

NC STATE

PHYSICAL MASTER PLAN


FRAMING THE FUTURE | 2023



TABLE OF CONTENTS

This Physical Master Plan Report is an interactive plan with buttons and links that will assist in moving you through the document. You may read through in a linear or non-linear manner, and go directly to aspects of the Plan that are most interesting to you. Click on any of the content areas to the right, and use the navigation at the top of each page, or click on any links within the report.

HOW TO USE THIS DOCUMENT



This report document is designed to be interactive and contains buttons that can be clicked to provide direct access to desired content. For reference, the NC State logo is clickable and will return the user back to the start of the document at any time.

LETTER FROM THE CHANCELLOR AND THE CHAIR OF THE BOARD OF TRUSTEES

NC State recently marked 136 years since its founding in 1887. Since that time, we’ve grown into the largest (and we believe the best) university in the UNC System and a leading national research university, all with a commitment to furthering our land-grant mission. As we’ve grown, so has our overall impact. Ranked in the top 1% of universities on the planet, NC State truly is a place where students, faculty and staff can think and do extraordinary things.

As we look to the future, it’s important to build on that momentum and success to ensure that our state and our society continue benefiting from NC State’s impact long into the future. Our new Physical Master Plan helps us do just that.

NC State’s Physical Master Plan will guide the growth and development of our physical campus for the next decade. It encompasses NC State’s five campus precincts in Raleigh, as well as outlying field labs at Lake Wheeler Road and Reedy Creek Road in Raleigh. The plan itself is bolstered by several guiding principles that align with our overall strategic plan and future growth goals:

- Reinforce culture and place
- Align facilities with mission
- Steward campus resources
- Strengthen campus connections
- Elevate the campus experience
- Ensure infrastructure reliability

The plan serves as a guide for future growth, but much of its focus is on better connecting our campus and making investments to enhance student success, improve the overall student experience and encourage a greater sense

of community among our Wolfpack. Examples of potential projects include improved pedestrian pathways throughout campus, enhanced connections to Centennial, a new residential village, and new dining and student life facilities, among others.

The Board of Trustees unanimously approved the plan in June 2023.

We want to thank the more than 3,250 students, faculty, staff, alumni and community members who provided input to the team throughout the process. And to the planning team, thank you for your hard work and dedication to our university’s success and longevity. The past two years of discovery, ideation, refinement and engagement with our community produced a vision for NC State’s physical campus’ future that will benefit the Pack for generations to come.

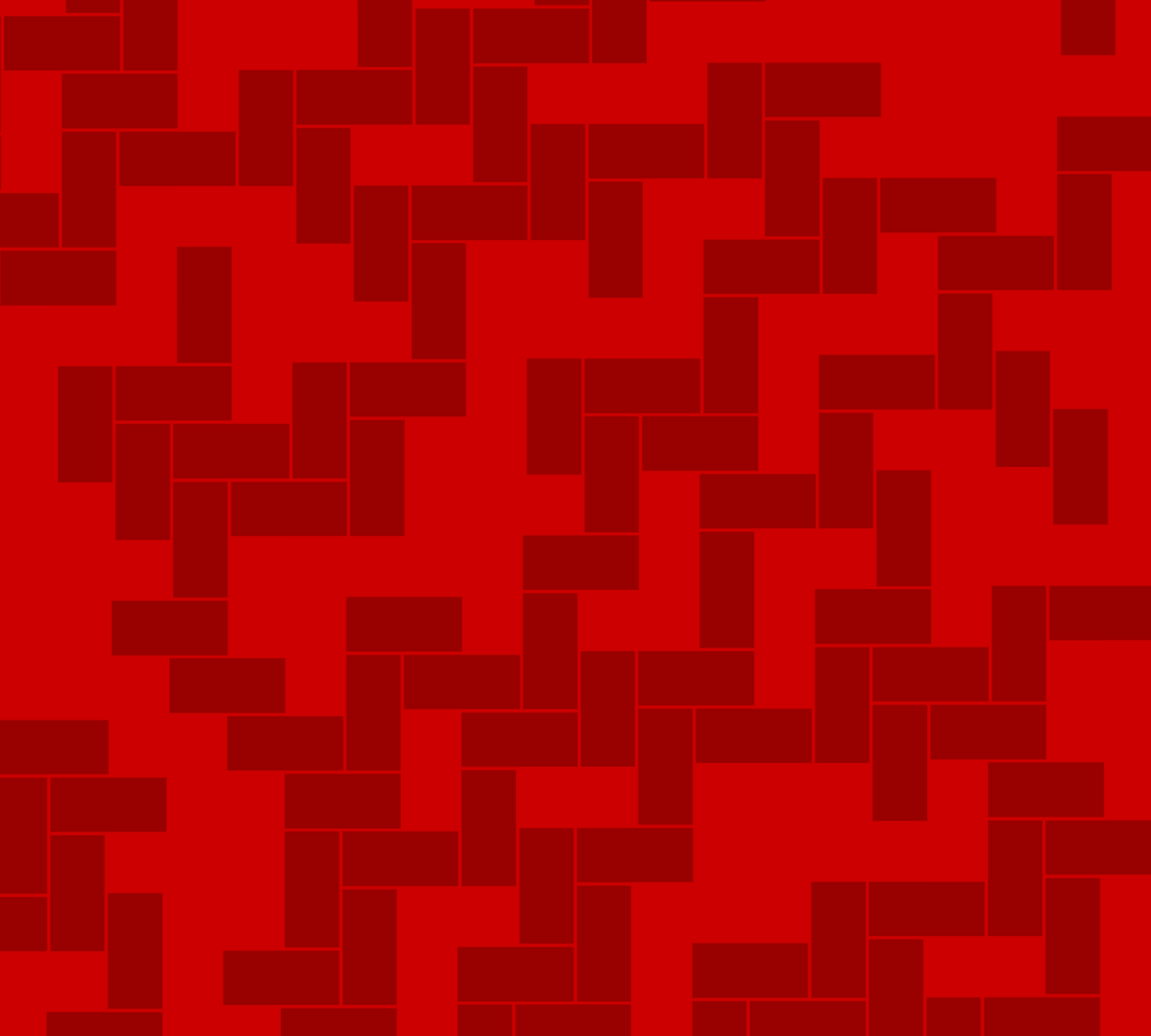
NC State is full of places and spaces that help us connect, learn and grow. But those places and spaces are made truly special by our community - past, present and future. The completion of our newest Physical Master Plan is an important milestone as our university continues to rise - the future is most certainly bright for our Pack.

Thank you,

Randy Woodson
Chancellor

Stanhope Kelly
Chair, NC State Board of Trustees





01

INTRODUCTION





EXECUTIVE SUMMARY



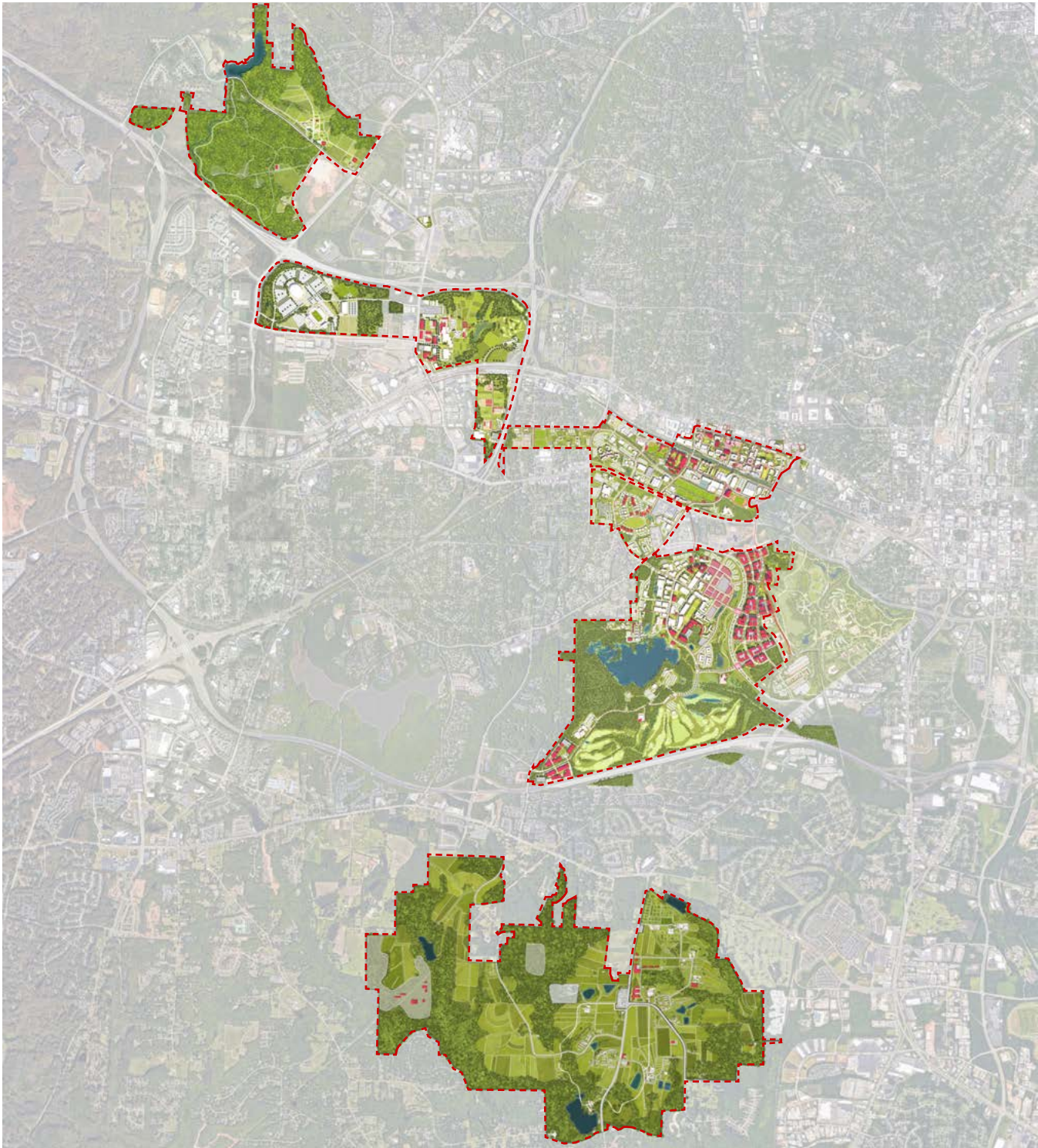
INTRODUCTION

As a land-grant university, NC State is dedicated to a mission of teaching, research, and service. Through partnerships with the people of North Carolina and beyond, the university supports efforts to address the local and global challenges of our day. The Physical Master Plan respects and acknowledges this important multi-faceted mission. The Plan strives to identify the facilities, open spaces, and campus infrastructure needed to serve this purpose.

For the first time, the NC State Physical Master Plan includes all Campus Precincts and properties to create a vision for future development and preservation in support of NC State’s mission. The plan does more than just build upon the framework of the existing campus: it truly engages the entire campus and aligns with the university’s Strategic Plan.

The two-year outreach process was based upon principles of equality, belonging, and well-being and included over 30 student engagement sessions, more than 150 task force members, and the input of thousands of stakeholders throughout the process. Task forces were formed based on strategic themes, and their work informed development of the Guiding Principles that will be used as future decisions are made.

A polycentric campus framework establishes multiple Neighborhood Hubs across NC State’s Campus Precincts. These hubs aim to create vibrancy, enhance interdisciplinary collaboration, provide a variety of activities for students, and enhance the overall campus experience. The creation of a connected campus expands and strengthens All Campus Paths and limits vehicles on internal campus streets to prioritize pedestrians, cyclists, and other micro-mobility options as well as create critical social spaces to enhance the public realm.



FLEXIBLE FRAMEWORK

The Physical Master Plan is a collection of powerful ideas. These ideas establish a flexible framework for coordinating physical change across the institution.

Unlike a Capital Plan or Development Plan, the Physical Master Plan is designed as a long-range tool that can adapt and flexibly respond to unexpected future changes. In order to address the possibility of change, a series of Guiding Principles and goals have been established to serve as the underlying framework to advise all future planning decisions and priorities.

-  Reinforce Culture + Place
-  Align Facilities with Mission
-  Steward Campus Resources
-  Strengthen Campus Connections
-  Elevate the Campus Experience
-  Ensure Infrastructure Reliability

The scenarios outlined within this plan are merely suggestions as a way to interpret these Guiding Principles in support of NC State's Strategic Plan. Additionally, a Campus Development Process has been created to test and review ideas, aid in the prioritization of projects, and establish an inclusive and transparent approach as recommendations are implemented.



GUIDING PRINCIPLES

The Physical Master Plan Guiding Principles were developed by the six Task Forces. They provide a framework to inform and guide decisions about the campus, and they remain constant over time. While the plan is forward-thinking, it is impossible to anticipate every situation that will arise over the long term. Thus, the specific projects resulting from the Physical Master Plan may change, but they will be considered and implemented within the enduring framework provided by the Guiding Principles.



Reinforce Culture + Place

NC State will continue to honor and embrace its legacy as a land-grant institution while also striving to celebrate the diverse people, places, and cultures that comprise this university.

Steward Campus Resources

NC State will serve as a model of environmental, social, and financial leadership, promoting a more resilient future.

Elevate the Campus Experience

NC State will promote a campus environment that seeks to advance faculty, staff, and student success.

Align Facilities with Mission

NC State will focus investment in facilities that seek to further support and enrich the university’s goal of preeminence in research, scholarship, innovation, and collaboration.

Strengthen Campus Connections

NC State will enhance social, technological, environmental, programmatic, and physical connections to strengthen its sense of community.

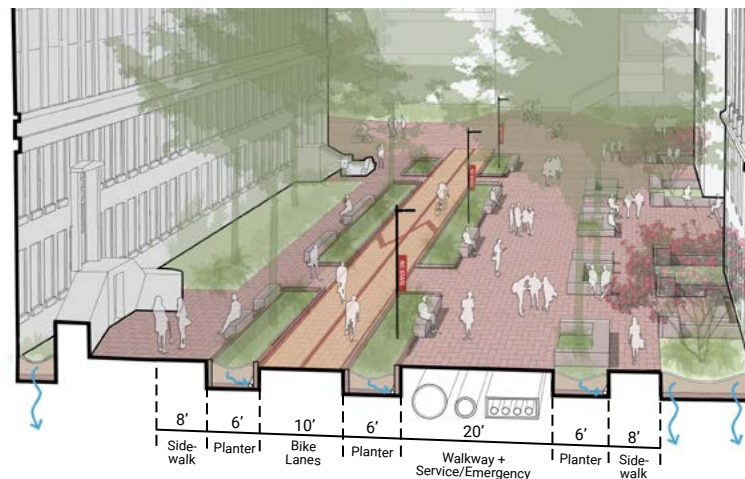
Ensure Infrastructure Reliability

NC State will foster a more holistic understanding and appreciation of the value of reliable infrastructure to support the mission of the university.

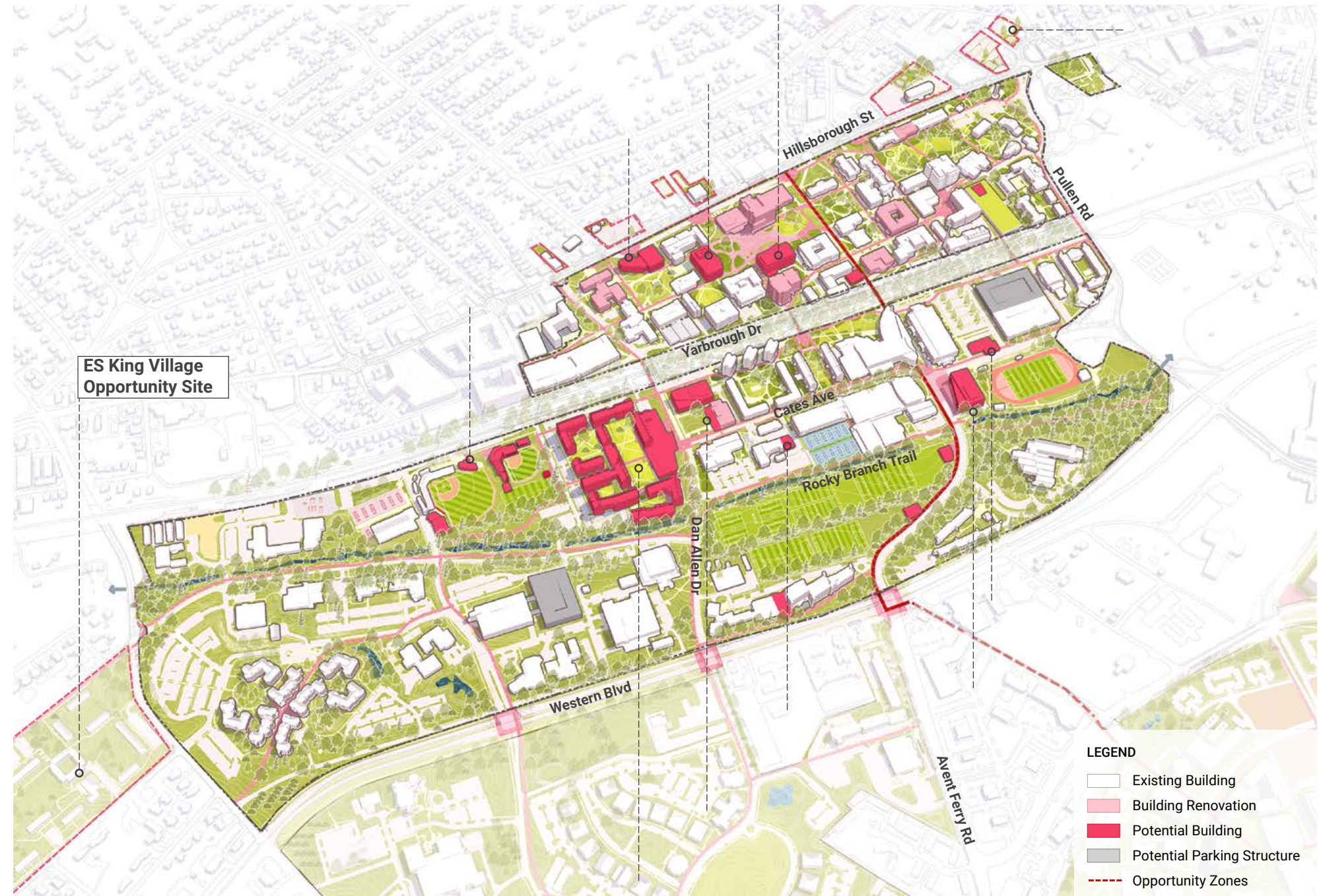
NORTH + CENTRAL CAMPUS



Stinson Drive Existing: North Campus has several existing roads that are traveled by thousands of students on foot daily.

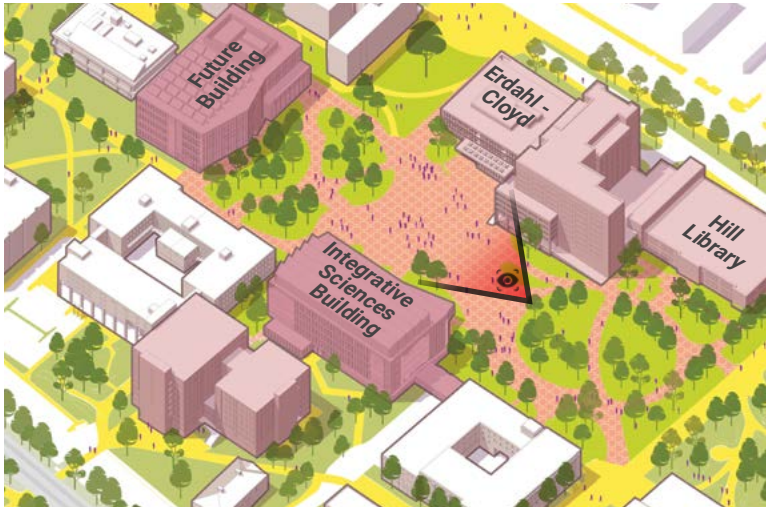


Stinson Drive Potential: Convert streets to remove parking, be pedestrian-first, separate mobility modes, and create social gathering space.



North and Central Campus Precincts form the historic core of academic and student life. Important recommendations include enhancing the vibrancy of the Brickyard, renovation of key facilities, creation of several hubs of activity, prioritizing pedestrians over vehicles, connecting campus and community, optimizing land use, incorporating sustainable features, and reinventing student life.

THE BRICKYARD



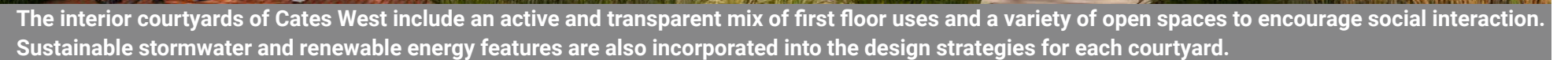
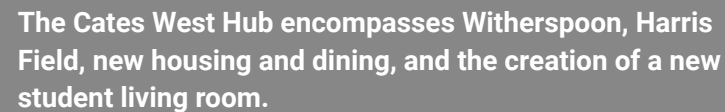
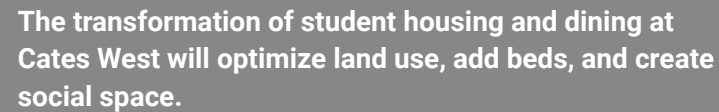
Potential short and long-term construction and renovations will reinvigorate the Brickyard.



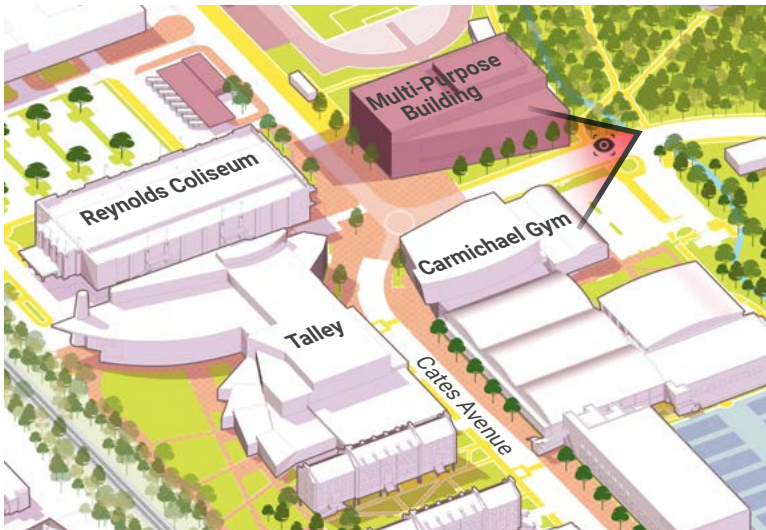
The potential Brickyard Hub puts research and innovation on display, creating student-centric spaces.



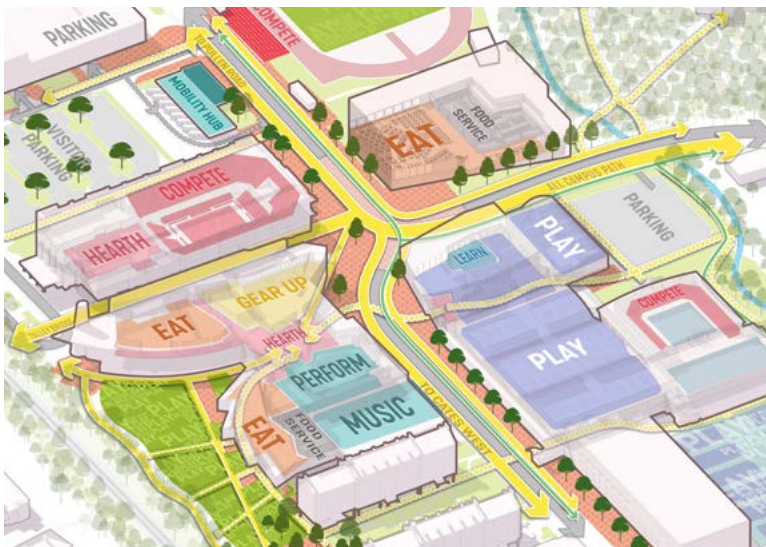
With active first floor uses and social spaces that connect inside to outside the buildings, the Brickyard can continue to be a vibrant space and the center of activity for campus.



CATES EAST



Cates East is an established hub of activity for students.

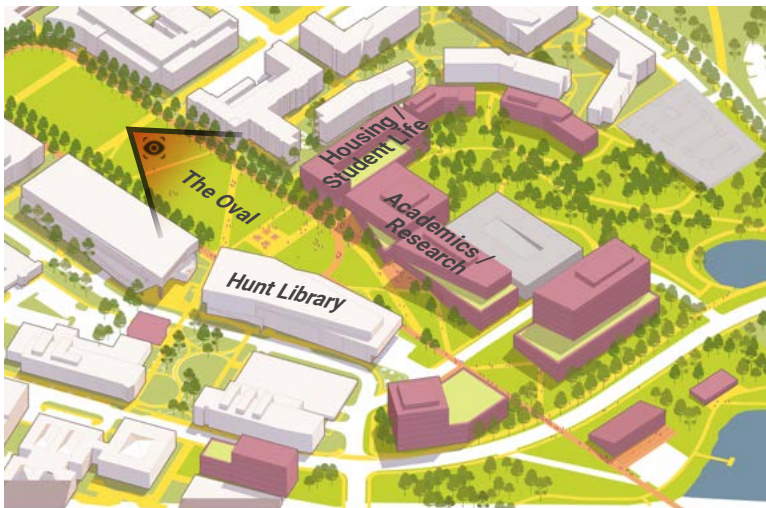


The Cates East Hub will add a mixed-use building for dining, athletics, other uses, and include a mobility hub.

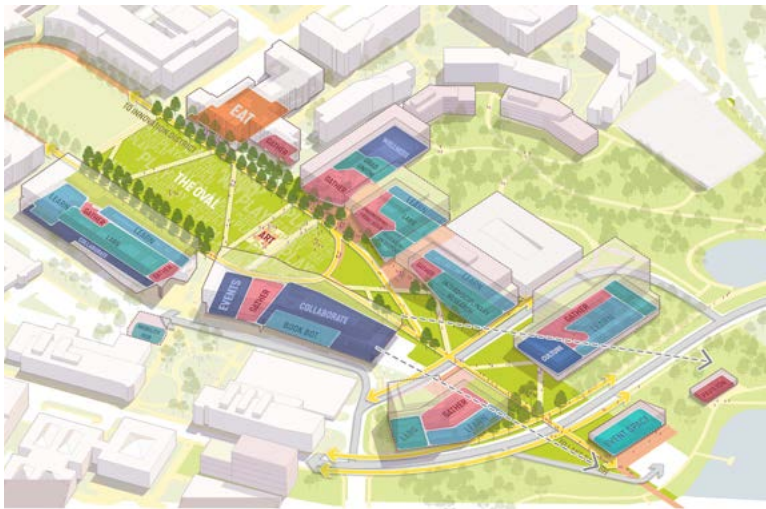


The new multi-purpose building will optimize land use, create additional dining capacity, consolidate athletic success programs, build upon the established student uses, and frame views to Reynolds Coliseum, one of NC State’s Hallowed Places.

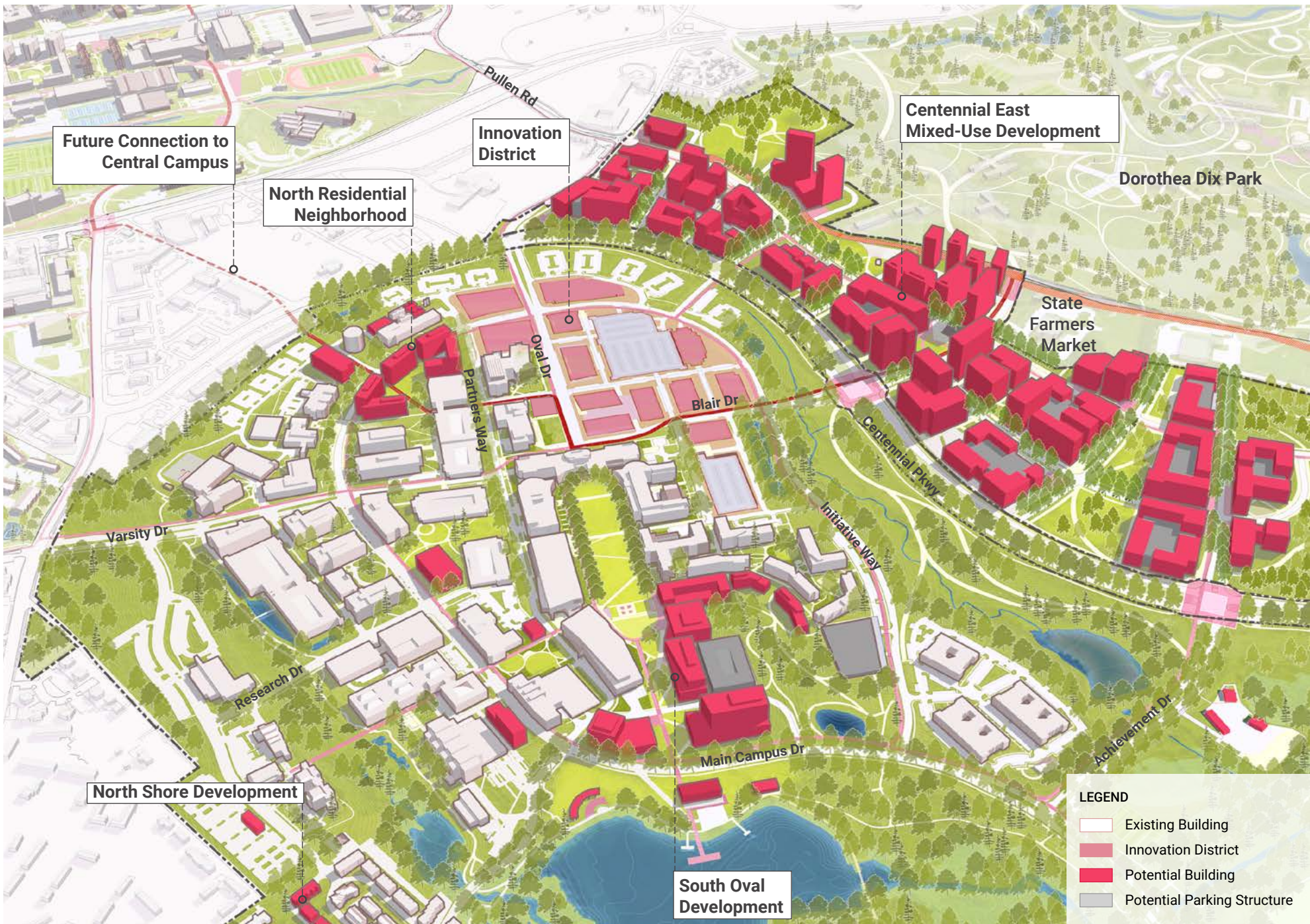
CENTENNIAL CAMPUS



Completion of the South Oval will add valuable square footage on the growing Centennial Campus Precinct.



The South Oval Hub will add critical student services such as recreation, counsels, student health, and others.



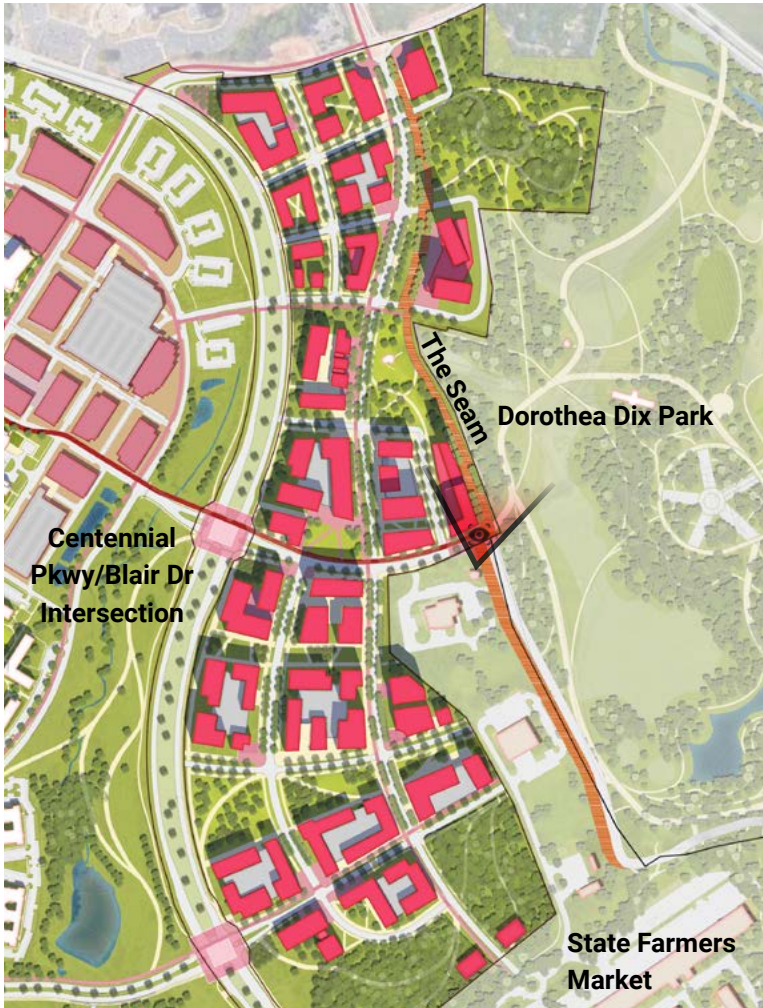
Centennial Campus Precinct has evolved into a lively campus district that is an integral part of the learning, research, and partnership mission. There are both short and long term opportunities identified around the Oval, the Innovation District, and Centennial East.

CENTENNIAL CAMPUS



The Oval has evolved into NC State’s 10th Hallowed Place based on its importance to the life of the university. New development will complete the Oval while allowing views to Lake Raleigh.

CENTENNIAL EAST

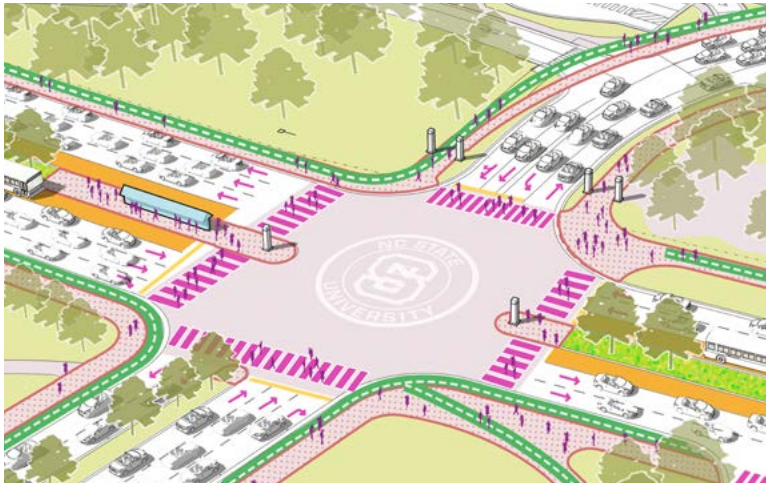


Centennial East is an organized, long-term vision for development as opportunities present themselves. With a mix of uses similar to those on Centennial Campus - housing, retail, commercial, research, partnerships, and others - this district allows for incredible growth potential while also becoming a community asset.

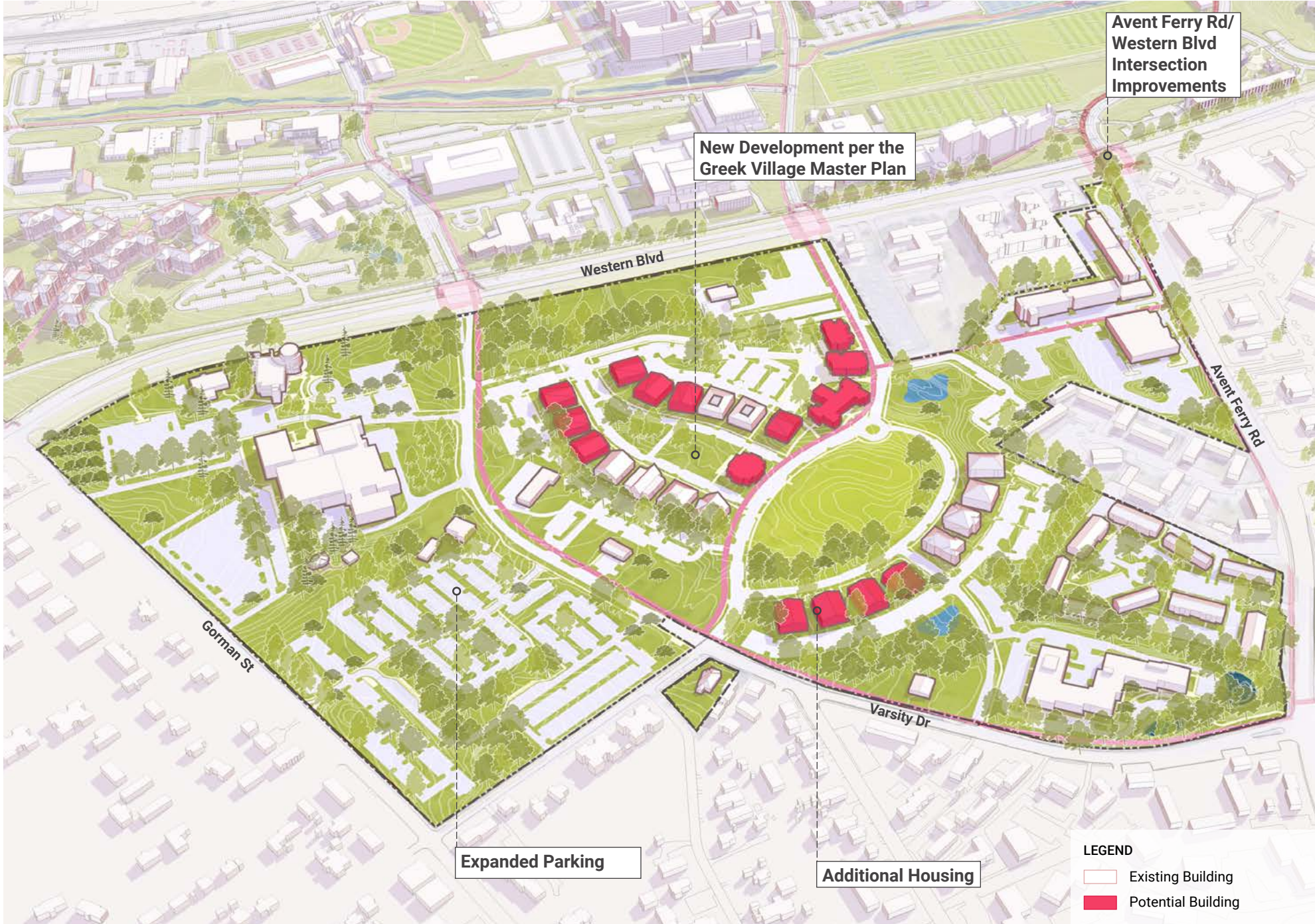


The Seam will connect Centennial East mixed-use district to Dix Park with a visual connection to downtown Raleigh. It will also serve as a critical social space and pedestrian and micromobility corridor connecting Centennial Campus Precinct to Central Campus Precinct.

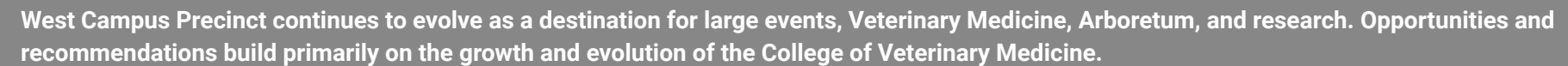
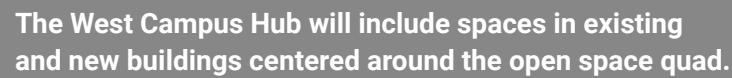
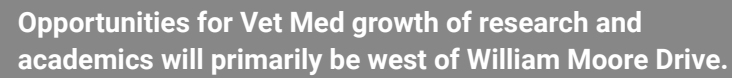
SOUTH CAMPUS



Creating a safe and attractive crossing at Western Boulevard is critically important to connect the campus. At-grade improvements are safer and more easily achievable than other options.



South Campus Precinct will continue to evolve with development centered around the Greek Village. Enhanced safe and attractive pedestrian connections across Western Boulevard will be critical to connect the campus precincts.



WEST CAMPUS



A new gateway and entrance into the Veterinary Medicine neighborhood creates opportunities for future research, Hub, and academic programs to grow. The entrance builds on the character of the more rural West Campus Precinct while including pedestrian and micromobility elements that will connect campus.

REEDY CREEK



The Reedy Creek Hub will be a unique environment that will allow new opportunities for research, education, outreach, and retreat while allowing unprecedented access to Schenck Forest.

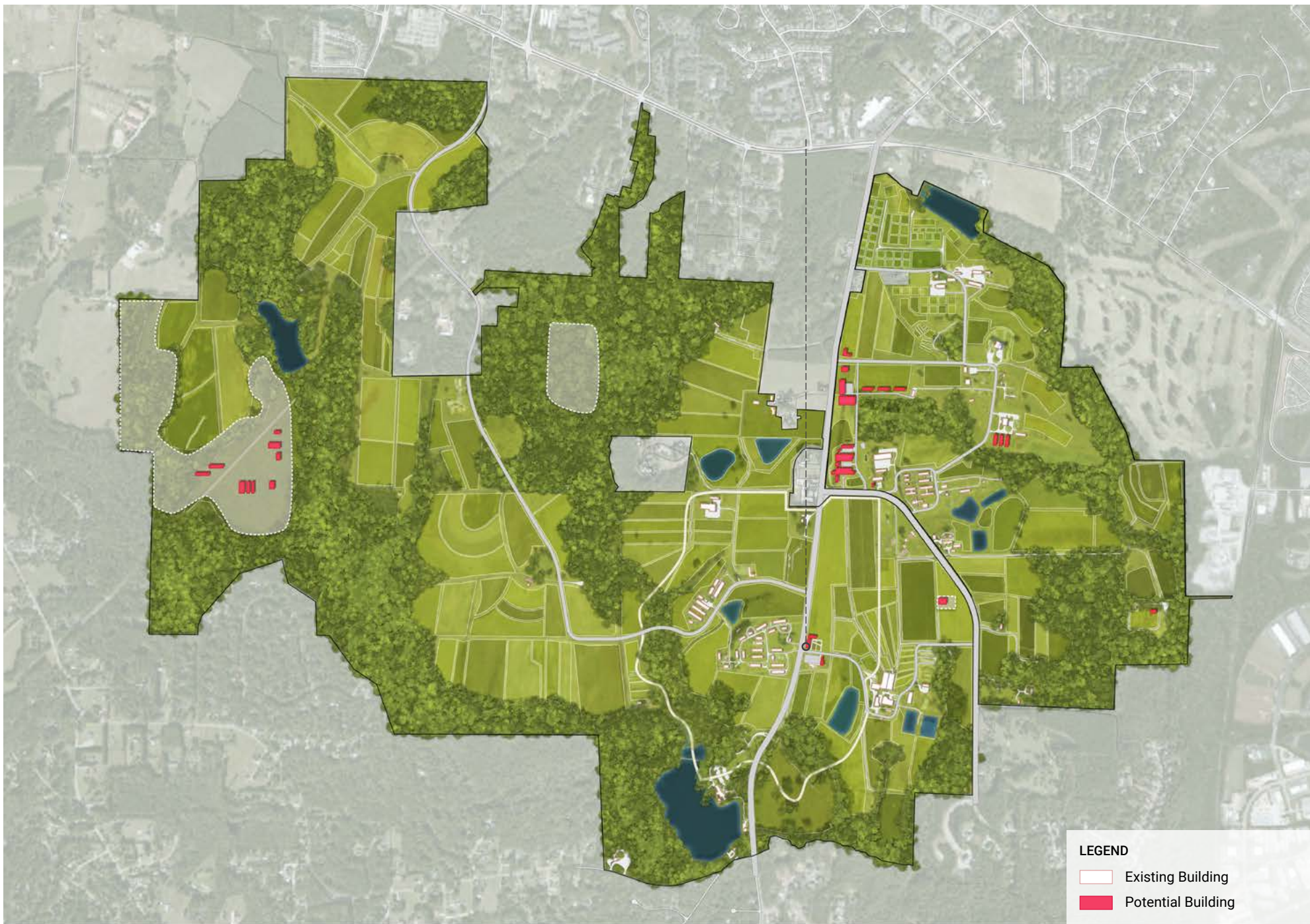


The Reedy Creek plan will allow the continued evolution of the Equine program as well as improved access to recreational, research, and educational activities at Schenck Forest.

LAKE WHEELER



The Lake Wheeler Hub, built around the Howling Cow Dairy Education Center and Creamery, will become a visitor destination that brings agricultural research and products to the campus and surrounding community.



Lake Wheeler is a critical research and educational asset in accomplishing NC State’s land grant mission. Accommodating additional research needs and telling the NC State agricultural story along Lake Wheeler Road through signage and branding will be critical in reinforcing the image of NC State.



● ● ● ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

MASTER PLAN VISION

NC State is a beautiful campus environment spread across seven Campus Precincts and several distinct, unique neighborhoods within these precincts that are organized around active and lively open spaces that promote interaction. These precincts are knit together with a consistent and coherent multi-modal pathway system that prioritizes the pedestrian and focuses on a connected campus experience.

The Plan creates a unified, comprehensive vision for campus development across all seven Campus Precincts over the next decade and beyond. The Plan sets forth a distinct set of Guiding Principles, developed with broad campus input, that act as guideposts for decision-making. Additionally, a Campus Development Process has been created to ensure inclusivity, transparency, ease of understanding, and the process is replicable across multiple project types and scales. A series of Prototypes identify key design elements and considerations for any future project to discuss and potentially implement.

There are three Big Ideas that help to organize the Plan: The Polycentric Campus, Neighborhood Hubs, and All Campus Paths and Green Network Connectivity. These frameworks help to establish key organizing ideas for development within the Campus Precincts, while ensuring a balance between critical campus systems.

Each Campus Precinct plan builds on the strengths and attributes of that precinct to create vibrant, inclusive, safe, sustainable places that, when connected through All Campus Paths, open spaces, and reliable infrastructure, create a campus that is a source of pride and identity for the NC State Community.



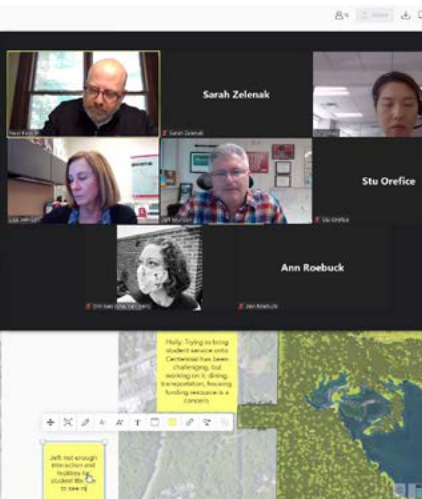
PLANNING PROCESS

INCLUSIVE APPROACH

The Physical Master Planning process was the most inclusive and comprehensive ever undertaken by NC State with over 3,250 individual students, faculty, staff, administration, alumni, trustees, and community members adding their voices in some way. In order to expand the stakeholder participation beyond those who typically opt in, a total of 23 pop-up engagement sessions were held in various locations across campus.

To get the most comprehensive feedback on campus use patterns, an interactive digital survey was released and received over 2,300 responses from faculty, staff, and students. To reach those beyond campus or those who couldn't make in-person sessions, a website was developed to share progress and receive feedback. The six task forces were strategically populated by over 150 faculty, staff, students, and alumni from every corner of campus and were selected for their diverse viewpoints, backgrounds, and experience.

Finally, in-person and online Open Forums were held throughout the process at critical decision points to share ideas and receive feedback. This inclusive and transparent process led to a campus-wide understanding of the issues, a robust conversation about ideas, and broad consensus around opportunities and recommendations.



STRATEGIC PLAN ALIGNMENT

WOLFPACK 2030: POWERING THE EXTRAORDINARY

In 2021, NC State released *Wolfpack 2030: Powering the Extraordinary* ([link](#)), the strategic plan for the university. That document clearly outlines the mission, vision, and values of NC State as well as the 7 strategic goals covering student success; research; engagement; equality, belonging, and well-being; effectiveness; partnerships; reputation; and visibility that will allow the university to fulfill the important land grant mission.

The Physical Master Plan becomes an extension and physical manifestation of the strategic plan so that Guiding Principles, physical recommendations, Design Guidelines, and capital project planning are aligned with and support the university's strategic goals and initiatives.



PLANNING DRIVERS

Throughout the planning process, three key planning drivers have been identified that have significant impact on future planning: Campus Growth, Student Success, and Connectivity. The Plan identifies strategies to alleviate these pressures currently faced by the university.

Addressing Future Growth

Enrollment at NC State is expected to grow significantly in the coming decade. Much of that growth is expected within the College of Engineering, but many other programs are growing as well. This growth will put pressure on existing academic and research facilities, student life facilities, mobility systems, open spaces, wellness and recreation, and campus/community boundaries. The Plan must balance facility needs with campus character, historical significance, open space, and identity. NC State needs to grow in a way that enhances the quality of campus life.

Supporting Student Success

Much of what determines a student’s success occurs outside of classrooms and labs. Supporting the whole student, their physical and mental wellbeing, helping them feel included and welcome, and providing them basic necessities such as food and shelter are all important aspects of success that the university must provide. While many of these services can be found across campus, they are at times difficult to access and are lacking in some of the Campus Precincts. By providing the right type and quantity of supporting services within each Campus Precinct, NC State can create a more equitable and balanced experience for all who attend.

Improving Campus Connectivity

NC State is a large campus with seven distinct Campus Precincts. Due to their size and location relative to each other, navigating between these precincts can be challenging. Both the North/Central and Centennial Campus Precincts contain a significant amount of academic, research, and student life activity, with thousands of students, faculty, and staff traversing between these areas weekly, or even daily. Moreover, many of the more distant precincts, such as West, Reedy Creek, and Lake Wheeler are difficult to access by any method other than personal vehicle.

Connectivity challenges aren’t only physical, but visual and programmatic as well. Increased wayfinding, open line of sight, and strong visual markers are needed to help navigate within and between Campus Precincts. Programmatic moves could be identified to promote cross-disciplinary collaboration and create opportunities to transform existing facilities to support new learning pedagogies.



PRINCIPLES, PROCESS, AND PROTOTYPES

An organizing theme of the planning process is centered on three outcomes: development of guiding **principles** to guide decision-making, a new Campus Development **Process** to ensure that the most transformative projects are prioritized, and a set of **prototypes** to consider as projects identified in the Plan, or yet to be imagined, are implemented.



PRINCIPLES

The Physical Master Plan Guiding Principles provide a framework to inform and guide decisions about the campus, and they remain constant over time. While the plan is forward-thinking, it is impossible to anticipate every situation that will arise over the long term. Thus, the specific projects resulting from the Physical Master Plan may change, but they will be considered and implemented within the enduring framework provided by the Guiding Principles.



PROCESS

As recommendations of the Physical Master Plan are implemented, it's imperative to have a proactive, inclusive, collaborative, and transparent process for developing projects. To accomplish this, a new Campus Development Process will ensure that the most transformative projects for the university are prioritized, input on projects is inclusive, new strategic criteria are used to prioritize projects, and reporting on results is done in a transparent way so campus stakeholders understand the status of all potential projects.



PROTOTYPES

To ensure a consistent, equitable, sustainable, and inclusive future of campus, a set of prototypes has been developed as a kit of parts to be considered during the planning and design of new projects. They are a set of guidelines or checklists that translate important planning concepts and ideas into actionable strategies that project teams must consider as they implement projects.

GUIDING PRINCIPLES

Reinforce Culture and Place

NC State will continue to honor and embrace its legacy as a land-grant institution while also striving to celebrate the diverse people, places, and cultures that comprise this university. Focus will be placed on creating spaces that foster a welcoming campus environment for all.

Steward Campus Resources

NC State will serve as a model of environmental, social, and financial leadership. This will be reinforced through on-campus actions that positively influence the stewardship of campus resources and promote a more resilient future.

Elevate the Campus Experience

NC State will promote a campus environment that seeks to advance faculty, staff, and student success. Physical development decisions will support this goal by incorporating a mix of uses designed to enliven and enrich the overall campus experience.

Align Facilities with Mission

NC State will focus investment in facilities that seek to further support and enrich the university's goal of preeminence in research, scholarship, innovation, and collaboration. An emphasis will be placed upon creating equitable and inclusive spaces across campus.

Strengthen Campus Connections

NC State will enhance social, technological, environmental, programmatic, and physical connections to strengthen its sense of community. Emphasis will be placed on promoting a culture that prioritizes pedestrians and extends connections beyond campus edges.

Ensure Infrastructure Reliability

NC State will foster a more holistic understanding and appreciation of the value of reliable infrastructure to support the mission of the university. Physical planning processes will consider the role and impact of all campus systems in achieving collective success.

SUPPORTING PRINCIPLES

The purpose of the Guiding Principles is to:

- Guide prioritization and decision-making for campus development.
- Test ideas that are not expressed in the master plan.
- Provide continuity across generations of leadership.
- Create advocates and stewards of the master plan.
- Reflect the mission, vision, values, and goals of the NC State Strategic Plan.

The Task Forces have developed supporting principles based upon their specific charge. The principles below expand upon, and better define, the overall Physical Master Plan Guiding Principles, noted above.

Reinforce Culture and Place

- Respect and enhance NC State’s **Hallowed Places** through physical planning and development.
 - *NC State’s Hallowed Places are “irreplaceable campus buildings, landscapes and natural settings that have accrued special meaning over time.” In consultation with the campus community, the list of Hallowed Places may expand over time.*
- Develop a campus open space network that incorporates green infrastructure, is interconnected, and adaptable to current programming, interests, and needs.
 - *Physical planning and development acknowledge multiple centers of activity and promote authentic engagement within the university community.*
- Acknowledge NC State’s land grant mission and commitment to service and leadership through narrative, images, art, and community engagement with campus.

- *NC State’s legacy is one of service throughout the world—through innovative teaching, research, and extension.*
- Utilize the planning process to foster an inclusive campus by engaging diverse perspectives and increase representation of diverse populations through narrative, images, and art.
- Celebrate NC State’s culture of active and experiential teaching, learning, and discovery by making these processes visible to campus and the community.
 - *NC State emphasizes “real-world” problem-solving and partnership. Physical planning and development should make these processes more visible to all.*

Steward Campus Resources

- Create a campus that embodies positive environmental impacts for the current generation and every future one.
 - *Food: Consume healthy and locally produced food where possible.*
 - *Energy: Move towards a net-zero campus.*
 - *Water: Conserve, appropriately use, and protect the quality and quantity of water resources.*
 - *Climate resilience: Design with the intent to build resilience to climate; designing for a 100- year campus.*
 - *Waste: Move towards a circular consumption ecosystem.*
 - *Habitat: Protect and celebrate the conservation of all campus ecology.*



- Create a campus that embodies positive social impacts for the current generation and every future one.
 - *Health:* Protect and enhance the well-being of students, staff, faculty, and the regional community.
 - *Well-being:* Develop and maintain spaces that promote well-being across NC State.
 - *Justice:* Recognize the complexities in regional history and develop methods that promote fairness and create opportunities for diverse groups of people to thrive together.
 - *Equality:* Promote the recognition that different ages, races, and voices contribute to the best NC State possible.
 - *Belonging:* Foster a sense of belonging by centering, valuing, and amplifying the voices, perspectives, and styles of all those who experience barriers based on their identities.
 - *Universal Design:* Ensure that all users can fully utilize the spaces and places that they need to live, thrive, and persevere at NC State, by utilizing Universal Design Principles to make the built environment beneficial to people of all ages and abilities
- Create a campus that embodies positive financial impacts for the current generation and every future one.
 - *User access:* Ensure that all users, regardless of financial contribution, have fair access to high-quality space.
 - *Intergenerational fairness:* Maintain stable funding mechanisms for maintenance, operations, and renovations for this generation and future generations of NC State.
- *Sustainable capital decision-making:* Ensure that all capital investments can be justified on a life-cycle cost basis using a maximum 10-year payback.
- *Rationalization of space:* Base decision-making upon space needs that reflect a modern and flexible approach to space utilization.
- *Fiscal sufficiency:* Maintain streamlined discussions regarding physical spaces, campus goals, and financial planning.
Financial responsibility: Develop proactive financial solutions for the continued enhancement of NC State excellence.

Elevate the Campus Experience

- Identify and create an appropriate mix of compatible uses, activities, and services within each neighborhood that support a lively and engaged campus environment beyond daytime hours.
- Create flexible spaces that promote engagement and learning through collaboration, creation, and innovation.
- Plan and design housing and dining spaces to be right-sized, appropriately located, and multi-functional.
- Support health and wellness across campus.
- Buildings, grounds, and paths foster a safe, secure, and healthy community where people can thrive. Proactive design and an integrated approach to security technology standards reinforce a safe and secure environment through appropriate materials, effective lighting and wayfinding, and a comprehensive security infrastructure.



Align Facilities with Mission

- Ensure equitable and inclusive space throughout the campus.
- Encourage environments that promote excellence in teaching, research, and extension.
 - *Spaces should be flexible, accessible, adaptable, and technology-enhanced.*

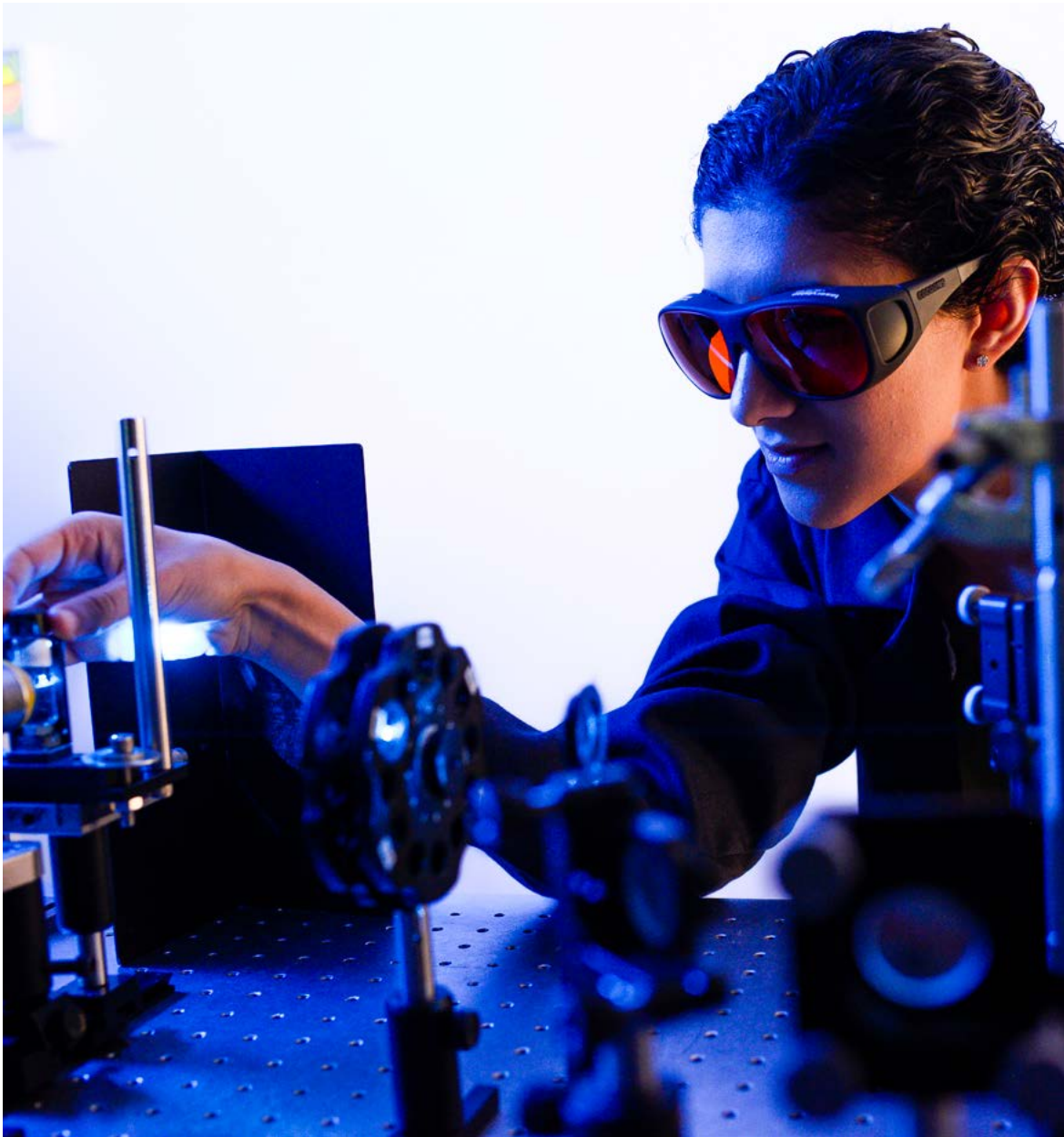
Balance investment across facility types to maintain NC State’s distinctive mission.

Strengthen Campus Connections

- Create efficient and connected programmatic activities and land use patterns that enhance the campus environment for students, faculty, staff, alumni, and the community.
- Foster a culture of non-vehicular mobility within the campus community that prioritizes pedestrian > bicycle > bus > personal vehicle.
- Improve the visibility and legibility of our strongest campus assets.
 - *Enhance view corridors.*
 - *Strengthen internal and external wayfinding.*
 - *Improve regional connections.*
- Explore relationships throughout campus between colleges, units, businesses, and community organizations. to foster connections and collaborations.
- Enhance social, technological, and environmental connectivity within the academic and social environment of campus.

Ensure Infrastructure Reliability

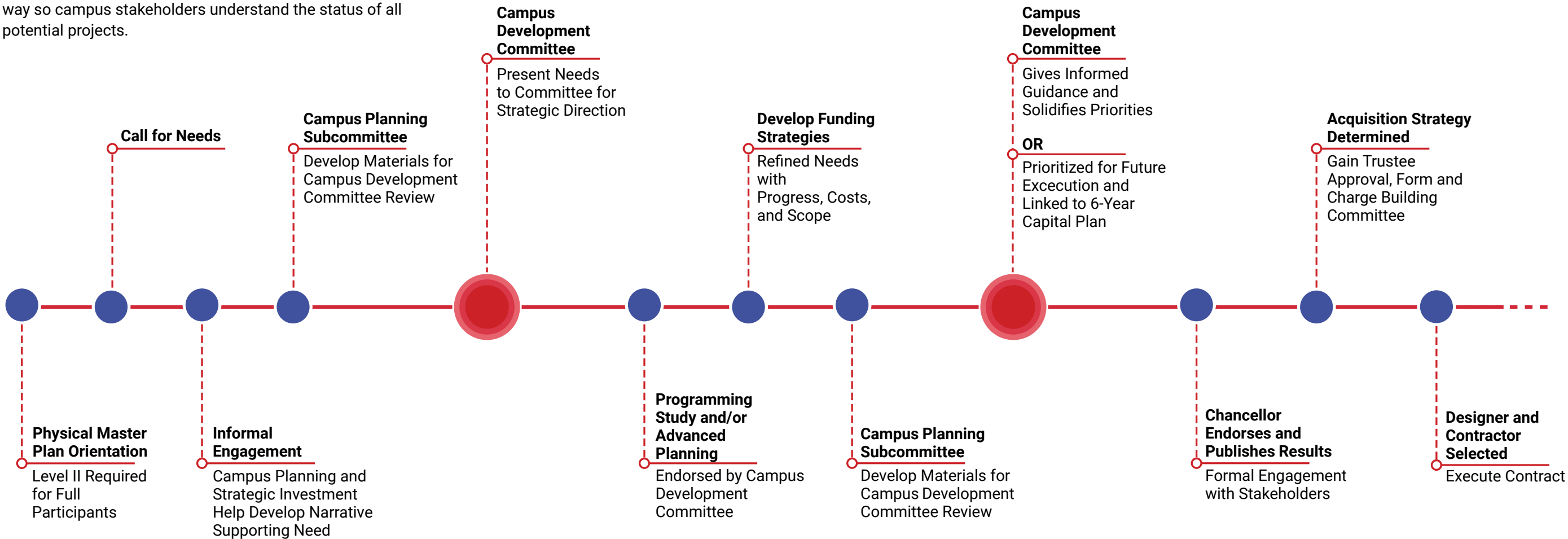
- Utilize an integrated and forward-looking approach to physical planning that enables infrastructure coordination.
 - *Any proposed project on campus from a small space renovation to a new campus open space or a new building should include infrastructure considerations.*
- Promote the understanding that mission success at NC State is dependent upon reliable infrastructure.
 - *Providing uptime for students and researchers is the buck-stops-here mission at NC State, and reliability is the key infrastructure requirement that enables that success.*
- Provide infrastructure flexibility to embrace unknowns of future physical planning.
 - *Any new project considers a degree of future flexibility. Planning should allow for future uses and space types but should not require a degree of flexibility that increases project budgets beyond sustainability.*



CAMPUS DEVELOPMENT PROCESS | PLANNING

● Stakeholder Involvement

As recommendations of the Physical Master Plan are implemented, it is imperative to have a proactive, inclusive, collaborative, and transparent process for developing projects. To accomplish this, a new Campus Development Process will ensure that the most transformative projects for the university are prioritized, input on projects is inclusive, new strategic criteria are used to prioritize projects, and reporting on results is done in a transparent way so campus stakeholders understand the status of all potential projects.



Origins of the Process

The Campus Development Process is the result of extensive input over the course of this two-year planning effort to identify a more effective, transparent, and inclusive process to prioritize and implement university projects. At the outset of the Physical Master Plan, six Task Forces were established which brought together diverse stakeholders from across the university and the community.

The Task Forces were convened specifically to help guide and inform development of the Principles, Process, and Prototypes. Discussions with the Task Forces revealed current strengths of existing processes that could serve as the foundation for our collective efforts. At the same time, discussions revealed that there were also weaknesses in the current process that needed to be addressed through a new or retooled approach.

The existing three part approach - Integrated Priorities List (IPL) process for capital projects, Facilities Modification Request (FacMod) for renovations, and Annual Spend Plan (ASP) for smaller projects was cited in every task force as a strong existing framework to build upon. Task Force members appreciated the accountability and defined set of evaluation metrics which each of these existing processes currently provide. It also leverages an existing committee structure through the Space Committee and Campus Design Review Panel (CDRP) which works well.

At the same time, Task Force members noted weaknesses in the existing processes such as a lack of diverse stakeholder input throughout all decision-making steps, at times, limited transparency and understanding of the “why” as it relates

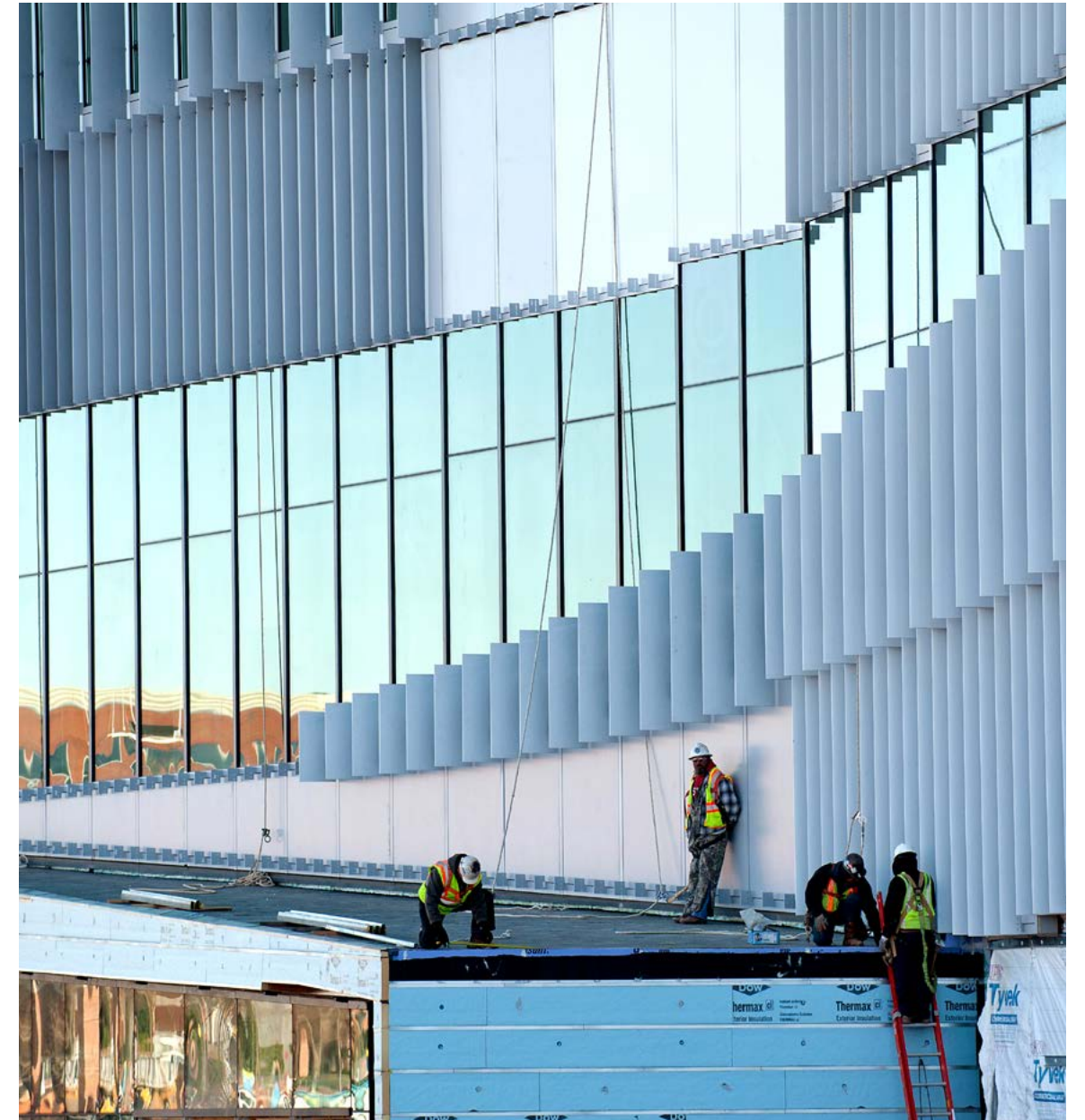
to prioritization, and the absence of auxiliaries in IPL and FacMod due to different funding streams.

In addition, small projects had a tendency to get lost and occasionally it seemed decision-making was overly reactive, as existing processes allowed for both large and small projects to be submitted at any time, limiting the opportunity to aggregate projects for greater impact, improved coordination, and ultimately increased prioritization. Current scoring criteria was also cited as being very quantitative, placing emphasis on urgent requests, versus elevating projects that could be more transformational for campus.

Goals for the Process

The final outcome of these many discussions, is a new, retooled approach called the Campus Development Process which will ensure that major capital projects - defined as new construction, renovation, or infrastructure projects with budgets of \$4 million or more and those that have a high impact - align more closely with institutional priorities. The revised approach aims to provide greater alignment with strategic goals and Guiding Principles. It is designed to be easily understood by all campus stakeholders, including newcomers to the university.

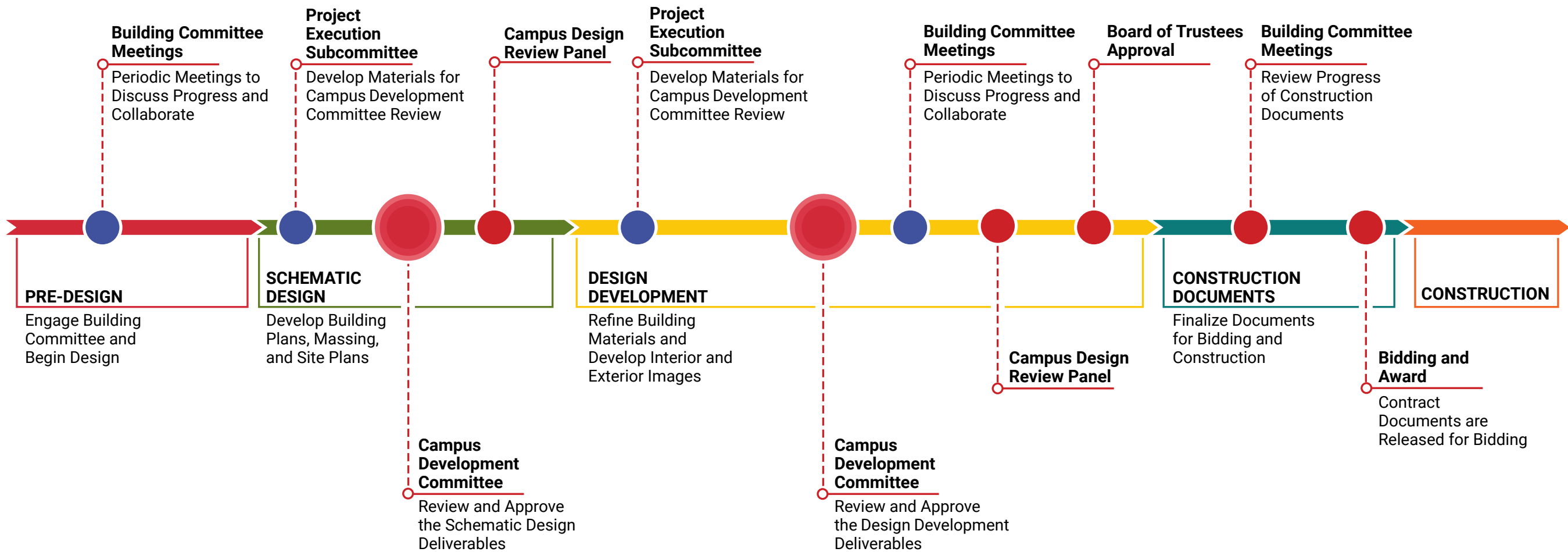
A key objective of this process is to diversify input to gain perspectives from a broader cross-section of stakeholders. This process will enable more than one college, unit, or function to be considered as a means to encourage interdisciplinary collaboration and the integration of auxiliaries. The process provides flexibility to adapt to changing needs and can be repurposed for other university needs. A unique feature of this effort is the establishment of an Orientation Program to help promote understanding and advocacy of the Plan.



CAMPUS DEVELOPMENT PROCESS | EXECUTION

Stakeholder Involvement

After a project is identified and a designer is selected, the Execution Phase of the Campus Development Process begins. The process will continue to include key stakeholders throughout each key project milestone. Upon completion of the process, the project is released for bidding and awarded to the selected contractor.



Value of the Process

This new Campus Development Process provides a governance structure to support implementation of the Physical Master Plan in alignment with NC State's Strategic Plan. It ensures investments in the physical campus environment and provides a mechanism in which to ensure that the principles, concepts, and recommendations of the Plan carry forward as projects are executed.

Through this new approach, NC State will spend limited financial resources more wisely and direct investments towards the most transformative projects on campus. It provides the opportunity to consider all campus needs together, at one time, to allow the aggregation of related projects, thus conserving time and resources.

In response to the feedback shared by the six Task Forces, the Campus Development Process creates increased inclusivity and brings together diverse stakeholders to the table at key moments during the project development process. It also provides a venue to engage auxiliaries in prioritization efforts to ensure all aspects of campus life are being considered.

In summary, this process will allow NC State Facilities to be more proactive in responding to campus needs versus a more reactive approach that historically has been the case. The Campus Development Process in combination with an Orientation Program will allow for more informed participants, knowledgeable in the Physical Master Plan Guiding Principles and recommendations, who will be able to more meaningfully contribute to the conversation and prioritization process.

Orientation Program

One of the most exciting and impactful outcomes of the Physical Master Plan process is the establishment of an Orientation Program. The goal of this training program is to help inform both current and future campus stakeholders of key aspects of the Physical Master Plan and to guide those same individuals on the Campus Development Process.

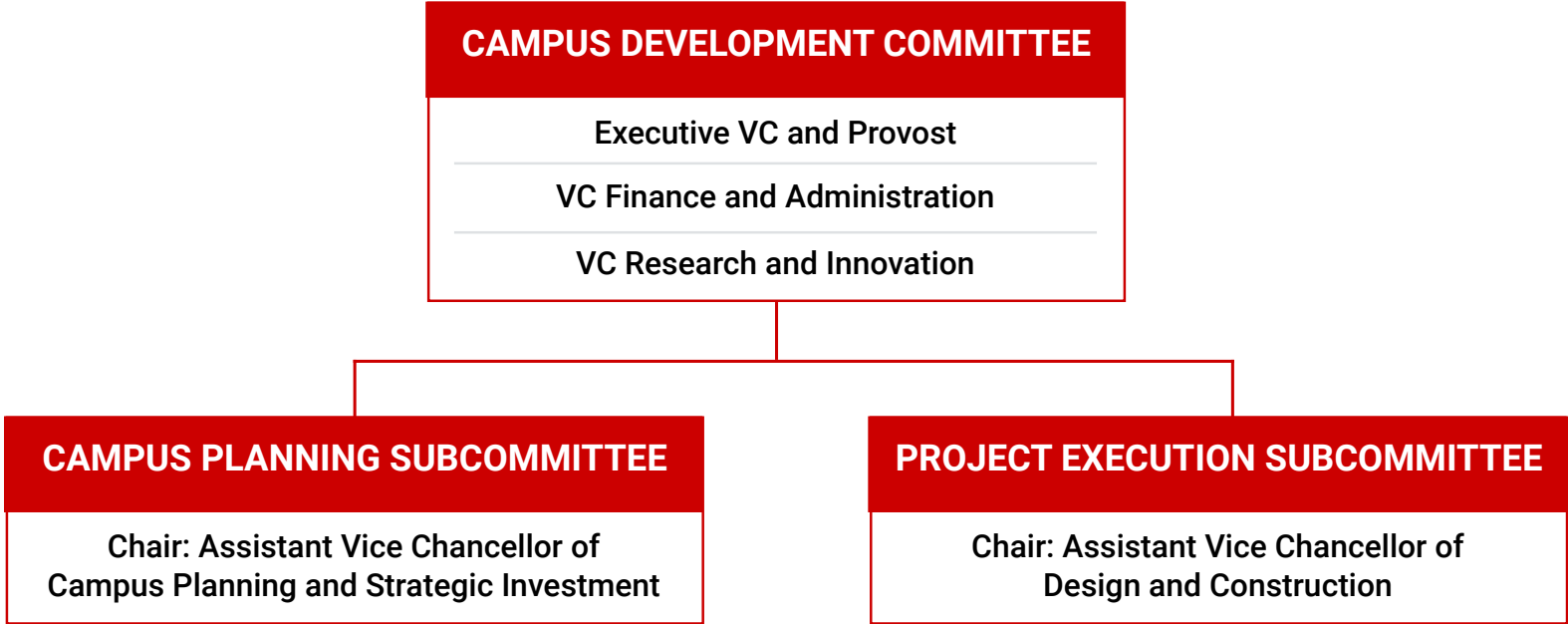
This program will help provide a mechanism to more seamlessly navigate leadership transitions while also educating new students, faculty, and staff to the university on the importance of the Physical Master Plan and the Campus Development Process. This was a critical point of feedback from Task Forces who expressed concern over a current lack of transparency around the planning and prioritization processes, particularly for those new to the institution.

