IUPUI | CAMPUS MASTER PLAN

FEBRUARY 2012

SMITHGROUP JJR

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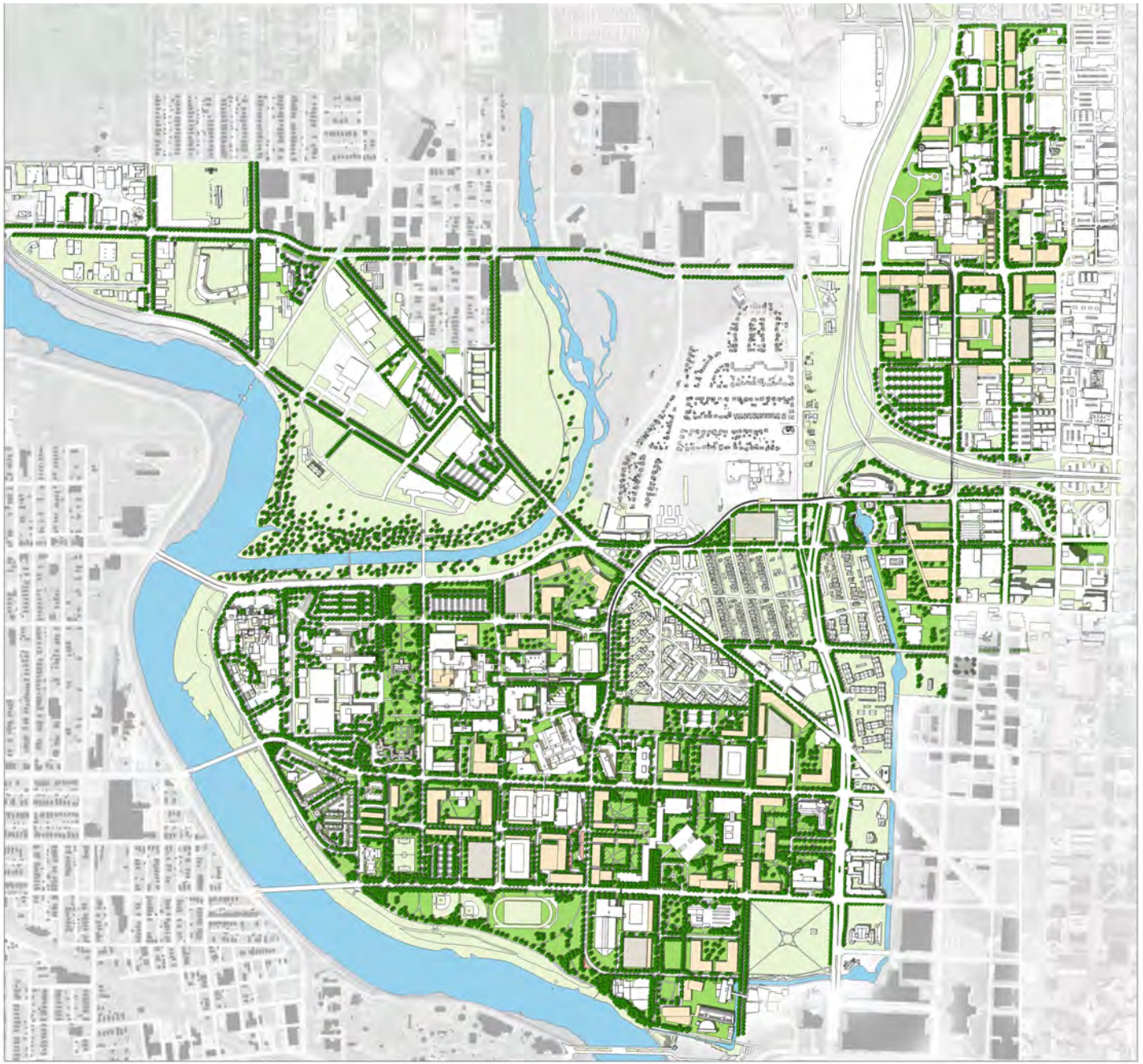


IUPUI Campus and IU-IU Health Academic Medical Center Campus Integrated Master Plan

FOREWORD

This Campus Master Plan is the culmination of an intensive planning effort that began in early 2008. Its purpose is to shape a vision for the future of the Indiana University-Purdue University Indianapolis (IUPUI) campus, one that creates an intellectually rich, collaborative, and innovative environment in support of the University's mission of education, research, and civic engagement.

The original focus of the IUPUI Campus Master Plan was centered on the IUPUI peninsula and Indiana University-owned land in downtown Indianapolis. However, in the spring of 2009, the master planning scope for IUPUI expanded in response to two new challenges: 1) the opportunity to conduct the first integrated strategic program and master plan for IUPUI and its healthcare partner Indiana University Health Hospitals (IU Health); and 2) the opportunity to consider campus expansion on the existing Wishard Memorial Hospital property, just north of the IUPUI campus.

An Integrated Approach to the Academic Medical Center Campus

During the course of master planning for IUPUI, it became clear that a more comprehensive and integrated planning approach involving IUPUI, the Health Professional Schools of IU, and IU Health Hospitals was necessary to better understand emerging medical education, healthcare and research program synergies, and to coordinate complex land planning and facility development decisions for all institutions.

IUPUI is the state's primary health sciences education campus. Together IU and IU Health provide Health Sciences Education, Research and Clinical Care through five Health Professional Schools and Riley Hospital for Children, Indiana University Hospital, and Methodist Hospital. Up until 2009, programming, planning, and land use decisions were made internally and separately by IU and IU Health, although both entities shared faculty and often facilities in adjacent locations in four districts in downtown Indianapolis, including the IUPUI campus on the peninsula.

In an era of increasing resource constraints, both IU and IU Health senior administrators saw the benefits of expanding the IUPUI campus master planning effort, and agreed to jointly conduct a long range facilities master plan and program. This would allow better integration of future healthcare, health sciences education, and research needs across the four districts into a single academic medical center campus master plan. IU and IU Health initiated this joint planning effort in the summer of 2009, and completed its integrated planning in spring of 2011.

The result of this 21-month long planning effort is the **Indiana University – IU Health Integrated Plan for the Academic Medical Center Campus**. The focus of its report is the programming, planning and integration for the health professional schools of Medicine, Nursing, Dentistry, and Health &

Rehabilitation Sciences, and the Department of Public Health; their research and clinical needs; and the affiliated health care needs of Indiana University Health Hospitals, its clinics and system offices for Riley Hospital for Children, Indiana University Hospital, and Methodist Hospital.

A Master Plan in Two Volumes

The five Health Professional Schools of the Integrated Academic Medical Center Campus are a subset of the academic programs and schools that comprise IUPUI. However, the boundaries of the study area expanded beyond the IUPUI campus and IU land holdings to include property owned by IU Health. Therefore, while there is overlap between the land area and programs for IUPUI and the IU / IU Health Master Plans, the two master plans have been documented as two separate volumes in this overall master plan report. **Volume One: IUPUI Campus Master Plan** is concerned with master plan recommendations for IUPUI and land solely owned by Indiana University. **Volume Two: Integrated Plan for the Academic Medical Center Campus** documents the programming and master plan recommendations for both IU Health Professional Schools and IU Health Hospitals and their collective land holdings.

A New Opportunity: Wishard Memorial Hospital Property

After the February 2009 approval of the IUPUI Campus Master Plan by the Indiana University Board of Trustees, Wishard Memorial Hospital received approval from voters in November 2009 to issue bonds to construct a new county hospital. As part of this approval, IU is engaged in a land swap with Wishard Memorial Hospital, to exchange vacant land currently owned by Indiana University west of the IUPUI campus for the current Wishard Memorial Hospital site north of the IUPUI campus. This has allowed Wishard Memorial Hospital to begin construction on a new 1.2 million square foot hospital complex on land formerly occupied by the vacant Larue D. Carter Memorial Hospital facility and State Board of Health building. Completion of the new hospital's primary

Axonometric view of Integrated Master Plan

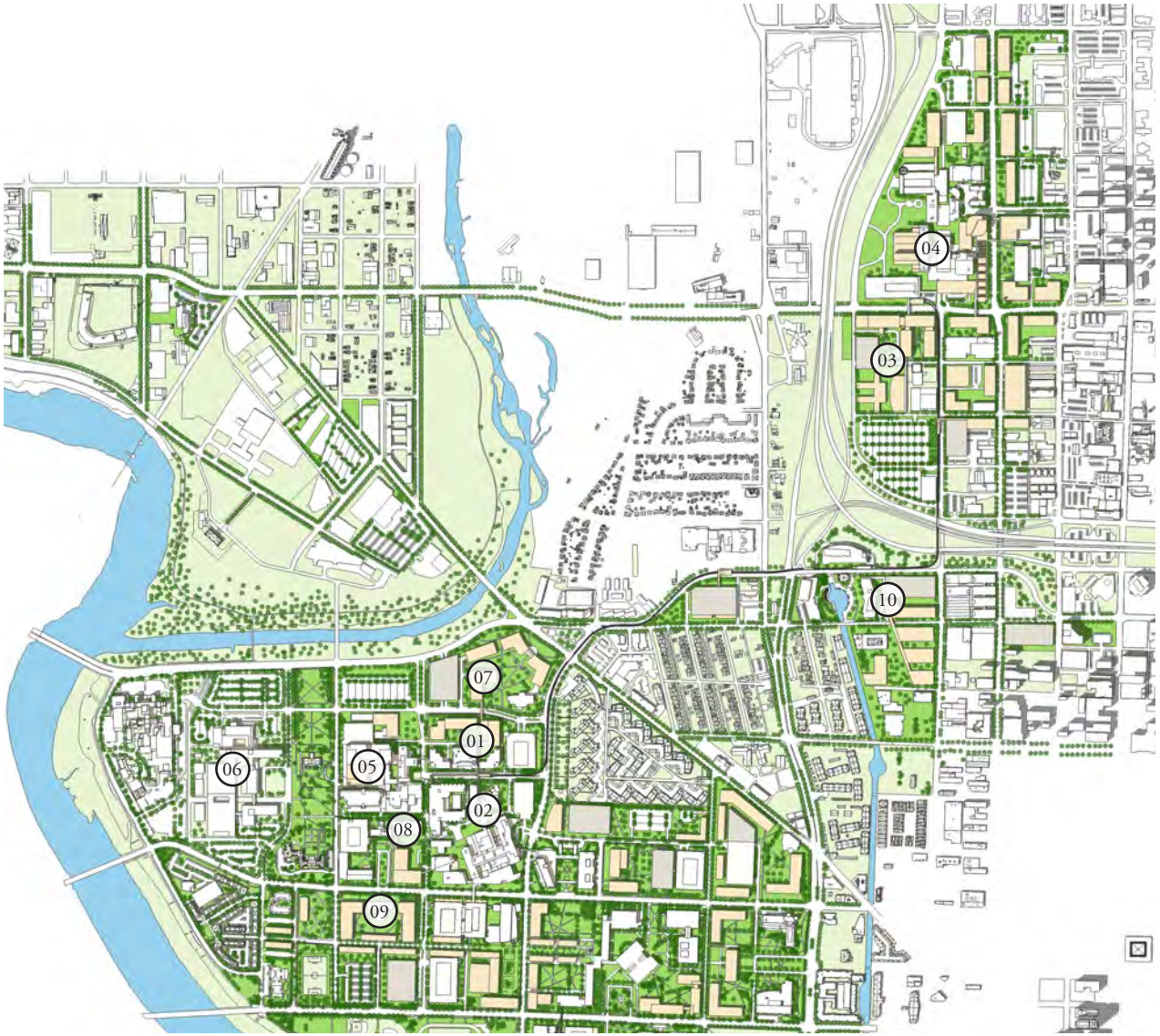
facilities is expected in late 2013. IU will formally take over the existing land and facilities of the current Wishard Memorial Hospital site, on West 10th Street and University Boulevard.

This has opened up significant new possibilities for growth and campus expansion not accommodated in the approved 2009 master plan for IUPUI. This final Campus Master Plan report for IUPUI has been updated and revised to take into account the future redevelopment, renovation, parking, transportation and infrastructure needs that the Wishard opportunity provides.

Redevelopment of the Wishard site is reflected in **Volume One: IUPUI Campus Master Plan**. Detailed recommendations for the Wishard site including evaluation of its existing structures is described in **Volume Two: Integrated Plan for the Academic Medical Center Campus** at the end of this document. This revised Campus Master Plan was approved by the IU Board of Trustees in February 2011.

1| MASTER PLAN SUMMARY

VOLUME 1: IUPUI CAMPUS MASTER PLAN



LEGEND

01 Integrated Health Sciences Education Center

02 Indiana University Hospital Simon Cancer NCI

03 Neurosciences Complex

04 Methodist Hospital

05 Riley Children's Hospital

06 New Wishard Hospital

07 Existing Wishard Hospital Site

08 Existing School of Nursing

09 School of Dentistry

10 Canal District

Existing Buildings
Proposed Buildings
Future Expansion
Parking

Overall Academic Medical Center Campus Master Plan

LEGEND

01 New Gateway Health Sciences Research Complex

02 Integrated Health Sciences Education

03 "Walk of Life"

04 Cancer Research

05 New Wishard Memorial Hospital

06 Ball Gardens

07 Ball Gardens and Riley Drive Extension

08 Vermont Street Housing

09 Central Campus Piazza

10 Riverfront Park

11 Academic Infill and Quads

12 Admin / Academic Gateway

13 Blackford Street / Cultural Trail

14 Indiana Avenue Mixed Use

15 Engineering Sciences Quad

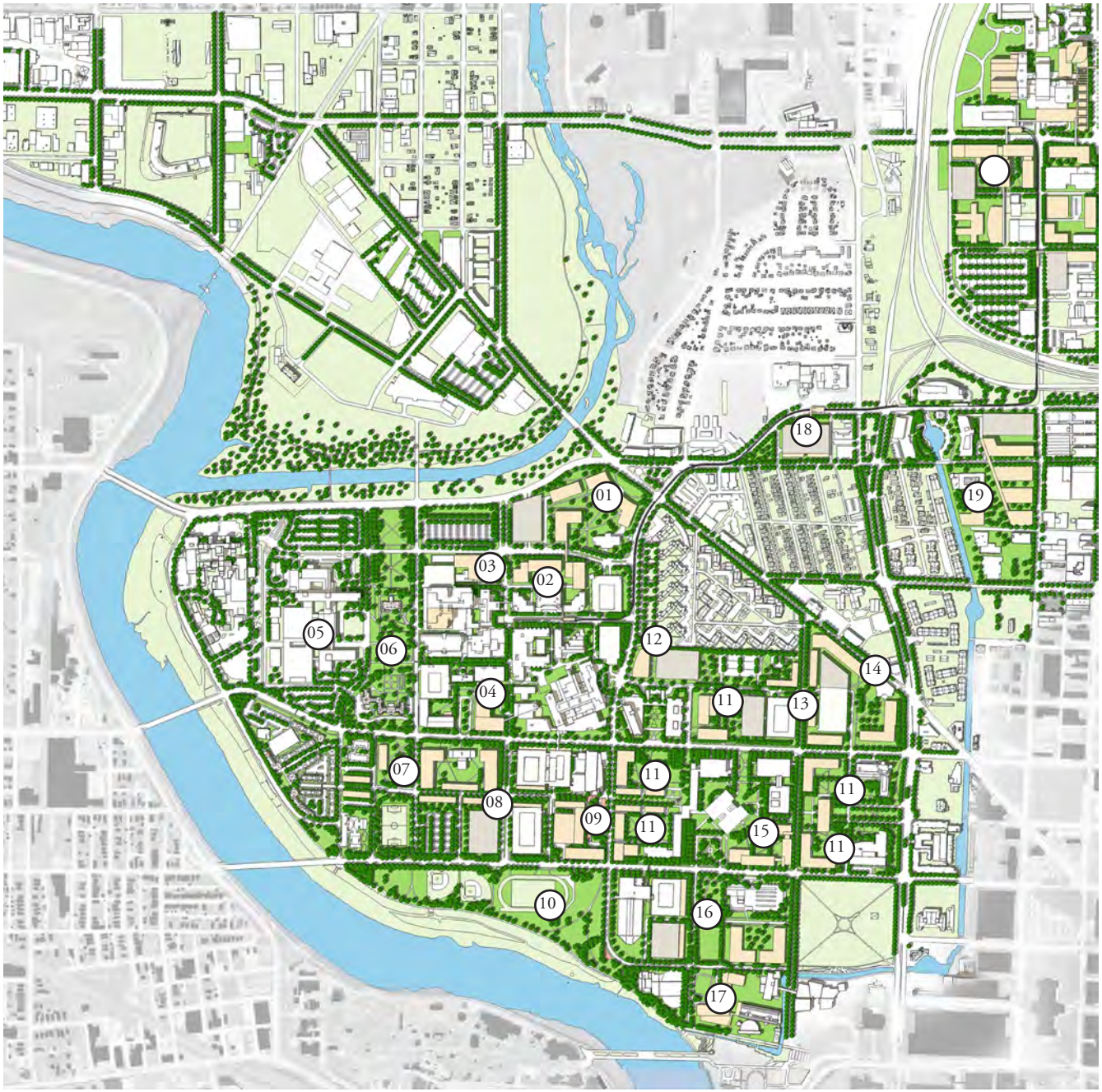
16 Blake Promenade

17 NCAA Expansion

18 Mixed Use Garage

19 Research Icubator Partnerships

20 Neurosciences Research



Indiana University-Purdue University Indianapolis Campus Master Plan

Indiana University-Purdue University Indianapolis Campus Master Plan View from West

MASTER PLAN SUMMARY

Indiana University Purdue University at Indianapolis (IUPUI) is the state of Indiana's premier health sciences and urban research university. Renowned for its educational programs, intellectual endeavors, and innovative research, IUPUI has nationally ranked programs in nursing, public and environmental affairs, law, and health sciences. The IU School of Medicine is the state's only medical school and the second largest medical school in the country by enrollment. The IU School of Nursing is ranked 8th nationally in research, and represents the largest nursing student body in the country. Through its affiliation with Indiana University Health hospital system, the Indiana University / IU Health Academic Medical Center campus is one of the 20 largest academic medical centers in the country. IUPUI has also earned national recognition for civic engagement, outreach, and innovative service learning programs, and is consistently ranked in the top ten of U.S. News and World Report for First-Year Experience, Service Learning, and Learning Communities.

Established in 1969, IUPUI has grown rapidly in its 50 year history. However, the development of the IUPUI campus extends further back in history to the early 1900's, with the establishment of the first medical school in Indianapolis, under the direction of Indiana University. The present IUPUI campus began in 1914 with the development of the medical campus on the western side of the peninsula created by the confluence of Fall Creek and the White River, in downtown Indianapolis. Almost one hundred years of construction for medical and health sciences education buildings, hospital and clinical buildings, nursing residences, and research facilities has created a dense academic medical district. Land acquisition and development in the second half of the twentieth century shifted expansion of the campus to the east and south, creating a lower density campus of superblocks with a modern architectural aesthetic.

Recognizing IUPUI's important role in the continued health, education, and economic growth of Indianapolis and the state, Indiana University has prepared a new vision for its urban research campus. This comprehensive Campus Master Plan has been commissioned to support IUPUI's mission and establish a framework for decision making and strategic development over the next 20 years. Led by Indiana University President Michael A. McRobbie, the plan is charged with creating a vision for the future the supports the academic, research, healthcare and service objectives of the University and encourages the exploration and sharing of knowledge through collaboration, innovation, application, and engagement. The plan provides new opportunities for better functional integration of its diverse missions, while continuing to grow and evolve as a dynamic, urban, intellectual environment. Campus infrastructure needs, environmental sustainability, and economic development are integral to the framework not only to support the University, but also to enhance and enliven neighboring communities and the downtown.

The Campus Master Plan represents a broad cross section of campus constituencies and

endorses a holistic and integrated approach to complex interrelated campus initiatives. The plan must also reflect and accommodate the needs of all campus users, including faculty, staff, students, researchers, clinical healthcare employees, patients and visitors. Development strategies must enhance the quality of life and campus experience for the total campus population, encouraging greater collaboration, interaction, and partnerships. This Campus Master Plan will be used to "fire the imagination" of potential donors and is an essential part of conveying an inspiring longterm vision for the future of IUPUI, Indianapolis, the state of Indiana, and the nation.

THE VISION - KEY THEMES

Create a Dense Urban Environment

The most effective urban environment is dense, flexible, convenient, and multi-faceted. As a major metropolitan university, IUPUI must capitalize on the value of urban land, particularly on the peninsula between Fall Creek and the White River. Increased density and the vertical integration of multiple uses will allow IUPUI to meet its needs for future growth, while leaving peripheral land reserves for growth beyond the planning horizon.

Unite the Campus

The increased need for collaboration and interdisciplinary learning, research, and healthcare delivery models will require a more integrated approach to development. The historical perception of a separate health sciences campus from the academic core of IUPUI must be replaced by a vision of one united campus. This can be achieved through the physical re-organization of campus to connect districts, simplify circulation, and create multi-user facilities and shared learning environments in support of new interdisciplinary programs.

Engage the City

IUPUI's mission of civic engagement and commitment to the educational, cultural, and economic growth of the region is also expressed in the way the campus physically engages with the city and its neighbors. Opening up views and linkages to adjacent cultural and neighborhood assets with new strategically located mixed use development at campus edges will strengthen the university's visibility and capacity for engagement.

Redefine the Public Realm

A strong, clear hierarchy of open space, a connected network of walks and public spaces, and the right-sizing of campus spaces are necessary ingredients to help orient campus users and break down the scale of superblock development on campus. The re-organization of campus open space will create a new spatial structure that better connects campus districts to one another and to existing parks, trails, and the White River. Future development should relate to new campus quadrangles, providing a greater sense of spatial definition.

Animate the Campus

The addition of student housing and dining on campus, new social gathering spaces visible from campus streets, and a new outdoor commons at the Campus Center will build urban energy and create a more animated, intellectually engaging

campus. A more human-scaled pedestrian environment modeled after successful urban streets, plazas and squares will increase the vitality, comfort, and livability of campus.

PROCESS

The planning process undertaken for the IUPUI Campus Master Plan was inclusive and comprehensive. Initially spanning a 12-month period, the planning process was extended to engage IU Health in an integrated plan and programming for the academic medical campus. The combined planning effort involved extensive input from IUPUI faculty, staff, students, and administrators; IU Health senior administration and staff; City of Indianapolis leaders and staff; and neighborhood and local community groups. The planning team was led by an Executive Committee chaired by Indiana University President Michael A. McRobbie and was supported by a Master Plan Working Group and Master Plan Steering Committee. The Working Group and Steering Committee were comprised of key University stakeholders representing academics, research, student life, facilities, and campus infrastructure. Methods of discovery and communication throughout the process included regular Working Group and Steering Committee meetings, topical workshops, focus group sessions, technical meetings, personal interviews, and public open house presentations. Considerable effort was made throughout the process to maximize collaboration and inclusiveness, ensuring that the Campus Master Plan represents a balanced vision of a broad constituency.

ANALYSIS

The planning team devoted considerable time to analysis and inventory activities at the beginning of the planning process. This period of discovery involved detailed assessments of all campus systems, infrastructure, natural resources, and social structure. The campus environment was evaluated for land use distribution, space utilization, building condition, and campus density. Campus systems were assessed for their current condition, relevance, longevity, and efficiency. Detailed studies of campus circulation patterns including vehicular and pedestrian traffic patterns and parking infrastructure were conducted. Observations were made on overall campus character, the scale and use of campus open spaces, and the character of campus edges and arrivals.

"Education is transformational. IUPUI transforms lives through learning."

— Chancellor Charles Bantz,
IUPUI
November 2008

CONCLUSIONS AND RECOMMENDATIONS

Integration of Education, Healthcare and Research

Continuing changes in medical education, research, and healthcare delivery requires even greater integration and physical collocation of facilities for the Academic Medical Center campus. Present research and healthcare facilities lack the capacity to accommodate future growth and projected space needs.

Recommendation: Continue coordinated planning and sharing of resources between IUPUI and IU Health across all Academic Medical Center campus districts and properties, for the optimum strategic alignment and functional adjacency between future research, health sciences education, and healthcare facilities.

Recommendation: through strategic phasing of new construction, demolition, and redevelopment of sites, create new facilities and renovate existing structures to provide adequate space for future growth of the Academic Medical Center campus, in proximity to existing hospitals and research facilities.

Districts

The separate evolution of the health sciences district and the non-health sciences academic campus has led to a perception of a fragmented campus. Land use districts that comprise the IUPUI campus tend to be self-contained, limiting opportunity for academic interaction, collaboration, and a greater sense of community.

Recommendation: tie campus districts together into a larger framework of contiguous facilities, multi-use zones, open space, gateways, and urban amenities, connected by an improved circulation and transportation system.

Student Housing

Increased enrollment of full-time students at IUPUI has resulted in the need for additional on-campus housing, dining, and student life facilities.

Recommendation: Provide increased campus housing in a new student life corridor on Vermont Street as a more integrated model, to include dining facilities, academic support services, classrooms, student health and recreation space.

Campus Character

The core academic campus lacks density, scale, and an architectural coherence that diminishes the pedestrian experience and reduces the overall quality of the campus environment.

Recommendation: Increase density within the core campus through strategic infill projects in a manner that will establish a sense of place and promote architectural unity.

Wood Memorial Plaza and Fountain

Indiana University-Purdue University Indianapolis Campus Master Plan Perspective View from Southeast

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Open Space

IUPUI is situated in a unique urban ecosystem, at the confluence of the White River and Fall Creek, but historically has not fully embraced its close relationship to this natural environment. Many campus spaces are memorable, but there is no sense of coherence across campus.

Recommendation: Unite the campus with its environment by creating a continuous green network of open space that connects to natural systems, greenways, and the City's parks and open space. Extend Ball Gardens river to river as a unifying amenity connecting campus districts.

Public Realm

IUPUI's existing public realm reflects its history of superblock development and the removal of the street grid. The campus lacks a level of organization at the human scale that responds to primary pedestrian circulation corridors.

Recommendation: Humanize the campus by establishing new memorable spaces, attractive urban streetscapes, and green linear corridors in conjunction with new development that reflects an understanding of the human scale.

Campus Circulation

Smooth vehicular and pedestrian movement within the core campus is compromised by a one-way traffic model and limited use of alternative modes of transportation.

Recommendation: Re-establish a two-way, urban street grid combined with new north-south roads to improve campus connectivity, simplify access and wayfinding, and reduce congestion at key intersections.

Recommendation: Simplify on-campus shuttle routes and better connect shuttles to the People Mover and IndyGo to increase the use of transit.

Recommendation: Improve the reliability, capacity, and comfort of the People Mover system to increase ridership and connectivity to the other academic medical districts of IUPUI and IU Health. Develop two new People Mover stops linked to intermediate parking garages off-campus.

Recommendation: Promote the use of sustainable modes of transportation, with a specific focus on bicycle traffic, through development of a comprehensive network of bike routes connected to city routes, regional trails and the Cultural Trail.

Parking

Parking is currently at capacity with few parking facilities located close to campus entries and arrival points, resulting in increased traffic congestion and pedestrian conflicts on campus.

Recommendation: Selectively redistribute and increase parking capacity near high demand zones at the campus perimeter and adjacent to projected development areas. Parking for healthcare facilities must remain close and convenient for patients and visitors.

Recommendation: Develop an integrated parking and transportation strategy to share existing and future off-campus parking resources with IU Health, connected by an enhanced people mover and campus bus circulator system for optimal access from parking to campus destinations.

Stormwater Management

Like many older urban areas across the country, much of the campus is currently served by a combined stormwater and sanitary sewer system, which discharges into the White River. In addition, much of the existing piping is undersized for future development, or deteriorating with age.

Recommendation: Install separate sewer lines for all new campus development, and implement water quality treatment facilities for all districts on campus.

Recommendation: Disconnect and separate storm water from the combined system for existing buildings, roads and parking as much as possible.

Utility Infrastructure

Chilled water production capacity is limited and will not support projected campus growth. Steam service will need to be extended to serve the development of sections of the campus. New equipment, duct bank, and cable will be needed for electrical and telecommunications to support future growth in certain areas of campus.

Recommendation: Expand central chilled water production facilities as needed to support future campus development.

Recommendation: Invest in steam, chilled water, power, and telecommunications system extensions and distribution networks as needed to support future campus development.

SUSTAINABILITY

Environmental sustainability will play a crucial role in the development and improvement of the Indiana University-Purdue University Indianapolis campus. The Campus Master Plan defines a broad holistic approach that unifies fundamental planning recommendations with meaningful qualitative and quantitative green strategies. Sustainable planning principles, carbon reduction strategies, alternative modes of transportation considerations, and innovative building initiatives all come together to inform the development vision for the campus and ensure that growth is forward thinking and environmentally sustainable. As part of this initiative, the university has committed that all new structures will be constructed to achieve a LEED® Silver certification as defined by the United States Green Building Council.

Campus development should prioritize sensible land use practices that encourage physical and functional consolidation and facilitate pedestrian mobility, access, and convenience. Campus functions should be concentrated in defined walkable areas, encouraging multi-use neighborhoods that minimize reliance on automobiles and promote alternative modes of transportation. Transportation and circulation infrastructure should be fully integrated with local and regional transit systems and provide efficient access to campus parking facilities. Parking infrastructure for non-healthcare patients and visitors should be refocused along core campus edges to reduce internal campus traffic and facilitate the daily transition of vehicle commuters to campus pedestrians. Bicycle use should be encouraged with development of a comprehensive campus-wide bicycle route network connecting to existing city routes, including convenient bicycle parking, storage, and a bike share program.

As an urban campus, IUPUI can do much to conserve, protect, and restore natural resources. Restoration of the White River and Fall Creek riparian corridors in conjunction with pre-treatment of storm water before discharge, reduction of impervious surfaces, and the separation of combined storm and sanitary sewers will have a big impact on water quality and habitat. Increasing the tree canopy on campus will also help with storm water management, sequester carbon, and reduce the heat island effect of urban environments.

Campus energy efficiency should be improved, and the University should move toward a carbon neutral campus by implementing greenhouse gas emission reduction strategies. Should all of the recommendations of the master plan be implemented within the proposed timeline, the University could realize an overall 25 percent greenhouse gas emissions reduction within the planning horizon, and an 80 percent reduction by 2050, including anticipated development. These reductions can be achieved by reducing existing and future energy consumption, using carbon emissions as a metric when evaluating suppliers, purchasing green power, and monitoring actual campus energy use to better understand power consumption and develop reduction strategies.

Indiana University-Purdue University Indianapolis Campus Master Plan View from North

2| INTRODUCTION

VISION STATEMENT

"The Vision of IUPUI is to be one of the best urban universities, recognized locally, nationally, and internationally for its achievements."

MISSION STATEMENT

"Indiana University-Purdue University Indianapolis (IUPUI), a partnership between Indiana and Purdue Universities, is Indiana's urban research and academic health sciences campus. IUPUI's mission is to advance the State of Indiana and the intellectual growth of its citizens to the highest levels nationally and internationally through research and creative activity, teaching and learning, and civic engagement. By offering a distinctive range of bachelor's, master's professional, and Ph.D. degrees, IUPUI promotes the educational, cultural, and economic development of central Indiana and beyond through innovative collaborations, external partnerships, and a strong commitment to diversity."

Approved by the Indiana University Board of Trustees, November 2005

IUPUI Academic Quadrangle

INTRODUCTION TO THE PLAN

Indiana University-Purdue University Indianapolis – IUPUI - is Indiana University's urban research and academic health sciences campus and offers the most comprehensive range of degree programs. IUPUI's mission is to conduct world-class research, scholarship, and creative activity relevant to Indianapolis, to Indiana, and beyond.

The origins of IUPUI's campus began with the establishment of Indiana University's School of Medicine and first teaching hospital in the early 1900's, on the peninsula of land between the White River and Fall Creek in northwest Indianapolis. Since that time, IUPUI and Indiana University Health System (IU Health) has grown to be one of the 20 largest health sciences centers in the country. The IU School of Medicine is the second largest school in the country, making IUPUI a healthcare and economic force in the city and state.

In January of 1969, IUPUI began as a collaborative venture between Indiana University and Purdue University. Situated in America's 14th largest city, IUPUI has quietly emerged as a renowned metropolitan university. In 2009 IUPUI celebrated its 40th anniversary. Chancellor Charles Bantz noted that "We have gone from the work of the schools to a vision of a campus, having gone from 10,000 to 30,000, and have gone from being dispersed in seven locations to being together on this campus."

In the last decade, IUPUI has seen a dramatic change in its student body, its retention and graduation rates, and its research activity. The University is experiencing record student enrollment. The percentage of full time students has grown from 57% to 70%, graduate and professional enrollment has grown, and international student enrollment has doubled. There has been a 50% increase in the graduation rate at IUPUI in the last 5 years and an increase in the number of master's degrees conferred. While 2008 was the highest year yet for securing external research dollars, IUPUI anticipates further increases in research activity for a number of its schools and colleges.

Such change requires a physical campus master plan to help guide decision-making and plan for growth that will ensure the long term viability of the University and its resources. In February 2008, IUPUI embarked on a 12-month process to explore the physical challenges and opportunities of the IUPUI campus and create a comprehensive Campus Master Plan. This planning initiative addressed:

- Anticipated increase in student enrollment and project space needs to accommodate growth
- Building and facilities growth and renovation to support learning and research
- Improvement of the quality of campus life and the learning environment
- Better integration of transportation systems and parking
- Improvements to infrastructure to serve campus development

- Sustainable strategies for campus growth
- Recognition of the value of urban land
- Connectivity to the City of Indianapolis
- IUPUI's contribution to the health and life sciences economy of the state
- Advancing the University's stature, to become a leading urban research institution

INTENT OF THE CAMPUS MASTER PLAN

The quality of the physical environment has a tremendous influence on the image and function of the institution. The intent of the Campus Master Plan for IUPUI is to serve as a foundation for shaping the campus fabric in support of its academic mission and vision.

At its very essence, the Campus Master Plan is an assemblage of powerful ideas. These ideas establish the philosophical framework and principles for coordinating physical change on the campus. The Campus Master Plan provides guidelines to better integrate the various activities of the university, establish stronger urban districts with a high quality aesthetic, and promote a more vibrant campus life. Quality academic, research, and healthcare facilities and an appealing campus environment are central to the University's image and to its ability to recruit high caliber students, faculty, and researchers.

The master plan for IUPUI is a composite document of principles, goals, objectives, ideas and recommendations, and the graphic maps that support and illustrate these concepts. The principles behind the master plan are the enduring elements. However, a master plan is not solely one component or another. It recognizes how each component relates to and affects each other, and how each component must be considered in relation to the whole. As an example of integrated systems thinking, the master plan can be used as a long range tool and a living guide, adapting to the needs of the campus and its stakeholders in response to new or unforeseen factors.

Wood Memorial Plaza and Fountain

View of IUPUI Looking Southeast Towards Downtown

Campus Activity near the Business-SPEA Building

This Campus Master Plan is the first document to collectively record recommendations for all campus systems, including future space and program needs; building renovation and new construction; residence life and amenities; campus landscape; transportation, transit and parking; infrastructure; and sustainability measures.

In preparing the Campus Master Plan, the planning team reviewed and incorporated past master plans including those prepared by Edward Larrabee Barnes in the 1970's and 1980's, and many recently completed plans and reports, including the following:

2001 IUPUI Campus Planning Framework Plan
2003 Northwest Quadrant Plan
2005 IUPUI Traffic Study
2006 Campus Framework Plan

The planning team synthesized previous planning recommendations while responding to current concerns and demands. The Campus Master Plan therefore sets forth recommendations addressing the physical, social, educational, intellectual, and sustainability challenges the University will face in the 21st century. The plan has been crafted to address both a programmatic 10-year planning horizon for academic demand, and a longer 20-year or greater build-out horizon, recognizing that the pace of construction on campuses fluctuates depending on need and the availability and source of funding.

Implementation of the Campus Master Plan will increasing rely on strong partnerships, greater collaboration, and innovative thinking to achieve its aspiration for IUPUI as an outstanding urban institution for:

- Excellence in teaching and learning;
- Excellence in research, scholarship, and creative activity; and
- Excellence in civic engagement locally, nationally and globally.

IUPUI Academic Campus

Interior of IUPUI Campus Center

GOALS AND OBJECTIVES

The University embarked on the Campus Master Plan by establishing two over arching goals that formed the planning foundation and guided the proposed physical framework for development. The two goals embody the aspirations of the University and the unique attributes of the IUPUI campus and link the institution's physical environment to its academic values.

1. Support Academic Excellence

Driven by the Chancellor, University leadership, and the Executive / Steering Committees, the Master Plan will be a tool for advancing IU's overall academic and research mission. Discussion during the planning phases centered not only on the quantitative need for space (particularly for research) and student life, but also on the qualitative need for flexibility and increased interaction among members of the campus community. The University expressed its desire to enhance experience for undergraduates, graduate, and professional students, and to better connect faculty, students, physicians, researchers and staff.

As a goal, Support Academic Excellence is further defined in a series of objectives intended to:

- Integrate places for learning and campus life
- Reflect contemporary learning styles
- Accommodate change and flexibility
- Establish a framework for sustainable facility growth
- Enhance interdisciplinary learning
- Provide a stimulating campus setting

2. Create a Vibrant Urban Campus

Seeking to enhance the character and vitality of the Indianapolis campus, the University leadership developed this goal in order to guide decision making and stimulate innovative thinking. Further objectives reflect these ideals and vision of a quality, distinctively urban academic environment:

- Improve the quality of campus life

- Provide stimulating external and internal settings
- Take the city seriously
- Realize the value of urban land
- Introduce vertically integrated space
- Enhance the pedestrian realm

View of IUPUI Campus with Indiana State Capitol in the Background

MASTER PLAN PROCESS

The Campus Master Plan is the University's plan. While the consultant team has contributed their technical expertise, the University's participants have passionately guided its development. The Campus Master Plan reflects the institution's vision, priorities, culture, and future needs.

The Indiana University Board of Trustees commissioned SmithGroupJJR to develop a Campus Master Plan for IUPUI. Work began in February 2008 and a draft report was completed in spring of 2009. The planning process was divided into five major tasks: Discovery, Analysis, Alternatives, Refinement, and Documentation.

The planning process included faculty, students, staff, administrators, trustees and community leaders. Input has been solicited at major decision points throughout the process, through regular committee meetings, workshops, focus group sessions, technical meetings, one-on-one interviews, and digital information exchange. As a result, the Campus Master Plan offers a widely representative planning perspective.

Several important committees were tasked with directing, advising, and supporting the Campus Master Plan.

Executive Committee

The Executive Committee oversaw the development of the Campus Master Plan. The committee provided final direction to the planning team, as well as administrative guidance, coordination of internal and external input, and final planning recommendations.

Michael A. McRobbie, President
Thomas A. Morrison, Vice President for Capital Planning and Facilities
J.Terry Clapacs, former Vice President and Chief Administrative Officer (retired)
Paul Sullivan, Deputy Vice President for Capital Planning and Facilities
Robert Meadows, former Assistant Vice President Facilities & University Architect (retired)

Master Plan Working Group

The Master Plan Working Group guided the iterative development of the Campus Master Plan. Members of the group included the University Architects Office as well as academic, auxiliary enterprise, and administrative representatives. This committee provided valuable project support, facilitated consensus building, and furnished current data relevant to the planning effort during its development.

Master Plan Steering Committee

Chaired by Chancellor Charles Bantz, the Master Plan Steering Committee was established to shape the evolution of the Campus Master Plan. Members of the committee represented the executive level administration and University Deans of IUPUI. This committee provided valuable input and greatly facilitated consensus building during the Plan's development.

Advisory Committee
The Advisory Committee provided counsel throughout the development of the Campus Master Plan. Members of this committee represented important university wide input from academic, administrative, staff, auxiliary enterprise, and student perspectives. This deliberate mixing of expertise provided critical user input during the plan's development.

Campus Health Sciences District Committee
The Health Sciences District Committee was comprised of individuals representing both clinical facilities and medical education programs on the IUPUI campus, including representatives from IU Health, IU School of Medicine, Wishard Memorial Hospital and the VA Hospital. The purpose of this committee was to discuss common planning concerns among the various healthcare constituents on the peninsula, and to provide information regarding future plans that would affect the Master Plan. The work of this committee led to the expanded planning process and to the development of the Integrated Plan for the Academic Medical Center Campus.

Community Partners Committee
The Community Partners Committee was established to guide the evolution of the Campus Master Plan in response to the University's community and neighbors. Members of this group represented an important mix of neighborhood entities, municipal and City representatives, and a broad range of civic and community organizations. This committee provided valuable input and greatly facilitated consensus building during the Campus Master Plan's development.

Master Plan Working Group

Student Participation

Campus/Community Leadership and Outreach

The ideas and opportunities documented by the Campus Master Plan reflect the combined efforts of institutional and community representatives working collaboratively with the consultant team. Engagement with the following individuals and groups was a critical component of the planning process:

Michael A. McRobbie, President
Thomas A. Morrison, Vice President for Capital Planning and Facilities
J. Terry Clapacs, former Vice President and Chief Administrative Officer (retired)
Paul Sullivan, Deputy Vice President for Capital Planning and Facilities
Robert Meadows, former Assistant Vice President Facilities and University Architect (retired)
Charles Bantz, Chancellor, IUPUI
John Lewis, Associate Vice President for Capital Planning and Facilities
Indiana University Board of Trustees
Indiana University Foundation Board of Directors
Roger Schmenner, Chief of Staff to Chancellor, IUPUI
University Deans
Various Department Chairs
Finance and Administration
Facilities Department Staff
Auxiliary Services
Sustainability Committee

IU Health
Indiana University Hospital
Riley Children's Hospital
Wishard Memorial Hospital
VA Hospital
Bio Crossroads

Office of the Mayor
Indianapolis Deputy Mayor
City of Indianapolis Departments of Engineering, Planning, and Transportation
IndyGo
Indianapolis Downtown
Indianapolis Urban League
Central Indiana Community Foundation
Indiana Sports Corporation
Walker Theater Board
BOS Community Development Corporation
NCAA

A full listing of all committee members, groups and individuals involved in the plan can be found in the Acknowledgements at the end of Volume One of this report.

IUPUI Campus Center

3| CAMPUS EVOLUTION

CAMPUS HISTORY

THE BEGINNING - INDIANAPOLIS AND IUPUI IN THE 19TH CENTURY (1800 - 1900)

Established in..."The Place of Noisy Water"[1]

Over the last forty years IUPUI has rapidly progressed and expanded, as an institution and as a campus. However, the origins and influences for its development extend further back into history than IUPUI's formal establishment in 1969. As an urban university, IUPUI's development has, and continues to be, influenced by the City of Indianapolis' ongoing evolution.

In the early 1800s the "land of Indians" was a U.S. territory, and the Miami and Delaware tribes inhabited this area of the future State of Indiana. Fall Creek flowed directly south and it and its tributaries spread out along what would later be the western half of IUPUI's campus. The creek, a popular fishing spot of the local tribes, was named Chank-ti-nun-gi which meant "The Place of Noisy Water." The adjacent White River was also a Native fishing spot and

1 Thurman B. Rice, M.D., "History of the Medical Campus," Monthly Bulletin Indiana State Board of Health, (January 1947), 13.

Historical Map of Indianapolis, Circa 1876

Indiana Territory, 1818

was known as "White Waters" due to its clarity. Although the natives frequented the site that would be IUPUI for fishing, they did not settle there because frequent flooding made the site unattractive for habitation.

Due to its proximity to the geographic center of the State as well as to Fall Creek and the White River, this area was chosen as the site for the capital city of Indianapolis. The initial thought was that the river would serve as a valuable trade route; however it proved unsuitable for navigation. In order to solve the problem, the state authorized the Indiana Central Canal project in 1835. Intended to run 296 miles, the canal was to connect Lake Erie to the Ohio River in Southern Indiana. Only the 8 mile portion connecting downtown Indianapolis with Broad Ripple to the North was ever operational. The original vision for a transportation hub became a reality with the Madison & Indianapolis Railroad in 1847.

The city's founders were inspired by L'Enfant's plan for Washington D.C. which was reflected in Alexander Ralston's design for the city. The plan proposed a grid of streets radiating outward from a central circle and N. West Street formed the boundary of the 'mile square' city. N. West Street is now the IUPUI campus' eastern edge. Military Park, at N. West and W. New York Streets, dates from Indianapolis' founding. Originally called Military Ground, the Park has seen various uses: militia training for the Black Hawk War in 1836, site of the first Indiana State Fair in 1852, and a camp for Union soldiers during the Civil War.

Proximity to both the river and the creek created problems for the city's development. Flooding was continual until the 20th century when the modern levees were put in place. Water-borne illnesses were also prevalent before the advent of modern vaccines for such illnesses as typhoid fever. A plague cemetery for some of the city's first settlers lays somewhere below IUPUI's campus.

At the time of European settlement of the area, orientation of Fall Creek and its tributaries was just to the west of the present site of Wishard Memorial Hospital. The Wishard Memorial Hospital site also served as the location of the city's first hospital. The hospital was located on a bluff above Fall Creek – its riverbed lying between the city hospital site on the east and the White River on the west. In the 1870s efforts were made to realign Fall Creek. Its

White River, 1905-1930

Indiana Avenue Street Scene

Medical Center, 1937

riverbed began to be filled with urban debris and trash. The mill race that ran from the Wishard Memorial Hospital site down to the area currently occupied by the NCAA complex was an early attempt at controlling and using the waters of Fall Creek; however, the race was eventually filled in around 1900.

Given the undesirable conditions, the earliest settlers tended to be those at the fringes of society. In the 19th Century the area was populated by immigrants from Ireland and Eastern Europe. In the early 20th Century, thousands of blacks came to the North in what has become known as the Great Migration and the area became a predominately African American neighborhood. The Indiana Avenue neighborhood was a center of African American heritage and cultural, music and spiritual life. The Bethel African Methodist Episcopal Church dates from 1869. The church played a role in the Underground Railroad movement and Civil War recruitment, and housed the first NAACP chapter in the city. In 1916 the area had numerous businesses that served its predominately African American residents who were restricted from white neighborhoods. On a national level, Indiana Avenue was the place for jazz; JJ Johnson, Duke Ellington, Ella Fitzgerald, Dinah Washington and Count Basie were among the many notable jazz greats performing at the Walker Theater, constructed in 1927. Indiana Avenue has been designated a Cultural District by the city and a formal development plan has been created.

The first hospital for the City was built on the Wishard Memorial Hospital site in 1859 and immediately became known as "Dunlap's Folly" because the exorbitant cost of construction left no money for furnishings or operating the hospital. The location was chosen because it was on the far western edge of Indianapolis and in an area deemed unfit for human habitation, a good place to send contagious patients who were not wanted in other areas. Shortly after the hospital was built it was abandoned and in the intervening 20 years it was used for a variety of purposes. In the 1880s, a new hospital founded by Dr. William Niles Wishard was built on the

site. The new hospital was dubbed "Wishard's Wisdom". It hosted the first nursing training program in the state and became the cornerstone on which the Medical Center at Indianapolis was built.

Academic classes in Indianapolis were first offered in 1891 on an informal basis for IU alumni residing in Indianapolis. This "extension movement" was held in the Extension Center downtown. Popularity of these programs led to the sporadic spread of educational spaces across the city. More permanent programs were established in 1919, including the School of Medicine.

Indiana University School of Medicine Clinical, 1908

Walker Theater, 1928

Wishard Hospital Site and White River

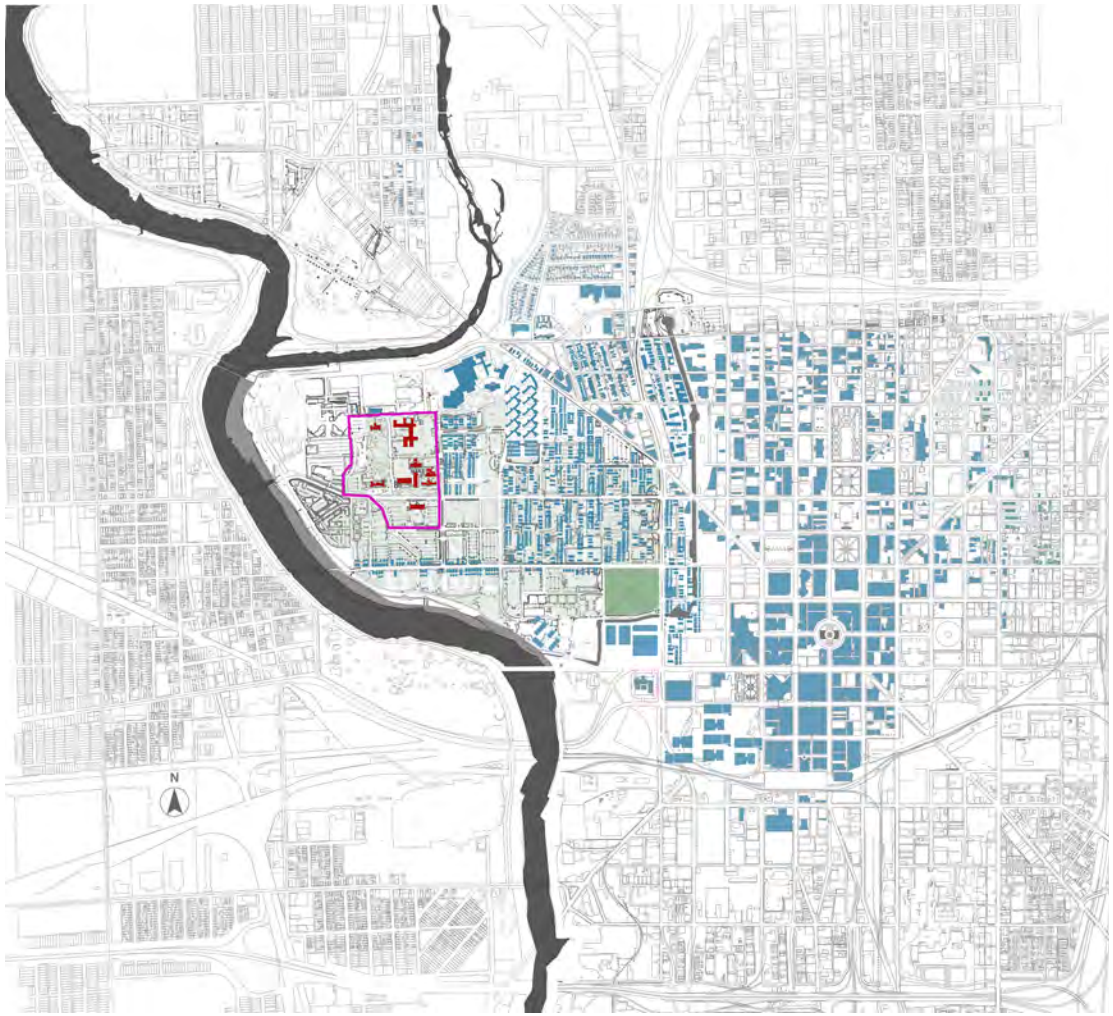
EXPANSION DURING THE FIRST HALF OF THE 20TH CENTURY (1900 - 1950)

"Six years ago we undertook to establish an adequate medical school in connection with Indiana University"[2]

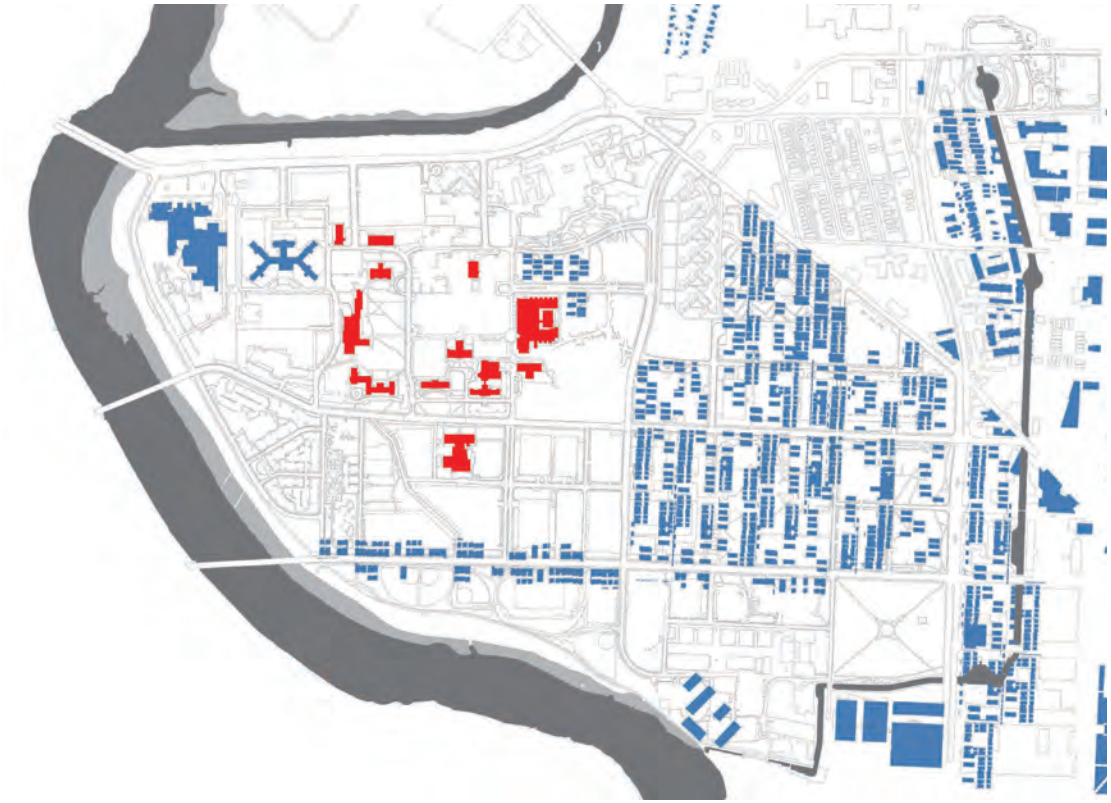
In the first decade of the 20th Century discussions began for a combined Medical Center in Indianapolis. The Medical Center brought together the interests and resources of Indiana University and Purdue University, which had recently merged with the Indiana Medical College. On April, 4, 1908 an agreement was reached to form a new medical teaching institution under the direction of the Trustees of Indiana University. The new Medical Center was located adjacent to the City Hospital.

The rapid development of the Medical Campus was guided by a plan produced by the Olmsted Brothers in the 1920s. Extensive improvements to the landscape were undertaken between 1934 and 1937: between five and ten thousand trees were planted on the 35 acre campus.

2 Burton Dorr Myers, M.D., History of Indiana University Volume II - The Bryan Administration, Ivy L. Chamness and Burton D. Myers, eds.., (Crawdiana: Indiana University, 1952), 68.



Regional Plan, Circa 1940



Campus Plan, Circa 1940

Grading and filling of this area which was once the bed of Fall Creek was carried out per the Olmsted Brothers Plan. Many improvements were completed with manpower provided by the Works Project Administration with tools, supervision and technical assistance provided by Indiana University and the Riley Memorial Association. By the end of the Bryan Administration in 1937, the IUPUI Medical Campus consisted of nearly 50 acres. By the 1950s the historian Burton Dorr Myers remarked that "The campus is now the most beautifully landscaped area in the west part of Indianapolis."

The present IUPUI campus began in the western portion of the site, in the area surrounding Ball Gardens and what is now Riley Hospital for Children. It was during the Bryan Administration that the campus' architectural character began to be established as more properties were acquired and buildings constructed. The building materials used during this era consisted of a mix of brick and limestone.

Long Hospital was the first of many buildings in the Medical Center – it was constructed in 1914, just south of Wishard Memorial Hospital along West Michigan Street. The Medical School Building (now Emerson Hall) was the next constructed, opening in 1919. That building was followed in the 1920s by the James Whitcomb Riley Memorial Hospital (1924).

In the late 1920s it was determined that accommodations were needed to fit the housing needs of the growing nursing school. Thus, in 1928, Ball Residence for Nurses was constructed. Several additions to Riley Hospital continued during the depression years of the 1930s, including: Kiwanis Unit (1930), Rotary Convalescent Home (1931), and the Hydrotherapeutic Pool (1935). In 1937, a clinical building was added to the Medical School. Development subsequently continued throughout the following decade primarily as small scale row housing along the periphery of the initial core.

Long Hospital, 1914

Ball Residence Hall, 1928

Ball Gardens, 1928

Dentistry School, 1934

Riley Hospital, 1930s

Row Houses 1940s

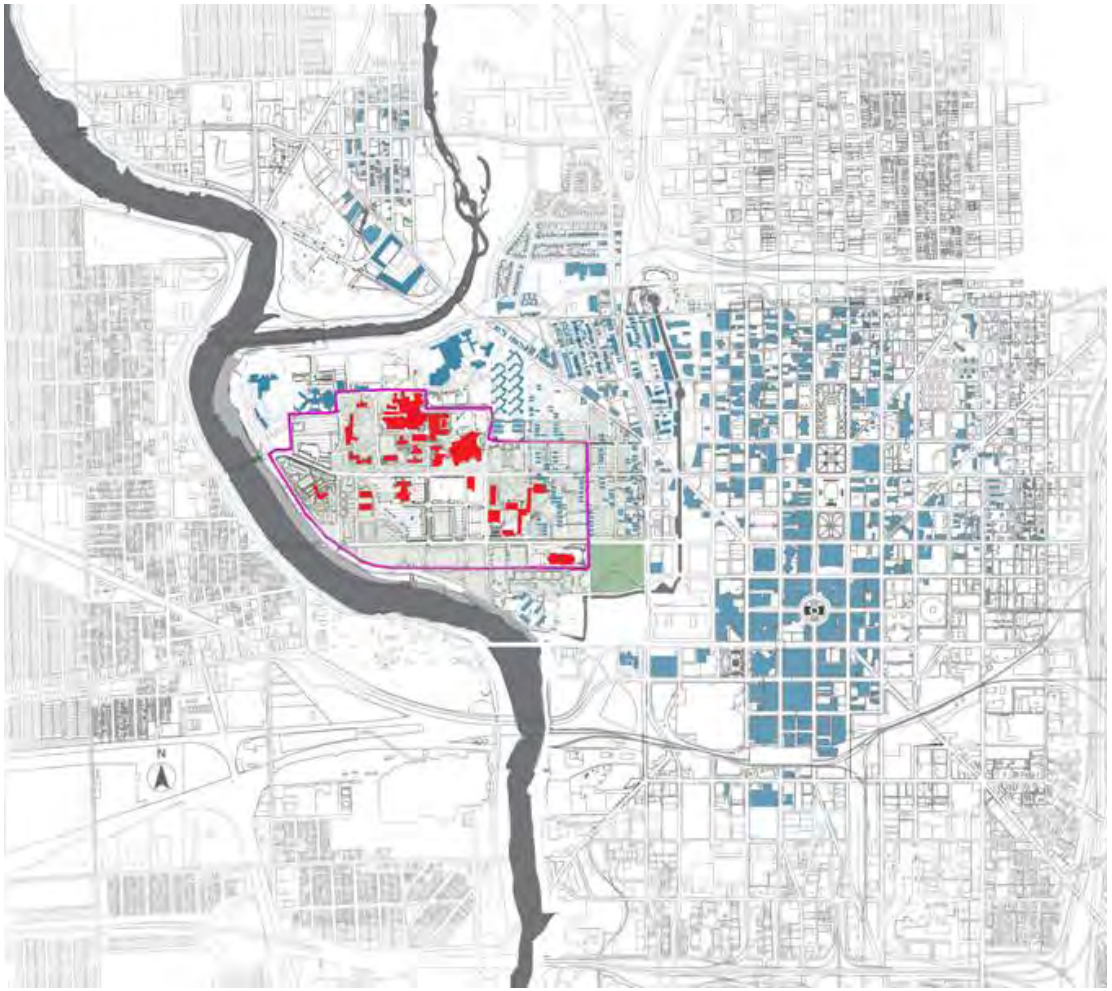
EXPANSION DURING THE LATTER HALF OF THE 20TH CENTURY (1950 - 2000)

"No other university has the backing of two Big Ten schools"[3]

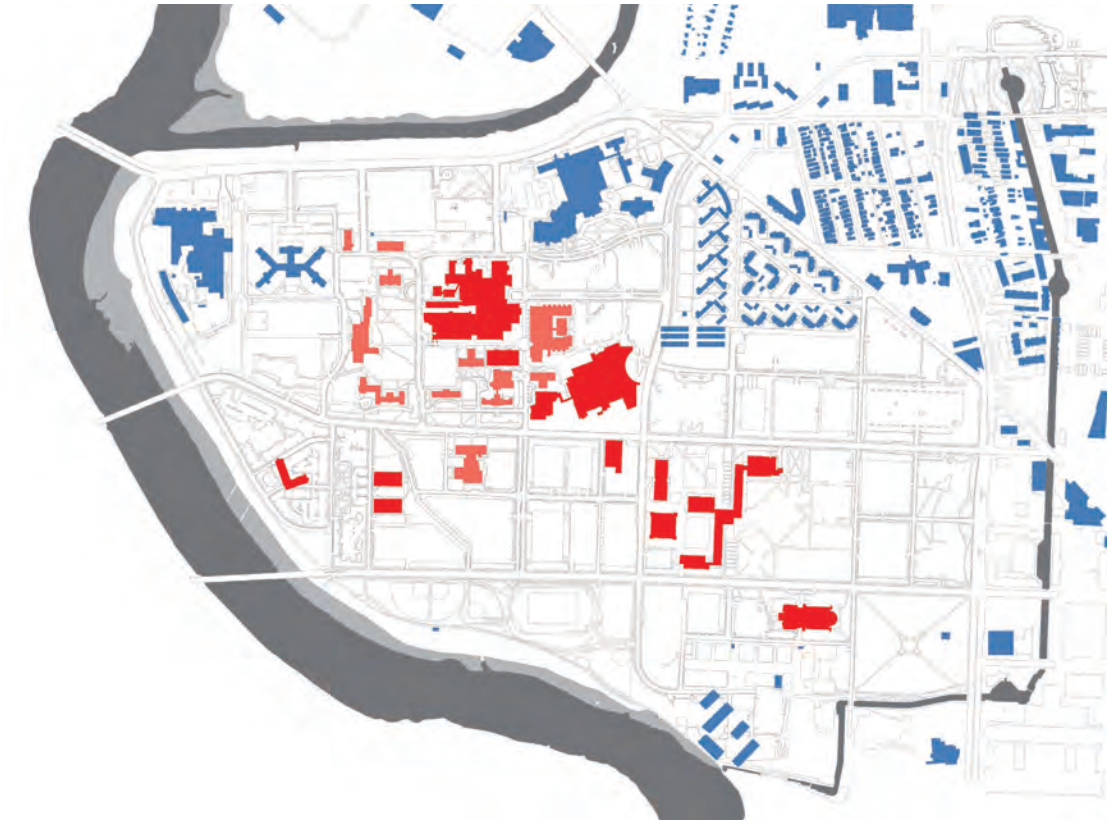
In 1943, Purdue University initiated its Division of Technical Studies. Although the official establishment of IUPUI, Indiana University-Purdue University Indianapolis as an undergraduate academic institution occurred in 1969; plans for the merger were in the works for most of the 1960s. Indiana University, under the direction of President Wells and through the Hoosier Realty Corporation, began buying up property as it became available adjacent to the Medical Center as early as the 1950s for creation of a central campus. The decades from 1960 to 1980 were marked by significant development of the central campus.

The majority of land acquisition activities and the consolidation of property owned by Indiana University occurred during the 1950s and 1960s. The University was assisted in its

3 Burton Ralph D. Gray, IUPUI – The Making of an Urban University, (Bloomington & Indianapolis: Indiana University Press, 2003), 123.



Regional Plan, Circa 1980



Campus Plan, Circa 1980

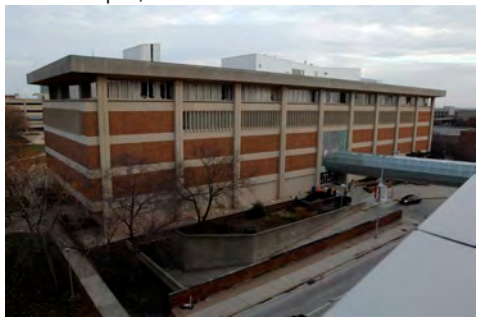
consolidation efforts by the City of Indianapolis Redevelopment Corporation. In the late 1950s the land adjacent to the School of Dentistry building between W. Michigan and W. New York Streets was identified for the future growth of the Medical Center. In order to expand the Medical Center south of W. Michigan Street, the University needed to acquire a massive amount of land. The City of Indianapolis classified the neighborhoods south and east of the Medical Center as deteriorated or in need of major rehabilitation, allowing the land to be acquired under the auspices of urban renewal and revitalization. Over the two decades preceding the formation of IUPUI, Indiana University obtained hundreds of acres in the newly coined 'University Quarter' of Indianapolis.

The IUPUI campus area's growth during the second half of the 20th Century is truly remarkable. Hardly a trace of the neighborhood that was the Old Fourth Ward is visible today. Neighborhood streets have disappeared with the advent of the superblock. Other major changes to the neighborhood were the partial demolition

of Lockefield Gardens, one of the nation's first public housing developments, and the addition of University Boulevard in the 1980s. Today the IUPUI campus and the Medical Center occupy the peninsula of land from Indiana Avenue and West Street to Fall Creek, and the White River to Military Park.

The earliest buildings that defined the new IUPUI campus include the library (now University College) from the mid 1960s, and the Lecture Hall and Cavanaugh Hall from 1971. These structures, with exteriors composed of brick and limestone with the addition of precast concrete, were admittedly 'utilitarian' given economy employed in their design and construction. The original Law School building was dedicated in 1970 and was considered an extremely well functioning, modern facility. That building has been renovated and presently serves as the Herron School of Art. University Hospital opened in 1970 and began to define IUPUI's medical campus.

IUPUI Campus, 1970s



Cavanaugh Hall, 1971

Lecture Hall, 1971

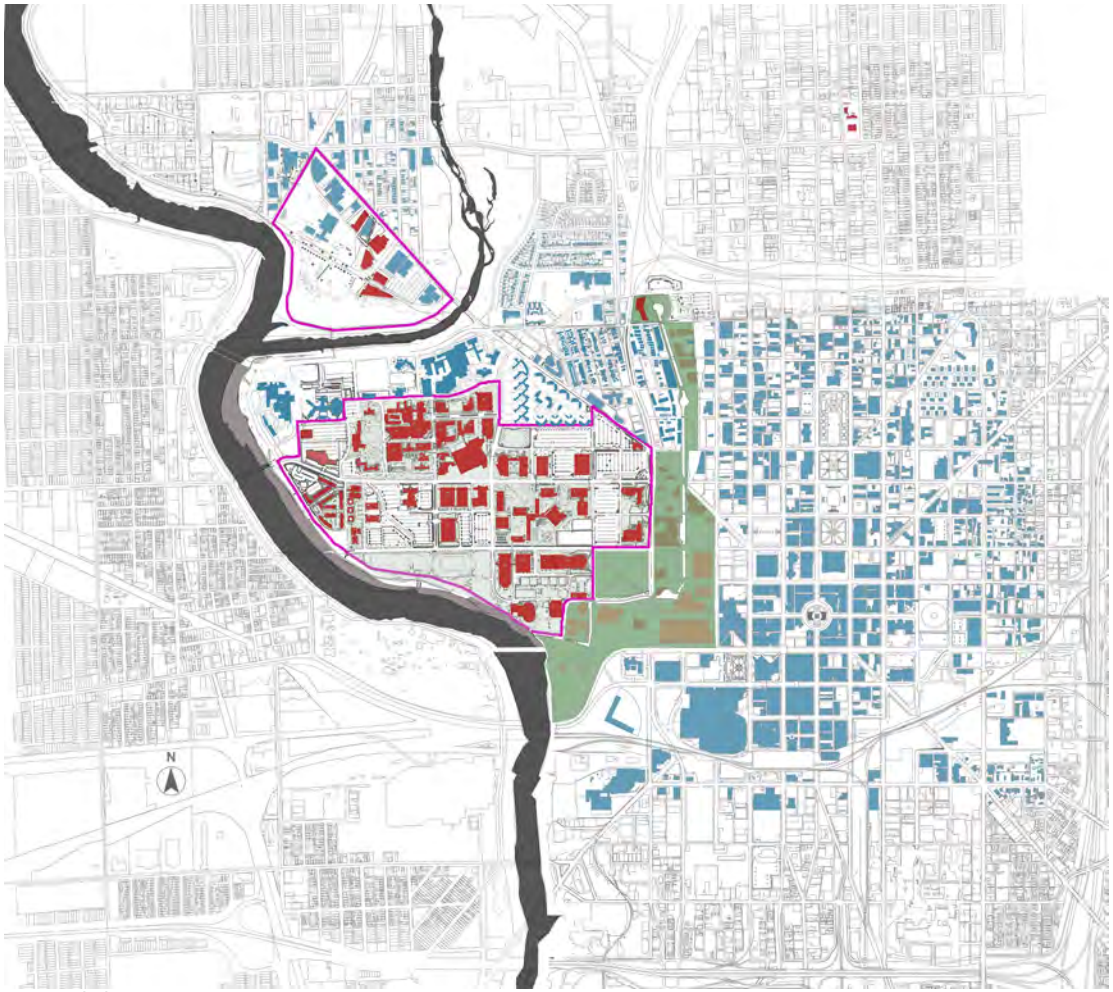
Barnes and Zion & Breen Associates Inc. Master Plan, 1991

It was in the 1970s that the center of campus shifted towards the east with the early projects of Edward Larrabee Barnes. He served as the campus planner in the late 1970s and 1980s and was design architect for the Education/ Social Work Building (1980), the Business-SPEA Building (1980), the Natatorium/Physical Education Building (1982), the University Hotel and Conference Center (1982), the Science, Engineering and Technology Buildings (1982) and (1988), and the University Library (1993). These buildings were monumental in their stature and began to form unified enclosures around defined exterior campus space.

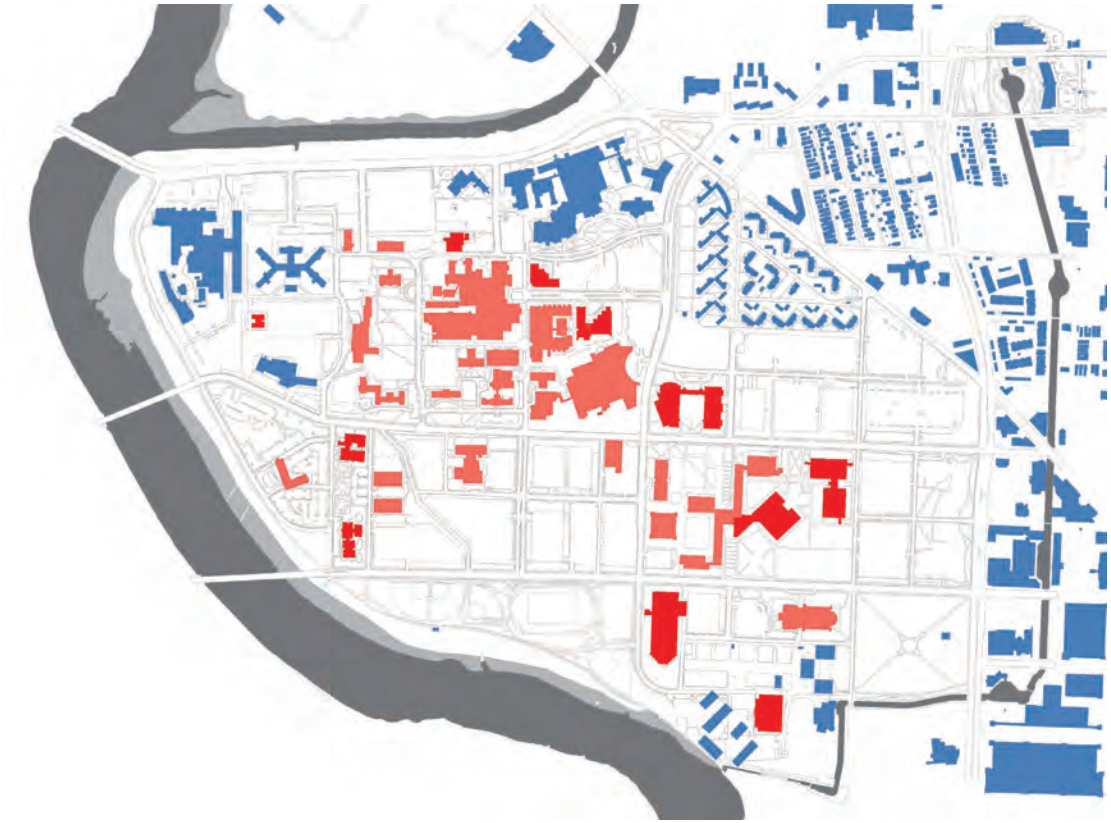
Barnes' campus plan, which he refined in the early 1990s with Zion & Breen Associates Inc., is primarily responsible for the overall character of the campus today. It established the campus' large super–blocks, generous setbacks along West Street, W. New York and W. Michigan Streets, and the placement of parking garages. These aspects of the planning relate to commuter, non-residential, vehicle-based functions and experience, likely to transform with current

recommendations for a more characteristically urban, pedestrian oriented campus design approach. Barnes' architecture and planning expressed a precise, modern, forward-looking identity for IUPUI which will be maintained by future campus landscape and building design.

The emergence of IUPUI's respected sports program paralleled developments within the city, which in the late 1970s adopted a strategy of achieving growth by becoming a center for sporting events. Construction of the Hoosier Dome in 1984 for the Indianapolis Colts was followed by additional investments in sports, arts, and entertainment facilities. In 1987, IUPUI and Indianapolis hosted both the World Indoor Track and Field Championships and the Pan American Games. In the 1990s IUPUI was admitted to Division 1 of the NCAA. Building projects included the NCAA headquarters and Conseco Fieldhouse. In addition, cultural investments during this time were represented by establishment of a cultural district running from W. 11th Street to the White River State Park and the Eiteljorg Museum.



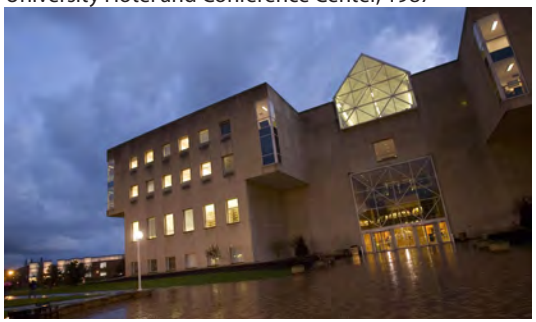
Regional Plan, Circa 1990



Campus Plan, Circa 1990

Engineering and Science Building, 1998 + 1992

University Hotel and Conference Center, 1987

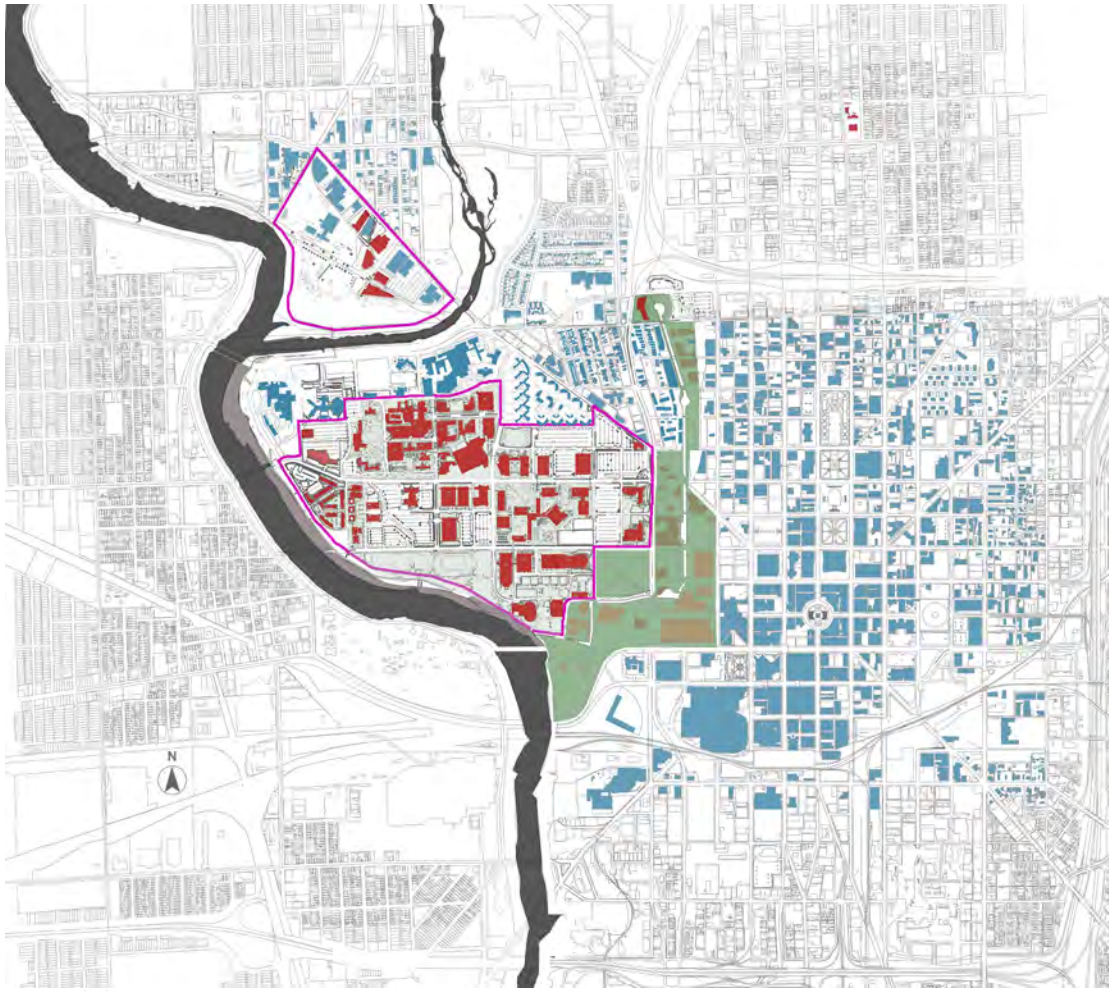


University Library, 1993

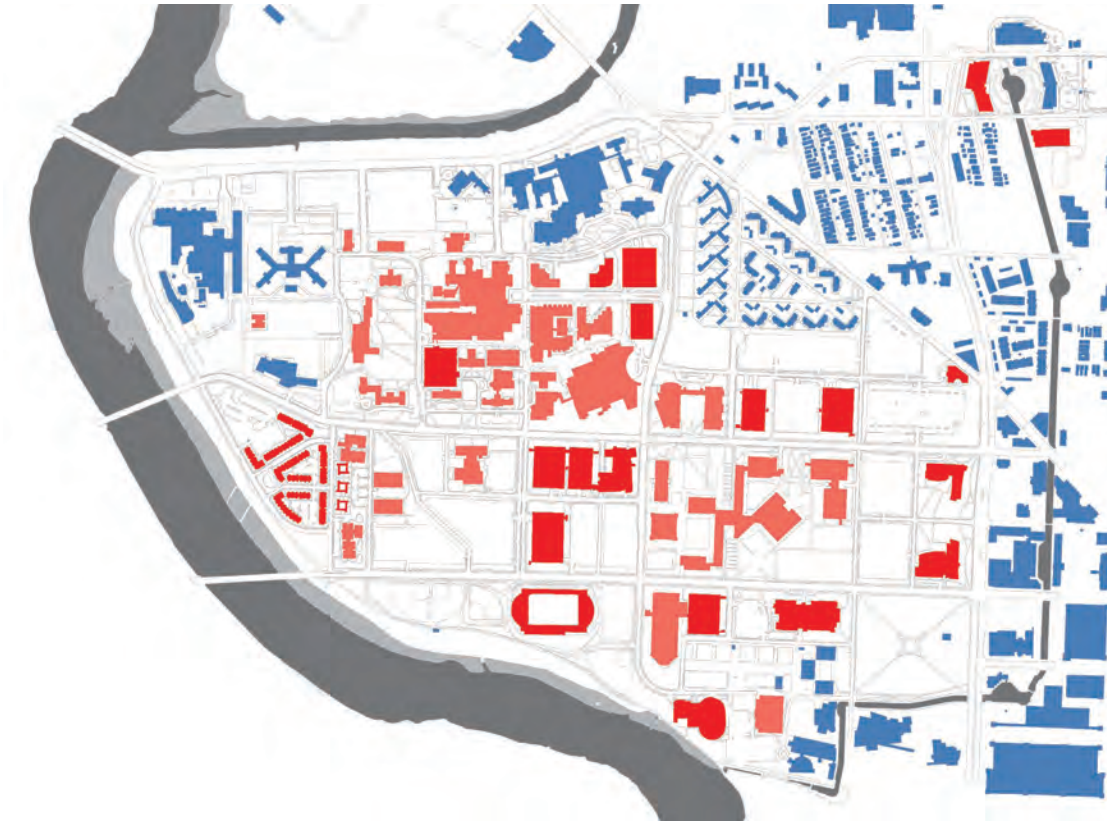
EXPANSION OF IUPUI AND INDIANAPOLIS IN THE 21ST CENTURY (2000 - TODAY)

The City of Indianapolis and the IUPUI campus continues to expand and evolve in the beginning of the 21st century. Projects that mutually benefit the University and the city will continue to be identified. The proximity of White River State Park to IUPUI provides a potential opportunity and suggests the direction of future campus growth and expansion in this area.

White River State Park, the nation's only urban cultural state park, offers a wide variety of cultural, educational, and recreational attractions. These include the Eiteljorg Museum of American Indians and Western Art, a subtle and powerful Kasota stone structure that was designed by Jonathan Hess in 1989 and expanded in 2005. The NCAA Hall of Champions and National Headquarters occupy a structure designed in 2002 by the nationally prominent architect, Michael Graves. The Indiana State Museum, which opened in 2002, was designed by Indianapolis' Ratio Architects and is an elegant museum constructed of



Regional Plan, Circa 2008



Campus Plan, Present

Indiana limestone, sandstone, steel, brick, and glass. Plans for IUPUI's future development capitalize on White River Park's rich diversity of urban attractions and amenities, while also reinforcing a connection to downtown that has been established with the development of the eastern campus edge.

The newest campus buildings include the Campus Apartments on Riverwalk (2003), designed by Ratio Architects, which initiated IUPUI's commitment to provide significant residential facilities for undergraduates. The Information and Communications Technology Complex (2004) by Robert A. M. Stern Architects joins with Inlaw Hall, the School of Law (2001) by SmithGroupJJR, to form a unified, monumental limestone ensemble and a strong presence for the University along N. West Street. These buildings also act as a gateway to the campus.

The University has established new partnerships and collaborations by developing the Life Sciences Corridor at the northwest edge of

downtown at the head of Canal Walk between W. 10th and W. 11th Streets. The Emerging Technologies Center, founded in 2003, houses facilities to incubate and accelerate life sciences, biotechnology, and bioinformatics companies. The 2006 Health Information and Translational Sciences Building contains research labs for the IU School of Medicine, IUPUI, and the Regenstrief Institute. The contemporary design by Beyer Blinder Belle incorporates Indiana limestone, brick, and glass and maximizes natural daylight into research and work interior spaces. Its ground floor contains a café and retail amenities. Completed in 2008 and designed by BSA Life Structures, Fairbanks Hall is a simulation center, a new collaborative enterprise of the IU Schools of Nursing and Medicine and IU Health partners.

The Campus Center (2008), by SmithGroupJJR, fulfills the 1960s vision for a student services building (never realized) as part of IUPUI's original Downtown Campus. Not far from its original proposed site, the Campus Center is located at the geographic center of the campus, at the busy corner of W. Michigan Street and University Boulevard. The Center is an extremely active hub and brings together all members of the diverse IUPUI community, including those from the Medical School and hospital complexes. The design is highly transparent, connects interior and exterior activities and spaces, and offers a wide variety of lounges, meeting rooms, and activity areas to enhance student life and experience. The Center has generated many favorable impressions by faculty, staff and students. Sharon J. Hamilton, Associate Vice Chancellor for Academic Affairs, Chancellor's Professor and Professor of English said, "This dramatic and exciting space symbolizes just how special we think our students are. They are a vital center of IUPUI's intellectual life, just as this Campus Center will become an essential center to campus life."

Inlow Hall, 2001

Student Housing, 2003

Health Sciences Building, 2006

Campus Center, 2008

IUPUI AND INDIANAPOLIS FUTURE

During their shared history and development, both IUPUI and Indianapolis have faced challenges and obstacles, that they have overcome with energy, creativity, and vision. The Campus Master Plan strategies are rooted in an understanding of the campus and Indianapolis' historical and physical developments over time.

Several factors are especially relevant which particularly inform Campus Master Plan principles. Perhaps the most fundamental goal is to capitalize on IUPUI's urban context and position in Indianapolis. In addition, the presence of Fall Creek and the White River natural systems present unique opportunities to enhance the campus' relationship to the environment. The Campus Master Plan also seeks to create a more unified campus experience that eliminates the sense of physical and programmatic dislocation between academic and medical precincts.

These initiatives build upon positive aspects of the influential IUPUI campus planning work of the modern architect Edward Larrabee Barnes and the landscape firm Zion and Breen while introducing a new district framework for development that establishes a sense of place and individual character for each area. The Master Plan provides guidance for future campus growth and expansion by considering both IUPUI's development and history, as well that of the City of Indianapolis.

4| EXISTING CONDITIONS

THE CAMPUS TODAY

IUPUI: Indiana University-Purdue University Indianapolis was founded in 1969 as a partnership between Indiana University and Purdue University. The University is home to the only medical and dental schools in the State of Indiana and is renowned as "Indiana's urban research and academic health sciences

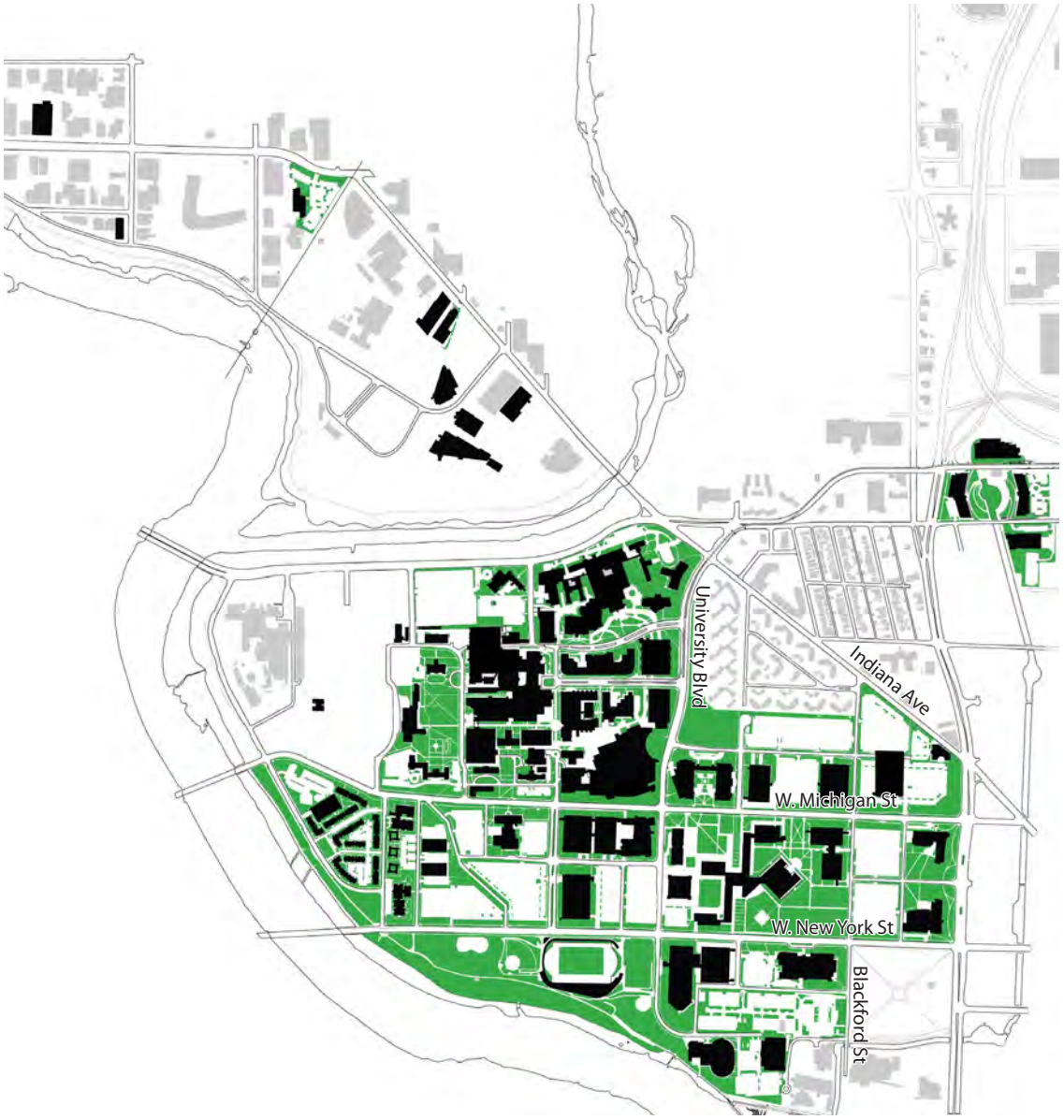
2007/2008 Baseline Data

Campus Population	37,780
Enrollment	29,854
Undergraduate	21,202
Graduate	6,052
Professional	2,600
Faculty	3,161
Staff	4,765
Campus Acreage	509 / 318
Number of Buildings	129
Gross Square Feet	9,859,179
Floor Area Ratio	0.71
Parking Spaces	19,924
Parking Ratio	1.90
Number of Beds	1,066
Living On-Campus	4%

View of IUPUI Campus

campus."[1] At the baseline year of 2007/2008, the IUPUI campus had a student population of nearly 30,000 and drew students from the local, regional, national, and international levels. The University only provides housing for a little over a thousand students. The IUPUI campus is supported by a faculty and staff numbering nearly 8,000 in 2007/2008.

The campus covers 509 acres[2] utilizing 129 buildings which amount to nearly 10 million gross square feet of classrooms, hospitals, laboratories, student housing, offices, athletic facilities and support spaces. With the recent construction of the Gateway Garage completed in 2010, the campus now has 20,906 parking spaces for visitors, faculty, staff, and students.



Map of the Indiana University - Purdue University, Indianapolis Campus

0 600 1200 1800 Feet

1 About IUPUI, "Mission of IUPUI," Indiana University-Purdue University, Indianapolis, http://www.iupui.edu/about/, Accessed 9 January 2009.

2 "Indiana University Fact Book 2007-2008," University Reporting & Research, Indiana University, January 2008, 3.

CAMPUS COMPARISONS

- University of Alabama - Birmingham
- University of Cincinnati
- University of New Mexico
- Wayne State University
- University of Illinois - Chicago
- Wayne State University

During the planning process, the physical campus of IUPUI was compared to six other public, urban research university campuses that included medical academic centers. These campuses were chosen primarily for physical commonalities shared with IUPUI. Comparisons were drawn from a list of common attributes such as population, land area, building area, physical scale, density, parking and on-campus housing.[1]

Of the six peer institutions in this study, Wayne State University in Detroit, the only urban research university in the state of Michigan, provided the best case for comparison. Although, WSU has a slightly larger student population than IUPUI's, this is primarily due to larger graduate and professional student populations. Wayne State's campus is about 40% the size of IUPUI's with roughly the same amount of gross square feet and is therefore significantly denser. This denser footprint allows Wayne State to house double the students on campus while providing a significantly better parking ratio than IUPUI. In fact, all peer universities had double or triple the number of on-campus residences than IUPUI. This contributes to a related improvement in parking ratio and higher persons per space, even in cities with limited public transportation like Indianapolis.

IUPUI Campus Center

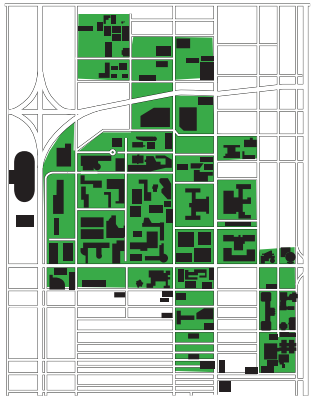
[1] Information used in these comparisons were supplied by the institution represented via their web site or through interviews with campus personnel. The data used was collected from the academic year 2007-2008.

IUPUI

Scale Comparison

WAYNE STATE UNIVERSITY

- Only urban research university in Michigan
- Campus 40% the size of IUPUI's
- Similar total built area

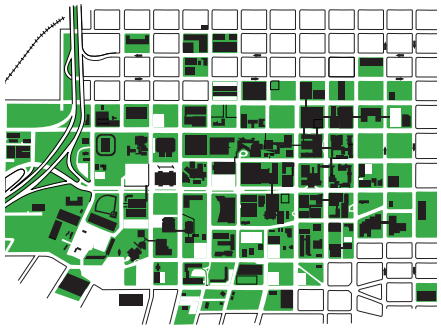


Scale Comparison

	IUPUI	WSU
Campus Population	37,780	41,291
Enrollment	29,854	33,240
Undergraduate	21,202	21,145
Graduate	6,052	9,115
Professional	2,600	2,980
Faculty	3,161	2,760
Staff	4,765	5,291
Campus Acreage	509 / 318	203
Number of Buildings	129	102
Gross Square Feet	9,859,179	10,000,000
Floor Area Ratio	0.71	1.13
Parking Spaces	19,924	12,500
Parking Ratio (persons/space)	1.90/1	3.30/1
Number of Beds	1,066	2,510
Living On-Campus	4%	8%

UNIVERSITY OF ALABAMA - BIRMINGHAM

- Half the student population
- Campus a third the size of IUPUI's
- Nearly twice as dense



Scale Comparison

	IUPUI	UAB
Campus Population	37,780	36,138
Enrollment	29,854	17,330
Undergraduate	21,202	10,796
Graduate	6,052	4,449
Professional	2,600	2,085
Faculty	3,161	2,248
Staff	4,765	9,491
Campus Acreage	509 / 318	342
Number of Buildings	129	228
Gross Square Feet	9,859,179	12,956,378
Floor Area Ratio	0.71	0.87
Parking Spaces	19,924	12,996
Parking Ratio (persons/space)	1.90/1	2.78/1
Number of Beds	1,066	1,625
Living On-Campus	4%	9%

UNIVERSITY OF LOUISVILLE

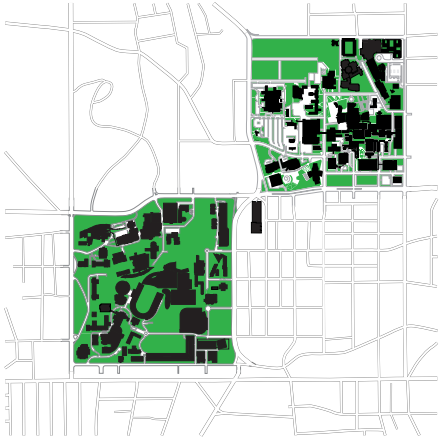
- Does not include the medical center campus
- A third of the size of IUPUI
- 15% of students live on-campus

Scale Comparison

	IUPUI	U of L
Campus Population	37,780	27,638
Enrollment	29,854	21,689
Undergraduate	21,202	15,125
Graduate	6,052	4,618
Professional	2,600	1,946
Faculty	3,161	2,074
Staff	4,765	3,875
Campus Acreage	509 / 318	287
Number of Buildings	129	106
Gross Square Feet	9,859,179	5,258,178
Floor Area Ratio	0.71	0.42
Parking Spaces	19,924	10,666
Parking Ratio (persons/space)	1.90/1	2.59/1
Number of Beds	1,066	3,300
Living On-Campus	4%	15%

UNIVERSITY OF CINCINNATI

- Campus population 25% larger
- Similar size campus and built area
- Parking ratio double IUPUI's

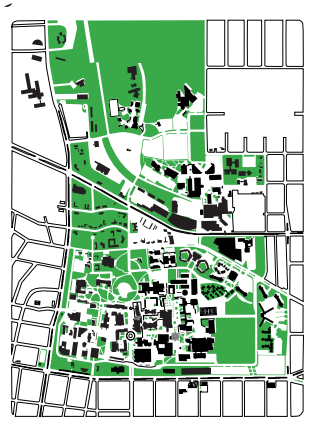


Scale Comparison

	IUPUI	UC
Campus Population	37,780	46,615
Enrollment	29,854	37,072
Undergraduate	21,202	28,369
Graduate	6,052	8,703
Professional	2,600	N / A
Faculty	3,161	5,620
Staff	4,765	3,932
Campus Acreage	509 / 318	473
Number of Buildings	129	117
Gross Square Feet	9,859,179	13,453,824
Floor Area Ratio	0.71	0.65
Parking Spaces	19,924	11,882
Parking Ratio (persons/space)	1.90/1	3.92/1
Number of Beds	1,066	3,300
Living On-Campus	4%	9%

UNIVERSITY OF NEW MEXICO

- Student population is 20% smaller
- More than double the on-campus housing
- Nearly a 3 to 1 parking ratio

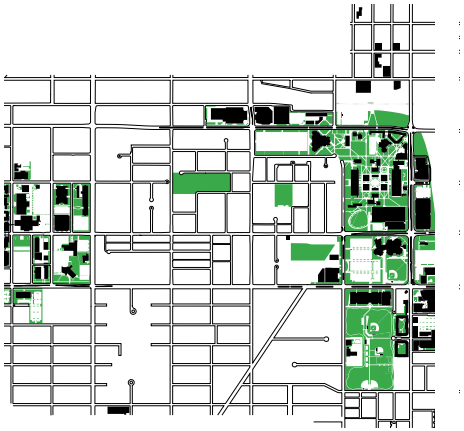


Scale Comparison

	IUPUI	UNM
Campus Population	37,780	32,745
Enrollment	29,854	24,092
Undergraduate	21,202	16,996
Graduate	6,052	4,570
Professional	2,600	2,526
Faculty	3,161	2,653
Staff	4,765	6,000
Campus Acreage	509 / 318	769
Number of Buildings	129	192
Gross Square Feet	9,859,179	6,800,000
Floor Area Ratio	0.71	0.20
Parking Spaces	19,924	11,000
Parking Ratio (persons/space)	1.90/1	2.98/1
Number of Beds	1,066	2,500
Living On-Campus	4%	10%

UNIVERSITY OF ILLINOIS - CHICAGO

- Similar size of campus population
- Half the land area
- Nearly three times the density

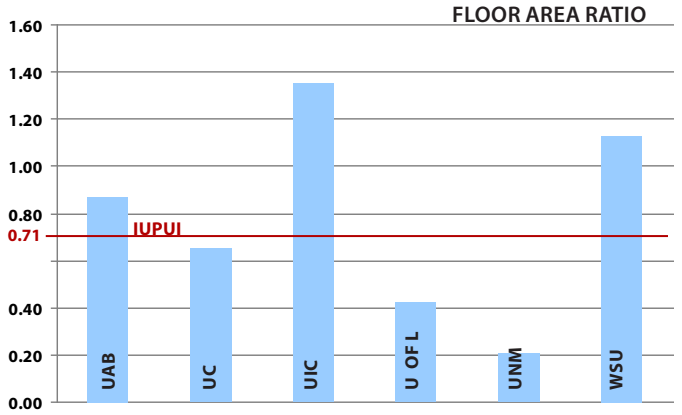


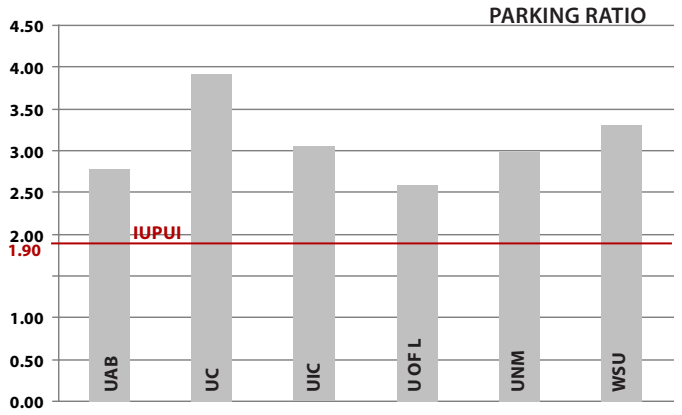
Scale Comparison

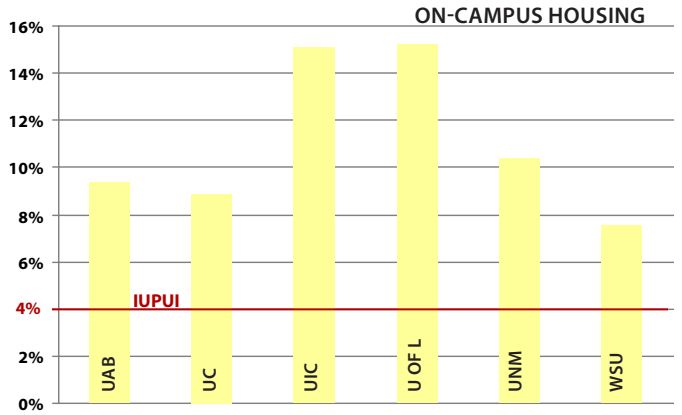
	IUPUI	UIC
Campus Population	37,780	36,640
Enrollment	29,854	25,125
Undergraduate	21,202	15,672
Graduate	6,052	6,916
Professional	2,600	2,537
Faculty	3,161	2,574
Staff	4,765	8,941
Campus Acreage	509 / 318	244
Number of Buildings	129	110
Gross Square Feet	9,859,179	14,400,000
Floor Area Ratio	0.71	1.35
Parking Spaces	19,924	12,000
Parking Ratio (persons/space)	1.90/1	3.05/1
Number of Beds	1,066	3,800
Living On-Campus	4%	15%

The summary chart to the right measures IUPUI on three physical planning parameters:

- Density (F.A.R.)
- Parking Ratio
- On-Campus Housing







CAMPUS ANALYSIS

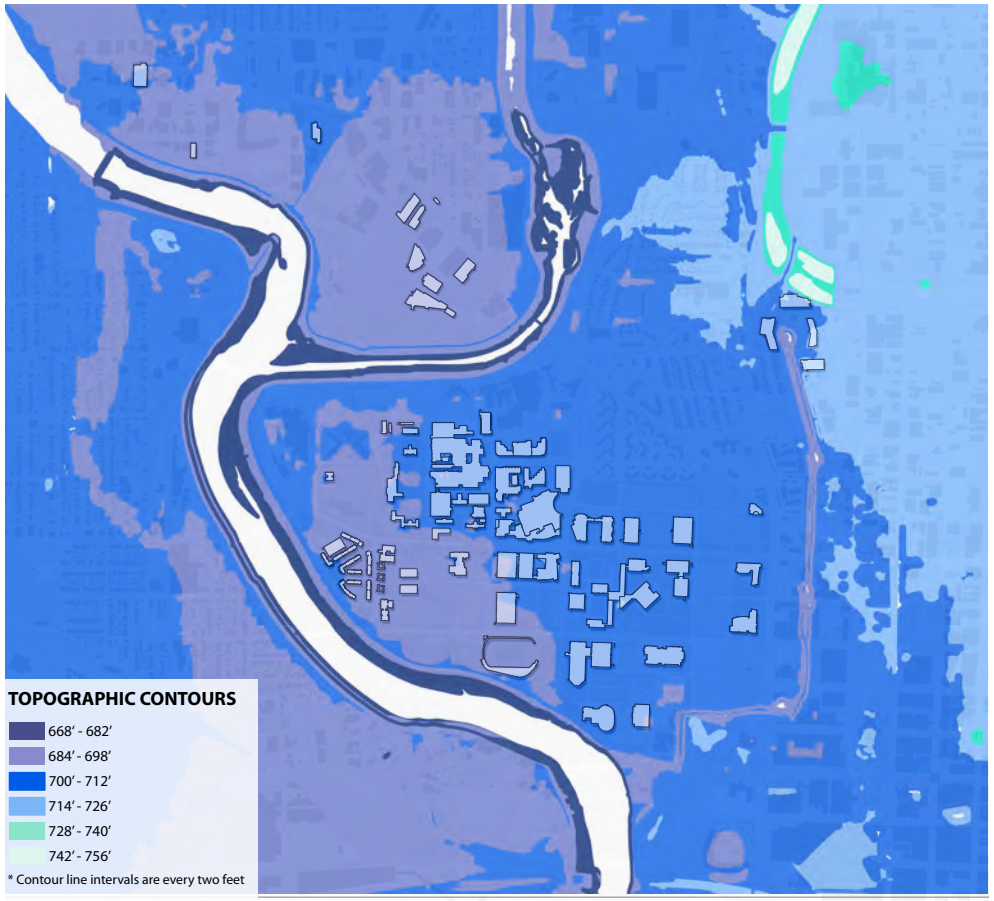
NATURAL FEATURES

Land Form and Hydrology

Indianapolis in Central Indiana is part of the Tipton Till Plain, a thick layer of glacial till remaining from the last ice age. As the glacier retreated, meltwater poured through the White River drainage basin, creating its low-lying, meandering floodplain. IUPUI is located within the geological formation of the West Fork Outwash Plain. The underlying bedrock consists of dolomites, shale, sandstone, limestone, anhydrite, and gypsum.

