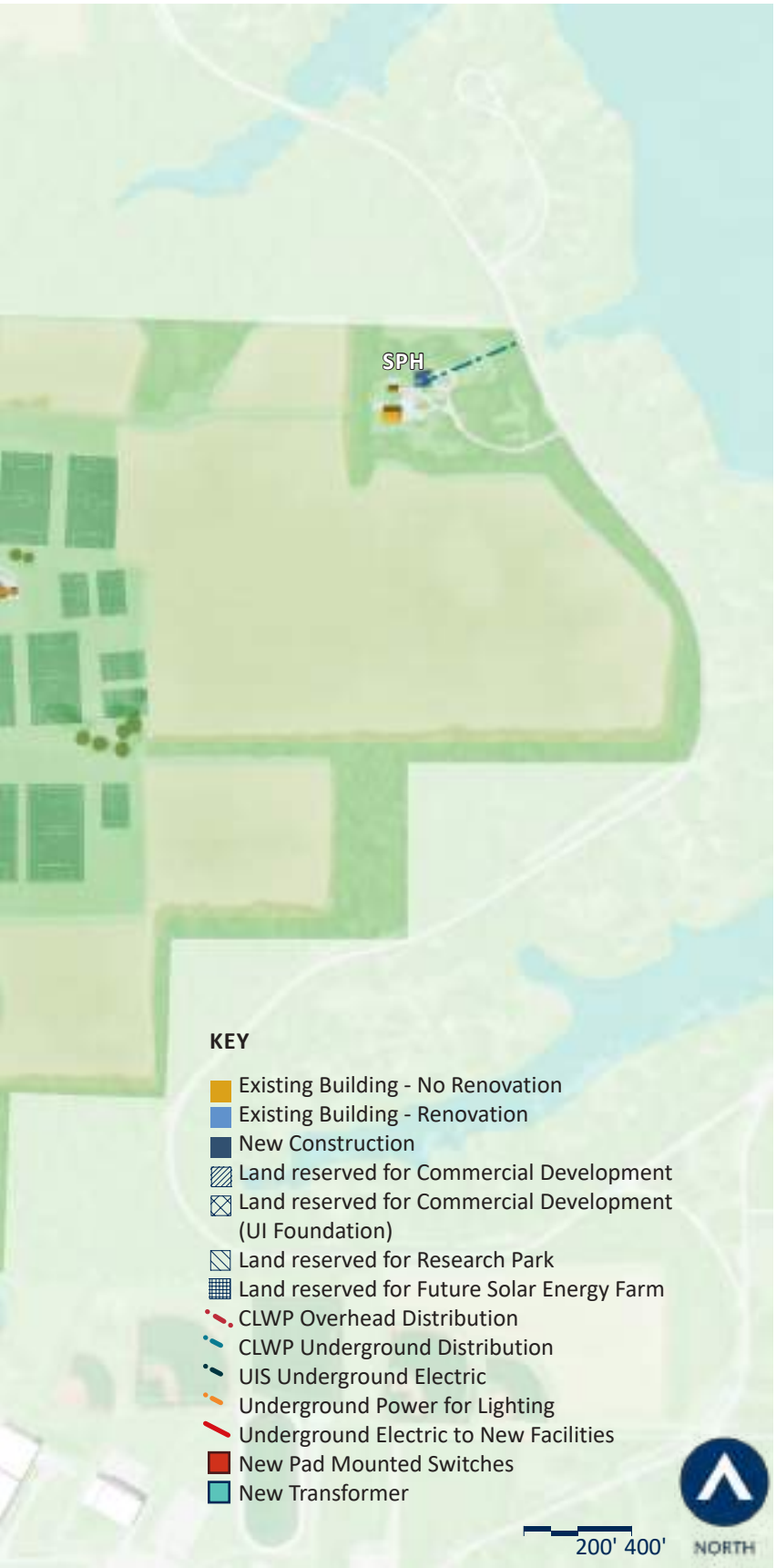
The campus is served by City Water, Light and Power. Presently, the CWLP is reviewing pipe age for the University of Illinois Springfield campus. The university is served by two water mains which enter the campus from the northwest. Overall, the infrastructure of water supply is able to serve the needs of the campus now and in the future. The existing CWLP water main in Eliza Farnham and University Drive can be utilized for expansion of water service to future buildings constructed along University Dr.

Utilities & Infrastructure: Sanitary Sewer

Sanitary

The sanitary sewer collection system is connected to the existing off-campus sewer system operated by the Sangamon County Water Reclamation District (SCWRD). The sanitary sewer main which serves the campus along Vachel Lindsay Dr. runs east-west through the campus. A new 12-inch sanitary sewer line is to be constructed as part of the construction of the Public Safety Building which will located at the northwest corner of the intersection of Eliza Farnham Dr. and University Dr.

Utilities & Infrastructure: Electric Distribution



Electrical Distribution

The campus is served by two electric feeders which enter campus from the northwest. The Porter Substation, owned by CWLP, is a 138kV substation that feeds the campus from the northwest located on Vachel Lindsay Drive west of campus. One of the critical underground feeds coming from the Porter Substation loops around 11th Street to University Drive and heads north on Shepherd Road/Richard Wright Drive where it crosses the campus on the east side of the LLSSC, HSB and Brookens where it enters the building from the north. Another feed from the Porter Substation runs on the south side of Vachel Lindsay Drive and heads east where it loops around the Foxglove Court, Penny Royal Court, Marigold Court and Trillium Court residences. A third feed from the substation heads east on Vachel Lindsay Drive and turns south on 11th Street where it connects to an east-west overhead electrical line south of the Baseball/Softball Complex on University Drive.

Future building/facilities constructed along University Dr. or S. 11th St. can utilize the CWLP facilities or the future UIS electric line which will be constructed in Eliza Farnham from Vachel Lindsay Dr. to University Dr.

Solar Power

When considering constructing a solar farm the basic equipment required includes solar panels, charge controller-regulate power coming from the solar panels, power inverter-converts DC to AC power, either a battery or connection to power poles to connect to the local power grid. Connection to the power grid will allow the university to be billed for the power they use versus the power produced. A battery system is helpful if there is a power grid failure or outage. In addition, a water source for periodic cleaning of the solar panels. Springfield CWLP has developed a set of guidelines for the design and construction of solar farms.

The location for the solar array would be in the northwest area of the campus which would provide enough space to construct a 2.5 acre array which would produce 1,000 kilowatts per day or 24,000 kilowatt hours. This would energy would be put back on the electrical grid and provide the university with a reduction on their electrical usage.

Overall, the Springfield CWLP does not provide any grant programs for funding of institutional solar projects. There is another option that could be pursued with CWLP and that is working out a financial arrangement to allow CWLP to construct a solar array on the university's property.

Wind Power

Presently, there is only one operating Wind Turbine in Springfield that is 700 Watts. A sustainable energy option explored for the University of Illinois-Springfield campus was Wind Power. After consulting Springfield-Sangamon County Regional Planning Commission regulations, Springfield City Water, Light and Power (CWLP) guidelines, and Illinois Regional Wind maps, it was determined that Wind Power is not feasible for use on the UIS campus. There are several reasons for this decision. Zoning in this area of Springfield does not favor the installation and/or use of Wind Turbines. CWLP does not have any connection standards or agreements established for Wind farms. They would have to develop these if the university would decide to construct a wind farm. According to the Illinois Wind Maps, Springfield falls in the mid to low range of wind which is not favorable for utilizing wind energy. A formal wind study would need to be completed to confirm the actual wind speeds in this area of Springfield.

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Design Guidelines

INTRODUCTION

The University of Illinois Springfield Design Guidelines is a companion to the UIS 2020 Master Plan, and sets forth a series of performance criteria. The role of the Design Guidelines is to ensure that individual designs implemented within the framework of the Master Plan will be of consistent and high quality. The guidelines are not intended to prescribe a design solution or to stifle analysis or creativity, nor should they be interpreted loosely to permit solutions that do not fit within the conceptual framework that is set forth by the University. The intent is to set a balance between the guidelines and the design decisions that must be made for each project, with the goal of a campus as a cohesive whole.

The Colonnade at the north end of the Main Quad.
Photos courtesy of www.uis.edu.

The University is committed to enhancing the campus environment on each project through the following principles:

Design Excellence – All new buildings must have a unique aesthetic and identity appropriate to its use, while also integrating into the Master Plan framework and being compatible with surrounding buildings.

Universal Design – All new buildings must foster an equal access environment that fosters pedestrian travel around campus.

Sustainability – All new buildings must promote environmentally responsible construction, maintenance and use. All new buildings under 20,000 GSF, additions, and site developments must meet at a minimum Leadership in Energy and Environmental Design (LEED) Silver rating. All new buildings over 20,000 GSF must achieve a minimum LEED Gold rating. This rating must be met regardless of whether the University decides to pursue certification.

Technical Innovation – As appropriate, new projects must incorporate innovative technologies that support the Master Plan (i.e. Green roofs, solar panels). Care should be taken not to negatively impact the building exterior with technologies at risk of becoming obsolete, and care should be taken to incorporate technologies in an aesthetically pleasing manner.

ADMINISTRATIVE GUIDELINES

Review and Approval: Each new construction, building modification, grounds improvement or demolition project must be reviewed with regard to its impact upon its surrounding environment. All projects are to be reviewed by the Office of Campus Facilities. Review milestones are typically to occur at the 30% (Schematic Design), 60% (Design Development) and 95% (Construction Document) levels. Approval is required at the end of each phase of design, prior to moving on to each subsequent phase, and prior to Bidding/ Construction. Typical areas of consideration and recommendations are addressed as follows.

University Office of Capital Programs and Real Estate Services (UOCP & RES) The University of Illinois system administration unit supports the University of Illinois' mission by facilitating and overseeing the development of and adherence to policies, procedures, and systems pertaining to the built environment for all universities in the system. UOCP&RES is responsible for all University of Illinois master planning and its related sub-master planning, acquiring property to meet the needs of the master plans, design guidelines, and review of capital facility project designs and site selections that require Board of Trustees approval.

Changing leaves around University Drive.
Photos courtesy of www.uis.edu.

GENERAL BUILDING DESIGN CONSIDERATIONS

Basic Principles: Design principles can be used to provide guidance in achieving unity among campus facilities in the development of new or expanded buildings. Some of these principals are outlined below.

- Overall building proportions tend to be horizontal.
- Roofs, and other elements, can be used as unifying elements
- Building organization is generally in three parts: base, middle, and top
- Walls, with some exceptions, are solid planes
- Building elements are used to create rhythmic patterns with doors, windows, cornices, material changes. Layering
- Main and secondary entrances are often used to create compositional emphasis
- Windows are often punched openings, grouped to create larger units and patterns within the facade

Building Setbacks: Building locations should conform to average or prevailing setback lines in the UIS 2020 Master Plan. Consideration should be given to alignment with adjacent structures, and response to the definition of existing or planned open space. Respect should be given to existing view corridors, and new view corridors may be created. Generous setbacks should be maintained at parking lots, streets, and main campus pedestrian corridors. Minor setbacks may be considered for building specific access paths and gathering plazas, which, in some cases, may be built with no buffer to the building at all.

Building Size: While diversity is essential in creating an appealing visual experience, building size should be controlled to maintain a common scale relationship between buildings. Building height should typically be 3-5 stories in height above grade, with the level of detail appropriate to maintain human scale.

Only special building elements may be considered to exceed this height in key locations. These will be considered and reviewed on an individual basis at the time of design.

Aesthetics: Consideration should be given, not only to the appearance of a project itself, but also to the impact it will have on the overall appearance of the surrounding areas. This applies to modifications to existing facilities, as well as, to new facilities.

1. The appearance of new facilities should be appropriate for the immediate and campus-wide architectural context.
2. The finish color of elements added to the exterior of existing facilities should blend with the existing color palette. The elimination and creation of openings in the façade of a building need to take into consideration the rhythm and balance set up by the existing windows and doors.
3. Projects involving additions to or projections from existing facilities should be contextual with the existing and surrounding facilities.
4. The installation of window air conditioning units should be avoided. If approved by the Office of Campus Facilities, window air conditioning units should be installed so as to minimize their projection from the exterior face of the facility.
5. The placement of exterior conduit and piping, while undesirable, is sometimes unavoidable and should be placed so as to take advantage of other vertical and/or horizontal elements.
6. Outdoor equipment (e.g. air conditioning units, emergency generators, transformers, etc.) installed at ground level should be located in remote / less traveled areas. When installing equipment at roof level, careful consideration should be given to site lines from the ground level (especially primary traffic routes) as well as upper levels of facilities. The installation of screening (e.g. walls, fencing and possible landscaping) is necessary, either at ground level or at roof level, depending on the site lines of the installation.
7. The installation of unsightly outdoor structures/ objects (e.g. loading docks, storage areas, sheds, tanks, trash / recycling containers, etc.) should be placed so as to take advantage of adjacent building and landscape screening features where available (i.e. within a remote alcove). Installation of additional screening is also required.

Acoustics: Consideration should also be given to the impact a project will have on the acoustic properties of the surrounding area.

EXTERIOR BUILDING ELEMENTS

SPECIAL CONSIDERATIONS FOR SPECIFIC CAMPUS AREAS

Main Quad
The original existing building on the Main Quad are all designed in a fairly traditional aesthetic, using a large amount of brown colored brick, aluminum windows and storefront, and some decorative metal elements. Newer buildings, such as the Student Union, incorporate more modern materials, and more color and decorative elements.

New building design on the Main Quad should strive to continue the direction set by the Student Union, using a variety of decorative materials in a more modern design aesthetic. At the same time, new design should be compatible with the original masonry buildings as well.

New buildings on the Main Quad should use any of the materials outlined under the section BUILDING ENVELOPE.

East Quad
The buildings on the East Quad were originally constructed as temporary space for the University. As the University has grown, the need for this space has remained, and these buildings have undergone several interior renovations, with no renovation to the exteriors.

These buildings were simple, single story metal buildings, designed as functional space, with simple, practical exteriors without much consideration to their exterior appearance. Windows are narrow. Material used are predominantly metal panels, with EIFS, metal windows, and unit masonry in limited areas.

Looking forward, the intent is to renovate, rather than demolish and rebuild, the East Quad buildings. These renovations will include full exterior and interior renovation.

Overall, it is intended to change the appearance of the East Quad by reimagining the building exterior facades, as well as the surrounding landscape and hardscape, to give the East Quad its own new unique identity and aesthetic, to create an area of campus on equal standing as the other Quads. The building facades should be considered an extension of the outdoor spaces, enclosing the interior as well as framing the exterior spaces.

When designing the exterior facades, the consideration should be given to a more modern design aesthetic, unique from the other areas of campus. Consideration should be given to larger expanses of glass, and larger windows to emphasize natural light and emphasizing building areas. Building entrances should be emphasized and clearly designed transitions from the exterior spaces.

Façade materials should be limited to those that can be supported by the wall framing behind, rather than by foundations or brick ledges below. The lack of existing foundation support makes materials such as unit masonry difficult and costly to implement, and should be avoided, unless by approval of the Office of Campus Facilities.

Building interiors should be designed in accordance with the section BUILDING INTERIOR ELEMENTS.

Residential
The residential buildings on campus are designed in one of two basic arrangements – Residence Halls or Apartments.

Residence Halls should be designed with any combination of the materials listed below.

The campus Apartments have a more residential feel unique from the rest of the campus. In addition to a more secluded setting, apartments should be designed in one or two story arrangements, with separate exterior entrances to each apartment.

Apartments should use materials typical of more residential building types. The goal is to maintain a more residential feel to set these buildings apart from the academic building. Materials to consider include:

- Unit Masonry
- Cementitious Siding
- Aluminum Single Hung Windows
- Asphalt shingle (sloped) roofing

Athletic
Athletic buildings can vary widely in their design, due to the specific use and needs of each building. These buildings may be designed with any combination of the materials suggested under the section BUILDING ENVELOPE.