The program is organized around two training modules. The first module is focused on providing a high-level overview and intended for engagement by all campus stakeholders. The second module is directed towards those individuals actively involved in campus development activities with an additional level of detail provided on Design Guidelines and the Campus Development Process.

The Orientation Program is a ground-breaking initiative unique to NC State. It reinforces the importance of stakeholder input and provides a venue to engage with implementation of the Physical Master Plan. The overarching goal is to encourage increased stakeholder engagement in the decision-making process and ensure the Physical Master Plan serves as a valuable resource for campus into the future.



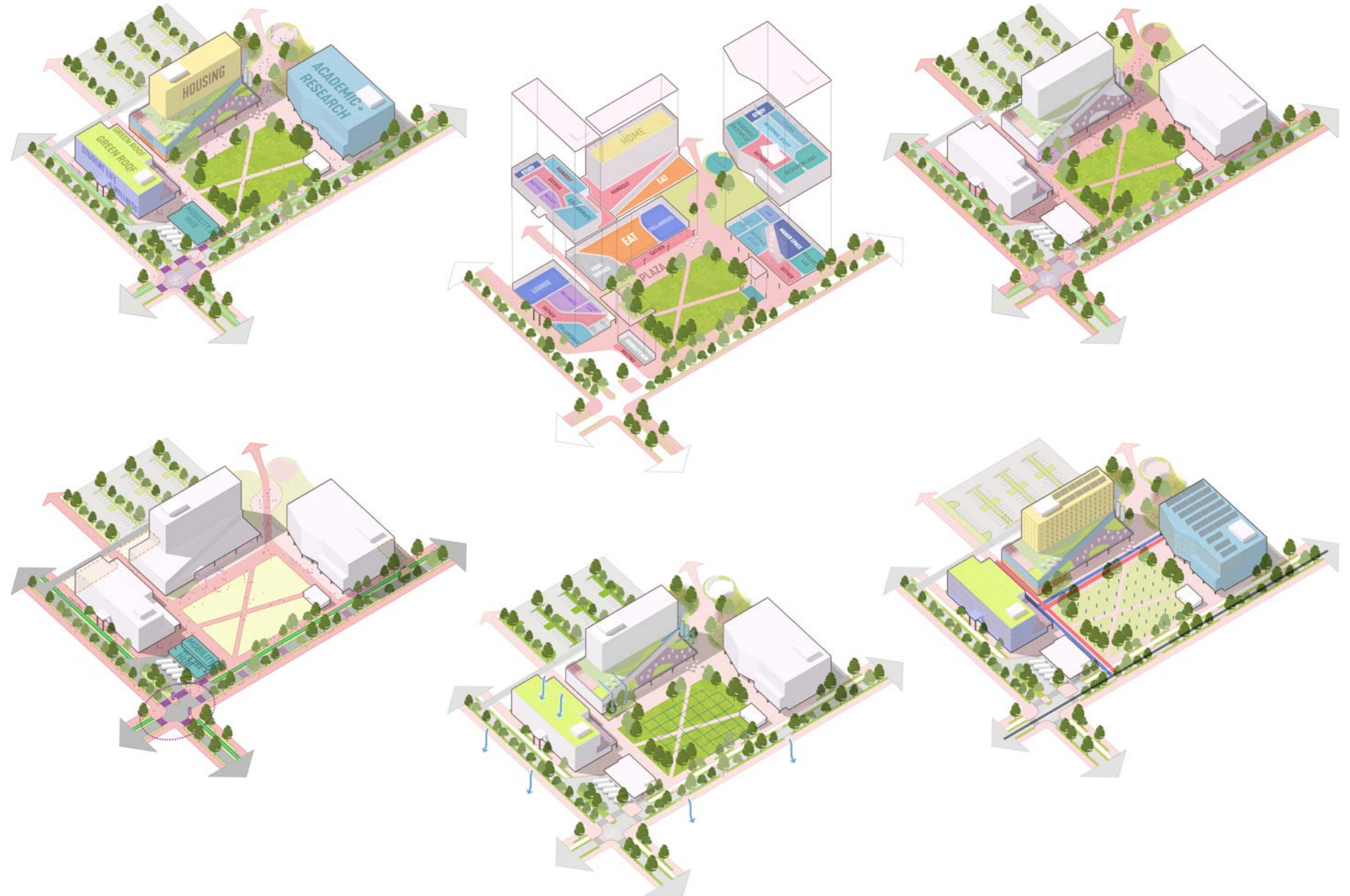
COMMITTEE STRUCTURE



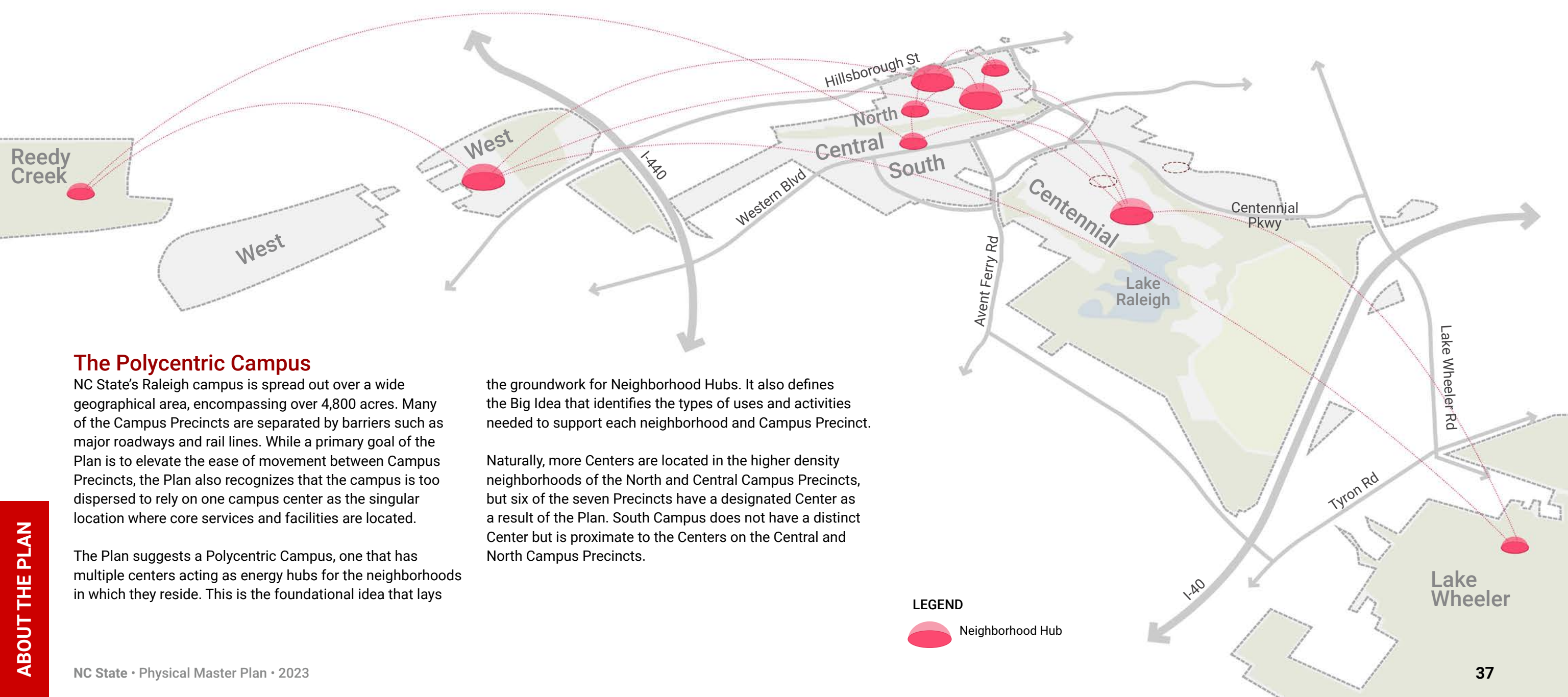
PROTOTYPES

As the third primary component of the Plan, a series of generic prototypes have been developed to guide future development. These prototypes are not prescriptive, but rather they identify the general components and systems that must be considered when developing any new project.

Primarily located within the Design Guidelines are a series of systems diagrams that address programmatic adjacencies, open space, infrastructure and sustainability, stormwater, and mobility. Additional detail is provided within each system narrative to guide future planning and design on NC State's campus.



BIG IDEAS



The Polycentric Campus


NC State's Raleigh campus is spread out over a wide geographical area, encompassing over 4,800 acres. Many of the Campus Precincts are separated by barriers such as major roadways and rail lines. While a primary goal of the Plan is to elevate the ease of movement between Campus Precincts, the Plan also recognizes that the campus is too dispersed to rely on one campus center as the singular location where core services and facilities are located.

The Plan suggests a Polycentric Campus, one that has multiple centers acting as energy hubs for the neighborhoods in which they reside. This is the foundational idea that lays

the groundwork for Neighborhood Hubs. It also defines the Big Idea that identifies the types of uses and activities needed to support each neighborhood and Campus Precinct.

Naturally, more Centers are located in the higher density neighborhoods of the North and Central Campus Precincts, but six of the seven Precincts have a designated Center as a result of the Plan. South Campus does not have a distinct Center but is proximate to the Centers on the Central and North Campus Precincts.

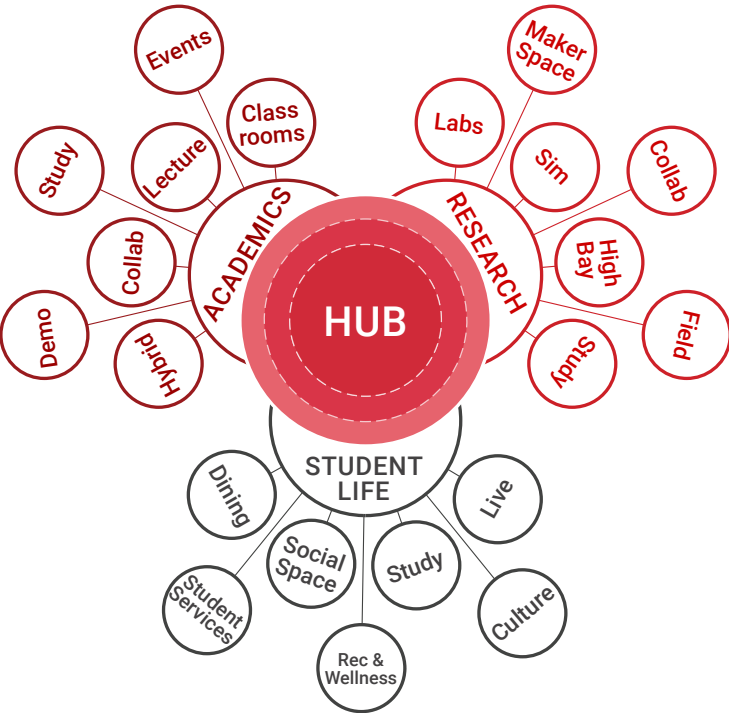
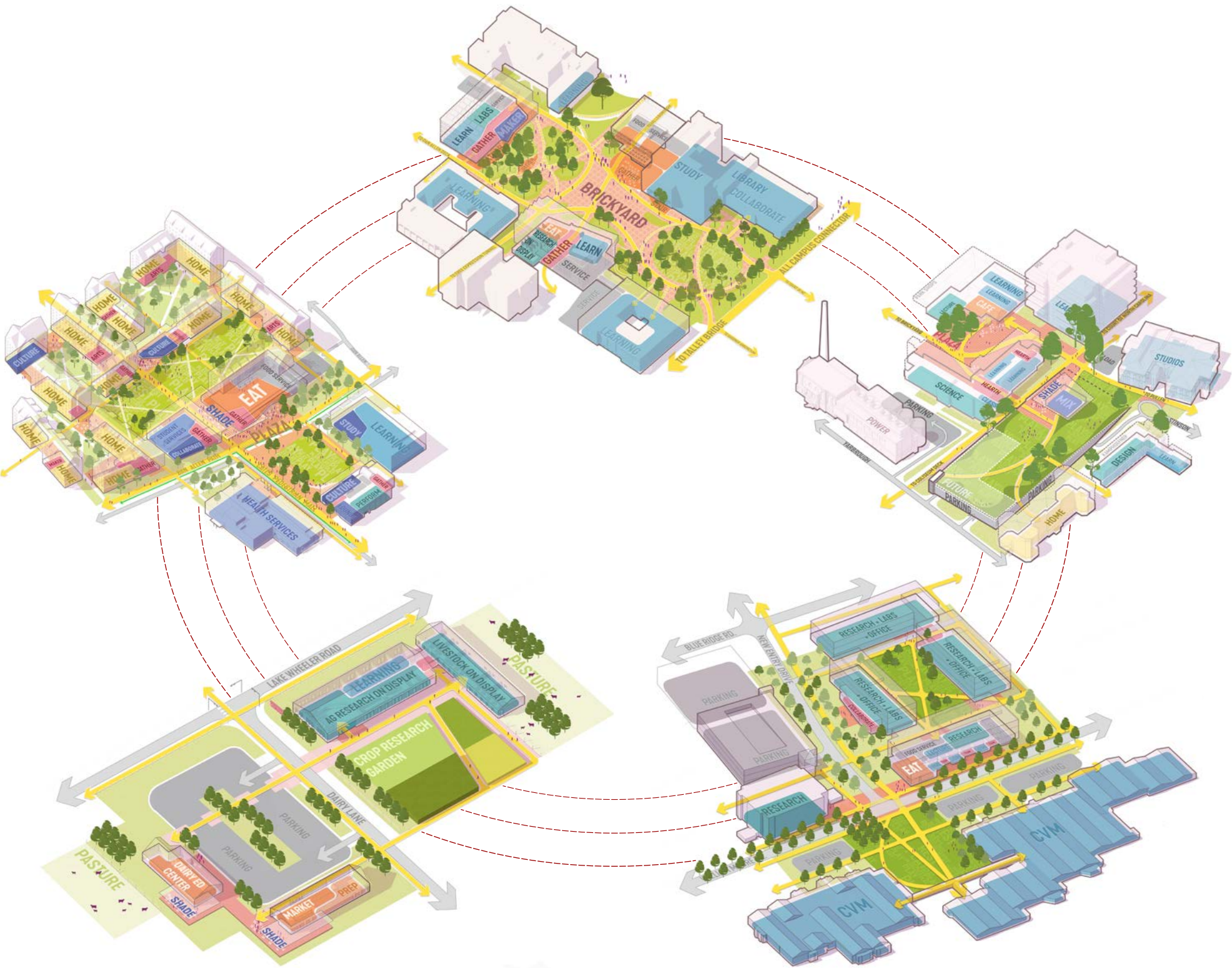
LEGEND

 Neighborhood Hub

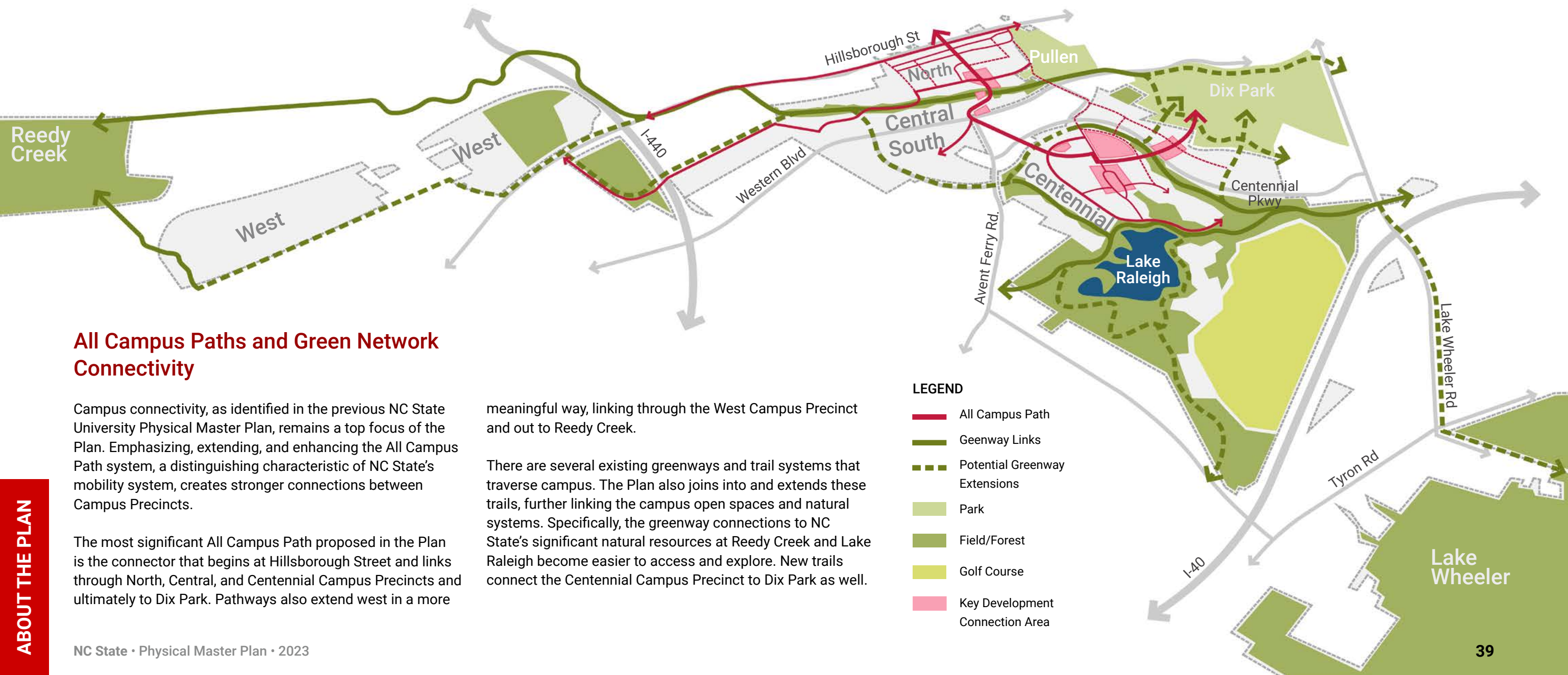
BIG IDEAS

Neighborhood Hubs

At the heart of each of the campus centers, identified by the Polycentric Campus framework, is a Neighborhood Hub. These hubs are where academic, research, and student life intersect, creating a dynamic and vibrant activity node that supports each unique neighborhood. Every hub should ideally include components of all three types of space, though the proportion may vary depending on the character and predominant function of that neighborhood. For instance, Cates West is largely a residential neighborhood, so the hub is heavily weighted toward Student Life functions, while Veterinary Medicine focuses more on Academics and Research.



BIG IDEAS



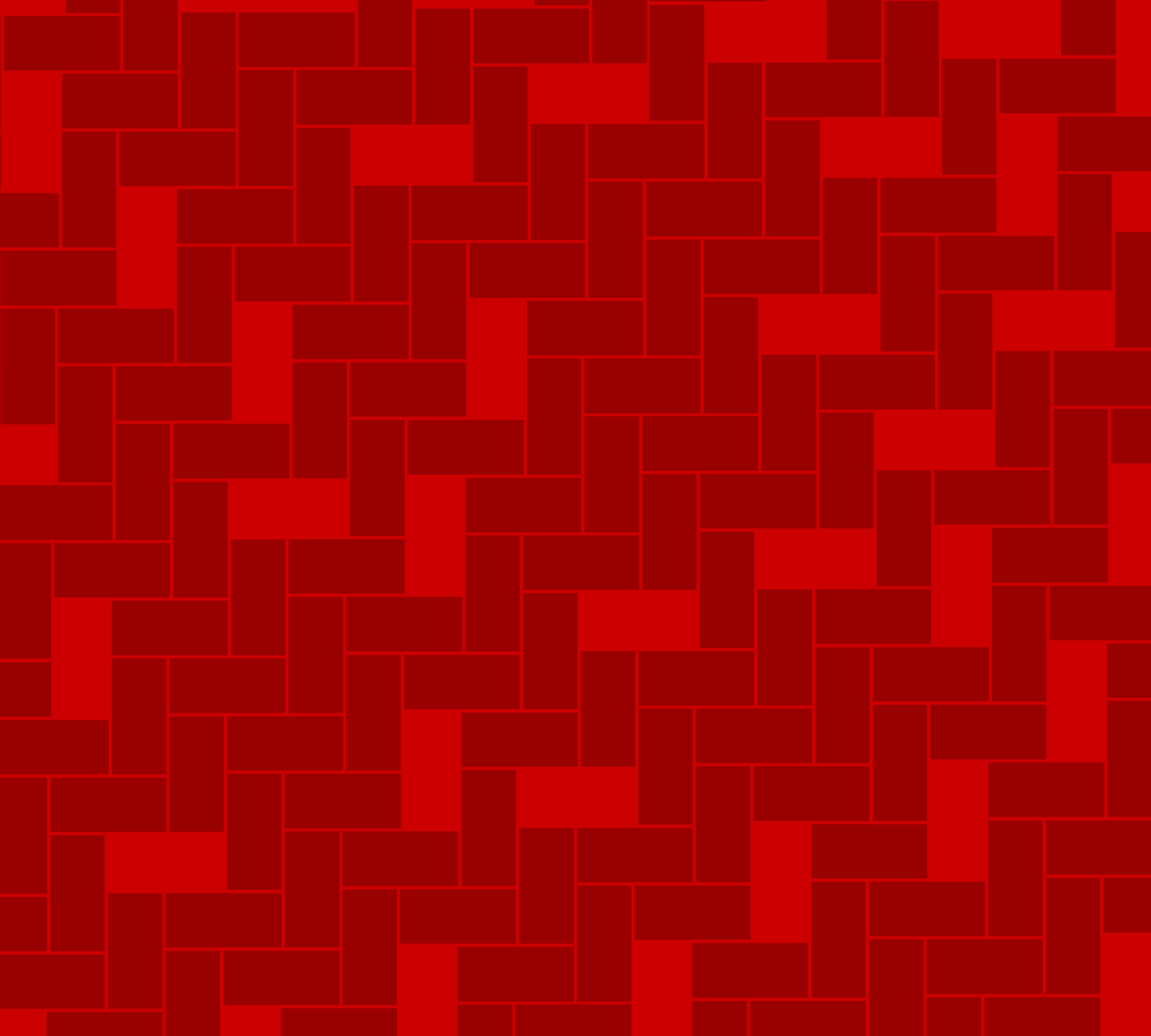
All Campus Paths and Green Network Connectivity

Campus connectivity, as identified in the previous NC State University Physical Master Plan, remains a top focus of the Plan. Emphasizing, extending, and enhancing the All Campus Path system, a distinguishing characteristic of NC State’s mobility system, creates stronger connections between Campus Precincts.

The most significant All Campus Path proposed in the Plan is the connector that begins at Hillsborough Street and links through North, Central, and Centennial Campus Precincts and ultimately to Dix Park. Pathways also extend west in a more

meaningful way, linking through the West Campus Precinct and out to Reedy Creek.

There are several existing greenways and trail systems that traverse campus. The Plan also joins into and extends these trails, further linking the campus open spaces and natural systems. Specifically, the greenway connections to NC State’s significant natural resources at Reedy Creek and Lake Raleigh become easier to access and explore. New trails connect the Centennial Campus Precinct to Dix Park as well.



02

CAMPUS MASTER PLAN: PRECINCTS



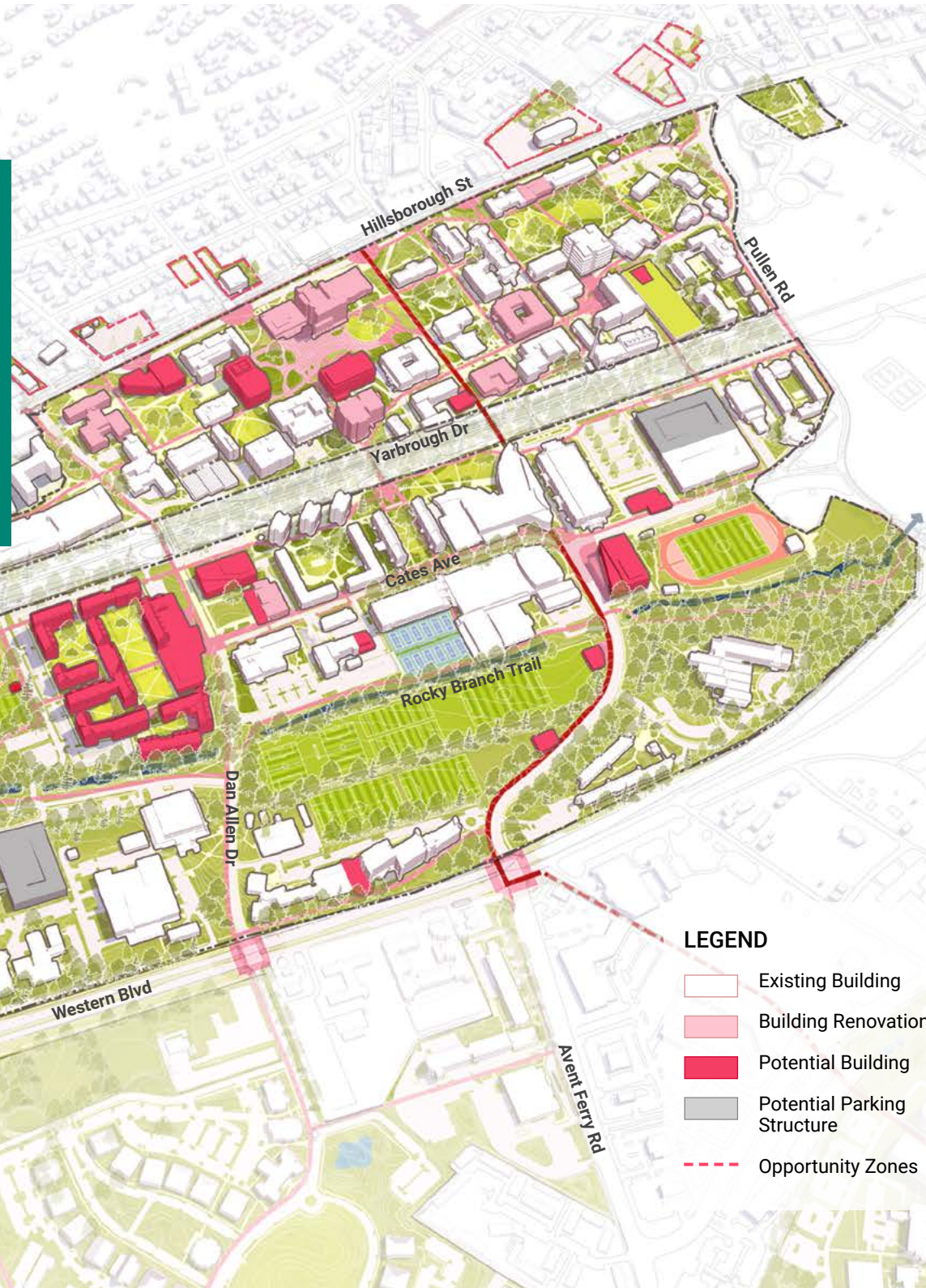


NORTH + CENTRAL CAMPUS PRECINCTS



PRECINCT VISION

Recommendations for North and Central Campus Precincts are rooted in the six guiding principles of the Physical Master Plan. The guiding principles reflect the mission, vision, values, and goals of the NC State Strategic Plan. The overarching intent is to strengthen the academic, research, and student life experience on campus through the addition of new facilities, renovations, open spaces, and the creation of dynamic, new Neighborhood Hubs.



PRECINCT GOALS



Reinforce Culture and Place

- Restore vibrancy to the historic University Plaza.
- Create new student centered spaces that are welcoming and inclusive of entire campus community.



Steward Campus Resources

- Prioritize pedestrians and alternative modes of transportation over single occupant vehicles.
- Treat stormwater in a holistic way across campus.



Elevate the Campus Experience

- Reinvent Cates West residential facilities.
- Reimagine dining services through establishment of several new dining facilities.



Align Facilities with Mission

- Strategically insert new interdisciplinary teaching and research facilities into the existing campus fabric.
- Support thoughtful renovations of existing facilities to optimize their use and extend their useful life.



Strengthen Campus Connections

- Convert numerous vehicular streets to promote a pedestrian first experience.
- Open up views across the railroad tracks to better visually connect the North and Central Campus Precincts.
- Improve east/west and north/south pedestrian connections



Ensure Infrastructure Reliability

- Maximize reliability through build-out of existing capacity at Yarbrough and Cates utility plants.
- Invest in a new regional energy exchange utility plant for the Cates West district, focused on maximizing geo-exchange potential.

PRECINCT VISION

Building Improvements

- 01 Kilgore Hall Replacement
- 02 Academic & Research Bldg
- 03 Hill Library Renovation
- 04 Integrative Sciences Bldg
- 05 Stinson Parking Structure
- 06 Residential Village
- 07 Dining & Student Services
- 08 Academic Building
- 09 Witherspoon Addition
- 10 Multi-Purpose Building
- 11 Mobility Hub
- 12 Broughton Pavilion
- 13 Student Recreation Bldg
- 14 Env. Sciences Addition
- 15 Cates Plant Expansion
- 16 Cates West Plant
- 17 Softball Stadium
- 18 Baseball Stadium Addition
- 19 Nelson Hall Renovation
- 20 Dabney/Cox Renovation
- 21 Mann Hall Renovation
- 22 Lampe Hall Renovation
- 23 Caldwell Hall Renovation
- 24 New Parking Structure

Mobility Improvements

- 01 Stinson Dr Conversion
- 02 Yarbrough Dr Connection
- 03 Broughton Dr Conversion
- 04 Lampe Dr Conversion
- 05 Current Dr Conversion
- 06 Talley Bridge
- 07 Cates Ave Conversion
- 08 Dan Allen Dr Conversion
- 09 Dan Allen Dr Rerouting
- 10 Western Blvd Improvements
- 11 Pullen Rd Improvements
- 12 New Pullen Bridge
- 13 Faucette Dr Conversion

Site Improvements

- 01 Hillsborough St Gateways
- 02 The Brickyard Improvements
- 03 Patterson Hall Green Space
- 04 Gardner Hall Green
- 05 Service Drive Conversion
- 06 Harris Field Improvements
- 07 Residential Quad
- 08 Lee Field Reconstruction
- 09 Miller Field Improvements



LEGEND

Existing Building

Building Renovation

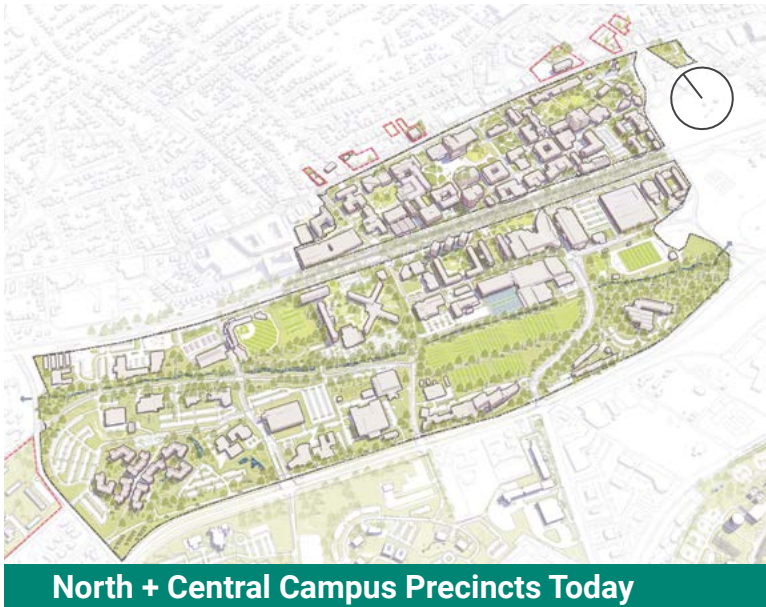
Potential Building

Potential Parking Structure

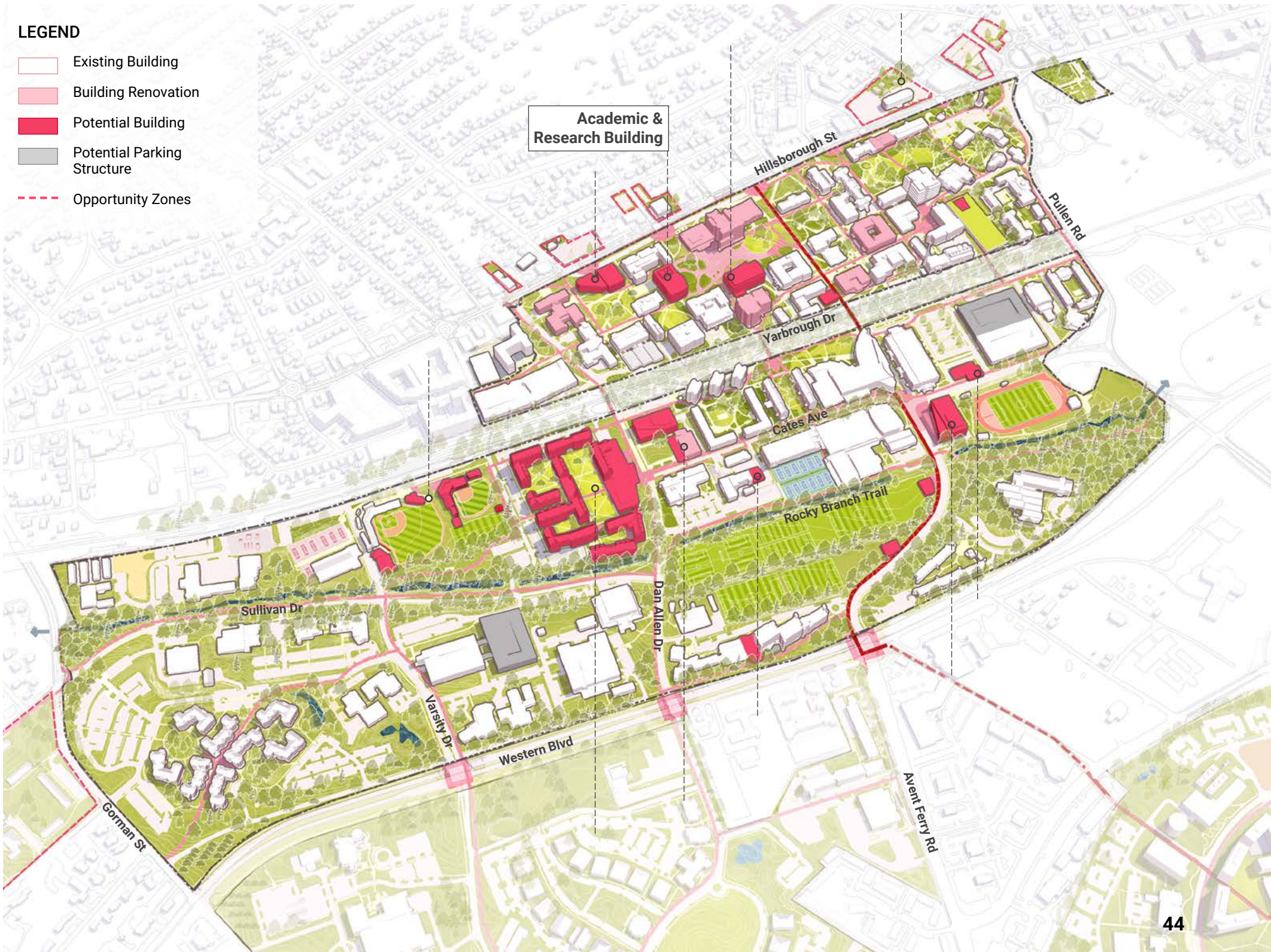
Opportunity Zones

POTENTIAL DEVELOPMENT

The Physical Master Plan seeks to strategically align academic, research, and student life facilities on North and Central Campus Precincts with both current and future needs. The Plan suggests a combination of new buildings, repurposing strategies, and significant renovations to better position NC State for success over the next decade. New construction focuses on creating dynamic interdisciplinary, multi-purpose, flexible facilities to replace aging single-purpose buildings. Initiatives also include reimagining the student life experience and providing best-in-class athletic and recreation facilities. Renovation strategies focus on improving energy efficiency and reliability across campus, while also providing improved teaching and research space.



North + Central Campus Precincts Today



LEGEND

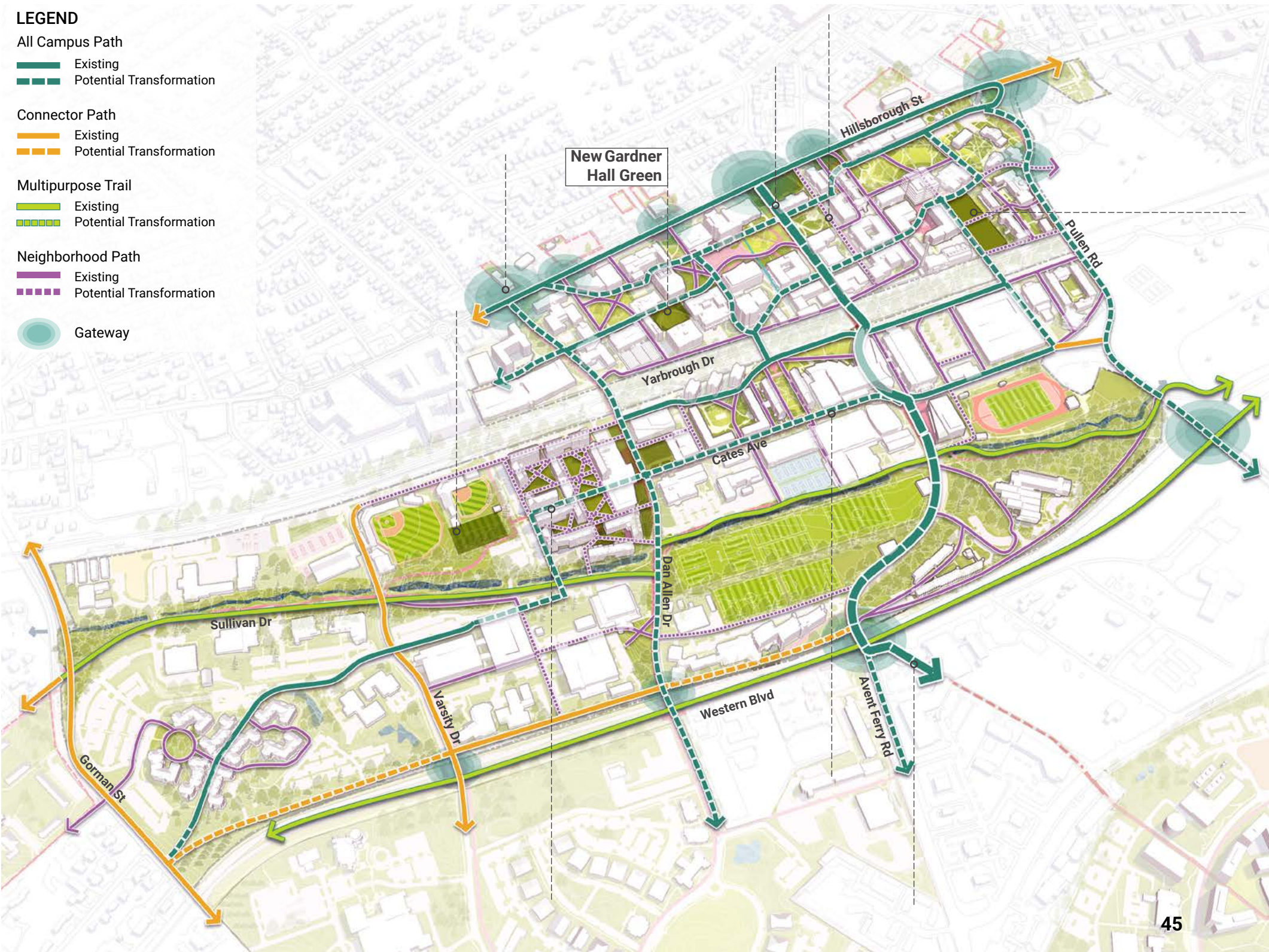
- Existing Building
- Building Renovation
- Potential Building
- Potential Parking Structure
- Opportunity Zones

PEDESTRIAN & OPEN SPACE FRAMEWORK

Several key open spaces, pathways, and trails define the pedestrian experience on North and Central Campus Precincts. The Plan first suggests the preservation of existing Hallowed Places with enhancement to the approaches and edges, and improved integration of these important spaces. Along Hillsborough Street, the intent is to create a more porous and inviting campus edge that strengthens links to the surrounding community. Several internal streets are suggested for conversion into multi-modal, pedestrian-first paths to give priority to the pedestrian experience. New open spaces are also suggested within residential and academic areas of campus to improve the overall student experience, in addition to creating safer connections across Western Boulevard.



North + Central Campus Precincts Today



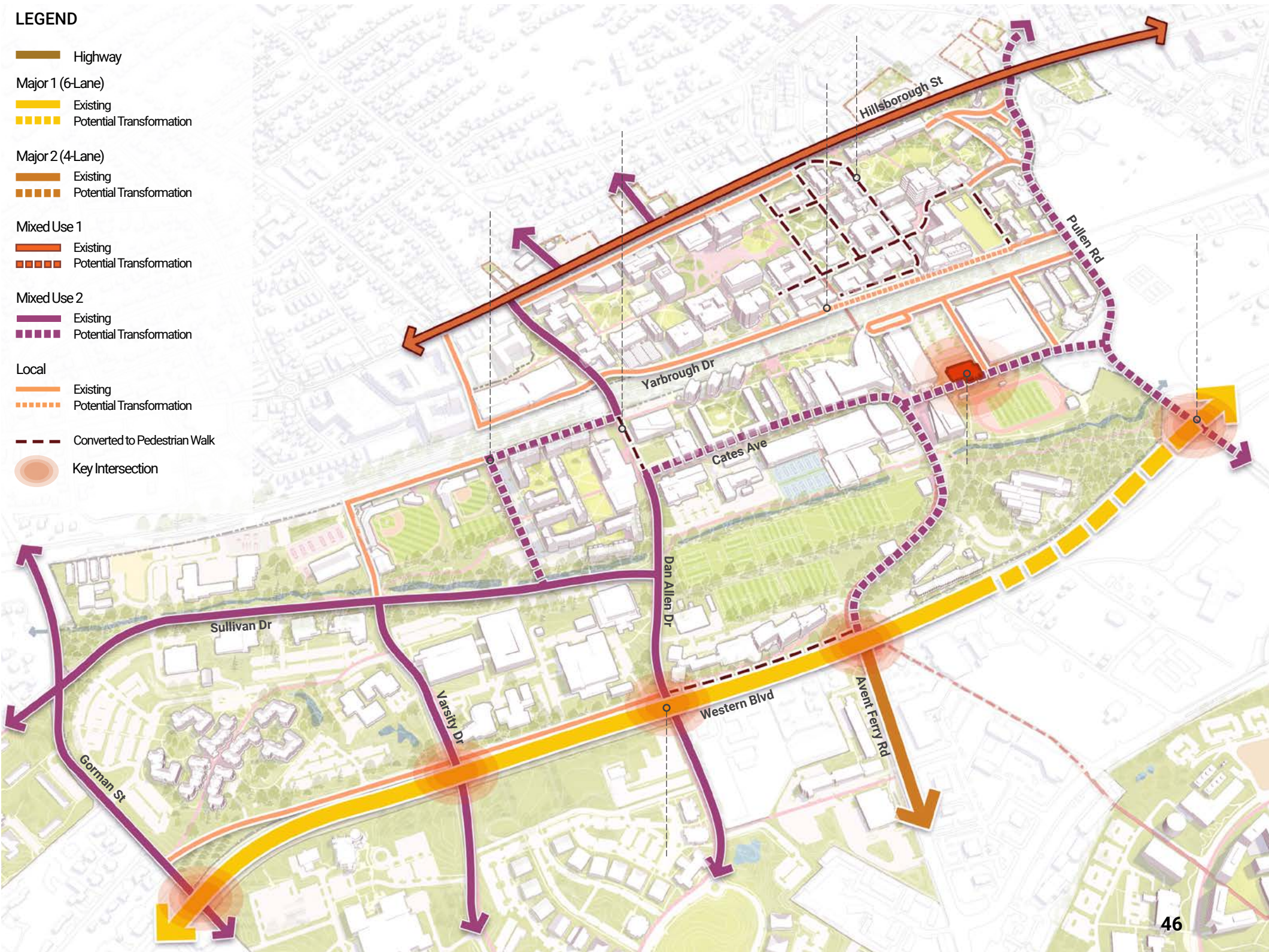
VEHICULAR MOBILITY FRAMEWORK

The North and Central Campus Precincts are bordered on each side by prominent roadways with Gorman Street to the west, Hillsborough Street to the north, Pullen Road to the east, and Western Boulevard to the south. Each roadway has a different character supporting significant campus and community traffic. In addition, many internal streets bisect areas of campus. Prominent interior roadways include Varsity Drive, Dan Allen Drive, Cates Avenue, Morrill Drive, and Yarbrough Drive.

A primary goal of the Physical Master Plan is to create a pedestrian-first environment across campus. This goal emerged early in the planning process as stakeholders cited concerns around pedestrian safety, campus aesthetics, and stormwater management due to an overwhelming number of interior streets.

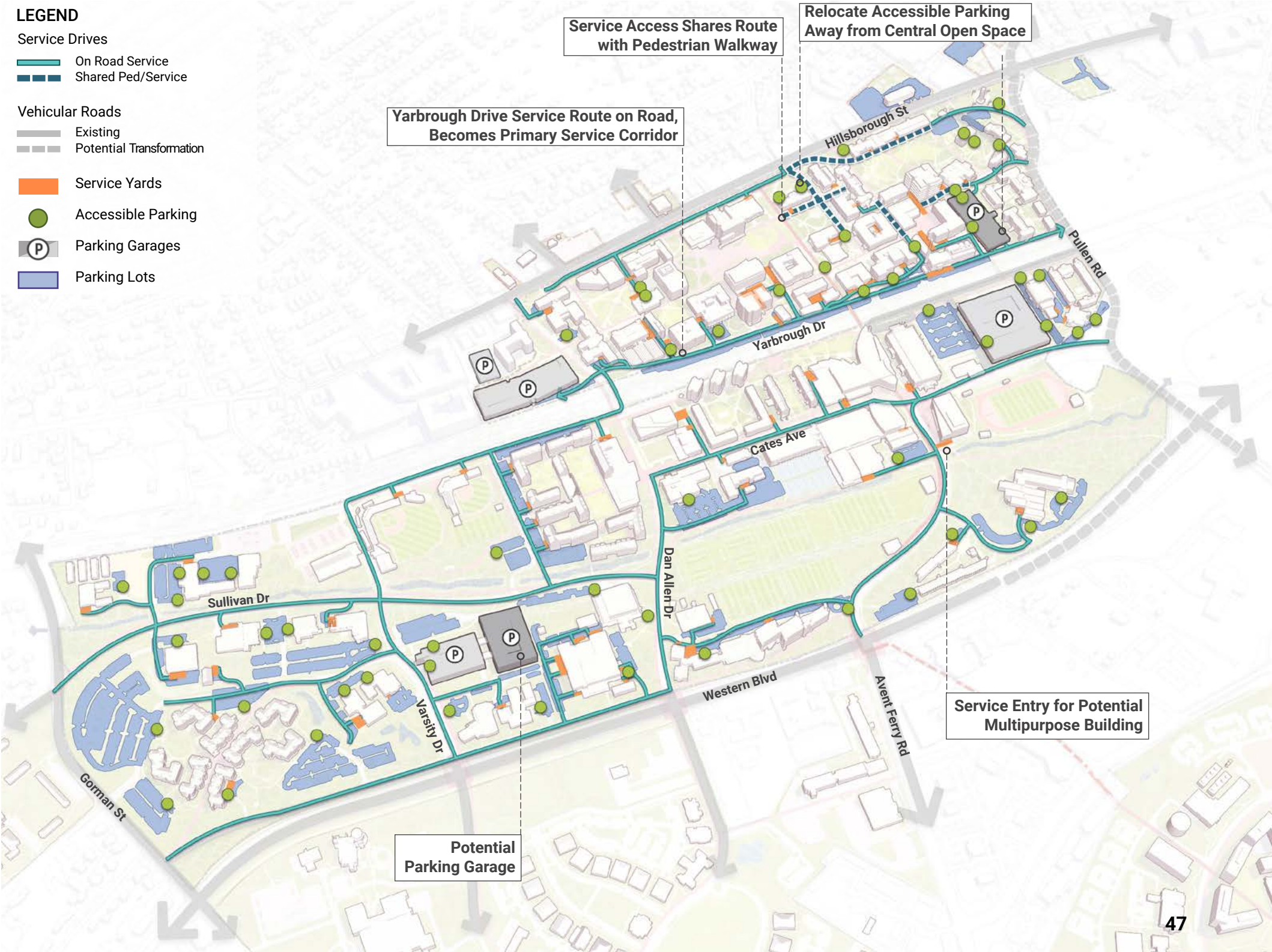
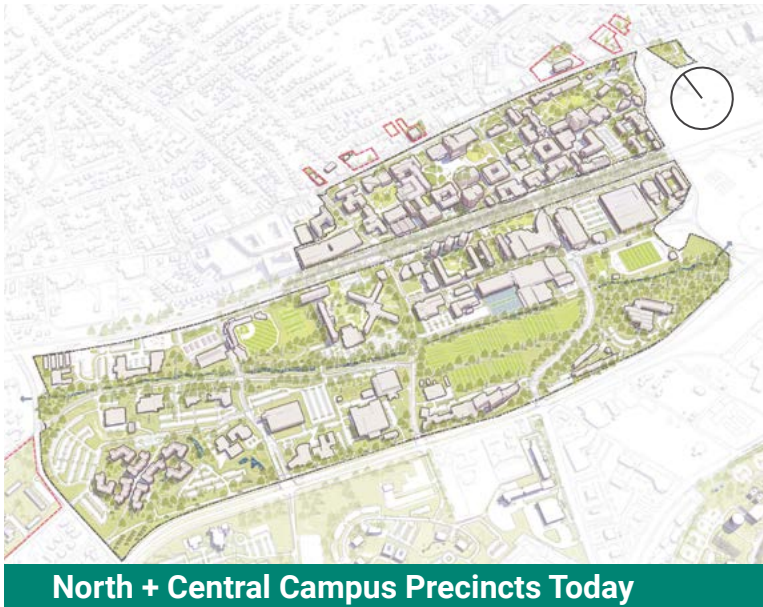
To achieve this goal, the Plan recommends transitioning many interior streets to pedestrian-focused corridors with dedicated bicycle and scooter lanes. In all cases, service and emergency vehicles, as well as ADA parking will be maintained. The intent is to incorporate stormwater management, lighting, and branding strategies with infrastructure distribution underground and social spaces near buildings with seating, landscaping, and shade to enhance the overall experience on the North Campus Precinct.

In addition, the Plan suggests unique approaches to enhancing other key roadways on and adjacent to campus as shown in the pages that follow, including Cates Avenue, Dan Allen Drive, Pullen Road, Morrill Drive, and Western Boulevard. Together, these strategies will improve campus safety and aesthetics.



SERVICE + PARKING

As mentioned earlier, the Plan recommends the conversion of several streets in the Precincts to pedestrian-focused corridors with service and emergency access. Yarbrough Drive is suggested to be a primary service corridor that enables some of these street conversions. On-street parking is eliminated or minimized in most places and several Parking Structures are introduced to accommodate the displaced parking. The number of ADA parking spaces are still maintained through all these initiatives.

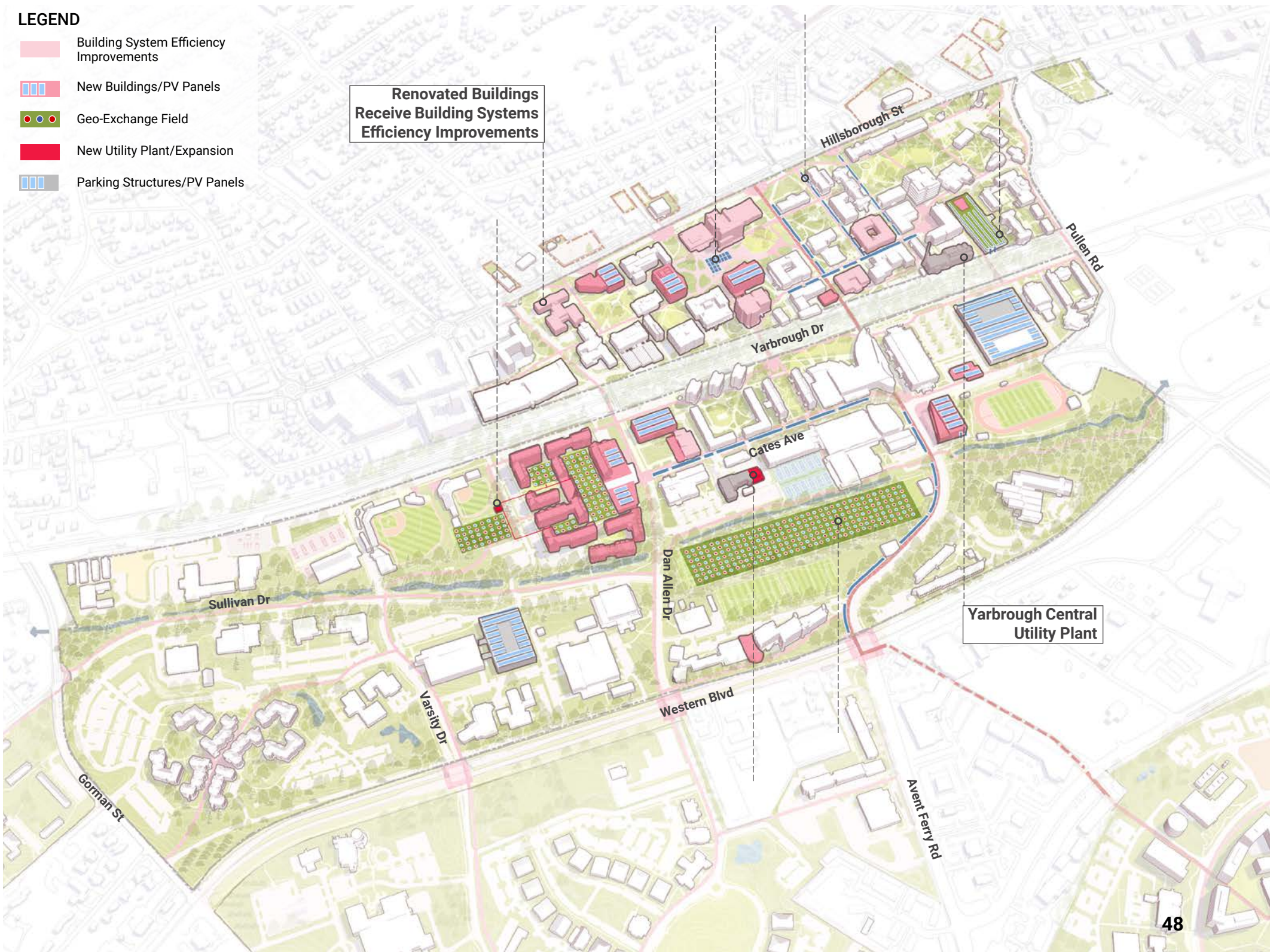


INFRASTRUCTURE RELIABILITY

The Cates and Yarbrough utility plants power North and Central Campus Precincts. Existing distribution of high and medium pressure steam and chilled water provides coverage to nearly all buildings in this area. Additionally, both plants were designed to accommodate future equipment expansion to increase the firm capacity of thermal energy to the Precinct. In preparation for building additions in this area, it is recommended that all planned capacity at existing plants be built out. In the near term, reliability will increase by having a larger buffer against equipment failure.

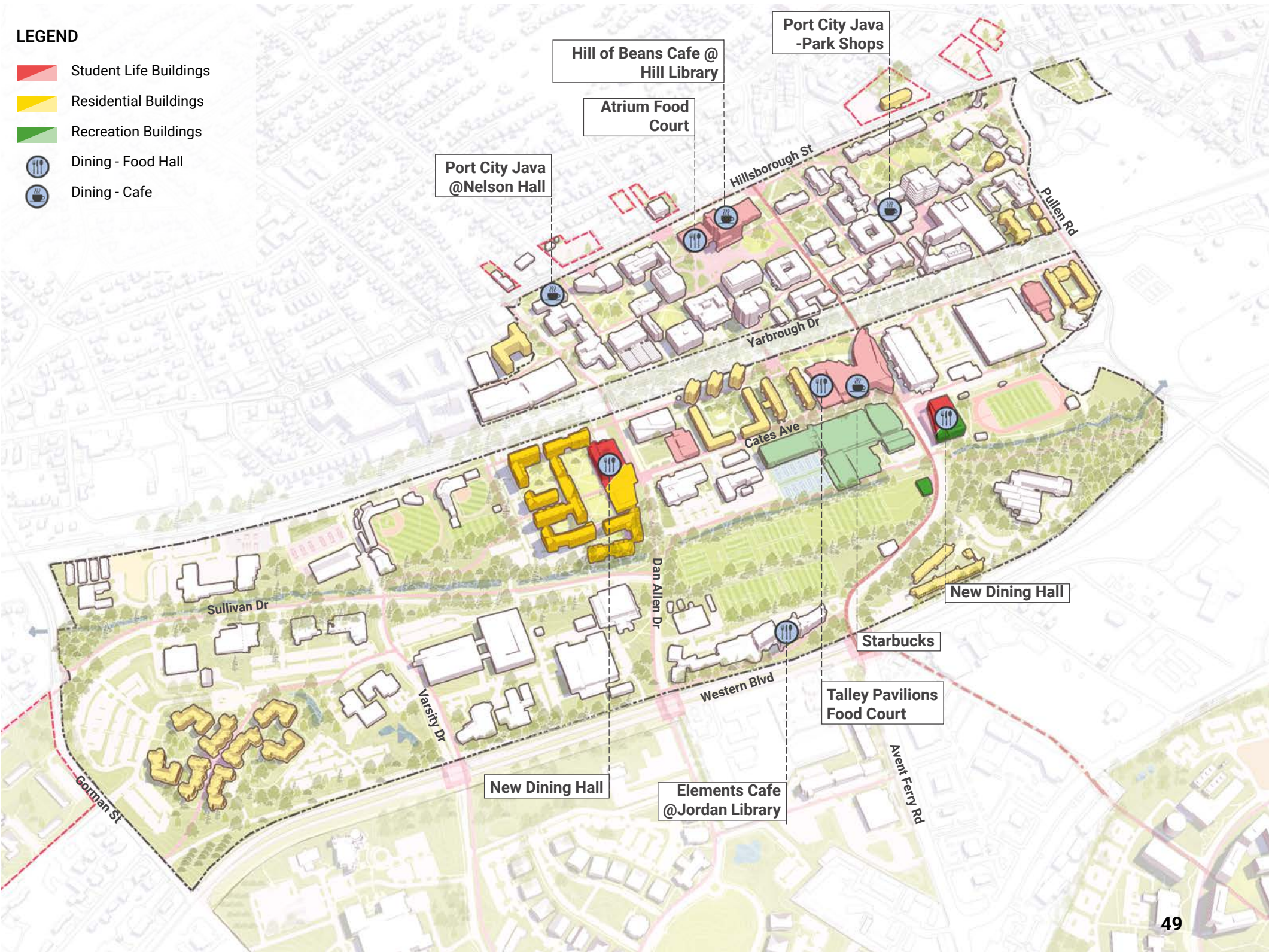
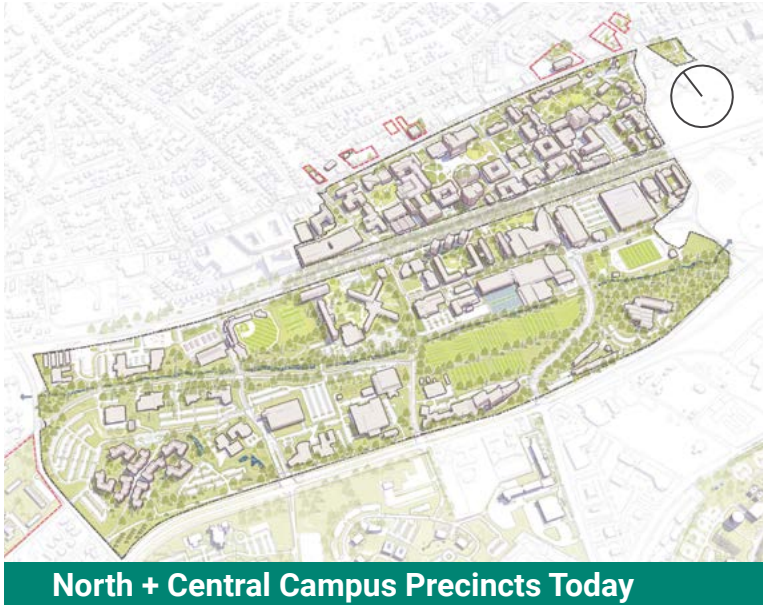
The Physical Master Plan identified several buildings north of Yarbrough Drive that are targeted for significant reinvestment. These projects should include substantial upgrades and/or replacement of existing mechanical air and hydronic systems. Renovation work should seek to separate sensible and latent load conditioning wherever possible. Upgrading building controls and providing advanced metering are also critical.

New development in the Cates West neighborhood offers a unique opportunity for the first regional energy exchange utility plant on campus. This location benefits from potential access to a significant area of geo-exchange that will have a meaningful impact of the efficiency and reliability of this regional plant. The energy exchange concept will also help to offset the demand at the existing utility plants.



STUDENT LIFE

The Physical Master Plan reimagines the Student Life experience in the North and Central Campus Precincts by proposing several new student-centered spaces, housing, and dining facilities. The Brickyard is envisioned to restore vibrancy with expanded dining, increased study spaces, and new buildings opening onto the plaza. The residential neighborhood at Cates West is reinvented and includes several social gathering spaces and a dining facility. Another dining hall at Cates East along with wellness and athletic facilities will enhance the experience for athletes as well as other students. The transformation of Cates Avenue, which connects several student-life facilities, will create a safer environment for pedestrians and cyclists. All these initiatives, together, will help to nurture a stronger sense of community in the Precincts.



NEIGHBORHOOD HUBS

A key concept of the NC State Physical Master Plan is to celebrate the “polycentric campus” organization of the institution, given it spans across Wake County, encompassing five Campus Precincts and two field labs. Rather than attempt to duplicate amenities and services at each location, the Plan suggests an approach centered around the establishment of Neighborhood Hubs.

Each Neighborhood Hub takes on a different, unique identity composed of the characteristics and qualities of the area it represents with a special focus placed upon addressing needs identified during the planning process. The Plan suggests nine Neighborhood Hubs with the goal of nurturing increased activity and vibrancy in these specific areas of campus.

The overarching vision is to express NC State’s commitment to “Think and Do” by putting collaboration and innovation more fully on display across the university. Neighborhood Hubs celebrate the experiential convergence of academics, research, and student life to create vibrant hubs of activity.

The concept can be achieved in a number of different ways through various hub typologies ranging from a collection of multiple adjacent buildings to development of a new stand-alone facility to renovation of a portion of an existing building. The Neighborhood Hub concept can be scaled to appropriately support an area as needed.



HILLSBOROUGH STREET

Campus Gateways, Future Opportunities

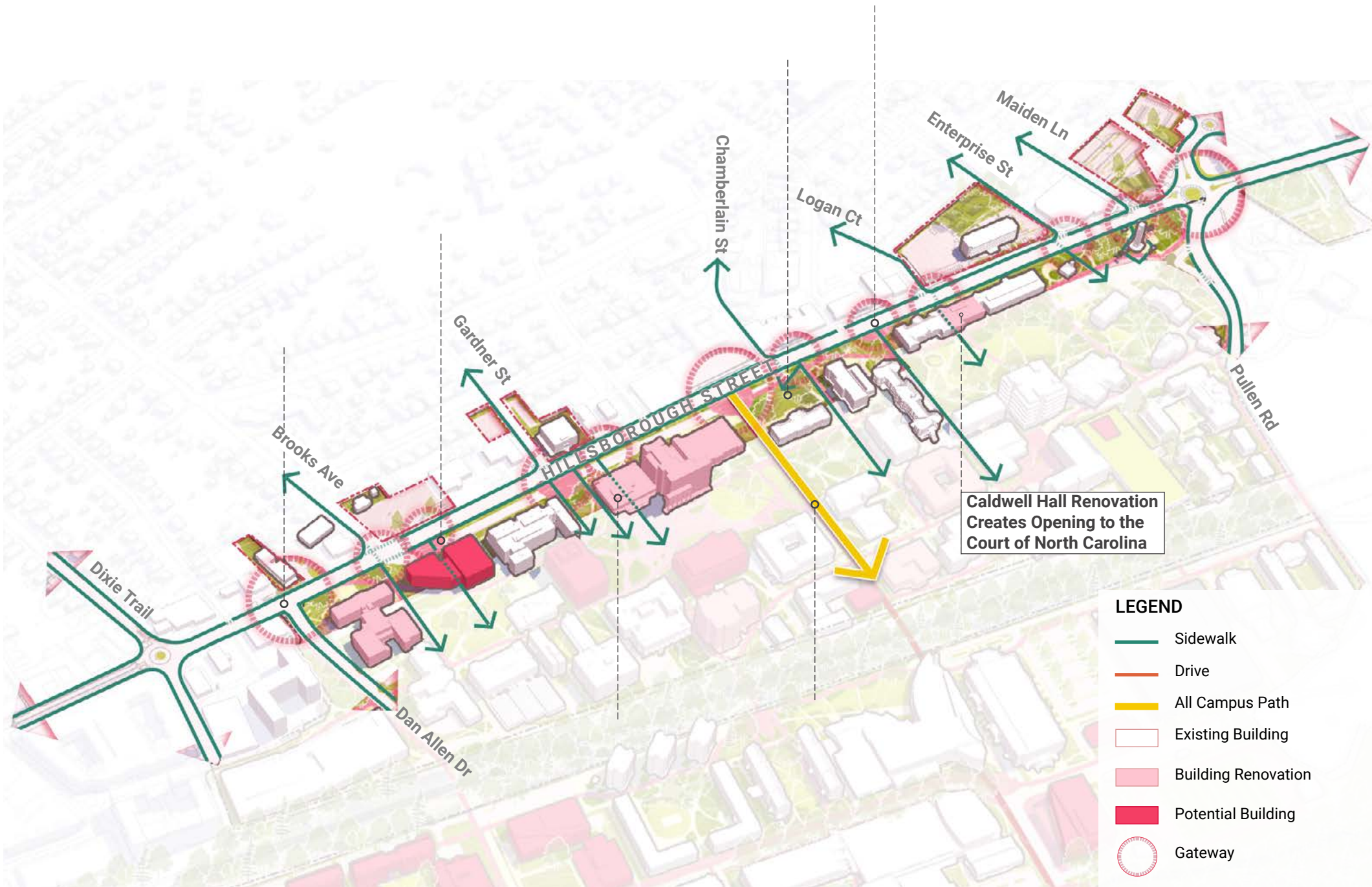
The primary interface between campus and community at NC State is at Hillsborough Street on the northern edge of the North Campus Precinct. Many of the commercial establishments along the north side of Hillsborough Street are targeted toward the campus community, and new off-campus housing developments in recent years have added to the student population residing in this area.

Historically, campus development has oriented inward toward campus, resulting in a relatively impermeable wall back to the community. NC State has already started to reverse this trend through projects like the Academic Success Center renovation in Hill Library, Memorial Belltower, and campus entry at Primrose Hall. The plan suggests continuing to add porosity to this boundary by creating new pedestrian gateways at multiple locations.

On the north side of Hillsborough Street, NC State stewards multiple parcels identified as future opportunity zones. The specific use for these areas has not yet been identified.

Caldwell Hall

Caldwell Hall is physically connected to Winston Hall and Tompkins Hall along Hillsborough Street, creating a building several hundred feet long that cuts off access from Hillsborough to the Court of North Carolina. The Plan suggests strategic removal of some of the connecting space between Winston and Caldwell, creating a portal into campus, while also maintaining an entry point to the building.

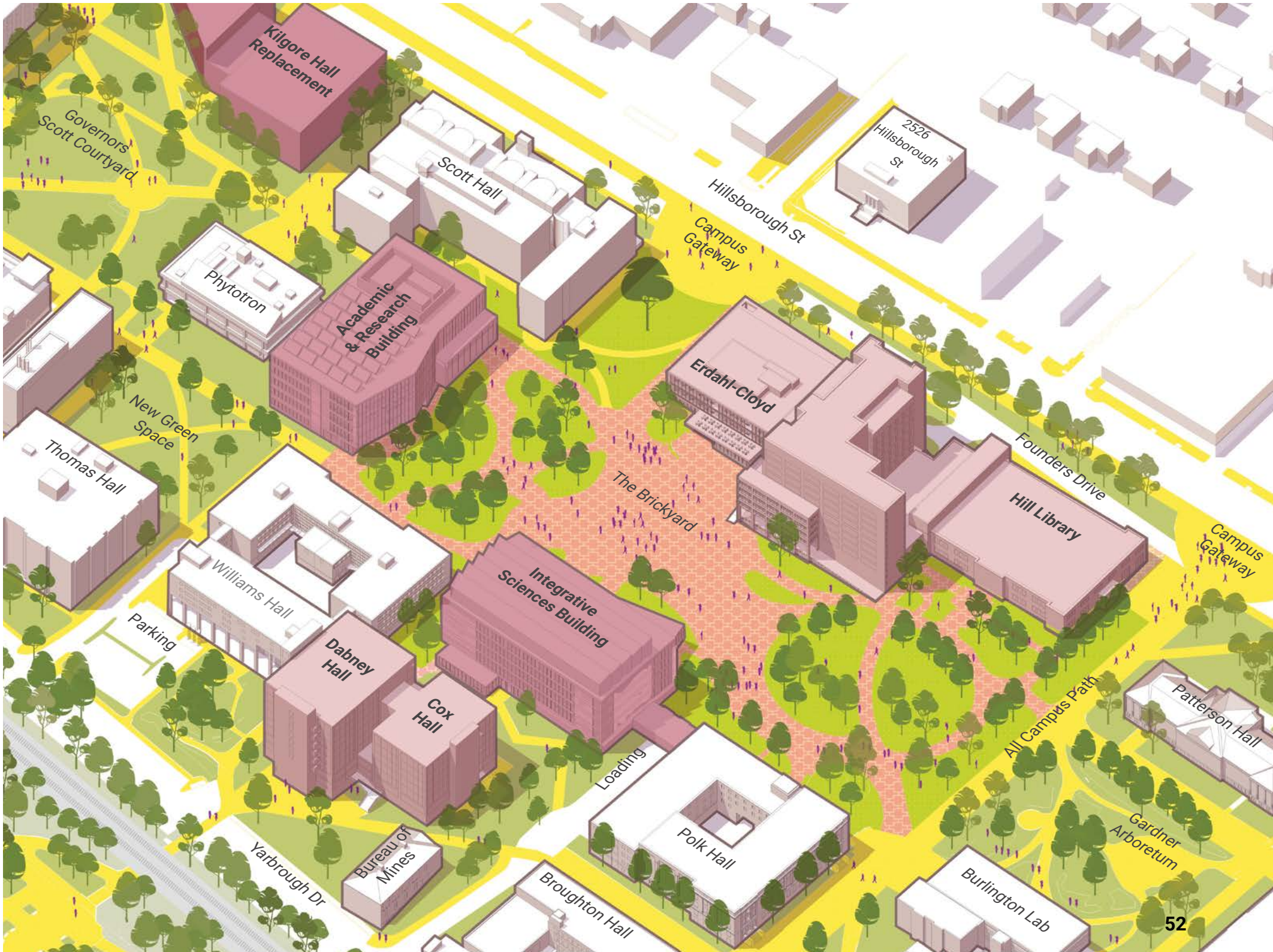


THE BRICKYARD HUB

University Plaza, also commonly referred to as ‘The Brickyard’ is one of NC State’s nine Hallowed Places and serves as a focal point of campus life. Input gathered during the initial phases of the process revealed that it lacks activation in late afternoon and evening hours. To address this concern, the Plan identifies new facilities, renovation strategies, active uses, and enhanced outdoor spaces to help reinvigorate the area.



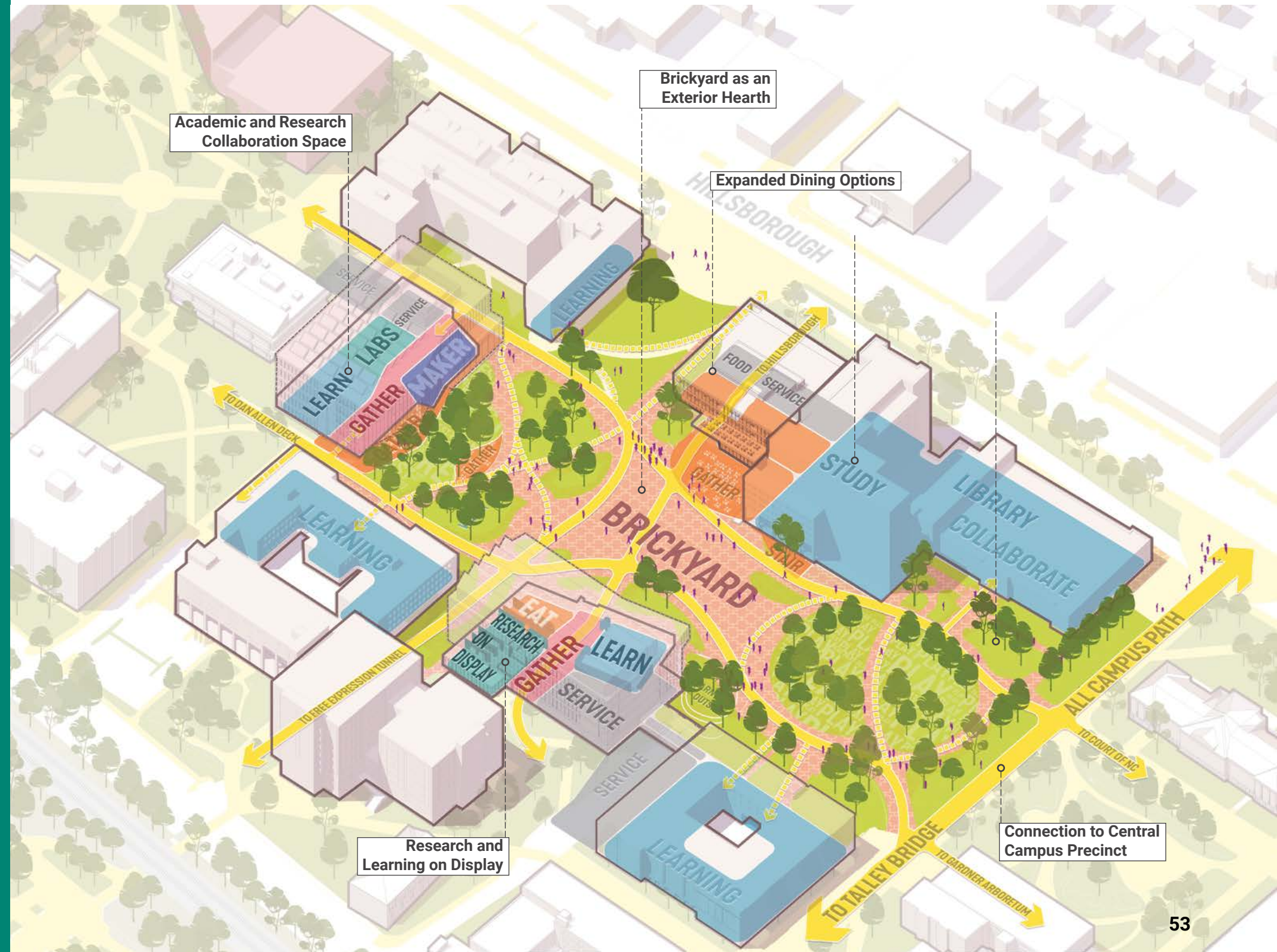
The Brickyard Existing Conditions



THE BRICKYARD HUB

The Brickyard Hub celebrates emergent ideas for teaching, learning, and research. It puts NC State's "Think and Do" mission prominently on display. This Hub focuses on reinvigorating and enhancing The Brickyard's existing identity as a central convergence point on campus. Circulation both to and through the space is key to fostering stronger connections across campus.