As part of the original floodplain and delta of Fall Creek, The IUPUI campus is relatively flat, ranging from a high point of 756.0 feet near IU Health and IUPUI medical facilities, to a low point of 668.0 feet, a difference of 88 feet. The levee elevation along the banks of the White River averages 673.0 feet, creating a low pocket for site drainage behind the levee.

A ridge line in the northeast quadrant of the campus divides the land into two drainage basins: The Fall Creek-Minnie Creek watershed

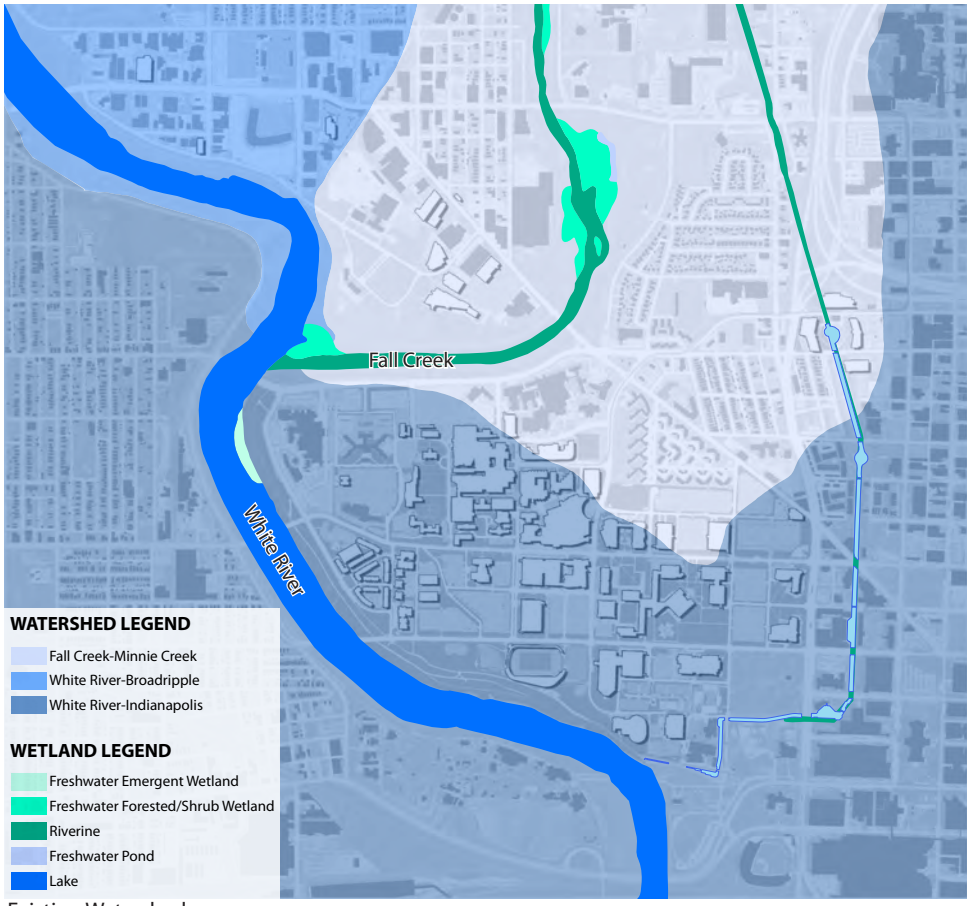


Existing Topography

is located on the northern portion of campus and the White River-Indianapolis watershed is located on the southern portion of campus. Stormwater runoff in both drainage basins feed into the City of Indianapolis storm sewers that discharge into Fall Creek or the White River.

Floodplain and Site Drainage

After the Indianapolis flood of 1913, earthen levees were constructed along the banks of the White River and Fall Creek from the 1920s to the 1960s. The levees redefined the floodplain boundary, holding both the 100-year floodplain and the floodway within manmade channels on the White River and Fall Creek. On the main IUPUI campus, approximately 448.3 acres of land area drains via storm sewers to the White River. Of this amount, 308.8 acres, or 69% of land area in this basin is impervious surface, consisting of building and garage roof areas, and paved surfaces of parking lots, roadways and sidewalks. A portion of this area drains to Fall Creek-Minnie Creek before reaching the White River.



Existing Watersheds

White River Riverwalk

White River at Bush Stadium

Fall Creek

The White River and Fall Creek

The White River drainage basin is approximately 5,746 square miles, and drains most of the central part of Indiana. The West Fork of the White River is 273 miles long, flowing southwest where it drains to the Wabash River. 27 miles of the West Fork of the White River flows through Marion County, forming the western boundary of the IUPUI campus. Fall Creek is a tributary stream of the West Fork and forms the northern boundary of the campus.

Prior to European settlement, the White River was a clear, cool water river with an abundant fish population, flowing through a dense hardwood forest. Over time, forests were cleared, and runoff from agriculture, urban development, and industrial discharge has severely degraded the water quality and stream condition of both the White River and Fall Creek. Both water bodies still receive sewage overflow during major storm events from combined storm and sanitary sewer systems.

The City and County's latest efforts to improve the water quality and habitat of the river have been successful. Recent studies have shown improvements to water quality and fish populations within the river, but more remains to be done. The City of Indianapolis is pursuing implementation of a long term plan to separate the combined storm and sanitary sewer system, so that sanitary sewage waste no longer discharges to the river. This will have some of the most positive impacts on water quality in Indianapolis.

Significant portions of the White River and Fall Creek also lack woody vegetation. This is causing bank slumping and erosion during flooding. Flooding along Fall Creek in particular has caused scouring along its banks, impeding the growth of natural vegetation.

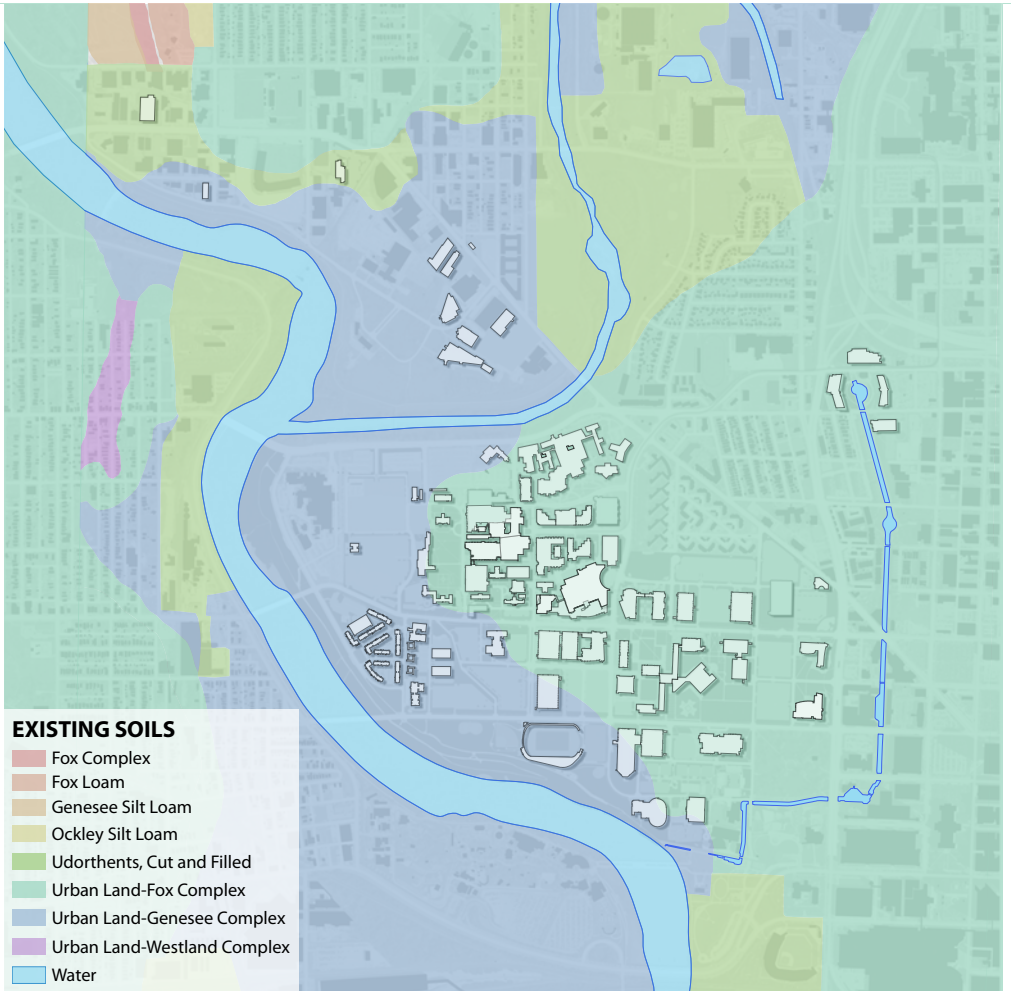
Wetlands

The National Wetlands Inventory map for the IUPUI campus indicates three types of wetlands within the floodplain boundaries of Fall Creek and the White River: floodplain

forested wetlands susceptible to temporary flooding, seasonally flooded areas with emergent vegetation, and areas of river floodplain with no vegetation definition.

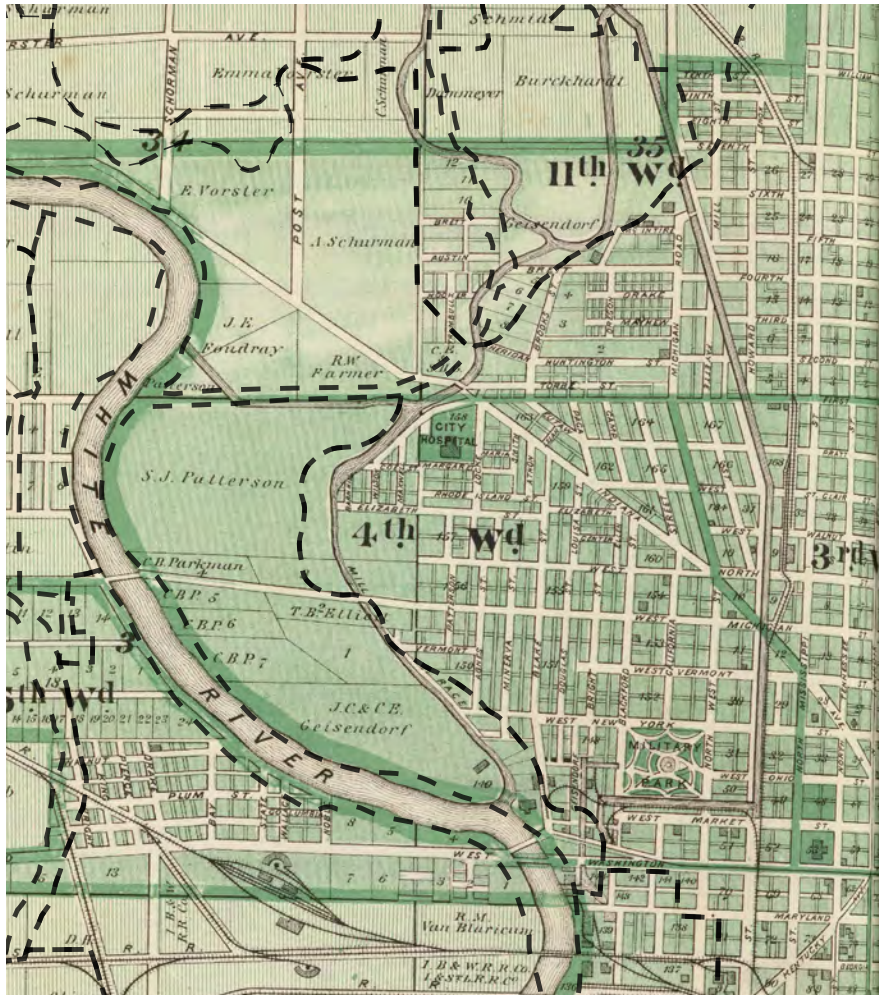
Soils and Urban Fill

A large part of the IUPUI campus was forested wetland and floodplain for the White River and Fall Creek. In the early 1800's Fall Creek flowed directly south, its creek bed and tributaries fanned out through the area that is now the western half of campus. Over time, the area has been greatly altered and filled. Two urban soil types are therefore found on campus: the Urban Land –Fox Complex, and Urban Land – Genessee Complex, both typical of urban fill soils and debris found in disturbed and/or developed areas. The constraints for the Urban land – Genessee complex are primarily due to frequent flooding, although this soil type is not listed as hydric. The water table depth is given as 48 to 72 inches. No hydric soils are found within the IUPUI campus.



Existing Soils

It is interesting to note the close correspondence between the lowest areas of campus – west of the former mill race location - and the area with lesser quality urban fill soils, located in the western third of the peninsula. This difference in soil type and elevation indicates that deep pile foundations may be required for construction in this area of campus.



1876 HIstorical Map of Indianapolis showing Existing Soils Overlay

Vegetation and Land Cover

Central Indiana was originally part of a vast deciduous forest that covered most of the state. Pre-settlement Marion County consisted of deciduous forest, streams and wetlands, with no prairie openings. Dominant tree species included Sugar Maple, American Beech, Ash, Chinquapin and White Oak, and Shagbark Hickory in upland areas, with Swamp White Oak, Silver Maple, Black Willow and Sycamore in floodplain forests. It is estimated that by 1876, forest cover in Marion County was down to 40% of land area, decreased to 10% in 1952, and down to 1% of land area by 1986. Forest cover has been replaced by agricultural fields, lawns, parks, and urban development.

Wildlife habitat or areas with natural vegetation on the campus is almost nonexistent. Areas with natural vegetation are found along the banks of the White River and Fall Creek, although most of this vegetation is impacted by flooding and scouring. There are a few good quality pockets of vegetation with intact riparian forest and natural

Existing Vegetation Cover

undergrowth along the eastern shore of the White River near the confluence with Fall Creek.

On the IUPUI campus, the majority of pervious land cover is open, mown lawn. In fact, lawn accounts for 100 acres of the 352 acres on the peninsula. Approximately 9% of the total campus property is covered by tree canopy from street trees and more formally planted bosques. Although not fully realized, one of the earliest master plans by the Olmsted Brothers called for planting five to ten thousand trees. The Zion & Breen landscape master plans in the late 20th century identified W. Michigan and W. New York Streets as significant gateway streets.

Pedestrian Mall at Riley Hospital for Children

Portions of these streets were planted with multiple rows of trees on either side, forming dense allees. Not all of the allees of trees on these corridors have been completed.

LANDSCAPE CHARACTER

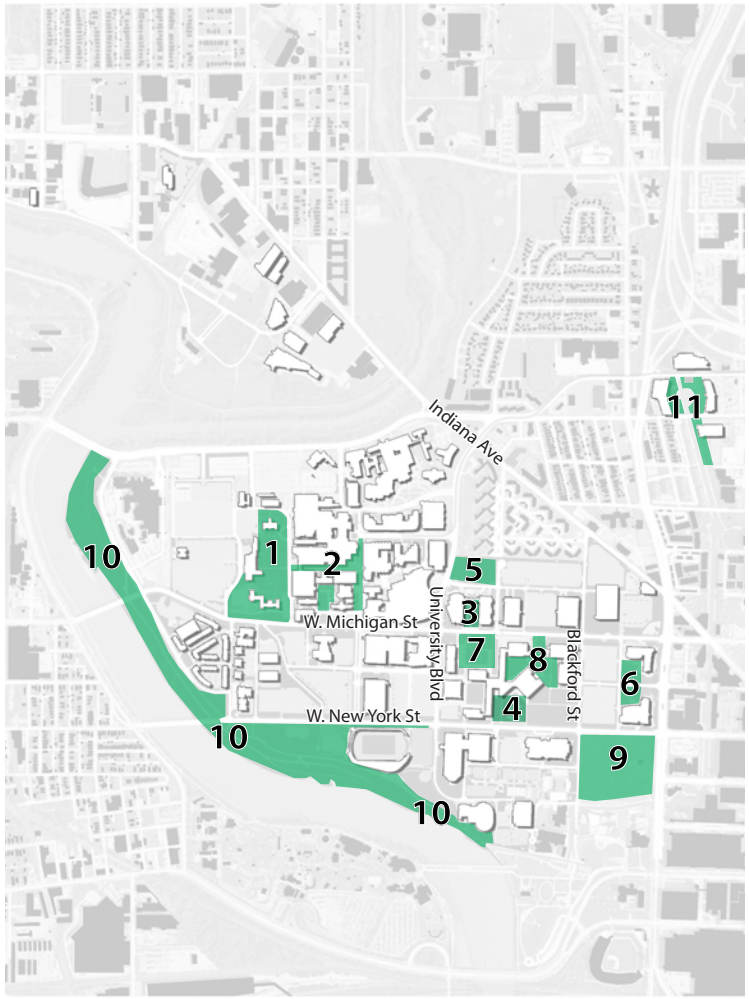
The character of campus is defined by the urban grid of streets and superblocks, with a formal landscape geometry responding to the orthogonal layout of the streets and buildings. Open space on campus is comprised of a hierarchy of four types: the linear, tree-lined setbacks along W. Michigan and W. New York Streets; the historic Ball Gardens and Military Park; the large Academic Quad that surrounds the University Library; and a few smaller courtyards and pedestrian spaces such as the pedestrian walk at Riley Hospital for Children and the courtyard at the University Place Hotel. Although the campus has a formal geometry in response to the street grid, it lacks a level of organization and detail that is scaled to the pedestrian, and connected back to the city.

Memorable Spaces

Existing memorable spaces - outdoor places with a unique character, spatial quality or trait - are limited to a few notable places on campus.

The scale and mature landscape of Ball Gardens makes it one of the most memorable and iconic spaces on campus. Smaller spaces such as the University Place Courtyard and the Wood Memorial Plaza and Fountain create high quality, pedestrian-scaled outdoor environments with a rich landscape texture, site furnishings, and amenities. The outdoor terraces at the new Campus Center, Inlow Hall and ICTC are also models of more successful urban spaces. Lockefield Green and the Cavanaugh Quadrangle are two undefined open spaces on campus. Although they provide open space, they lack spatial definition or a clear program for use. Other than these notable spaces, IUPUI lacks sufficient memorable spaces at a variety of scales.

The campus is in close proximity to City and State parks and cultural resources, such as Military Park and the White River State Park, and museums to the south. However, visibility and accessibility to White River State Park and museums are almost non-existent from the campus. Visibility and connections to these important civic and open space resources are important considerations for the master plan.



Existing Memorable Spaces

MEMORABLE SPACES

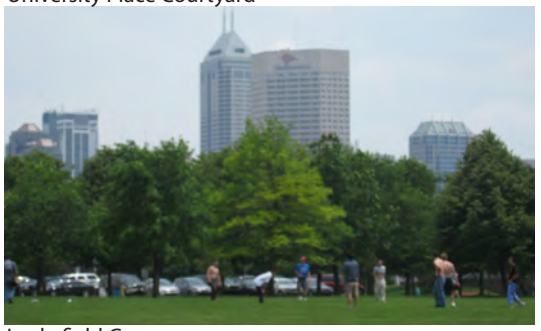
1. Ball Gardens
2. Pedestrian Mall at Riley Hospital for Children
3. University Place Courtyard
4. Wood Memorial Plaza and Fountain
5. Lockefield Green
6. Outdoor Terraces at Inlow, ICTC
7. Cavanaugh Quadrangle
8. Library Green South of W. Michigan St.
9. Military Park
10. Open Space Along the White River
11. Canal Walk

Ball Gardens

Pedestrian Mall at Riley Hospital for Children

University Place Courtyard

Wood Memorial Plaza and Fountain



Lockefield Green

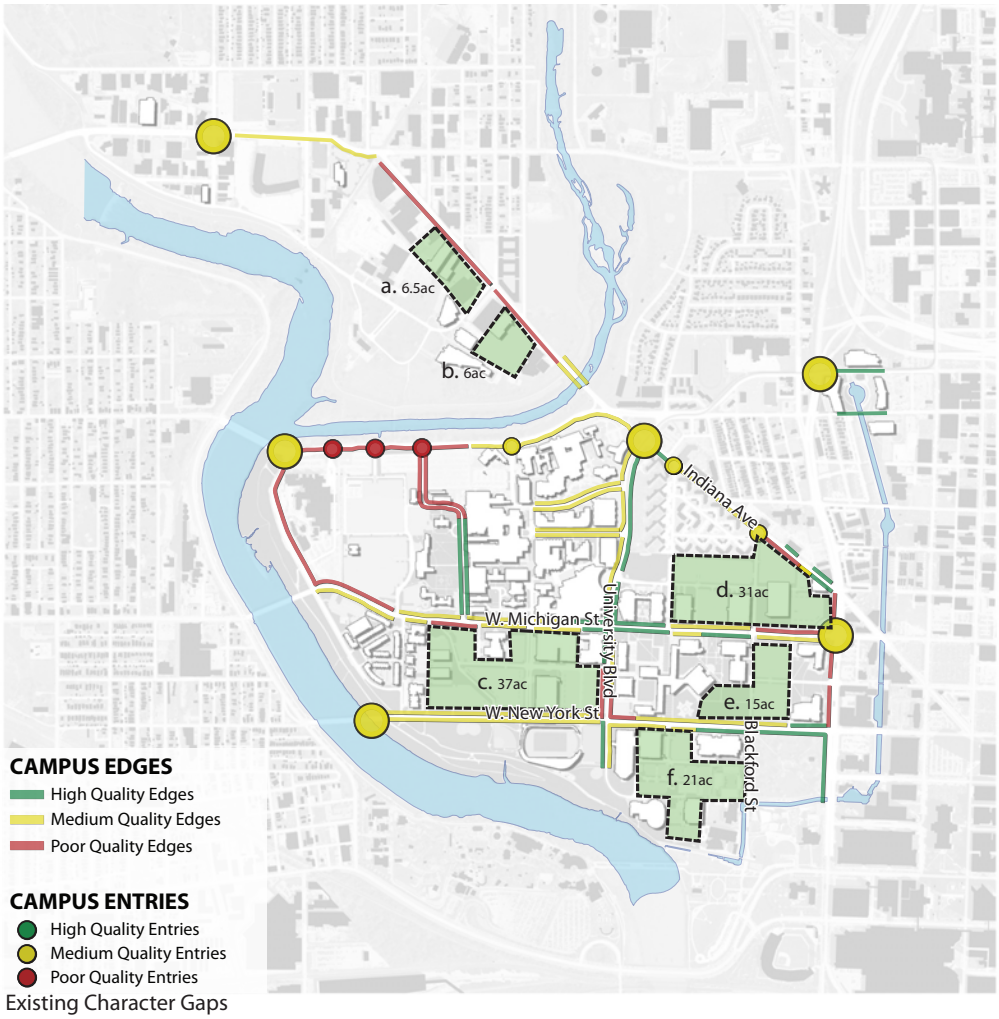
Outdoor Terraces at Inlow, ICTC

Character Gaps

Open houses held early in the process revealed that campus faculty, staff and students ranked the quality of the campus environment low and in need of improvement. The lack of quality construction and architectural design on what were 'temporary' structures (such as the Administrative Office Building) detract from the higher quality of design and construction on many campus buildings. Overscaled and undefined open space also lessens the visual quality and pedestrian experience of campus.

In particular, the academic quadrangles that surround the University Library lack a level of landscape refinement and amenities. Potential

Canal District



views and access to the riverfront from the campus is a current gap in the campus character and a hidden opportunity for future landscape expression.

The visual dominance of large, unscreened, parking lots and the poor quality of parking deck facades create the largest gaps in the quality of the campus environment. While the university needs to provide parking for its large commuter student and faculty/staff populations, improvements to existing surface parking can and must be addressed as part of the university's commitment to enhancement of the public realm and sustainability. Surface parking on campus also provides land bank opportunities for future development, which will radically alter the visual character of these areas.

Campus Edges

The N. West Street frontage of the IUPUI campus, particularly between W. Michigan and W. New York Streets, portrays a clear sense of identity. Its consistent setback, similar building heights, massing, and materials, and quality

Pedestrian Gateway at Barnhill

West Avenue at W. Michigan Street

W. Michigan Street

landscape all contribute to the character of this campus edge. However, the overhead utility lines detract from the attractiveness and quality of this primary campus edge. Surface parking lots, sparse landscape, and an inconsistent architectural style and setback dilute the clarity of remaining edges of campus on Indiana Avenue and W. 10th Street.

Internal to campus, the Zion and Breen landscape plan established deep setbacks for W. Michigan and W. New York Streets. This has created a lush but suburban quality to campus, adding to the perception that W. Michigan and W. New York Streets are barriers to accessing campus. Setbacks on other campus streets vary, but are typically deeper than traditional urban streets. Large sections of surface parking and inconsistent building placement along major corridors such as University Boulevard do not convey a consistent urban design intent.

Streetscape Character

The streetscape character at IUPUI is at best utilitarian. Generally, sidewalks are provided along most streets and thoroughfares, sometimes at the curb, sometimes separated from the road traffic by a narrow lawn panel. There are few streets with a healthy or established row of street trees. Some of the best examples on campus include University Boulevard south of W. New York Street. There, mature street trees planted along both sides of the sidewalks provide shade to pedestrians and motorists and define the street. The portions of W. Michigan and W. New York Street planted with staggered double rows of trees are also successful examples. Some of the poorest streetscapes are also at some of the busiest pedestrian areas, such as the east side of University Boulevard from W. Michigan to W. New York Streets. This streetscape consists of large expanses of pavement next to on-street parking, surface parking lots and a 4 -lane roadway, plus the Cavanaugh Hall loading dock. It has wider walks to accommodate foot traffic, but lacks any street trees, landscape, or urban amenities. Improvements to the streetscape character on campus will be a key component to enhancing the pedestrian realm.

Gateways

Gateways are arrival points to the campus, and can consist of a building or grouping of buildings, an architectural feature, a landscape feature, or a piece of public art. They can be scaled to either a vehicular scale or a pedestrian scale, depending on the mode of arrival and surrounding context.

The majority of traffic arrives to campus from the northeast or southeast. Because of the one-way street pairs, gateways to the IUPUI campus are limited to University Boulevard and W. Michigan Street off of N. West Street. Here, major campus entry signs and landscape have been installed. They are generally effective for announcing the campus entries. However, the signs lack an urban context and density of development around them to fully express the concept of gateway and arrival at a great urban research university. The I-65 exit ramp at N. West Street is a true regional front door for IUPUI and the medical campus, and provides an opportunity for a larger scale entry design.

Internal to campus, there are a few well-designed pedestrian gateways to the Barnhill and Middle Drive pedestrian malls at Riley Children's Hospital that could serve as models for future gateways to other campus spaces.

Wayfinding is a critical concern for all users and visitors to campus. The University has been working with IU Health to implement a better wayfinding and signage program to direct visitors and patients to Riley and IU Hospitals, and various clinics. Modifications to roadways and the addition of new development and/or relocated facilities will require updating this wayfinding system.

CAMPUS DEVELOPMENT

Community Context

According to the United States Census, the City of Indianapolis had a population of 795,458 in the year 2006, making it the third largest Midwestern city, after Chicago and Detroit. Its metropolitan area has a population of over 1.7 million. The IUPUI campus occupies the peninsula of land formed by the White River

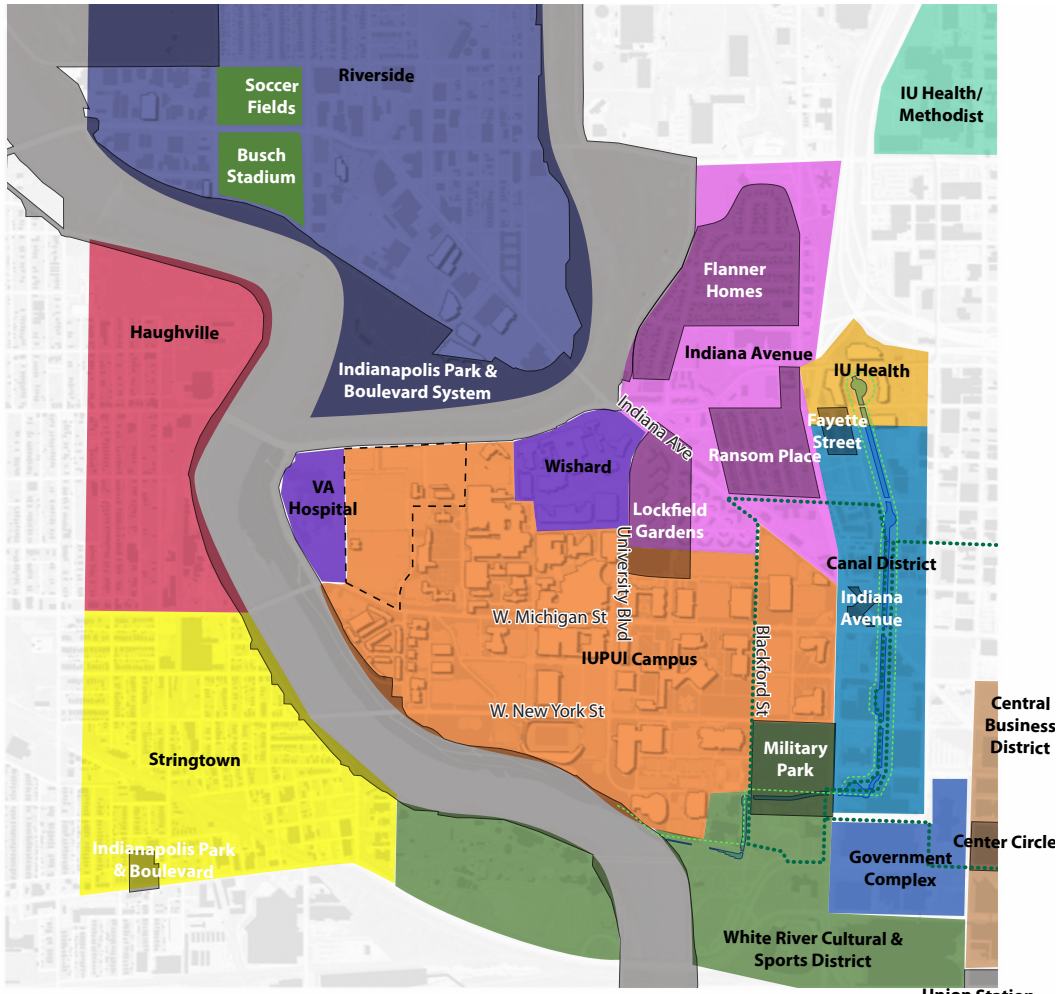
University Boulevard at W. 10th Street

W. Michigan Street and West Avenue

and Fall Creek, in the northwest quadrant of downtown Indianapolis. A mix of government uses, parking, high density residential, historic properties, and single family neighborhoods surround the main campus.

The campus is bordered by 3 neighborhood and economic development districts to the east and south: the Indiana Avenue District, the Canal District, and the White River Cultural and Sports District. The Central Business District of downtown Indianapolis lies a few blocks east of the campus. North and west of Fall Creek and the White River are the neighborhoods of Riverside, Haughville, and Stringtown.

The IUPUI campus and the neighborhoods of Indiana Avenue and the Canal District are part of the larger Indiana Avenue Cultural District, under the jurisdiction of the BOS Community Development Corporation. There are six registered National Historic Districts and numerous historic properties within this area, including Indiana Avenue, Fayette Street, Lockefield Gardens, Ransom Place, and



Community Context

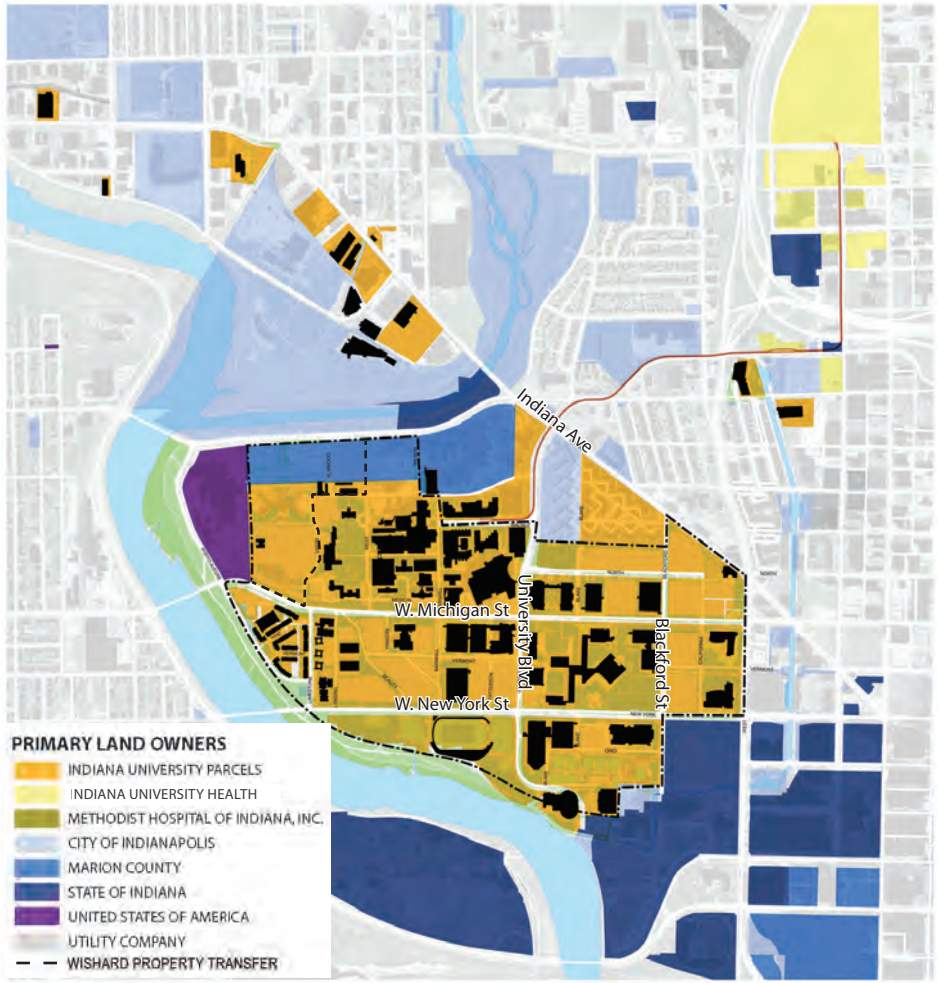
the Flanner Homes. Historically significant structures and institutions include the Walker Theater and the Crispus Attucks High School, both on the National Register of Historic Places.

The White River Cultural and Sports District south of campus contains several significant state and local cultural facilities and destinations, including the 250-acre White River State Park, the Eiteljorg Museum of American Indian and Western Art, the State History Museum, Victory Field baseball complex, and the NCAA National Hall of Champions. The historic Military Park is also a federally recognized historic district within this area.

The State Capitol Building and state government offices are at the southeast corner of campus, across from Military Park. Although only 6 city blocks away from Monument Circle and the heart of downtown Indianapolis, the IUPUI campus is separated from downtown businesses and activities by several blocks of surface parking lots and decks and by N. West Street, a major nine-lane wide city arterial. The lack of urban vitality and active land uses between campus and downtown affects pedestrian quality and creates the perception that the campus is isolated from the rest of the city. Higher density residential infill along the Canal district has helped somewhat to bring population to the downtown and campus, although its inward-focused urban design character does not enhance the street level.

Elteljorg Museum and Indiana State Museum

Monument Circle



Property Ownership

Property Ownership

Indiana University, Indiana University Foundation, the Indiana University Trustees, Indiana University Health, the Federal Government, and Marion County are the primary land owners on the peninsula formed by the White River and Fall Creek. The City of Indianapolis, Marion County, the State, the federal government, Methodist Hospital and IU Health are other significant land owners surrounding the campus. IU Health and IUPUI have acquired land northeast of campus, at the head of the downtown canal, largely along the People Mover. IUPUI has also acquired outlying parcels north of Fall Creek, along Stadium Avenue.

Land Use

The concept of IUPUI as one campus is a relatively recent condition. The construction of the Herron School of Art on W. New York Street in 2005 was the last step to consolidate the various academic departments and schools onto the peninsula. A few research facilities on W. 10th Street at the Canal—the Health

Information and Translational Sciences Building (HITS), the Emerging Technologies Center, and the Biomedical Research Technology Center (BRTC) facility—and miscellaneous support space (such as the ceramics studio for the School of Art) off of Stadium north of Fall Creek are the only off-campus facilities operated by IUPUI.

Currently the IUPUI campus is divided into five land use districts on the main peninsula:

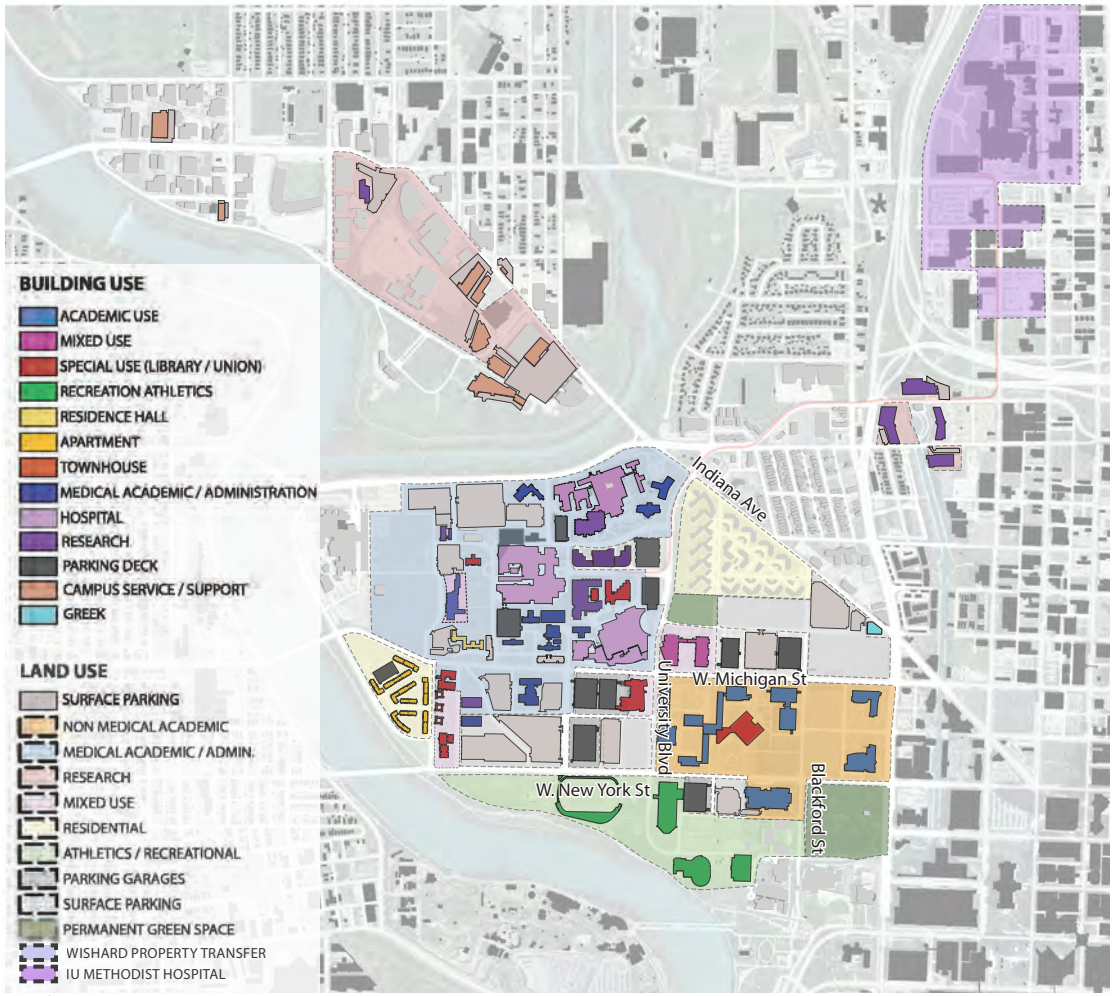
- Health Sciences District
- Non-Health Sciences Academic District
- Parking Districts
- Athletics and Recreation District
- Residential Districts

The Health Sciences District, the oldest developed land area of campus, occupies the northwest quadrant on the peninsula. It includes the IU Hospital and Riley Children's Hospital, patient clinics, medical and health sciences educational facilities, health sciences research facilities, and administrative departments and offices for the IU School of Medicine, School of Dentistry, and the School of Nursing. Wishard Memorial Hospital complex and the Veterans Administration Medical Center are neighbors to IUPUI in this northwest quadrant of campus. The district also houses miscellaneous campus support facilities such as the Power Plant, the Environmental Management Facility, the campus post office, and campus police in the Ball Annex.

The existing county-owned Wishard Memorial Hospital has outgrown its site at the corner of W. 10th Street and University Boulevard. In the fall of 2009, county voters approved a millage to allow the transfer of land between IUPUI and the county for the construction of a new county hospital. This will allow replacement of the existing Wishard Memorial Hospital, and the transfer of its land and facilities to IUPUI for campus use. The new Wishard Memorial Hospital is currently under construction on the west edge of campus, on the former Larue Carter psychiatric facility and old State Board of Health sites, between the VA Hospital and IUPUI's border. The land transfer is scheduled for December of 2013.

The Non-Health Sciences Academic District by contrast is the newest part of campus in the southeast quadrant, between W. Michigan and W. New York Streets, east of University Boulevard. This district contains the remaining academic functions, schools, and colleges of the University and the central University Library. The new Campus Center and the University Place Hotel and Conference Center are strategically located in the geographic center of the campus, at the crossroads of W. Michigan Street and University Boulevard, where they can be easily accessed by both the medical research and non-medical academic districts.

Parking Districts for the campus are concentrated into the remaining southwest and northeast quadrants, unfortunately located across W. Michigan Street from the destinations and functions the parking is intended to serve. Primarily used for parking, these districts also contain non-academic functions such as Administration Offices, the Ronald McDonald House, and the Center for Young Children.



Landuse

The Athletics and Recreation District on the south end of campus includes the Natatorium, the Indianapolis Tennis Center, the Michael A. Carroll Track and Soccer Stadium, the National Institute for Fitness and Sport, and softball and baseball fields. Kuntz Memorial Soccer Stadium, home to IUPUI's men's and women's soccer teams is located off of the main campus, north of Fall Creek on Stadium Drive.

The athletic facilities at IUPUI were built in the 1980s to host the 1987 Pan American Games held on campus, and to attract other national and world-class events. They have contributed to Indianapolis' reputation as "Amateur Sports Capital of the World". Although used by IUPUI, they were not constructed for IUPUI Athletics programs, and are not always seen as connected to the mission of IUPUI. As a district, their location, particularly the Tennis Center, cuts off access from campus to the White River State Park and cultural museums to the south.

Residential Districts are on the west and east ends of the peninsula. The University currently houses approximately 4% of its student body on campus. The Campus Apartments at the River Walk on the west side is a newer student housing complex that holds the majority of student housing. Its location is remote from the main academic campus, and lacks access to student amenities, services, and retail. Although not a part of student housing, Lockefield Gardens on the east side of campus provides housing for many graduate and medical school students, close to the campus core, medical school, and healthcare facilities.

Campus Land Use Issues

Overall, the potential energy and vitality of IUPUI as an urban campus is limited by the division of the campus into single use zones. Uses that are too distant from each other and a lack of campus amenities result in an academic core that feels empty, particularly at night. Surface parking lots as a primary land use on Indiana Avenue misses a key opportunity to create a vibrant urban edge to the neighborhood.

The Health Sciences District faces significant demand for expansion and/or new facilities but is severely land locked. Multiple uses, for medical education, research, faculty offices, and health care all need proximity and are competing for limited land area. Older structures such as Long Hospital, the Clinical Building, Coleman and Fesler Halls are on key sites for future growth, but new space must be found to move their existing programs and occupants before these sites can be made available for new construction.

As one part of the total University, the Health Sciences District faces increased challenges to integrate and accommodate new and emerging programs affecting patient care services, biomedical research, and medical education in new ways. These trends also reinforce the need for interdisciplinary collaboration among research scientists, clinicians, health care workers, physicians, medical educators and students.

Wishard Memorial Hospital Site and Land Transfer

Construction of the new Wishard Memorial Hospital and subsequent transfer of its existing land area to IUPUI will provide over 30 acres for future redevelopment. This will be a significant asset to address the future growth of health sciences education, research, and patient care in an interdisciplinary, integrated model. The current build-out of the existing Wishard site, condition of its current facilities for renovation and re-use, and ability to phase construction have been evaluated and described in detail as

Existing Wishard Memorial Hospital Site

part of Volume 2 of this master plan report, the **Integrated Plan for the Academic Medical Center Campus**. Please refer to that volume at the end of this document.

Campus Height and Density

For an urban research university in the heart of a major metropolitan center, the building height and density on the IUPUI non-medical academic campus is very low in scale and density. The great majority of buildings (78%) are less than four stories tall. 18 percent of buildings are between five to eight stories, predominantly within the Medical Research District. The University Place Hotel and the new Riley bed tower are the only structures on campus over 9 stories tall.

Floor Area Ratio (F.A.R.) is a means of measuring the proportion of building square footage to land area to determine the density of development. Overall, the IUPUI campus has a 0.7 F.A.R. The density of its campus districts ranges from 0.3 to 2.0 F.A.R. The Medical Research District, the densest part of IUPUI, has a more urban density at 2.0 F.A.R. However, the Academic District has an F.A.R. of only 0.4. Continued growth at lower levels of density will limit the capacity of the peninsula to accommodate future development. IUPUI must begin to value campus land as a strategic resource.

Building Condition

An evaluation of the physical condition for all campus facilities was conducted by the University Architect's Office and provided to the planning team. Buildings were evaluated based on building age, replacement value, building component values, overall condition, prior renewal capital expenditures and observation.

The majority of buildings on campus were found to be in either satisfactory condition requiring no immediate renovation, or fair condition, requiring minor to moderate levels of renovation. Over one dozen campus structures were identified in need of major remodeling, including:

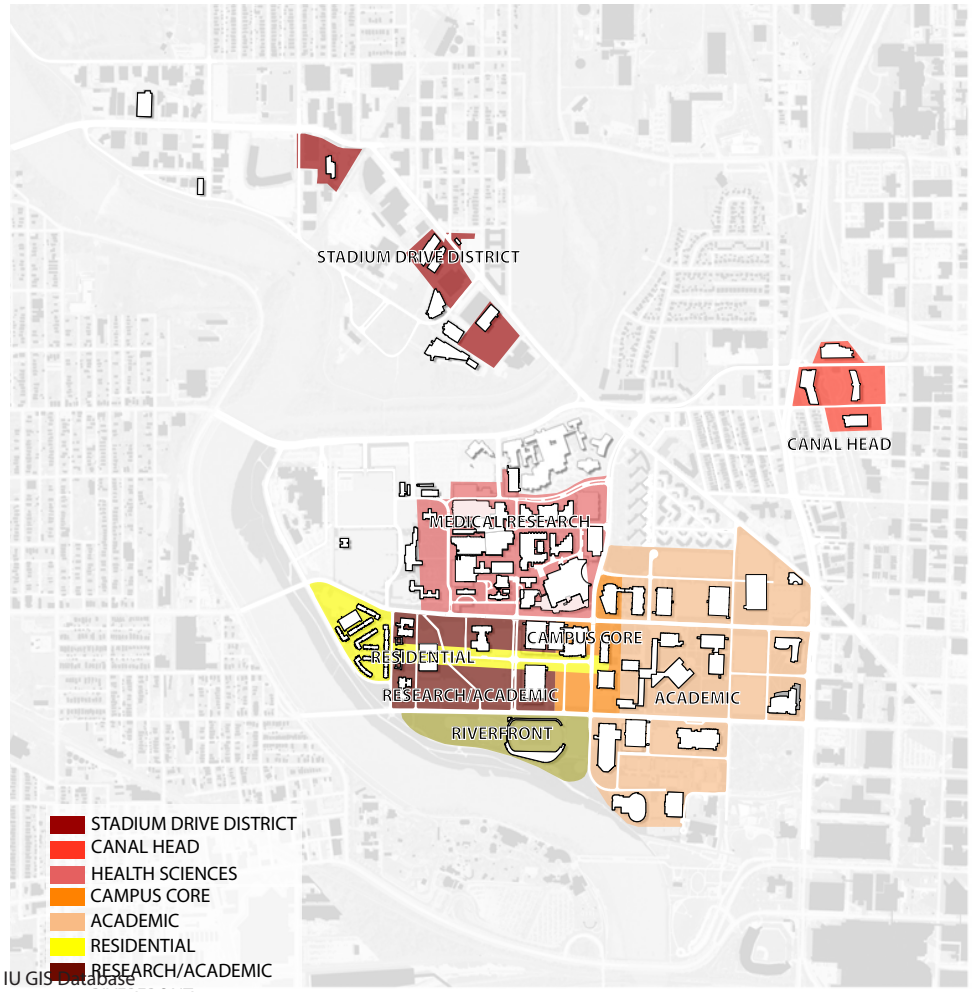
- Cavanaugh Hall
- Rotary Building
- Ball Residence Hall
- Coleman and Fesler Halls
- Clinical Building
- School of Dentistry
- Former Union building
- Natatorium
- Michael A. Carroll Stadium

A few structures were identified for demolition, primarily the Graduate Townhouse Apartments on Lansing Drive.

A number of the athletic venues built for the Pan Am Games in the 1980's have significant renovation issues and ongoing maintenance costs for the amount of use by IUPUI Athletics. The Michael A. Carrol Stadium and the Tennis Center are two facilities that are over-scaled for the amount of university use they receive, and are costly for IUPUI to maintain. Major renovation and retention of these facilities in their current form will likely not serve the University's needs in the long term.

Existing FAR Density			
District	**Total Bldg GSF**	**Dist Area (AC)**	**FAR**
Stadium Drive District	194,945	20.5	0.2
Canal Head	183,360	17	0.3
Medical Research	5,287,032	67	2.0
Campus Core	1,672,862	16	2.1
Academic	2,273,869	124	0.4
Residential	1,244,487	27	1.2
Research/Academic	585,249	33	0.3
Riverfront	64,355	21	0.1
Additional Campus Property	-	63.5	-

*Note: Acreage is based on IUPUI Property ownership data from the IU GIS Database



Existing Height and Density

Educational Adequacy

26 buildings on the IUPUI campus were evaluated as to their educational adequacy, including an analysis of their functionality, suitability for their use and purpose, and flexibility of space. The buildings reviewed were sorted into four categories:

1. High Quality/Model Buildings
2. Functional Buildings Requiring Upgrade / Renovation
3. Dated Buildings for Renovation or Replacement
4. Dated Buildings on Underutilized Sites

The specific buildings evaluated were:

1. **High Quality Buildings**
   - Biotech and Research Building
   - Eskenazi Hall
   - Health Information & Translational Science (HITS)
   - Informatics & Communications Technology Center (ICTC)
   - Inlow Hall

2. **Buildings Requiring Upgrade**
   - Business SPEA
   - Ceramics & Sculpture
   - Education/Social Work
   - Emerson Hall
   - Engineering & Technology Building
   - Engineering, Sciences & Technology
   - Medical Research & Library Building
   - National Institute for Fitness & Sport
   - Science Building
   - University Library
   - VanNuys Medical Science Building

3. **Dated Buildings to Renovate/Replace**
   - Dental Building
   - Natatorium
   - Nursing School
   - Taylor Hall (University College)
   - Union Building

4. **Dated Buildings, Underutilized Sites**
   - Cavanaugh Hall
   - Coleman Hall
   - Fesler Hall
   - Gatch Clinical Building
   - Lecture Hall

Long Hospital, Coleman Hall, Fesler Hall, and Gatch Clinical Building are significantly older buildings that have been converted from their original use and purpose. Although there has been some partial renovation, they are still identified in need of major renovation. Given their central location between Riley and IU Hospitals, the building sites of Long Hospital, Gatch Clinical Building and Coleman Hall are valuable to accommodate future growth for Cancer Research that will need close proximity to the hospitals and Simon Cancer Center. Though parts have been recently renovated, the Nursing School still has classrooms that are dated. The VanNuys Medical Science Building has been built in stages, and is also in need of major renovation.

The Dental Building is used for teaching clinics, research and teaching labs, classrooms, and offices. Starting in 1934 the building was built in three phases, and is outdated and in need of renovation and/or replacement space to accommodate its growing program and clinical practice.

Originally designed as a hotel, the Union building is at the end of its useful life. It is scheduled for demolition in the fall of 2011, as part of the site construction for the new county hospital, Wishard Memorial Hospital.

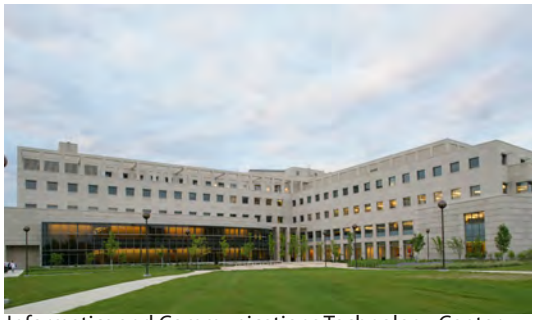
On the academic campus, the biology labs in the Engineering/Sciences and Technology Building are crowded and spaces are generally too small. The Science Building is also functional but needs more lab space.

Taylor Hall and the Lecture Hall are two of the original three buildings on campus. Taylor Hall is the former library, and has been reused for many purposes. The Lecture Hall is a one-story structure primarily used for classrooms. Both facilities are somewhat outdated and are too low in density at critical locations in the center of campus. In order to better utilize these prime campus sites, IUPUI should consider increasing the size of each building if renovation occurs.

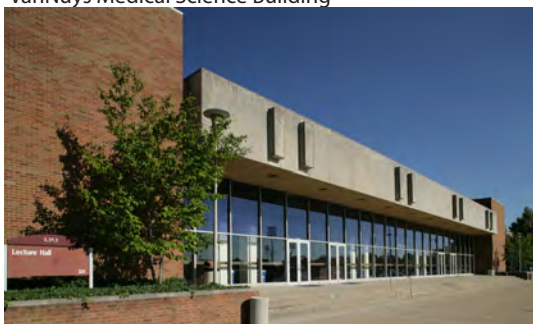
Cavanaugh Hall is the third of the original buildings. It is primarily used for classrooms and faculty offices. This building is seriously dated, office spaces are too small, and it has no collaborative space for students and faculty. Given its location at a key intersection at the center of campus, it would be better to replace this facility with a more modern classroom building than renovate it.

Built in 1982, the Natatorium has hosted national events and U.S. Olympic trials. With a seating capacity of 4,700, it has the largest indoor pool in the United States. However, the Natatorium has a significant amount of deferred maintenance issues and is in need of a major renovation. The gymnasium in the building is used for basketball and volleyball, but is greatly undersized for its use.

For further information, please refer to the full Educational Adequacy report in the Technical Appendix.


Informatics and Communications Technology Center

VanNuys Medical Science Building


Lecture Hall

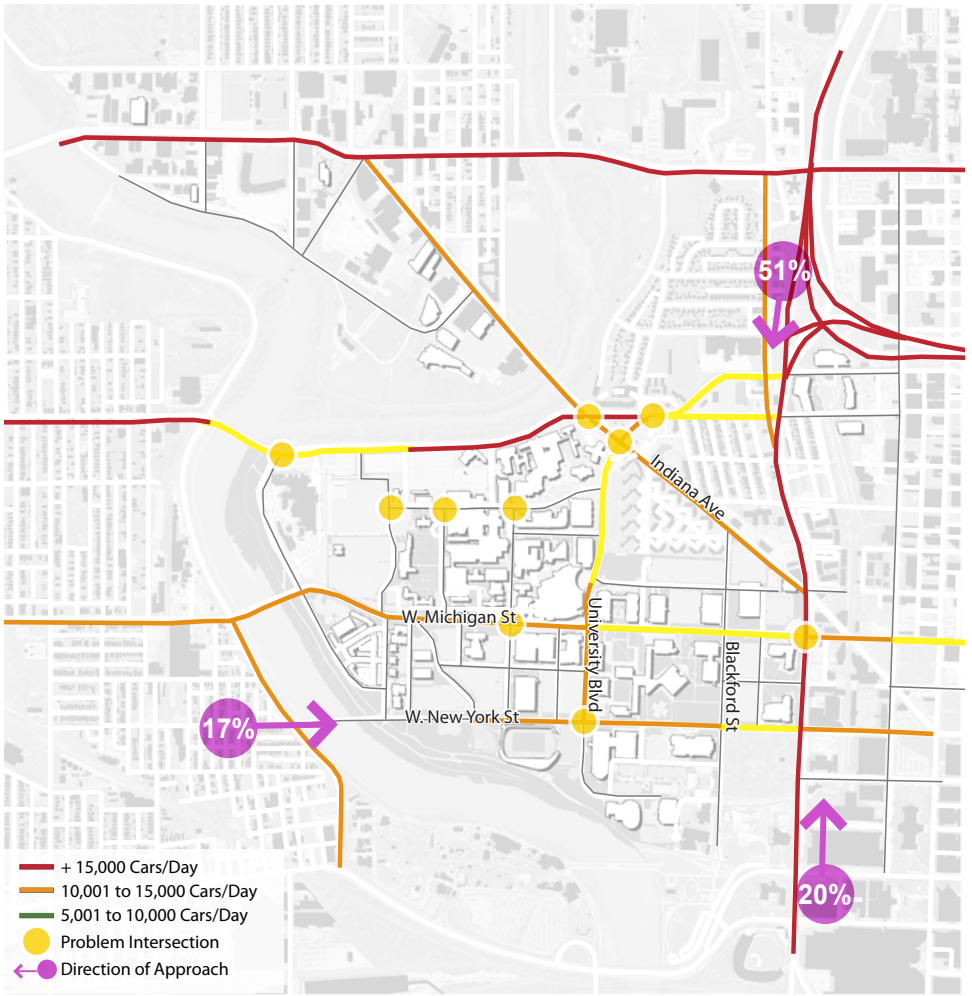
CIRCULATION AND PARKING

Roads and Vehicular Traffic

IUPUI is served by a roadway network and hierarchy of streets that include regional arterials, city arterials, campus arterials, and local roads.

The city arterials of W. Michigan and W. New York Streets are one-way pairs, with W. Michigan Street carrying westbound traffic into campus and W. New York Street carrying east bound traffic back to downtown. Blackford Street is also one-way between W. Michigan and W. New York Streets, leading southbound, to aid drivers exiting campus to W. New York Street. Average daily traffic volumes show that the majority of traffic coming to campus stays on campus, rather than using the city arterial streets as through routes.

Because of the campus's location on the peninsula and its one-way pairs, there are only five vehicular entrances: W. Michigan Street from N. West Street on the east; University Boulevard at Indiana Avenue and Blackford Street at Indiana Avenue on the north; and the



Existing Road Network

W. 10th Street and W. New York Street bridges on the west.

The majority of traffic, 71%, arrives to campus from the northeast and southeast. It breaks down as:

- 51% arrives from the northeast via I-65,
- 20% arrives from the southeast,
- 17% arrives from the W. New York Street bridge,
- The remaining traffic arrives from either the W. 10th Street bridge, or from the east on W. Michigan St.

The direction of arrival and the one-way street pairs create several congested intersections on campus. Several intersections have failing levels of service, including the triangle of intersections at Indiana Avenue, W. 10th Street, and University Boulevard. On the east, long queues line up to turn onto W. Michigan Street from N. West Street, and line up again on W. Michigan Street turning onto Barnhill Drive to access the Vermont Street and Barnhill Drive Garages. Evening queues line up on Blackford, Barnhill, and W. New York Streets for traffic exiting campus.

The layout and organization of roads on campus make circulation difficult. One-way street pairs, the removal of local streets, and insufficient north-south streets create very limited travel options, making it easy for drivers to get lost. Road closures and the lack of any direct north-south streets within the medical campus make wayfinding particularly difficult for hospital, clinical, and outpatient users.

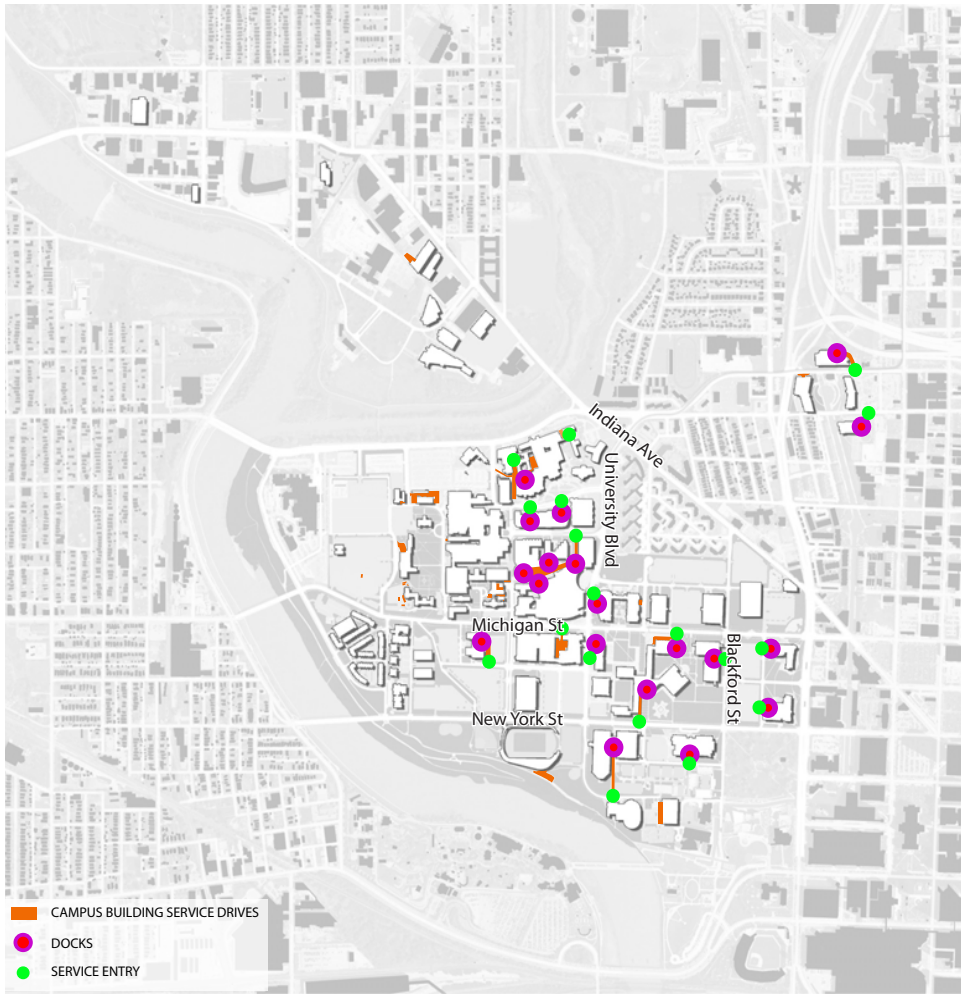
Traffic congestion on campus is more a function of the direction of travel and lack of north-south options, rather than street capacity. The traffic volume and 8 travel lanes combined on W. Michigan and W. New York Streets handle the same volume of traffic as W. 10th Street with 4 travel lanes (at half the capacity). W. Michigan and W. New York St. have capacity to handle the road volumes, but still have congestion due to turning movements. Further, the high speed of travel, number of lanes, and long stretches with no signalized pedestrian crossings make W. Michigan and W. New York Streets barriers to campus pedestrian movement.

W. Michigan Street

W. New York Street

Service Corridors

Service and loading areas typically are located and screened to minimize disruption to the public realm of campus. A few notable exceptions includes the loading dock of Cavanaugh Hall that fronts directly onto University Boulevard, and the University Library and former University College loading dock that faces W. New York Street, directly on a main pedestrian route through campus. As the campus continues to develop, service areas and drives will need to be carefully integrated to not disrupt the campus fabric.

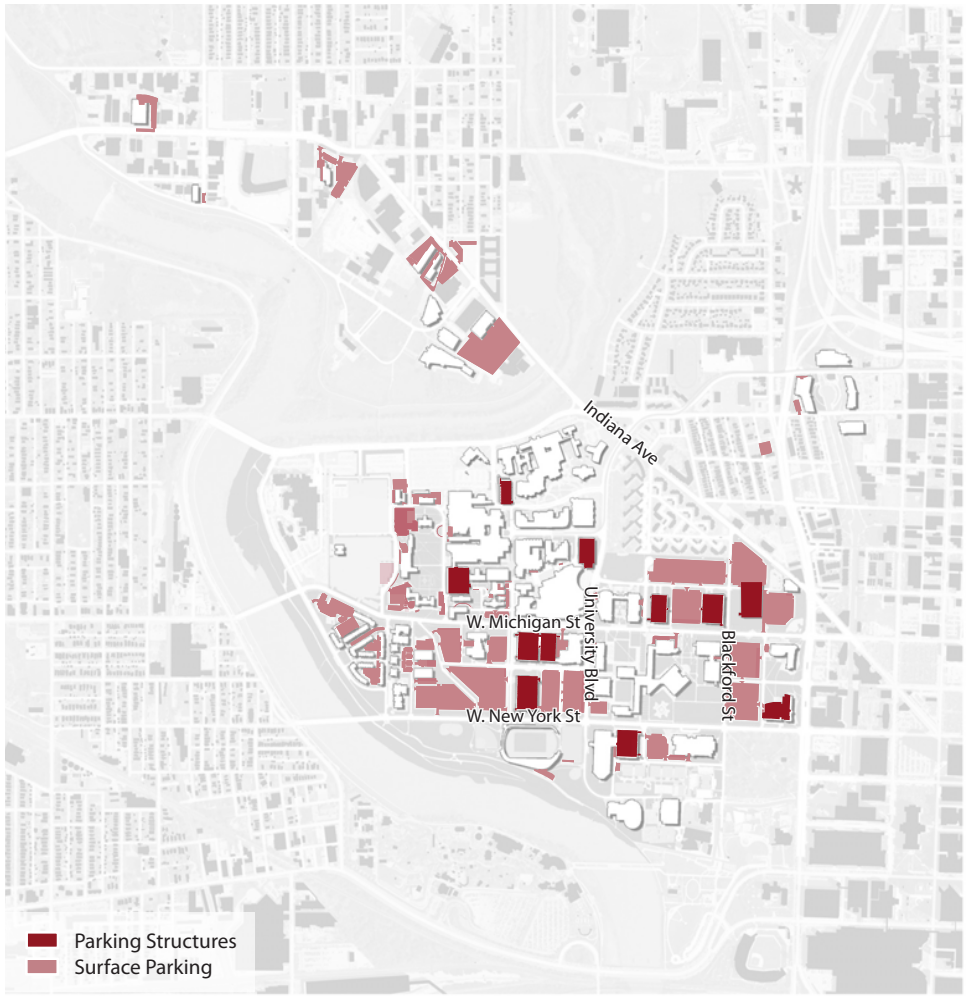


Service Corridors

Parking

As of 2008, the existing parking supply on campus was 19,924 spaces serving the campus population of students, faculty, staff, hospital patients, and visitors. 17,209 spaces were located on the main peninsula. Approximately 2,715 spaces were on land owned by the University north of Fall Creek, at the Canal District and other lots, serving off-campus facilities and remote parking. 8,331 spaces were in structured parking in 9 garages (including the parking below Inlow Hall) with 8,878 surface spaces on the main campus.

Approximately 73% of parking spaces on the main campus are permit parking for faculty, staff, and students. The remaining spaces are used for staff, physician, patient, and visitor parking for Riley Children's Hospital, IU Hospital, the University Place Hotel and Conference Center. A parking utilization study conducted in 2008 for all non-hospital related permit lots demonstrated that the University parking demand was at or beyond capacity. All parking lots and decks on the main campus



Parking

showed a 90% or greater utilization. In essence, the decks and lots on the peninsula were full.

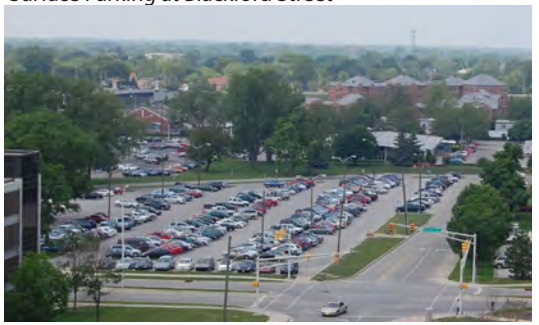
As a result of the study, IUPUI commenced construction on a new 1,200 space parking garage on the surface lot at California and West Michigan Streets. This garage opened in the fall semester of 2010, adding much needed parking in the northeast quadrant of campus.

Additional factors since 2008 have also changed the parking supply on campus. Construction of the new Wishard Memorial Hospital complex has taken out 1,700 surface parking spaces on the west side of campus. Temporary parking has been utilized north of campus, including parking at the former Bush Stadium on 16th Street, and parking at Kuntz Stadium with a shuttle service to campus. Combined, these two surface lots add over 1,200 peripheral parking spaces. Once the new Wishard Memorial Hospital is completed and occupied, IUPUI will regain about 1,700 spaces in existing surface lots and the Wishard parking garage on the old Wishard Memorial Hospital site, as part of the land swap with the County.

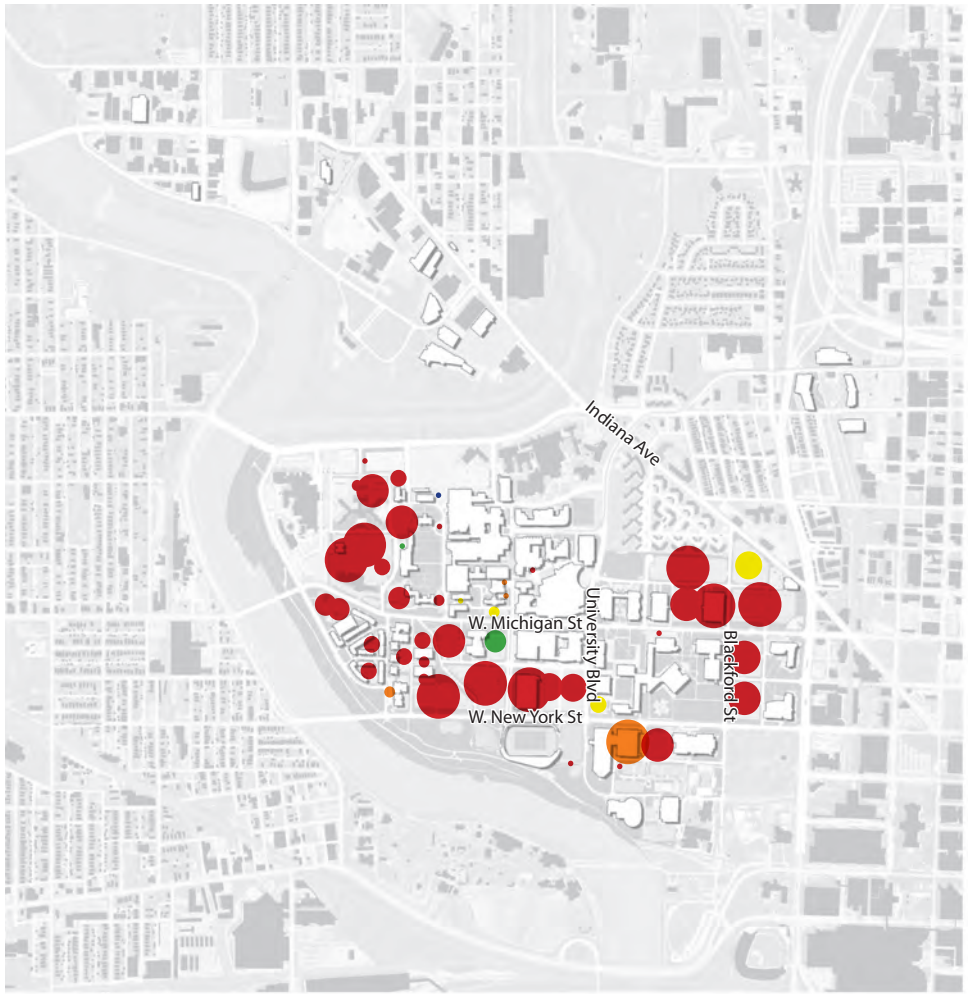
The location of the majority of parking on campus creates significant circulation and pedestrian safety issues. Parking is clustered in three locations: the surface lots and garages in the northeast quadrant of campus, largely across West Michigan Street; in the center of campus (the Barnhill and Vermont Street garages); and the southwest quadrant of campus (the surface lots between W. Michigan and W. New York Streets, west of Barnhill). Parking located across West Michigan Street from the academic core creates significant conflicts for pedestrians trying to cross West Michigan. Parking located in the southwest quadrant is difficult to access. Not enough parking facilities are located close to campus entries and arrival points, causing motorists to drive further into campus to park, and then walk back to their destination. This leads to increased campus traffic congestion and conflicts with pedestrians. Future parking demand and the location of new facilities to support the growth of campus and to serve hospital patients and visitors are key concerns for the campus master plan.

Vermont Street Garage

Surface Parking at Blackford Street


Surface Parking at W. New York Street

Number of Spaces	Utilization
<25	<50%
25 - 50	50% - 59%
51 - 100	60% - 69%
101 - 200	70% - 79%
201 - 500	80% - 89%
>500	>90%

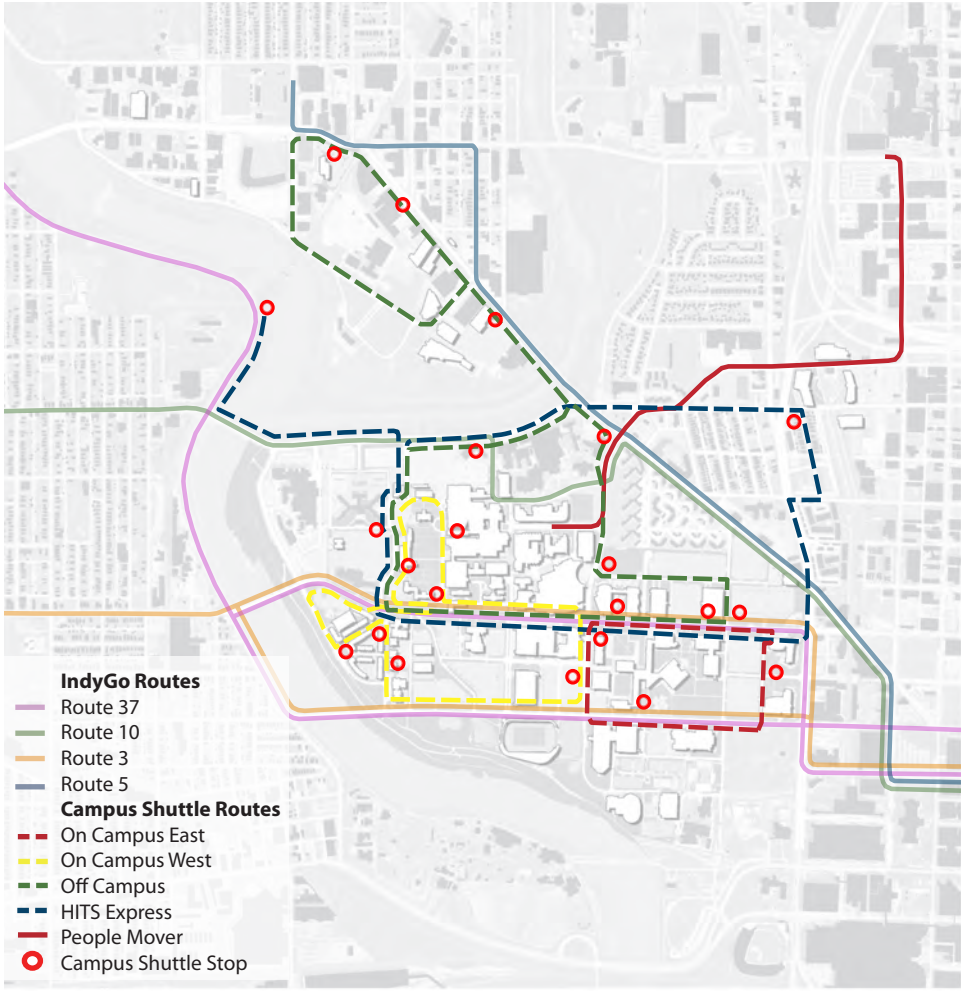


Parking Utilization Study, 2008

Transit / Alternate Transportation

The IUPUI campus is served by two separate campus shuttles, the East Loop and the West Loop. These two systems do not overlap, and the direction of travel on the one way streets results in bus stops located on the wrong sides of the streets for riders, causing pedestrians to have to cross traffic to reach campus. The University also has five city bus routes with stops within or at the perimeter of campus, but their stops are not coordinated with the campus shuttles. The city operates the Red Line, a shuttle bus run connecting the campus with the downtown. This has proved to be a promising route. The campus also has an elevated People Mover that connects the IU and Riley Hospitals with IU Health's Methodist Hospital north of 16th Street, allowing medical faculty, students, and physicians access to all of the IU Health medical facilities in downtown Indianapolis.

Despite the number of campus shuttles, city bus routes, and the People Mover, not one of these systems connects to any other. The University is in a sense transportation rich, but mobility



Transit

impaired. Even with traffic congestion, one-way streets, and parking at capacity, it is still easier to get around campus with a car.

The planning team conducted a user survey in 2008 for faculty, staff, graduate and undergraduate students to understand their travel patterns, parking patterns, and use of transit on campus. The survey revealed that:

- On average, 86% of all campus population groups live beyond three miles from campus.
- 95% of the total campus population uses the automobile to reach campus.
- 87% on average drive alone.
- 22% of students live within 3 miles of campus, but 86% of students drive alone to classes.
- Approximately 8% of all campus populations carpool to campus.
- 20% on average move their cars during the day (24% of students move their cars).
- 34% of all drivers circulate through multiple lots before finding a spot (50% for students).
- Slightly more people walk to campus than ride transit (1.8% vs. 1.6%).
- 2% use bus transit while on campus, although faculty reported an 8% use of the People Mover.
- 45% of drivers would consider an alternate mode of travel to campus.
- The Red Line is the most popular bus route with students.

The overall mode split in 2008 for faculty, staff, and students coming to campus:

- 87% drive alone
- 8% carpool or get dropped off
- 1.8% walk
- 0.7% bike
- 1.6% bus

With the vast majority of campus users living more than 3 miles from campus, current transit options in Indianapolis may not be viable. However, the University could do more to increase the ridership and effectiveness of its own campus shuttle system, to cut down on the amount people drive to multiple spots on campus during the day.

The fact that 45% of drivers to campus would consider alternate means of transportation, including transit and carpooling if they were more convenient, suggests that a robust and comprehensive Transportation Management Plan could have some impact on the traffic and parking demand on campus. Current Carpooling and Guaranteed Ride Home programs could also be better advertised. University and City efforts to introduce more housing and more housing choice on and near campus would also help reduce the traffic and parking demand on campus.

Pedestrian Circulation

The basic pedestrian flow on campus is east west along Vermont Street and through the center of the Academic Core. Secondary pedestrian routes include Barnhill Drive and the pedestrian malls within the medical campus.

The primary pedestrian circulation issue is the north south access across campus and the location of parking on the opposite side of W. Michigan Street from medical or academic destinations. East of University Boulevard, decks and surface parking lots that serve the academic core are north of W. Michigan Street, causing pedestrians to cross multiple lanes of traffic. West of University Boulevard, parking decks serving the medical campus are south of W. Michigan Street, creating significant pedestrian volumes at the intersection of W. Michigan Street and Barnhill, adding to this already congested intersection.

A number of overhead skywalks serve the medical research district campus, connecting it to the hotel, conference center, academic district (through SPEA) to the Natatorium and its sports medicine facilities. This skywalk system was constructed primarily to serve the medical and research functions of campus, and as a way to bridge over W. Michigan Street. It does not connect the rest of academic destinations. Brief observations of pedestrian movements revealed that a slight majority of pedestrians still crossed at grade rather than use the overhead skywalk on W. Michigan Street at Blackford or Blake, even if it meant jaywalking.

A number of the regional and city arterial streets are very wide, including N. West Street (94' to 104'), W. 10th Street (60' wide), and W. Michigan and W. New York Streets (44' and 48' wide, respectively). Street widths, the volume and speed of traffic, and long blocks without any signalized pedestrian crossings make these streets barriers to pedestrian movement across campus. University Boulevard, with street widths ranging from 50 to 60', has a number of signalized intersections, making it easier for pedestrians to cross.

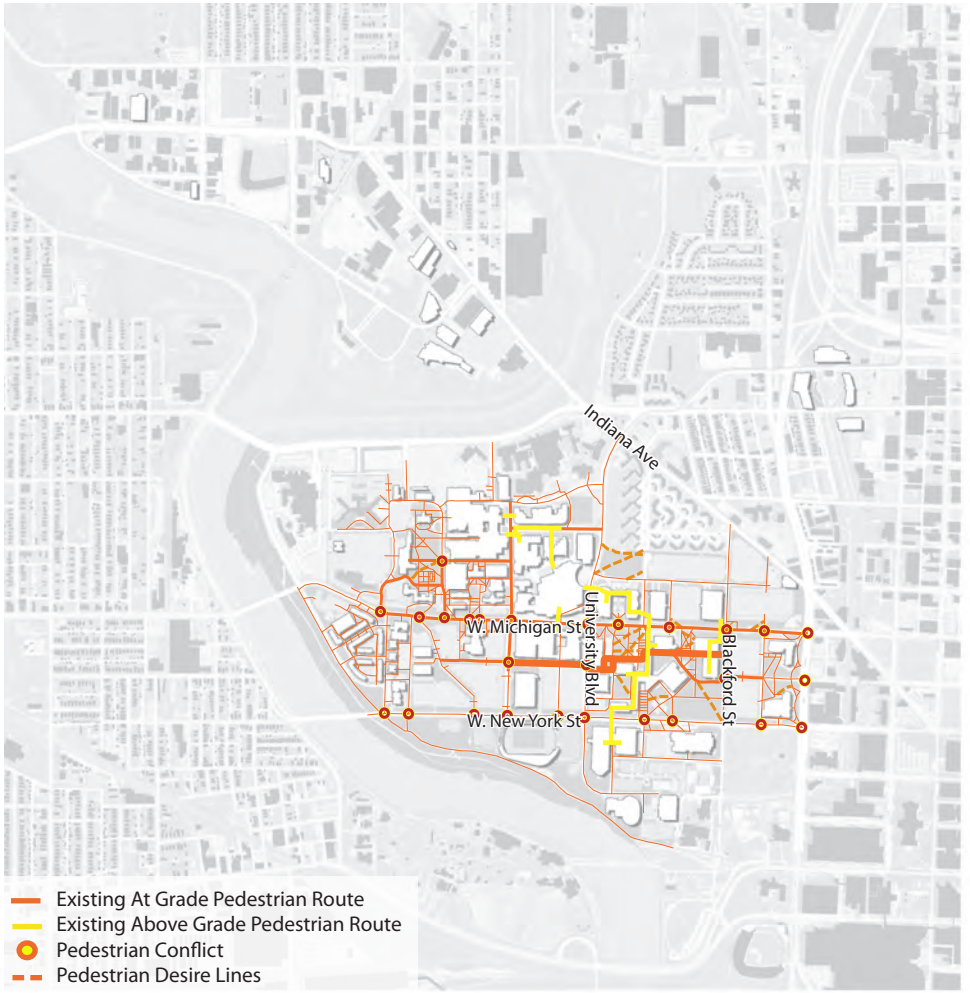
N. West Street poses the biggest barrier to pedestrian movement from downtown to campus. Pedestrian access across N. West Street is only at the signalized intersections at W. New York and W. Michigan Streets. Signal timing and the width of pavement does not easily accommodate pedestrians crossing N. West Street.

The outdoor environment at IUPUI needs better landscape definition and human scale to create more comfortable outdoor spaces and walkways. The formal bosques of trees within the academic quadrangle do not shade pedestrians moving between classes, and the main east west pedestrian route has no tree cover. The large open spaces around the Library are uninviting, open to the extremes of the climate and weather. Campus streets lack activity and vibrancy to attract students and visitors to stay on campus for longer periods.

Walkways within the medical research district have received better landscape treatment. The east west pedestrian mall on the former Middle Drive next to Riley Hospital is an excellent example of an appropriately scaled and designed outdoor space.

Pedestrian Mall at Riley Hospital for Children

East-West Pedestrian Route on Central Campus



Pedestrian Circulation

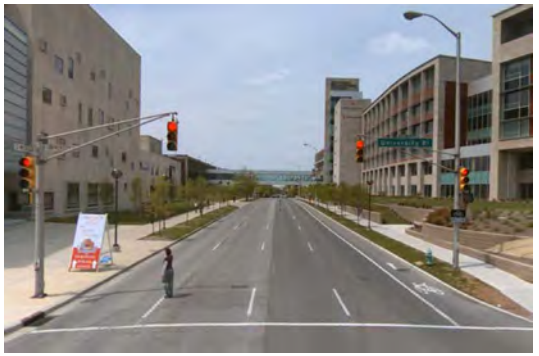
Bicycle Use

In 2008, the IUPUI campus had relatively little bicycle circulation facilities. Recently, the City of Indianapolis has striped a one-way bike lane on W. Michigan and W. New York Streets, following the one-way flow of vehicular traffic. While these facilities help support bicycle ridership, particularly commuter biking, the large blocks of campus and the one-way design of major streets make it difficult for bicyclists to easily reach their destinations on campus, without going out of their way.

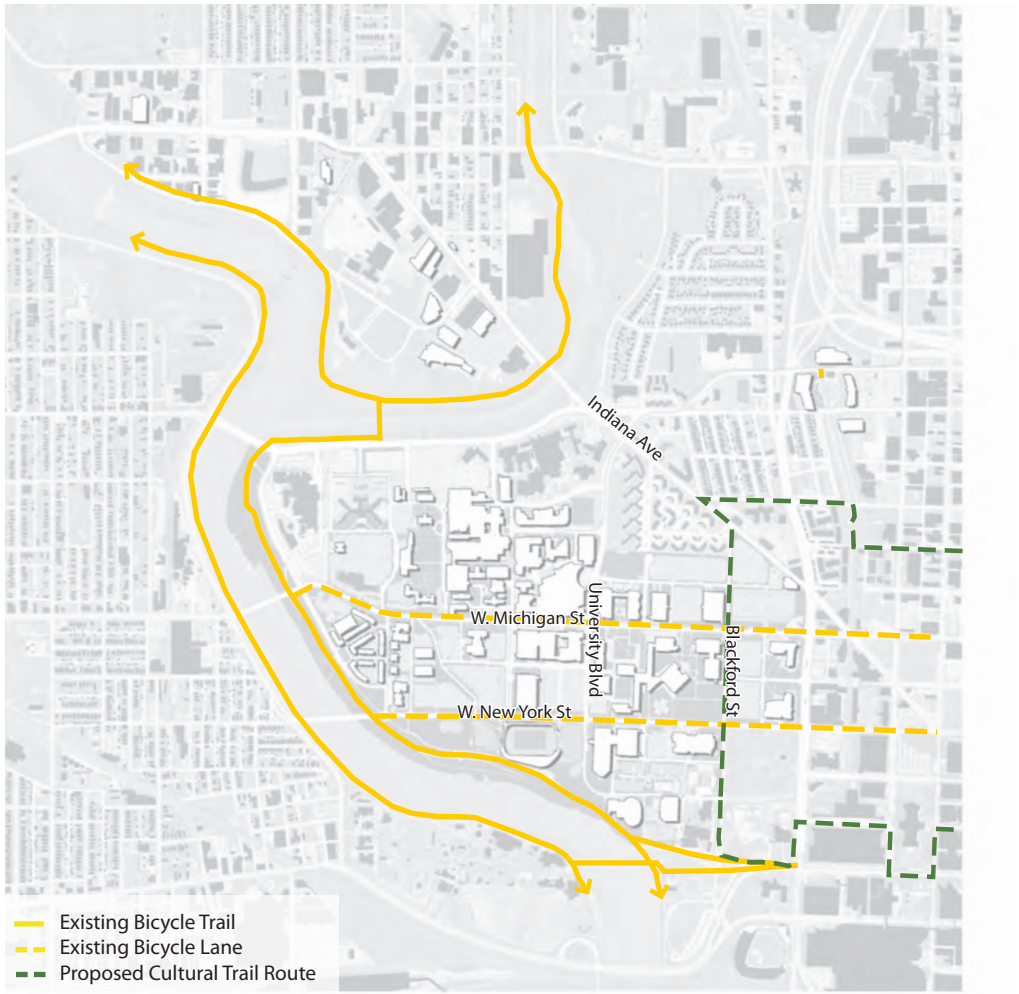
The campus does have connection to the 5-mile long White River Wapahani Trail that follows the top of the levee along the White River, connecting the White River State Park and the campus across the footbridge over Fall Creek. The White River Wapahani Trail connects to the regional greenways of Fall Creek Trail and the Central Canal Towpath to the north. Expansion of the Cultural Trail route within downtown Indianapolis to Blackford Street on campus will tie in Military Park and the White River State Park south of campus. This leg of the Cultural Trail would connect campus back to the Monon Trail east of Meridian Avenue, creating a fully connected, regional greenway and recreational trail system.

Given the commuter nature of the IUPUI campus, the university might want to consider developing a bike sharing program for students and staff as an easier alternative to using personal vehicles to drive to campus destinations. Additional internal bike routes, an on-campus bike station for repairs, showers in new construction, bike lockers and more bicycle racks would all help increase campus bicycle use.

Please refer to the full Transportation Report as part of the Technical Appendices of the Master Plan.



Bicycle Lane on W. Michigan Street


Indiana Ave
W. Michigan St
University Blvd
Blackford St
W. New York St
Existing Bicycle Trail
Existing Bicycle Lane
Proposed Cultural Trail Route

Bicycle Use

CAMPUS INFRASTRUCTURE

Chilled Water System

The IUPUI campus is currently served by Citizens' Thermal (CT), the Indianapolis district energy company. In addition, IUPUI owns a 5,500 Ton chiller plant which CT maintains and operates. The plant was recently relocated to the new Riley Faculty Building located at Wishard Blvd and Wilson Street. This chiller plant is located on the North end of the CHW distribution system and assists with maintaining capacity and hydraulic pressure differential on campus. The projected cooling load for the campus in 2008 was 17,113 Tons. In addition to IUPUI buildings, there are several IU buildings which are connected to the district cooling system that share the same distribution piping with IUPUI. The total load on the main piping which serves the IUPUI campus was projected to be 23,628 Tons (see attached campus chilled water map). The majority of the cooling load is generated at CT's N. West Street plant facility, and the balance is generated at the IUPUI "North Plant".

The main chilled water piping service to campus originates at the CT N. West Street plant. A set of 42" mains enter the campus from the South near the white river canal. Several distribution additions were recently added to the IUPUI campus to support the new buildings that are operational or under construction. The largest piping installation was a set of 24" mains that started in University Boulevard north of W. Michigan Street, and connected to the existing piping in Walnut Street. This extension facilitated the connections to Cancer Research II and III, and provided a second feed into the 18" chilled water loop, originally installed by IUPUI.

Campus Cooling Problems

The distribution system has been hydraulically modeled to verify support of the existing building systems plus the buildings which are currently under construction. The last building under construction, Riley Phase V, was the last load to be modeled. A conclusion made at the completion of the hydraulic model was the existing distribution system cannot support additional cooling load on the campus without some type of distribution expansion. The problem is most acute in the riley hospital block as this is the furthest point away from the N. West Street chilled water plant on campus. The new IUPUI North plant operation is critical to maintaining adequate differential pressure in the Riley hospital block during peak cooling periods.

Campus Steam and Condensate System

The IUPUI campus steam system is supplied by the Citizens Thermal (CT) from the Perry K steam plant. Steam is delivered to the IUPUI campus from the 'O'-Vault where the pressure is reduced from a supply pressure of 250 psig to 150 psig for distribution to IUPUI and to the hospitals (Veterans Administration, Wishard, and Riley) on the north side of campus. The steam supplied to the hospitals is delivered through the IUPUI steam system but metered at the hospitals, deducted from the campus use, and billed separately.

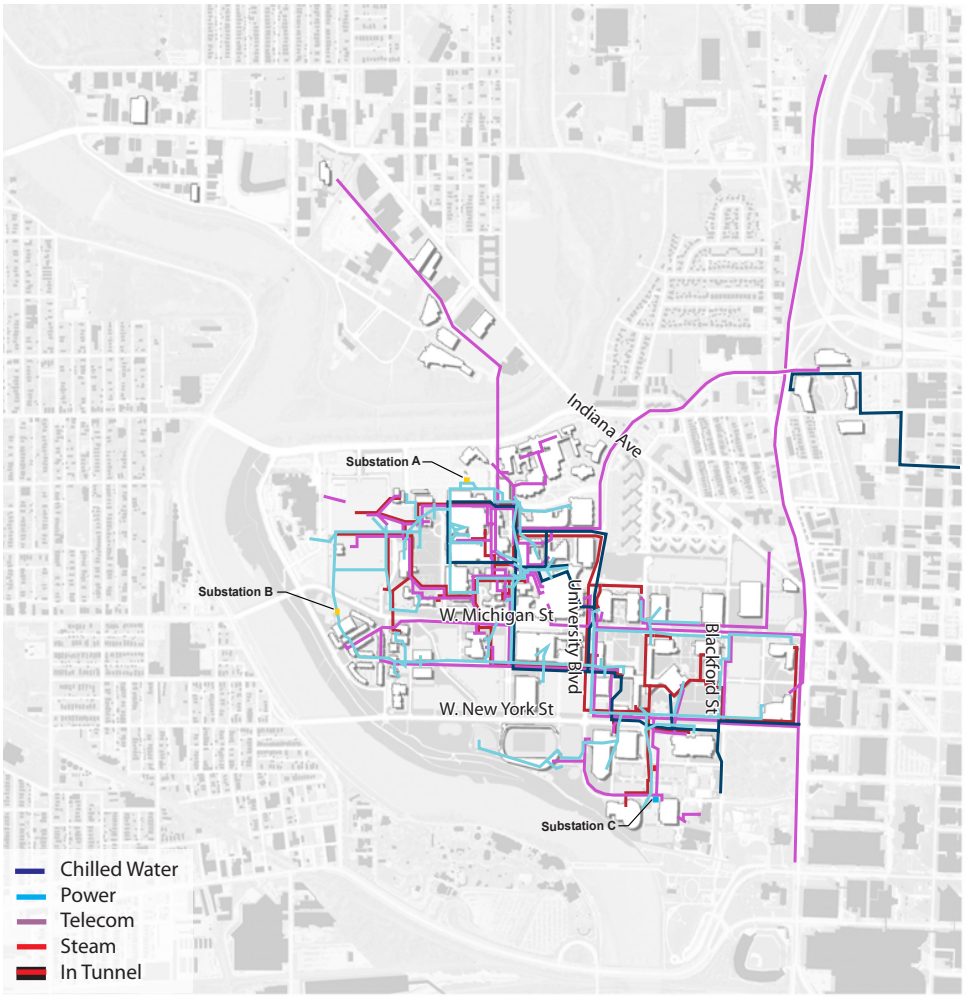
The overall capacity of the pressure reducing valves (PRVs) and safety relief valves (SRVs) at 'O'-vault is 440,000 lbs/hr. There are three

PRVs in the vault, with two of them normally activated. The third PRV in the vault is intended for use as an in-line spare should either of the two active PRVs require replacement or maintenance. The current usage, including the hospitals, is approximately 170,000 lbs/hr.

The steam distribution system is owned by IUPUI and is maintained by CT. Steam is distributed through the campus at 150 psig with any further pressure reduction occurring at the individual buildings as required for each user. There are some distribution sections that supply steam to multiple users at 50 psig. The distribution system consists of both direct-buried pipe and a system of utility tunnels. It is generally in good condition and meets the existing demand for both IUPUI and the hospitals. There is some concern that the supply to the VA hospital may become insufficient if additional future load is installed on campus.

Campus Steam and Condensate Problems

The distribution system for both IUPUI and the hospitals is supplied by a single pipe and



Utilities Composite Map

Substation A

Substation C

PRV station ('O'-vault). Therefore, there is no redundancy. This is of significant concern for IUPUI, as well as of special concern for the hospitals. Redundancy at IUPUI is desirable to protect research investment and to provide minimum heating to buildings on campus. The hospitals are required by code to have redundant systems. Their current position is to meet this requirement by means of a plan to use portable boilers; though they have not been required to implement this plan as of yet.

There is no condensate return system at the IUPUI campus. Generally speaking, condensate is tempered and discharged to the sewer. There are heat recovery systems at a few locations on campus; however, heat recovery is minimal.

Electrical System

The Campus electrical distribution system supplies academic buildings, research facilities and IU Health and VA hospital loads. AES/IPL is the electrical utility provider for the campus. Peak consumption is 38MW. AES/IPL provides a total of six circuits to three utility switchyards. IUPUI operates and maintains circuits that originate in these switchyards. IUPUI campus Substation A, on the north side of the campus, is fed from three circuits. Substation B, on the west side of the campus, is fed from two circuits. Substation C, on the southeast side of the campus, is fed from two circuits. Each of the three AES/IPL utility switchyards provides 13.8KV to the substations maintained and operated by campus facilities services. The 13.8KV electrical distribution system is mainly an underground radial distributed throughout the campus. The existing duct bank distribution system and cable capacity is currently satisfactory. Each building has distribution equipment that can be fed from two different radial feeds. This redundancy is critical for system reliability and planned maintenance.

Campus Power Problems

IUPUI circuits operate at 13.8KV. AES/IPL's nominal distribution voltage is 13.2KV, but typically is maintained at a somewhat higher value. Operation of the circuits under these conditions is normally transparent, but

occasionally when AES/IPL allows the voltage to drop to 13.4KV, IUPUI will start experiencing voltage drop problems in their low voltage building distribution systems. The voltage dip is seen quickly in major equipment such as elevators and large HVAC equipment. The utility transformers are 10% impedance (Z).

A small quantity of cable runs is in need of being upgraded to 750 MCM cable. Most of the main 15KV distribution conductors consist of 750 MCM with EPR insulation. There are some existing conductors with XLP insulation that are scheduled for replacement with EPR insulation. All future 15KV distribution conductors should be equipped with EPR insulation. Standard size for all standard conductors should be 750 MCM.

There is a concern for Feeders AE1 and AE3, which originate from Substation A. In normal operation these feeders can accommodate the load capacity. But in an emergency, or for planned maintenance switching scenarios, these feeders could become overloaded and exceed the rated capacity of the circuits. Pickup trip units are set to 600 amps; and the conductor insulation is XLP.

Currently there is an AES/IPL 13.2KV circuit in the Substation B switchyard for emergency feed of the AES/IPL loads (apartments and small offices). There is a manual switch for this emergency circuit with a sign that highlights the fact that the IUPUI feed is provided at 13.8KV and AES/IPL loads are based on 13.2KV. AES/IPL would only need the emergency backup if the existing service feed from across the bridge was out of service.

The AES/IPL service feed for Substation C also serves the GM plant. This has been a problem in the past when GM or one of AES/IPL's other customers on that service feed has a problem that requires switching by AES/IPL or the customer. The switching is experienced by IUPUI as a brown-out, or on rare occasions as a momentary outage.

"Rider 15", a contractual agreement between AES/IPL and IUPUI, allows AES/IPL the option of requesting that IUPUI operate its existing generators in order to reduce the load on the AES/IPL grid during the months of June, July and August. IUPUI does not normally operate generators for peak shaving.

Telecommunications System

The telecommunications distribution system is comprised of duct bank systems interwoven through out the IUPUI campus. There are additional direct-buried conduits that connect the IUPUI campus to IU Bloomington and Purdue University West Lafayette campuses. Additional conduit is routed on the IUPeople Mover connecting IULabs and the IUPUI campus. IUPUI's telecommunications infrastructure has many existing redundant network loops; and has the capability to expand to accommodate new facilities that will be added to the campus in the future.

Telecommunications Problems

Currently, there are no significant problems or issues of the IUPUI telecommunications system that require resolution.

Stormwater and Sanitary Systems

The main campus drainage system improvements can be broken down into four main drainage corridors. These corridors were identified based on the four main combined sewer overflows which convey storm water runoff and sanitary discharge from campus property; Beauty Avenue corridor, University Boulevard corridor, Blackford Street corridor and Indiana Avenue corridor. The areas which contribute storm water runoff to these main lines are, in large part, planned for development as a result of the Master Plan and therefore create an opportunity to separate storm and sanitary sewers.

Several smaller storm water systems outlet runoff to the White River and Fall Creek; however the largest systems exist combined with the sanitary sewer system. This combination is what causes the release of sewage during high runoff events.

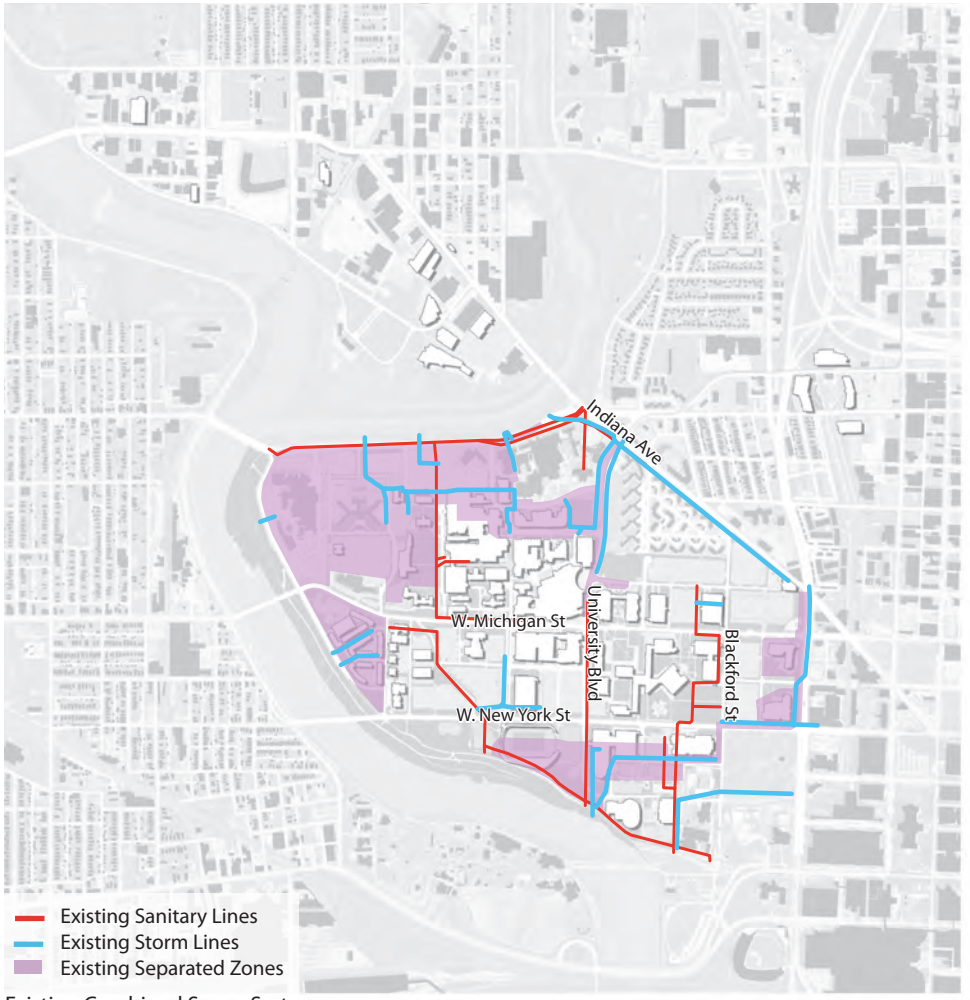
In addition to the adverse nature of the combined sewer system, many of the existing pipes are undersized or deteriorating due to age. Whether the storm and sanitary systems are separated or not, the piping needs to be upgraded.

A sewer separation and campus drainage strategy coinciding with the master plan has been developed. This plan is broken down into four phases of separation based on the four proposed main drainage corridors. Under this plan, all new development, (buildings, parking lots, recreational fields and open space) are recommended to be separated if they are not currently. The sizing and capacity of the proposed system is to be determined based on the current capacity of the system as it is today, and the projected load on the system at full build out. It will be up to the University and the City to determine pipe sizing and decide how to implement the construction of new drainage infrastructure based on the recommendations of the master plan.

A significant investment on the part of the City and the University will be needed to achieve separation in all proposed development areas.

The storm water runoff and sanitary loads from all new building projects will have to be routed separately to the main sewer system collection lines based on city regulations. The full separation of as many existing and proposed building sites as possible is the goal of the master plan. As development continues, it will be necessary to determine on a case by case basis how best to route, re-route, abandon or convert storm and sanitary lines in a way that makes fiscal sense, minimizes disturbances to campus, maximizes sewer separation, and promotes sustainability.