BUILDING ENVELOPE

WALLS

The exterior building envelope should be designed in such a manner as to complement the existing buildings on campus. It is not the intent of this guideline to impose a single design aesthetic on new or renovation work on campus. However, each area of campus has unique aesthetic and considerations, as outlined previously.

Exterior Envelope may be built with any material, or combination of materials, below:

- Unit masonry
- Anchored Stone Veneer Masonry
- Metal Panels
- Terra Cotta Panels
- Composite Materials
- Cementitious Panels or Siding
- EIFS
- Aluminum Storefront or Curtain wall
- Other materials may be approved by the Office of Campus Facilities

WINDOWS & DOORS

Natural light in campus buildings is a priority. Buildings should be designed with an effort to bring natural light to as many interior spaces as possible. The architect must balance this goal with the energy efficiency of the building envelope.

BUILDING ENTRANCES

Building entrances occupy a zone of transition between exterior and interior spaces. As such, building entrances must clearly stand out from the rest of the building, and clearly signify the entrance to the building for users. Using materials distinct from, but compatible with the rest of the building can be considered. This zone should be considered an extension of both the exterior landscape, and the interior public areas.

Canopies may be used as part of the building entrance transition. Materials should be compatible with the rest of the building, but may also stand out through the use of color, materials, etc .

Materials used for building entrances and canopies should comply with the building envelope materials listed above. Exposed steel may be used, but building infrastructure should not be visible, and must be covered in some manner.

SUSTAINABILITY

All new construction and major renovation projects shall incorporate sustainable design principles to the maximum extent practical by project scope and when life cycle cost effective. The University has adopted the USGBC's LEED Green Building Rating System as a tool to measure sustainability elements achieved during design and construction. All projects, regardless of scope or funding source, shall use the LEED rating system as a self-assessment metric to determine the sustainable design goals for the project. USGBC LEED Silver should be achieved for all new construction projects under 20,000 GSF and whole-scale renovations which include changes to building envelope and interior building systems. All new construction projects over 20,000 GSF should be designed to achieve LEED Gold.

SITE DESIGN GUIDELINES

FURNISHINGS

Site furnishings

Furnishings at the UIS campus vary in style from place to place, although certain styles and products have been identified by facilities staff as being preferred for future use. Specifically, a standard waste container that is durable and convenient to maintain has been selected. Benches were selected for the new Student Union that could be used in other locations on campus.

Uniform styles of furnishings should be used throughout the central campus area. Specialty furnishings may be used in less public areas such as courtyards, residential areas, and remote pathways and trails to develop character and uniqueness.

Movable furniture should be reserved for areas where its use can be monitored.

Exterior Lighting

Campus lighting must conform to any specifications in the U of I Facilities Standards. Light fixtures and optics should be selected to best illuminate the necessary areas.

Along streets with sidewalks lighting should typically include a combination of high-mast streetlights at regular intervals with lower height pedestrian-scale fixtures between streetlights. The combination is both functional and attractive. Along sidewalks or walkways through open areas, the lower height lights should be uniformly spaced along one side of the walkways. In particular

locations where a light poles are not wanted for aesthetic reasons, low-profile lights can be used to line sidewalks, light outdoor terraces, or highlight areas for improved pedestrian safety.

Special features on the campus landscape such as signs, buildings, entrances, other architectural features, sculpture, and trees can be highlighted with flood or spotlights. The lights can be mounted on structures, on the ground, or in trees. The number of highlighted elements and the intensity of lighting should show restraint.

Selections of new poles and light fixtures should be based on several criteria. First is their overall capability to perform as required. With lighting technology advancing rapidly, consideration should be given to the capability of light sources (fixture) to be replaced in the future with improved units. A second criteria is the visual compatibility with other light fixtures used within campus. Although there is convenience in using the same fixtures, doing so can be overly repetitious. Use of contrasting fixtures in certain areas can help create a strong visual statement.

Environmental considerations must also be respected. Areas should not be lighted to excess, showing disregard for energy use and economy. Lights should have cut-offs and optics that restrain lights within the areas to be lighted. Economic lighting technologies and controls should be employed where possible to encourage energy conservation.

EARTHWORK

Topography

The UIS Campus is built on flat land that was once tall-grass prairie with woodlands along its shallow drainageways. Because of the minimal topographic change, providing adequate drainage within the campus is often a challenge. Deep swales and ditches along roadways and large underground storm sewers have been constructed to collect and discharge water beyond the developed campus areas. In some areas sustainable stormwater management techniques, such as the permeable pavers, bioswales, rain gardens, and green roofs, have been employed to reduce stormwater runoff.

To only a limited extent have landforms been utilized on the campus. The entrance sign is set on a large berm. Additionally, “negative” landforms create sunken courtyards at the Public Affaurs Cebter (PAC) and the Health & Sciences Building (HSB). One pond has also been built to provide stormwater detention.

Because this campus is on naturally flat prairie land, use of berms or other landforms should be largely avoided as they appear forced and artificial. Rather, the campus should celebrate the horizontal lines of the land.

Finish Grading

Projects such as drainage swales, roadway ditches, rain gardens, and detention ponds involve excavation and finish grading. Topsoil removed during construction projects should be stockpiled and reused on the site if needed for turf or plant development. Where topsoil is not needed at the construction site, it should be stockpiled for future use by the University.

Erosion and Sediment Control

Erosion and sediment control is needed where earthwork and construction projects are being done. Both sheet erosion, and rill and gully erosion should be mitigated to keep wind and run off from carrying soil off-site or into drainage channels or pipes that empty within the watershed of Lake Springfield. Some controls are temporary such as temporary turf cover, straw mulch, silt fences, straw wattles, and excelsior blankets, and should be used until work is completed and permanent controls are in place. In other situations, controls should be permanent such as turf reinforcement mats, planted drainage channels, and revetment mats.

EXTERIOR IMPROVEMENTS

General Pavement

Pavements within the campus include streets and parking areas, service drives and utility pads, patios and terraces, sidewalks and bikeways. Each has a distinct purpose and use.

Where streets are being widened or new connector streets constructed, attention should be paid to controlling drainage where possible with sustainable approaches to minimize stormwater runoff into storm sewers. Additionally, attention should be given to providing for associated bicycle and pedestrian circulation. If bicycle routes are provided on-street, adequate lane widths and signage for safety is imperative. Similarly, for sidewalks, separation from vehicle lanes and safe street crossing must be provided.

Terraces, patios, and plazas within campus can be built from a variety of materials. Concrete, pavers, or other non-permeable surfaces add to the volume of stormwater runoff and drainage concerns within the area. Permeable surfaces can reduce runoff considerably, although permeable pavers do require subsurface drainage.

Special Concrete (Concrete Borders, Paver Base, and Footings)
This section provides standards for the materials, mixes, and applications of concrete for landscape elements. Concrete borders are recommended around areas of pavers, tree grates, and planting beds. A 4" deep concrete base with drainage holes every 24" on-center and in low spots is recommended for non-permeable pavers. Concrete footings are recommended for site elements, with any exposed surfaces to have a smooth, hand-rubbed finish.

Unit Paving (Precast Concrete or Brick)
Unit pavers provide color, texture, and interest to pavement areas. Unit paving may be used to enhance building entrances, gathering areas, and courtyards. They can also be used in niche areas and to define circulation routes within pedestrian areas. Pavers for pedestrian areas should be a minimum of 2-3/8" thick. The length, width, texture, finish, and pattern of pavers in pedestrian areas can vary to relate to adjacent buildings, structures, or adjacent pavements. The recommended installation is to set pavers on a ½"-1" deep sand bedding over a 4" thick concrete base. (Criteria for use of pavers in vehicular areas is substantially different than for pedestrian-use only areas.)

Permeable Unit Paving (Precast Concrete or Brick)
Permeable unit pavers add color, texture, and interested to pavement areas. Permeable pavers are recommended in large plaza areas where a significant reduction of stormwater runoff can be achieved, and the pavers can be installed economically by mechanical methods. Permeable pavers are also recommended in parking lots if large vehicles can be restricted. Pavers in vehicular areas should be a minimum of 3-1/8" thick and have an aspect ratio less than or equal to 4:1. A 45 or 90-degree herringbone pattern or "L"-shaped paver is recommended for all vehicular applications.

Permeable pavers are not recommended for small or linear applications as the benefit of reducing stormwater runoff is minimal and the installation cost is relatively high due to hand installation and the quantity of edge restraints.

Permeable pavers reduce stormwater runoff by allowing stormwater to quickly flow down between the paver units into a subsurface drainage system. Water is collected and detained within graduated aggregate courses where it percolates into the ground and slowly discharges through a pipe system. A sub-base course of CA-1, base course of CA-7, and bedding course of CA-16 is recommended. Base aggregate depths vary with the existing soil conditions and the type of application.

Aggregate Surfacing (Gravel Borders and Cobble Areas)
A narrow aggregate edge is often used around buildings to provide ease of maintenance, to keep vegetation away from buildings, and to reduce damage to buildings from mowing. Gravel borders should not be used adjacent to turf areas as mowers could throw the gravel. In these locations, 12" square unit pavers are recommended along building edges to keep turf away from the building and make maintenance easier.

Cobbles areas can define water-like areas or protect surfaces that cannot support vegetation.

Cast-in-Place Concrete Walls
Concrete walls are used as retaining wall, amphitheater sitting walls, and free-standing sitting benches. The use and needs will determine the scale, size, and materials selected. Typically, a smooth, hand-rubbed concrete surface is recommended.

Stone Retaining Walls
Dry laid stone walls can be retaining walls or free standing. The scale and height can vary greatly, with the structural and visual qualities being the primary considerations. Standard 8" wide drywall stone is recommended for walls under 24" high. Large stone slabs should be used for walls over 36" high. A CA-7 aggregate trench and perforated drain tiles are recommended behind all retaining walls.

Screening
To the extent possible, service areas and equipment should not be located in plain view of motorists and pedestrians on campus. Where such areas are visible, screening should be provided. The type of screening should be determined by the nature of the service component including its frequency of use, the possible generation of noise, and its size and visual impact.

Site walls may be used for screening when they can be attached or visually associated with a building. Walls should be compatible with the design and materials of the associated structure. Durable gates may be a necessary component of certain wall enclosures. Trees or other plant material may also be used to soften the appearance of the site walls.

Where service areas are remote (not associated with a building) screening with plant material instead of structural walls will usually be more compatible with the campus environment. Evergreen trees or shrubs that are adapted to the Mid-west can be used. Where evergreen screening must have a rigid layout, some deciduous plants may be added for a more naturalistic appearance. This would apply most directly to areas beyond the center of campus where native and naturalistic landscapes are important.

Parking lots should also be screened, or partially screened, to avoid the appearance of vast areas of uninterrupted pavement. Screening with trees and other plants can be done within parking lot islands and around the perimeters. (Trees in these areas provide the added benefit of shade for cars and motorists using the areas.) The placement and species selected for parking lot areas should not block visibility needed for safe vehicular use or for a sense of security within the areas. Strategies and guidelines established by Crime Prevention through Environmental Design (CPTED) such as natural surveillance, access control, and territorial reinforcement should be considered during the design process.

Sculpture and Fountains
Art can be a special element within the campus landscape. The existing UIS Colonnade Terrace and Fountain is a focal center north of the quadrangle. Other works of art and sculpture are located throughout the campus, generally in locations that pertain to the sculptural subject.

Any additional pieces of art and sculpture should be located where they have a purpose or a relationship to the campus. Locations could include prominent positions to highlight the campus entrances, environmental settings to emphasize particular themes, or campus building vicinities where they relate to academic studies.

The grounds around any sculpture or artwork can be enhanced to create a more compatible setting. The elevation may be raised, a base built, and restrained lighting provided for nighttime viewing. Generally, elements should not be “dolled-up” with unnecessary accouterments. Fine artwork is complete unto itself.

Generally, sculpture and fountains should be scaled to fit the environment in which they are located. Pieces should be selected that will have a timeless quality. If pieces are of a contemporary nature, consideration should be given to whether they will remain significant in the future. This is not to say that temporary or limited-term art should be not be exhibited. Such additions can add a sense of spontaneity, growth, and energy to a campus setting.

Plants

Throughout campus, tree, shrub, and hedge plantings should be appropriate to the scale of the space. A broad stroke use of plants in large rows and masses is generally preferred to fussy, intricate plantings in order to maintain a proper scale relationship with large university buildings. More intricate and small-scale plantings are appropriate only in smaller courtyard spaces and in proximity to smaller campus buildings.

Plantings should reinforce the basic campus structure defined by streets, buildings, and walkways. Plantings should provide structure to open spaces. Plant material should be used for ground stabilization, climate moderation (wind, sun, and precipitation), and aesthetic qualities.

Throughout campus, plantings must avoid creating conditions that cannot be easily seen and monitored for safety. In vicinities of streets, driveways, and sidewalks, plants should be positioned to avoid obstructing visibility. A 25' x 25' visibility triangle free from obstructions, should be maintained at every street intersection. Strategies and guidelines established by Crime Prevention through Environmental Design (CPTED) such as natural surveillance, access control, and territorial reinforcement should be considered during the design process.

In general, plantings should be simple and restrained. The variety of species within a defined area should be limited. Planting should not, however, be monocultures and plants should not be used such that species-targeting insects or disease would adversely affect the design. The currently ongoing devastation of ash trees is such an example. This principle should also apply to the streetscapes and walkways within and approaching the campus.

Throughout campus, plant selections should favor plants that are well adapted to the climate and conditions of the site. Native species and their cultivars are adapted to local conditions when planted in species-appropriate locations. Over the years, many non-native species have been planted on the UIS campus and found to be adapted to site-specific conditions. Because so many species of plants, natives and non-natives, are present the campus has somewhat of an arboretum collection already.

Plants should be selected for their overall suitability for their purpose and site conditions. The recommended tree list includes but is not limited to the following species.

Scientific Name	*Common Name*
Shade Trees	
Acer saccharum	Sugar Maple
Celtis occidentalis	Hackberry
Ginkgo biloba	Ginkgo
Gleditsia triacanthos var. inermis	Thornless Honeylocust
Nyssa sylvatica	Black Tupelo
Quercus bicolor	Swamp White Oak
Quercus macrocarpa	Bur Oak
Quercus muehlenbergii	Chinquapin Oak
Quercus rubra	Red Oak
Taxodium distichum	Bald Cypress
Tilia americana	American Linden
Ulmus hybrids	Asian Elm Cultivars
Evergreen Trees	
Juniperus virginiana	Eastern Redcedar
Pinus strobus	Eastern White Pine
Ornamental Trees	
Amelanchier arborea	Downy Serviceberry
Carpinus caroliniana	American Hornbeam
Cercis canadensis	Eastern Redbud
Crataegus crusgalli vas. Inermis	Thornless Cockspur Hawthorn
Hamamelis virginiana	Common Witchhazel
Malus x 'Prairifire'	Prairifire Crabapple
Ostrya virginiana	Ironwood

Use of other species will be allowed as approved by the University.

All trees are to conform to the American Nursery Stock Standards. Upon installation, trees within the main campus area should not be less than the following sizes:

Shade Tree:	2-1/2 inch caliper minimum, as measured 48 inches above grade
Evergreen Tree:	Six (6) feet tall, minimum
Ornamental Tree:	1-3/4 inch caliper minimum, as measured 48 inches above grade (single-stem) or six (6) feet tall, minimum (multi-stem)

Typically, trees are to be located a minimum of ten feet from the edge of the sidewalk or pavement. Shade trees with larger canopies at maturity should be positioned greater than ten feet away.

Plant choices for the center of campus could be made to further develop the arboretum-like campus. To do this, species should be grouped or sorted in meaningful ways, i.e.. plants from a certain region or country could be grouped together. Similarly, native plants could be grouped in other areas. Information could be provided by tours, labels, QR codes, and/or brochures.

For areas outside the central campus, where forest management and enhancement are recommended, and where prairies are an option in replacing row crops, only native species and in some cases native ecotypes must be used.

For courtyards, residential sites, and other small areas within the campus, planting should be done to suit the character and purpose of each space.