Potential facilities such as a new Integrative Sciences Building and a Bostian Hall/Gardner Hall replacement bring academics and research together. Expanded dining options and increased study spaces within Hill Library help enliven the area and increase neighborhood vibrancy. More buildings open onto the plaza which aids in the creation of different types of outdoor spaces for teaching, gathering, and study.



THE BRICKYARD HUB

Integrative Sciences Building

The new Integrative Sciences Building will serve as a catalyst to transform STEM research and education at NC State. This facility will bring together various disciplines such as chemistry, biochemistry, biology, physics, and engineering, serving as a model for interdisciplinarity on campus. ISB will highlight NC State's leading role in addressing the world's grandest challenges. Given its prominent location on the southern edge of The Brickyard, the facility will also serve to connect existing centers of excellence on campus and help to activate adjacent areas. The building will serve as a key anchor of The Brickyard Hub that seeks to celebrate the convergence of teaching and research.

Gardner-Bostian Site Future Building

Gardner and Bostian Halls have long served as significant teaching and research facilities for College of Agriculture and Life Sciences, and College of Sciences. Both buildings are in significant need of repair or replacement, with Gardner Hall in extremely poor condition. The current configuration of these two facilities, along with the Phytotron, creates the perception of a wall between The Brickyard and Governors Scott Courtyard which significantly limits pedestrian movement and negatively impacts the overall campus experience.

To address these existing challenges, the Plan recommends removal of both buildings with a priority on demolition of Gardner Hall in the near-term and Bostian Hall in the future. In their place, a new multi-use academic and research building is suggested that frames The Brickyard and helps to further strengthen this Neighborhood Hub by adding active first floor

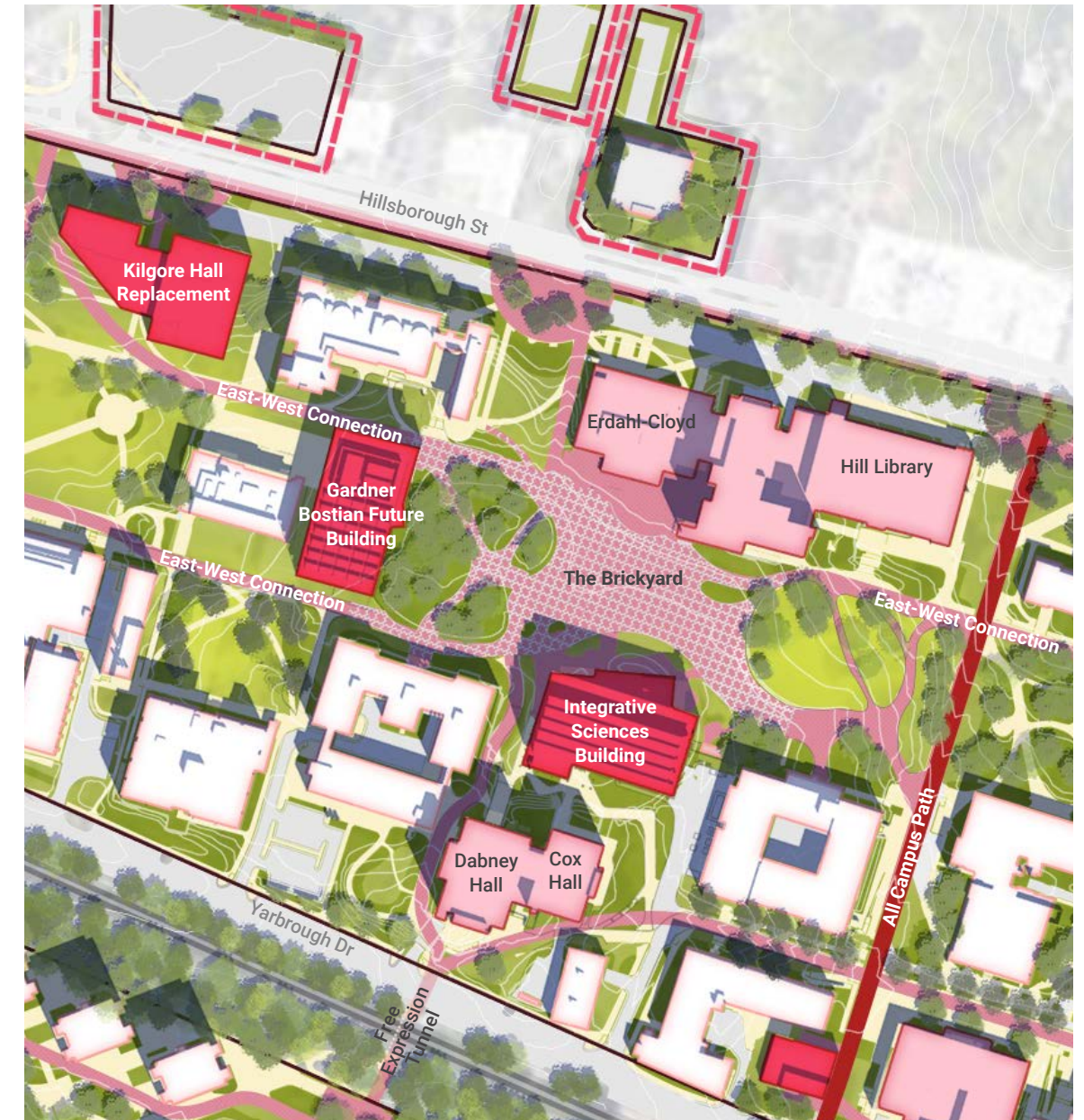
uses and building transparency, helping to increase vibrancy in this area, especially during evening hours. The potential facility is positioned to improve east-west pedestrian movement and better connect NC State's network of campus open spaces.

Kilgore Hall Replacement

Kilgore Hall is in significant need of repair or replacement within the next ten years. A new building is suggested in this location to better support academics and research, as well as increase density in this area of campus. The potential facility addresses Hillsborough Street to the north while also adding porosity from this important campus edge. The building also frames a new east-west pedestrian connection from Hillsborough Street to Governors Scott Courtyard and onto The Brickyard.

Dabney & Cox Halls

Renovation is scheduled for Dabney Hall, which includes building systems upgrades and building envelope repair. Future renovations will consider systems improvements in Cox Hall as well.



THE BRICKYARD HUB



Hill Library Renovations

Hill Library underwent significant renovations in 2020 to dramatically improve the second and third floor spaces, including the addition of an open stairwell, Academic Success Center, and increased study spaces. A study is currently underway to explore additional renovations to the remaining floors with a focus on additional collaboration space and flexible, multi-purpose areas.

Due to significant enrollment growth, the Erdahl-Cloyd Wing of Hill Library requires a transformative renovation to increase the amount of dining and seating available, by opening up and connecting the Hillsborough Street level to The Brickyard level below. The intent is to provide increased seating which can accommodate multiple uses.

The Brickyard Site Improvements

The Brickyard is culturally and functionally significant as a gathering and events space at the center of North Campus. Potential site improvements keep the original intent of The Brickyard intact while improving stormwater management and accessibility.

East-West Campus Connections

Several significant landscapes exist in the North Campus Precinct, including Memorial Belltower, Mary Yarbrough Courtyard, The Court of North Carolina, Gardner Arboretum, The Brickyard, and Governors Scott Courtyard. The pathways between these great spaces, however, are often disconnected and underwhelming. The Plan suggests strengthening these connections by removing north-south vehicular streets, opening up links west of The Brickyard, and converting Stinson Drive to a campus multi-modal path.

All Campus Path Connection to Centennial

Connecting multiple modes of non-vehicular transit quickly and directly between North + Central and Centennial Campus Precincts is a difficult issue due to multiple barriers and breaks in the travel path between the two.

The Plan proposes an All Campus Path, a multi-modal path, to link from Hillsborough Street to Centennial East campus and Dix Park beyond. To accomplish this long-term vision, Broughton Drive is converted to a pedestrian path, a new bridge connects to the fourth floor of Talley Student Union over the railroad tracks, Morrill Drive is reconfigured, and the Avent Ferry crossing at Western Boulevard is improved. Partnership with future redevelopment of the Mission Valley property would allow the path to continue directly to Centennial Campus and beyond.

THE BRICKYARD

With active first floor uses and social spaces that connect inside to outside the buildings, the Brickyard can continue to be a vibrant space and the center of activity for campus.



Bioswales Infiltrate,
Slow, and Clean Runoff
Close to the Source

The new ISB
Building Opens
onto the Brickyard

Exterior Hearths to
Buildings Create
Informal Learning
Spaces

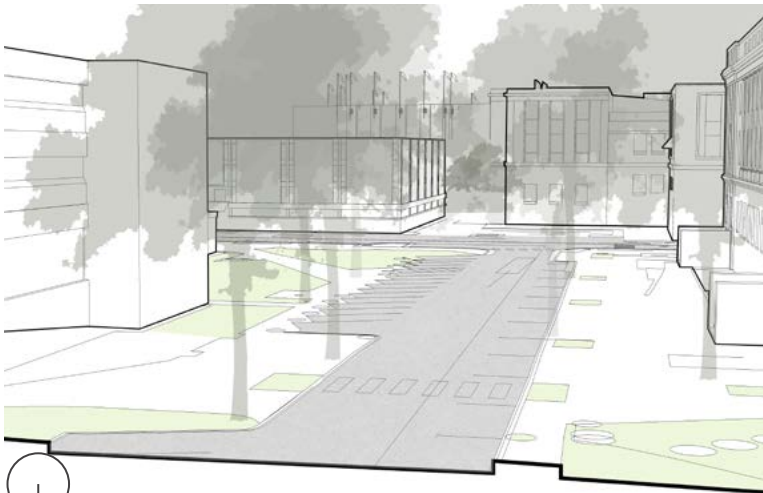
The Brickyard Incorporates
Sustainable Strategies for
Stormwater Management

Exterior Hearths to
Buildings Expand
Hangout and Informal
Learning Spaces

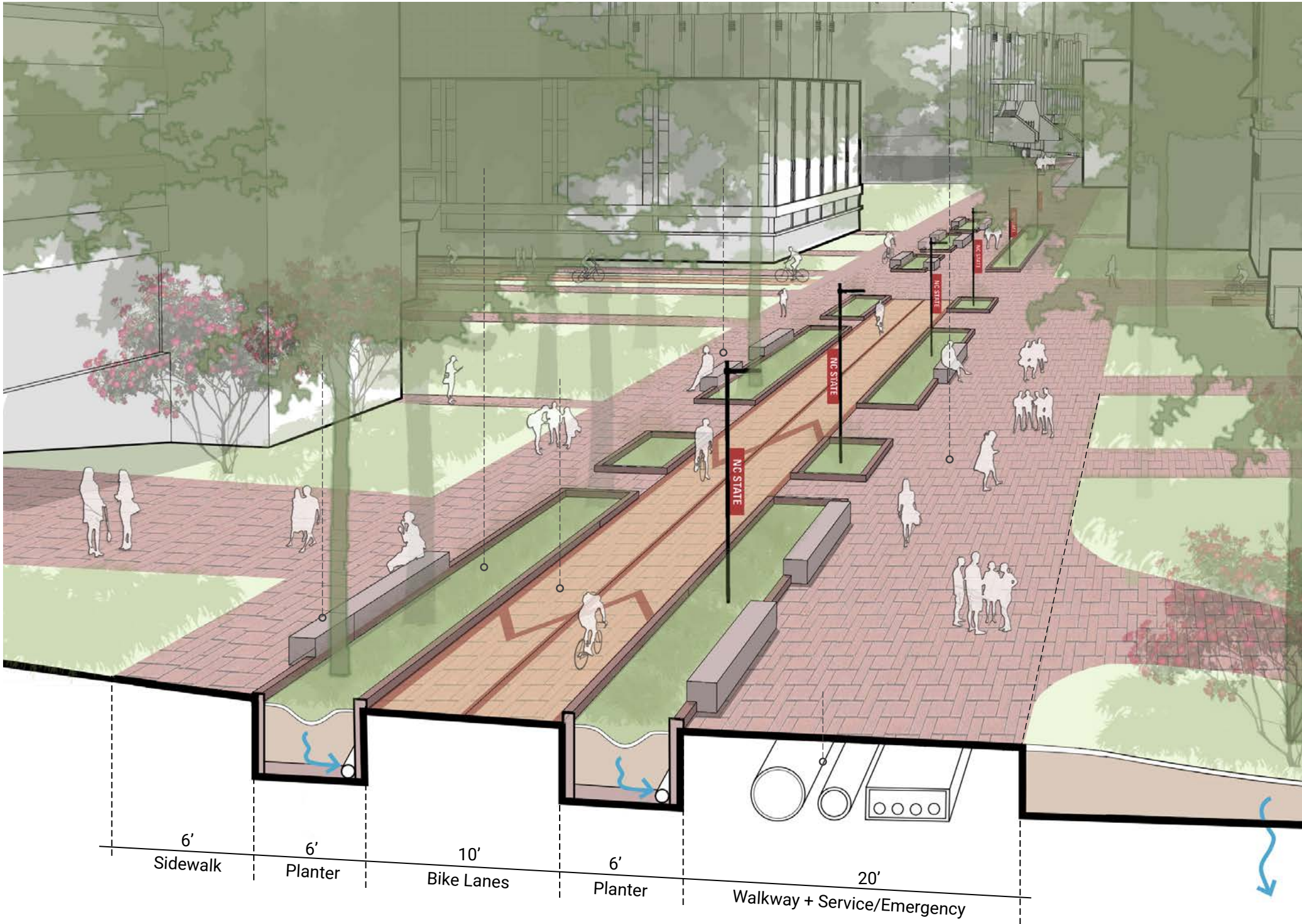
BROUGHTON DRIVE

An opportunity exists to establish Broughton Drive as the primary northern portion of the All Campus Path system connecting Campus Precincts. The roadway currently prioritizes vehicles and parking.

The Plan suggests to convert Broughton Drive to a pedestrian-first environment with dedicated space for non-motorized transportation such as bikes and scooters. As with all street conversions on campus, Broughton Drive will continue to allow access to service vehicles, emergency vehicles, and ADA parking. The path will provide connectivity from Hillsborough Street, south to the potential bridge to Talley Student Union. This creates a gateway at Hillsborough Street, enhancing entry onto campus and signaling the start of the connector.

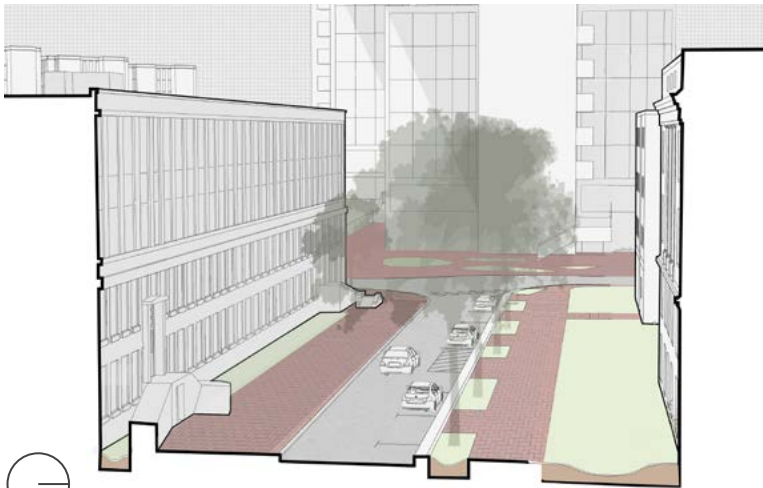


Broughton Drive Existing Conditions

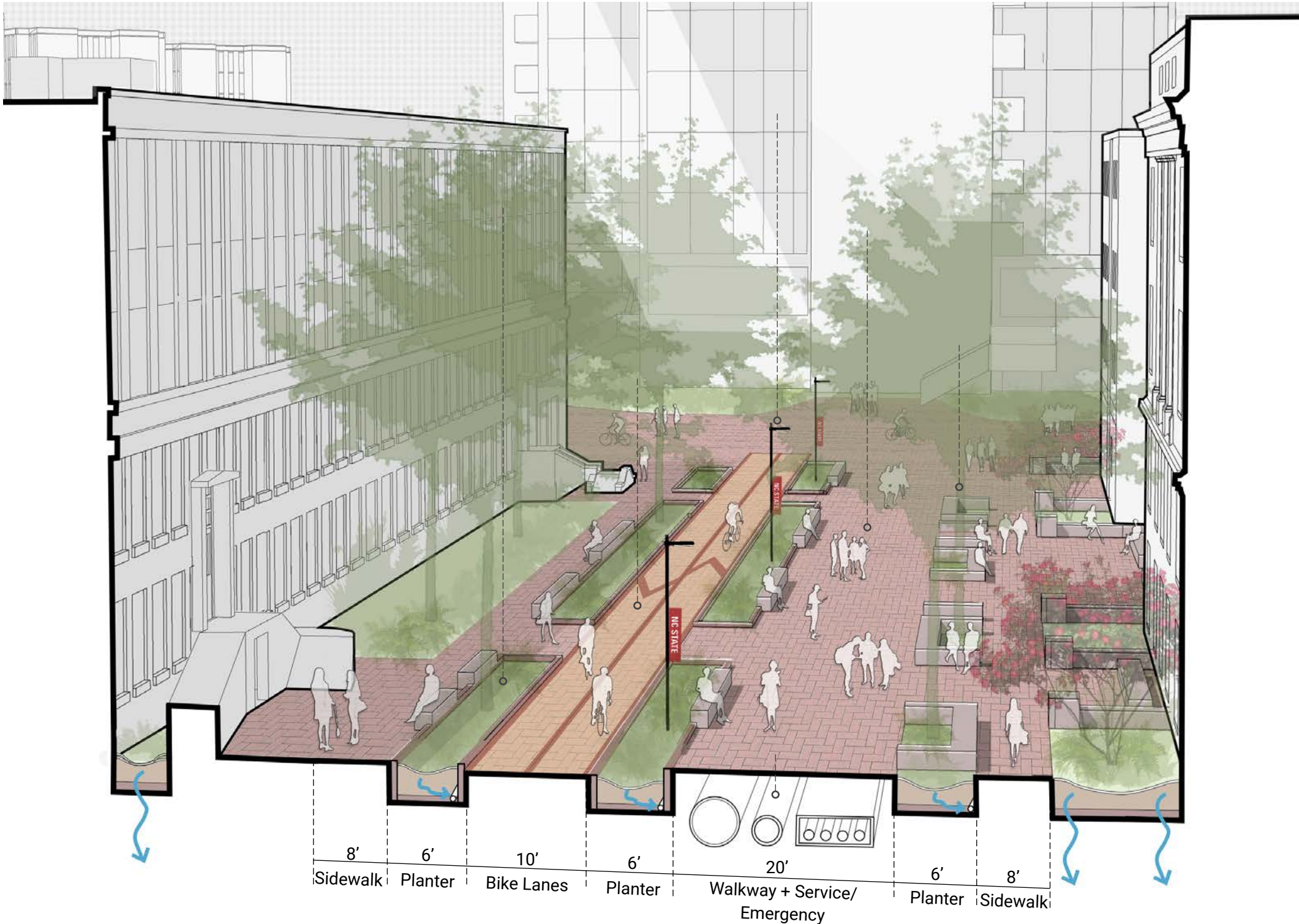


STINSON DRIVE

Stinson Drive, in its current state, can best be described as a linear parking lot. However, during class change, the roadway becomes filled with hundreds of students moving east and west across the North Campus Precinct. With the focus on creating a pedestrian-first environment, the Plan suggests removing vehicles and parked cars from the street, while maintaining access for service vehicles, emergency vehicles, and ADA parking. The potential Stinson Drive cross-section uses a common kit of parts and material selections to create a unified approach to mobility across campus. The drive prioritizes pedestrians while also allowing dedicated space for bikes and scooters through contraflow lanes. In addition, the roadway incorporates new strategies for stormwater management, lighting, branding, and social space.

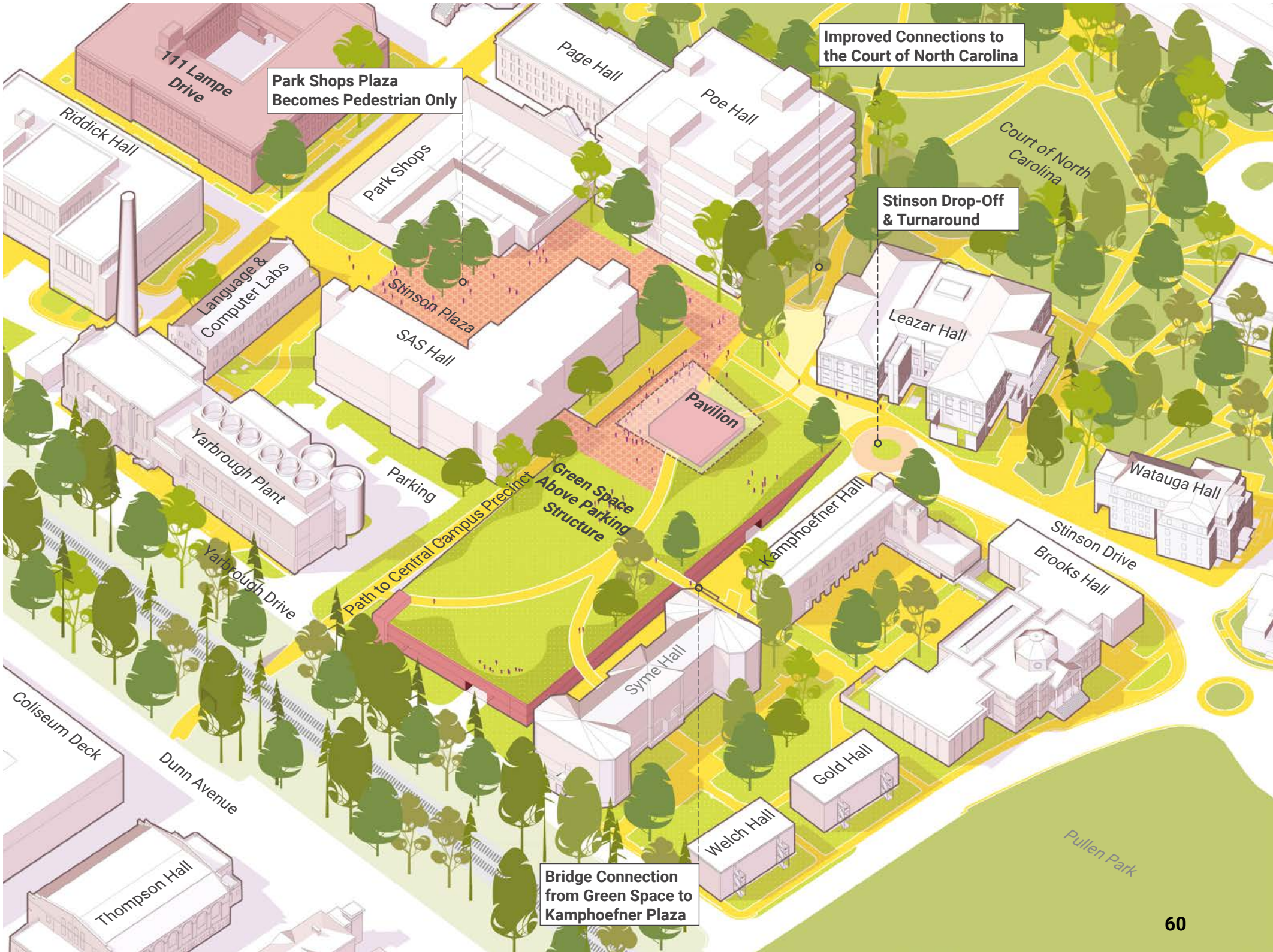


Stinson Drive Existing Conditions



STINSON EAST HUB

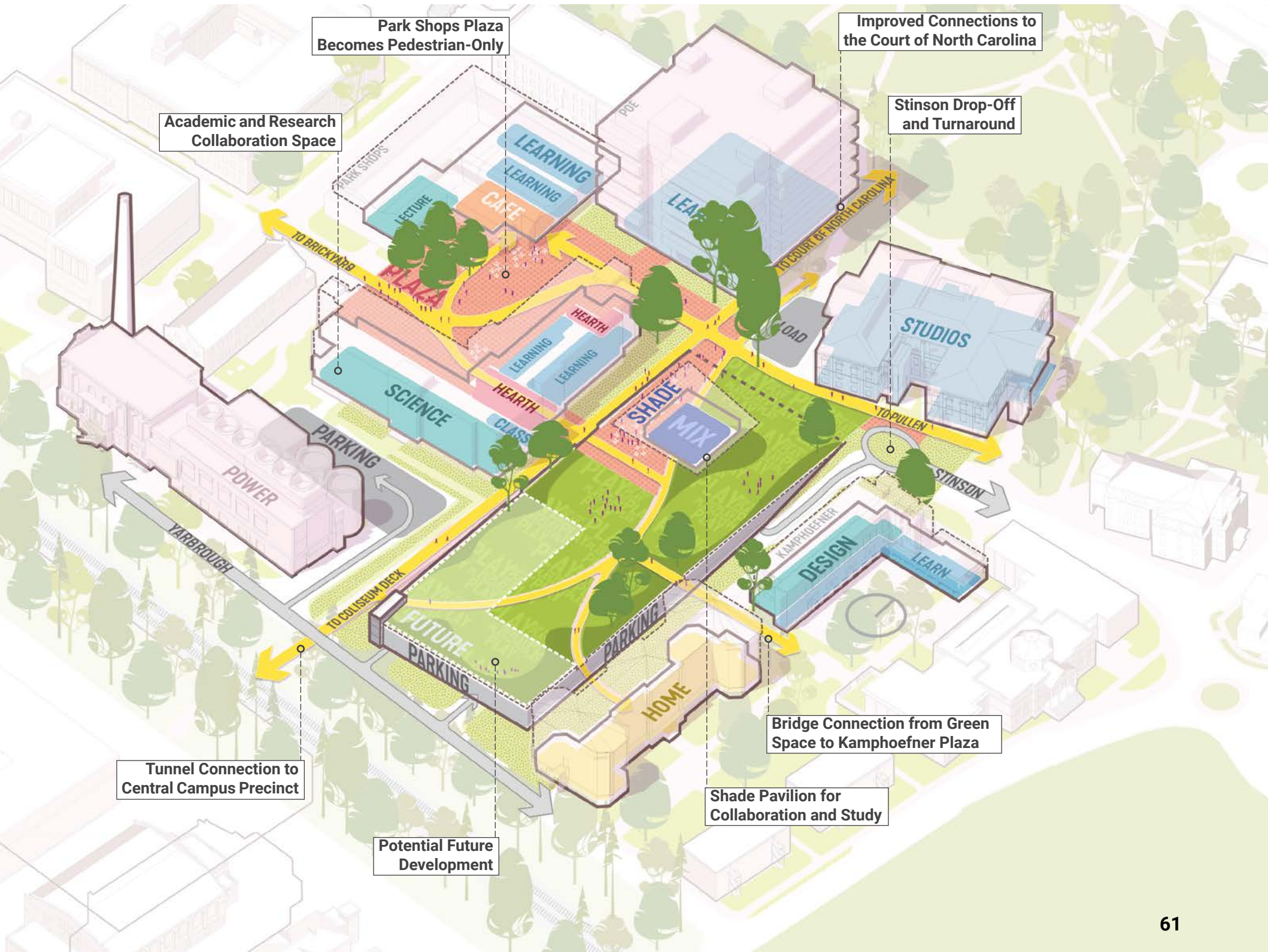
The area defined here as Stinson East encompasses the former Riddick Stadium site which now exists as a surface parking lot. This parking area lies far below the grade of Stinson Drive and challenges pedestrian connectivity between facilities. An opportunity exists to transform this area into a vibrant green space while also preserving it as a valuable parking resource.



STINSON EAST HUB

Stinson East Hub seeks to better unite design with social sciences through the creation of a space on the eastern side of North Campus that encourages gathering, collaboration, and the exchange of ideas. A new open space positioned at the same grade as Stinson Drive will provide connectivity between facilities and serve as a much needed focal point for this area of campus.

The new green space will feature a collaboration pavilion providing space for students, faculty, and staff to come together. All of this will be positioned atop a parking structure in order to maintain parking access in this portion of campus. The space also allows for the expansion of academics on the southern end of the Hub if the need arises in the future. Stinson East Hub will foster increased collaboration across disciplinary boundaries.



STINSON EAST HUB

Yarbrough Drive

The Plan suggests connecting Yarbrough Drive behind the Yarbrough plant out to Pullen Road. This move is the catalytic project that allows service to occur from Yarbrough, meaning that many of the interior streets on North Campus Precinct can then be converted to pedestrian pathways.

Parking Structure, Green Space, and Pavilion

The new parking structure on top of existing Riddick Lot will accommodate all of the parking in this location today, as well as the parking from the removed streets on North Campus. Entry and exit will occur at Stinson Drive and Yarbrough Drive.

Mann Hall

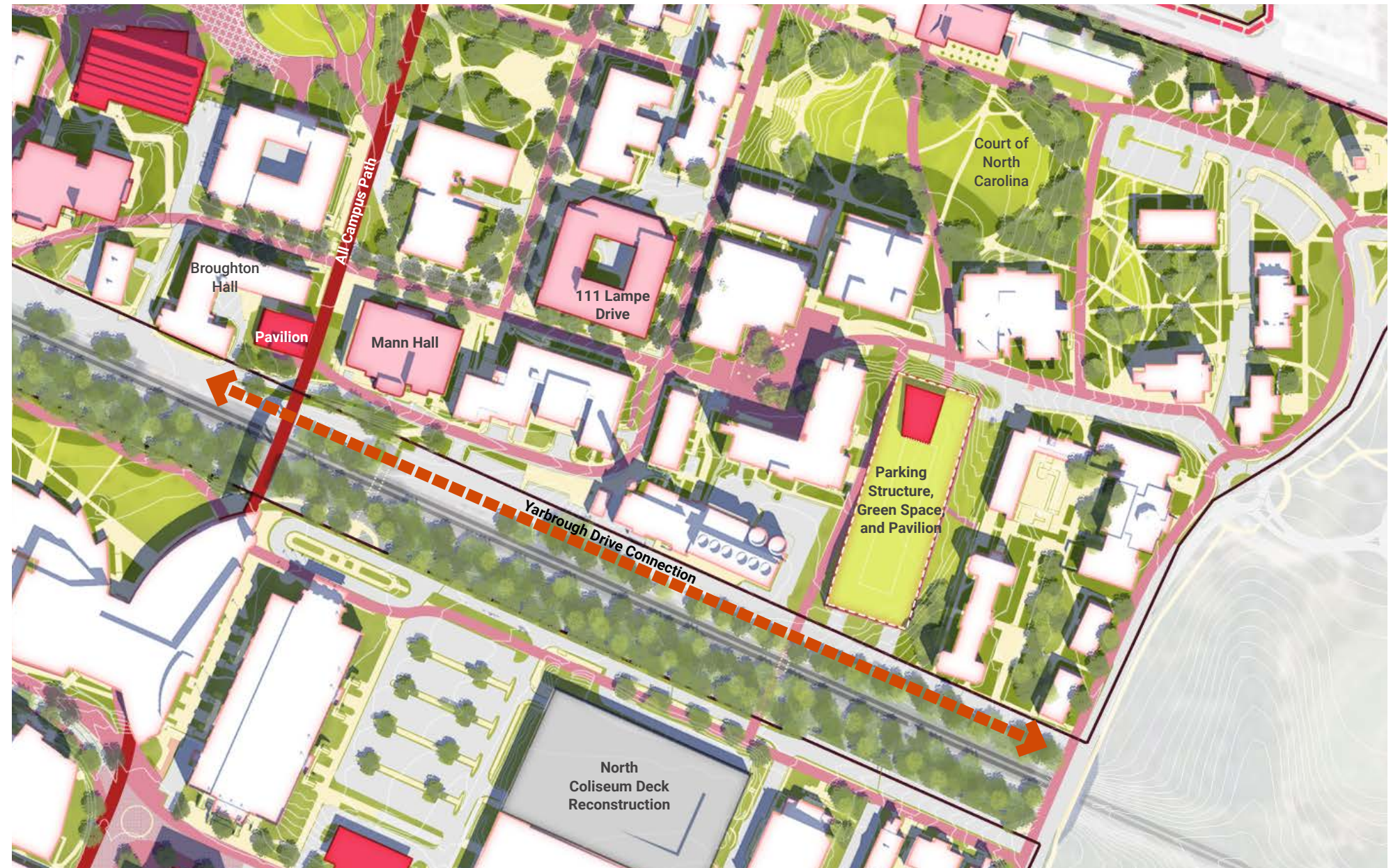
Constructed in 1964, Mann Hall serves the College of Engineering and is currently slated for renovation. It will be the instructional home for first and second-year courses in the undergraduate engineering and computer science degree programs and will provide an "Engineering Gateway" experience on the North Campus Precinct.

111 Lampe Drive

As the former home to part of the College of Engineering, 111 Lampe Drive is slated for extensive renovation and transformation, with the first floor already renovated to house part of the College of Design.

Broughton Hall

The Broughton Hall Diesel Wing will be demolished and replaced by a small pavilion at the Talley Bridge entrance. The remainder of Broughton is renovated for classroom and lab space.



CATES AVENUE

Cates Avenue provides a critical east-west connection in the Central Campus Precinct with numerous student life facilities located along this corridor. In addition, Cates Avenue also serves as a key arrival point for visitors to campus. Presently, the roadway prioritizes vehicular traffic. The Physical Master Plan suggests transforming Cates Avenue into a complete street more effectively supporting vehicles, pedestrians, and cyclists simultaneously.

The Plan recommends maintaining two-way drive lanes while removing most parking, with dedicated areas for pick-up/drop-off and service parking. Temporary access is intended at key times during the year to allow for move-in/move-out parking. The potential approach results in a wider, livelier, and safer pedestrian environment along the corridor.



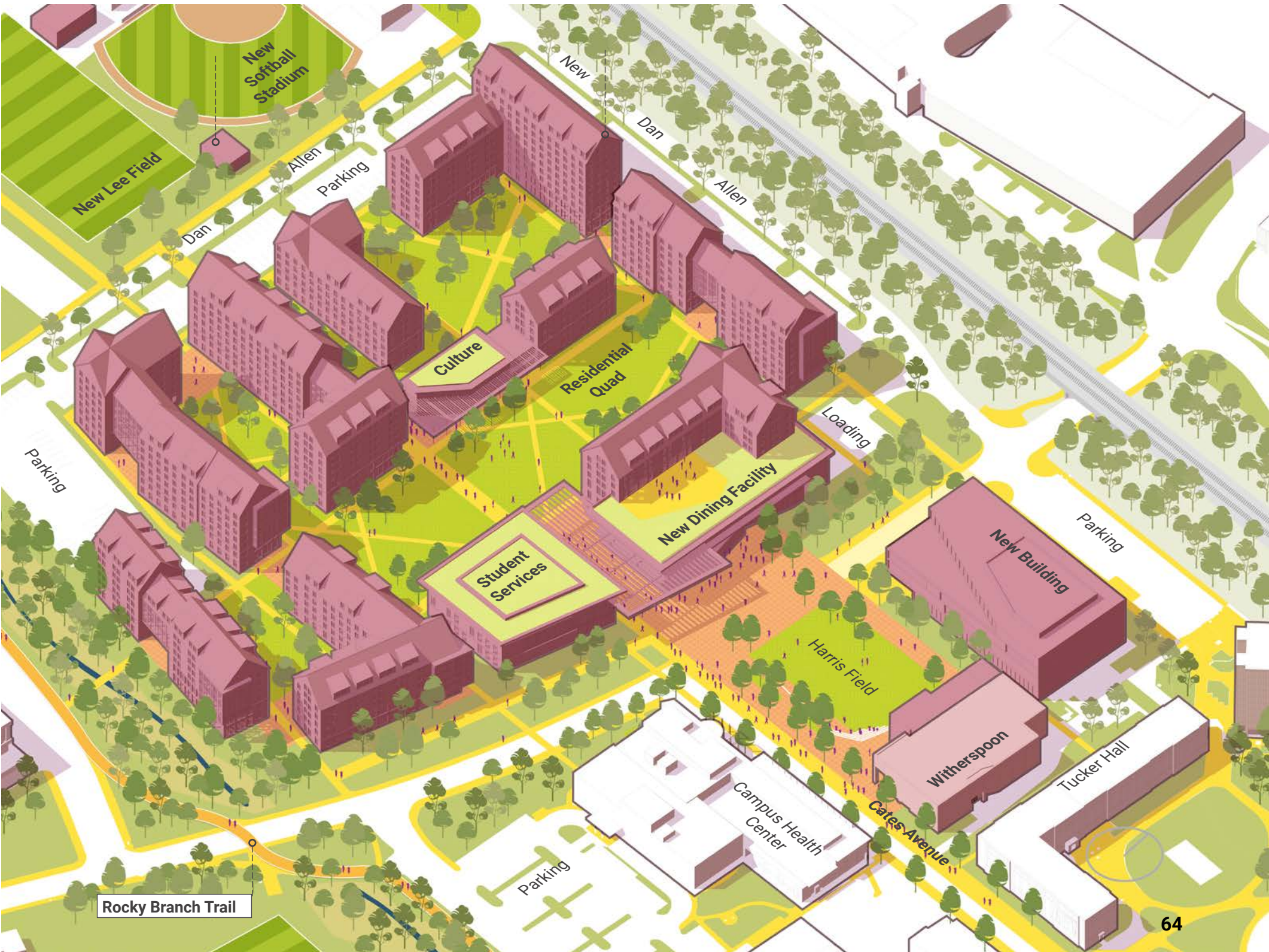
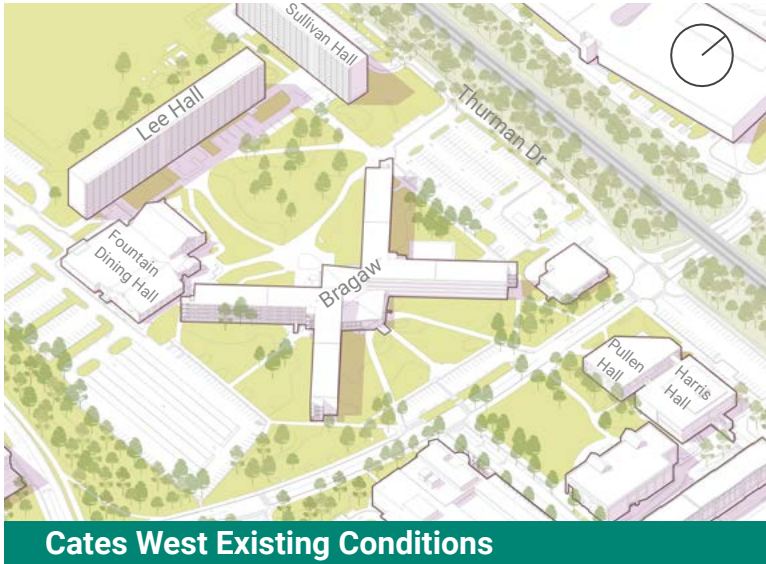
Cates Avenue Existing Conditions



CATES WEST HUB

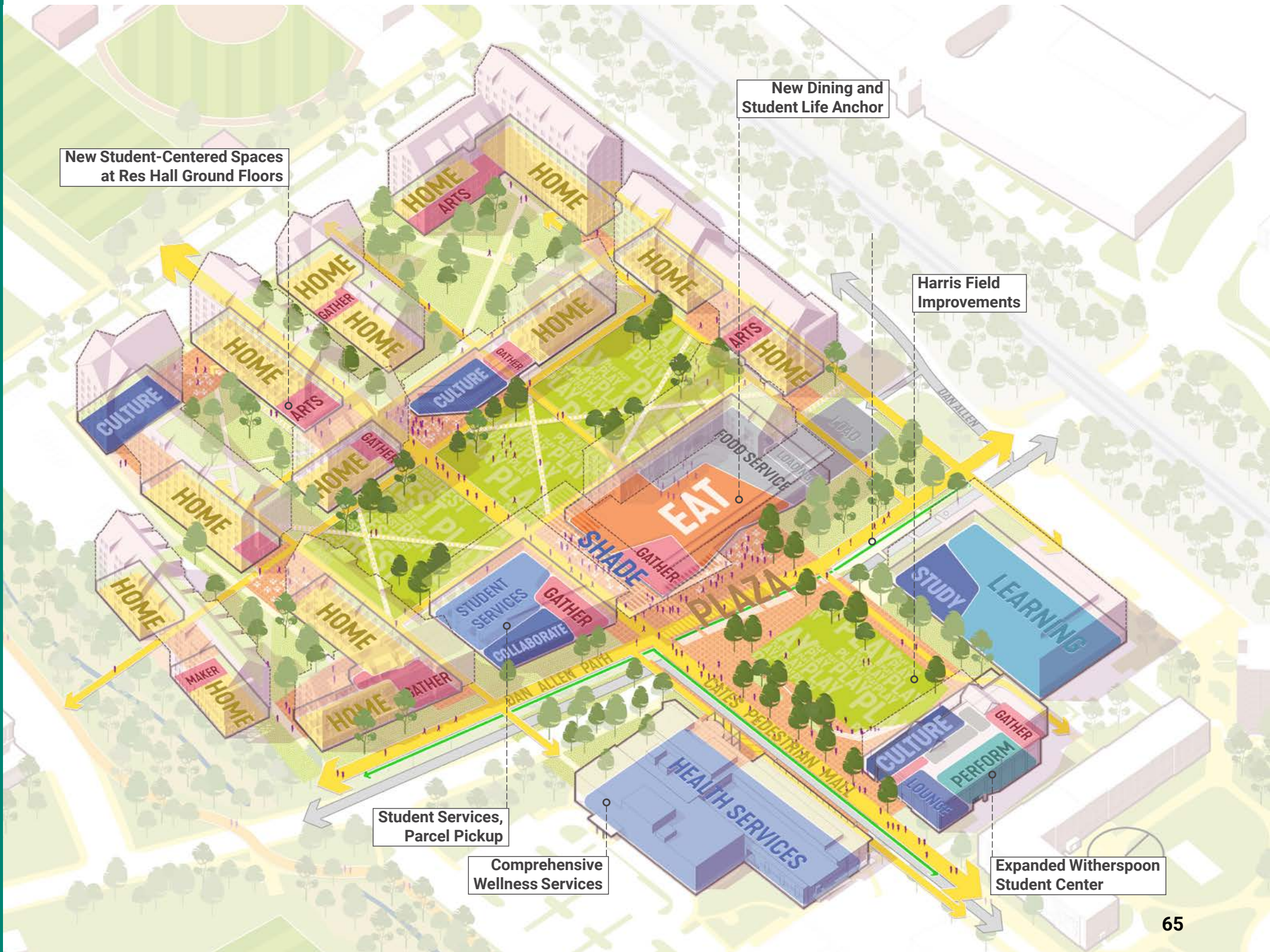
Cates West provides a formative experience for many NC State first-year students as the neighborhood supports the greatest concentration of undergraduate housing on campus. Many of these residence halls lack adequate accessibility and modern student life amenities. The buildings exist largely as objects in the landscape with little relationship to one another.

This area also includes the primary residential dining facility on campus, Fountain Dining, which is outdated and over-capacity. The Campus Health Center, Witherspoon Student Center, and various student services located within Pullen and Harris Halls are also located within this area. The Plan presents a transformative vision for this neighborhood focused on supporting shared uses and fostering a stronger sense of community and connectivity.



CATES WEST HUB

A top priority of the Physical Master Plan is to reimagine the student experience by establishing a Hub at Cates West. The intent is to look holistically at this area to ensure it effectively supports the health and well-being of all students. This approach elevates Cates West’s current role as the “campus living room” by creating a new residential neighborhood reflective of NC State’s values. It celebrates the range of activities and uses within this Hub, centered around the creation of student gathering areas and open space. A new dining facility and student services building anchors Cates Avenue, and is balanced by the renovation and expansion of Witherspoon Student Center.



CATES WEST HUB

A NEW STUDENT LIFE EXPERIENCE AT CATES WEST

The residential village that is situated west of Dan Allen Drive and includes Bragaw Hall, Lee Hall, Sullivan Hall, and Fountain Dining Hall supports the highest concentration of on-campus student housing at NC State. The quality of these facilities is no longer sufficient to adequately address student life needs. Lee and Sullivan Halls lack ADA accessibility, and Fountain Dining Hall is significantly undersized and outdated. These buildings were constructed to occupy space rather than frame it, resulting in a development that fails to optimize the land and presents a more suburban feel in contrast to the rest of the precinct development patterns.

As one of the most significant catalytic projects identified in this planning effort, the entire area west of Dan Allen is reimagined as a new Residential Life Hub that supports students in multiple ways by better connecting Cates Avenue, Harris Field, and Witherspoon Student Center together to create a dynamic Hub of student activity on the west side of the Central Campus Precinct.

To encourage a more reliable and resilient approach to development, sustainable strategies are employed throughout the neighborhood including geothermal energy, wastewater heat exchange, advanced metering, demand-controlled ventilation, rainwater capture, energy exchange, solar orientation, and photovoltaics.

New Residential Village

As part of a multi-phase, multi-year approach, over 2,000 new beds are suggested to help reimagine the student experience in this area of campus. In addition, space is suggested on the first floor of each residence hall to support student uses, including but not limited to, study, collaboration, learning, arts and culture, maker space, and large gathering/hangout areas which will help to create community and bring students together. Different types of social interaction spaces are mixed throughout the neighborhood to help foster social well-being and create a dynamic, vibrant atmosphere throughout the day. Buildings are configured to allow for multiple exterior courtyards that vary in size and function, accommodating both passive and active recreation.

Dining & Student Services Building

Prominently located at the west terminus of the main student life corridor along Cates Avenue, a new Dining Facility is suggested to anchor the Cates West Hub and provide a vastly enhanced dining experience. The new, modern facility will allow for more dining options and menu flexibility, while also providing additional space for other uses outside of dining hours. The new multi-level Dining Facility will be paired with student-facing services and functions. This has the potential to provide space for some, or all of, the programs in Pullen, Harris, and West Dunn Halls today. Programs that do not require direct interaction with students could potentially be relocated elsewhere on campus. The intent is to position the new building so that it creates a strong physical connection between Cates Avenue and the residential neighborhood, becoming a natural gathering space.



CATES WEST HUB

Witherspoon Student Center Renovation & Addition

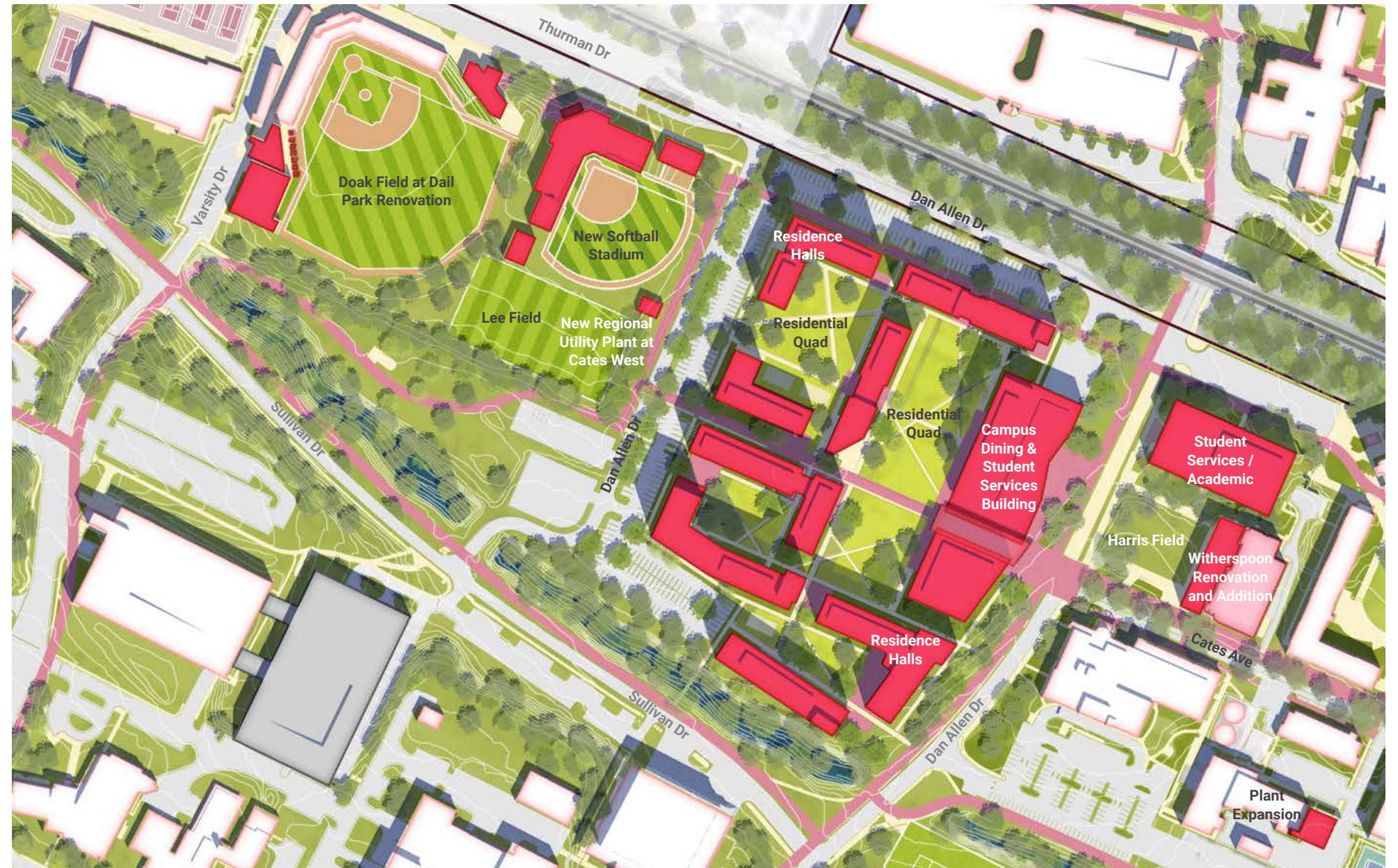
The Witherspoon Student Center is the home to the African American Cultural Center, Student Media Center, Military & Veteran Resource Center, and Cinema. Significant renovations are needed to achieve the vision of providing a welcoming, vibrant, and safe place for students, faculty, staff, and community members of diverse race, ethnic, and experiential backgrounds to gather and engage for cultural, intellectual, and community enrichment and support.

Harris Field Academic Building

Pullen Hall currently houses Student Affairs and operations for Student Housing, while Harris Hall serves as the primary student service resource hub for NC State students. As a long-term strategy, the goal is to migrate many of these student services to either a new Dining & Student Services Building or elsewhere on campus. This would allow these buildings to be replaced, potentially with a new academic facility that will further add to the diverse mix of campus uses in this area. The front door of a new building would ideally be placed to open onto Harris Field, framing and adding activity to this important space.

Cates Utility Plant Expansion

The Plan identifies the need to expand capacity of the existing Cates Utility Plant. Recommendations include a building expansion to the east and additional cooling towers adjacent to those already existing, south of the plant.



CATES WEST HUB

New Regional Utility Plant at Cates West

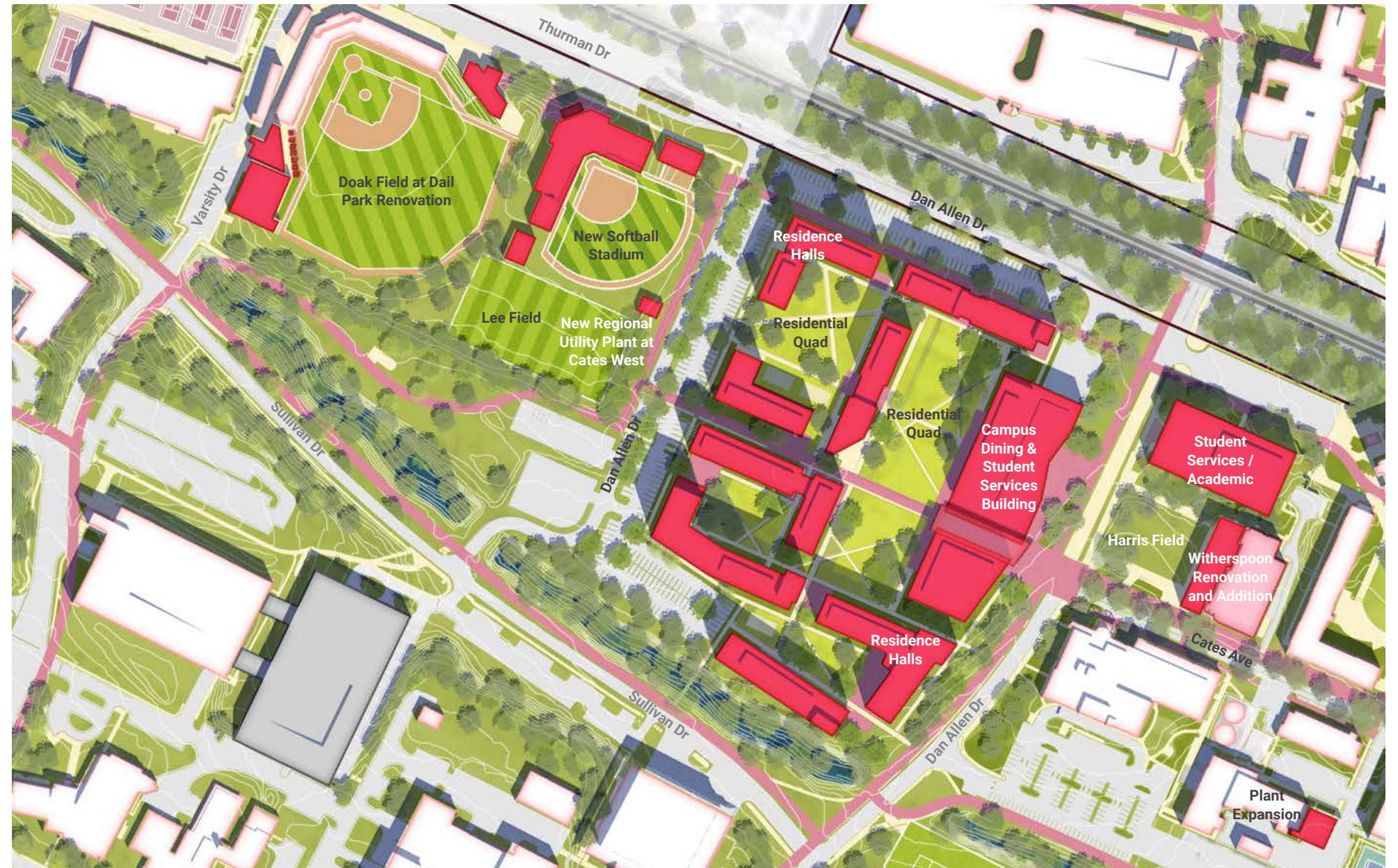
To accommodate the potential residential neighborhood at Cates West, a new regional (energy exchange) utility plant is suggested. This new plant would also be tied to existing campus utility infrastructure to serve daily peak demand and increase long-term reliability.

Doak Field at Dail Park Renovation

The Plan suggests the renovation to redefine the recruiting experience and enhance the student-athlete as well as the fan experience. Potential improvements include a new indoor practice and hitting facility, new NC State Clubhouse, bullpens, and outfield porch seating, new concessions, restrooms, retail and ticketing, press box, premium seating, and shade canopy.

New Softball Stadium and Lee Field

As part of a long-term strategy, a New Softball Facility is to be located east of Dail Park, on what is currently Lee Field. The new Softball Stadium will provide appropriate operational facilities needed by Athletics to create a modern facility with an exciting game day experience. Lee Field is reoriented and located south of the new Softball Stadium and will continue to be used for campus and community use.

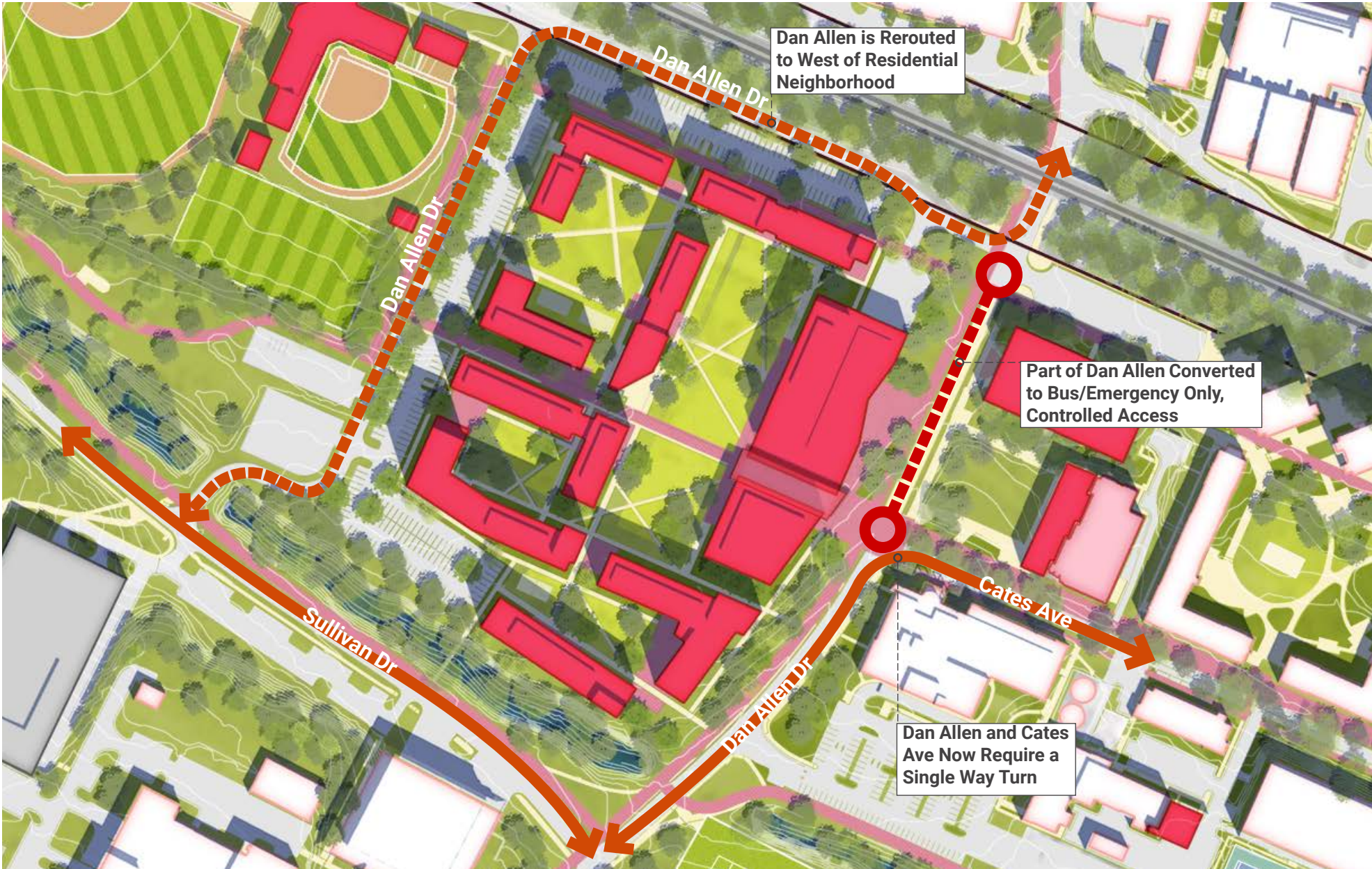


CATES WEST HUB

Dan Allen Drive Reconfiguration

Dan Allen Drive bisects Central Campus Precinct from north to south near the largest concentration of undergraduate student housing on campus. It also serves as the terminus for Cates Avenue. Over the years, various strategies have been explored to minimize vehicular traffic and improve pedestrian safety in this area of campus, yet concerns still exist today.

As part of the Cates West Neighborhood Hub concept, the Physical Master Plan suggests re-routing a portion of Dan Allen Drive, as shown in the image to the right, to allow for increased pedestrian and physical connectivity in this area of campus. The proposal allows northbound traffic to turn right onto Cates Avenue and also maintains bus circulation as needed to support multi-modal transit initiatives. This strategy will also help foster a stronger sense of community within this neighborhood.



CATES WEST PLAZA

Cates Ave, Witherspoon, Harris Field and the Cates West redevelopment will prioritize pedestrians and create an active social environment for students.



A New Shade Pavilion at the Dining Hall Expands Dining and Outdoor Hangout Space

Bioswales Infiltrate, Slow, and Clean Runoff Close to the Source

Open Spaces Provide Space for Collaboration and Foster a Greater Sense of Community

Connected Bicycle Paths Link to Other Campus Precincts and Community

RESIDENTIAL VILLAGE

The interior courtyards of Cates West include an active and transparent mix of first floor uses, the creation of multi-use courtyards and open spaces, and sustainable stormwater and energy features to create social interaction.



The Outdoor Overhead Canopy Expands the Hangout Space

Bioswales Infiltrate, Slow, and Clean Runoff Close to the Source

Open Spaces Provide Space for Collaboration and Foster a Greater Sense of Community

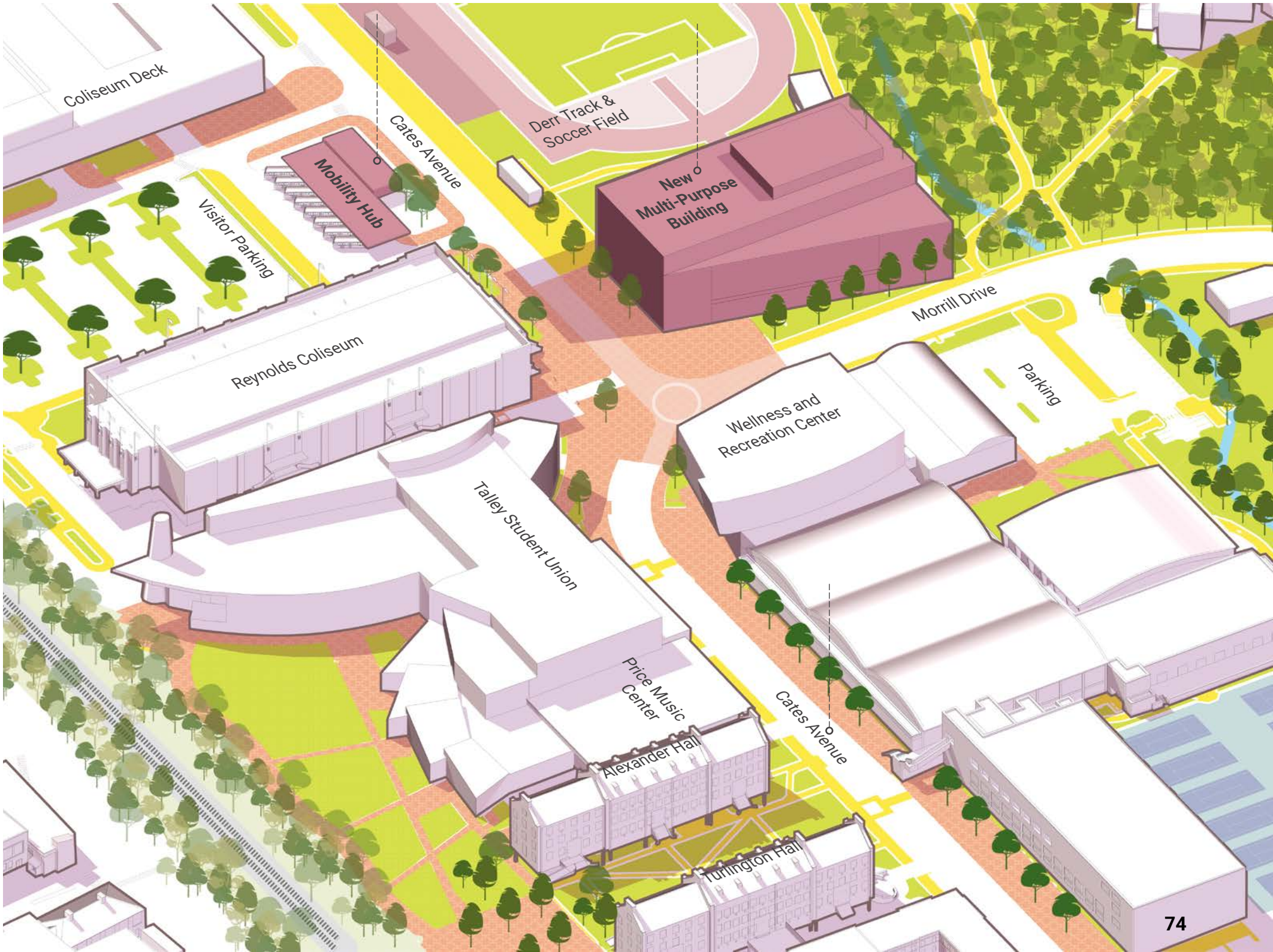
Geo-Exchange System to Support Heating and Cooling for Buildings

CATES EAST HUB

The intersection of Cates Avenue and Morrill Drive serves as a primary gateway for visitors to campus. Significant investment has been made to adjacent facilities to strengthen this arrival experience. An opportunity exists to further enhance this area of campus with the development of a new multi-purpose dining/wellness/athletic facility, as well as a new mobility hub.



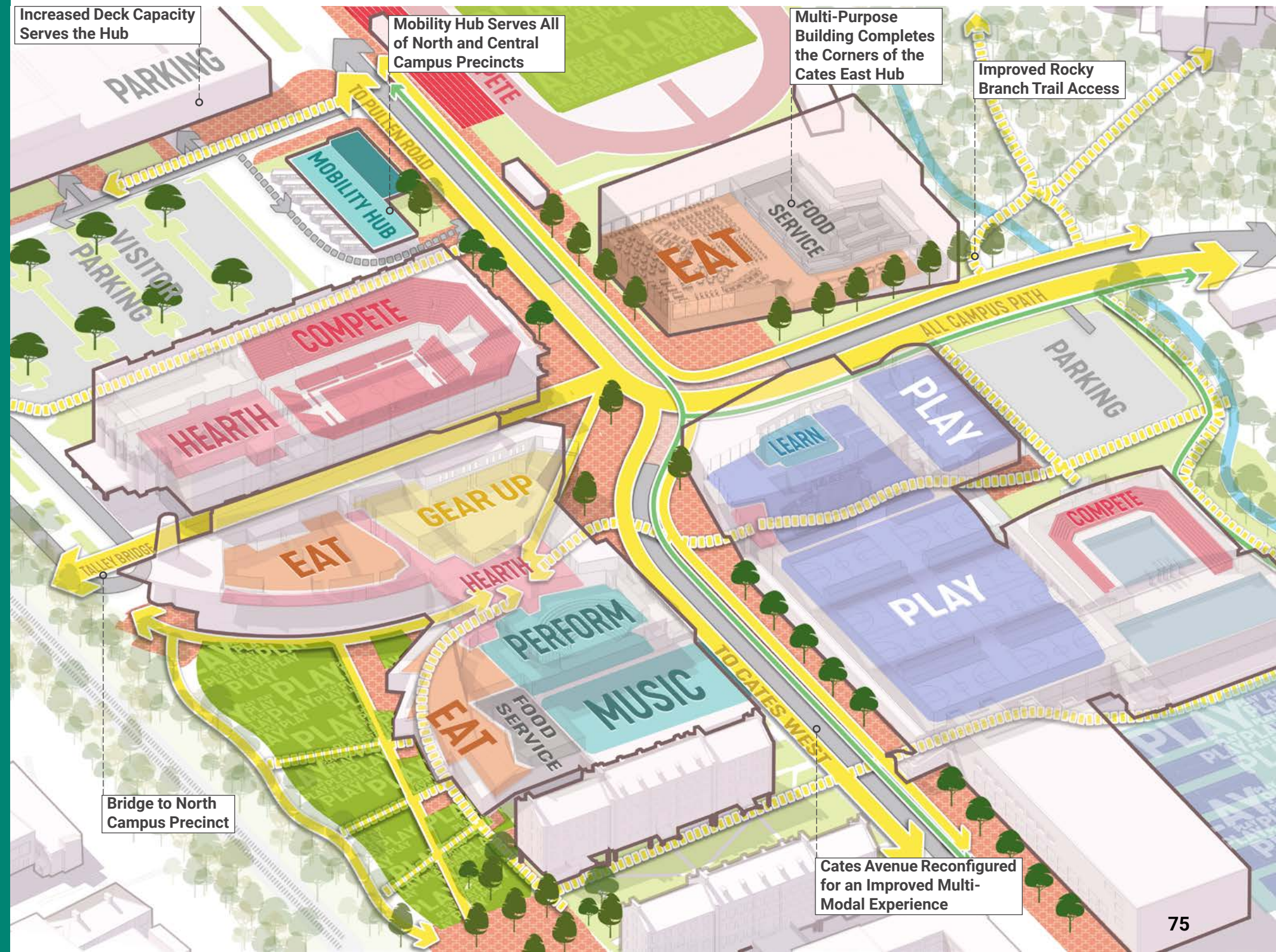
Cates East Existing Conditions



CATES EAST HUB

Cates East Hub reinforces the importance of wellness through support of a sound mind and sound body. The Hub highlights the significant inter-relationship of uses within this neighborhood which span the performing arts, athletics, recreation, and academics. A new multi-purpose facility on the southeastern corner of Cates Avenue and Morrill Drive provides a modern dining hall in conjunction with an athletics expansion, anchoring this prominent intersection.

In addition, the Plan suggests a mobility hub to strengthen connections across campus, providing access to multiple transit modes. This is in conjunction with roadway enhancements on both Cates Avenue and Morrill Drive to support a better pedestrian experience and promote increased connectivity to the South Campus. A new pedestrian bridge from Talley Student Union is also suggested to improve connectivity to North Campus.



CATES EAST HUB

CREATING MULTI-PURPOSE SPACE AT CATES EAST

Dail Softball Stadium, Case Dining Hall and Academic Center, and Clark Dining Hall have long served the student experience and athletics in this area of campus. In recent years, the new Talley Student Union, Wellness and Recreation Center, and renovated Reynolds Coliseum have elevated Cates East as a significant student life hub on the NC State campus. Because of these recent developments, Dail Softball Stadium and Case Dining Hall are no longer serving the highest and best use of the land in this location.

New Multi-Purpose Facility

As part of the long-term vision for this location, a new Multi-Purpose Facility is suggested, which will provide a large, new dining facility to replace Case and Clark Dining Halls. The intent is to enhance the overall experience both for the general campus population as well as for athletics and the student athlete. The facility is intended to include athletic uses such as sports performance, training space, offices, an Academic Center, and other academic and student life uses. The building is sited to preserve views to Reynolds Coliseum on the approach from Morrill Drive to add to the dynamic hub of activity at this important intersection on campus.

Mobility Hub

In the Central Campus Precinct, the primary bus drop-off and pick-up currently take place along Morrill Drive south of Carmichael Recreation Center. As Case Dining Hall and the Academic Center are relocated to a new Multi-Purpose Facility, the Plan suggests a new Mobility Hub in its place

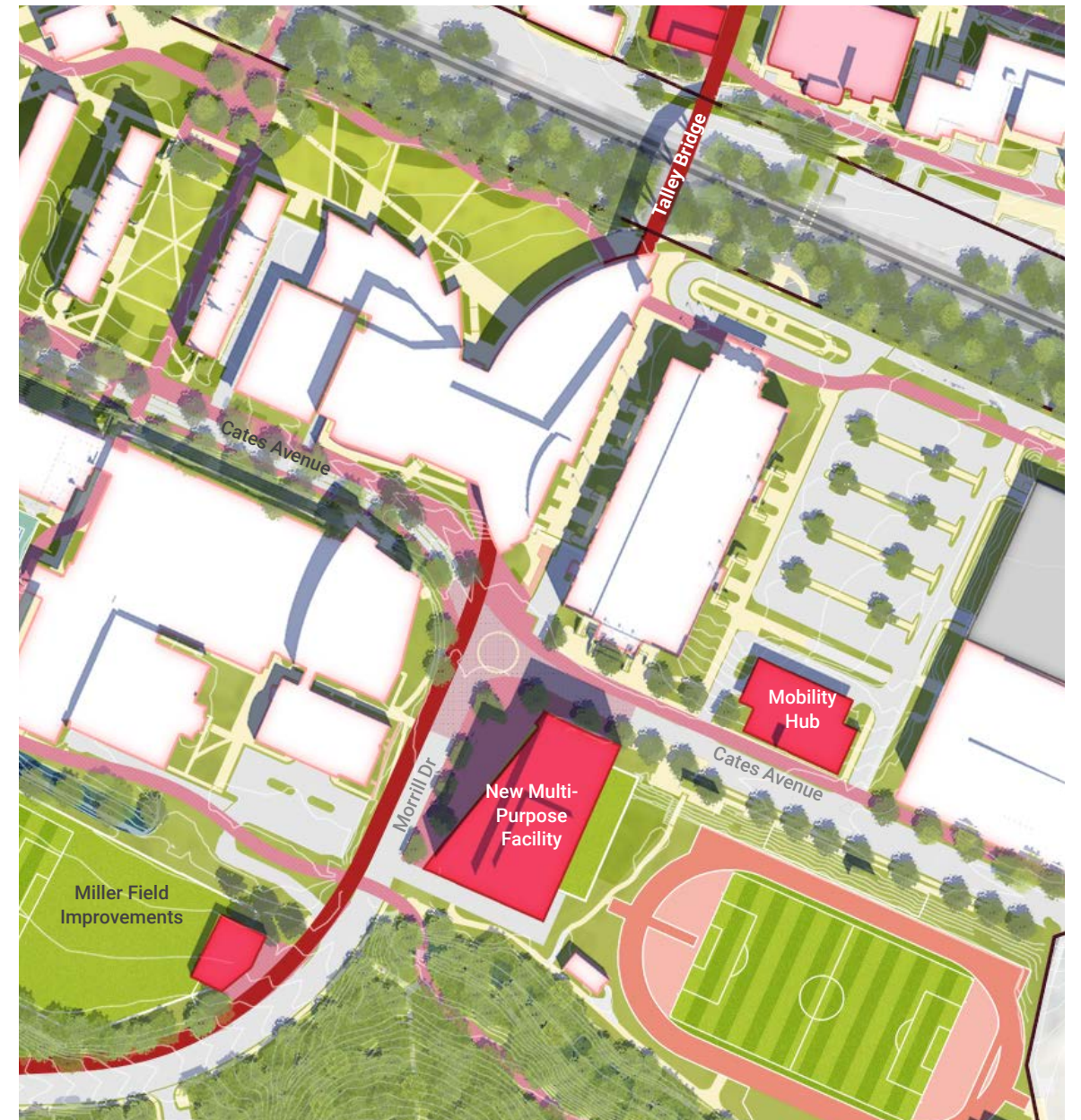
along Cates Avenue. The Mobility Hub would provide bus service for multiple routes, micro-mobility drop-off and pick-up, ride sharing pickup locations, e-charging stations, visitor information, and restroom facilities. This location puts users in the heart of the Cates East Hub, allowing individuals to easily navigate to all other areas of campus quickly and efficiently.

Talley Bridge

The railroad tracks present a major challenge, dividing North and Central Campus. Along with the tracks, a thick stand of trees along the railroad corridor makes visual connection between the two nearly impossible. The Plan suggests a new bridge that connects the fourth floor of the Talley Student Union, which was designed to accept this bridge, to the back side of Broughton Hall. The Broughton Hall Annex is suggested for demolition, which will allow the bridge landing to align with the improved Broughton Drive pedestrian path, which is part of the All Campus Path.

Miller Field Improvements

Miller Field hosts much of the outdoor Intramural Sports program at NC State, which leads to overuse and degradation of the fields. Miller Field lacks restroom and equipment rental and storage facilities. The Plan locates these new facilities along Morrill Drive for ease of access from Cates East. Recommendations also include replacement of the natural grass with synthetic turf for Miller Field. This will increase the hours of use and efficiency of the fields for recreational uses.



TALLEY BRIDGE

A new bridge connecting Broughton Drive to Talley enhances the All Campus Path that links North, Central, and Centennial Campus Precincts. Selective tree removal opens view corridors to Stafford Commons while on the bridge, and visually links North and Central Campus Precincts.



The Covered Bridge Provides Protection from the Elements

The Technology Tower at Talley is an iconic landmark and orienting element on campus

Talley Bridge Creates an All Campus Path Connection from North to Central Precincts



Visual Connectivity

Selective Tree Removal Opens Visual Access Between North and Central Campus Precincts

CATES EAST

The new multi-use building will optimize land use, create additional dining capacity, consolidate athletic success programs, build upon the established student uses, and frame views to Reynolds Coliseum, one of NC State's Hallowed Places.