Stormwater Outfall at White River



Existing Combined Sewer System

PROGRAM

The planning team evaluated three aspects driving the need for increased space: qualitative space needs, quantitative space needs, and social space needs. Each of these is a determinant in the formation of academic, support, and campus life programs accommodated by the Master Plan framework.

QUALITATIVE SPACE NEEDS

Teaching and Research Space

One of IUPUI's primary academic goals is to enhance the resource base on campus. This includes addressing the quality of teaching and research space. At the lab and classroom level, research and instruction spaces must facilitate interdisciplinary collaboration and interaction through group work and active learning. New and existing classroom spaces should continue to incorporate emerging communication technologies, including streaming video, web conferencing and virtual learning software.

At the building and campus level, functions must be more integrated in order to improve cross-collaboration and communication among members of its diverse population. New program and building adjacencies, physical integration of programs within buildings, and inclusion of informal, unprogrammed interaction spaces will facilitate new collaboration.

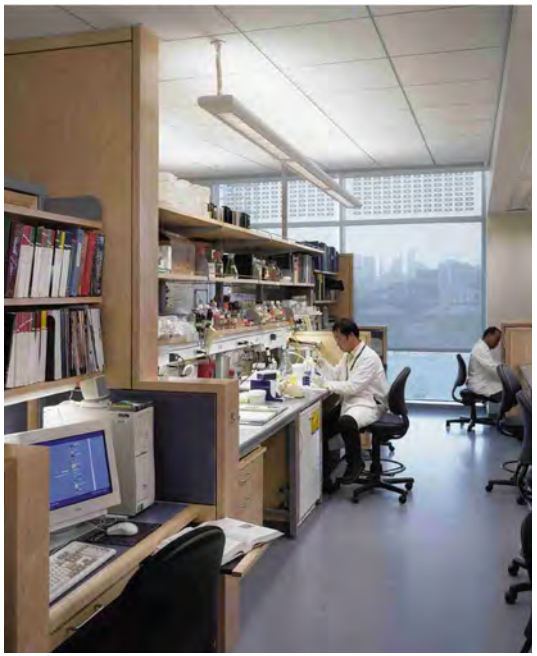
Campus Life

The increased number of full-time students has changed the culture of IUPUI. Given the diversity and varying schedules of the student body, there is an increased need for informal social space in academic settings to encourage the continuation of in-class discussions outside the classroom. According to the 2008 VOICE report commissioned by the IUPUI Division of Student Life, "IUPUI students have very different lives and there needs to be … more interaction between all students."

More residence halls, dining services, informal gathering spaces, recreation, and student activities are needed to build a stronger sense of community and campus identity, and to improve student retention and graduation rates. Faculty members have also expressed the need for greater visibility, accessibility, and space for social venues such as an expanded Faculty Club.

QUANTITATIVE SPACE NEEDS

Quantitative space needs include the mathematically driven elements that are necessary for future program development. They outline physical building blocks and



Academic Space

identify specific space types. Space needs are in essence an assemblage of spatial parts from which to construct a physical vision of the future campus. It is important to apply this technical information through a qualitative filter and broad campus-wide lens.

For the purposes of the Master Plan, the space needs were derived in assignable square feet (ASF) and subsequently converted to gross square feet (GSF). This conversion assumes a 63% ratio of ASF to GSF (1.58 multiplier). This building efficiency relationship was validated, on a campus-wide level, by the Indiana University Facilities Inventory Summary for the IUPUI campus. Campus space needs are divided into four broad categories of academic, academic support, auxiliary, and residential typologies.

Academic Space

- Classroom, laboratory, research, office, service

Academic Support Space

- Library, administrative, recreation, assembly, exhibit, physical plant

Auxiliary Space

- Student center, health, athletics

Residential Space

- Residential halls, dining facilities

Campus Baseline: 2007-2008 Academic Year

Total Enrollment	29,854	
Undergraduate:	21,202	(70%)
Graduate:	8,652	(30%)
Faculty:	3,161	
Staff :	4,765	
Total Campus Population:	37,780	

The planning team utilized the fall 2007 data as the point of departure for spatial and programmatic projections. Consideration of facilities needs, transportation requirements, and infrastructure demands are based on aggregate totals of the campus population and not full time equivalent (FTE) metrics.

Historical Enrollment Growth

Historically, working in increments of 10 years, IUPUI experienced an average growth of 6,520 students per decade from 1968 to 2008.

Over the last decade, IUPUI continued to experience similar enrollment growth. Using information from the Indiana University Reporting and Research database, from 1998 to 2008 the University grew from an enrollment of 27,036 to 29,854, adding 2,818 students, representing 10 percent growth.

Enrollment	Decade	% Growth
3,761	1968	
21,700	1978	476
23,618	1988	8.8
27,036	1998	14.5
29,854	2008	10.4

Projected Enrollment Target

Based on fall 2007 data, IUPUI reported a record student headcount of 29,854 and a full time equivalent (FTE) enrollment of 22,161. The relatively high ratio of FTE to headcount suggests a reasonably high utilization of campus facilities through the day. This spatial efficiency was confirmed during interviews with faculty

representatives and reiterated in the Space Needs Analysis.

For the purposes of the Campus Master Plan, a new enrollment level of 35,000 was established as the planning target. Essentially, this suggests increasing student enrollment 17 percent over enrollment levels of the 2007-2008 academic year. This enrollment direction underscores the University's commitment to growth at IUPUI, a quality student experience, research, and the need for state of the art facilities to meet the competitive academic needs of the future.

Historical Facilities Growth

Based on fall 2007 baseline data, IUPUI contains more than 129 buildings on 509 acres representing 9.86 million GSF. Using information from the University Bureau of Facilities Programming and Utilization, from 1998 to 2008 the university grew from 6.6 to 9.86 million GSF, adding 3.3 million GSF and representing 49% growth. Historically, the university has experienced an average increase of 2.0 million GSF per decade:

Facilities (GSF)	Decade	% Growth
1,809,622 GSF	1968	
3,413,047 GSF	1978	88.6
5,173,467 GSF	1988	51.5
6,616,781 GSF	1998	27.8
9,859,179 GSF	2008	49.0

Process to Determine Need

The planning team conducted two studies to validate quantitative space needs for campus: 1) a benchmarking analysis of space allocation per student within peer institutions, and 2) a space needs analysis comparing current and projected IUPUI space needs against a normative data base of over 400 comparable universities across the country.

Indiana University Purdue University Indianapolis provided the planning team with a staffing file, which included faculty and staff identified by job title and unit assignment, and a facility inventory that summarized space by space type and assigned unit. Enrollment information separated by school was also provided. During the study, the planning team met with campus leaders and deans in addition to representatives from various master plan committees to review unique space needs. The planning team visited the campus and toured selected buildings. The data was utilized to analyze space needs and to illustrate benchmarking data. For reference, the nomenclature "base year" refers to the academic year 2007 and "future year / target year" refers to a 10-year minimum planning horizon.

(Refer to the Technical Appendix for the full *IUPUI Space Needs Analysis for the Master Plan Report)*

SPACE ALLOCATION BENCHMARKING

At the outset of the study, IUPUI leadership identified twelve urban, public research universities as peer institutions for the planning team to survey. Once identified, an electronic questionnaire and cover letter was developed and sent to all twelve institutions. The survey requested data on space overall and space by school or college; the number of students; the number of faculty; and student credit hours.

Data was gathered from the following nine peer institutions:

- University of Louisville
- University of Alabama at Birmingham
- University of New Mexico
- University at Buffalo
- University of South Florida
- University of Cincinnati
- University of Utah
- Virginia Commonwealth University
- University of Illinois at Chicago

Temple University, Wayne State University, and the University of Colorado Denver were also identified and contacted as part of the original twelve peer institutions; they declined to participate.

The student FTE enrollment and full-time faculty for each of the peer institutions are depicted in the Data Analysis Summary table. Following the comparative analysis, the benchmarking data was normalized by calculating the ASF per student and ASF per full-time faculty. Once normalized, the average

Data Analysis Summary

Institution	Total Campus ASF	Student FTE	FT Faculty	Faculty/Student Ratio
Benchmark Institutions				
University A	4,803,912	13,337	2,036	1:7
University B	4,230,215	24,288	1,203	1:20
University C	4,111,855	23,110	2,083	1:11
University D	5,945,365	24,567	1,673	1:15
University E	3,578,974	17,214	1,548	1:11
University F	2,218,573	20,257	1,046	1:19
University G	4,596,435	25,178	1,216	1:21
University H	6,072,301	23,307	2,104	1:11
University I	3,195,581	25,387	1,888	1:13
BENCHMARK AVERAGE	**4,305,912**	**21,849**	**1,644**	**1:14**
Indiana University - Purdue University Indianapolis	**3,019,737**	**22,161**	**2,113**	**1:10**
IUPUI COMPARED TO AVERAGE	**(1,286,175)**	**312**	**469**	**(4)**
IUPUI as a % of AVERAGE	**(30%)**	**1%**	**29%**	**(26%)**

Benchmarking Analysis of Space Allocation

Institution	Total Campus ASF	ASF per Student FTE	ASF per FT Faculty
Benchmark Institutions			
University A	4,803,912	360	2,359
University B	4,230,215	174	3,516
University C	4,111,855	178	1,974
University D	5,945,365	242	3,554
University E	3,578,974	208	2,312
University F	2,218,573	110	2,121
University G	4,596,435	183	3,780
University H	6,072,301	261	2,886
University I	3,195,581	126	1,693
BENCHMARK AVERAGE	**4,305,912**	**205**	**2,688**
Indiana University - Purdue University Indianapolis	**3,019,737**	**136**	**1,429**
IUPUI COMPARED TO AVERAGE	**(1,286,175)**	**(68)**	**(1,259)**
IUPUI as a % of AVERAGE	**(30%)**	**(33%)**	**(47%)**

for the peers was calculated and compared to the data for the IUPUI campus. The planning team compared ASF per student and ASF per full-time faculty campus-wide, by type of space, and by school and college.

Space Allocation Findings

IUPUI ranks ninth out of the ten peer institutions examined in total campus ASF, equivalent to 30 percent less ASF than the combined campus average. The ASF per student at the peer institutions ranges from 110 to 360 ASF per student. The average of the peers is 205 ASF per student. IUPUI has 136 ASF per student, ranking eighth in ASF per student when compared to the urban research universities in the study.

At the baseline year of 2007, IUPUI's faculty per student ratio was higher than the average of the peer institutions. However, IUPUI ranked seventh in its full time equivalent (FTE) for student enrollment.

The ASF per full-time faculty ranges from 1,429 ASF to 3,780 ASF per faculty. The average of the peers is 2,688 ASF per full-time faculty. IUPUI has 1,429 ASF per full-time faculty, placing IUPUI last in comparison to its peers.

This benchmarking comparison demonstrated that IUPUI is deficient in space for both its student population and in ASF per full-time faculty.

SPACE NEEDS ANALYSIS

The *IUPUI Space Needs Analysis for the Master Plan* study focused on the campus-wide, non-healthcare needs and analyzed physical space needs by major space types. The study also evaluated space needs at the school level and provided information on where each academic school or college stands in relation to recognized space guidelines at current and proposed activity levels.

The purpose of the study was twofold:

- To identify and define existing and future space needs to aid IUPUI in fulfilling its

Academic Support Space

educational and research mission.

- To provide potential square footage requirements to aid in prudent land use, capacity, adjacency, and campus organizational decision-making.

Space Needs Analysis Findings

Existing Space Needs at the Campus-Wide Level

At the campus-wide level in the base year Indiana University-Purdue University Indianapolis had a total space deficit of nearly 896,000 ASF (1,415,000 GSF). This represented 30 percent of the existing academic and related space on campus.

Existing Space Needs by Category

The greatest existing space needs at the base year were in research space and academic office space. This was equivalent to 60% of the overall existing campus-wide need. There was also a 19% deficit in both classroom and class lab space on campus.

Capital Projects

As of the base year, IUPUI had approximately 194,000 ASF (311,000 GSF) of capital projects that were approved, funded, and/or are now nearing completion, that include the Glick Eye Institute, the Research Institute III, and office, classroom, and lab space within the IU Health Fairbanks Hall in the Canal District on W. 10th Street.

Campus Wide Projected Space Needs

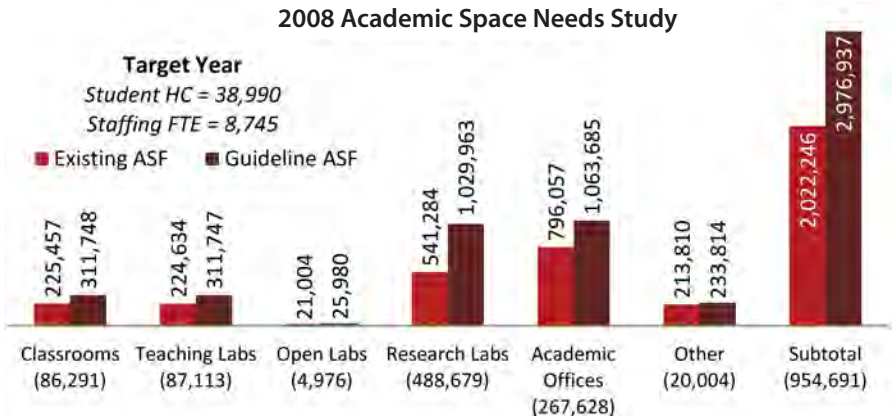
In order to accommodate growth to a 35,000 student enrollment target, future year projections established in 2008 (including the 311,000 GSF of currently funded capital projects) showed that the University could anticipate an additional demand of 1,422,000 ASF, the equivalent of 2,200,000 GSF. This projection did not account for future demolition or replacement of facilities.

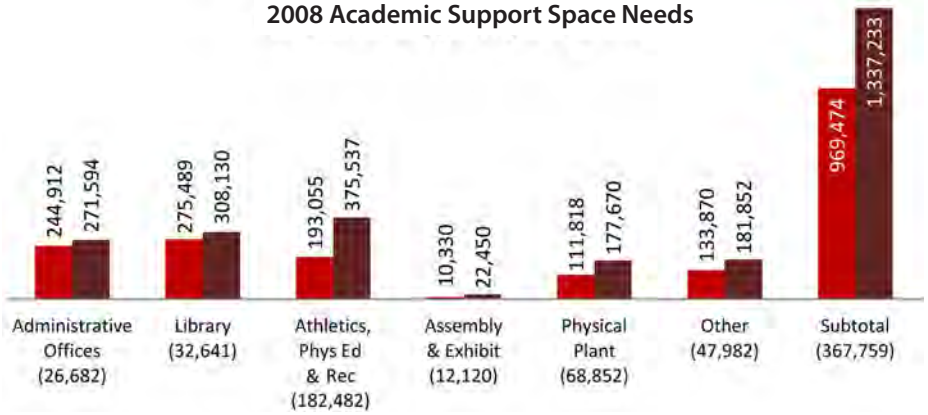
Projected Space Needs by Category

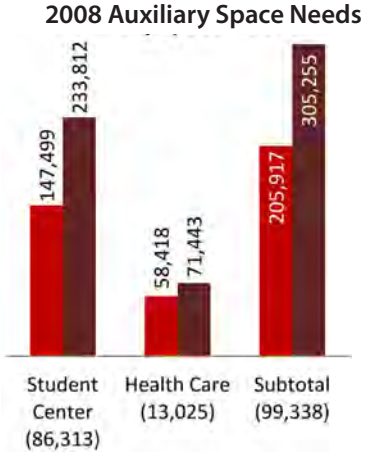
Future year projections showed that the greatest space needs will remain in the categories of research space and academic office space. These two categories represented 51% and 28% respectively. Collectively, classroom and class lab space represented 18% of the overall future need. Per the 2008 study, and considering the need for demolition and replacement of outdated space, IUPUI would have a total future space need projection of almost 3.4 million gross square feet of new construction to address current space deficiencies and to accommodate enrollment and research growth.

2008 Space Needs Analysis

Space Category	Future Needs (GSF)
Academic Space	1,525,000
Academic Support Space	515,000
Auxiliary Space	160,000
Subtotal	2,200,000
Demolition Replacement	1,184,000
Total Space Need	3,384,000







2011 Revised Space Needs

The IUPUI Space Needs Analysis for the Master Plan Report study was completed in early 2009. Since that time, a more detailed program analysis was conducted for the Health Sciences Education Schools (School of Medicine, School of Health and Rehabilitative Services, School of Nursing, School of Dentistry and Department of Public Health), as part of the integrated planning effort with IU Health. In that process, future space projections for the Health Sciences programs increased, reflecting changing assumptions of clinical need and growth for the School of Dentistry, increased demand for the School of Nursing and School of Health and Rehabilitative Services, and a re-assessment of the future research and academic need for School of Medicine. The space projections for IUPUI have been revised as follows:

2011 Revised Space Needs:	**(GSF)**
Health Sciences Schools	1,947,460
Non-Health Academic/Support/Auxiliary	1,824,700
Subtotal	3,772,160
Demolition/Replacement	1,118,750
Total Future Space Need	**4,890,910**

Southern Gateway, Ohio State University

SOCIAL NEEDS

Residence Life

With less than 4% of the student body residing on campus, a complete on-campus student living-learning experience is diminished. As of fall 2007, the campus contained approximately 1,107 beds in three primary developments, concentrated on the west side of campus.

Existing On-Campus Housing Breakdown

Ball Residence Hall	300 beds
Graduate Townhouse Apartments	60 beds
Campus Apartments at River Walk	747 beds
Grand Total	**1,107 beds**

Built in 1928, the Ball Residence Hall is the most historic residence, overlooking the sunken gardens and open space of Ball Garden. The Graduate Townhomes on Lansing Street were constructed in 1958 and are viewed as outdated models for student needs. Built in 2003, the Campus Apartments at the River Walk are the most recent housing units and contain the campus's majority of student housing.

IUPUI is evolving from a part-time to a full-time student environment. This shift brings opportunities and pressures to accommodate not only a growing enrollment, but also a growing need for more on-campus housing with related dining facilities and student life programs. The Department of Housing and Residence Life at IUPUI has set a goal to build a stronger campus community to promote student recruitment and to increase student retention, engagement, and graduation rates.

At the time of this report, IUPUI was conducting a concurrent housing market demand study. Early indications from the study noted an ample supply of apartment-style units and the need for more innovative suite-style units geared toward freshmen and sophomores. For the purposes of the Master Plan, residential programming was based on a target goal of supplying beds for ten percent (10%) of the student population, the upper limit for on-campus housing at IUPUI established by the State Legislature. In order to be competitive, the University will need to provide a more integrated model of campus housing that includes dining facilities, academic support services, classrooms, and student health and recreation space.

CAMPUS GATHERING SPACES

Although IUPUI lies within the northwest quadrant of downtown Indianapolis, the campus environment lacks retail activity and gathering spaces conveniently located for campus users on campus. Gathering spaces could include a range of retail and commercial uses, recreational uses, student-run and local businesses and services, public spaces, small restaurants, casual food, coffee houses, and evening destinations. As both indoor and outdoor environments, gathering

spaces encourage interaction and the exchange of ideas for more informal learning among students, faculty, staff, medical personnel, and visitors. Such activities and spaces provide opportunities for recreation, healthy living, arts, culture, and fun—a more fully integrated, lively, and intellectually stimulating campus environment.

Creating a Dynamic Urban Campus

Increasingly, urban universities have pursued both public and private partnerships with local municipalities and the private sector to develop more amenities and gathering spaces on and adjacent to their campuses. The Southern Gateway, a joint venture of the City of Columbus, Ohio, The Ohio State University, and the private sector is an example of a revitalization of a campus/neighborhood edge into a vibrant, urban experience.

Untapped Potential

The planning team estimated a daily population of 57,400 on campus, comprised of students, faculty, staff, researchers, medical staff, outpatients, and hospital/campus visitors. Currently the campus lacks sufficient amenities to serve this large, captive, daily population. The exceptional and immediate success of the new Campus Center and the popularity of other on-campus gathering spaces (University College Courtyard, SPEA student lounge, and the University Place Hotel restaurants) demonstrate an under-serviced demand for additional eateries and social gathering places.

The planning team refined the daily campus population and visitor population into differentiated user groups in order to determine potential economic spending and demand:

Primary Users:

- IUPUI students, faculty, and staff
- Medical campus employees, visitors, and outpatients
- University Place Hotel guests
- Conference Center attendees
- Special Events Visitors (sports and charitable events-related)

Secondary / Regional Users:

- Downtown and adjacent neighborhood residents
- City of Indianapolis residents
- Overnight visitors staying in downtown Indianapolis

Retail Opportunities

Dynamic Streetscape with Outdoor Cafes

Considering retail expenditures and economic activity adjacent to campus and in the city of Indianapolis, the IUPUI campus has the potential to capture nearly $79 million annually in expenditures on campus. The Primary User Group for campus is projected to account for 86% of potential expenditures. 14% is projected to come from the Secondary/ Regional User Group defined above. Students alone are projected to account for 43% of all expenditures, while the medical campus population is projected to account for 18%.

This potential commercial economy on campus can be translated into the equivalent of over 60 small businesses, services, and amenities at an average size of 1,800 square feet each, for a combined total of approximately 108,000 square feet of additional retail and enhanced gathering spaces.

Wood Memorial Plaza and Fountain

5| THE MASTER PLAN

A CAMPUS IN TRANSITION

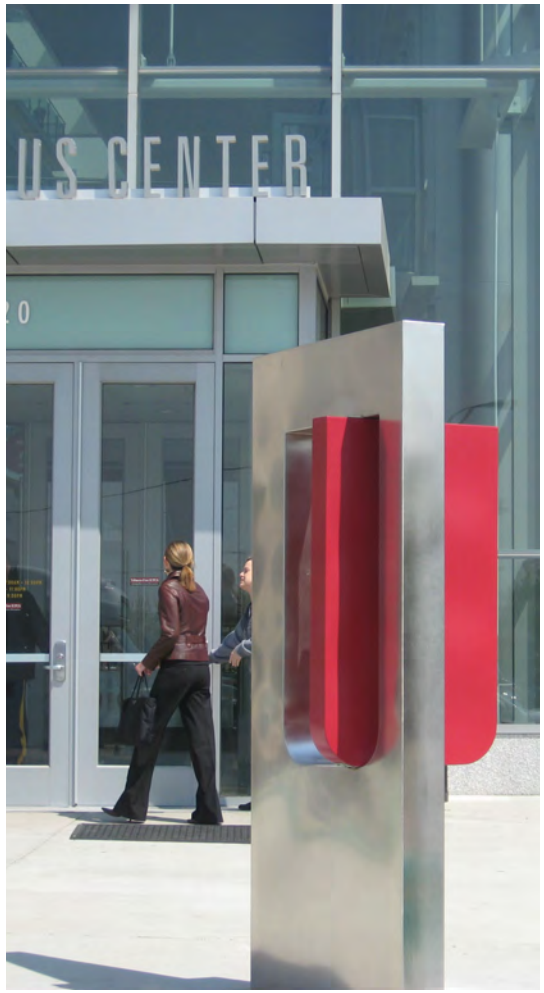
IUPUI is maturing from its campus 'adolescence' into adulthood. The campus is transitioning from a commuter-based to a more mixed use environment, from suburban density to an urban density, from an isolated peninsula to a connected grid, and from a place removed from the City to a place within the City. The principal outcomes of this transition affect the physical, cultural, and intellectual framework. Building on the foundations that formed the campus, the Master Plan proposes a new approach to transform the campus into a great urban university.

To begin the transformation, the Master Plan re-evaluates the past assumptions that one-way streets and large super-blocks constitute an effective urban environment. The Master Plan suggests that the most effective urban environment is dense, flexible, convenient, and multi-faceted. The Plan proposes continued physical integration of the medical and academic centers, the refinement of over-scaled open space environments, and the creation of a pedestrian-centric culture. The Master Plan proposes to transform IUPUI by breaking down the physical and perceptual campus barriers, redefining and re-imagining the campus form by embracing urbanity, and connecting institutional, neighborhood, and City communities.

The future holds significant change for IUPUI. As the university targets growth from a 30,000 to a 35,000 student population, several concurrent needs are triggered. These needs shape the perspective of the Master Plan, defining the importance of managing dramatic growth strategies to address the necessity of building new facilities, replacing or renovating aging buildings, and reshaping the quality of the existing learning environment.

Urban Campus

Outdoor Courtyard



Student Resources at the IUPUI Campus Center

MASTER PLAN PRINCIPLES

The physical Master Plan is comprised of three components: the master plan principles and themes, campus wide systems and guidelines, and campus district recommendations. This overview describes the Master Plan principles that have led to the formulation of key themes that inform all aspects of the Master Plan.

The planning principles convey the intent, goals, and long-term values of the University. They are the most fixed and enduring elements. The planning principles were developed early in the process to test campus development. They represent ideas on campus enhancement, and ways to invigorate existing campus districts and edges. The planning principles for the IUPUI campus are:

- Capitalize on IUPUI's urban setting
- Use land wisely
- Celebrate pedestrian places and environments
- Mitigate traffic issues
- Define Indiana Avenue as a mixed-use district
- Integrate the campus with the Cultural Trail
- Transform the parking strategy away from surface lots
- Connect the campus to the White River and to the City

KEY THEMES

The Master Plan process was informed by a rigorous analysis and testing of ideas. The fundamental intent of the physical Master Plan can be summarized through a series of powerful and complementary themes that resulted from that process. Specific physical planning recommendations reinforce the key themes:

1. Create a Dense Urban Environment
2. Unite the Campus
3. Engage the City
4. Redefine the Public Realm
5. Animate the Campus

1. Create a Dense Urban Environment

IUPUI is positioned to create a forward-looking modern campus for a truly urban institution. New development should be dense and vertically integrated with a mix of uses. Increasing campus density from a suburban model to a more appropriate urban model will accommodate

A Strong Urban Edge, A Model for Indiana Avenue

A Dynamic Campus Environment

the University's need for growth for the next 10 to 20 years and will leave land available for continued growth beyond that planning horizon. Concentrating future development on the main peninsula will create a critical mass necessary to support interdisciplinary research, academic interaction, and a more vital student and campus experience. Scaling down the super blocks for enhanced pedestrian circulation, re-introducing the urban grid on the peninsula, and filling unsightly voids created by surface lots and overly monumental open space will re-define the spatial order and create a new urban campus fabric.

Theme 1 Recommendations

- Build a critical mass of density on the peninsula, at key locations on campus
- Reinforce the heart of campus fronting University Boulevard
- Integrate diverse uses for convenience and quality of campus life
- Encourage vertical integration of uses
- Celebrate the street as a valuable asset
- Clarify campus organization for visitors
- Model sustainable urban systems

2. Unite the Campus

IUPUI has historically suffered from an 'identity crisis', the result of a physical campus fragmentation, administrative organizational divisions and program separation between the medical and healthcare focus and the academic core. This perception has been physically evidenced by dispersed academic, medical, undergraduate and professional facilities across the peninsula. Early in the university's formation, impressions were that IUPUI "was not a university but a grouping of separate constituencies". The 1970's directive given to master planner Edward Larrabee Barnes and the landscape architecture firm Zion and Breen was to "make a group of separate buildings look like a campus".

Today, IUPUI is host to a greater diversity of campus users than any other IU campus. Undergraduate, graduate, and doctoral students; faculty, administrative and support staff; private researchers, physicians and healthcare staff; hospital and clinical patients; and visitors from rural areas, the city, and the metropolitan region

all make up the estimated 57,000 daily campus population. The University and campus must not only work for its core academic, research and healthcare functions, it must also present a clear and organized environment for its many visitors.

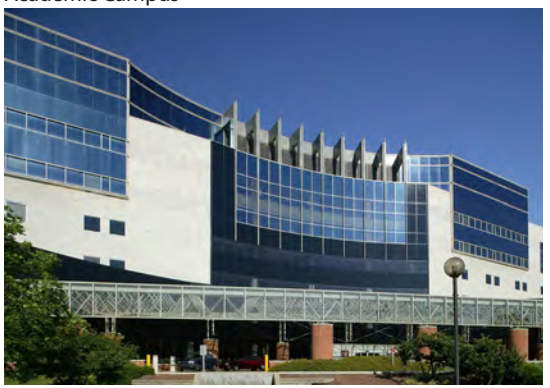
The Master Plan proposes to unite undergraduate programs, professional schools, and the medical center. In the interest of leveraging the full potential of the academy, the new planning model recommends a cross-pollination of programs, schools, and centers to facilitate the exchange of ideas and provide greater student learning and mentoring opportunities. More integrated planning will allow IUPUI to consolidate redundant resources into new shared facilities that by nature can contribute to more interdisciplinary learning approach.

Physically, the Master Plan proposes a new intellectual framework and campus organization that cuts across historic divisions. The plan proposes five distinct districts on campus, each combining a variety of academic, research, medical, and residential uses. Each district is organized and defined by a major public space – either an urban park, plaza, or urban street. Three of the five districts align north-south, perpendicular to W. Michigan Street, the perceived dividing line between the academic and medical campuses. The fourth district, Vermont Street, ties the three together as an east-west street mainly containing functions geared to student life. The center of the campus is reinforced with mixed-use development containing a variety of functions and amenities, creating a natural destination and meeting spot, a common ground for the diverse IUPUI community.

Theme 2 Recommendations

- Integrate academic, research, and medical environments through physical, social, and programmatic mechanisms
- Promote the integration of professional and undergraduate student learning opportunities
- Facilitate a model of interdisciplinary learning
- Encourage the development of shared multi-user facilities
- Eliminate redundant, single-use facilities

Academic Campus



Medical Campus

Urban Setting

Vibrant Streetscape

3. Engage the City

"You can't have a great city without a great university."
— Former Indianapolis Mayor Bart Peterson

IUPUI is an important partner of the City of Indianapolis and host to many civic activities ranging from cultural to athletic events. One of the principle recommendations of the Master Plan is to meaningfully connect the campus and Indianapolis's downtown. This includes extending physical connections to cultural attractions, athletic facilities, government operations, the White River, and to adjacent neighborhoods. Deliberate engagement will allow the campus community to fully take advantage of its position in the heart of Indianapolis and the Indianapolis community to realize the many benefits of being adjacent to world-class academic, cultural, research and medical facilities. More effective connections will be accomplished, in part, by strengthening and expanding linkages along traditional networks including the street grid, transit corridors, bikeways, open spaces, and pedestrian systems.

The Master Plan advocates mixed-use facilities, carefully placed dense development, strategic public-private partnerships, and shared community facilities in order to encourage positive bonds between the IUPUI campus and City.

Theme 3 Recommendations

- Connect the fabric of the campus to the City
- Leverage campus and city venues including: cultural, athletic, academic, medical, research, and civic amenities
- Improve all transportation networks and connections
- Reconnect the campus with all its neighbors
- Engage the White River open space
- Explore shared community amenities and neighborhood alliances

4. Redefine the Public Realm

Broadly defined, the public realm is the setting for inspired learning and intellectual exchange. The Master Plan proposes to re-define the public realm by aggressively reshaping campus spaces, orienting new buildings to activate streets and

public space, and reinforcing pedestrian activity at the ground plane. In principle, the expansion of second level skywalks is not encouraged for the academic district as it removes pedestrian activity from the street level. Exceptions are made to facilitate patient, physician, and visitor movement to and within the medical district.

The Plan expands the open space vocabulary of campus beyond the academic model of malls and quadrangles to include more urban models of active streets, plazas, and squares, fronted by buildings with a vibrant and transparent first floor presence. Through development of surface parking lots and campus infill, the plan creates a network of more pedestrian and human-scaled spaces, with interior and exterior space for socializing and interaction in both new and retrofitted facilities. Creating a central 'piazza' and civic space at the "100% corner" of University and Vermont Streets will anchor the heart of campus. A more urban streetscape vernacular, mid-block crossings, and multiple transportation options will enhance the pedestrian experience, lessen the visual intrusion of parking and traffic, and positively impact the social characteristics of campus.

Theme 4 Recommendations

- Reintroduce human-scaled open space to campus
- Use new development with active first floor uses to animate and shape outdoor space
- Return the pedestrian experience to the ground plane.
- Create a central "100%" spot on campus
- Improve and expand existing streetscapes, transportation networks, and trails systems
- Clarify the visitor experience through enhanced public spaces
- Address parking and circulation's interface with the public realm

5. Animate the Campus

IUPUI's close proximity to the White River State Park, downtown Indianapolis, the city's Cultural and Canal Districts, and established neighborhoods provide a great foundation to build a vibrant urban campus. However, as a commuter campus, the current IUPUI

Campus Center Outdoor Cafe

Medical Center Mall

Massachusetts Avenue, Indianapolis

Cultural Trail, Indianapolis

environment lacks the ingredients that build urban energy: a night life, a varied choice of amenities and services, a sense of neighborhood.

More dense development, mixed uses, and a robust campus life will transform IUPUI. An on-campus, 24-7 presence of student life is envisioned with new housing typologies on the Vermont Street corridor, supported by indoor recreational facilities located at the heart of campus. Completion of the Cultural Trail on Blackford and a new public/private mixed use development on the Indiana Avenue and N. West Street frontage will engage both the campus and adjacent neighborhoods. More residents, more eateries, more public spaces and more amenities, choreographed with pedestrian experiences at every 2-3 minute walking distance intervals, will contribute to a livelier environment for IUPUI students, faculty, and staff and for the greater Indianapolis community.

Theme 5 Recommendations

- Develop more on-campus housing
- Add indoor and outdoor urban recreational amenities
- Infuse the campus with more social and gathering spaces
- Create a 24/7 environment in the campus core
- Encourage an atmosphere that provides opportunities to learn, live, work, and play on campus
- Connect amenities on campus with amenities downtown via streetscapes and pleasant walkable corridors
- Provide dedicated gathering spaces for active and passive activities

ILLUSTRATIVE MASTER PLAN

The Illustrative Master Plan represents an ideal future campus configuration, translating the principles and key planning themes into a graphical representation. It illustrates opportunities for new development and provides a guide for growth, representing future building envelopes, their relative scale, and how they shape space. Specifically, the Illustrative Master Plan proposes the placement of new features such as opportunities for future buildings, roadways, open space, parking and other facilities in relationship to existing campus facilities, roads, parking and open space. Second, the illustrative master plan introduces a spatial order between the physical elements of campus.

The Illustrative Master Plan is supported by a series of recommendations for campus-wide systems:

- Sustainable Planning
- Campus Development
- Landscape Character
- Circulation and Parking
- Campus Infrastructure
- Architectural Guidelines

In Section 6, the overall campus is delineated into five campus districts, with further detailed recommendations on future development, re-use, open space, infrastructure, and design guidelines at the district level. The campus districts are:

- West Campus
- Central Core
- Cultural Trail and Blackford Street
- Vermont Street
- Canal District

As a planning document, the Illustrative Master Plan and its supporting graphics are most valuable when communicating the character and intent of the plan, rather than specific detail. This plan is not a final design, and the footprints shown will not be the final building configurations. At the Campus Master Plan altidtude, specific college or departmental designations are not predetermined for proposed footprints. Taken collectively, the illustrative Master Plan is intended to aid in short-, mid-, and long-term decision making. As political, administrative, and programmatic variables change, the Campus Master Plan needs to remain flexible. The fundamental function of the Campus Master Plan then, is to suggest a principle-driven framework for managing future opportunites.

CAMPUS MASTER PLAN SUMMARY STATISTICS

Proposed Use	**Total GSF**
Existing Facilities	9,859,179
Total Proposed Facilities In Construction	176,000
Academic, Academic Support, and Auxiliary (Avg. of High and Low Scenario)	4,425,125
*Demolition/Replacement	-1,118,750
Total Future SF	13,341,554
Existing Housing to Remain	1,107
Housing to be demolished	-60
Proposed Housing	2,400
Total Future Housing	3,447
Mixed Use	467,850 GSF

* Demolition/Replacement does not include the existing Wishard facilities.

LEGEND

01 New Gateway Health Sciences Research Complex

02 Integrated Health Sciences Education

03 "Walk of Life"

04 Cancer Research

05 New Wishard Memorial Hospital

06 Ball Gardens

07 Ball Gardens and Riley Drive Extension

08 Vermont Street Housing

09 Central Campus Piazza

10 Riverfront Park

11 Academic Infill and Quads

12 Admin / Academic Gateway

13 Blackford Street / Cultural Trail

14 Indiana Avenue Mixed Use

15 Engineering Sciences Quad

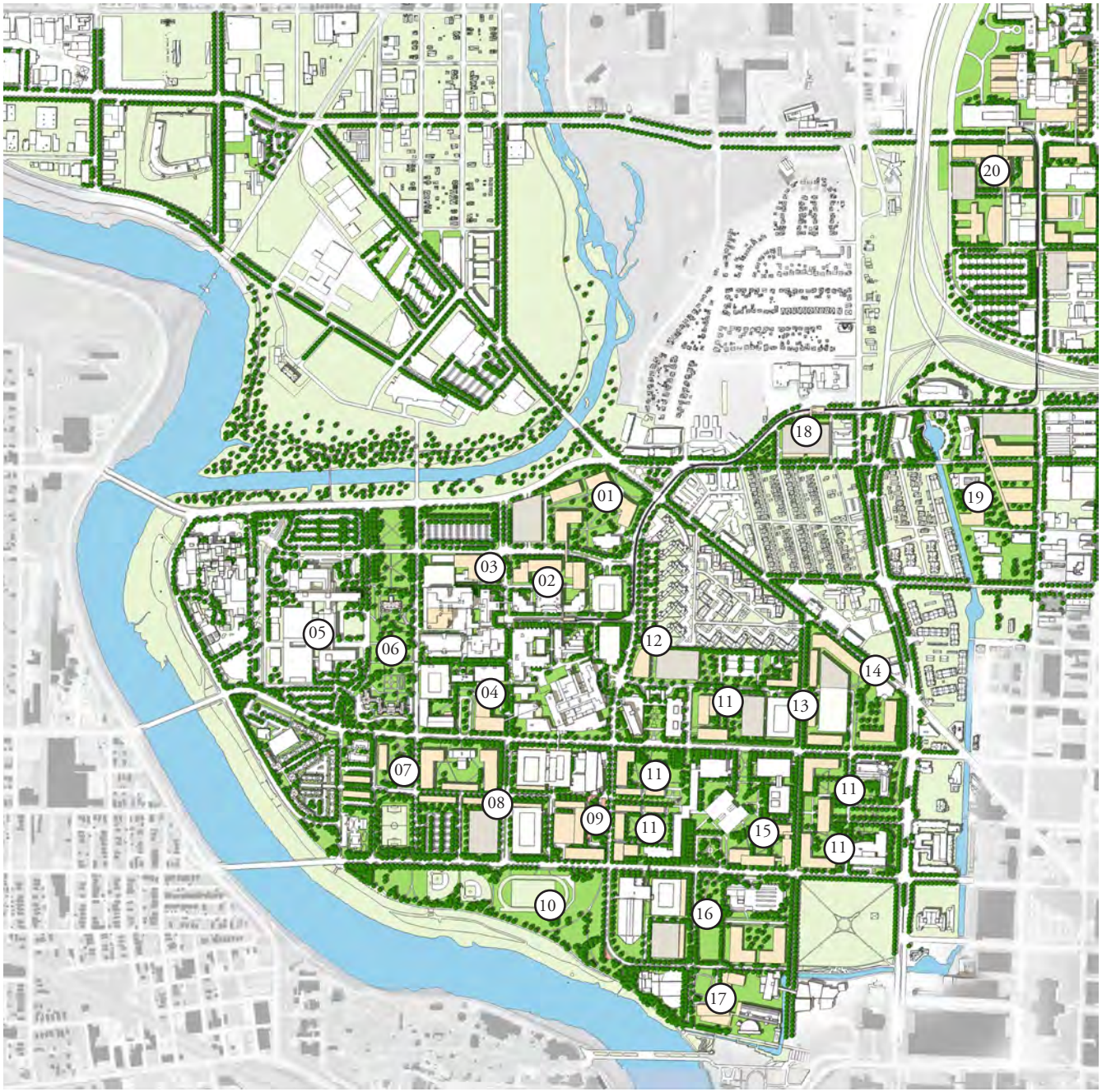
16 Blake Promenade

17 NCAA Expansion

18 Mixed Use Garage

19 Research Icubator Partnerships

20 Neurosciences Research



Campus Master Plan

SUSTAINABLE PLANNING

Building on IUPUI's Adopted Campus Sustainability Principles (2008), this Campus Master Plan embeds sustainability throughout. The Campus Master Plan has focused on a purposeful and strategic incorporation of both quantitative and qualitative improvements to the setting of the academic mission, to promote a campus that manifests sustainable planning principles. Implicit in the plan is the goal of developing the campus as a learning environment where innovation is promoted, interpreted, and celebrated.

Overlaid on the key themes of the Campus Master Plan, the recommendations are grouped under several broad sustainable planning principles:

1. Adopt environmentally sensitive land use practices.
2. Move toward a carbon-neutral campus.
3. Ensure a range of transportation options.
4. Plan for innovative sustainable buildings and landscapes.

1. Adopt environmentally sensitive land use practices.

"We value and conserve natural resources and will seek to preserve and make sustainable use of our air, water, and land. We will protect and conserve non-renewable natural resources through efficient use, careful planning, collaborative land management programs and regulatory compliance. " - 2008 Adopted Campus Sustainability Principles

IUPUI is an urban campus, but can do much to conserve, protect, and restore natural resources in Indianapolis. The riparian corridors along the White River and Fall Creek should be restored in order to improve water quality and habitat, with bank stabilization, vegetated buffers, and the removal of invasive species. The reduction of impervious surfaces, pre-treatment of storm water before discharge, and the separation of combined storm and sanitary sewers can have a big impact on water quality and habitat in the watershed. Increasing the tree canopy on campus and building an urban forest will absorb run off, sequester carbon, improve air quality, and mitigate the heat island effect of the urban environment. More compact development and minimizing the amount of impervious surfaces will also help conserve land and water resources.

Sustainabilty Principle 1 Recommendations

- Protect and restore aquatic habitat on the White River and Fall Creek.
- Eliminate invasive species and establish or enhance vegetated buffers for the White River and Fall Creek.
- Promote an increase in native landscaping, including restoration of riparian vegetation.
- Decrease use of hazardous lawn chemicals, pesticides, and fertilizer wherever possible.
- Implement Integrated Pest Management in both outdoor and indoor environments, wherever possible.

- Capture and treat water where it falls or as close as possible.
- Separate combined sewers to reduce/ eliminate discharge of sewage during large rainfall events.
- Increase campus density and diversify uses to encourage walking and increase quality of life.
- Create a green network to connect to the large ecosystem of the White River and Fall Creek.
- Reduce the amount of impervious surface through more density, more vertical integration of uses, structured parking rather than surface lots, green roofs, pervious pavements, etc.

2. Move toward a carbon-neutral campus.
"As stewards of the IUPUI campus and of all its resources, we recognize the interdependence of humans with the environment. We must apply thoughtful and creative planning to achieve a thriving campus community built on the principles of sustainability. We must foster conservation, protection and enhancement of natural resources through campus policy and personal behavior. We must promote a common agenda for IUPUI as a green campus. We must preserve and enhance the quality of life for our campus community and future generations in ways that enhance teaching and learning, research, civic engagement and administrative practices." - 2008 Adopted Campus Sustainability Principles

The Campus Master Plan proposes a number of pathways that could lead to a significant reduction in greenhouse gas emissions up to 80 percent by the year 2050. It identifies strategies that, if fully implemented, would result in a 25 percent reduction in carbon emissions by 2020, even while increasing the built area by 50 percent. As an example, this is consistent with targets established by the American College and University Presidents Climate Commitment (ACUPCC). The emissions addressed here result from the use of purchased electricity, steam, and chilled water. The University may wish to address the full range of emissions related to travel, commuting, and procurement through the evolution of other policies.

Sustainable Stormwater Management, University of Michigan, SmithgroupJJR

Alternate Forms of Transit

Sustainabilty Principle 2 Recommendations

- Use carbon emissions as a metric when evaluating suppliers of purchased electricity, chilled water, and steam.
- Anticipate solar thermal applications in the design of buildings and systems.
- Expand metering of individual building's energy use. Identify disproportionately high energy users to prioritize investments in energy efficiency.
- Set payback parameters to qualify energy efficiency initiatives.
- Establish campus-wide standards for equipment efficiencies (computers and office equipment, food service equipment, and lab equipment).
- Investigate funding and financing tools to reward/monetize emissions reduction.
- Improve energy efficiency in new construction by 30 to 50 percent over the baseline.
- Install occupancy sensors and more efficient lighting in new and existing buildings.
- Optimize laboratory energy use with high efficiency fume hoods.
- Renovate 8 percent of existing buildings to improve energy efficiency by 26 percent over the baseline.
- Retrofit commission the remaining existing buildings to optimize performance.
- Purchase green power to accelerate the progress towards carbon neutrality.

3. Ensure a range of transportation options.

"We will minimize transportation demands to and from campus and continue to incorporate alternative fuels in the campus fleet. We will work with the Central Indiana Clean Cities Alliance, Central Indiana Commuter Services, and IndyGo to encourage increased use of carpooling and public transportation by IUPUI students and employees and we will work with Central Indiana Bicycling Association, Indy Greenways and similar programs to encourage bicycling as a commuter option." - 2008 Adopted Campus Sustainability Principles

86% of IUPUI's total campus population live more than three miles from campus. 95% of the total population drive to campus, while 87% drive alone. 22% of students actually live

within three miles of the campus, yet 86% still drive alone. In addition, more than 20% move their car on campus during the day, and 50% of students circulate through multiple lots before finding a parking spot. All of this underscores the fact that IUPUI is still a heavily commuter campus. The Campus Master Plan proposes multiple solutions that help reduce the almost exclusive reliance on the private automobile on campus, including new campus bus routes, adding bike lanes and bike paths, encouraging carpooling, and increased use of the People Mover. Conversion of one-way streets to two-way will also make campus transit more efficient and convenient. Increased student housing on campus and more compact development will encouraging walking rather than driving to class.

Sustainabilty Principle 3 Recommendations

- Increase the use of lower impact modes of transportation and alternative fuel vehicles in lieu of reliance on single occupancy vehicles.
- Create pedestrian and bicycle priority on campus.
- Simplify transit runs and select vehicles for short headways and passenger convenience.
- Convert one-way streets to two-way streets to improve campus bus travel times and convenience.
- Improve inter-campus and intra-campus transit, including direct connections to the larger academic medical center campus.
- Connect campus shuttle routes to IndyGo routes at common stops.
- Integrate and connect bike parking, transit stops, parking garages and People Mover stations.
- Increase density of central campus to increase pedestrian walkability.
- Develop and implement Transportation Demand Management strategies to reduce future parking demand—parking pricing, bicycle sharing, marketing for carpooling and Guaranteed Ride Home programs, and car-sharing.
- Work with IndyGo and IU Health to revise regional transit routes that directly serve campus and IU Health destinations.

IUPUI People Mover

Bicycle Sharing

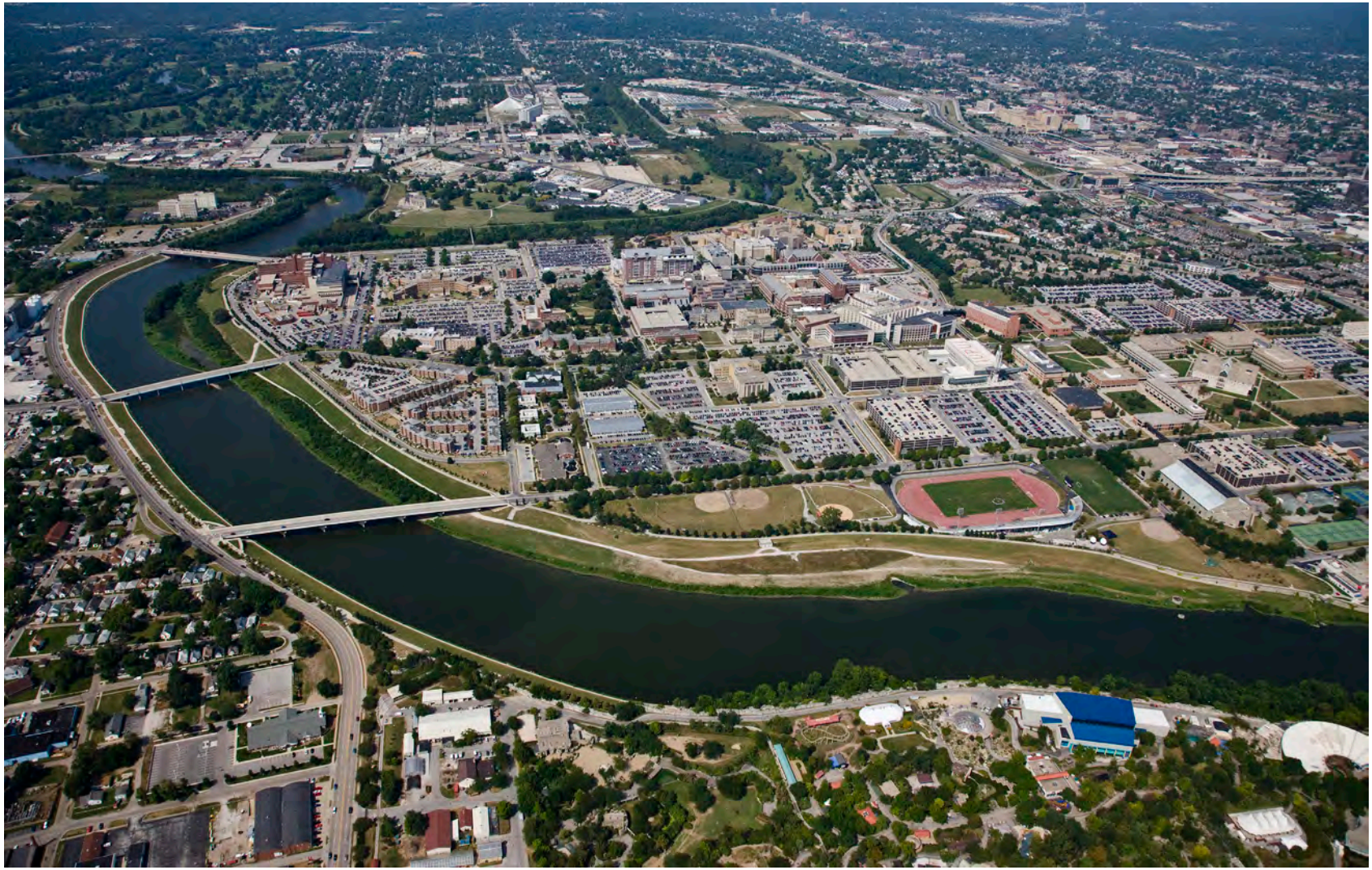
4. Plan for Innovative Sustainable Buildings and Landscapes.

"We will seek to design, build, restore and manage our facilities and grounds through the use of sustainable materials and practices. Total life cycle costs, energy use, and impact on the environment are other important factors that will influence selection of materials and practices." - 2008 Adopted Campus Sustainability Principles

The Campus Master Plan anticipates that over three million gross square feet (GSF) of new buildings will be constructed, and a number of older, inefficient buildings will be demolished. This is an ideal time to establish standards of sustainable design to guide this new development. The University has set LEED® certification as a benchmark to be considered for all new construction. In addition, the Campus Master Plan outlines strategies to build on the significant past water conservation initiatives to further reduce potable water use by 35 percent over today's use, even while increasing the overall built square footage on campus.

Sustainability Principle 4 Recommendations

- Design buildings for daylight harvesting without unwanted heat gain or glare.
- Orient (and pitch) roofs for solar thermal and photovoltaic applications (immediate or future).
- Site buildings for microclimate characteristics such as cooling summer breezes, protection against winter winds, sunlight, and shade.
- Site vegetative and landscaping features to create beneficial local microclimates to minimize energy and water usage in campus buildings.
- Install meters to create a thorough database of existing campus building energy (electricity, chilled water, and steam) and water use.
- Use efficient plumbing fixtures in new construction.
- Retrofit existing plumbing fixtures, especially in residential facilities.
- Consider graywater capture and re-use in new construction.
- Systematically identify and remedy leaks.
- For academic medical and research facilities, target strategies for reducing process water by at least 10% for water intensive equipment.



View North of IUPUI Campus

CAMPUS DEVELOPMENT

FUTURE LAND USE

The Campus Master Plan proposes a future campus that is invigorated by multiple-use districts and buildings, woven together through increased connectivity. The Campus Master Plan promotes flexibility and a mixing of programs, disciplines and campus uses within districts and vertically within buildings.

A base land use of academic, administrative, and support uses on the IUPUI peninsula are overlaid with specialty focus districts for healthcare, research, clinical activity, and mixed use. Housing and the Vermont Street Corridor is the dominant axis and pedestrian spine that spans the campus east to west. Linear north-south open spaces and the Cultural Trail on Blackford Street link districts to each other, to the White River, and to cultural destinations.

Administrative offices (for both IU School of Medicine and IU Health), research, and research incubator uses are clustered in the Canal District, in an urban mixed use pattern. Proposed research incubator facilities could be developed as university/private sector partnership opportunities to leverage access and proximity to both IUPUI and IU Health functions. Research and clinical uses are the primary functions proposed for the Neurosciences District on 16th Street and Senate Boulevard. Academic and support uses are planned for the near and midterm along Indiana Avenue north of Fall Creek.

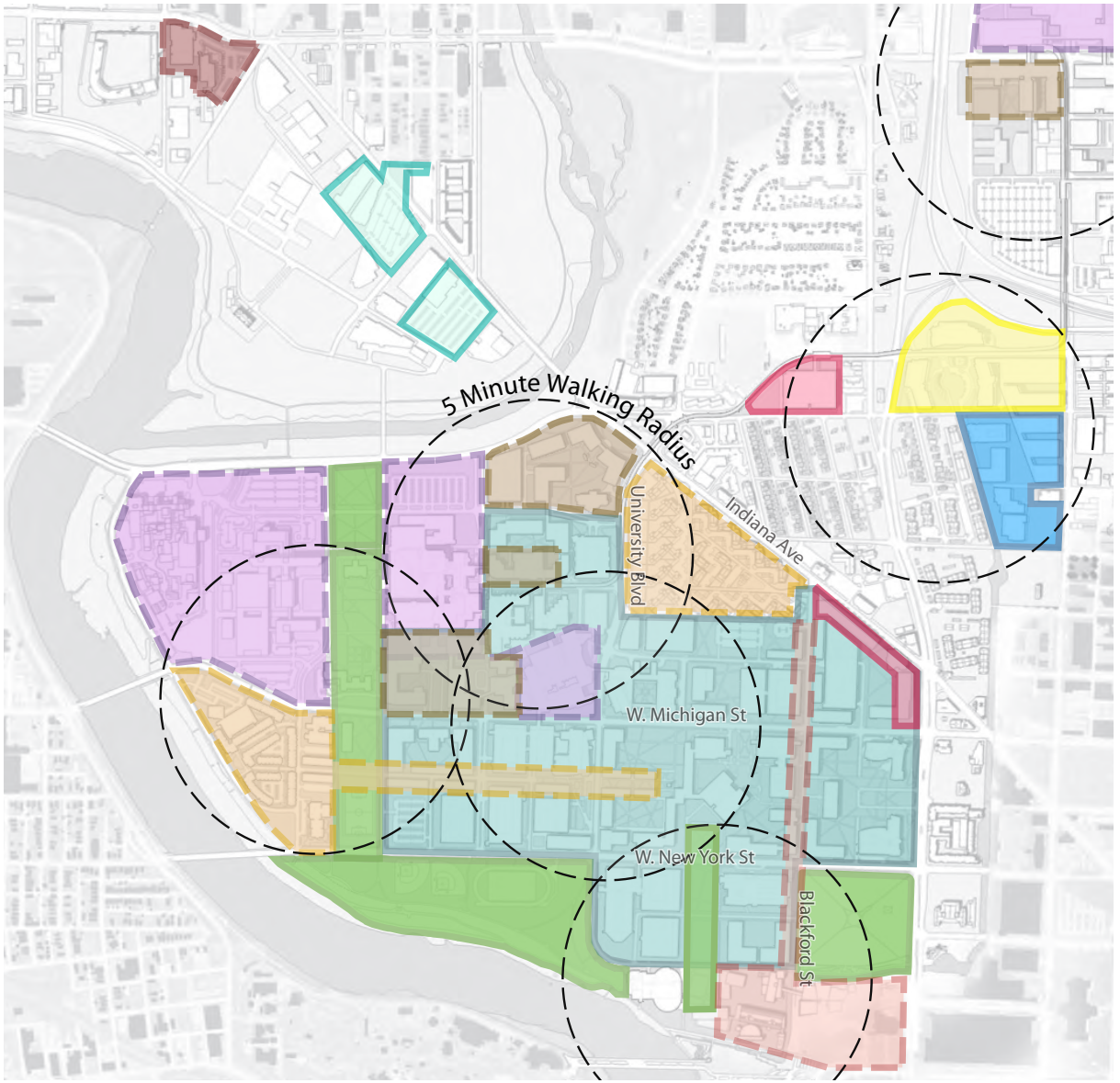
Vertical integration and a mix of uses within buildings in districts are encouraged, such as classroom, office, lab, conferencing, and retail space, or residential, classroom, office and retail. Mixed uses within buildings should also support multi-disciplinary team spaces, informal social spaces, and a mix of departments and schools, to break down academic silos and create more collaborative learning environments.

The proposed Mixed Use Gateway on Indiana Avenue is intended to help revitalize the neighborhood, bringing IUPUI programs, offices, community outreach, housing, and retail to an important edge of campus across from the Madam Walker Theater. Vermont Street in the center of campus is envisioned as a mixed use student neighborhood with housing, retail, student support services, gathering spaces and some retail use.

Land Use Recommendations

- Integrate academic, research, and faculty office uses horizontally across districts.
- Provide a mix of uses as vertical integration within buildings.
- Reinforce University Boulevard and Vermont Street as the center of campus life for academic, healthcare, research, visitor, graduate, and undergraduate populations on campus.
- Integrate student housing within the center of campus, not just at its periphery.
- Combine new student housing with study spaces, classrooms, student services, and campus amenities along Vermont Street.
- Consider public/private partnerships to create the mixed use development on Indiana Avenue and N. West Street.

- Partner with the City of Indianapolis to encourage redevelopment for vacant non-IUPUI properties in the Canal District, Neurosciences District, and the area north of Fall Creek.
- Work with private developers to provide high quality student housing on nearby off-campus sites.



FUTURE LAND USE

FUTURE DENSITY AND FAR

The Master Plan proposes a significant increase in density, with future development concentrated on the main peninsula of campus to achieve the critical mass and proximity necessary to support the goals of the plan. For comparison purposes, density areas are the same areas used in the density analysis.

The Master Plan proposes an increase in overall campus density from 0.7 to a 1.5 F.A.R. for the main peninsula. The biggest gains in density include:

Area	Existing / New
Health Sciences	2.0 / 2.5 F.A.R.
Campus Core	2.1 / 3.7 F.A.R.
Academic	0.4 / 0.9 F.A.R.
Research/Academic	0.3 / 1.3 F.A.R.

In order to achieve this density, building heights have been increased, particularly along key north south corridors, and as vertical place markers on campus, as noted in the proposed Building Heights diagram.

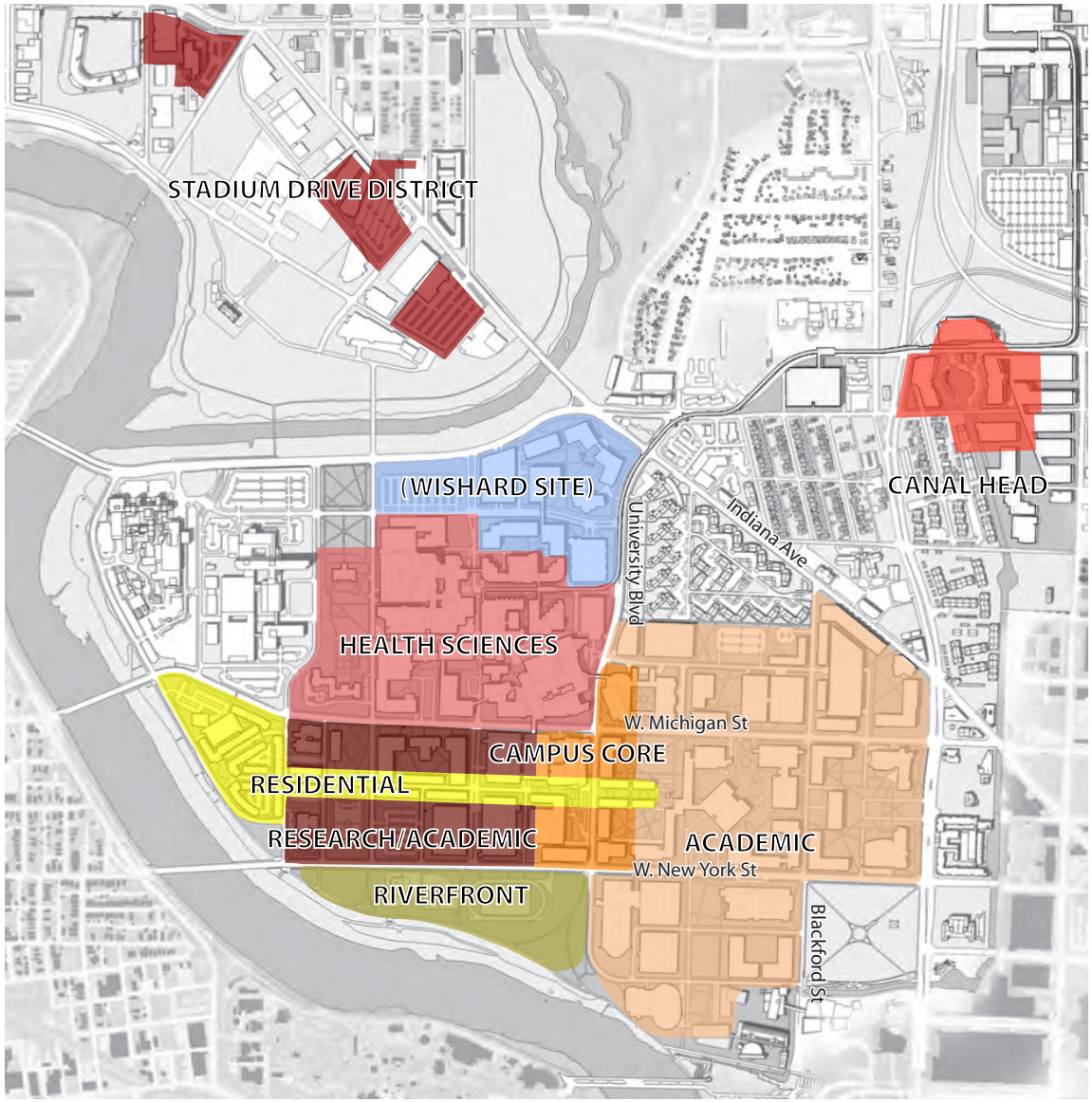
Density and FAR Recommendations

- Concentrate future campus and related research development on the main peninsula of campus.
- Increase campus density and verticality.
- Target an overall campus density of 1.5 F.A.R.
- Use building heights to reinforce campus structure and organization.
- Increase building height to a minimum of 4 stories on campus.
- Promote a minimum building height of 6 stories along the north-south axes of Ball Garden extension, University Boulevard, and Blackford Street.

Proposed FAR Density

District	Total Bldg GSF	Dist Area (AC)	Prev FAR	FAR
Stadium Drive District	194,945	20.5	0.2	0.2
Canal Head	381,360	17	0.3	0.5
Health Sciences	5,149,487	67	2.0	1.8
(Wishard Site)	1,287,584	30	1.0	1.0
Campus Core	2,127,778	16	2.1	3.0
Academic	4,108,049	124	0.4	0.8
Residential	1,717,342	27	1.2	1.5
Research/Academic	713,907	33	0.3	0.5
Riverfront	0	21	0.1	0.0
Additional Campus Property	-	63.5	-	-

*Note: Acreage is based on IUPUI Property ownership data from the IU GIS Database
**Note: Total GSF does not include Parking Garages.



STADIUM DRIVE DISTRICT
CANAL HEAD
HEALTH SCIENCES
(WISHARD SITE)
CAMPUS CORE
ACADEMIC
RESIDENTIAL
RESEARCH/ACADEMIC
RIVERFRONT

PROPOSED DENSITY

0 600 1200 1800 Feet

CURRENT CAPITAL PROJECTS

Current capital projects include those projects that are under construction and projects in the planning and design stage, and have been updated in this report. The University is committed to increase research space and improve the quality of academic and medical education space. The University has requested funds to support approximately one new research facility every other year for the next ten years for IUPUI. At an average 200,000 GSF per building, that could amount to 1 million GSF of new science and research facilities within the 20-year programming horizon of this master plan. The University is also committed to increase the amount and quality of academic and administrative office space on campus, construct new parking garages, and build new student housing.

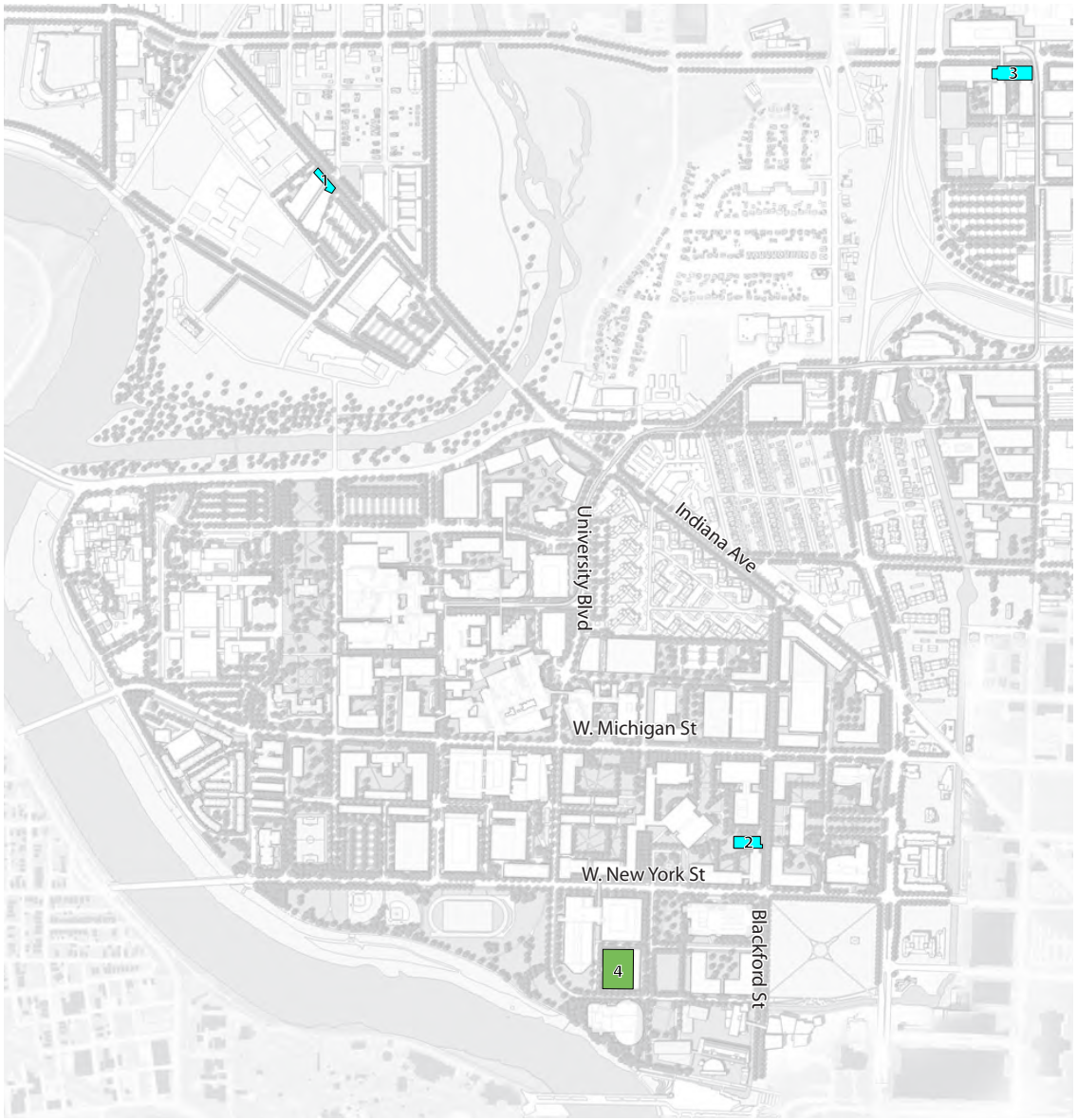
The following tables and map describe the approved projects under construction or in planning and design, and their location and size, if known.

PROJECTS IN PLANNING AND DESIGN

Project Name		
1	Ceramics Addition	10,500
2	Science Lab	40,000
3	Neurosciences - Research	125,500
		176,000

PROJECTS IN CONSTRUCTION

Project Name		
4	Sports Complex Parking Deck	444,600
		444,600



CURRENT CAPITAL PROJECTS

Projects in Planning and Design
Projects in Construction

0 600 1200 1800 Feet

DEMOLITION CANDIDATES

There are four broad categories of demolition candidates proposed: 1) demolition of existing structures due to poor building condition and quality of space; 2) demolition and replacement with new facilities on campus to support the Master Plan; 3) future demolition of facilities to be relocated off campus; and 4) demolition of the existing Wishard Memorial Hospital complex. Long term plans to redevelop the Wishard site propose the demolition of the Wishard Central Plant as well. Further study should be conducted to determine the feasibility of retaining or relocating part of this facility and equipment to serve the build out of the Wishard site.

1. **Demolition due to Building Condition / Location:**

- Graduate Townhouse Apartments
- Administration Office Building
- Oral Health Research Institute
- Former Union Building (as part of new Wishard Memorial Hospital Construction)

2. **Demolition for New Facilities in Support of the Master Plan:**

- Coleman Hall
- Long Hospital
- Clinical Building
- Cavanaugh Hall
- Lecture Hall
- Taylor Hall (University College)
- Physical Plant

3. **Future Demolition of Facilities for Possible Relocation:**

- Psychiatric Research Building (assumes long term relocation to proposed Neuropsychiatric campus south of 16th Street near Senate Ave.)
- Indoor Tennis Building
- Michael Carrol Stadium and Track and Field

4. **Demolition of Existing Wishard Memorial Hospital Complex**

The following table and map shows the location and size of facility proposed for demolition.

ACADEMIC AND SUPPORT DEMOLITION CANDIDATES

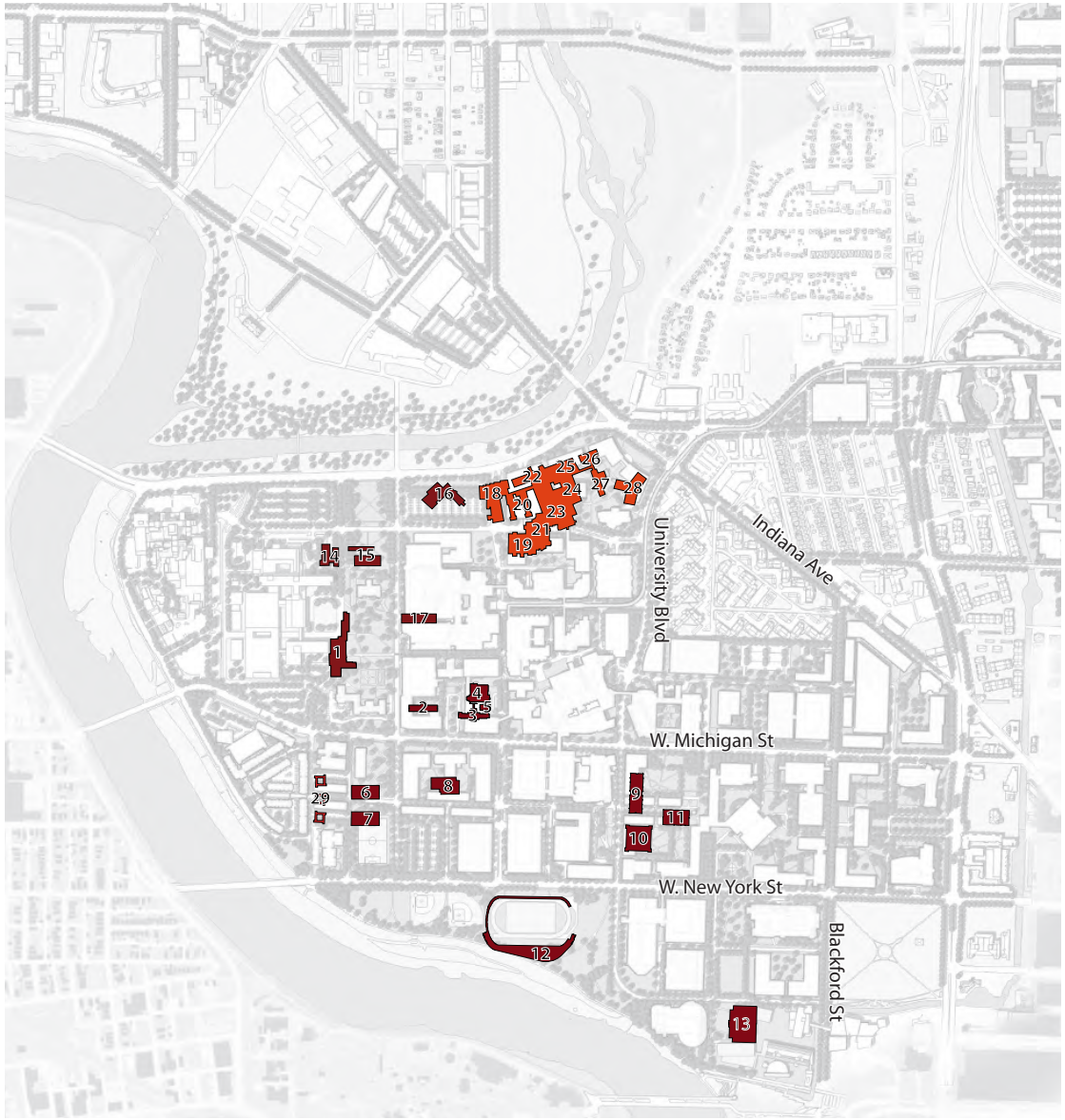
	IUPUI BLD. #	GSF
1	IN020	152,531
2	IN031	44,944
3	IN033	56,190
4	IN033A	102,510
5	IN034	2,987
6	IN062	20,175
7	IN078	20,267
8	IN064	199,950
9	IN084	168,536
10	IN100	37,148
11	IN085	89,245
12	IN112	64,355
13	IN132	50,600
14	IN001	40,387
15	IN003	38,554
16	IN381X	30,730
17	IN014	55,542
		1,174,651

WISHARD CAMPUS DEMOLITION CANDIDATES

	WISHARD BUILDING	GSF
18	Service Building	67,038
19	Regenstrief	200,235
20	Burdsal Building	69,700
21	Dunlap Building	135,479
21	West Building	79,779
23	Myers Tower	394,176
24	F-Wing	52,285
25	East Building	104,869
26	Ott Building	30,390
27	Bryce Building	48,818
28	Lockfield Village	104,815
		1,287,584

RESIDENTIAL DEMOLITION CANDIDATES

	IUPUI BLD. #	BEDS	GSF
29	IN077	60	21,500
		60	21,500



Academic and Support Demolition Candidates
Wishard Demolition Candidates
Residential Demolition Candidates

DEMOLITION CANDIDATES

0 600 1200 1800 Feet

RENOVATION CANDIDATES

The University has evaluated the condition of its buildings and identified facilities that are in need of minor, moderate or major renovations. These include renovations to:

- VanNuys Medical Science Building
- Emerson Hall
- Ball Residence
- Rotary Building
- The Natatorium
- Technology Building
- Parts of SPEA
- School of Dentistry
- Fesler Hall
- School of Nursing

There are a number of facilities that the University identified as in need of renovation that are recommended for demolition and future replacement in the Master Plan. While modest renovations may be needed to maintain functionality for buildings such as Cavanaugh Hall and Taylor Hall, the University should balance short term renovation costs against longer term replacement costs and implementation schedules.

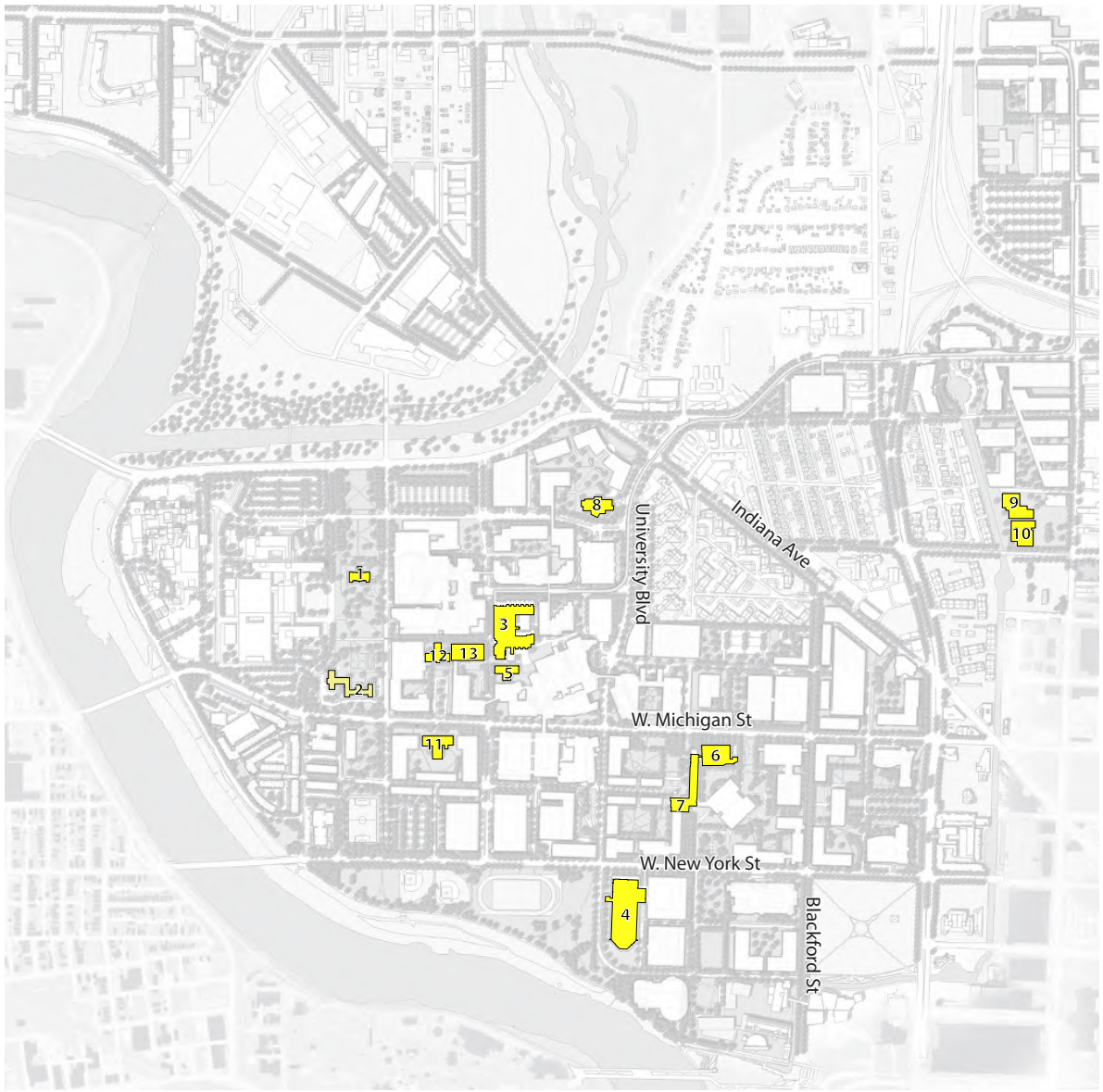
The following table and map shows the location and size of facility proposed for renovation.

RENOVATION CANDIDATES

	Project Name	
1	Rotary Building	39,123
2	Ball Residence Hall	66,077
3	VanNuys Med Sci	291,011
4	Natatorium	248,084
5	Emerson Hall	52,073
6	Technology Bldg	124,392
7	SPEA	130,220
8	Primary Care Center	98,747
9	350 West Saint Clair	22,200
10	335 West 9th Street	24,100
11	Dental School	80,000
12	Fesler Hall	61,400
13	Nursing School	140,000
		1,377,427

Rotary Building

Emerson Hall



Academic Renovation Candidates

RENOVATION CANDIDATES

0 600 1200 1800 Feet

FUTURE ACADEMIC AND SUPPORT GROWTH

The Master Plan suggests a number of future buildings to accommodate the proposed program for research space, health sciences, academic, academic support and office space, administrative office space, and auxiliary uses. The Plan shows a range of 3.4 to 5.2 million GSF of future growth depending on final program, building height, and massing. This total does not include development the University may construct with third party entities, such as the proposed mixed use development on Indiana Avenue.

The following table and map shows the location and size of future academic and support buildings.

FUTURE ACADEMIC, RESEARCH AND SUPPORT

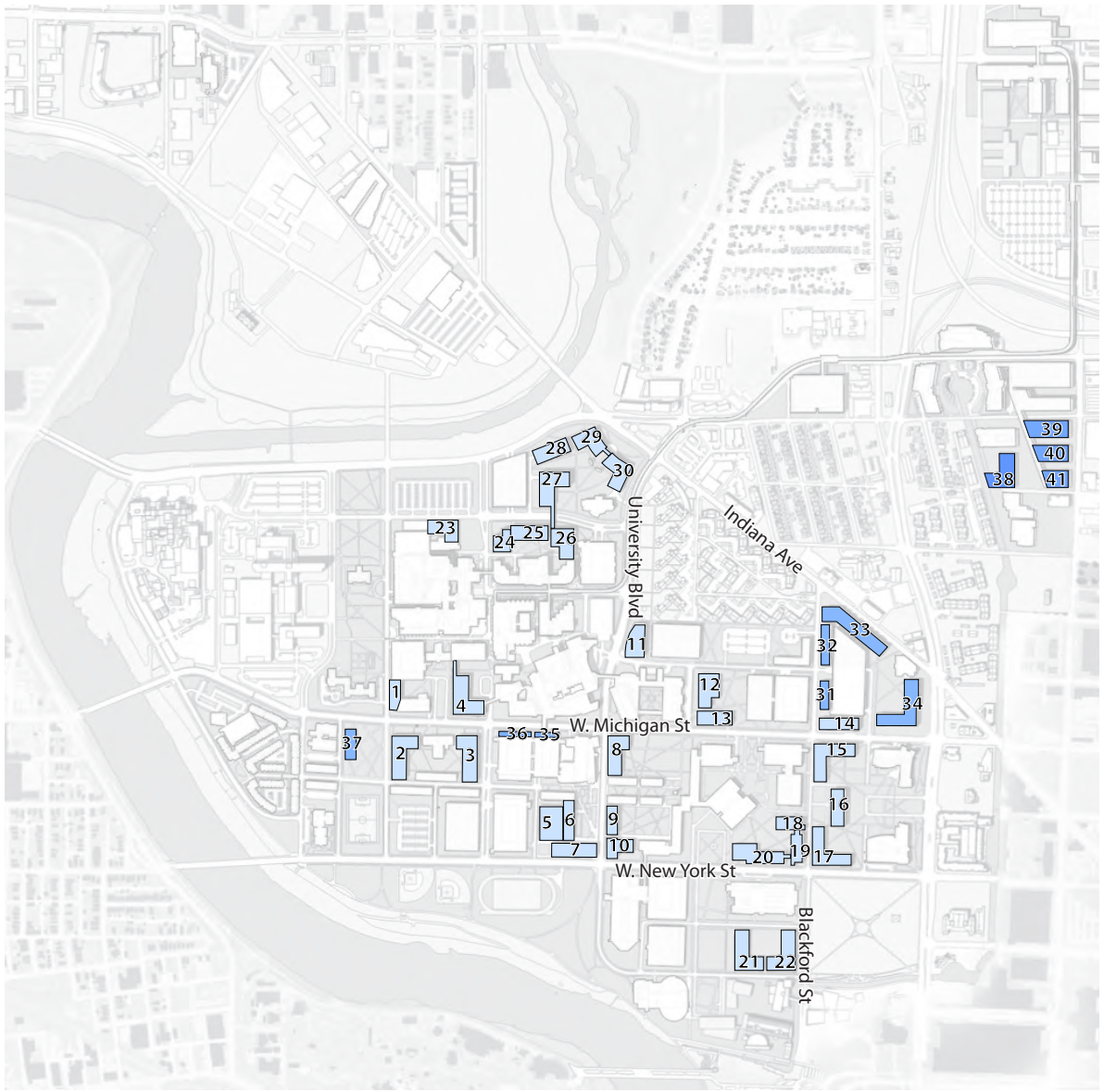
		Low-Range		High-Range	
Name	Base SF	FL	GSF	FL	GSF
1	17,000	4.00	68,000	6.00	102,000
2	42,000	4.00	168,000	6.00	252,000
3	40,000	4.00	160,000	6.00	240,000
4	48,400	4.00	193,600	6.00	290,400
5	41,650	4.00	166,600	6.00	249,900
6	24,000	4.00	96,000	6.00	144,000
7	29,250	4.00	117,000	6.00	175,500
8	31,050	4.00	124,200	6.00	186,300
9	16,800	4.00	67,200	6.00	100,800
10	22,400	4.00	89,600	6.00	134,400
11	27,800	4.00	111,200	6.00	166,800
12	31,550	4.00	126,200	6.00	189,300
13	22,500	4.00	90,000	6.00	135,000
14	23,200	4.00	92,800	6.00	139,200
15	38,900	4.00	155,600	6.00	233,400
16	27,000	4.00	108,000	6.00	162,000
17	39,100	4.00	156,400	6.00	234,600
18	15,800	4.00	63,200	6.00	94,800
19	18,850	4.00	75,400	6.00	113,100
20	37,100	4.00	148,400	6.00	222,600
21	40,500	3.00	121,500	5.00	202,500
22	40,500	3.00	121,500	5.00	202,500
23	31,500	3.00	94,500	4.00	126,000
24	17,500	5.00	87,500	6.00	105,000
25	26,200	5.00	131,000	6.00	157,200
26	29,700	5.00	148,500	6.00	178,200
27	37,350	5.00	186,750	6.00	224,100
28	26,000	4.00	104,000	6.00	156,000
29	26,700	4.00	106,800	6.00	160,200
30	29,300	4.00	117,200	6.00	175,800
			3,596,650		5,253,600

MIXED USE

31	12,600	1.00	12,600	1.00	12,600
32	18,000	1.00	18,000	1.00	18,000
33	50,450	4.00	201,800	6.00	302,700
34	48,600	4.00	194,400	6.00	291,600
35	4,850	1.00	4,850	2.00	9,700
36	7,000	1.00	7,000	2.00	14,000
37	14,600	2.00	29,200	4.00	58,400
			467,850		707,000

INCUBATOR RESEARCH

38	35,000	2.00	70,000	4.00	140,000
39	38,250	2.00	76,500	4.00	153,000
40	29,950	2.00	59,900	4.00	119,800
41	24,600	2.00	49,200	4.00	98,400
			255,600		511,200
			4,320,100		6,471,800



Future Academic, Research, and Support
Mixed Use (Office, Residential, Retail)
Incubator Research

FUTURE ACADEMIC AND SUPPORT

0 600 1200 1800 Feet

RESIDENCE LIFE GROWTH

The Master Plan recommends the provision of more on-campus housing and residential life programs in order to attract, retain, and engage students. The plan proposes over 2,400 new beds (as both new facilities and replacement beds) to bring the total of housing on campus close to the target of providing on-campus housing for 10% of projected enrollment. Given its diverse student population base, a mix of housing and food options on campus to suit both underclassmen and upper class or graduate students is desirable. New on-campus housing will also require dining facilities integrated into future residential districts. The size and scale of future dining facilities will depend on the final quantity and mix of housing types.

The Master Plan proposes a new residential district along Vermont Street which will include the majority of on-campus housing. The residential street will link the west Campus Apartments on the River Walk to the academic and research activities to the east. Future campus housing opportunities are also shown on North Street and Blackford Street in order to improve the pedestrian character of the streets and to provide a front facade to parking structures. At the proposed Arts Mall south of W. New York Street, new residential facilities may provide housing and studios for fine and performing arts students.

Residential Space Summary

There are widely varying space needs for various housing typologies, each with different square footage requirements. The national average for residence halls is currently 333 GSF / bed. In general, the traditional housing model requires the least square footage, falling in the range of 250-275 GSF / bed. This housing type has become less favorable for entering freshmen. Suite-style housing requires more space per student for common amenities and generally totals 300-325 GSF / bed. Apartment style units require the most space per student, totaling 400 plus square feet per bed. For Master Plan purposes, an average of 360 GSF per bed has been applied to the demand. Future residential space totals 864,000 GSF.

Residential Base Year

Total Existing Beds	1,107 beds
Demolition Candidates	- 60 beds
Remaining Existing Beds:	1,047 beds
Proposed Residential	2,400 beds
Future Year Total	3,447 beds

Total Residential Space Needs (GSF)

864,000 GSF

Potential Scale for Vermont Street

Ball Residence Hall

Vermont Street Housing

Residence Life Recommendations

- Increase the number of beds on campus to 10% of the projected student population.
- Develop a mix of housing types for flexibility and to reflect future housing demands.
- Retain and renovate Ball Residence Hall.
- Develop Vermont Street as the primary student housing corridor: vibrant, urban, and pedestrian-oriented.
- Integrate dining, student services, classrooms, academic support, retail, and recreational uses along Vermont Street.
- Establish learning communities and opportunities for themed residential communities on campus.
- Work with the private sector to include residential uses in the proposed public/ private mixed-use development on Indiana Avenue and with the mixed use garage proposed between W. 10th and 11th Streets.

FUTURE RESIDENCE LIFE

Name	FL	Beds	GSF	GSF/BED
1	4.00	141	50,600	360
2	4.00	141	50,600	360
3	4.00	183	66,000	360
4	4.00	183	66,000	360
5	4.00	178	64,000	360
6	4.00	95	34,300	360
7	4.00	95	34,300	360
8	4.00	154	55,400	360
9	4.00	128	46,000	360
10	4.00	128	46,000	360
11	4.00	98	35,200	360
12	4.00	98	35,200	360
13	4.00	243	87,600	360
14	3.00	116	41,580	360
15	3.00	165	59,400	360
16	4.00	140	50,400	360
17	4.00	120	43,200	360
		2,405	865,780	

Future Residential Buildings
Third Party Developer Buildings

FUTURE RESIDENTIAL SPACE

0 600 1200 1800 Feet

ENHANCED GATHERING SPACES

"Coffee shops, bookstores, films, and little restaurants are as vital to the process of education and personal growth as labs and exams. Without them, the university is not a complete educational milieu."
— Christopher Alexander, *A Pattern Language*

If the land occupied by IUPUI were owned by multiple private owners instead of one large institution, there would be numerous small and large businesses, cafes, coffee shops, and amenities serving the 57,000 people that come to campus on a daily basis. The peninsula would operate as an urban district, part of the larger city. Businesses would tend to concentrate at the most visible, easily accessible centers of population density, especially at University Boulevard, W. Michigan and Vermont Streets, and on Indiana Avenue, visible to city traffic, and adjacent to a large parking supply.

The program for IUPUI recommends up to 108,000 GSF of additional retail, amenities, services, and gathering spaces on campus over a ten to twenty-year horizon. This addition will

meet one of the primary objectives of the Master Plan: to create a vibrant urban campus and improve the quality of campus life. New retail and gathering spaces should be concentrated in a few key locations to generate the 'critical mass' of experiences needed to generate social interaction and to create a true sense of place with the dynamic feel of a truly urban environment.

Reinforce the Heart of Campus

The Vermont Street corridor from University Boulevard to Barnhill Drive, adjacent to the Campus Center, has the highest foot traffic on campus. It is within walking distance to all University functions including the University Place Hotel and Conference Center, IU and Riley Hospital facilities, clinics, and parking. Future retail, student services, and amenities are proposed as visible ground floor uses within residential buildings along Vermont Street. Active ground floor uses and amenities are also recommended for the buildings that form the perimeter of the proposed central Piazza on University Boulevard south of the Campus Center.

Indiana Avenue as City Link

Indiana Avenue can become the northwest equivalent of popular Massachusetts Avenue on the northeast of downtown. The University's frontage on Indiana Avenue is a natural location for a mixed-use edge between campus and the city, providing both the campus and neighborhoods with amenities, retail uses, entertainment, and gathering spaces. New campus development on Indiana Avenue will also tie into the proposed Cultural Trail being developed along Blackford Street, connecting to the significant arts, cultural, and recreational facilities south of campus.

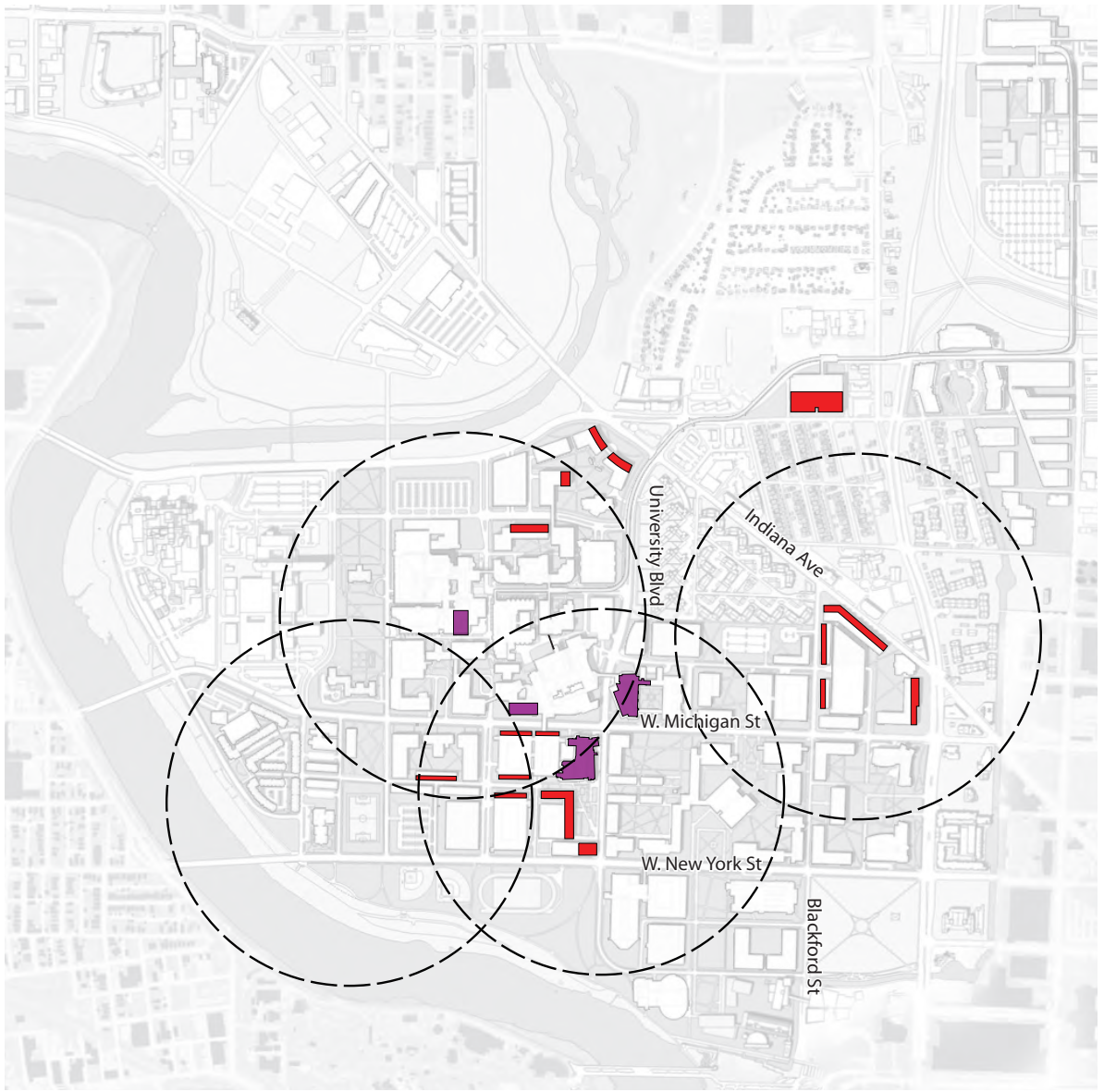
As the on-campus residential population grows, the University will want to consider selecting the proposed program for future retail amenities, and food service. The emphasis should focus on student and user flexibility, choice, and quality experience. The University consider including local, independent operators with a history of quality and success to run selected businesses and services on campus.

indoor Gathering Space, Campus Center

Recommendations

- Establish a retail and student services corridor as part of future residential construction on Vermont Street, concentrated between University Boulevard and Barnhill Drive.
- Construct new facades for the existing parking decks on Vermont Street to include ground level retail uses fronting W. Michigan Street.
- Extend future retail and amenities to surround the proposed central Piazza on University Boulevard south of the Campus Center.
- Partner with the City and community groups to revitalize Indiana Avenue as a vibrant, eclectic urban street, part of the evolving cultural district of Indianapolis.
- Work with the private sector to create a new mixed use development on Indiana Avenue from Blackford to N. West Street.
- Work with a private developer to include retail uses and a potential grocery store for the proposed garage on W. 10th and W. 11th Streets.
- Add retail, amenity, and social gathering space on major frontages and at building entrances as the Wishard site builds out.
- Conduct a further Market Implementation Strategy to determine square footage distribution of future retail space for each primary location.

Outdoor Gathering Space at the University of Cincinnati



New Retail Opportunities
Existing retail

CAMPUS GATHERING SPACES

0 600 1200 1800 Feet

LANDSCAPE CHARACTER

Passive recreation on campus

Active recreational opportunities

The landscape of the IUPUI campus is a radically altered manmade environment. Western parts of the IUPUI peninsula are highly artificial, created through the construction of levees and the fill of low-lying and wet areas, over time. The Master Plan sets forth recommendations for humanizing the urban environment and for creating connections to nature.

CAMPUS LANDSCAPE AND OPEN SPACE

Two overarching goals established at the beginning of the planning process are:

1. Support Academic Excellence.
2. Create a Vibrant Urban Campus.

Recommendations for enhancements to the pedestrian realm and improved connections to natural systems, greenways, and the City's larger open space network are natural outcomes of the second goal. The Master Plan proposes a green network that includes riparian corridors and tree cover forming a campus urban ecosystem; new memorable spaces; improvements to campus edges and gateways; and enhancements to the pedestrian realm.

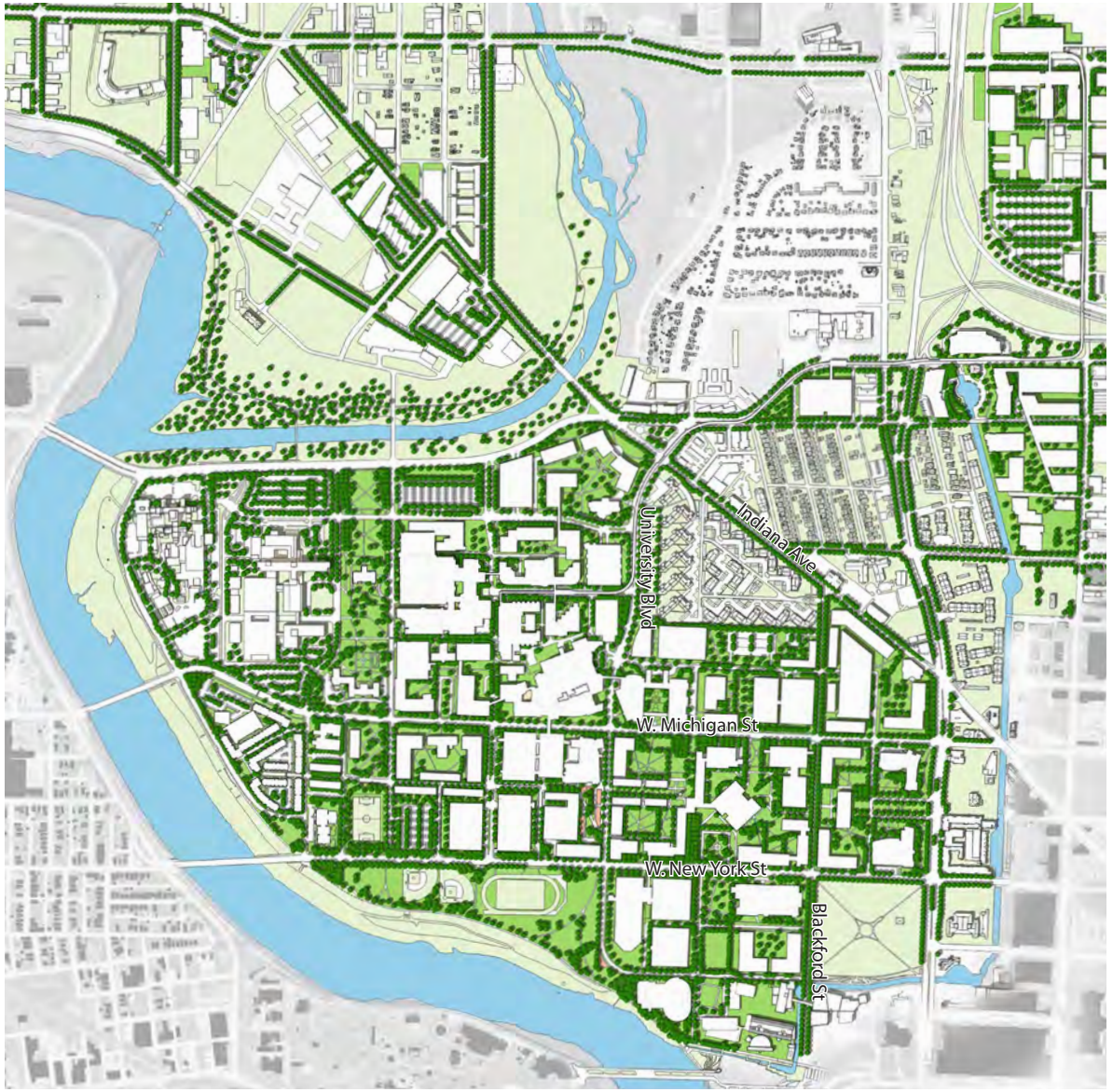
The Master Plan builds on the open space framework established by prior master plans, including those by Zion & Breen Associates, through the late 20th century. It considers the relationships between natural systems, new and existing open spaces, streetscape corridors and pedestrian spaces as a means to physically organize the campus and as a framework for articulating future growth.

An Urban Ecosystem

Lying at the confluence of the White River and Fall Creek, the campus landscape and riparian corridors can contribute to the regional ecosystem. The riparian corridors along the White River and Fall Creek should be restored in order to improve water quality and habitat. Re-vegetation and bioengineering techniques are recommended for stabilization of the river banks and to reduce bank sloughing and siltation in the waterways. Native trees and woody vegetation will absorb runoff, silt, and pollutants and slow runoff. Vegetated buffers and the removal of invasive species along the river corridors will also create habitat for wildlife species. The existing

landscape of the levee embankments consists of mown lawn and little tree cover. Establishing a remnant woodland edge and a no-mow zone near the embankments will help filter surface run-off and create more habitat contiguous with the two largest natural systems on campus.

Increasing the tree canopy and building an urban forest will also provide habitat, shade, climate control, and stormwater management benefits. Currently the percentage of tree canopy to land area on the IUPUI campus is 10%. Good urban forestry practice recommends a minimum 15% tree cover for urban areas. The Master Plan recommends more than doubling the tree existing canopy to at least 28% of land area. At this level and density of tree cover, the campus will realize numerous environmental benefits. Air pollution removal will increase from 3,004 pounds per year to 8,542 pounds per year. Carbon storage and sequestration will triple, increasing from 1,421 total tons stored annually to 4,042 tons stored, and from 11 total tons sequestered annually to 31 total tons sequestered. Stormwater runoff will be reduced, decreasing the amount of silt



CAMPUS LANDSCAPE AND OPEN SPACE

and pollutants that drain to the White River and Fall Creek. The increase in tree canopy will provide over $165,000 in savings on stormwater detention facilities that might otherwise need to be built.

New tree cover is proposed to continue the tree allees initiated with the Zion and Breen landscape plan, and adding denser allees along north-south corridors. Increasing the number of street trees and providing parking lots with a tree canopy cover will have a significant effect on the microclimate and will mitigate heat islands. Additonal tree canopy is also proposed along the riverfront, in new open spaces, within existing quadrangles, and along major pedestrian walks.