Turf Seeding
Seeding for mowed turf should be scheduled to coincide with optimum climatic times of the year, with a late-summer seeding typically the best. Areas that can be irrigated or watered could have a broader seasonal window. Seeded areas should generally have 4-6" of topsoil in place. Seed mixes should be selected to suit the conditions and fertilizing during establishment should be planned. A turf-type tall fescue seed mix is recommended due to its good drought and wear tolerance and low maintenance requirements. A mix of three or more varieties of turf type-tall fescue with one of the varieties being rhizomatous is preferred.

Prairie Seeding
Marginal land and farm fields may be converted to native prairie area. Prairie development is a 3 to 5 year process. Soil preparation may or may not involve disturbance of the soil surface. Seed selection should include grasses and forbs, and species and rates should be selected with an understanding of the competition among species. The optimum seeding time is late spring for these are warm-season species. Monitoring and maintenance by knowledgeable individuals are essential.

Wetland Development
Tributaries and areas along Lake Springfield could be converted to wetlands in keeping with the desire to promote sustainable environments. Development of wetlands may include seeding with wetland species as well as planting of plugs. The recommended minimum plant plug size is 3-1/2" deep. Protection from geese and other birds is necessary.

Reforestation
Reforestation of select areas and planting along existing forest areas to create an irregular, transitional forest edge is proposed. Site preparation to remove undesirable species and planting of various size woody species should be done optimally in fall. Tree sizes in reforestation areas can be smaller than those planted on the main campus. Bare root or container grown trees are recommended in reforestation areas. Protection from deer is necessary.

UTILITIES DESIGN GUIDELINES

The site development and construction of new facilities on the University of Illinois Springfield (UIS) campus should address the impacts with the surrounding existing topography, soil conditions, location of existing utilities, existing easements and right-of-way, subsurface environmental conditions, site drainage, temporary and permanent stormwater management strategies, accessible routes, parking availability, construction phasing and staging locations and other site specific conditions.

SITE CLEARING AND EARTHWORK

Temporary and Permanent Stormwater Management: The University of Illinois Springfield campus has a relatively flat topography and poorly draining soils which will need to be addressed during all phases of Project Design and Construction. Best Management Practices (BMP) guidelines will be followed for the design and construction of temporary and permanent stormwater runoff collection systems at all new site developments impacting the campus. These BMP's will be utilized to improve water quality and reduce stormwater runoff and soil erosion. Land Disturbance guidelines established by the Illinois Environmental Protection Agency (IEPA) require the development of a Stormwater Pollution Prevention Plan (SWPPP) which will be incorporated into the project construction documents.

Permanent Stormwater Management Strategies to help reduce stormwater runoff into Lake Springfield should utilize the use of bioretention basins/rain gardens, bioswales and permeable paving systems and prairieland reclamation techniques. However, the university does not allow the use of underground detention systems.

Existing Utilities: Location of existing utilities, whether owned by the University, City of Springfield or other privately-owned utility companies will be investigated with these entities to determine any conflicts or obstructions on the project site that would require demolition or relocation of any utilities. Utility coordination is critical and can often times impact the Project's design. This utility coordination effort should begin early on in the design process.

Topsoil Stockpiling: The stockpiling and reuse of topsoil on the university campus is mandatory. Topsoil not reused during construction will be stockpiled elsewhere on the campus as directed by UIS Facilities.

Site Grading: The grading of the site should minimize the amount of excessive cut or fill to maintain a balanced site. The main grading design considerations will be to maintain positive stormwater runoff away from building and reduce any ponding of water on the finished project site.

Geotechnical Soil Analysis: For all site development projects a geotechnical soil analysis should be performed to determine existing soil conditions and provide guidance to the civil and structural engineering teams for their design.

EXTERIOR IMPROVEMENTS

Aggregate Base Courses

Aggregate Base Courses for Asphalt or Concrete Pavement: The aggregate base course for asphalt and concrete pavement shall follow the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, latest edition. Type B material with a CA-6 gradation will be used for the aggregate base course under all pavements. It should be noted that the engineer should consult the geotechnical report for soil conditions and design recommendations.

Aggregate Base Courses for Small Utility Equipment Pads: The aggregate base course for small utility equipment pads shall follow the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, latest edition. Type 5 material will be used for the aggregate base course under all equipment pads. The minimum aggregate base thickness for small equipment utility pads will be 6-inches. It should be noted that the engineer should consult the geotechnical report for soil conditions and design recommendations. Small utility equipment types include, but not limited to, transformers, air conditioning condensers and switchgears. The weight of this equipment should be a maximum of 500 lbs.

Aggregate Base Courses for Large Utility Equipment Pads: The aggregate base course for large utility equipment pads shall follow the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, latest edition. Type 5 material will be used for the aggregate base course under all equipment pads. The aggregate base thickness will be

determined by the structural engineer and geotechnical analysis. Large utility equipment types include, but not limited to, transformers, switchgears, generators and other equipment exceeding a 500 lb weight limit.

Asphalt Paving

Asphalt Pavement for Roadways, Parking Lots, Sidewalks and Bike Trails: The asphalt paving for surface and binder courses shall follow the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, latest edition. Recommended mixtures for Bituminous Concrete Binder Course will include IL-19.0 or IL-9.5 and for Bituminous Concrete Surface Course mixture IL-9.5. Recycled asphalt pavement can be used in these mixtures with a maximum of 25% for binder course mixes and maximum of 15% for surface course mix.

Concrete Paving

Concrete Pavement for Roadways, Parking Lots, Curbs, Curbs and Gutters, Headers for Permeable Paving Systems, Sidewalks and Bike Trails: The concrete paving shall follow the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, latest edition. The recommended classes of concrete include PV or SI.

Permeable Paving Systems

Permeable Paving Systems for Parking Lots and Plazas: In areas where a large amount of impervious pavement is to be used, Permeable Paving Systems should be considered to provide an opportunity to reduce the amount of stormwater runoff. Large impervious areas include, but are not limited to, large gathering plazas and parking lots. Permeable paving systems are not to be used for sidewalks for bike trails. These paving systems consist of solid concrete pavers that when installed have a larger than normal ancillary opening between each paver. The subbase drained is comprised of several aggregate courses of varying aggregate size and depth. These layers of aggregate promote infiltration into the subsoil and detain a portion of stormwater runoff reducing the release into the stormwater collection system.

Curb Ramps

Curb Ramps: Curb Ramps are an essential component in accessible design which allows the handicapped to safely traverse routes around the campus. They are used to bridge the elevation difference in locations where vertical curb is present. The addition of detectable warning panels guides the sight impaired for safe passage when crossing streets and roads. The design of ADA accessible sidewalks and curb ramps should follow the Illinois Accessibility Code, latest edition. The Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, latest edition, should be used for curb ramp design standards. Curb ramps shall be constructed of concrete pavement and detectable warning panels shall be cast iron. Detectable warning panels made of other materials is not acceptable.

Parking Bumpers

Parking Bumpers: Parking bumpers or wheel stops are used in parking facilities to prevent vehicles from pulling into parking stalls and hanging the front bumper over the adjacent sidewalks, which often times hinders pedestrians from traversing the sidewalk accessible routes. They are also used in head-on parking to prevent a vehicle from pulling too far into a stall and damaging the vehicle facing it. Parking bumpers shall be 4-inch high low profile, 6-inches wide and 6-feet long and made of concrete. Asphalt installation hardware will be a flat head rebar stake, 5/8-inches in diameter and 14-inches long.

Pavement Markings

Pavement Markings: Pavement markings are necessary on streets, roads and in parking lots to help drivers navigate and guide them along their routes. In addition, pavement markings are used to designate ADA parking stalls and locations where pedestrians will be crossing traffic. Pavement Markings shall comply with the standards set forth in the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, latest edition.

UTILITIES

Water Utilities

Water Utilities: On-site private and public water facilities are essential to any large campus. These include service lines for chilled water lines, domestic potable water, fire protection lines including fire hydrants. The water service lines should enter the development site with separate domestic and fire protection lines and not a split service. Redundant fire protection and domestic water service lines should be considered for larger facilities. The water line service shutoff and isolation valves for each new

facility will be located near the water main tap on the university's property and not in any public right-of-way. Alignment of the domestic and fire protection service lines will be straight and not meander on the site to provide easier location of the underground piping. Trace wire will be installed above the water piping to aide in location of the lines once installed. Smart meters will be located immediately outside the building or in the building's mechanical room. Location of Post Indicator Valves for fire protection lines should follow NFPA 24 and local fire codes. The Standard Specifications for Water and Sewer Construction in Illinois, latest edition and NFPA 24-Installation of Private Fire Service Mains and Their Appurtenances will be followed for new site development design and construction.

Sanitary Sewage Utilities

Sanitary Sewage Utilities: The UIS campus has separate sanitary and storm sewer systems and should be maintained for any new facilities connecting to either. The sanitary sewer lines serving the campus are gravity type, but some facilities may require that the sewage be pumped up to a sanitary line. Manholes and/or cleanouts will be necessary where the piping alignment changes direction. For new or existing facilities having kitchens, grease/water separation vaults will be required before final connection to the sanitary main and located immediately outside the building. New parking garages will require sand/oil interceptors located just outside the structure and before final connection to the sanitary sewer main.

The Standard Specifications for Water and Sewer Construction in Illinois and Illinois Department of Transportation (IDOT), Standard Specifications for Road and Bridge Construction, latest edition and requirements from the Sangamon County Water Reclamation District will be adhered to for new facility design and construction.

Storm Drainage Utilities

Storm Drainage Utilities: The stormwater conveyance systems on the UIS campus discharge into Lake Springfield west of campus. To help maintain the health and water quality of Lake Springfield, sustainable measures should be considered when designing the stormwater collection system for a new facility's site. Consider the use of bioswales, rainwater gardens, prairie reclamation areas, permeable paving systems, green roofs and other Best Management Practices which help to reduce runoff to the lake and improve water quality. It should be noted that UIS Facilities does permit the use of underground detention structures.

The Standard Specifications for Water and Sewer Construction in Illinois and Illinois Department of Transportation (IDOT), Standard Specifications for Road and Bridge Construction, latest edition and requirements from the Sangamon County Water Reclamation District will be followed for new facility design and construction.

Natural Gas Distribution

Natural Gas Distribution: The UIS campus utilizes natural gas for its individual facilities within the property. The gas service is presently provided by Ameren Illinois and comes to the meter at 100 psi. Service lines past the meter on the UIS campus side is considered private which means it is maintained by the University. The present metering system steps the gas pressure coming to campus from 100 psi to 10 psi. Future plans for a new high-pressure gas service main is planned for the UIS campus. This will be metered separately and additions to the campus natural gas lines will be constructed by the University. The new high-pressure main will provide a 100 psi and will be used mainly to serve natural gas generators at new facilities.

BUILDING SYSTEMS DESIGN GUIDELINES

HVAC SYSTEMS
Purpose of HVAC: The twofold purpose of HVAC at UIS

1. Provide a comfortable and healthy environment for building occupants, thus promoting learning, personal performance and productivity.
2. Provide reliable environmental control to support research activities.

Guiding Principles:

- Quality: Provide systems/components of high quality. Typically referred to as “institutional quality” as opposed to “commercial quality”.
- Reliability/Redundancy: Provide systems that operate properly with minimal service interruptions.
- Maintainability: Provide systems that require minimal service and that facilitate convenient service when required.
- Operability: Provide systems that are as intuitive and easy to operate as possible while providing required functionality.
- Flexibility: Maintain options for potential future changes to spaces served within appropriate limits.
- Sustainability: Provide environmentally responsible designs with focus on energy efficiency and conservation.

Life Cycle Cost: Life cycle cost analysis shall be included as a significant factor in design decision making. As such, installed cost shall be weighed against long term cost of ownership. It is common knowledge that first cost is typically dwarfed by operating cost over the life of an HVAC system. However, it is not commonly considered that operating cost is dwarfed by the value of human performance and productivity. Unfortunately it is difficult to assign a numeric value to human productivity or to the impact of the HVAC system upon it. Yet, substantial value shall be assigned to it, numeric or not. At the end of the day, good engineering judgment shall prevail.
See previous paragraph titled "Purpose of HVAC."

Energy Conservation: HVAC systems of significant scope shall incorporate occupancy sensing to facilitate implementation of energy reduction strategies. Systems shall be configured to take advantage of energy recovery opportunities when possible without violating other design priorities.

Institutional Quality: HVAC equipment/systems shall be institutional grade as opposed to standard commercial grade. For the purposes of this writing, institutional grade equipment/systems shall have minimum life expectancy of 25 years for dynamic system components such as motors, switches, pumps, valves, fans, dampers, compressors and burners, and a minimum life expectancy of 50 years for static system components such as casings, cabinets, ductwork and piping.

Central Utilities: HVAC systems in the central campus core currently utilize central distributed chilled water, central distributed steam and central distributed electricity. The chiller plant is currently at capacity. The Student Union and Health & Sciences Building (HSB) have dedicated chiller equipment. The East campus utilizes local direct expansion equipment.

Central HVAC Systems: Each building shall be served by a minimal number of central HVAC systems rather than numerous smaller systems (e.g. less than 5,000 CFM). Each central system shall typically include an air handling unit, a return and/or exhaust fan or fans and air supply, return and/or exhaust ductwork.
The installation of a smaller number of larger systems typically results in higher equipment quality and reduced maintenance requirements while providing adequate opportunity for application of energy conserving features and control strategies.
Geothermal and/or variable refrigerant flow (VRF) systems may be considered on a case-by-case basis.

Future Expansion: Within practical limitations each HVAC system shall be sized and configured to accommodate potential future expansion of capacity and/or infrastructure.

Flexibility: Within practical limitations, HVAC systems shall be designed to be flexible and adaptable to accommodate changes in room layout and usage. This is particularly the case for laboratory spaces given that research objectives frequently require changes in laboratory operations and programs. Extreme flexibility such as that required to support major changes such as the conversion of an office to a wet lab or vice versa shall generally be avoided due to its negative impact on energy consumption.

Terminal Zoning: HVAC systems shall be configured such that each occupied space may be controlled as a separate zone with regard to temperature and/or airflow. In other words, a minimum of one terminal control unit (e.g. VAV unit with reheat coil) shall be provided for each occupied space. Each occupied space shall have a minimum of one dedicated thermostat (or equivalent). For the purposes of this writing, reception areas, lobbies, atria and public assembly spaces shall be considered occupied spaces.

Sound Control: Sound control as it relates HVAC systems shall be given adequate priority. As mentioned elsewhere, the best way to control noise is to not create it in the first place. When focused attention is given to maximizing the efficiency of HVAC systems, noise is much less of an issue. HVAC-related background noise in a given space shall not exceed the guideline criteria provided in the chapter entitled *"Sound and Vibration Control"* in the *"ASHRAE Handbook, HVAC Applications"*.

PLUMBING SYSTEMS

Codes: The Illinois Plumbing Code shall govern as a minimum and the International Plumbing Code shall only govern in regards to storm drainage.

FIRE PROTECTION SYSTEMS

Compliance: The design, installation, and placement of all fire protection systems shall be in complete compliance with the applicable edition *National Fire Codes, NFPA Standards #13* and *14* and other applicable codes therein. These codes are to be viewed as providing minimal requirements for fire protection. Where the requirements of these Standards exceed the minimum requirements for compliance referenced above, they shall be complied with.

Sprinkler System Requirements: Automatic fire suppression systems shall be installed through all new buildings and all buildings that are completely renovated. Partial systems that are installed with areas of major renovation must be designed in accordance with NFPA 13 so as to ensure adequate water supply, system performance, fire alarm system interface, system supervision, and the potential to be expanded should future projects be undertaken at the subject site. For the purpose of this section, "completely renovated" shall be defined as renovation projects in which 75% of the gross floor area of the building is affected by the scope of the project. When there are multiple, phased renovation projects planned to occur in a building, the total affected floor area shall be considered the sum of all such project areas.