The Plaza at the
Intersection Strengthens
the Arrival Experience

Bioswales Infiltrate,
Slow, and Clean Runoff
Close to the Source

Connected Bicycle
Paths Link to Other
Campus Precincts
and Community

Mobility Hub Improves
Transit Accessibility and
Strengthens Connectivity

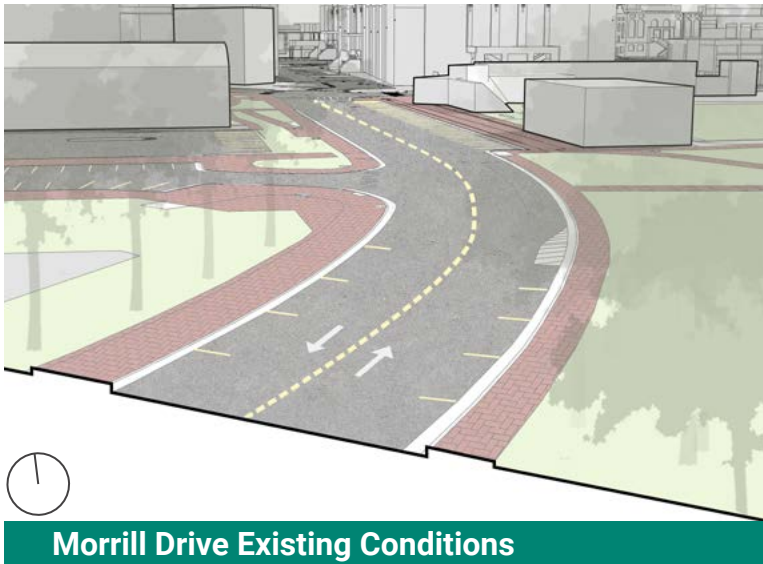
New Buildings Implement
Efficient Construction
Methods and Reliable,
Sustainable Infrastructure

A New Dining Hall
Creates a Dynamic
Ground Floor

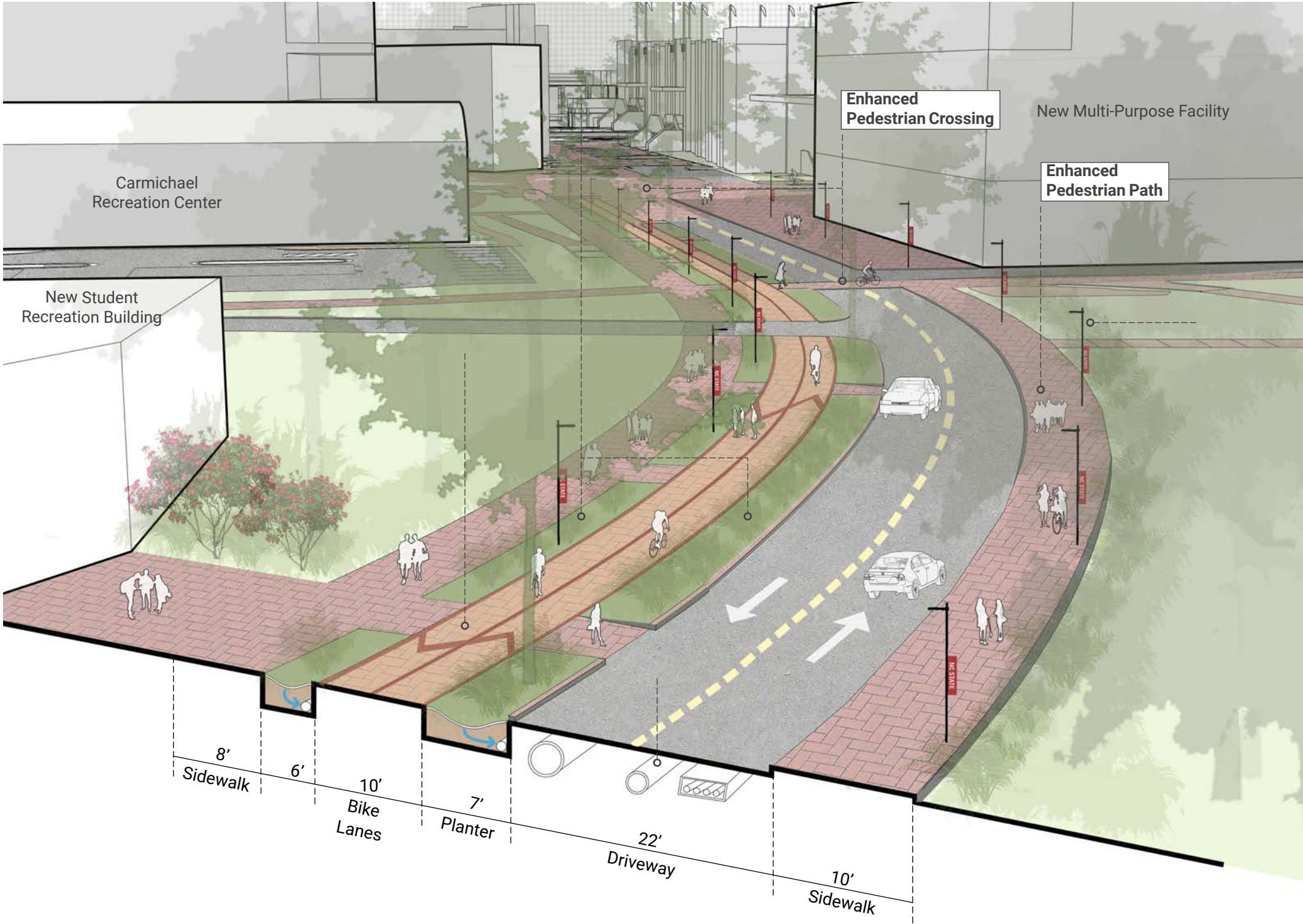
MORRILL DRIVE

Morrill Drive allows for continuation of the “campus connector”, originating at Hillsborough Street, extending along Broughton Drive over the railroad via a potential pedestrian bridge to Talley Student Union, across Western Boulevard, and ultimately to Centennial Campus Precinct.

To accomplish this goal, the Plan recommends enhancing Morrill Drive to provide a more desirable connection. This includes removing most of the on-street parking in order to add width to both sides of the street, thereby creating a more desirable pedestrian path and providing dedicated space for bicycle/scooter lanes. Displaced parking can be absorbed by available spaces within the Coliseum Parking Deck. This transformation would greatly improve connectivity between NC State’s Campus Precincts from north to south.



Morrill Drive Existing Conditions



ENVIRONMENTAL SCIENCES HUB

The area of campus located along the northern side of Western Boulevard supports multiple academic and research facilities such as Biltmore Hall, Jordan Hall, and Weaver Labs. However, this portion of campus feels largely disconnected from campus amenities. To address this concern, the Plan suggests creation of a Neighborhood Hub to foster a greater sense of identity.



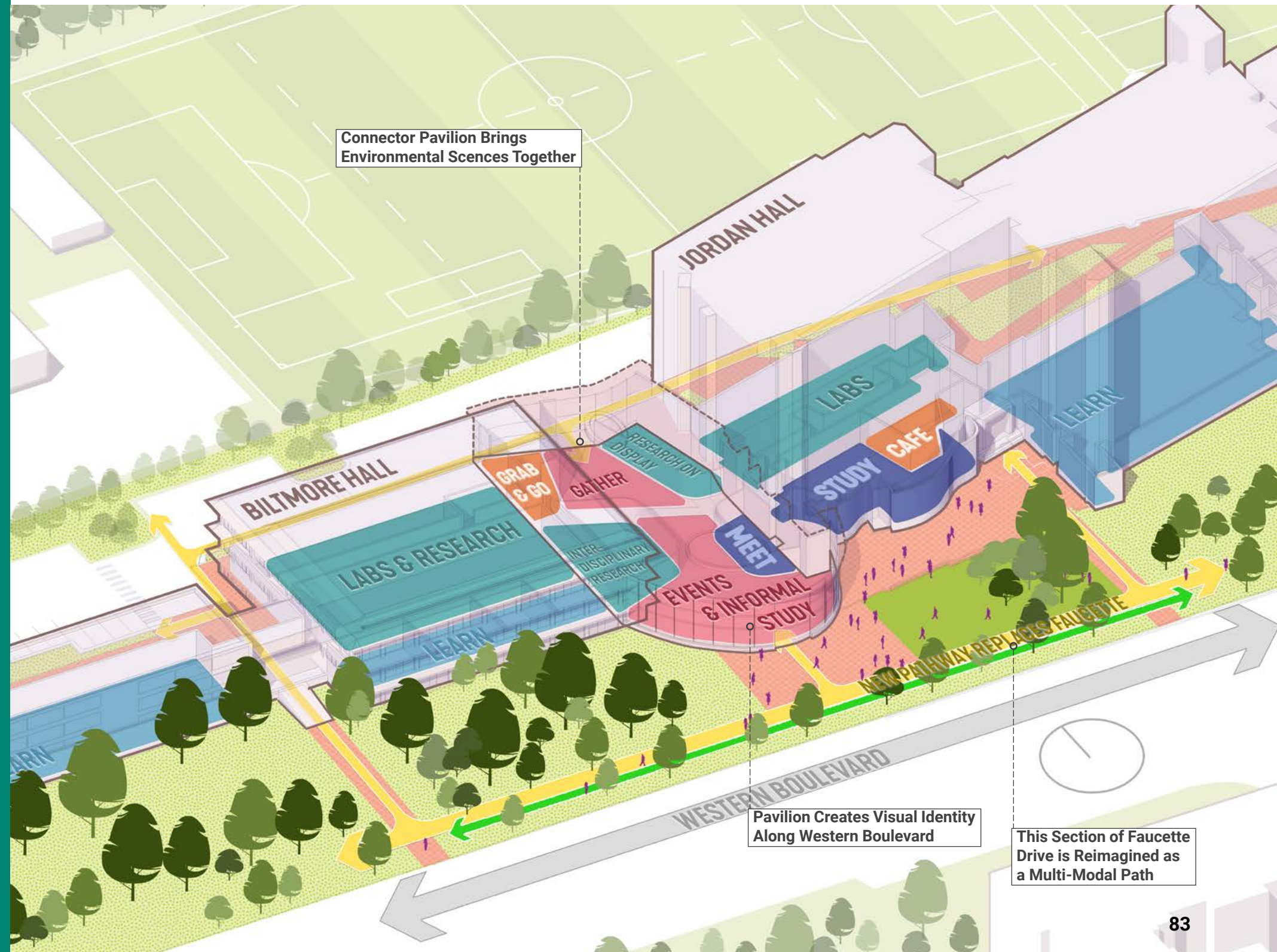
Env. Sciences Existing Conditions



ENV. SCIENCES HUB

The southern portion of the Central Campus Precinct is predominantly occupied by facilities that support the College of Natural Resources and the College of Sciences. To help foster a stronger sense of identity in this area of campus, the Plan suggests establishing an Environmental Sciences Hub with a focus on research and innovation.

Potential uses within this Hub include an experiential learning pavilion, expanded study space aligned with the existing library, increased seating to support the existing cafe, and collaboration space. The intent is to provide a venue within this area of campus that encourages students, faculty, and staff to gather, as well as to encourage interactions with industry partners. The pavilion will also create a greater sense of visual identity along Western Boulevard, helping to enhance the campus edge condition.



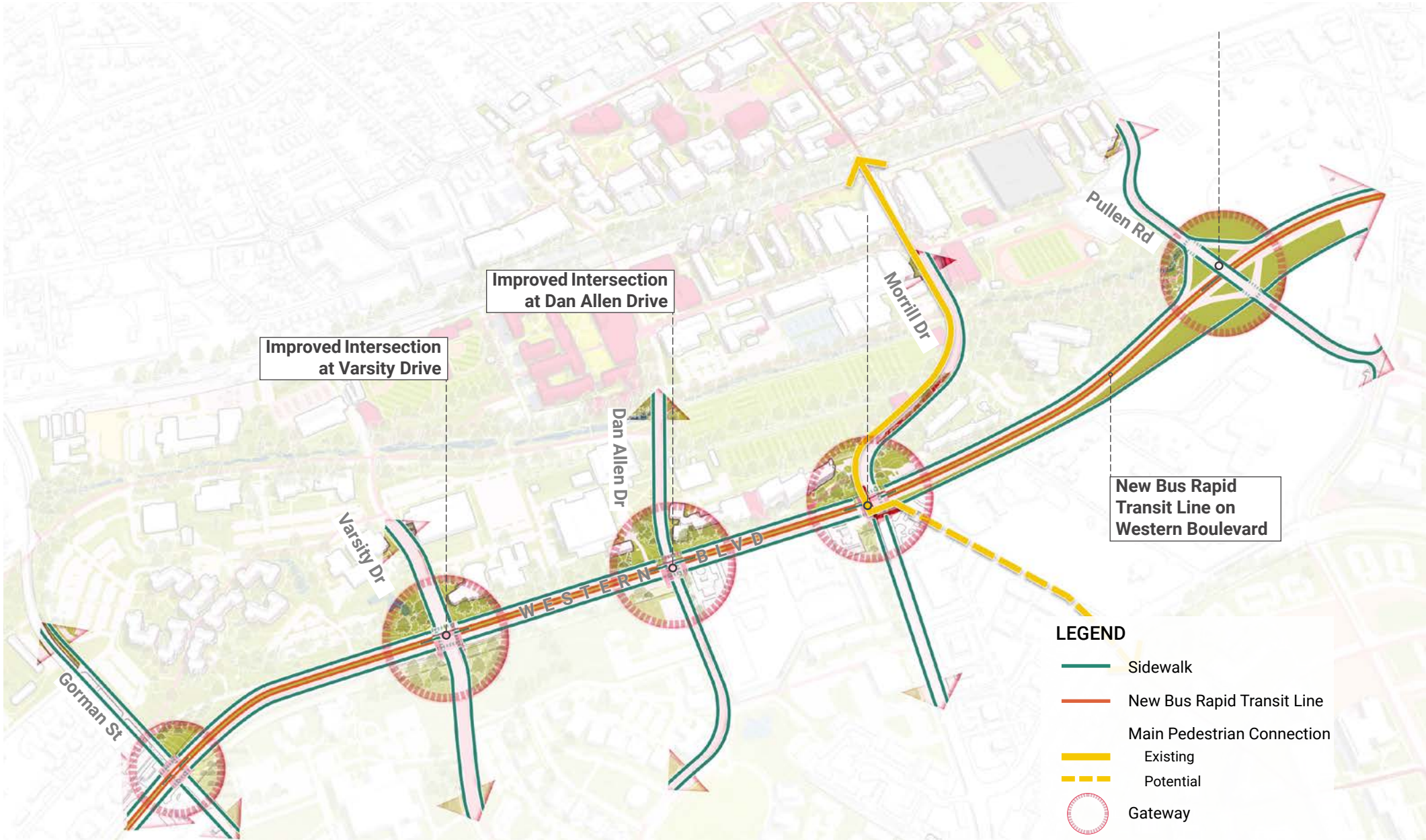
WESTERN BOULEVARD

Western Boulevard is a heavily utilized east-west vehicular connection through the City of Raleigh. The roadway bisects NC State's North and Central Campus Precincts from the South and Centennial Campus Precincts with little indication to drivers that they are passing through campus. During the planning process, numerous stakeholders expressed concern that crossing Western Boulevard presents major safety issues for pedestrians, cyclists, and scooters, greatly limiting connectivity between precincts.

Concerns are expected to increase without improvements, as continued growth is planned for South and Centennial Campus Precincts. In addition, the City of Raleigh has proposed a Bus Rapid Transit system along the center-lane of Western Boulevard. Stops are proposed at Varsity Drive, Morrill Drive/Avent Ferry, and Pullen Road, thus increasing the likelihood of pedestrian activity along the corridor.

A primary goal of the Physical Master Plan is to improve safety and connectivity across Western Boulevard and identify ways to enhance overall aesthetics and branding. The Plan recommends creating safe at-grade crossings at five campus intersections including Gorman Street, Varsity Drive, Dan Allen Drive, Morrill Drive/Avent Ferry Road, and Pullen Road.

This can be accomplished by providing a center landscaped median along Western Boulevard with safe pedestrian refuge islands. This enhances the overall image of campus while also encouraging pedestrians to cross at dedicated zones. In addition to improving safety, it provides the opportunity to incorporate NC State gateway branding elements in the center median. With these improvements, the corridor will be safer for all users.



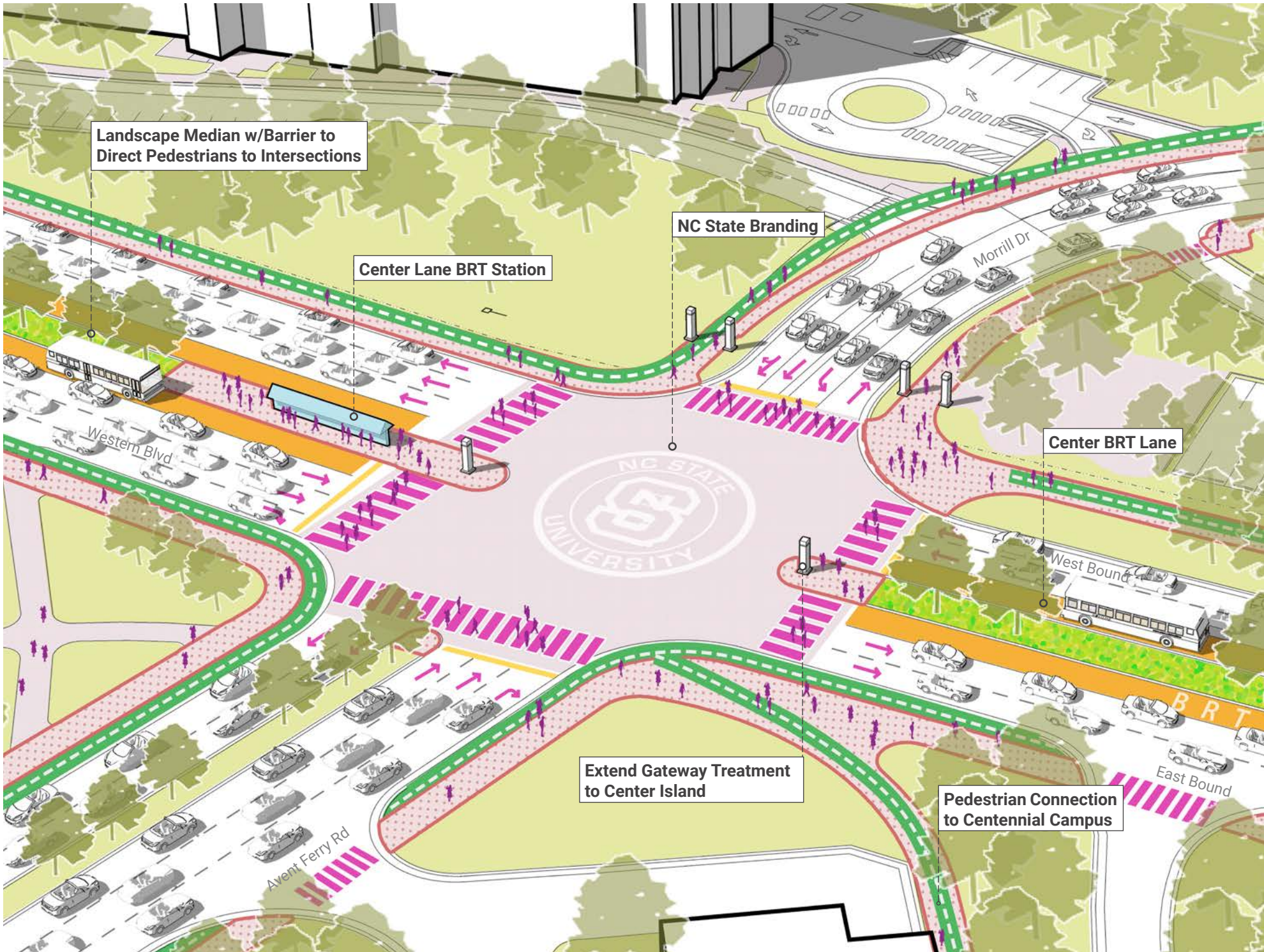
WESTERN & AVENT FERRY FERRY INTERSECTION

The image to the right presents an example of the improvement potential for each intersection crossing Western Boulevard, as outlined on the previous page. This is an example of an at-grade crossing in the location where Western Boulevard meets Avent Ferry Road / Morrill Drive.

The concept incorporates a center-running Bus Rapid Transit system, as proposed by the City of Raleigh, with a station on the west side near Avent Ferry. Variations of this approach can be applied to other intersections crossing Western Boulevard such as Varsity Drive and Dan Allen Drive. NC State's existing gateway at Morrill Drive serves as an inspiration to extend branding elements to the center median.



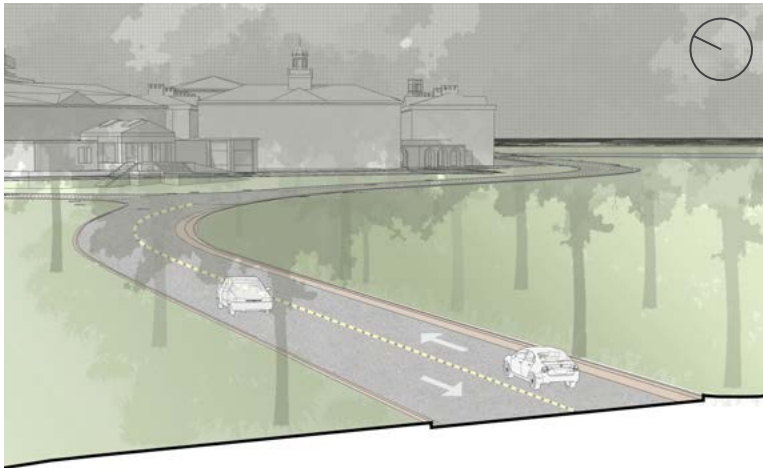
Western at Avent Ferry Existing Conditions



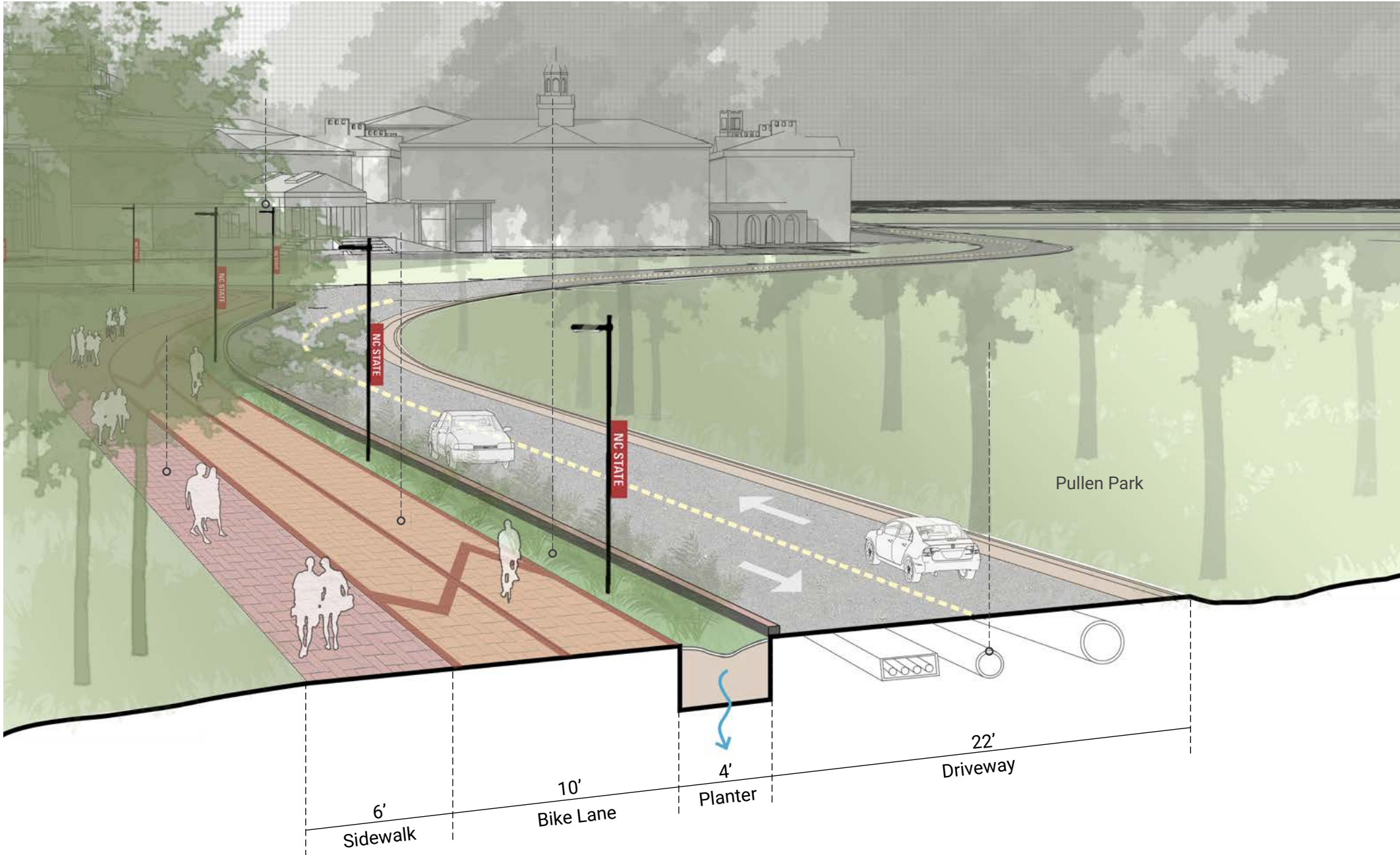
PULLEN ROAD

Pullen Road borders the easternmost edge of NC State's North and Central Campus Precincts. It serves as a primary north-south connector for both campus and the Raleigh community. Its current configuration presents many challenges including congestion at peak times during the day and safety concerns for pedestrians, cyclists, and scooters due to non-existent sidewalk connections along some portions of the right-of-way. Congestion along this key corridor is anticipated to increase with additional development potential for the Centennial Campus Precinct and upon full build-out of Dorothea Dix Park.

The Plan has identified improvements to this roadway as a primary goal. Recommendations include keeping the existing east curb-line to limit impacts to Pullen Park, while still allowing for a continuous sidewalk and bike/scooter lanes on the west side of the street. This would provide a critical link connecting North and Central Campus Precincts to the Centennial Campus Precinct.



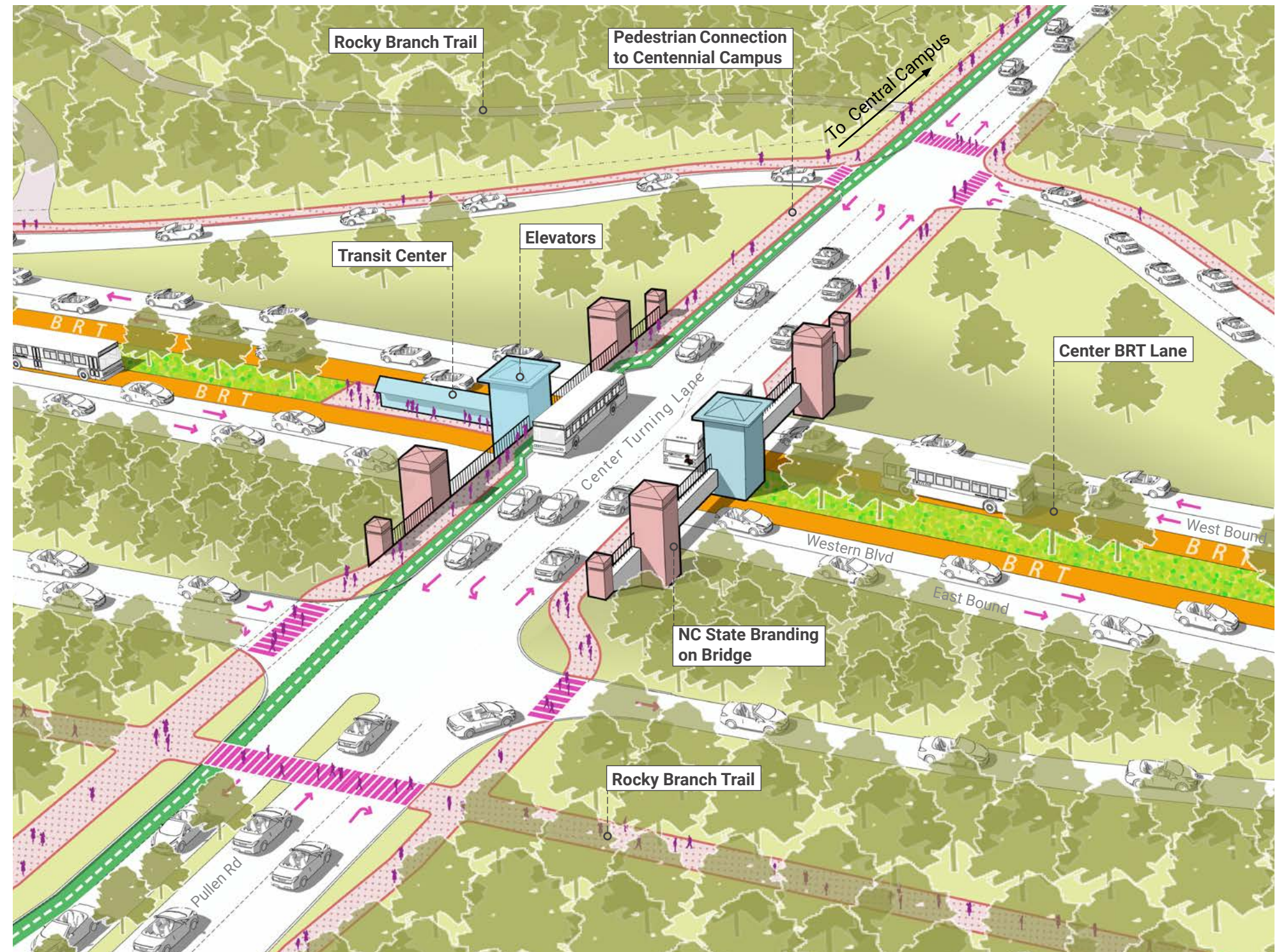
Pullen Road Existing Conditions

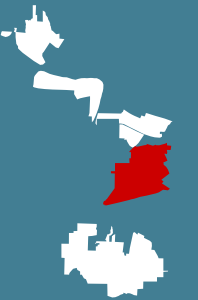


PULLEN ROAD AT WESTERN BOULEVARD

Much of the congestion experienced along Pullen Road is due to the traffic light at Western Boulevard. The Physical Master Plan recommends collaboration with the City of Raleigh, NCDOT, and Pullen Park representatives to explore a transformative approach to this area which will improve safety for all users. Pullen Bridge, which crosses Western Boulevard, is very narrow and without width for pedestrian and bicycle connections. The bridge currently only crosses the westbound lanes of Western Boulevard, leaving the eastbound lanes to be crossed at-grade. This presents an unsafe condition for pedestrians and cyclists.

An opportunity exists to rebuild Pullen Bridge so that it crosses both the east and westbound lanes of Western Boulevard while also allowing for a Bus Rapid Transit stop. A wider Pullen Bridge would provide space to fully accommodate pedestrians and bike/scooter lanes. It also can provide transit stops for ease of BRT/Wofline connections and serve as a new, prominent gateway to campus. Upon completion, it would ease congestion, improve safety, and greatly enhance connectivity across campus.





CENTENNIAL CAMPUS PRECINCT



PRECINCT VISION

The Guiding Principles of the Physical Master Plan inform the future direction for Centennial Campus Precinct. The intent is to strategically expand the academic and research ecosystem, improve the overall student experience, and create additional opportunities for industry collaboration.

CENTENNIAL

PRECINCT GOALS



Reinforce Culture and Place

- Activate The Oval by introducing student-centered spaces.
- Increase views and recreational access to Lake Raleigh.



Steward Campus Resources

- Protect the natural environment with a focus upon campus stormwater management improvements.
- Explore strategies to incorporate alternative energy/renewables on campus to support a move towards net-zero.



Elevate the Campus Experience

- Provide access to robust dining, recreation, student support services, and study and collaboration spaces.
- Provide additional University Housing on Centennial Campus.



Align Facilities with Mission

- Expand the innovation ecosystem by developing Centennial East as a mixed-use neighborhood.
- Create opportunities for more interdisciplinary interaction.



Strengthen Campus Connections

- Improve connections to other Campus Precincts and Centennial East through multimodal paths.
- Enhance the trail system within campus, extending to Dix Park and the City of Raleigh greenway system.



Ensure Infrastructure Reliability

- Provide strategic improvements to existing laboratory buildings.
- Invest in regional energy exchange utility plant for South Oval.

LEGEND

- Existing Building
- Innovation District
- Potential Building
- Potential Parking Structure

PRECINCT VISION

Building Improvements

- 01 High-Bay Research Facilities
- 02 Research Support Facility
- 03 Parking Structure

Site Improvements

- 01 Lake Raleigh Woods Trail System
- 02 Lake Raleigh Loop Trail

Mobility Improvements

- 01 Main Campus Drive Conversion



LEGEND

- Existing Building
- Innovation District
- Potential Building
- Potential Parking Structure

PRECINCT VISION

Building Improvements

- 01 Academic/ Research Bldg
- 02 North Residential Neighborhood
- 03 Innovation District
- 04 Parking Structure
- 05 Housing / Student Services
- 06 Wolf Ridge Housing Expansion
- 07 Event Space
- 08 Mixed-Use Development
- 09 North Shore
- 10 Central Utility Plant Expansion
- 11 Facilities Support
- 12 Regional Utility Plant to serve South Oval neighborhood

Site Improvements

- 01 Campus Oval Improvements
- 02 Amphitheater
- 03 Trail Connection Improvements
- 04 Trail System Extension
- 05 Green Link to Dix Park
- 06 Spring Hill House
- 07 Arboretum Expansion

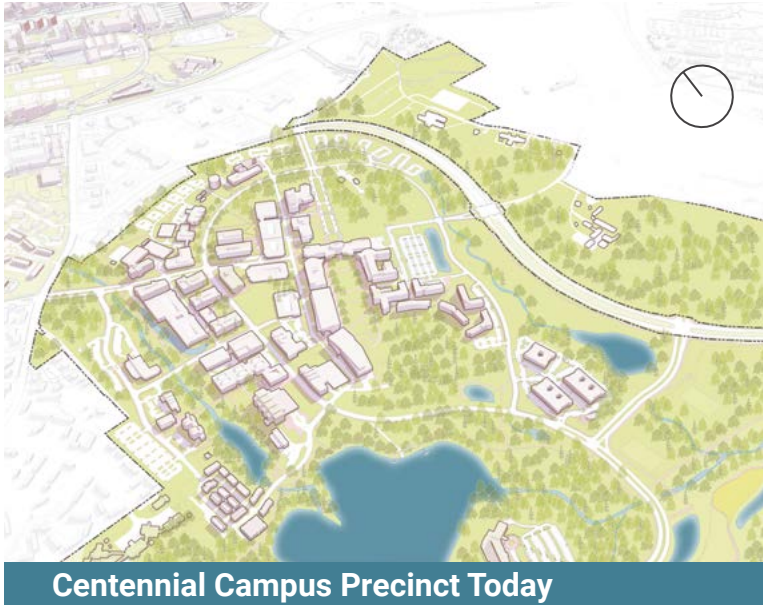
Mobility Improvements

- 01 Connection to Central Campus
- 02 Pullen Road Connection
- 03 Pedestrian Promenade at The Seam
- 04 Connection to Lake Raleigh
- 05 Enhanced Centennial Parkway Crossings
- 06 Mobility Hub

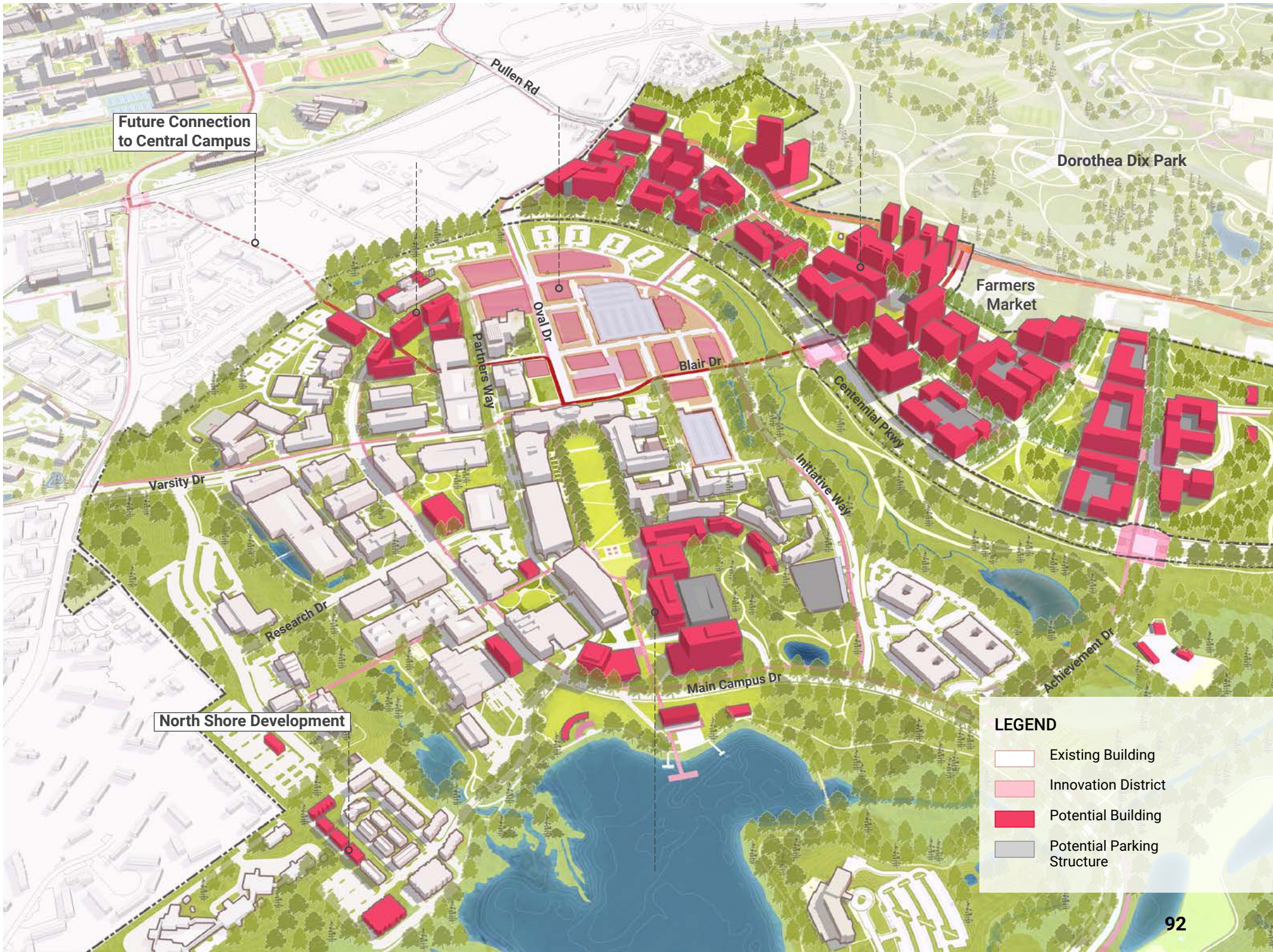


POTENTIAL DEVELOPMENT

Centennial Campus Precinct is a world-renowned research campus that fosters interdisciplinary collaborations between NC State academic and research talent with industry, governmental, and non-profit partners. The idea for Centennial Campus was conceived in 1984 and came to fruition incrementally over subsequent decades with the College of Engineering which began relocation in 2002. The Physical Master Plan expands upon this original vision by proposing future development in areas surrounding The Oval for full build out of the campus. Facilities include new academic and research space, while also addressing student life needs. The Plan also looks to the long-term future with a potential approach for the land commonly referred to as Centennial East neighborhood. This presents an incredible opportunity to provide mixed-use development adjacent to Dorothea Dix Park and continue to build upon Centennial's innovation ecosystem.



Centennial Campus Precinct Today



- LEGEND**
- Existing Building
 - Innovation District
 - Potential Building
 - Potential Parking Structure

PEDESTRIAN & OPEN SPACE FRAMEWORK

The potential network of pathways, trails, and open spaces will improve the overall pedestrian experience on Centennial Campus Precinct. All Campus Paths link the precinct to adjacent precincts and also to Dorothea Dix Park (Dix Park). This Green Network helps unite the Centennial East neighborhood with the core of the Centennial Campus Precinct.

A new pedestrian gateway is suggested where the All Campus Path enters Centennial Campus Precinct on the northwest side of the campus. This long-term vision includes a connection through Mission Valley to better unite Centennial Campus Precinct with Central Campus Precinct. Enhanced pedestrian crossings at Varsity Drive, Oval Drive, and Pullen Road are also suggested.

The Plan recommends a greenway loop around the precinct to better connect existing trails to Dix Park and the City of Raleigh's greenway system. A Pedestrian Promenade will help to activate the convergence of Centennial East and Dix Park. Strategies also include preservation of existing green space and stormwater management corridors, with Lake Raleigh as a focal point for potential campus organization.

LEGEND

- All Campus Path

Existing

Potential Transformation
- Connector Path

Existing

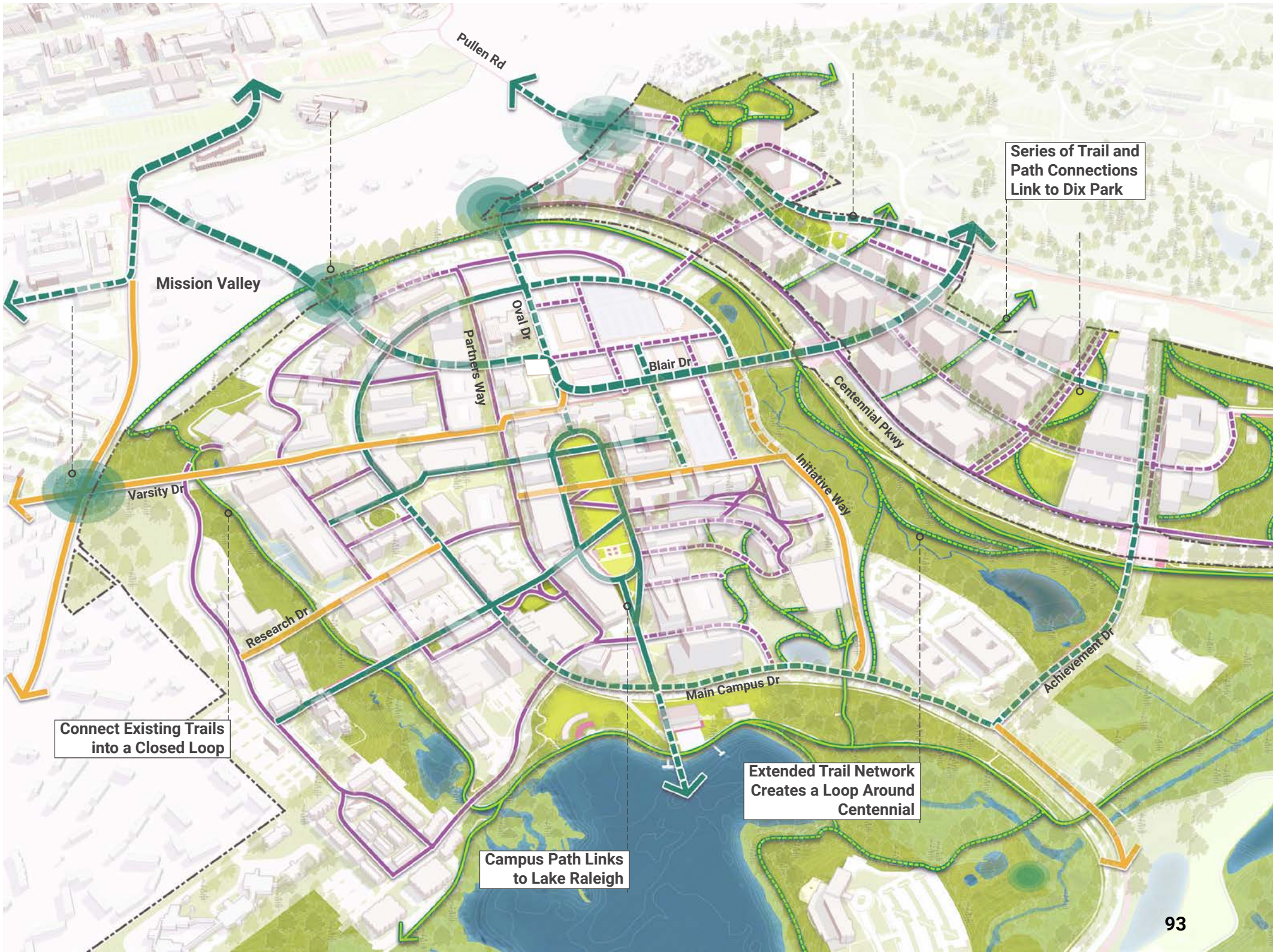
Potential Transformation
- Multipurpose Trail

Existing

Potential Transformation
- Neighborhood Path

Existing

Potential Transformation
- Gateway



VEHICULAR MOBILITY FRAMEWORK

Avent Ferry Road and Centennial Parkway serve as the primary vehicular connections to North and Central Campus Precincts. The Physical Master Plan suggests adding a third primary vehicular connection via Pullen Road. With significant anticipated growth on Centennial Campus Precinct over the long-term future, additional vehicular access points will be needed.

Presently, Centennial Parkway bisects the precinct, creating a significant divide from the land commonly referred to as Centennial East. The Plan presents opportunities to improve connectivity at key crossings, such as Blair Drive, by positioning new construction close to the street edge and activating the streetscape to improve walkability.

Additional internal roads build upon existing street patterns similar to other parts of the campus, extending the current vehicular framework into Centennial East neighborhood, where feasible. The plan seeks to minimize pedestrian-vehicular conflict zones whenever possible and prioritize pedestrian circulation.

LEGEND

- Highway

Major 1 (6-Lane)

Existing

Potential Transformation

Major 2 (4-Lane)

Existing

Potential Transformation

Mixed Use 1

Existing

Potential Transformation
- Mixed Use 2

Existing

Potential Transformation

Local

Existing

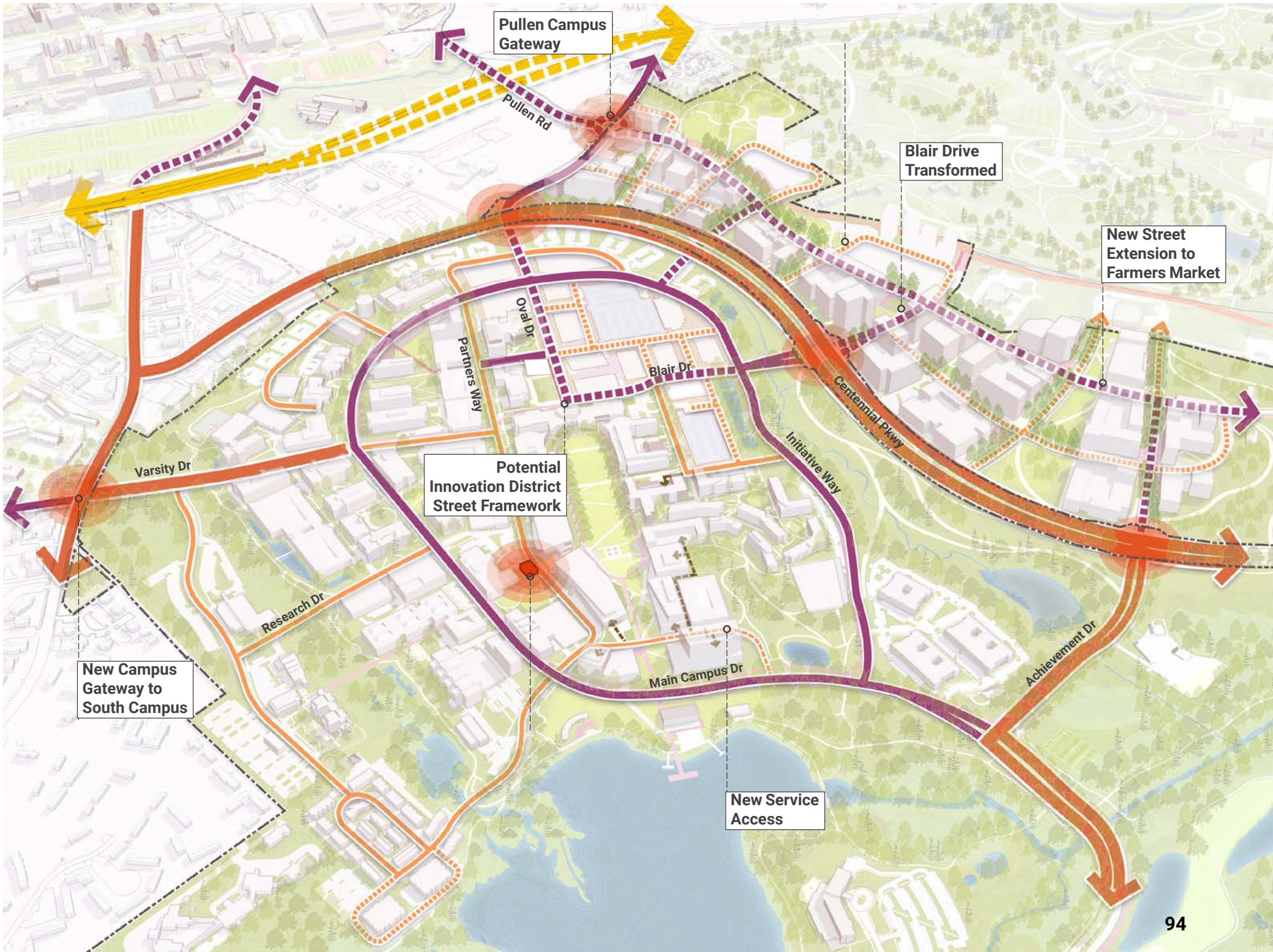
Potential Transformation

Service Route

Existing

Potential Transformation

Key Intersection



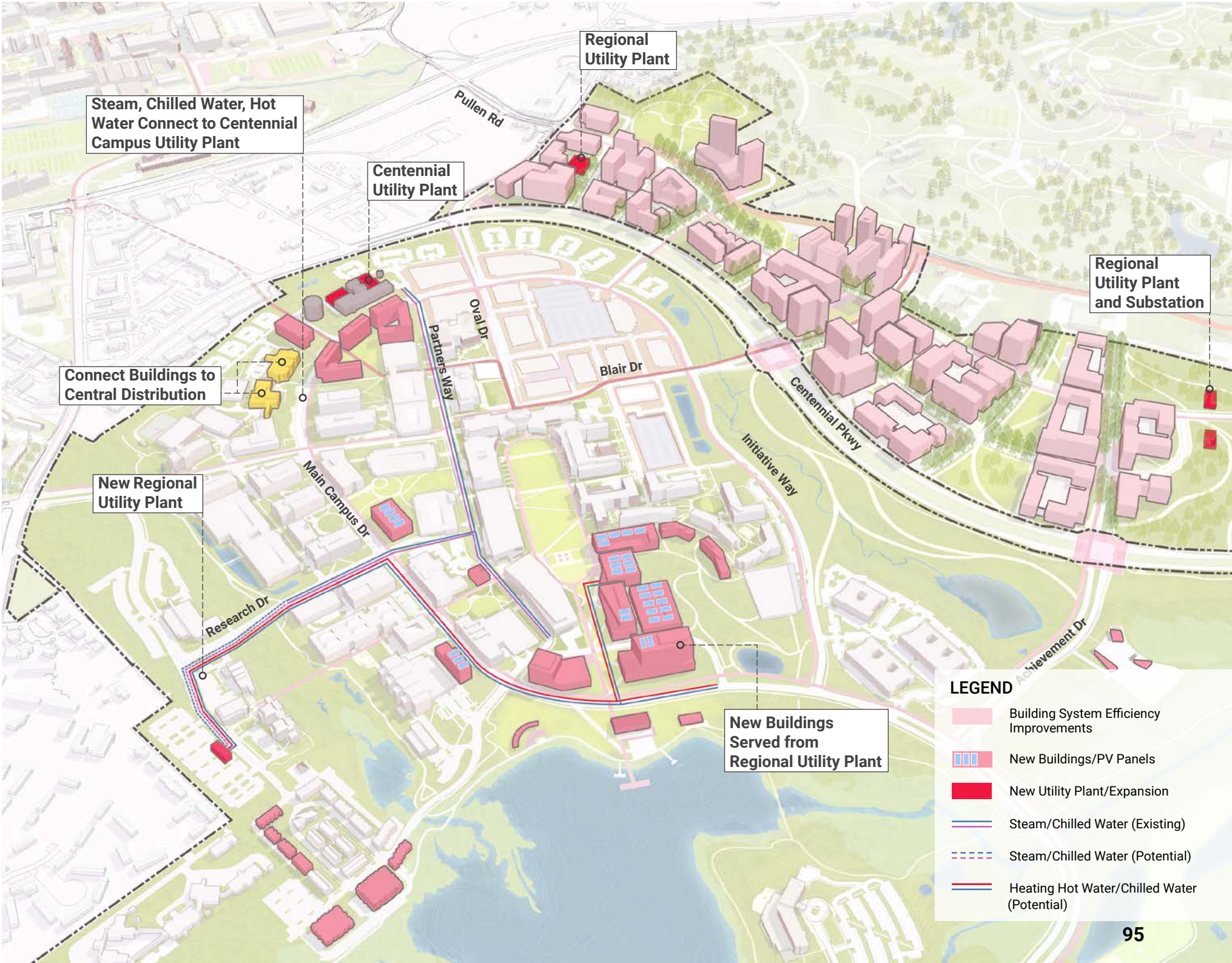
INFRASTRUCTURE RELIABILITY

The Centennial Precinct is currently served by Centennial Campus Utility Plant, located at the north end of campus. The plant was recently updated to include both combined heat and power and thermal energy storage capabilities and the plant capacity has been maximized with a full build out of the planned infrastructure. Planning for adding capacity in this location requires physical expansion. Distribution of steam and chilled water currently provides coverage to many of the buildings in this area.

Several significant laboratory buildings are not currently connected to the campus distribution. In accordance with the goals of the Physical Master Plan, connecting these buildings with the central utility plant distribution will increase the reliability of building operations and take advantage of the efficiencies of the combined heat and power operation. Strategic energy improvements in these buildings through heat recovery, retro-commissioning of control systems and laboratory ventilation optimization should reduce the impact to utility plant demand to the largest extent possible.

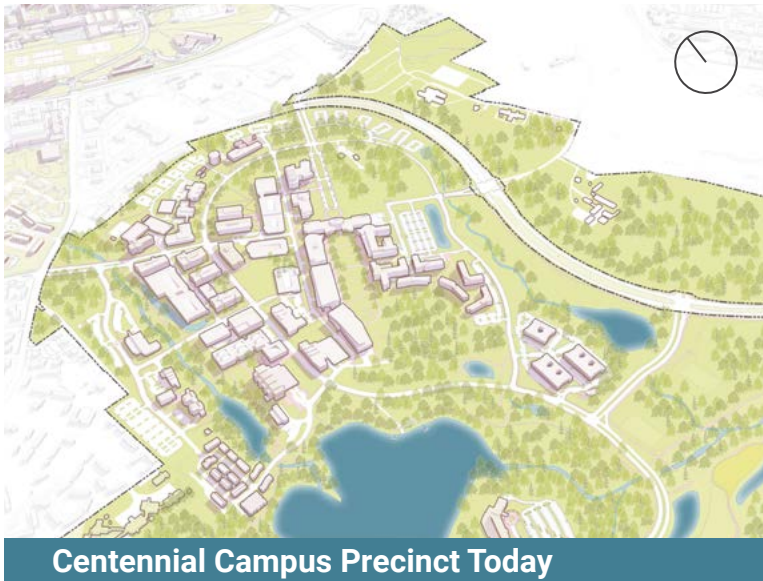
The Physical Master Plan identified the South Oval neighborhood for a significant level of new building development. These projects should target best-in-class building mechanical systems. Each building shall be designed to include local connections for power and thermal utilities in the event of a failure at the campus level to ensure reliability. Increases in operational efficiency of the newest buildings on campus will simultaneously increase the reliability of operations by minimizing stress on the new and existing prime thermal capacity generation.

Planning for the thermal capacity to the South Oval neighborhood is a critical path task. Implementation of this new regional utility plant for the Centennial campus should follow the design guidelines for the regional energy exchange utility plant prototype.

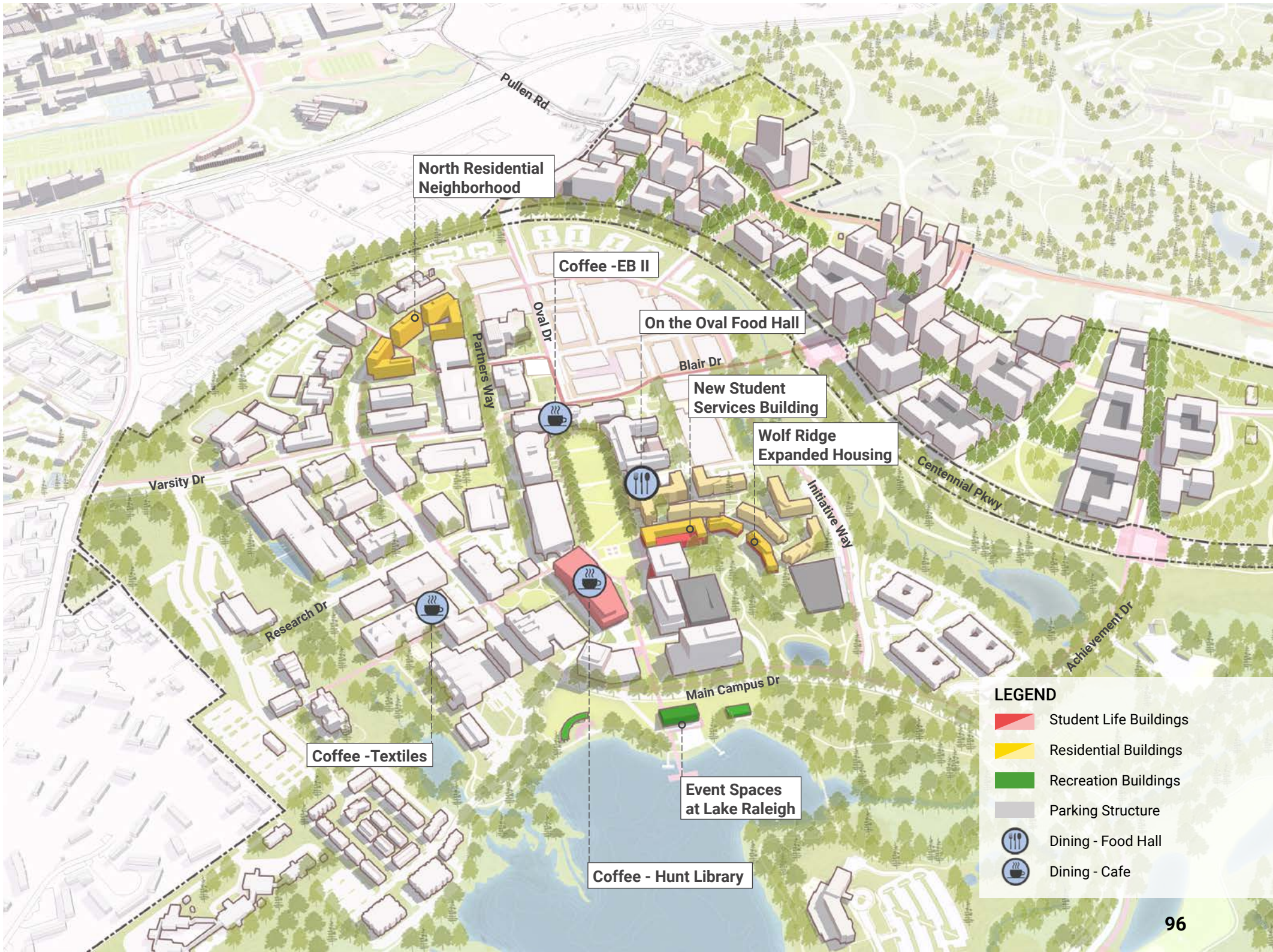


STUDENT LIFE

As Centennial Campus Precinct continues to grow, significant potential exists to cultivate a more vibrant student experience. Stakeholder interviews, conducted as part of the planning process, revealed that a primary concern is the limited student services presently provided in this part of campus combined with the distance to access more robust offerings on North and Central Campus Precincts. The Physical Master Plan addresses this concern by introducing or expanding a variety of student-focused dining, wellness, recreation, and gathering spaces to the precinct. A new Student Services Building acts as the focal point, positioned adjacent to Wolf Ridge Apartments and On the Oval Food Hall. The Plan also recommends expansion of the existing Wolf Ridge apartment complex and additional student housing options in the northwest portion of campus. Together, potential facilities will help to foster a stronger sense of place on Centennial Campus Precinct and better support student success.

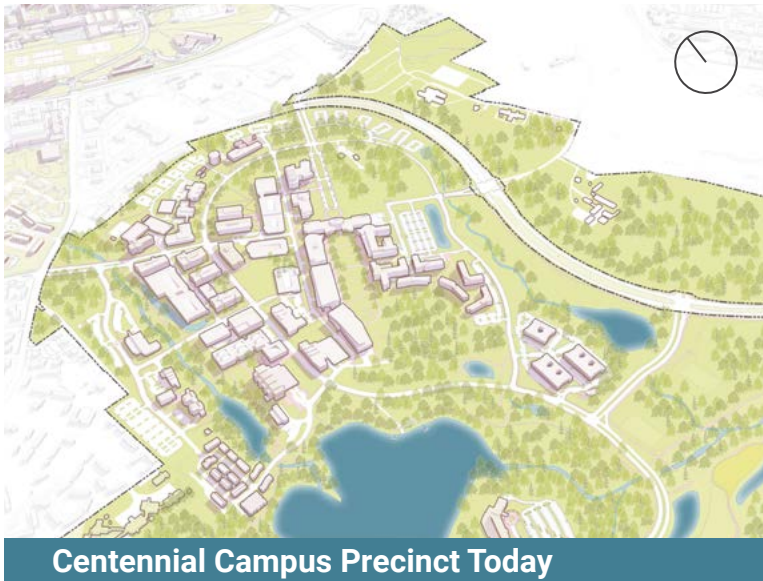


Centennial Campus Precinct Today

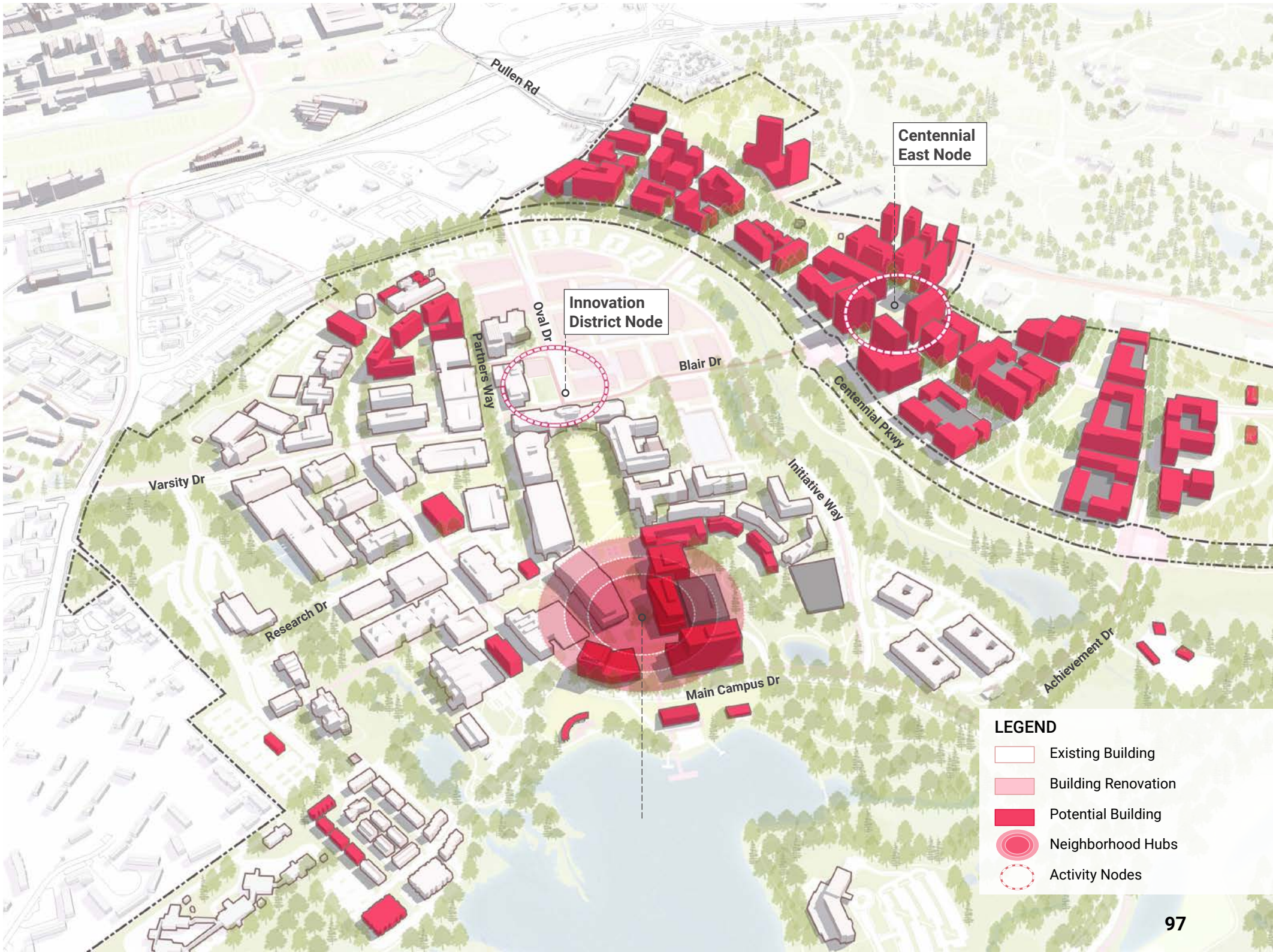


NEIGHBORHOOD HUBS

With continued long-term future growth of Centennial Campus Precinct, it is important to plan ahead by identifying the locations for activity zones which will serve as focal points for services and amenities within the precinct. The Physical Master Plan identifies one Neighborhood Hub, called the South Oval Hub, in the southern portion of The Oval adjacent to Hunt Library. Its focus will be on enhancing the student experience. In addition, two Activity Nodes are suggested as central organizing features of both the future Innovation District and Centennial East developments. Each celebrates the convergence of academic and industry partnerships in a unique way. The Neighborhood Hub and Activity Nodes can each be scaled to appropriately support an area as needed, and Activity Nodes may evolve into Neighborhood Hubs over time as development comes on-line and the campus population continues to grow.



Centennial Campus Precinct Today



- LEGEND**
- Existing Building
 - Building Renovation
 - Potential Building
 - Neighborhood Hubs
 - Activity Nodes

CENTENNIAL NORTH

Innovation District

The Innovation District is a 30-acre urban, mixed-use development underway that aims at expanding the impact of private-public partnerships on Centennial Campus Precinct. The project will offer office space, lab space, housing, dining, recreation space, and a variety of collaborative areas to help establish a vibrant environment that realizes the “live-learn-work-play” vision. The development will be integrated into the existing Centennial Campus Precinct framework and in support of NC State’s academic, research, and statewide outreach mission.

New Residential Neighborhood

A key opportunity identified during the planning process was to create more student housing on Centennial Campus Precinct. Due to the size of the College of Engineering, located predominantly within this precinct, student housing demand is quite high. With additional engineering growth anticipated over the next decade, the Physical Master Plan recommends the addition of more apartment-style housing in the northwestern portion of Centennial Campus Precinct. Given its adjacency to the proposed Innovation District, increased height and density is feasible here and will help provide population to activate ground floor uses within the Innovation District. The Plan suggests approximately 1,200 - 1,400 additional beds in this location. The buildings are configured to create vibrant outdoor gathering spaces for students in the center of the development while still creating a strong outward facing urban edge condition.

New Academic / Research / Partnership Building

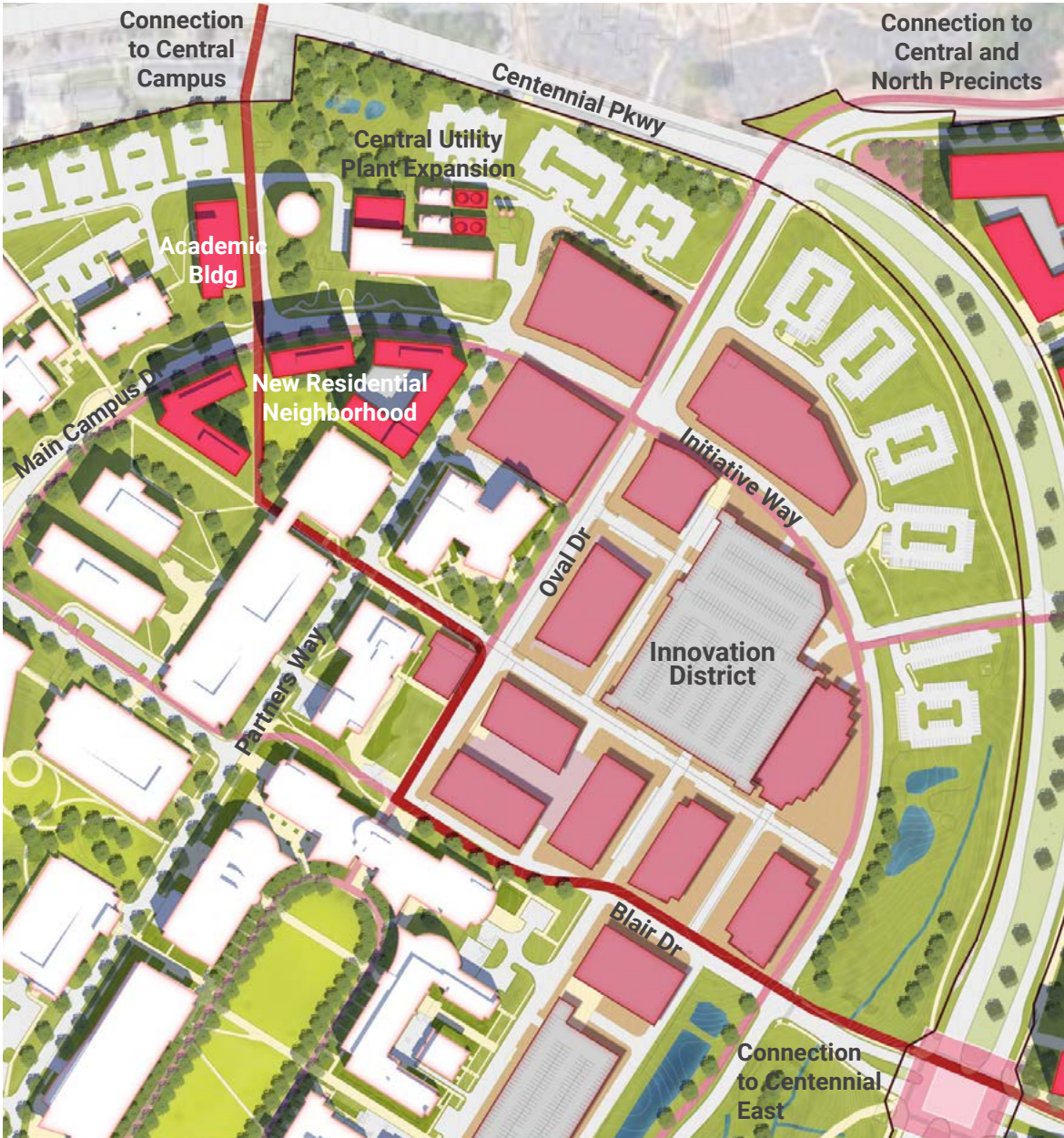
The Physical Master Plan also suggests an academic / research / partnership building to be located along the All Campus Path that provides connectivity to Central Campus Precinct. This facility has the potential to support the academic and research mission of Centennial Campus Precinct but can also be used as additional partnership space in the future, if needed.

Central Utility Plant Expansion

As development increases in this area, the utility infrastructure must be expanded to reliably support additional facilities. The intent is to gradually expand the Central Utility Plant in parallel with the construction of new or expanded facilities on Centennial Campus Precinct. In addition, aging infrastructure should be replaced as needed. As new buildings come on-line in the future, consideration should be given as to how the infrastructure will tie into existing systems and create redundancy whenever possible.

All Campus Path

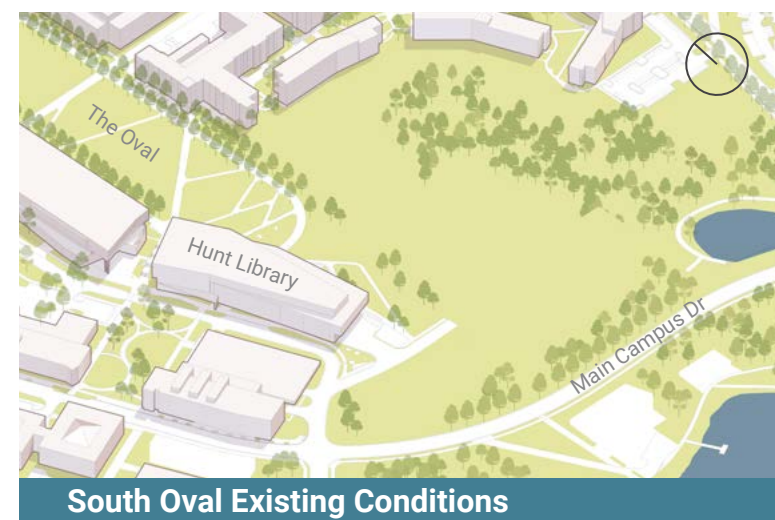
A significant connector between Central Campus Precinct and Centennial Campus Precinct is the suggested All Campus Path. It enters Centennial Campus Precinct from the north across Centennial Parkway. Lined with potential development, the path traverses south through the Innovation District before continuing on to the potential Centennial East neighborhood.



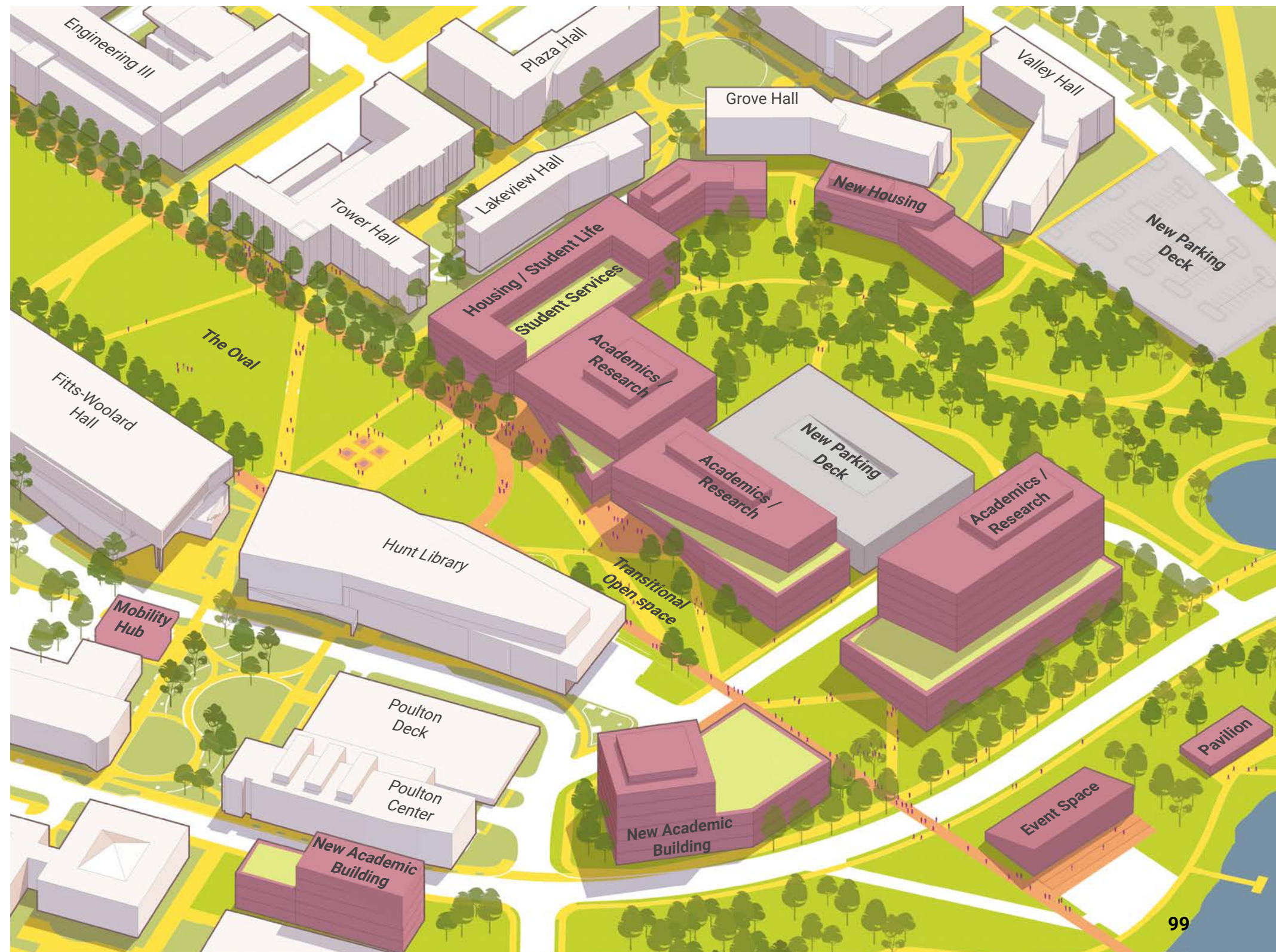
SOUTH OVAL HUB

The Oval is a green space located within the heart of Centennial Campus Precinct bounded by College of Engineering Buildings, Hunt Library, Wolf Ridge Apartments, and On the Oval Food Hall. This central open space has served as a key organizing element for the precinct since its inception and is increasingly recognized by students, faculty, and staff as a treasured space at the university. It is for this reason that the Physical Master Plan has added The Oval as NC State's 10th Hallowed Place.

To further enhance this area of Centennial Campus Precinct, the Plan suggests a series of new facilities at the southernmost end of the academic core to accommodate academic and research needs, as well as enhance student life offerings. The potential campus organization takes into consideration access and views to Lake Raleigh, a wonderful natural amenity. A South Oval Neighborhood Hub is also suggested within this area to serve as a focal point for gathering and collaboration.