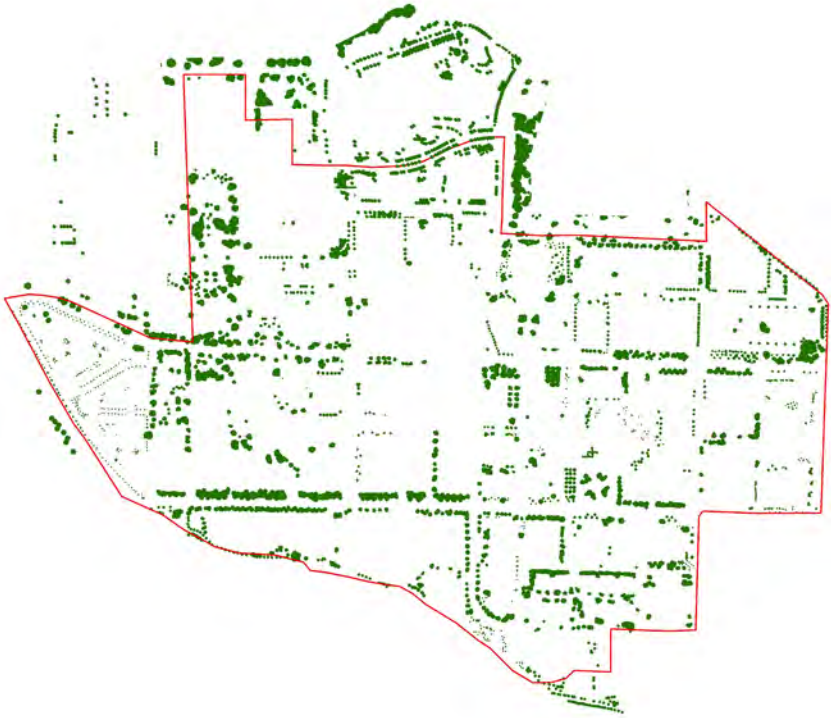
Selection of species for future tree plantings should carefully consider the type of space they will occupy, such as urban streetscape conditions or broader quadrangles. For either circumstance, a diversity of tree species will minimize the risk of loss due to pests or disease. Diversity of trees will also encourage diverse campus habitat.

Recommendations

- Create native habitat on campus and along riparian corridors.
- Create a range of urban ecosystems from traditional "turf and tree" campus environments to woodland fragments along riparian edges.
- Connect landscape fragments to form continuous corridors across the peninsula from the White River to Fall Creek.
- Establish a no-mow zone along the levee embankments and plant with a native seed mix to gradually replace existing lawn.
- Use native species in re-vegetation and bank stabilization efforts.
- Eliminate invasive species.
- Increase the tree cover from 10% to at least 28% on campus.
- Increase tree plantings along all streets and within parking lots.
- Increase tree plantings in future and renovated campus open spaces and quadrangles.
- Use a diverse range of native species to reinforce connectivity with the natural environment.
- Implement a Landscape Maintenance and Tree Management Plan for the campus.

Existing Tree Cover

EXISTING CONDITIONS:
10% TREE COVER



PROPOSED CONDITIONS:
28% TREE COVER

NEW MEMORABLE SPACES

A Green Network

The Master Plan proposes a green network of new memorable spaces, attractive urban streetscapes, and green linear corridors that connect to the larger ecosystem of the White River and Fall Creek, and to the cultural facilities of Military Park and White River State Park. Memorable spaces proposed range from larger one-of-a-kind spaces such as the Ball Garden Extension and improved riverfront park to smaller quadrangles and intimate campus spaces.

Overall, the green network of the Master Plan provides 153 acres of re-fashioned parks, quadrangles, plazas, and social gathering spaces. New spaces include:

- The extension of Ball Garden from Fall Creek to the White River
- A new Arts Mall from University Library to the White River State Park
- An enhanced riverfront park for athletics, recreation, and passive use
- Enhanced urban streetscapes
- New and renovated quadrangles
- A major campus Piazza at University Boulevard and Vermont Street

Recommendations

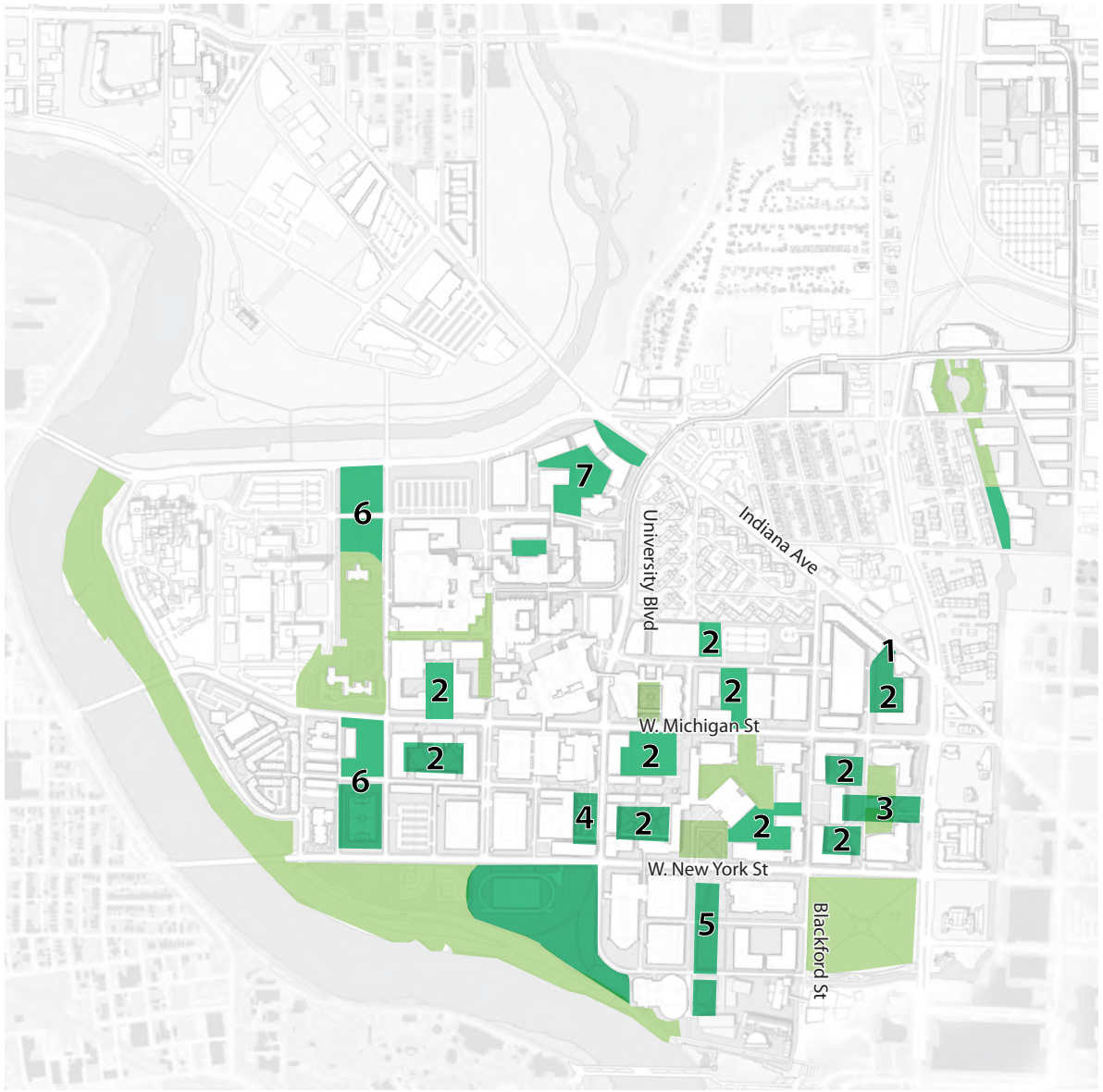
- Future development should be centered on green space, public streets, and urban amenities.
- Open spaces should connect to each other, to larger natural systems, and to cultural destinations through pedestrian-scaled streetscapes, walks, and linear corridors.
- Break down the scale of larger open spaces such as the Ball Garden extension and Arts Mall with a series of outdoor rooms, recreation fields, rain gardens, and pathways.
- Protect views and celebrate arrivals at the riverfront from all street ends.
- Create new quadrangles as semi-enclosed space (enclosed on at least three sides), but with many entry points.
- Design future development and quadrangles with a strong sense of spatial definition (typically a proportion of 1:2 to 1:4 ratio of architectural height to horizontal width of the space).
- Create a change of scale in the entry sequence to quadrangles, moving from narrow portals into broad open space.
- Use landscape and tree masses to delineate boundaries and break down the scale of existing quadrangles on campus.

Pocket Park, Southern Gateway, The Ohio State University

NEW MEMORABLE SPACES

1. Indiana Avenue Pocket Park
2. Academic Quads
3. West Avenue Quad
4. Campus Center Piazza
5. Arts Mall Pedestrian Promenade
6. Ball Gardens Extension
7. Biomedical Research Quad

Academic Quads, Columbia University



Existing Open Space
Proposed Open Space

NEW MEMORABLE SPACES

0 600 1200 1800 Feet

CAMPUS EDGES AND SETBACKS

Consistent building placement, defined by clear setback and build-to lines will establish a stronger urban campus character. Setbacks define the minimum distance behind the curb line for building placement and parking areas. Build-to lines establish the dimension from the curb that new development must meet in order to create a consistent, urban streetwall. A hierarchy of setback dimensions and build-to lines are proposed. Both University Boulevard and Indiana Avenue establish build-to lines to create a more urban streetscape formed by future development and active ground floor uses. Vermont Street, as a smaller scale residential street, has a tighter build-to line proposed to create a more intimate spatial definition.

The Master Plan proposes to preserve the setbacks established by the previous Zion and Breen landscape plan on W. Michigan, N. West, and W. New York Streets. At the intersections of W. Michigan and W. New York Streets with Limestone, West Drive, University Boulevard, and Blackford Street, development is proposed closer to the street to reinforce a sense of gateway and urban density.

A consistent setback and landscape treatment is proposed for W. 10th Street, an important campus edge and front door image zone for the hospitals and medical campus.

Recommendations

- Establish setback dimensions proposed, free of development and surface parking lots.
- Preserve the setbacks and complete the landscape design previously established for W. Michigan, W. New York, and N. West Streets, in the areas proposed on the plan.
- Establish a 20-foot build-to line on University Boulevard and Indiana Avenue to create a consistent street wall for future development.
- Establish a 15-foot build-to line on Vermont Street for future residential development.
- Screen views of surface parking lots from the street rights-of-way through additional landscape plantings, low hedges, and/or low walls.

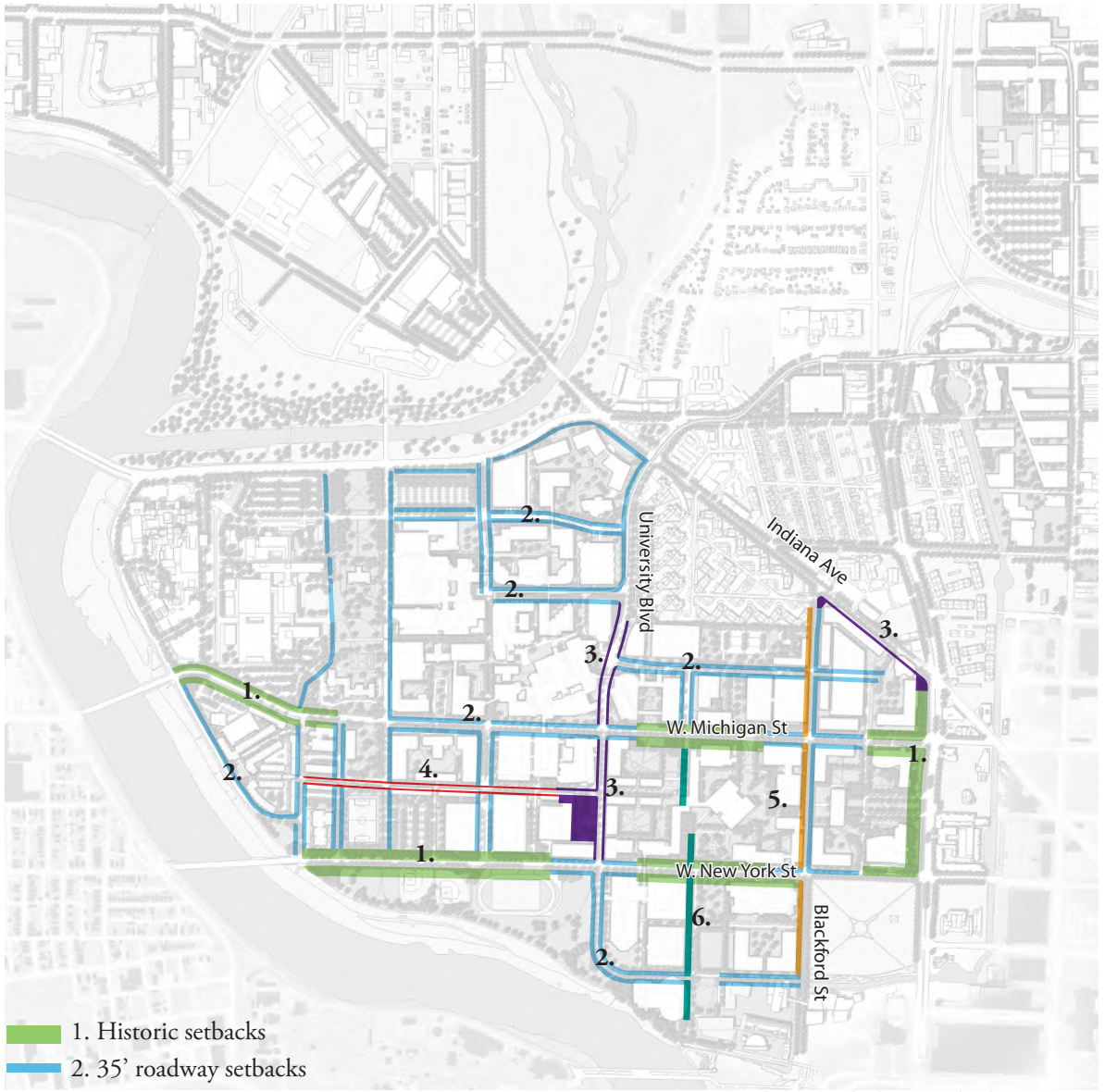
STREETSCAPE CHARACTER

An urban campus connects most immediately to the city through the pedestrian experience. The character of the urban streetscape is a key component of the pedestrian experience at IUPUI. Enhancements to the pedestrian realm and a consistent streetscape treatment with more trees, pedestrian lighting, site furniture, and signage is proposed for all campus streets. The conceptual cross sections that follow describe the proposed character and minimum dimensions for campus streetscapes.

Recommendations

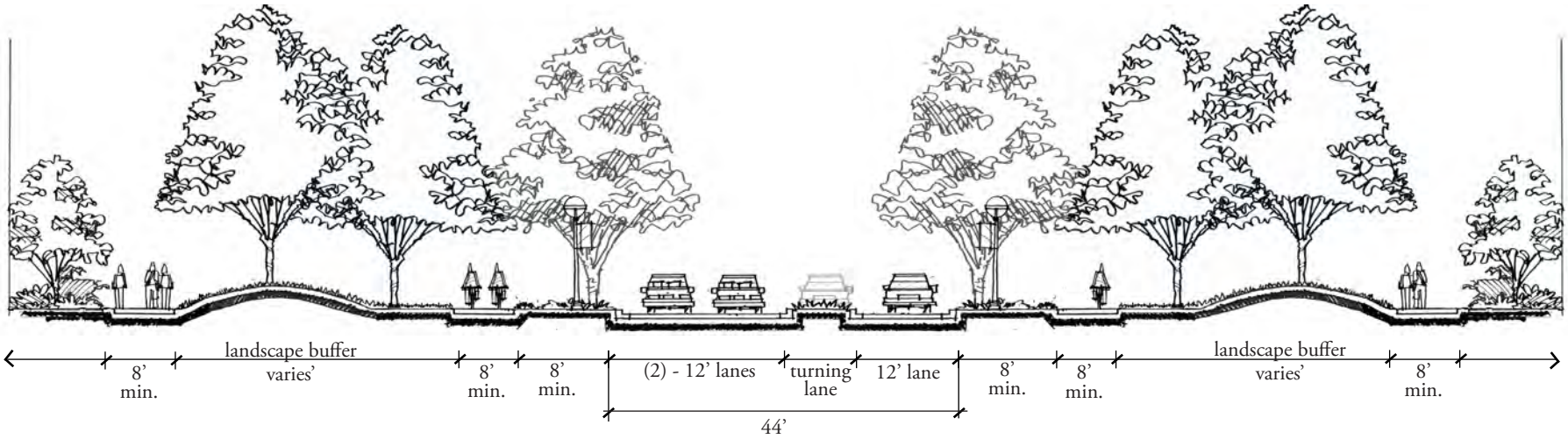
- Provide a consistent streetscape design for all campus streets, based on scale, character, width of roadway, and volume of pedestrian traffic.
- Increase the number of street trees on all campus streets, planted in either lawn panels or tree grates, depending on street type.
- Complete the landscape design and staggered double row of trees established within the historic setbacks for W. Michigan and W. New York Streets.

- Provide appropriately scaled lighting for all campus streets to light both roadways and sidewalks.
- Provide additional site furniture on major pedestrian routes.
- Sidewalks for all campus streets should be a minimum of 8 feet wide, wider in areas of heavier foot traffic.
- Building service zones and loading docks should not front campus streets.
- Improve the streetscape for IUPUI properties on Stadium Drive north of Fall Creek with street trees and appropriately sized walks, and screen all campus surface parking from view of the right-of-way.
- Improve and maintain the streetscape for IUPUI properties on W. 10th Street at the Canal with street trees, appropriately sized walks, and screen all campus surface parking from view of the right-of-way.

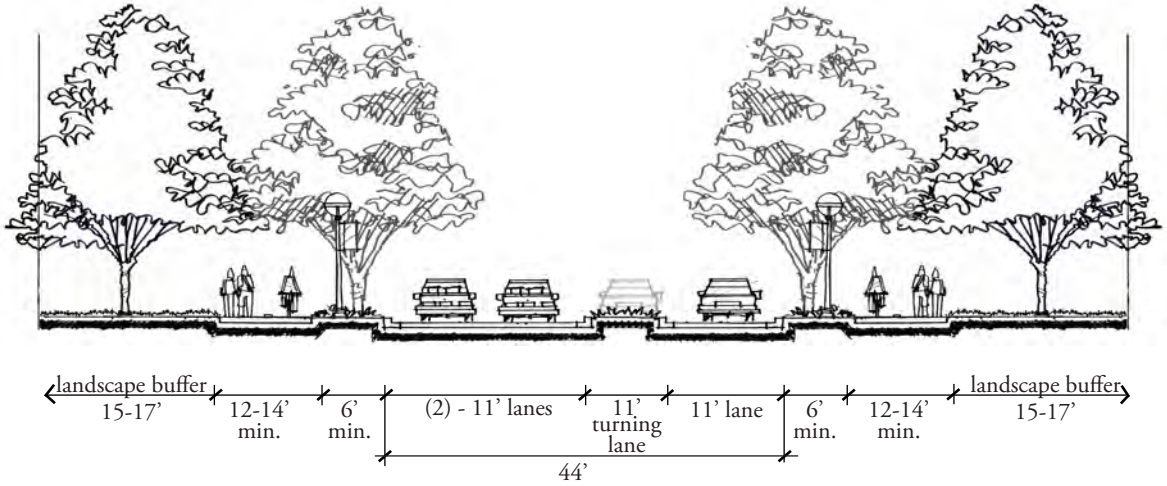


CAMPUS EDGES, SETBACKS, AND STREETSCAPE CHARACTER

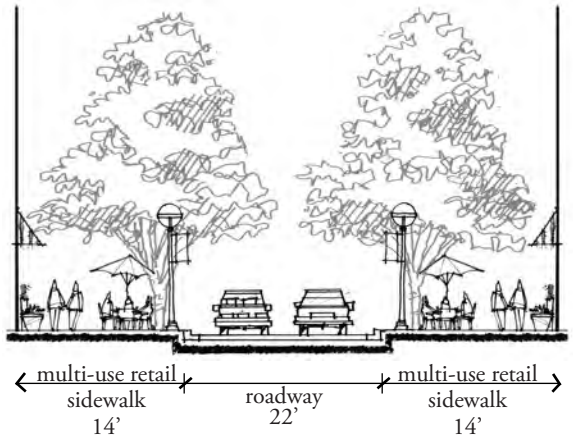
STREETSCAPE CHARACTER
1. HISTORIC SETBACK



STREETSCAPE CHARACTER
2. ROADWAY 35' SETBACK

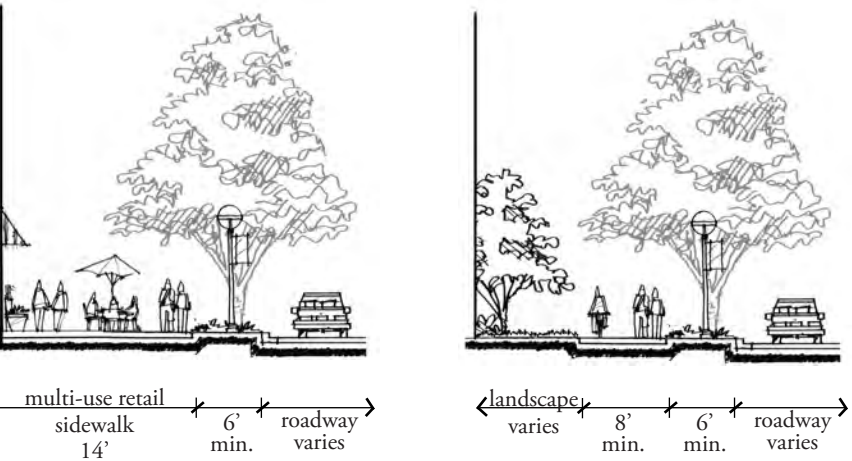


STREETSCAPE CHARACTER
3. VERMONT STREET 15' BUILD-TO



TREETSCAPE CHARACTER
NIVERSITY AND INDIANA 20' BUILD-TO

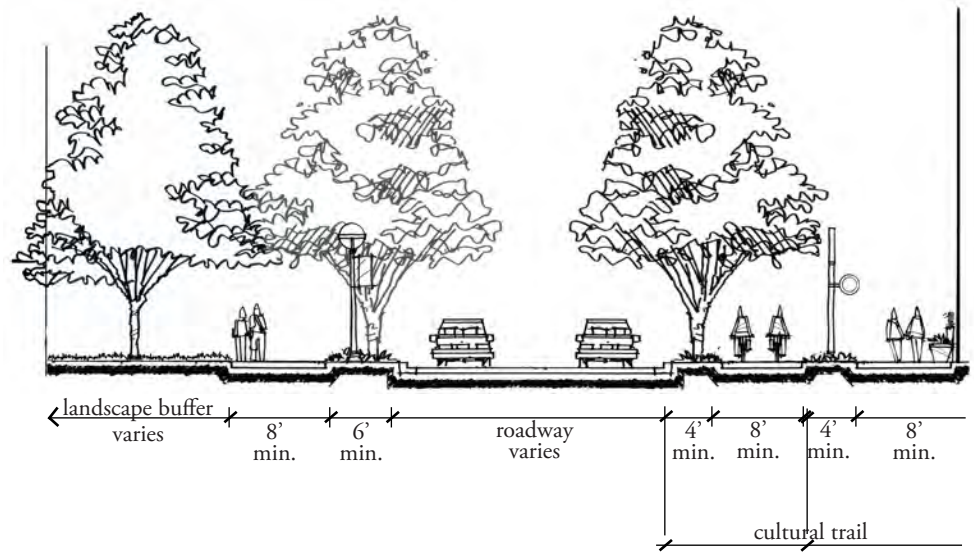
Indiana and South University



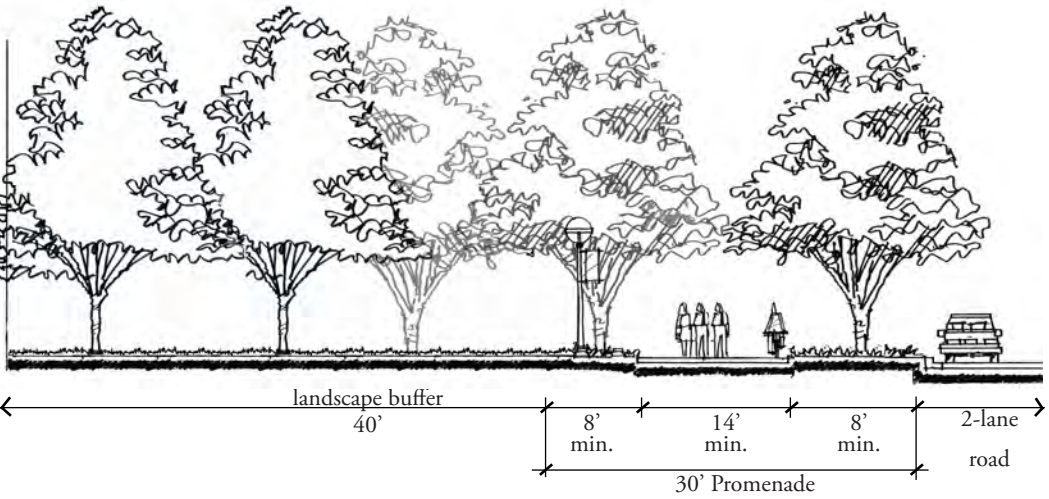
North University

5.

STREETSCAPE CHARACTER
BLACKFORD STREET / CULTURAL TRAIL



TREETSCAPE CHARACTER
ULTURAL ARTS MALL 30' PEDESTRIAN PROMENADE



CAMPUS GATEWAYS

Campus gateways and entrances create a positive first impression. As an urban campus, gateways for IUPUI should not separate the campus and city, but should mark the transition from one urban space to the next.

Gateways and entrances serve both vehicular and pedestrian traffic. Vehicular entrances must be legible for drivers traveling at faster speeds, while pedestrian entrances must foster a sense of safety, scale, and engagement. Entrances that serve both vehicular and pedestrian traffic must be legible at multiple scales. The design of gateways should be simple, appropriate, and compatible with the surrounding urban and architectural context of the campus and its districts.

Because of the diverse populations that come to IUPUI, campus gateways and entrances should include a straightforward wayfinding and signage system to direct students, patients, visitors and staff to parking, drop-offs, and/or campus and healthcare destinations.

Recommendations

- Work with City and community partners to develop an appropriate gateway image and wayfinding for IUPUI and the hospitals at the I-65 entrance and exit ramp and at W. 10th and 11th Streets.
- Establish vehicular scaled entrances on W. 10th Street at Indiana Avenue and Wilson Street, and at the new entrance on Riley Drive to include directional signage for all hospital, clinical, emergency, and regular campus traffic.
- Establish vehicular scaled gateways at the bridges on W. 10th Street, W. Michigan, and W. New York Streets, for east bound traffic.
- Establish combined vehicular and pedestrian scale gateways on N. West Street at Indiana Avenue, W. Michigan, and W. New York Streets.
- Incorporate vertical architectural elements of high quality materials that are compatible with campus architecture into the design of vehicular gateways for visibility and campus image.
- Establish a combined vehicular and pedestrian gateway at University Boulevard and Indiana Avenue.
- Ensure there are adequate pedestrian walkways and hardscape areas to accommodate foot traffic at combined gateways.
- Create a series of internally focused, pedestrian-scaled gateways to campus districts similar in scale to the Barnhill pedestrian mall gateway.
- Create pedestrian-scaled gateways at the south end of campus to welcome visitors from White River State Park and cultural museums.
- Develop a consistent palette of lighting, signage, hardscape and landscape materials for all levels of gateway designs that reflect the character of the campus.

Marquette University Campus Gateway

MAJOR GATEWAY

1. University Boulevard
2. W. Michigan St. at N. West St.
3. W. New York St. at N.West St.

VEHICULAR

4. W. 10th Street at West Drive
5. W. 10th Street at Limestone
6. W. Michigan St., W. New York St. at Bridges
7. W. 11th Street at N. West St.

PEDESTRIAN

8. Canal at Blackford
9. Blackford
10. University Blvd.
11. Medical Campus
12. New York at Barnhill

MIXED

13. W. 10th Street at Wilson
14. Blackford at Indiana

GATEWAYS AND ENTRANCES

0 600 1200 1800 Feet

PEDESTRIAN REALM

Improved campus streetscapes and pedestrian corridors are elements of an enhanced pedestrian realm for IUPUI. A finer network of campus pedestrian walks at the ground level is proposed to serve future development. As one of the major pedestrian paths on campus, Vermont Street will be transformed from a walk through parking lots to a lively urban residential street, connecting to the proposed Central Piazza at University Boulevard, and to the main pedestrian walk through the center of the academic core. This main east west path can also be developed into the "IUPUI Campus Trail" with bike and pedestrian paths and interpretive graphics, as an offshoot from the Cultural Trail extension on Blackford Street.

Pedestrian crosswalks at Indiana, W. Michigan, Vermont, and W. New York Streets across North West Street remain critical pedestrian links to the City and to the Canal District. As plans are pursued to bury the overhead utility lines on N. West Street, the University should engage in discussions with the City and State regarding the future design of N. West Street. A minimal widening of the roadway to allow construction of a continuous landscaped median on N. West Street from Indiana Avenue to W. New York St. would greatly enhance safe pedestrian movement across this major thoroughfare.

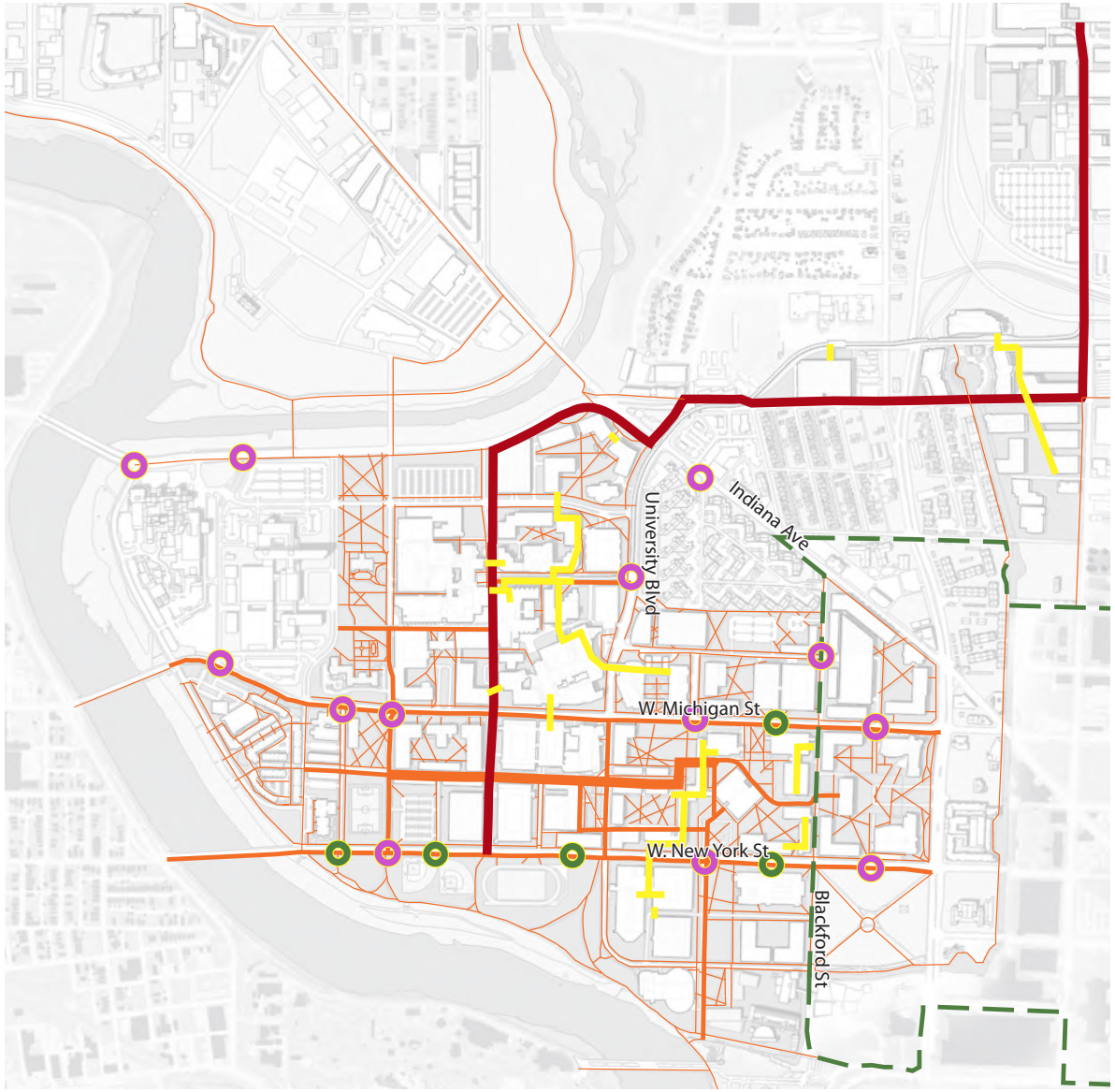
On the main campus, more north-south pedestrian walks will overcome the lack of circulation options created by the earlier super-block plan of the campus. Designated mid-block crossings on W. Michigan and W. New York Streets are proposed as part of the conversion of the roadways to two-way traffic and will enhance pedestrian safety. These new north south walks will connect to the recreational trail along the White River, and to the footbridge north of W. 10th Street to link up with the White River Wapahani Trail north of Fall Creek. The plan also includes the route for the Cultural Trail on Blackford Street and the proposed setback to accommodate its combined walkway and bike path.

In order to create a critical mass of pedestrian activity and vitality at the ground level, expansion of the existing second level skywalk system is not recommended. Exceptions are made only within the hospital district in order to serve patient, visitor, and materials movement between medical and research facilities.

Recommendations

- Provide a hierarchy of sidewalks along natural desire lines to link major destinations across campus.
- Provide walks that connect major building entrances directly to safe street intersections or designated mid-block crosswalks.
- Increase plantings of deciduous canopy trees along major pedestrian routes for more shade and wind protection.
- Improve and increase site furniture, lighting, and amenities along major pedestrian routes on campus.
- Locate outdoor gathering spaces along major campus pedestrian routes.

- Improve and enhance pedestrian connections from parking facilities to hospitals and clinics for visitors and patients.
- Limit skywalks to those necessary to aid critical patient, visitor and materials movement in the hospitals district.
- Extend the Cultural Trail onto campus along Blackford Street to connect Indiana Avenue and the campus to the White River State Park.
- Develop the "IUPUI Cultural Trail" on campus along the Vermont Street corridor as an internal interpretive path from the Cultural Trail.



FUTURE PEDESTRIAN CIRCULATION

CAMPUS CROSSWALKS

The Master Plan recommends a number of new pedestrian intersections and mid-block crossings to improve pedestrian safety. New intersections and mid-block crossings should include clearly marked and consistent designs to alert motorists to yield to pedestrians. More detailed traffic studies to determine the specific design and location of mid-block crossings and the potential need for pedestrian-activated signals should be conducted.

Campus Crosswalks, MIT

CAMPUS LIGHTING

The IUPUI campus has three variations of a modern globe and simple pole base design as its pedestrian lighting standard. The quality and consistency of most campus light sources. Evening observations indicate that campus illumination is poor and there is insufficient lighting for pedestrians at the locations.

A consistent design and hierarchy of pedestrian and street lighting should be developed and implemented over time. Exterior lighting should form part of a unified family of site elements that visually organize the campus setting and improve its function, visibility, safety, and security. As a first step toward implementing these recommendations, a detailed campus-wide lighting study should be conducted.

Recommendations

- Pedestrian lighting should differ in style and scale from roadway and parking lot lighting.
- The illumination, intensity, quality and distribution of light should respond to site characteristics and patterns of use.
- Fixtures should direct light downward and minimize light pollution.
- Light sources should be utilized for energy efficiency, color rendition, and visibility of pedestrians.
- The source of illumination for pedestrian fixtures should be concealed.

Typical Campus Lighting Fixtures on the IUPUI Campus

CIRCULATION AND PARKING

ROADS AND VEHICULAR TRAFFIC

The Master Plan proposes to re-establish a two-way, urban street grid to improve campus connectivity, simplify access and wayfinding, and reduce congestion at key intersections. The plan proposes to convert Michigan, New York, and Blackford Streets from one-way to two-way operation. New north-south roads are proposed to facilitate movements and increase options for drivers, transit, and cyclists. Vermont Street is envisioned as a pedestrian-friendly, local road, supporting residential and retail uses.

An initial analysis was performed for the IUPUI Master Plan in January 2009 in order to determine the future roadway network demands. This included analysis of the existing and future traffic conditions (with and without the conversion from one-way to two-way streets). Existing traffic counts, signal timings, and roadway configurations were determined from traffic counts obtained from the City of Indianapolis and through field reconnaissance performed by Gorove/Slade. Trip generation for the campus was determined and used in order to account for the demolished parking and the replacement parking. Trip distribution was determined from the survey data and regional traffic patterns. The analysis was performed using the software package Synchro 7, based on the Highway Capacity Manual (HCM) methodology.

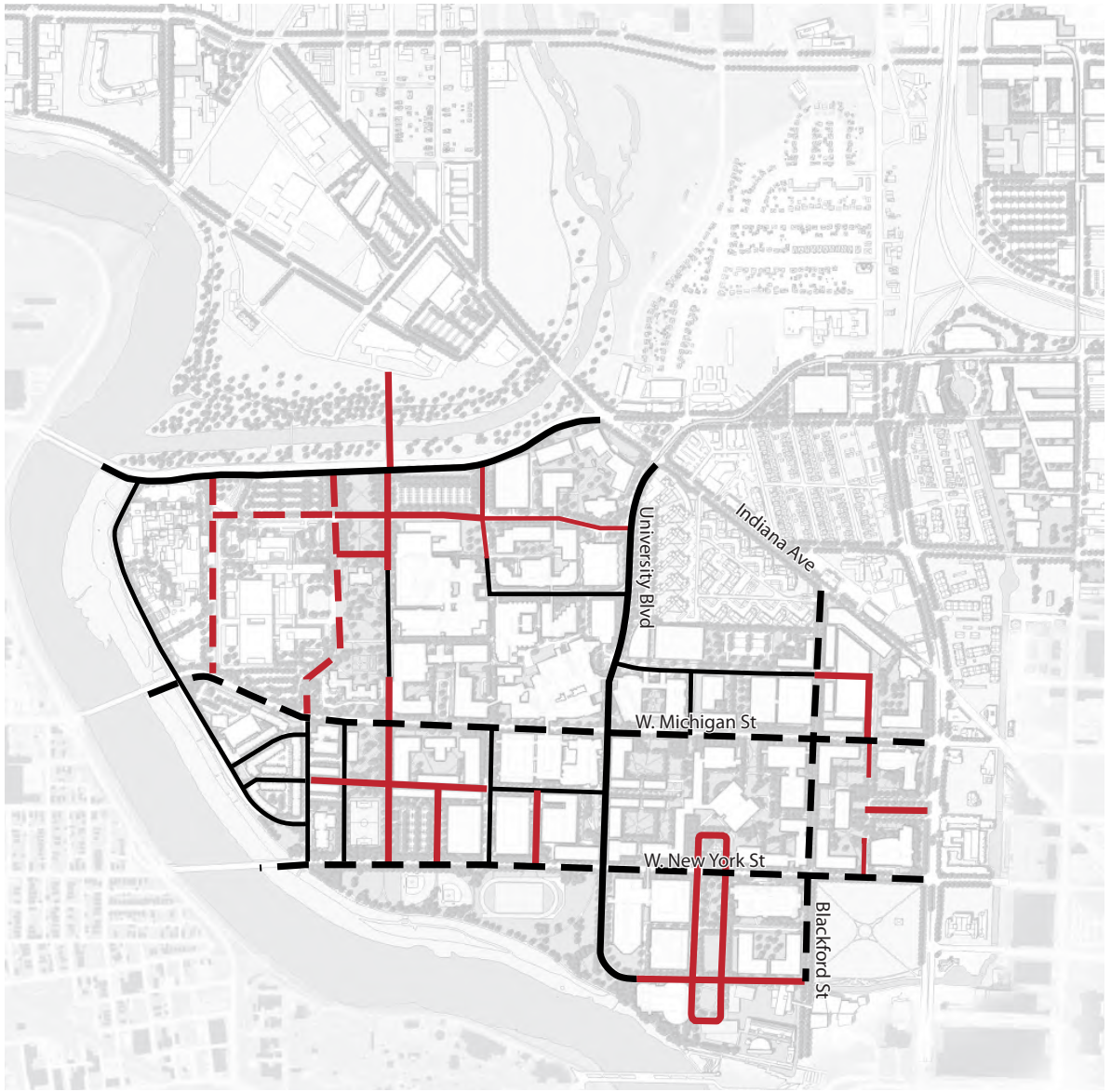
The analyses found that both street grids (with and without the conversion of some streets to two-way traffic) were able to meet the transportation needs of the campus. Converting some streets to two-way traffic was recommended, because it showed a reduction in the overall number of choke-points on campus due to added ability of the two-way streets to provide more routing options for drivers.

Following the update of the IUPUI Master Plan, an additional analysis was performed to evaluate the updated parking plan and confirm the initial conclusions and roadway recommendations. In general, the roadway recommendations follow the initial conditions proposed in 2009. However, detailed recommendations follow below.

Recommendations

- Convert Michigan Street from one-way to two-way, staying within the existing four-lane cross-section. Along the eastern edge of campus, the roadway would operate with two travel lanes westbound, one eastbound, and a center lane for left-turns. Along the western edge of campus, the roadway would transition to two lanes in each direction.
- Convert New York Street from one-way to two-way, with two travel lanes in each direction.
- There will be a need to widen W. New York St. between California and West St. to accommodate future turning movement. See land diagram, page 155.
- Install short medians in the center turn lanes on Michigan Street at mid-block pedestrian crossings where they do not interfere with turning movements.
- Reconstruct all traffic signals on Michigan and New York Streets in conjunction with the two-way conversion. Add new lane markings, signage, and medians to both streets to adapt intersection with West Street.

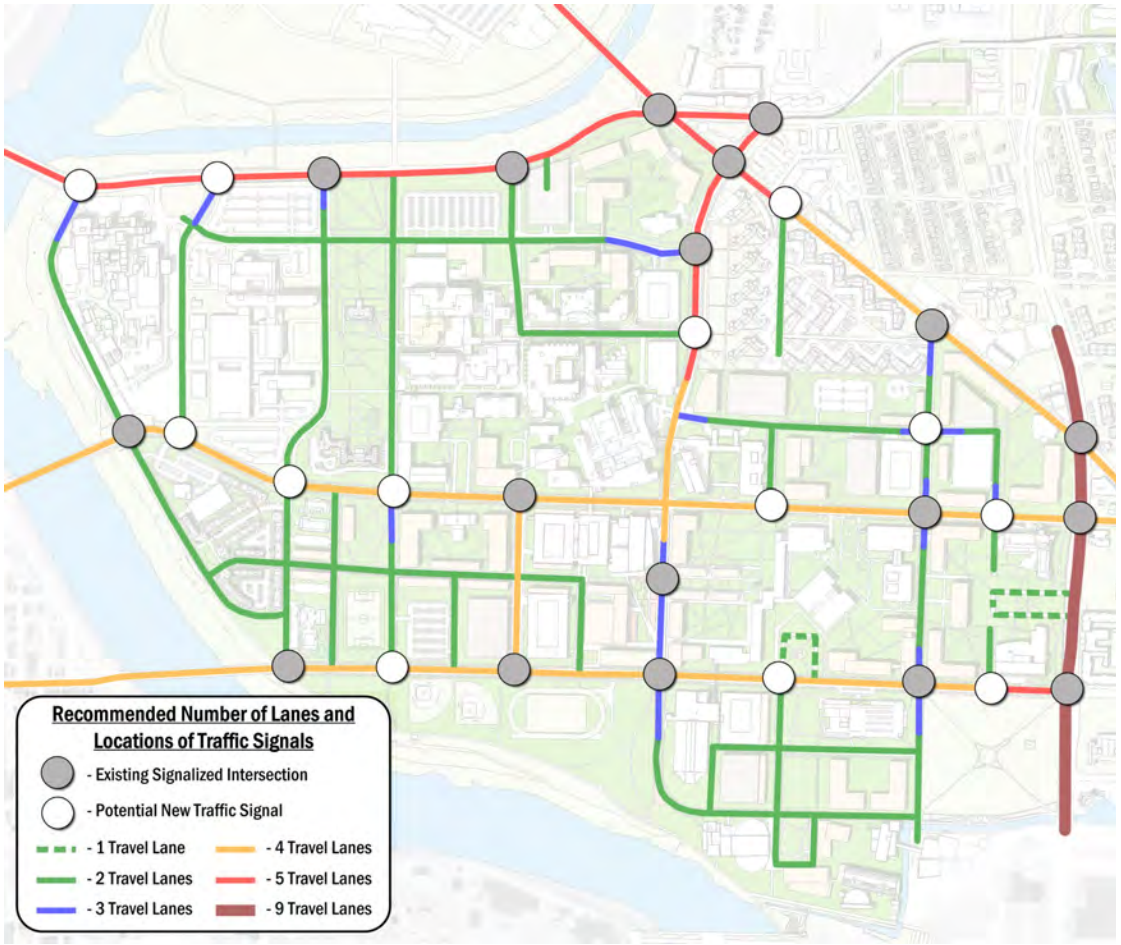
- Construct a northbound left-turn lane in the existing median on West Street for turns onto New York Street.
- Convert Blackford Street between Michigan and New York Streets from one-way to two-way with one travel lane in each direction and center turn lanes approaching the intersections with Michigan and New York Streets.
- Extend West Drive and Limestone Street to connect 10th Street to New York Street.
- Provide north-south and east-west roadways through the medical area, serving as parking access points and providing more options for drivers.
- Extend University Boulevard to the east, and connect it to Blackford Street south of New York Street.
- Provide a local street connection from New York to the extended route of University Boulevard.
- Provide a vehicular drop-off on the south side of the Library with ADA-accessible parking spaces.

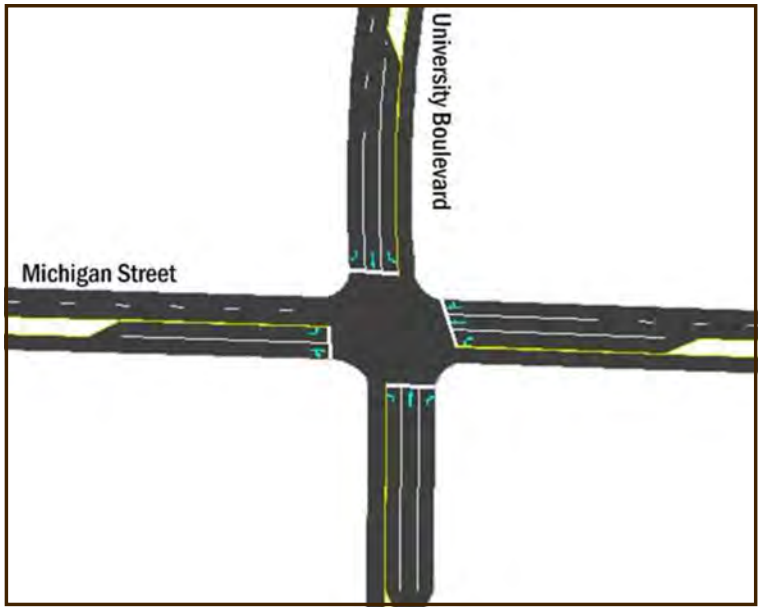


ROADWAYS AND VEHICULAR TRAFFIC

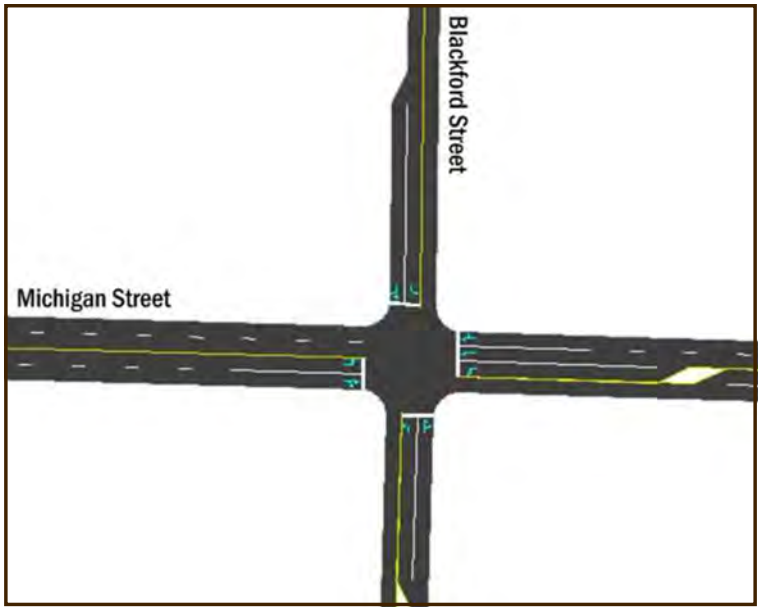
- Enhance California Street as an internal north-south connection from New York Street to North Street.
- Develop Vermont Street from its western terminus to University Boulevard as a narrower, pedestrian-scaled street intended to carry localized traffic.
- De-emphasize parking access points along Vermont Street.
- Increase the number of signalized intersections on Michigan and New York Streets to aid pedestrian crossings.
- Reduce the cross-section of University Boulevard between Michigan and New York Streets from two lanes in each direction to one lane in each direction with a center turn lane.

The technical analyses that form the basis of the recommendations were performed at a planning level. Detailed studies, with additional data collection, traffic modeling and documentation will be needed during each step of the implementation process.

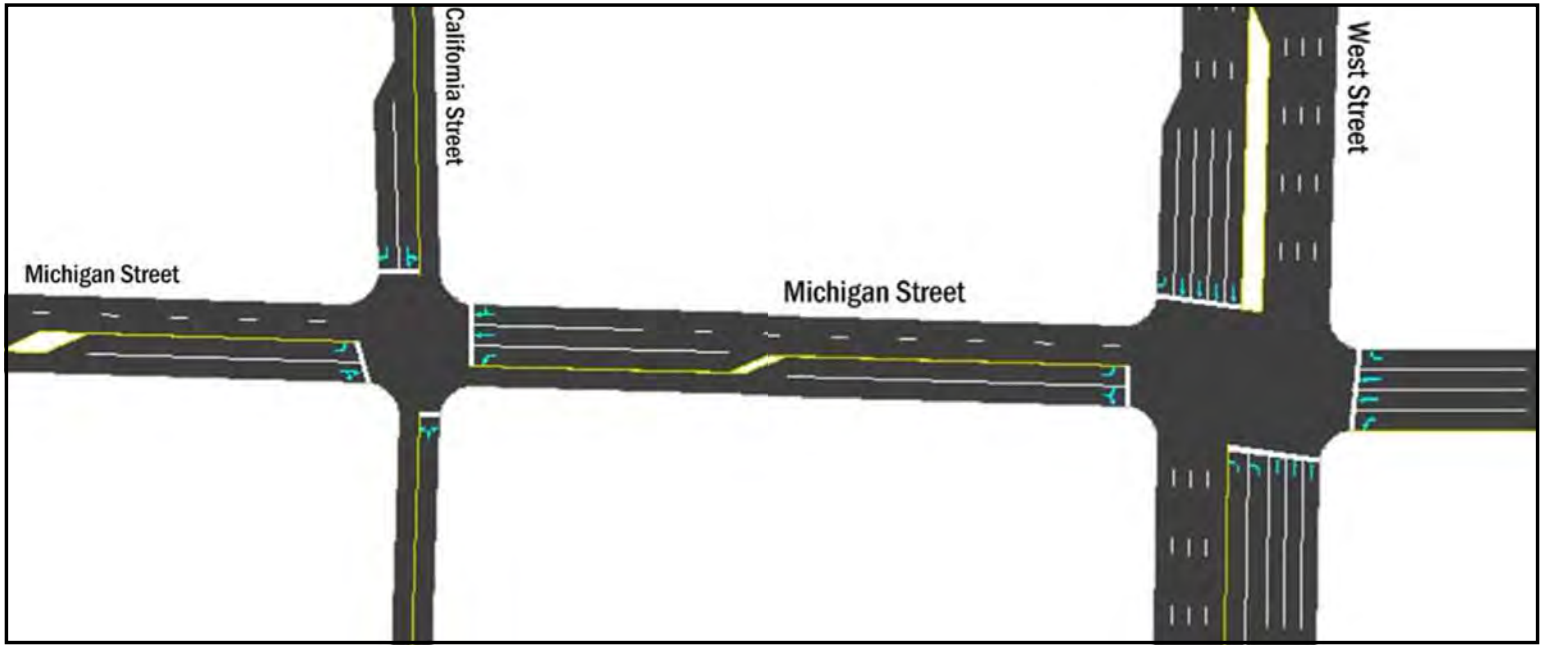




Michigan Street and University Boulevard Intersection

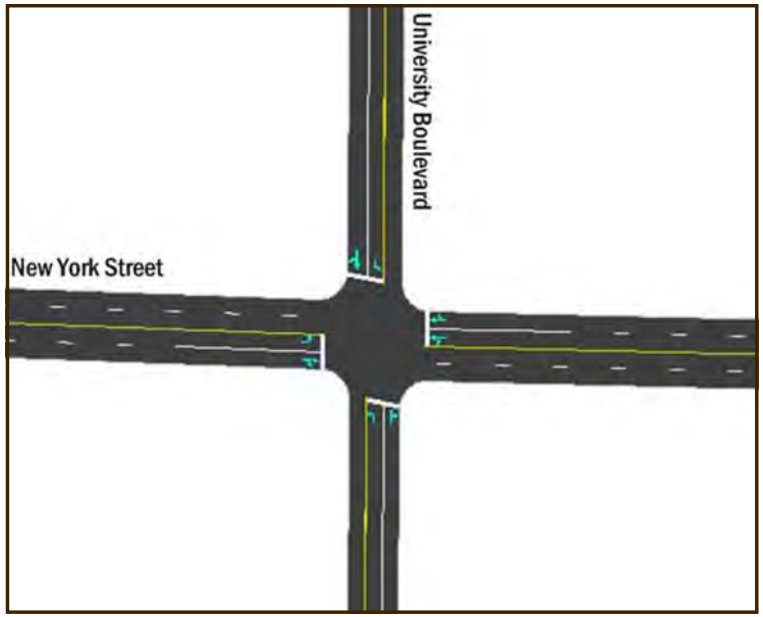


Michigan Street and Blackford Street Intersection

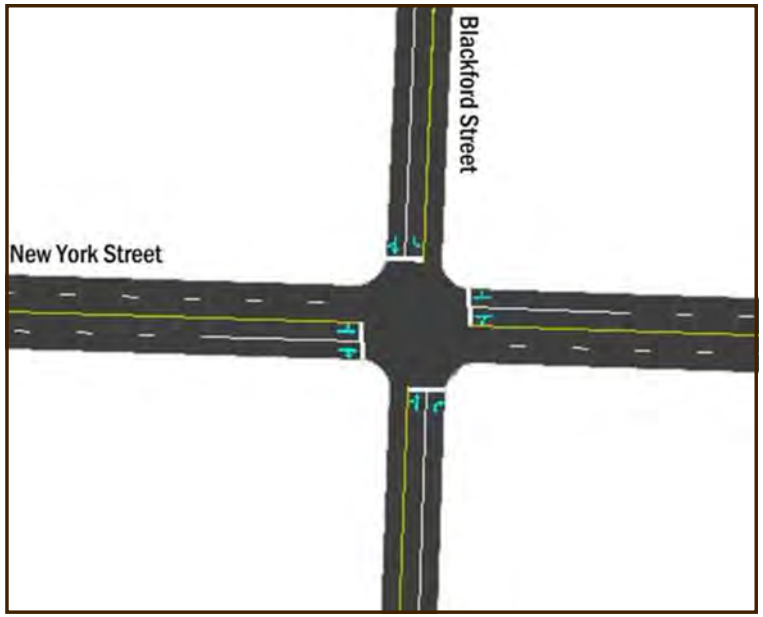


Michigan Street and California Street and West Street Intersections

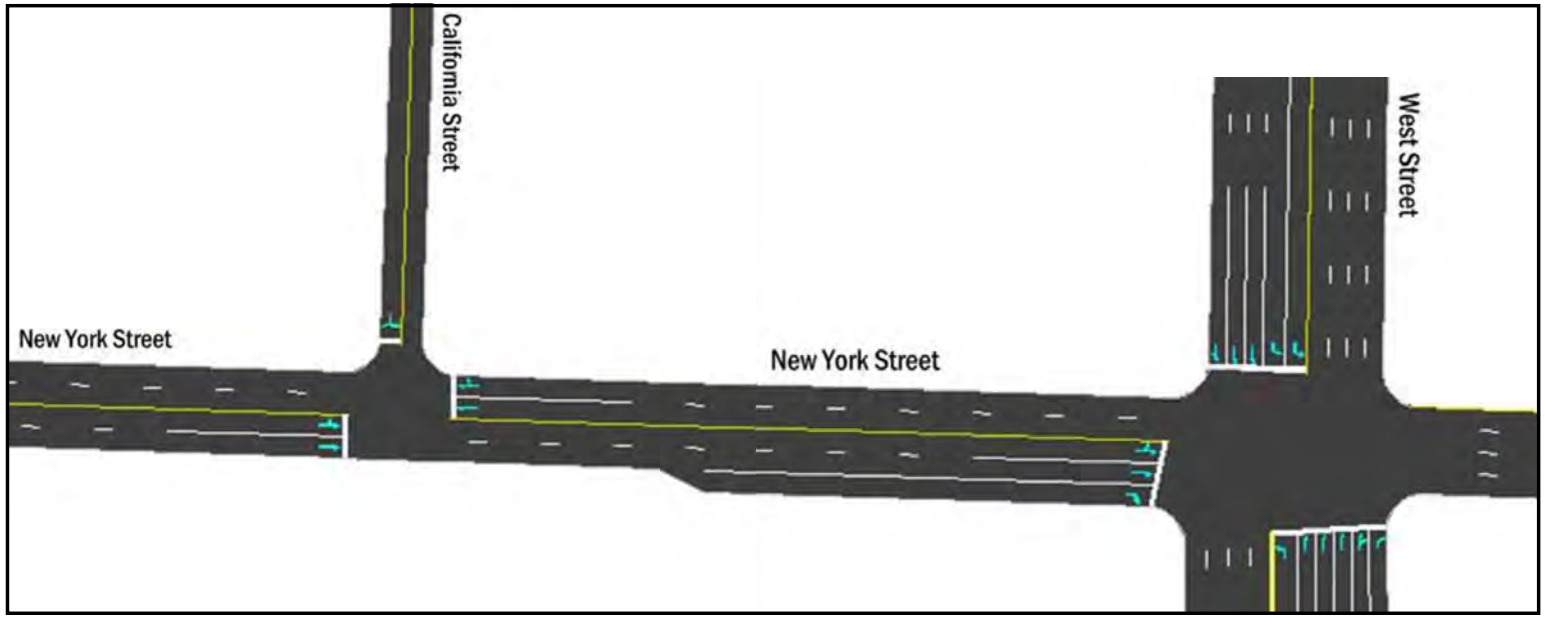
PROPOSED LANE AND INTERSECTION CONFIGURATIONS ALONG MICHIGAN STREET



New York Street and University Boulevard Intersection



New York Street and Blackford Street Intersection



New York Street and California Street and West Street Intersections

PROPOSED LANE AND INTERSECTION CONFIGURATIONS ALONG NEW YORK STREET

PARKING

As an urban commuter and academic medical campus, parking supply is a priority concern for IUPUI. Of the surface lots and decks allocated for campus users, parking utilization was over 93% - at full capacity – in 2008.

Future Demand

Parking demand has been projected to support IUPUI's growth in student enrollment to 35,000 students; to accommodate research and healthcare growth; and to support more on-campus housing in accord with the Master Plan's goals. It is estimated that future parking demand could equal 6,000 new spaces. Table B highlights the parking demand breakdown by the main activities on campus. It should be noted that these projections are based on the future growth assumptions laid out in the Master Plan. Changes in academic growth, healthcare service, research, or in the amount of on-campus housing will affect the need for future parking. Parking demand should be re-evaluated as needed in the future as programs shift.

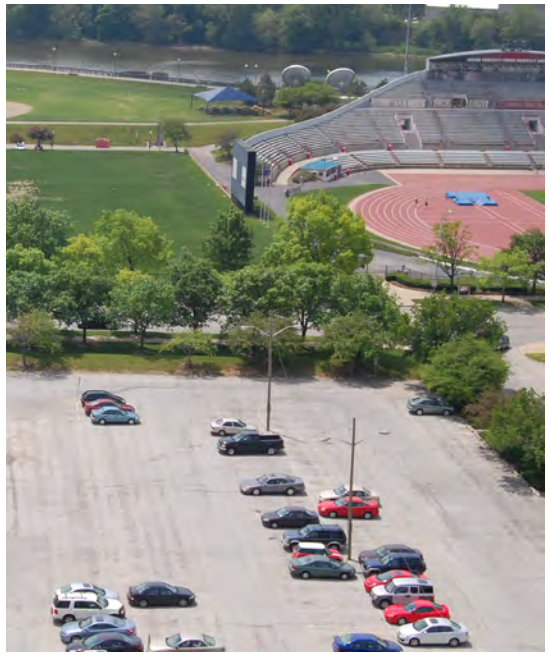
New construction will displace existing parking, creating additional demand for replacement spaces. The total of displaced parking currently in use is estimated at just over 7,000 spaces. Subtracting out current available spaces brings that total down to 4,620 spaces, (see Table D).

Proposed Parking

In order to accommodate future growth and provide the necessary parking facilities, the University must reduce its reliance on surface parking and incrementally increase the amount of structured parking over time. Structured parking is encouraged to include liner buildings and/ or active uses at the ground floor fronting key pedestrian corridors and streets.

The Master Plan illustrates the locations for over 10,955 new and replacement parking spaces on campus, both in surface lots and in the phased construction of seven new parking garages (including one underground) to serve future growth on campus. This total includes the gain of the existing Wishard Garage at University Boulevard and Wishard Boulevard, as part of the land swap conducted at the end of 2013.

Proposed garages are located where feasible at major campus entries near the direction of approach, to intercept traffic and alleviate the need to travel into the core of campus. This includes a proposed mixed use parking garage



Surface Parking

TABLE A - EXISTING PARKING SUPPLY

IUPUI Parking 2008	Existing Supply	Spaces In Use	Spaces Available
Peninsula Surface Lots	8,878	7,593	1,285
Parking Garages	8,331	7,882	449
Subtotal Peninsula Parking	**17,209**	**15,475**	**1,734**
Off Campus Parking	2,715	2,715	0
Total All Parking	**19,924**	**18,190**	**1,734**

TABLE B - 2008 FUTURE PARKING DEMAND

IUPUI Proposed Use	Future Demand	Demand with TDM
Academic	1,600	1,440
Research	1,160	1,044
Healthcare/Hospitals	1,680	1,680
On-Campus Housing	1,600	1,600
Total Range	**6,040**	**5,880**

TABLE C - CHANGES SINCE 2008

IUPUI	Existing Supply	Spaces In Use	Spaces Available
2008 all parking	19,924	18,190	1,734
2010 loss of parking	-2,068		
2010 gain in parking	2,807		
New total spaces	**20,663**		
Net Gain	**739**		**2,473**

TABLE D

IUPUI Future Displaced Parking	Existing Spaces	Spaces In Use	
Surface Parking	-5,431	-5,274	
Bush Stadium	-905	-905	
Parking Garages	-1,016	-915	
Total Displaced	**-7,352**	**-7,094**	
Add Spaces Available			**2,473**
Net Displaced			**-4,621**

TABLE E

IUPUI Future Parking Demand		Low with TDM	High
Future Demand		5,764	6,040
Demand plus Displaced		**10,385**	**10,661**

TABLE F

IUPUI Future Supply	Surface Parking	Garage Parking	Total Proposed
Proposed Spaces	765	10,190	**10,955**

TABLE G

IUPUI Supply vs Demand	Supply Proposed	Demand Low (TDM)	Demand High
Total Future Supply	**10,955**		
Total Demand		10,385	10,661
Net Surplus/(Deficit)		**570**	**294**

between W. 10th and W. 11th Streets, west of Martin Luther King Drive that could intercept commuters closer to I-65. A new People Mover stop is proposed at this garage location, allowing commuters easy access to campus or to the other districts of the Academic Medical Campus. The parking garage could be built in partnership with a private developer to include residential units and ground floor retail, such as a grocery, to provide a much needed amenity for the existing neighborhood.

Transportation Demand Management (TDM)

To create a more sustainable transportation policy and reduce the need for future structured parking, testing and implementing Transportation Demand Management (TDM) strategies is recommended. TDM strategies provide incentives to students, faculty and staff to use alternatives to single occupancy vehicles to travel to campus and could lower parking demand 5-10%. Such strategies could include:

- A review of current parking pricing policies for changes that could help reduce demand;
- Subsidies and improved facilities for transit and bicycle use;
- Increased marketing of the carpooling program, and reservation of priority parking spaces for participants;
- Increased marketing of the Guaranteed Ride Home program;
- Establishment of car-sharing and/or bike sharing programs on campus;
- Improved inter-campus and intra-campus shuttle systems, including stops serving the larger academic medical center campus; and
- Coordination between IUPUI, IU Health and IndyGo to revise regional transit routes that directly serve campus and IU Health destinations.

Recommendations

- Construct seven new parking garages in phases to meet incremental demand in the following locations:
  - Between W. 10th and W. 11th Streets west of MLK Drive, as a mixed use garage connected to a future People Mover station.

Parking Deck, Houston, Texas

Parking Deck, Lincoln, Nebraska

Parking Deck, IUPUI

STRUCTURED PARKING

	2008	
Wilson (9) (PK)	554	0
Riley (26) (XE)	1,075	1,075
North (38)(XC)	462	0
UHG (44)(XA)	689	689
Vermont (56)(XB)	1,978	1,978
Sports (88)(XD)	1,032	1,032
Lot 90 (IH)	119	119
Blackford (72)(XF)	1,135	1,135
Barnhill (XH)	1,287	1,287
Wishard (WX)	0	1,196
Gateway (XL)	0	1,200
Gateway Expansion (XL2)	0	660
Riley Childrens (P01)	0	325
10th & Wilson (P02)	0	1,230
New York & Barnhill (P03)	0	1,200
North & Blake (P04)	0	1,200
North & Blackford (P05)	0	850
Sports 2 (P06)	0	1,300
California &Vermont (P07)	0	600
10th St. & 11th. St. (P08)	0	1,445
	8,331	**18,521**

OFF CAMPUS PARKING

902 Dr. Martin Luther King Jr. Blvd (L101)	72	72
HITS (L102)	30	30
1323 N. Indiana Ave (L401)	75	75
1360 N. Indiana Ave (L402)	77	77
1302 N. Indiana Ave (L403)	230	230
1200 Indiana Ave (L404)	576	576
1410 N. Indiana Ave (L405)	55	55
1828 W. 16th St. (L406)	70	70
1701 W. 15th St. L407)	13	13
1345 W. 16th St. (L408)	191	191
Busch Stadium (LBS)	905	0
Kuntz Stadium (LKS)	377	377
Emerging Technology Center (LTK)	44	44
	2,715	**1,810**

Increase
Decrease

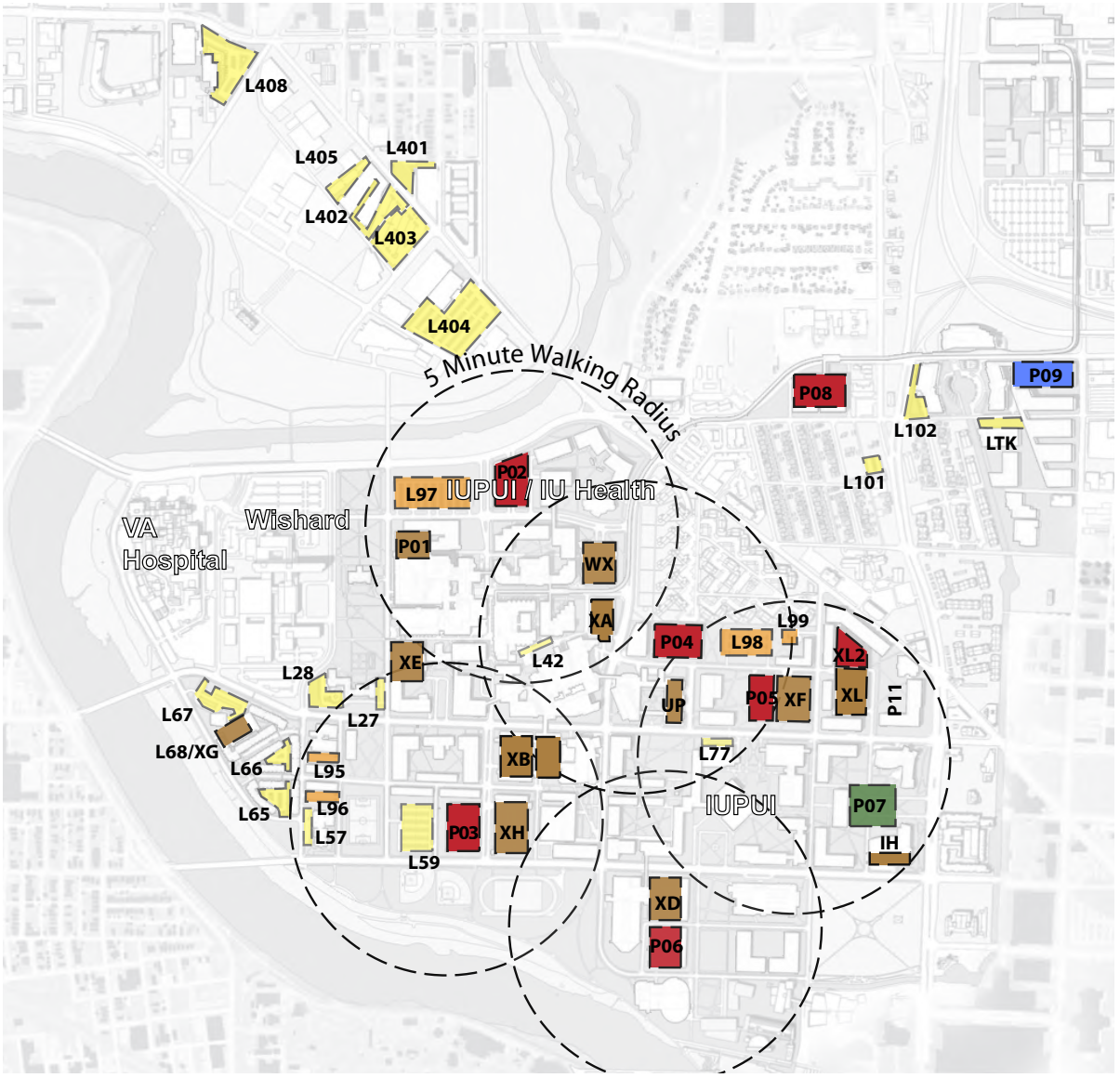
SURFACE PARKING

	2008	
Lot 1	68	0
Lot 2	243	0
Lot 3	49	0
Lot 4	22	0
Lot 6	48	0
Lot 12	205	0
Lot 14	8	0
Lot 19	9	0
Lot 20	555	0
Lot 21	80	0
Lot 22	532	0
Lot 25	16	0
Lot 27	39	39
Lot 28	170	170
Lot 30	9	0
Lot 33	48	0
Lot 34	20	0
Lot 42	20	20
Lot 53	58	0
Lot 54	268	0
Lot 55	161	0
Lot 57	26	26
Lot 58	253	0
Lot 59	644	325
Lot 60	36	0
Lot 62	47	0
Lot 63	504	0
Lot 64	77	0
Lot 65	71	71
Lot 66	56	56
Lot 67	197	197
Lot 68 (XG)	180	180
Lot 69	755	0
Lot 71	409	0
Lot 73	740	0
Lot 77	16	16
Lot 79	24	0
Lot 80	406	0
Lot 81	56	0
Lot 83	450	0
Lot 85	492	0
Lot 86	214	0
Lot 87	4	0
Lot 92	470	0
N. Union Dr.	48	0
Clinical Dr.	4	4
Blake St.	17	17
Hine St.	35	35
Spea Dr.	19	19
P95	0	42
P96	0	42
P97	0	400
P98	0	236
P99	0	45
	8,878	**1,940**

- On W. 10th Street at the realigned Wilson Street entrance. This garage replaces and adds spaces from the demolition of the existing Wilson Street Garage, for Riley Hospital and research growth. Phasing of this garage will be dependent on the pace of build out on the former Wishard site.
- On North Street just east of University Boulevard, as part of a new academic/ administrative facility. This garage could provide additional capacity for IU Hospital staff and visitors, as necessary.
- Replacement of the existing undersized North Street Garage between Blake and Blackford Streets.
- Expansion of the California Street Garage to serve new mixed use development on Indiana Avenue.
- Underground structured parking between W. Michigan and W. New York Streets to serve future academic growth on Blackford St.

- On Blake Street just south of W. New York Street and the existing Sports Garage.
- On W. New York Street and Barnhill Drive, to serve residential and School of Dentistry growth.

- Renovate existing parking structures to improve the visitor arrival and experience, particularly the Vermont Street parking south of IU Hospital.
- Remove wood slats from existing parking garages and repair/enhance parking deck facades. Consider adding liner retail for the Vermont Street structure on W. Michigan Street.
- Renovate existing surface lots with additional tree plantings, pervious pavement, and/or bio-swales to channel and treat run-off.



TRANSIT

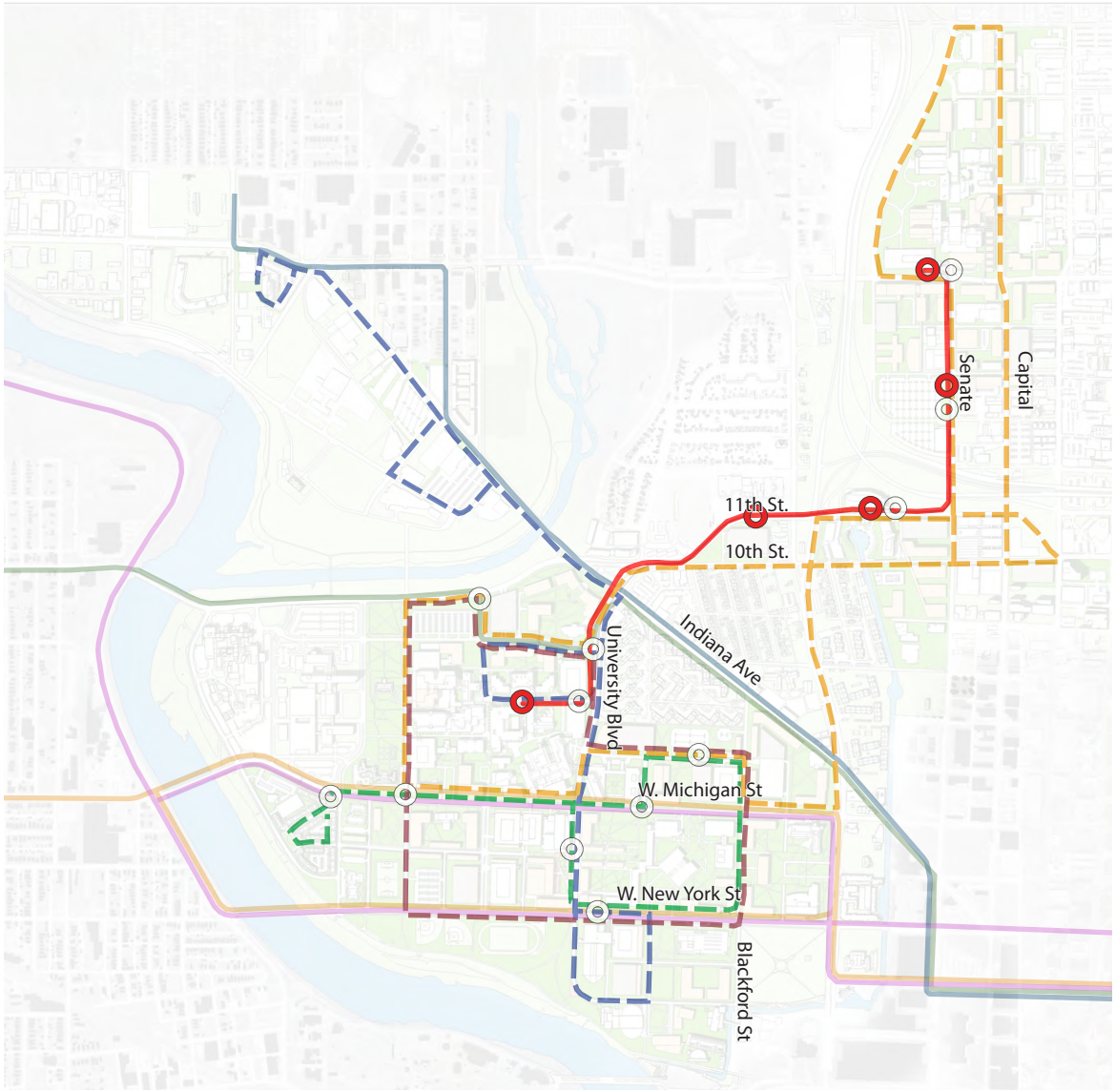
The transit recommendations of the Master Plan include simplifying the on-campus shuttle routes, establishing a central transfer area and taking advantage of the proposed one-way to two-way street conversion.

In order to improve campus mobility, the campus shuttle system proposed is organized into three primary routes: a west route that takes advantage of new north south roads, connecting future research facilities to health care facilities and the People Mover; an east-west route that links west side residential to campus destinations and east side commercial activity; and a north route that links facilities and parking along Stadium Drive to the main campus. The area of University Boulevard between W. Michigan and W. New York Streets should be established as a transfer point between routes. Coordinated stops between campus shuttle routes and IndyGo routes are encouraged.

Recommendations

- Simplify transit runs to 'out and back' lines with end loops for turn-arounds.
- Connect transit routes with parking reserves, decks, and major destinations on campus.
- Integrate bike parking, transit stops, and parking garages where possible to encourage ridership
- Connect campus shuttle routes to IndyGo routes at common stops.
- Develop a shuttle route serving remote parking resources and key transfer stops at the People Mover and at the core of campus.
- Increase connectivity between the People Mover and campus shuttle lines.
- Develop an east-west shuttle route connecting housing with the campus hub.
- Develop a west shuttle route that links the People Mover, existing hospitals and research buildings with proposed research uses south of W. Michigan Street.
- Work with IU Health to evaluate ridership and function of the People Mover and possible increase in capacity.

Transit Shuttle Service



Indy Go Routes

People Mover

Proposed Routes

North Indiana Shuttle

IUPUI-Methodist Connector

West Michigan Link

Campus Connector

Transfer Stop

People Mover Stop

TRANSIT

0 800 1600 2400 Feet

Bicycle Trail

Cultural Trail

BICYCLE CIRCULATION

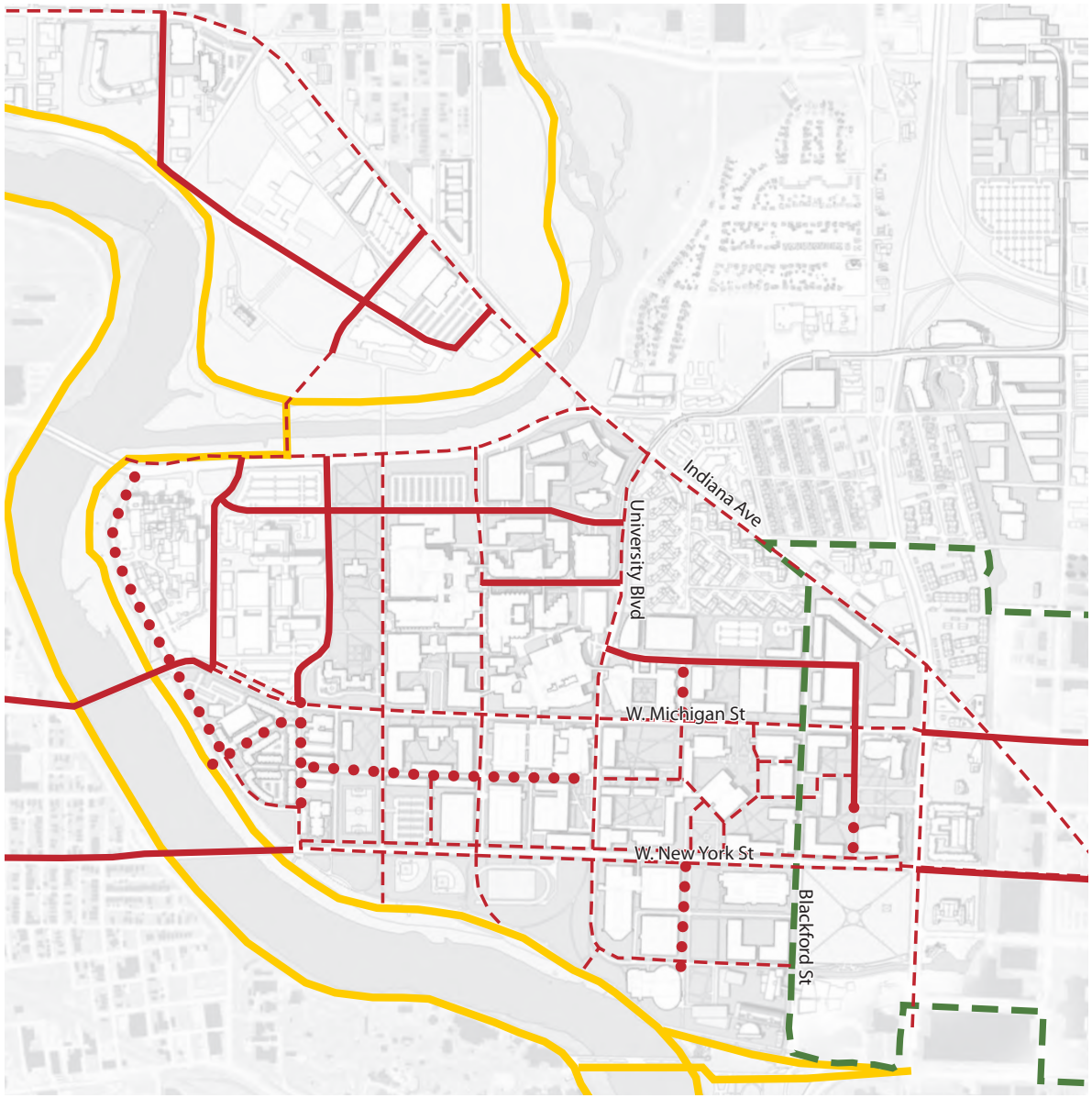
The Master Plan proposes a comprehensive network of on-street bicycle lanes, off-street bicycle paths, and bike-friendly streets that connect to existing city routes and the regional greenway trails along the White River. Development of this alternative transportation infrastructure will reduce the amount of campus vehicular movement.

Creating a campus bike station with covered parking, bike repair, showers and lockers will also facilitate bike transportation. It is also recommended that the University evaluate and implement a bicycle-sharing program.

Recommendations

- Make bike transportation easier and more convenient. Bicycle transportation should form part of a campus-wide Transportation Demand Management plan.
- Create a hierarchy of bicycle paths/lanes.
- Connect the campus bike system to regional bikeways.
- Design new roadways to encourage on-street bike lanes.
- Utilize off-street campus paths for mix of bike and pedestrian use.
- Develop five foot wide on-street bike lanes along the Limestone street extension, North Street, and secondary roads on campus and north of Fall Creek, as feasible.
- As W. Michign and New York Streets are reconfigured and re-striped to two way travel, implement off-street bike paths alongside the roadways.
- Create off-street bicycle lanes along high traffic volume streets, University, Barnhill, West Drive and the campus frontage on N. West Street.
- Develop bicycle friendly streets along Vermont Street, portions of California Street, and the pedestrian promenade on the Blake Street extension south of W. New York St..
- Work with community partners and the City to develop the Cultural Trail on Blackford Street.

- Establish an “IUPUI Cultural Trail” as an interpretive trail along the Vermont Street pedestrian spine on campus.
- Create multi modal parking decks with bike parking and storage.
- Include shower facilities where feasible at major campus destinations.
- Provide additional bike parking on campus, including covered bike parking.



CAMPUS INFRASTRUCTURE

CHILLED WATER

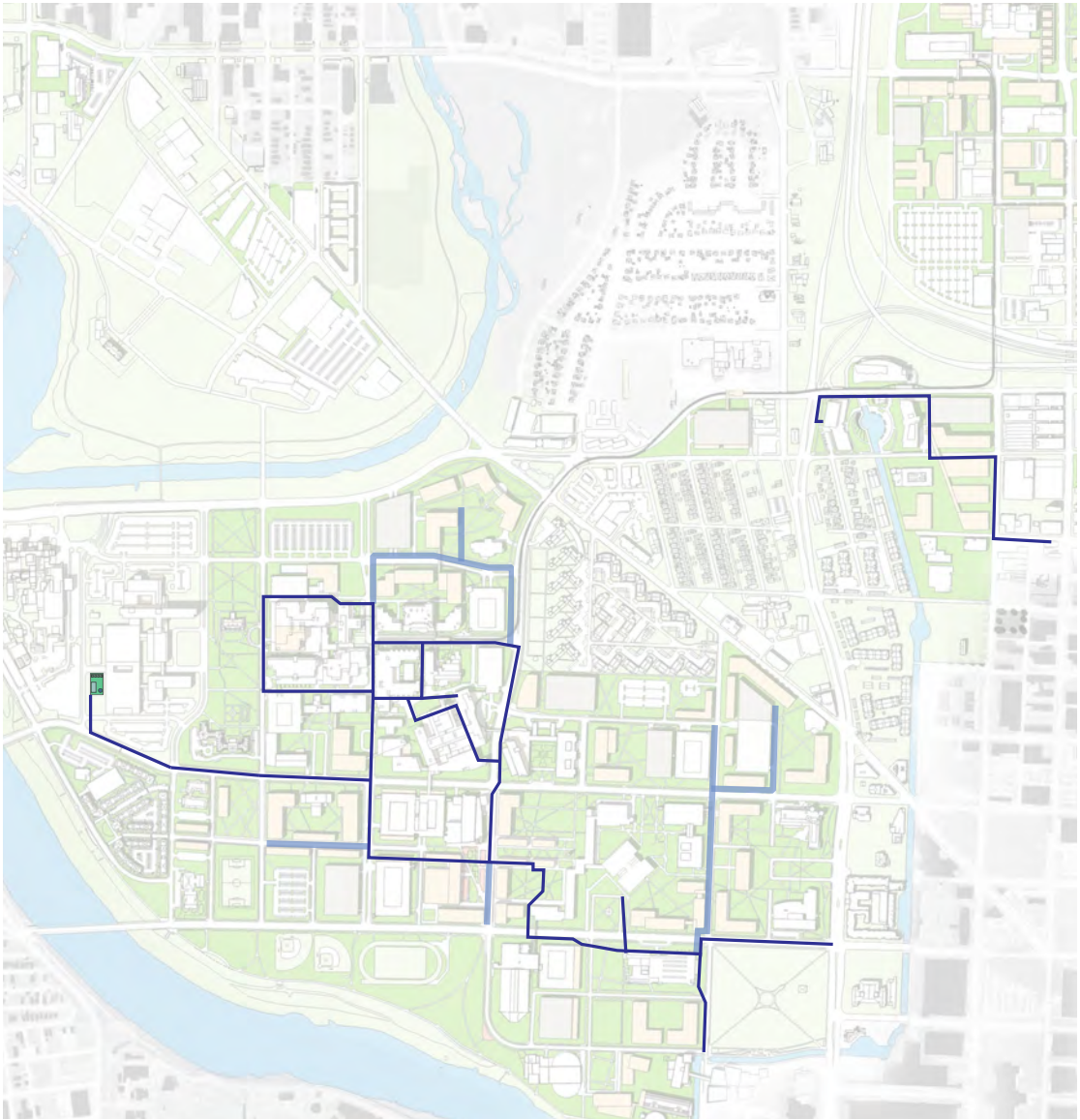
The 42-inch chilled water mains serving the campus are at peak velocity at the height of the cooling season, and cannot support more flow. Therefore, new building additions on campus will be supported by the new cooling plant capacity located on the peninsula. The existing Wishard chilled water plant can support 3,000 tons of new building load if connected to the chilled water system. However, long range plans for the redevelopment of the Wishard site may require relocation of this equipment. Its feasibility requires further study. Also, new capacity can be installed at the new Wishard Chiller/Boiler Plant (CBP) by Citizens Thermal (CT) and exported to the IUPUI campus.

A 20-inch distribution extension on Vermont Street west of Barnhill Drive will be needed to connect the proposed buildings in this area to district cooling. A total of 2,600 tons of cooling capacity will be needed to serve this new load. In addition, another 16-inch distribution expansion will be needed to connect the proposed buildings on the south side of campus on University Avenue. A total of 1,600 tons of cooling capacity will be needed to serve this new load.

The new building additions shown on the existing Wishard site north of Wishard Boulevard represent approximately 3,000 tons of cooling capacity. There is not enough distribution capacity in the existing campus chilled water system to support this fully developed area. It is noteworthy that a chiller plant, not currently connected to the campus chilled water system, exists on the existing Wishard site with a capacity of 3,000 tons and with 10-15 years of equipment service life remaining. This plant currently just serves the Myers and Regenstrief buildings of the existing Wishard complex. These buildings are ultimately slated for demolition in accordance with the plans for the new Wishard site. Three options exist to support the cooling load associated with the new buildings proposed for this area. 1) The existing Wishard chiller plant could be preserved and connected to the new buildings; and a connection made back to the campus chilled water system for redundancy. 2) The existing Wishard chiller equipment could also be relocated to a new site west of the Barnhill Street north extension, connected to the new buildings and to the campus chilled water mains. 3) The third option would be to install capacity for the new building additions north of Wishard Boulevard at the new Wishard CBP. Due to the remote location of the CBP relative to the current Wishard site and the expected heavy load for buildings in between, this option may require an additional 20" chilled water extension from Vermont Street to Walnut Street along University Boulevard. Further study of the timing for these building additions is necessary to understand which will be the best solution to implement.

From an economic perspective, the locations of the proposed residential buildings may be conducive to connection with the district cooling system. However, the proposed buildings are relatively small and extend past the present district cooling mains. This type of building is not a good match for a district cooling system due to the low cooling density. The residence hall may follow a similar path of cooling that was utilized for the new campus apartment complex.

Other potential energy saving techniques could be geothermal or variable-volume direct expansion (DX) cooling systems.
CT has expressed a desire to build thermal storage capacity into the chilled water system to improve efficiency and reduce carbon footprint. Thermal storage can accomplish this by maximizing the use of lower power electrical chillers during the off-peak demand period through the night hours. To maximize the effectiveness of this program, the campus, hospitals and new customers should make it a goal to utilize building cooling coils designed for a 20°F chilled water temperature rise for all new building and retrofit projects. Past history has demonstrated that chilled water thermal storage is most successful if the chilled water system operates at a 20°F supply-return temperature differential.



STEAM AND CONDENSATION SYSTEM

The existing steam load is approximately 254,000 lbs/hr including the load from the existing Wishard Memorial Hospital complex (approximately 30,000 lbs/hr). The new Wishard Memorial Hospital complex will be connected to the district steam system (approximately 67,000 lbs/hr). Phase I construction for the IUPUI campus is expected to add approximately 106,000 lbs/hr. The total load through O-Vault will be approximately 397,000 lbs/hr. O-Vault has a capacity of 440,000 lbs/hr. The requirement for redundant steam supply service to the hospitals is satisfied by the combination of steam supplies from 1) the Citizens Thermal district steam system on campus and 2) the newly constructed Chiller/Boiler Plant in the area of the new Wishard Memorial Hospital site.

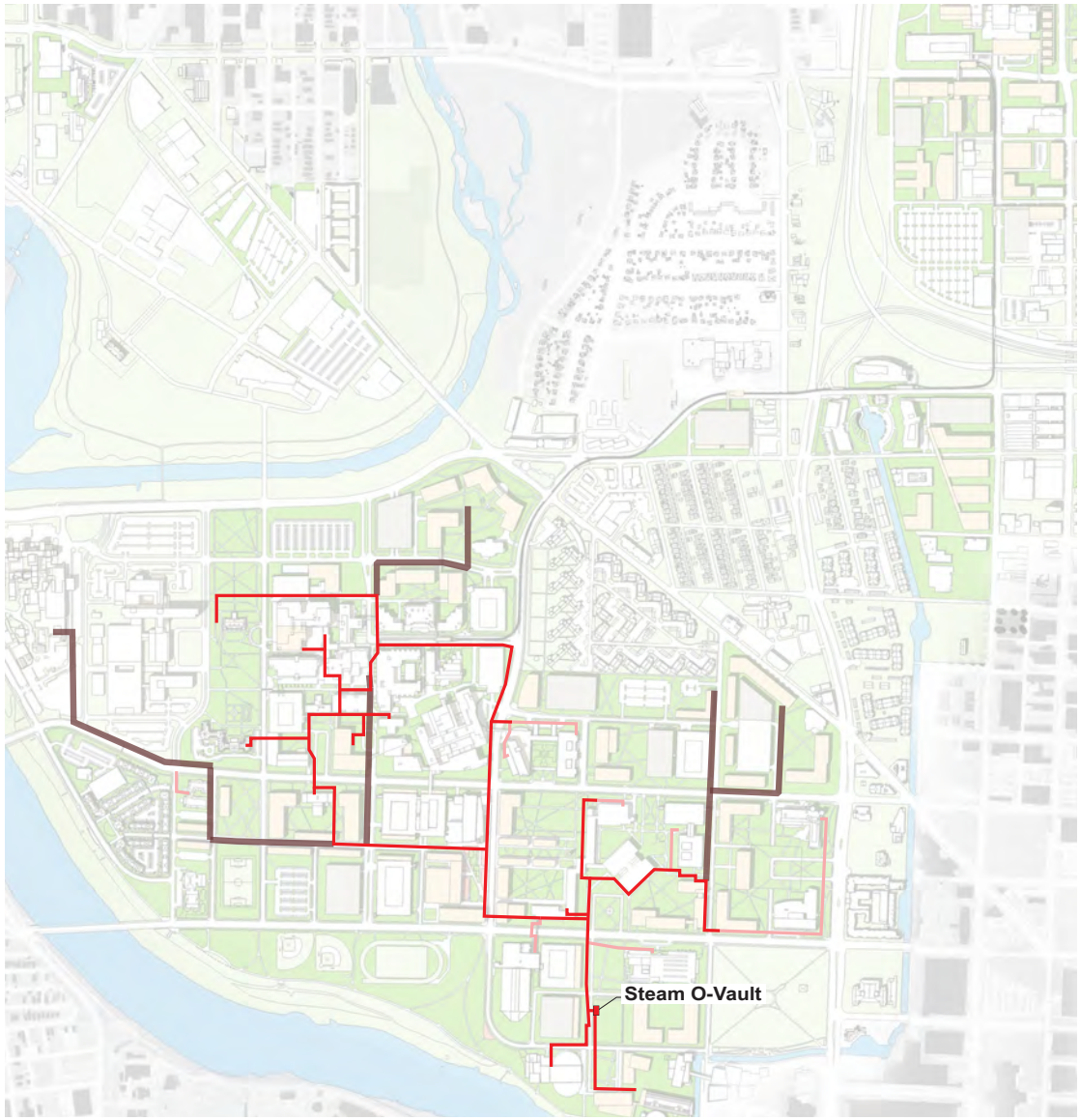
There is no condensate return system at the IUPUI campus. Generally speaking, condensate is tempered and discharged to the sewer. There are heat recovery systems at a few locations on campus. However, heat recovery is minimal. New construction projects could at least incorporate heat recovery even in the absence of a return system.

To make room for the new campus gateway between IUPUI and White River State Park, O-Vault must be relocated. It could possibly be relocated in to the Building R17 footprint.

Steam service will need to be extended to serve the academic and mixed use buildings located between Indiana Avenue, Michigan Street, West Street, and Blackford Street. This extension would run north along Blackford and east along Michigan to enter the building complex.

Steam will be needed for the new buildings that will occupy the existing Wishard site. To serve this area, new steam distribution piping will connect to the existing system in Barnhill Drive and run north to the Wishard Boulevard utility corridor and then east to the building site.

An extension along Barnhill Drive connecting the north and south parts of campus is needed for operational purposes after the piping on the west end of campus is demolished or decommissioned to make way for the new Wishard Memorial Hospital complex.



Existing Steam
Proposed Steam

INFRASTRUCTURE/UTILITIES

0 600 1200 1800 Feet

ELECTRICAL SYSTEM

New equipment, duct bank and cable must be installed to support campus growth. As the campus grows, these new 15KV distribution feeders should be routed to balance the loads among the three substations when feasible. Project costs to extend infrastructure should be included in funding for new buildings.

Additional switching infrastructure is required for campus electrical reliability and maintenance. Upgrades should continue replacing aged cable on the existing system. New duct bank must be installed to support campus growth. As the campus grows, new 15KV distribution radial feeder loops should be routed to balance the circuit loads among the three substations when feasible. Substation A is currently built out to its maximum capacity. However, it may be possible to increase the cable size and fuse size in the existing circuits. Future consideration should be given to centralizing power generation for emergency circuits. This would centralize the maintenance for equipment and would reduce cost when compared to operating and maintaining separate generator sets for each building. This centralization would necessitate a separate duct bank to carry the emergency circuit feeders. Future addition of system capacitance should be evaluated and added at new buildings for specific loads to improve the power factor billing. The undeveloped area north of Fall Creek is a technically feasible location from which to extend circuits to Substation A, which is built to maximum capacity, to provide a new substation in collaboration with AES/IPL.

The old Wishard Memorial Hospital site will be fed from the Substation A. The existing 5kV primary transformers feeding the old Wishard Memorial Hospital site will be available for temporary and transitional power as the old Wishard Memorial Hospital site is transformed into the new campus master plan. The master plan includes the removal of the existing 5kV service and the provision of 13.8kV service to all new buildings from Substation A. During the transformation period new ductbank and circuits shall be distributed. The future assumption would include upgrades to Substation A for the new circuits and rebalancing of existing loads. The 5kV distribution and one utility 5kV transformer would remain in service and continue to feed the existing utility building for the old Wishard Memorial Hospital site.

Substation A is presently fed by overhead lines from 10th Street. To meet the master plan these overhead lines should be routed underground. The route would follow planned street routes to avoid future building growth.

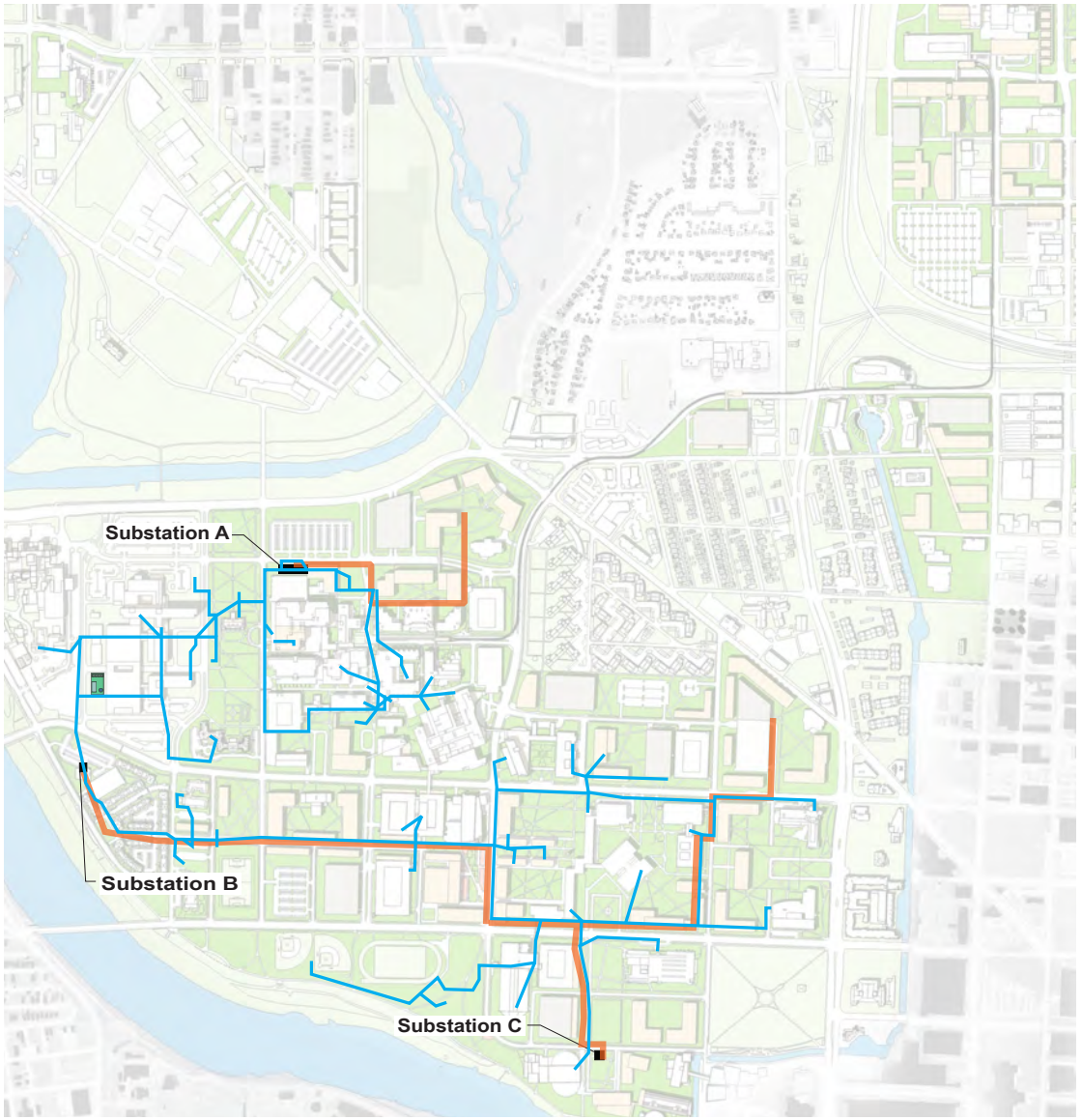
Substation C is presently located in a planned green space. To meet the master plan negotiations with IPL will be required to develop a new site for Substation C. Relocation would include routing overhead lines underground. Further study is warranted to determine the feasibility and cost of relocation.