Wet vs. Dry Pipe Systems: Wet pipe systems are to be used exclusively with one allowable exception: in areas where freezing may occur. Dry pipe systems are allowed in these areas only. If, due to building remodeling, an area served by a dry pipe system is no longer exposed to freezing temperatures, the fire protection system serving this area shall be converted to a wet pipe system.

Other Systems: Other more specialized types of sprinkler systems such as preaction, combined dry pipe/preaction, and antifreeze systems shall not be installed without special approval (i.e. without an approved request for variance). The use of a pre-activation system in computer rooms will not require a variance. Fire suppression systems shall not contain ozone-damaging substances such as Halon.

COMMUNICATIONS SYSTEMS

Ownership: The University of Illinois Springfield (UIS) owns and operates the telecommunications system that serves the campus, including all system hardware located within buildings as well as outside of buildings.

Operation and Maintenance: The management, operation and maintenance of the UIS-owned system are the responsibility of Information Technology Services (ITS). ITS is also responsible for the design/engineering of all data, Wi-Fi, voice, and video. ITS also works with local cellular carriers to enhance their cellular coverage at campus facilities.

System Scope: The UIS telecommunications system is designed to provide a uniform, comprehensive and flexible distribution system to meet the complete telecommunication needs of the campus. This system supports all forms of information transport and processing as required for data (including computer networking), Wi-Fi, voice (both digital and analog), video, and audio.

ELECTRICAL DISTRIBUTION SYSTEMS

Compliance: The design and construction of all electrical distribution systems shall be in complete compliance with the current adopted revision of the *National Electric Code (NEC) and the National Electrical Safety Code (ANSI C2)*.

Distribution System: Electricity is distributed to campus from the Main Campus Distribution Center located in the lower level of Brookens Building (BRK). The electricity on campus is distributed via an underground distribution system or from the utility company. The primary voltage on campus is 12,470V.

FIRE ALARM SYSTEMS

Compliance: All fire alarm systems shall be designed and installed in full compliance with all applicable requirements of the *National Fire Alarm Code* as published by the NFPA. These documents may exceed the minimum requirements of the current *Code*. When the *Facilities Standards* exceed the *Code*, the *Facilities Standards* shall supersede the Code.

JCI/Simplex Panel: Each new facility is to be equipped with the latest Simplex fire alarm panel model available on the market. Contact Owner in regard to the Capital Project Brand Name Policy. Refer to *Technical Section 28 30 00 – Fire and Smoke Detection System*. Existing facility fire alarm panel upgrade or modifications should take into consideration the age of the equipment, the availability of parts and cost.

LIGHTING, EXTERIOR

Exterior Lighting: Lighting should be planned to provide maximum visibility along walkways and near entrances. Provide adequate lighting and make provision for the natural view of "gathering areas" such as benches, tables and smoking areas, as well as bike racks and trash collection / pickup locations.

General exterior illumination shall use the most efficient method available that is compatible with the ambiance of the surrounding area. Use of LED sources is strongly preferred. Life cycle cost analysis shall be performed when multiple systems are being considered. Color temperature of the lamp(s) shall not exceed 4500K. The quality and quantity of illumination shall be in compliance with the requirements of *Technical Section 26 56 00 – Exterior Lighting* and the *IESNA Handbook*. Particular attention shall be paid to enhancing vertical illumination for safety, while minimizing glare and light pollution.

LIGHTING, INTERIOR AND EMERGENCY

Illumination Levels: Illumination levels and quality for areas and tasks in campus buildings shall be within 10 percent of that recommended by the IESNA Handbook for each type of space and task. It is not the intention of the standard to sacrifice safety, comfort or performance for the sake of energy conservation. Sample foot-candle calculations (for each typical space in the project) shall be provided to the Owner as part of the design review submittals. Calculations shall also be submitted for review indicating illumination levels and energy consumption are in compliance with program requirements, IESNA recommendations and ASHRAE 90.1.

Fixture Selection: Provide high quality equipment to meet the requirements of the design while providing low cost illumination with a minimum of installation and maintenance expense. For this reason, fixture selection will include, but is not limited to, evaluation of:

1. Minimum life cycle cost.
2. Ease of obtaining and replacing lamps, lenses, lamp sockets, ballasts, drivers, and LED light boards
3. Structural integrity and fixture finish durability, including ease of cleaning.
4. Preference for LED sources, in support of the University's "LED Campus" initiative.

Energy Performance: Installed lighting power density shall conform to ASHRAE 90.1, and the AE shall endeavor to exceed this standard by the widest margin practical. Calculation sheets shall be provided to the Owner as part of the design review submittals.

General Illumination: General illumination for typical interior spaces, such as offices, classrooms, laboratories, lecture halls, stairwells, corridors and other public areas, restrooms, equipment rooms, service areas, storage rooms, etc., shall be provided by LED fixtures. LED fixtures are preferred where dimming is required by code or programmatic requirements.

Indirect lighting shall be kept to a minimum due to its high installed, operating and maintenance costs.

LED fixtures shall be preferred whenever they offer lowest life cycle cost, including all downlighting, task lighting and exit light applications. Incandescent fixtures shall not be installed unless no other lamp source is suitable. Compact fluorescent fixtures shall be kept to a minimum and shall not be used for general illumination purposes.

ELECTRICAL SYSTEMS

ELECTRICAL DISTRIBUTION SYSTEMS

Compliance: The design and construction of all electrical distribution systems shall be in complete compliance with the current adopted revision of the *National Electric Code (NEC) and the National Electrical Safety Code (ANSI C2)*.

Distribution System: Electricity is distributed to campus from the Main Campus Distribution Center located in the lower level of Brookens Library. The electricity on campus is distributed via an underground distribution system. The primary voltage on campus is 12,470V.

New Service: Provision for a new electrical service to a facility requires extension of the utility company electrical distribution system to the facility and installation of an outdoor transformer and metering. Any new transformer and metering that is required must be provided and is owned and operated by the utility company.

Future Loads: Electrical distribution systems/equipment shall be sized and configured to accommodate future loads.

Documentation and Submittals: The AE shall review the *Project Submittal Requirements*.

ELECTRICAL SERVICE ENTRANCES

Primary Service Connections to Building: Extensions of the utility company distribution system, including underground duct, conductors, and pad mounted electrical equipment, shall be furnished and installed by that Project.

Source of Electrical Power: The City Water, Light, and Power (CWLP) utility company is the required source of electrical power for building projects.

Special Requirements:
Extensions of the existing utility company distribution system shall be included in capital projects.

Provide a single line drawing showing the complete final building distribution system, suitably framed in 24" x 36" size under glass to be mounted in the substation or main switchgear room.

Documentation and Submittals: The AE shall review the Project Submittal Requirements.

ELECTRICAL SYSTEMS, BUILDING

Compliance: The design and construction of all building electrical systems shall be in complete compliance with the National Electric Code. This code is to be viewed as the "final authority" for establishing the minimum requirements for electrical devices, equipment and systems. The requirements of these *UIS Facilities Standards* often exceed the minimum requirements of the Code, requiring further compliance.

Emergency Generator: A natural gas-powered engine generator set shall be provided as the required emergency power source for each new building 25,000 square feet or larger. Renovations of buildings of this size shall include the addition of an emergency generator if possible. Emergency generators shall not be located within buildings. In addition to using up valuable indoor building space, potential problems include: engine exhaust fume discharge, indoor radiated noise, remote exhaust discharge noise, ventilation, cooling and heating requirements, remote fluid cooler requirements, fuel storage and transfer issues, fire protection, electrical power and control requirements, as well as compliance with all applicable codes.

Transformer Rooms: Each building shall incorporate one or more main electrical rooms. These should generally be located on the lowest level of the building, adjacent to the electrical service entrance. This room shall house the building's switch gear and associated equipment.

Smaller Buildings: In smaller buildings, a single unit substation shall be installed that supports the building loads. A 277/480 volt, three-phase, four-wire system to serve lighting and mechanical equipment shall be utilized with a 208Y/120V to support receptacle loads. This is preferred and shall be done when the project budget can support it. It is preferred to utilize VFDs to serve mechanical equipment, in lieu of installing distributed motor starters, when it is cost effective to do so and the project budget can support it.

Transformer Redundancy: A building with expected maximum demand of over 750 KVA, generally, shall have two separate main transformers of equal capacities located either in separate transformer rooms in different parts of the building or in a double-ended arrangement in one transformer room. This is recommended for reasons of safety, reliability and equipment handling. Buildings

with large auditoriums or assembly areas shall have two transformers as required to ensure reliability of the lighting.

Overcurrent Protection / Coordination: Each overcurrent protective device shall be properly sized for the protection of the connected downstream component. Fusible switch type equipment shall be used where required. All protective devices, including the primary fuses, the secondary main protection device and the secondary distribution protection devices shall be coordinated for a purely selective system.

Harmonics: Electrical design shall take power system harmonics into consideration. Each transformer shall be K factor rated where applicable.

Electrical Closet Location: Electrical closets shall be vertically "stacked" to the greatest degree possible, thus facilitating distribution riser configuration.

Panels: Each distribution panel located within the building shall be served by a dedicated circuit breaker within the distribution section of the unit substation. Distribution and branch panels may be located in electrical closets that are directly accessible from a public corridor. These closets shall be labeled "Electrical". They may also be located in public corridor walls and, if so, shall be flush mounted. Each panel shall only serve electrical devices that are located on the same floor as the panel. The only acceptable exception to this is an emergency panel, which may serve multiple floors. Branch panels shall be located such that branch circuits will not exceed 100 ft. in total developed length. Each flush-mounted panel shall be fitted with four spare one-inch conduits that extend above the suspended ceiling or to a point near the structural ceiling. Each new distribution or branch panel shall have 42 spaces and shall have a minimum of nine spare spaces when the entire installation is complete.

Emergency Panels: Generally, emergency panel(s) shall be located in the main electrical room and shall serve only lighting and devices required by Life Safety Code as well as other critical equipment as deemed appropriate and necessary. Critical equipment includes:

- Sump pumps
- Sewage ejectors
- Hot water perimeter heating pumps
- DDC panels - At a minimum, controls required to operate perimeter HW generation equipment and pumps
- Pneumatic control air compressors
- Steam condensate pump units
- Elevators (as required)
- Card access systems
- Security systems
- Cold room cooling units, condenser water pump/controls as applicable
- Critical lab equipment, HVAC
- Research animal HVAC, other support systems
- Critical computer equipment, HVAC
- Critical telecom equipment, HVAC
- Critical lab exhaust systems - At a minimum, one of multiple ganged exhaust fans

Circuiting: Wall outlets shall be served by 20 amp circuits with a maximum of six duplex outlets per circuit. Lighting and outlets shall be served by separate dedicated circuits. Circuits that serve outlets located in corridors shall serve corridor outlets only. They shall not also serve outlets located in other spaces (e.g., offices or laboratories where computers or other critical equipment may be in operation). These outlets are used by custodial staff to power cleaning equipment, resulting in the occasional tripping of a circuit breaker. Each substantial piece of hard-wired single-phase electrical equipment shall be served by a dedicated circuit. Every piece of hard-wired three-phase electrical equipment shall be served by a dedicated circuit. Equipment that incorporates duplex units for the sake of redundancy, such as air compressor units, sump pump units and condensate pump units, shall be served by two separate power and control circuits such that one unit can continue to operate when the other has failed. Each piece of equipment or system shall be served by a dedicated control circuit that is wired so as to be disabled when the power circuit is disabled. Standard control circuits shall be 120 volt.

Outlets: The density of portable electrical devices used within University buildings, especially laboratory buildings, is quite high. Also, the usage of spaces changes often. Therefore, a generous number/distribution of

20 amp duplex outlets shall be provided in new or remodeled areas. For example, even the smallest and simplest office area shall have at least two duplex outlets. A 20 amp duplex outlet shall be provided every 50 feet (maximum) in corridors and public areas for use by custodial staff. Mechanical equipment rooms, electrical equipment rooms, elevator machine rooms, janitor closets and other service and support areas shall not be overlooked with regard to the need for an adequate number/distribution of outlets. The location of outlets shall be coordinated with the layout of modular furniture/partitions with integral raceway. Generally, outlets shall be flush mounted in walls. Flush-mounted floor outlets are not allowed. However, recessed floor boxes with hinged/removable covers that contain power and/or voice/data receptacles may be installed to serve equipment that is located remotely from the nearest wall.

Exterior Outlets: An exterior outlet shall be provided adjacent to each piece (or grouping) of mechanical equipment (at the ground and roof levels) to facilitate service.

Motor Starters and Variable Frequency Drives: Each three-phase motor shall be served by a configured variable frequency drive in lieu of a magnetic starter with a hand-off-auto switch, where possible, as opposed to a manual starter. This facilitates the application of automatic controls.

Flexible Design: As mentioned previously, the usage of spaces within University buildings, especially laboratory spaces, changes often. Remodeling is a common occurrence. Therefore, the building electrical systems shall be designed with sufficient flexibility and spare capacity to accommodate substantial future changes. Generally, a spare capacity of 25% (minimum) shall be provided throughout each electrical system, from the reserve transformer capacity to the number of spare spaces in each branch panel.

Panel Identification Label: Every electrical unit substation, switchboard, automatic transfer switch and panel shall be identified with a label designating the building number, the room number where the equipment is located, and the room number where the equipment is fed from. (For example: If a lighting panel is located in Building #0014, Room #435 and fed from a unit substation, located in Room #12 in the basement, then the panel will be labeled as 0014-LP435-12). See F&S for additional information regarding equipment labeling.

FIRE ALARM SYSTEMS

Compliance: All fire alarm systems shall be designed and installed in full compliance with all applicable requirements of the *National Fire Alarm Code* as published by the NFPA. These documents may exceed the minimum requirements of the current Code. When the *Facilities Standards exceed the Code, the Facilities Standards* shall supersede the Code.

JCI/Simplex Panel: Each new facility is to be equipped with the latest Simplex fire alarm panel model available on the market. Contact Owner in regard to the Capital Project Brand Name Policy. Refer to *Technical Section 28 30 00 – Fire and Smoke Detection System*. Existing facility fire alarm panel upgrade or modifications should take into consideration the age of the equipment, the availability of parts and cost.

Central Communication Capability: Each new fire alarm panel shall be networked such that it communicates with the campus central fire alarm panel which is located in the Police Station.

Fireman's Service: If a new facility is equipped with one or more elevators, the elevator controller(s) shall be equipped with Fire Fighters' Service Requirements.

Retrofit Systems: When a new fire alarm system is retrofitted into an existing building, the following shall be accomplished in conjunction with the installation of the new system:

Interface with Existing System: The new system shall be interfaced with any preexisting system that is left in operation.

Tamper Switches: Tamper switches shall be added to any fire protection system isolation valves that were previously chained and locked in the closed position. Chaining and locking valves are no longer allowed.

Flow Switches: A flow switch shall be installed to monitor flow in each standpipe system. All flow switches that serve sprinkler and standpipe systems shall be tied into the new fire alarm system.

Fire Pumps: A status switch shall be installed to monitor the operation of each fire pump. Each fire pump status switch shall be tied into the new fire alarm system.

Elevator Controllers: All existing elevators shall conform to the Fire Fighters' Service Requirements of ASME/ANSI A17.3 Safety code for existing elevators and escalators. Each elevator controller shall be upgraded to incorporate "Fireman's Service" in a manner that satisfies the requirements of *Division 14* of these *Standards*. Elevator upgrades in buildings that are not equipped with the campus standard fire alarm system shall conform to the requirements herein stated. It shall be recognized that the cost-effective method of conformance would be to include the installation of an upgraded fire alarm system in the Project.

Early Detection Devices: The installation of early detection devices such as smoke and thermal detectors is encouraged for the purpose of increased safety in buildings not protected throughout by an automatic fire suppression system.

Temporary Protection: Where modifications to existing fire alarm devices or equipment cause Interim Life Safety Measures to remain in place for a period of time exceeding 48 hours, temporary protection shall be provided to the affected area. Temporary protection shall comply with the requirements listed in *Section 28 3000 – Fire Alarm and Smoke Detector Systems*. Any project that requires removal or replacement of detection or notification devices shall include a survey by a professional fire alarm engineer or designer.