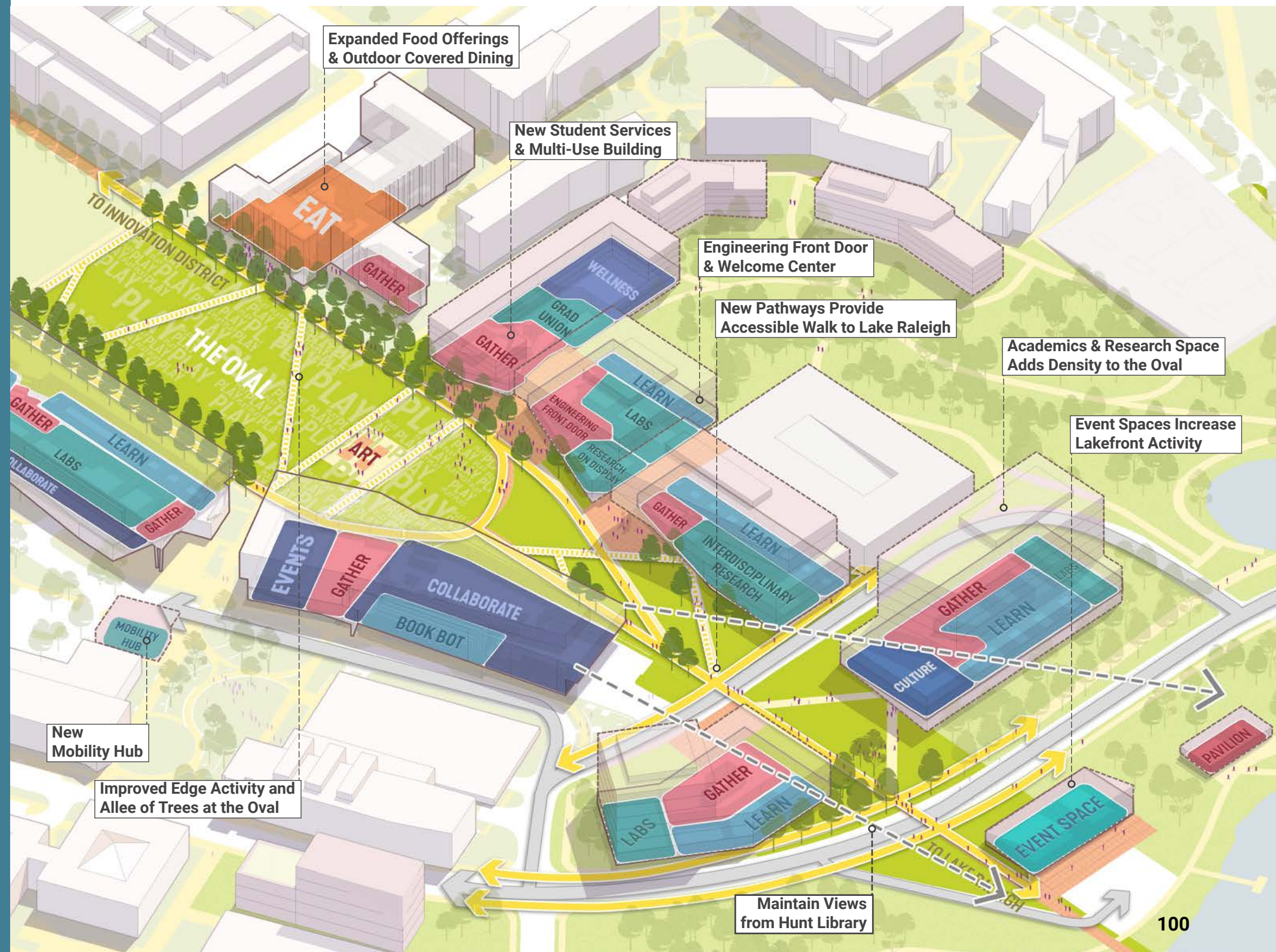


South Oval Existing Conditions



SOUTH OVAL HUB

The South Oval Neighborhood Hub focuses on enhancing the student experience at Centennial Campus Precinct. This area is intended as the primary node of student activity on The Oval and is located in close proximity to existing student services, Hunt Library, and Wolf Ridge Apartments. The Hub has the potential to serve as a much-needed new “front door” for the College of Engineering to welcome prospective students and guests. In addition, a new Student Services and Multi-Use Building will provide space for expanded academic success and student support services, as well as dining and recreation facilities.



SOUTH OVAL HUB

Academic / Research Buildings

The College of Engineering is presently the largest college at NC State in terms of enrollment, which is projected to increase significantly in the years ahead. The Physical Master Plan suggests a series of academic and research buildings to address the need for additional space. The goal is for each building to have highly flexible classrooms, laboratories, informal collaboration space, and maker spaces reflective of contemporary pedagogy. Programming may also include exhibition and industry partnership space. These facilities can accommodate engineering or other colleges in the future, as desired. Service access needs to be considered as part of any future development. This potential grouping of academic and research space will further strengthen teaching, learning, and research opportunities on the Centennial Campus Precinct.

Housing, Student Life & Services Center

During the planning process, many stakeholders raised concerns that student support services located on North and Central Campus Precincts are too distant to effectively serve students. To address this disparity, the Plan suggests the addition of a variety of services to better support student needs. A new Student Services Building is suggested, which may include collaborative study spaces, student support services, a variety of lounge and meeting areas, space for graduate student organizations, and student wellness areas on the lower two floors. Additional apartment-style housing will expand Wolf Ridge Apartments.

Wolf Ridge Housing Expansion

Wolf Ridge Apartments provide housing for upper-class and

graduate students. With a growing academic and research footprint in Centennial Campus Precinct, it is anticipated that this housing will be in high-demand. The Plan suggests expanding Wolf Ridge to address a lack of housing within walking distance of the precinct. This expansion will increase student activity and create additional density on this part of campus.

Parking Structures

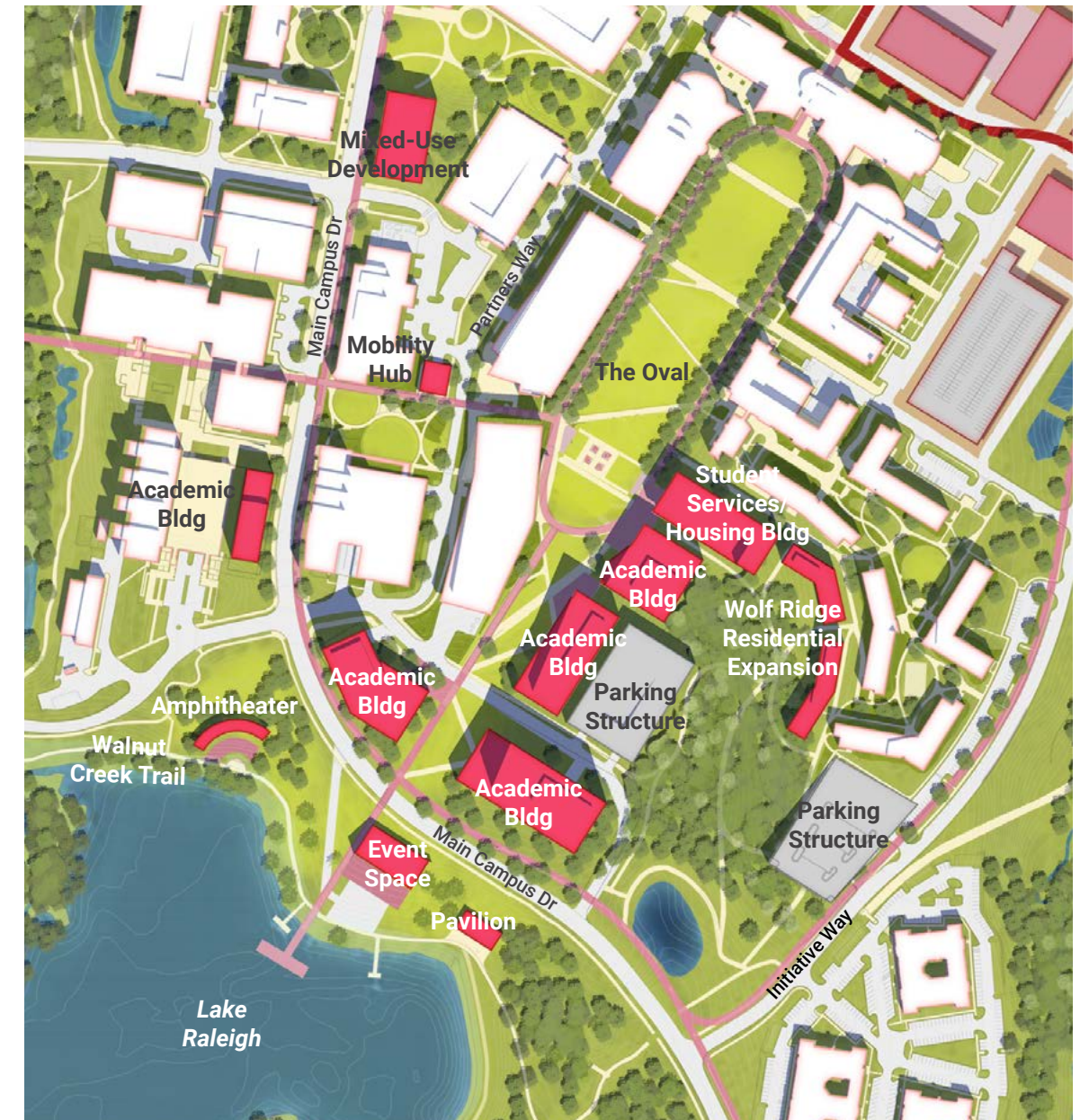
As new facilities are constructed, additional parking will be required. Expansion of Wolf Ridge Parking and a new Parking Deck tucked behind the academic and research buildings on The Oval are suggested to accommodate future needs.

Lake Raleigh Recreation Area

Lake Raleigh Recreation Area offers multiple opportunities for outdoor activities such as hiking, biking, and disc golf. The Plan seeks to improve access to the existing trail system from The Oval by connecting it with Walnut Creek Trail. Recreation areas such as event space, amphitheater, multiple lake access points, and pavilion overlooking the lake will draw the campus and surrounding community to this underutilized campus asset.

Mobility Hub

At Partners Way, on the west side of Hunt Library and Fitts-Woolard Hall, a new Mobility Hub is suggested. Similar to the new Mobility Hub in Central Campus Precinct, it will provide bus service for multiple routes, micromobility drop-off and pick-up, ride share pick-up locations, e-charging stations, visitor information, and restroom facilities. This location is expected to become the primary drop-off and pick-up location for campus.





THE SOUTH OVAL

The Oval has evolved into NC State's 10th Hallowed Place based upon its importance to the life of the university. New development will complete The Oval while also allowing views to Lake Raleigh.



A New Shade Pavilion at the Dining Hall Expands Dining and Outdoor Hangout Space

Exterior Hearths on Buildings Create Informal Learning Spaces

New Buildings Implement Efficient Construction Methods and Reliable, Sustainable Infrastructure

Edges of The Oval are Transformed with Public Spaces and Increased Shade

A New Series of Pathways and Ramps Provide Access to New Buildings and to Lake Raleigh

New Art on The Oval Enhances Cultural Identity and Placemaking



Visual Connectivity

Selective Tree Removal Opens Visual Access from the Oval to Lake Raleigh

The Oval Sits at the Heart of Centennial Campus Precinct

CENTENNIAL EAST

The area defined as Centennial East neighborhood includes the 130-acre portion of land east of Centennial Parkway lying at the convergence of the university and the city, with Dorothea Dix Park to the east and North Carolina State Farmers Public Market to the south. The Physical Master Plan recognizes the potential of this land and suggests mixed-use development aligned with Centennial Campus Precinct’s public-private partnership mission.

The potential campus framework respects the historical significance of Spring Hill House and recommends an appropriate area around the site to thoughtfully transition from adjacent development. The Seam between Centennial East and Dorothea Dix Park is envisioned as a vibrant Pedestrian Promenade lined by retail, dining, and social spaces with ample seating and a view of Dix Park and, in some areas, Downtown Raleigh. The Seam will generate pedestrian activity at Centennial East which is mutually beneficial to both the precinct and the park.



Centennial East Existing Conditions



LEGEND

- Existing Building
- Innovation District
- Potential Building
- Potential Parking Structure

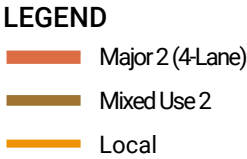
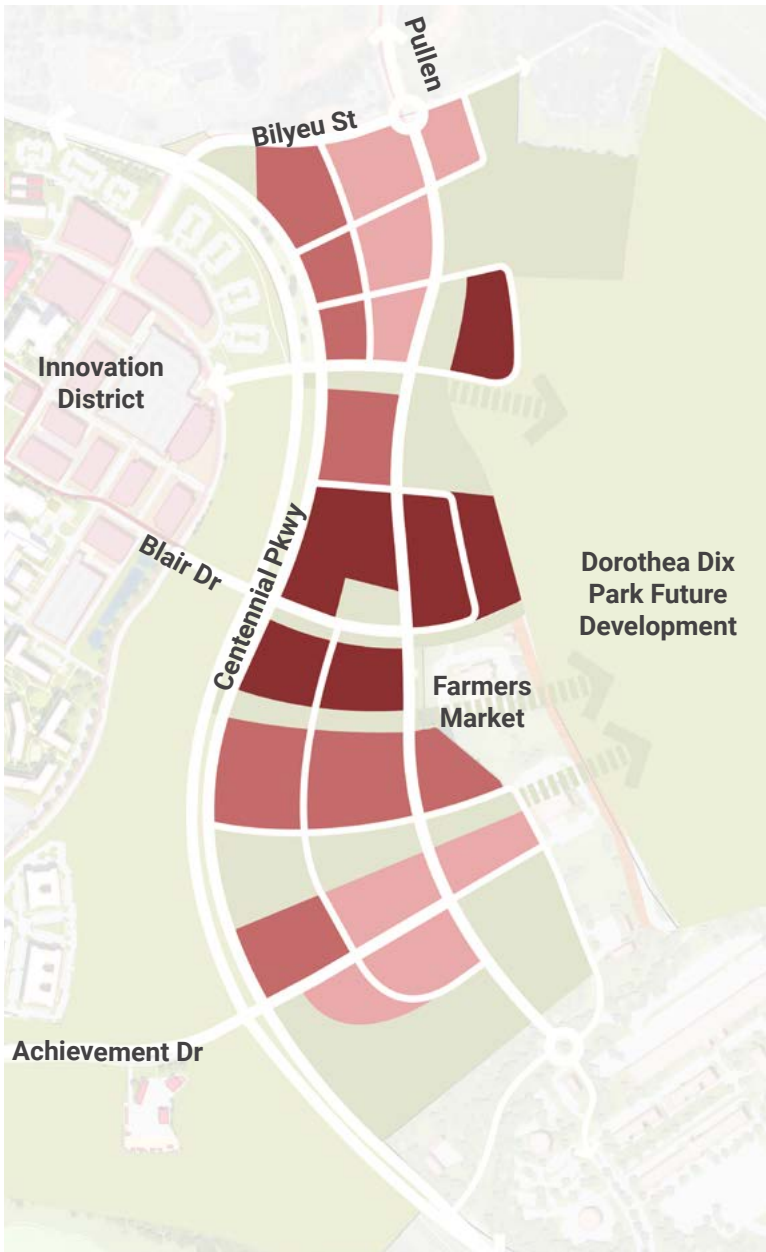
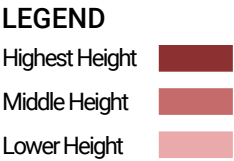
CENTENNIAL EAST

Mobility Framework

Centennial East represents a long-term vision; therefore, the Physical Master Plan suggests a series of development frameworks which will serve as guideposts for future build out. Vehicular linkages from Centennial Campus Precinct and the Innovation District are suggested to provide connection across Centennial Parkway, creating a more integrated network. A major north-south Pullen Road extension through the site connects to existing streets within the North Carolina State Farmers Public Market property to the south. Smaller local streets create additional connections within Centennial East and tie back to the northbound lane of Centennial Parkway.

Development Density Framework

Given this location in Centennial Campus Precinct and its proximity to Central Campus Precinct, Dorothea Dix Park, and Downtown Raleigh, there is a need to develop Centennial East with a variety of building heights to accommodate various uses and neighborhood adjacencies. The tallest buildings should be located along Blair Drive with a connection to the Innovation District and along Dix Park to create a vibrant park edge which takes advantage of incredible downtown views. Moderate building heights should occur along Centennial Parkway, with building faces pulled as tightly to the road as possible to reduce perceived distances to the Innovation District and create an urban feeling along the streetscape. The lowest height buildings are envisioned along naturalized edges and in close proximity to adjacent residential neighborhoods.



CENTENNIAL EAST

Open Space Framework

NC State supports significant open space assets on Centennial Campus Precinct with Lake Raleigh and Lake Raleigh Woods, a Hallowed Place, at its southern edge. A series of trails connect campus to the broader Raleigh trail network. The Plan for Centennial East recommends a series of open spaces that function as green linkages, connecting Centennial Campus Precinct open space network to Dorothea Dix Park. Development is concentrated along open spaces to help activate areas. An expanded trail system further strengthens the walkability and connectivity of Centennial Campus Precinct.

Spring Hill House

Spring Hill House is a registered historic building, built around 1815 as the main house of a plantation. Throughout its history, it has been associated with indigenous people, enslaved people, and people suffering from mental illness. In 2001, the house was part of the additional land assigned to Centennial Campus (that is now referred to as Centennial East neighborhood). It is currently being used by the Japan Center that works to strengthen connections between Japan and North Carolina. It serves as a resource for citizens, companies, and public and private institutions. The Physical Master Plan respects the historic significance of the house and suggests to preserve it and the adjacent open space around it.

Arboretum Expansion

The JC Raulston Arboretum is currently located on West Campus Precinct. While there are no plans to displace the current facility, an expansion opportunity does exist on Centennial East. The Physical Master Plan has identified an

area near the site's northeast boundary that would serve as an ideal secondary location for the arboretum. The potential site includes several large specimen trees. Over time, this additional location will provide expanded opportunities for community interactions and provide a transition between the Pullen Park Terrace neighborhood and the mixed-use development.

The Seam

At the intersection of Centennial East, Dorothea Dix Park, and North Carolina State Farmers Public Market, the Plan suggests a Pedestrian Promenade at The Seam - envisioned as a vibrant public walkway providing a diverse mix of uses and experiences such as outdoor dining, shopping, and gathering places for special events and everyday social interactions. Streetscape elements define the realm for pedestrians and cyclists with lighting, seating, landscaping, and bicycle parking. Given the unique topography of Centennial East, this walkway will offer a view of both Dix Park and the distant skyline of Downtown Raleigh. The Seam has the potential to serve as a catalyst that attracts visitors and new businesses to the community.

Green Links to Dix Park

The density of the development on Centennial East lessens in the southernmost zone where it meets the Farmers Market. This zone is designed as a porous urban fabric that allows a series of greenways and trails to connect Centennial Campus Precinct with Dix Park and the Farmers Market. In addition to The Seam, which runs north-south, these east-west green linkages work to break up the density of Centennial East and provide better integration with surrounding land uses.





THE SEAM

The Seam will connect Centennial East mixed-use district with Dix Park with a visual connection to downtown Raleigh while also being a critical social space and micromobility corridor connecting Centennial Campus Precinct to other NC State Campus Precincts.



Maximize Views to the
Park and Downtown



Vibrant and Active
First Floor Uses

A Mix of Retail,
Business, and Research
Spaces Strengthen a
Dynamic Ground Floor

Social, Dining,
& Retail Spaces
Activate The Seam

New Buildings Implement
Efficient Construction
Methods, Rooftop Renewable
Energy and Other Reliable,
Sustainable Infrastructure

Shaded Seating
Along The Seam
Creates Comfortable
Outdoor Gathering

Connected Bicycle
Paths Link to Other
Campus Precincts
and Community

Bioswales Infiltrate,
Slow, and Clean Runoff
Close to the Source

New Pathways
incorporate Sustainable
Strategies for Stormwater
Management

High-Bay Research Facilities

At the southern tip of Centennial Campus Precinct, the Physical Master Plan suggests the development of high-bay research space over a long-term time horizon. The intent of this neighborhood is to provide much needed research space that allows for materials testing which requires separation from other types of research and innovation. The potential layout provides adequate space for large vehicle entry and exit and can be developed using simpler construction methods, likely requiring less financial capital as compared to other research facilities. An opportunity exists to further leverage NC State's research and innovation by inviting industry partners to share space in this area of campus. Over time, and as needed, parking structures could be added to support further development given its distance from the rest of Centennial Campus Precinct.





SOUTH CAMPUS PRECINCT



PRECINCT VISION

The Guiding Principles of the Physical Master Plan inform recommendations for South Campus Precinct enhancements. The overall vision is to transform South Campus Precinct into an active and dynamic neighborhood with improved connectivity to both Central and Centennial Campus Precincts.

SOUTH

LEGEND

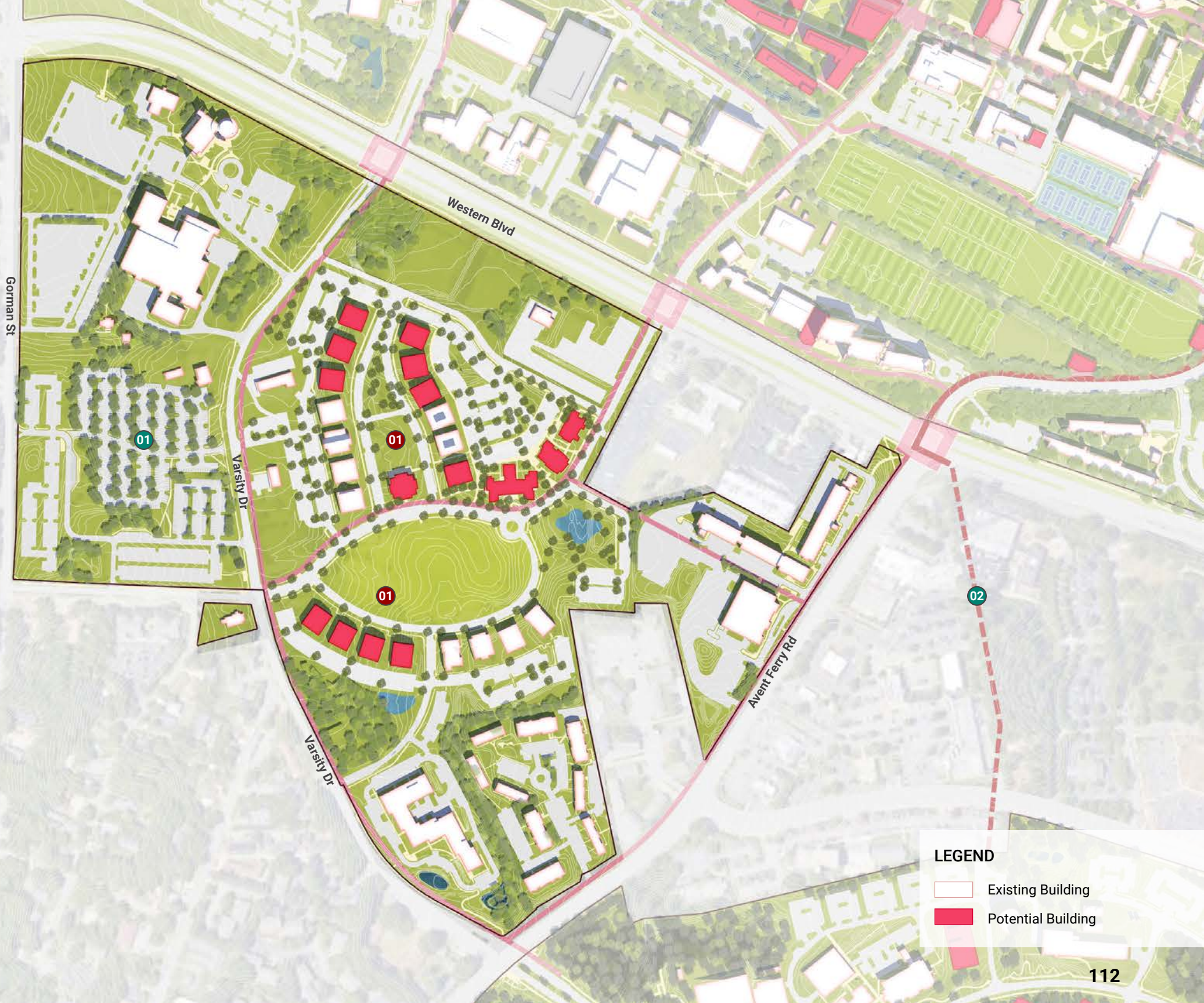
Existing Building

Potential Building

PRECINCT GOALS

- **Reinforce Culture and Place**
 - Continue development of Greek Village to strengthen the fraternity and sorority community at NC State.
- **Steward Campus Resources**
 - Expand safe and accessible pedestrian and bicycle access to encourage sustainable modes of transit.
- **Elevate the Campus Experience**
 - Support changes underway to enhance the student experience by providing a variety of gathering spaces.
- **Align Facilities with Mission**
 - Provide parking facilities to better support the needs of adjacent users and the broader campus community.
- **Strengthen Campus Connections**
 - Recognize South Campus Precinct as a vital link between Central and Centennial Campus Precincts.
 - Create safer pedestrian connections across Western Boulevard at multiple intersections linking campus.
- **Ensure Infrastructure Reliability**
 - Improve reliability at McKimmon Conference and Training center by focusing on building system improvements.
 - Support opportunity for building-dedicated geo-exchange chiller/heater plant and local emergency generation electrical plant.
 - Incorporate solar PV canopies over surface parking and evaluate local battery storage in combination with local emergency generation electrical plant to increase power reliability.

PRECINCT VISION



Building Improvements

- 01 New Development per the 2020 Greek Village Master Plan

Site Improvements

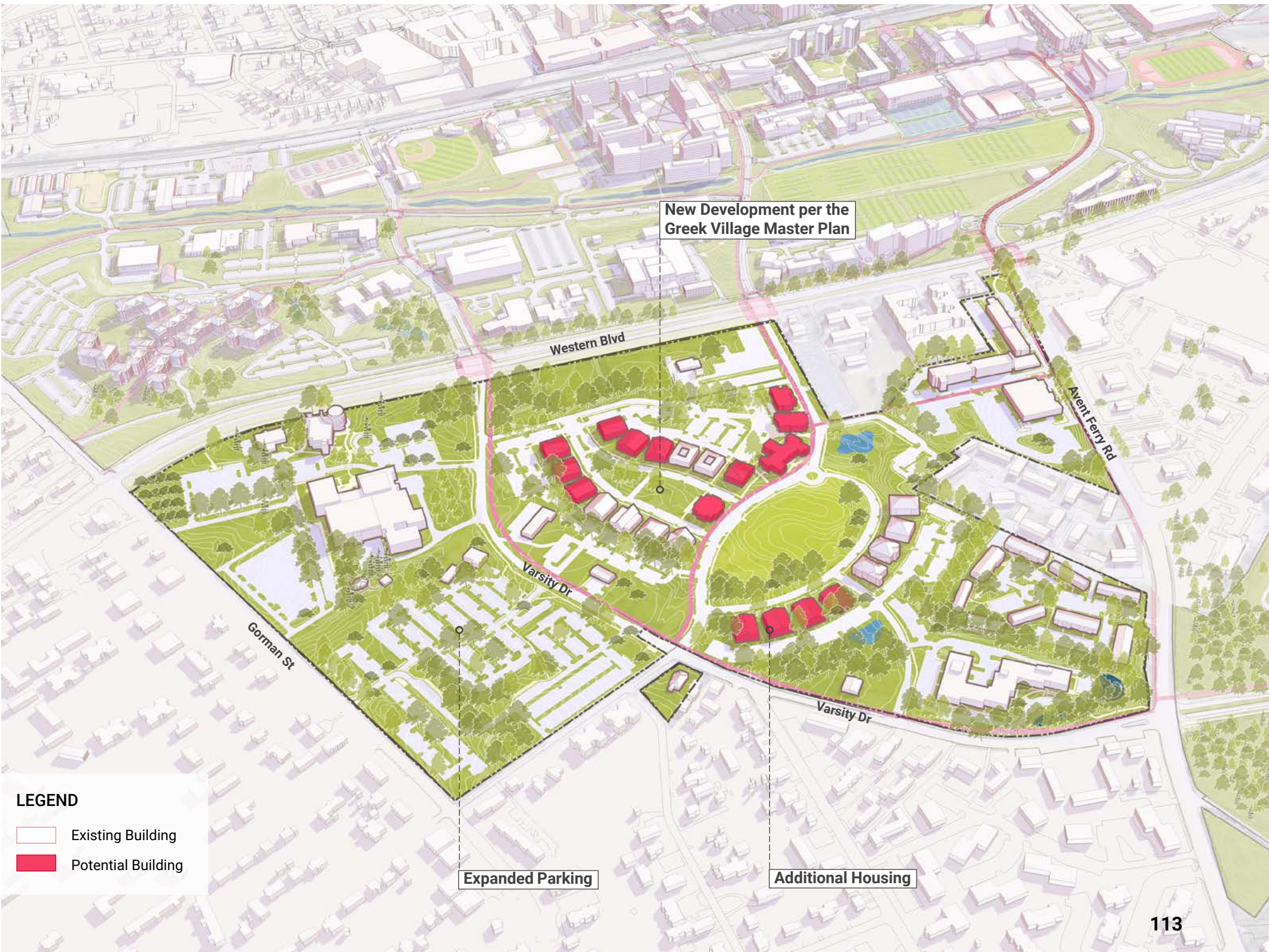
- 01 Additional Parking
- 02 Campus Path to Centennial Campus Precinct

LEGEND

- Existing Building
- Potential Building

POTENTIAL DEVELOPMENT

The Physical Master Plan supports the continued implementation of the Greek Village Master Plan, which is currently underway. This effort is critical to enhancing the overall campus experience for fraternity and sorority communities within the South Campus Precinct. The Greek Village Master Plan suggests new housing options and several new indoor and outdoor amenities to meet the needs of students and organizations. This redevelopment approach provides opportunities for living, learning, and social development which has the potential to attract more student communities to the South Campus Precinct in the future, further elevating the living-learning environment. The Plan also supports efforts underway to expand and reconfigure surface parking and transit facilities west of Varsity Drive to support broader campus parking needs.



PEDESTRIAN & OPEN SPACE FRAMEWORK

Many new pathways and pedestrian connections are suggested for the South Campus Precinct in alignment with the 2020 Greek Village Master Plan. Additionally, connections to the Central Campus Precinct across Western Boulevard are to be enhanced with potential All Campus Paths at Dan Allen Drive and Morrill Drive. Future Neighborhood Paths knit Greek Village and the new west parking lot together as redevelopment efforts continue on the South Campus Precinct. The Campus Connection Paths along Varsity Drive and Avent Ferry Road will continue to link the South Campus Precinct to the Centennial Campus Precinct. In addition, a significant central green space is suggested in the heart of Greek Village and is already in progress. Once complete, the green will be a key unifying space that provides opportunities for passive and active recreation within this precinct.

LEGEND

All Campus Path

Existing

Potential Transformation

Connector Path

Existing

Potential Transformation

Multipurpose Trail

Existing

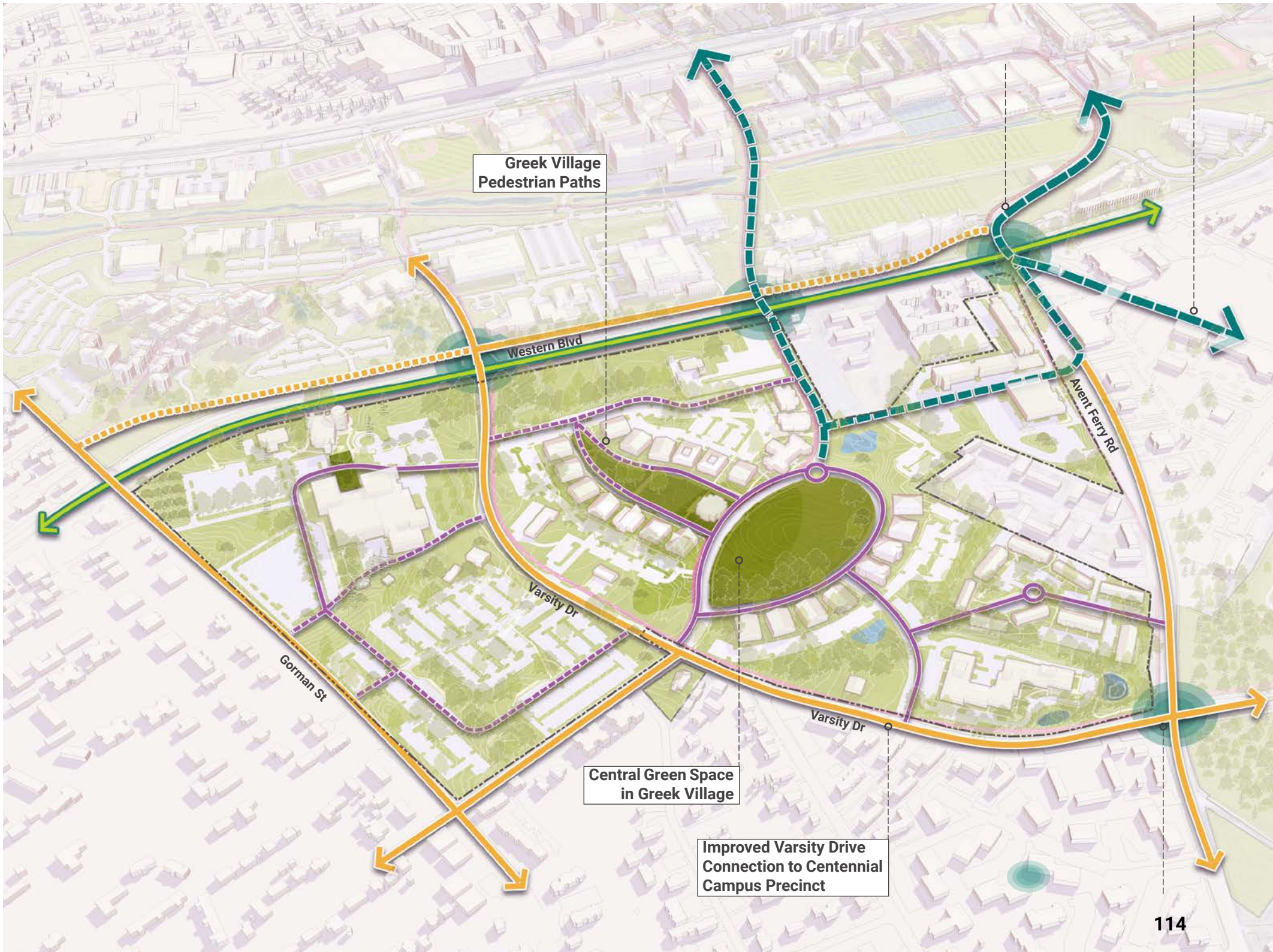
Potential Transformation

Neighborhood Path

Existing

Potential Transformation

Gateway



VEHICULAR MOBILITY FRAMEWORK

The South Campus Precinct is bordered by three major roadways, Western Boulevard on the north, Avent Ferry Road to the east, and Gorman Street to the west. As mentioned in the North and Central Campus Precincts chapter, one of the key goals of the Plan is to create safer intersections along Western Boulevard at Varsity Drive, Dan Allen Drive, and Avent Ferry Road for pedestrians to cross between the South and Central Campus Precincts.

These intersections serve as key gateways into campus from Western Boulevard. The Physical Master Plan suggests enhancing and unifying campus entry signage to create a visible and coherent campus edge condition along the entire length of Western Boulevard. Smaller entrances along Varsity Drive are also suggested. New Local streets will complete vehicular connections within the Greek Village and link Varsity to Gorman in the future.

LEGEND

- Highway

Major 1 (6-Lane)

Existing

Potential Transformation

Major 2 (4-Lane)

Existing

Potential Transformation

Mixed Use 1

Existing

Potential Transformation
- Mixed Use 2

Existing

Potential Transformation

Local

Existing

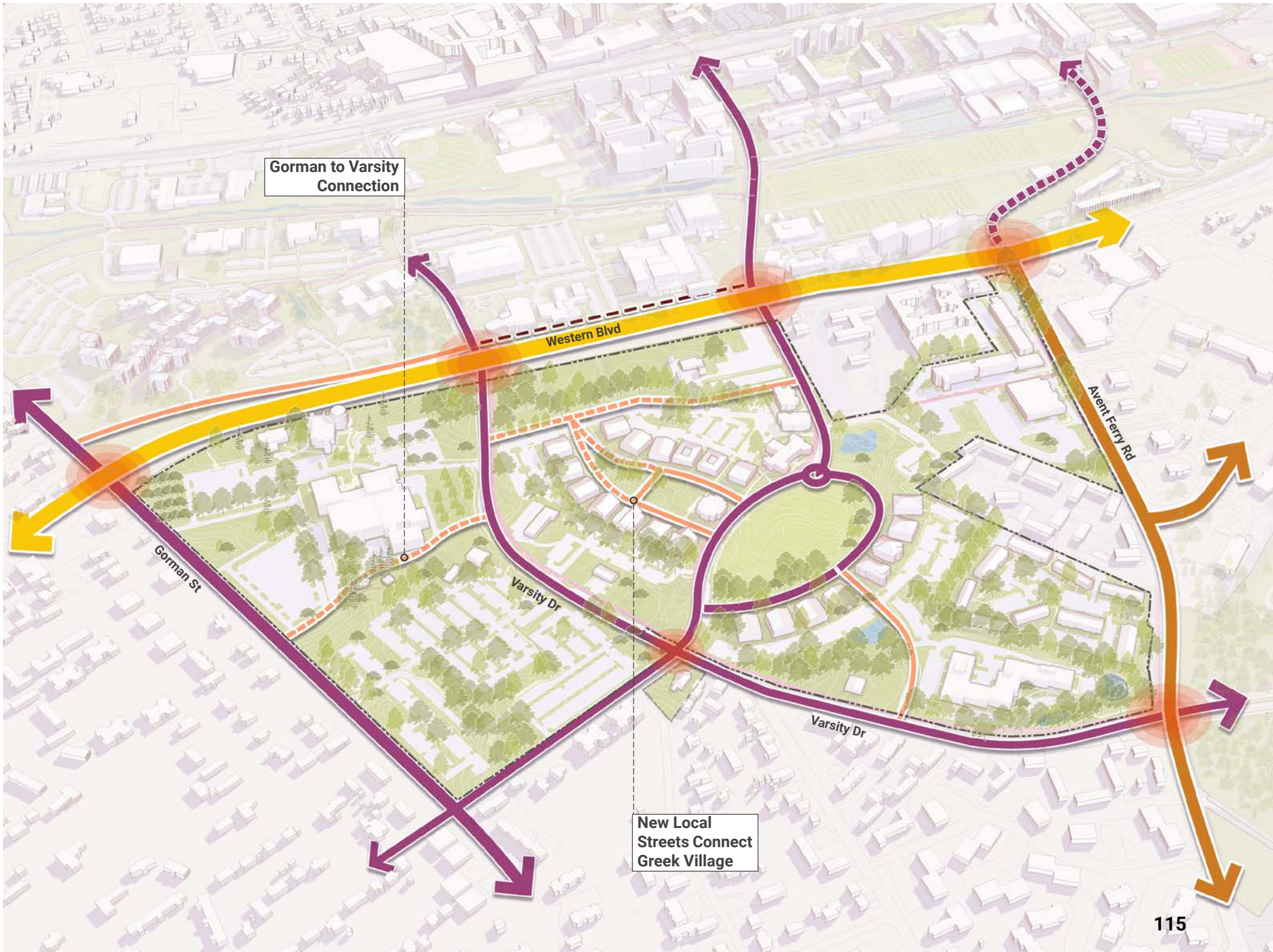
Potential Transformation

Service Route

Existing

Potential Transformation

Key Intersection



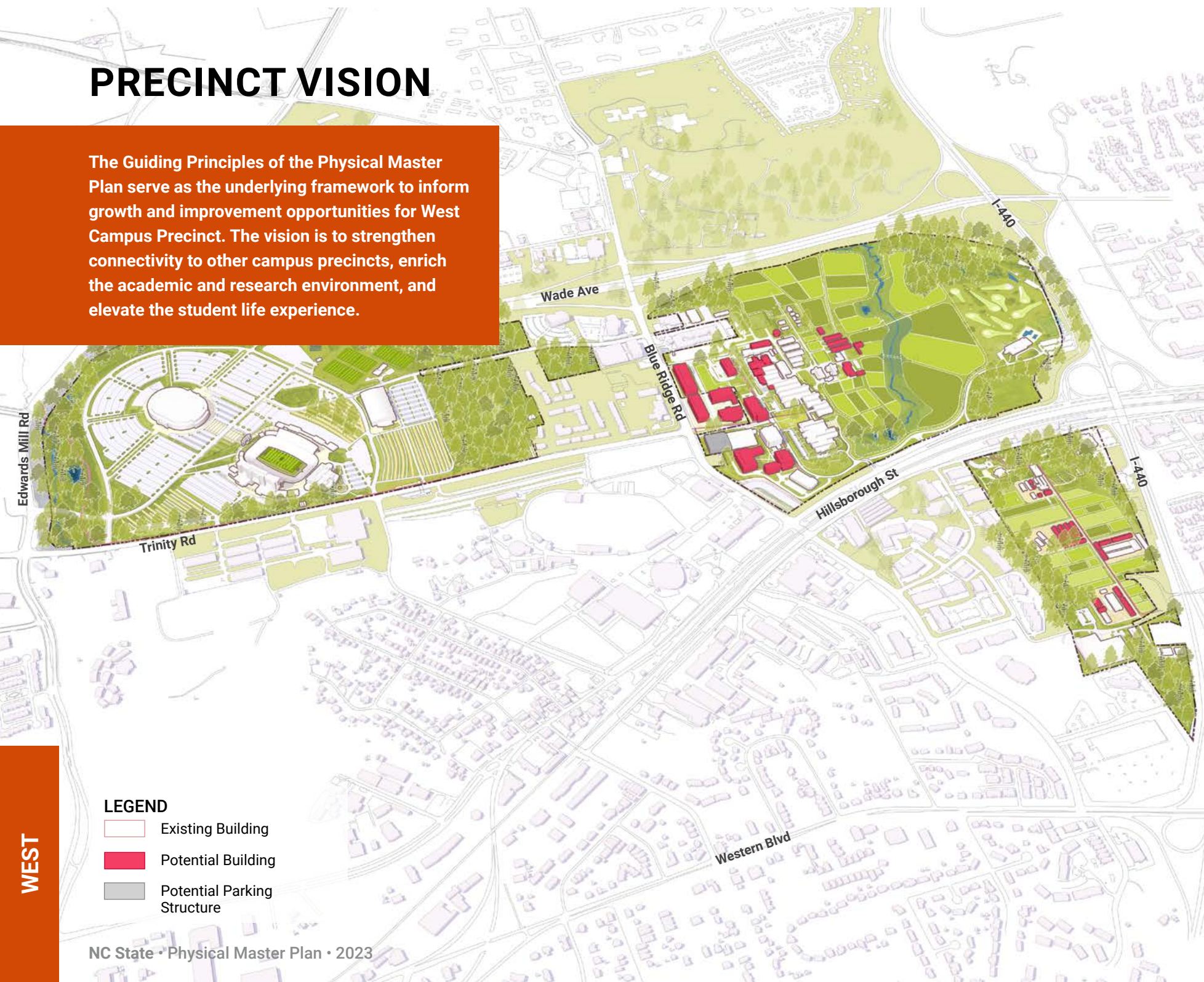


WEST CAMPUS PRECINCT



PRECINCT VISION

The Guiding Principles of the Physical Master Plan serve as the underlying framework to inform growth and improvement opportunities for West Campus Precinct. The vision is to strengthen connectivity to other campus precincts, enrich the academic and research environment, and elevate the student life experience.



PRECINCT GOALS



Reinforce Culture and Place

- Respect and preserve the College of Veterinary Medicine Pastures, a Hallowed Place at NC State.
- Put research on display across West Campus Precinct to celebrate NC State's land grant mission.



Steward Campus Resources

- Create a multi-modal greenway connection across West Campus Precinct to prioritize pedestrians and cyclists.



Elevate the Campus Experience

- Cultivate a more welcoming and inclusive experience on the Centennial Biomedical Campus for all users.
- Provide a better campus arrival experience, acknowledging the regional draw of the College of Veterinary Medicine.



Align Facilities with Mission

- Support new academic and research facilities for the College of Veterinary Medicine to align with space needs.
- Optimize land use to enhance Research Annex capacity.



Strengthen Campus Connections

- Enhance circulation and wayfinding within Centennial Biomedical Campus to improve the visitor experience.
- Support construction of a new Ligon Street Bridge over I-440 to improve connectivity to Central Campus Precinct.



Ensure Infrastructure Reliability

- Maximize reliability through build-out of existing utility plant planned capacity.
- Invest in new regional energy exchange utility plant focused on hydronic thermal distribution in planning of CVM neighborhood.

LEGEND

- Existing Building
- Potential Building
- Potential Parking Structure

PRECINCT VISION

- Building Improvements**
 - 01 CVM Neighborhood
 - 02 Arboretum and Horticulture Field Research Area Improvements
 - 03 Expanded Parking Structure
 - 04 Equine Hospital Addition
 - 05 New CVM Dairy Building
 - 06 Equine Arena
 - 07 Academic and Research Cluster
 - 08 TAU Facility Additions
 - 09 Utility Plant Expansion
- Mobility Improvements**
 - 01 New Campus Entry
- Site Improvements**
 - 01 Pastureland Improvements

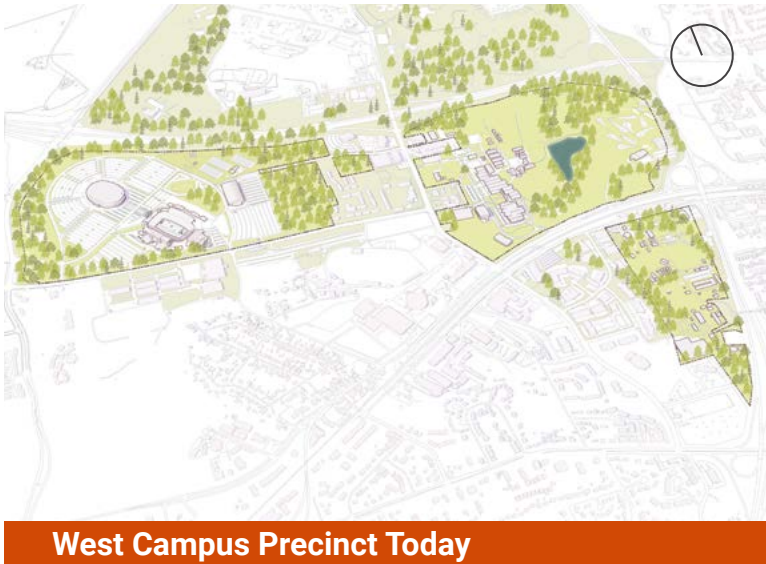
LEGEND

- Existing Building
- Potential Building
- Potential Parking Structure

POTENTIAL DEVELOPMENT

West Campus Precinct includes a dynamic mix of uses such as the Athletic Complex with PNC Arena and Carter-Finley Stadium, Centennial Biomedical Campus (home to the College of Veterinary Medicine), JC Raulston Arboretum, and the West Research Annex. Many of these land uses attract a regional population, with visitors drawn to sporting events, activities at the Arboretum, and appointments at the Veterinary Hospital.

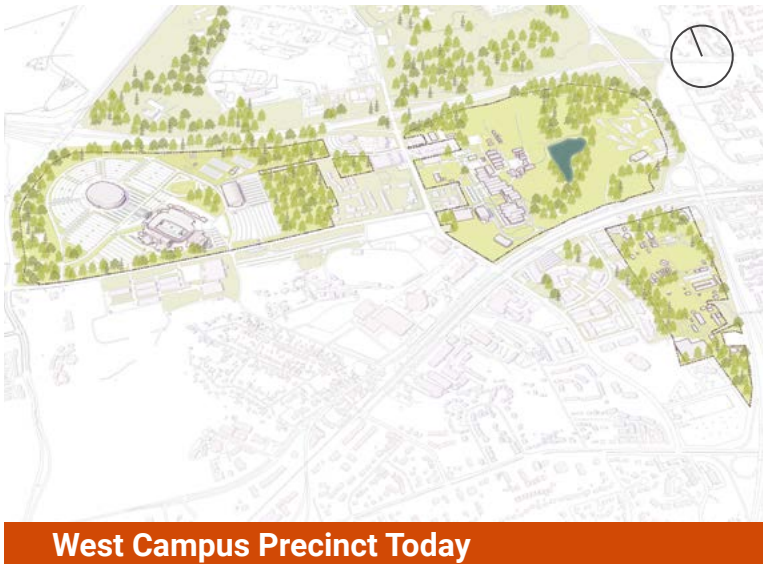
The Physical Master Plan acknowledges this unique role and seeks to create a welcoming and inclusive campus environment for all. The Plan identifies projects, both currently underway and in the future, to support the College of Veterinary Medicine’s space needs. It also identifies strategies to reconfigure and adapt existing land within the West Research Annex to better address future goals. All of these suggested initiatives recognize the need for both public and private zones to support campus activities.



PEDESTRIAN & OPEN SPACE FRAMEWORK

During the planning process, many stakeholders cited concerns regarding the isolation of the College of Veterinary Medicine and the disconnect between uses within the precinct. To address this issue, the Physical Master Plan suggests a Campus Connection Path to link the Athletics Complex to Centennial Biomedical Campus and then over to JC Raulston Arboretum and West Research Annex. This same path also provides a more direct connection to Central Campus Precinct.

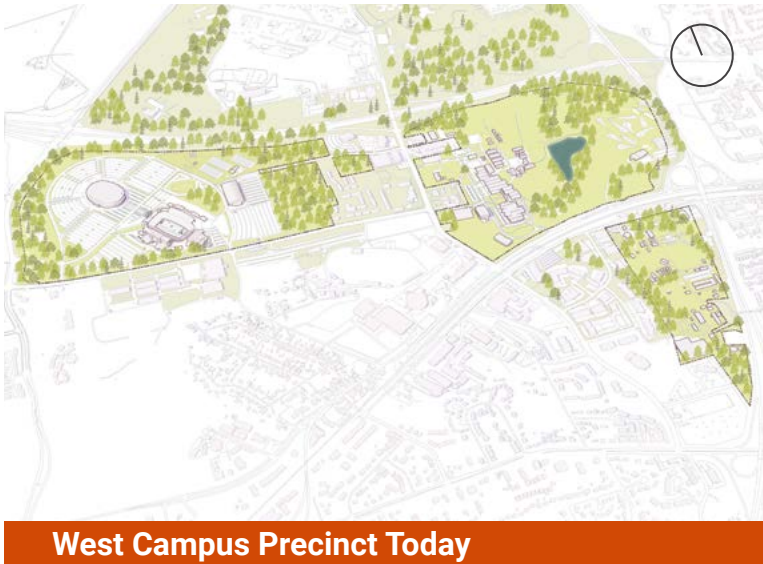
To create a greater sense of identity in areas adjacent to the College of Veterinary Medicine, the Plan suggests improved internal campus streetscapes and an enhanced central open space. At the same time, the Physical Master Plan respects and preserves the Pastures east of the College of Veterinary Medicine, a Hallowed Place at NC State.



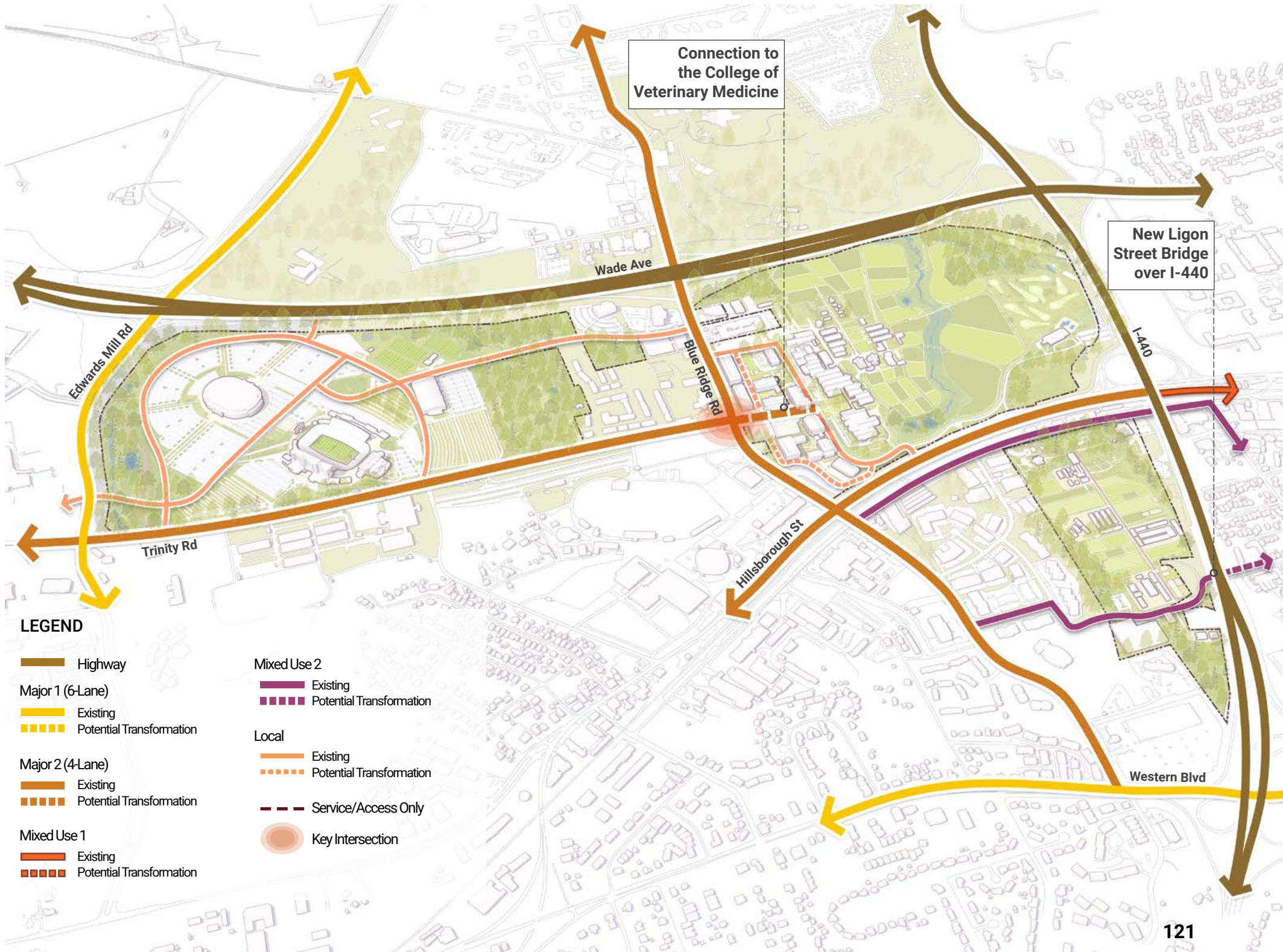
VEHICULAR MOBILITY FRAMEWORK

West Campus Precinct is bordered by several significant mobility corridors which challenge overall campus connectivity. Wade Avenue is located to the north, I-440 to the east, Edwards Mill Road to the west, and Trinity Road, as well as Western Boulevard to the South. In addition, Blue Ridge Road and Hillsborough Street bisect the precinct. As a result, West Campus Precinct can often feel like three distinct, disconnected campus zones.

The Physical Master Plan suggests a series of moves to help strengthen connectivity across West Campus Precinct. One key initiative includes creation of a primary campus gateway to Centennial Biomedical Campus from Trinity Road. This will aid with circulation and be supported by new interior roadways. In addition, the new Ligon Street Bridge over I-440 will greatly improve vehicular access to Central Campus Precinct.



West Campus Precinct Today

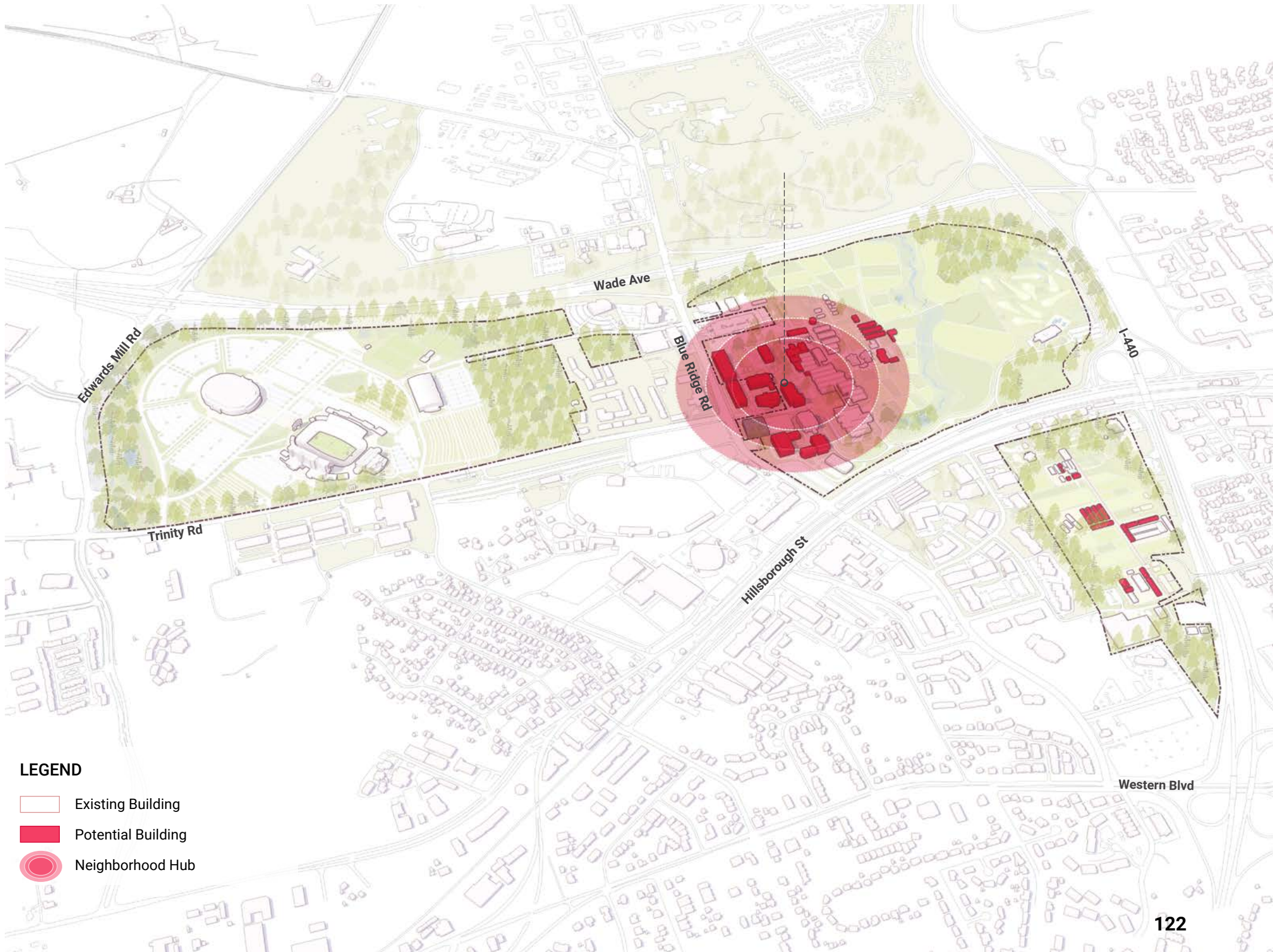
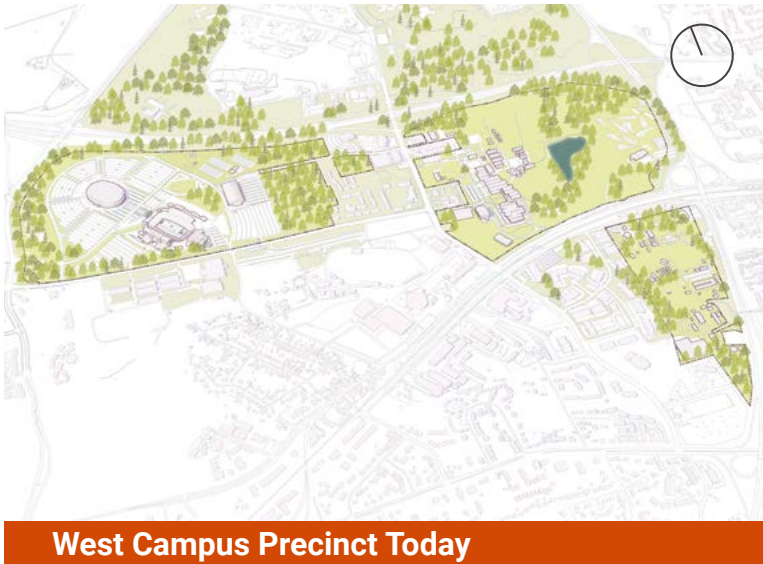


LEGEND

- Highway
- Major 1 (6-Lane)
 - Existing
 - Potential Transformation
- Major 2 (4-Lane)
 - Existing
 - Potential Transformation
- Mixed Use 1
 - Existing
 - Potential Transformation
- Mixed Use 2
 - Existing
 - Potential Transformation
- Local
 - Existing
 - Potential Transformation
- Service/Access Only
- Key Intersection

NEIGHBORHOOD HUBS

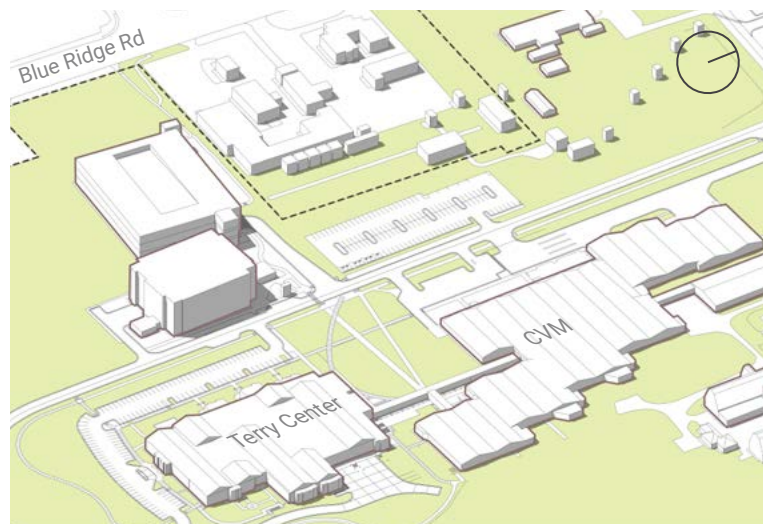
As discussed in previous chapters, the specific characteristics of the campus context shape the unique identity of each Neighborhood Hub. At West Campus Precinct, the Physical Master Plan seeks to amplify the level of activity that already exists today on the Centennial Biomedical Campus. The potential Neighborhood Hub is to be located in the heart of this portion of campus, centered around College of Veterinary Medicine’s existing facilities. The West Campus Hub aims to build a stronger sense of identity for the College of Veterinary Medicine and re-imagine the campus experience for students and visitors alike. Potential facilities bring together research and collaboration to encourage industry partnerships, fostering a dynamic, multi-disciplinary campus environment.



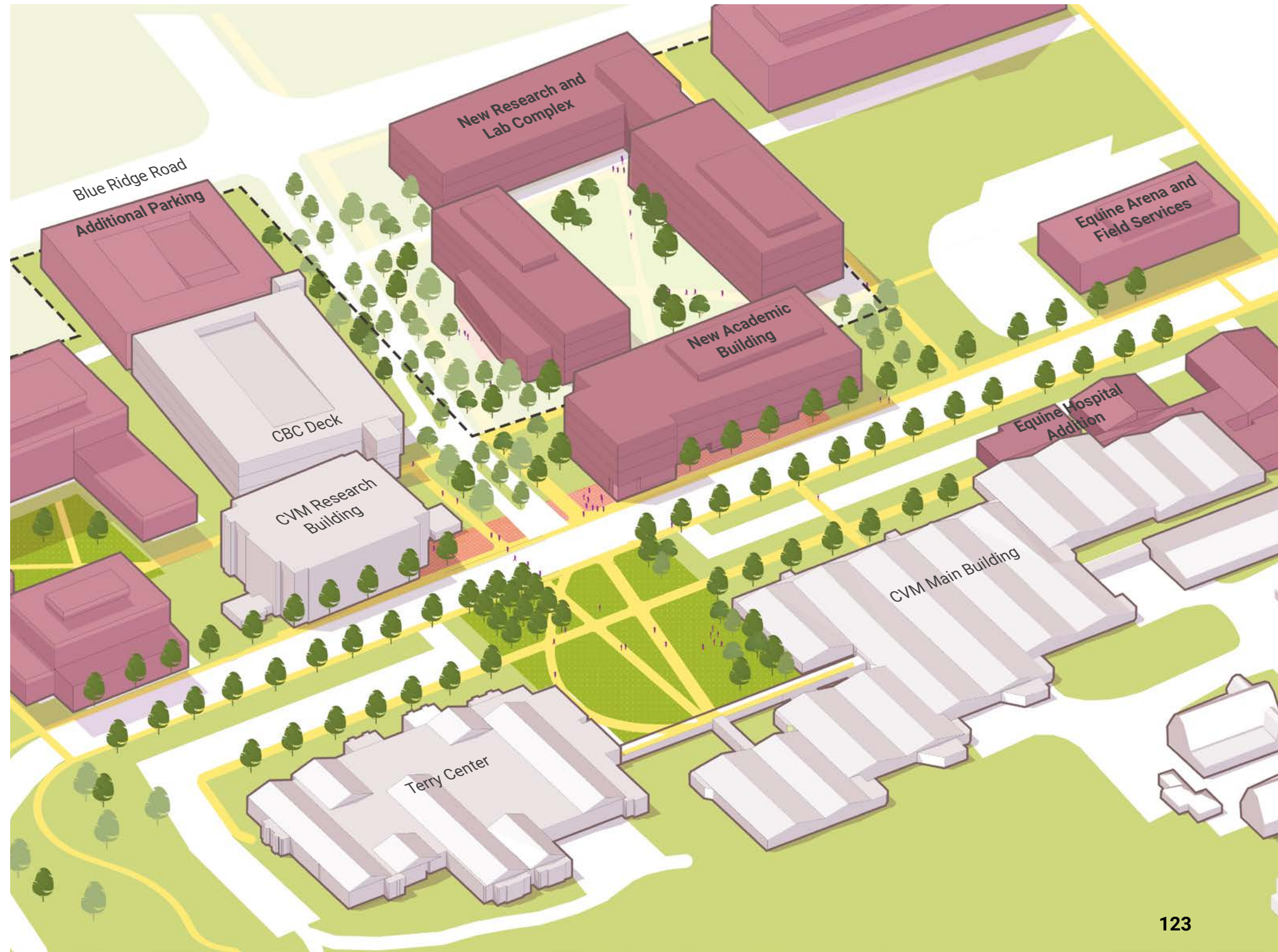
WEST CAMPUS HUB

The area defined here as the West Campus Hub includes the primary academic and research buildings for the College of Veterinary Medicine and an additional property immediately east of Blue Ridge Road. The Physical Master Plan recommends acquiring this land, currently assigned to the State Highway Patrol, to improve connectivity by establishing a new campus gateway at the intersection of Trinity Road and Blue Ridge Road. It would also allow for expansion of facilities west to frame the street edge and campus entry.

Together, this will help foster a greater sense of visual identity for the College of Veterinary Medicine and improve the overall physical campus environment. This expansion aligns with the college's growing enrollment and need for increased space. Hub programming strongly aligns with NC State's commitment to "Think and Do" with the goal of putting research on display by activating building first-floors to add vibrancy to this area.

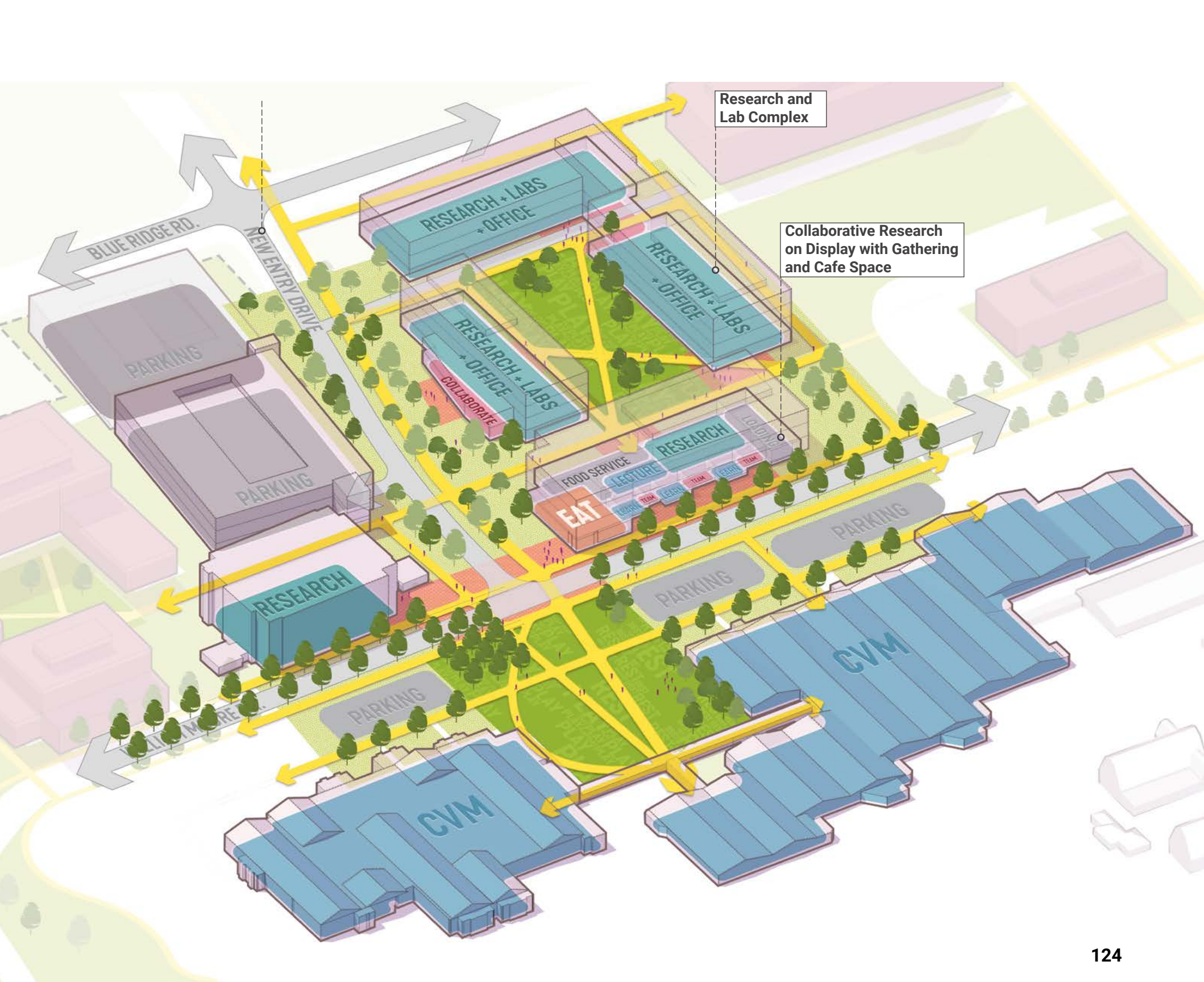


Existing Conditions



WEST CAMPUS HUB

Life Sciences Research is the focal point of this Neighborhood Hub, centered on the Centennial Biomedical Campus. The goal is to provide a vibrant setting with space for increased collaborations between NC State and industry partners. The Hub will include group gathering and events space with enhanced food offerings. A new entry drive and central open space improvements will help create a more welcoming and inclusive neighborhood.



WEST CAMPUS HUB

CVM Education Building

At the intersection of the existing College of Veterinary Medicine (CVM) facilities, a new Education Building is suggested to serve as an anchor for the West Campus Hub. The new building is intended to be a beacon, an iconic building that brings academic and research functions together in a very visible way. The first floor will provide space for teaching and learning, collaboration, and study. This building will anchor future academic and research expansion in West Campus Precinct.

Equine Arena

Efforts are currently underway to design and construct a new Equine Arena and Field Services Building west of the College of Veterinary Medicine's Main Building. The new facility will be supported by surface parking and service access.

Equine Hospital Addition

As an expansion to the existing College of Veterinary Medicine Main Building, a plan is currently in place to provide additional facilities for an Equine Hospital addition. This space will be positioned on the northwest corner of the existing building with access for large horse trailers immediately adjacent.

Teaching Animal Unit (TAU) Cluster

In alignment with the CVM TAU Master Plan, several facility additions are suggested to support teaching operations. Many of these improvements are already underway. For additional details, please refer to the 2017 CVM TAU Master Plan.

Academic / Research Buildings

The Plan suggests a series of future academic and research buildings to enhance and strengthen the mission of CVM and to create a more dynamic campus environment. A grouping of buildings is suggested in the location of the existing Highway Patrol site adjacent to Blue Ridge Road. The Plan suggests assignment of this property to the university which would present the opportunity to create a new campus entry.

Central Utility Plant Expansion

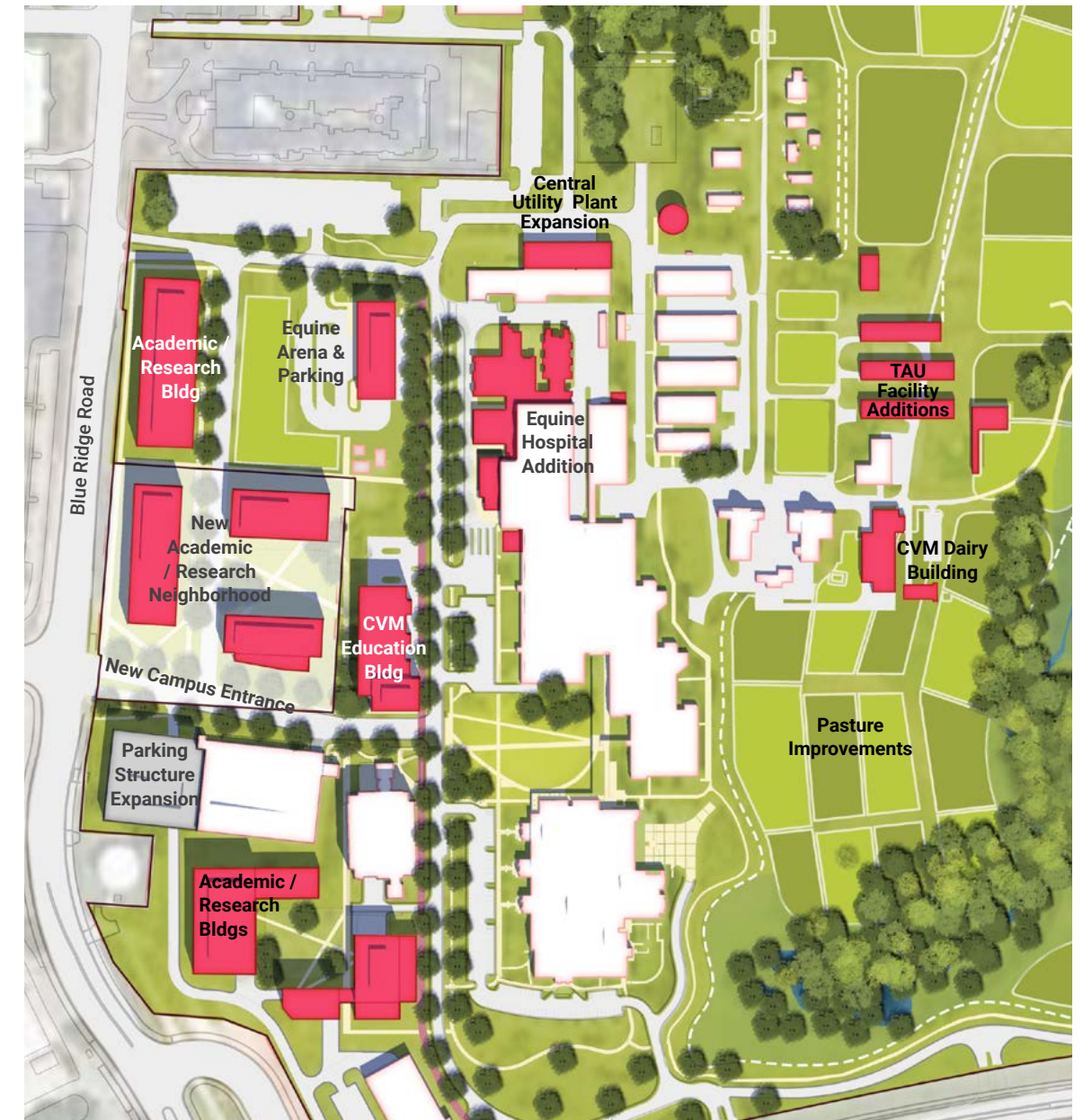
Growth within this part of campus will require updates to and expansion of the Central Utility Plant. Existing capacity should be sufficient to support initial phases of the buildout, but expansion is likely needed as additional development comes online.