For sustainability issues photovoltaic solar power should be considered since there is an abundance of roof space especially on parking structures. IPL incentive programs for photovoltaic systems

should be researched as part of the design for each future project. Such consideration should include the relative value of such technology in comparison to other alternatives. IUPUI does not envision providing peak shaving due to the relatively constant nature of the loads. IUPUI does not consider a wind generation system to be feasible because the campus is not located in a favorable wind area. Alternative energy sources

O-Vault

Substation C



Existing Electrical
Proposed Electrical

INFRASTRUCTURE/UTILITIES

0 600 1200 1800 Feet

TELECOMMUNICATIONS SYSTEM

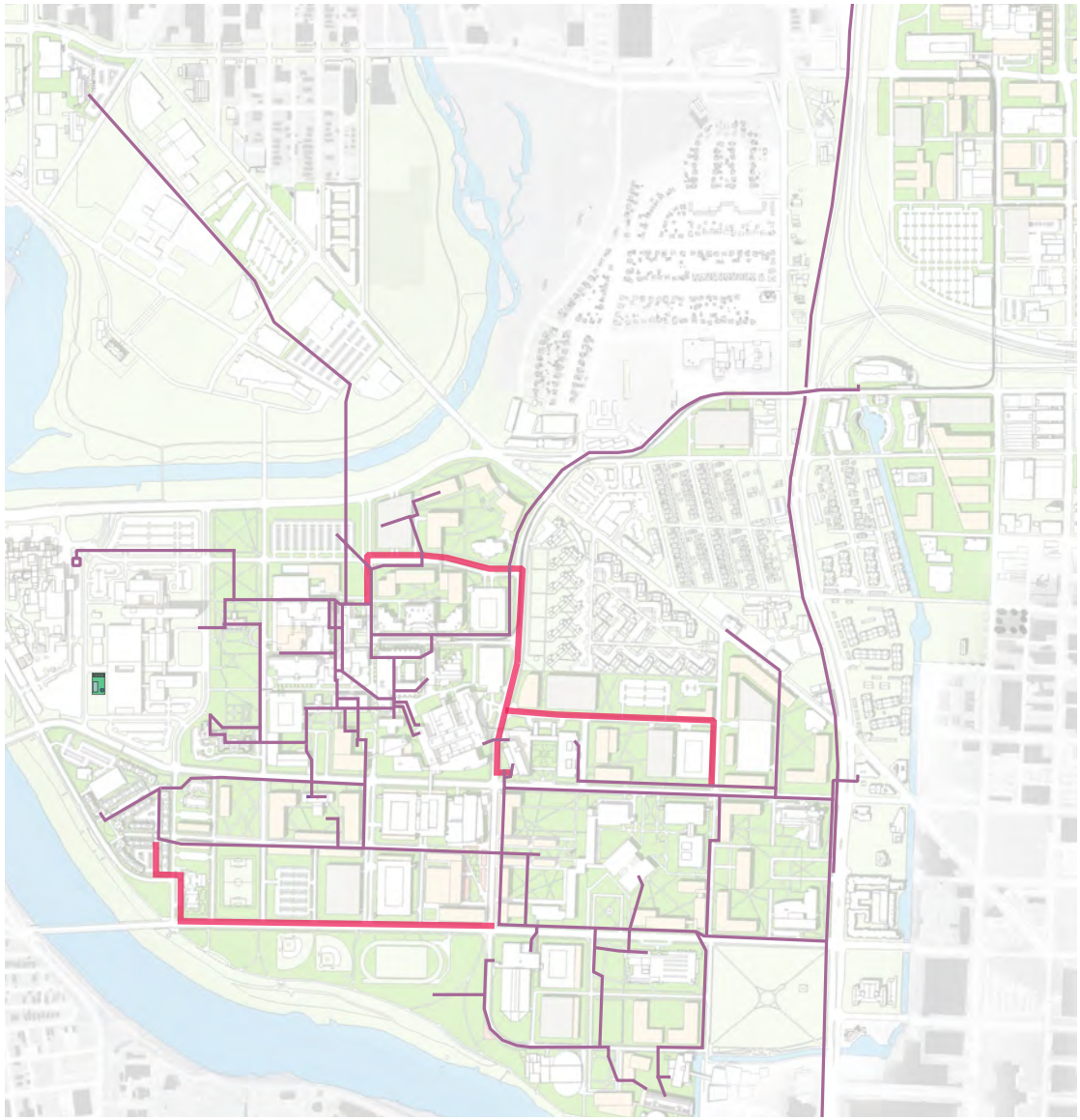
The telecommunications duct bank systems have adequate capacity for future expansion throughout the campus with the exception of the northeast and southwest areas of the campus. In the northeast area future new university buildings require additional diverse telecommunications routes. In the southwest area development of new academic and support buildings are proposed. Both areas would require new duct bank infrastructure to connect the new buildings to the existing telecommunications infrastructure network. To support the southwest campus expansion new duct bank infrastructure would be required along New York Street from University Boulevard to Lansing Street. To support the northeast campus expansion new duct bank infrastructure would be required from the intersection of Michigan and Blackford Streets routed north to North Street then west to University Boulevard. This would provide additional infrastructure for new buildings near Lockfield Green. Additional duct bank infrastructure would be added up University Boulevard from Lockfield Green north to the future utility corridor (Wishard Boulevard). The duct bank would follow the utility corridor west to Wilson Street then route south connecting into existing tunnels.

Connecting the IUPUI campus to a future neuroscience building on 16th Street near the Methodist Hospital is also an expansion possibility for the future. This is a fiber optic link that could potentially be routed along 16th Street from the existing duct bank infrastructure located at Indiana Avenue and 16th Street.

Fiber optic cable would be installed in the duct bank systems to connect new campus buildings into the existing telecommunications system. Single mode fiber optic cables will be installed in two diverse paths from the University Library and the Infomatics and Communications Technology building to new facilities to support various future communications. With the future VOIP implementation copper cable installation will be minimized to small emergency phone cables for each new facility. With the elimination of copper cable connections in the backbone system this will free up even more infrastructure for future expansion.

Exterior wireless network access around the IUPUI campus has been historically satisfied by wireless access located within each building, which has been sufficiently powerful to allow exterior wireless access. Should additional exterior wireless network coverage be required additional antennas would be installed on top of university buildings, and cabling from a telecom room within those buildings would connect the antennas into the university network. IUPUI anticipates the continuation of this contingency for future expansion. No new telecom infrastructure would be required.

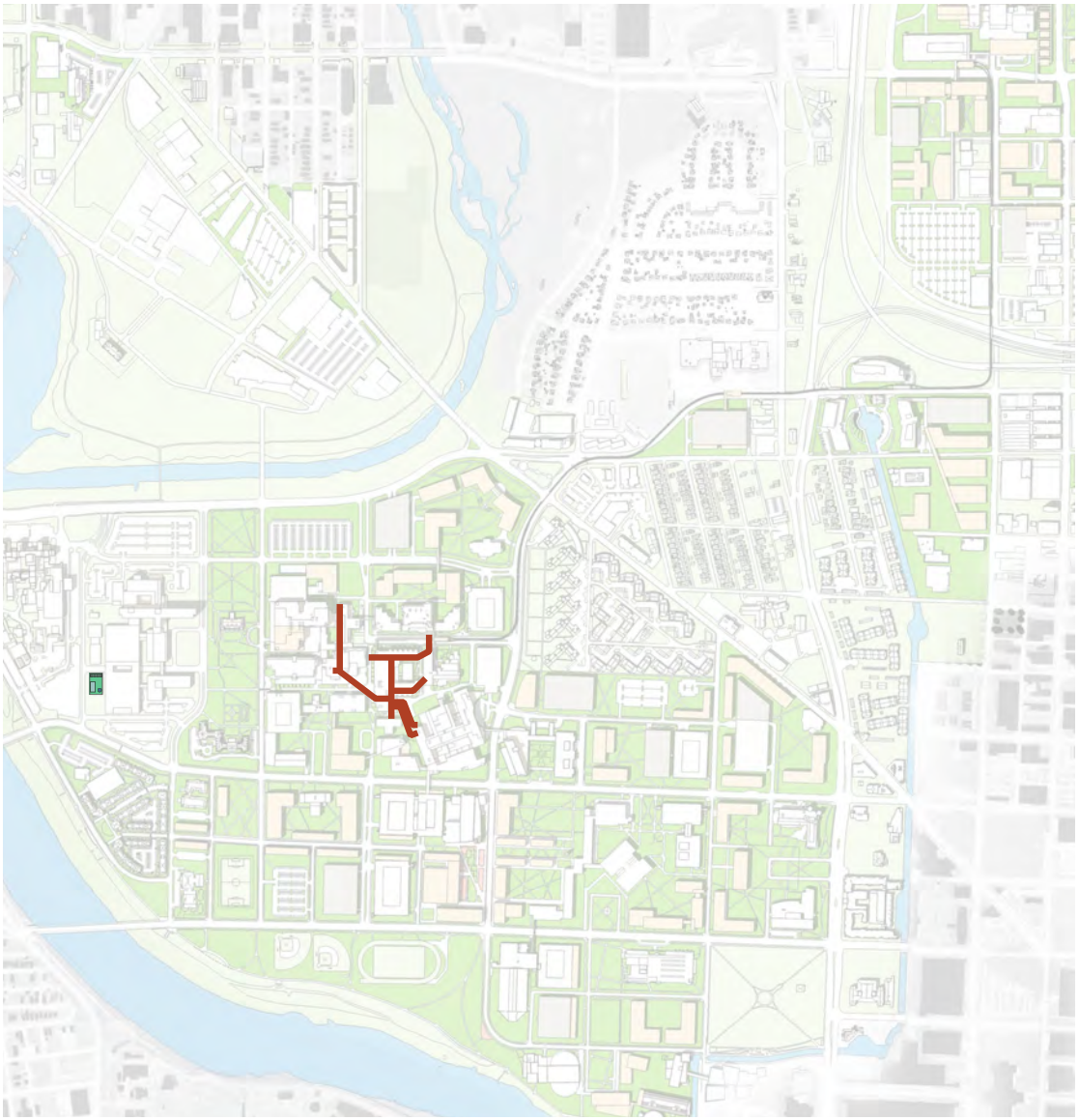
Cellular phone service is currently adequate throughout the IUPUI campus. Any future signal amplification required will be provided by the cellular service providers, not by the university's infrastructure.



Existing Telecom Service
Proposed Telecom Service

INFRASTRUCTURE/UTILITIES

0 600 1200 1800 Feet



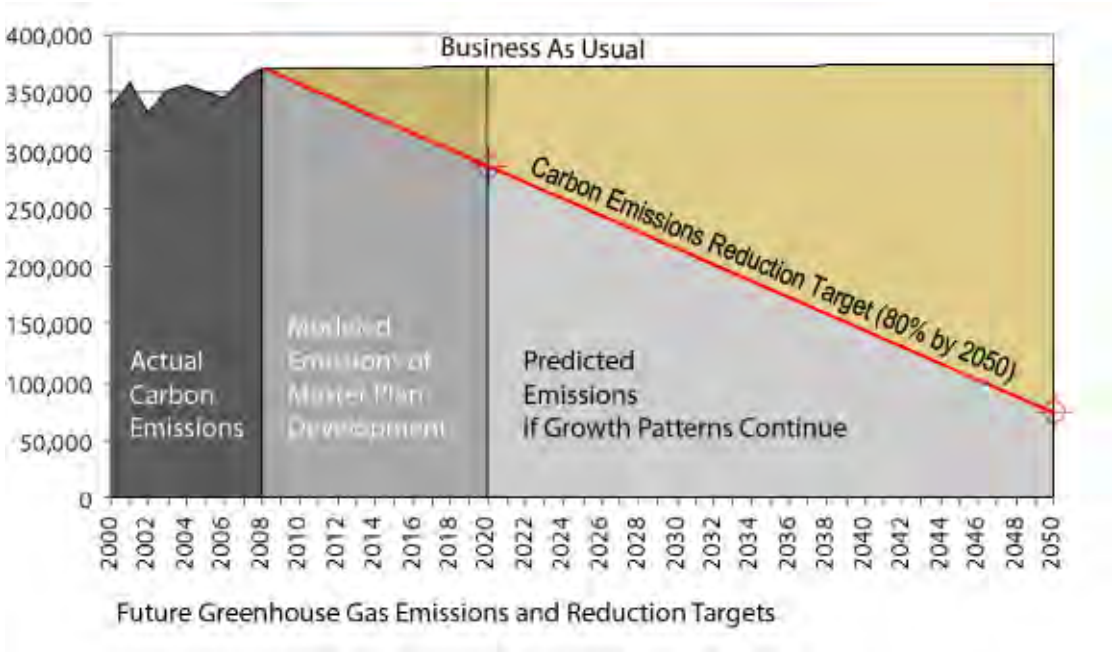
Hospital Tunnel

INFRASTRUCTURE/UTILITIES

0 600 1200 1800 Feet

ENERGY AND WATER USE

This Energy and Water Use section predicts the energy use, GHG emissions and water use of the IUPUI campus when the master plan is fully implemented once the buildings proposed in the master plan have been completed. The analysis summarized here was completed in 2009 and excluded the Medical Campus and existing campus hospitals. There have been minor adjustments to the campus master plan after the analysis was completed, and these changes could impact the predicted energy and water use of the proposed campus. That said, the strategies for energy and water conservation found within the report are still valid and should be recommended considerations to guide the future development of the campus. The potential impact of those strategies, as well, remains relevant although there may be minor changes to the specific predicted energy and water savings resulting from revisions to the master plan since the time of this study.



Future Greenhouse Gas Emissions and Reduction Targets

Over the next ten years and beyond, the IUPUI campus will grow with the addition of nearly 5.1 million square feet of building. This growth could increase the campus greenhouse gas emissions and potable water consumption. By embracing sustainable design strategies, the campus can grow while reducing its resource impacts. The Energy and Water Use portion of the Master Plan estimates the greenhouse gas emissions and potable water consumption associated with the existing campus and predicts the energy and water use of proposed development based on current campus building standards. It demonstrates how sustainable design strategies can significantly reduce the campus's carbon footprint and water consumption.

The American College & University Presidents Climate Commitment (ACUPCC) establishes a

goal of reducing campus greenhouse gas (GHG) emissions by 80% by the year 2050, equating to a 23% reduction target by the year 2020, the end of the Master Plan development. Similarly, the Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability Tracking Assessment & Rating System (STARS) establishes campus water conservation goals to reduce potable non-irrigation water consumption by 10%, 25%, and 50%, using water consumption per square foot of building as the unit for comparison. While IUPUI has not committed to the ACUPCC goal, a series of sustainable design practices have been proposed for both the planned and existing building stock in order to demonstrate a path towards meeting similar targets to the ACUPCC and STARS goals.

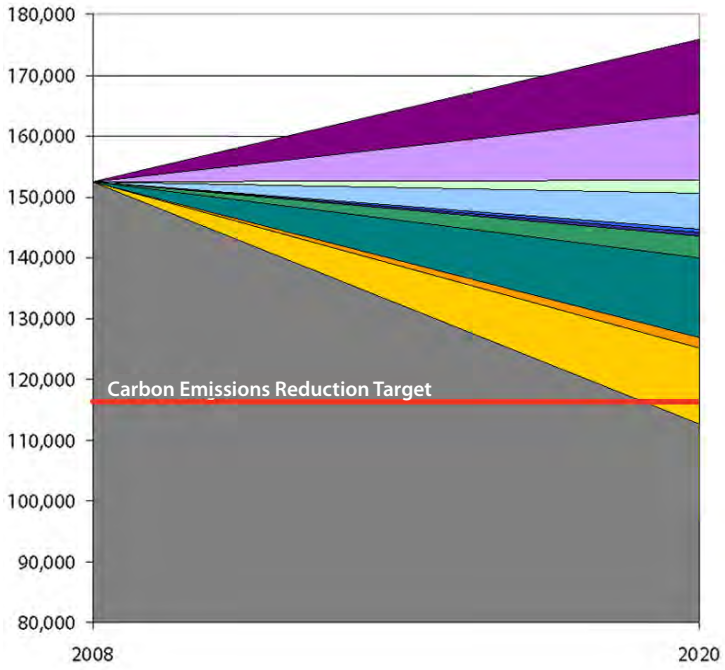
Carbon Emission Reduction Recommendations

The colored wedges in the chart below represent the emissions reduction potential associated with a series of strategies to reduce predicted campus carbon emissions. No one strategy or "wedge" alone will reach the ACUPCC target, but the cumulative effect of combined strategies will reach and exceed the target.

Wedges 1a and 1b demonstrate the impact from requiring all new construction to meet energy use reduction thresholds prescribed in the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System™. Wedges 2-6 demonstrate the impacts from retrofitting existing campus buildings for more sustainable practices. Wedges 7 and 8 examine the impacts of incorporating sustainable policies to the building stock. If all of the measures from Wedges 1-8 are implemented, the strategies combined will result in a greenhouse gas emissions reduction of 62,430 MT eCO2. IUPUI can grow by over 50% while at the same time reduce its greenhouse gas emissions by over 25%. This 25% reduction would put the campus well on track to reach a goal of an 80% reduction of GHG emissions by the year 2050.

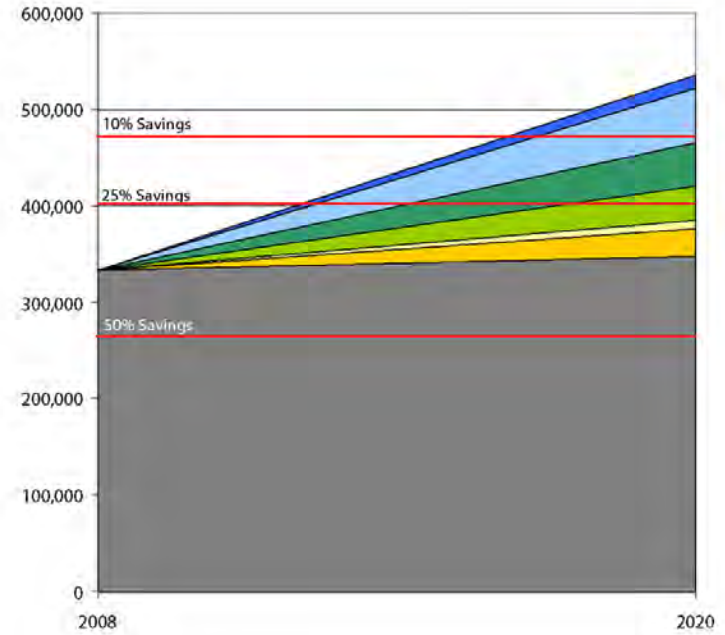
Water Use Reduction Recommendations

Using wedge analyses similar to those discussed previously, the chart to the right represents the water use reduction potential associated with a series of proposed strategies. Wedges 1, 3, and 5 examine the impacts of conservation measures applied to new campus buildings, while wedges 2, 4 and 6 demonstrate the impacts from retrofitting existing campus buildings to include water conservation measures. If all of the measures from Wedges 1-6 are implemented, the strategies combined would result in a potable water savings of 187.6 million gallons a year. IUPUI would increase its building area by 50% but increase its potable water consumption by only 4%.



GHG Emissions Reduction Recommendations

- 1a. All new work earns 10 points in LEED 2009 EA1
- 1b. All new work earns 19 points in LEED 2009 EA1
- 2. Occupancy Sensors in Offices
- 3. Replace all standard fume hoods with high-efficiency fume hoods
- 4a. Renovate 7.83% of existing building stock up to LEED 2009 standards
- 4b: Renovate 7.83% of existing buildings to earn 10 points in LEED 2009 EA1
- 4c: Renovate 7.83% of existing buildings to earn 19 points in LEED 2009 EA1
- 5. Of the remaining building stock, take on 1 funded energy savings project / year
- 6. Retrofit Commission the remaining building stock
- 7. Change winter setpoint from 70° to 68°
- 8. Purchase green power for 15% of remaining electricity use



Water Use Reduction Recommendations

1. Use efficient toilets and urinals in all new construction
2. Retrofit existing fixtures with efficient toilets and urinals
3. Use efficient faucets and showers in all new construction
4. Retrofit existing fixtures with efficient faucets and showers
5. Use Greywater Recovery in all new construction
6. Reduce Process Water Use by 10%

STORM WATER

Campuses across the country are creatively incorporating storm water management techniques into traditional campus environments. The IUPUI campus is sited on a former floodplain of the White River, and due to its unique location at the toe of the watershed, the pre development condition would not have detained flooding events, therefore, water quantity issues have not been considered as part of the master plan. Recommendations instead focus on improving water quality issues and disconnecting much of the campuses storm water that is currently directed toward a combined sewer system which, in large rain events, dumps raw sewage directly into the river.

The City of Indianapolis Storm Water Specifications Manual includes all pertinent information on the storm water management requirements of the City. Because the White River and Fall Creek are currently considered direct discharge waterways by the city of Indianapolis, storm water runoff can be discharged to these waterways without detention as long as the necessary water quality requirements are met and a downstream analysis is performed showing that the peak runoff volume is released to the river well before the river reaches its peak elevation following a storm event.

Rainfall data was obtained from the Utah Climate Center (UCC) for the City of Indianapolis for the years 1900 to 2005. Based on this data, it was determined that the average annual rainfall is 39.35 inches. Runoff coefficients were also calculated for the IUPUI campus. The watershed was broken up into categories based on surface type: existing and proposed buildings, existing and proposed parking lots, other paved areas (roads, walks, drives, etc.), and lawn/woods. Each of these different categories was assigned a specific runoff coefficient according to their use. The weighted average was then determined for each watershed (see Table 1). As the areas change from existing to proposed conditions, the runoff coefficients are updated. When the average annual rainfall is multiplied by the runoff coefficient and the watershed area, the Average Annual Runoff (AAR) is calculated.

Assuming that the quality of storm water leaving a watershed is at its highest when it is in its pre-developed state, the goal for storm water quality for the IUPUI campus will be to reduce the AAR for the proposed condition back to that of the pre-developed condition. In order to accomplish this goal, water quality facilities will need to be carefully incorporated into existing and proposed parking lots, proposed buildings, existing buildings, and existing roads on campus, since space is very limited. Storm water treatment facilities within the master plan have been designed for the 2-month, 24-hour storm event, treating 94.5% of all storm events with only a slight increase in necessary infrastructure. Since these facilities will take runoff "off-line" by allowing it to infiltrate, the AAR will be reduced to that of the pre-developed condition.

Specific storm water quality techniques recommended in this report attempt to slow down storm water runoff from large rainfall

Table 1: Average Annual Stormwater Runoff

Condition	Total Drainage Area (ac)	Existing Building (ac)	Proposed Building (ac)	Existing Parking (ac)	Proposed Parking (ac)	Misc. Paved (ac)	Lawn/ Woods (ac)	C	Average Annual Runoff* (gal)
		C = 0.90		C = 0.85			C = 0.30		
Pre-developed	448.3	–	–	–	–	–	448.3	0.30	143,679,402
Existing	448.3	93.0	–	93.4	–	122.4	139.5	0.69	330,106,832
Proposed	448.3	77.4	47.5	23.9	24.2	124.3	151.0	0.68	325,009,806
Sustainable Proposed	248.3	7.7	4.8	0.0	0.0	80.0	151.0	0.51	143,679,402

* 39.35 inches x 1ft/12in x Area x 43,560 sf/acre x C x 7.48 gal/cf = AAR

events, mimic pre development runoff conditions by managing small storm water events at or close to where rain falls, and by minimizing impervious surfaces. In order to do this, several strategies, described below, are woven into the master plan to improve storm water treatment at IUPUI.

Detention Basins

Detention basins are large volume storage facilities which help to manage large storm events by providing added capacity to a drainage system. Due to the campus's location in the White River and Fall Creek watersheds, detention provided on campus would have a very minimal impact on the hydraulics of either water course. Due to this and the infrastructure needed to create detention, it is not recommended on campus. However, rain water cistern systems can be included to collect rain water. The water collected by the cistern can then be used for non-potable uses like landscape irrigation, toilet flushing, and mechanical system make up.

Rain Gardens

Rain gardens, infiltration planters, bioswales and constructed wetlands are examples of infiltration facilities which help to filter storm water from smaller events. By encouraging and assisting infiltration, these facilities enhance water quality, reduce runoff rates, recharge the groundwater system, and create habitat. If there are existing impervious soils, the storm water will be going into the storm sewer conveyance system; however, the benefit of the infiltration facility still exists since the runoff has been slowed down and cleaned.

Pervious Pavements

Pervious pavements allow the infiltration of storm water in areas that would normally be impervious. They also enhance groundwater recharge through increased percolation of rain water into the soil underneath paved areas. Pervious pavements can be applied to walks, parking lots, roads and driveways and can come in the form of pervious asphalt, pervious concrete or pervious pavers. Similarly to rain gardens, if local soils are not sufficient to infiltrate the storm

Rain Garden

Green Roof

water into the ground water system, underdrains can be included to take the storm water to the storm sewer system after it has been cleaned and delayed.

Green Roofs

Green roofs, while relatively new to the United States, have proven effective at managing smaller rain events while slowing runoff for larger rain events. Including natural surfaces to what would normally be impervious allows for storm water from small rain events to be absorbed and used by plants rather than running off to the storm water system. This scenario more accurately mimics the conditions that would have occurred prior to the development of the site.

The IUPUI plan focuses on implementing urban water quality measures while also disconnecting storm water from the combined system by encouraging disconnection of existing buildings, and designing new buildings with separate sewer lines.

Recommendations

- Reduce the Average Annual Runoff (AAR) to pre-developed condition by incorporating water quality facilities into the campus
- Size structures for a two-month, 24-hour event to manage 94.5% of all storm events
- Design 100% of existing and proposed parking lots, 90% of proposed and existing buildings, and 36% of existing roads in the watershed with infiltration facilities to meet two-month, 24-hour event

A more detailed stormwater study was completed for portions of the campus. This study outlines the type of treatment measures to be used in an effort to meet the recommendations listed above.

SANITARY SEWER SYSTEM

The sanitary sewer system on campus is jointly maintained by the City of Indianapolis (sewers in public right-of-way) and private owners, one of which is IUPUI. The sanitary sewage (and storm water runoff) is collected in a system of combined sewers and eventually outlets at the Belmont Advanced Wastewater Treatment Facility, which is approximately three miles south of campus.

As part of the master plan process, the IUPUI campus was evaluated based on main drainage lines to determine what areas currently have separate storm and sanitary sewers and what areas could be separated in the future. A best case scenario for sewer separation and campus drainage was developed, encouraging all new development (buildings, parking lots, rec. fields and open space) to be separated out if not currently. The sizing and capacity of the proposed system was determined based on the current capacity of the system as it is today, and the projected load on the system at full build out. The "Future Sanitary Solutions Best Case Scenario" plan on page 173 shows approximately 180 acres of separated areas at full build out.

Because of the significant investment on the part of the City and the University to achieve separation in all proposed development areas, the University sought to pursue separation along four major corridors as part of the master plan process. These corridors were identified based on the four main combined sewer overflows (CSO) which outlet excess storm water runoff and sanitary discharge from campus property; Blackford Street Corridor (CSO 37), University Boulevard Corridor (CSO 38), Beauty Avenue Corridor (CSO 39), and Indiana Avenue Corridor (CSO 210). The areas which contribute storm water runoff to these main lines are, in large part, planned for development and therefore create an opportunity to separate storm and sanitary sewers. The "Future Sanitary Solutions--Phase One" plan on page 172 highlights these initial sanitary projects.

Blackford Street Corridor (CSO 37)

The existing combined sewer main which runs from North Street at the northwest corner of the Blackford Street Parking Garage south and eventually ends up at the White River at CSO 37 will need to be re-routed as part of the master plan. The existing sewer main south of the Science Building should be abandoned, and replaced with a new line which will run south along Blackford, west along W. New York Street and then south again to eventually be tied back into the system at CSO 37. Adjacent to this sewer, a new storm line should also be installed from the south end of the science building to W. New York Street which will tie into the existing 54" storm sewer main and facilitate sewer separation in the area. At full build out, approximately 49 acres can be separated out if all the necessary storm lines are installed along this drainage corridor. The total effect of the Master Plan on the system in shown in Table 2.

University Boulevard Corridor (CSO 38)

The replacement of the undersized and outdated combined sewer main located along University Boulevard. is a first priority as part of the master plan. This sewer line runs south from the

University Hospital main entrance, at Michigan Street, to the White River at CSO 38. As part of this project, a new storm line should be installed adjacent to the upgraded sanitary line to facilitate full separation. By separating all the sanitary and storm loads currently contributing to this combined sewer line, overflow events can be avoided. At full build out, approximately 34 acres can be separated out if this project is completed and all the necessary secondary storm lines are installed tying into the proposed storm main along this drainage corridor. The additions and substractions to the system proposed by the Master Plan are shown in Table 2.

Beauty Avenue Corridor (CSO 39)

Realignment of the combined sewer main that runs along Beauty Avenue is necessary to avoid interference with the buildings and parking garage proposed for this area. Currently, this sewer turns southeast at Michigan Street and runs along Beauty Avenue to CSO 39. The proposed route would continue south along Lansing Street to W. New York Street before turning east to tie back into itself.

Table 2: Projected Sanitary Sewer Demand

Outlet	Academic		Research		Residential		Total	
	Area (GSF)	Flow (gpd)	Area (GSF)	Flow (gpd)	Area (GSF)	Flow (gpd)	Area (GSF)	Flow (gpd)
Demolition								
37	–	–	–	–	–	–	0	0
38	–	–	–	–	–	–	294,930	34,386
39	–	–	–	–	–	–	963,318	342,158
201	–	–	–	–	–	–	0	0
Total	–	–	–	–	–	–	1,258,248	376,544
Phase 1 - 10-Year Build Out								
37	207,747	17,084	0	0	130,630	29,392	338,377	46,476
38	1,891,731	155,570	419,220	125,766	468,591	105,433	2,779,542	386,769
39	1,402,177	115,311	147,306	44,192	355,634	80,018	1,905,117	239,520
201	0	0	0	0	0	0	0	0
Total	3,501,655	287,965	566.526	169,958	954,855	214,843	5,023,036	672,765
Phase 2 - 20-Year Build Out								
37	2,433,161	200,096	0	0	197,128	44,354	2,630,289	244,450
38	250,000	20,559	0	0	0	0	250,000	20,559
39	781,954	64,306	0	0	175,357	39,455	957,311	103,761
201	198,000	16,283	0	0	0	0	198,000	16,283
Total	3,663,115	301,244	0	0	372,485	83,809	4,035,600	385,053
Grand Total	7,164,770	589,209	566,526	169,958	1,327,340	298,652	7,800,388	681,274

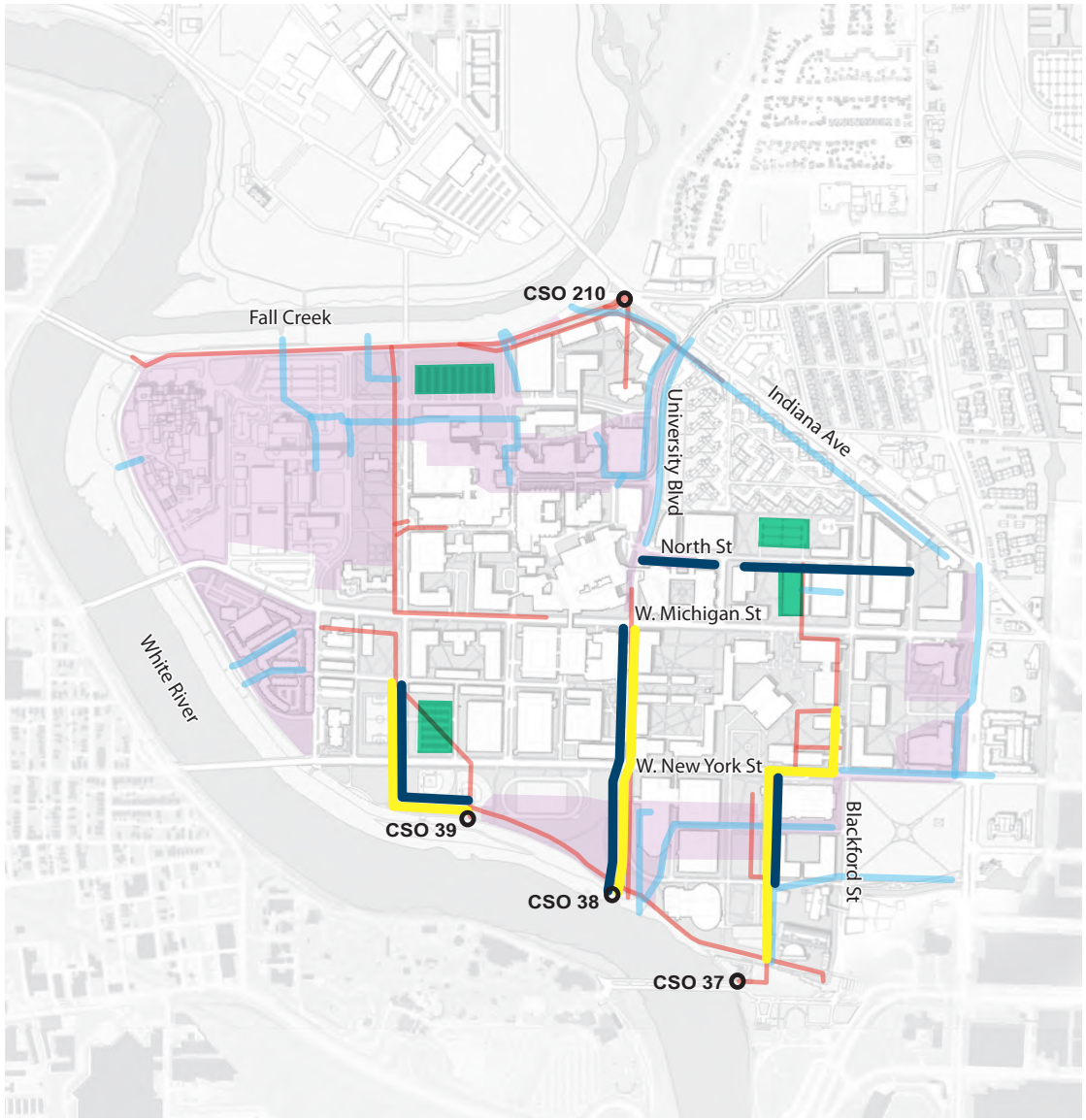
Note: Academic Buildings 82 gpd/1,000 sf; Research Buildings 300 gpd/1,000 sf; Residential Buildings 225 gpd/1,000 sf

As part of this re-alignment project, a new storm sewer main should be installed adjacent to the sanitary sewer. If enough storm lines are disconnected from this sewer and diverted to the new storm main, it may be possible to convert CSO 39 to a storm outlet and direct sanitary loads downstream without the need to overflow.

The 66" storm sewer main at Beauty Avenue and W. New York Street should be disconnected from Sewer 39 and connected to the proposed storm sewer mentioned above. Table 2 shows the cummulative effect of the Master Plan on the system.

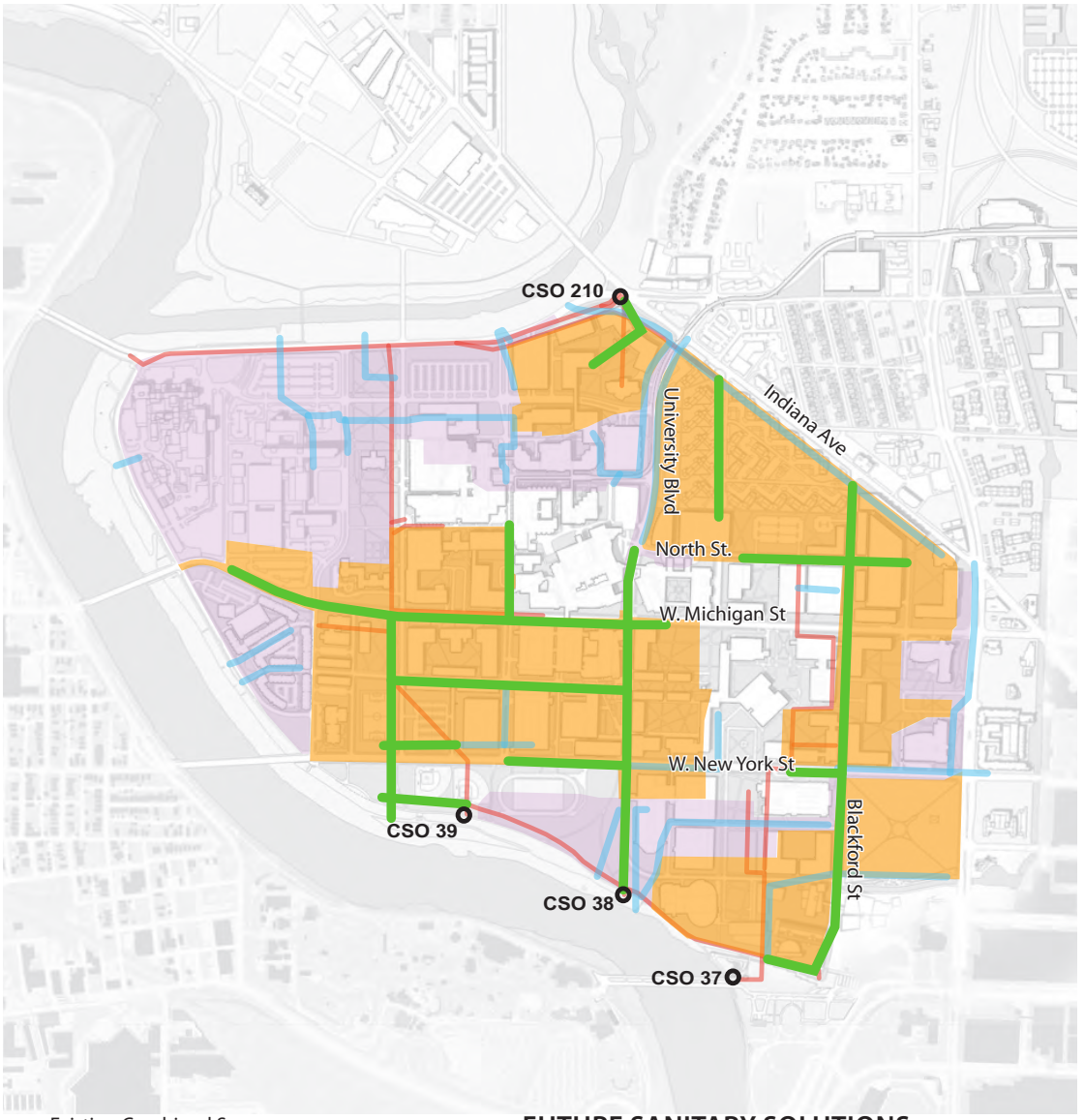
Indiana Avenue Corridor (CSO 210)

With the exception of the parking lot north of North Street and west of Blackford Street, the area of campus bounded by North Street, Indiana Avenue and University Boulevard drains to a large storm main which runs northwest along Indiana Avenue, discharging to Fall Creek just west of CSO 210. There is a combined sewer main which parallels this storm main which overflows into CSO 210. With the addition of new storm



FUTURE SANITARY SOLUTIONS--PHASE ONE

sewers along North Street and Blackford Street and the re-routing of existing storm sewer lines, it may be possible to separate out approximately 33 acres of proposed development area by tying into the storm main. A closer examination of this area will be necessary to determine what the best options are for separation depending on the capacity of the existing system and the location of proposed buildings and underground infrastructure. The total effect of the Master Plan on the system is shown in Table 2.



ARCHITECTURAL GUIDELINES

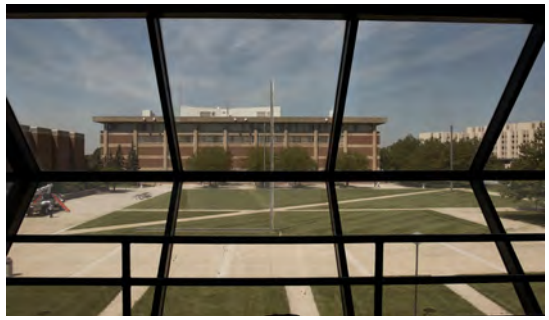
The architectural guidelines consist of broad design guidelines applicable to the IUPUI campus as a whole, as well as specific formal and functional objectives adapted to each campus district. The guidelines reinforce the Master Plan themes:

- Create a Dense Urban Environment
- Unite the Campus
- Engage the City
- Redefine the Public Realm
- Animate the Campus

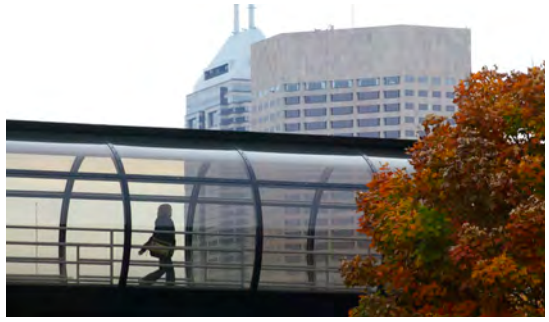
The guidelines reflect primary principles of enhancing academic excellence and urban experience by guiding construction of distinctive, quality structures.

The Master Plan breaks down the scale of the large IUPUI campus by proposing four distinct districts, each with an individual, memorable character. The qualities of each district and their specific architectural guidelines are detailed in Section 6 – Campus Districts. The intention is to create a strong identifiable character for each district, while maintaining a unified sense of

Diverse Campus Resources



Public Space



Pedestrian Connectivity

campus and physical identity for the University. This will be achieved by physically reinforcing the core design principles that remain consistent from district to district. The following general guidelines therefore apply to the design of campus structures in all of the campus districts.

The guidelines reinforce IUPUI's essential connection to its urban Indianapolis context. They focus on fundamental physical qualities of urbanism: diversity, pedestrian experience, civic engagement and presence. They are not prescriptive in nature, and are directed toward furthering the high-quality, inventive modern spirit that has led to much of the campus' architectural development to date. Application of the guidelines is meant to capitalize on each individual architect's intellect, each contributing to the forward-looking dynamic physical environment that facilitate IUPUI's rigorous, forward-looking academic programs.

The guidelines are also meant to unify the design of individual structures into a coherent larger pattern expressive of the enduring qualities of Indiana University. Rather than a collection of individual objects, the recommended design approach connects buildings with one another and with the landscape to form an integrated and architecturally rich campus context.

General Design Guidelines

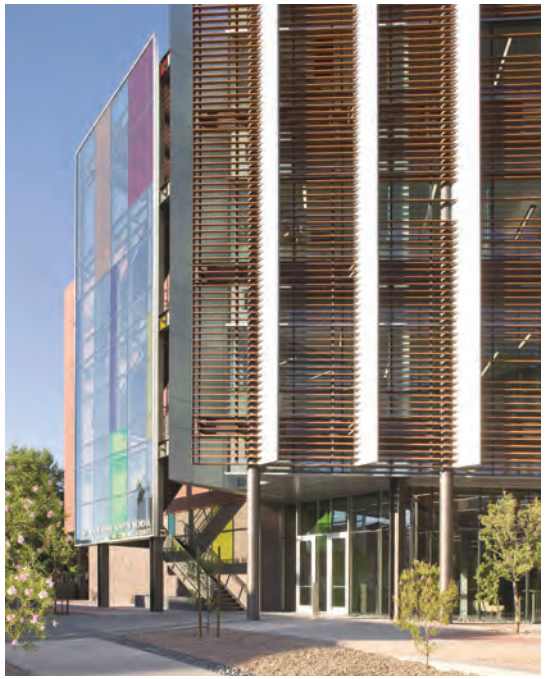
The campus development methodology encourages diversity among its districts and programs. While each building should reflect its own time and place; it should also reflect the enduring values of Indiana University and IUPUI: quality, durability, commitment to academic excellence. Each building design should contribute to the identity of the campus while reinforcing the architectural and landscape pattern of its individual district.

City Interface

Campus development should celebrate and connect to IUPUI's urban setting, in terms of program, activity and building form. Campus edges are considered porous with seamless and natural visual and physical connections to Indianapolis. Buildings should be designed as

University Library, Edward Larrabee Barnes

SPEA / Business School



Norton School of Family Sciences, University of Arizona, SmithGroupJJR

IUPUI University Library

welcoming to the larger community. Maintaining security and necessary privacy may be achieved with clear organization for visitors: clear means of access, wayfinding, signage, etc. Diverse uses are encouraged to promote activity and urban vitality.

The edges that define the limits of campus at its urban interface must also present a character and identity appropriate to a leading academic institution. Opportunities for the University to visually announce itself should be incorporated – these may include signage, architectural expression of programmatic activities and purpose, and/or transparency.

Expression

IUPUI has a legacy of notable architectural design and planning. From 1976-1993, the architect Edward Larrabee Barnes worked for Indiana University on three campuses as a master planner and architect. At IUPUI he built ten buildings including Business/SPEA, the University Library, and the Natatorium.

Barnes had a long and influential career and is considered a modern master.

Distinguishing characteristics of his work for IUPUI include clarity, monumentality, and comprehensible distinction between object, landmark structures versus background buildings whose primary role is to define campus spaces. However, some buildings and spaces have a scale that is too large and appears grand and corporate rather than appropriately institutional and collegiate. New buildings should achieve a more human-scale presence and relationship to their setting as the campus transitions to a more urban, pedestrian oriented character.

More positive attributes should be extended with the design of new buildings and spaces: clarity, precise building forms, and a simple, direct emphasis on campus space making. Two principles should underlie the design of new buildings. Buildings should clearly communicate their purpose and their time period. Each new building should address its context and district, and contribute a spirit of invention and intellect to the campus's architectural expression.

Materiality

The existing IUPUI campus has a varied palette of building materials consisting of Indiana limestone, brick, precast concrete, metal panel and glass. While no one building material predominates, Indiana limestone in various forms has been used to convey physical identity for landmark academic and student life structures: the University Library, the Law School, the Informatics and Communications Technology Complex, and the Campus Center. While this approach shall be extended with the design of new campus landmarks, the use of a variety of materials expressive of forward-looking dynamism is also encouraged, either in combination with or in lieu of Indiana limestone. These materials may include metal panel, glass, and/or terra-cotta panels. Materials will be varied within each district to contribute to their individual character. Selection of durable materials will convey permanence and quality, appropriate attributes for IUPUI.

Scale

Large buildings should incorporate design features to reduce their perceived mass, creating a human scale for the campus. Such features may include articulated masses, façade treatments, changes in vertical height, and/or incorporating a variety of materials.

Entrances

Entrances to buildings should be considered a major design feature, easily identifiable and expressive of the activities of building programs and activities. Entrances should be located along prominent open spaces or primary pedestrian and vehicular routes to maximize visibility and identity. Projecting, recessing or otherwise articulating entrances is encouraged. Buildings should be sited and designed to create gathering places adjacent to their entrances.

Active Spaces and Streets

Campus development will maximize opportunities to create active campus spaces. Streets must be pedestrian-oriented in order to take full advantage of IUPUI's distinctly urban environment.

Building forms should define appropriately-scaled campus spaces. Ground level interiors in each building facing a campus space or a street should house active functions and should be transparent and visually accessible. Canopies, colonnades, and other ground level articulations and integrated, adjacent site and seat walls are encouraged. Ground level spaces in blocks along Indiana Avenue as well as at other locations should include retail or storefront services.

Height / Density

Building heights and development density should be established to fully recognize the value of urban land. Buildings should take full advantage of opportunities for integration of functions, mixing retail, office, academic, housing and research functions vertically, as well as horizontally. Specific guidelines for building heights are included for each district. To ensure adequate height for anticipated and future uses, floor-to-floor heights should be approximately 17' at ground level and no less than 15' above ground level. Building widths should be limited to 70' where permanent staff and faculty workspaces are located to maximize access to daylight and views.

Orientation and Exposure

Buildings should be oriented and designed in response to solar angles and wind direction to reduce energy consumption. Appropriate shading options should be incorporated including architectural and landscape elements. Measures to optimize natural airflow and ventilation should be integrated.

Program

Building design should provide for flexibility as programs and program requirements change over time. Internal partitions should be easy to reconfigure while maintaining the visual character of permanence and enduring quality. Floor-to-floor heights should allow for flexible, adaptable building systems. Net building area to gross building area ratios must be carefully established to ensure adequate unprogrammed casual/ communal spaces that are conducive to informal, unstructured interaction.

Service Points

Building service points and discrete connections to utilities must be carefully integrated into a building's design without compromising visual integrity. Loading docks must be fully enclosed or visually screened and accessible from predefined service corridors. Exterior rooftop equipment must be fully concealed with integral architectural building elements. Pad mounted equipment at grade must be similarly screened.

All exterior equipment on grade must be located in a designated service yard area and must be visually screened architecturally or with landscape elements. Screening must be continuous on all sides and extend to the top of the equipment. Alternate screening configurations that include landscape and/or topography may be considered.

Sustainabilty

All new buildings and renovation projects shall incorporate sustainability design and building practices. IUPUI is committed to achieving LEED Silver Certification as defined by the United States Green Building Council for all building and renovation projects.

6| CAMPUS DISTRICTS

INTRODUCTION

District Organization

The organization of the IUPUI campus can be understood as a collection of distinctive districts or neighborhoods stitched together by a network of memorable pedestrian and vehicular corridors. Each of the five districts identified in the master plan is unique in its programmatic function, spatial character and level of activity. Three of the districts are oriented north-south, West Campus, Central Core, and Cultural Trail-Blackford Street. The north-south orientation of these districts promotes greater connectivity across the West Michigan Street and West New York Street corridors where meaningful connections have traditionally been absent. The West Campus District and Central Core overlap along University Boulevard and share both sides of this major circulation artery and gateway to the campus.

The West Campus District largely contains medical, allied health, academic, and research facilities with Ball Garden defining its western edge. Barnhill Drive is to be developed as a central circulation axis and organizing pedestrian feature that will unify the district north to south. The Central Core district contains predominantly academic, research, administrative, and student life facilities and functions as the primary social hub of the academic campus. This district effectively functions as the heart of the campus and defines a clear identity for IUPUI as a whole. The Cultural Trail-Blackford Street District will contain a lively variety of mixed-use facilities organized around the Indianapolis Cultural Trail planned for Blackford Street. The West Street edge of this district defines IUPUI's civic relationship to downtown Indianapolis and represents the University's physical identity within the urban context.

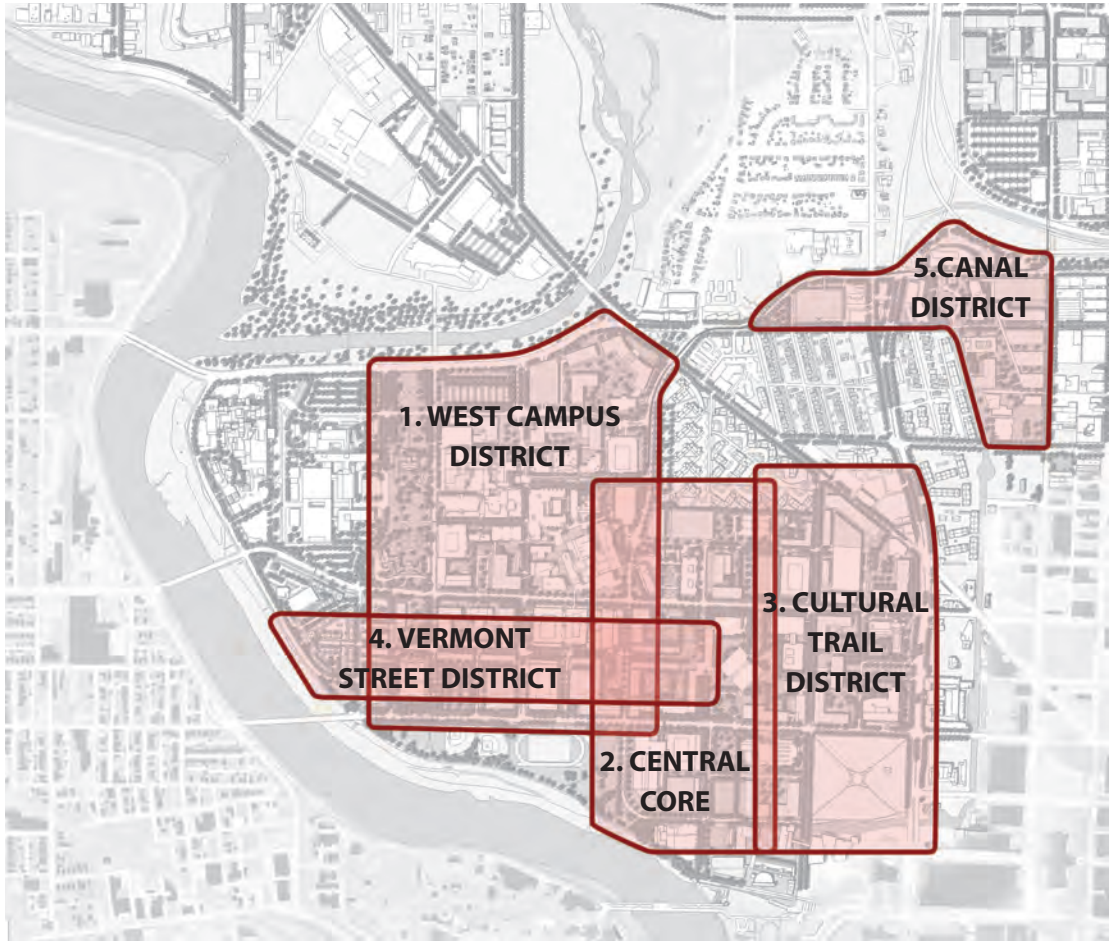
The north-south districts are interrupted by the primary vehicular east-west corridors, West Michigan Street and New York Street. Significant modifications suggested for these corridors will create a more pedestrian-oriented environment and human scale by establishing a campus fabric that is more comfortable and easier to traverse. The intersections between Michigan and New York and each of the north-south corridors will present new opportunities for gateway structures and spaces that can function as thresholds to each district and visually represent the unique qualities of each area.

Vermont Street comprises the fourth district and is oriented east-west between West Michigan and New York. In contrast to Michigan and New York's vehicular focus, this corridor is envisioned as the primary pedestrian circulation spine for the academic campus. Its character will be uniquely urban, relying on tightly-clustered student residences and a variety of mixed use structures to activate a dynamic street life.

The Canal District is a unique area of campus that is focused around the northern terminus of the historic Indiana Central Canal. Currently home to several research and health science administrative facilities, future development in this district will include additional administrative,

research/incubator facilities and structured parking. A proposed new station for the people mover just west of the Canal will strengthen ties to the main campus and the northern precincts of the Academic Medical Center Campus.

Each district defines a region of campus loosely defined by programmatic function and spatial character. To achieve a sense of urban vitality consistent with the Indianapolis context, programmatic uses and activities are deliberately mixed and integrated throughout the campus. While certain programmatic functions may be concentrated in a particular district, others may be widely distributed. Similarly, the physical landscape and architectural design of each district should not reinforce differences, but rather embody and subtly unite aesthetics that together form part of an identifiable whole for the entire campus. The design guidelines for districts will connect campus spaces and structures to one another within an integrated, overall campus framework for development.



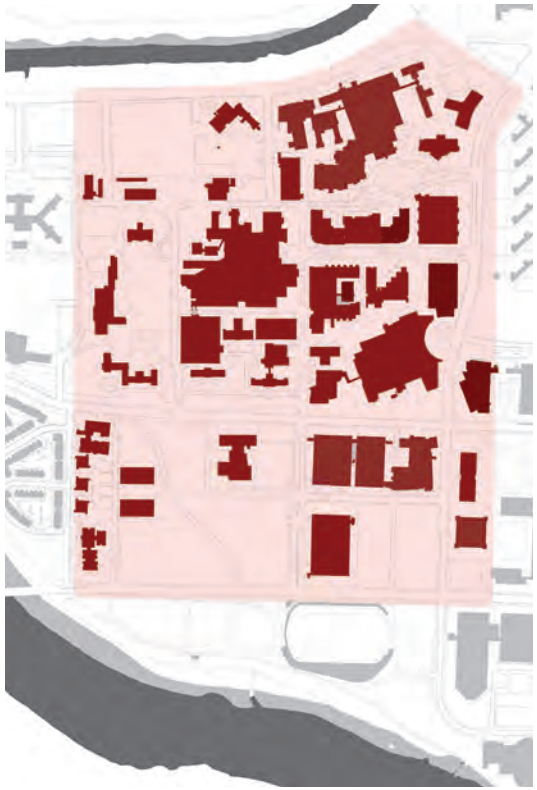
IUPUI Campus Districts

DISTRICT 1: WEST CAMPUS

EXISTING CHARACTER

The West Campus District extends from Fall Creek to New York Street and from Ball Garden to University Boulevard. The architectural styles represented are a range of historic turn of the century neoclassical to modern contemporary. Construction materials are predominantly Indiana limestone, brick masonry, concrete and glass.

Buildings in this district from New York Street to 10th Street date from the early 1930s. They include Riley Children's Hospital, the Rotary Building, Ball Residence Hall, Fessler Hall, Gatch Clinical Building, Long Hospital, and Coleman Hall north of West Michigan Street. South of West Michigan Street, the district includes the School of Dentistry, the Oral Health Institute and Campus Administration, university townhouses, the Ronald McDonald House, and the Center for Young Children. Several buildings address West Michigan Street in a monumental fashion, such as the School of Dentistry, with generous setbacks, colonnades, and symmetrical facades. The Indiana



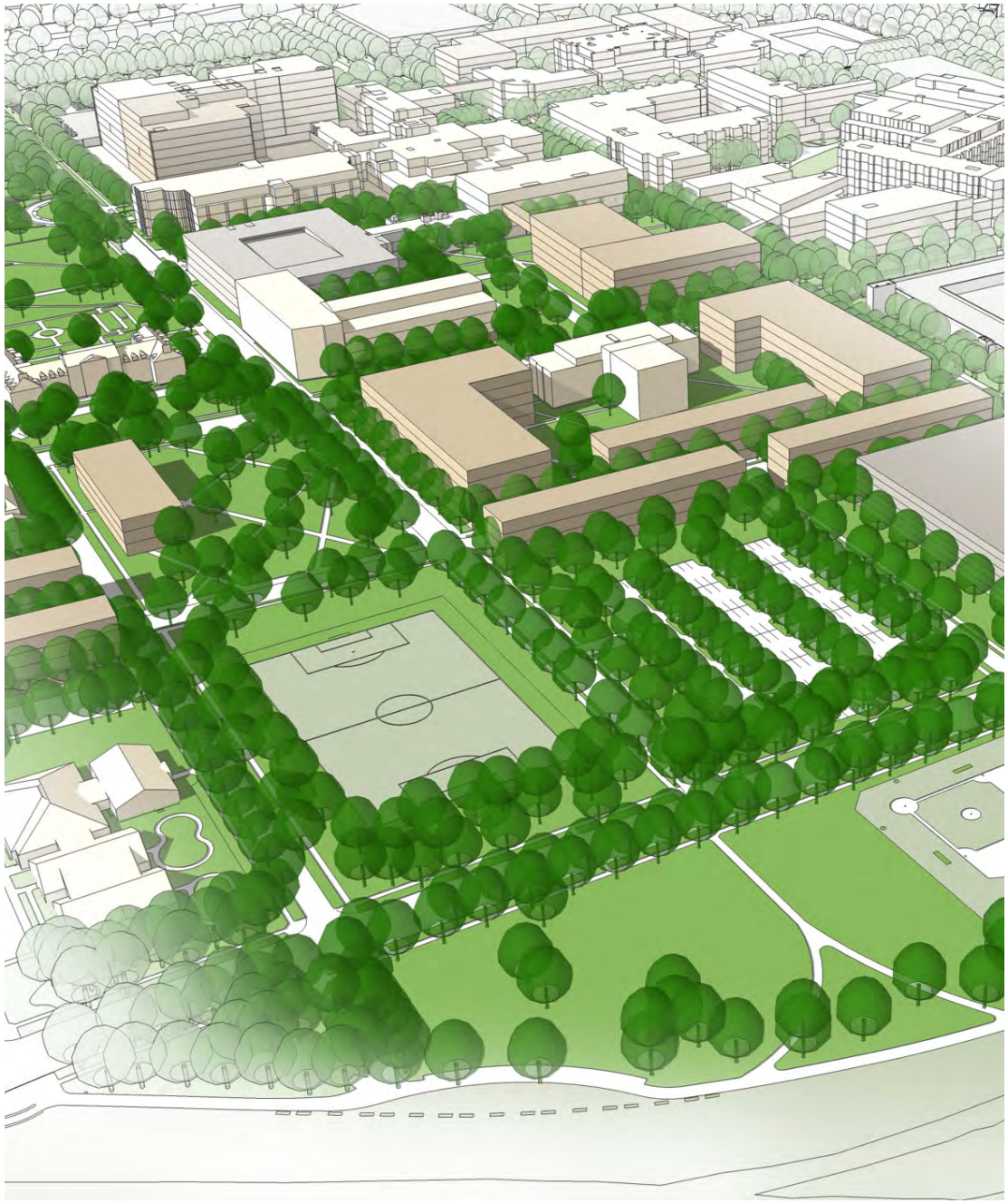
West Campus District Map

Ball Garden

Medical Campus

University Hospital covers a large block within the district and embodies a structural density common among urban hospitals. Large surface parking lots and temporary metal structures also occupy significant portions of this area of campus. Architectural quality varies widely, from the very high quality facades of the 1930's historic structures such as the Rotary Building, Ball Residences, and Riley Children's Hospital, to the lesser quality one-story temporary metal buildings housing the Chancellor and administrative offices. Large surface parking lots form the remaining character of development, south of West Michigan Street.

The existing Ball Garden forms the western edge of the district and is one of the most recognizable and memorable open spaces on the IUPUI campus. With design roots dating back to the Olmsted Brothers firm, this important green space signifies an important legacy of the area and its development.



Proposed Ball Gardens Extension District

Postech Digital Library, Pohaug University, Seoul, South Korea, SmithGroupJJR

Existing Qualities

- Densely organized healthcare facilities with minimal integrated green space
- Varied architectural styles
- Singular monumental, historic green space – Ball Gardens
- Large surface parking lots and parking structures
- Temporary structures

DEVELOPMENT OPPORTUNITIES

The West Campus District encompasses the Health Sciences District (District A) of the Academic Medical Center Campus Master Plan. Future development in this district will focus on the medical and health sciences and integrating the hospital environment into the academic campus. Development includes academic, research, support services, and hospital expansion.The acquisition of the Wishard site provides an opportunity to create a prominent and monumental new gateway to the campus at 10th Street and University Boulevard.

Barnhill Drive has been extended north and south to create the major pedestrian corridor and internal axis of the district. Envisioned as a "Walk of Life", the pedestrian corridor will link the West Campus District to the other districts outside of the academic campus as outlined in the Academic Medical Center Campus Plan. At the western edge of the district, Ball Gardens provides an ideal resource for both quiet reflection and recreation. The extension of the original green space from 10th Street south to the White River will reinforce the connection between the campus and the riverfront, enhancing access to this unique natural feature. Facilitating access to the riverfront will foster interaction between the campus community and the broader urban context.

Development Objectives

- Define a new iconic and monumental campus gateway
- Promote further integration of the health sciences, medical, research, and academic uses

- Reinforce the aesthetic identity
- Enhance and extend Ball Garden
- Engage the regional greenway system

BUILDING INITIATIVES

The West Campus District will include the Academic Health Sciences center for the health professional schools and expansion to Riley Children's Hospital. The Wishard site will be redeveloped for medical research and faculty office growth. A full description of their program is included in Volume 2 of this report, An Integrated Plan for the Academic Medical Center Campus.

Biomedical Research and Faculty Office Complex

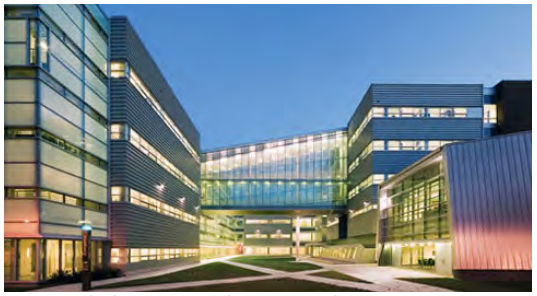
Building masses of 4-6 stories will create a new gateway for the University and IU Health on Indiana Avenue and University Boulevard. Proposed faculty office buildings in this complex will provide the replacement space for demolition of Long Hospital and Gatch Clinical Building.

Integrated Health Sciences Education Complex

4-6 story footprints are proposed in phases to create a new Integrated Health Sciences Education complex for the School of Nursing, School of Health and Rehabilitative Services, and Department of Public Health, with space for School of Medicine functions. The re-alignment of Wishard Boulevard to the north allows room for this new complex and for a new Health Sciences quadrangle bounded by Walthur Hall and existing research institutes on Walnut Street. Building facades and major building entries fronting the new Wishard Boulevard should incorporate a sense of scale, arrival, and transparency to engage the public realm of the street.

Cancer Research Facility

A new cancer research building adjacent to the Simon Cancer Center will provide future specialized research space in conjunction with the pursuit of an NCI Comprehensive Cancer Center designation for IU Hospital. Its proximity to the hospital, medical education,



Peter and Clara Scott Laboratory, Ohio State University, Polshek Partnership

Newhouse School of Public Communications, Syracuse University, Polshek Partnership

James Clark Center, Stanford University, Foster and Partners

School of Dentistry

Glick Eye Institute Phase One, Ratio Architect

and other facilities will allow greater integration of research, patient care and education.

School of Dentistry Expansion and Renovation

Building sites shown flanking the existing School of Dentistry will allow for expansion of operatory clinics to the east, and phased renovation and redevelopment of the Dental School, south of West Michigan Street, between Barnhill and Riley Drive. Demolition of portions of the existing Dental School will create a new academic quadrangle within the complex. Where the building footprints approach Vermont Street, the ground floor should include active uses such as a food marche, cafe, and gathering spaces.

Ronald McDonald House Expansion

A potential expansion of the Ronald McDonald House for Children is shown just east of the existing facility, south of W. Michigan Street. This site is adjacent to the original house, and could take advantage of the open space and views of the Ball Garden extension.

Parking Structures

The Wilson Street Garage will be replaced by a new larger parking structure to serve Riley Hospital and new development in the Biomedical Research complex, bounded by W. 10th Street, a re-aligned Wilson Street entrance, and the new Wishard Boulevard. Ground floor retail or services uses are encouraged to help activate the western and southern street edges for pedestrians.

A new parking structure at the northwest corner of New York Street and Barnhill will replace several large surface lots as building projects are completed. The parking structure will be shielded from view by landscape and residential courtyards on Vermont Street and Ball Garden.

RENOVATION INITIATIVES

Fesler Hall and School of Nursing

As identified earlier, Fesler Hall and the School of Nursing building are in need of additional renovation. These buildings however are located where their conversion to faculty office use, rather than classroom use, would make sense

as ancillary functions to the proposed Cancer Research facility and Simon Cancer Center.

Van Nuys Medical Science Building

This facility is the primary educational building for the IU School of Medicine. It is also at a critical location for medical education, and needs renovation to continue as an educational, faculty, and research facility.

Primary Care Building, Wishard Site

This facility, constructed in the 1990's is in good condition and used for outpatient clinics and offices. It is proposed for renovation and re-purposing to accommodate School of Medicine administrative functions moving out of Long Hospital and Gatch Clinical Building, and should be renovated accordingly.

Ball Residence Hall and Rotary Building

These two structures are historic and part of the fabric of the original Ball Gardens. Ball Residence Hall should be renovated and retained as a residence hall. The Rotary Building is a unique structure that could be renovated for smaller scale programs, offices, or institutes.

OPEN SPACE INITIATIVES

Ball Garden

The historic Ball Garden, designed by the Olmsted Brothers, serves as a model outdoor environment. The firm envisioned Ball Nurses' Sunken Garden and Convalescent Park in 1929 as a therapeutic greenspace. The design included plantings, water features, and pathways conceived of as a healing space for visitors. Not all of these elements were carried through although the sunken gardens became a much-used, popular space for nursing students for three decades.

The area has lacked maintenance and there is now a plan in place for its revitalization. The themes which the Olmsted Brothers brought to this part of the IUPUI campus, which was originally envisioned to be 10 acres, will be assimilated into the organization of the new greenway system of the Ball Garden Extension precinct. These themes include outdoor space tightly defined by buildings, careful proportion of planting to open space, and dynamic natural forms contrasted with more rigid geometry.

Proposed Ball Gardens renovations, Rundell Ernstberger

The mature trees and well thought out landscape design form a pleasant oasis on campus. The gardens should be preserved, restored, and refurbished to achieve the original design intent.

Ball Garden Extension Open Space

A central open space aligned with the historic Ball Garden will become the unifying element of the district. Pedestrian-scaled streetscape elements, pathways, lawns, infiltration swales, and storm water treatment planters will unify the district and create an iconic open space for the IUPUI campus. Inclusion of intramural recreation fields are proposed as student housing is built out on campus.

Riverfront

It is important that the existing gardens successfully connect to the proposed garden extension and to Fall Creek and White River regional trail systems, through a series of pedestrian and bicycle paths. This connection will allow for better active and passive recreation use throughout the district, extending to White River State Park.

Proposed Ball Gardens Extension District

A refurbished riverfront park will be the front door for this area and will provide improved riverfront access for campus and city community members. Active recreational uses such as trails, paths, open lawns, and sport fields will terminate the Ball Garden extension as it meets the White River. New pedestrian walks and terraces will connect the street ends at Barnhill, Limestone, and Lansing to the riverfront and recreational trail.

Quadrangles

As new research, residential, and medical buildings are planned, their surrounding quadrangle and gathering space must be successfully developed. These spaces will unify the campus and create more livable and walkable pedestrian-scaled outdoor environments. Linked to the larger campus open space network by pedestrian walks and well-designed campus streetscapes

STREETSCAPE INITIATIVES

The Walk of Life

Similar to the proposed Cultural Trail on the east end of campus, a new pedestrian promenade is proposed along the length of Barnhill Drive from W. 10th Street to W. New York Street and the riverfront. This new promenade, the "Walk of Life" is intended as a uniquely designed and branded streetscape that knits together IUPUI's academic, healthcare, and research functions. Parts of it already exist in the form of the pedestrian mall and street closure of Barnhill Drive north of W. Michigan Street. Although Barnhill Drive needs to stay open to vehicular traffic for its remaining length, it should incorporate wide sidewalks, street trees, specialty paving, lighting, signage, and artwork to identify it as the Walk of Life corridor.

This unique streetscape design is intended to continue on W. 10th Street from IUPUI campus to Senate Boulevard, past the Canal District, up to the Neurosciences and Methodist districts of the Academic Medical Center Campus. Streetscape furniture, maps, mile markers,

Proposed Wishard Boulevard Re-alignment

interpretive features and other pedestrian amenities should be included to encourage healthy exercise and walking between districts.

New Roadways

Three new roadway projects are proposed for the build out of the West Campus: 1) the extension of Riley Drive to connect W. 10th Street to W. New York Street; 2) a re-aligned Wilson Street to directly connect W. 10th Street to Riley Hospital's emergency access drive and east entrance; and 3) a re-aligned Wishard Boulevard and new east-west street providing local circulation for the academic medical district from the VA Hospital to University Boulevard. Each of these streets will have different road characteristics depending on the expected volume of traffic, however, each should also be designed as high quality pedestrian-friendly streets, with appropriately scaled lighting, street trees, signage, and sidewalks.

INFRASTRUCTURE INITIATIVES

Chilled Water System

The existing Wishard site will be supplied by a new underground chilled water main loop. A new underground chilled water main is also planned to be routed along Vermont Street. In addition, another new underground chilled water main will be routed along University Boulevard between New York and Vermont Streets.

Steam and Condensate System

The new CBP will be connected to the existing system by a new underground steam main to be routed along Vermont Street. A new underground steam main supplying the area of the existing Wishard site is planned to connect to the existing system at Barnhill and Walnut Streets. Another new underground steam main is to be routed along Barnhill Street, from Vermont Street to North Street.

Electrical System

New underground electrical mains will feed the old Wishard Memorial Hospital site from Substation A. A new underground main between Substations B and C is to be routed along Vermont Street.

Telecommunications System

A new underground telecom main is to be routed along Wishard and University Boulevards. Another new underground telecom main is to be routed along New York Street.

Water System

The water supply is adequate to serve both the domestic and fire protection systems; however, the results of flow and pressure tests may require distribution system upgrades to serve new facilities. This analysis will be needed once the design of new buildings begins.

Storm Water and Sanitary System

As new buildings are developed, infiltration facilities should be incorporated to increase the quality of the stormwater flowing further downstream. The existing buildings and parking lots should be analyzed to determine whether infiltration facilities can also be incorporated as surrounding development occurs. Due to its position in the watershed, detention facilities are not included for this district.

Separation of storm sewers from combined sewers should also occur whenever possible as development occurs. Since several of the existing combined sewer mains are deteriorated or undersized, this will also allow for the storm sewers to be updated and adequately sized to account for existing conditions.

Much of the existing sanitary sewer system exists as a combined sewer. During large rainfall events, the combined sewers overflow and discharge sewage into Fall Creek and the White River. Separation of the storm and sanitary sewers should occur whenever possible as development occurs. Several of the existing combined sewers are deteriorated or undersized. Separation will allow for the sanitary sewers to be updated and adequately sized to account for existing conditions. Separation will also reduce or eliminate the overflow of sewage into the natural water courses.

BioMedical Research Facility, Arizona State University, SmithGroupJJR

ARCHITECTURAL GUIDELINES

Several themes inform the development of new buildings in this district: outdoor space tightly defined by buildings, dynamic natural forms contrasted with more rigid geometries, the use of large expanses of glass especially at walls surrounding open spaces. In addition to glass, other primary building materials within the district will consist of brick, limestone, metal panel, terracotta panels, and limestone accents.

Biomedical Research Gateway Buildings

The 4-6 story buildings that comprise the biomedical research quadrangle on the Wishard site must leverage this prominent location to create a significant iconic gateway to campus, defining an emblematic university presence that is civic in scale. The building footprints should form a concave form to imply reception and cradle the entry. New quadrangles and courtyards are to provide a sense of public space, with views and landscape carefully configured to convey an impressive institutional quality appropriate for Indiana University. Entrances must be significant and scaled appropriately to convey monumentality and visibility. Construction materials should convey a sense of permanence and stability through the use of natural limestone. Brick masonry or terracotta panels should also be utilized to assimilate the new structures within the existing medical campus context. Transparent glazing should be leveraged to promote interest and to activate the ground floor uses that line new quadrangles and open spaces.

Dental School

The new Dental School planned for Barnhill Drive between West Michigan and Vermont Street must have a welcoming character with highly transparent façades along Barnhill and Vermont. The ground floor must be active and house dynamic portions of the building program. Active uses on the ground floor should address the Vermont Street edge with permeable and pedestrian-friendly façades. Construction materials will consist of brick, metal panel and glass. Architectural refinements and articulations may be of a finer scale and grain than those found elsewhere in the adjacent buildings.

Cancer Research Building

The cancer research building planned along Michigan Street must sympathetically extend the aesthetic established by the existing adjacent structures while also defining a fresh new image for this important new program expansion. The 4-6 story structure should maintain a similar setback north of Michigan Street, solidifying the street edge and defining a clear threshold to the medical campus.

The building should be configured to form a formal courtyard along the northeastern quadrant of the site to reduce campus density and facilitate pedestrian circulation. The formal entrance should be located on Michigan Street adjacent to Clinic Drive, with a secondary primary entrance facing the formal courtyard. The base of the structure should support pedestrian permeability at multiple locations and convey a sense of transparency and openness. The building facades should be rendered with terracotta or brick masonry with significant limestone features along Michigan Street.

Integrated Health Sciences Education Building

The new facilities planned for integrated health sciences education will be located on internal campus sites, south of the realigned Wishard Boulevard. The new 4-6 story structures must assimilate to the established architectural context while also conveying a progressive new image appropriate for the programs they support. The new buildings should be configured to extend and link the existing research courtyards and align with the new street edge. Gaps should be provided between the structures to allow for convenient pedestrian circulation and connectivity. The north facing facades should relate to the Gateway Biomedical Research structures architecturally without competing. The south facing facades should fully integrate aesthetically with the existing research structures to provide a compelling unified campus context. Construction materials should be primarily terracotta or brick with minor limestone accents.

Parking Structures

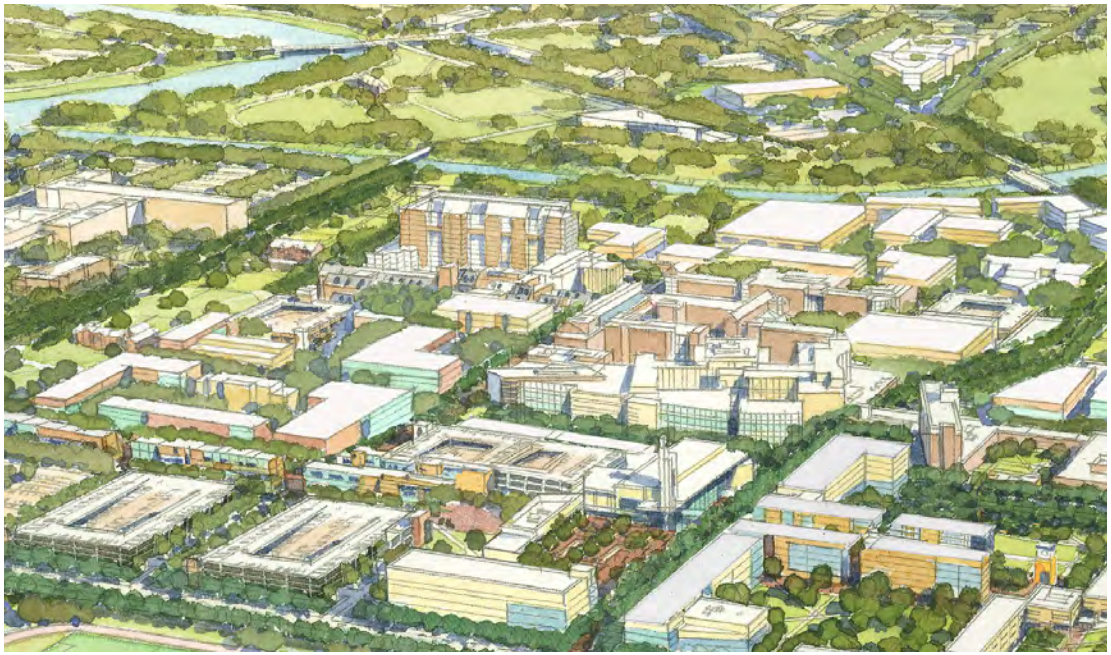
The parking structure proposed at W. New York Street and Barnhill Drive will be shielded from view by other buildings along Vermont Street and Ball Gardens. The south and west façades, visible from New York Street, should incorporate glass or metal mesh screening devices to create an appropriate aesthetic visible to these important campus corridors.

Objectives

- Monumental research/academic structures that reinforce gateway
- Large scale transparent façades define open green spaces
- Flexible building formats to accommodate changing uses

Primary Materials

Mainly metal panel and glass around perimeter of quadrangles; brick, terra cotta panels, and metal panel and glass at other facades.



West Campus District

BUILDING INITIATIVES

01 Biomedical Research and Faculty Office Complex

02 Future Cancer Research

03 Glick Eye Institute expansion

04 Dental School expansion and renovation

05 Vermont Street housing

06 Parking structures

07 Future Integrated Health Sciences Education Building

08 New physical facilities service building

09 Riley Tower addition, long term

10 Ronald McDonald House expansion

RENOVATION INITIATIVES

11 Building Renovations

12 Renovation of Ball Residence Hall and Rotary Building

OPEN SPACE INITIATIVES

13 Existing Ball Garden

14 Ball Garden extension with pedestrian paths connecting to regional trail system

15 Recreation fields

16 Riverfront park and fields

17 New pedestrian walks to river

18 New quadrangles

STREETSCAPE INITIATIVES

19 New streets and streetscape design

20 Re-aligned entrance street

21 Walk of Life pedestrian promenade

INFRASTRUCTURE INITIATIVES

22 New underground electrical mains

23 New underground steam mains

24 New underground telecom

25 New underground chilled water mains

26 Electrical Substation A

West Campus District Plan

DISTRICT 2: CENTRAL CORE

Central Core District Map

View of Central Core

Simon Cancer Center

EXISTING CHARACTER

The Central Core parallels University Boulevard and extends from Lockfield Green to the White River. Several buildings including Cavanaugh Hall and the Lecture Hall define a pedestrian environment that is opaque, uncomfortable and difficult to navigate. Several structures present windowless façades and service areas along primary pedestrian and vehicular corridors. The large parking structures that are aligned along West Michigan Street and Vermont Street contribute to a negative pedestrian experience.

North of West Michigan Street, large hospital facilities and the University Hotel and Conference Center also promotes a less than ideal pedestrian experience. The IUPUI Natatorium and athletic facilities to the south are similarly large structures that celebrate building mass and bulk with minimal street level articulation, transparency, or pedestrian orientation.

The new Campus Center, in contrast, is largely transparent along University Boulevard, West

Michigan and Vermont Streets. It intentionally connects interior and exterior spaces and is an extremely active campus hub. The new IU Simon Cancer Center at the corner of University Boulevard and West Michigan Street has also added significant activity to the district.

Existing Qualities

- Large expanses of open space
- Vast surface parking lots and structured parking
- Few pedestrian oriented facades

DEVELOPMENT OPPORTUNITIES

The Central Core and University Boulevard will serve as the vibrant and active home for some of the most central functions of the University, including academics, administration, medical, research, health care, and student life. The district will have a coherent design character and its physical presence will embody the identity of IUPUI.

New development is planned for University Boulevard at Lockfield Green. This site will serve as a gateway to the campus core. The character of this development should work in tandem with the West Campus gateway site at Indiana Avenue and University Boulevard.

Particular emphasis is placed on creating active exterior spaces connected to visually exciting interior spaces. A ceremonial plaza at the intersection of University Boulevard and Vermont Street will establish this district's architectural character. The plaza's surrounding structures will be 4-6 stories in height and of an urban scale consistent with the Campus Center, the central feature of the plaza and of the entire district.

Ground level activity in particular will be prominently displayed throughout the district. Building and landscape design elements will encourage daily gathering as well as a wide variety of more formal University and civic events. The overall development is relatively dense consistent with that of its urban context, and the district will be characterized as the campus' active academic hub.

Development Objectives

- Etablish University Boulevard as a prominent campus gateway
- Encourage density and urban form with emphasis on the pedestrian experience
- Create a major public space and destination gathering space at the heart of campus
- Integrate research, medical and academic activities
- Reinforce the student experience
- Connect to the riverfront
- Create a unified distinctive architectural character.

BUILDING INITIATIVES

Academic, Administrative, and Student Life Buildings

New academic, administrative, and student life buildings will front University Boulevard and frame the edges of a new central campus piazza. Development of these buildings will provide replacement space for Cavanaugh Hall, the Lecture Hall, and Taylor Hall. Future development will be 4-6 stories in height and in scale with the existing Campus Center, the central feature of the plaza and of the

View of the Central Core

entire precinct. New building entrances will be prominently displayed and face University Boulevard and the plaza to further define and enhance the urban street wall and emphasize human scale while promoting gathering and activity.

Building uses will mainly include shared instructional space, academic departmental and administrative offices, student life facilities, as well as distributed community spaces including meeting rooms, lounges and cafes, to complement Campus Center functions. A Wellness and Academic Center containing health and fitness facilities and general instructional and academic spaces is one of the possible uses for new development fronting the central piazza. Replacements for the existing Lecture Hall and Cavanaugh Hall structures are recommended.

New undergraduate residential development along Vermont Street will be immediately adjacent to the plaza, signifying the integration of student life with the full range of University academic environments.

South of W. New York Street

To create visual connectivity to the riverfront park, it is recommended that the Michael A. Carroll Stadium grand stands be removed. The track will remain and be improved as part of the active recreational portion of the park.

New Academic/Administrative Building on University Boulevard

The district's northern edge will be established by a new building and parking garage on University at Lockefield Green, highly visible from the major vehicular entrance to the campus at Indiana Avenue and University. The parking garage will be shared with the University Hospital. The new building at Lockefield Green may contain facilities for central University administration and will create a strong academic, institutional presence among the adjacent IU Hospital and University Hotel and Conference Center buildings.

Parking Structures

The new parking structure at University Boulevard and North Street will serve University

Hospital patients and visitors as well as members of the University community. The structure will be shielded from view along University Boulevard. Its southern edge along North Street should include a ground floor façade of potential retail or service uses, to help activate the street and screen views of the University Conference Center and Hotel. An adequate setback should be provided from the Lockefield Green residences to the north of the new garage.

RENOVATION INITIATIVES

Natatorium

As identified earlier, the Natatorium is a significant athletic venue on campus. It has had significant deferred maintenance issues and is in need of major renovation.

Business SPEA and Technology Buildings

Both buildings in the central academic core are in need of renovation, with labs and classrooms undersized for their use. The Business SPEA building is an unusual and dimension for its program, and should be considered for alternative uses should this program be relocated.

OPEN SPACE INITIATIVES

Central Piazza

The Central Piazza, conceived as the ceremonial and emblematic campus outdoor space at the intersection of University Boulevard and Vermont Street will unify the district and establish its character. The Piazza will be urban in nature and largely paved. Landscape design elements will encourage daily gathering as well as a wide variety of more formal University and civic events. The Piazza will be an academic crossroads, surrounded by mixed-use academic, office, recreation, and student services functions. With direct adjacencies to Vermont Street's residential resources and athletic resources south of New York, the Central Piazza is envisioned as the memorable and iconic space on the IUPUI campus.

Quadrangles

The Master Plan proposes a tighter, more appropriately urban, pedestrian scale grid for the campus. New and renovated quadrangles should also be detailed and designed at a more pedestrian-oriented scale. The new outdoor spaces will create a collegiate atmosphere, encourage activity and interaction, and form part of a connected series of open spaces that define the Central Core and reference the larger campus framework.

White River Park Development

This system of small scale and pedestrian open spaces will connect with the development of an improved riverfront park directly south of New York Street. The park will be designed to encourage more formal and informal recreation, with paths that connect to the levee and regional trail system south of New York. A new artificial turf and multi-purpose recreation field along the river will become a new destination.

University River Terrace

A new pedestrian plaza/terrace space is proposed at the bend of University Boulevard and the White River. This terrace will serve as a gateway point of connection between regional public space and the campus, linking the White River and recreational trail to campus recreational uses.

New Arts Mall

Similar to the Ball Garden extension of the West Campus, a second major north south open space is proposed from the Wood Memorial Fountain and Plaza across New York Street to the NCAA headquarters and Hall of Fame. This broad mall will open up views and access from the center of the academic core directly to the cultural facilities on the Central Canal and the White River State Park. Strategic groves of trees and pedestrian spaces will break up the scale of the space into a series of outdoor rooms. The landscape is intended to be an urban, innovative, and artistic expression, with interpretive exhibits and public art in conjunction with the adjacent Herron School of Fine Arts.

Blake Pedestrian Promenade

A wide, tree-lined pedestrian promenade is proposed adjoining Blake Street, parallel to the Arts Mall, opening another major pedestrian route from campus to the river. Liner residential buildings on the east facades of the existing and planned parking structures will help create a more pedestrian-friendly and urban edge to this new campus connection.

Blake Street River Terrace

A second major pedestrian plaza/terrace at the riverfront is proposed at the terminus of the pedestrian promenade, by the future NCAA expansion. This easement and public space will provide both views and a direct connection to the terminus of the Central Canal at the White River.

STREETSCAPE INITIATIVES

Streetscape

W. Michigan and New York Streets

As part of the conversion and lane re-configuration of West Michigan and New York Street to two-way traffic, the pedestrian streetscape along these two major campus corridors should be reconsidered. A new streetscape design compatible with the staggered double row of trees established by the Zion and Breen Landscape Master Plan should be incorporated, with new pedestrian-scaled lighting and street trees between the sidewalk and the curb.

Consistent with West Michigan and New York Streets' conversion to two-way streets, a denser grid system is recommended.

Existing Soccer Fields south of W. New York Street.

University of Cincinnati Main Street and Bearcat Plaza

Quadrangles

An important component of the denser grid system is the proposed extension of University Avenue south of New York Street. The extension will continue east-west in order to connect University to Blackford Street, unifying campus circulation and providing active street frontage for existing and proposed buildings.

Blake Street Extension
Blake Street is proposed as a street connection from New York Street to the new University Boulevard east west extension. This will provide local access to facilities, and a front door for future development on the mall.

Southern Entrance and Drop-off to Library
A new driveway and drop-off is proposed south of University Library to provide better ADA access. Modification to the ground floor of the Library to accommodate a new southern entrance is also proposed.

Mid-block Pedestrian Crosswalks
Pedestrian mid-block crossings on Michigan, New York, and North Streets are proposed to help facilitate pedestrian movement through the super block of the academic core. Clearly marked pedestrian crossings will utilize potential medians in Michigan and New York as part of their redesign and conversion to two-way streets.

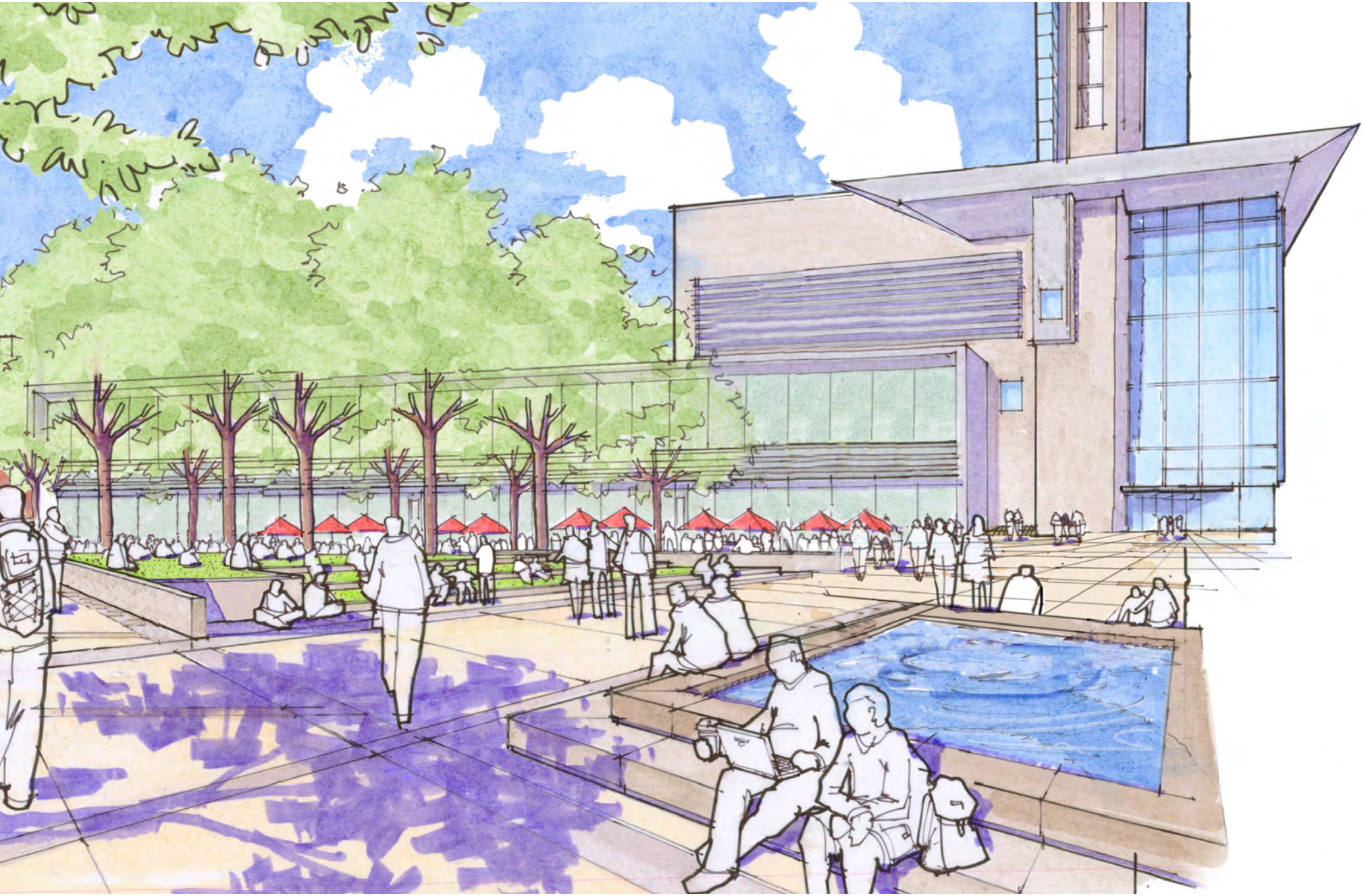
INFRASTRUCTURE INITIATIVES

Chilled Water System
A new underground chilled water main loop is to supply the area of the existing Wishard site. In addition, a new underground chilled water main is planned to be routed along University Boulevard from W. New York Street to Vermont Street.

Steam and Condensate System
Wishard Boulevard is proposed to receive a new underground steam main to supply the area of the existing Wishard site.

Electrical System
The new underground electrical main planned to supply the area of the existing Wishard site

Piazza at the Central Core



is to be routed from Substation A along Walnut Street, then north, west of University Boulevard. Another new underground electrical main is to be routed north from Substation C, proceeding along New York Street to reach Blackford Street to the east and University Boulevard to the west.

Telecommunications System

A new underground telecom is to be routed from Barnhill and Walnut Streets to Blackford and Michigan Streets. University Boulevard and New York Street are also planned to have new underground telecom routed along them.

Water System

The water supply is adequate to serve both the domestic and fire protection systems; however, the results of flow and pressure tests may require distribution system upgrades to serve new facilities. This analysis will be needed once the design of new buildings begins.

Storm Water and Sanitary System

As new buildings are developed, infiltration facilities should be incorporated to increase the quality of the stormwater flowing further downstream. The existing buildings and parking lots should be analyzed to determine whether infiltration facilities can also be incorporated as surrounding development occurs. Due to its position in the watershed, detention facilities are not included for this district.

Separation of storm sewers from combined sewers should also occur whenever possible as development occurs. Since several of the existing combined sewer mains are deteriorated or undersized, this will also allow for the storm sewers to be updated and adequately sized to account for existing conditions.

Much of the existing sanitary sewer system exists as a combined sewer. During large rainfall events, the combined sewers overflow and discharge sewage into Fall Creek and the White River. Separation of the storm and sanitary sewers should occur whenever possible as development occurs. Several of the existing combined sewers are deteriorated or undersized. Separation will allow for the sanitary sewers to be updated and adequately sized to account for existing conditions. Separation will also reduce or eliminate the overflow of sewage into the natural water courses.

ARCHITECTURAL GUIDELINES

The Piazza will establish the Central Core's architectural expression. Building and landscape design elements will encourage daily gathering as well as a wide variety of more formal University and civic events. The Piazza's surrounding structures will be 4-6 stories in height and of an urban scale consistent with the existing Campus Center.

The district will have a unified, coherent academic character and its physical presence will embody the identity of IUPUI. Building materials will consist mainly of Indiana limestone and large expanses of glass especially at ground level to connect interior and exterior activity. The General Design Guidelines for Active Spaces apply particularly to the development of this district. Building entrances should be oriented to the Piazza. The character

of the buildings that surround the Piazza should continue that established by the Campus Center which will remain a strong visual focus. Limestone building masses with punched openings should form a lively contrast with glass building forms and surfaces.

Each structure should be vertically integrated, containing a deliberate mix of functions. Interdepartmental interaction should be encouraged. Multi-level places for interaction at building entries and on upper floors should form glassy design features both at the exterior and within the interiors. While common interaction spaces may be fixed elements of the design, other program areas should be designed to anticipate future reconfiguration and evolving uses.

In addition to shaping the Piazza, building design should activate University Boulevard and define it as the academic "main street." New buildings, in marked contrast to Cavanaugh Hall and its windowless expanses and service areas, will be oriented toward University, with a high degree of visual connections between exterior and interior activity. Entrances will be prominently displayed and transition spaces including colonnades and covered exterior spaces will emphasize human scale and promote gathering and activity.

The new building on University at Lockefield Green will create a strong academic, institutional presence among the adjacent University Hospital buildings and University Hotel and Conference Center. Like the gateway buildings at Indiana Avenue and University Boulevard, Its materials should consist of limestone and glass, and the building should be considered a monumental, emblematic University landmark.

The Central Core will contain a variety of structures housing a variety of functions. Visual unity will be created by a relatively unified palette of materials – mainly limestone and glass – and an emphasis on creating active exterior spaces connected to visually exciting interior spaces.

Objectives

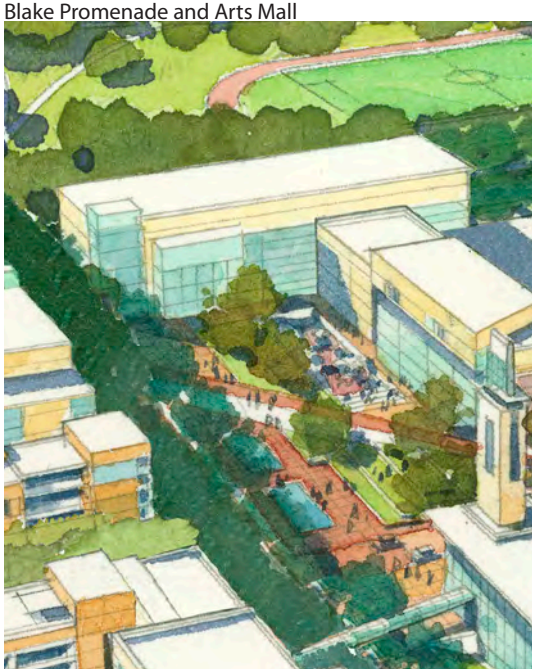
- Vibrant outdoor spaces
- Massing, entries and transparency emphasize interior and exterior connections
- Buildings display activity, circulation and meeting places
- Unified academic character

Primary Materials

- Mainly limestone and glass for academic buildings
- Brick, metal panel with limestone accents for residential buildings

Drachmann Hall, University of Arizona, SmithGroupJJR

Blake Promenade and Arts Mall



Central Core, Detail

BUILDING INITIATIVES

01 Academic buildings

02 Academic/administrative building

03 Student recreation and classroom building

04 Vermont Street housing

05 Iconic tower/campanile

06 Future liner residential buildings

07 New parking garages

RENOVATION INITIATIVES

08 Renovation of Natatorium

09 Renovation of Technology Building, Business SPEA

OPEN SPACE INITIATIVES

10 Central Piazza

11 Quadrangles

12 White River paths and active recreation uses

13 University River Terrace

14 Arts Mall

15 Blake Promenade

16 Blake Street River Terrace

STREETSCAPE INITIATIVES

17 University Boulevard extension

18 Blake Street extension

19 Southern entrance and Library drop-off

20 Mid-block crossings

INFRASTRUCTURE INITIATIVES

21 New underground electrical main

22 New underground steam main

23 New underground telecom

24 New underground chilled water main

Central Core District Plan

DISTRICT 3: CULTURAL TRAIL-BLACKFORD STREET

Cultural Trail-Blackford Street District Map

Blackford Street Aerial

EXISTING CHARACTER

The Cultural-Trail Blackford Street district follows the Blackford Street corridor, running north-south between Indiana Avenue and the canal, west of West Street.

The area currently contains academic buildings including Engineering and Science and Technology. The School of Art occupies the successfully renovated former School of Law building south of New York Street.

West Street forms the district's eastern edge. Physically as well as symbolically, West Street establishes the interface between the campus and the Indianapolis urban core. The new School of Law building and Informatics and Communications Technology Complex (ICTC) are gateway structures that convey a monumental civic presence for the University along West Street. Large parking lots however diminish this area's visual quality.

The scale of the spaces between buildings is very large. Pedestrian circulation patterns are not

Inlow Hall, School of Law, SmithGroupJJR

Engineering, Science and Technology

Eskenazi Hall, School of Art

defined by the building infrastructure and lack coherence. Buildings appear as independent entities rather than linked related facilities that work together to form a cohesive campus environment. The southern portion of the district is defined by Indianapolis's primary cultural area, with major cultural attractions that include the Indiana State Museum and NCAA Hall of Champions.

Existing Qualities

- Variety of building forms
- Lack of coherent circulation patterns
- Vast outdoor spaces
- West Street gateway, IUPUI civic identity
- Major cultural attractions adjacent

DEVELOPMENT OPPORTUNITIES

The Cultural Trail – Blackford Street district will be a dynamic, engaging urban environment, containing a mix of facilities to serve the University and Indianapolis communities. The district will form a coherent campus edge and provide a positive identity at this important city interface.

New developments will fundamentally connect the University to its urban setting and will eliminate existing physical and perceived barriers. A nexus of campus and community life, the pedestrian-oriented district will contain a wide variety of academic, cultural, retail, housing, and civic amenities. There are several opportunities for establishing new connections, partnerships, and civic and University relationships, utilizing the Cultural Trail as a catalyst for development.

Development Objectives

- Establish mixed-use facilities along Indiana Avenue between West and Blackford
- Celebrate and embrace the Cultural Trail along Blackford
- Develop infill sites to create more appropriately scaled spaces
- Foster connectivity to the White River State Park cultural district

BUILDING INITIATIVES

Indiana Avenue and Blackford Street

The northern edge will be established by new

Madame Walker Theater

South Campus Gateway, Ohio State University, Elkus Manfredi

buildings within the Indiana Avenue cultural district. The Master Plan proposes a mixed-use development on the block at the intersection of Indiana Avenue and West Street across from the Madame Walker Theater. Redevelopment of this formerly grand avenue will engage the community and provide desirable retail and commercial amenities. Directly opposite the Madame Walker Theatre sits the Sigma Theta Tau Center for Nursing Scholarship. Currently, the main entry to this building is from the surrounding parking and opposite the public avenue. The surface parking will be transformed to green space and drop-off, and the Sigma Theta Tau building should be retro-fitted to front Indiana Avenue.

Development along Indiana and Blackford represents an opportunity to collaboratively realize the planning vision at the urban scale. Design of new buildings and public spaces will integrate new facilities and academic space into an evolving city cultural district. The intersection of Blackford Street and Indiana Avenue will mark an important gateway entry.

Large parking structures will be placed at the interior of the blocks to serve visitors, residents, and members of the campus community. Development along Indiana Avenue will extend from West Street to Blackford Street with retail, commercial, and residential uses concentrated in the vicinity.

Academic University Buildings

Blackford Street will include a number of new academic buildings. Highly active functions should be located at their ground floors when possible to further engage Indiana Avenue's mixed-use environment.

New science labs and engineering buildings will be located at the northwest corner of New York, West Michigan, and Blackford Streets. The building footprint creates an urban street wall condition that encourages a pedestrian-friendly sidewalk.

A new academic site will anchor the southern stretch of the Blackford Street-Cultural Trail, immediately south of the School of Art. Located

adjacent to the arts district, this site provides the opportunity for a unique, iconic structure that engages the street and the larger context. The new buildings will complement the major cultural and recreational destinations at White River State Park. The Tennis Center currently on site will be relocated off of the main campus, making more seamless connections between the University and White River State Park possible.

North West Street

The eastern edge of the district is defined by West Street, a primary gateway to the IUPUI campus especially for visitors to the University. A busy traffic corridor between major interstate highways, West Street is also the primary address for governmental, cultural and civic institutions. The Indiana Government Center, Indiana Historical Society, Eiteljorg Museum and Military Park are immediately proximate to the University along its West Street edge. Physically as well as symbolically, West Street establishes the interface between the campus and the Indianapolis urban core.

Proposed Blackford-Cultural Trail District

Future building sites in this area include the northwest corner of West Michigan and West Streets envisioned as appropriate for a future professional school and the site near the current intersection of Vermont and California Streets identified for future academic or administrative uses. Several characteristics of future structures are anticipated by the design of Inlow hall, the School of Law, and by the Informatics and Communications Technology Complex (ICTC). These characteristics include setbacks, materials and specific elements and design features intended to convey a monumental civic presence for the University along the West Street corridor.

Parking Structures

A new parking structure has been constructed at the interior of the block between Indiana Avenue, Blackford Street and West Michigan Street. The setbacks provided will allow future mixed use office, retail, and academic buildings along their perimeter that will screen the garage from view. Future expansion of the new parking garage to the north will also accommodate increased parking demands in the area.

In addition, underground structured parking is envisioned to serve the academic and University buildings in the area of the ICTC and Inlow Hall.

Inlow Hall School of Law, SmithGroupJJR

OPEN SPACE INITIATIVES

Mid-Block Pedestrian Environment and Plaza

In conjunction with the urban streetscape on Indiana Avenue, a smaller urban space and pocket park is proposed at the terminus of California Street to create a break in the street wall of Indiana Avenue, provide views to the Walker Theater, and facilitate pedestrian movement. This plaza is proposed as an intimate scale urban space with pervious pavement, landscape, and high quality site furnishings and amenities.

Academic Quadrangles

New academic quadrangles will be defined by future academic buildings along Blackford Street and should be detailed and designed at a pedestrian-oriented scale. The new outdoor spaces will create a collegiate atmosphere, encourage activity and interaction, and form part of a connected series of open spaces that complement the terraces at Inlow Hall and ICTC. They can also be utilized for innovative urban rain gardens to treat local storm water run-off.

STREETSCAPE INITIATIVES

Indiana Avenue Streetscape

The streetscape on Indiana Avenue is envisioned as a classic urban streetscape, defined by a strong streetwall of new development with retail and active ground floor uses, encouraged to spill out onto the street. Broad sidewalks, a high quality of finish and level of detail, street trees, pedestrian scale lighting, and street furniture will re-establish this district as a lively commercial environment. Innovative design that supports sustainable measures such as porous pavement and small scale infiltration planters should also be included.

Blackford Street-Cultural Trail

Blackford Street is identified as the campus route of the Indianapolis Cultural Trail, an urban walk and bike route that strategically connects districts, cultural facilities, and entertainment amenities throughout the city. The Cultural Trail is made possible by a public and private collaboration led by the Central Indiana Community Foundation, the City

of Indianapolis and several not-for-profit organizations devoted to building a better city. The organization has developed landscape and materials guidelines for specific streetscape improvements. These urban enhancements will unify the Cultural Trail as it passes through IUPUI, establishing its distinctive character. Construction of the Cultural Trail is scheduled to begin in summer of 2011, within the larger campus and city framework.

Campus Arrival and Drop-Off at N. West Street

A more formal entry space and vehicular drop-off is proposed where Vermont Street enters campus from West Street. A similar high quality landscape design of the West Street campus edge should be carried through this new arrival point.

INFRASTRUCTURE INITIATIVES

Chilled Water System

A new underground chilled water main is to be routed north from W. New York Street along Blackford Street, and extending to North Street. A new underground branch main is proposed to be routed east from Blackford Street along Michigan Street to California Street, then north.

Steam and Condensate System

New underground steam mains are proposed to be routed along Blackford Street to the Lockefield Green area. In addition, a new underground branch main is to be routed from Blackford and Michigan Streets east to California, then north.