LIGHTING, EXTERIOR

Exterior Lighting: Plan lighting to provide maximum visibility along walkways and near entrances. Provide adequate lighting and make provision for the natural view of "gathering areas" such as benches, tables and smoking areas, as well as bike racks and trash collection / pickup locations.

General exterior illumination shall use the most efficient method available that is compatible with the ambiance of the surrounding area. Use of LED sources is strongly preferred. Life cycle cost analysis shall be performed when multiple systems are being considered. Color temperature of the lamp(s) shall not exceed 4500K. The quality and quantity of illumination shall be in compliance with the requirements of *Technical Section 26 56 00 – Exterior Lighting* and the *IESNA Handbook*. Particular attention shall be paid to enhancing vertical illumination for safety, while minimizing glare and light pollution.

Street/Roadway Lighting: Lighting for roadways shall be via full cutoff cobra-head or decorative luminaire as directed for the specific project and location. Pole shall be round tapered steel or aluminum, black, with concrete base. If roadway luminaires are not adequate to light the sidewalk, then secondary luminaires shall be added on the same pole as the roadway luminaires. Two separate rows of poles for street and sidewalk will not be allowed. Particular attention should be paid to lighting levels at crosswalks, bike paths and intersections. Roadway lighting levels, quality and uniformity shall be in compliance with the *IESNA Handbook*.

Pedestrian Walkway Lighting: Lighting for pedestrian walkways (not along roadways) shall be via pole-top luminaire. Walkway illumination levels shall be in compliance with the *IESNA Handbook*. Refer to *Standard 26 56 00, Exterior Lighting*.

Parking Lot Lighting: Lighting for parking lots shall be simple and efficient, via full cutoff luminaire on a UIS standard aluminum or steel pole. Parking lot lighting shall have motion sensors to provide two levels of lighting.

Exterior Lighting Controls: Exterior lighting shall be controlled by a single photocell shall be installed to control the operation of exterior lighting. Avoid using individual photocells per fixture.

Project Outages: If project work requires outages of any exterior lighting (including building, sidewalk or street lighting), adequate temporary lighting shall be provided for the entire duration of the outage as part of the project. Location, placement and number of temporary lights shall be coordinated to the satisfaction of the Owner's Representative before existing lighting is disrupted. Pedestrian and vehicle safety shall be given utmost importance.

LIGHTING, INTERIOR & EMERGENCY

Illumination Levels: Illumination levels and quality for areas and tasks in campus buildings shall be within 10 percent of that recommended by the *IESNA Handbook* for each type of space and task. It is not the intention of the standard to sacrifice safety, comfort or performance for the sake of energy conservation. Sample foot-candle calculations (for each typical space in the project) shall be provided to the Owner as part of the design review submittals. Calculations shall also be submitted for review indicating illumination levels and energy consumption are in compliance with program requirements, IESNA recommendations and ASHRAE 90.1.

Fixture Selection: Provide high quality equipment to meet the requirements of the design while providing low cost illumination with a minimum of installation and maintenance expense. For this reason, fixture selection will include, but is not limited to, evaluation of:

1. Minimum life cycle cost.
2. Ease of obtaining and replacing lamps, lenses, lamp sockets, ballasts, drivers, and LED light boards.
3. Structural integrity and fixture finish durability, including ease of cleaning.
4. Preference for LED sources, in support of the University's "LED Campus" initiative.

Energy Performance: Installed lighting power density shall conform to ASHRAE 90.1, and the AE shall endeavor to exceed this standard by the widest margin practical. Calculation sheets shall be provided to the Owner as part of the design review submittals.

General Illumination: General illumination for typical interior spaces, such as offices, classrooms, laboratories, lecture halls, stairwells, corridors and other public areas, restrooms, equipment rooms, service areas, storage rooms, etc., shall be provided by LED fixtures. LED fixtures are preferred where dimming is required by code or programmatic requirements.

Indirect lighting shall be kept to a minimum due to its high installed, operating and maintenance costs.

LED fixtures shall be preferred whenever they offer lowest life cycle cost, including all downlighting, task lighting and exit light applications. Incandescent fixtures shall not be installed unless no other lamp source is suitable. Compact fluorescent fixtures shall be kept to a minimum and shall not be used for general illumination purposes.

Larger Areas: Illumination for larger interior areas, such as atriums, auditoriums, gymnasiums, warehouses, etc., shall be provided by fixtures and lamps that represent the lowest life-cycle-cost installation. The quality and quantity of illumination shall be in compliance with the requirements of the *IESNA Handbook*. Fixtures shall provide direct illumination. As mentioned above, indirect illumination shall be avoided due to its high operation and maintenance costs.

Specialty Lighting: If used, display case, decorative, accent and other specialty lighting shall be kept to a minimum and used only in the highest profile areas, such as main entry lobbies, theaters, etc. or where appropriate for historical preservation. LED shall be the preferred source for specialty lighting whenever appropriate. In rooms where reduced lighting levels are necessary to allow note-taking during video presentations (e.g., conference rooms, lecture halls, as well as some classrooms and instructional labs), dimmable LED shall be considered first. Dimming range shall be appropriate for programmatic use of the space.

Maintenance Responsibility: Maintenance of specialty lighting, including all incandescent and dimmable fluorescent lighting systems, will not be provided by the F&S Division, but will be the responsibility of the using department/agency.

Circuiting: Lighting and outlets shall be served by separate dedicated branch circuits.

Lighting Controls: The interior lighting that serves an area shall be controlled by local switches that are installed as close as possible to the entrance that serves the area. For example, locate light switches at the ends of hallways rather than the middle. Master switching of the lighting that serves a larger area shall not be used. Where multiple circuit switching is necessary, multi-pole contactors shall be used. Occupancy sensors shall be used wherever practical and where required by code. If a building-wide lighting control system is used, it must be integrated with the building automation system (BAS) for mechanical systems controls. Interior lighting controls shall be provided to meet the requirements of applicable energy code.

Lenses: Fixture housings shall be appropriate to the application. The use of glare-reducing baffles or parabolic style lenses shall be minimized. Direct/indirect "basket" style fixtures shall be avoided in favor of lensed "wrap" style due to insect contamination issues.

Conference Rooms, Classrooms and Lecture Halls: Reduced general lighting levels are typically necessary to allow note-taking during video projection presentations, so incremental switching of LED lighting shall be provided. If the desired level/distribution of lighting cannot be achieved in this manner, dimmable LED lighting shall be provided. Specialty lighting (e.g., to illuminate blackboards, presentation areas, etc.) and associated controls shall be provided as directed by the Program Statement.

Emergency Lighting: Provide emergency egress lighting and exit signage in accordance with all applicable codes and standards, including *NFPA 101* and *NEC 700*. Egress lighting systems shall be designed with the minimum possible maintenance requirements. The power source for egress and exit lighting shall be, *in order of preference*:

1. Standby generator, if available. Consider extending circuit from a neighboring building's generator if practical.
2. Individual battery units, with multiple external heads sharing a single battery when possible. Batteries shall be installed only when no other power source is available.

It is preferred to connect standard LED fixtures to emergency power sources whenever possible. When unswitched "night light" fixtures are installed in corridors, they shall be kept to the minimum necessary for egress lighting and designed so as to use the least amount of energy possible. LED adjustable-head type emergency lights, if used, shall have self-diagnostics and laser pointer testing capability.

All exit signs shall use red LEDs and shall be *UL 924* listed. "Self-powered" LED signs are not permissible.

Refer to *Section 26 52 00 – Exit and Emergency Lighting* for additional requirements.

MECHANICAL, PLUMBING & FIRE PROTECTION SYSTEMS

FIRE PROTECTION SYSTEMS, EQUIPMENT

Compliance: The design, installation, and placement of all fire protection systems shall be in complete compliance with the applicable edition *National Fire Codes, NFPA Standards #13* and *14* and other applicable codes therein. These Codes are to be viewed as providing minimal requirements for fire protection. Where the requirements of these *Standards* exceed the minimum requirements for compliance referenced above, they shall be complied with.

Sprinkler System Requirements: Automatic fire suppression systems shall be installed through all new buildings and all buildings that are completely renovated. Partial systems that are installed with areas of major renovation must be designed in accordance with NFPA 13 so as to ensure adequate water supply, system performance, fire alarm system interface, system supervision, and the potential to be expanded should future projects be undertaken at the subject site. For the purpose of this section, "completely renovated" shall be defined as renovation projects in which 75% of the gross floor area of the building is affected by the scope of the project. When there are multiple, phased renovation projects planned to occur in a building, the total affected floor area shall be considered the sum of all such project areas.

Design Water Pressure: All fire protection systems shall be sized using water supply tests performed not more than one year prior to construction.

Modifications/Additions: Any modifications or additions to an existing automatic fire suppression system shall require the entire system to be hydraulically calculated.

Wet vs. Dry Pipe Systems: Wet pipe systems are to be used exclusively with one allowable exception: in areas where freezing may occur. Dry pipe systems are allowed in these areas only. If, due to building remodeling, an area served by a dry pipe system is no longer exposed to freezing temperatures, the fire protection system serving this area shall be converted to a wet pipe system.
Other Systems: Other more specialized types of sprinkler systems such as preaction, combined dry pipe/preaction, and antifreeze systems shall not be installed without special approval (i.e. without an approved request for variance). The use of a pre-activation system in computer rooms will not require a variance. Fire suppression systems shall not contain ozone-damaging substances such as Halon.

Electrical Load Centers and Distribution Centers: In lieu of a sprinkler system, these electrical equipment rooms shall be housed in a 2-hour fire-rated enclosure including protection for penetrations. This enclosure shall be dedicated to electrical equipment only and use only dry-type electrical equipment.

Water Service: Each building shall be provided with a combined domestic/ fire protection water service. The domestic and fire protection lines are separated inside the building.

Fire Department Connection: A freestanding fire department connection (FDC) shall be connected to the automatic fire suppression system within each building. The FDC shall be located as far from the building and as near to a hydrant as practical, permitting ready access by a fire truck. Its location shall be subject to approval by F&S. The ball drip valve associated with the FDC shall be located in the basement of the building or within a shallow sump depressed within the lowest floor of the building such that the line outside of the building remains completely free of water. A wall mounted FDC is permitted when the building does not have a basement.

Double Check: Each fire protection water service fed from a University water main shall incorporate a double check valve assembly at the building service entrance.

Fire Pumps with Associated Jockey Pumps, Ancillary Equipment, Electrical Service, and Controls. Their installation shall be required for new construction only when the utility water pressure cannot meet NFPA flow and pressure requirements at the hydraulically most remote area with no additional hydraulic safety factors applied. When required, their design shall comply with *National Fire Code NFPA #20* and other applicable *NFPA Fire Codes*. They shall be base-mounted, horizontal, centrifugal type pumps. A bypass line shall be provided in the event the fire pump fails.

Flow Switches: Flow switches shall be installed as required by code and shall interface directly with the building fire alarm system. Each flow switch shall include an adjustable time delay feature. Electronic bells are generally not needed.

Sprinkler Zones: Each zone of an automatic fire suppression system shall not cover more than one floor of a building.

Inspector's Test Connections: Each zone of each sprinkler system shall incorporate an inspector's test connection (ITC). If the sprinkler system is a wet type system, the ITC shall be located at the riser. Each ITC shall discharge outdoors or into an open-site drain located in a mechanical equipment room. Any drain that is used for this purpose shall be capable of accepting the full flow of water under system pressure without creating water damage to the surroundings. In order to facilitate routine inspection, ITC's shall not require the use of ladders or temporary hoses.

System Main Drain: A main drain for the fire protection system shall be provided. The drain must be arranged such that no water remains in the line following a main drain test. The main drain test is done under utility water pressure. Therefore, this line must discharge outdoors or into an 8" hub drain.

Standpipe Systems: In those cases where a standpipe system is required, a combined sprinkler/standpipe system shall be installed rather than require a separate fire sprinkler standpipe. Hose cabinets and hoses shall not be installed with these systems. Combination Extinguisher & Fire Department Valve Cabinets shall be installed. The recessed or semi-recessed cabinets shall be installed at each mid-landing of each floor.

Special Systems: The design and installation of special fire suppression systems such as inert gas and chemical systems are to be closely coordinated with, and are subject to approval by, F&S.

Fire Extinguishers: Fire extinguishers and recessed or semi-recessed cabinets shall be provided in all buildings in accordance with NFPA 10, Standard for Portable Fire Extinguishers, and the Campus Fire Extinguisher Program coordinated by F&S covering the inventory, inspection and testing of extinguishers.

At least one (1) 10 lb. ABC dry chemical fire extinguisher shall be provided for every 3,000 GSF in a Low Hazard Occupancy facility, every 1,500 GSF in a Moderate Hazard Occupancy and every 1,000 GSF in a High Hazard Occupancy facility. The travel distance to the extinguisher shall not exceed 75 feet.

Except in special cases, the number and location of the extinguishers shall be based upon Class A Fires.

In laboratories or areas containing Class B Hazards, a 10 lb. ABC dry chemical fire extinguisher with a UL rating of 4A-80B:C shall be provided such that the travel distance shall not exceed 50 feet.

It is in the environmental interest of UIS that a suitable substitution fire extinguisher, such as Halotron or CleanGuard, be used to protect "sensitive areas" that were formally protected by Halon. Extinguishers shall not contain ozone-damaging substances. See *Section 10 44 00 - Fire Extinguisher Cabinets and Accessories* for detailed requirements for fire extinguishers and cabinets.

HVAC SYSTEMS

Purpose of HVAC: The twofold purpose of HVAC at UIS is…

1. Provide a comfortable and healthy environment for building occupants, thus promoting learning, personal performance and productivity.
2. Provide reliable environmental control to support research activities.

Guiding Principles:

- Quality: Provide systems/components of high quality. Typically referred to as "institutional quality" as opposed to "commercial quality".
- Reliability: Provide systems that operate properly with minimal service interruptions.
- Maintainability: Provide systems that require minimal service and that facilitate convenient service when required.
- Operability: Provide systems that are as intuitive and easy to operate as possible while providing required functionality.
- Flexibility: Maintain options for potential future changes to spaces served within appropriate limits.
- Sustainability: Provide environmentally responsible designs with focus on energy efficiency and conservation.

Life Cycle Cost: Life cycle cost analysis shall be included as a significant factor in design decision making. As such, installed cost shall be weighed against long term cost of ownership. It is common knowledge that first cost is typically dwarfed by operating cost over the life of an HVAC system. However, it is not commonly considered that operating cost is dwarfed by the *value of human performance and productivity*. Unfortunately it is difficult to assign a numeric value to human productivity or to the impact of the HVAC system upon it. Yet, substantial value shall be assigned to it, numeric or not. At the end of the day, good engineering judgment shall prevail.
See previous paragraph entitle *Purpose of HVAC*.

Compliance: Design and construction of HVAC systems shall be in compliance with all applicable codes and standards including:

- *International Mechanical Code*
- *Illinois Energy Conservation Code*
- *ASHRAE Standard 90.1 - Energy Standard for Buildings*
- *ASHRAE Standard 62.1 - Ventilation for Acceptable Indoor Air Quality*
- *ASHRAE Standard 55 - Thermal Environmental Conditions for Human Occupancy*

ASHRAE Handbook: HVAC system design issues not addressed within these *UIS Facilities Standards* shall be governed by recommendations of the latest version of *ASHRAE Handbook – HVAC Applications*.

Climatic Design Conditions: Climatic design conditions for HVAC systems shall be as published within the latest version of the *ASHRAE Handbook – Fundamentals*.
Station Location: *Springfield*.

Outdoor Design Conditions: Design conditions for cooling, evaporation and dehumidification shall be based upon 0.4% annual cumulative frequency of occurrence. In order to achieve a conservative design, heating design conditions shall be based upon mean extreme DB in lieu of the 99.6% value. Humidification shall be based upon 99.6% annual cumulative frequency of occurrence.