Parking Structure Expansion

As new facilities are constructed, additional parking will be required. Since much of the land in this area is vital to research and CVM operations, an expansion to the existing parking structure is suggested to accommodate increased demand.

Pasture Improvements

The Pastures in the West Campus Precinct are one of the Hallowed Places recognized by NC State. Preservation and enhancement of this land is critical because the pastures are vital to the successful operation of CVM. Pasture reconfiguration has been studied as part of the CVM TAU Master Plan, and this plan supports the pond removal proposal and other improvement recommendations as outcomes of that study.





CAMPUS GATEWAY

A new gateway into the College of Veterinary Medicine creates an opportunity for future academic, research, and student service programs to grow. This entrance builds upon the character of the more rural West Campus Precinct while including pedestrian and micromobility elements to better connect campus.



Exterior Hearths to Buildings Expand Hangout and Informal Learning Spaces

New Buildings Implement Efficient Construction Methods and Reliable, Sustainable Infrastructure



Visual Connection to Collaboration Space

Transparent First Floors Add Vibrancy to Streetscape

Connected Bicycle Paths Link to Other Campus Precincts and Community

Bioswales Infiltrate, Slow, and Clean Runoff Close to the Source

WEST RESEARCH ANNEX

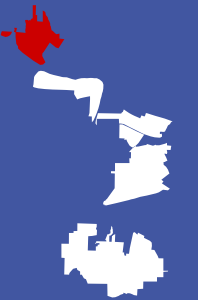
West Research Annex Reconfiguration

The West Research Annex is used primarily for horticultural research. Much of the development in this area has been unplanned over the years, leading to inefficiencies in land use. The Physical Master Plan suggests that over time and as aging facilities are removed or new facilities are added, consolidation of the greenhouse facilities will occur to create a more organized pattern of development in this portion of campus.

By clustering facilities, land assets can be used more efficiently. The current amount of existing field research space will remain, and JC Raulston Arboretum, which sits at the northern part of the site, will remain in its current condition, without impact.

The Ligon Street bridge is currently under construction and, once complete, will provide a stronger access point from Central Campus Precinct. The Plan suggests improvements to the north and south pedestrian pathways to strengthen connections to the rest of West Campus Precinct as well.



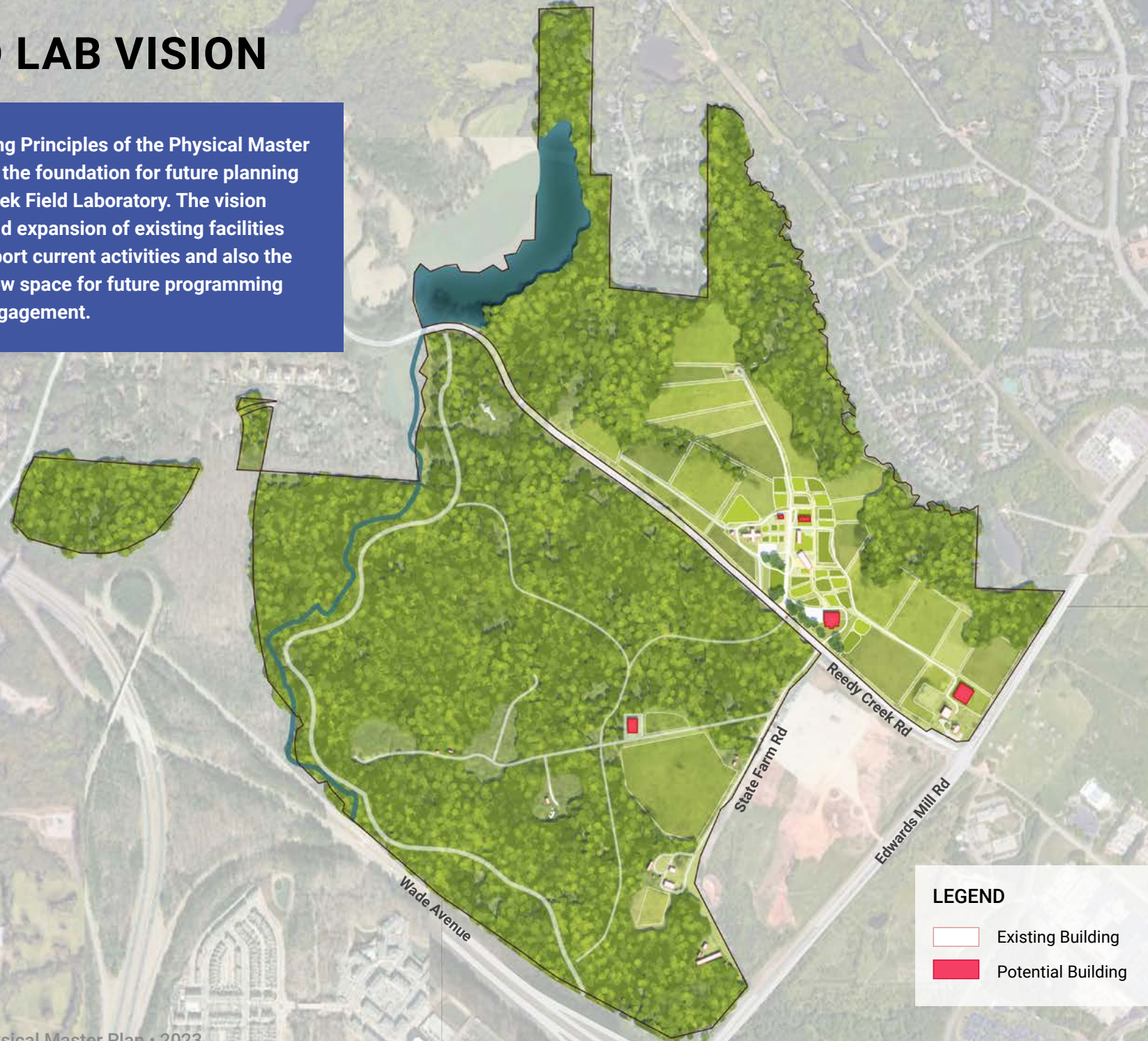


REEDY CREEK FIELD LABORATORY







FIELD LAB VISION

The six Guiding Principles of the Physical Master Plan serve as the foundation for future planning for Reedy Creek Field Laboratory. The vision centers around expansion of existing facilities to better support current activities and also the addition of new space for future programming and public engagement.



FIELD LAB GOALS

- 
Reinforce Culture and Place
 - Cultivate a welcoming and inclusive environment for public engagement and educational opportunities.
 - Put research on display to create a stronger identity for Reedy Creek and celebrate NC State's land grant mission.
- 
Steward Campus Resources
 - Create opportunities for increased public interaction with Schenck Forest to help foster a greater appreciation for the natural environment.
- 
Elevate the Campus Experience
 - Provide event and educational space on site to expand the role of the field lab for both NC State and the public.
- 
Align Facilities with Mission
 - Construct facilities that will expand existing offerings to increase collaborations with industry partners and new applied-research opportunities.
- 
Strengthen Campus Connections
 - Improve wayfinding and signage at the intersection of Reedy Creek Road and Edwards Mill Road.
 - Connect trails to West Campus Precinct and to the city's greenway system.
- 
Ensure Infrastructure Reliability
 - Create a stand-alone micro-grid by using a large-scale photovoltaic array and battery storage systems.
 - Align efforts with academic research on renewable energy strategies for agricultural settings.

FIELD LAB VISION

- Building Improvements**
 - 01 Future Education Pavilion
 - 02 Equine Farm Plan Expansion
- Mobility Improvements**
 - 01 Trail Network Extension
 - 02 Campus Gateway
- Site Improvements**
 - 01 Challenge Course

LEGEND

- Existing Building
- Potential Building

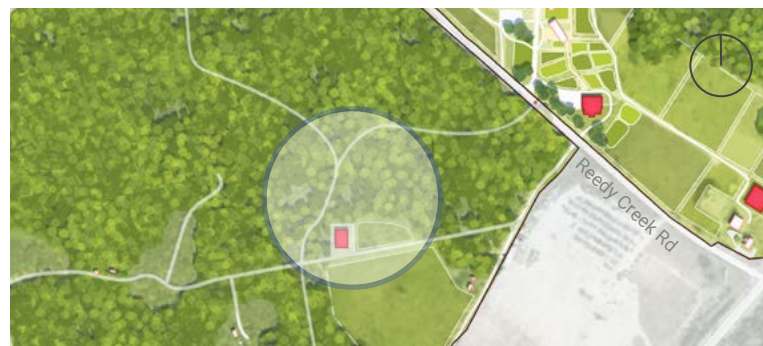


REEDY CREEK HUB

Reedy Creek Field Laboratory is comprised of the Carl Alwin Schenck Memorial Forest on the southwestern side of Reedy Creek Road, the Equine Educational Unit on the northeast, and other research units. A plan currently exists to provide new and expanded facilities to support the College of Veterinary Medicine's and the College of Agriculture and Life Sciences' Equine Farm for educational and research purposes. The facility also provides support to horse owners as part of NC State's statewide extension services.

Carl Alwin Schenck Memorial Forest encompasses 245-acres and is managed by the College of Natural Resources. It serves an important role in support of education and research focused on forest management practices. In addition, Schenck Forest is a popular destination for visitors seeking passive recreation.

Reedy Creek is an important part of NC State that currently lacks strong visual identity and sufficient space to support a myriad of educational and outreach programs desired by the university. An opportunity exists to create a Neighborhood Hub to strengthen wayfinding, identity, and create new gathering spaces for users.



Reedy Creek Hub Location



REEDY CREEK HUB

The overarching concept for Reedy Creek Neighborhood Hub is immersion in nature through working landscapes. The goal is to provide additional indoor and outdoor space for educational opportunities, industry partnership events, and community programming. The Hub is intended as an interdisciplinary venue in support of the College of Natural Resources, the College of Veterinary Medicine, and the College of Agriculture and Life Sciences. Potential facilities are tucked amidst Schenck Forest to immerse users in nature and highlight the importance of natural resources in our community. An expanded trail system links multi-purpose pavilions to one another and ultimately to a regional greenway system. The Hub seeks to strengthen Reedy Creek's identity, bring students and researchers together, and provide increased opportunities to welcome the broader community to the property for experiences immersed in nature.





LAKE WHEELER ROAD FIELD LABORATORY



FIELD LAB VISION

Recommendations for Lake Wheeler Road Field Laboratory are rooted in the six Guiding Principles of the Physical Master Plan. The overall intent is to enhance wayfinding and campus identity, improve public engagement opportunities, and provide enhanced facilities for day-to-day operations.

LAKE WHEELER



FIELD LAB GOALS



- Reinforce Culture and Place**
- Create a welcoming and inclusive environment for the public to connect with agricultural research.
 - Put research on display in a safe, dedicated area to celebrate NC State’s land grant mission.



- Steward Campus Resources**
- Explore ways to showcase sustainable initiatives taking place at the Field Lab to the broader public.



- Elevate the Campus Experience**
- Develop an immersive and experiential learning experience for campus and community visitors.
 - Foster a vibrant setting by developing a market alongside the existing Howling Cow Creamery.



- Align Facilities with Mission**
- Support research facilities and field lab improvement projects that are currently underway.
 - Expand educational opportunities by developing additional animal and plant-related research facilities.



- Strengthen Campus Connections**
- Improve wayfinding and signage along Lake Wheeler Road to enhance the visitor experience.
 - Create a multipurpose/public education trail linking beef, poultry, dairy, and swine research units.



- Ensure Infrastructure Reliability**
- Create micro-scale “test lab” for implementation of micro-grids in agricultural settings.
 - Incorporate PV, biogas, and battery storage into “packaged” proof-of-concept solutions aimed towards family farms.

FIELD LAB VISION

Building Improvements

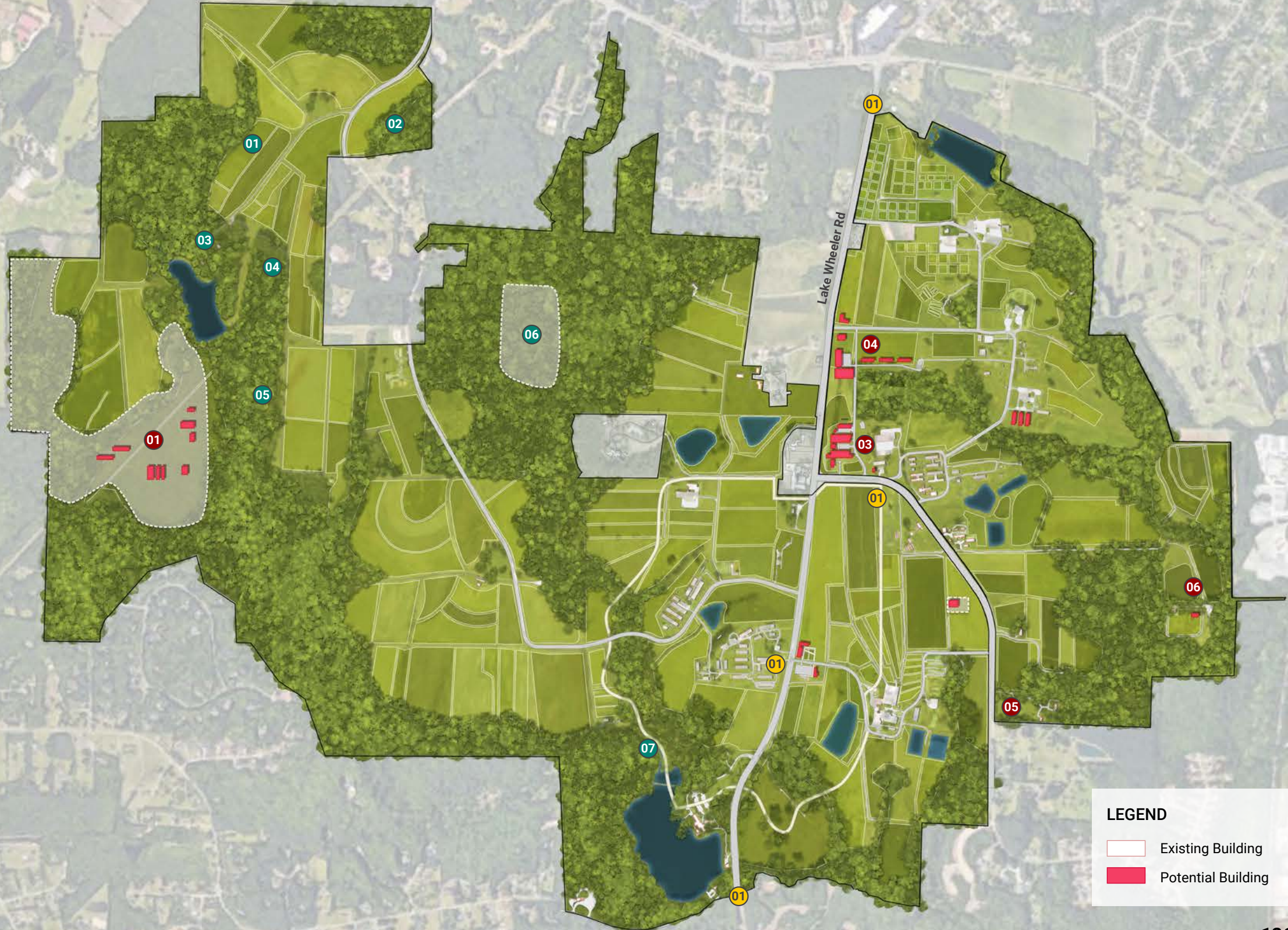
- 01 Small Animal & Metabolism Teaching Unit
- 02 Lake Wheeler Neighborhood Hub
- 03 USDA Agricultural Research Station
- 04 Plant and Environmental Technology Operations
- 05 Bee Research Center
- 06 Compost Facility Expansion

Mobility Improvements

- 01 Entry and Signage Improvements

Site Improvements

- 01 Plant Sciences Initiative Delivery System
- 02 Precision Ag Technology Training
- 03 Teaching Facilities
- 04 Horticulture Field Lab
- 05 Plant Ecology/ Long Leaf Pine Ecosystem
- 06 Aquaculture & Environmental Research Ponds
- 07 Nature Public Education Trail



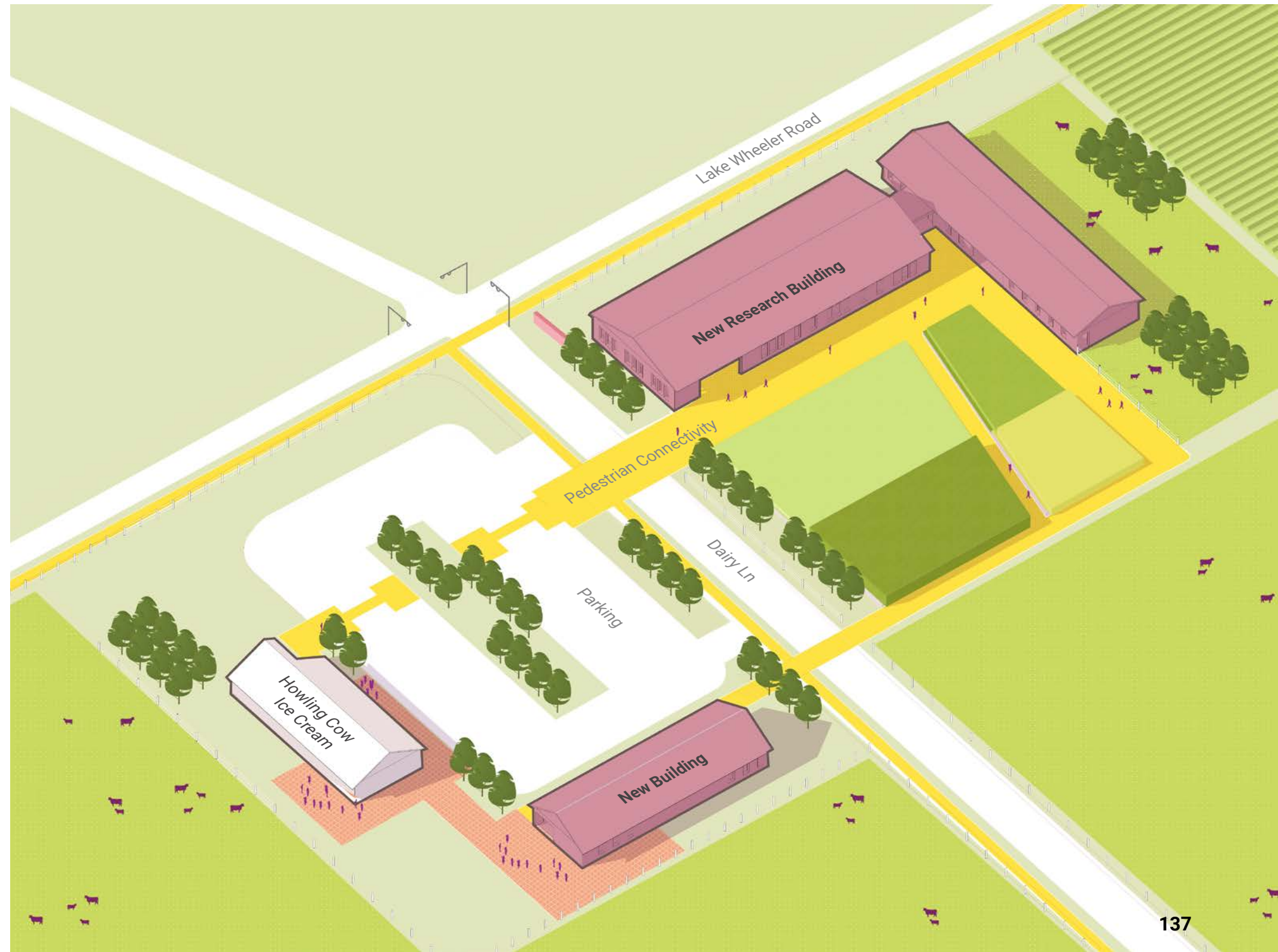
LEGEND

- Existing Building
- Potential Building

LAKE WHEELER HUB

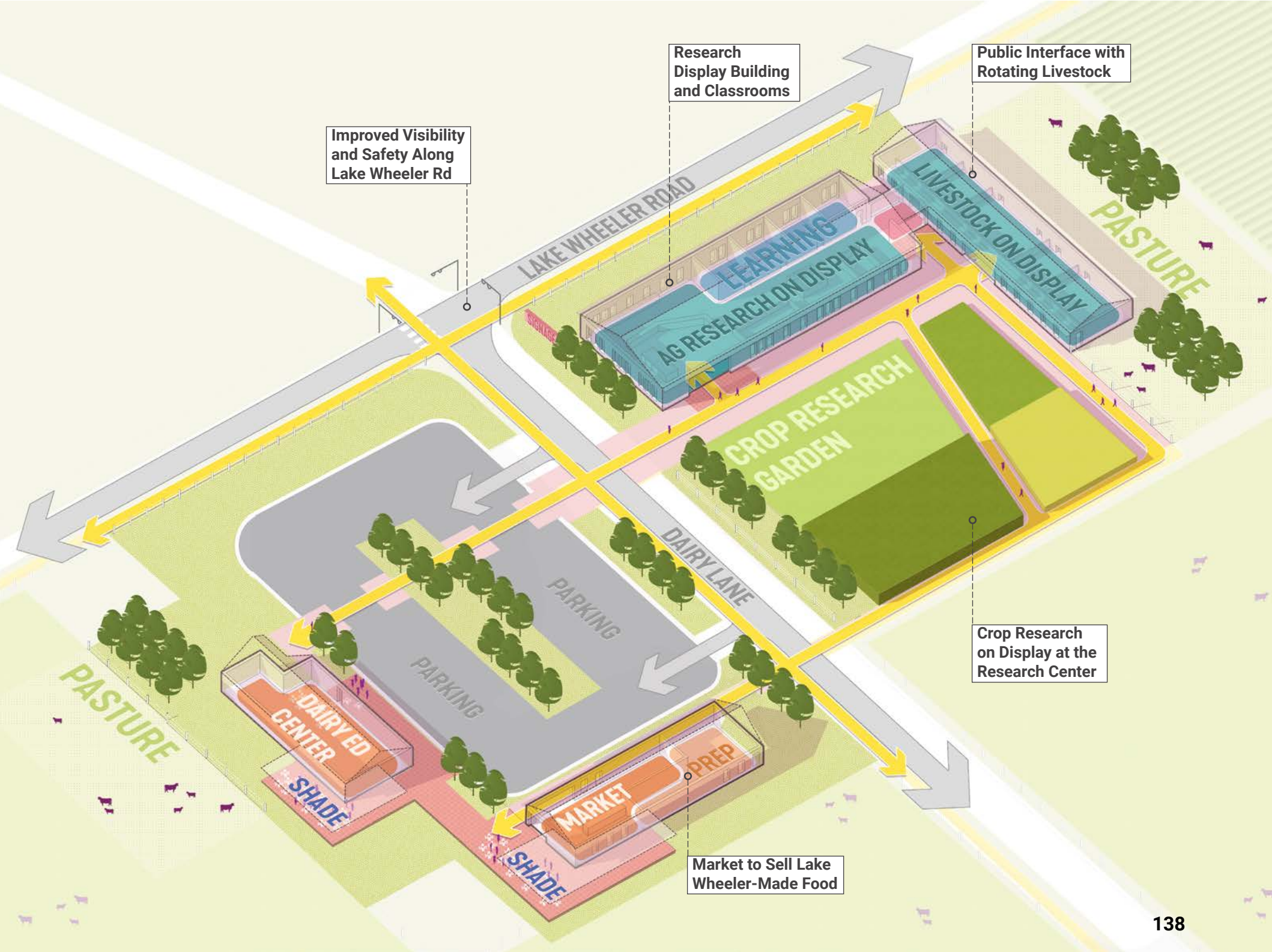
Lake Wheeler Road Field Laboratory encompasses nearly 1,500 acres of land for teaching, research, and extension service activities in support of the College of Agriculture and Life Sciences (CALS). The facility is directly tied to NC State's land grant mission and is a critical resource for North Carolina's largest industry. It is a valuable asset, located only five miles from the Central Campus Precinct and surrounded by urban expansion. CALS completed a separate detailed study in recent years which identifies specific facility needs and initiatives that have been incorporated into Physical Master Plan recommendations.

As part of stakeholder outreach sessions, a vision emerged to further enhance the educational role of Lake Wheeler Road Field Lab by inviting the public to dedicated space on the property to foster a greater appreciation and understanding of research being undertaken by NC State. From this feedback, the concept of Lake Wheeler Neighborhood Hub emerged, located adjacent to the existing Howling Cow Education Center and Creamery, a popular ice cream destination and experiential learning center.



LAKE WHEELER HUB

Lake Wheeler Hub focuses on creating a more robust destination to welcome the public and put agricultural research on display in a safe and controlled environment. By creating a more dynamic public interface, it will allow visitors to better appreciate the important agricultural research taking place at NC State. It will also help to invigorate the area and enhance Lake Wheeler’s existing public education outreach mission. A potential market is intended to sell produce and goods that highlight NC State patents or research outcomes. The Hub will be able to host cultural and food events celebrating the living laboratory at Lake Wheeler. It puts NC State’s “Think and Do” mission prominently on display. This Hub, along with improvements on Lake Wheeler Road, will help foster a greater sense of identity for Lake Wheeler Road Field Labs.

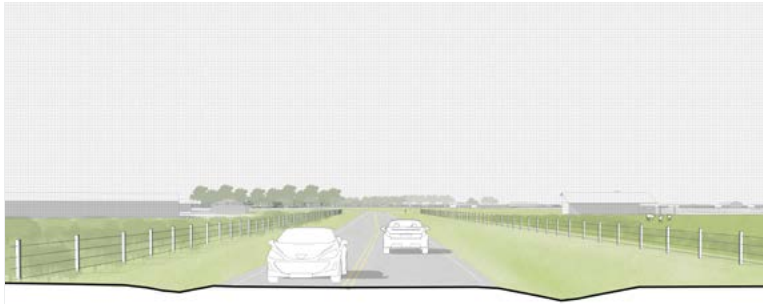


LAKE WHEELER ROAD

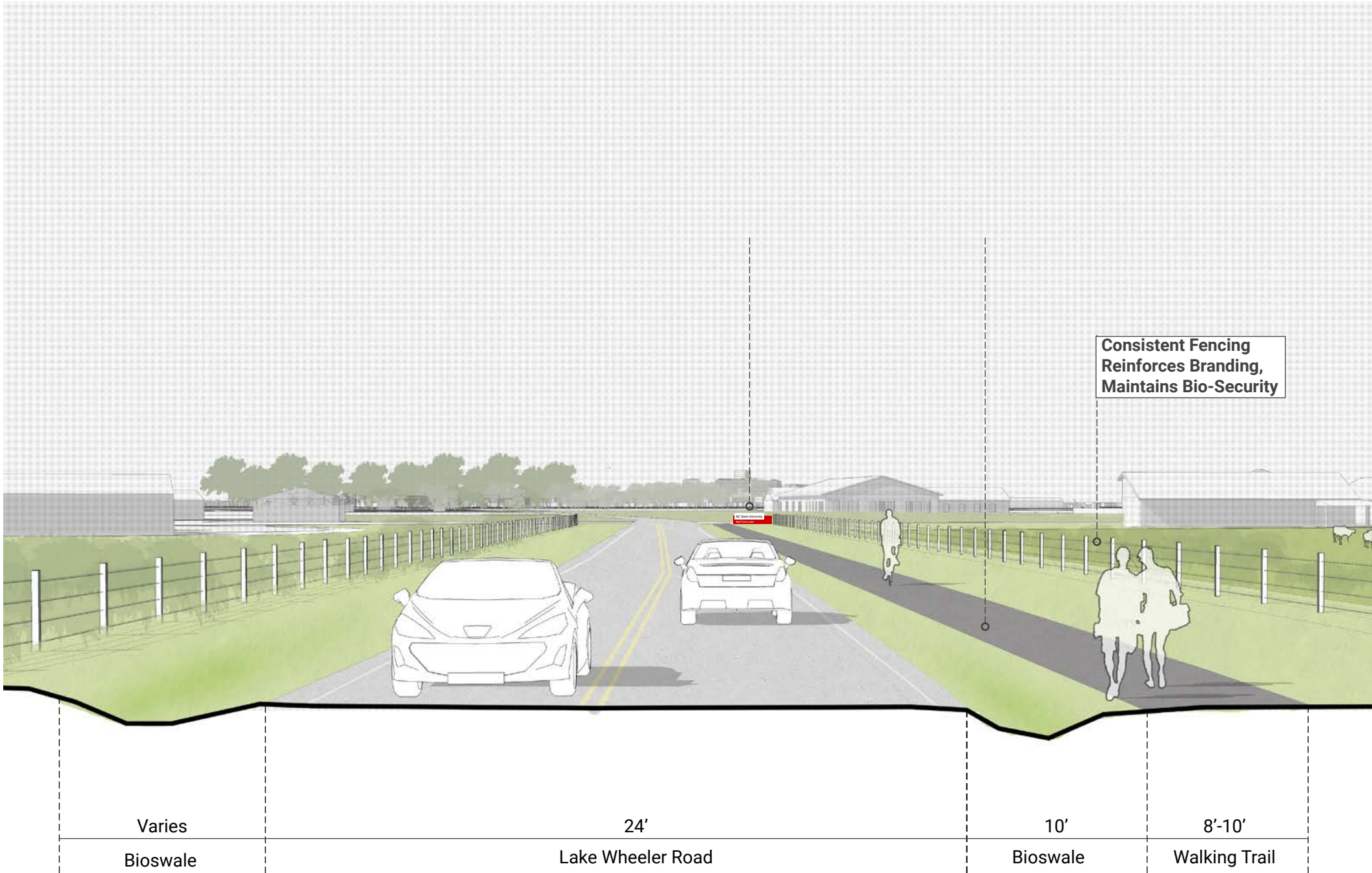
An opportunity exists for NC State to work collaboratively with the North Carolina Department of Transportation to provide improvements to Lake Wheeler Road. This roadway serves an important north-south connection within the Raleigh region. It supports access not only to Lake Wheeler Road Field Laboratories but also to Historic Yates Mill County Park.

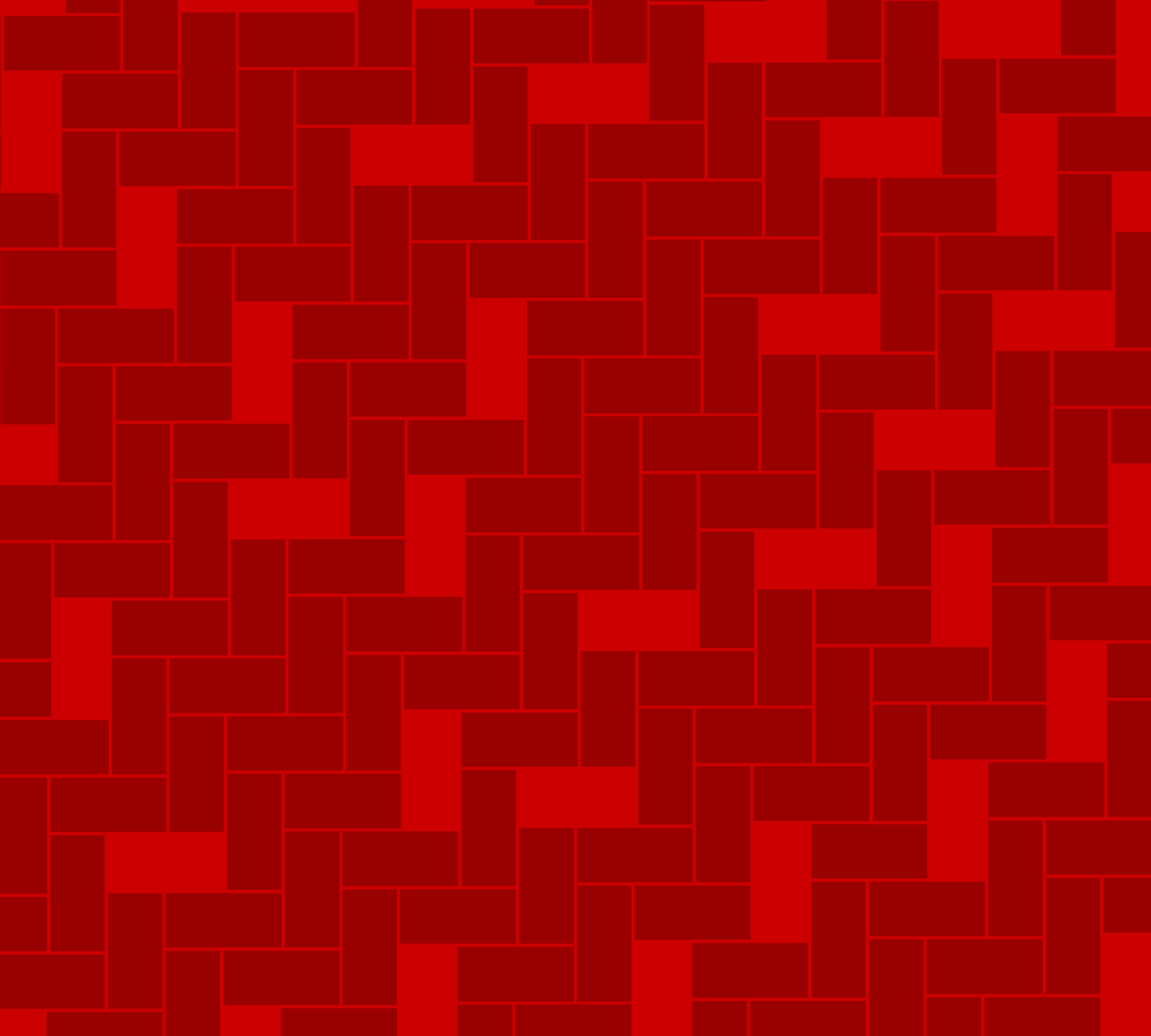
The adjacent Lake Wheeler Road cross-section suggests adding a non-motorized trail along the eastern edge of the right-of-way to provide a safe, dedicated path for pedestrians, scooters, and cyclists. It also has the potential to provide better connectivity to the surrounding community, with the long-term goal being a connection north to NC State's Centennial Campus Precinct.

Potential improvements also include updates to wayfinding and signage for Lake Wheeler Road Field Laboratory and a more consistent edge condition along the property to better distinguish the Field Lab from adjacent lands. This approach serves a dual purpose in that it also supports bio-security.



Lake Wheeler Road Existing Conditions





03

DESIGN GUIDELINES



DESIGN GUIDELINES

TABLE OF CONTENTS

This Physical Master Plan Report is an interactive plan with buttons and links that will assist in moving you through the document. You may read through in a linear or non-linear manner, and go directly to aspects of the Plan that are most interesting to you. Click on any of the content areas to the right, and use the navigation at the top of each page, or click on any links within the report.

HOW TO USE THIS DOCUMENT



This document is interactive and has links and buttons that can be clicked. NC State logo is clickable and will bring the user back to this dashboard when clicked.

DESIGN GUIDELINES

PURPOSE

NC State is a beautiful tapestry of Campus Precincts, Human-Scaled places where individuals can form a lasting personal connection to this large university. These neighborhoods are diverse in character, organized around attractive, lively open spaces, and developed in ways that encourage human interaction, collaboration and reflection. They are woven into a coherent whole by a system of footpaths, streets, and transit - a pedestrian-oriented network featuring All Campus Paths that are a distinguishing characteristic of the university. The built environment shall be of the highest quality, responding to campus and ecological contexts, and contributing to the traditions and missions of NC State University. Each project, however large or small, is a source of pride for the community and measurably moves toward making NC State a better place.

The university is committed to the Master Planning Process. Decisions about space allocation and management, capital priorities, designer selection, building design, and landscape planning, for state owned buildings, are based on the criteria in the Plan. This process and plan are intended to be a framework that inspires excellent design. If the university decides it must modify the Plan's criteria or deviate from its standards in a development project, it will be guided by the Board of Trustees, the Campus Design Review Panel, and campus neighborhood stakeholders. As Design Guidelines specific to each Campus Precinct are developed, they become supplements to the Plan and provide further guidance for project planning.

The Plan begins with the Campus Vision, the NC State campus as it will become, drawing on the campus' successful existing parts. All development will advance this Vision. The subsequent Guiding Principles, on which the Vision is built, are the university's underlying values regarding campus development. The Precinct Plans are renderings that illustrate the vision for the five planning areas of the campus core: the North, Central, South, West and Centennial Campus

Precincts. Additionally, Lake Wheeler and Reedy Creek are considered Campus Precincts in the Plan and their vision is defined as well.

These guidelines are conceptual development criteria that every development proposal must address. The architectural, site, and ecosystems standards, which are coupled with their appropriate guidelines, present specific criteria for the design of buildings, the development of the exterior environment, the sensitive management of natural systems, and the ways to integrate them into the campus fabric. These guidelines are intended to be descriptive rather than prescriptive, providing adequate information for future designers to understand the key concepts at NC State, while maintaining flexibility and creativity within each unique design solution. By following these guidelines and standards, the many parts of a large campus are woven into a coherent whole that honors the Campus Vision and the Guiding Principles.





CAMPUS-WIDE FRAMEWORKS



CHARACTER PLACES

There are places on campus that hold particular meaning for the university community, either because they are the sites of ceremonial or historical significance or because over time they have been recognized as having a quality that sets them apart from other areas on campus as worthy of special treatment and respect. These places are Hallowed Places, Exterior Hearths, Landmarks, Prototypes, and Landscape Features. The university will preserve and enhance these places, which give the campus a memorable sense of character.



Wolf Plaza



Stafford Commons outside Talley Student Union



Memorial Belltower



Lake Raleigh

Hallowed Places

The university is committed to caring for and preserving campus buildings, landscapes, and natural settings that have accrued special meaning over time, henceforth referred to as Hallowed Places. This unique designation is awarded only to those buildings and places that have become irreplaceable because of their historical significance or because over generations of students they have become symbols of our bond with

the university. Hallowed Places provide an underlying commonality of experience and evoke awe, fascination, and inspiration. These buildings, unique places, and natural resources are cataloged, restored if necessary, nurtured, and celebrated to reflect pride in the university’s heritage and respect for the past. These are campus places that, over time, inspire a feeling or mental image that is uniquely “NC State.” They are irreplaceable

campus buildings, landscapes, and natural settings to which people have created lasting bonds throughout generations of students by providing an “underlying commonality of experience which evokes awe, fascination, and inspiration.”



Memorial Belltower



Court of North Carolina



Reynolds Coliseum



University Plaza “The Brickyard”



Lake Raleigh Woods



Holladay Hall



Mary Yarbrough Courtyard



Free Expression Tunnel



College of Veterinary Medicine Pastures



The Oval

Hallowed Places Extents

The outlines below indicate the understood extents of NC State's Hallowed Places. Any future modifications will require extraordinary care to preserve, enhance, and restore the character of these special places.



West Campus Precinct

- 01 College of Veterinary Medicine Pastures



North/Central Campus Precinct

- 02 Memorial Belltower
- 03 Court of North Carolina
- 04 Reynolds Coliseum
- 05 University Plaza "The Brickyard"
- 06 Holladay Hall
- 07 Mary Yarbrough Courtyard
- 08 Free Expression Tunnel



Centennial Campus Precinct

- 09 Lake Raleigh Woods
- 10 The Oval

Exterior Hearths

From benches beneath a tree to large Shared Open Spaces, these are the university's gathering places and social centers, often containing some level of food service. Each development project must plan, arrange, and preserve space so that Hearths exist in all Shared Open Spaces. Since Exterior Hearths are gathering places, they are ideal locations for exterior art as a focal point.

Site Standards

- Hearths are visible from and related to at least one other, and are connected by the All Campus Path. Should connect to Interior Hearths.
- Have a focal point, Landmark, or other feature unique to the neighborhood.
- Hearths may include seating, covered areas, and electrical receptacles.



University Plaza "The Brickyard"

Landmarks

Landmarks are distinctive and dominant in the landscape and aid in wayfinding. They may be a feature of a building, a free standing object, a Hearth, a Natural Area, or public art that over time or through design has become part of the university's identity. They are sometimes associated with a memorial structure or ceremonial functions.

Site Standards

- Landmarks are protected and enhanced by each development project.
- Are located so that views to them are attractive, act as points of reference along All Campus Paths, and facilitate campus wayfinding.
- Are connected to or are part of Shared Open Spaces.
- May incorporate elements of learning into their design.
- May incorporate special lighting.



The State College Smoke Stack

Significant Landscape Features

Landscape Features are landforms, woodlands, meadows, gardens, green open spaces, and Ecosystems that provide each Campus Neighborhood with unique character. They are respected as amenities and are enhanced.

Site Standards

- Landscape Features are accessible to Neighborhoods and their Shared Open Spaces.
- Include plantings that provide food and habitat for wildlife and people.
- Are repaired or enhanced by the use of native plant materials that conserve the area's unique character.
- Are available as an educational resource to an extent that does not compromise their natural character.
- Are identified on campus maps, where appropriate, to assist in wayfinding.



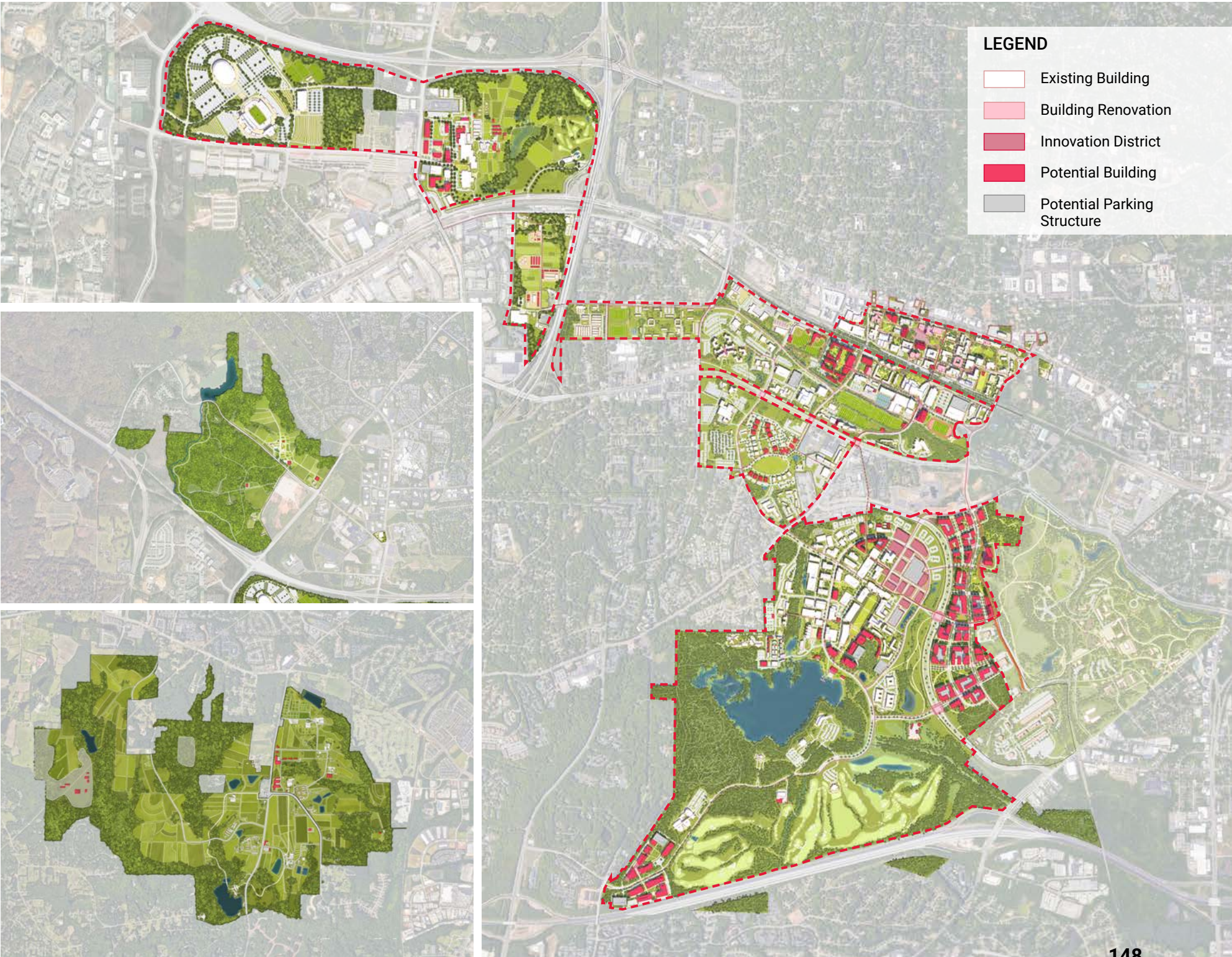
Garden at the Gregg Museum

CAMPUS PRECINCTS

The Campus Precinct is the basic building block of the campus structure - a place where people live, work, study, and play. Campus pathways connect these precincts, their inhabitants, and their activities. By building on these ideas, NC State is bringing beauty and a deepened sense of personal connection to campus. By highlighting the unique character of each of the Campus Precincts, the Plan presents a way to integrate the many parts of a large, urban campus into a coherent whole. This plan includes guidelines and standards for individual projects and directions for fitting those projects into the overall campus fabric.

People develop their sense of belonging to NC State through the Campus Precincts and the activities that occur within them. These precincts feel self-contained, but they connect easily to other precincts and campus places via pedestrian and multi-modal paths. While each Campus Precinct is unique, all of the neighborhoods share several characteristics that must be considered in new construction or renovation projects. This section presents design guidelines for those characteristics. Following the applicable guidelines are Architectural Standards, Landscape Standards, and/or Natural Systems Standards with more specific guidance.

Each Precinct contains a variety of activities that encourage human interaction across groups and disciplines. These may include food service, the facilities of different academic disciplines, libraries, galleries, and so forth. Some neighborhoods may have a predominant function, such as academic, residential, administrative, or service, but all will have features that welcome every person. The Visibility of Activities within neighborhoods invites the interest and engagement of the university community. The character of the Public Domain ensures that public spaces connect to and energize each other to promote human interaction. At its Community Interface, each neighborhood enhances the campus’s relationship with the surrounding community.



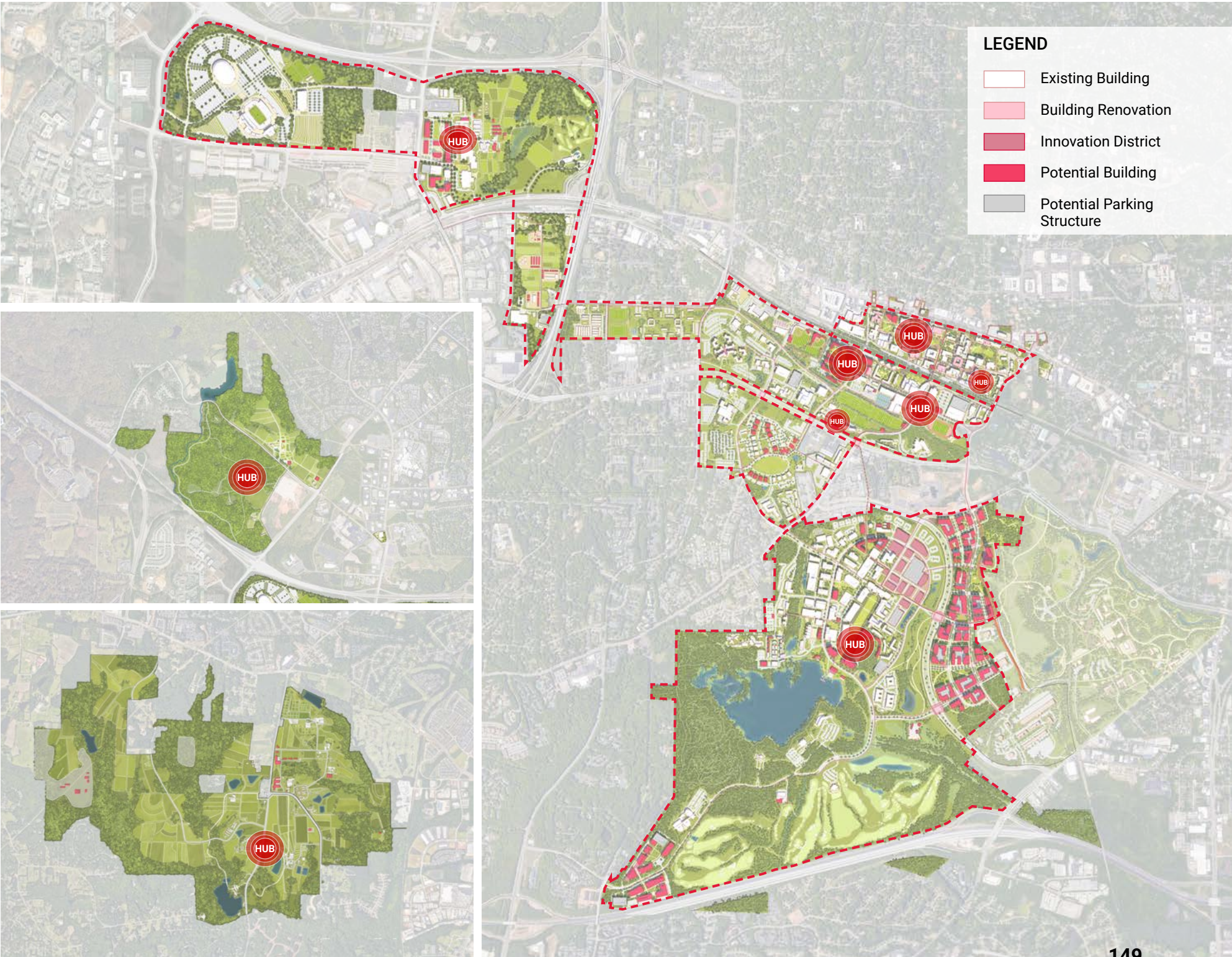
NEIGHBORHOOD HUBS

The focus of study and work in each neighborhood generates unique activities, and these activities help define the neighborhood’s personality. All facilities - housing, teaching, student services, research, etc. have the need for interior and exterior spaces that not only support their own and related activities, but also make them accessible to the university community. This Plan encourages development that creates interactions which foster appreciation of human and educational equality and promote understanding and collaboration across disciplines. Neighborhood Hubs are identified in key locations across campus because of their ability to create a vibrant mix of campus uses and activities. The Plan suggests nine Neighborhood Hubs with the goal of nurturing increased activity and vibrancy in these areas of campus.

Mixed-Use Neighborhoods

Mixed use is the integration of a variety of activities and functions within neighborhoods, which encourages interaction, communication, and cross-fertilization of ideas. To promote interaction across disciplines, each Campus Hub is unique, but contains a strong mix of uses that support that specific part of campus. Dining, residences, lecture halls, galleries, libraries, open spaces, public art, and theaters attract people into neighborhoods, extending the usefulness of the space beyond standard class and work schedules, while creating opportunities for people of diverse backgrounds and disciplines to interact.

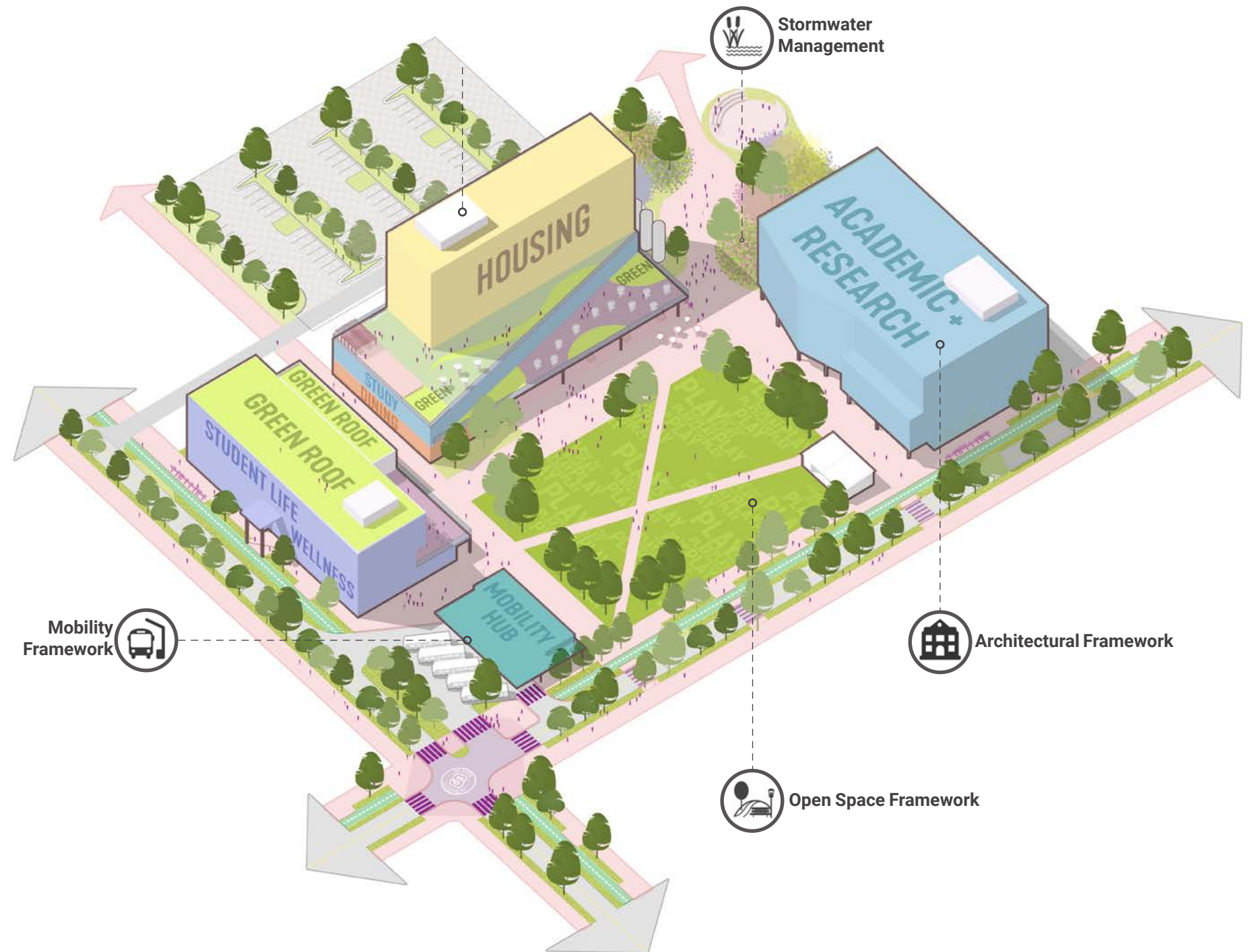
Neighborhoods are well defined physically by the arrangement of buildings around a Shared Open Space, but the life and personality of a neighborhood are generated by the activities within the buildings and outdoor spaces. When these activities engage a diverse group of campus community members, they enhance the university’s mission. Mixed-Use Neighborhoods, which offer a variety of academic, social, and other activities, engage the greatest number of people. Renovations are used as an opportunity to develop public activity spaces that attract a wide spectrum of people from across the campus.



Typical Hub Prototype

Each Neighborhood Hub takes on a different, unique identity representative of the characteristics and qualities of the area it represents with a special focus placed upon addressing needs identified during the planning process.

The overarching vision is to express NC State's commitment to "Think and Do" by putting collaboration and innovation more fully on display across the university. Neighborhood Hubs celebrate the experiential convergence of academics, research, and student life to create vibrant hubs of activity.

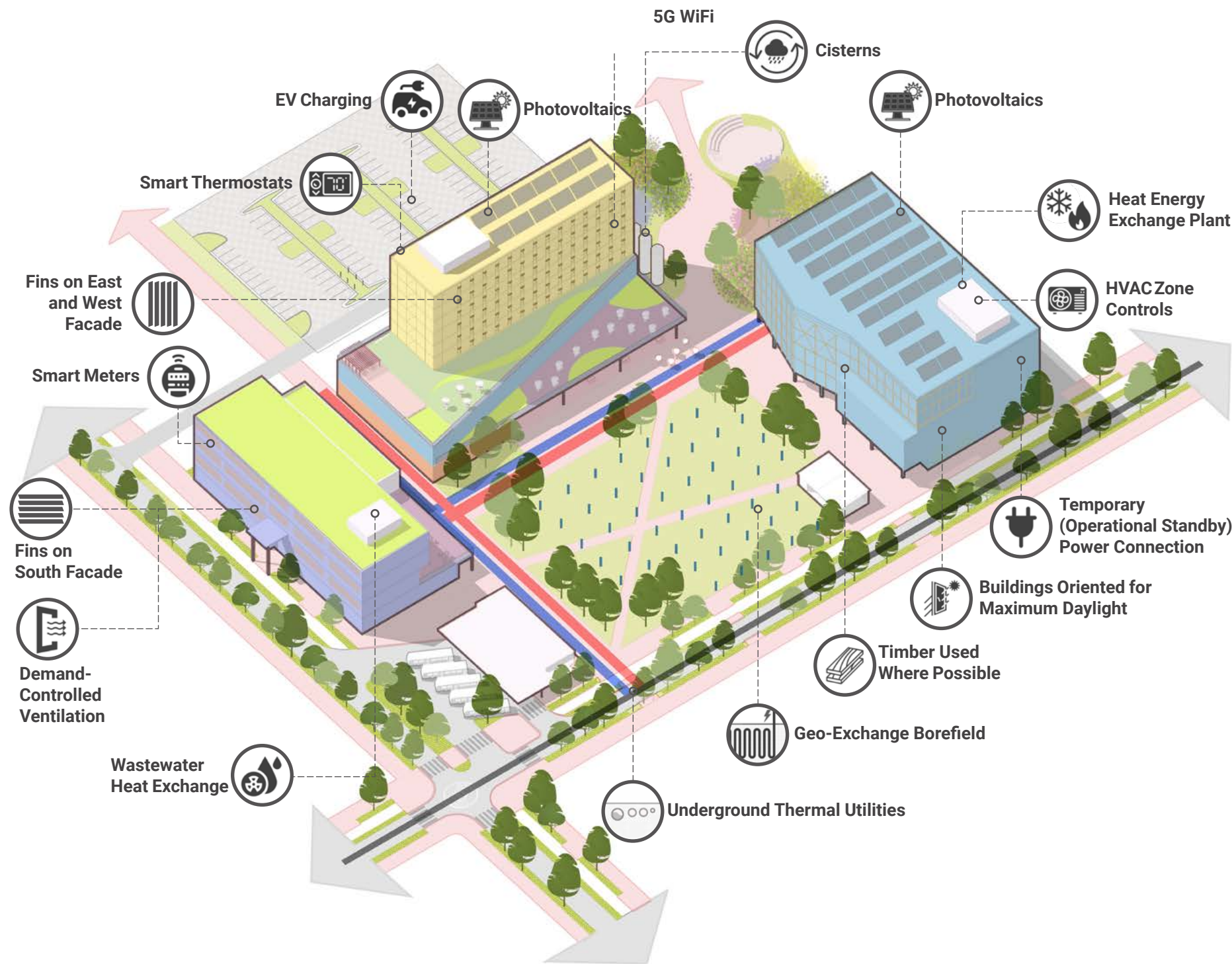


INFRASTRUCTURE RELIABILITY

Consistent with the commitment to reliability, resource conservation, energy efficiency, carbon emissions reductions, and sustainable development, campus utility infrastructure requires regular and intentional evaluation and investment. The campus development planning process considers maintenance, renewal, and modernization efforts as critical components to meeting the strategic goal of infrastructure reliability. Further, this process assesses the impact of existing infrastructure improvements alongside new campus physical expansion.

NC State’s physical environment exists to meet the University’s needs. Primary to these physical environment needs is energy reliability in a cost-effective manner that enhances environmental and financial stewardship. To meet these needs, NC State has made a long-term investment and is fully committed to District Energy to meet the current reliability, environmental, and stewardship goals of the campus. Additionally, District Energy positions NC State to continue being a leader in energy research by demonstrating innovative methods to meet the needs of an operating campus.

District Energy as implemented by NC State includes district cooling and district heating at the campus level in lieu of providing these energy needs at the building level. This provides significant advantages in efficiency, reliability, and maintainability when compared to stand-alone systems in individual buildings. The highly efficient processes at campus-level utility plants decrease emissions and overall fuel consumption, which reduces cost. At NC State, this thermal energy is produced via five central utility plants on the three major campus areas (Original, Centennial, and Centennial Biomedical). This thermal energy consisting of chilled water, steam, and hot water is distributed through below-ground walkable tunnels, arched tile tunnels, and direct buried pipes ranging in size from 4 to 48 inches in diameter. Additionally, the Original Campus and the Centennial Campus have cogeneration



facilities that generate electricity and capture waste heat for building heat, domestic hot water, and process steam applications.

Benefits of District Energy at NC State include:

- **Greater Reliability** – More effective method to enhance reliability through multiple pieces of major equipment at central plants as opposed to building level systems.
- **Lower Total Cost of Ownership** – District Energy has the lowest life cycle cost to serve campus facilities.
- **Lower Energy Costs** - District energy results in reduced fuel purchases and is a major reason NC State has reduced energy use per gross square foot by 35% since 2003.
- **Reduced Greenhouse Gas Emissions** – Reduced energy usage through more efficient equipment and more efficient processes results in lower environmental impact.
- **Strategic Buying Power** - In addition to creating economy of scale opportunities for energy-saving technology, district energy consolidates NC State's natural gas supply system that enables a lower purchase price.
- **Optimize Building Space** - District energy reduces building space needed for heating/cooling systems and allows space to be reallocated.
- **Lower Noise Levels** – Noise associated with boilers, chillers, and cooling towers is located in central plants as opposed at building levels, which reduces noise at each building on campus.
- **Lower Maintenance Costs** - Because district energy consolidates

equipment in utility plants, buildings have fewer maintenance costs and staff time is optimized.

- **Lower Water Costs** - Centennial Campus cooling operations are cooled by City of Raleigh reclaimed water that is cheaper than potable water. District energy also centralizes water treatment, eliminating this cost at multiple buildings.
- **Risk Mitigation** – Central utility plants offer flexibility in fuel selection (natural gas, fuel oil, and electricity) which can provide options to reduce impact of rising energy prices.
- **Reputational Enhancement/Key partner in North Carolina's Utility infrastructure** - District Energy enhances the overall energy infrastructure through local energy production to improve options for overall energy resiliency within our state. District energy allows for innovative methods to reduce peak demands and costs that are not possible at individual buildings. Examples include thermal energy storage which allows chilled water generation to be decoupled from the time it is needed at an individual building.
- **Energy Storage** – District energy allows for innovative methods to reduce peak demands and costs that are not possible at individual buildings. Examples include thermal energy storage which allows chilled water generation to be decoupled from the time it is needed at an individual building.
- **Renewable Energy** – In conjunction with ownership of three electrical substations, NC State is positioned to implement renewable energy to meet campus needs in a better environmental manner.
- **Future Opportunities** – By consolidated fuel usage at central utility plants, NC State is positioned to leverage new fuel sources such as



Cates Steam Plant Infrastructure

biomass, geothermal, and hydrogen as research develops more cost effective methods to optimize use of these fuels.

The utility systems are developed as centralized district systems and are generally owned, permitted, managed, and maintained by the university. Utility plants are designed for “N+1” firm capacity and, where feasible, incorporate redundant distribution loops to maximize reliability. Alignment of utility distribution corridors within the limits of multi-purpose paths and streets is a primary consideration for future expansions.

Downstream of the distribution of utilities, building power and thermal energy performance standards play a key role on campus. Focusing on improvements in the existing buildings and setting expectations for new building construction projects are critical components of overall infrastructure reliability and operational sustainability.

The pedestrian nature of campus often results in buildings having no clearly defined service corridor. Service and equipment yards, loading docks, dumpsters and other free-standing equipment are screened from pedestrian view and planned with pedestrian safety in mind. The presence of exterior equipment is minimized to enhance open spaces, while still allowing for equipment systems to be well protected and easily accessible for operations and maintenance. Locating utilities underground has aesthetic and reliability benefits.

Architectural Standards

- Utilize streets and paths for utility corridors to minimize conflict with vehicular traffic, street trees and natural areas. The architecture and detailing of central utility plants is consistent with the NC State Style.
- Locate mechanical rooms at the perimeter of the building and at grade for direct connectivity to utilities.
- Design and locate equipment to minimize visibility, noise, and

vibrations, especially near teaching, lab, study, residential, and public areas.

- Co-locate equipment in service yards, underground, or in concealed places. Service yards shall have easy access to mechanical rooms.
- All exterior equipment, service yards, roof equipment and penetrations, mechanical penthouses, etc. are integrated into the building’s design.
- Equipment is dark architectural bronze in color and is concealed by landscaping or screen walls no less than eight feet in height.

Building Design Recommendations

- Install LED lighting for all new buildings and retrofit existing buildings to the greatest extent possible. Seek to improve lighting power densities by 20% from ASHRAE 90.1-2016 baseline (whole building).

- Install occupancy controls to control lighting and enable HVAC setbacks.
- Install plug load controls to limit power at convenience receptacles during unoccupied hours.
- Implement HVAC temperature setback controls. Include both occupied, standby mode and unoccupied mode setpoints.
- Design ventilation systems to accommodate demand-controlled ventilation sequences to right-size outside air requirements with sensed occupancy. Measure actual outside air flow at all air-handling units.
- Design building systems to decouple ventilation and latent load conditioning from sensible space conditioning.
- Make buildings “solar-ready” if they are deemed to have reasonable siting for future solar.



Solar Panels on the Roof of the Keystone Science Center

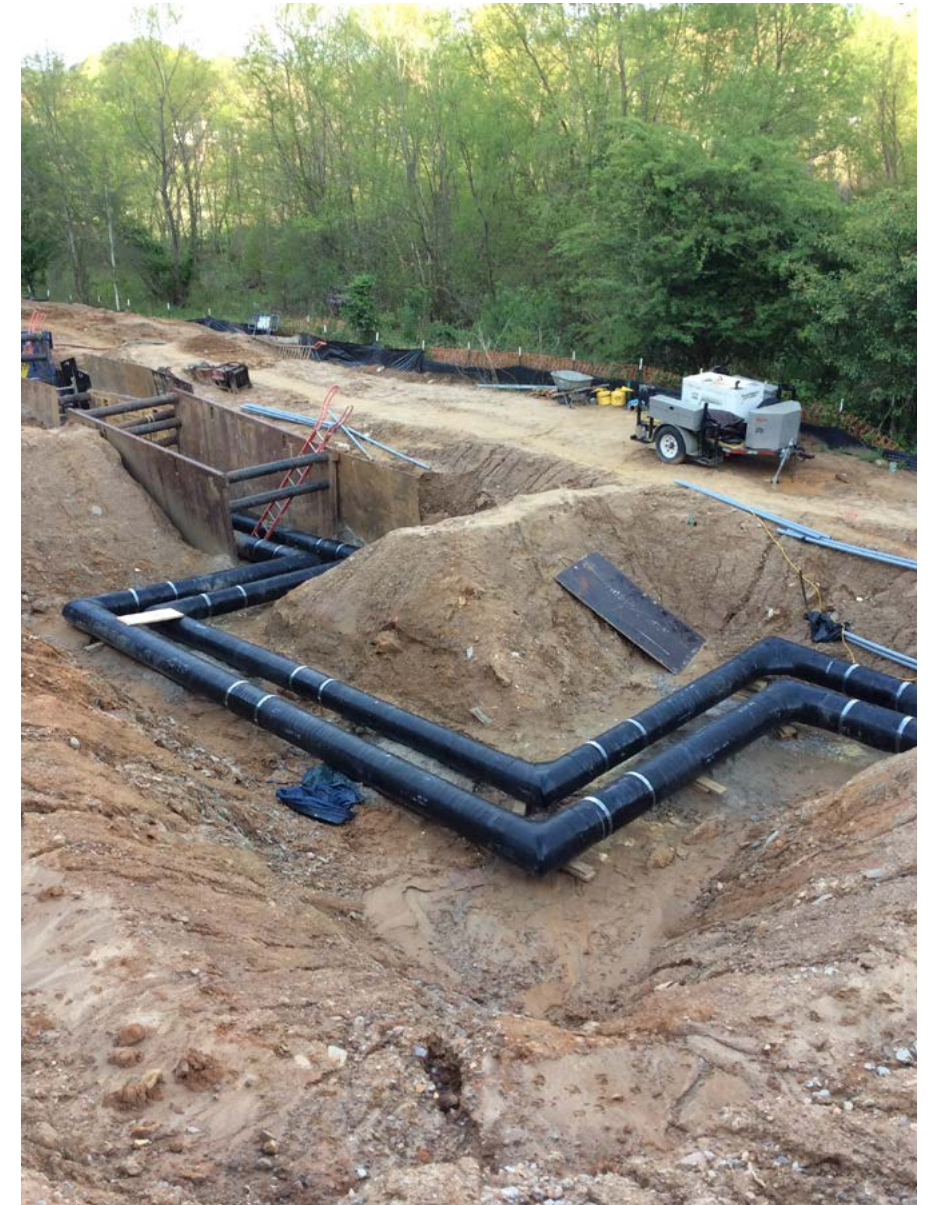
System Level Recommendations

- Perform retro-commissioning on existing buildings to ensure proper operation of control systems and assess building equipment performance. Focus on reducing energy consumption for all buildings that account for more than 1% of the overall campus energy consumption.
- Upgrade building automation systems for existing buildings to BACnet IP. Integrate all buildings to single campus front-end for improvement monitoring and control.
- Install advanced metering for building power, thermal and water utilities. Metering architecture should include all sub-systems that make up 10% or more of overall demand. Incorporate metering into real-time, monthly and annual use calculations and trending.
- Perform “Smart Lab” evaluations at all laboratory facilities to assess opportunities to lower the amount of conditioning outside air required for air change rate or exhaust rate requirements.
- Assess the level of criticality of operations within the building portfolio and provide point of connection to the electrical distribution system for temporary power to cover life safety and optional standby loads. Plan all new buildings with temporary power connections, at grade, even where connected to university generator power distribution.
- Plan all new buildings with temporary thermal (heating / cooling) connections, at grade, to tie in temporary chiller and boiler skids, for maintenance or equipment failure scenarios.
- Convert existing constant volume hydronic pumping systems to variable volume by installing variable frequency drives for all pumps and replacing 3-way control valves with 2-way valves.
- Convert existing constant volume HVAC systems (i.e., hot deck / cold deck; constant volume variable temperature) to variable volume with zone level airflow control.

Thermal Systems

NC State has five campus central utility plants that provide thermal energy to NC State Buildings through campus steam and chilled water distribution. The Physical Master Plan describes the interaction of these existing campus utility plants with new thermal capacity generation from regional energy exchange plants to accommodate campus growth, increase operational efficiency and improve infrastructure reliability in several neighborhoods across the University.

- Maximize the potential of existing campus thermal plants by building out all modular planned capacity steps.
- Supplement existing campus thermal plant capacity by creating additional regional “energy exchange” utility plants.
- Design regional plants to provide chilled water and heating hot water distribution using heat recovery equipment to capitalize on simultaneous demand.
- Limit additional utility-scale steam distribution systems. Provide connection to existing campus utility distribution for trim capacity and reliability improvement.
- Invest in geo-exchange fields, where feasible, at regional utility plant locations and utilize 6-pipe chiller-heater system configuration
- Provide thermal storage for chilled water and heating hot water to extend hours of operation of chiller-heater system and improve regional plant reliability.
- Design all new buildings to maximize the use of low temperature heating hot water (120F) and higher temperature chilled water (58F). Utilize water-to-water heat pumps for domestic water heating.



Steam Expansion Loop West of Monteith Research Center

Electricity Systems

NC State recently completed a significant upgrade and expansion of the campus electrical distribution system to improve power reliability at North and Central Campus and accommodate future campus growth. Further, the university has a long history of solar installations on campus and is a leader in solar research. Electrical considerations in line with the Physical Master Plan concept for hubs will continue to offer cleaner and more reliable power on campus.

- Provide all new building projects with PV-ready roofing systems and electrical system integration and rough-in.
- Provide all new (surface or deck) parking projects with structural and electrical system integration and rough-in for future PV installation.
- Investigate the development of electrical microgrids around the hub concepts.
- Integrate emergency power generation and battery storage into designated microgrids.
- Continue research for potential PV array and battery storage sites on campus.

Utility Corridors

There are several utility tunnels serving the NC State Campus. Currently, over 19 miles of chilled water pipe and over 27 miles of steam pipe service campus.

The Physical Master Plan suggests building upon this infrastructure and continue to group utility lines beneath streets during renovations and utility upgrades. Adherence to the use of shared multi-purpose utility corridors will minimize or eliminate future trenching and manholes.

Additional recommendations include:

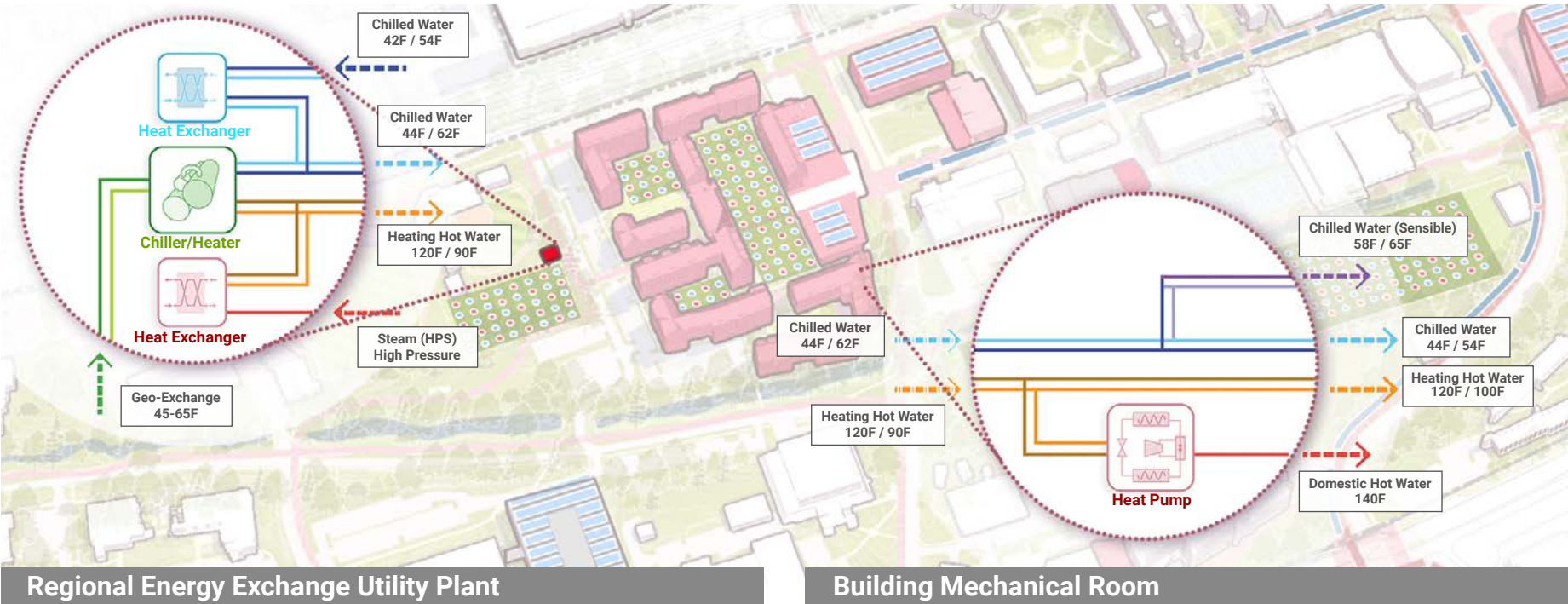
- Projects continue to utilize energy performance contracting (EPC) to upgrade facilities and systems, avoid operational expense and reduce emissions.
- Continue the use of the Holiday Energy Savings Initiative (HESI) to reduce energy waste during holiday closures.
- Plan for the expansion of the university’s renewable energy portfolio, either on-site or through financing through/for off-site projects.

Chilled Water

	Length(ft)	Length(mi)
Supply	51,400.80	9.74
Return	51,450.60	9.74
Total		19.5

Steam

	Length(ft)	Length(mi)
Steam	134,150.90	25.41
Domestic	9,364.50	1.77
Total		27.2



SUSTAINABLE DESIGN

NC State is committed to sustainable design and construction that creates lasting value for the campus community and the state of North Carolina while also serving as a model of environmental, social and financial leadership. The university's sustainability commitments ensure the highest quality of stewardship, adaptability for future growth and well-being of the campus community. To reduce the university's environmental impact, all campus projects include sustainability goals that protect and enhance Ecosystems for current and future generations. By creating facilities and landscapes built upon these goals, NC State is a living laboratory and a model of innovative sustainability in the local and global community.

The university's commitment to sustainability and efficient, responsible development takes many forms. It includes creating a campus that is more inviting for walking than for driving, the renovation and reuse of existing structures, and the use of recycled materials in construction. Whenever feasible, the university places buildings on sites that are in need of repair and designs them in harmony with the natural contours and other features of the land.

Proper building siting can have a significant impact on building performance and often results in little or no additional construction cost. Early in the design process, consideration of solar orientation, wind, and various climate and micro-climate factors, including vegetation, can reduce energy requirements, create opportunity for renewable energy production, increase natural ventilation, and improve the quality of interior daylight. At this point in the process, building materials and systems selections are made to allow for sustainable choices to be incorporated into the project. The design and construction of every building allows for its efficient maintenance, creative adaptability, and renewability.