Electrical System

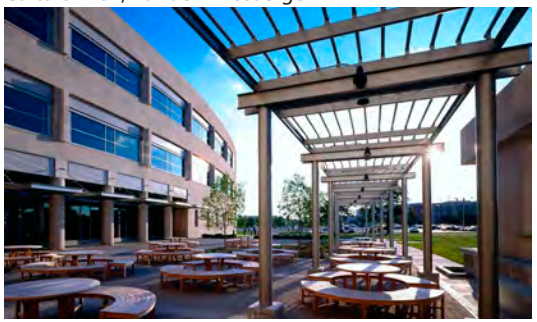
New York Street is proposed as the location for a new underground electrical main that is to be routed east along this roadway. The electrical main will then turn north to run along Blackford Street, then east along Michigan Street, and north along California Street.

Telecommunications System

A new underground telecom is planned to be routed east along North Street and south along Blackford Street to Michigan Street.

South Campus Gateway, Ohio State University, Elkus Manfredi

Cultural Trail, Rundel Ernstberger


Inlow Hall School of Law, SmithGroupJJR

Water System
The water supply is adequate to serve both the domestic and fire protection systems; however, the results of flow and pressure tests may require distribution system upgrades to serve new facilities. This analysis will be needed once the design of new buildings begins.

Storm Water and Sanitary System
As new buildings are developed, infiltration facilities should be incorporated to increase the quality of the stormwater flowing further downstream. The existing buildings and parking lots should be analyzed to determine whether infiltration facilities can be incorporated as surrounding development occurs. Due to its position in the watershed, detention facilities are not included for this district.

Separation of storm sewers from combined sewers should also occur whenever possible as development occurs. Since several of the existing combined sewer mains are deteriorated or undersized, it will allow for storm sewers to be updated to account for existing conditions.

Much of the existing sanitary sewer system exists as a combined sewer. During large rainfall events, the combined sewers overflow and discharge sewage into Fall Creek and the White River. Separation of the storm and sanitary sewers should occur whenever possible as development occurs. Several of the existing combined sewers are deteriorated or undersized. Separation will allow for the sanitary sewers to be updated and adequately sized to account for existing conditions. Separation will also reduce or eliminate the overflow of sewage into the natural water courses.

ARCHITECTURAL GUIDELINES

The Cultural Trail district will be a dynamic urban environment with an engaging architectural character. Its design will create nexus of campus and community life.

New buildings will serve as a civic interface and gateway to the University. Building massing of 4-6 stories should form a unified street-wall datum, within which a variation of materials and treatments will create a lively urban texture. A diversity of architectural expression should reinforce a coherent whole.

Buildings should reinforce the street and encourage activity with transparent storefront treatment at the ground level. Large parking structures at the interior of the blocks will be concealed along street edges by the new mixed-use structures. Materials to include brick, stone, glass and metal panel should be durable and convey a sense of permanence and quality.

The intersection of Blackford Street and Indiana Avenue should be celebrated with a symbolic vertical element, possibly a sign, sculpture, tower or vertically extended building form.

Buildings along Blackford Street should continue the pattern established at Indiana Avenue, however more academic or University facilities may be visually signaled by incorporating more limestone within the overall palette of materials and transparent storefront treatments should be maintained. Ground floor uses may contain active centers and institutes.

The configuration of the future science and research building at New York and Blackford Streets should provide a sense of enclosure and serve to create a more appropriate human scale for the active University Library fountain plaza. Materials for the laboratory complex should include limestone and glass.

Additional material selections may include brick and metal panel to reference its position in the Cultural Trail district.

In the long term, the building site south of Herron School of Art's Eskenazi Hall provides an opportunity for a significant institutional or cultural facility. This block should encourage more signature architecture, with the east facade designed to relate to Military Park and create a striking civic presence. The west façade should relate to and reinforce a newly configured Arts Mall, extending from the National Institute for Fitness and Sport and new NCAA garage to the south, to the University library to the north, forming a visual connection to the Library's Fountain Plaza. Buildings in the cultural district are each objects meant to be viewed from all sides. The new development should equal its neighbors and be a unique, iconic structure. The new building at the northwest corner of West and West Michigan Streets should form a relationship with the ICTC to establish a formal gateway to the University. The ICTC's design orients two square tower elements toward the intersection, suggesting that the new building completes the gesture by incorporating a related building form. The new building should also follow the height datum and setback along West Street established by the existing structures. Its materials should consist of limestone and glass. Entrances should be monumental features, surrounded by porches or colonnades, contributing to an institutional character.

Inlow Hall and ICTC will create symmetrical bookends for the new building at the current intersection of Vermont and California Streets. This new building's dominant form should appear as a strong object and formal symbol. Subsidiary building masses and elements like colonnades and porches should frame and directly relate to a formal lawn, together creating a distinguished and stately setting. Building materials should be mainly limestone and glass. This building will also occupy a significant frontage along Blackford Street within the Cultural Trail District and will perform a dual role. When viewed and approached from the west, its materials, character, and relationship to landscape elements may form a more direct relationship to surrounding structures. The setback along Blackford Street will create a space that should be developed as an intimately-scaled urban courtyard.
The Cultural Trail Precinct will be a vibrant urban development, establishing new connections, partnerships, and civic and University relationships. Embracing a deliberate

Inlow Hall School of Law, SmithGroupJJR

mix of functions and a particularly urban design sensibility for both street-wall and iconic new buildings will create a landmark neighborhood, integrating the University with its Indianapolis context.

Objectives

- Celebrate the scale of the street
- Buildings to contain a mix of uses with active ground floors
- Link to civic and cultural activities
- Reinforce West Street as IUPUI's civic interface

Primary Materials

- Lively mix of materials at Blackford Street and Indiana Avenue: brick, terra cotta panel, metal panel, glass, limestone accents
- Primarily limestone and glass for University academic and administrative buildings

Proposed Blackford-Cultural Trail District

BUILDING INITIATIVES:

01 Mixed use residential, commercial and office buildings

02 Academic buildings

03 Special Use

04 Proposed above grade parking structures

05 Proposed below grade parking structures

OPEN SPACE INITIATIVES

06 Academic quadrangles

STREETSCAPE INITIATIVES

07 Blackford Street-Cultural Trail

08 Indiana Avenue streetscape

09 Campus Arrival and Drop-Off at N. West Street

10 Mid-block pedestrian crosswalks

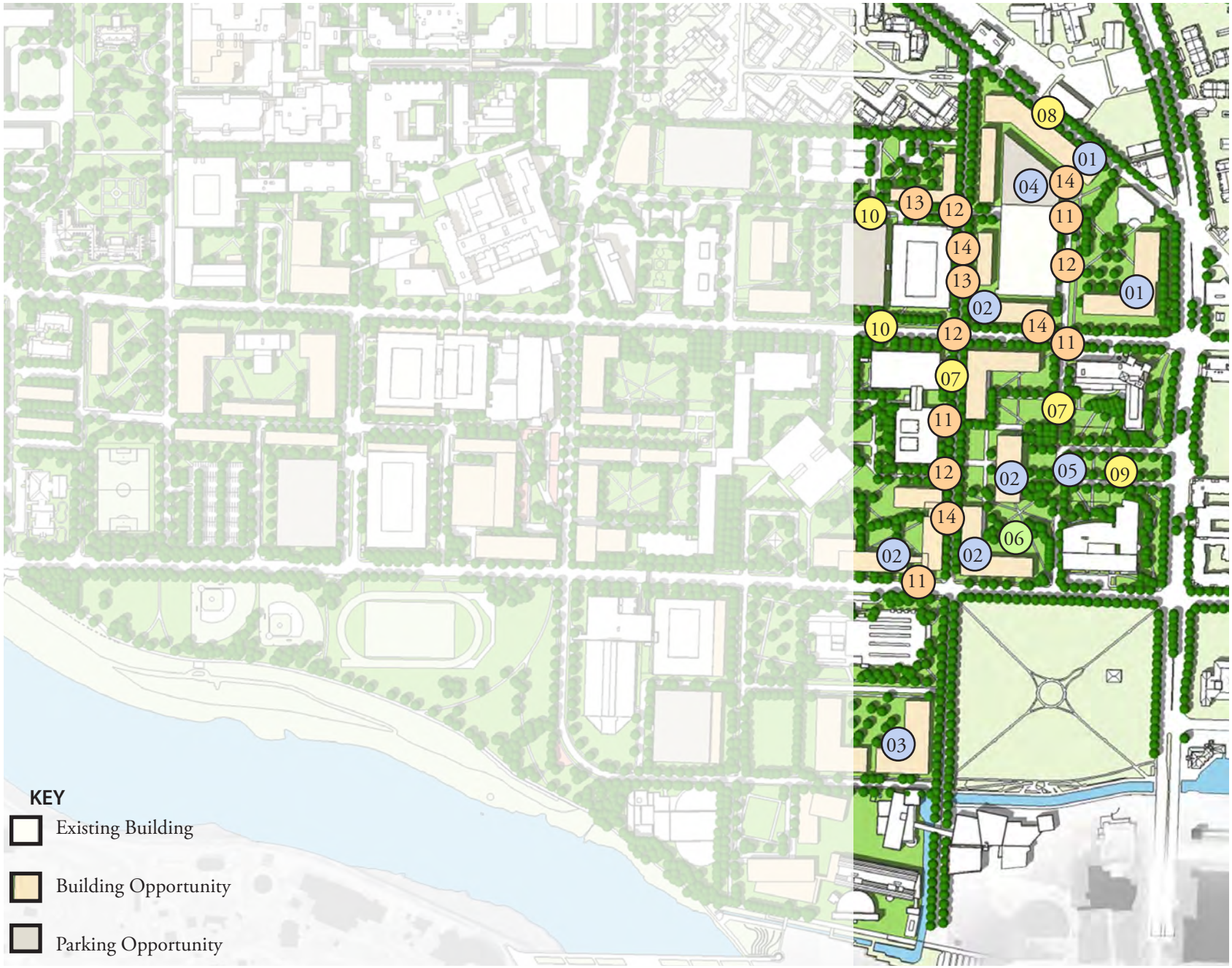
INFRASTRUCTURE INITIATIVES

11 New underground electrical main

12 New underground steam main

13 New underground telecom

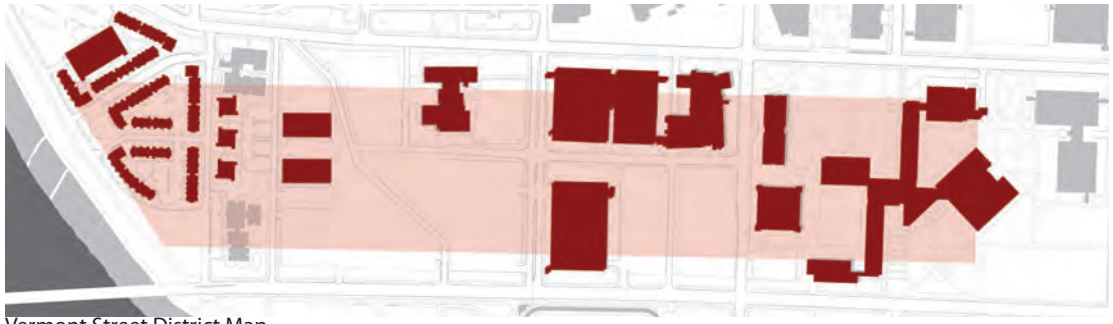
14 New underground chilled water main



Cultural Trail-Blackford Street District Plan

DISTRICT 4: VERMONT STREET

Vermont Street Aerial



Vermont Street District Map

EXISTING CHARACTER

Vermont Street currently serves as a parking corridor. To the west, the newly constructed West Campus Apartments on the Riverwalk offer 750 beds in apartment-style one, two, and four bedroom units. The design of these existing apartments creates a series of connected objects in an arrangement more typically found at the urban periphery or suburbs rather than at the central downtown urban core.

Existing Qualities

- Surface parking lots, parking garages
- Campus apartments on the Riverwalk

Vermont Street

River Walk Apartments

Vermont Street Parking Garage

DEVELOPMENT OPPORTUNITIES

IUPUI is in a rapid process of development and transformation. To realize its goal of becoming a preferred undergraduate institution the University will build new undergraduate housing facilities on campus.

Traditionally commuter-based with notable graduate and professional programs, IUPUI has identified the strategic goal of becoming a preferred undergraduate institution. In order to implement this goal the master plan identifies opportunities for graduate and undergraduate housing facilities for the future. The recently constructed apartments on the River walk opened in 2009 and provide approximately 750 of the existing stock of approximately 1,100 beds. The next phase of residential development is expected to add approximately 2,000 new beds in the Vermont Street precinct. The residential units will contain suites, traditional undergraduate dorms, and both single and double loaded corridors. The new residential development is envisioned as a uniquely urban environment, tied to its Indianapolis context and contributing to a compelling and unique undergraduate experience.

Development Objectives

- Develop Vermont as an import east-west pedestrian connection
- Create a vibrant urban street with a variety of residential types and a wide variety of first floor services and amenities
- Encourage and foster the student life experience within the proposed streetscape and building designs
- Create opportunities for enhanced gathering space

BUILDING INITIATIVES

Vermont Street Residential Units

Residential configurations will recognize differing needs of IUPUI's diverse student population. Consistent with an overall trend for market-style apartments, one arrangement will be in suites containing various number of individual bedrooms with shared living rooms, kitchens and bathrooms. At the same time the development could contain traditional

View of the Vermont Street District

undergraduate dormitory configurations, with double-loaded corridors between individual and shared bedroom/living rooms and larger shared bathrooms, lounges and amenities.

The new units will be arranged in a dense "alley-like" configuration consisting of structures 3-5 stories in height. This arrangement will create a pedestrian-oriented residential space that weaves through the campus, from the existing campus housing at Limestone Street to the west through to the University Library in the core campus. Rather than an isolated district, the residential precinct will deliberately connect to areas that predominately contain academic, recreational and student life facilities. The design approach recognizes and celebrates undergraduate experience as an integrated continuum.

Vermont Street residential development should form a unified linear development, eventually concealing the Barnhill Drive garage and Vermont Street garage from view.

The residential buildings will contain spaces for gathering including study rooms and seminar rooms especially at their ground floors. Ground floors will also contain small-scale recreational amenities and retail, including cafés, student-run shops, and convenience stores. Retail uses should be concentrated at the corners of street intersections in typical district fashion.

Steger Student Life Center, University of Cincinnati, Moore Ruble Yudell

Tower

The relatively consistent and smaller scaled street wall established along Vermont will be punctuated by a tower component at Vermont's termination at the existing Business/SPEA Building. Similar to a campanile and piazza, the tower will be a bell tower or other element of similar scale and relationship. Placed at Vermont Street's mid-section near the center of the campus, the tower element provides a visual marker and a link to the Indianapolis tower skyline in the near distance, visually bridging the distance between campus and downtown.

OPEN SPACE INITIATIVES

Academic Quadrangles

Several new academic quadrangles will be formed by Vermont Street residential buildings and new academic buildings within other campus districts. These spaces will provide opportunities for informal recreational uses adjacent to the student residences. The design of the building facades that address these spaces may vary from those developed along Vermont Street. Their design should recognize their primary role in defining and enclosing outdoor space, and acknowledge the immediate adjacency of academic buildings with a much different scale and use.

STREETSCAPE INITIATIVES

Vermont Streetscape

While certain stretches of Vermont Street including the area between University Boulevard and Business/SPEA will remain or be closed to vehicular traffic, the area from just west of the Campus Center to Limestone Street will remain open, however the new configuration will discourage significant vehicular volume. Vermont Street is mainly intended for local, residential traffic.

The existing parking garages in the vicinity of Barnhill Drive and Vermont will remain and their faces along Vermont will be 'veneered' by new residential buildings. The garage entries on Vermont should be studied for the possibility of consolidation or relocation onto W. New York and Michigan Streets.

Vermont Street Existing Conditions

Proposed Vermont Street Massing

Vermont Street will be an extremely distinctive place contributing a unique urban character to the University. Its layout follows the overall planning principles established by the Master Plan, creating a clear east-west pedestrian corridor punctuated by the Ball Gardens Extension Precinct, the Undergraduate Core, and the Cultural Trail, each running north—south. Vermont Street will be a true district, a place of interaction fostering memorable human connections, the heart of campus life and of the IUPUI campus.

Eye Level View of Vermont Street

INFRASTRUCTURE INITIATIVES

Chilled Water System

A new underground chilled water main is to be routed along Vermont Street. In addition, a new underground chilled water main is also to be routed along University Boulevard between New York and Vermont Streets.

Steam and Condensate System

The proposed new CBP will be connected to the existing system via a new underground steam main to be routed along Vermont Street.

downstream. The existing buildings and parking lots should be analyzed to determine whether infiltration facilities can also be incorporated as surrounding development occurs. Due to its position in the watershed, detention facilities are not included for this district.

Separation of storm sewers from combined sewers should also occur whenever possible as development occurs. Since several of the existing combined sewer mains are deteriorated or undersized, this will also allow for the storm sewers to be updated and adequately sized to account for existing conditions.

Much of the existing sanitary sewer system exists as a combined sewer. During large rainfall events, the combined sewers overflow and discharge sewage into Fall Creek and the White River. Separation of the storm and sanitary sewers should occur whenever possible as development occurs. Several of the existing combined sewers are deteriorated or undersized. Separation will allow for the sanitary sewers to be updated and adequately sized to account for existing conditions. Separation will also reduce or eliminate the overflow of sewage into the natural water courses.

Another new underground steam main is to be routed north along Barnhill Drive from Vermont Street.

Electrical System

A new underground electrical main will be routed along Vermont Street between Substations B and C.

Telecommunications System

New underground telecom to be routed south along Limestone Street to New York Street.

Water System

The water supply is adequate to serve both the domestic and fire protection systems; however, the results of flow and pressure tests may require distribution system upgrades to serve new facilities. This analysis will be needed once the design of new buildings begins.

Storm Water and Sanitary System

As new buildings are developed, infiltration facilities should be incorporated to increase the quality of the stormwater flowing further

ARCHITECTURAL GUIDELINES

The Vermont Street residential development is envisioned as a uniquely urban environment arranged in a dense "alley-like" configuration. Building forms will be of an urban 'townhouse' scale. The overall image will be of development over time, created with a deliberate mix of materials and architectural expression, and intentional dynamism. Predominant materials for the sidewalk, buildings and street paving will be brick, in a varied color palette to provide variety and human scale. The relatively uniform building height will establish unity which should be extended with a regular rhythm of fenestration and pattern of small and large scale elements. Expanses of relatively solid walls with smaller punched openings will be contrasted by large glass openings and bay windows at living rooms, lounges, and activity spaces.

Landscape and streetscape elements including furniture, lighting, trees and plantings will significantly contribute to the district's neighborhood character. Building elements including stoops, porches, overhangs and balconies will be similarly employed to connect interior to exterior and encourage the perception of the street as an outdoor living room, a true neighborhood and place of activity and interaction.

Vermont Street will contribute a uniquely urban architectural character, an environment that fosters memorable human connections at the fundamental core of the IUPUI campus experience.

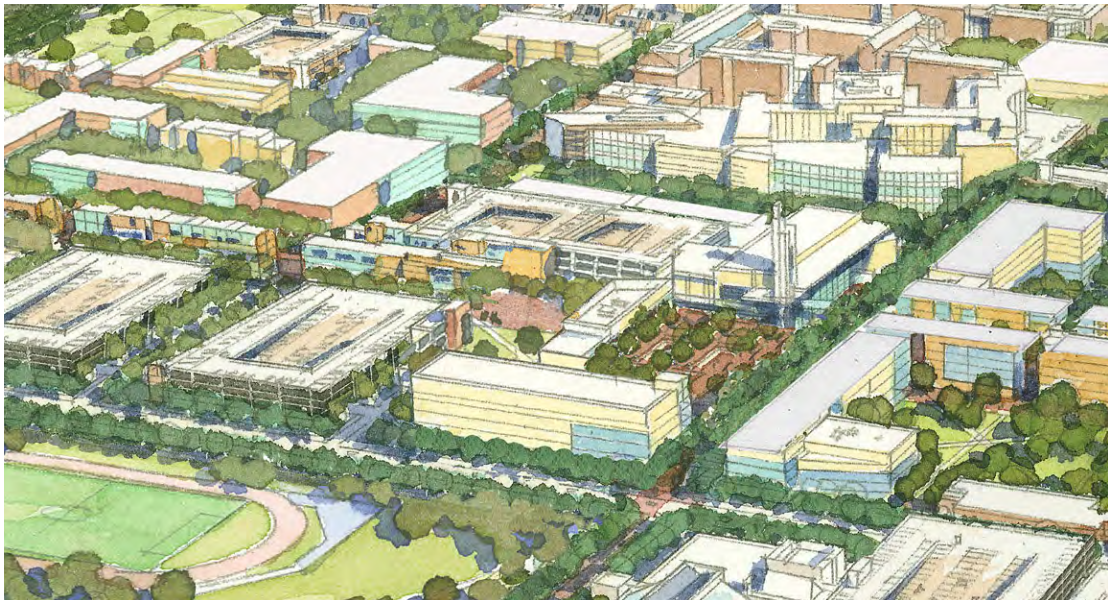
Objectives

- Dense urban residential neighborhood
- Variety and vitality within relatively uniform street-wall datum
- Solid walls with punched openings contrasted with large glass openings/bay windows
- Architectural configurations that encourage gathering: stoops, porches, balconies, overhangs.

Primary Materials

Brick, with glass and metal panel, and limestone accents.

Proposed Vermont Street Streetscape Massing



Proposed Vermont Street District

BUILDING INITIATIVES

01 Mixed use residential units along Vermont

02 Residential units along Vermont

OPEN SPACE OPPORTUNITIES

04 Urban Piazza

05 Academic Quadrangles

STREETSCAPE OPPORTUNITIES

06 Vermont Streetscape

INFRASTRUCTURE OPPORTUNITIES

07 New underground electrical main

08 New underground steam main

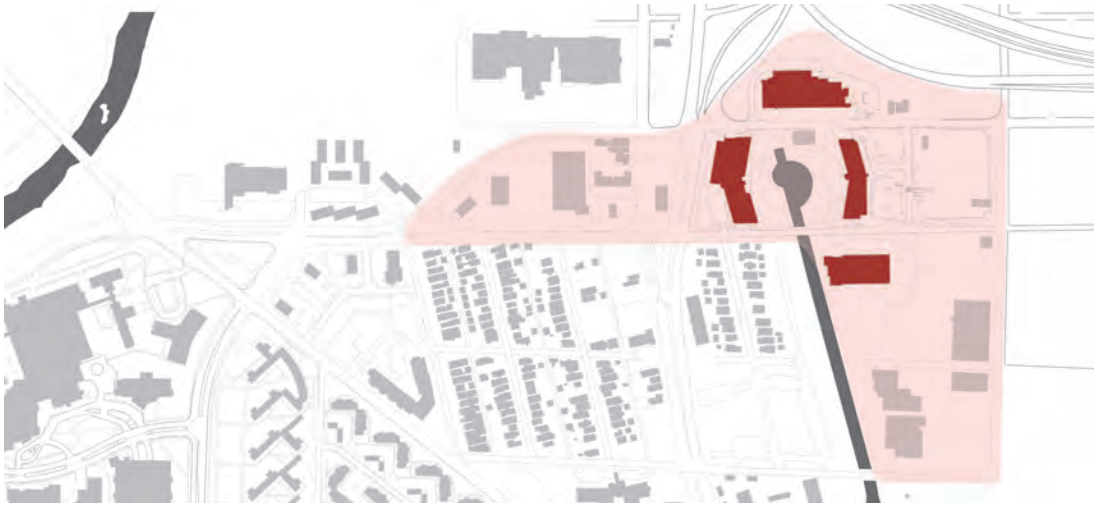
09 New underground telecom

10 New underground chilled water main

Vermont Street District Plan

DISTRICT 5: CANAL DISTRICT

Canal District Aerial



Canal District Map

EXISTING CHARACTER

The Canal District is located at the terminus of the Indianapolis Canal Walk and extends from 11th Street to West St. Clair Street.

The Canal Walk serves the downtown community as a waterside promenade for walkers, runners, bikers and sightseers and spans from the Riverfront Park to 11th Street.

Much of the canal immediately south of the district is lined by residential developments. Significant new office, research and incubator buildings surround the canal terminus and define a progressive and forward leaning design aesthetic. Large surface parking lots and light industrial/warehouse buildings occupy the area east of the canal along Senate Avenue.

The area west of Dr. Martin Luther King Jr. Street between 10th and 11th Streets lacks

density and consistency of character. Currently, the area is occupied by a one-story commercial strip mall development, a walk-up style apartment building, and single family homes.

Existing Qualities

- Fragmented remnants of original historic urban context
- Strong progressive aesthetic among new structures
- Consistent quality aesthetic along interior canal corridor
- Inconsistent character along canal perimeter
- Large expanses of surface parking

DEVELOPMENT OPPORTUNITIES

The Canal District is part of the Integrated Plan for the Academic Medical Center Campus. It links Precinct A within the IUPUI campus with the Methodist Hospital Districts to the north. The Canal District provides for a mixed-use development of office expansion, incubator research and adjacent privately developed retail and office.

A new people mover station and parking garage planned for the parcel between 10th and 11th Streets, west of Martin Luther King Drive, will alleviate parking demand and allow for development elsewhere on campus. Retail, residential apartments, and office space along 10th Street will activate the street level and screen the bulk of the structure.

Development Objectives

- Continue the established progressive aesthetic character
- Increase density and re-establish an urban neighborhood fabric
- Promote physical and visual connectivity with other parts of campus
- Convey a unique IUPUI image and identity

BUILDING INITIATIVES

IU Health administrative functions will occupy a second phase office building, Fairbanks Hall II, between 10th and 11 Streets, adjacent to the existing Fairbanks Hall.

A research incubator zone between the canal and Senate Boulevard, from 10th Street to St. Clair will allow consolidation and future expansion of incubator research facilities related to the SOM research programs for private public partnerships in biomedical start-ups and acceleration laboratories.

Administrative functions for IU Health will be retained within the existing Gateway Building on Illinois and 10th Street. A new parking garage with retail frontage will be constructed on 10th Street to serve the building and allow for future growth of the district.

IU Health Infomation and Translational Sciences Building

A new mixed use parking garage and people mover station is proposed west of Dr. Martin Luther King Jr. Drive. This development is proposed with a liner apartment building on the south side of the garage, with retail and a potential grocery store at the ground floor level. Separate entry drives on its east and west facades will help stage vehicles off of 10th and 11th Streets.

OPEN SPACE INITIATIVES

Quadrangles

Small courtyards and quadrangles are planned for the emerging research incubator area east of the Canal Walk, both along the river and internal to the blocks. These outdoor spaces will provide a common amenity for a development of smaller private research start-up and incubator companies. Addressing the Canal Walk with appropriate architectural detail, transparencey, lighting, and landscape to create a front door on the Canal will be important to harmonize with adjacent residential development.

View South in Canal District

Gateway

The intersection of W. 11th and 10th Streets with the I-65 freeway on and off ramps is an important regional gateway and entry into the IUPUI and IU Health campus and academic medical district. This is a large, vehicle-oriented and congested intersection. Initial studies have been done to create a signature gateway object at this site. Further design should be explored that will identify the district, provides for basic wayfinding, and bring a sense of campus identity to this gateway, without adding to the confusion or visual clutter.

'Freeway' Park

The Integrated Plan for the Academic Medical Center Campus proposes site improvements under the I-65 overpass to create a more inviting environment for pedestrians walking between the Canal District and the Neurosciences District. Establishing a buffer between parked cars and sidewalks, screening, and creative lighting solutions would improve the visual quality and perceived safety of this area.

STREETSCAPE INITIATIVES

The Walk of Life

The streetscape design of the "Walk of Life" is intended as a uniquely designed and branded streetscape that knits together IUPUI's academic, healthcare, and research functions. It is proposed to continue on W. 10th Street from the IUPUI peninsula campus to Senate Boulevard, past the Canal District, and up to the Neurosciences and Methodist districts of the Academic Medical Center Campus. The Walk of Life will also tie in the proposed mixed use parking garage on W. 10th and W. 11th Streets west of Martin Luther King Jr. Drive. Where possible, sidewalks should be widened to include street trees, specialty paving, lighting, signage, and artwork to identify it as the Walk

of Life corridor. Streetscape furniture, maps, mile markers, interpretive features and other pedestrian amenities should be included to encourage healthy exercise and walking between districts.

W. 11th Street

As the westbound leg of the one-way pair for east-west travel, streetscape improvements are also proposed on W. 11th Street to enhance the pedestrian environment. Consistent street tree planting and pedestrian-scale street lighting at a minimum should be incorporated.

ARCHITECTURAL GUIDELINES

The Canal District serves as a vital link between the IUPUI main campus and the medical districts to the north. A wide variety of existing character and uses require that the new development be sensitive and responsive to its context.

A strong aesthetic quality and precedence exists among the newer buildings at the canal terminus. Fairbanks Hall and The Health Information & Translational Sciences Building are an eclectic combination of brick masonry, metal panel and glass curtainwall. The architectural scale of these structures has been broken down through effective shifts in material selection and massing. The new development directly east of the terminus sympathetically mimics these qualities very successfully. The massing, language, scale and materiality of all future development should also reflect a similar aesthetic approach.

To the south, the research incubator zone will front the canal on its east and Senate Boulevard on its west. The two-story structures should be predominantly brick and glass. Along the canal, the new building will sit directly opposite residential townhomes. Similar to the existing building directly to the north, the existing topography should be used to minimize the scale of the building at the canal. The incubator buildings are organized around an interior park. To promote collaboration and activity, facades facing the park should be predominantly glass with multiple opportunities for connections across the park.

West of Doctor Martin Luther King Junior Street, the additional density created by the new garage and residential and retail frontage will be minimized to respond to the surrounding residential context. Upper levels of the residential and retail frontage will be a combination of brick and metal panel to break down the façade. Glass openings shall be regular and articulated for apartment typologies giving way to large expanses of glass at the ground level. The street level will provide a friendly pedestrian environment along 10th Street by providing brick paving and canopies. The exposed faces of

Gateway Building to Canal

the garage shall utilize screens and articulation to disguise the function and reduce the overall scale of the structure. Materiality of the garage facades shall be architectural-finish concrete and metal panel. Color and integrated green screens shall be considered to provide vibrancy and interest.

Objectives

- Increase pedestrian activity
- Reinforce urban context and environment
- Unify divergent architectural styles

Primary Materials

Brick with metal panel and glass.

Proposed Canal District Detail

BUILDING INITIATIVES:

01 Proposed People Mover station and mixed use parking structure

02 Proposed Incubator Partnerships

03 Fairbanks Hall Phase II and parking garage

04 Building renovations for IUSOM research and surgery space

OPEN SPACE INITIATIVES

05 Freeway Park

06 Proposed Courtyards

STREETSCAPE INITIATIVES

07 Walk of Life Streetscape Improvements on 10th Street and Senate Boulevard

08 W. 11th Street Streetscape Improvements

Canal District Plan

7| ACKNOWLEDGEMENTS

ACKNOWLEDGEMENTS

The recommendations presented in this report reflect the combined ideas offered not just by the planning team, but by the numerous faculty, staff, student, and community representatives who participated in the effort. Because of their diligence and patience, they ensured that the Campus Master Plan will exist for years representing both university and community interests.

Special recognition is due to many; however, those listed below are particularly noteworthy, including a number of key University representatives who gave inordinately of their time and skill. These include:

Terry Clapacs, Paul Sullivan, Bob Meadows
Tom Morrison, and John Lewis

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Indiana University - IU Health

INTEGRATED PLAN for the ACADEMIC MEDICAL CENTER CAMPUS

VOLUME 2: FEBRUARY 2012

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1| PURPOSE

INTRODUCTION

Indiana University and Indiana University Health jointly provide Health Sciences Education, Research and Clinical Care through the five Health Professional Schools and three Hospitals located on the Indianapolis campus. While many quality programs and services are jointly provided by IU as the State of Indiana's primary health education campus and Indiana University Health (IU Health) as Indiana's largest health system and university affiliated hospitals, planning has remained separate and distinct for both entities and governance structures. In 2009, the two organizations embarked on a mission to form an integrated strategic planning process and governance structure to integrate four distinct and separated campus districts into a single Academic Medical Center Campus.

A joint IU/IU Health planning group led by a Steering Committee with Executive Committee overview was established to provide program needs requirements, guide the development of an integrated plan, and provide a governance structure to implement the plan based on the organizations' Board approvals.

SmithGroupJJR was commissioned to develop a master plan and long range facilities plan for the Academic Medical Center, the health professional schools of Medicine, Nursing, Dentistry, Health & Rehabilitation Sciences and Public Health; Indiana University Health Hospitals, and the clinics and system offices of Riley Children's Hospital, Methodist Hospital and University Hospital. The physician's group practices, which were in the process of restructuring into IU Health Physicians, with their medical office and outpatient clinic programs, were also incorporated into the plan. Private partners, such as Ronald McDonald House, Hope Lodge and a future short-stay hotel providing related health services to the Academic Medical Center campus were considered for potential adjacent site locations.

During the early programming phase, the Wishard Replacement Hospital was approved by county voters and the University entered into an agreement to secure the property adjacent to the IUPUI Health Sciences District for usage in December 2013; the assessment and recommendations of these properties for reuse were also incorporated into the plan.

PLANNING OBJECTIVES

The Committees and planning team identified several key objectives for the Integrated Academic Medical Center campus master plan

1. Provide a plan that would enhance and facilitate the integrated mission of providing the highest quality education, research and clinical care of both organizations.

2. Evaluate joint program needs and priorities for augmented collaboration between faculty and clinical professionals and staff to improve the "healthcare team" of education, professional development, medical research and clinical outcomes.

3. Provide the highest and best utilization of current and future facilities and sites

for identified short-term and future joint program needs.

4. Provide a plan that creates an integrated image, quality of life, physical continuity and identity for the Academic Medical Center as a single unified campus.

5. Provide a plan that greatly improves parking, access and circulation for patient and student customers and facilitates campus wide circulation convenience for faculty and staff.

6. Develop a facilities plan that defines specific needs and priorities, but has flexibility of timing and implementation based on evolving trends, changing technologies and funding availability.

7. Provide a planning framework to guide future joint decisions in an ongoing collaborative process in the best interests of both entities.

Perspective View Looking North-East

MASTER PLAN OVERVIEW

The following drawings and diagrams illustrate the developed master plan for the IU/IUH Academic Medical Center.

The overall Academic Medical Center campus plan drawing (p. 7) illustrates a vision for current and future use of over 300 acres, of which 179 are currently owned by the University and Indiana University Health. A specific portion of the additional land is designated for acquisition and development of program use in conjunction with private development partners.

The various districts are integrated into a continuous development framework of contiguous facilities, urban amenities, open space and gateways, connected by an enhanced people mover system for optimal access from planned parking and cross campus convenient circulation.

The various isometric aerial views illustrate the proposed development strategy of joint facility and site utilization and future development.

The Peninsula District A axonometric drawing (p. 10) illustrates the future development of the

Academic Health Sciences center for the health professional schools and Riley Children's Hospital and University Hospital expansion. Within the Health Sciences Center is a planned new Integrated Health Science Education complex and a redeveloped School of Dentistry.

The Wishard property to the north is redeveloped for medical research and faculty office growth with several existing former Wishard property buildings reutilized for near term administration, faculty office and clinical program needs.

The new Wishard replacement Hospital is planned to the west of the Health Sciences Center within reasonable access for clinical faculty.

North of Michigan Avenue, a joint use of existing facilities, site and future development is planned for a National Cancer Institute to-be-designated Comprehensive Cancer Center. This will capitalize on the University's School of Medicine and School of Nursing research excellence in Cancer and Indiana University Hospital, Simon Cancer Center as a future preeminent regional National Comprehensive Cancer Center of excellence for cancer care.

The Canal District B (p. 13) and Methodist Hospital Districts C + D (p. 14 + p. 15) axonometric drawings illustrates a continuous development for office, incubator research, private development and supporting mixed use expansion in the Canal District. A developed North Capitol Avenue Streetscape provides continuity from West 10th Street north to West 16th Street for Indiana University Health Administrative Office private development and a new Neuroscience complex at West 16th Street. Methodist Hospital redevelopment occurs principally along North Capitol Avenue for new clinical tower and outpatient expansion north to West 21st Street, the northern most boundary of the Academic Medical Campus.

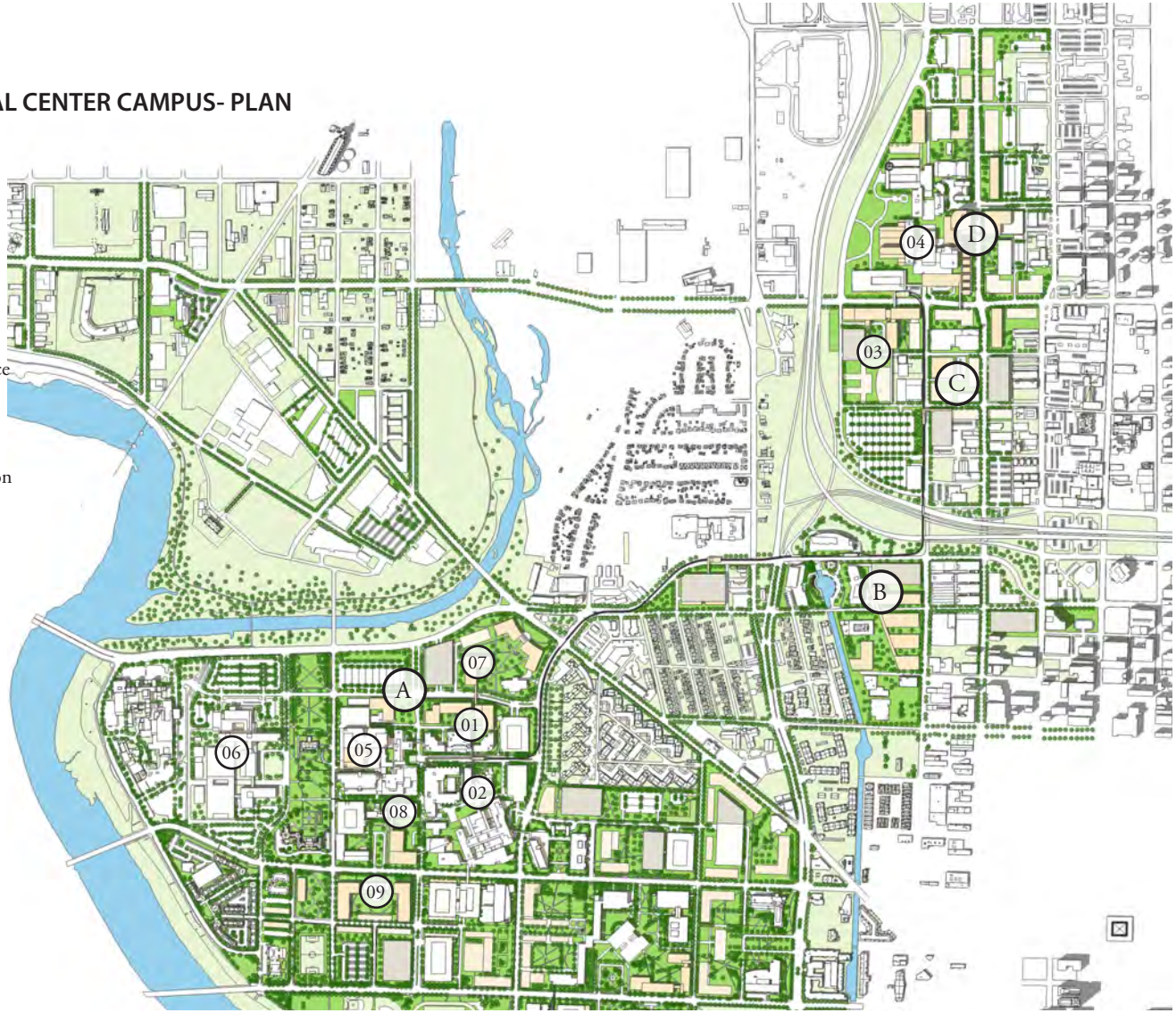
Parking garages are located conveniently for patient access to Hospitals and clinics and to educational facilities for students. Intermediate decks along a revitalized people mover system, with new in line stations, provide accessibility to each district from central locations for faculty and staff parking and cross district travel. Additional parking is planned in remote lots north of campus with shuttle bus service to the Peninsula District.

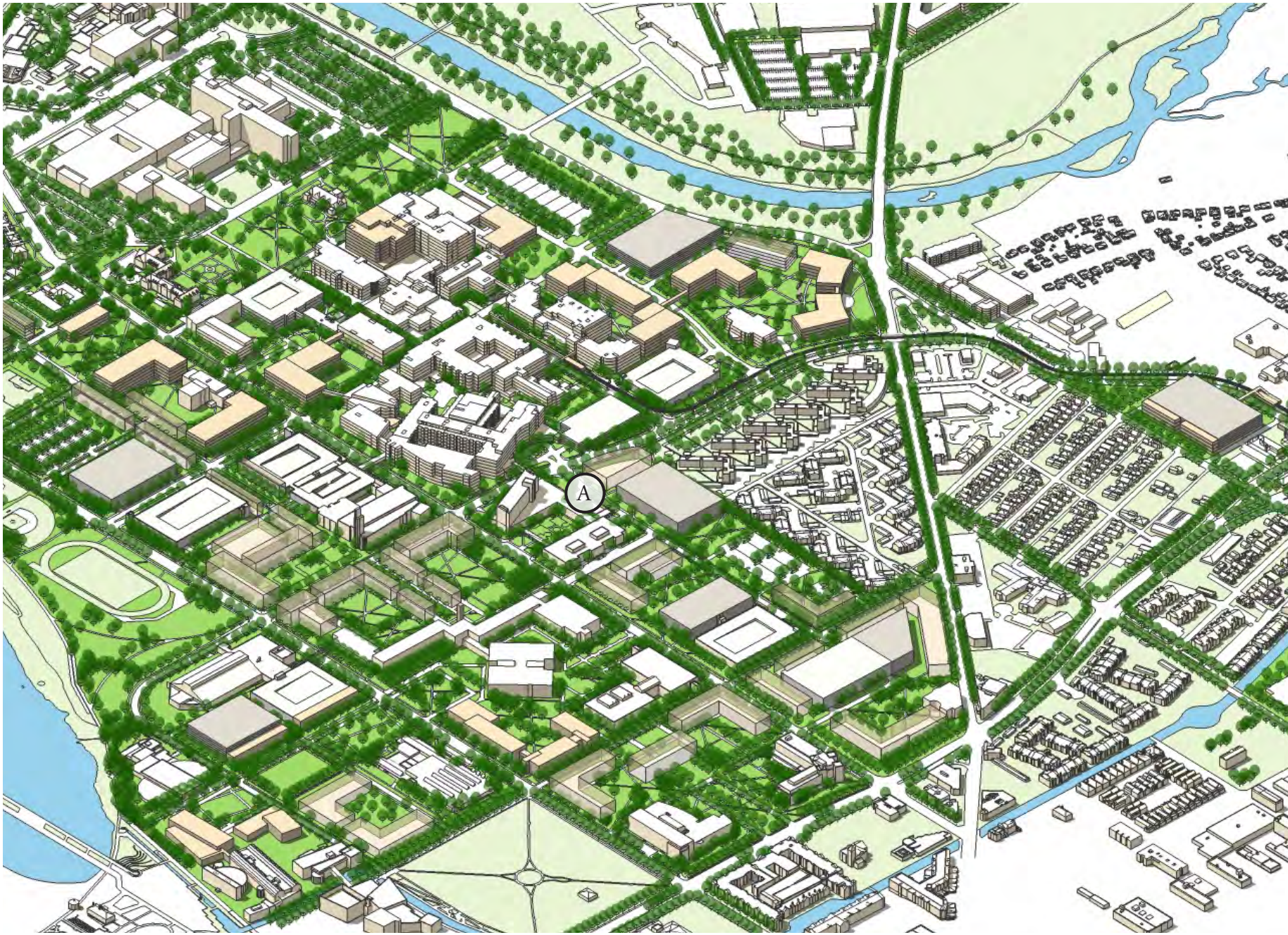
OVERALL ACADEMIC MEDICAL CENTER CAMPUS- PLAN

LEGEND

- (A) Peninsula District A
- (B) Canal District B
- (C) Indiana University Health and Office
- (D) Development District C + D
- (01) Integrated Health Sciences Education Center
- (02) Indiana University Hospital Simon Cancer NCI
- (03) Neurosciences Complex
- (04) Methodist Hospital
- (05) Riley Children's Hospital
- (06) New Wishard Hospital
- (07) Existing Wishard Hospital Site
- (08) Existing School of Nursing
- (09) School of Dentistry

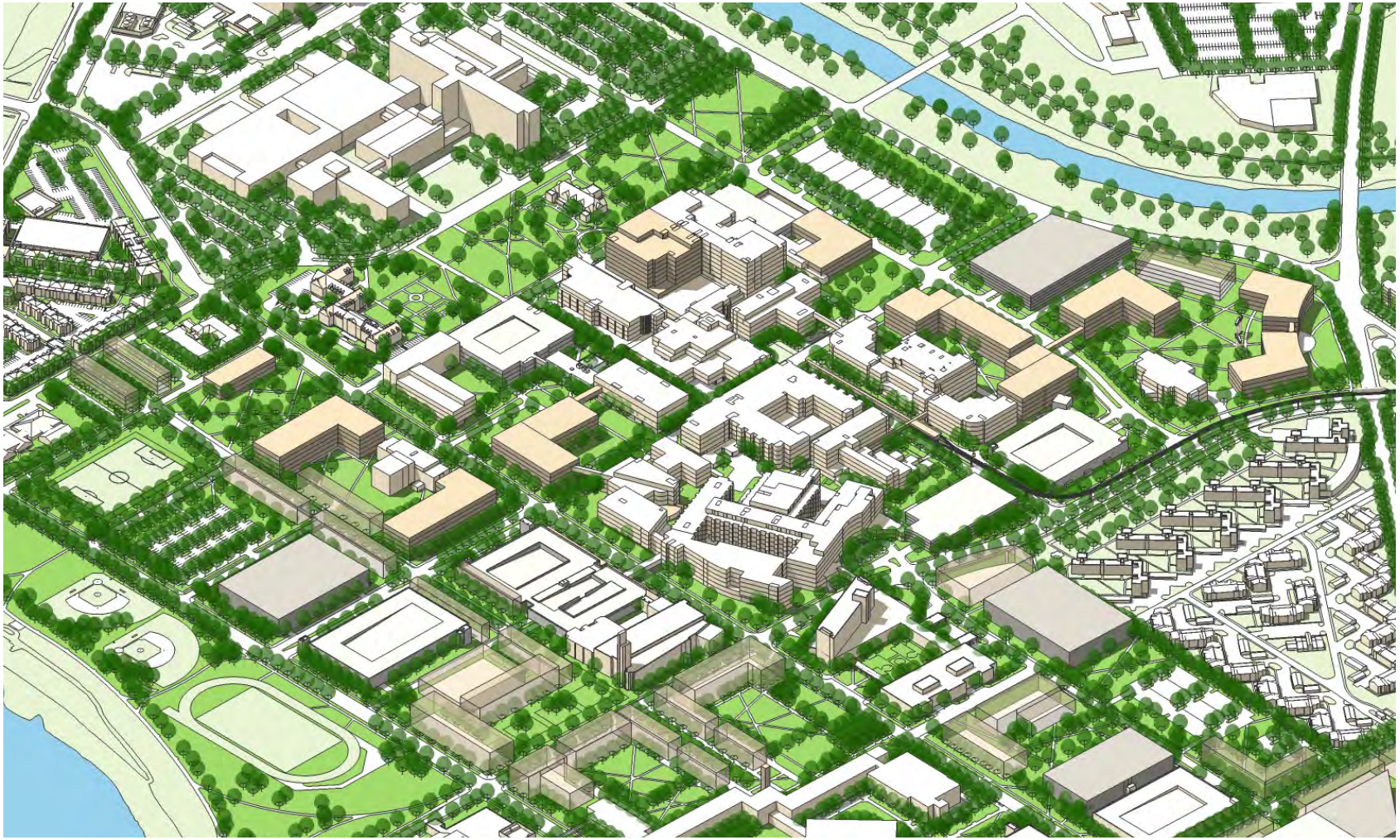
Existing Buildings
Proposed Buildings
Future Expansion
Parking





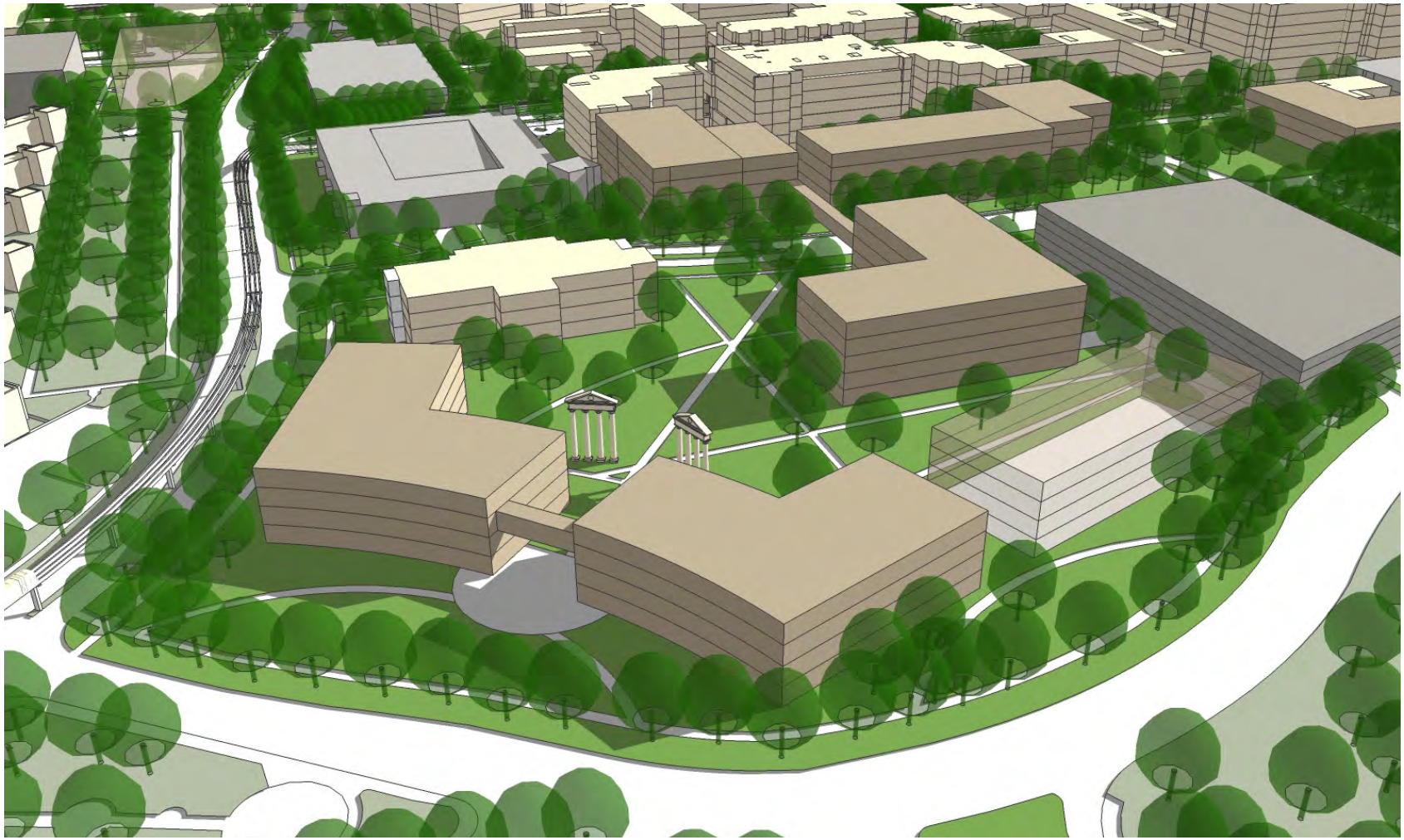
Overall Academic Medical Center Campus - Axonometric View Looking North-West - FINAL PHASE 2025+

Existing Buildings
Proposed Buildings
Future Expansion
Parking
B
C
D



Peninsula District A- Axonometric Looking North-West

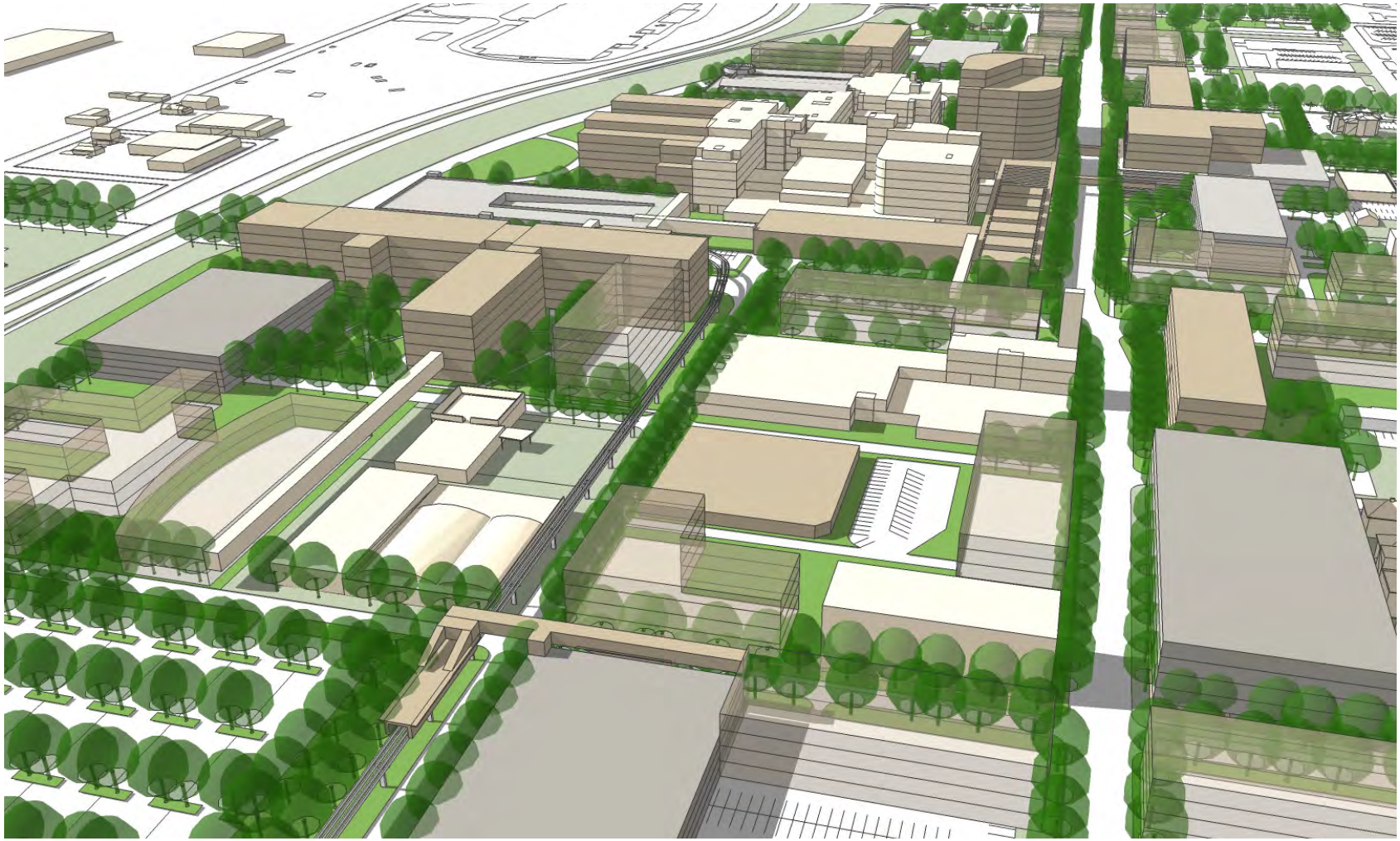
Peninsula District A, View Looking South-East



Peninsula District A, Wishard Site, View Looking South-East

Canal District B, View Looking North-East

Methodist Hospital Districts C + D- Axonometric View Looking North-West



District C + D, View Looking North-East down North Capitol Avenue

1. Methodist Hospital - West Tower

HEALTH CARE PRACTICE & TRENDS

In 2001, the Institute of Medicine published "Crossing the Quality Chasm." The book's release was a sentinel event for health professions education and care delivery. Its publication triggered a flurry of activity to redefine both educational programs and care delivery models, as evidenced by various reports, which begin to define the issues with the current state of health care in more detail and create care models focusing on patient care quality and safety.

Health professions practice has changed tremendously over the last century. In addition, new professions have been added as health care has become more complex in response to evidence-based medicine and increasing technology. Health professions education, however, has remained relatively unchanged. Most health professions schools rely heavily on lectures and memorization of facts although simulation laboratories are emerging to allow the respective student to develop care skills and apply knowledge prior to actual clinical encounters. Such encounters in a real-time clinical setting are an integral part of the professional caregivers' necessary experienced-based curriculum.

Nationally, there is growing consensus that a team-based approach to clinical care is optimal and the curriculum in and between health professions schools must foster integration. In addition, necessary clinical environments must also must facilitate an integrated / team-based care delivery model. Interdisciplinary and inter-professional education, as well as care delivery, is the future for the academic health sciences center; this future state must be reflected in site and facility developments which foster integration.

Implications

Various implications emerge from the working premise, including:

- Integration faces many challenges, not the least of them culture, history, and tradition.
- Basic science and clinical integration at all levels will:
  - Solidify and reinforce team-based learning.
  - Assist in developing critical thinking skills.
  - Foster faculty interaction and collaboration.

1

1. West Michigan Street

- Foster health professions interaction, team-building and collaboration.
- Facilitate translational medicine as well as evidence-based care delivery models.

- Both vertical and horizontal integration in the basic and clinical sciences will be necessary.
- Facility development must foster integrated models.

The degree of integration within the academic health sciences center is variable and often driven as much by cultural values as trending pedagogic philosophy. The major driver of integration as a response to an era of resource constraints, however, is consistent. Enhanced alignment offers many potential benefits:

- Increased productivity
- Reduced duplication
- Support of knowledge management
- Support of emerging disciplines
- Development of evidence-basis
- Optimized care delivery
- Enhanced safety, quality and value

PROBLEM STATEMENT

Over time, the separate and distinct IUPUI and Indiana University Health campuses will become more integrated. They will continue to optimize an increasingly integrated mission. Although driving toward an integrated multi-specialty group practice model with the development of the IU Health Physicians, their context of distinct constituencies and capital program funding mechanisms will continue to complicate site and facility development.

An integrated planning and governance structure will assure the following.

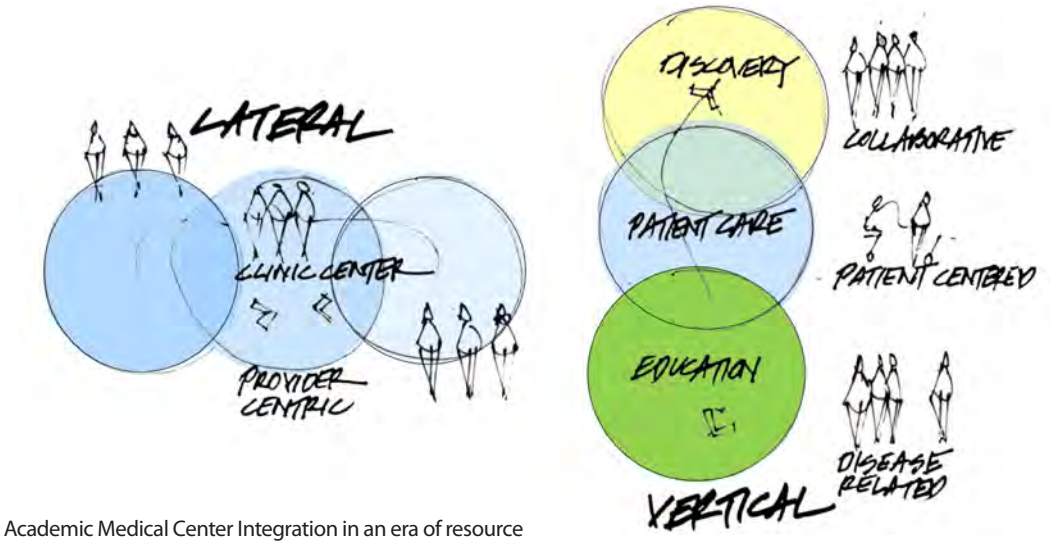
- Priority on highest and best use of available parcels
- Less risk of constrained future growth
- Maximum flexibility and adaptability of space
- Appropriate site density
- Opportunity for integrated site and buildings
- Anticipation of economies of building types (Institutional (I) vs. Business (B) occupancy)

1

CONTEXT

Individually, IUPUI and Indiana University Health represent significant enterprises in their respective fields. Consider:

- IU School of Nursing represents the largest nursing student body in the country. They are ranked 8th in NIH funded research with $6.6M in 2009.
- IU School of Dentistry has enrollment of 100 DDS, DMD degree students, 120 faculty, now under leadership of new Dean focused on the growth of integrated research.
- IU School of Medicine represents the 2nd largest school in the country with 1,175 medical students, 231 PhD students and 810 residents and fellows using 2008 Association of American Medical Colleges data.
- IU ranks 13th among all public medical schools in total revenue of $485 million, of which $112.7 million was federal (NIH, NCI) research grants, using 2008 Association of American Medical College data.
- Nationally, Indiana University Health's downtown hospitals ranks 4th largest in number of beds (1,395), 7th largest in total employees (10,743), and 17th largest in total revenue ($3.6 billion), using 2010 AHD data.
- (VA and Wishard share the peninsula district; Wishard ranks 98th in total number of beds (277), 84th in total employees (3,380), and 100th in total revenue ($714 million)).



Academic Medical Center Integration in an era of resource

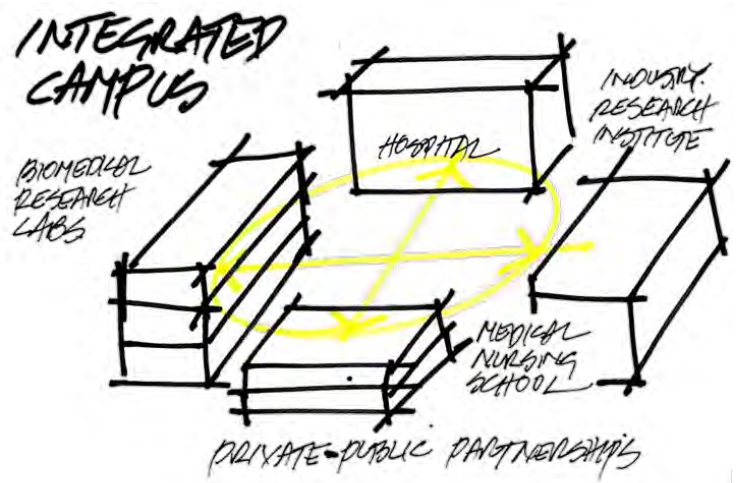
- Based on Association of American Medical Colleges and American Hospital Directory reporting sources, the IUPUI / IUH Campus is one of the 20 largest health sciences centers in the country.

Within the context of greater alignment and integration, it is beneficial to consider the major drivers-of-change for each of the three major constituents of a health sciences center.

Education Trends

The primary future trend in medical education is toward a Role-Model-Based instruction model in which clinical presentations are the foundation of the curriculum. This is consistent across all of the disciplines and professions making up the health sciences. The primary focus is on clinical reasoning pathways and diagnostic classification schemes unique to each individual problem; an integrated / trans-professional approach to basic and clinical sciences is introduced in a graduated fashion related to the clinical presentations being addressed. Scheduled instructional activities are spent in small groups and include case-based learning sessions.

The result is larger numbers of medical, nursing and other health sciences students in a broader variety of educational settings throughout the day. These settings may include seminar and larger classrooms, simulation labs and a broad array of clinical settings found within the hospital and associated care delivery settings.



Trend towards Integrated Academic Medical Campus + Facilities

Research Trends

New discoveries in genomics, protenomics, medical imaging and core technologies are changing the very nature of medical research. The future includes more interdisciplinary inquiry and collaboration between research scientists, clinical researchers, clinicians and care givers, and medical educators. Specific research programs and their facilities may become thematically aligned by type of research (Cancer, Neurosciences, Cardiovascular, etc.) and will impact site placement in order to optimize programmatic and staff adjacencies.

New facilities will integrate basic sciences labs, distributed vivariums, faculty offices and clinical areas; hybrid building types including research and clinical activities may accommodate specific translational research themes.

Clinical Trends

The rapidly changing trends facing the healthcare industry are predicated upon emerging

technologies, an increasingly chronic patient population, new and less-invasive care processes, a patient-centered care and "community health status" philosophy and declining resource availability. Some have proposed that the Academic Medical Center may benefit from recently passed health reform legislation by the virtues of their existing networks and systems, readily available students and residents / fellows, and command of evidence-based practices.

In order to provide enhanced value and quality in this environment, the planning and design of new clinical facilities (and their enterprises) is being driven toward an integrated disease-pathway treatment protocol, system consolidation to enhance efficiency and reduce duplication of equipment and staff, adoption of technology-assist modalities, enhanced physician productivity. Healthcare facilities are strategic resources; they must be optimally responsive to foster clinical programs, enhance culture, and ensure efficient operations.

GOALS OF THE INTEGRATED PLANNING PROCESS

The primary goal of an integrated planning process is to holistically address not only the programmatic needs of each individual entity from a macro perspective, but also to position the IUPUI / Indiana University Health Campus for a variety of potential future successful land-use strategies.

Traditionally, academic health sciences centers have revolved around individual distinct health sciences schools, first and foremost being the school of medicine. Complex operational structures have evolved to adjust from the "town and gown" reality of faculty development to a more streamlined "clinic" or interdisciplinary faculty practice model. Complex relationships have existed with select industry partners to enable clinical trials for pharmaceuticals and medical devices. Joint funding mechanisms have been developed for attracting top researchers and clinicians.

1. Graduate and Post-Doctoral Study at Indiana University [i.1]

1

The emerging reality for the academic medical center is significantly more integrated from a strategic perspective. Clinical programs will be closely integrated with research and regional / rural health care delivery and education. Enhanced community linkages will drive

economic growth and development, as well as enhance wellness and the quality of public health. Integrated facilities for research, teaching and clinical campuses will become the norm. Shared research with industry genomics and biotech partners will enhance health science center operating positions. Global linkages for research collaboration and data analysis enhanced by high capacity computer networks for data transfer, and regional tissue banks for clinical research will create a new "community health resource" identity for more prominent heath science centers.

ONE-CAMPUS STRATEGY

The following master plan document addresses these trends and responsibilities from a One-Campus perspective. The creation of healthcare Centers of Excellence, focusing patient care resources around specific disease and treatment pathways for cancer, cardiovascular, and neurosciences has resulted in long-term programmatic changes for Riley, IU, and Methodist Hospitals, and the establishment of an emerging Neurosciences district south of Methodist Hospital. Other program challenges and opportunities include the need for educational renovation and expansion, additional research, faculty and medical office facilities, consolidation and/or replacement of administrative office space for Indiana University Health and IU School of Medicine, and a variety of support programs and facilities including hotels and support services.

Within this document the physical challenges and opportunities to create One-Campus out of disparate health sciences districts have been addressed including the land for expansion within the academic medical campus at IUPUI peninsula prior to Wishard property expansion, density, traffic circulation, open space and the quality of the pedestrian realm, transit connectivity and the role of the People Mover, increased reliability of the people mover and parking supply, demand and location.

Opportunities for a more integrated campus, site and facilities have been identified. These opportunities address both the image and identity of the Peninsula Health Sciences District as well as the total Academic Medical Center campus stretching north to 21st Street. A model for a more appropriate site density; Floor Area Ratio (FAR) of 1.5 to 2.0 floor area of building to land area, has been developed, supported by enhanced connectivity and mobility between districts and an integrated parking and transportation strategy. A model of land use and availability has also been developed to help inform joint discussions of appropriate parcel selection for the appropriate program.

Implemented over time, these recommendations will foster and enhance the development of a unified Academic Medical Center Campus for IUPUI and Indiana University Health in Indianapolis.

1. Historical Context Diagram [i.2]

2| SITE

DOWNTOWN CONTEXT

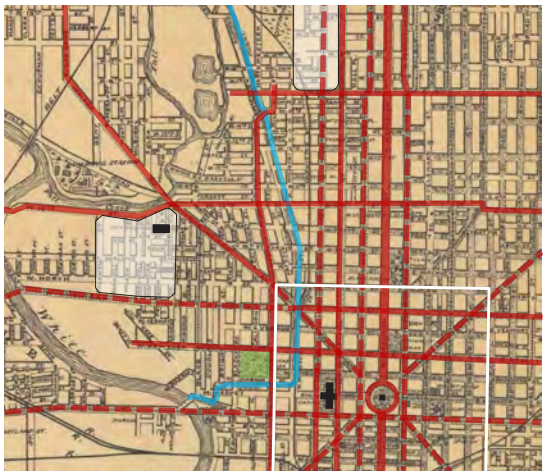
The IU / IU Health Academic Medical Center campus lies within the northwest quadrant of downtown Indianapolis, approximately one to two miles from Monument Circle at the center of the city. The four districts that make up the campus are not contiguous to each other and are divided by major city thoroughfares and the I-65 corridor, making wayfinding and campus connectivity a challenge. Districts B, C, and D are easily connected by the north-south streets of Senate, Capitol and Illinois Avenues, while 10th Street, 11th Street, St. Clair, Michigan and New York Streets are the east-west thoroughfares that physically connect District A on the Peninsula with the other districts.

This area of Indianapolis is typically characterized by low-scale and low-density development surrounding the high rise core of downtown, punctuated by the higher density and taller structures of the IUPUI medical center and the Methodist Hospital districts.

HISTORICAL CONTEXT

Both medical complexes were originally constructed on land at the far edge of the historic city center, away from the original square mile platted for downtown, due to concern over infectious diseases. The first city hospital in Indianapolis was constructed on what is now the Wishard Hospital site. The state's first nurses' training program began at Wishard, and in 1908 a new medical teaching institution associated with Indiana University was formed, located adjacent to the Wishard City Hospital site, creating the nucleus for the current academic medical center and the campus of IUPUI. Long Hospital was the first medical building constructed in 1914, followed by Riley Memorial Hospital in 1924. The current University Hospital was constructed in 1970. Educational buildings and the recent construction of IU's research towers make up the current academic medical campus on the peninsula.

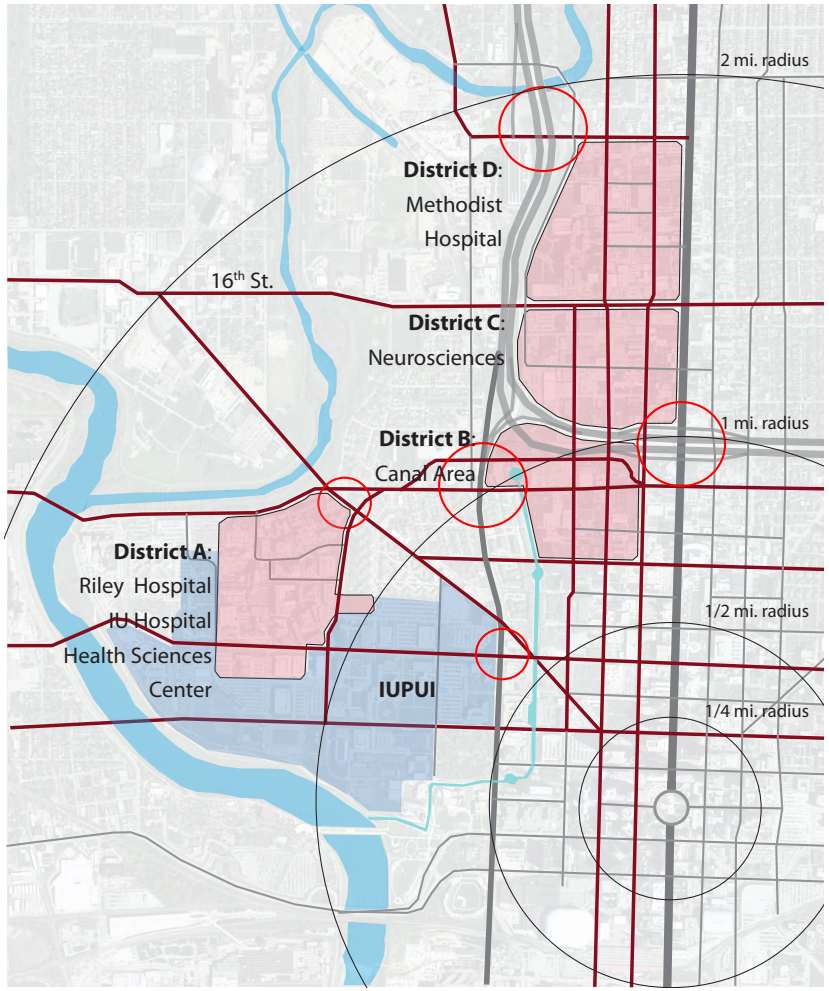
Methodist Hospital began as the Methodist Episcopal Hospital and Deaconess Home of the



Historical Context Diagram , 1

State of Indiana in 1908 with 65-beds, north of 16th Street between Senate Boulevard and Capitol Avenue. The addition of a second wing in 1916 established Methodist Episcopal Hospital as the largest hospital in the state, with 200 beds. The hospital continued to grow rapidly, reaching 635 beds by 1930, and achieved many significant healthcare milestones since its opening in 1908. In 1986, the West Building and major building entrance was added off of a re-aligned Senate Boulevard, creating a new front door on the I-65 corridor.

Aerial View of Downtown Indianapolis



Downtown Context

LAND USE

Land uses surrounding the Health Sciences Campus consist of low density residential neighborhoods and a mix of medical related uses, surface parking lots, small-scale office buildings and light industrial buildings, including some historic structures such as the Crispus Attucks Medical Magnet High School on Tenth St., and the Madam Walker Theater at the intersection of Indiana Avenue and West Street. The former Stutz Bearcat factory on 10th Street is an example of an historic light industrial complex being renovated for mixed use by a private developer. The area was once a series of thriving, working class residential neighborhoods with small scale light industrial facilities at the edge of downtown. Today, this zone of the City is in transition, characterized by vacant and underutilized property, and acres of surface parking, in which the Health Sciences and IUPUI Campuses are the primary sources of population density and land use activity. The re-design of the White River Canal as an attractive linear open space in the area has attracted several new urban housing developments along its edges, creating a new seam of land use and downtown population. The extension of the Cultural Trail to IUPUI's campus provides another pedestrian attraction.

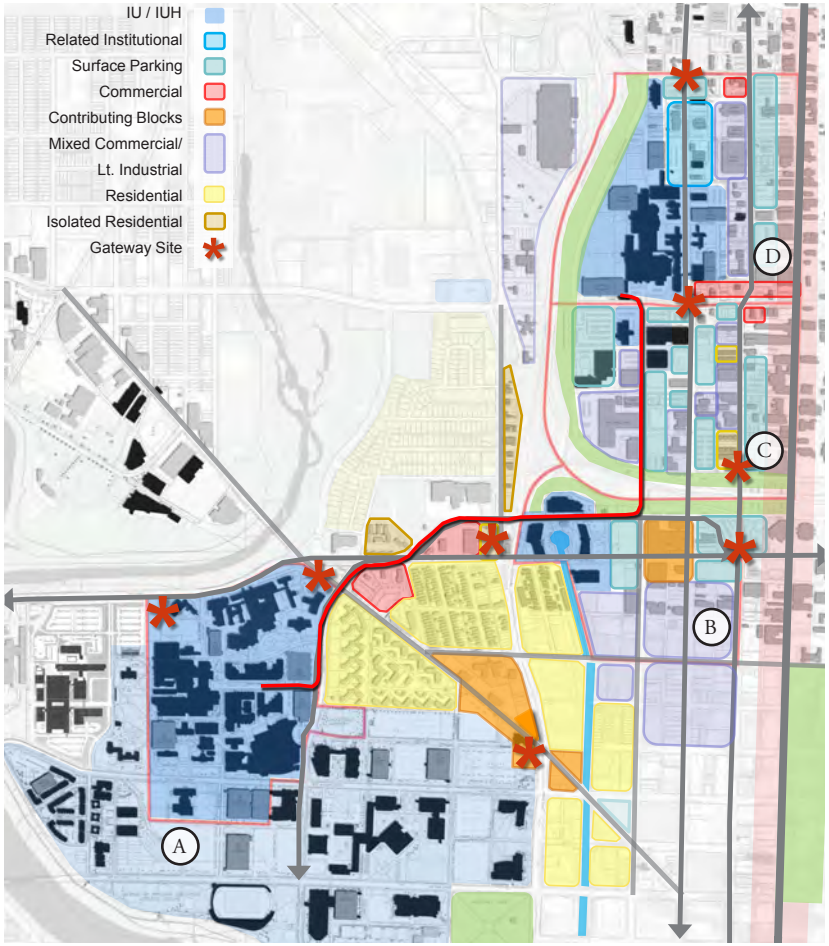
As laid out in the Indianapolis Regional Center Plan for 2030, the City of Indianapolis envisions the northwest quadrant becoming a more dense, urban mixed-use district of housing, commercial, and research and technology uses related to the combined economic strengths of IUPUI and Indiana University Health System. Other recent planning studies for this area reinforce the desire for more research and technology uses as a means to revitalize the commercial and light industrial properties in the district, and represent an optimistic view of the market demand for such uses. The challenge will be the strategic location of IU and Indiana University Health-related research facilities embedded within the Health Sciences Campus to support the integration of patient care, education, and discovery, rather than the diffusion of research uses away from core clinical facilities. Depending on market demand, the redevelopment of surrounding properties into private sector life sciences or other related technology uses could evolve over time. IU and Indiana University Health should continue to work with the City and private developers to ensure compatible land use development in the larger quadrant.

LAND AREA AND OWNERSHIP

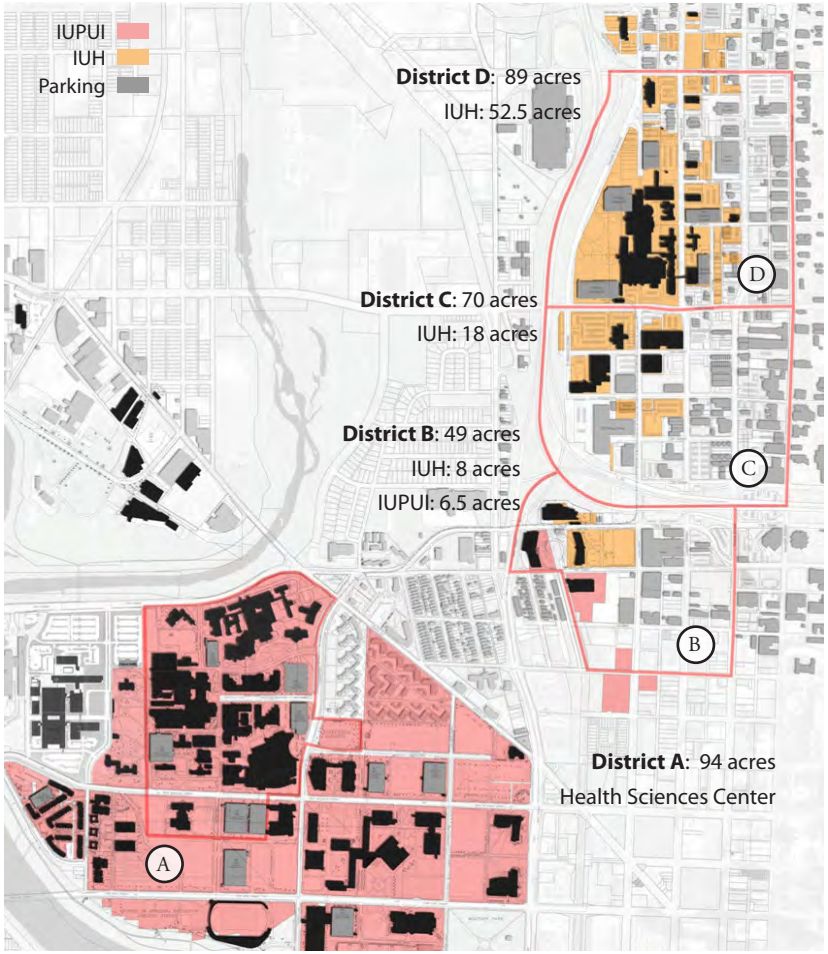
The study area of the Health Sciences Campus is approximately 302 acres, of which 179 acres are owned by Indiana University, Methodist Hospital, or Indiana University Health System. Of the four districts, District A is the largest area with 94 acres, all owned or controlled by Indiana University.

DENSITY AND CAPACITY

This planning effort is the first time that IU and Indiana University Health Systems have combined data on their respective hospital,



Land Use Diagram



Property Ownership

outpatient, administrative, educational, research and support facilities and property. Based on the data provided by both Indiana University and Indiana University Health System, the combined total for all facilities is 11.57 million square feet on IU and Indiana University Health-owned property. With the imminent acquisition of the existing Wishard campus, the new total will be 13 million square feet.

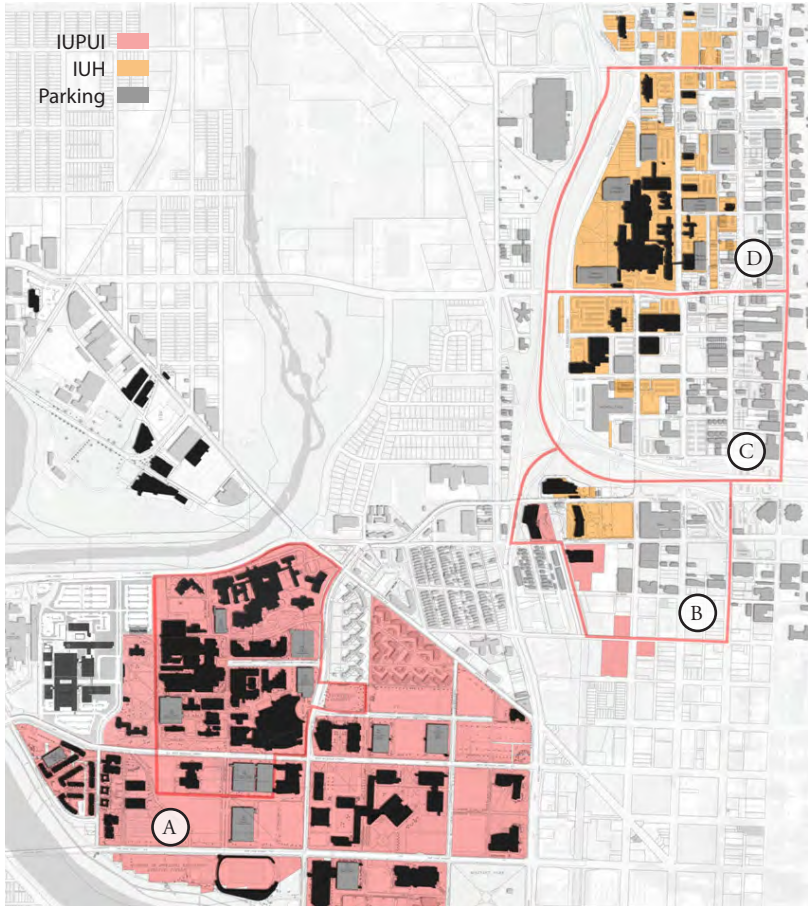
Density, measured as the ratio of square footage of land to square footage of buildings ranges from a low of 0.25 Floor Area Ratio (F.A.R.) in District C to a high of over 2.0 F.A.R. in District A. Such low overall F.A.R. in Districts B, C and D point to opportunities to add development to those districts to accommodate future program demand. Redevelopment of the former Wishard Hospital campus, redevelopment or replacement of underutilized property, and construction of parking garages to allow development on surface parking lots could yield up to 62 acres of developable sites for all four districts combined. At a range of density from 1.0 to 2.0 F.A.R., similar to the existing Health Sciences campus, this land area could theoretically accommodate 3.8 to 4 million GSF of new facilities in the future, on land currently owned and controlled by IU and Indiana University Health. This capacity scenario however would displace up to 3,500 current surface parking spaces and does not take into account the land configuration needed to create the necessary program adjacencies.

District A
IU Hospital: 1,652,506 GSF
Riley Hospital: 867,045 GSF
Simon Family Tower: 675,000 GSF
Total IUH Facilities: 3,194,551 GSF
IUSM, IUPUI Facilities: 1,962,702 GSF
Wishard Facilities: 1,461,001 GSF
Total Facilities: 6,618,254 GSF
Parking Garages: 2,004,160 GSF
Total Development: 8,622,414 GSF
Net F.A.R. 2.1

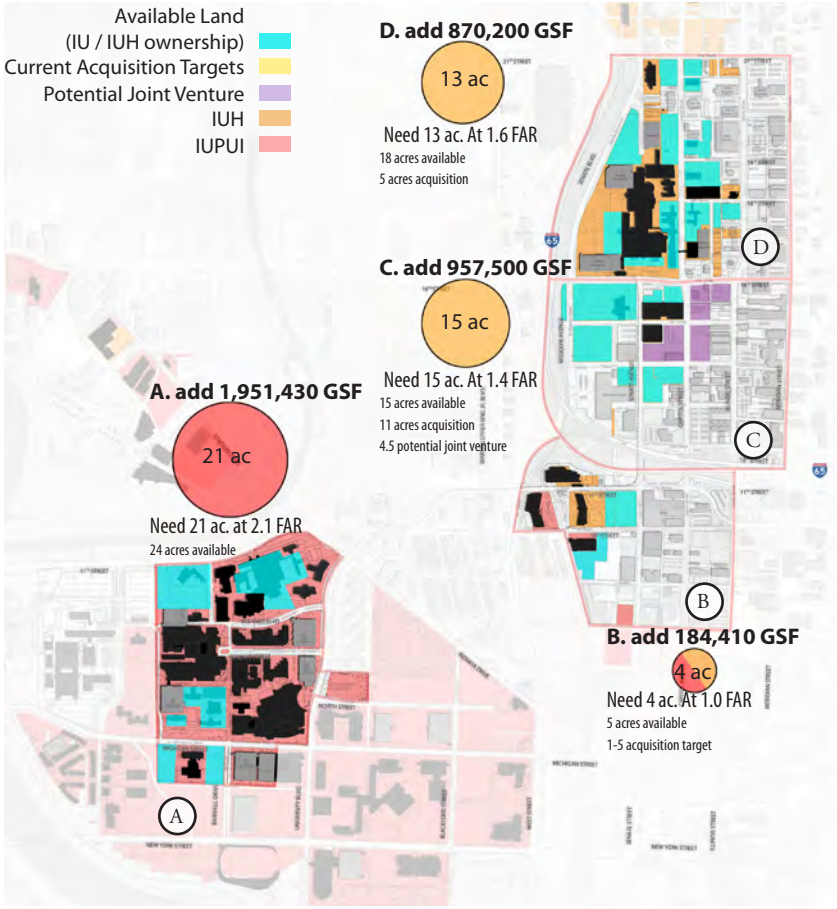
District B
IUH: 498,723 GSF
IUPUI: 232,810 GSF
Total Facilities:
731,537 GSF
Net F.A.R. 1.05

District C
IUH: 201,424 GSF
Net F.A.R. 0.25

District D
Methodist Hospital: 1,367,385 GSF
Other Facilities: 660,811 GSF
Total Facilities: 2,028,196 GSF
Parking Garages: 1,450,598 GSF
Total Development: 3,478,794 GSF
Net F.A.R. 1.6



Current Density



Land Capacity

EXISTING WISHARD HOSPITAL FACILITIES

As part of the facilities inventory, the existing facilities at the former Wishard Hospital property were assessed for potential reuse, renovation or demolition and repurposing of land for IUPUI Health Sciences programs. The group of available facilities consists of the Wishard Hospital, several clinic and office buildings, a central service building and 2 parking garages. The total gross square feet of occupied buildings is 1.386 million GSF and capacity for 1,700 deck parking spaces.

Several engineering studies have been previously commissioned by Wishard Hospital to evaluate the economic feasibility for facility renovation and systems replacement versus relocation to a new site. These studies formed the basis of the decision to abandon this property and pursue a replacement hospital now in development.

As an asset for IUPUI, the acquisition of this property offers several strategic opportunities for Health Science programs:

- Property is located immediately adjacent to the existing IUPUI Health Sciences district
- The existing IUPUI Health Sciences district is very densely developed constricting expansion.
- Site provides a front-door image potential off of West 10th Street and University Boulevard.
- Several of the facilities are in reasonably good condition and can accommodate IUPUI program in the short-term time frame.
- The site allows realignment of Wishard Blvd. to improve vehicle access and circulation.

Based on previous engineering reports which documented field observations, equipment inspections, and reviews of available documents; useful life estimates were made of architectural and engineering systems based on industry indices. Preliminary estimates for renovation and replacement costs were also projected.

As part of this master plan, a preliminary assessment was compiled. Table 2.1 summarizes this assessment into three distinct categories:

1) Facilities recommended for potential reuse which are in reasonably good condition.
   a. Lockefield Village for student housing/ office
   b. Ott and a partial North area of Bryce for administrative offices
   c. Primary Care Center for faculty office and clinics
   d. Wishard garage

2) Facilities recommended for demolition beyond economically feasible renovation
   a. Wishard Hospital, East and West Wing, partial South Area of Bryce
   b. Wishard Hospital Meyer Tower, F-Wing, Burdsal

3) Facilities potentially useful with major renovation
   a. Dunlap for education
   b. Regenstrief for education
   c. Service building, if both Dunlap and Regenstrief are retained on the system
   d. Wilson garage

1. Dunlap Building - View from East
2. Existing Wishard Hospital
3. Existing Wishard Gateway
4. Existing Wishard Hospital

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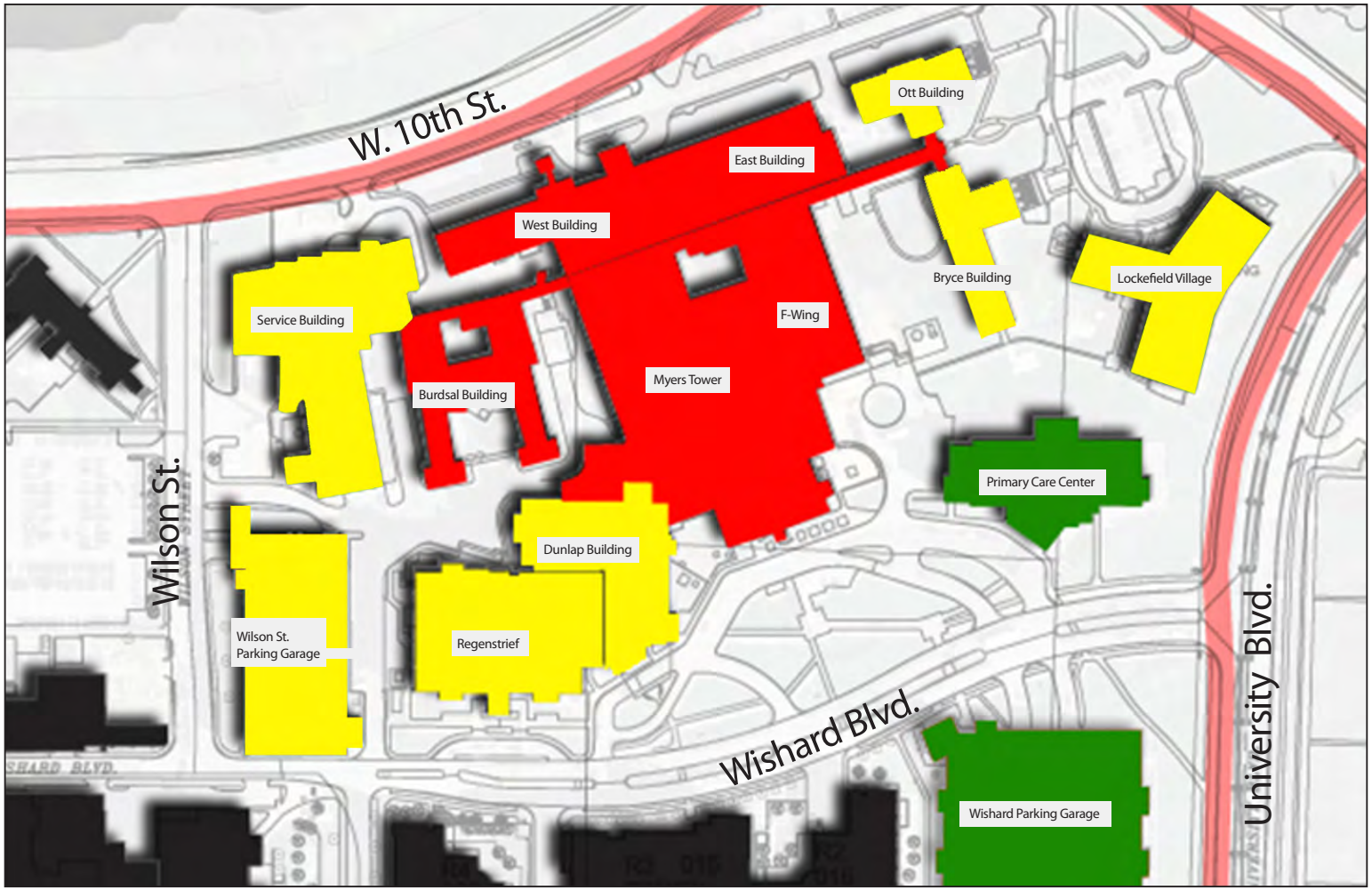
W. 10th St.
Ott Building
East Building
West Building
Bryce Building
Lockefield Village
Service Building
F-Wing
Myers Tower
Burdsal Building
Primary Care Center
Wilson St.
Dunlap Building
Wilson St.
Parking Garage
Regenstrief
Wishard Blvd.
Wishard Parking Garage
University Blvd.

District A1 UIPUI/Wishard	Exist'g. GSF	Building Classification	Building Age Yrs./2010	Number of Floors	Site Location Adjacency	Condition Assessment	Potential Reuse
Lockfield Village	104,815	I	13	4 +Bsmt	East/ Stand Alone	**Good Condition** MEP systems some upgrades replacements	Student Dorm Office
Primary Care Center	98,747	B	11	4 + Bsmt.	South / Stand Alone	**Good Condition** Upgraded MEP minor upgrades required	Faculty Office
Ott Building	30,390	B	86	4	North / Connected	**Fair Condition** Upgraded MEP minor upgrades required, new roof and windows needed	Office
Service Building	67,038	B	16	2	West / Connected	Reuse chillers & steam minor upgrades	Central Utility as required
Dunlap Building	135,479	I	22/6	4 +Bsmt	Central / Attached	**Good Condition** MEP systems some upgrades replacements	Office Education
Regenstrief	200,235	B	34	6 + Bsmt.	West / Attached	**Fair Condition** MEP Systems need replacement	Office Education
East Building	104,869	B	80	4 + Bsmt.	North / Attached	**Fair-Poor Condition** MEP Systems need replacement	Demolition
West Building	79,779	B	84	5	West / Attached	**Poor Condition** MEP Systems need replacement	Demolition
Myers Tower	394,176	I	40	7 + Bsmt.	Central / Attached	**Poor Condition** Central MEP distribution, upgrades required, roof replacement, plumbing replacement, FI to FI Height issues	Demolition
F- Wing	52,285	I	70	5 + Bsmt.	East / Attached	**Fair Condition** MEP Systems, Roof need Replacement	Demolition
Burdsal Building	69,700	I	95	5	West / Attached	**Poor Condition** MEP Systems need Replacement	Demolition
Bryce Building	48,818	B	85	5	East / Connected	**Poor Condition** MEP Systems need Replacement	Demolition Office
Wishard Garage	(1,200 cars)	P	5	7	East / Stand Alone		Retain Parking
Wilson St. Garage	(500 cars)	P			West / Stand Alone	Upgrading for added 10 year life	Retain Parking
Total Area	1,386,331						
Area for Reuse	98,747						
Potential Reuse	586,775						

Table 2.1 - Wishard Properties Assessment Summary

Reuse
Investigate for Reuse
Demolish

Previous Engineering Reports:

1 Wishard Health Services Capital Spending Plan, October 2006
2 Wishard Health Services Buiding Information Report, January 1999
3 Strategic Facility Analysis Wishard Hospital Buildings, October 2006

A further evaluation of the facilities was performed in the planning scenario alternatives based on potential program reutilization, economic costs of renovation/systems replacements for new program uses and health sciences center land expansion needs recommending additional replacement over time.

1. Indiana University Hospital, [i.3]
2. Dunlap-Regenstrief Building, [i.4]
3. Research Building, [i.5]

DISTRICT CHARACTER

The Academic Medical Center campus has an urban character, where the original gridded street pattern of the city has been modified to create super blocks for hospital, research, and educational uses on the Peninsula and at the Methodist campus. Evolving as separate campuses over time, the architectural style across the districts is quite different, ranging from the mix of historic and contemporary architectural styles in limestone, glass and red brick at Riley and IU Hospitals on the IUPUI Health Sciences district, to the buff-colored brick, glass, concrete and limestone character of the Methodist Hospital complex. District B, at the head of the Canal, has been most recently developed with a more contemporary architecture rendered in glass, concrete and brick. The emerging Neurosciences District still has the character of low-scale, light industrial sites south of 16th Street, with a variety of brick, metal and masonry construction, age and condition. This district will have the most dramatic transformation of its character with the development of the

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1. Health Information and Translational Sciences Building District B, [i.6]
2. West Tower, Methodist Hospital
3. Lockefield Village

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3

new Neurosciences complex and the future Neuropsychiatric Hospital.

The Wishard Hospital campus adjacent to the IUPUI Health Sciences district also represents a range of building age, condition and design character. Unlike the IUPUI campus, the primary materials consist of a buff-colored brick, glass, and concrete with limestone accents. As this area is redeveloped, it will become an important architectural gateway and visual transition to the red brick and limestone materials of the IUPUI campus.

GATEWAYS

The Academic Medical Center campus is served by a regional network of interstate freeways and an urban grid of local and major city thoroughfares. Three interchanges on the I-65 Freeway at Martin Luther King Jr. Avenue, at 21st Street and at Meridian Avenue provide regional access from north, south and east of Indianapolis, and carry over 50% of traffic coming into the study area.

The Academic Medical Center campus has multiple points of arrival and gateway opportunities, most notably at 21st Street at Senate Boulevard and Capitol Avenue; 16th Street at Capitol; the intersection of Martin Luther King Boulevard, West and 10th Streets; and the triangular intersection at Indiana Avenue, 10th Street and University Boulevard. Major entry identification and entry signs at 21st Street and on University Boulevard have been established, but several other opportunities exist that would create a more cohesive identity and aid in visitor arrival, orientation and wayfinding. For example, Meridian Avenue, a major city and regional thoroughfare just two blocks from the Methodist Hospital campus, is a missed opportunity for signage and access, as well as the Meridian Avenue I-65 exit ramps onto 10th and 12th Streets downtown.

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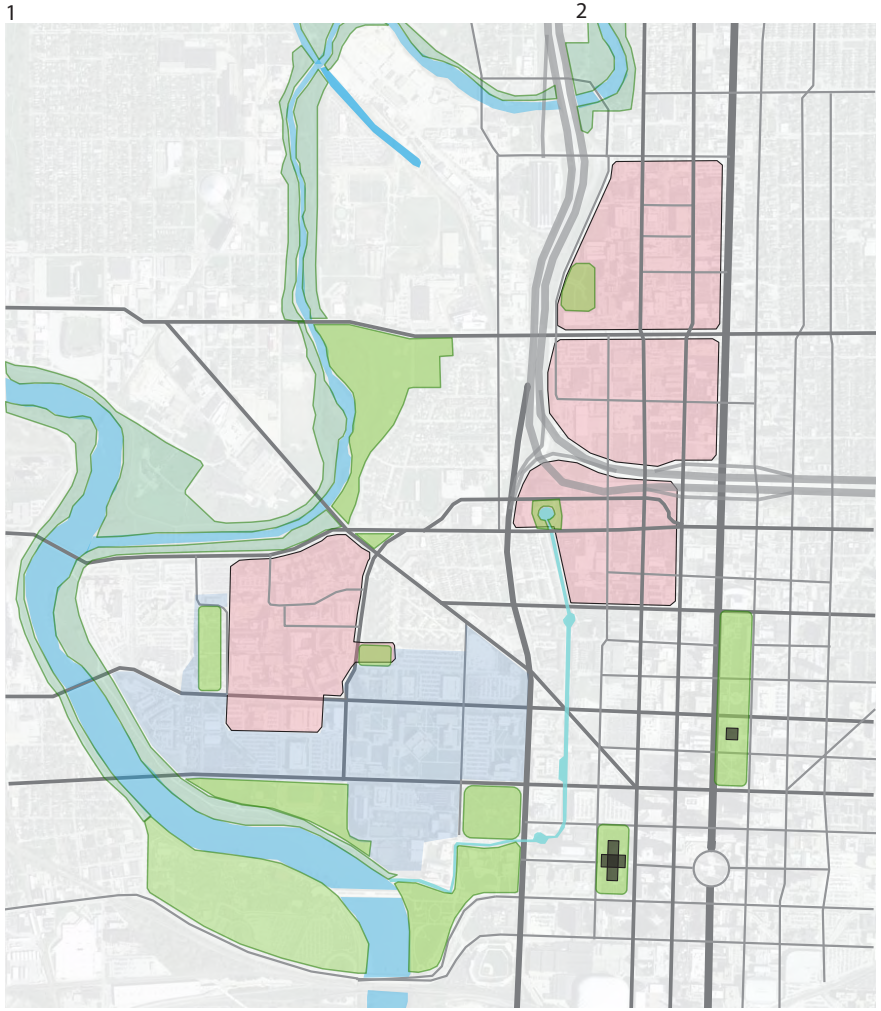
1. Riley Hospital Outdoor Walkway, [i.7]
2. Ball Gardens, [i.8]



Open Space Diagram

OPEN SPACE

The major open space systems of downtown Indianapolis consist of the riparian corridors and levee system along the White River and Fall Creek; the White River State Park; the Canal Walk; historic Military Park, Monument Circle, and major open space and mall from University Park to the Veterans Memorial Plaza. Beyond this larger context, the open space of the districts comprising the Academic Medical Center breaks down into a smaller scale of internal courtyards, streets, and pedestrian walks. There is no intervening scale of open space that bridges or links the city-wide system to the more intimate Health Sciences campus open space. As an attractive, public linear corridor, the Canal Walk has the potential to bridge the gap between city parks and the health sciences districts. Now used for surface parking, the land area under and abutting the I-65 freeway also has the potential to become a more attractive landscaped linear park and gateway that could help unite the districts.

1. Indianapolis Canal Walk
2. Indianapolis Canal Walk, [i.9]

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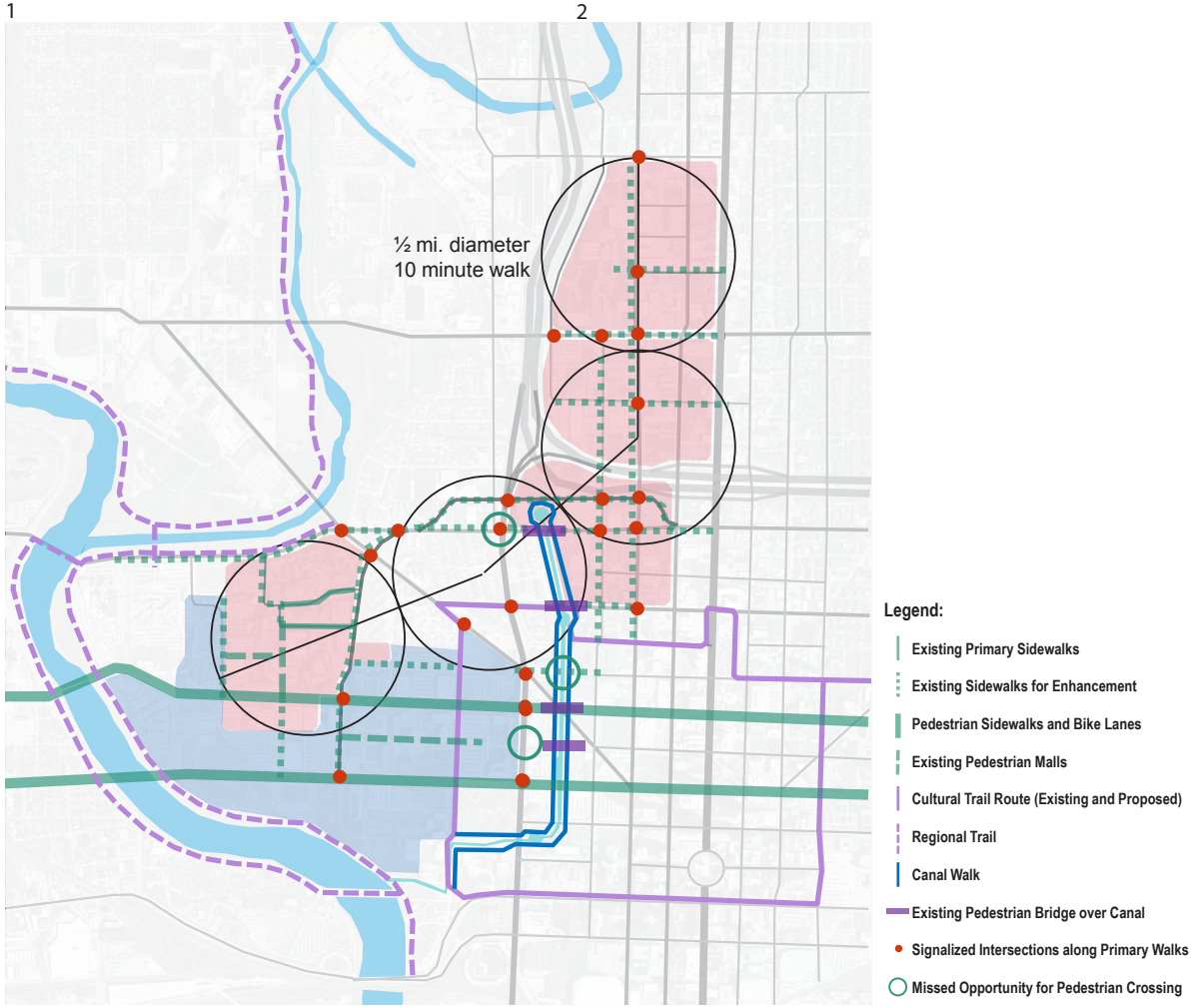
PEDESTRIAN AND NON-MOTORIZED CIRCULATION

The four districts of the Academic Medical Center campus span 2 miles, and would take over 40 minutes to walk end-to-end. Existing pedestrian circulation is made up of a network of public sidewalks, campus pedestrian malls and private or semi-public skywalks that link educational, research and healthcare functions within districts and to the People Mover. This current network varies in quality, scale and safety, with a high degree of jaywalking and informal mid-block crossings between surface parking and clinical or educational facilities. There is no coordinated network of designated bike lanes, although the City of Indianapolis is implementing bike lanes on major downtown streets such as Michigan and New York Streets. Construction of the Cultural Trail to the IUPUI campus helps provide a safer and more attractive east-west pedestrian and bicycle route across downtown. Along with the Canal Walk, the Cultural Trail is another asset to help connect districts with each other and downtown destinations.