I**ndoor Design Conditions, Occupied:** Default indoor "design-to" conditions for HVAC systems that serve standard occupied spaces:

Heating DB: 70 Degrees F
Cooling DB: 75 Degrees F / 50% RH

When a system that serves a standard building/space is provided with positive humidity control, the space humidity set-point shall be limited as follows:

Heating: 30% RH Maximum
Cooling: 50% RH Minimum

ASHRAE Standard 55: Proposed indoor design conditions for occupied spaces other than the default *values provided above will be considered by Owner* for approval on a project-by-project basis. However, consideration will only be given to design conditions that fall within the range of acceptable thermal conditions presented in *ASHRAE Standard 55*.

Equipment Room Set-points: Space temperature within mechanical and electrical equipment rooms and similar support spaces shall typically be maintained between 55F and 85F. However, each such space shall be evaluated individually based upon specific equipment requirements.

Special Environmental Requirements: It is acknowledged that it is inappropriate to require "across the board" compliance with the indoor design conditions identified above for all space types. Non-standard spaces often require non-standard environments. Examples of such spaces include library archival storage, musical instrument storage, museums, clean rooms, animal facilities and data centers. Maintaining temperature and humidity requirements for such spaces often requires application of specialized HVAC equipment and/or special building construction. Consideration: Provision of low space temperature in conjunction with high space humidity is a common professional recommendation and/or User request. Achieving and maintaining such environmental conditions is typically difficult and/or costly to accomplish. As such, non-standard HVAC systems required to support such conditions shall be provided only if truly required. For all projects involving special environmental considerations an evaluation shall be conducted to determine which conditions are recommended versus those that are truly required.

Energy Conservation: HVAC systems of significant scope shall incorporate occupancy sensing to facilitate implementation of energy reduction strategies. Systems shall be configured to take advantage of energy recovery opportunities when possible without violating other design priorities.

Institutional Quality: HVAC equipment/systems shall be institutional grade as opposed to standard commercial grade. For the purposes of this writing, institutional grade equipment/systems shall have minimum life expectancy of 25 years for dynamic system components such as motors, switches, pumps, valves, fans, dampers, compressors and burners, and a minimum life expectancy of 50 years for static system components such as casings, cabinets, ductwork and piping.

Central Utilities: HVAC systems shall typically utilize central distributed chilled water, central distributed steam and central distributed electricity whenever these utilities are available.

Central HVAC Systems: Each building shall be served by a minimal number of central HVAC systems rather than numerous smaller systems (e.g. less than 5,000 CFM). Each central system shall typically include an air handling unit, a return and/or exhaust fan or fans and air supply, return and/or exhaust ductwork.

The installation of a smaller number of larger systems typically results in higher equipment quality and reduced maintenance requirements while providing adequate opportunity for application of energy conserving features and control strategies.

Disallowed Equipment: The following types of HVAC equipment/systems shall not be installed in campus facilities without an approved variance:

1. Window air conditioning units
2. PTACs: Packaged Terminal Air Conditioners
3. Residential furnaces
4. DX split air conditioning units
5. Commercial or residential grade heat pumps, air source or ground source
6. Electric resistance heating equipment. Exception: Electric resistance heating may be used within packaged HVAC units with dehumidification control (CRAC units).
7. Fan coil and blower coil units. Exception: Cooling-only fan coil and blower coil units may be used for specialty cooling applications such as telecommunications rooms, computer server rooms and certain equipment room cooling applications (e.g. electrical transformer rooms, elevator machine rooms).
8. Fan powered terminal air units (aka “fan powered boxes”)
9. Two-pipe combination hydronic heating/cooling units/systems

System Architecture: Spaces with similar uses, environmental conditions, fresh air ventilation rates and occupancy schedules shall generally be grouped together on the same HVAC system. Spaces with significantly dissimilar usage types and/or schedules shall not be served by the same system. Space types that require dedicated HVAC systems include:

1. Offices*
2. Classrooms*
3. Chemical and biological laboratories (aka “wet labs”)
4. Lecture halls/theaters**
5. Sizable public assembly areas/atria

Any area with distinct non-standard temperature and/or humidity requirements shall be served by a dedicated system. This overall approach to system architecture allows the design of each system to be tailored to the specific needs of the area it serves while facilitating energy conservation strategies. Night setback, system cycling and optimized demand control ventilation serve as examples.

*In some cases it is acceptable to serve offices and classrooms from a common system. This shall be discussed with *F&S Engineering* prior to project design.

** A lecture hall or theater is typically defined as a room with assigned occupancy of 100 or more individuals. Each room of such capacity shall be served by a dedicated system.

Dedicated Cooling:
Each space requiring uninterrupted cooling shall be served by a dedicated cooling unit independent of any centralized building system. Examples of such spaces include:

1. Electrical transformer rooms
2. Elevator equipment rooms
3. Telecommunications rooms
4. Data processing rooms
5. Mechanical equipment rooms, as applicable.

See paragraph on the following page entitled *Equipment Rooms* as well as section entitled *Mechanical Equipment Rooms* within these *General Guidelines*.

Equipment Rooms: HVAC for mechanical and electrical equipment rooms and similar support spaces shall be "divorced" from applicable central HVAC systems given that uninterrupted operation is required. Further, in the case of ventilation systems, potential exists for compromising the central system via transfer of objectionable noise and odors.

Future Expansion: Within practical limitations each HVAC system shall be sized and configured to accommodate potential future expansion of capacity and/or infrastructure.

Flexibility: Within practical limitations HVAC systems shall be designed to be flexible and adaptable to accommodate changes in room layout and usage. This is particularly the case for laboratory spaces given that research objectives frequently require changes in laboratory operations and programs. Extreme flexibility such as that required to support major changes such as the conversion of an office to a wet lab or vice versa shall generally be avoided due to its negative impact on energy consumption.

Terminal Zoning: HVAC systems shall be configured such that each occupied space may be controlled as a separate zone with regard to temperature and/or airflow. In other words, a minimum of one terminal control unit (e.g. VAV unit with reheat coil) shall be provided for each occupied space. Each occupied space shall have a minimum of one dedicated thermostat (or equivalent). For the purposes of this writing, reception areas, lobbies, atria and public assembly spaces shall be considered occupied spaces.

Equipment Location: Each piece of motorized HVAC equipment shall be located within a building mechanical equipment room with the following exceptions:

- Approved roof mounted air handling equipment
- Roof mounted exhaust fans
- Unit heaters, cabinet unit heaters and similar unitary heating units
- CRAC units and similar specialty equipment designed for location within the space served

Location of motorized HVAC equipment above finished ceilings is not allowed. This includes suspended grid/drop-in tile ceilings. In no case shall motorized equipment (e.g. fan coil or blower coil units) be installed above a hard finished ceiling (e.g. sheet rock or plaster).

Motorized HVAC equipment shall not be located above sensitive equipment such as telecom switches, elevator control panels, computer server and sensitive lab equipment. This is particularly true of HVAC equipment that generates condensate.

Janitor Rooms: Given that janitor rooms are not accessible to maintenance personnel, mechanical equipment and devices shall not be located within them. Provision shall be made to adequately access mechanical equipment and devices without passing through a janitor room.

Outdoor Equipment: Air-cooled equipment such as chillers and condensing units need not be located within equipment rooms. Each outdoor unit shall be supported by and firmly anchored to a steel reinforced concrete pad with appropriate subgrade footing. The pad shall be of sufficient height above grade to effectively reduce exposure of equipment to dust and debris. Pad height shall be 6" minimum.

Support: All indoor floor-mounted mechanical equipment shall be supported upon and affixed to a steel reinforced concrete pad anchored into the structural floor. If required for vibration control, a spring supported inertia base shall be provided as addressed in the following paragraph entitled *Vibration Control*.

Vibration Control: Most floor-supported rotating HVAC equipment located within the lowest level of a building, with the exception reciprocating equipment (e.g. air/refrigeration compressors and internal combustion engines) may and shall be installed with virtually no special provisions for vibration isolation between the equipment and its support system or associated hydronic piping. This equipment shall typically be "hard mounted" directly to its concrete support/housekeeping pad without use of vibration isolation devices and "hard connected" to the piping systems they serve without the use of flexible pipe connectors. The use of flexible pipe connectors shall be minimized since they have proven to be leak/failure prone. An exception to these general rules may be necessary in cases where laboratory equipment is especially vibration sensitive (e.g. an electron microscope) is located in close proximity to an equipment area. Rotating HVAC equipment that is supported from any ceiling or supported by any floor

other than the lowest floor of the building shall be individually evaluated to determine if vibration isolation devices, inertia bases and/or flexible pipe connectors are needed to prevent unacceptable levels of vibration from being transmitted into the building structure.

Access: Adequate access shall be provided within mechanical equipment rooms to facilitate operation, maintenance and repair activities. (See *Mechanical Equipment Room* section within these *General Guidelines* for requirements). Similarly, adequate (as in generous) access shall be provided to operate, maintain and repair all mechanical devices located outside of equipment rooms. Such devices include, but are not limited to, finned tube elements, VAV boxes, reheat coils, valves, dampers, controllers and control devices. Thus, office furniture shall not be located so as to hinder access to finned tube cabinets. Piping, conduit and ductwork shall not be located so as to hinder access to VAV boxes and controllers. Equipment and devices that are vulnerable to damage or tampering by building occupants or activities shall be located and/or protected accordingly.

Backup Equipment: A 100% backup or duplex unit shall be provided for each critical piece of HVAC equipment. Included are:

- Hot water perimeter heating pumps
- Pneumatic control air compressors
- Steam condensate pumps
- HVAC for research animals
- HVAC for critical laboratory equipment
- HVAC for critical computer equipment
- HVAC for critical telecom equipment
- Critical lab exhaust systems - At a minimum, one of multiple ganged exhaust fans

In general terms, N+1 redundancy shall be provided for each truly critical piece of equipment. Careful evaluation in conjunction with Owner input is required to determine the necessity of such redundancy.

Redundant Components: For critical applications, redundant components shall be provided within HVAC equipment as deemed prudent. Examples include multiple fans within an air handling unit, multiple control valves serving a single device, and multiple compressors/ refrigerant circuits within a chiller.

Emergency Power: Critical HVAC equipment shall be provided with emergency power as deemed prudent. Consideration shall be given to each system listed above in the paragraph entitled *Backup Equipment*.

Variable Speed: All HVAC equipment with three phase motors shall be equipped with variable speed drives. When such requirement is deemed excessive for a given application concurrence shall be sought from the Owner.

Sound Control: Sound control as it relates to HVAC systems shall be given adequate priority. As mentioned elsewhere, the best way to control noise is to not create it in the first place. When focused attention is given to maximizing the efficiency of HVAC systems, noise is much less of an issue. HVAC-related background noise in a given space shall not exceed the guideline criteria provided in the chapter entitled *"Sound and Vibration Control"* in the *"ASHRAE Handbook, HVAC Applications"*.

Troubleshooting: System components shall be located to facilitate troubleshooting procedures. For example, VAV boxes and control valves for heat transfer devices shall be located on the same floor as the spaces they serve. Specific example: control valves shall not be located on the floor below to serve up-fed finned tube elements.

Humidification: HVAC equipment/systems shall not incorporate space humidification unless required for a specific application. Humidification is costly, not only in terms of first cost but also in terms of maintenance and energy consumption. With the increased use of dedicated outdoor air ventilation systems and total enthalpy heat recovery wheels the need for space humidification has been reduced. When humidification is required it shall be provided by means of a steam-to-steam humidifier located adjacent to the applicable air handling unit. Makeup water to each humidifier shall be softened to reduce scaling. In some applications, further conditioned with reverse osmosis and/or deionizing equipment is required. Steam from the campus central steam distribution system shall not be used for direct injection humidification.

Freeze Protection: Neither water, steam nor condensate piping systems shall be installed in locations where they are vulnerable to freezing (e.g. outdoors without sufficient earth cover, within unheated spaces, within building exterior walls or wall cavities, within exposed overhangs, within exposed exterior walkways, etc.) Exception shall not be granted for systems to be protected via the use of glycol solution. Over time, glycol solution can become diluted to the point that it is no longer effective at providing freeze protection.

Temporary Use of New Equipment: HVAC equipment shall not be used for temporary heating and cooling during construction except by specific approval by the Owner. Only after approval from the Owner, the AE shall document the conditions by which HVAC equipment may be used during construction and clearly require the Contractor to implement measures to assure equipment will be like new when delivered to the Owner. The AE shall balance the expediency of using new HVAC equipment with the negative consequences of compromised indoor air quality, equipment warranty, cost to restore the equipment to like new condition and the impact of commissioning out-of-sequence. The use of permanent HVAC systems for construction purposes is discussed in *Section 01 76 00 – Protecting Installed Construction*.

Utilities Sub-Metering: Utilities shall be sub-metered within the building level to better allow for monitoring, trending, recommissioning, etc. Utilities to be considered for sub-metering include gas, electric, domestic water, chilled water, steam, condensate, irrigation, etc. Sub-metering requirements shall be reviewed with *F&S Engineering* during the project design.

Identification:
Equipment tags should be stamped metal for a long wear life and to prevent the information fading over time. Pipes to be marked shall be labeled with the text as shown in the following table regardless of which method or material is used:

Pipe Service	Lettering Color	Background Color
STEAM - 12 PSI	Black	Yellow
STEAM - 5 PSI	Black	Yellow
CLEAN STEAM - 0 PSI	Black	Yellow
GLYCOL WATER SUPPLY	Black	Yellow
GLYCOL WATER RETURN	Black	Yellow
HEATING WATER SUPPLY	Black	Yellow
HEATING WATER RETURN	Black	Yellow
LOW PRESSURE CONDENSATE	Black	Yellow
PUMPED CONDENSATE	Black	Yellow
CHILLED WATER SUPPLY	White	Green
CHILLED WATER RETURN	White	Green
CONDENSER WATER SUPPLY	White	Green
CONDENSER WATER RETURN	White	Green
CONDENSATE DRAIN	Black	Yellow
REFRIGERANT LIQUID	Black	Yellow
REFRIGERANT SUCTION	Black	Yellow
REFRIGERANT HOT GAS	Black	Yellow
Underground Piping	Varies	Varies
Tracer Wire - All other buried types	---	Green

Steam pipe markers shall include operating steam pressure within pipes.

Ductwork and Fan Systems: All fans, filters housings, and access doors shall be labeled with the text as shown in the following table:

Ductwork Label and System	Lettering Color	Background Color
WARNING – CHEMICAL FUME EXHAUST	Black	Orange/White
WARNING – ISOLATION ROOM EXHAUST	Black	Orange/White

PLUMBING SYSTEMS

Codes: The Illinois Plumbing Code shall govern as a minimum and the International Plumbing Code shall only govern in regards to storm drainage.

Domestic Water System: Avoid locating domestic water lines in exterior walls and unheated spaces in the building. Routing water lines near un-ducted outside air louvers where exposure to freezing temperatures may occur shall not be permitted.

Water line sizes shall be hydraulically calculated to conform to the decreased demand of low water use fixtures or they shall be based on sizing tables for the low water use fixtures being used Note that written approval is required by the Illinois Department of Public Health.

All piping shall be secured against movement. Provide water hammer arrestors in accordance with PDI when necessary.

Once-through cooling using potable water is not permitted on any equipment.

Thermostatic Mixing Valves: Water heaters shall produce at least 140F water. However, 95-100F may be delivered through a building domestic tempered water system after a master thermostatic mixing valve (TMV). This approach eliminates the need for individual TMVs for emergency showers and eye wash stations and lavatories, and also eliminates the need to insulate these lines. Hot and tempered water systems shall be recirculated to provide hot or tempered water upon demand at each fixture unless the water heater is located directly adjacent to the fixture(s) served. For most scenarios, localized instantaneous hot water heaters are preferred in lieu of building wide recirculation systems.

Drinking Fountains: Preference is to install water coolers and drinking fountains in alcoves.