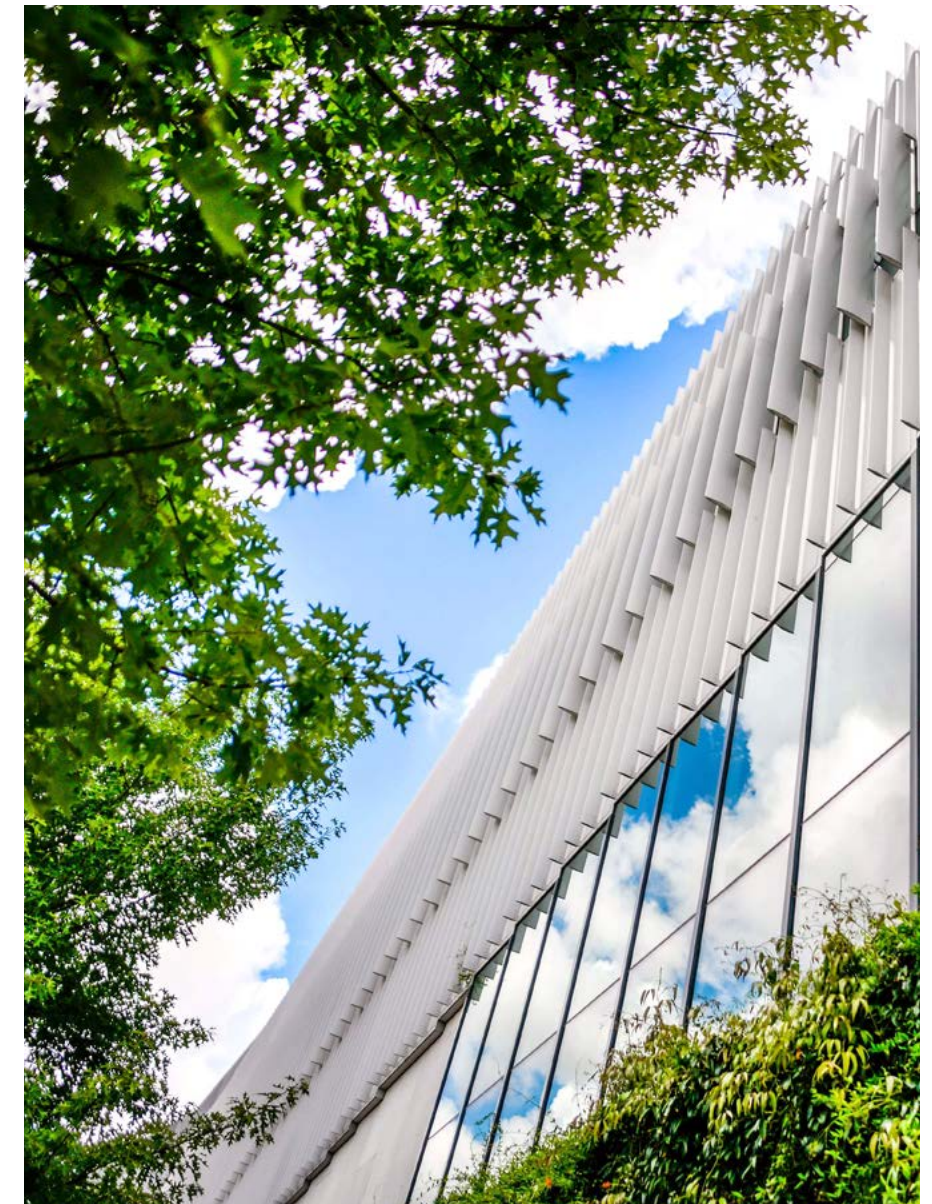
To ensure that these and other important factors are integral to building design, a full life-cycle cost analysis is a part of the early design phases. Considerations to reduce negative externalities are included in the project plans and specifications. Examples include: specifying building materials within a 500-mile radius of the construction site to avoid excessive pollution caused by shipping methods and distances; managing stormwater to avoid damage to communities downstream; and reducing or eliminating facility consumption of fossil fuels, which pollute air.

Site Standards

- Limit light pollution from buildings and area lighting.
- A building's long axis is oriented east/west and windows are oriented north/south whenever possible to take maximum advantage of natural light while limiting solar heat gain. Where the long axis cannot be oriented east/west, configure portions of the building's footprint to achieve the same goals.
- Buildings located on the south side of a Shared Open Space are designed so that they cast minimum shadow in the open space.
- Building footprints are minimized with multistory construction to ensure each site has space for outdoor common areas and Hearths.
- Hearths are provided on the south-facing side of each building to accommodate informal gathering places.
- Reduce the impact of stormwater effects and the intensity of heat islands through efforts such as strategic landscape design and green roof technology.

Neighborhood Connectivity

- Reduce distances between necessary services by creating walkable, dense, mixed-use neighborhoods with both housing and dining that maximize developed open space and preserve campus natural areas.
- Create an interconnected network of paths; e.g., sidewalks, multipurpose paths, and streets with slow speeds to reduce traffic congestion and to provide safe, pleasurable walking and biking.



Light-Control Fins on the Facade of Hunt Library

Materials

- The design lifespan of all buildings, new and renovated, is a minimum of 50 years.
- Life-cycle environmental impact, durability, and long-term maintenance and operating costs are considered when choosing materials.
- Renovation and reuse of existing structures extend the life of existing buildings and reduce consumption of materials.
- Select materials that are harvested and manufactured locally, have recycled content, or are from rapidly renewable or certified sustainable resources.

Recycle and Reuse

- Planning for the reduction and recycling of construction waste is included in early design phases and in the contract documents. Use of manufacturer recycling programs should be utilized to reduce material in waste stream.
- Projects must follow NC State University Construction Waste Management Plan which specifies a minimum landfill diversion rate of 75% and encourages reuse and recycling of building materials.
- Construction, deconstruction, and site grading materials should be diverted to beneficial reuse.
- Every building has adequate accommodations for recycling and composting collection that's easily accessible to individuals and to service providers.

Energy

- Move towards a net-zero campus.
- The university strives to exceed the North Carolina State Energy Code for both new and renovated buildings.
- Innovative water saving, energy saving and energy generating technologies will be factored into project scopes. This could include solar energy and other renewables, green roof, gray water-use and other emerging technology.
- Energy intensity and water use performance goals will be established for buildings and systems during the schematic design phase to ensure that new projects and renovations further campus-wide energy and water reduction goals.
- Control heat loss and gain through building envelope design, which includes insulation and glazing/shading choices, and by limiting heat loads from lighting and equipment.
- Energy use will be reduced with controls and sensors that minimize consumption when buildings are not in use.
- Electricity, steam, chilled water, natural gas, and domestic water usage are metered for each building to create an energy consumption database.
- Commissioning and retro commissioning are budgeted for each major facility to optimize building systems equipment and minimize energy waste.
- Employ renewable energy sources and energy-saving building technologies to allow for downsizing of heating and cooling systems.
- To reduce ozone depletion, existing mechanical equipment that uses CFC-based refrigerants will be replaced.
- New facilities will be designed as solar-ready and EV charging-ready so that future installation is cost-effective.



Green Roof on Engineering Building III



Solar Tree on Centennial Campus Precinct

Micro-Grids

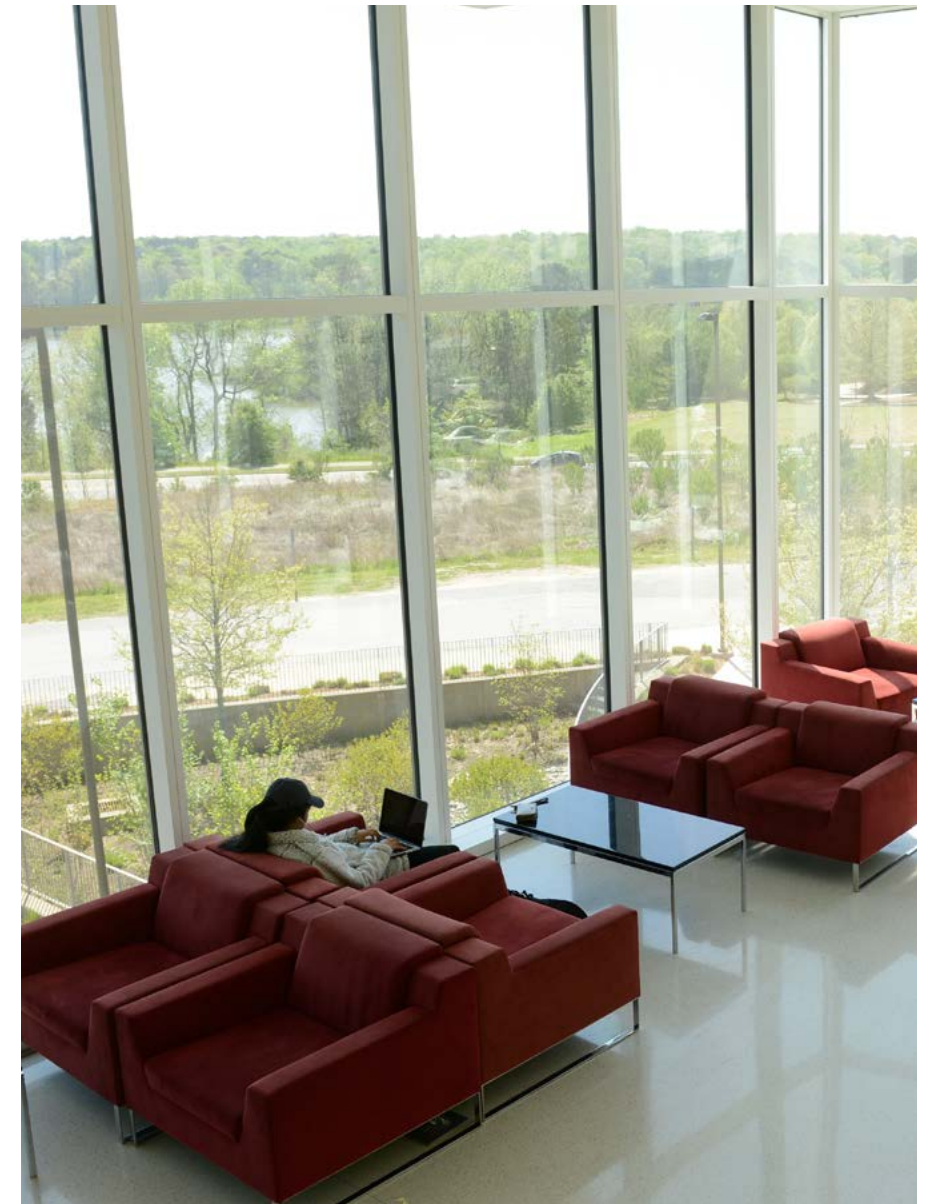
- The university is exploring the use of micro-grids to increase reliance, resilience, and efficiency of the power distribution system.
- Use micro-grids to manage renewable generation of the distribution system.
- Coordinate micro-grids to connect with one another to improve diversification of the generation assets and loads.

Indoor Air Quality and Environment

- To ensure healthy indoor air quality, use materials with reduced air contaminant emissions. Design a separate outside exhaust system where chemical use and storage or other air contaminants occur within buildings.
- Provide occupant control of thermal, ventilation, and lighting systems to support optimum health, productivity, and comfort.
- Plan for carbon dioxide and humidity monitoring equipment.
- Ensure that building occupants are not exposed to environmental tobacco smoke.
- Locate air intakes far away from loading docks and other sources of poor-quality air.
- Locate noisy exterior activities and mechanical equipment to minimize the impact on building occupants, particularly in critical task areas such as classrooms and research and study areas.
- Improve the indoor environment for productive work and study by providing daylighting, acoustics attenuation, and views to outside.
- Placement of exterior and interior glass is aligned to bring natural light further into the building. Light shelves, reflective or white ceiling systems, and light colored interior finishes should all be considered to maximize the effectiveness of the daylighting strategy.
- Plan for the placement of mats at exterior doors to minimize dirt and pollution in buildings.

Water

- Conserve, appropriately use, and protect the quality and quantity of water resources.
- A water management plan is developed with each project design.
- Water-conserving fixtures and equipment are used to minimize potable water demand and to decrease wastewater generation. Include the collection and reuse of non-potable water where feasible.
- Domestic water is metered at each facility and a post-occupancy evaluation measures peak water use data for future planning.
- To minimize irrigation needs, the university prefers the use of indigenous plants and plants tested for adaptability to the region.
- Invest in local rainwater containment and treatment where irrigation needs exist to limit impact to Lake Raleigh.



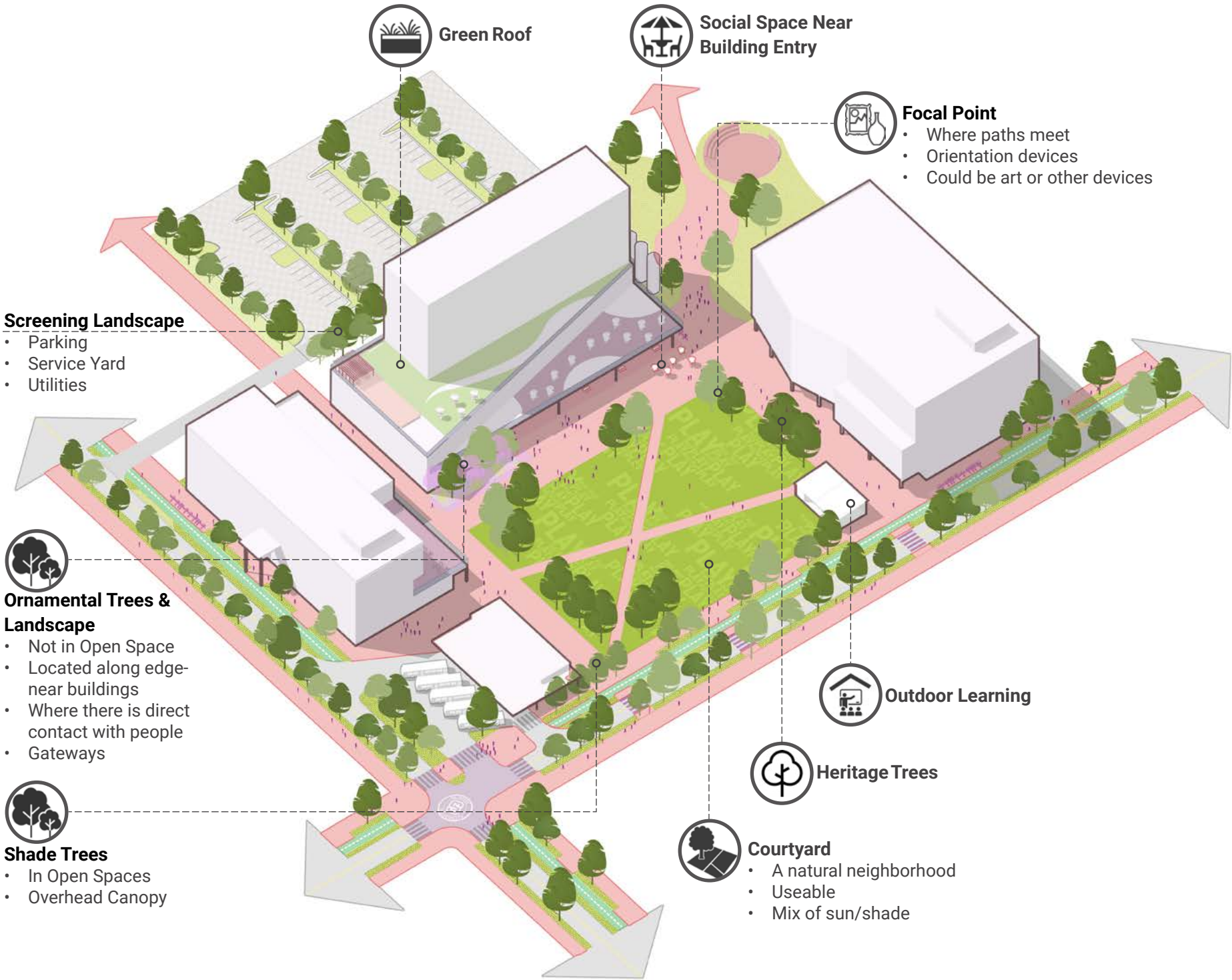
Glare-Free Natural Light Spaces at Hunt Library



OPEN SPACE FRAMEWORK

The variety of open space types should work together as part of a larger open space system that supports a robust variety of passive and active uses, creates well-understood and safe pedestrian movement, logically connects desire lines to and between destination points, contains gathering spaces of varying sizes, and is unified by a cohesive landscape.

Design of these spaces should consider the neighborhood context and unique features adjacent to the project site. Each future project should consider all parts of the open space framework and seek to include these elements wherever possible.



SHARED OPEN SPACES

Campus Neighborhood buildings are clustered to define five distinct types of Shared Open Spaces: Campus Greens, Courtyards and Plazas, Campus Streets, Campus Edges, and Natural Areas, each defined below. These are the central areas of neighborhoods and are either nurtured or created by all development projects. Building location and orientation is critical to defining the boundaries of these spaces. These people-focused areas are the building blocks of campus, creating identity and providing places for collaboration while addressing appropriate use, scale and character. Vehicular traffic is minimized, and service needs are handled outside of the open spaces.

Site Standards

Shared Open Space provides:

- Connection to each major building entrance in the Campus Neighborhood within a two-minute walking distance (600 feet).
- Sight lines or a clear sense of direction to the next nearest Campus Neighborhood.
- A prominent visual and physical connection to an All Campus Path.
- A major focal point or amenity that draws people from outside the neighborhood, such as an outdoor dining area, a fountain, a prominent vista, an amphitheater, or other comfortable, inviting gathering place.
- Opportunities for the creation of Landmarks including public art, which may assist in wayfinding and strengthen campus identity.
- Opportunities for the display of university community projects, research, etc.
- Opportunities for a variety of outdoor experiences, including educational and recreational experiences through the use of plants, landscape elements, materials, and other characteristics of the space.
- Landscape elements, hardscapes and site architecture that define space and contribute to the character of the open space.
- A rich variety of seating types and locations, in sun and in shade, that encourage interaction, such as, fixed and movable furniture, hanging benches, and seat walls.

- Plants to celebrate building entrances, reinforce pathways, define exterior space, and ameliorate climate extremes.
- Opportunities for edible landscapes for people, and food and cover for urban wildlife.
- Accommodations for long-term success of shade trees, both deciduous and evergreen.
- A rich plant palette to offer seasonal interest and increase biodiversity.
- Landscaped edges forming the transition areas where buildings meet the ground especially at entrances.
- Access to sun, wind, water, and earth adding multi-seasonal appeal and enhancing human comfort and safety.
- Winter and summer Hearths where possible.
- One or more connections to transit.
- Bike racks.
- Adequate service vehicle parking adjacent to but outside of the open space.

Architectural Standards

- Buildings create or enhance a Shared Open Space.
- Stand-alone buildings and buildings that establish new neighborhoods have at least one open space, creating the framework for future neighborhood development.
- Buildings and their features frame views and/or allow connections to the Shared Open Space, paths, or other neighborhoods.
- Building design should give particular consideration to the views created by the relationships among buildings and Shared Open Spaces.
- Human-Scaled features and materials serve as transitions between the Shared Open Space and the architecture. Examples include canopies, arbors, portals, walls, lighting, planters, and furniture.



Student Gathering at Stafford Commons

Campus Greens

Campus Greens are the largest type of Shared Open Space and are dominated by expanses of lawn. Major walkways run along the perimeters, connecting the building entrances that open to them. Neighborhood Paths cross the open space where needed. The perimeters feature trees and other plantings and a variety of seating and gathering places.

Site Standards

- Are enclosed on at least three sides by buildings.
- Are 100,000 square feet or larger, with the narrowest dimension not less than 150 feet.
- Have a center expanse of lawn that is open, with minimal areas of shade.
- Have the long view unobstructed from one end of the space to the other.
- Have edges that are paved with paths and planted with trees to provide micro-climates favorable for seating and to reinforce entrances into the open space.
- Provide amenities, such as seating, pavilions and other small gathering places located at the edges.

Plazas

Plazas are large gathering spaces primarily composed of paving. Their ample paved surfaces are suitable to support the large outdoor functions on campus, from impromptu celebrations to programmed events.

Site Standards

- Plazas are usually enclosed on three sides by buildings.
- Are 25,000 square feet or larger, with the narrowest dimension not less than 120 feet.

- Have most of their paved surfaces unobstructed, allowing for flexibility for programmed events.
- May use trees to soften the space and add shade in summer.
- Provide seating opportunities for individuals and small groups.
- Include a range of options for micro-climate spaces, providing comfort in sun and shade throughout the year; plant choices respond to the range of micro-climate spaces.

Architectural Standards

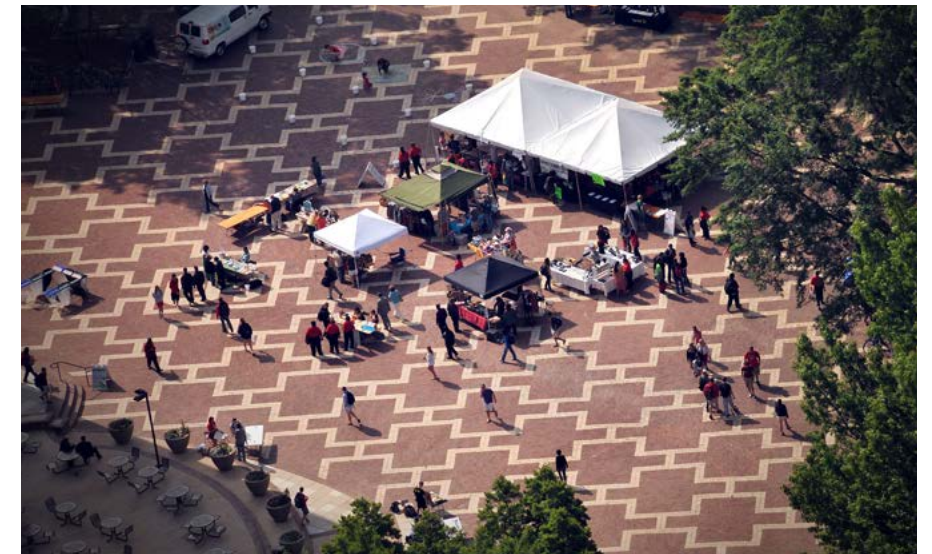
- Building entrances opening into Plazas are placed to animate the Contributing Open Space and to promote interdisciplinary collaboration.



The Court of North Carolina



The Oval



University Plaza "The Brickyard"

Courtyards

Courtyards are well-articulated, outdoor spaces with either a landscaped or paved center that includes walkways, seating, and other amenities, such as a fountain, sculpture, or other landmark. Courtyards may be of a variety of shapes but must be large enough to define a neighborhood rather than be dwarfed by adjacent buildings. Ideally, it is possible to see at least one other Shared Open Space from any Courtyard and possible to reach it by a variety of paths.

Site Standards

- Courtyards are usually enclosed on three sides by buildings.
- May be open or have a tree canopy at the center, depending on the character and intended activities of the neighborhood.
 - Provide open areas to allow for programmed activities. Size is related to anticipated uses and takes Human Scale into consideration to promote interaction.
 - Provide seating and gathering places that range in size to accommodate individuals and groups. Plants are used to soften the space.
 - Include carefully-located benches and low seat walls to allow people using them to observe activity in the open space.
 - Include a range of options for micro-climate spaces, providing comfort in sun and shade throughout the year; plant choices respond to the range of micro-climate spaces.
 - Have a focal point such as public art, a fountain, or other landmark that provides a distinct meeting place.

Architectural Standards

Building entrances opening into Courtyards are placed to animate the Shared Open Space and to promote interdisciplinary collaboration.

Natural Areas

Natural Areas present unique opportunities for neighborhood facilities to interface with and incorporate access to less-developed green space that is more natural in character than the structured campus open spaces. These areas, such as North Creek or the Rocky Branch corridor, offer quiet alternatives to the developed campus open spaces and afford opportunities to explore campus Ecosystems as living laboratories.

Site Standards

- Natural Areas are linked to campus neighborhoods by the pedestrian path network.
- Human-Scaled transitions from the built environment to the natural environment are achieved through paths, plantings, or other Landscape Features.
- Natural Areas incorporate spaces that allow people to enjoy and interact with nature.
- Natural Areas receive a minimal level of maintenance so that they remain in their natural state.

Architectural Standards

- Building faces adjacent to Natural Areas meet natural grade. No large fills or cuts are made adjacent to natural areas.
- Building designs respect the character of the Natural Area. Natural Areas influence building and street designs.
- Buildings allow views of and access to the Natural Area from interior public spaces.



Global Courtyard



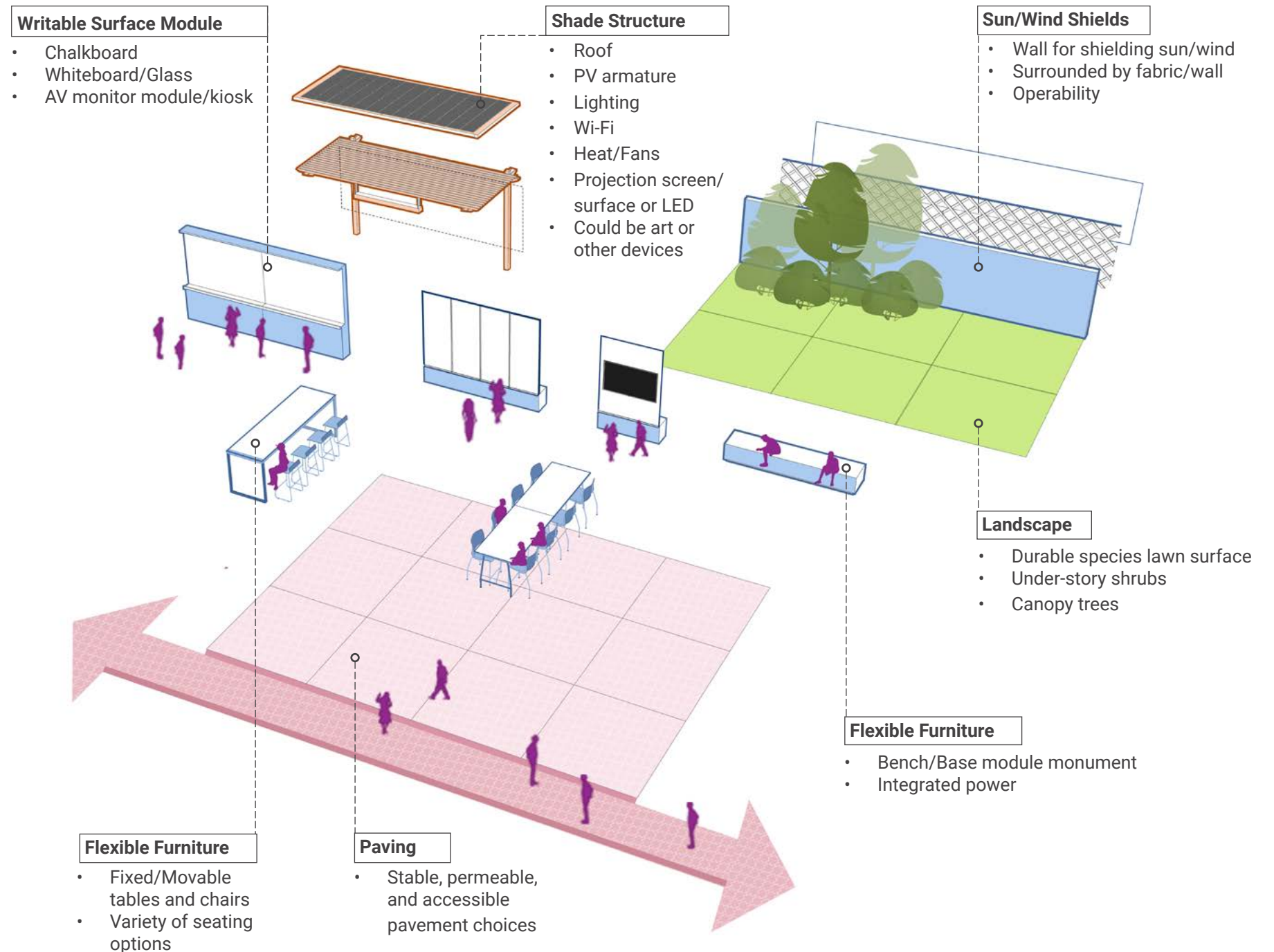
Marshland Area Next to Lake Raleigh

Outdoor Learning Environments

An Outdoor Learning Environment serves as an extension of indoor classrooms and provides an engaging setting for students to learn and collaborate. These spaces should ideally be located along All Campus Paths and can range in size to accommodate individuals and groups as needed. The Physical Master Plan suggests having Outdoor Classrooms strategically located across the campus to create a unique collaborative learning environment at NC State.

Each future project should consider all elements shown in the diagram and include them depending on the location and use of the space. These elements can be of different scales and designs as needed.

- **Flexible Furniture:** Provide a variety of options for desks and seating such as tall desks, fixed/movable tables and chairs, and benches.
- **Writable Surface Module:** Include chalkboards/whiteboards and AV monitors to facilitate an instructional setting.
- **Shade Structures:** Provide shade structures to create a comfortable learning environment throughout the year, protecting from sun and rain. Consider the installation of solar panels on its roof.
- **Landscape:** Include vegetation to soften pavement, improve micro-climate and visual interest, and add human scale. Integrate stormwater management strategies and rainwater capture.
- **Micro-climate:** Include Sun/Wind Shields to provide comfort throughout the year.
- **Amenities:** Provide efficient lighting, good Wi-Fi connection, and integrated power outlets in desks/seating.



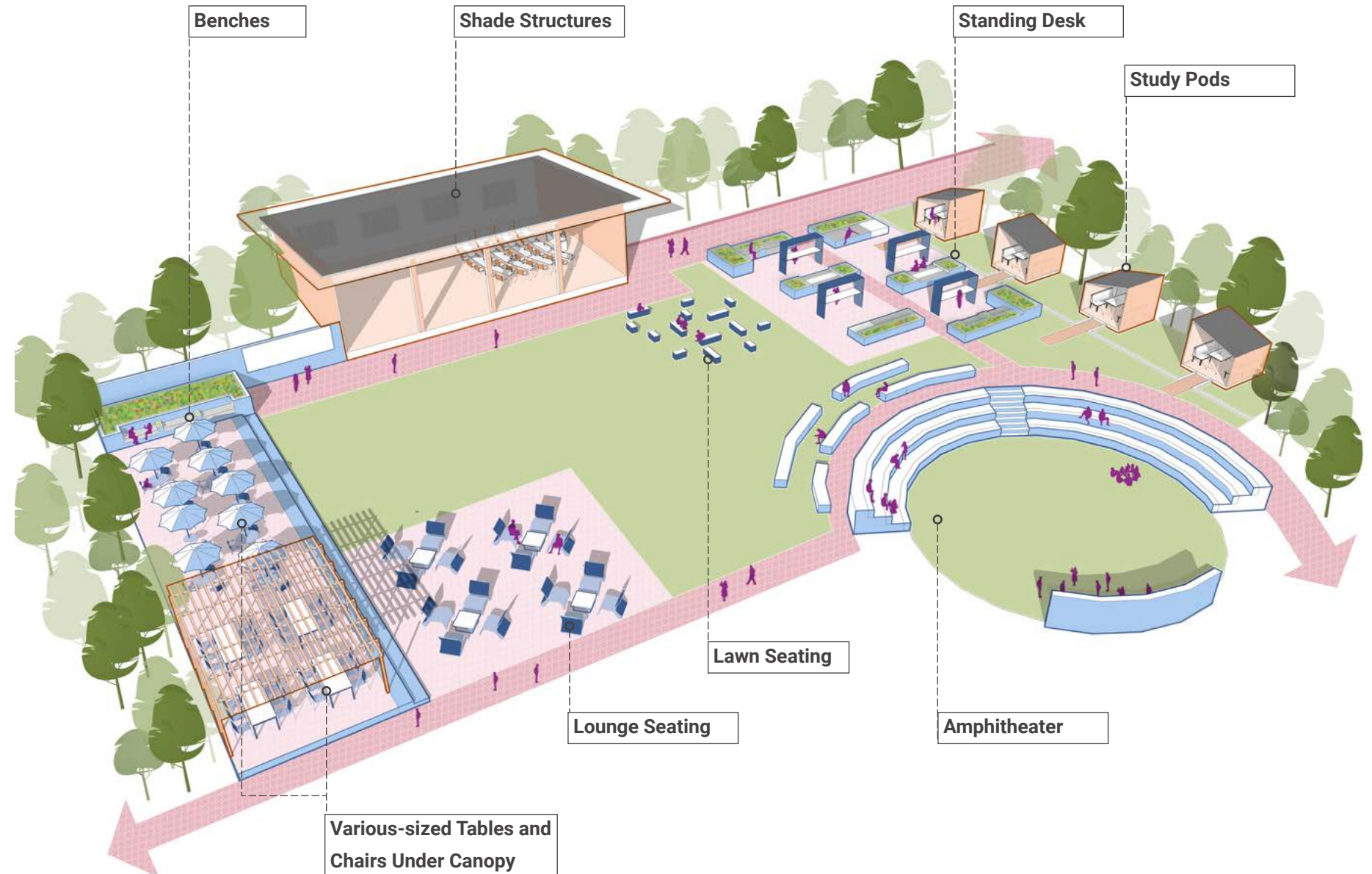
Outdoor Space Types

There are multiple outdoor space types that can be used for a variety of purposes such as dining, learning, and collaboration. The primary uses for these spaces will inform the elements needed in the design solution.

The Outdoor Learning Spaces can be formal settings with whiteboards and and/or AV monitors to conduct lectures as well as informal areas for student interaction and collaboration. Agile, modular furniture should be considered that can be configured in multiple ways enabling conversion of spaces from one use to another or creating flexible groupings of different sizes. The flexibility in study spaces allows students to choose a seat or desk that works best for their learning style.

The diagram shows multiple study space types that can be considered while designing any future outdoor learning space. These elements can be configured and scaled depending on the nature of the space.

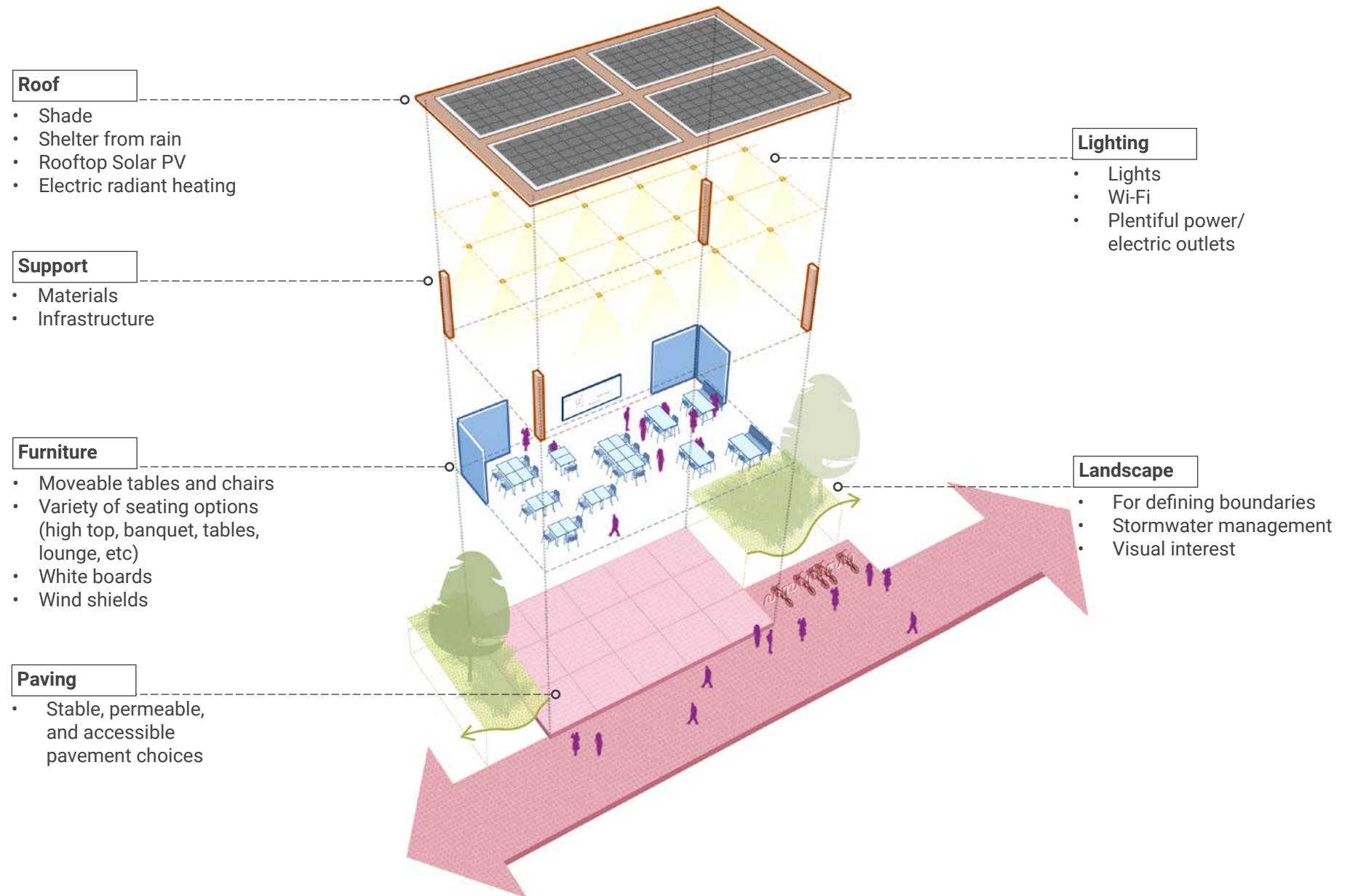
- **Shade Structure:** Provides protection from sun and rain and can be used for formal/informal learning. The integration of PV panels into the shading structures provides clean power for laptop use and electronic charging and offers opportunity for technology on display.
- **Amphitheater:** Provides space for large outdoor lectures. Can also be used to hold other campus-related activities, including small ceremonies, assemblies, performances, meetings, and more.
- **Tables and Chairs under Canopy:** Provide a comfortable learning environment.
- **Study Pods:** Provide quiet and isolated study areas for individual study or group collaboration.
- **Lounge Seating:** Provides a relaxed seating option for students to gather or study.
- **Standing Desks:** For those who need more movement, standing desks allow them to move without disrupting others.
- **Lawn Seating:** Provides benches and furniture for individual or group use.



Shade Structures

Shade Structures can provide a flexible, comfortable, and highly functional learning environment. Shade Structures often serve as a campus focal point both visually and in terms of student life. They can be used for instruction, independent learning, or a place to gather, talk, and relax outside of class. Moveable chairs and desks with multiple configuration options encourage collaboration between students.

To ensure that the pavilions are accessible for all and used efficiently, the Plan suggests locating them in high-pedestrian traffic areas: near All Campus Paths, Campus Greens/Plazas, and academic building entrances. Bike stations are recommended to be installed in proximity to the Classroom Pavilions.



CAMPUS EDGES AND GATEWAYS

The university endeavors to integrate the campus into the land-use and socio-economic context of the City of Raleigh. It will coordinate with various citizens advisory councils, local government, and the business community on opportunities to improve the shared, larger community. The university participates in the local municipal planning process, recognizes that some Campus Precincts overlap with city neighborhoods, and partners with citizens toward mutually beneficial goals. The university will maintain open, inviting borders, recognizing that the campus is a resource and asset to the surrounding communities and all citizens of North Carolina. NC State will be woven into the fabric of surrounding neighborhoods by campus edges that strengthen the university's identity while facilitating the flow of people and exchange of ideas between communities.

Campus edges are the public face of the university. For many, their primary impressions of NC State are created by these edges. Campus edges provide an appropriate reflection of the character and beauty of the campus. They are unifying elements that clearly and consistently demonstrate the campus identity.

Site Standards

- Present significant open views into campus with a minimum of visual clutter.
- Have architectural features or structures that clearly represent campus character (e.g., Gateways, brick walkways, columns and markers, accent lighting, signage, and other wayfinding elements).
- Screen parking lots from public view.
- Are pedestrian friendly.
- Have clearly marked pedestrian crosswalks that enhance safety and comfort.
- Are connected to adjacent neighborhoods with paths, gathering spaces, framed views, and campus streets.
- Use public art that provides an urban campus feel.

- Are defined by a maintained landscape treatment.
- Incorporate landscape elements that represent the campus character and clearly delineate the campus edge, such as planting trees and shrubs in a recognizable pattern or rhythm.
- Have areas of groundcover or lawn in front of buildings.
- Use plantings and other landscape features to decrease the impact of traffic.
- Have signs that are unified, consistent, scaled appropriately, and limited in number. Sign messages are minimal and aimed to the first-time visitor.
- Have underground utilities.
- Have traffic signals on unified poles and mastheads.

City Context

The university endeavors to integrate the campus into the land-use and socio-economic context of the City of Raleigh. It will coordinate with citizens advisory councils, local government, and the business community on opportunities to improve the shared, larger community. The university participates in the local municipal planning process, recognizes that some Campus Precincts overlap with city neighborhoods, and partners with citizens toward mutually beneficial goals. The university will maintain open, inviting borders, recognizing that the campus is a resource and asset to the surrounding communities and all citizens of North Carolina. NC State will be woven



Hillsborough Street - Campus Edge

into the fabric of surrounding neighborhoods by campus edges that strengthen the university's identity while facilitating the flow of people and exchange of ideas between communities.

Urban/Neighborhood Edges

Community Interface: University improvements and growth require that the university embrace community planning in neighborhoods adjacent to the campus, so that campus facilities strengthen the surrounding communities. Campus-edge facilities reach out to and enhance city neighborhood development.

Where the campus interfaces with the city community, entrances will have views that invite pedestrians into campus open spaces. The design of buildings will enhance and complement the character of the surrounding communities.

Rural Edges

In the more rural campus locations such as Reedy Creek and Lake Wheeler, unified signage should be located at the vehicular entries to the property and reinforced at appropriate intervals along the road. Fencing and landscape treatment should reinforce a uniform character and appearance along these edges.

Primary Gateways

Gateways indicate arrival at major campus entries and serve as transitions between the campus and surrounding community. They are easily recognized, clearly communicate the university brand, and are marked with appropriately scaled archways, monuments, railings, walls, other architectural elements, signage, large canopy trees and ornamental plantings.

Site Standards

- Provide open access and views in multiple directions.
- Feature appropriately scaled wayfinding signage.
- Are designed in context with the surrounding community and campus.
- Provide clear links to major campus paths.
- Are wide enough to serve as pedestrian drop-off areas.
- Feature red and/or white-flowering landscape materials.
- Are defined with a vertical statement.

Architectural Standards

- Campus Gateways share unifying elements that clearly and consistently demonstrate the campus identity and reflect the context in which they are placed.

Portals

Portals serve to define entrances into or between Campus Precincts. They are easily recognized as passageways and are defined by an appropriately scaled overhead form created by an architectural feature or plantings. Transit Stops are located near portals when feasible.

Site Standards

- Are wide enough to accommodate the change of direction in pedestrian flow.
- May feature a unique pattern in the pavers.
- Are defined with an overhead form.
- May be enhanced with flowering landscape plantings.
- Are accessible for all pedestrians and small maintenance vehicles.

Pedestrian Gateways

Pedestrian gateways have the same character and feel as primary gateways and pay special attention to Human Scale. These gateways are significant portals into campus and between Campus Precincts and can be combined with Vehicular Gateways where needed.

Vehicular Gateways

Like the Gateway enhancements that welcome pedestrians, Vehicular Gateways serve as the transition between the campus and the surrounding community and clearly indicate arrival to NC State. Vehicular Gateways accommodate pedestrian and people-powered movement as well as cars and other vehicles. Therefore, in addition to the vehicular paths they frame, they incorporate other paths as appropriate into their design.



Watuga Gateway along Hillsborough Street

ECOSYSTEMS

Forests, meadows, wetlands, agricultural lands, streams, lakes, and ponds are important to the university's and the state's heritage, as are the natural topography, urban tree canopy, and urban wildlife. All of these features add variety to the landscape and enrich campus neighborhoods. Ecosystems provide teaching opportunities and learning experiences and contribute greatly to a sense of community and belonging and thus aid the university in its educational, research, and service missions. The university will actively preserve and/or enhance natural wildlife corridors and specified Ecosystems. The university will be a model of sustainable environmental stewardship for the state, following its commitment set forth in the Guiding Principles. It will develop the campus in a way that sustains the natural environment for both the university community and its neighbors by following and exceeding state and local environmental standards.

Meadows

Meadows have value on campus for aesthetic, ecosystem, educational, water efficiency, and fuel reduction benefits. Meadows are a temporary landscape feature in the natural succession process, in which the land eventually becomes wooded. Meadows require only minimal mowing.

- Maintain graded future building sites as meadows.
- Design and create meadows for cleared areas that are not planned for academic or recreational programming.
- Native grasses and wildflowers are encouraged to grow in these areas, through naturalization and/or seeding.
- A mowed edge at the visible border is maintained.

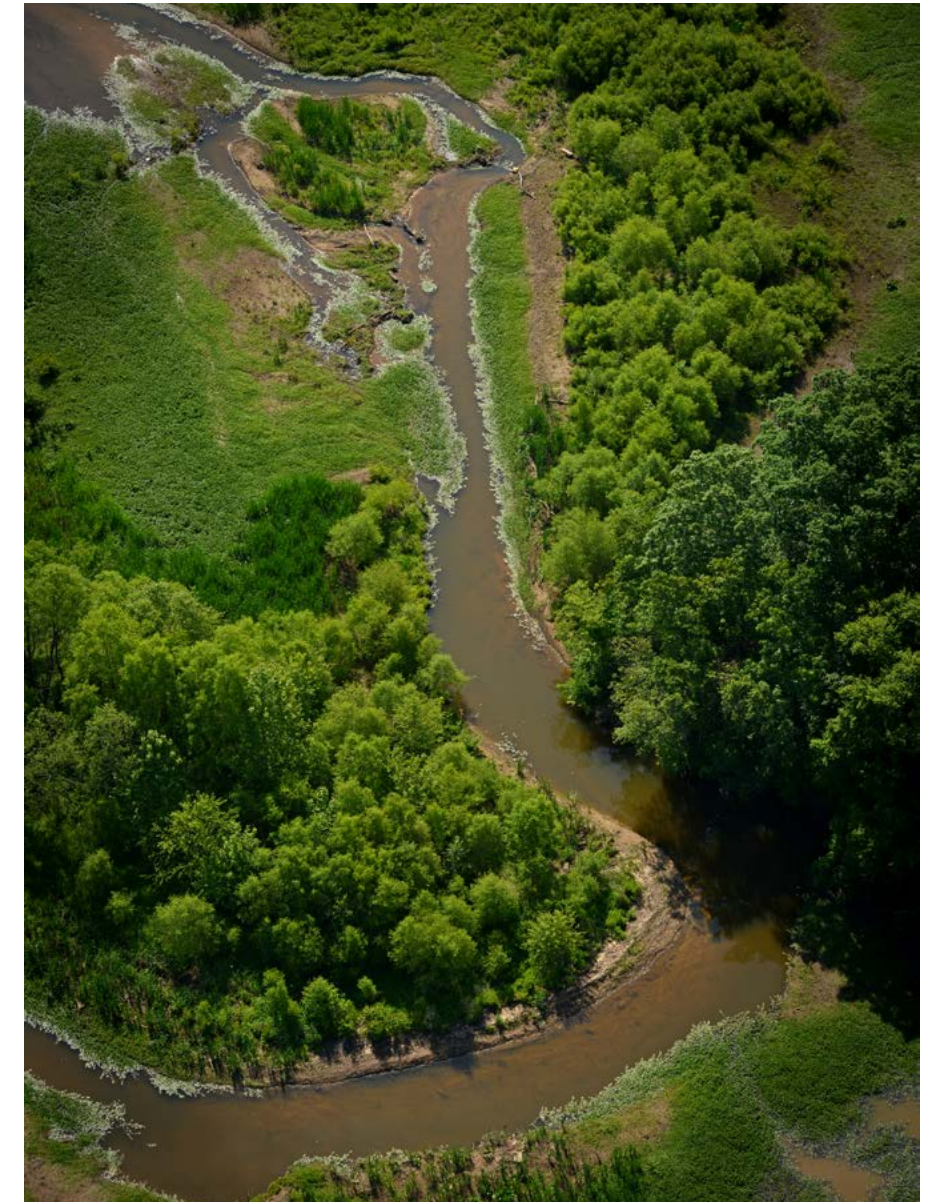
Forests

Wooded areas add value to our campus by providing shade, aesthetics, wildlife habitat, air and water quality, as well as recreation and learning opportunities.

- Preserve, enhance, and increase forest lands and tree cover.
- Manage trees to provide aesthetic and climate benefits, including planting, trimming, removing, and replacing trees.
- Expand the variety of native tree species to favor native wildlife, reduce non-native species, and eliminate invasive species.

Streams

- Pedestrian access and visibility to streams is increased.
- Streets and paths are bridged over streams rather than the streams being diverted through culverts.
- Stream corridors and buffers are protected and enhanced for wildlife habitat.
- Tree canopies are maintained over creeks and streams.
- Development within the watershed protects and enhances the vegetative stream buffer, water quality, and stream channel.
- Stormwater controls are located near the source; the impact of stormwater runoff is minimized by conserving adequate stream-corridor buffer width.
- Stormwater control methods are designed to manage flow to creeks and increase and improve the stream buffer zone.
- When stream bank stabilization is required, vegetative and naturalizing bioengineering concepts are used in lieu of hard river control structures.
- When redeveloping a site, existing stormwater conveyances and management measures at creeks, streams, and drainage ways are examined and repaired or renovated in a manner to improve the stream channel.



Walnut Creek in Centennial Campus Precinct

Lakes and Ponds

Lake Raleigh reflects the university's commitment to environmental stewardship and offers recreational value to the students and the wider community. Lake Raleigh Woods on the western banks of the lake, is one of the Hallowed Places on campus.

- Conserve natural features when creating recreational spaces along the Lake.
- Use the least intrusive techniques for construction near the Lake.

Agricultural Lands and Working Landscapes

Lake Wheeler Road Field Laboratory encompasses nearly 1,500 acres of land for teaching, research, and extension service activities in support of the College of Agriculture and Life Sciences (CALS).

- Continue sustainable initiatives concerning land management, rotational grazing, composting, and stormwater.
- Manage livestock, forests, and field crops while putting agricultural research on display
- Explore ways to showcase sustainable initiatives to the broader public.



Lake Raleigh

STORMWATER

Stormwater projects address runoff as close to the source as possible, upstream of potential erosion and flooding impacts. Exceeding minimum stormwater regulations is a goal for all development. Each new development project addresses stormwater as an integrated campus-wide system with management measures to:

- Create conveyances that are features in the landscape.
- Be visible for teaching and educational outreach.
- Minimize negative impacts on humans and the environment.
- Keep flow to predevelopment levels.
- Manage stormwater close to the source.
- Utilize innovative, low maintenance methods for keeping stormwater onsite, such as infiltration devices, vegetative practices, and detention and retention facilities.
- Minimize contiguous impervious area.
- Replace impervious pavement with pervious surfaces where possible, especially in areas prone to flooding.
- Maximize infiltration of stormwater into the soil.
- Prevent pollution of surface waters.
- Control nutrient levels leaving the site.
- Prevent erosion due to land disturbance.
- Manage erosion through the use of appropriate ground cover materials.



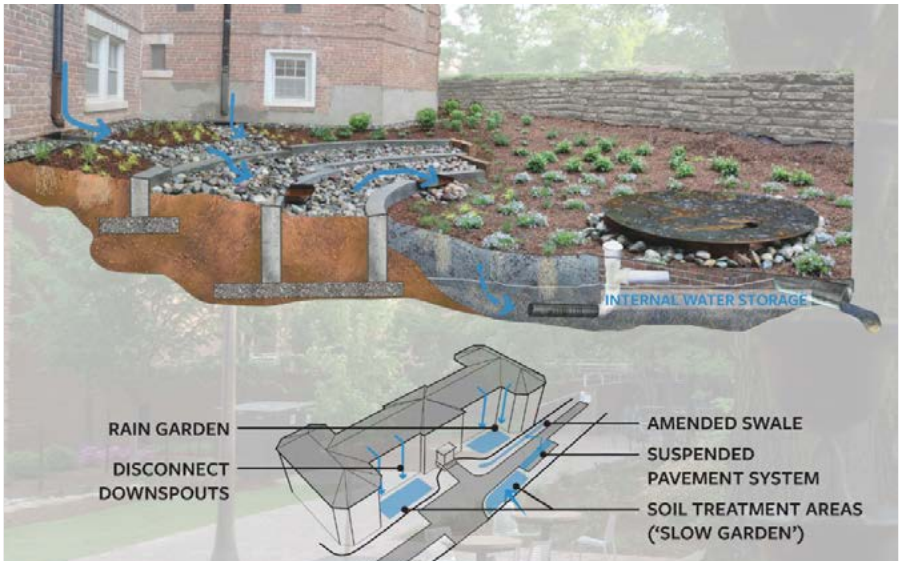
Roof Garden at JC Raulston Arboretum



Parking lot run-off in Rocky Branch Creek



Storm Water Control on Centennial Campus



Storm Water Control at Syme Hall

Stormwater Prototype

Stormwater treatment should be considered holistically across campus, with the intent to infiltrate as much water as possible as close to the source as possible. To achieve this, a variety of techniques should be considered with each building, open space, infrastructure, and mobility project. While not all of the options in the diagram need to be employed for each project, each should be considered and discussed at the outset to determine the most appropriate approach for the site and surrounding context.

Bioretention

Incorporate Rain Gardens and Bioswales to collect run-off and promote groundwater recharge and evapotranspiration through deep-rooted plants and engineered soil.

Permeable Surfaces

Use Permeable Pavers and asphalt to reduce the impervious surfaces on campus.

Green Roof

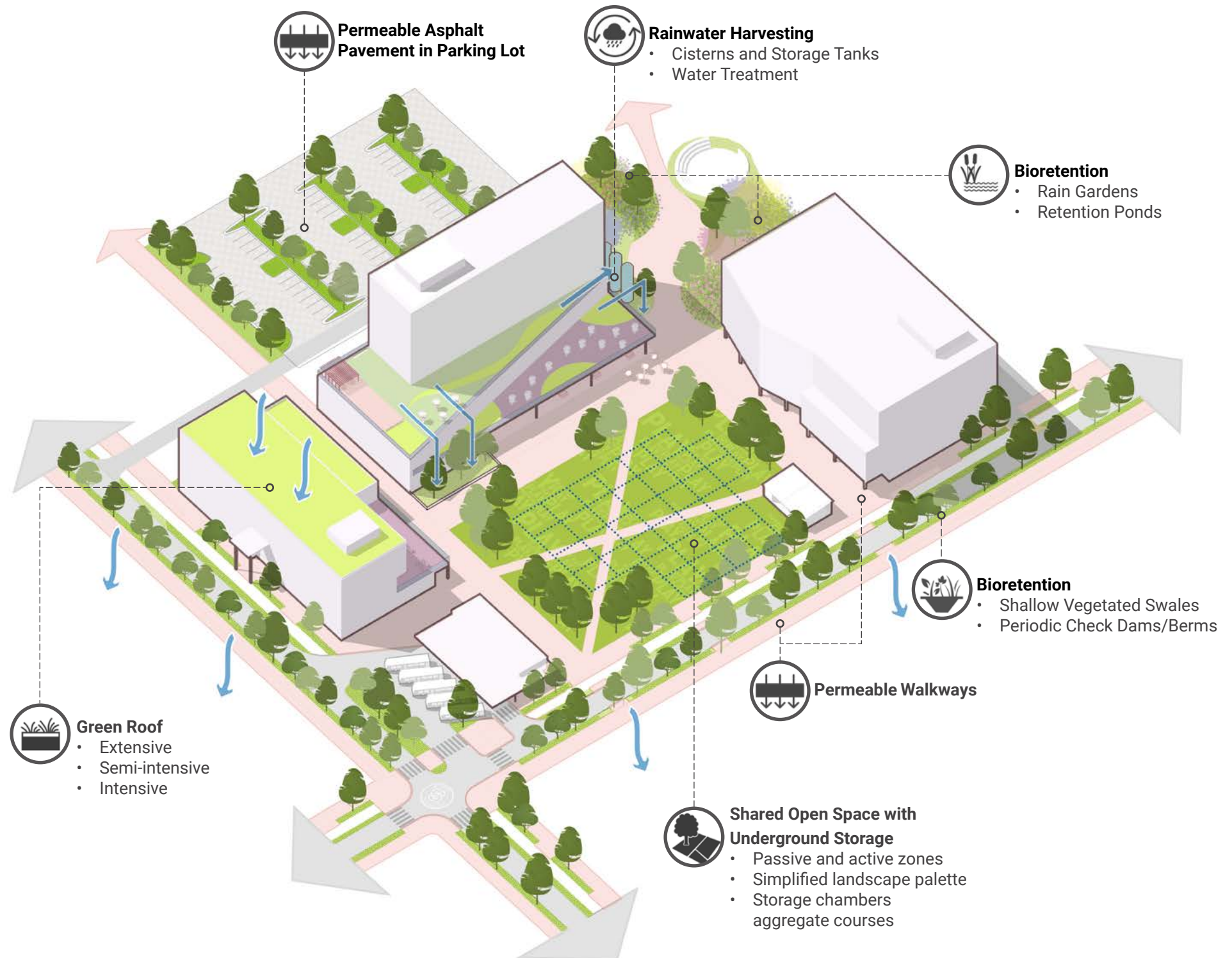
Implement Green Roofs via extensive (shallow), semi-intensive or intensive (deeper) systems to manage stormwater.

Underground Storage

Underground Detention Systems to provide a temporary storage area for excess stormwater.

Rainwater Harvesting

Use Cisterns and Storage Tanks to provide minimal treatment to the stormwater for reuse in irrigation, tower makeup, flushing water, etc.



PLANT MATERIALS

Trees and Vegetation

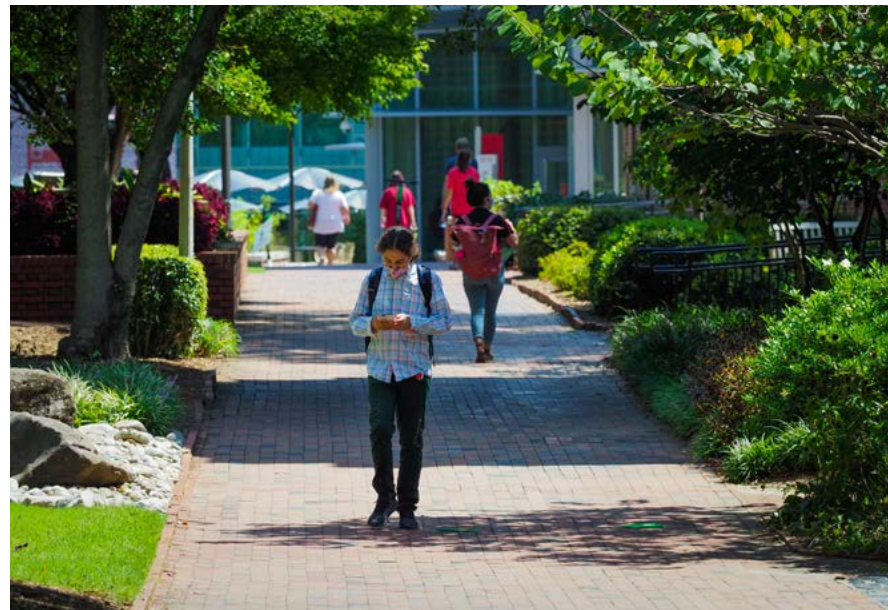
The choice of vegetation is important for maintaining aesthetics, research opportunities, wildlife habitat, and human food.

- Provide examples of uncommon indigenous vegetative types as a teaching tool and an environmental resource.
- Use predominantly native plant materials in natural and naturalized areas, greenway corridors and along creeks, streams, and drainage ways.
- Maintain street-tree canopies to provide a continuous habitat for birds and other urban wildlife and to provide shade for pedestrians.
- Include appropriate native plant materials to provide food and cover for urban wildlife.
- Exotic plants may be used in the landscape for variety, human food, teaching and research purposes, but invasive species of exotic and native plants are not to be used.
- Paths have large deciduous trees to provide summer shade and to allow sun to filter through in winter.
- Large trees enhance a sense of direction along Campus Paths.
- Shrub plantings along all walks are low and spaced to not obstruct visibility.
- Plant material lends Human Scale and form to paths.
- Use color variation in landscaping to make a path memorable and to aid in wayfinding.
- Annual plant beds enhance community spirit, aid in wayfinding, and highlight advances in horticulture. Strategically locate annual plant beds in high-impact areas such as Gateways and entrances to the most public buildings."

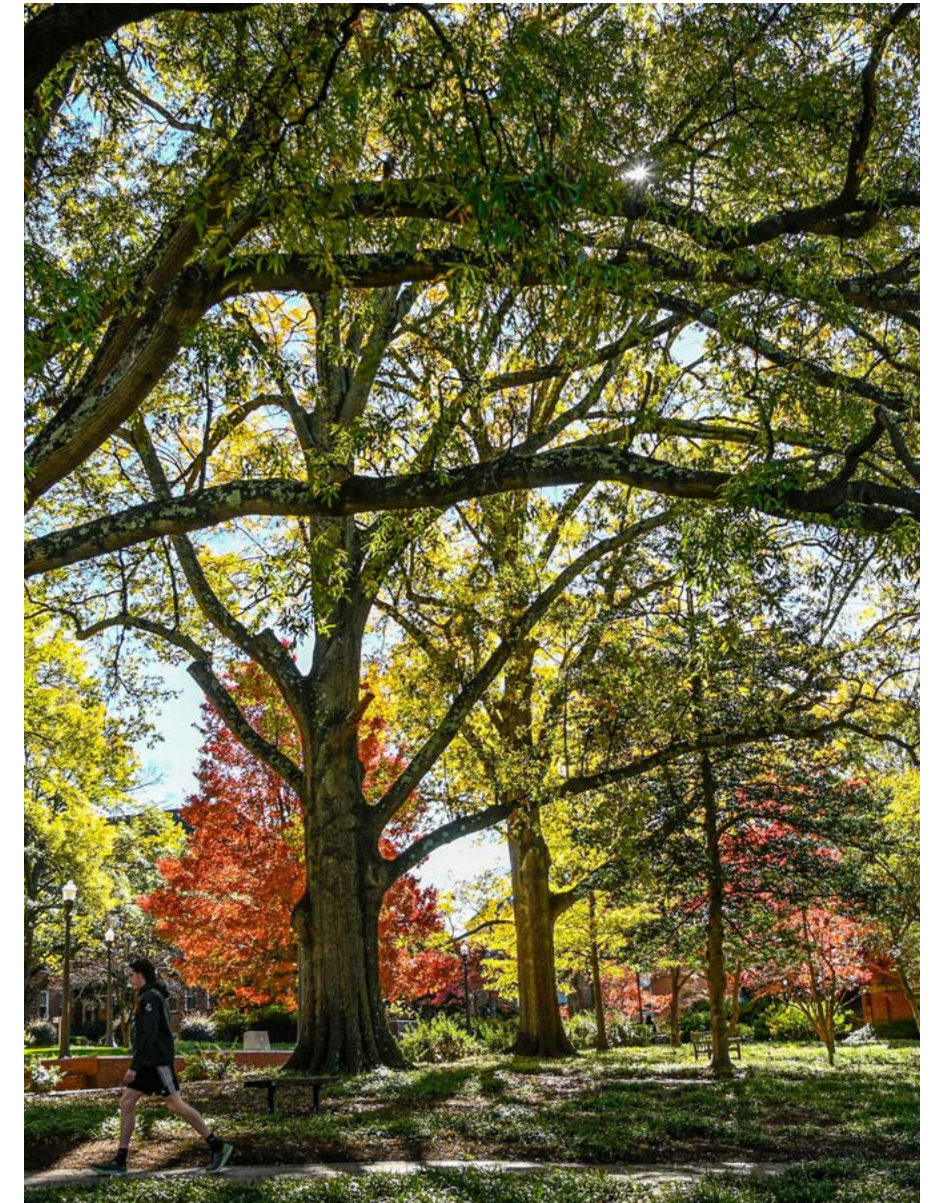
Heritage Trees

Heritage Trees are defined as "a landmark tree, or a grove of trees, that has developed historical or aesthetic value because of its form, setting, age, exemplary representation of genus or species, rarity, association with an important event or person, or memorial significance to the university to be preserved for future generations." Criteria for selection include size, age, location or setting, species, health, aesthetic value, historical significance, a rarity to the region/campus, and whether it's an outstanding specimen.

- Development should avoid impacts to these irreplaceable natural resources.
- When development does occur near Heritage Trees, arborists and other experts shall be consulted to minimize impacts to them.



Vegetation Lining the Path to Talley Student Union



Large Trees in the Court of North Carolina

EXTERIOR PUBLIC ART

Works of Public Art are special elements in the landscape that accentuate the quality of campus' built environment and act as a secondary level of landmarks. Public art is created for and displayed as a focal point in public spaces, accessible to all individuals within a community or specific location. It encompasses a wide range of artistic forms, including sculptures, installations, and interactive pieces. Public art aims to engage and inspire the public, fostering a sense of connection, identity, and cultural enrichment within a shared environment.

NC State showcases sculptures at Global Courtyard and Wolf Plaza, and several iconic bronze figures around the campus. In reference to other Public Art Acquisition and Display, the University has formed a Public Art Committee that oversees the decisions.

General Guidelines:

- Public art can be a landmark to enhance and express campus identity.
- Space can be defined and enlivened by the addition of public art.
- Artwork can provide a focal point where one is needed.
- Form and scale of public art should respond to and respect the surrounding buildings, open space, and environmental context.



Sculpture at Global Courtyard



MOBILITY FRAMEWORK

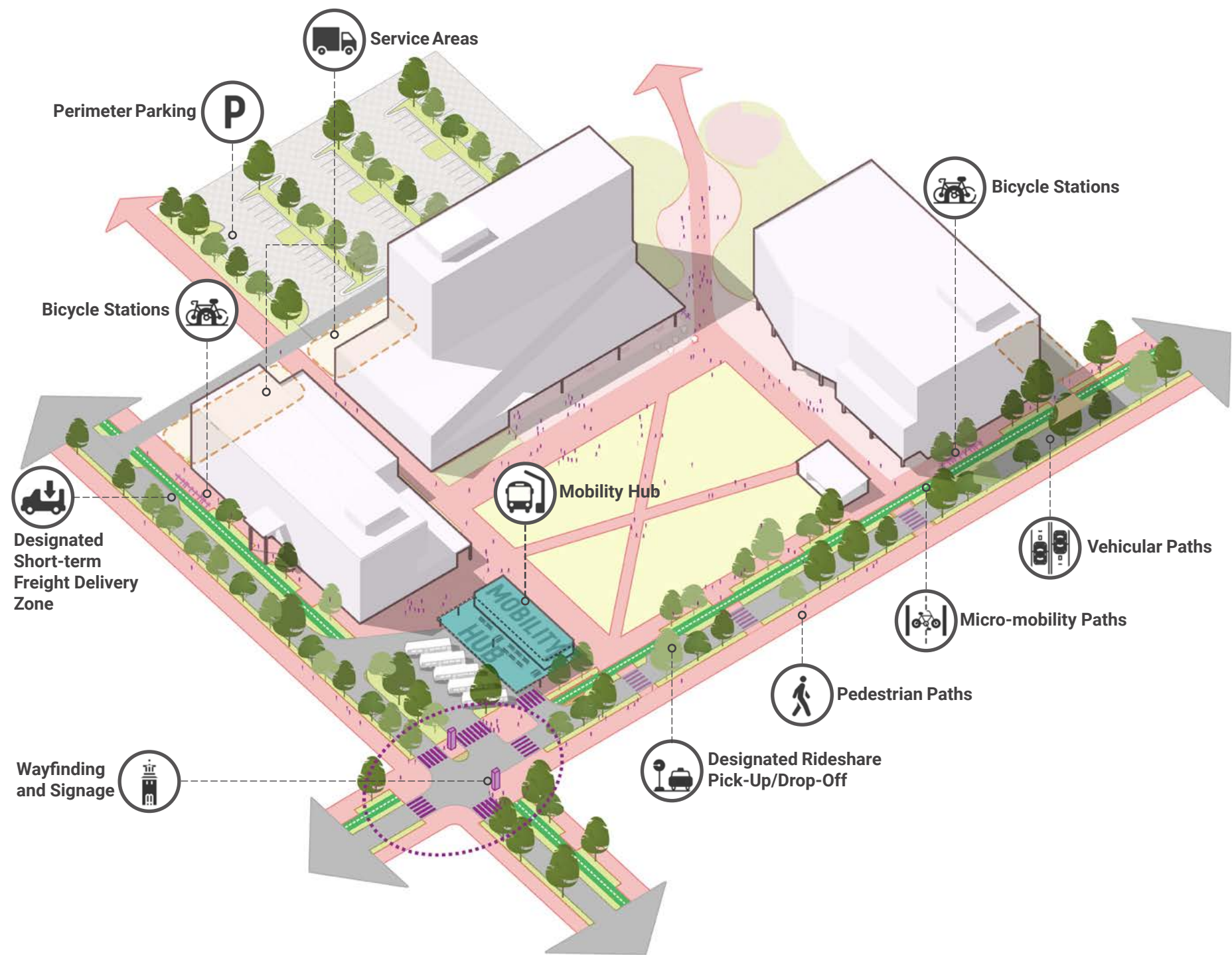


MOBILITY FRAMEWORK

The university is committed to creating a pedestrian-first campus through the improvement of its mobility framework. Pedestrian paths, micromobility paths, and vehicular paths work in partnership to promote a multi-modal system that strengthens the connections between campus neighborhoods and across campus precincts. Pathways and neighborhoods are designed in a way that create legibility, easy navigation, and are assisted by various wayfinding methods. Mobility networks are maximized through the collaboration of parking, Transfer Hubs, and bike stations to facilitate the transition between driving, transit, cycling, and walking.

Pedestrian-Oriented Campus

NC State is a safe, inviting, and Pedestrian -Oriented Campus, a planning strategy for reducing dependency on campus vehicular traffic. Pedestrians are served through a network of paths that safely and comfortably link campus destinations and precincts. All Campus Paths, connecting campus Hearths, are major pedestrian zones providing scenic routes with few interruptions by vehicles. Access for vehicles is thoughtfully planned to enhance pedestrian activity. The speed and volume of traffic is designed to safeguard pedestrian movement. Parking is consolidated at campus perimeters to reduce the number of vehicles entering interior campus streets. Campus improvements will effectively link to other parts of campus and the surrounding community. The university is committed to supporting alternatives to single-occupancy vehicles and to connecting with city and regional transit systems. The university's transit and parking policies will be sensitive to the quality of life in the surrounding city neighborhoods.



PEDESTRIAN PATHS

This section describes the campus path network designed for people-powered movement. All campus destinations shall be accessible to all people, using the principles of Universal Design. The larger paths are scaled to accommodate a volume of traffic including bikes, people-powered vehicles, and occasional service vehicles. Paths consist of common elements defined by the NC State Construction Guidelines such as paving details, lighting, benches, plantings, and site amenities. Path intersections create opportunities for Landmarks, Hearths and special features that enhance wayfinding. Campus Paths provide a sense of connection among the university's engaging and beautiful places.

Each capital project or campus improvement shall provide an accessible pedestrian connection to the campus path network so that people may move freely and safely throughout.

The Role of Pedestrian Paths

- Pedestrian Paths accommodate bicycles and other people-powered vehicles. They are designed to provide access to service, emergency, and other special-function vehicles.
- Exterior Hearths are often located at major Pedestrian Path intersections.
- Path intersections with streets, parking lots, or other contact points that have vehicular traffic are clearly marked.
- Each project connects to the path network extending beyond a project's immediate limits to make appropriate linkages.



Pathway outside Talley Student Union

Materials

- The dominant material for Pedestrian Paths in the North Campus and Central Campus Precincts is red-flashed brick pavers in context with surrounding color and pattern. Pedestrian Paths in the West, South, and Centennial Precincts may incorporate other materials in addition to brick.
- To enrich design and celebrate special places, materials other than brick and patterns other than running bond may be used as trim or accent to indicate the direction of pedestrian flow, to mark entrances to spaces and buildings, to identify bike lanes on the path, and to identify bus stop areas.
- Concrete walks are designed with a sub-base and reinforcement for service-vehicle access and with regular patterned control joints for aesthetics and ease of demolition and maintenance.
- All Pedestrian Paths will have sufficient lighting; All Campus Paths shall have an enhanced level of lighting. Security stanchions will be considered on a case-by-case basis. Specifications for these safety features are found in the NC State Construction Guidelines.

Patterns

- The standard pattern for all brick paths is running bond, aligned with the direction of pedestrian traffic flow.
- Different patterns may be introduced at “people places”, such as All Campus Paths, Courtyards, Plazas, and major pedestrian entrances to the campus.
- Non-red brick colors may be added for a more complex pattern in Plazas and at building entrances.
- Patterns and colors incorporate principles of Universal Design.
- In areas where concrete plazas are suitable, incorporate brick as trim or dividers.

Building Entrances

- Paths have a more ornate pattern than running bond to celebrate entrances.
- Paths expand in width for pooling of pedestrians.
- Paths accommodate seating, recycling and waste receptacles, special lighting, landscaping features, bike racks, and ashtrays (at a distance in accordance with campus policy).
- Paths are sized according to the numbers of building occupants and their activities.
- Paths have architectural cover next to buildings.
- Paths run through covered walkways along building walls.

Steps on Paths

- Steps serve as a secondary method of entering buildings and outdoor spaces.
- When co-located with an accessible route, begin and end steps in close proximity to the accessible, primary route.
- Steps are wide enough to allow for both pedestrian seating and pedestrian flow.
- Steps are used only on steep slopes.
- Exterior steps are less steep than interior steps.
- Steps have open rails for visibility.
- Steps on paths have bike troughs.



Red-Flashed Brick Pavers



Building Entrance at Wellness and Recreation Center

All Campus Paths

All Campus Paths are a special feature of the NC State path system. It is actually a system of interconnected paths sharing distinctive features that create a special zone for pedestrian movement, with amenities such as seating, landscaping, and special paving. All Campus Paths and their surroundings showcase the beauty and uniquely engaging qualities of the NC State campus as well as being special places and destinations in themselves. Integration of these paths will be achieved over time with further enhancements to pedestrian movement, the highest ideal for people movement within the campus. These enhancements make paths safe and aesthetically pleasing, provide walking comfort, and move people in an expeditious manner to their destinations. To support pedestrian friendly Neighborhood Streets, the number of single occupancy vehicles will be reduced in the more densely developed areas through a strategy of providing large parking facilities at campus perimeters.

Campus Paths are the most intensely used and lively type of pedestrian path. The width of All Campus Paths is sufficient to create an active promenade with pedestrian amenities for those passing through, as well as comfortable seating along the edges for people-watching. They may be wider in some areas to create settings for small gatherings. These paths incorporate the principles of Universal Design and accommodate bicycles, skateboards, and other forms of people-powered movement. Vehicular access is strictly limited to service, emergency, and special-function vehicles.

All Campus Paths serve as the scenic and functional routes from which key campus locales can be viewed and also provide opportunities for impromptu social interactions. Consisting of a network of pathways located in the urban areas of campus and interfacing with streets, they form an interlocking web with common characteristics and serve as a unique and distinctive design feature of the university.

All Campus Paths connect shared open spaces and provide access to Campus Neighborhoods. Many building entrances, outdoor dining areas, retail establishments, student lounges, libraries, food service destinations, and housing facilities are found along All Campus Paths. The Campus Paths and Shared Open Spaces plan identifies the vision for expanding and upgrading the network.



All Campus Path at The Oval



All Campus Path at Turlington/Alexander Residence Hall



All Campus Path through The Brickyard

Site Standards

- All Campus Paths have a minimum width of 15 feet.
- All Campus Paths are the recommended travel route after dark and provide enhanced lighting and other security features.
- Directional signage and pedestrian kiosks are incorporated along All Campus Paths to assist with wayfinding and information.
- All Campus Paths offer opportunities to highlight the academic activities in the neighborhood.
- Every Campus Neighborhood Hearth has access to an All Campus Path.
- Each neighborhood provides a memorable feature or Landmark to assist in wayfinding along the All Campus Path.
- Development projects along future All Campus Path routes incrementally contribute to their implementation and enhancement.
- Seating is placed in key areas along All Campus Paths to provide opportunities to observe and participate in neighborhood activities.
- All Campus Paths may incorporate special embellishments to standard running bond pattern in a way that is unique to that neighborhood. Special paving may be used, especially in areas where the path enlarges to create Hearths or gathering places or intersects with other paths.
- Where an All Campus Path leads from one neighborhood to another, the pathway is clearly defined by the directness of the route, width of the path, standard paving pattern, and other Landscape Features and Landmarks.
- Views from All Campus Paths are created or enhanced to aid in wayfinding from one neighborhood to the next.