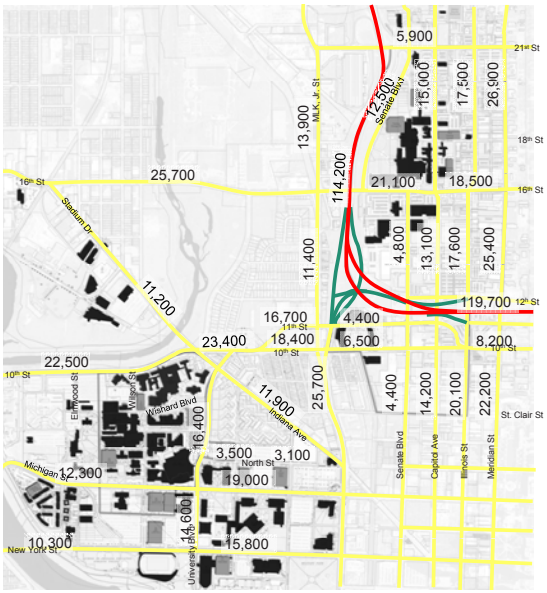
Existing Pedestrian and Non-motorized Connections

TRAFFIC, TRANSIT, AND PARKING

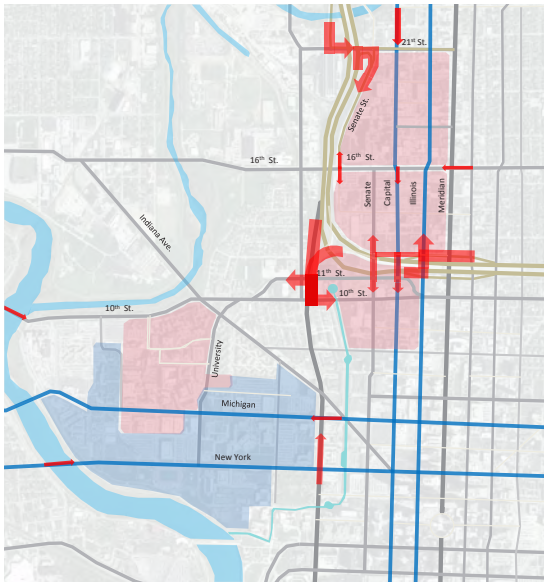
The majority of roadways and intersections located within the four districts of the Academic Medical Center campus operate well during the morning and afternoon peak periods. In general, the morning and afternoon peak traffic periods for the campus are relatively short, approximately 45 minutes.

The urban street grid in the four districts disperses vehicles well throughout the roadway network. The roadway grid is a combination of primary arterials and local roadways, supplemented by the I-65 freeway and secondary arterials (freeway ramps), as classified by the City of Indianapolis in the June 2002 Marion County Thoroughfare Plan.

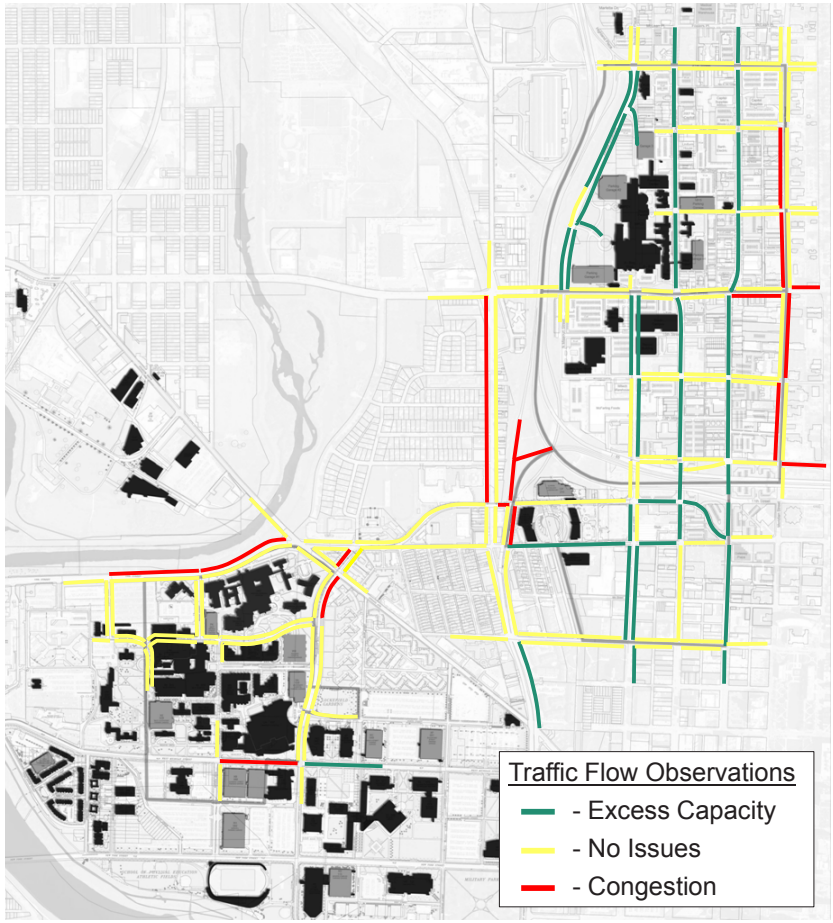
The grid allows drivers to access multiple routes within the campus and provides connectivity throughout the study area and to surrounding areas. In addition to the urban street grid, the network of one-way streets that operate north-south through Districts B, C, and D and those



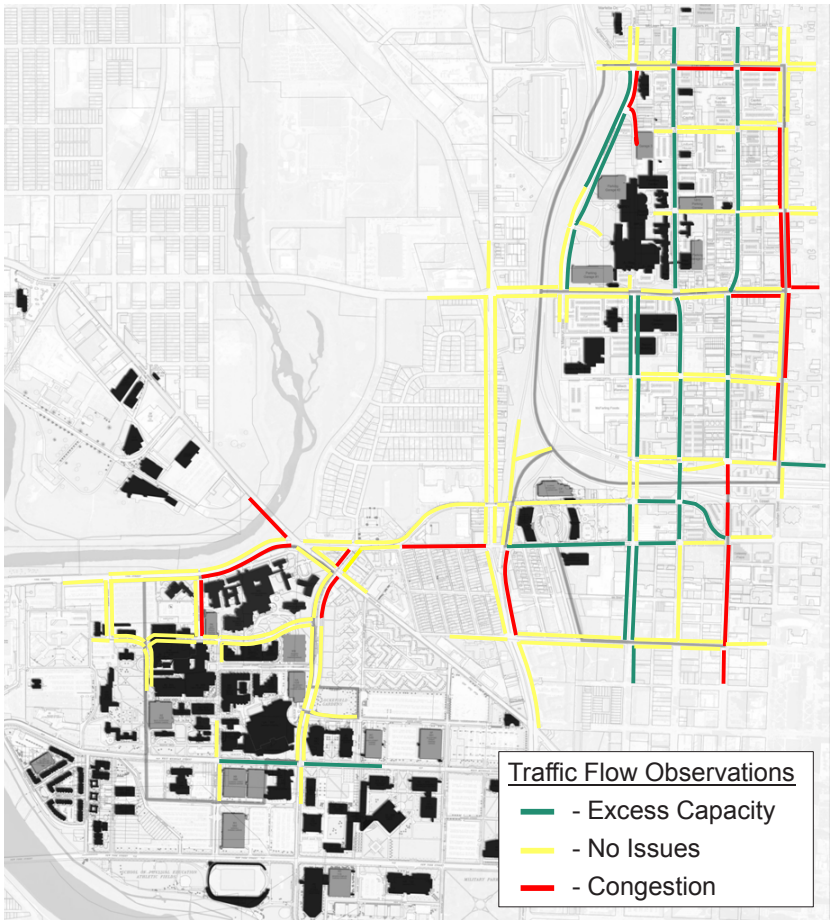
Roadway Classification



Primary District Connections



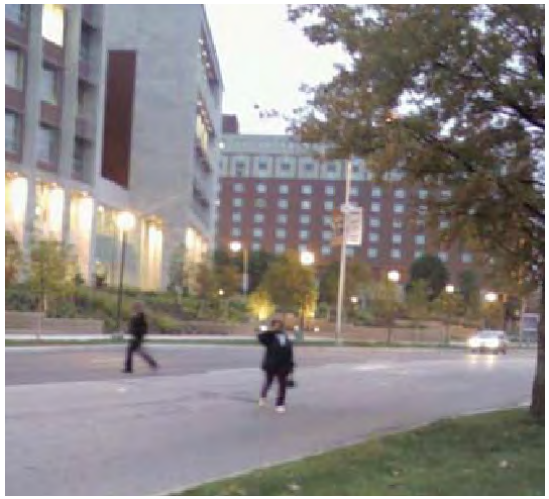
Vehicular Observations - AM



Vehicular Observations - PM

1. Illegal pedestrian crossing

that run east-west connecting Districts A and B are very efficient at moving vehicles through the campus. The one-way design and signal timing of Illinois and Capitol Avenues allow the streets to carry high traffic volumes with short delays to motorists or long waiting queues at intersections. However, these features also encourage high speeds and create an intimidating environment for pedestrians that want to cross these roads. The long blocks and large distances between traffic signals also contribute to the difficulty of pedestrians trying to cross, leading to more jaywalking.



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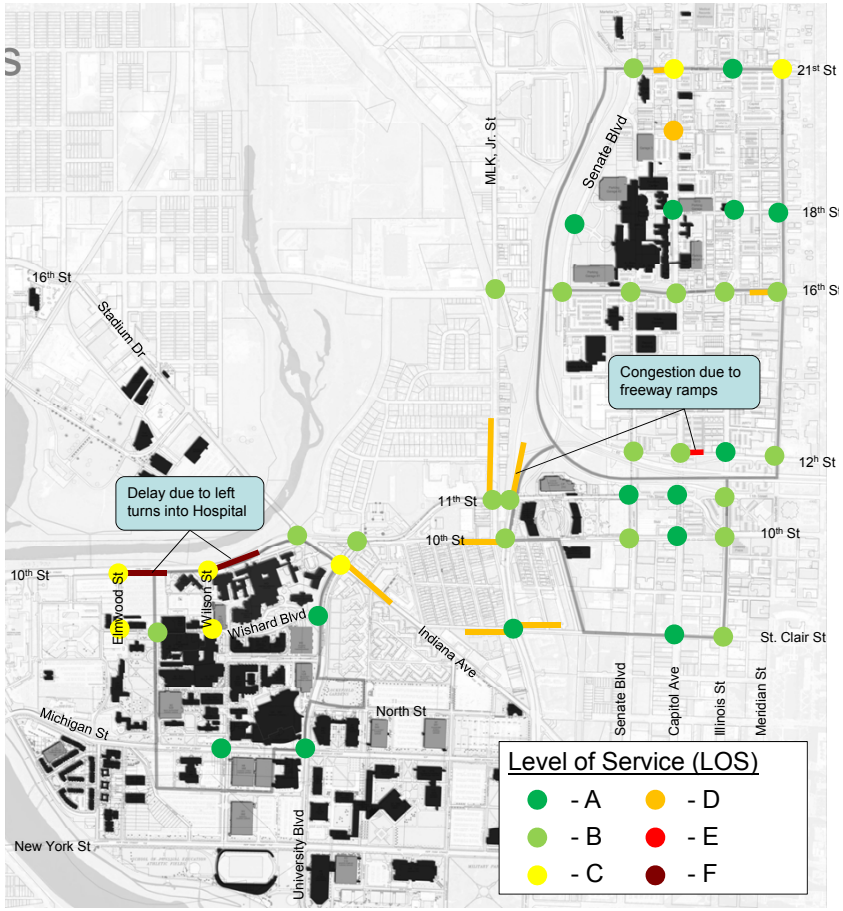
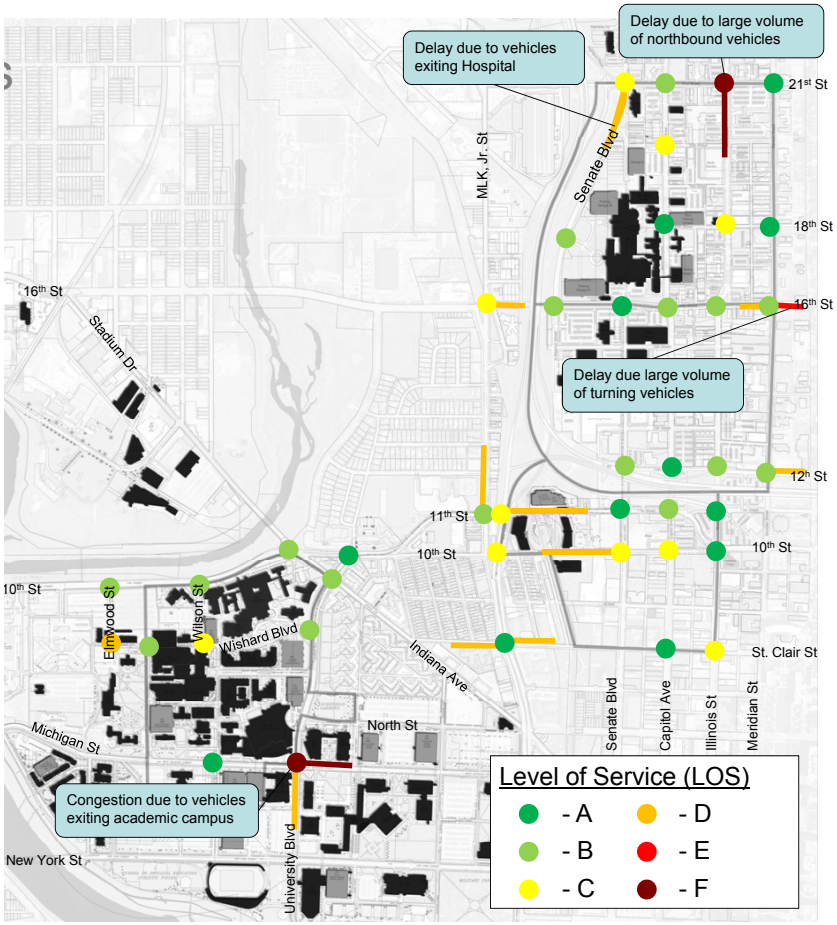
The majority of traffic arrive to the campus from the exit ramps off of I-65 at 21st Street (for District D), at I-65 and at 12th Street/Meridian (Districts B and C), and the I-65 off ramps at M. L. King Boulevard and 11th Street (Districts A and B). Approximately 10-15% arrives from the north and south on city arterials of Capitol Avenue and West Street. Less than 10% of all traffic arrives from the east or west on local streets (Michigan, New York and the 10th Street bridges).

Given the pattern of arrival, the majority of congestion within the campus occurs near the freeway ramps of I-65 and the queues lined up to access or exit I-65. Hospital entrances and exits, and a few of intersections also see some congestion of vehicular traffic. This is most notable at the entrances and exits to parking areas along 10th Street in District A and Senate Boulevard in District D during the morning and afternoon peak periods, respectively. Congestion also occurs along Meridian Street during the morning and afternoon peak periods due to the large volumes turning movements onto two-way side streets.

There are some roadways that travel through the campus that appear to have excess capacity, including Capitol Avenue, Illinois Street, Senate Boulevard, and Michigan Street. The excess capacity on these roadways is due to their configuration as one-way streets with wide cross-sections and well-timed signals. Reductions in capacity could potentially be made on Capitol and Illinois, such as eliminating one travel lane, without significant detrimental impacts to vehicles. Changing these two roadways from one-way to two-way would greatly benefit wayfinding and circulation in this district. Given their role in the regional travel pattern to downtown and the design of the I-65 interchange at Meridian, a more detailed feasibility study would need to be conducted.



Capacity Analysis - AM

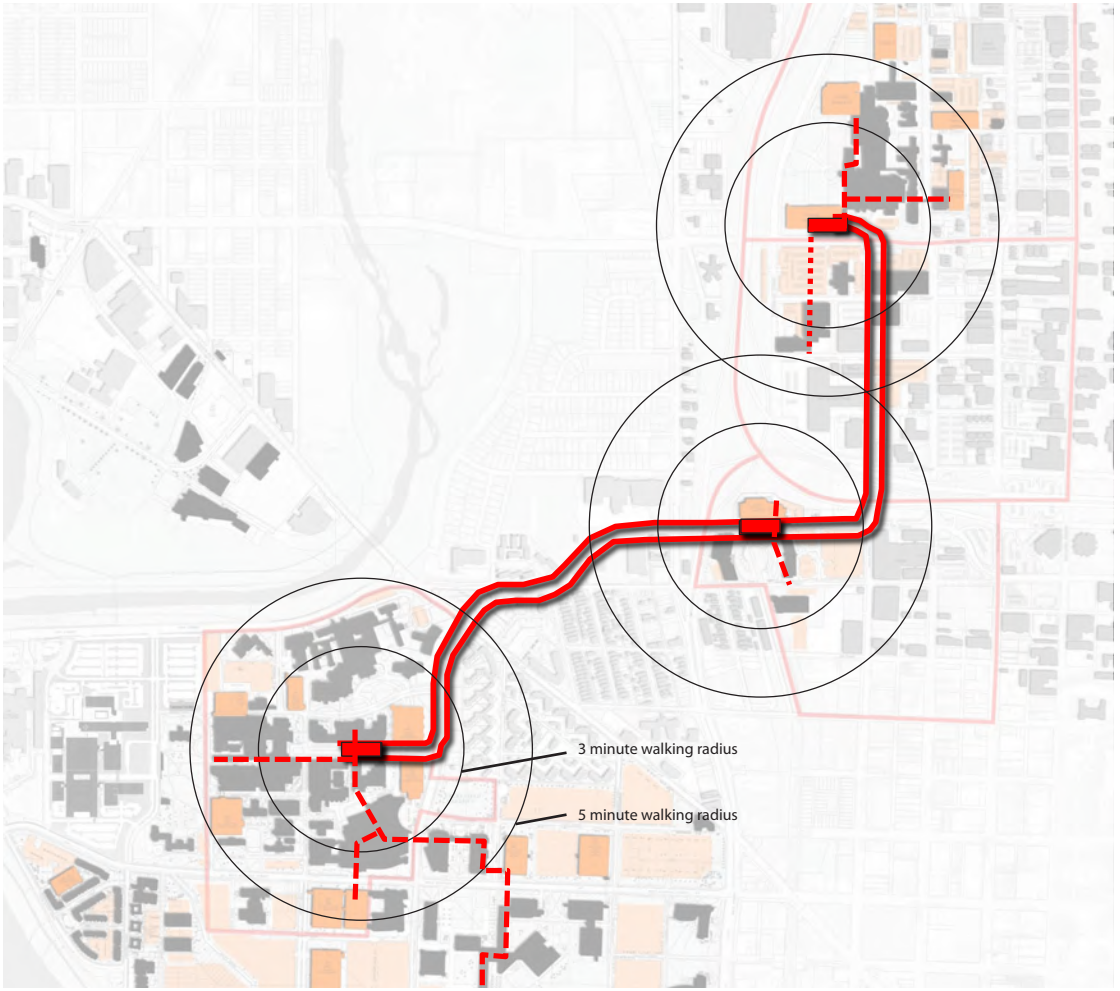


Capacity Analysis- PM

1. People Mover and Methodist Hospital, [i.10]

People Mover

The People Mover opened on June 28, 2003. It is 7,400 feet long (1.4 miles) on an elevated concrete, dual-track guideway serving three stations (IU/Riley, Canal and Methodist). It uses two three-car trains (called trainsets) with a passenger capacity of 81 passengers per train (24 seated and 57 standing). Trains are electrically powered and operate using rubber tires on the concrete guideway.



Existing Transit and People Mover Diagram

1. People Mover, [i.11]
2. People Mover Status Display

The design speed is 28 miles per hour, but the typical operating speed is 20 miles per hour in order to maintain a smooth ride. Each of the two trains operates back and forth from one end of the guideway to the other on an exclusive track. The running time from end to end of the track is seven minutes.

See operating schedule below.

The People Mover has operated with a 99% on-time record since 2007. Most service disruptions have been caused by snow and ice build-up on the tracks. Only a third of the track guideway has heating strips to reduce snow and ice build-up. The occasional difficulties during snow and ice periods are the only operating issues associated with the People Mover.

The ridership in 2009 was 455,057 trips. This was less than 20 percent of the peak period capacity for the ridership of the system.

The People Mover guideway can be extended from the stations at each end (Riley and Methodist) with modifications to walkways, train control and trainset doors (to open on both sides).

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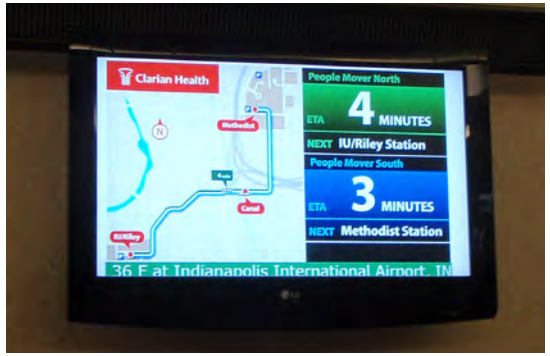

Monday-Friday	5:30 a.m. – 6:00 p.m.: two trains operate every 7 minutes 6:00 p.m. – 10:00 p.m.: one train operates every 14 minutes 10:00 p.m. – 5:30 a.m.: one train operates an on-call operation
Saturday	5:30 a.m. – 10:00 a.m. one train operates every 14 minutes 10:00 a.m. – 2:00 p.m.: two trains operate every 7 minutes 2:00 p.m. – 10:00 p.m.: one train operates every 14 minutes 10:00 p.m. – 5:30 a.m.: one train operates an on-call operation
Sunday	5:30 a.m. – 10:00 p.m.: one train operates every 14 minutes 10:00 p.m. – 5:30 a.m.: one train operates an on-call operation

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The People Mover is operating at less than 20 percent of its peak period capacity. The current operation does not have the traditional AM and PM peak times because most of the passengers are using the People Mover for interoffice travel and not rush hour travel to and from a parking garage. In fact, the busiest peak times for People Mover ridership are the weekday midday hours for lunch trips. This is reflected even on Saturdays when the People Mover operates two trainsets between 10:00 a.m. and 2:00 p.m. to cut waiting times from every 14 minutes to every 7 minutes.

A detailed analysis of People Mover ridership characteristics was not part of this master plan effort. However, the planning team conducted basic ridership research to determine if the system would have the capacity with the existing fleet or additional trainsets to handle the ridership with the proposed People Mover options to serve new IUPUI and IU Health parking garage capacity.

Based on a review of July and March 2010 data provided, the peak monthly ridership was 45,000 passengers. The highest single hour of ridership during the month was 242 passengers during the noon hour on Friday, July 23rd. Two People Mover trainsets were in service at that hour to provide a train every 7 minutes for travel in either direction. At this service frequency the two trainsets complete 17.1 trips per hour. Each trainset has a total passenger capacity of 81 passengers (24 seated, 57 standing) and provides a system capacity of 1,385 passengers per hour with two trainsets in operation. During this peak hour, the lunch hour ridership utilized 17.5% of the system capacity. This analysis is illustrated in the table below:

Friday, July 23, 2010 Peak Hour Ridership 12 Noon	242 passengers
People Mover Operating Schedule per direction	Every 7 minutes (two trainsets)
Number of People Mover trips per hour/direction	8.57 trips
Total People Mover trips per hour	17.1 trips
People Mover trainset capacity	81 passengers: 24 seated, 57 standing
Total People Mover capacity per hour	1,385 passengers
Peak Hour Capacity Utilization 7/23/2010	242 psgrs./1,385 capacity= 17.5%

1. IU Shuttle service

Transit

IUPUI Transportation System

IUPUI operates a transportation system connecting campus points, residences and parking facilities. The five transportation routes operate Monday – Friday, year round except University holidays. Service is provided free of charge to members of the university community. Transportation services are provided by a fleet of vans operated under contract by Bloomington Shuttle Services.

The five IUPUI transportation routes (Brown, Purple, Gray, Pink, Olive, Teal) all serve the IUPUI Campus Center. The network of routes is designed to provide transportation connections and circulation to IUPUI buildings on Campus East and Campus West, the Health Information and Transitional Sciences (HITS) building, and campus residential halls such as Park Place. Two of the IUPUI transportation routes provide service to and from the peripheral parking facilities along Stadium Drive, including parking at Bush Stadium and the Kuntz Soccer Stadium.

Service frequencies on each route vary from every 10, 20 or 40 minutes depending on route and time of day. The IUPUI transportation system connects the IUPUI Campus Center with various locations on the following routes:

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Route	Hours of Operation	Service Frequency	Route Characteristics
Brown Line	6:00 a.m. – 12:00 a.m.*	Every 10 minutes	Serves parking lots via Stadium Drive
Purple Line	6:00 a.m. – 12:00 a.m.*	Every 10 minutes	Connects Stadium Drive parking lots with the IUPUI Conference Center
Gray Line	6:20 a.m. – 9:40 p.m.**	Every 20 min 7a -7p Every 40 min from 6:20 – 7a; 7p -9:40p	Service to Campus West destinations
Pink Line	6:20 a.m. – 9:40 p.m.**	Every 20 min 7a -7p Every 40 min from 6:20 – 7a; 7p -9:40p	Service to Campus East destinations
Olive Line	7:00 a.m. – 6:00 p.m.	Every 20 minutes	HITS Route
Teal Line	7:00 a.m. – 9:40 p.m.	Every 20 minutes	Park Place Route

*Brown and Purple Lines operate as one route 10:00 p.m. – 12:00 a.m.
** Gray and Pink Lines operate as one route 6:20 a.m. – 7 a.m. and 7 p.m. – 9:40 p.m.

1. IndyGo Signage
2. IUPUI Shuttle Signage

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IndyGo

The Indianapolis Public Transportation Corporation (IndyGo) operates 29 fixed routes throughout Indianapolis and Marion County, serving over nine million passengers per year. Although together IUPUI, Indiana University Health and Wishard form a major employment destination in the region, most of the IndyGo bus routes are structured with a focus on downtown Indianapolis and thus offer limited direct service to the IUPUI campus, Indiana University Health and Wishard medical sites.

As part of the Student Activity Fee, IUPUI students are eligible to receive an IUPUI S Pass which is good on all IndyGo routes. All others pay $1.75 fare per ride or $60.00 for a monthly pass.

The IUPUI Campus, Riley Hospital and the Indiana University Hospital are served by the following IndyGo routes:

- 3 Michigan Street;
- 10 Tenth Street;
- 37 Park 100; and
- Red Line Downtown Circulator.

The Methodist Hospital is served by the following IndyGo routes:

- 4 Ft. Harrison;
- 25 West 16th Street; and
- 28 St. Vincent.

There is currently no transit service, whether operated by IUPUI or by IndyGo that connects the districts of the Academic Medical Center campus to each other. The People Mover is the only transportation connection to all of the districts. This is a deficiency in service that will need to be addressed as part of the planning for the Academic Medical Center campus.

1. District A Parking
2. Methodist Parking Overflow

Parking

Planning District A

Parking in Planning District A comprises a variety of parking garages and surface parking lots located on the IUPUI Health Sciences district and the Wishard Memorial Hospital campus. The combined total of 6,353 spaces is approximately 97 percent utilized during peak periods.

- IUPUI currently operates and maintains four parking garages and four surface parking lots within District A, and most of this parking inventory is reserved for visitors and patients. Primary parking for hospital staff and physicians is provided in adjacent facilities outside the planning area. The University garages and lots are well maintained and in good condition overall, and access into these facilities is controlled with the use of parking revenue and access control systems.
- Wishard Memorial Hospital operates one parking garage, a surface lot for physicians, and small miscellaneous surface lots scattered about the Wishard campus. The majority of parking for Wishard visitors, patients and physicians is provided in these facilities on the campus. Due to construction of the new Wishard Hospital, staff parking formerly west of the hospital complex has been temporarily relocated to off-campus lots accessed by shuffle. The parking garage uses a parking access and revenue control system, and parking on the campus in general is well lighted and in relatively good condition. The staff surface parking lots outside District A are heavily used and in fair condition.

Planning District B

IUPUI and Indiana University Health have new facilities situated on 14.5 acres located between 10th and 11th Streets at the top of the canal in Planning District B. There is a total of 1,091

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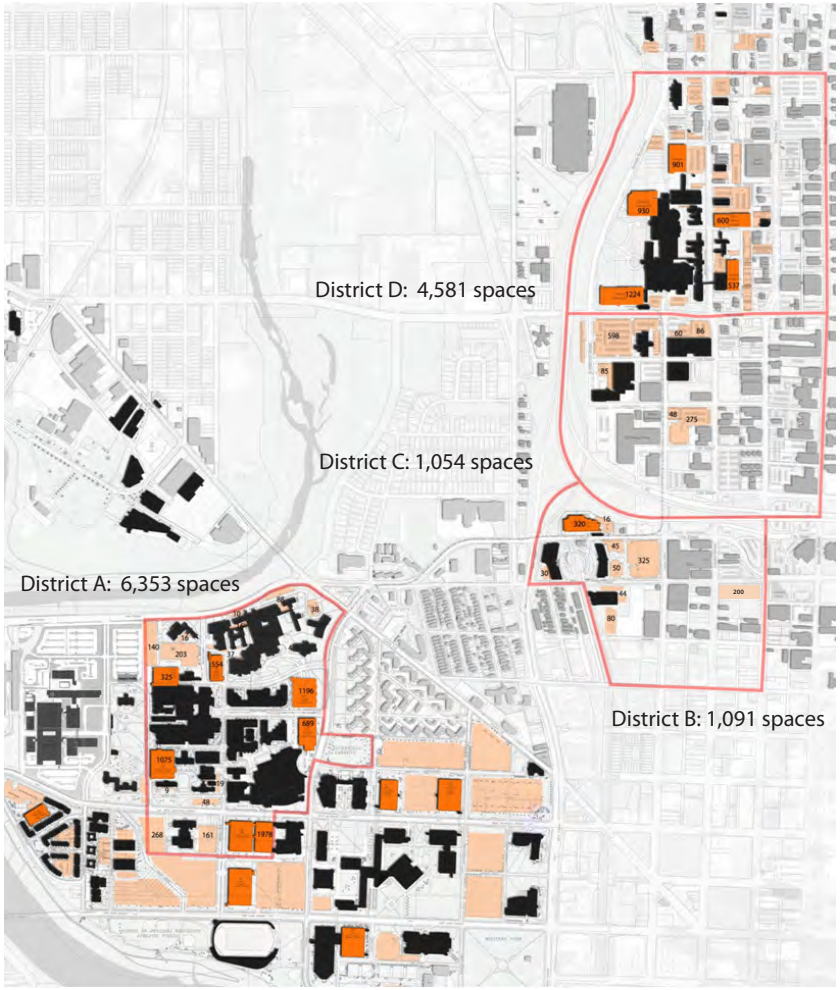
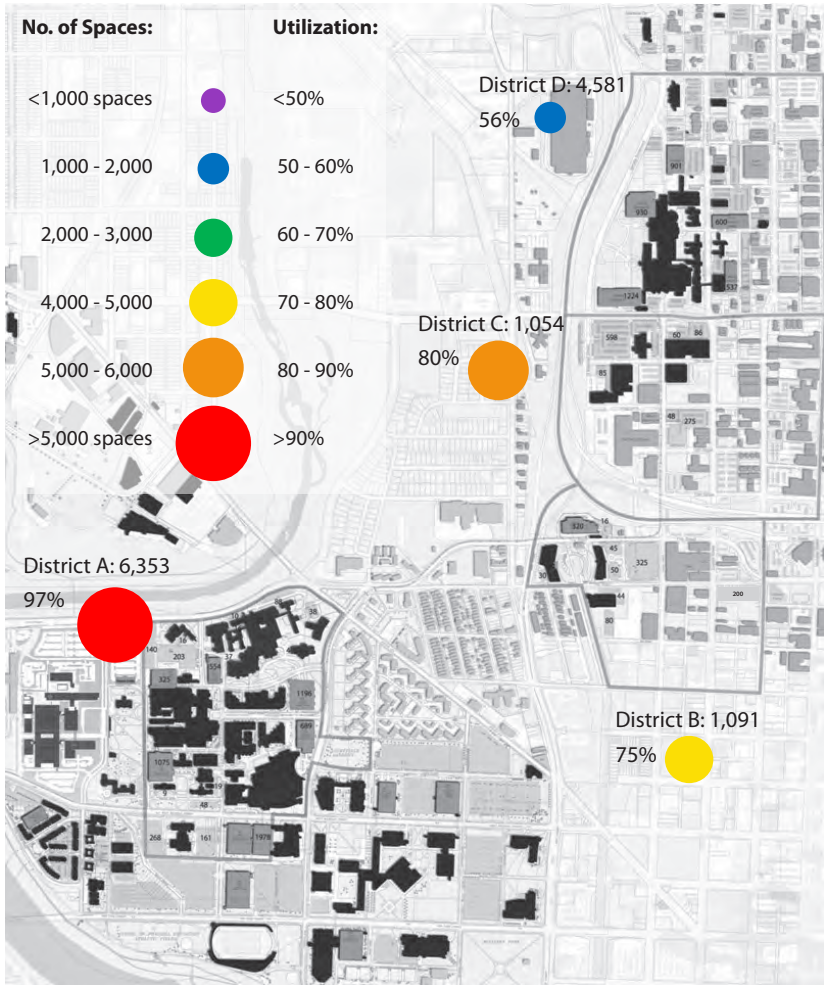


Existing Parking by District



Parking Utilization by District

1. Wilson Street Garage, [i.12]

parking spaces with 320 spaces in a garage under the Indiana University Health Clinical Laboratory building, 370 spaces on a large surface lot east of Fairbanks Hall, 200 spaces in a surface lot by the Gateway Building and 201 spaces in smaller lots adjacent to the four buildings in the complex. The majority of the parking inventory is gated and reserved for employees working in the complex. The parking facilities are well lighted and maintained, and are 75 percent occupied on average during peak traffic periods.

Planning District C

Indiana University Health/Methodist Hospital owns six surface parking lots and leases two others in Planning District C, located south of the Methodist Hospital complex. These lots are reserved for employee parking and 80 percent of the 1,054 spaces in the lots are used during peak times, with some excess parking available throughout the day in the more distant lots. Access control equipment is not present, so permits are required and the lots are patrolled regularly by campus police. Most of the lots are in good condition, but some require hard surface repairs, fresh pavement markings/striping, and sign improvements.

Planning District D

The majority of parking for Indiana University Health / Methodist Hospital is located in Planning District D and includes one leased garage, four parking garages and thirteen surface lots owned by Indiana University Health. The combined total of 4,581 spaces are used at only 56 percent of capacity during peak parking periods. The parking garages are located in close proximity to the Methodist Hospital complex and provide the primary parking for visitors and patients. The two garages located to the east are older facilities with limited service life remaining. The surface parking lots in this planning area are distributed to the east and north of the Methodist Hospital complex and are heavily used by employees. The lots in close proximity are full at peak times and the few distant lots usually have a modest amount of excess parking available

1

throughout the day. Most of the lots do not have access control equipment but are appropriately signed and patrolled regularly by campus police. However, some lots are missing signs or the signs require updating or replacement. Many of the smaller lots are located off lanes behind buildings or alleyways and are in poor condition, some with gravel or stone parking surfaces, and given their location and state of repair they are perceived to have a general lack of security.

3| PROGRAM

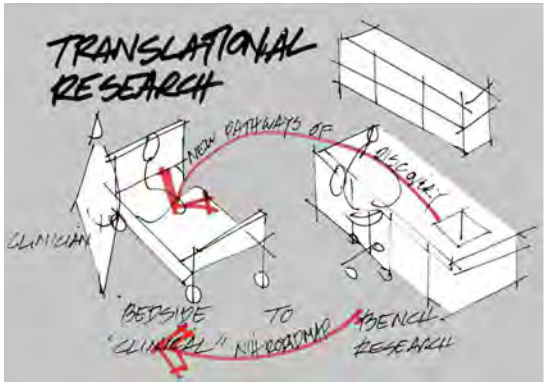
EXISTING PROGRAM UTILIZATION

An analysis was completed for existing space utilization for Health Sciences education, research and faculty office space and the Indiana University Health System clinical inpatient, outpatient, faculty practice and Heath System administrative office space. Although there is joint utilization of several buildings on the Academic Medical Center campus districts, space utilization was analyzed by a mix of current occupancies versus building functions. For example, the School of Medicine faculty occupies office and clinical space in the University Hospital on a lease basis. This space is accounted for in the IUPUI utilization summary.

Education and Research

The current overall utilization at the four districts composing the Health Sciences space is approximately 1.396 million net assignable square feet (NASF) for the Health Sciences programs including the School of Medicine, School of Nursing, School of Dentistry, Department of Public Health and School of Health and Rehabilitation Sciences. Some of the current University Health Sciences space does not meet current university standards for functional adequacy and is scheduled for demolition or repurposing over the next several years. This includes current space in Long, Clinical/Gatch, Coleman, and Riley Research buildings which house faculty office, some research laboratory and educational uses. These buildings are of considerable age and would require major renovation to retain for future state-of-the-art program occupancy. Several of these facilities are located on site parcels that are contiguous to major Health Sciences and Hospital facilities and would be prime sites for potential future expansion.

Overall Health Sciences faculty, especially, in the School of Medicine are scattered throughout several buildings and not functionally contiguous with educational or other clinical functions for effective operations.



Clinical and Research Integration

Indiana University Health Clinical and Administrative

Indiana University Health currently utilizes approximately 5.055 million net assignable square feet, of which 885,577 NASF (17%) is in leased facilities. Indiana University Health Inpatient Hospital space is not adequately positioned for the emerging model-of-care for patient privacy, level of acuity and functional adjacency. Several of the bed towers at Methodist Hospital are scheduled for renovation and new patient towers planned for space realignment.

	Existing NSF All Districts	Proposed NSF Growth	Proposed Demolitions	Demo GSF To Be Replaced	Total Additional Required GSF	Total GSF Required
Academic	**1,395,995**			**373,410**	**1,947,460**	
SOM	**1,185,765**	**509,275**			**1,370,900**	**1,370,900**
	490,985	112,250			142,570	**395,980**
Administration						
				253,410	253,410	
			Long Replaced	55,500		
			Fesler Hall To Remain	-		
			Riley Research Replaced	61,400		
			Clinic Bldg. Replaced	102,510		
			Emerson to Remain			
			Surge Space for Relocations		50,000	**50,000**
Research	537,415	391,025			781,920	**781,920**
Education	115,650	6,000			11,000	**11,000**
Clinical	29,745				64,000	**132,000**
			Gatch Replaced by Glick		68,000	
Other	11,970		Coleman Replaced	34,000		
SOH&RS	**15,820**	**24,780**			**49,560**	**61,000**
SON	**77,397**	**84,594**			**153,800**	**222,000**
DOPH	**7,040**	**16,360**			**29,750**	**35,000**
SOD	**109,973**	**78,898**	Partial existing to remain		**223,450**	**343,400**
			SOD Clinic Replaced	120,000	120,000	

Table 3.1 - Health Sciences Space Summary

A portion of the leased space, 236,000 NASF for Indiana University Health office support is approaching lease expiration time frames over the next several years and can be exited and consolidated to new space to improve efficiency.

As both IUPUI and Indiana University Health accommodate their growth and replacement needs over the next several years, the existing space replacement, repurposing and consolidation represent a significant joint opportunity for functional integration and alignment of programs

	Existing NSF All Districts	Proposed NSF Growth	Proposed Demolitions	Demo GSF To Be Replaced	Total Required GSF
IUH Healthcare	**5,055,877**				**2,339,840**
Riley	**833,800**				**450,000**
Hospital				Simon Tower Fit-out	(182,000)
				Phase 2-Flrs 2-4 Reno	(58,400)
				Phase 3 Mother Baby	(135,000)
Outpatient				Clinic Faculty Office	150,000
				Simon Tower addition	300,000
University	**1,077,200**				**-**
Hospital				Bed Floor Reno	(139,000)
				Cancer Center fit-out	(57,500)
				Ed Expansion	(4,000)
				D&T renovation	(17,000)
Outpatient				Clinic Renovation	(30,000)
				ICU/ACU Renovation	(48,500)
Methodist	**2,259,300**				**1,400,400**
Hospital				Bed Floor Renovations	(324,000)
				South Expansion	122,000
				NE Bed Tower 1	601,000
				NE Bed Tower Exp.	72,000
				West Bed Tower Exp.	215,600
				MOB Faculty Office	116,000
Outpatient				Neuro Ambulatory	211,300
				Neuro Expansion	62,500
Administrative	**885,577**	**154,000**	**Lease Exits NSF**	**236,117**	**489,440**
Corporate			Gateway (to remain)	-	
			1815 Demo	13,057	
			2039 Demo	7,327	
			Safeco Exp.	43,770	
			Bldg. B&C	52,396	
			South Madison	54,051	
			Independence	54,364	
			Methodist Tower	11,152	
Other Programs					

Table 3.2 - Indiana University Health Space Summary

1. Medical Staff at Riley Hospital

PROJECTED PROGRAM REQUIREMENTS

Consolidated Projected Program

The program projections for educational, research and faculty office space for the various schools of the Health Sciences along with the program projections of Indiana University Health clinical, faculty practice and administrative support office space were developed and consolidated into a composite summary. Program projections were compiled based on the individual schools and hospital's 20-year projections of 2010 and beyond needs, review of previous separate facility master plan studies and interviews with the respective academic deans and hospital directors. The consolidated requirements were reviewed with the Steering and Executive Committees and some adjustments were made based upon understanding of several strategic initiatives:

1

- The School of Medicine (SOM) is reevaluating the current space in Medical Library and Van Nuys to accommodate smaller group teaching.
- The SOM is undergoing a curriculum study that may impact an integrated education approach with other Health Sciences Schools.
- The SOM research programs will grow to attain a top-10 University NIH funding status in Cancer, Neurosciences, Pediatric and Cardiovascular/ Diabetes programs. Also, potential research synergy with programs in biomedical engineering will be needed.
- The current Neurosciences initiative is embarking on a more integrated research and clinical alignment and collocation.
- The University Hospital and Simon Cancer Center is repositioning for greater recognition as a top regional cancer and transplant Hospital to a proposed NCI Comprehensive Cancer Center (CCC) model.
- Methodist Hospital will become the primary acute Hospital in Indianapolis, Indiana University Hospital System.
- The School of Dentistry (SOD) has

recruited a new dean and will impact SOD planning, fund raising initiatives and research growth.

- The School of Health & Rehabilitation Sciences currently does not have a permanent home and can be more integrated into the Health Sciences Center.
- The Department of Public Health is scattered in several buildings and would be additional candidate for integrated Health Sciences education location.

The 20-year program projections indicate an overall need for over 4.430 million gross square feet for all IUPUI and Indiana University Health System needs. Table 3.3 summarizes the consolidated Academic Health Center programs.

Health Sciences Projections

The total Health Sciences programs projections are for 1.947 million GSF including required facility replacements.

The School of Medicine (SOM) projected growth is primarily in the research faculty and programs requiring a total 1.371 million GSF of additional laboratory and vivarium space. This total includes replacement of older facilities of Long, Coleman, Clinic/Gatch and Riley Research buildings which house primarily faculty offices.

The School of Health and Rehabilitation Sciences (SH&RS) projects a plan to accommodate programs in a new 61,000 GSF facility and would collocate with other Health Sciences programs.

The School of Nursing (SON) projects a modest expansion for educational needs, currently the nursing enrollment of 1,200 students is the largest in the nation; current research faculty are funded 8th in the nation for nursing schools by NIH. Expansion needs will be impacted by the IU Hospital Simon Cancer Center initiative for future NIH CCC status. Current projection shows the school potential of doubling its needs to 222,000 GSF if SON increases enrollment and research.

The School of Dentistry (SOD) was previously planned to grow and replace the current Dental School facility. The potential feasibility to fund raise for a total new facility was challenged. A more modest phased expansion of clinic programs and renovation of teaching and faculty space is projected at 343,400 GSF.

The Department of Public Health (DOPH) is scattered in several buildings and temporarily leasing additional space off campus, programs need a permanent location and some growth for a total projected program of 35,000 GSF.

Indiana University Health Projections

Indiana University Health clinical growth is primarily in outpatient and diagnostic facilities at the Methodist, Riley and Indiana University Hospitals. The inpatient new facilities expansion is a realignment of inpatient units for patient privacy, degree of acuity and emerging health cost

containment and reimbursement constraints.

The total Indiana University Health system projected needs are for 2.340 million GSF; however a majority of the administrative office and outpatient physician practice clinical space will be leased.

Riley Hospital projects a need for 450,000 GSF. This includes fit-out to current shelled space in the Simon Tower in several phases, addition of a Faculty Clinical facility and long term expansion of a Simon Tower Addition. Related to the Children's Hospital is a desire to expand the Ronald McDonald House. There could be expansion potential next to its current location.

University Hospital's initial projections were to decrease beds and relocate patient admissions to the Methodist Hospital site. Recent census data indicates a need for the current number of beds and expansion of emergency and diagnostic departments and renovations to the outpatient clinics and intensive care units. Current projections for these programs are essentially

	Existing NSF All Districts	Proposed NSF Growth	Proposed Demolitions	Demo GSF To Be Replaced	Total Additional Required GSF	Total GSF Required
Academic	**1,395,995**			**373,410**	**1,947,460**	
SOM	**1,185,765**	**509,275**			**1,370,900**	**1,370,900**
	490,985	112,250			142,570	**395,980**
Administration						
				253,410	253,410	
			Long Replaced	55,500		
			Fesler Hall To Remain	-		
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Education	115,650	6,000			11,000	**11,000**
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SOH&RS	**15,820**	**24,780**			**49,560**	**61,000**
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DOPH	**7,040**	**16,360**			**29,750**	**35,000**
SOD	**109,973**	**78,898**	Partial existing to remain		**223,450**	**343,400**
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Outpatient				Clinic Faculty Office	150,000
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University	**1,077,200**				**-**
Hospital				Bed Floor Reno	(139,000)
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				NE Bed Tower 1	601,000
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				MOB Faculty Office	116,000
Outpatient				Neuro Ambulatory	211,300
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Administrative	**885,577**	**154,000**	**Lease Exits NSF**	**236,117**	**489,440**
Corporate			Gateway (to remain)	-	
			1815 Demo	13,057	
			2039 Demo	7,327	
			Safeco Exp.	43,770	
			Bldg. B&C	52,396	
			South Madison	54,051	
			Independence	54,364	
			Methodist Tower	11,152	
Other Programs					
				Total GSF Required	**4,492,140**

Table 3.3 - Consolidated Academic Medical Center Program Projections

within the existing footprint of the Hospital. The initiative to attain a future NIH CCC status will impact the need for contiguous research and future clinical space. A private development hotel for cancer patient pre-admission testing and family stays is also needed within proximity to the Hospital. The potential to share hotel space with the University Hotel should be further discussed and investigated.

The Methodist Hospital site and the district south of 16th Street will need to accommodate an additional 1.127 million gross square feet for projected programs.

This includes the Nursing tower expansions for a new North East Tower and West Tower expansion for program realignments to single occupancy rooms. Outpatient faculty practice and clinical diagnostic programs will also expand. Current Neurosciences clinical program and expansion is planned at 273,800 GSF; phase 1 is being provided through a developer.

The Indiana University Health administrative and support office space will be accommodated through leased space in new and replaced leased facilities. Space need projections will track with the overall growth and consolidation of the Indiana University Health system and is projected at 489,440 GSF. This includes the replacement of 236,117 equivalent GSF of lease space exits.

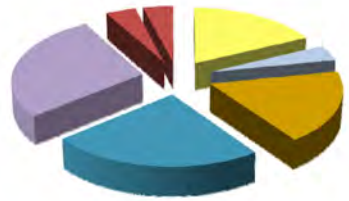
The consolidated Academic Medical Center programs were initially allocated to specific districts based on current location of similar programs.

Consolidated Academic Medical Center Program Projections

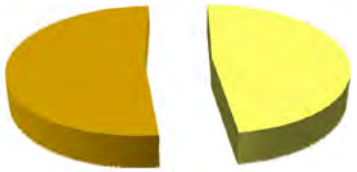
Program growth reutilization and related uses were allocated to the various Academic Medical Center campus districts. Table 3.4 shows this initial distribution which illustrates that approximately half of the total growth still needs to be accommodated in the Peninsula District A, the most densely developed district in the Academic Medical Center campus.

Program by District (GSF)	
District A	
Base Program	**2,251,800**
Administrative	436,400
Support	100,000
Research	450,000
Clinical - Glick/Riley	582,000
Education	683,400
McDonald House (future)	100,000
Hotel / Hope Lodge (future)	100,000
District B	
Base Program	**184,140**
Administrative	184,140
IU Research/Incubation (future)	200,000
District C	
Base Program	**829,600**
Administrative	305,300
Clinical/Diagnostic	273,800
Family Practice Rep (future)	24,000
Research	250,500
Hotel (future)	125,000
District D	
Base Program	**1,226,600**
Methodist Expansion (incl. new MOB GSF)	1,126,600
Research	100,000
TOTAL =	**4,492,140 GSF**

Table 3.4 - Consolidated Academic Medical Center Program Projections by District



District A
2,251,800 GSF



District B
184,410 GSF

District C
829,600 GSF

District D
1,226,600 GSF

4| SCENARIO EVALUATION

Based on the integrated program space projections and site opportunities, an analysis was developed of strategic alignment of program linkages and adjacencies that could best optimize functional interrelationships. This analysis looked at planning drivers for research, clinical, education and support functions in a variety of scenarios to ultimately achieve the best planning configuration. The following scenarios emerged as the best options.

PREFERRED FUNCTIONAL RELATIONSHIPS

The functional relationships between clinical, research and educational programs were analyzed in a series of alternative scenarios to test optimal functional adjacencies, potential linkages between programs and opportunities for shared use of sites and facilities. An initial series of three scenarios were developed:

1. Integrated
2. Distributed
3. Consolidated

Integrated Scenario

This functional scenario optimizes the full integration of clinical, education and research programs by integrating programs at adjacent sites or in joint-use facilities.

Planning drivers:

- Research adjacent to patient care environments to integrate clinical and translational research.
  - NCI Cancer Research at University Hospital
  - Cardiovascular research at Methodist Cardiovascular clinics
  - Neurosciences research with proposed Neurosciences clinics, imaging center, vivarium and future Psychiatric Hospital
  - Pediatrics research contiguous with Riley Hospital
- Education expanded and integrated at the Peninsula Campus with potential to optimize an integrated Health Sciences curriculum

  - SOM , SON, SOH&RS, DOPH potentially contiguous
- Administration / Faculty Offices expanded and integrated at District Level based on availability of property acquisition
  - Educational Faculty at the peninsula
  - Administrative offices at the Hospital and adjacent Districts
- Parking integrated into each District for patient and student priority convenience

Integrated Scenario

Distributed Scenario

This functional scenario optimizes site utilization and distributes educational and administrative programs to be located more central to the clinical Hospitals.

Planning Drivers:

- Research distributed to a combination of Basic Sciences complex and some clinical integration
  - Neurosciences distributed to the Neurosciences Clinical complex
  - Additional expansion contiguous with the basic sciences complex at the Peninsula.
- Education distributed and aligned with "One Campus" patient care model
  - A new nursing school facility relocates programs to a Canal District site equally adjacent to clinical programs at Methodist as well as Peninsula District Hospitals
- Administration / faculty offices expanded and distributed to each planning district
- Parking clustered at Canal District staff distributed to maximize People Mover utilization

Distributed Scenario

Consolidated Scenario

This alternative optimizes adjacencies of programs of similar functions, faculty and staff.

Planning Drivers

- Research consolidated at the Peninsula along a basic sciences model
  - Expansion of research modules would be contiguous to the Basic Sciences complex and centralized vivarium space
- Education consolidated and expanded at the Peninsula along professional school lines
  - SOM and SOD are expanded adjacent to existing locations
  - Opportunity for a New SON at north edge of site along 10th street
- Administration consolidated at canal

Consolidated Scenario

and south Indiana University Health district

Preferred Scenario

These scenarios were evaluated with the Steering and Executive Committees and what emerged as the preferred direction was a hybrid of the initial three scenarios.

Distributed Research

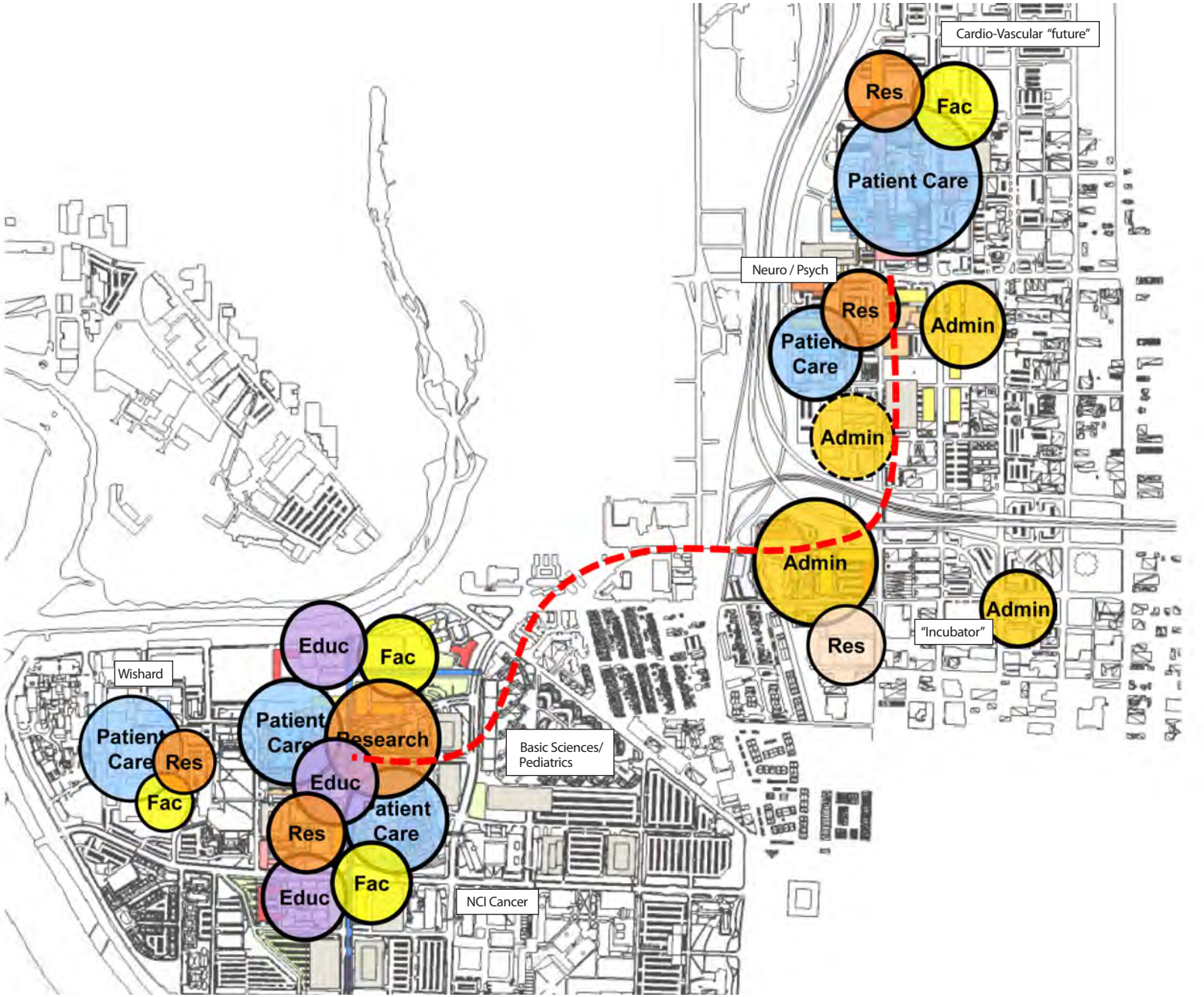
- Research adjacent to patient care environment to integrate clinical and translational research.
  - NCI Cancer Research and vivarium contiguous to University Hospital and Simon Cancer Center
  - Cardiovascular at Methodist Cardiovascular clinics
  - Neurosciences with proposed Neurosciences clinics, imaging, center vivarium and future Psychiatric Hospital
  - Pediatrics contiguous to Riley Children's Hospital
  - The potential Primary Clinical Research distributed to new Wishard Hospital site is not market-rate feasible

Consolidated Education

- Education consolidated and expanded at the Peninsula
  - Expand SOD contiguous with existing facilities, new SON moved North to site at 10th Street
  - An alternate (1) is a new Health Sciences Educational facility for potential integrated curriculum for SOM, SON, SOH&RS, DOPH with large educational classroom spaces consolidated for shared use
  - An alternate (2) is a potential reuse of existing Dunlap/Regenstrief buildings for the SON
- Public/Private Collaborative Research (IURTC) Labs are consolidated at the Canal District, contiguous to existing SOM incubator /accelerator programs.

Distributed Office & Parking

- Administration / faculty offices expanded and distributed to each planning district
- Parking distributed to optimize Hospital adjacencies, and potential deck located along people mover route with increased utilization of the people mover. Remote peripheral parking off-site is also envisioned.



Preferred Functional Relationships

1. Scenario Workgroup Session
2. Scenario Study Model

SCENARIO DEVELOPMENT

From a physical configuration perspective, each of the scenarios where evaluated relative to overall performance and costs to determine the highest value strategy for the Indiana University and Indiana University Health System to pursue collectively. Multiple ideas were developed in a workshop-setting with quick study models, and grouped into scenarios that optimized different parameters relative to: overall operations and functional performance, responsiveness to site and environment, logistics feasibility of implementing the scheme and demands on fiscal capital and operation costs. The key performance features of each scenario were then evaluated. The following diagrams illustrate the program grouping and distribution of functional space in each scenario.

1

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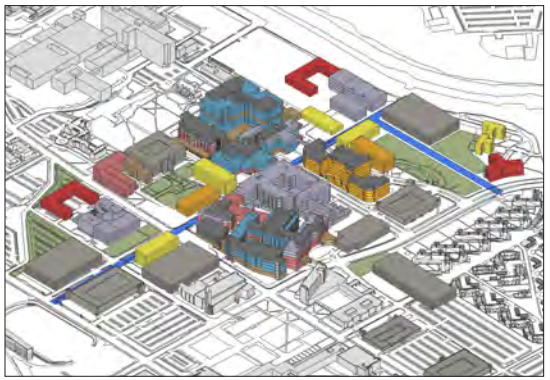


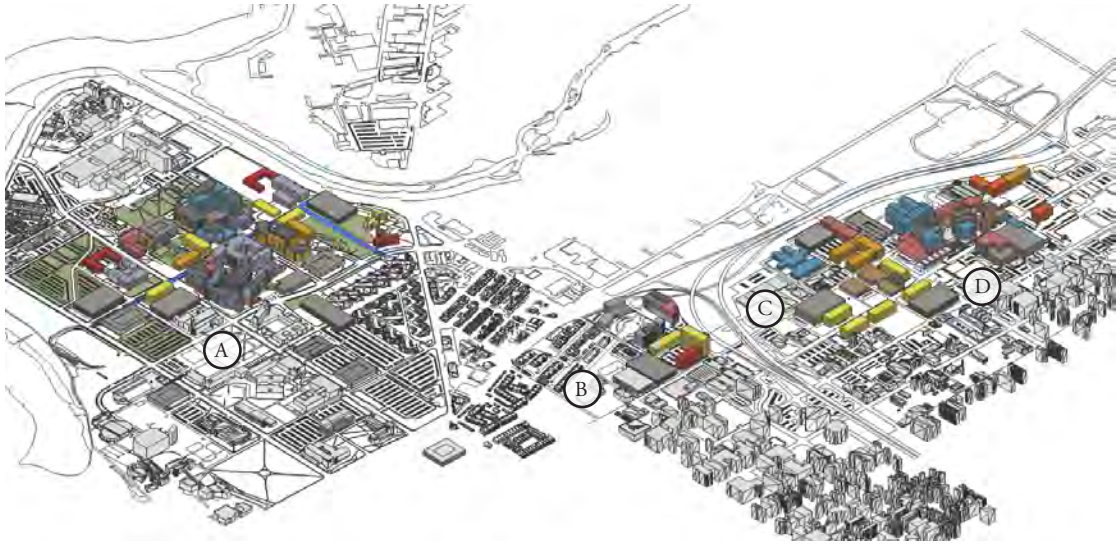
District A

District B

District C+D

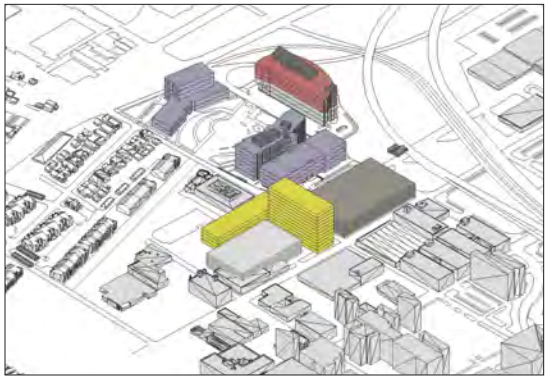
Integrated Scenario Study

The main idea in this scenario optimizes the research and clinical hospital functions by clinical specialty with the potential of developing integrated building types connected by skyways. At the Peninsula District A, a new cancer research laboratory building and facility office complex would be developed across the street, west of the Simon Cancer Center and University Hospital connected by skyway. Additional clinical space would be developed in the University Hospital. This will facilitate clinical and research staff collaboration and augment translational research moving towards a future NCI Comprehensive Cancer Center Model.

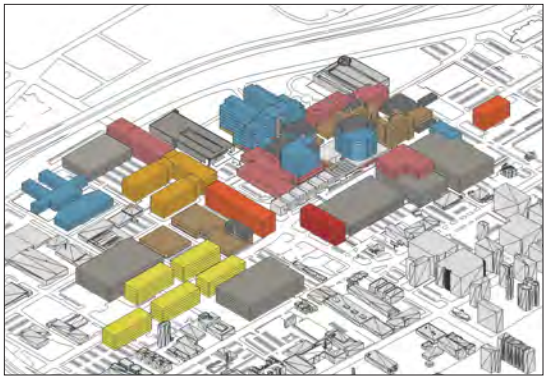


Integrated

District A



District B

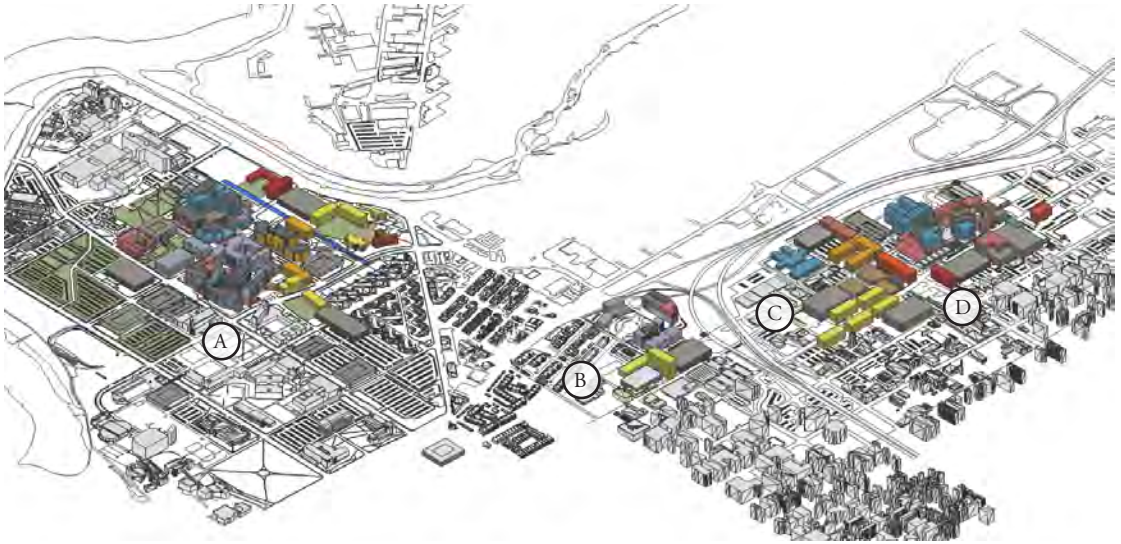


District C+D

Distributed Scenario Study

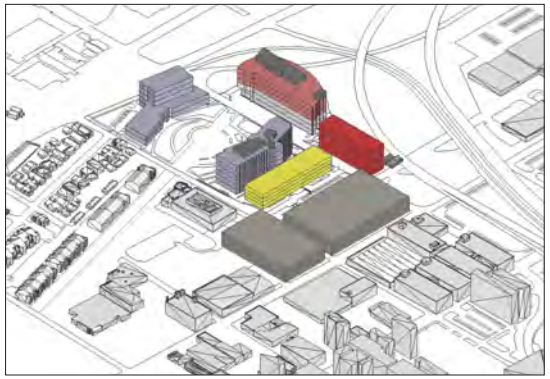
The main idea in this scenario is to distribute the educational programs for the School of Nursing to the Canal District B to function in closer proximity to where the nursing teaching also occurs at the Methodist site, equally distant to all three Hospitals. This would help decrease the density at the Peninsula, but the concern was it also separates the students from the main campus other academic programs, support functional and student life activities.

Indiana University Health system office expansion is distributed in District B as a mixed-use developed with other office and retail planned development. In addition, office space is developed in District C in proximity to the Methodist and corporate office sites. This creates a more distributed density of contiguous development along Capital Street.

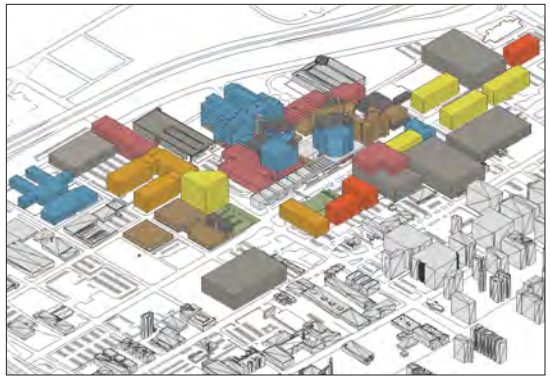


Distributed

District A



District B



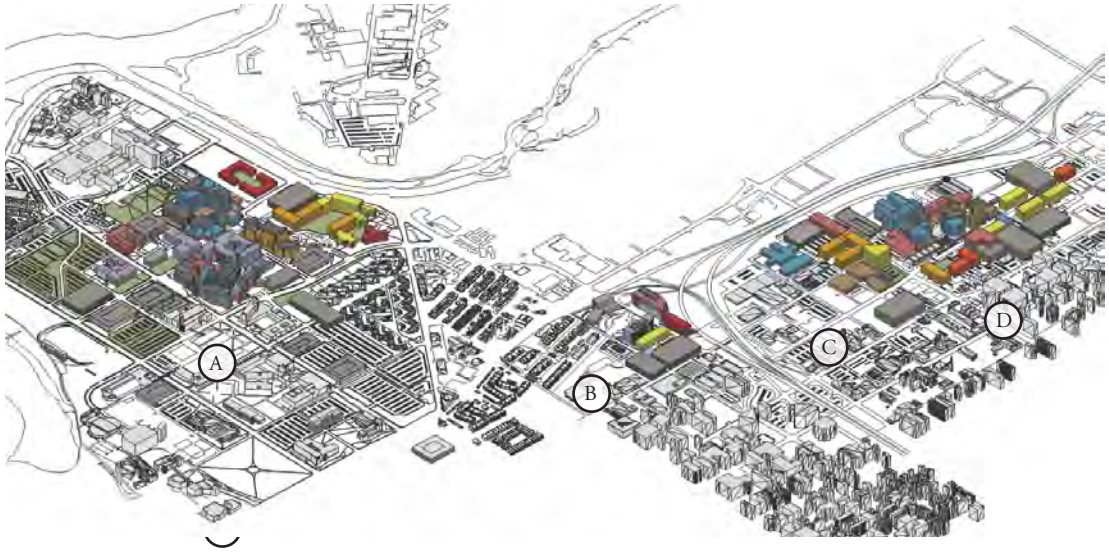
District C+D

Consolidated Scenario Study

This scenario optimizes the consolidation of all the Health Sciences educational expansions in close proximity to each other school along a north south pedestrian access. The SOD would remain south of University Avenue.

A major opportunity is to develop a new Health Sciences Educational complex north of the basic research complex for shared use of a large classrooms and integrated curriculum for consolidated SON, SOH&RS, DOPH and limited SOM expansion. The resulting plan would place research, education and clinical hospital functions contiguous at the peninsula within one block of each other connected by skyway bridges.

Research laboratory and faculty office with the exception of the committed Neurosciences



Consolidated

complex would be developed north of the existing basic sciences research complex and expand into the former Wishard Hospital property site in District A. This facilitates research community interaction and shared use of core lab and support facilities, but at the trade-off of collaboration with clinical faculty practices.

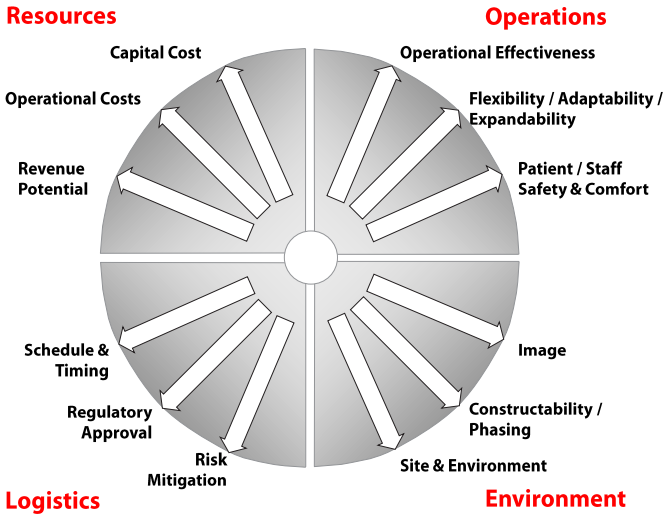
Value Model

To evaluate the best performing option, a value model was developed defining twelve (12) specific criteria, three (3) in each category of Operations, Image, Logistics and Resources. Overall value is defined as performance divided by costs with performance measured as a set of subjective qualitative factors and cost being quantified for capital and projected operational costs in net present values.

Each of these criteria was weighted on a scale of full value 1.0 or reduced value of .75 or .5 based on the relative importance established by the Steering Committee; then each scenario was given a performance score rating on a scale of 10 to 1, with 10 being the highest performance of how well the scenario met the specific defined criteria.

The following charts illustrate the overall performance score for each of the initial scenarios.

$$V = \frac{Q}{\$}$$



Operations

1. Operational Effectiveness - the ability of the environment to enable operational performance of education, research and clinical care functions efficiently, reliably and effectively

2. Flexibility / Adaptability / Expandability - the ability to accommodate changes in program with minimal disruption and downtime. The ability to accommodate the future growth to current or new programs

3. Student / Staff / Patient Access - ability to achieve an environment that assures a high level of student, staff and patient access and satisfaction

Environment

4. Image - ability of the environment to promote a positive image to the community, university and potential donors

5. Constructability / Phasing - ability to be feasibly constructed and phased with minimal risks, disruption and downtime to ongoing operations

6. Site & Environment - degree of compatibility to Urban Design context, Health Sciences Center growth, the community and a sustainable environment

Logistics

7. Schedule & Timing - time frame for the master plan to be constructed, occupied, and generating revenue

8. State / Regulatory Approval - viability of the master plan to be approved and funded

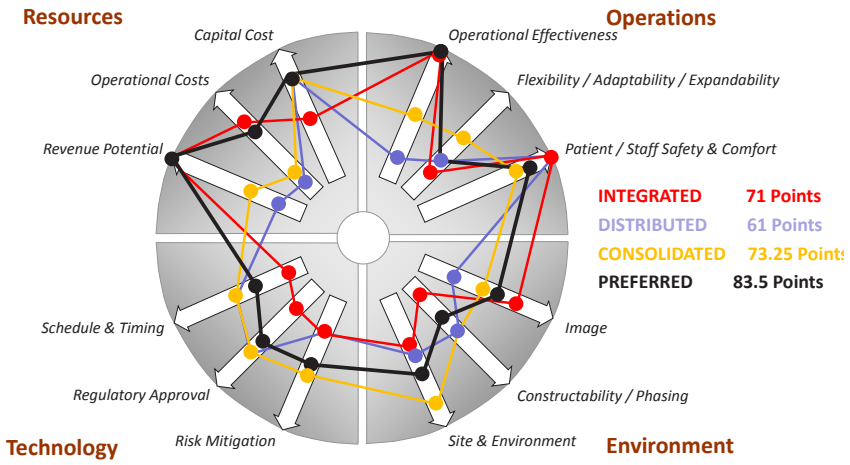
9. Risk Mitigation - impact on existing operations, quality level of space to support programs and achieve acceptable level of risk reduction to quality of education, research and clinical care

Resources

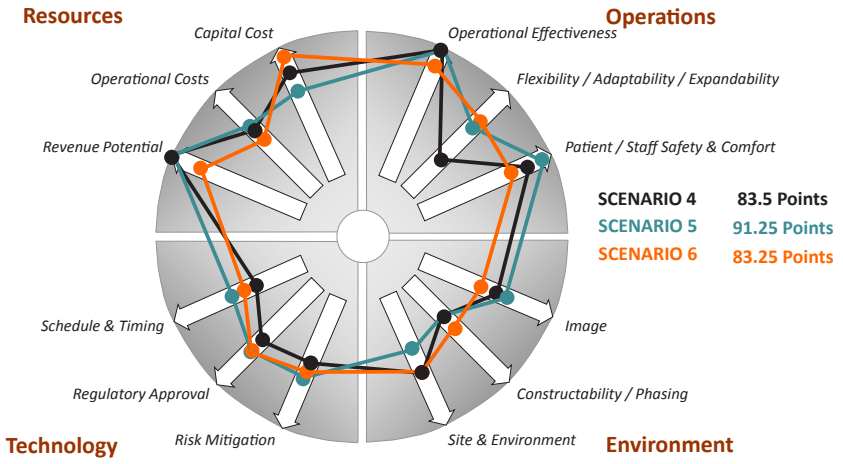
10. Capital Cost - total project cost of construction, infrastructure, equipment & furnishings to design, construct and occupy facilities

11. Operational Costs - cost of staffing, energy, maintenance & repairs, leasing, supplies, and services on an annual basis

12. Revenue Growth Potential - analysis of market share income and increased revenue given level of investment required



Value Model



Value Model

1. Integrated – 71
2. Distributed- 61
3. Consolidated- 73.25
4. Preferred- 83.5 which is a hybrid of the first three scenarios and integrates research, consolidates education and distributes office development.

Option 4, "Preferred," yielded the highest scores for operational effectiveness due to the close integration of the research and clinical functions, efficiency of faculty collaboration with clinicians and bedside translation of clinical outcomes. The enhanced image of a new NCI Comprehensive Care Center branding and the potential to attract and recruit new faculty and increased NIH translational grant funding scores very high.

The "Preferred" Scenario 4 was then evaluated and compared against Alternate Scenario 5 which incorporates a new Health Sciences Educational facility for the SON, SOH&RS, DOPH limited and SOM expansion. This option further improves operational effectiveness of combining curriculums in developing a "Health Care Team

Quality Model Performance Criteria	Integrated Program Scenario 1			Distributed Program Scenario 2			Consolidated Program Scenario 3			Scenario 4					Scenario 5					Scenario 6				
	Score	Value		Score	Value		Score	Value		Score	Score	Value	Value		Score	Score	Value	Value		Score	Score	Value	Value	
1. Operational Effectiveness	10	1.00	10	3	1.00	3	5	1.00	5	10	10	1.00	1.00	10	10	10	1.00	1.00	10	10	9	9	1.00	1.00	9	9
2. Flexibiltiy / Adaptability / Expandability	5	0.75	3.75	6	0.75	4.5	8	0.75	6	6	6	0.75	0.75	4.5	4.5	8	8	0.75	0.75	6	6	9	9	0.75	0.75	6.75	6.75
3. Patient / Staff Safety & Comfort	10	1.00	10	10	1.00	10	8	1.00	8	9	9	1.00	1.00	9	9	10	10	1.00	1.00	10	10	8	8	1.00	1.00	8	8
4. Image	10	0.75	7.5	4	0.75	3	8	0.75	6	9	9	0.75	0.75	6.75	6.75	10	10	0.75	0.75	7.5	7.5	8	8	0.75	0.75	6	6
5. Constructability / Phasing	4	0.50	2	10	0.50	5	10	0.50	5	8	8	0.50	0.50	4	4	8	8	0.50	0.50	4	4	10	10	0.50	0.50	5	5
6. Site & Environment	5	1.00	5	6	1.00	6	9	1.00	9	7	7	1.00	1.00	7	7	10	10	1.00	1.00	10	10	7	7	1.00	1.00	7	7
7. Schedule & Timing	4	0.50	2	10	0.50	5	10	0.50	5	9	9	0.50	0.50	4.5	4.5	10	10	0.50	0.50	5	5	8	8	0.50	0.50	4	4
8. State / Regulatory Approval	5	0.75	3.75	10	0.75	7.5	10	0.75	7.5	8	8	0.75	0.75	6	6	9	9	0.75	0.75	6.75	6.75	9	9	0.75	0.75	6.75	6.75
9. Risk Mitigation	6	0.75	4.5	5	0.75	3.75	9	0.75	6.75	8	8	0.75	0.75	6	6	10	10	0.75	0.75	7.5	7.5	9	9	0.75	0.75	6.75	6.75
10. Capital Cost	5	1.00	5	8	1.00	8	8	1.00	8	9	9	1.00	1.00	9	9	7	7	1.00	1.00	7	7	10	10	1.00	1.00	10	10
11. Operational Costs	10	0.75	7.5	3	0.75	2.25	4	0.75	3	9	9	0.75	0.75	6.75	6.75	10	10	0.75	0.75	7.5	7.5	8	8	0.75	0.75	6	6
12. Revenue Growth Potential	10	1.00	10	3	1.00	3	4	1.00	4	10	10	1.00	1.00	10	10	10	10	1.00	1.00	10	10	8	8	1.00	1.00	8	8
Total Performance Score [Q]			71			61			73.25					83.5					91.25					83.25
Total Cost [without escalation]														$1,372,571,600					$1,397,360,150					$1,377,227,678
Final Value Score [V=Q/$]														0.000000061					0.000000065					0.000000060
Rank														2					1					3

Value Model - Scenario Summary

Approach" to developing physicians, nursing and health care professionals. The periodic need for large 130-student classrooms with new technology environments can be shared for better utilization. The image potential of a new front entry for education in the health sciences is realized off of a realigned Wishard Avenue. The capital cost is increased for a new educational facility versus renovation and expansion of existing SON. This is offset since the need for additional new faculty office buildings is reduced by repositioning the SON as faculty office and spending new capital for this state-of-the-art educational space. This results in a 4% net increase in the total capital facilities costs over scenario 4, based on a net present value comparison. This alternative Program Scenario 5 ranked first in value when measured on overall value of the performance score divided by total development cost.

Subsequently, the Preferred Scenario 4 was then evaluated against an alternate Program Scenario 6 which looked at the renovation of Dunlap Regenstrief Buildings on the former Wishard Hospital site for relocation and expansion of the SON. This option proved less effective for operations since the school would need to adapt to existing configuration constraints of the buildings. Some advantage in phasing and timing versus constructing a new educational facility would be realized; however it would not have the image impact of a new facility. Capital costs for renovation of the buildings due to the need to upgrade major systems and reconfigure exterior wall construction on Regenstrief for natural light to offices and classrooms would still be 1% greater than the preferred Scenario 4.

This alternative Program Scenario 6 ranked third in value when measured on overall value of performance score over total development cost. Program Scenario 5 thus was further developed as the direction for the Master Plan.

5| URBAN DESIGN FRAMEWORK

URBAN DESIGN PRINCIPLES

A key aspect to facilitate a more integrated health sciences education, research and clinical care model is an improved physical relationship among the four districts of the Academic Medical Center campus. An integrated physical campus plan based on sound urban design principles can enhance the user experience; promote greater connectivity and mobility among uses; provide more efficient use of shared facilities, parking and resources; and lead to a more consistent image and identity for patients, visitors and staff.

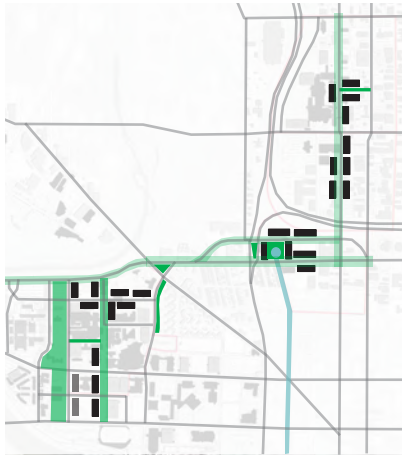
The following planning principles were developed to achieve a more integrated physical campus:

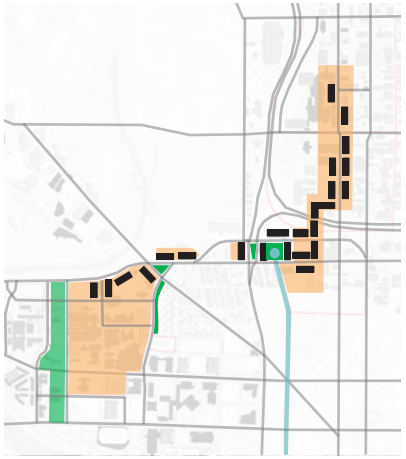
1. Create one, seamless academic medical campus.
   a. Continue coordinated planning
   b. Integrate functions of patient care, education and research
   c. Respect and provide for key functional adjacencies
   d. Plan for and provide physical connectivity between districts
   e. Develop consistent gateway and wayfinding design
   f. Develop a walkable, attractive, inspiring campus

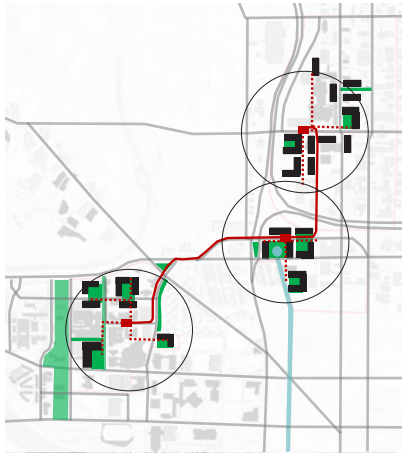
2. Use land strategically – don't sprawl
   a. Strategically use and/or acquire land to reinforce district identity and function

3. Promote a strong sense of place
   a. Create a clear sense of arrival and a positive front door experience
   b. Design visible and accessible open space as part of all districts.

A Series of Gateways


Urban Form / Streetwall


Contiguous Land


Campus Quads & People Mover

URBAN DESIGN SCENARIOS

Along with functional and programmatic relationships among districts, different urban design strategies were evaluated to improve the visual and functional continuity between districts in order to create a more unified whole. Four physical organizational strategies were considered in parallel to the functional scenarios described above:

1. A series of gateways
2. A continuous streetwall
3. Development of contiguous land
4. Campus quads within each district

Series of Gateways
This approach would establish a sense of common identity for the Academic Medical Center campus through the development of new facilities at key gateways and crossroads at each district. This would create clustered hubs of activity at the gateways, announcing the presence of the medical center campus at major arrival points. This scenario would require strategic land acquisition to fully develop the concept, and may not correspond fully with programmatic adjacency needs to existing facilities.

Continuous Streetwall
This approach establishes a sense of campus using new development to front major street corridors and defines a consistent streetwall in each district. Paired with a common streetscape design and mixed use amenities at the street level, this scenario creates an urban, linear form and reinforces the street grid as the connecting force between districts.

Development of Contiguous Land
This approach establishes the strongest sense of campus through strategic acquisition and development of contiguous parcels from Methodist Hospital to the IUPUI campus. This strategy would create the greatest connectivity and control of land, particularly north and south of I-65 between Districts B and C. While this approach would result in the most flexibility for future development, it is also the most costly to develop.

Connected Campus Quads
This scenario creates a series of public and semi-public spaces as focal points for new development, connected to primary pedestrian corridors, skywalks, and People Mover stops. The new quads create a strong spatial organization, lined with food service and visitor amenities at the ground level. These public spaces bring a stronger sense of place to each district, relying on transit for campus connectivity.

Preferred Approach
In discussion and evaluation of the different physical design strategies, a combination of the best traits of each scenario emerged as the preferred physical design direction. Programmatic and functional relationships as well as a sense of identity and arrival informed the choices.

The preferred urban design strategy:

- Emphasizes the arrival experience and common identity of the Academic Medical Center campus through consistent design

treatments at major gateways into each district and along connecting streets and corridors, using common identification and directional signage, streetscape lighting, landscaping and materials.

- Uses new development to reinforce the urban grid along major connecting street corridors;
- Uses land acquisition of strategic parcels to establish connectivity at critical junctures; and
- Creates a series of new campus quads and public spaces as defining open space features common to each district, of the campus, connected to campus transit, transportation. and the larger campus open space and pedestrian network.

The preferred urban design strategy has been further refined to form the organizational structure and physical framework of the campus master plan.

FRAMEWORK PLAN

The Framework Plan provides the physical structure to accommodate the goals, recommendations, and program needs of the Master Plan. It represents an organizational diagram for the Academic Medical Center campus and the primary development zones, gateways, circulation corridors, public space and quadrangles, and transit connectivity that form the basis of the Master Plan. Unlike an illustrative plan, it does not depict specific building footprints, using instead the goals, principles, program needs, functional adjacencies and physical relationships that comprise the whole of the Master Plan.

Framework Plan Components:

Development Zones

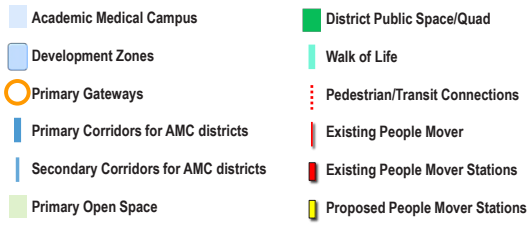
- The Framework Plan depicts primary development zones to accommodate the proposed program, increase density and create new image areas for the Academic Medical Center campus.
- Future building sites within the development zones should respond to and create the spatial definition of district public spaces and quads represented in the Framework Plan.
- Building heights and massing are illustrated in the Integrated Master Plan chapter.

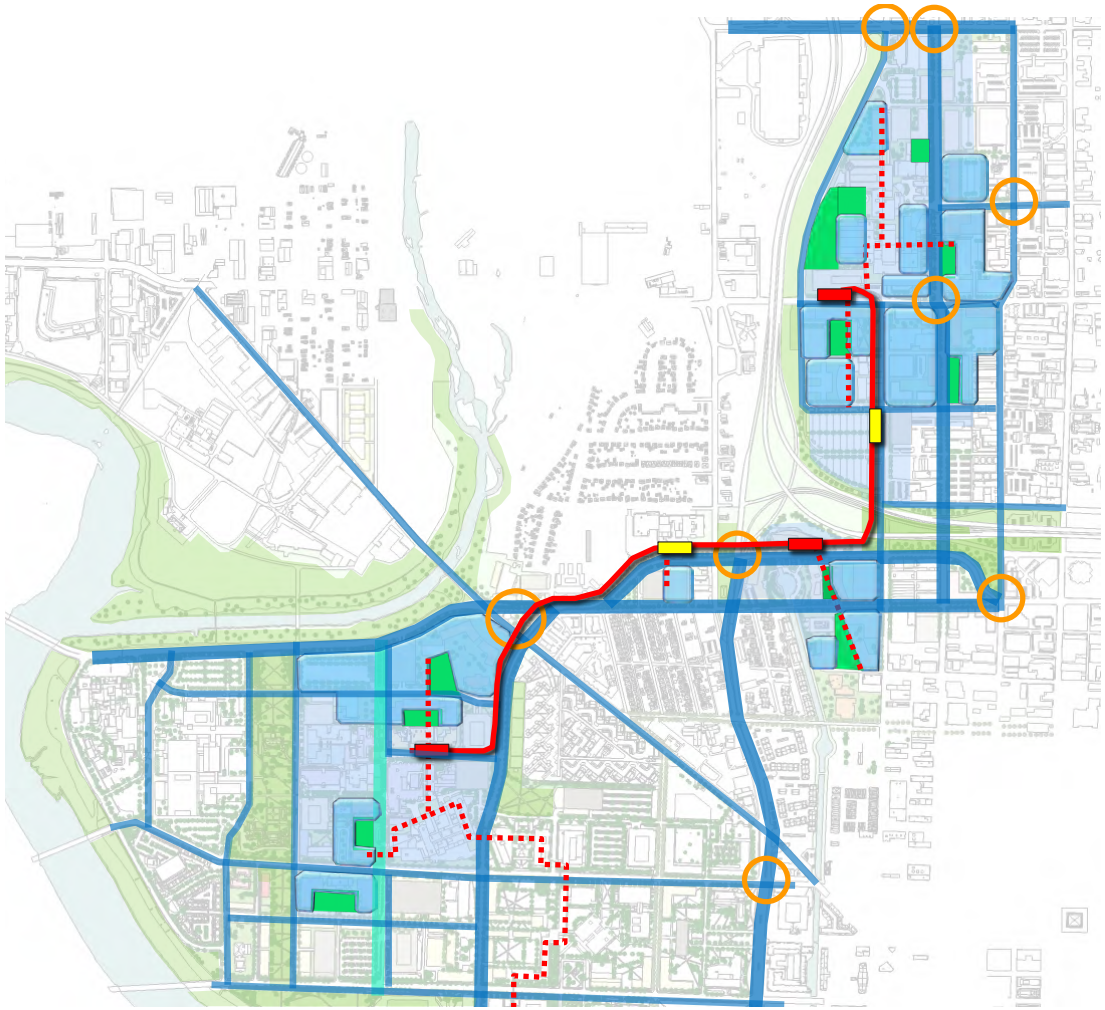
Primary and Secondary Corridors

- Given the pattern of arrival and traffic circulation, 21st Street, Capital Avenue, the 10th/11th Street pair, and University Boulevard form the primary connective and arrival corridors for key address, image, streetscape and wayfinding improvements for Academic Medical Center campus traffic. Based on larger regional traffic patterns, Capital Avenue should remain as a one-way south bound street, paired with Illinois.
- Illinois Street is a supporting one-way north-bound street for local circulation and arrival from the Meridian Avenue exit off of I-65, and Senate Boulevard is a supporting two-way, north-south connection between

the Canal, Neurosciences and Methodist districts.

- Pedestrian enhancements for safe crossing along these corridors should be included.
- West Street is a major traffic corridor in downtown Indianapolis. The intersections of West and 10th, 11th, and Michigan Streets are important arrival / decision points and gateway locations.
- Indiana Avenue, Michigan and New York Streets provide important secondary travel routes to the IUPUI Health Sciences district.
- 18th, 16th, 14th and 12th Streets form a secondary east-west network of circulation and specific district arrival points for the Neurosciences Complex and Methodist districts.





Recommended Framework

- A re-aligned Riley Hospital Drive, the Wishard Hospital access boulevard, and relocated Wilson Drive will form direct district entries and visibility off of 10th Street on the peninsula. Riley Hospital Drive should be extended to connect 10th Street with New York Street.
- A new east-west street parallel to and just south of 10th Street is critical in providing local circulation and connectivity for users in the Health Sciences Center district and to alleviate congestion on 10th Street.

Gateways

- Major gateway locations are shown on the Framework Plan. These arrival points should reflect a consistent wayfinding and design vocabulary for the entire Academic Medical Center campus.

Open Space

- Future open space and pedestrian connections should relate and connect to the regional open space framework surrounding the Academic Medical Center campus, including Fall Creek and White River corridors, and the landscape buffer along I-65.
- The IUPUI Master Plan proposes extending the existing Ball Gardens to create a significant new green and front door to Riley Hospital, connecting the Fall Creek open space to the White River.
- A new landscaped "Freeway Park" parallel to I-65 from west of Senate Boulevard to Meridian Avenue (including consolidation or relocation of the existing surface parking) would create a more welcoming entrance to the Academic Medical Center campus.
- A series of district public spaces and quads are proposed to create social gathering spaces, providing a focal point and breaking down the scale of future development. Future development should help define their spatial boundaries, with major building front doors and ground level amenities fronting the spaces.
- Internal connections and skywalks are included to facilitate easy interaction among students, faculty, researchers and staff. These connections should also link to the People Mover, district public spaces and quads.

Academic Medical Center Campus Connectivity

- The Framework Plan recognizes the important role of the People Mover and related transit routes have in creating a convenient, climate-controlled connection between the districts of the Academic Medical Center campus. Two future infill stations on the People Mover are proposed to enhance ridership and connect the districts to proposed parking resources.
- The existing pedestrian mall north of Michigan Street and Barnhill Drive is an important north-south connection and pleasant outdoor space in a very dense district. The plan proposes extending its pedestrian orientation and design character to create a longer "Walk of Life," an identifiable pedestrian path to link all districts.

1. Aerial View of Peninsula District

6| INTEGRATED MASTER PLAN

INTRODUCTION TO THE PLAN

The Master Plan for the Academic Medical Center campus fundamentally re-envisions what are today separate districts and facilities into one integrated healthcare, research and health sciences education campus.

Five concepts form the basis of the plan in support of the overarching goal to enhance the integrated mission of providing the highest quality education, research and clinical care for Indiana University and Indiana University Health Partners:

1. **Coordinated Programs and Planning-** The major functions of Research, Patient Care, Education and Administrative/Support spaces are located by specific district across the campus in order to better integrate research with patient care, consolidate and integrate new educational models, and distribute corporate and faculty office in support of primary health care, research and education functions.

2. **Development of a Comprehensive Cancer Center**-land area adjacent to IU Hospital should be reserved to accommodate needed growth for a proposed National Cancer Institute (NCI) Comprehensive Cancer Center designation.

3. **An Integrated Health Sciences Education Model -** A new, consolidated Health Sciences Education complex for School of Nursing, some School of Medicine classes, Department of Public Health, and School of Health and Rehabilitation Sciences on the Peninsula will facilitate new circular models in "The Health Team" and collaborative education approaches.

4. **Enhanced Connectivity Through Transportation -** Better utilization of the People Mover and transportation improvements will connect districts and create a more seamless and unified Academic Medical Center campus.

5. **Coordinated Resources for Maximum Effectiveness** - A joint strategy to coordinate parking resources for all four districts of the Academic Medical Center campus, linked by a new Health Sciences shuttle system provides the most efficient and cost effective parking solution without duplicating resources.

RE-USE OF THE EXISTING PROPERTY

Wishard Property

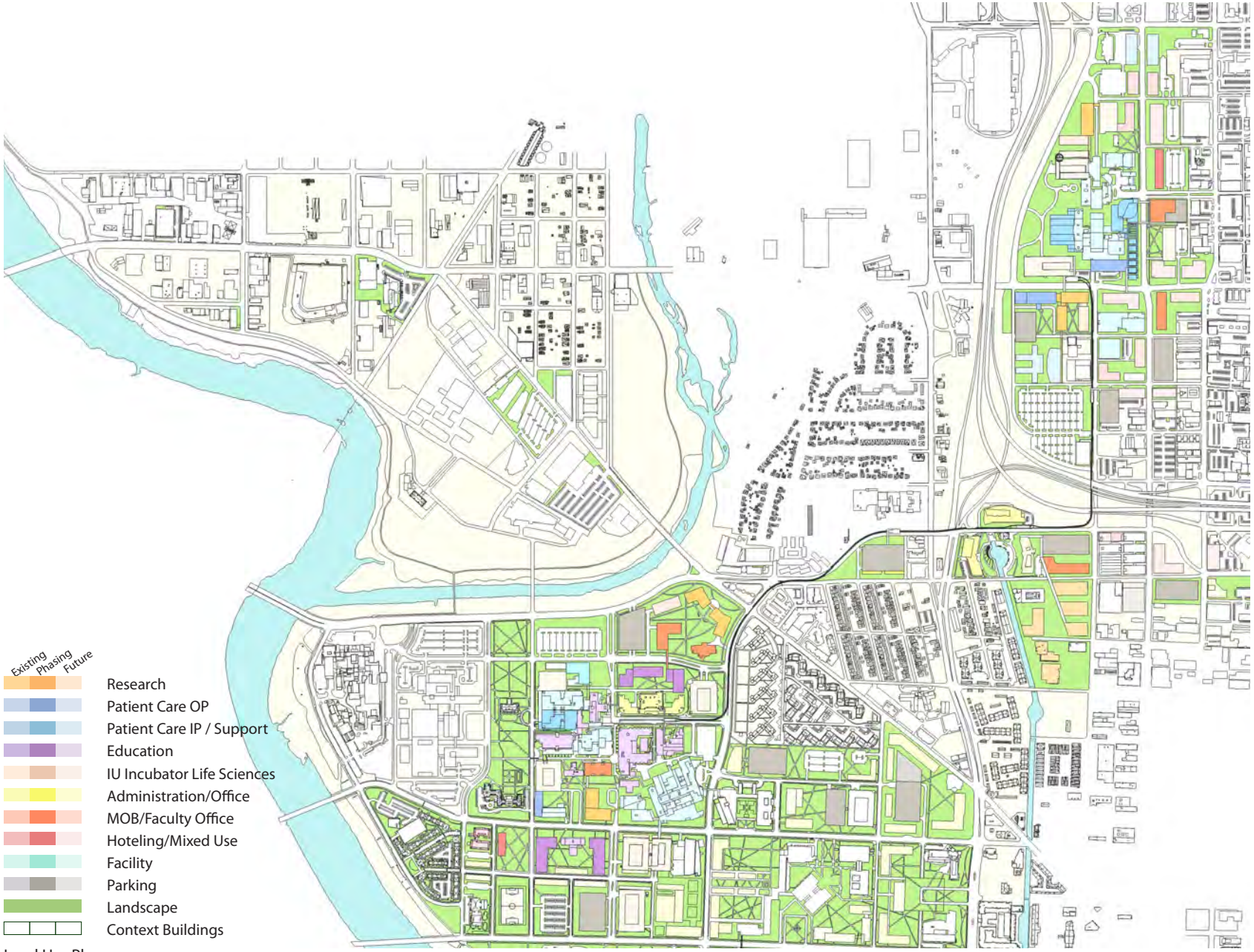
The transfer of the former Wishard Hospital property provides Indiana University and Indiana University Health with the opportunity to best utilize and re-develop the site consistent with its goals of an integrated clinical, research and education campus. Many scenarios were evaluated to re-use existing buildings on the current Wishard campus. However, a combination of complex and interrelated factors has led to the recommendation that the majority of the site be cleared and redeveloped for new construction in support of the specific program needs for IU and Indiana University Health. These factors include:

- The condition of existing buildings;
- The feasibility and costs to renovate and adapt existing buildings for new uses and specific lab/research functions, versus the cost of new construction;
- Phasing and the sequence of demolition and new construction;
- The need to increase parking supply;
- The need to improve traffic circulation and access on campus.

The removal of most of the former Wishard Hospital site buildings, with the exception of the Primary Care Building, will ultimately allow IU and Indiana University Health with the most flexibility to construct an environment that is a more flexible and integrated part of the Academic Medical Center campus.

Indiana University /IU Health Academic Medical Center Center Campus

In the final plan, 397,800 GSF of obsolete IU/Indiana University Health facilities are demolished. However, 867,400 GSF of existing facilities are repositioned for renovation of current space for new programs at the Academic Medical Center campus.



Land Use Plan

KEY PLAN RECOMMENDATIONS

01 Provide land area to achieve the goal of NIH Comprehensive Cancer Center designation for IU Hospital. This will require expansion of facilities, particularly research, in close proximity to IU Hospital and Simon Cancer Center, and integration of clinical, research, diagnostic and support functions.

02 Provide space for a new joint medical sciences education facility, co-located with clinical and patient care settings and research to achieve an integrated and consolidated Health Sciences Education.

03 Redevelop the former Wishard Hospital site to accommodate useful long-term growth, rather than short-term reuse of facilities that may not match program need, facility type or adjacency.

04 Use administrative functions in districts B, C and D as strategic development sites to partner with private developers, and as opportunities to re-build and reinforce active, attractive urban districts.

05 Organize development and key entrances around or fronting public spaces, plazas, streetscapes and quadrangles to enhance visitor arrival and wayfinding.

06 Improve and provide a high quality, landscaped open space and pedestrian realm for all districts, to reinforce identity and contribute to a healing environment.

07 Provide a consistent wayfinding and signage design at multiple gateways into the Health Sciences campus.

08 Improve the ridership and reliability of the People Mover, in conjunction with improved pedestrian corridors and streetscapes to link districts.

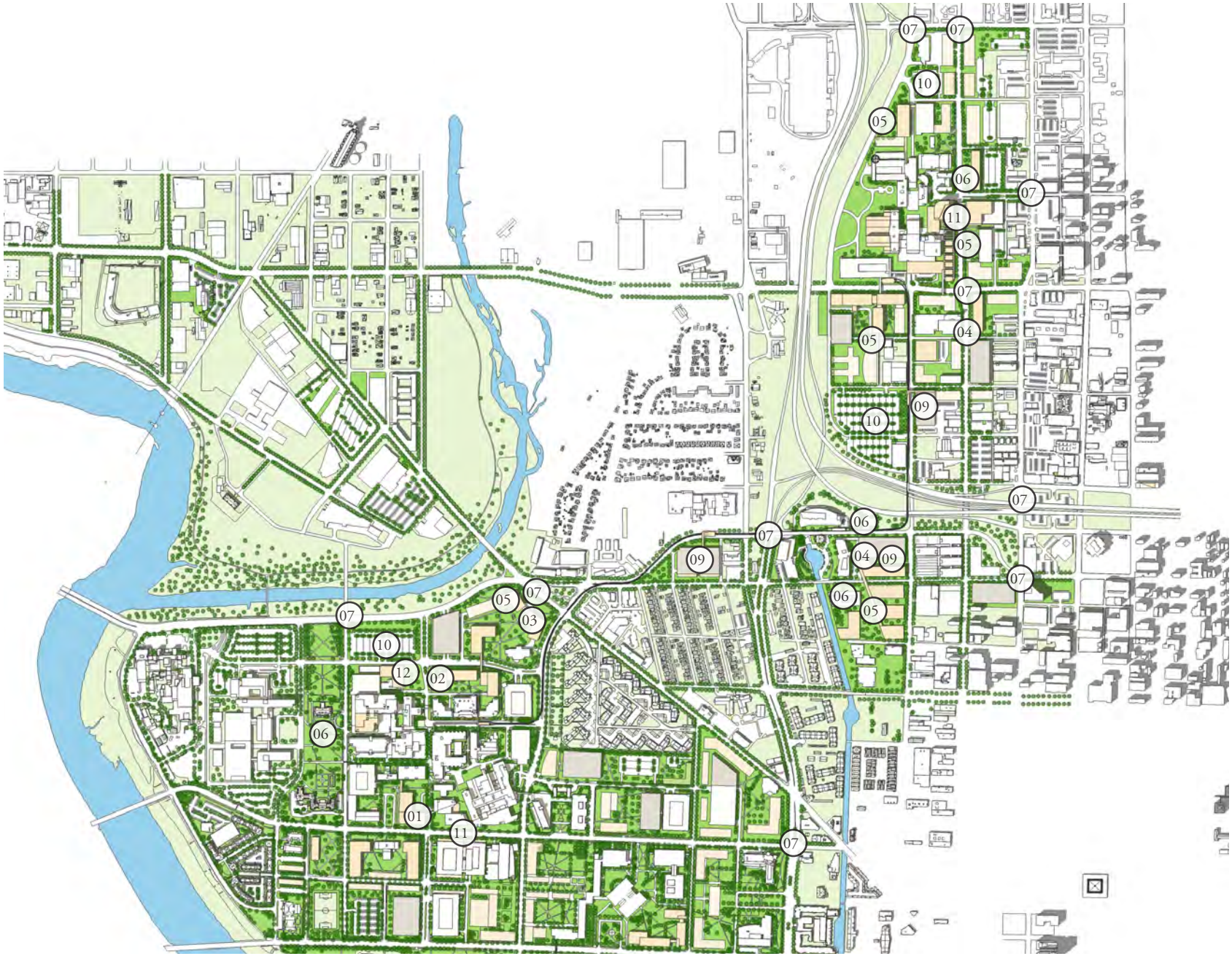
09 Provide and prioritize parking to serve patients, visitors, students and key heath care staff in proximity to garages linked to the People Mover, and combined with services and mixed uses at the ground level.