Sill Cocks: Buildings shall be provided with an appropriate number of exterior sill cocks to facilitate not only Grounds maintenance operations, but exterior window washing as well. Minimally, one sill cock shall be provided on each side of the facility. On larger buildings, two or three per side may be necessary to prevent the unnecessary placement of hose.

Building Sanitary System: Booster pumps, stormwater pumps, and sanitary sewer lift stations shall be avoided when possible. When stormwater pumps or sanitary sewer lift stations are necessary, only those fixtures requiring pumping shall incorporate these pumps.

Sewer line sizes shall be hydraulically calculated to conform to the decreased demand of low water use fixtures or they shall be based on sizing tables for the low water use fixtures being used. Note that written approval is required by the Illinois Department of Public Health.

Floor Drains at Area Ways, Entrances: Provide a floor drain inside all below grade building entrances to intercept water that may accumulate within the area way.

Building Storm Systems: Primary roof drains shall discharge to the underground storm sewer system. A secondary roof drainage system, when scuppers or other non-piped overflow methods are not used, shall discharge in a visible location without causing a safety hazard.

Vertical storm piping should avoid offsets below the uppermost floor line.

Identification:

Pipe Service	Lettering Color	Background Color
HIGH TEMP HOT WATER OVER 240ºF	Black	Yellow
CONDENSATE DRAIN	Black	Yellow
COMPRESSED AIR	Black	Yellow
CONTROL COMPRESSED AIR	Black	Yellow
DOMESTIC COLD WATER	White	Green
DOMESTIC HOT WATER - 115°F	Black	Yellow
DOMESTIC HOT WATER - 140°F	Black	Yellow
DOMESTIC HOT WATER CIRCULATING - 115°F	Black	Yellow
DOMESTIC HOT WATER CIRCULATING - 140°F	Black	Yellow
SANITARY SEWER	Black	Yellow
VENT	Black	Yellow
STORM SEWER (PRIMARY AND SECONDARY)	White	Green
NATURAL GAS	Black	Yellow
TEMPERED WATER	Black	Yellow
TEMPERED WATER RETURN	Black	Yellow
NON-POTABLE WATER	Black	Yellow
DEIONIZED WATER	White	Green
DISTILLED WATER	White	Green
RO WATER	White	Green
FUEL OIL SUPPLY	Black	Yellow
FUEL OIL RETURN	Black	Yellow
All Underground Pipes	Varies	Varies
Tracer Wire - Water Pipe Lines	---	Blue
Tracer Wire - Natural Gas Pipe Lines	---	Yellow
Tracer Wire - All other buried types	---	Green

TECHNOLOGY

COMMUNICATION SYSTEMS

Ownership: The University of Illinois Springfield (UIS) owns and operates the telecommunications system that serves the campus, including all system hardware located within buildings as well as outside of buildings.

Operation and Maintenance: The management, operation and maintenance of the UIS-owned system are the responsibility of Information Technology Services (ITS). ITS is also responsible for the design/engineering of all data, Wi-Fi, voice, and video. ITS also works with local cellular carriers to enhance their cellular coverage at campus facilities.

System Scope: The UIS telecommunications system is designed to provide a uniform, comprehensive and flexible distribution system to meet the complete telecommunication needs of the campus. This system supports all forms of information transport and processing as required for data (including computer networking), Wi-Fi, voice (both digital and analog), video, and audio.

AE Requirements: On all new construction or major remodeling projects, the AE must use a Registered Communications Distribution Designer (RCDD) for the design of all communications infrastructure. This encompasses all designs for outside plant (OSP) and inside plant (ISP). All designs must follow the Campus Facilities Standards. ITS Plant Engineering will review all AE designs for compliance.

The minimum qualifications for the Telecommunications Engineer are:

1. A Building Industry Consulting Service International Inc. (BICSI) Registered Communications Distribution Designer (RCDD).
2. Ten years working experience in the telecommunications industry.
3. Three years working experience in the planning and design of telephone OSP and building riser facilities (e.g., OSP Engineering or Building Industry Consultant Service (BICSI).
4. Ability to author detailed specifications, punch lists and other bid documents.
5. Ability to prepare detailed construction and as-built drawings.
6. Ability to inspect and supervise projects.
7. Experience in a campus environment.

ITS Plant Engineering will review and approve the qualifications of all Telecommunications Engineers to provide telecommunications services.

Contract Documents Drawing Submittal Requirements: The commissioned Project AE shall provide floor plans that show the locations of existing and new telecommunications main terminal rooms, equipment rooms, and floor terminals. The floor plan drawings may be submitted in either of the following two formats:

1. AutoCAD compatible drawing files scaled to the true dimensions of the building. AutoCAD Release 2013 drawings are preferred; however, a minimum of Release 2004 will be accepted.
2. On reproducible media scaled no smaller than 1/8" = 1'-0".

Drawings shall also show the proposed locations for all communications outlets, intermediate distribution frames (IDFs),communications equipment rooms (CERs), and floor distribution frames (FDFs) destinations.

In addition, all conduits, raceways, cable trays, floor ducts, junction boxes, camera mounts, wireless access locations, pull boxes, and manholes shall be shown for all proposed telecommunications facilities.

All telecommunications drawings shall be separate from other disciplines, and will be identified as Telecommunications and System Drawings within the Electrical section.

Floor plan drawings shall include separate layers identifying the floor plans with distribution raceway and voice and data station outlets.

Unscaled drawings shall be provided for distribution and riser cables showing:

1. Backbone distribution cable routes
2. Service entrance
3. Riser distribution cable routes
4. Distribution cable support systems
5. Type, size, sheath, gauge and length of all cables except station cables
6. All splice locations with cable number and count
7. Protector location and count
8. Terminal locations and quantities of major hardware components

Scaled drawings shall be provided for nodes/main distribution frame (MDF), IDFs, CERs, and FDFs showing:

1. Room layout (plans and elevations) showing location of splices, backboards, protectors, protector counts, frames, racks, mounts, power supplies, ground bus, and cable counts.
2. Terminating location of distribution, station and riser cables.
3. Riser cable count and number of station jacks to be terminated.
4. Dimensions of devices, fixtures, etc.
5. Details of special supports that are required for clarification.

Provide a voice/data schematic drawing.

System Description: The system includes the following components/features:

Outdoor Distribution: All buildings on "campus proper", as well as a number of outdoor emergency telephones, run through an extensive underground conduit and manhole distribution system. The outdoor cable infrastructure consists of copper cable, multi-mode, and single-mode fiber optic cables.

Data Networking: Data network switches are connected to routers in HSB and UHB. The router is connected to the ICCN via single mode fiber optic cable.

Wi-Fi Networking: Wi-Fi, also known as wireless connections, is distributed throughout the campus, both in buildings and at exterior locations, and are connected to communications equipment rooms (CERs) via network cabling.

Nodes/Main Distribution Frames: The UIS telecommunications system is connected to the AT&T Central Office through a separate "main distribution frame" (MDF), referred to as "nodes", as mentioned above.

Intermediate Distribution Frames: Each MDF is connected to an "intermediate distribution frame" (IDF), also called a "main terminal room", in each of the buildings it serves.

Floor Distribution Frames: Each IDF is connected to one or more "floor distribution frames" (FDFs), also called "terminal closets", on each floor of the building it serves to primarily handle voice communications.

Communications Equipment Rooms: Each IDF is also connected to one or more "communications equipment rooms" (CERs) in each building to primarily handle data communications.

Outlets: Each FDF is connected (primarily) to the voice jacks on the floor, or portion of thereof, that it serves. Each CER is connected (primarily) to the data jacks in the building, or portion thereof, that it serves.

Typical Circuits: A typical complete data circuit consists of a data jack wired back to the CER. A typical complete voice circuit consists of a voice jack wired to the FDF; the FDF wired to the IDF; the IDF wired to the MDF; and the MDF wired back to the central office.

Building System Requirements: Each building shall incorporate the following features/devices to support the telecommunications system that serves it:

Main Terminal Room: A 7x4.5 ft. (minimum) room shall be provided at the telecommunications service entrance on a lower level of each building to serve as the "intermediate distribution frame" (IDF) or "main terminal room". The exact IDF room size required to serve a specific building shall be determined/confirmed by ITS.

Floor Distribution Closet: Multiple 8x5.5 ft. (minimum) rooms shall be provided to serve as "floor distribution frames" (FDFs) or "terminal closets". As stated above, FDFs primarily support voice communications. These rooms shall be "stacked" vertically to create a riser up through a building (with an FDF on each floor). Multiple FDF risers shall be provided as required to support the number of voice jacks that are expected to be installed within a building. The exact number and location of FDFs to serve a specific building shall be determined/confirmed by ITS.

Communications Equipment Rooms: One or more rooms shall be provided to serve as "communications equipment rooms" (CERs). The minimum dimension of this room is 10x8 feet. Depending on jack density and equipment requirements, the size of the CER may have to be increased. The CERs are there to support data, voice and Wi-Fi. Other systems and/or equipment that do not service the CER cannot be installed in CERs. CERs shall be provided in number and location as required to limit the cable length to 100 meters from a CER to the

most remote data jack. The exact number and location of CERs to serve a specific building shall be determined/ confirmed by ITS.

Outlets: Outlets shall be installed as indicated by the *Program Statement* and UIS representatives for a given project. The density of telephones and computer equipment used within UIS buildings is quite high. Also, the usage of spaces changes often. Therefore, a generous number/distribution of outlets shall be provided. An outlet consisting of two data jacks shall be provided in each room that may someday be occupied (e.g., storage rooms). Where applicable, the location of outlets shall be coordinated with the layout of modular furniture/ partitions with integral raceway. This has been a repeated problem area in the past. Outlets shall be provided for emergency and service telephones (refer to paragraphs individually addressing each of these items below). This requires coordination and is easily overlooked. Data jacks shall be provided for the building automation control unit(s) that serves each building. An Ethernet data jack and voice jack shall also be provided in each elevator machine room. Both of these are also often overlooked. Generally, outlets shall be flush mounted in walls. Flush-mounted floor outlets are not allowed. However, recessed floor boxes with hinged/removable covers that contain power and/or voice/data receptacles may be installed to serve equipment that is located remotely from the nearest wall.

Raceway: Cable raceway shall be provided as required to interconnect all system components within a building. All cables shall be installed in conduit or cable trays. The exact type and routing of raceway within a building shall be determined/confirmed by ITS.

Emergency Telephones: An emergency telephone shall be installed within each elevator cab and at each area of refuge within stairwells. One outdoor kiosk with an emergency telephone shall also be installed at each new or remodeled campus building. All emergency telephones shall be placed so as to be noticeable to pedestrians in the area and not hidden from view.

Outdoor System Requirements: Buried concrete-encased conduits shall be provided as protective raceway for outdoor cabling between nodes and/or buildings. A manhole/vault shall be provided at each junction point in the system. Conduit number/configuration/routing and manhole size/configuration/location shall be determined/ confirmed by ITS.

Brand Name Products: Long-term management to maintain the integrity of the campus distribution system through consistent standards requires the designation and use of certain brand name products (refer to *Section 27 00 00 – Communications*).

Additional Information / Requirements: Refer to *Technical Section 27 00 00 – Communications* for detailed information / requirements related to all of the above topics.

ELECTRONIC DOOR ACCESS CONTROL SYSTEM

Coordination of Design: AE shall coordinate design of the electronic door access control system with the UIS Public Safety Department once the floor plans with door locations have been developed for the project.

Exterior Door(s): Each new or remodeled building shall be equipped with an S2 electronic door access control and monitoring system on each of its exterior doors.

Interior Doors: Consideration shall be given to providing door access systems, not only at exterior doors, but also at selected interior doors, to provide increased security for specific limited-access areas such as computer labs, research labs, etc. Specific options and information shall be obtained from the UIS Public Safety Department.

Installation: The Contractor is responsible for installing electronic door access raceway, cable, panels, and the assurance of a complete, functional, and operational system.

Operating Force in Manual Mode: To ensure that the required exit doors will be able to be opened readily in the manual mode of operation, the closing mechanism of the electronic door access device shall be adjusted in accordance with requirements of the *NFPA 101 Life Safety Code*, the *International Building Code (IBC)* and the *Illinois Accessibility Code*.

For delayed egress door hardware, special signage shall also be provided on the egress side of such doors. The sign shall be readily visible and use lettering of at least one-inch height on a contrasting background to convey

the following message: “IN EMERGENCY, PUSH TO OPEN”.

Raceway: All electronic door access system wiring shall be installed in conduit or cable tray with future available fill capacity.

Provide a 6"x6"x4" (minimum) J-box above drop ceiling on secured side of door for card reader, door position, electric power transfer, request to exit, ADA pushbuttons, and other low voltage wiring to door area. Provide a 1" conduit from this same J-box to the nearest cable tray or S2 control panel location.

Provide a 1" conduit for Ethernet communication from each S2 panel location to the nearest cable tray or the UIS Technology Services Hub location.

All electronic door access system wiring shall be installed in a minimum 3/4" EMT conduit, except to an electric power transfer (EPT-10) at door frame). All conduits shall be continuous and be connected to a box or fitting (not stopped inside a wall or door frame). Card reader, remote I/O, or any other communication/data cable shall not be spliced between controller and device.

Cable: All input cables and card reader cables shall be grounded at the S2 control panel while taped and installed at the device.

Cables from inside and outside pushbuttons for a handicap door with electronic door access shall run to an S2 control panel input and not to the door operator.

Card Reader Location: All card readers shall be offset by a minimum of 12" if mounted on opposite sides of wall.

Commissioning: All systems shall be commissioned by the Owner. A minimum of 72 hours in advance notice is required.

MOBILITY AND ACCESSIBILITY

The University of Illinois Springfield campus currently provides an established multi-modal transportation network, including roadways, pedestrian and bicycle facilities, and access to transit. While transportation options are currently provided on campus, the network is fragmented which limits on- and off-campus mobility and accessibility. While the UIS 2020 Master Plan seeks to leverage the existing multi-modal network, opportunities have been identified to enhance pedestrian and bicycle connectivity; improve roadway conditions and create intuitive circulation patterns; and enhance access to transit. The improvements identified in the UIS 2020 Master Plan create a multi-modal network which emphasizes convenience, safety, and comfort. These improvements also positively contribute to broader campus objectives, including connectivity to the Springfield community; improving access to jobs, shopping, and recreation; and enhancing the quality of life and campus experience for students, faculty, and staff. An overview of key transportation improvements included in the Master Plan is outlined below.

ENHANCE MOBILITY OPTIONS

New connections and intersection improvements have been identified to create an integrated and continuous network of safe and efficient roadways, sidewalks, and trails. Further, these improvements seek to minimize conflicts and improve visibility and safety for pedestrians, bicyclists, and motorists. The future multi-modal network would allow students, faculty, and staff to make informed transportation choices based on personal needs and preferences.

OPTIMIZED PARKING SYSTEM

As the campus continues to evolve, opportunities to right-size parking infrastructure should continue to be explored. In order to support University activities, enhance sustainability, and minimize maintenance costs, the UIS 2020 Master Plan outlines key considerations for the campus parking network. The recommended improvements seek to create a parking network focused on convenience and efficiency.

AGENCY COLLABORATION AND PARTNERSHIPS

Transit-supportive improvements and continued partnership with the Sangamon Mass Transit District is recommended in order to enhance transit as a viable commute option for students, faculty, and staff.

Implementation of the transportation improvements should be coordinated with other campus modifications outlined in the UIS 2020 Master Plan in order to optimize resources and minimize disruption to University activities. Additionally, implementation will require continued coordination with the City of Springfield, Illinois Department of Transportation, Sangamon Mass Transit District, and other area stakeholders.

CIVIL SYSTEMS

NATURAL GAS SYSTEMS

Natural Gas Distribution System: The University of Illinois Springfield (UIS) owns and maintains the campus distribution system past the Ameren Illinois gas meter. Ameren Illinois supplies natural gas to the campus at approximately 100 psi. At the service meter the pressure is stepped down to approximately 10 psi.