10 Provide an easily accessible, peripheral parking supply and rapid shuttle system to serve employees of IUPUI and Indiana University Health.

11 Design guidelines should be developed for hospital wayfinding, vistas to points of entry, access, and key control points for major departmental functions.

12 Proposed Facilities Service Building location

Existing Buildings
Proposed Buildings
Future Expansion
Parking

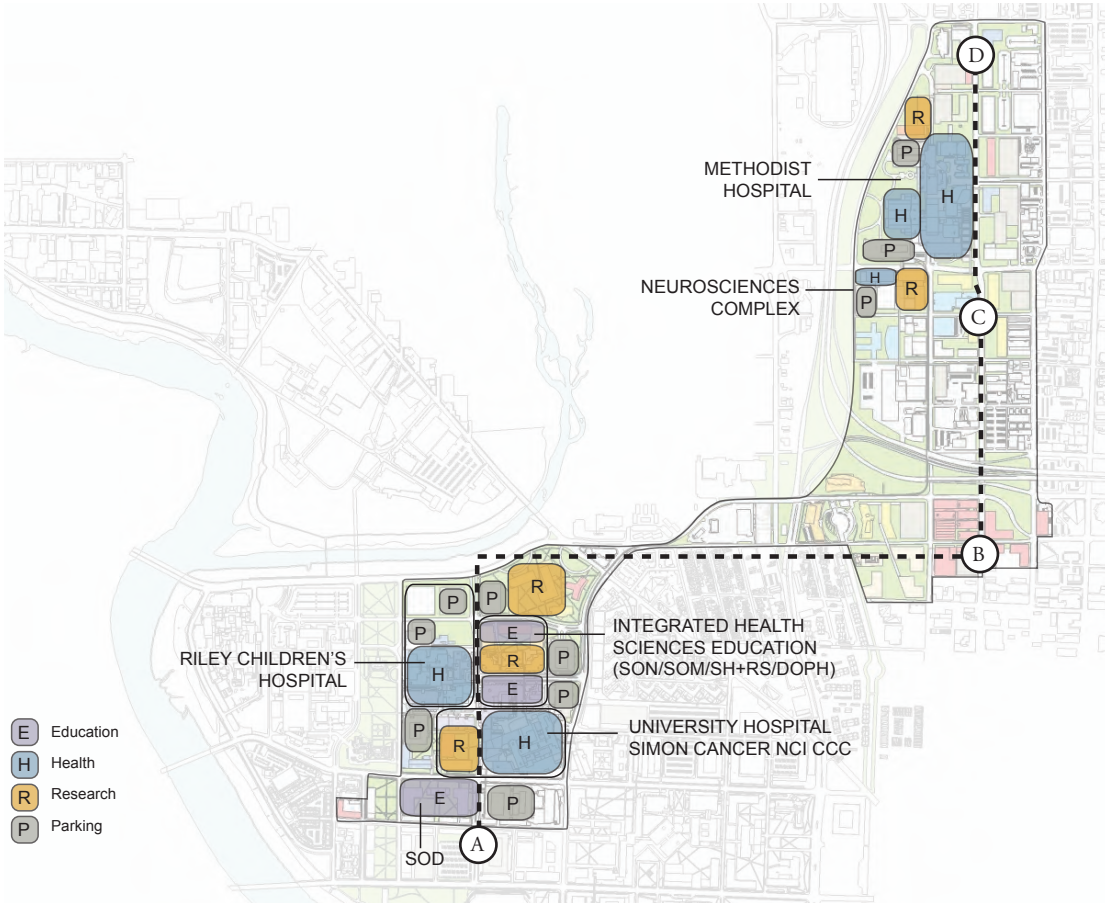


OVERALL ACADEMIC MEDICAL CENTER CAMPUS - PLAN

The master plan achieves the goal of one Academic Medical Center campus organized as a single contiguous campus:

- Starting with the IUPUI Health Sciences district along Michigan Avenue in District A, proceeding north to West 10th Street incorporating the former Wishard Hospital property, organizing all of the Health Sciences Educational programs into one consolidated complex.
- Traversing east to the Canal District B utilizing the people mover pathway, for a mixed-use development.
- Proceeding north along the Capitol Avenue corridor for office development and research and research/clinical cluster at 16th Street in District C.
- Terminating with Methodist Hospital District D expansion to 21st Street.

The proposed facilities development plan and space utilization is illustrated in the following functional massing diagrams.



Academic Medical Center Integrated Campus

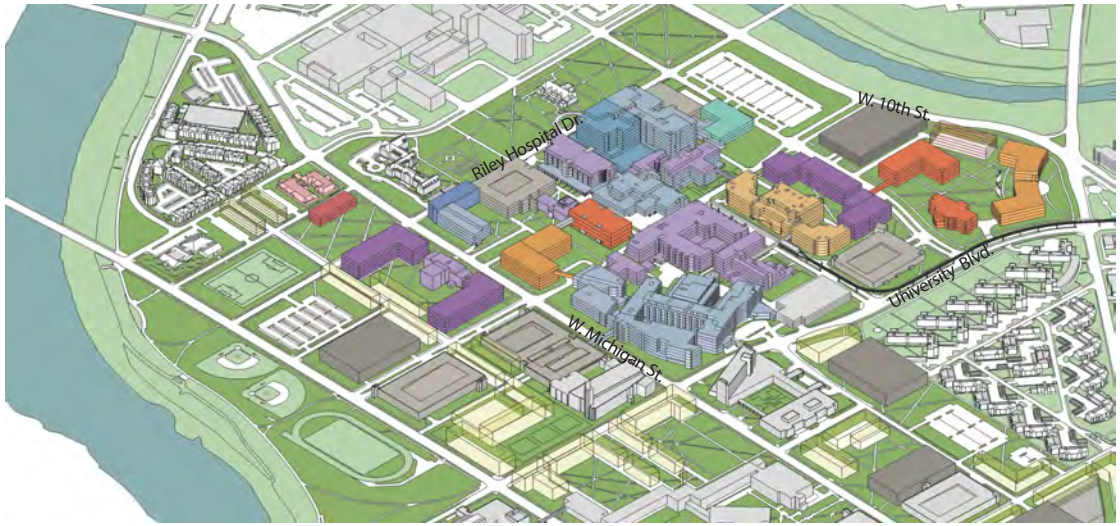
RECOMMENDATIONS BY DISTRICT

District A

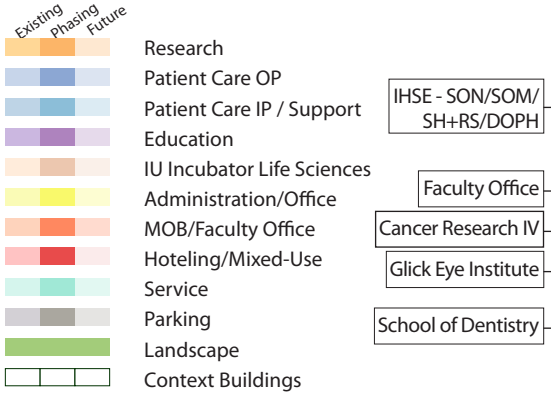
District A –Facilities and Land Use

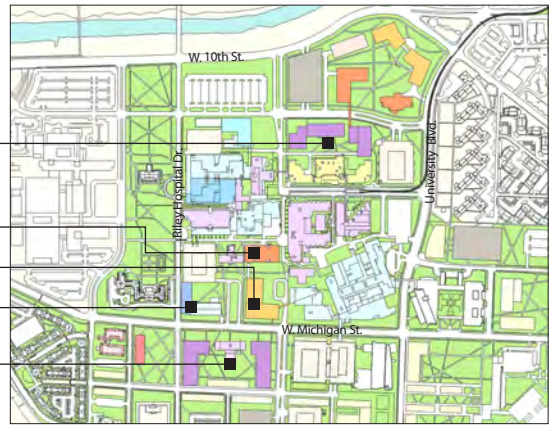
The IUPUI Health Sciences district of the Academic Medical Center campus is organized into several contiguous parcels and integrated facilities:

- The School of Dentistry (SOD) expansion and redevelopment at the existing site along Michigan Avenue provides expansion



District A





District A - Land Use Plan

District A- Existing Conditions

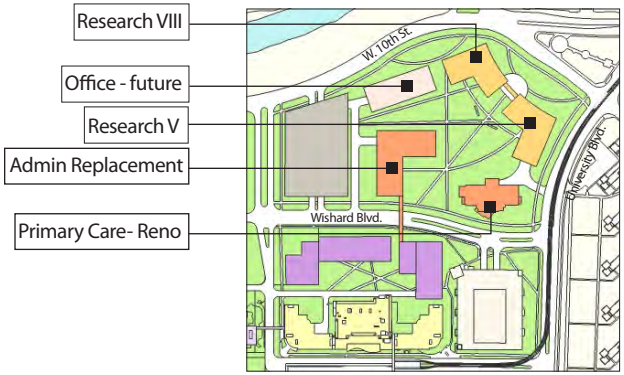
for operatory clinics to the east, then redevelopment of the existing facility for state-of-the-art classrooms and support functions.

- A repositioned proposed NCI-designated Comprehensive Cancer Center north of Michigan Avenue between University Boulevard and Riley Hospital Drive that provides for shared use of the site and facilities for University Hospital, Simon Cancer Center, and a new Cancer Research Complex to the west for SOM, SOD, and SON clinical and research faculty.
- Riley Children's Hospital zone extending north to West 10th Street between Riley Hospital Drive and a pedestrian "Walk of Life" Mall along West Barnhill Drive. This parcel will accommodate future expansion of Riley inpatient and outpatient clinical facilities and serve as a front door image for the Hospital on West 10th Street. The Hospital is adjacent to and connected to the biosciences research complex for pediatric research, clinical and research faculty collaboration.
- A new Integrated Health Sciences Educational complex south of a realigned Wishard Boulevard between the "Walk of Life" Mall and the Wishard parking garage provides for SON, SOH&RS and SOM expansion, with shared utilization of new large classrooms and group teaching space. The complex would be contiguous to the research complex and connected to existing Van Nuys Medical Sciences Building with convenient access to the People Mover station.
- A Biomedical Research & Faculty Office Complex north of the realigned Wishard Boulevard up to West 10th Street, on the former Wishard Hospital property site. Once Wishard Hospital moves into its new campus west of Ball Gardens, the Primary Care Building can be renovated for relocated faculty and administrative offices from Long Hospital and Gatch Clinical Building. The remaining Wishard property can provide for biomedical research expansion and faculty office growth when the property is vacated and as program demand arises. These new facilities will be contiguous with the new Integrated Health Sciences Education complex for educational and research faculty and student collaboration.
- An early phase Biomedical Research Building can be constructed as a new gateway and signature building on the Wishard site, fronting Indiana Avenue. This site could accommodate early construction while the property is occupied by Wishard Hospital, within the existing crescent drive off of Indiana Avenue, east of Ott and Bryce Halls.
- An potential future expansion opportunity for Ronald McDonald House is east of its existing facility, just north of the existing Oral Health Institute. This location will front the proposed Ball Garden extension south of Michigan Street. This will accommodate up to 50,000 GSF of additional growth.

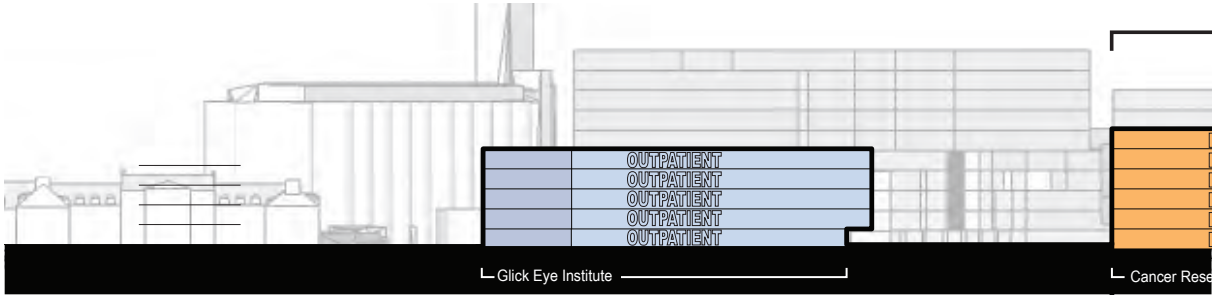
Existing Phasing Future

- Research
- Patient Care OP
- Patient Care IP / Support
- Education
- IU Incubator Life Sciences
- Administration/Office
- MOB/Faculty Office
- Hoteling/Mixed-Use
- Service
- Parking
- Landscape
- Context Buildings

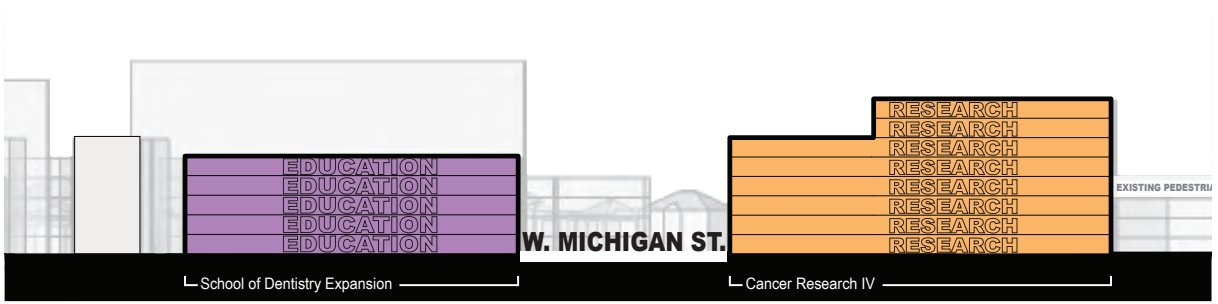
District A - Wishard Site Land Use



District A - Wishard Site Land Use Plan

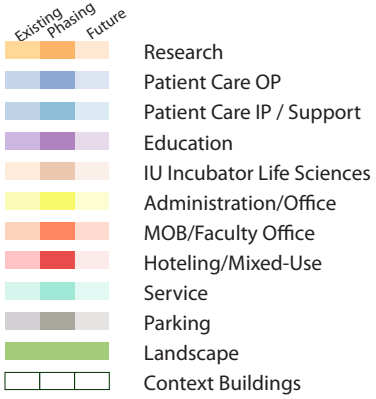


District A - Section 1 [West - East]

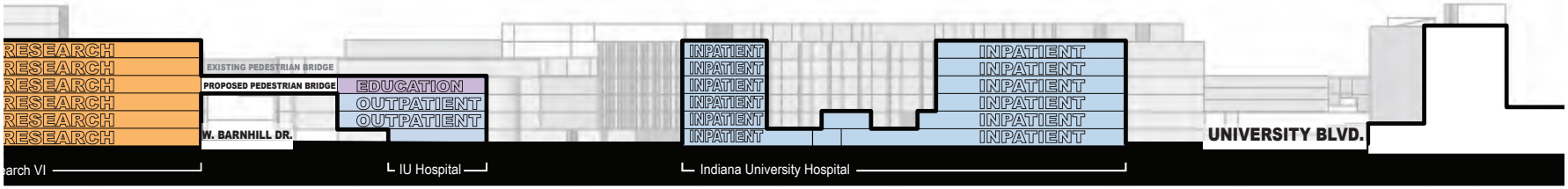


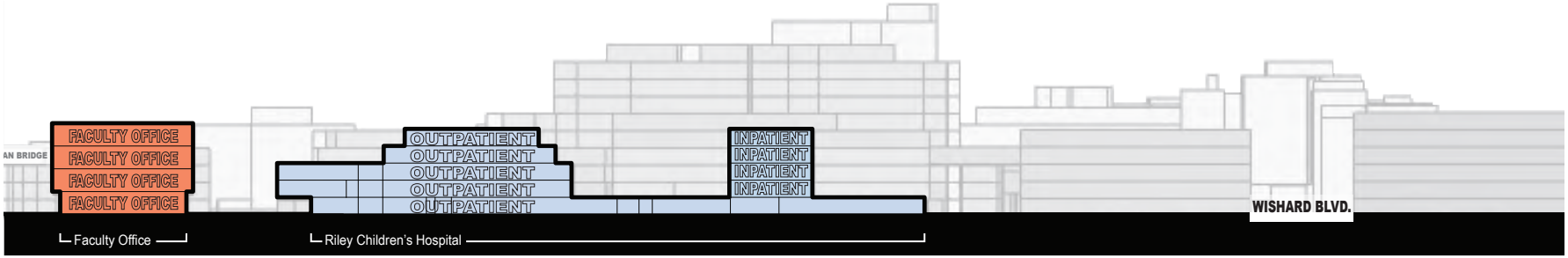
District A - Section 2 [North - South]

District A - Section 3 [North - South]

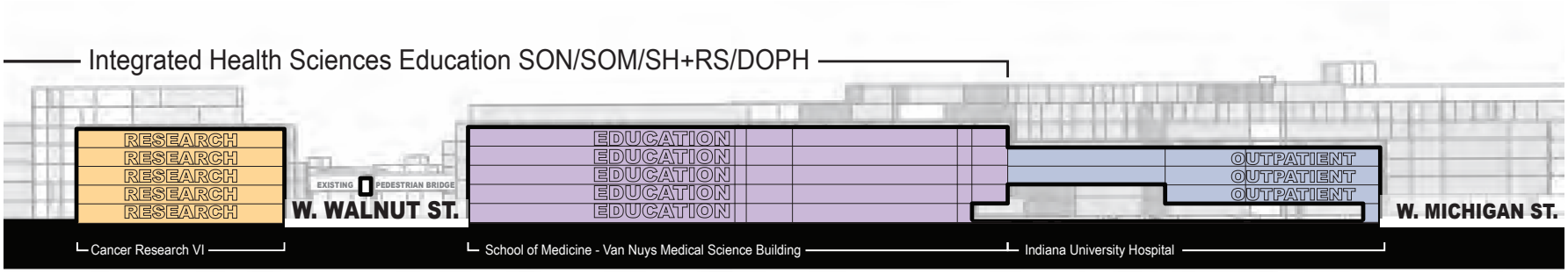


Future NCI Comprehensive Cancer Center





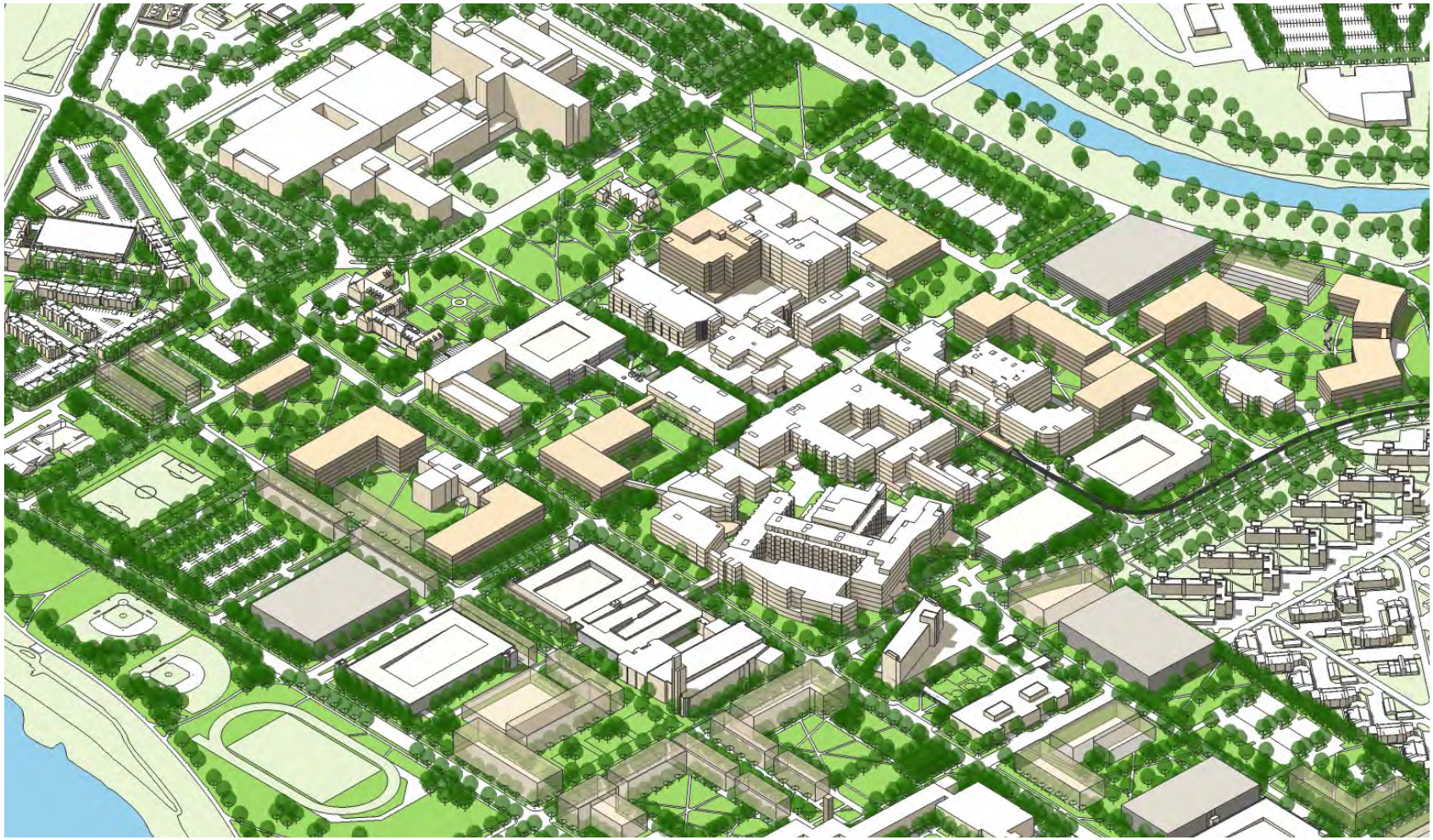
Integrated Health Sciences Education SON/SOM/SH+RS/DOPH



District A – Illustrative Plan

- Four new quadrangles and courtyards are proposed with the Biomedical Research and Office facilities, the Health Sciences Education complex, the Cancer Research Center and the School of Dentistry to provide a sense of public space, views and landscape.
- The Biomedical Research quadrangle is framed by new development, and is intended to have building entrances, transparency and active uses at the ground floor, lining the quad. The historic facades and columns of Ott and Bryce Halls could be retained as architectural and interpretive features. The Health Sciences Education quadrangle will need to accommodate service and access to the existing research buildings facing Walnut Street.
- The plan proposes extending the quality and design character of the existing pedestrian mall north of Michigan Street up to 10th Street and south to New York Street, as a "Walk of Life" pedestrian corridor. Setbacks, wide sidewalks, canopy trees and lighting will help define this important pedestrian connection and link it to the other districts.
- Extend the open space of Ball Gardens south to New York Street and north to 10th Street (in coordination with Wishard Hospital).
- A landscaped setback on 10th Street will create a new viewshed and front door to Riley Hospital to aid visitor orientation and wayfinding.
- Three new road segments are proposed: 1) a northern and southern extension of Riley Hospital Drive to connect 10th Street to New York Street; 2) a new east-west street south of 10th Street connecting to a realigned Wishard Boulevard and entrance from University Boulevard; and 3) a new entrance boulevard from 10th Street that replaces Wilson Street and connects to the new Wishard Blvd.
- Internal pedestrian corridors and skywalks will link all new facilities to the People Mover station and the existing network of skywalks and internal corridors.

Existing Buildings
Proposed Buildings
Future Expansion
Parking



District A- Axonometric

District B

District B - Facilities and Land Use

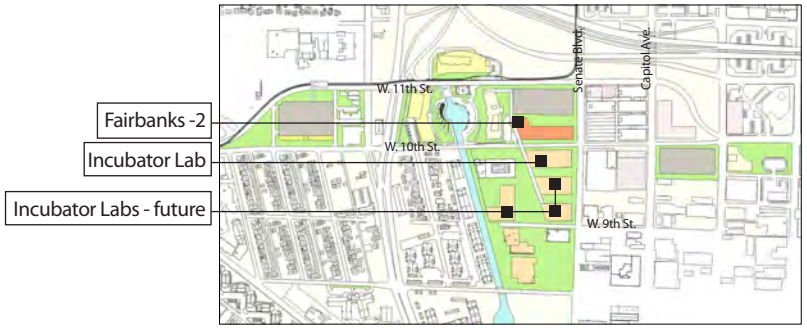
The Canal District B provides for a mixed-use development of Indiana University Office expansion, incubator research and adjacent privately developed retail and office on specific parcels.

- An office parcel east of the Canal over to Senate Boulevard between 10th and 11th Streets provides office expansion contiguous with the existing Fairbanks Hall and future mixed-use private development on the Stutz property.
- A research incubator zone between the Canal and Senate Boulevard, from 10th Street to St. Clair will provide for consolidation and future expansion of incubator research facilities related to the SOM research programs for private public partnerships in biomedical start-ups and acceleration laboratories.
- Administrative functions for IU Health will be retained within the existing Gateway Building on Illinois and 10th Street. A new parking garage with retail frontage will be constructed on 10th Street to serve the building and allow for future growth of the district.

Existing Phasing Future

- Research
- Patient Care OP
- Patient Care IP / Support
- Education
- IU Incubator Life Sciences
- Administration/Office
- MOB/Faculty Office
- Hoteling/Mixed-Use
- Service
- Parking
- Landscape
- Context Buildings

District B



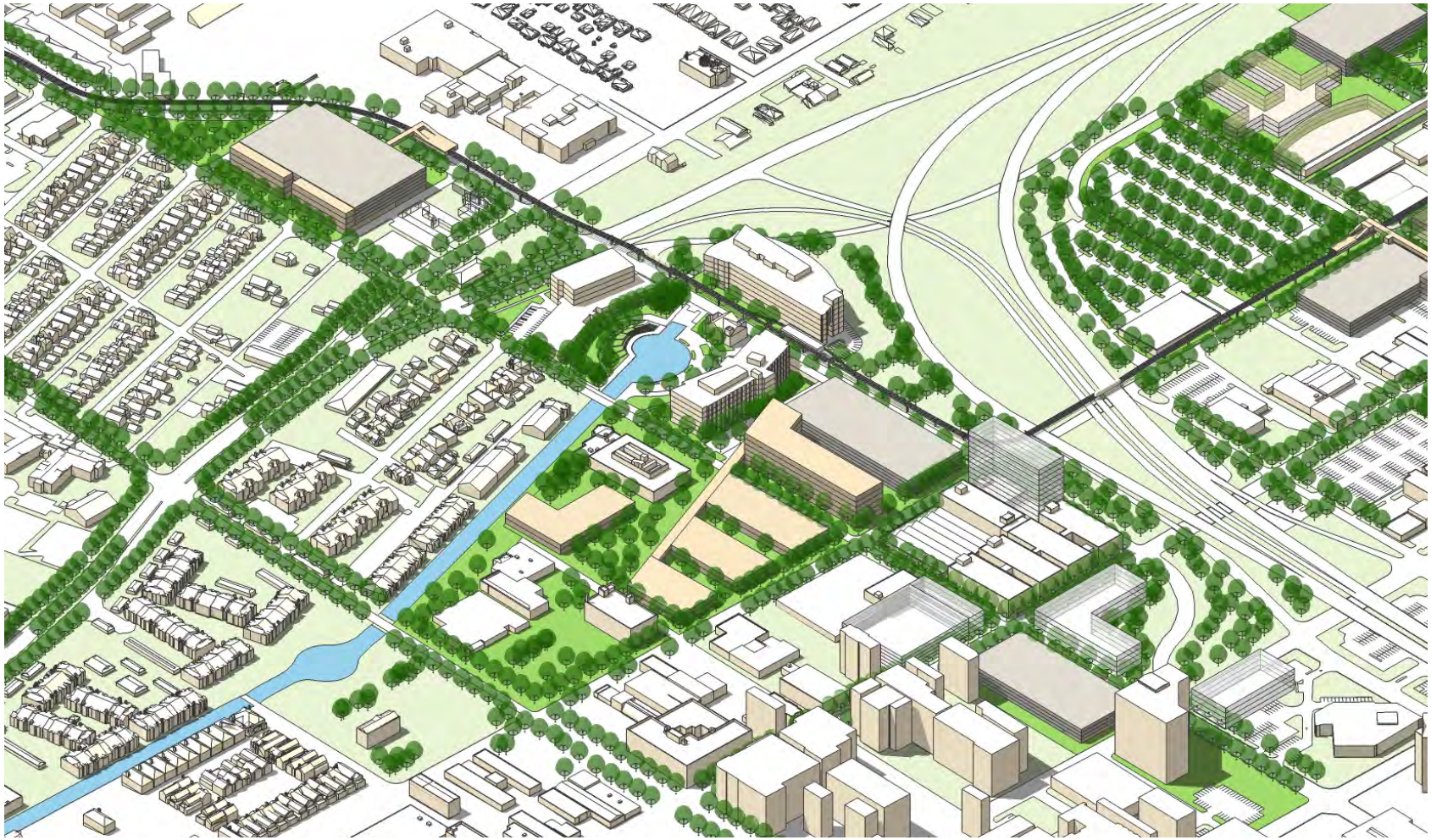
District B - Land Use Plan

District B- Existing Conditions

District B – Illustrative Plan

- A new "Freeway Park" design for the open space and existing surface lots under the I-65 Highway will enhance pedestrian access, safety and comfort. Landscape, sidewalks, plazas, creative lighting, interpretive displays and public art can transform this underutilized area from Senate to Illinois Avenue, creating a visual gateway and closing the physical gap between Districts B and C.
- New courtyards and open space are woven into each block in District B, both internal to the block and fronting the Canal.
- Unique streetscape design elements identifying the "Walk of Life" will extend along 10th Street from District A to Senate Avenue, then north to Districts C and D.
- Streetscape enhancements on 9th, 10th, 11th Streets, Senate Boulevard, and North Capitol Avenue will enhance pedestrian circulation through the district, and connect to the Cultural Trail on St. Clair Street.
- The proposed office development and parking garage will be linked via skywalks to the existing People Mover station.

Existing Buildings
Proposed Buildings
Future Expansion
Parking



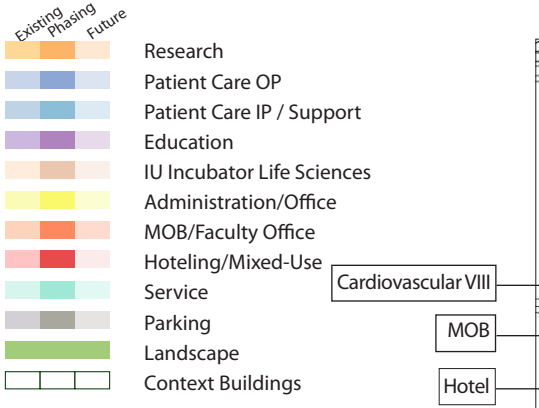
District B - Axonometric

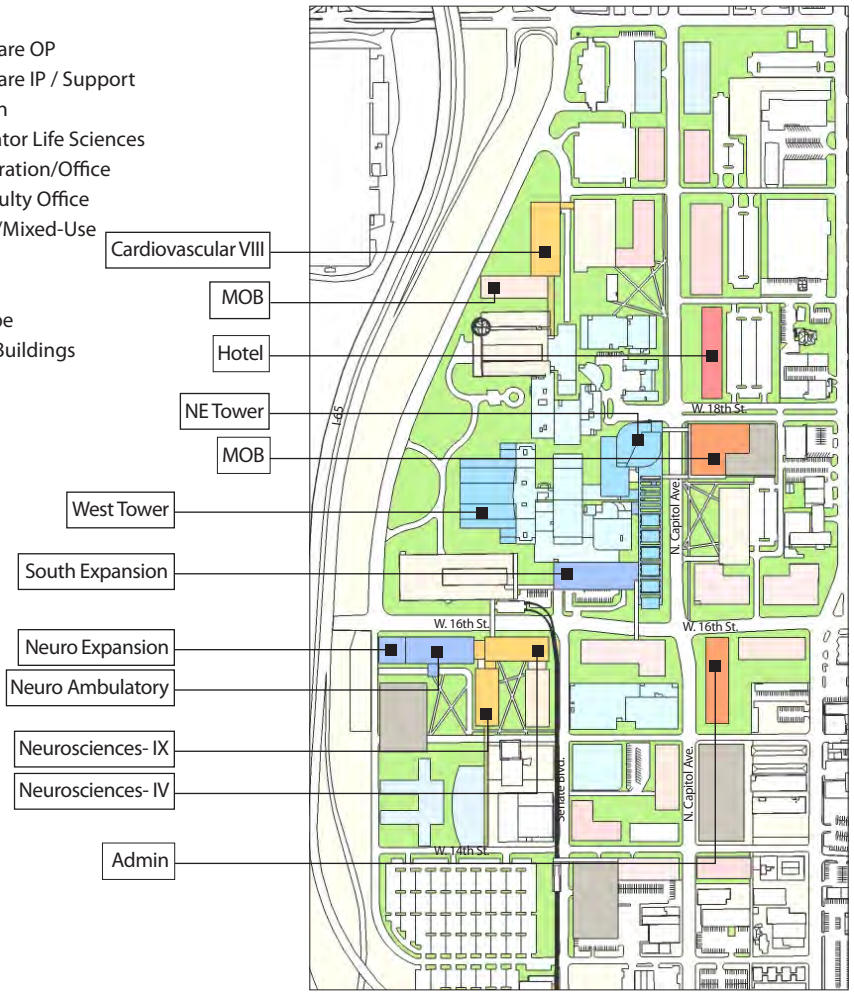
District C + D

Districts C and D – Facilities and Land Use

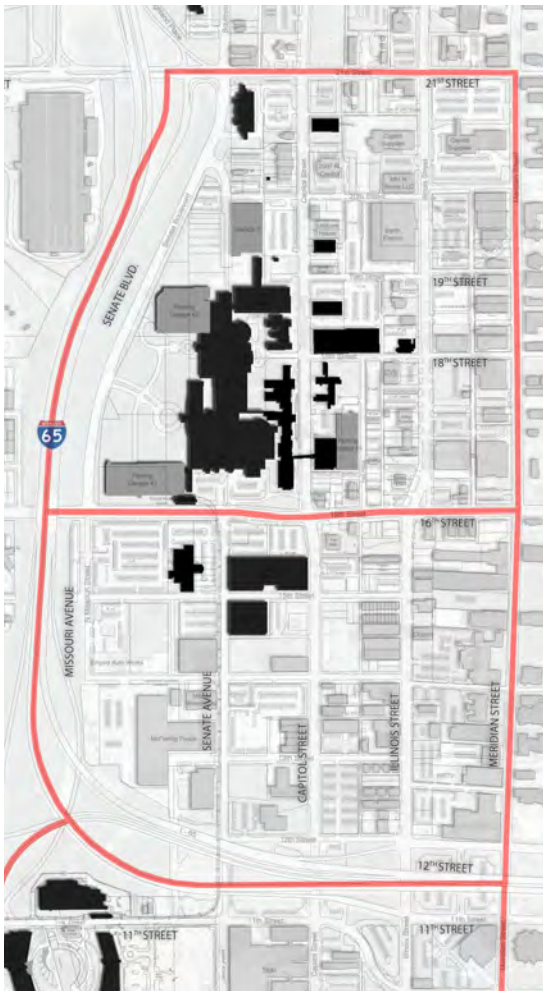
The Indiana University Hospital and office development in Districts C and D provides the joint use of Indiana University clinical expansion for inpatient and outpatient faculty practices with the integration of biomedical research on several parcels:

- A Neurosciences complex bounded by the I-65 Highway to the west and Senate Avenue to the east- extending from 16th Street south to 14th Street provides the first integrated research and clinical outpatient complex with shared use of a diagnostic imaging center for clinical and research needs. A future Psychiatric Hospital would be developed south of the complex at 14th Street to full provide for inpatient clinical integration.
- Methodist Hospital inpatient and outpatient expansion would occur from 16th Street north to 21st, between I- 65 Highway and Illinois Street to the east. This provides for realignment of inpatient programs in new bed towers and diagnostic expansion along Capitol Avenue. A hotel would also be developed in proximity to the Methodist site.
- An integrated Research and Clinical complex for new Cardiovascular and diabetes research would be developed at the north edge of the Methodist site between I-65 Highway and Capitol Avenue contiguous with the Cardiovascular Faculty Practice clinic.
- In District C from 16th Street south to 11th Street between I-65 and Illinois Avenue, an office development zone provides a contiguous corridor linking the Methodist site to the Canal District along Capitol Avenue and to the Peninsula District along 10th Street. This provides for private development of office and mixed-use for leased support office programs for Indiana University Health system.





District C + D - Land Use Plan



District C + D Existing Conditions

Districts C and D Illustrative Plan

- The build-out of the proposed program is shown in solid color, generally concentrated on Capitol and Senate Avenues from 18th Street to 14th Street. This District and Indiana University land holdings can accommodate future additional growth, shown as transparent, to extend the development character of the district.
- New development will front public streets and reinforce the grid and block pattern of district, re-creating an urban street wall on Capitol Avenue with active ground floor uses.
- Capitol Avenue will have a consistent and distinct streetscape design to identify it as the urban front door to the Methodist Hospital district.
- The Senate Avenue streetscape will be designed as part of the "Walk of Life" corridor, connecting to the internal pedestrian spine of Methodist Hospital across 16th Street, via a new skywalk connection.
- Streetscape improvements on east-west streets, particularly 18th, 16th, 15th and 14th Streets will help unify the district and enhance pedestrian safety.
- New semi-public courtyards with the Neurosciences complex and new public spaces fronting Capitol Avenue will provide human scale and views to landscaped space, including future plazas at the "100% corner" at the Capitol and 16th Street intersection.
- A new infill People Mover station and parking garage shown on Senate at 14th Street provides peripheral parking and connectivity for all Academic Medical Center campus users.

Existing Buildings
Proposed Buildings
Future Expansion
Parking

District C + D - Axonometric

7| PARKING, TRANSPORTATION & TRAFFIC

FUTURE PARKING AND TRANSPORTATION NEEDS

The Integrated Academic Medical Center campus will need both parking and transportation to support the locations, activities, and interaction among the faculty, staff, students, patients and visitors. Over the life of the build-out of the four districts, some existing parking supply will be displaced by new development and new parking will be created in surface lots and garages. With parking supply located in different areas, a coordinated and convenient People Mover and transportation system are vital for moving individuals from parking to workplace, from workplace to other locations for work or collaboration and from workplace to other amenities found on the campus.

Parking Demand vs. District Connectivity

Parking demand and connectivity between the districts are two complex and interrelated issues. Parking must be supplied for the patients, visitors and commuters (faculty, staff and students) that come to the Academic Medical Center campus. However, the regional distribution of commuter routes and the lack of a coordinated, regional public transit results in the continued need to provide a higher parking ratio. Priority should be given to patients and visitors, plus key staff members who will need proximate parking close to their healthcare facilities. Future policies will be needed to determine who among faculty, staff and students will also require proximate parking. Some commuters may be able to park in locations that are not in immediate proximity to their work and will need a transportation system that allows them to move conveniently from commuter parking to their destinations. Thus, connectivity becomes part of an important parking and transportation strategy to link districts, people, parking and facilities.

Connectivity and collaboration are going to be even more important in the future of medical care and research than they are today. The ability for physicians, research staff, and medical students to move among locations for collaboration, information, and meetings without driving and parking in each location would be a definite advantage to IUPUI and IU Health, and underscores the importance of improvements to the People Mover.

Determining Future Parking Demand

The proposed program represents growth both in facilities and in population, with demand generated by the aggregate growth of patients, visitors and commuters (faculty, staff and students). To quantify existing and future parking demand by program within districts, a number of programmatic and demographic topics were discussed with planning and facilities officials of Indiana University Health, Methodist Hospital, Indiana University School of Medicine and with parking and other officials of IUPUI.

Topics included plans for program growth and office relocations, site development and existing and future population and service volumes. In addition, a data collection form was circulated for completion by the officials to record existing and future floor area by location and use. Other data sought and analyzed included employment statistics for professional, administrative, faculty

and staff labor categories, student enrollment projections and service volume statistics.

Data was also collected on parking occupancy at all of the Methodist surface parking lots in Districts C and D. These data were augmented by data from the parking access control systems in the garages. Similarly, data from the IUPUI-owned parking garages serving District A were assembled from the control systems in those garages as well. Together, these data were combined to arrive at an understanding of the current levels of use of the parking facilities in all four districts.

In conjunction with the parking supply and occupancy information gathered, the facility, population and service volume data was used to develop ratios of existing parking requirements for employees, patients (principally, out-patients), visitors and students by type of building use (research, education, health care delivery, etc.). These ratios were subsequently used to project future parking demand for the same groups based on population and land use growth and program/facility development by area and major time period.

These calculations resulted in the parking demand projections illustrated in Tables 7.1 and 7.2 and B. Table 7.1 shows the current parking demand level in each district as compared to the total number of parking spaces and determines the number of spaces currently available in each district. Table 7.2 illustrates the projected future parking demand by district by phase.

Table 7.3 shows the number of parking spaces that are anticipated to be displaced by construction through the three different phases outlined in this plan. 1,483 spaces in District A will be displaced by future development and will need to be replaced in future supply.
After accounting for the existing available spaces in each district, the projected future parking demand and the number of spaces displaced during build-out of the plan, the ultimate net parking need can be assessed for each district.

Displayed in Table 7.4, these figures represent the number of spaces that are needed to be constructed in each phase in each district to ensure the parking system can effectively support the proper functioning of the activities in each district.

2010 AVAILABLE

District	Existing Supply	Spaces In Use	Spaces Available
A	6,353	6,163	190
B	1,091	1,018	73
C	1,054	844	210
D	4,581	2,573	2,008
TOTAL	13,079	10,598	2,481

Table 7.1

NEW DEMAND

Phase	Parking Demand
District A	
I	(1,093)
II	(1,349)
III	(1,280)
Subtotal	(3,722)
District B	
I	0
II	(1,396)
III	0
Subtotal	(1,396)
District C	
I	(717)
II	(314)
III	(1,019)
Subtotal	(2,050)
District D	
I	(503)
II	(558)
III	(642)
Subtotal	(1,703)
TOTAL	(8,871)

Table 7.2

DISPLACED BY CONSTRUCTION

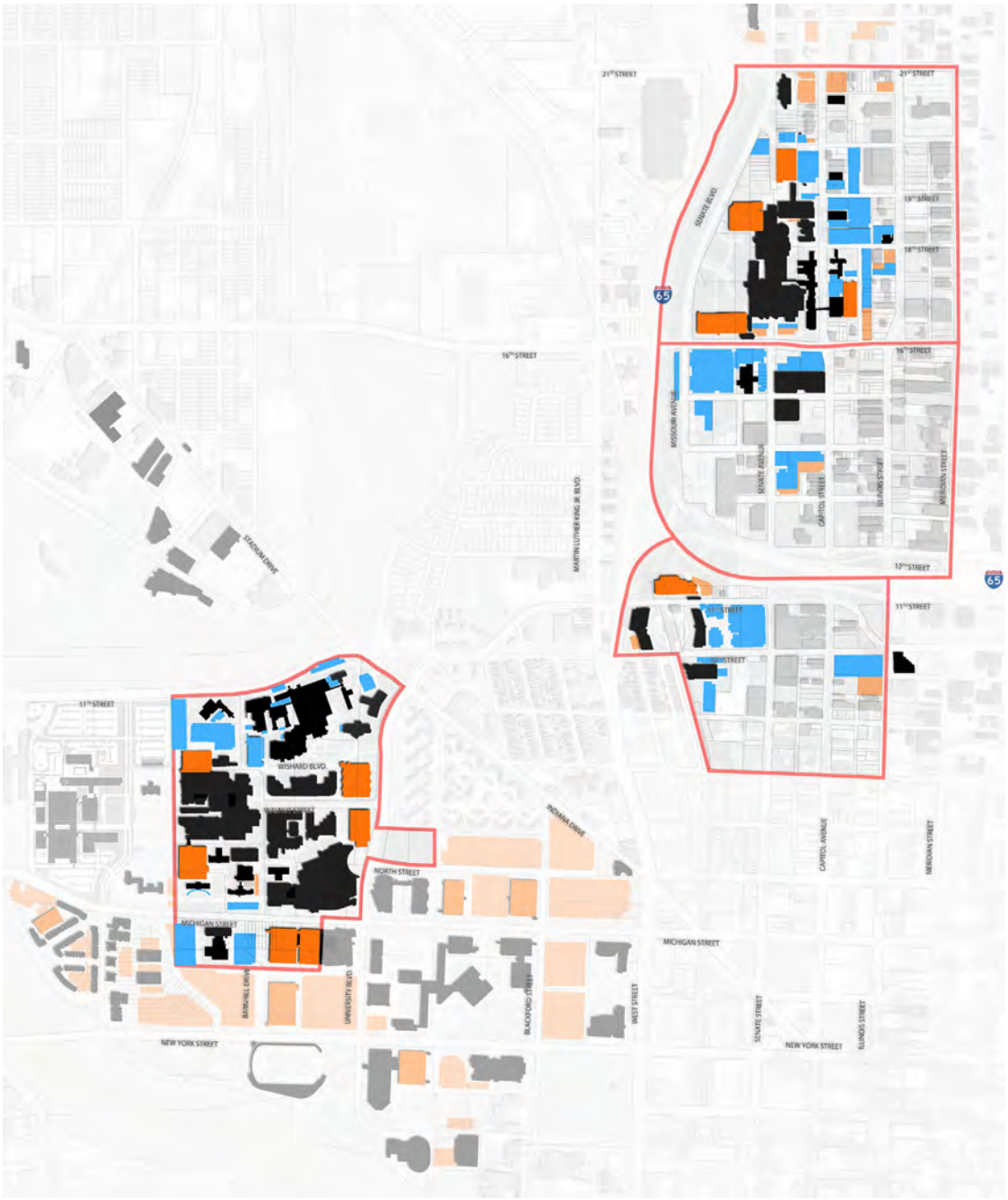
Phase	Surface Parking Lots	Garages	Total
District A			
I	(589)	0	(589)
II	(330)	(564)	(894)
III	0	0	0
Subtotal	(919)	(564)	(1,483)
District B			
I	0	0	0
II	(640)	0	(640)
III	0	0	0
Subtotal	(640)	0	(640)
District C			
I	(416)	0	(416)
II	(141)	0	(141)
III	(723)	0	(723)
Subtotal	(1,280)	0	(1,280)
District D			
I	(151)	0	(151)
II	(430)	0	(430)
III	(326)	0	(326)
Subtotal	(907)	0	(907)
TOTAL	(3,746)	(564)	(4,310)

Table 7.3

TOTAL PARKING NEED

Phase	Parking Need
District A	
I	(1,492)
II	(2,243)
III	(1,280)
Subtotal	(5,015)
District B	
I	73
II	(2,036)
III	0
Subtotal	(1,963)
District C	
I	(923)
II	(455)
III	(1,742)
Subtotal	(3,120)
District D	
I	1,354
II	(988)
III	(968)
Subtotal	(602)
TOTAL	(10,700)

Table 7.4



Parking Displacement

Findings

As noted previously, District A is the most heavily utilized parking district with a 90% utilization rate. In contrast, District D, the Methodist Hospital campus has an approximate surplus capacity of 2,000 spaces. District A will also have the largest share of new development and new parking demand, while displacing the most existing parking spaces. This will result in a long term need to construct over 5,000 new and replacement spaces to serve development in District A. That area also has the highest density and land that will become available with the relocation of Wishard Hospital will be needed for core programs in patient care, research and educational facilities. The challenge is to provide future parking in a phased approach and in proportion to district need that is both cost and land effective while optimizing convenience for patients, visitors, and commuters.

The build-out over the next ten to twenty years is expected to generate a parking demand of 10,700 new and replacement spaces for employees, patients, faculty, students and visitors. Some of these parking spaces will be provided by developers in conjunction with the construction of corporate administration facilities for Indiana University Health.

ALTERNATIVE PARKING SCENARIOS

The scale of parking demand will require some amount of structured parking. Constructing up to 10,700 spaces in surface parking lots would be a very land intensive exercise, requiring 85-90 acres of land. All surface parking would not be convenient for users and would require a transportation system to connect to all lots. The operating costs involved, plus the costs to purchase or lease enough land drive the decision to incorporate structured parking into the solution.

The consultant team evaluated three broad strategies for parking that ranged from:

- All Proximate Parking - where each district provides parking garages in close proximity to its facilities
- Consolidated Parking – development of larger parking structures along the People Mover to consolidate parking supply and use the People Mover to connect districts and parking
- Combined Parking - that prioritizes new garages for those needing proximate parking, and develops peripheral parking in surface lots for commuters, connected by an improved transportation system.

The Proximate Parking option would build 10 to 11 new garages for all four districts over time and keeping walking distances to within a 5 to 7 minute walk to primary destinations. Although highly convenient, building parking garages for the entire parking demand within each district would take up valuable land better utilized for patient care, research and educational programs that need proximity to existing hospitals and facilities.

The Consolidated Parking option considered larger garages constructed at strategic locations across the four districts, tied to the People Mover system. The advantage would be a slightly more

1. Riley Hospital Parking

cost effective approach to garage construction with efficiencies of scale. However, at a minimum cost of $15,000 per space, the high capital cost to build only structured parking in these first two options would be overly expensive.

The third option, Combined Parking, would provide a mix of proximate parking garages and peripheral surface lots. This option balances costs with convenience, but will rely on an integrated transportation solution to connect parking to destinations. This option trades the high capital costs of all garage parking for a higher operating cost to bring transit service to peripheral lots.

Upon review with IU and Indiana University Health an approach that optimizes convenience for patients, visitors, students and key staff, with the cost effectiveness of some surface parking was deemed most feasible to pursue in conjunction with an improved transportation system to connect districts.

1

FUTURE TRANSPORTATION NEEDS

In addition to linking parking, the continued success of IU and Indiana University Health growth and plans to attain an NCI Comprehensive Cancer Center status will rely on the strength of connectivity and collaboration between physicians, researchers, students and staff. As demonstrated with the current People Mover, transit plays a vital role in supporting connectivity and collaboration between the facilities in each district. The addition of over 4 million square feet of development and the need to link parking resources will require an improved People Mover. An expanded transit service to provide flexibility and serve those areas not connected to the People Mover route will also be required. Specific improvements to the People Mover and district transit are part of the general recommendations to achieve an integrated Academic Medical Campus.

People Mover Improvements

The existing People Mover system has the ability to serve 648 passengers each way per hour, but its current ridership is at 20% of peak hour capacity. Recommended improvements include modifications to train platforms and doors for ingress and egress on both sides, and the addition of three train sets to reduce peak period waiting time from every 7 minutes to 3.5 minutes. This would make the People Mover a more convenient alternative to driving between districts and adding parking demand.

The reliability of the existing People Mover during winter weather is not optimum. Snow and ice accumulations have caused service disruptions on the People Mover during significant weather events. Installing heating strips on the entire guideway would allow the People Mover trains to continue service in snowstorms up to one inch of snow per hour accumulation and greatly improve reliability of the system. In the event of a shutdown due to heavier snowfall, a proposed shuttle system could provide back-up service to People Mover stations.

Expanded Transit Service

Although IUPUI and IndyGo operate various bus routes serving the campus and downtown, no current route connects the districts of the Academic Medical Campus. A new Transit Circulator route that links district destinations with each other and to district parking and periphery lots is a fundamental requirement to improve connectivity.

PARKING AND TRANSPORTATION ALTERNATIVES

The consulting team considered and evaluated several alternatives with IU and Indiana University Health staff for parking and transportation options that would support the build-out of four districts. The alternatives considered include a mix of People Mover extensions, transportation and consolidated or combined parking options described above. The alternatives tested extensions of the People Mover to the north, to the south and west to the new Wishard Hospital site. They also tested parking options that consolidated parking in a few mega-

structures in different districts, vs. peripheral surface lots served by a transit circulator. The full alternatives are described in the Parking and Transportation Study as an appendix to this report.

PREFERRED ALTERNATIVE

The Preferred Alternative combines proximate garages, new People Mover infill stations, peripheral surface parking and transportation improvements to provide a balanced approach to IUPUI / IU Health parking and circulation needs, optimized against capital and operating costs. It consists of the following elements:

New Infill Stations and Mixed Use Garages
A new mixed use garage connected via skywalk to a new infill People Mover Station located between 10th and 11th Streets provides a new midpoint stop between the Canal and Walnut Street stations. This site is located close to the I-65 Martin Luther King Blvd. entrance and exit ramps, intercepting arriving traffic closer to the freeway ramps. A new People Mover station makes it a short ride to the Health Sciences Center on the IUPUI campus, or to the emerging Neurosciences district and Methodist Hospital to the north. The mixed use garage is proposed with a liner building of residential apartments facing the historic neighborhood of Ransom Place with retail and a neighborhood grocery store recommended at the ground floor level. A separate driveway access to this garage will need to be carefully considered to minimize traffic back-up on 11th Street in the morning peak period.

A second mixed use garage and infill station is proposed for the People Mover at Senate and 14th Street, creating a new midway station between Canal and the stop at Methodist Hospital. The garage can be built on land currently owned by IU Health and is recommended to include ground floor retail to provide amenities to commuters parking at this location.

The two infill People Mover stations provide a distributed access to parking capacity for all four districts. Located on the existing People Mover route, the proposed new stations provide a more equidistant access and therefore shorter trips to IUPUI/IU Health destinations. The People Mover costs would be $34.5 million, including both infill stations but not including garages, land costs and any required traffic improvements. Additional costs are included in the Cost Model section of this report.

Proximate Garages
Two new garages are proposed in District A to serve the demand for priority proximate parking for IU and Riley Hospital and new research development. The area north of Riley Hospital is reserved for long term hospital growth, but is recommended as surface parking for the timeframe of this plan.

A number of locations are identified in districts B, C and D where IUPUI and IU Health can partner with private developers to build corporate office and administration functions and private parking garages with a lease back to IUPUI and IU Health. This helps offset the cost of

construction while providing a more convenient parking source.

Surface Parking at the Periphery
Surface parking lots are proposed in A, C and D, with a major new parking lot recommended at Senate and 13th Street in district C, with access to the new infill station of the People Mover and Transit Circulator. Generous landscape, lighting, and a sustainable design with pervious pavement will help mitigate the scale of parking and its environmental footprint.

Additional peripheral parking on surface lots could be a future option if land became available at reasonable prices. This option should continue to be considered as land use changes around the IUPUI campus and the Districts.

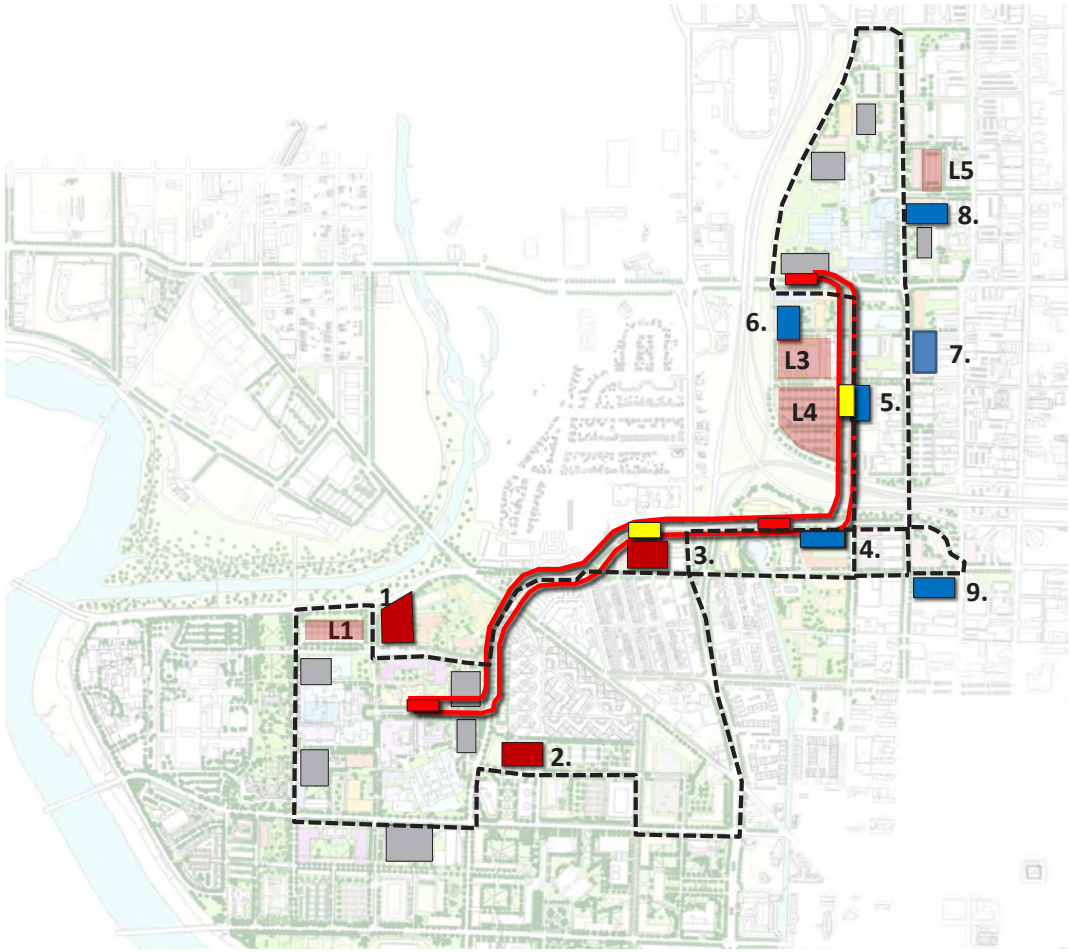
AMC Transit Circulator
A new bus transit route is recommended that will link the IUPUI campus and Health Sciences complex to districts B, C and D. This transit circulator would provide frequent bus service connecting the People Mover stations and parking facilities with destinations in all four districts to provide greater interoffice connectivity and promote a "park once" policy to reduce traffic and parking congestion.

Real Time Information for Transportation
The current People Mover operation utilizes GPS technology to provide real-time information of the next People Mover train arrivals in each station. This technology can be expanded to include the transit circulator to peripheral parking so that passengers can have real time information about the location of the next transit vehicle at bus stops and People Mover stations on their laptops, cellphones and PDAs. Capital costs for the Transit Circulator (12 buses, shelters, GPS information tracking) were not included because it may be more cost effective to contract out the operation.

Transportation and Sustainability
Increased use of the electrically powered People Mover, alternative fueled buses for the proposed Transit Circulator, expansion of Transportation Demand Management (TDM) efforts, regional coordination with IndyGo on direct regional commuter bus routes, and development of a "park once" policy can all provide long term, high profile, highly visible sustainable energy and transportation solutions.

Legend:

- **Existing Garages**
- **Proposed Surface Lots**
  - L1 – 400 spaces
  - L3 – 400 spaces, temporary lot
  - L4 – 600 spaces
  - L5 – 175 spaces (hotel parking)
- **IU/Clarian Provided Garages**
  1. 1,300 spaces, 5 levels
  2. 1,145 spaces, 6 levels
  3. 1,400 spaces, 5 levels
- **Private Developer Garages**
  4. 1,270 spaces, 5 levels
  5. 780 spaces, 4 levels
  6. 855 spaces, 5 levels
  7. 900 spaces, 5 levels
  8. 750 spaces, 4 levels
  9. 750 spaces, 4 levels
- **New People Mover Infill Stations**
- **New District Bus Circulator Links Parking**



Preferred Alternative - In-fill Station/Proximate Garages/Transit Circulator

Parking as a Shared Resource

The previous Tables 7.1 - 7.4 showed the existing parking supply, the projected demand, parking displaced and the net demand for new parking spaces. Tables 7.5 and 7.6 show the proposed parking by district and by phase, so that parking facilities can be built in accordance with the demand. As demonstrated by Tables E and F, the parking demand in District A is larger than any other district, while the parking supply in District D remains larger through the short term and midterm phases of development.

In order to create a functioning Academic Medical Center campus, parking must be viewed as a shared resource to be managed jointly between IUPUI and IU Health. It is recommended that the surplus parking in District D by Methodist Hospital be used to offset the growing demand in District A. Implementation of the Transit Circulator will provide a shuttle connection between existing lots in District D and destinations for the Health Sciences district on the IUPUI campus.

NEW SUPPLY

Phase	New Parking
District A	
I	2,125
II	1,300
III	1,145
Subtotal	4,570
District B	
I	0
II	2,020
III	0
Subtotal	2,020
District C	
I	855
II	400
III	2,280
Subtotal	3,535
District D	
I	175
II	750
III	0
Subtotal	925
TOTAL	11,050

Table 7.5

NET SURPLUS/DEFICIT
(at end of each phase)

Phase	
District A	
I	633
II	(310)
III	(445)
Subtotal	-445
District B	
I	73
II	57
III	57
Subtotal	57
District C	
I	(68)
II	(123)
III	415
Subtotal	415
District D	
I	1,529
II	1,291
III	323
Subtotal	323
TOTAL	350

Table 7.6

Transportation Demand Management

IUPUI Parking and Transportation Services has an impressive array of Transportation Demand Management programs on campus. They range from Emergency Ride Home services for those who ride transit, to commuter carpool and vanpool matching services. They are available to all IUPUI employees.

These already established programs should be communicated and marketed to IUPUI employees continuously. As new buildings are constructed and new employees arrive, information about TDM should be part of the orientation to the campus and institution. If IU Health does not have similar TDM services to its employees, it might be cost effective for IU Health to participate in the funding and expansion of the IUPUI programs to IU Health employees.

A significant TDM opportunity exists for the IUPUI and IU Health employees who are willing to use transit to reduce auto trips.

However, this potential can only be realized if the IndyGo bus routes are restructured to provide more regional, one-seat direct route services to IUPUI and IU Health destinations, beyond the current downtown Indianapolis focus of the IndyGo network. The existing routes require many prospective passengers to make circuitous connections to other routes that reach IUPUI and IU Health locations.

TRAFFIC CONSIDERATIONS

To understand the potential traffic impacts based on the Preferred Alternative, proposed parking changes were grouped in general areas and examined as a cumulative net loss or net gain of spaces for each phase of development, using previous data on road volume, trip generation and direction of approach. Some parking areas will have a negligible effect due to a small overall cumulative net gain or loss in peak hour trips. A summary of findings and potential improvements are described below. Please refer to the Traffic Analysis Study as an Appendix with this report.

General Observations

Potential traffic impacts from proposed parking locations are primarily concentrated near freeway ramps and existing areas of congestion and turning movements. A general analysis shows that specific intersections may be affected and will need further study to determine the appropriate traffic improvement and detailed roadway geometrics. These roadways and intersections include:

1. 10th Street West of University Blvd – new road entrances and parking for the IUPUI Health Science Center and new Wishard Hospital may require additional left turn capacity off of 10th Street for westbound traffic.
2. 10th Street at West Street – this intersection has significant congestion in the evening rush hour as traffic queues up for the I-65 entrance ramps. An additional left turn lane and adjustments to signal timing will need to be evaluated.
3. Illinois Street and I-65 On-Ramp – this intersection may require an additional left turn lane from Illinois Street northbound onto the I-65 entrance ramp.
4. 12th Street at Meridian – traffic generated by new parking in District B and C could increase the demand for through movement on 12th Street. Converting a turn only lane to a through lane could mitigate traffic flow.
5. Signal Changes at 16th and Meridian - new traffic generated by the Neurosciences District may increase traffic at 16th and Meridian Streets. Improved signal timing with a protected left turn would help turning movements.
6. Intersection Improvements at Senate and 21st Streets – additional traffic generated by new development would add to the congestion already at this intersection. Intersection improvements including a double-left turn and signal timing changes should be evaluated.
7. 18th Street Between Capitol and Illinois - Convert 18th Street to two way traffic to distribute traffic and help with wayfinding and access into the Methodist Hospital campus.
8. Pedestrian improvements will still be

needed on key corridors, such as Capitol Avenue in Districts B, C and D. One or more lanes may be converted on Capitol to on-street parking with curb extensions at intersections and pedestrian-activated signals at mid-block crossing for specific sections of the roadway.

FUTURE OPTION FOR WISHARD HOSPITAL PEOPLE MOVER EXTENSION

This future option evaluates the extension of the Indiana University Health People Mover south and westward from the end of the current track at Riley Hospital to a new station at the Cancer Research Center and a new station serving the Wishard/VA. This alternative would be built in conjunction with the infill stations to provide access to parking capacity at the multi-use garages. This future option would also create the opportunity to extend the Translogic pneumatic tube system along the guideway to the Cancer Research Center and Wishard/VA to transport lab samples to the Indiana University Health Pathology Lab at Canal.

This option could be constructed in two phases. The first phase would extend the People Mover 1,400 feet south from Riley and construct a new station at the Cancer Research Center on West Michigan. This station could be built within the structure of the new building and provide walkway connections across West Michigan to the School of Dentistry, Vermont Street Garage and the IUPUI Campus Center. This option would provide greater connectivity for collaboration among colleagues in all four districts with the Cancer Research Center, which is the centerpiece for plans to establish a National Cancer Institute-designated Comprehensive Cancer Center. The extension to the Cancer Research Center will require extensive modification of the overhead walkway system around Riley.

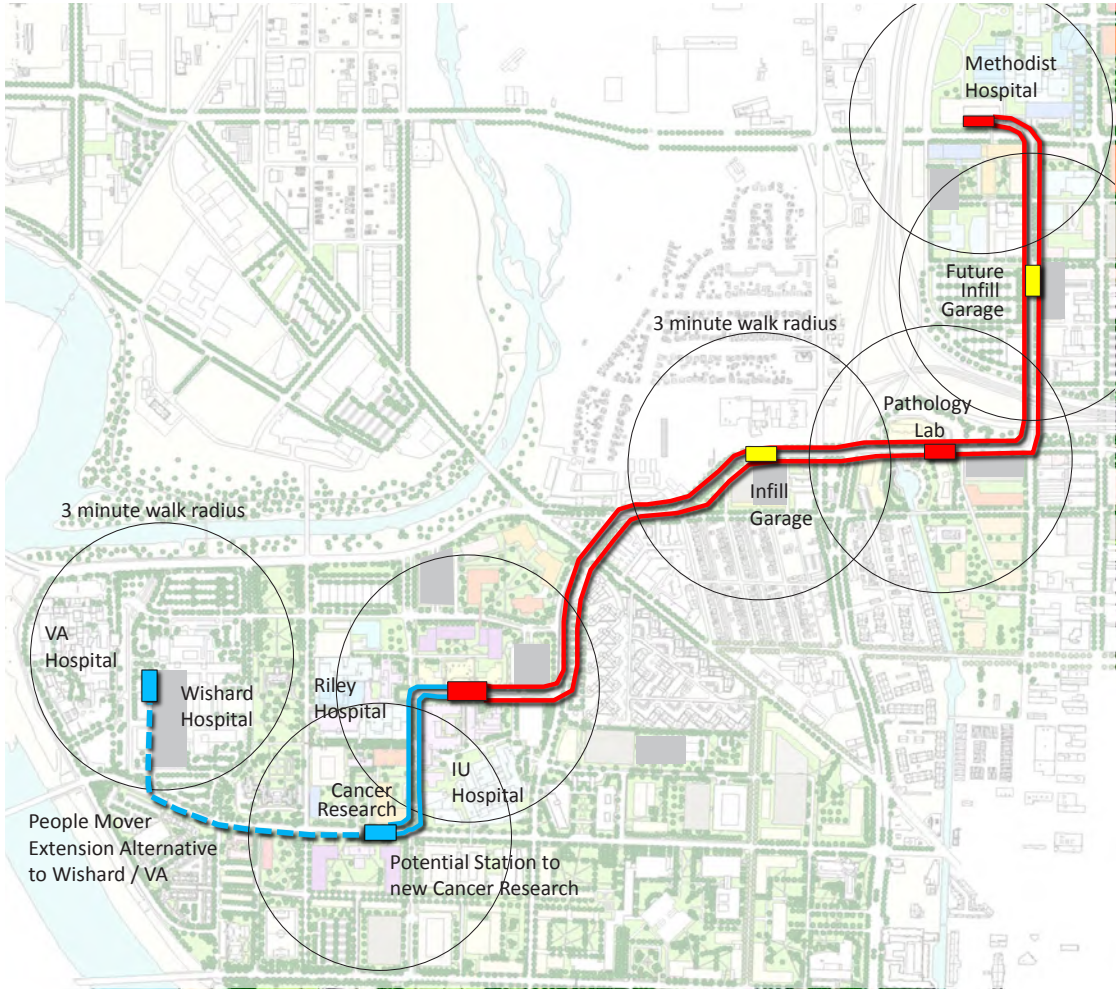
A potential future phase could extend the People Mover 3,165 feet from the Cancer Research Center station along West Michigan to a new station serving the Wishard and VA hospitals and the new Wishard parking garage. The station located between Wishard and the VA would provide excellent service to both institutions. Funding for this extension would have to be provided by Wishard and/or the VA Hospital to be feasible.

Order of Magnitude Costs

Estimated costs are $12.0 million for the first phase extension from Riley to the Cancer Research Center and $17.3 million for the second phase to Wishard/VA. This does not include costs for new trainsets, train control and train door modifications which are assumed to be part of the costs for any service improvements need to provide capacity for the new in-fill stations.

Legend:

- Existing People Mover Route
- Existing People Mover Station
- Proposed Infill Station
- Potential People Mover Extension
- People Mover Extension Alternative to Wishard and VA
- Potential Extension Stations



Future Options - People Mover Extension to Wishard/VA via Cancer Research Center

8| COST & PHASING

COST MODEL

The following chart summarizes the overall plan development costs for the various Indiana University and Indiana University Health programs.

Each facility program element was estimated for the projected facility construction cost of either a new facility or adaptive reuse renovation based on the projected gross square feet (GSF) size and facility program type. The Indiana University Health clinical programs, to be provided by a private developer and leased back by Indiana University Health, and facility costs are not projected.

Site development, transportation and parking costs are sub-totaled separately and may be shared by both organizations

For each district grouping of facilities, project costs were developed including relevant:

a) average escalation of the facilities group based on the projected phasing at 2% per year,
b) A soft cost allowance for fees, equipment at 20%,
c) a project contingency at 10%.

Detailed estimates were distributed to Indiana University and Indiana University Health administrative groups and are not contained in this report.

Total Project Facility Cost	**$**	**2,158,441,773**
Total Project Site Cost	**$**	**46,195,000**
Total Project Transportation Cost	**$**	**140,958,900**
Total Plan Development Cost	**$**	**2,345,595,673**

PHASING & IMPLEMENTATION

The long-term program needs were prioritized into three categories.

1) Near Term
2) Mid Term
3) Long Range

The following charts illustrate the new facilities expansion, backfill renovations of existing buildings for new programs and required demolitions of existing buildings to accommodate new facilities.

Timing of specific projects is contingent on the approval of capital funding plan by the University Board of Trustees and Indiana University Health Board of Directors.

IU / IU Health
Academic Medical Center Campus Implementation Plan
2010- 2029+

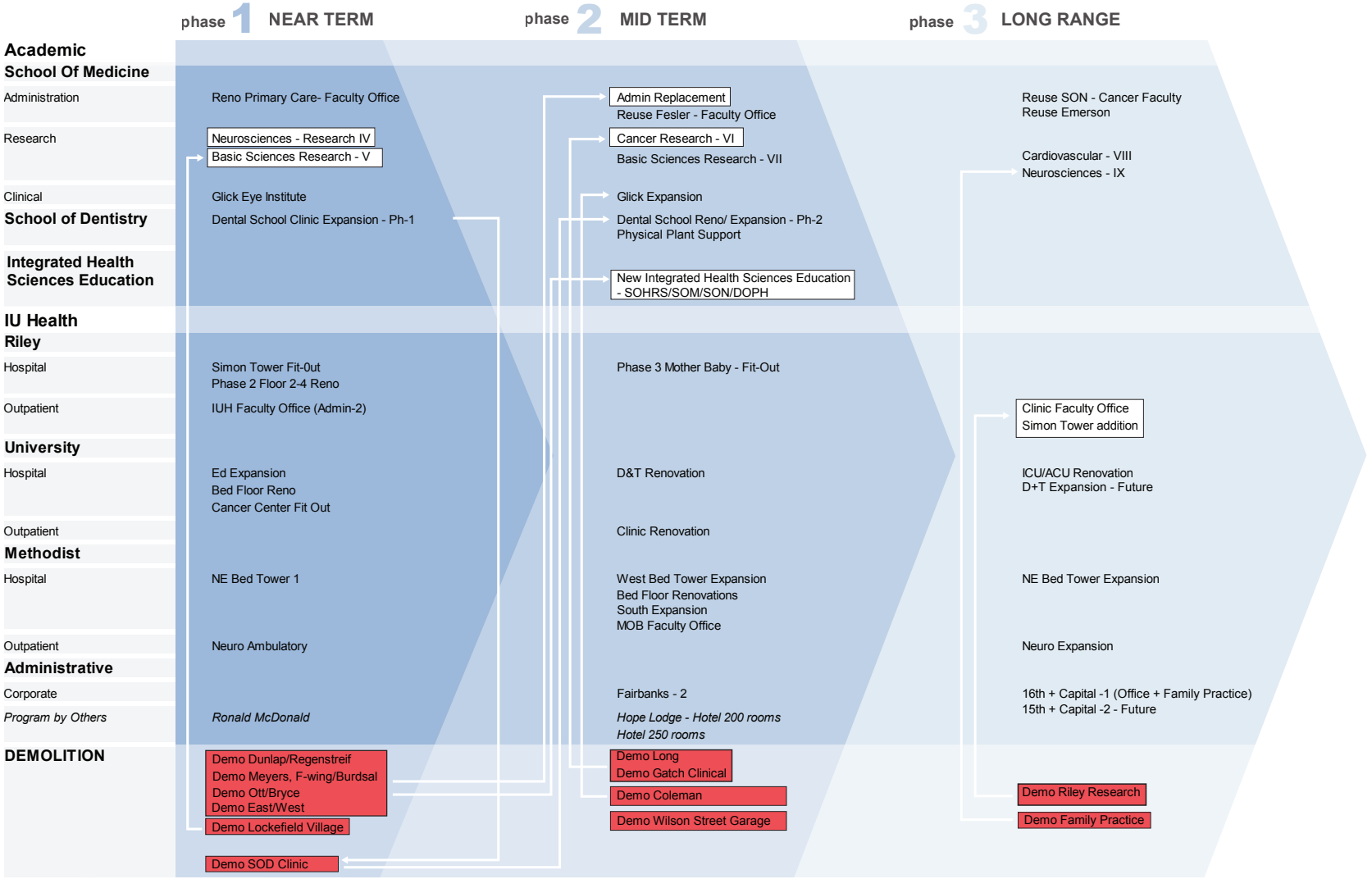
Approximate Project Start Dates

	NEAR TERM	New Proposed GSF	MID TERM	New Proposed GSF	LONG RANGE	New Proposed GSF
Academic						
School of Medicine						
Administration	Reno Primary Care - Faculty Office	(105,000)	Admin Replacement Reuse Fesler - Faculty Office	80,000 (61,400)	Reuse SON- Cancer Faculty Reuse Emerson	(140,000) (50,000)
Research	Neurosciences - Research IV Basic Sciences Research - V	125,500 100,000	Cancer Research - VI Basic Sciences Research - VII	200,000 150,000	Cardiovascular Research VIII Neurosciences Research IX	100,000 125,500
Clinical	Glick Eye Institute	64,000	Glick Expansion	68,000		
School of Dentistry			Dental School Clinic Expansion - Ph-1 Physical Plant Support	143,400 100,000	Dental School Reno/ Expansion - Ph-2	200,000
Integrated Health Sciences Education			New Integrated Health Sciences Education	340,000		
SOH & RS SOM SON DOPH			SOH & RS Expansion 61,000 SOM Growth 11,000 SON Expansion 233,000 DOPH Expansion 35,000			
IU Health						
Riley						
Hospital	Simon Tower - Fit-0ut Phase 2 Floor 2-4 - Renovation	(182,000) (58,400)	Phase 3 Mother Baby - Fit-Out	(135,000)		
Outpatient		24,000			Clinic Faculty Office Simon Tower addition	150,000 300,000
University						
Hospital	Ed Expansion Bed Floor Renovation Cancer Center Fit Out	(4,000) (139,000) (57,500)	D&T Renovation	(17,000)	ICU/ACU Renovation D+T Expansion - Future	(48,500) TBD
Outpatient			Clinic Renovation	(30,000)		
Methodist						
Hospital	NE Bed Tower 1	601,000	West Bed Tower Expansion Bed Floor Renovations South Expansion MOB Faculty Office	215,600 (324,000) 122,000 116,000	NE Bed Tower Expansion	72,000
Outpatient	Neuro Ambulatory	211,300			Neuro Expansion	62,500
Administrative						
Corporate			Fairbanks - 2	184,140	16th + Capital -1 (Office + Family Practice) 15th + Capital -2 - Future	281,300 TBD
Program by Others	*Ronald McDonald*	(100,000)	*Hope Lodge* *Hotel 250 rooms*	(52,000) (125,000)		
DEMOLITION	Demo Dunlap/Regenstreif Demo Meyers, F-wing/Burdsal Demo Ott/Bryce Demo East/West Demo Lockefield Village Demo Family Practice Demo SOD Clinic	(335,715) (516,160) (52,600) (213,465) (104,800) (24,000) (120,000)	Demo Long Demo Gatch Clinical Demo Coleman Demo Wilson Street Garage	(55,500) (102,500) (34,000)	Demo Riley Research	(61,400)

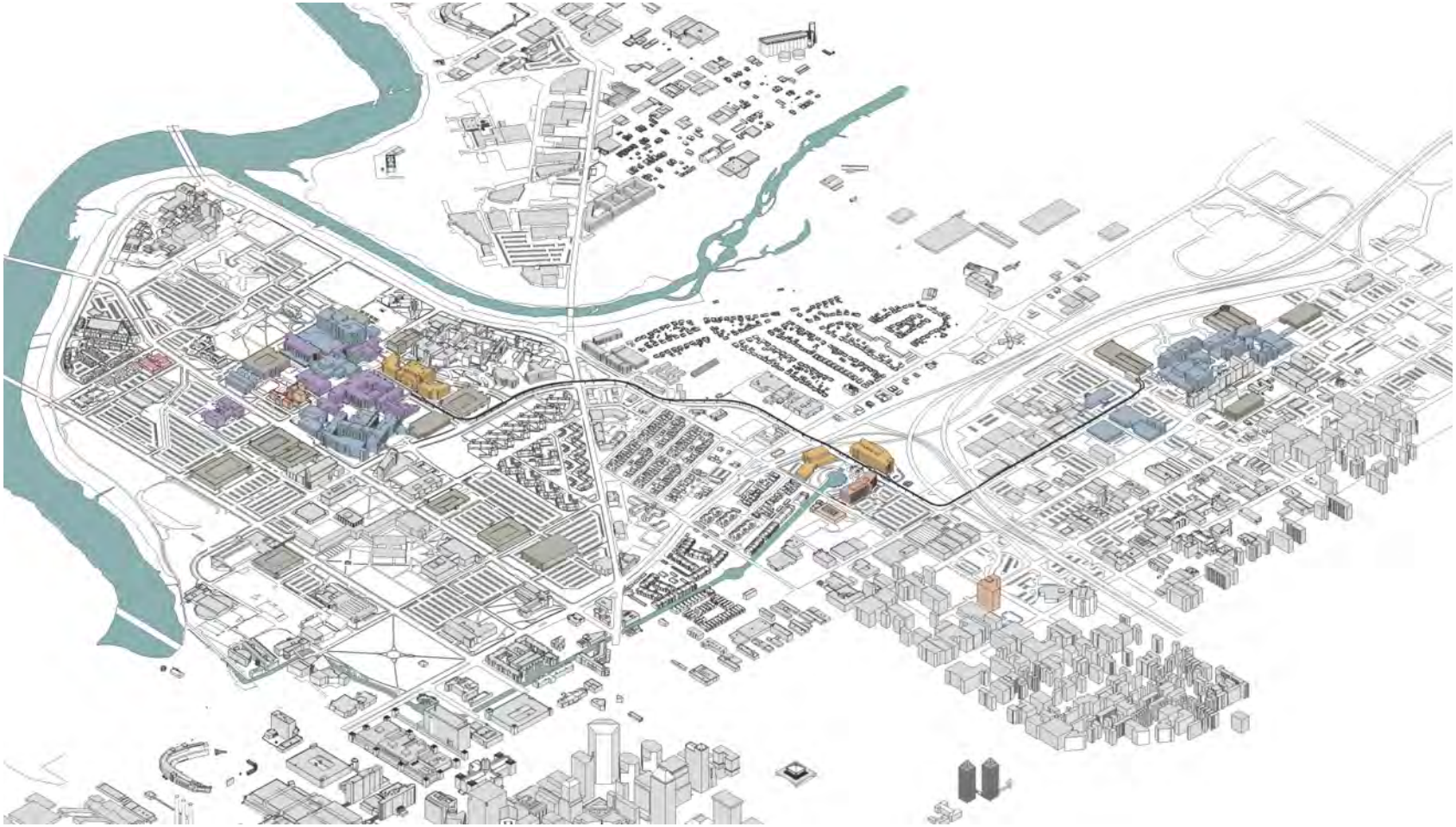
(…….) Indicates renovation fit-out of existing or demolition

IU / IU Health
Academic Medical Center Campus Logistic Plan
2010- 2019+

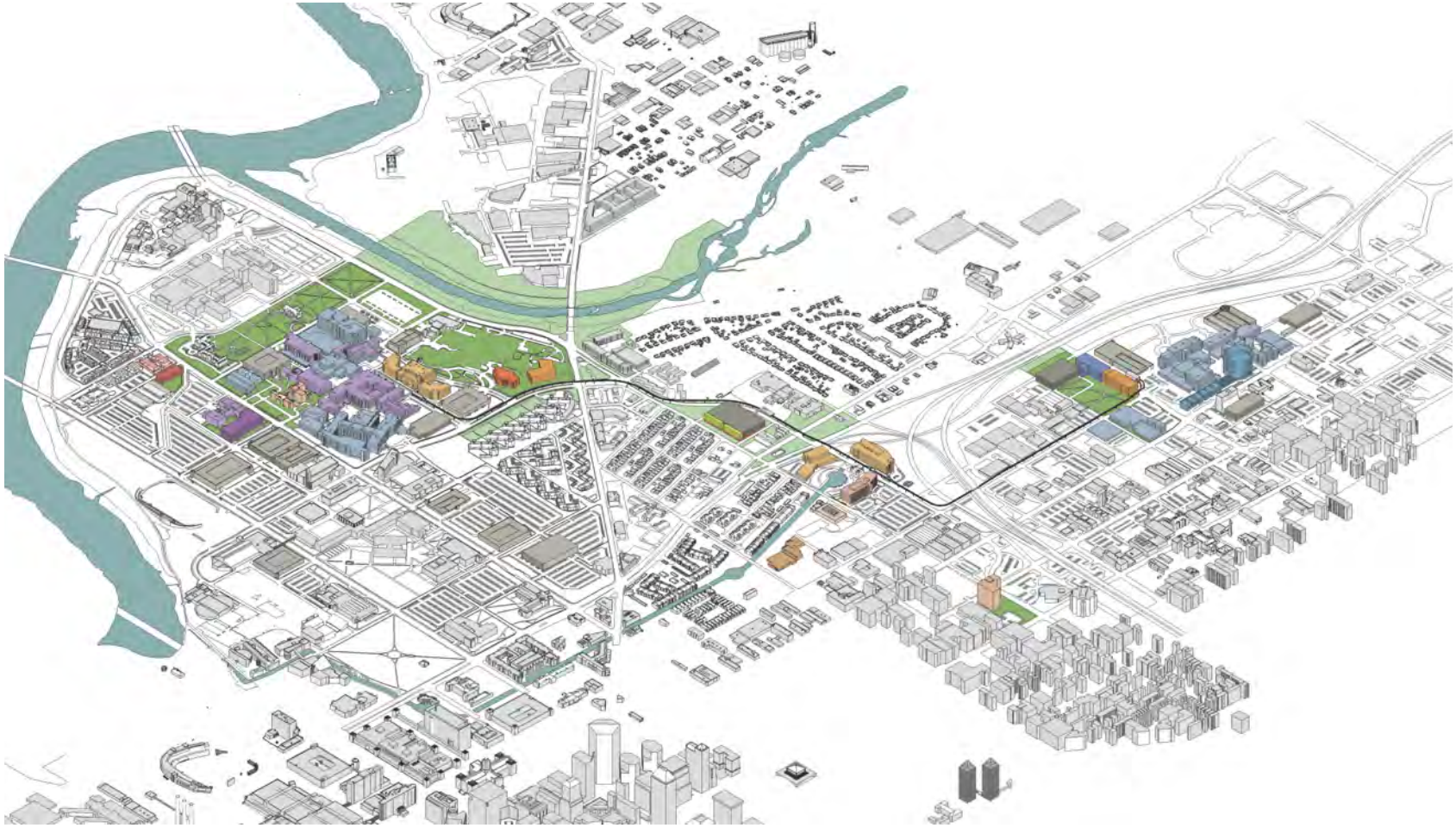
Approximate Project Start Dates



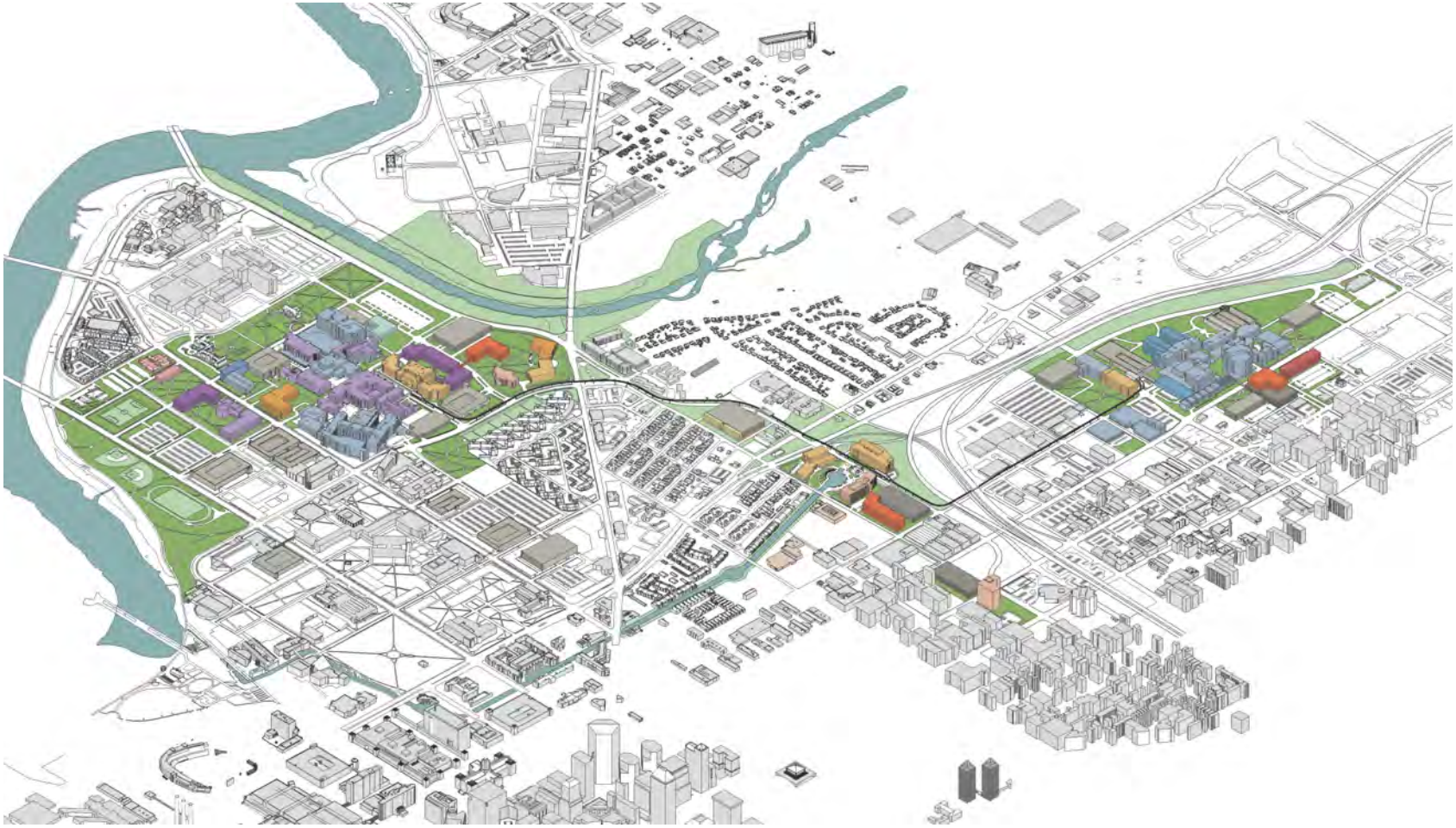
PHASING DIAGRAMS



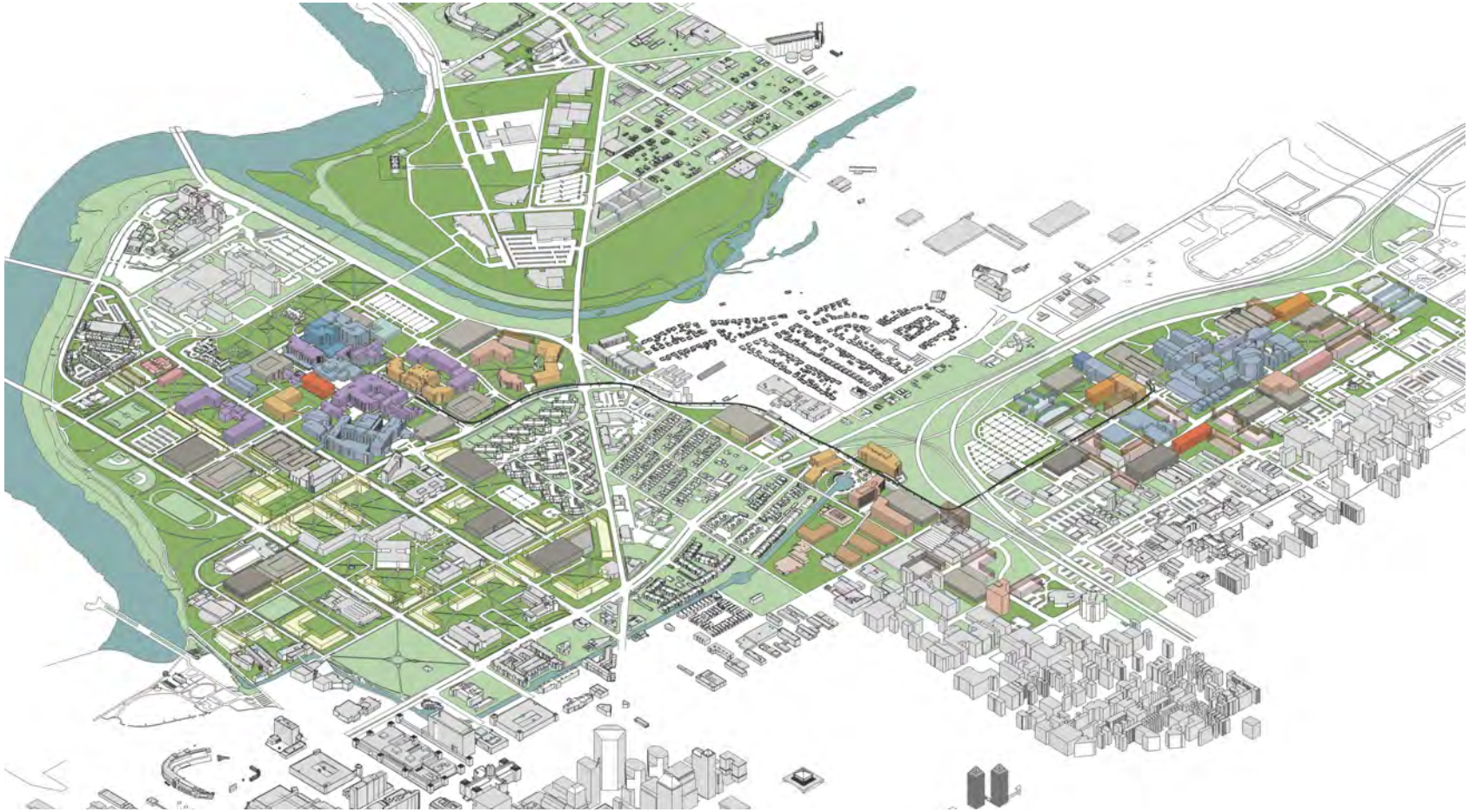
Existing Conditions



Phase 1- Axonometric



Phase 2- Axonometric



Final Phase- Axonometric

District A Phasing IA

District A Phasing IB

District A Phasing

Phase 1A

District A phasing starts with the demolition of the existing abandoned Lockefield Village facility to accommodate an immediate site for a new Biosciences Research V.

The Glick Eye Institute is currently under construction along a Michigan Avenue site.

Phase 1B

When the new Wishard Hospital is occupied, programs can relocate from the existing Wishard properties and Indiana University can take over the property. Phase 1B can start with the demolition of Ott/Bryce, Meyers, F-wing/ Burdsal, East and West-wings facilities.
The Primary Care Center can be renovated for faculty office programs not scheduled to move in to the new Wishard Hospital facilities. Additional demolition of Dunlap/Regenstrief and the services building can be accomplished. Timing of the demolition of the Service Building will be determined by further study of the facility.

The School of Dentistry's new clinic expansion can occur east of the existing facility once capital funding is approved.

Potential expansion of Ronald McDonald house at Lansing Street north of the Oral Health Institute.

District A Phasing 2A

District A Phasing 2B

Phase 2A

Once the Wishard Hospital is demolished north of Wishard Boulevard, the construction of an Administrative Faculty office replacement facility can be developed. Faculty and support programs currently occupying Long, Gatch/Clinical buildings can be relocated and a new parking deck constructed along 10th Street. Fesler will need to be renovated in order to accommodate additional faculty office relocations.

The University Hospital expansion for Emergency Department, Simon Cancer Center Tower fit-out and Riley Hospital 2nd floor and 4th floor renovations can commence upon Indiana University Health Board of Directors funding approvals.

Long and Gatch/Clinical buildings need to be demolished to clear the site for the new Cancer Research VI building to be the key anchor building for application of an NIH designated Comprehensive Cancer Center designation.

Basic Sciences Research VII can be constructed along 10th Street and University Avenue to complete the front door image of the University Peninsula District.

Phase 2B

Cancer Research VI will be constructed west of the Simon Cancer Center and connected via a pedestrian bridge. An option for the People

District A Final - Axonometric

Mover extension to West Michigan Street. can be considered and the station incorporated into the research building and bridge intersection. The University Hospital renovations can occur with this expansion to align with NIH Comprehensive Cancer Center program.

An Integrated Health Sciences Education Building can be constructed south of a realigned Wishard Boulevard and connected to the existing Biosciences Research complex and the newly constructed Administrative Faculty office building to the north.

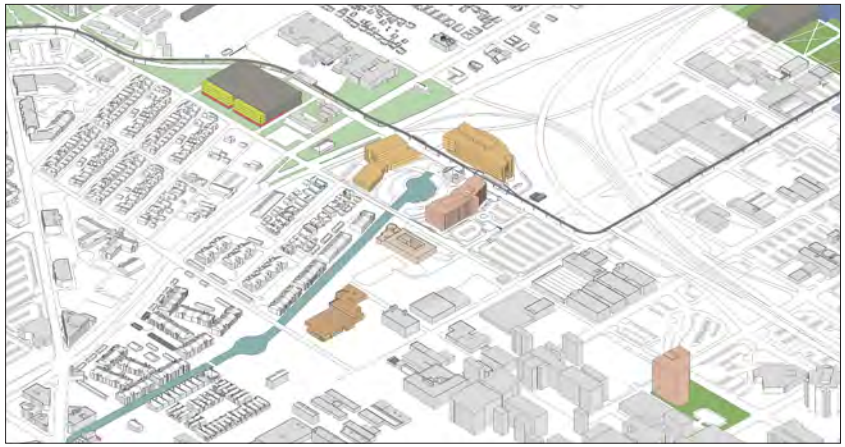
The Coleman building will be demolished to accommodate the expansion of the Eye Institute.

Final Phase

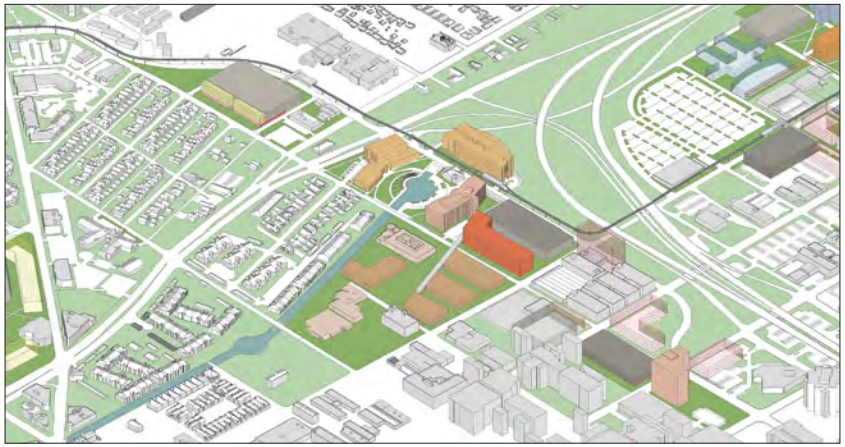
The existing SON can be renovated to accommodate faculty offices that will be part of the Comprehensive Cancer Center complex. Diagnostic and Treatment expansion of the Simon Cancer Center can occur. The existing Wilson Parking deck will be demolished.

Although not projected in the program, future expansion of Simon Cancer Center to the north may require demolition of the Emerson building. The Wishard property can accommodate additional faculty office building expansion if needed.

The old SOD dental clinic can be demolished and renovation and expansion of the Dental school can be developed to the west of the renovated portion of the remaining SOD along Michigan Avenue. A more comprehensive feasibility study should be developed.



District B Phasing 1



District B Final - Axonometric

District B Phasing

Phase 1

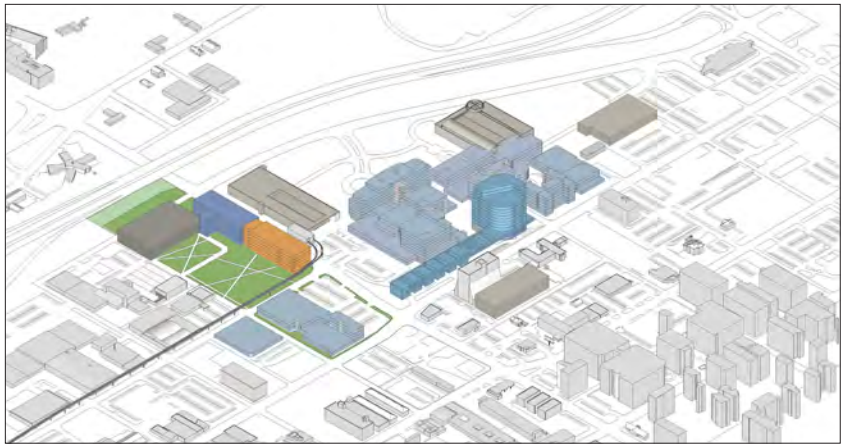
A new infill People Mover station and parking deck will be constructed to service the population of the Peninsula District and connectivity between districts.

Phase 2 & Final

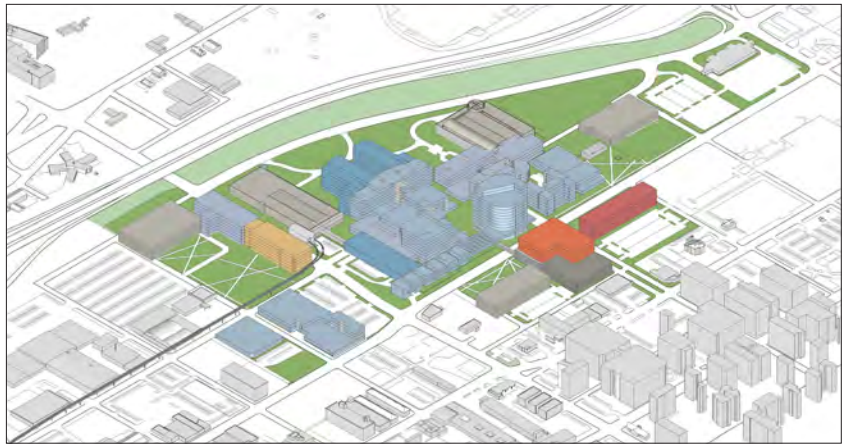
The new Fairbanks 2 Office facility and parking deck will be constructed in the Canal district west of the Fairbanks facility.

A new parking garage will be constructed to serve IU Health administrative functions and Gateway Building.

Additional research incubator facilities will be constructed south of Fairbanks Office complex. The specific timing of these facilities is undetermined and can be phased based on program funding and private partnerships. The adjacent Stutz property west of this site is anticipated to be developed as mixed-use by private interests and support the population of this district.



District C + D Phasing I



District C + D Phasing 2

District C + D Phasing

Phase 1

Indiana University Health will construct a new North East Bed tower on the Methodist site at 18th Street.

The Neurosciences complex will initiate with the construction of a Neurosciences Ambulatory Clinical facility south of 16th Street by a private developer with associated parking deck. Once funded by the University, the Neuroscience Research IV facility will be constructed east of the Clinical facility.

Phase 2

Methodist Hospital existing Bed tower renovations will commence in a phased sequence. The Diagnostic and Treatment expansion will be constructed at the south side of Methodist Hospital.

The Methodist West Bed Tower expansion will be constructed based on need for additional private beds.

A Medical Office building and new parking deck will be developed along Capitol Avenue north of 16th Street.

A new hotel serving District D is shown on Capitol Avenue north of 18th Street.

District C + D Final - Axonometric

Final Phase

An office complex at 16th Street and Capitol Avenue with an associated parking deck will be developed by a private developer. The Family Practice program will be relocated to the office complex.

Neurosciences Research expansion IX will be developed west of the initial phase and primary care center will be demolished. Neurosciences clinical expansion will occur to the east with additional parking.

The new Cardiovascular Research VIII will be constructed north of the Methodist Hospital complex adjacent to the existing Cardiovascular Clinical facility.

A future Psychiatric Hospital is planned south of this complex to be developed by the state.

The North East Bed tower expansion will be developed as required for additional private beds.

PLANNING REFERENCES

Existing/Referenced Master Plans

1 Clarian Health - Downtown Facilities Master Plan
March 2008, *HOK*

2 Indianapolis Northwest Quadrant Framework
25 April 2003, *Beyer Blinder Belle*

3 Riley Hospital for Children Planning Update
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4 Neurosciences District Studies
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[i.2] Historical Context Diagram, p. 22
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[i.3] Indiana University Hospital, p. 32
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[i.4] Dunlap Regenstrief, p. 32
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[i.5] Research Building, p. 32
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[i.6] Health Information and Translational Sciences Building District B, p. 33
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[i.7] Riley Hospital Outdoor walkway, p. 34
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[i.8] Ball Gardens, p. 34
Title of work. Year. Institution name, website. JPEG file.

[i.9] Indianapolis Canal Walk, p.35
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[i.10] People Mover and Methodist Hospital, p. 40
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[i.11] People Mover, p. 41

[i.12] Wilson Street Garage, p. 46
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