Compliance: The design and construction of all natural gas distribution systems on campus shall comply with all applicable Federal, State and Local regulations. All natural gas work shall conform to Federal, State and Local building codes.

Distribution Piping: All distribution piping shall be designed to appropriately serve the new facility. Install valves in grassy areas and avoid installing in paved areas. Locate branch valves as close to the gas mains as possible.

Building Services: Gas service lines shall be installed according to Federal, State and Local building codes.

Documentation and Submittals: Plan submittals for new projects shall be provided to the University's A/E for review on an agreed upon schedule between the university and design consultant.

PAVEMENTS

General Requirements: Pavements used throughout the University of Illinois Springfield campus shall be non-reinforced and reinforced concrete which is dependent upon the application. Detectable warning panels at curb ramps shall be cast iron and installed in wet concrete. All sidewalks will contain synthetic fiber reinforcement. Sidewalks that are 6 ft in width shall contain welded wire mesh reinforcing. Those wider than 6 ft in width shall contain steel rebar reinforcing and designed for medium weight vehicle loading. Parking and roadway pavements shall be designed for H-20 class loading.

Pavement Typical Sections: General requirements are stated above. For each project, the design of pavement typical sections shall be designed under recommendations from the project geotechnical report.

Construction: Shall comply with the latest edition of the *Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction*, including all addenda

Documentation and Submittals: Plan submittals for new projects shall be provided to the University's A/E for review on an agreed upon schedule between the university and design consultant.

SANITARY SEWER SYSTEMS

Campus Sanitary Sewer Systems: The University of Illinois Springfield (UIS) campus sanitary sewer system is owned and maintained by the University. The gravity sewers discharge into major interceptor sewers and sewage processing facilities that are owned by the Sangamon County Water Reclamation District (SCWARD).

Compliance: The design and construction of sanitary sewer systems on the UIS campus shall be in compliance with the latest editions of the *Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction*, including all addenda and the *Standard Specifications for Water and Sewer Main Construction in Illinois*. In addition to these standards, the sanitary sewer system design shall follow regulations and guidelines established by the *Sangamon County Water Reclamation District (SCWRD)*. The strictest requirements of these three standards shall govern the design, unless approval from the agencies or UIS Facilities Management obtained.

Minimize Clear Water: The design of sanitary systems for expansion of the existing sewer system or to provide service to new campus facilities will prevent the infiltration of stormwater. Stormwater collection is to be directed to new or existing stormwater collection system.

Future Considerations: All sanitary sewer systems shall be designed to accommodate the sanitary requirements of the new facility.

Manholes: Structures shall be in compliance with the latest edition of the *Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction*, including all addenda. Manhole spacing shall be a maximum of 400 ft and at any locations where the sanitary sewer alignment changes direction.

Specific Design Information: Design of extensions or modifications to the existing campus sanitary sewer systems shall comply with the latest edition of the *Standard Specifications for Water and Sewer Main Construction in Illinois* and regulations and guidelines

established by the *Sangamon County Water Reclamation District (SCWRD)*.

Documentation and Submittals: Plan submittals for new projects shall be provided to the University's A/E for review on an agreed upon schedule between the university and design consultant.

STORMWATER DRAINAGE SYSTEMS

Watersheds: The surface water around University of Illinois Springfield (UIS) campus drains to Lake Springfield via a collection of swales, culverts, and stormwater drainage structures. The northern half of campus drains toward University Drive and follows the road around the perimeter of campus to the northeast where the surface water flows into a creek that leads to the lake. The southern half of campus is directed to and around University Drive where the water drains to the southeast into a creek. The western portion of campus drains into a storm sewer system that eventually discharges into the Lake Springfield.

Campus Drainage Systems: The University of Illinois Springfield campus stormwater conveyance system is owned and maintained by the university. The stormwater systems on campus discharge into Lake Springfield. Any modifications to the existing stormwater conveyance system or expansions of the system to accommodate new facilities on campus should be designed to reduce the amount of stormwater entering the system. This shall be accomplished by utilizing Best Management Practices and Sustainable and Low Impact Design (LID).

Compliance: The design and construction of stormwater systems on the UIS campus shall be in compliance with the latest editions of the *Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction*, including all addenda and the *Standard Specifications for Water and Sewer Main Construction in Illinois*. In addition to these standards, the stormwater system design shall follow regulations and guidelines established by the *Sangamon County Water Reclamation District (SCWRD)*. The strictest requirements of these three standards shall govern the design, unless approval from the agencies or UIS Facilities Management obtained.

Stormwater Management Policy: The UIS Stormwater Management Policy is to reduce the amount of stormwater entering the existing storm sewer system and improving stormwater water quality to help maintain the water quality in Lake Springfield. The use of Sustainable and Low Impact Design of stormwater drainage systems shall be driven by these principles. Use of bioretention basins, vegetative swales and stormwater gardens may be incorporated in the design, but the use of underground stormwater detention is not allowed. The use of green roofs and interlocking permeable paver systems are also encouraged in the design of new facilities.

Scope of Policy: The UIS Stormwater Management Policy applies to any new construction including but not limited to new buildings, renovations of existing buildings, additions to existing buildings, construction of new parking lots, and renovation of existing parking lots that results in an impact on the downstream existing system.

Calculations: Stormwater calculations shall be in compliance with the guidelines established by the Sangamon County Water Reclamation District (SCWRD).

Future Considerations: All stormwater drainage systems shall be designed to accommodate the drainage requirement of the future project site and new facility.

Manhole and Storm Inlet Structures: Structures shall be in compliance with the latest edition of the *Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction*, including all addenda. Manhole spacing shall be a maximum of 400 ft and at any locations where the storm sewer alignment changes direction.

Surface Drainage: Stormwater drainage design around the perimeter of buildings and entrances shall provide positive drainage away from these structures. The surface drainage will not allow stormwater runoff to pond, especially in parking lots, sidewalks, other paved and unpaved areas, unless sustainable measures and low impact design concepts are being utilized.

Documentation and Submittals: Plan submittals for new projects shall be provided to the University's A/E for review on an agreed upon schedule between the university and design consultant.

WATER DISTRIBUTION SYSTEMS

Water Distribution System: The University of Illinois Springfield owns and maintains the water distribution system that serves the campus. This system provides treated potable water for domestic water systems, fire protection systems. Water service to the campus water distribution system is supplied by City, Water, Light and Power (CWLP) in Springfield, IL. Several water mains serve the campus and surround the campus.

Water Quality: The water supplied by CWLP is routinely tested to maintain water quality.

Compliance: The design and construction of water distribution systems on campus shall comply with the regulations established by the Illinois Environmental Protection Agency and the latest edition of the *Standard Specifications for Water and Sewer Main Construction in Illinois.*

Configuration: The water distribution system is configured as a looped or grid-type system. This configuration shall be maintained. Three isolation valves shall be provided at each branch connection to maximize system reliability and operational flexibility. Branch valves shall be located as near the associated mains as practical. Water main extensions or additions that result in dead end mains are not permitted.

Pipe and Valves: Water line distribution pipe shall be seamless copper tubing for lines 3-inches or less in diameter. For domestic and fire protection lines 4 to 16 inches in diameter ductile iron pipe, pressure class 350 (4-12 inches in diameter) and pressure class 250 (14-16 inches in diameter). The use of butterfly valves is not allowed.

Location: Avoid locating water piping within the drip lines of trees or close to the tree trunk. The integrity of water utilities will be given priority over landscaping and plantings. Locating valves in grass areas or parkway is preferred and only as necessary shall they be installed beneath streets, sidewalks or other paved areas.

Locating Buried Water Pipe: Piping which has been installed shall have magnetic detectable conductor trace wire buried above the pipe and a minimum of 6 inches below finish grade.

Hydrants: Fire Hydrants shall be installed at locations required by UIS Facilities department and the Local Fire Code Official.

Building Service: Domestic water and Fire Protection service lines to buildings shall have separate redundant lines to buildings or connected to a watermain loop that can be tapped to maintain continuous service to the buildings.

Metering / Backflow Prevention: Meters, Backflow preventors and detector check valves shall be installed as required by UIS Facilities and state and local jurisdictions.

Permitting: Domestic water main installations require an approved IEPA permit prior to construction. The A/E shall obtain and submit a completed permit to the Owner for review and processing. Necessary schedules, drawings, and specifications shall accompany the permit. Documents shall include the average and peak flow rates used to size the domestic water piping.

Hydrant Flow Test: Hydrant flow tests will be performed as necessary and approved by UIS Facilities.

Specific Design Information: Design information including placement and sizing of system extensions as well as location of hydrants and valves shall be approved by UIS Facilities and state and local agencies.

STORMWATER

The surface water around campus drains to Lake Springfield via a collection of swales, culverts, and stormwater drainage structures. The southern half of campus drains to the south and east and is captured in drainage swale the traverses through Lincoln Land Community College to the southeast and eventually discharges into Lake Springfield. The northern half of campus drains to the north and east into a drainage swale which discharges into Lake Springfield beyond West Lake Drive.

Overall, the native soils on campus are a nutrient rich loam and high in organic matter which helps provide good conditions for plant growth. However, in areas where construction and site grading have occurred highly compacted soils are present which does not allow for good ground water infiltration. In turn, the result of the compacted soil promotes a large amount of surface runoff when compared to areas where undisturbed soil is present. The parking lots and the newer portions of campus have stormwater collection systems that

perform well. A significant system of swales and culverts control the flow of water around and through the road network. The backbone structure of the road network drainage system is in decent condition and functions well enough that traffic is not impeded during rainfall events. The existing swale on the downstream side of the pond overflow structure adjacent to University Drive should be regraded to minimize standing water.

The old vitrified clay drainage tiles around campus are decaying which results in areas of ponding during and after rain events. The various playing fields on campus have old vitrified clay drainage tiles which have collapsed resulting in stormwater ponding on the fields during rainfall events. Through the implementation of stormwater Best Management Practices (BMP) the campus can improve the water quality and promote stormwater infiltration to reduce water ponding in problematic areas of campus. Construction of future facilities to control stormwater runoff should rely on the use of BMP's rather than expanding on the existing underground stormwater collection system on campus.

One BMP that can be utilized to provide reduction in the amount of stormwater runoff and water quality employs the use of a permeable paver system installed in strategic areas of existing and future parking lots. The pavers are manufactured in a variety of strengths to accommodate light or heavy duty uses. The systems promote infiltration through the subgrade drainage rock. In addition, the systems provide a stormwater detention area that helps slow the release rate of stormwater into the campus collection system.

Another BMP that lends itself to this campus are stormwater gardens and vegetative swales. These can be installed in medians of parking lots, around the future buildings to collect roof and site stormwater runoff or stormwater runoff from parking lots. The plantings in the stormwater gardens and vegetative swales improve stormwater quality and reduce the amount of runoff into Lake Springfield.

UTILITIES

The utilities serving the University of Illinois Springfield Campus are comprised of CWLP (City Water, Light and Power) a department of the city of Springfield, Ameren Illinois and the Sangamon County Water Reclamation District (SCWRD). These utilities are continually updating their infrastructure to provide improved service for the campus as it continues to grow in the future.

Electrical Distribution

The campus is served by two electric feeders which enter campus from the northwest. The Porter Substation, owned by CWLP, is a 138kV substation that feeds the campus from the northwest located on Vachel Lindsay Drive west of campus. One of the critical underground feeds coming from the Porter Substation loops around 11th Street to University Drive and heads north on Shepherd Road/Richard Wright Drive where it crosses the campus on the east side of the LLSSC, HSB and Brookens where it enters the building from the north. Another feed from the Porter Substation runs on the south side of Vachel Lindsay Drive and heads east where it loops around the Foxglove Court, Penny Royal Court, Marigold Court and Trillium Court residences. A third feed from the substation heads east on Vachel Lindsay Drive and turns south on 11th Street where it connects to an east-west overhead electrical line south of the Baseball/Softball Complex on University Drive.

Future building/facilities constructed along University Dr. or S. 11th St. can utilize the CWLP facilities.

Gas Distribution

The campus gas service is provided by Ameren Illinois and is a high-pressure main providing 100 psi. This is more than enough for the current and future needs of campus. Ameren Illinois has made infrastructure improvements to the mains serving the campus by switching from ductile iron to plastic pipe. Presently, the gas main connection at the campus meter reduces the gas service from high pressure to low-pressure which is around 10 psi. This hinders the university's ability to provide natural gas emergency backup generators at present and future facilities on the campus. A new high-pressure gas main should be installed from the Ameren gas main in Vachel Lindsay Dr. and Eliza Farnham Dr. where a new meter will be placed and the high-pressure gas main can be run along the east side of Eliza Farnham Dr. to University Dr. This allows for service connections to future student housing and the future Athletics Field House on University Dr. Service lines for future Natural Gas Generators at existing buildings on campus can also utilize this high-pressure gas line.

The existing low-pressure campus gas network lacks gas main shut-off valves for each campus building which results in multiple buildings being shut down when gas work is performed. On all future buildings and existing buildings shut-off valves should be added to correct this problem.

Water Distribution
The campus is served by City Water, Light and Power. Presently, the CWLP is reviewing pipe age for the University of Illinois Springfield campus. The university is served by two water mains which enter the campus from the northwest. Overall, the infrastructure of water supply is able to serve the needs of the campus now and in the future. The existing CWLP water main in Eliza Farnham and University Drive can be utilized for expansion of water service to future buildings constructed along University Dr.

Sanitary
The sanitary sewer collection system is connected to the existing off-campus sewer system operated by the Sangamon County Water Reclamation District (SCWRD). The sanitary sewer main which serves the campus along Vachel Lindsay Dr. runs east-west through the campus. A new 12-inch sanitary sewer line is to be constructed as part of the construction of the Public Safety Building which will located at the northwest corner of the intersection of Eliza Farnham Dr. and University Dr. This provides the sanitary service to the future residence halls adjacent to the Public Safety Building and the future Athletics Field House at the southeast corner of University Dr. and 11th St. It should be noted that any future campus buildings will need avoid constructing over the new 12-inch sanitary sewer.

The university has reported backups at the Public Affairs Center on the first floor which goes to pumping stations before tying into the 24-inch sanitary sewer. There have been float rod guides rusting out which in turn causes the float rods to stick on the pumps at Tower 2 and 3. The sewage pumps in the building are original, but some have been rebuilt. Replacement of these pumps is recommended. Several discharge lines in the main concourse have also been replaced with PVC pipe which has helped in preventing backups. All other floors are gravity fed to the sanitary sewer.

Utility Corridors
The campus presently has existing utility corridors established in Vachel Lindsay Drive, Eliza Farnham Drive, Richard Wright Drive and Shepherd Road. The utilities are mainly distributed on each side of these roads. Richard Wright Drive is at capacity for the number of existing utilities in that particular corridor which limits any additions in this section. Expansion in Vachel Lindsay Drive, Eliza Farnham Drive and Shepherd Road have room to allow for expansion of future utilities. A new corridor was established for a 12-inch sanitary main which runs north-south through the quad area between Foxglove, Pennyroyal Court, Trillium Court and Marigold Court. This is an ideal secondary utility corridor to allow expansion of other utilities to the south for University Drive future buildings.

Solar Power
When considering constructing a solar farm the basic equipment required includes solar panels, charge controller-regulate power coming from the solar panels, power inverter-converts DC to AC power, either a battery or connection to power poles to connect to the local power grid. Connection to the power grid will allow the university to be billed for the power they use versus the power produced. A battery system is helpful if there is a power grid failure or outage. In addition, a water source for periodic cleaning of the solar panels. Springfield CWLP has developed a set of guidelines for the design and construction of solar farms.

The location for the solar array would be in the northwest area of the campus which would provide enough space to construct a 2.5 acre array which would produce 1,000 kilowatts per day or 24,000 kilowatt hours. This would energy would be put back on the electrical grid and provide the university with a reduction on their electrical usage.

Overall, the Springfield CWLP does not provide any grant programs for funding of institutional solar projects. There is another option that could be pursued with CWLP and that is working out a financial arrangement to allow CWLP to construct a solar array on the university's property.