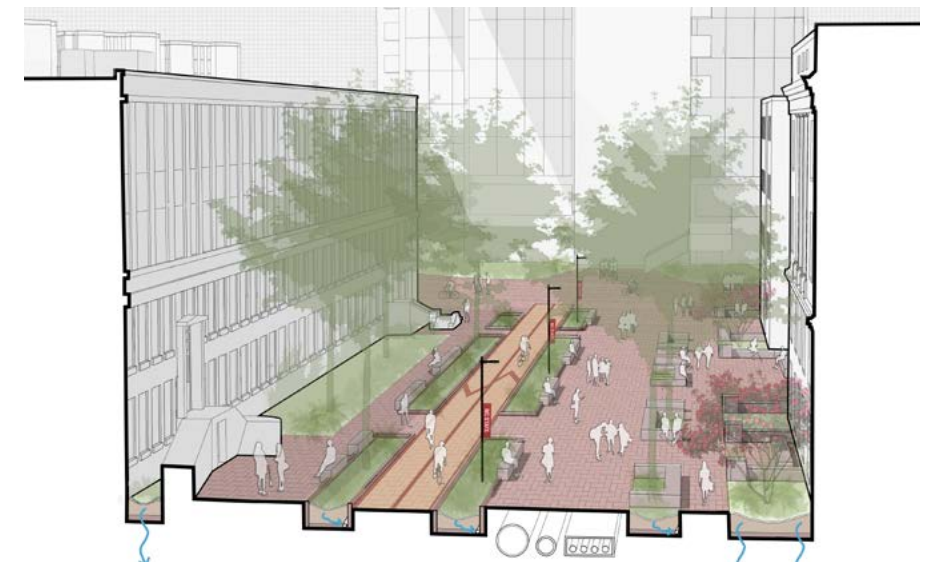
Pathway lighting at Talley Student Union



All Campus Path at Talley Student Union



Seat Walls on Stinson Drive



Typical Multi-Modal Corridor

Connector Paths

Connector Paths generally run parallel with a street and are designed to move high volumes of pedestrian traffic in a direct and safe manner to their destinations. They connect destinations such as large parking areas, campus precincts, and neighborhoods directly to each other. Connector Paths also connect to other path systems to reach specific destinations and to the City of Raleigh's pedestrian network. These paths are wide enough to accommodate pedestrians, occasional bikes, and other people-powered modes of transportation. In locations where bike traffic volume is high, bikeways will be designated.

Site Standards

- Projects impacting streets will incorporate a Connector Path parallel to the street, providing access to bus stops.
- Pavement material may be brick or concrete with a minimum width of 10 feet.
- When a Connector Path runs parallel to a Campus Street, curbing and a minimum of six-foot planting buffer area will separate the path from the street.
- When a Connector Path intersects with a Neighborhood Street, pedestrians have the right of way over vehicular traffic. These paths have a raised pedestrian table or other traffic calming devices for crossing these interior streets.

Neighborhood Paths

Neighborhood Paths move lower volumes of pedestrians than Connector Paths and are within Campus Neighborhoods. They connect building entrances, open spaces, small parking lots, and other destinations within and adjacent to the Campus Neighborhoods. They are wide enough to accommodate an occasional bike or service vehicle. They may also be secondary connectors or incidental paths that provide convenient local pedestrian connections within Campus Neighborhoods and across campus Hearths.

Site Standards

- Pavement material may be brick or concrete with a minimum width of 8 feet.
- Where Neighborhood Paths cross interior campus streets at mid-block or at intersections, crosswalks are delineated by paint, stamped concrete, or other contrasting material.



Connector Path by Memorial Belltower



Neighborhood Path by Hunt Library

Multipurpose Paths

Multipurpose Paths are accessible walks along natural corridors connecting various areas throughout campus, designed for recreation or enjoyment of the natural environment. They connect to the City of Raleigh Greenway system where convenient.

These paths are designed as an alternative route for pedestrians and people-powered vehicles to move throughout campus with few road crossings. To reduce conflicts with vehicular traffic, underpasses are provided at street crossings. Path spurs may access stream banks or other natural amenities for study or recreation. Multipurpose Paths connect to the larger community and bring people to and through campus. They may have markings to indicate bike and pedestrian lanes.

Site Standards

- Multipurpose Paths and their spurs are accessible to all people and are designed for bike and pedestrian safety.
- Paving material is asphalt with reinforced sub-base.
- Paving minimum width is 10 feet with 2-foot, reinforced gravel shoulders.
- These paths accommodate occasional maintenance vehicles.

Tunnels and Bridges

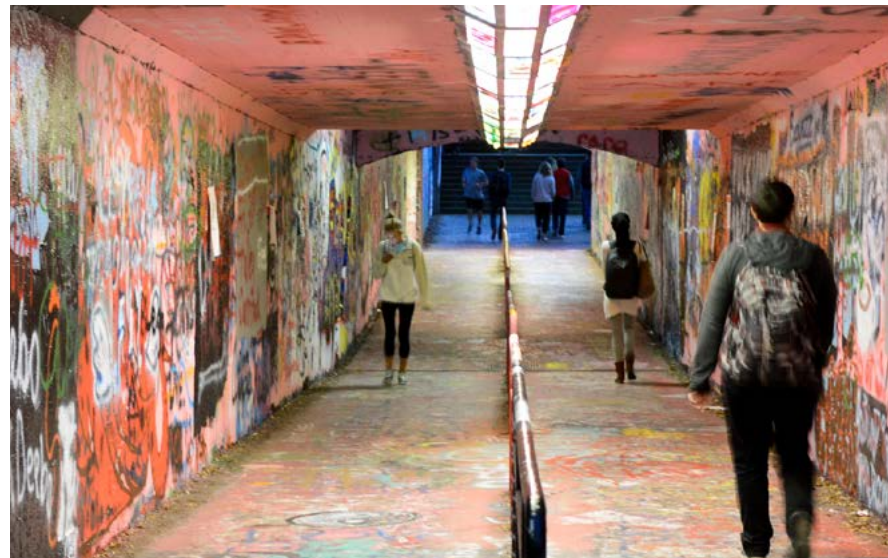
A series of tunnels currently connect North Campus Precinct with Central Campus Precinct. The Free Expression Tunnel is a Hallowed Place and should be preserved, with upgrades to drainage, lighting, and safety as needed. The other tunnels are largely utilitarian today and are in need of renovation or removal. A new bridge connecting the North Campus Precinct with Talley Student Union on the Central Campus Precinct is also suggested.

Site Standards

- Drainage system is improved to address flooding concerns.
- Accessible routes are incorporated to and through tunnels, or across bridges.
- Tunnels and bridges have appropriate light levels for safety considerations.
- Tunnels are widened or enhanced where feasible.



Multipurpose Path



Free Expression Tunnel



Bridge to College of Textiles on Centennial Campus Precinct

MICROMOBILITY PATHS

Micromobility Paths may be designated lanes in the roadway or Multipurpose Paths shared with pedestrians that allow bikers, scooters, and other non-vehicular transit modes to move at various speeds with minimal conflict with pedestrians or automobiles. Portions may be elevated or underground. This type of micromobility facility will make traveling between campus precincts more efficient, therefore encouraging people to use bicycles to travel. A multi-modal path between North and Centennial Campus is needed and requires additional supporting studies to determine the exact location and design criteria.

Bicycle racks, shelters, and lockers are placed throughout campus in locations convenient to All Campus Paths and buildings. Small bicycle parking areas will be located near entrances of buildings for convenient short-term parking. Sheltered bicycle parking will be incorporated into the building or surrounding landscaping where possible. Stand-alone covered bicycle shelters will also be implemented where possible. Bicycle lockers will be available for longer-term storage at Parking Decks, Mobility Hubs, and in areas that are not served by a Bicycle Station.

Architectural Standards

- Bike racks are located on paved surfaces such that the bikes do not encroach on pedestrian circulation and are under cover where possible.
- Bike shelters are covered parking structures with their “interiors” highly visible from the exterior. Security stanchions may be located at or near each shelter.
- Bike lockers are enclosed, lockable storage units, located on paved surfaces. Given their utilitarian appearance, they shall be located or screened so they do not detract from building entrances or Hearths.
- To provide increased safety and security, bike racks are best grouped together and sited within view of building lobbies and streets.



University Plaza “The Brickyard”

Bike Lanes

As part of the overall micro-mobility strategy, bike lanes should be accommodated for all new pathway and streetscape improvements, as well as existing infrastructure upgrades. Where possible, bike lanes should be separated and protected from vehicular traffic, with clearly marked signage where vehicular and/or pedestrian paths intersect.

Sharrows

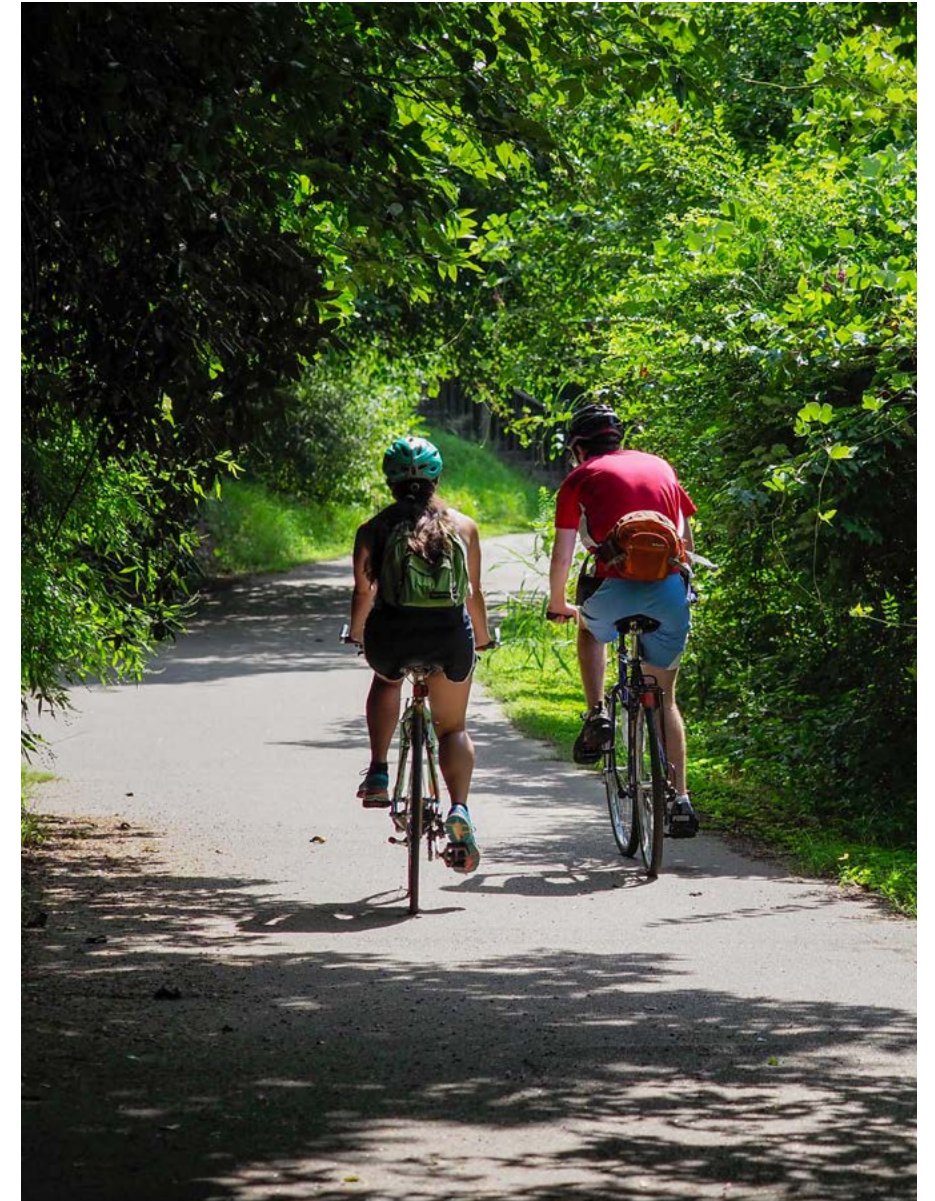
Sharrows are an important part of connecting the bike lane network within campus and between campus and the surrounding community. Whenever possible, preference should be given to creating separated, dedicated bike lanes adjacent to vehicular paths. Where that is not possible, Sharrows should be considered, with proper width given to allow safe cycling and micro-mobility use.

Greenway Trails

Greenway Trails should be designed to accommodate all types of micro-mobility as well as pedestrians, providing enough width to safely pass and create “lanes” for each direction in sections where visibility is limited. To the extent possible, all Greenway Trails should have accessible entry and exit points, with all area between points accessible as well.



Student biking on Sidewalk



Greenway Trail

Bicycle Stations

Bicycle Stations provide enhanced bike amenities at high-volume bicycle destinations on campus and at commuter hubs. They are covered and provide racks, lockers, and air pumps, and they may include bicycle repair equipment.

Architectural Standards

- Bicycle Stations are located in dense Campus Neighborhoods near primary destinations, at Bus Transit Stations, and at perimeter parking decks.
- Campus maps and bus schedules are posted.
- Their location is within view of building lobbies or streets. The “interior” is highly visible from the exterior. Security stanchions may be located at or near each station.
- Stations are designed to minimize energy use for lighting. Timed lighting is incorporated for night hours of operation.
- Bike racks, bike lockers, and other features are available for theft protection.
- Air pumps are available.
- Nearby showers and storage for bicycle commuters may be incorporated into larger stations.

Site Standards

- Plantings and other Landscape Features are placed to keep sight lines open.
- Hardscape surrounding the shelter is ample, wide enough to accommodate several bicyclists arriving or leaving simultaneously.



Bike station at the Entrance of DH Hill Library

VEHICULAR PATHS

Vehicular Paths support the concept of a pedestrian-oriented campus with a sustainable, safe, convenient, and attractive transportation network. Reduction in the campus's reliance on the single-occupancy vehicle is a primary goal. Vehicular parking is managed to support this vision.

Personal car movement may be restricted within the cores of campus precincts and on some interior campus streets. Vehicular operations in these areas will be limited to transit, service, emergency vehicles and those vehicles needing a special right of entry to accessible parking and loading areas. Passenger car movement and large parking areas will be near the campus's Thoroughfares and Collector Streets found at campus perimeters.

As the population of the campus community increases in the South and Centennial Precincts, safer at-grade crossings with appropriate traffic calming measures, clear signage, and university branding at Western Boulevard intersections is suggested.

Standards for all Vehicular Paths

All Vehicular Paths have:

- Accessible parallel sidewalks, pedestrian amenities, lighting, wayfinding signage, and may provide access to security stanchions.
- Street trees located 40 feet minimum, 65 feet maximum on-center.
- Intersections with curb-cuts in each crossing direction that meet Americans with Disabilities Act Accessibility Guidelines, and NC State standard detailing.
- Bicycle facilities and/or pavement markings, promoting safe bicycle movement.
- Sidewalks that are widened at path intersections to provide room for pedestrian "pooling."
- Block-style pedestrian crosswalk markings.
- Raised pedestrian tables, usually at mid-block crossings that accommodate large numbers of pedestrians.



Wide Sidewalks along Vehicular Paths

Major Streets

Thoroughfares are major public roads that bring people to campus in personal vehicles and other various modes of transit. Avent Ferry Road, Centennial Parkway, Hillsborough Street, Blue Ridge Road, and Western Boulevard are considered Thoroughfares. Thoroughfare traffic moves at 35 miles per hour or greater.

Where Thoroughfares form campus and precinct edges, they are made Human Scale, beautiful, and safe. Landscaping, lighting, and signage provide a comfortable environment for both the driver and for pedestrians moving parallel to or crossing these streets. Large parking areas are located near Thoroughfares to capture commuter traffic before it enters smaller campus streets. Special pedestrian amenities, including tunnels, provide for the safe crossing of Thoroughfares.

Site Standards

Thoroughfares have:

- Posted speeds of 35 miles per hour or greater.
- Parallel, accessible Multipurpose Paths for people-powered movement separated from the travel lanes.
- A planting strip between the travel lane or curb and pedestrian paths for safety.
- Signage directing drivers to major public campus destinations in accordance with NC State's exterior signage standards.
- Pedestrian crossings with pedestrian-activated signals at intersections.
- Pedestrian refuge areas if there is a median or excessive distance crossing travel lanes at pedestrian crossings.

Mixed-Use Streets

Streets that connect precincts and distant Campus Neighborhoods are Collector Streets. Examples are portions of Gorman Street, Sullivan Drive, Cates Avenue, Method Road, Varsity Drive, Dan Allen Drive, Pullen Road, and Main Campus Drive. Collector Streets are often used by personal vehicles that must move around more densely populated pedestrian areas. Collectors generally have traffic speeds that do not exceed 25 miles per hour and share the road with scooters and bicycles moving in the travel lane.

Collector Streets have parallel pedestrian paths such as All Campus Paths or Connector Paths and are ideal for locating campus bus stops and transit service. They have a balance of pedestrians and vehicles mixing safely.

Site Standards

Collector Streets have:

- Posted speeds of 25 miles per hour or less.
- Sidewalks behind and adjacent to the curb and/or a planting buffer between the curb and Pedestrian Path.
- On-street parking where needed and appropriate.
- Bus stops at convenient locations, especially where an All Campus Path or Connector Path crosses the street.
- Mid-block pedestrian crossings where appropriate.
- Raised pedestrian tables where an All Campus Path or Connector Path crosses the street.
- Pedestrian wayfinding signage.
- Space for bicycle transit along the street, guided by sharrow markings on the pavement.



Major Street: Western Boulevard



Mixed-Use Street: Hillsborough

Local Streets

Neighborhood Streets are located in densely developed areas, are narrow, and are designed to discourage personal vehicular traffic. Examples are Yarbrough Drive, Partners Way, and Founders Drive. Neighborhood Streets are used primarily by transit vehicles, service vehicles, bicycles, other human-powered vehicles, and cars used by short-term and weekend visitors. A limited number of Neighborhood Parking Lots may be found off Neighborhood Streets.

Along Neighborhood Streets, buildings are close to the road, entrances face the street, and there is a high concentration of pedestrians using the wide sidewalks that parallel and cross these streets. Speed limits are 15 miles per hour or lower, and traffic-calming strategies are used to keep vehicle speeds low.

Site Standards

Local Streets have:

- Low speeds to discourage through traffic.
- Posted speed of 15 miles per hour or less.
- Sharrow markings on the streets to encourage bicycles to operate in the travel lanes.
- Raised pedestrian tables or other traffic-calming devices at high-volume Pedestrian Path crossings to give pedestrians the right of way.
- On-street parking.
- Paving materials similar to those used on Pedestrian Paths to designate high-volume pedestrian crossings.
- Street tree plantings responding to building entrances and pedestrian ways.

Agricultural Roads

Agricultural roads, primarily at Lake Wheeler and Reedy Creek, should continue to utilize the existing posted speeds. Character for these roads should be curbless and crowned at the center with adjacent swales or ditches to convey stormwater. In locations identified as trail extension opportunities, a non-vehicular pathway should be built alongside the road, separated by a swale. Signage should be consistent with wayfinding and branding of NC State.



Local Streets

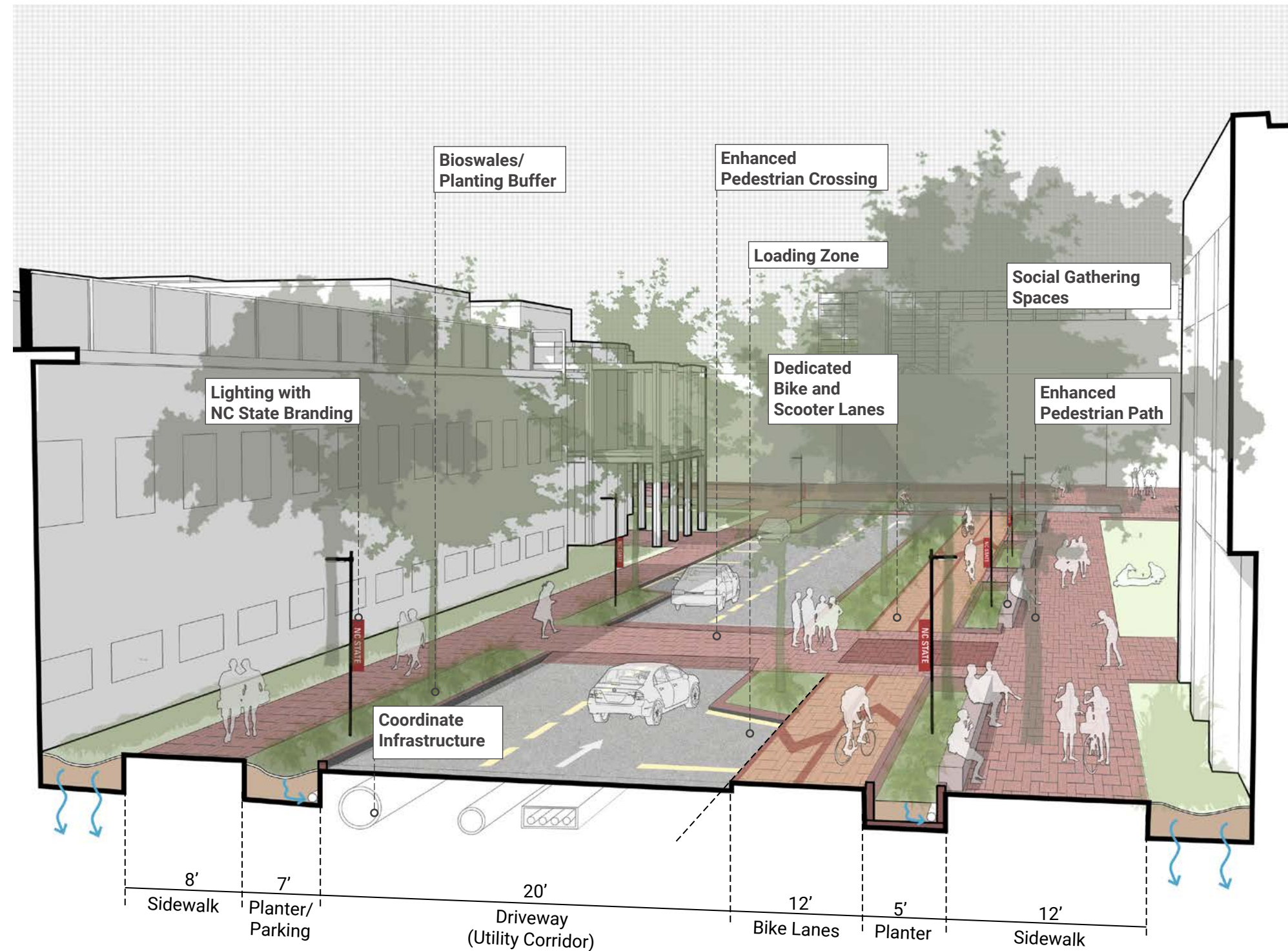


Agricultural Road in Lake Wheeler Precinct

Typical Mobility Prototype

To increase connectivity and prioritize non-vehicular circulation, the Plan suggests an integrated mobility strategy that provides adequate space and identification for multi-modal transit. The example prototype shows how pedestrian pathways, vehicular streets with loading/unloading zones, and micro-mobility paths can work within a transit corridor.

Additionally, stormwater management, utility infrastructure, landscaping, and campus lighting and signage are integrated into this prototype. While the arrangement may change for each corridor, all of these elements should be considered for any new/improvement project across campus. The result is a coherent, easily identifiable language for circulation and mobility across campus.



Bus Transit

Bus transit at NC State provides reliable, quick and easy transit for the NC State community to move about campus. The bus system is planned to grow into a coordinated multi-modal transit system. Transit uses campus and city streets and its own rights-of-way to cross and connect the precincts of NC State's campus. The routes and stops of all transit modes enhance the Campus Neighborhoods and their features and the Pedestrian Paths.

The university bus system, known as the Wolfline, is free and is complemented by local and regional services that link cities throughout the Triangle. Wolfline routes use a variety of campus and city streets to connect all campus precincts, nearby residential neighborhoods and activity centers.

The Stops for the Wolfline route network enhance Campus Neighborhoods, their features and the Pedestrian Paths. Continued reliance on a rubber-tired transit technology to serve the majority of transit needs is envisioned for the foreseeable future.

Priority Corridors

To meet future travel demand between campus precincts, maximize rider capacity and ensure Wolfline schedule reliability, Priority Corridors may be designated on selected university and public roadways. Special treatments favoring bus movement could include bus lanes outside of general traffic, intersection signal prioritization, exclusive bus ways that allow buses to move unhindered to achieve greater timetable reliability and avoid general traffic access limitations. Founders Drive and Dan Allen Drive already illustrate some of these features. As Centennial Campus develops and intra-campus bus travel grows along with traffic congestion, other Priority Corridor opportunities will be considered, including Varsity Drive through Greek Village, and the planned Pullen Road extension to connect North and Centennial

Campus Precincts. The stops for the Wolfline route network enhance Campus Neighborhoods, their features and the Pedestrian Paths.

Mobility Hubs

Mobility Hubs are buildings that accommodate multiple routes (both city and regional) and normally include multiple bus bays, covered passenger seating, real-time arrival/departure information, restrooms and other amenities such as retail or food service. At present, there are no Mobility Hubs. However, the Plan suggests two major Mobility Hubs, one in the Central Campus Precinct east of Reynolds Coliseum, and the other in the Centennial Campus Precinct west of Hunt Library.

Transfer Hubs

Transfer Hubs accommodate multiple routes and act as focal points of activity. They include capacity to queue multiple buses and provide shelters for passenger waiting and seating. Currently three Transfer Hubs offer frequent and convenient bus route changes: Hill Library on Founders Drive where multiple Wolfline routes converge and where local and regional connections can be made on Hillsborough Street, Carmichael Gym on Morrill Drive, and on Main Campus Drive at the College of Textiles. In addition, two minor hubs can be found along Partners Way at both Hunt Library and Engineering Building I. Most of the existing bus routes utilize these hubs, allowing for passengers to transfer easily from one route to another.

Should planned commuter rail or light rail systems construct stations on campus, new rail-bus Transfer Hubs will need to be located and designed to create pedestrian-friendly station access.



Wolfline Bus

Stops

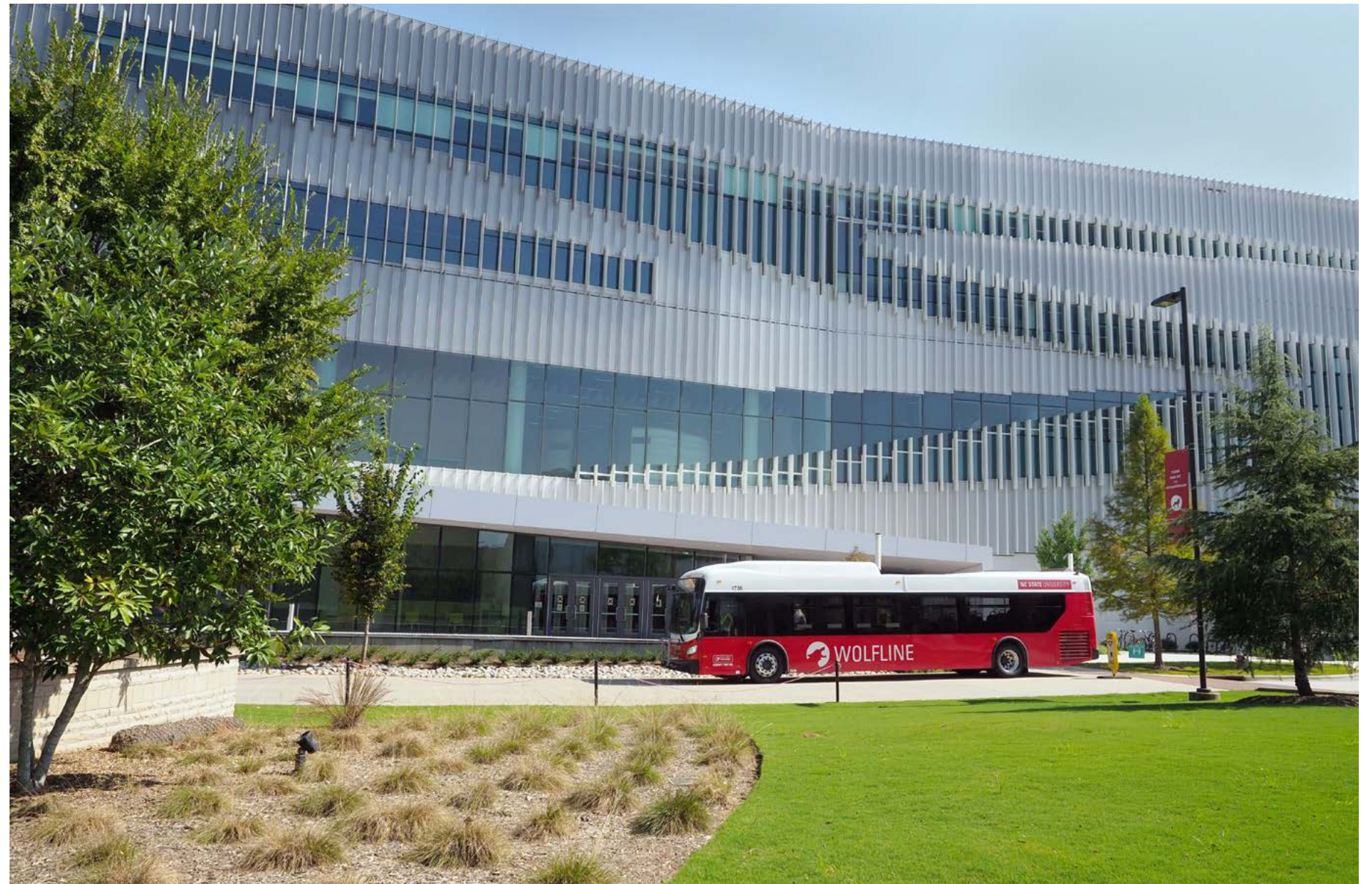
Transit Stops are designed and located to serve passenger demand and to facilitate safe passenger loading and unloading. At certain locations, bus layovers are desirable to allow buses to get back on schedule. Strategically placed bus layovers increase the overall reliability of individual routes and the bus system as a whole.

Architectural Standards

- In general, shelters shall be uniform to present a consistent identity.

Site Standards

- Transit Stops are safe and accessible and are configured and sited so waiting space does not impede pedestrian flow.
- Transit Stops provide site amenities such as comfortable benches, recycling and landfill waste bins, route maps, wayfinding signage, and appropriate lighting.
- Transit Stops have clearly identifiable Wolfline signage with route number and route name.
- Bus Layovers are located away from buildings' fresh-air intakes and Exterior Hearths to reduce infiltration of fumes and noise. Seating is sited away from the source of exhaust fumes.



Transit Stop at Hunt Library on Centennial Campus Precinct

PARKING

Parking areas form transition places between the vehicular and the pedestrian domains and have clearly defined Pedestrian Paths within them. Along these paths the university creates places for communication or simply for waiting and resting comfortably. All lots must be lighted sufficiently for safety. Large parking areas are located to provide easy connections with regional, local, and campus transit and the pedestrian path system.

Parking areas are the final destination along the vehicular paths for commuters and visitors to campus. As such, major parking areas will be located on the campus perimeter, proximate to Thoroughfares and Collector Streets, with pedestrian connections to Transit Stops and campus destinations. Major parking facilities are designed in concert with Transfer Hubs and bike stations to facilitate a smooth and efficient mode shift from the single-occupant vehicle to walking, transit, and bicycling to campus destinations. Every renovation and new development project will have parking requirements addressed in each scope statement to meet university and local requirements for parking.

Standards for all Parking areas

All Vehicular Parking Areas:

- Are designed in accordance with the City of Raleigh Landscape Ordinance.
- Have adequate sidewalks making safe, accessible connections to the campus' Pedestrian Path network, transit stops, and campus destination points.
- Have vehicular and pedestrian wayfinding signage.
- Use planting areas as infiltration bays to detain or retain surface runoff.
- Use special landscaping and lighting to reinforce direction of vehicular and pedestrian flow.
- Have shade canopy to minimize the effects of heat gain on the air and water, and to reduce the energy needed for cooling vehicles.
- Have lighting according to Illuminating Engineers Society of North America standards as a minimum.

- Have security stanchions as needed.
- Include provisions for motorcycles and bicycles.

SURFACE PARKING

Collector Lots

These parking areas are to be built to a Human Scale, with the same attention to detail, wayfinding, and accessibility as Campus Neighborhoods and Paths. The university will use setbacks, buffers, landscaping and architectural scale, and other elements of design to avoid building monolithic barriers to vision and movement. These parking areas will be located and designed so as not to degrade nearby off-campus neighborhoods.

Site Standards

- Are subdivided by tree canopy planting strips and planting islands, and provide formalized Pedestrian Paths that connect to the Campus Path hierarchy.
- Are designed to mitigate negative environmental impacts, such as stormwater concentrated by impervious surfaces, pollutants carried by runoff, heat, noise, and glare.
- May have planting islands designed to utilize storm water for irrigation and to remove pollutants.
- Have bus stops with shelter and bicycle racks.



Surface Parking on Centennial Campus Precinct

Neighborhood Lots

Neighborhood Lots are small and are located off Neighborhood Streets. They are reserved mostly for service and limited departmental parking, accessible parking, visitor parking, and short-term loading. While ensuring a sense of safety within these lots, the university uses landscaping, low walls, berms, and so forth to screen the visual impact of the lots from adjacent campus spaces.

Site Standards

- Neighborhood Lots contain a maximum of fifty cars.
- They may be combined into a collection of linked lots.
- Their space is defined by shade trees and other plantings.
- Use of permeable pavement is encouraged.

On-Street Parking

On-street parking serves as protection for the pedestrian and may be found on one or both sides of some Neighborhood or Collector Streets as street widths allow. On-street parking brings people to the street and provides safe and convenient spaces for short-term needs, accessible parking, and evening parking needs. It provides a zone for drop off, loading, and bus pullovers. On-street parking moderates vehicle speeds on roadways and promotes pedestrians' sense of safety.

Site Standards

On-Street Parking spaces:

- Are parallel to the sidewalk.
- May be interrupted at intervals by bump outs planted with street trees.
- Are often terminated by planted bump outs to screen parked cars from views on the pedestrian path.



On-Street Parking on Hillsborough Street

PARKING STRUCTURES

Personal vehicles are directed into Parking Structures and Collector Lots at campus perimeters to minimize the impact of traffic through the campus and surrounding city neighborhoods. Parking Structures are pedestrian-friendly, incorporating architecture and landscape elements to refine building mass. The architecture and site details shall address security issues, which are of the utmost importance in the design of Parking Structures. Parking Structures may also include other uses such as retail and housing on the street facades to give the building a Human Scale.

Site Standards

- Site parking decks along campus perimeters to reduce the numbers of personal vehicles entering Neighborhood Streets.
- Locate decks to encourage pedestrian movement through neighborhoods.
- Locate decks to allow round-the-clock use where spaces are shared with the city and neighboring businesses.

Architectural Standards

- Architectural details are incorporated to relate the deck to neighborhood buildings.
- Where parking decks are integral to a Campus Neighborhood or are adjacent to a neighborhood's Shared Open Space, the face of the deck is lined with occupied building space with doors and paths fronting the neighborhood.
- Decks are subdivided to enhance wayfinding and to break up building mass.
- Decks shall have a primary entrance for pedestrians and open stairwells, providing adequate visibility and lighting.
- Daylight is directed into deck interiors.
- Green roofs, living walls, and other sustainable features are incorporated.

- Solar canopies for shading and power generation may be explored.
- Adequate electrical points for EV stations are incorporated.
- Covered Stops, wayfinding maps, lighting, bicycle parking/storage lockers, and recycling are some of the amenities incorporated at pedestrian entry/exit points.
- Bus layovers with bus driver restroom facilities are incorporated into deck design as needed.

ELECTRIC VEHICLE CHARGING STATIONS

Electric Vehicle Charging Stations should be considered as part of the comprehensive mobility strategy across campus. These stations could be part of future Mobility Hubs, parking structures, or surface lots as part of future renovation strategies. Adequate electrical infrastructure to allow for EV stations should be considered with new and improvement projects.



West Parking Deck

WAYFINDING AND SIGNAGE

Memorable neighborhoods and paths are the primary means of wayfinding, which makes the campus easy to navigate, understandable and recognizable. Wayfinding is derived from paths that provide a clear indication to the next neighborhood, unique Landmarks at significant intersections, and clear expressions of primary building entrances. All improvements to campus contribute to successful wayfinding.

Wayfinding is assisted by exterior signage, not dependent upon it. All exterior wayfinding signage on university-owned property is uniform, attractive, promotes the university’s graphic identity and brand, and enhances the professional appearance of the campus while aiding in navigation. Exterior wayfinding signage hierarchy includes campus gateway, vehicular and pedestrian circulation with accessible route options, parking deck/lot identification, building identification, and accessible entry signs. Interior wayfinding signage hierarchy includes building directory, interior wayfinding, and room identification signs with accessible options. Informational and donor signage provide additional instruction or messaging. For details, refer to the NC State University Exterior and Interior Signage Manuals.



Signage near Talley Student Union



ARCHITECTURAL FRAMEWORK



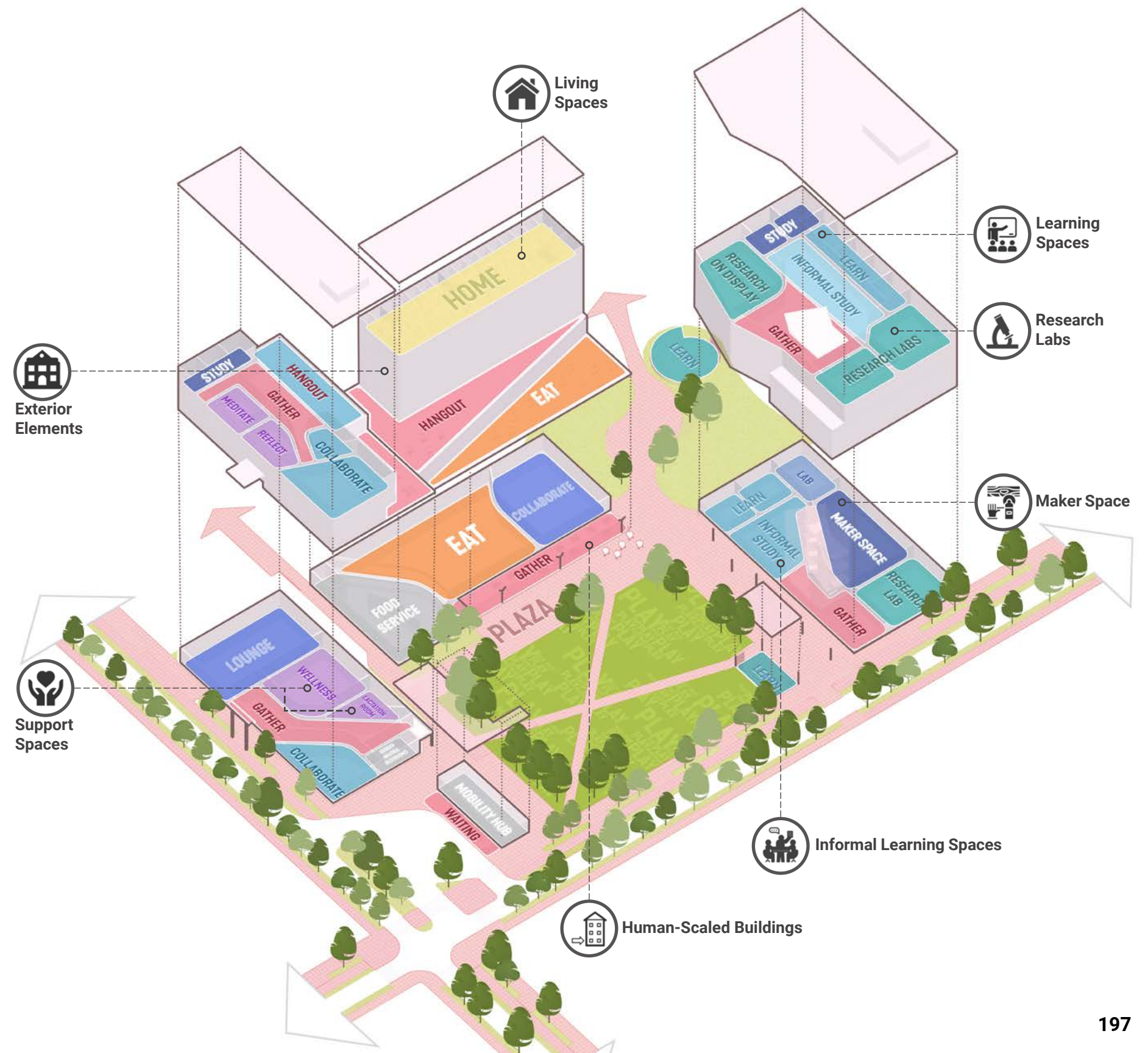
ARCHITECTURAL FRAMEWORK

NC State's buildings are a source of pride for the campus community and the citizens of North Carolina. These buildings play important roles in their Campus Neighborhoods. For example, their main entrances will open onto, and help define, the Shared Open Space at ground level and offer smooth transition areas from outside to inside. Guidelines and standards are supplied for Human Scale, NC State Style, Exterior Elements, Interiors, Interior Hearths, Learning Space, Research Space, Living Places, and Administrative and Support Space.

Buildings enhance the university with enduring and timeless qualities. Each building is Human-Scaled and designed with NC State Style to be in context with nearby structures, the campus fabric, and the natural surroundings. Materials and construction methods shall not be compromised in favor of programmatic demands.

Buildings and their details

- The coherence and unity of the campus takes precedence over individual building design.
- Buildings that have a prominent location or a special role within a neighborhood are reserved for public functions; e.g., libraries, large auditoriums, college or departmental offices, or other similar spaces. Buildings that serve a particularly public function and have a high visibility role will enjoy greater latitude in terms of the compositional massing.
- Memorable building elements are encouraged particularly in an otherwise uniform streetscape to assist in wayfinding; e.g., prominent entries, contrasting features.
- Architectural design acknowledges the building's programmatic role.



HUMAN SCALE

Campus Neighborhoods of Human-Scaled buildings and Open Spaces are NC State's primary planning unit for development. Campus buildings are arranged to define Shared Open Spaces that accommodate diverse activities. A building with large mass is subdivided into smaller units and has more detail at the ground plane. This is done with repeated fenestration patterns, arcades, building set-backs, porches, overhangs, and other features that make the building scale match peoples' range of perception.

A Human Scale helps people cognitively map their surroundings, enabling them to acquire, store, and decode information about the environment around them. People form a closer and more satisfying connection to their surroundings when the design of those settings accommodates everyday human activity at the slower speeds of people-powered movement. Measures for Human Scale include human grasp, reach, stride, mobility, and the distances at which people can recognize and hear one another.

Architectural Standards

- Building height should integrate with the surrounding context. Additional height will not be allowed if it is detrimental to the overall neighborhood.
- Building massing is achieved through grouping relatively simple building blocks, such as a rectangle or square in plan, to easily define edges of outdoor space. This is especially important in urban conditions where the role of the building is to define the street edge. These basic building blocks may be combined in various ways to enclose a Shared Open Space.
- When programmatic requirements result in a building that is overly large for its neighborhood, divide the building into a complex of smaller, connected buildings.
- Buildings and parking decks are sited and detailed to respect Human Scale.

- Include building elements in a range of sizes from those seen from a distance down to hand size (brick/mullion) to give the buildings sufficient detail.
- Detail the ground level with features and elements that create pleasant outdoor spaces at the street, the entry, or other pedestrian areas.
- Repetition of shapes and patterns, surface materials, and building elements at various scales unify the building while providing rhythm and variation. These elements are compatible with others in the neighborhood.

Visible Neighborhood Activities

Visibility of Activities within neighborhoods softens the boundaries between places, helps to inform people, and invites them to engage with one another. Likewise, the views to exterior activities enhance the quality of interior spaces, and the selection and arrangement of landscape elements contribute to the transparency and views. As a result, the character of each neighborhood is discovered and people move with greater ease, confidence and understanding.



The Hill Library Entrance on Hillsborough Street

NC STATE STYLE

The NC State Style is eclectic and reflects the university's diverse programs in agriculture, industry, and technology. The style has a lasting sense of quality characterized by common elements that unify the campus and contribute to its heritage. Buildings reflect the time in which they were built as well as the disciplines they have housed, adding further variety to the campus's built environment. The university's industrial heritage can be seen in such buildings as Riddick, Page, Tompkins, and Nelson Halls. The university's emphasis on supporting advancements in learning and technology is reflected in more recent projects, such as SAS Hall on North Campus, and Hunt Library and Fitts-Woolard Hall on Centennial Campus.

Architectural Standards

- NC State buildings have a tripartite organization: Base, Middle, and Top.
- Projects draw design cues (scale, massing, rhythm, details) from surrounding architecture in the neighborhood.
- Additions to existing buildings respond to and complement the existing structure to create a whole composition that is harmonious between its existing and new parts.
- Additions avoid overwhelming or drawing attention away from the existing structure.

Base

- Buildings relate to the landscape and respect the contour of the site. The base of the building is connected to the earth at natural grade, avoiding graded building pads. Respectful siting provides visual variety and opportunities to develop gathering spaces and to shape the Shared Open Space.
- The university encourages the construction of arcades and other covered areas at building bases to protect exterior pedestrian environments.
- There are openings in the massing at the base where there is pedestrian access or activity.
- Entries are readily visible and identifiable.

Middle

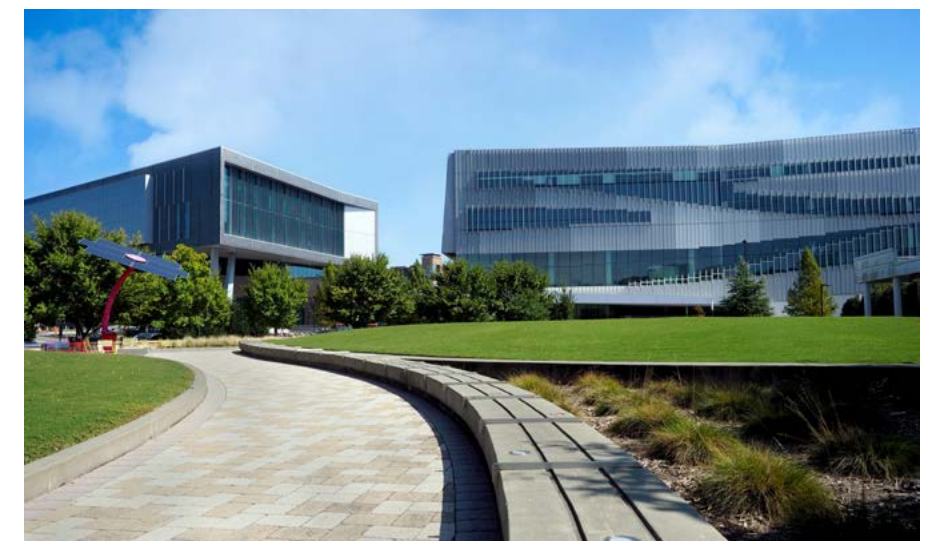
- The midsection contains the predominant material of the building (red brick, for example) and is a continuous surface, broken only with individual window or door openings, which may be organized into groups.
- The university encourages large expanses of openings to reveal the activity within the building.
- Window groupings and occasional bay windows create external rhythm on the facade.

Top

- The building top has sufficient detail to give the building presence and is in harmony with its surroundings.
- This zone of the building may contain window strategies and materials different from those used in the base and middle sections.
- Parapets are preferred over rooftop guardrails as they provide safety and conceal rooftop equipment. Guardrails must be integrated into the building's architecture.
- Mechanical equipment penthouses and fume hood exhausts are integrated into the design of the building top.



1911 Building in North Campus Precinct



Fitts-Woolard Hall and Hunt Library

EXTERIOR ELEMENTS

Architectural elements increase in delicacy, variety, and structural complexity and decrease in scale at pedestrian areas, building entrances, and Shared Open Spaces. These elements are related to the function and character of the activities the building contains, while the building's materials and scale provide continuity with other buildings in the neighborhood.

Materials

- NC State uses a consistent palette of exterior materials throughout the campus for a sense of continuity that clearly and consistently demonstrates the campus identity.
- The structure of the building and the purpose of the materials will be expressed and seen in the architecture of the building.
- Building materials are authentic. They are functional and purposeful and do not imitate other materials.
- Design elements and architectural features are sympathetic to the neighborhood context.
- Elements of an existing building inform the detailing of an addition.
- Human-Scaled materials are used.
- Materials are chosen for their enduring, low-maintenance qualities.

Masonry

- Flashed, red, wire, cut, modular brick is preferred and is the predominant exterior material for all buildings. Brick and mortar color unify new construction with that of the existing buildings and neighborhood.
- For additions, brick size and color blend closely with that of the existing building.
- Stone, cast stone, and precast concrete are subordinate to the brick. They may be used for such purposes as trim, sills, lintels, building bases, entrance elements, medallions, and steps.
- Limestone is the university's stone of choice. Cast stone or precast concrete, when used, resemble limestone in color and texture. Other

stones are considered in limited areas or as part of a significant building. Polished exterior stone is discouraged.

Metal

- Metal is subordinate to brick. It may be used for visual applications such as roofing, window mullions, bay windows, metal panels and/or screens, trim, and rails.
- For additions, the entire composition of the new and existing building elements is considered when determining the appropriate amount of metal.

Glazing

- Spandrel or clerestory windows may include a wider range of glass types. Reflective coatings are limited to larger scaled buildings that front high-speed corridors.
- Bird collision deterrent measures should be integrated into the window glazing design (such as ultra-violet ink or ceramic frit patterns) per the American Bird Conservancy guidelines, that may also provide added benefits of energy-saving and glare reduction measures.
- Frit pattern, size, and color should not detract from building occupants' views out.
- Frit pattern may fade or lapse to avail strategic view shed opportunities.

Windows

- Windows typically are singular openings in a continuous wall surface. Windows may be grouped together to give emphasis to an area or to establish a rhythm.
- Consider the fenestration pattern precedent of surrounding buildings when determining window proportions and rhythm.
- Fenestration pattern shall allow for future flexibility of interior space configuration.
- Windows typically are subdivided to add detail and scale to building.



Window Mullions and Glazing at SAS Hall



Windows at NC State Craft Center

- Openings are recessed three inches or more to give depth to the wall plane.
- Windows are operable in occupied spaces.
- Large open expanses of glass are appropriate for buildings that serve a highly public role or have special activity areas within that are made visible from the outside.
- Bay windows are allowed when they are appropriate for the neighborhood but do not dominate the primary wall plane.

Walls

- Walls are articulated to create a rhythm of frames, pilasters, or recesses with depth between wall and window planes on the continuous surface.
- The university encourages detailing of masonry walls (arches, lintels, soldier courses, decorative patterns, etc.) to visually reinforce the nature of the material.

Steps

- A building entry requiring a grade change has steps as a means of entry that are integrated with the accessible entry.
- Steps are proportioned generously enough to provide seating and still allow unimpeded passage.

Arcades

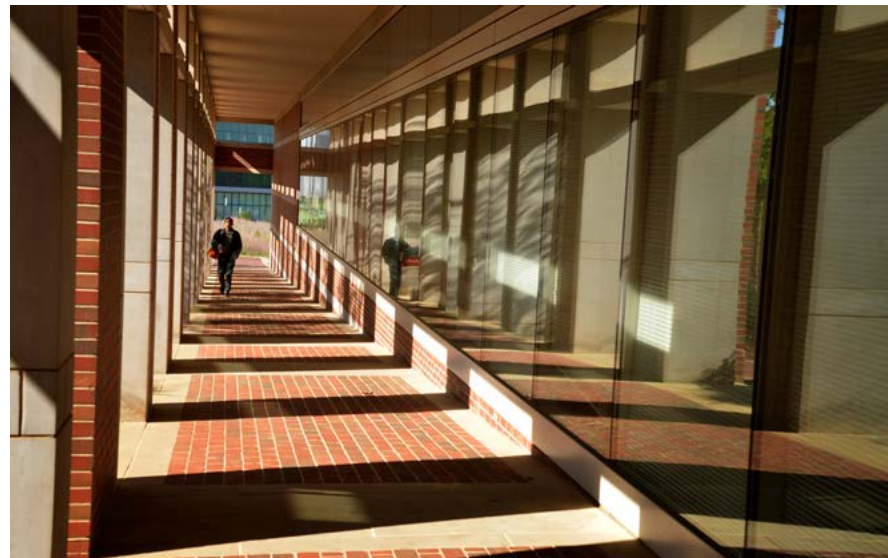
- Arcades are ideally located on the south side of buildings.
- They are located along the face of the building that has an entrance.
- They are most appropriate along primarily pedestrian paths, especially where they open to major outdoor spaces.
- Buildings are visually open to the arcade for safety and interest, and the arcade is well-lit.



Building Entrance - Talley Student Union



Facade Treatment at Tower Hall, looking out the Oval



Arcade in the Engineering Building 2



Rooftop Equipment at College of Veterinary Medicine

Rooftops

- Communications towers, when located on rooftops, must add to the feeling of NC State as a technological center and not detract from neighborhood Design Harmony.
- Rooftop equipment and penetrations are organized and/or screened to allow proper performance and access while improving the roof’s appearance.
- Roof design should facilitate incorporation of sustainable practices.

Design Harmony

The campus has a strong visual unity arising from the blending of the old and new, the Human Scale and architectural detail of the Campus Precincts, and the beauty and coherence of the campus paths. The architecture exhibits enduring quality and beauty, and new development draws upon the context of the surrounding architecture, scale, materials, and landscape to create or enhance neighborhood unity. While all neighborhoods have unique characters, NC State’s campus is unified and strengthened through the strategic use of Gateways, Portals, and Landmarks. Precincts are woven together with campus paths that shape movement through a harmonious collection of buildings and places.

Service Areas

All facades contain public entrances, and most campus buildings do not have a “back” or “rear” to create a safe and inviting entry sequence for pedestrians, service yards, equipment yards, and loading docks. Utilities are designed to minimize pedestrian/vehicular conflict and minimize visual intrusion of utilitarian functions into the surroundings. Future campus development must consider the potential vantage points from buildings and open spaces in the design and placement of these areas. Consider grouping service areas to serve multiple buildings. Service drives and yards provide adequate areas for shade tree plantings which reduce the visual impact of their utilitarian nature and heat sink effects.

Service Areas have:

- Adequate space for all anticipated outdoor building support, utility equipment, and containers for landfill waste, recycling and compost collection.
- Additional space for installation of future equipment to support research needs.
- Architectural screening that is integrated into the overall building design or neighborhood context.
- Entries and corridors sized to accommodate the movement of goods and services.
- Paved paths from the custodial exit to dumpsters.
- Equipment that is dark architectural bronze in color.
- Bollards as required to protect the building or other features.
- Parking spaces for vendor, delivery, standard and small-sized service vehicles, and electric service vehicles with recharge stations.
- Adequate space for temporary services, such as a location for truckbed generator in existing construction and space for temporary chillers/boilers connections from rented skid package in new construction.



Visible Activities at Hill Library and Brickyard



Service Area at Fitts-Woolard Hall

INTERIORS

Interior design continues the established pattern of exterior architectural detailing. The design of shared interior space accentuates the activities it contains. This detailing guides people along a hierarchy of corridors from large public spaces to smaller, private spaces while making offices and programmatic areas approachable. Major interior corridors readily accommodate pedestrian traffic and create lively connections to outdoor paths. The activities in public spaces such as office suites, computer labs, and Interior Hearths are visible and accessible from major corridors. Buildings are safe, secure, universally accessible, well-lit, have readily identifiable entrances, and clear wayfinding signage.

Architectural Standards

- Future flexibility in building use is an important design consideration; no building shall be so unique that it cannot be easily renovated. Building plans shall incorporate modular principles that allow for future programmatic changes.
- Long corridors end with views to interior or exterior spaces and have features that add interest along their length.
- Transition spaces are incorporated between public and private zones.
- Interior spaces are illuminated by the transmission of natural light through the use of interior glazing, skylights, and light shelves
- Windows and transparent interior partitions expose the public activities taking place within entries, lobbies, lounges, and teaching and research spaces.

Entrances and Lobbies

Building entrances are transitional zones between the inside and the outside, and lobbies are a prominent feature of these zones. Every building has at least one prominent entrance that fronts a Shared Open Space; distinctive paving is used at these locations. Every entrance is accessible, providing an unencumbered transition in the best spirit of Universal Design. Major entrances have a protective cover, significant architectural features and adjacent landscaped areas. The lobby allows

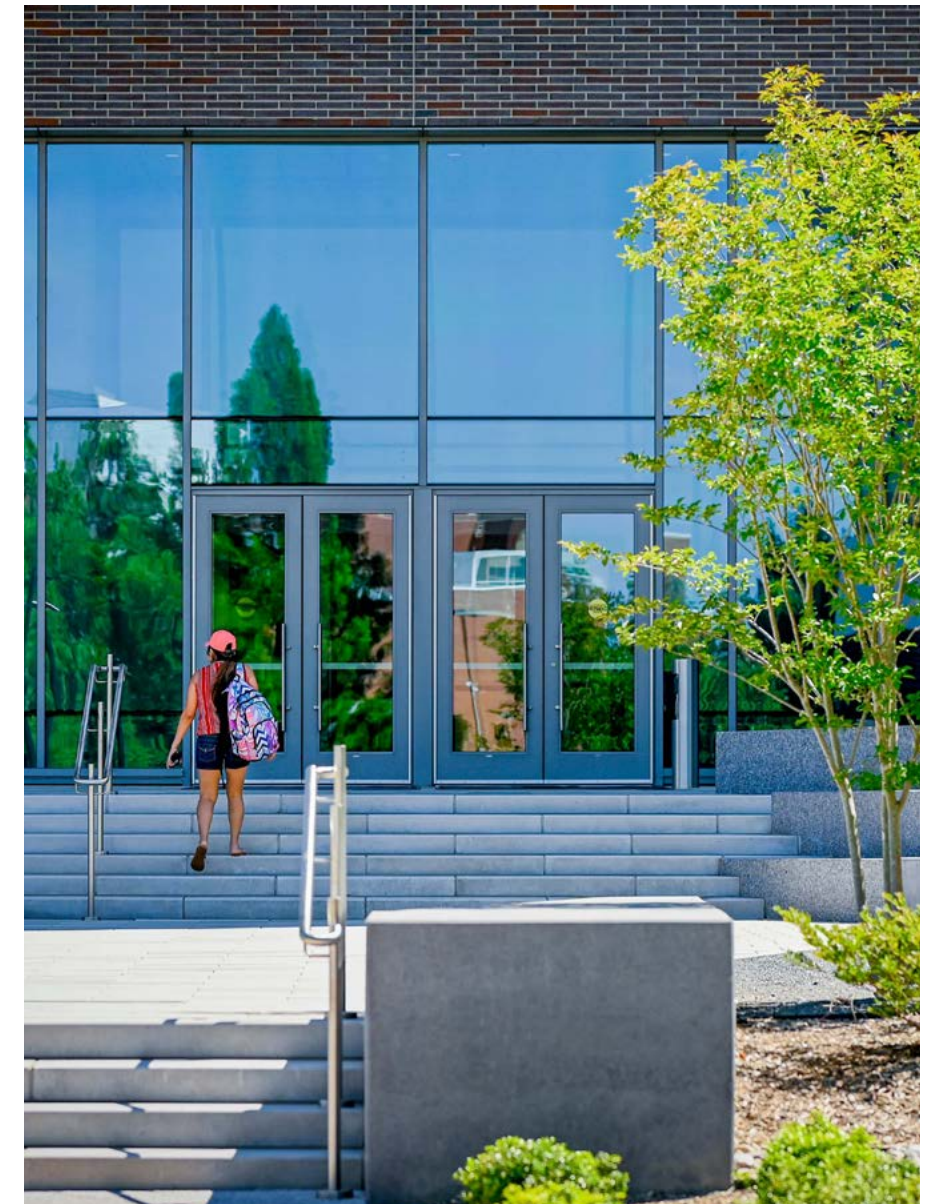
views into the adjacent spaces to communicate the building's functions. The names of buildings are clearly marked with post-mounted building identification signs at major entrances, and signage for wayfinding is clearly visible just inside.

Site Standards

- The arrival sequence into building entrances is reinforced and enhanced with plant and landscape material.
- Entrances along the All Campus Paths assist in wayfinding by creating memorable points of reference.
- Complex, ornamental plantings are placed at high-use areas such as building entrances to maximize their benefit.
- Plant material over three feet in height at maturity must be planted and maintained in such a way that it does not hinder safety and security by creating visual barriers and/or shadows at entrances.

Architectural Standards

- Buildings that serve as a gateway to a Campus Neighborhood have a visible entrance.
- The material used at a building entrance may include stone and/or glass.
- Ramps, when used, are integrated into the building arrival sequence and are given precedence over stepped entrance ways.
- Major and secondary entrances provide adequate overhead cover extending beyond the building envelope to provide ample sheltered space for gathering and waiting outside of the building. Recessed entrances are daylighted or employ other means to convey an open, welcoming appearance.
- Entries progressively increase in detail and wall depth as one approaches, employing special features such as archways, canopies, unique light fixtures, etc.
- Outdoor seating is incorporated at entries.
- Bike racks are located near entries yet do not interfere with pedestrian flow or detract from the appearance of the building.



Entrance to Fitts-Woolard Hall

Interior Hearths

All buildings need Interior Hearths. Some of these are spaces that have symbolic meaning and are protected and enhanced during renovations. All Hearths are important gathering centers, such as Caldwell Lounge and the Fox Reading Room. These multipurpose community spaces allow for informal interaction, study, learning or larger scheduled functions. They are inviting places offering opportunities for collaboration of varying sizes. Interior Hearths are prime locations for the placement of art. The university encourages the establishment of a network of Interior Hearths at the ground plane. Hearths may include: food service, retail, study, galleries, large assembly areas, information centers, and lounges.

Architectural Standards

- Hearths are located near the main entrance with daylighting and views to and from the exterior. They are adjacent to and visible from main circulation paths and provide some feeling of intimacy.
- Hearths organize interior wayfinding.
- Hearths provide a variety of comfortable seating including tables or tablet-arm chairs that support personal electronic devices. Power outlets adjacent to seating and Wi-Fi transmitters are incorporated into the design.
- Hearths may provide opportunities to write, express ideas and share information.
- The university encourages incorporation of stair landings and other functional areas as part of a Hearth.
- Where possible, the Interior and Exterior Hearths are connected.

Shared Interior Spaces

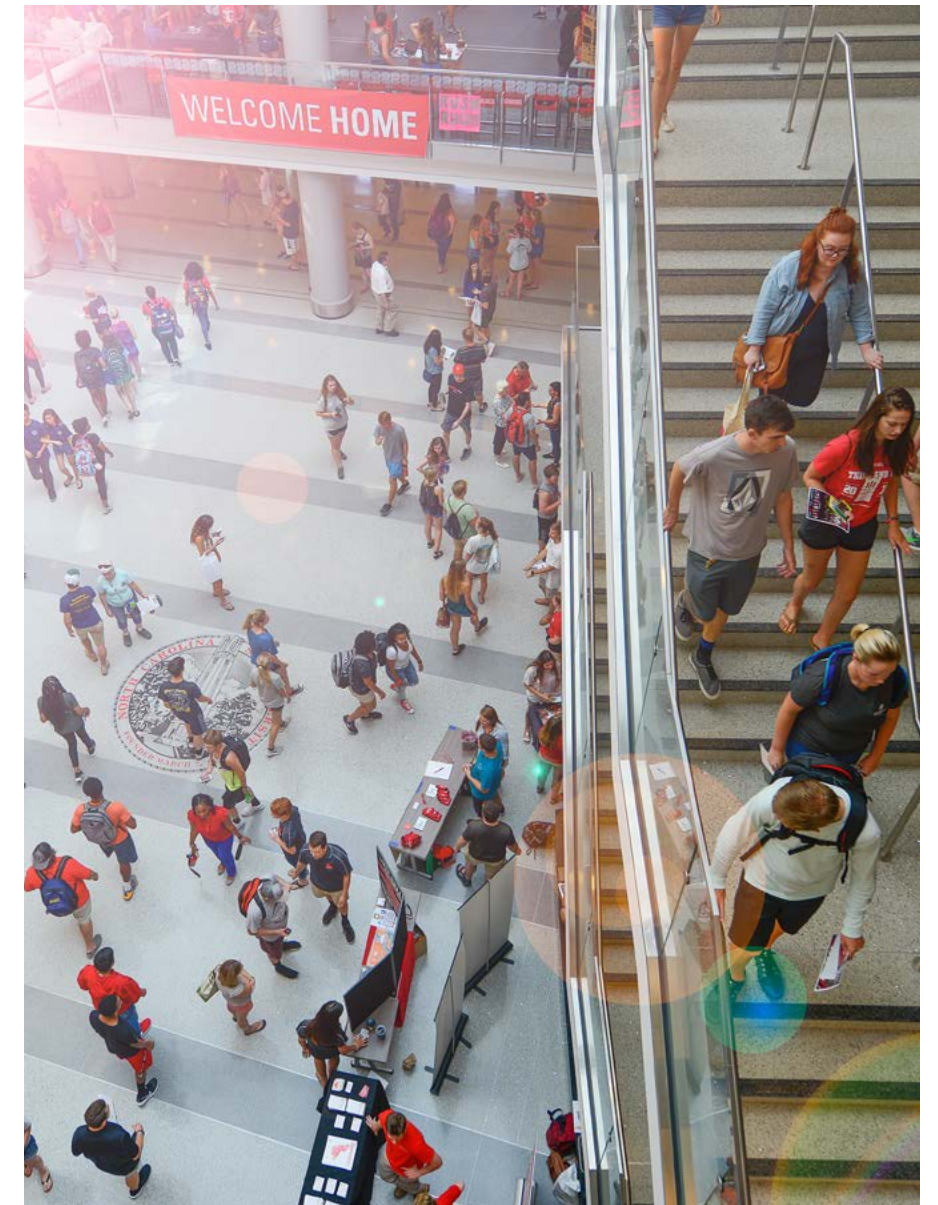
In addition to Hearths, shared spaces include building amenities, such as break rooms, vending, lounges and lactation/personal health rooms, as well as program functions, such as meeting, conference, and workrooms. Sharing resources across campus is encouraged for efficient space utilization and judicious stewardship of resources as space is very expensive to build, maintain, and operate. Shared spaces are located on common corridors for equitable access and ease of wayfinding.

Interior Public Art

Interior works of art such as those in the public spaces of Hunt Library, Reynolds Coliseum, SAS Hall and the Wellness and Recreation Center enrich the campus experience. Like Exterior Public Art, these works can include a wide range of form and expression. The Public Art Committee shall be contacted to initiate planning art and objects for display in public interior spaces, such as lobbies, lounges and public meeting rooms.

General Guidelines

- Public art can express campus or neighborhood identity.
- Space can be defined and enlivened by the addition of public art.
- Public Art can provide a focal point where one is needed.
- Form and scale of public art should respond to and respect the surrounding context.



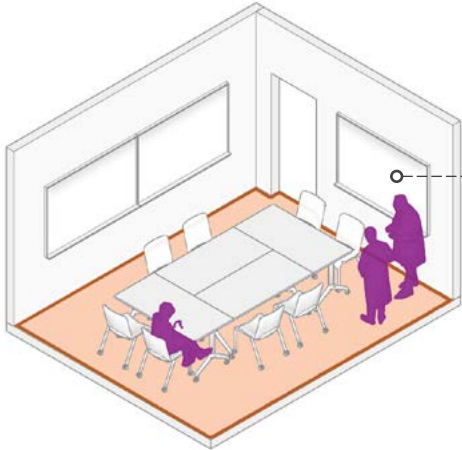
Hearth at Talley Student Union

Learning Spaces

Academic buildings support a variety of teaching pedagogies and learning styles and offer appropriately scaled learning spaces. These rooms inspire and facilitate learning. They are designed to accommodate multiple uses without sacrificing architectural detail or adaptability to future needs. Classrooms are equipped to facilitate the use of technology in learning. Teaching and learning occur in places other than classrooms; possibilities for these activities are reinforced in the interior and exterior built environment.

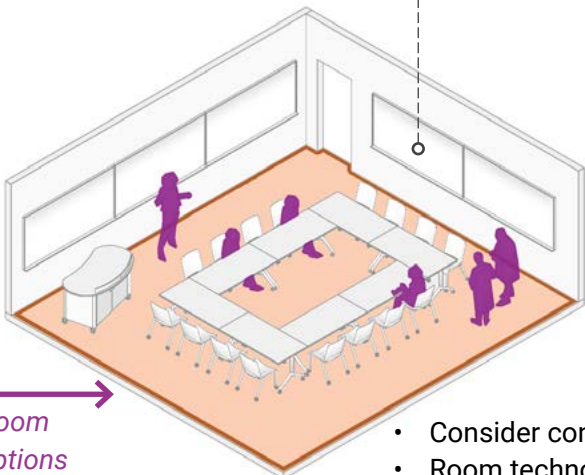
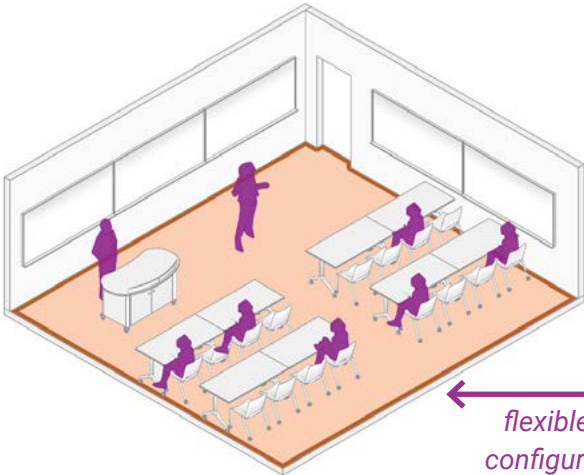
Architectural Standards

- The university’s classroom standards are followed for classroom and learning space design.
- Learning spaces are grouped together and are located on the lower floors with adequate prefunction space in the adjacent corridors for peak volume at class changes with access to gathering space for study and collaboration opportunities.
- Classrooms shall have proportions that are more square than rectangular; long narrow spaces make for poor classrooms.
- Learning spaces are configured with flexibility in mind to allow for future changes in size and teaching pedagogies.
- Using principles of Universal Design, learning space configuration shall allow for and encourage interaction among students.
- Learning spaces are located within the building to allow for indirect natural light. Classrooms have windows and include light control to allow for visual projection and similar technologies.
- Natural light integrated in the design of the classroom enhances the learning experience and can reduce the need for artificial lighting.
- Interior windows in learning spaces may be translucent to reduce student distraction.



- Furniture**
- Whiteboard/Display Screen
 - Movable Desks and Chairs

PROTOTYPE A: SMALL GROUP CLASSROOM (8 SEATS)
Example of NC State’s Discussion-Focused Classroom (8 seats)

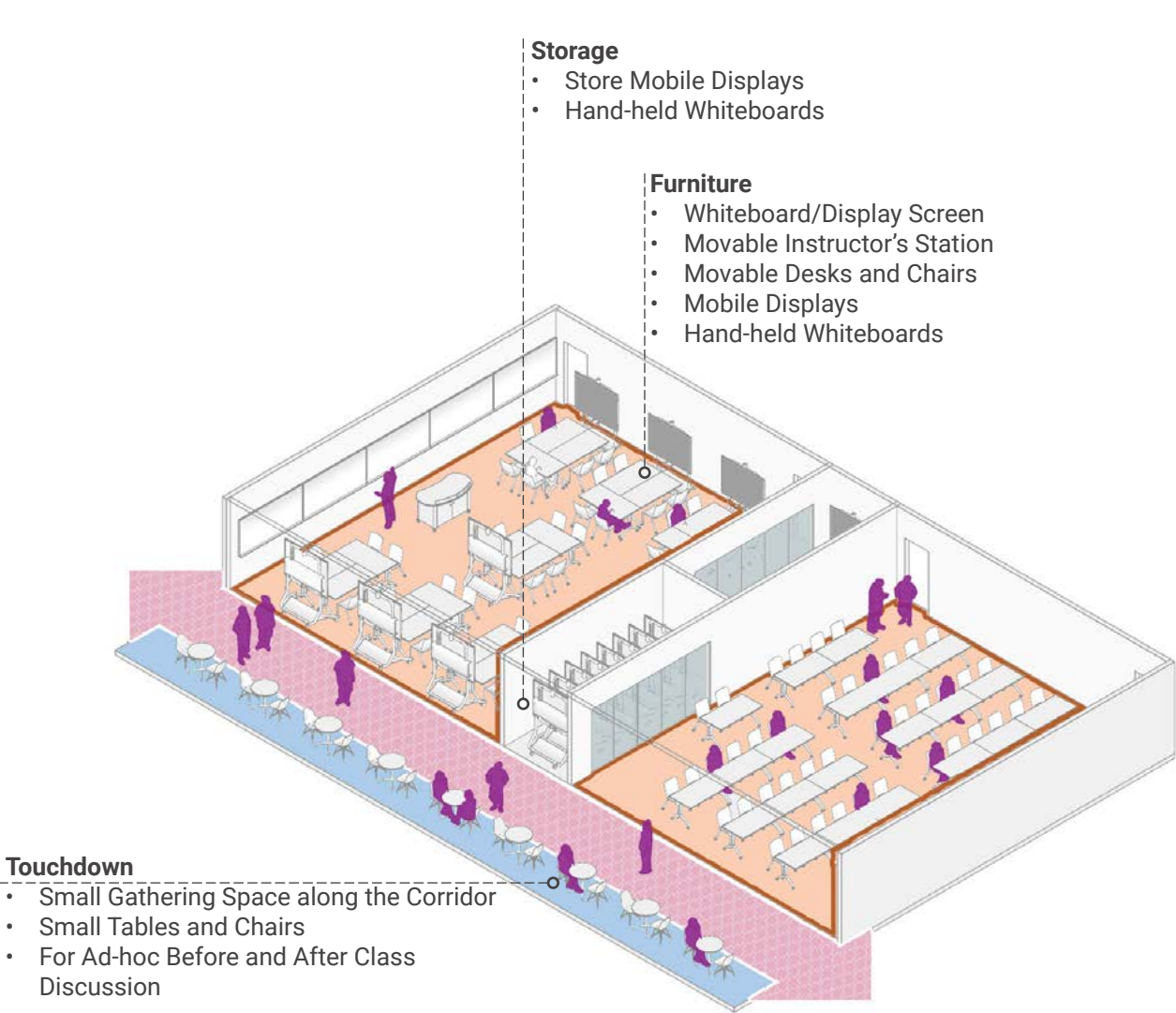


- Furniture**
- Whiteboard/Display Screen
 - Movable Instructor’s Station
 - Movable Desks and Chairs

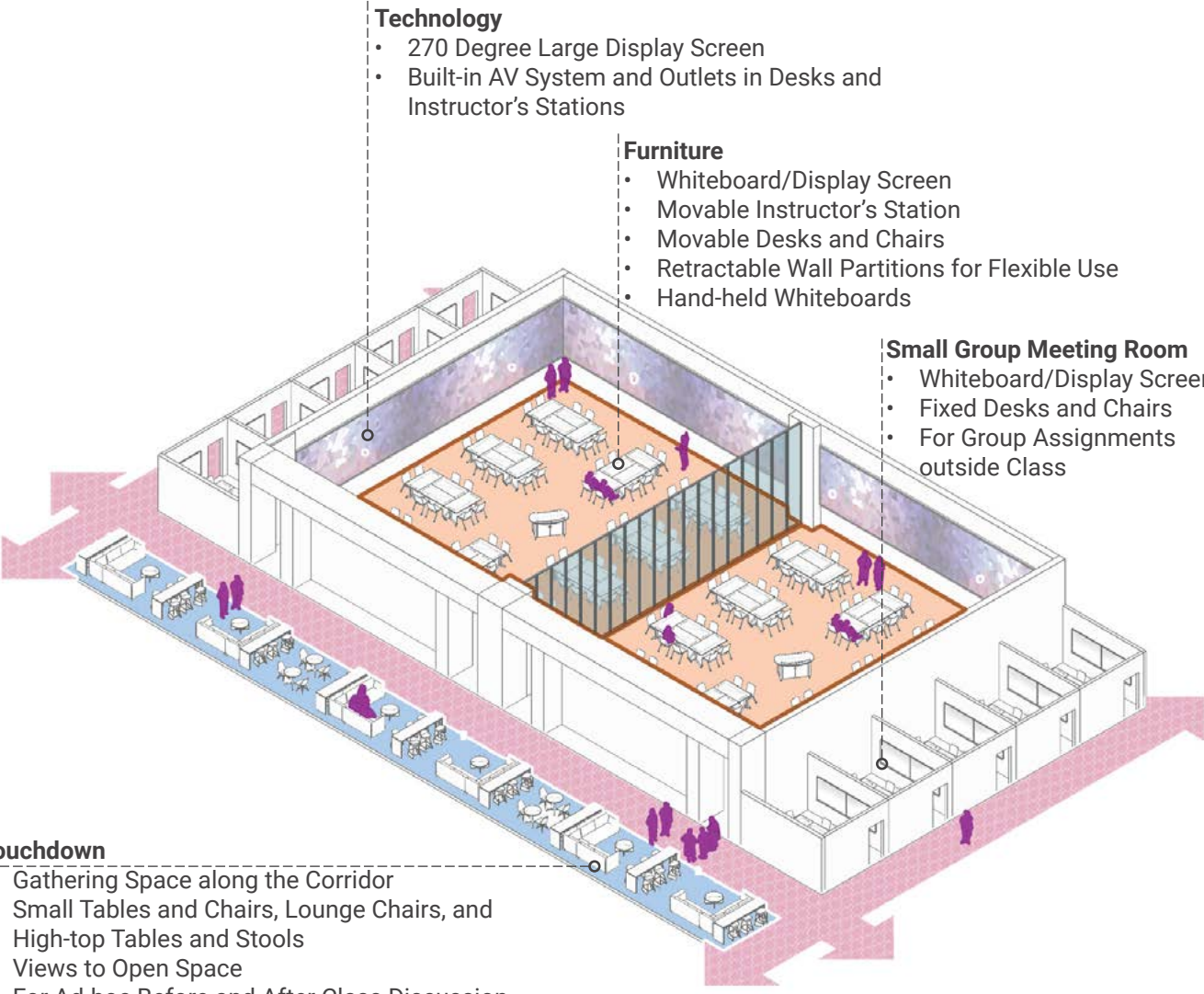
*flexible classroom
configuration options*

PROTOTYPE B: SMALL GROUP CLASSROOM (16 SEATS)
Example of NC State’s Versatile Discussion-Presentation Classroom (16 seats)

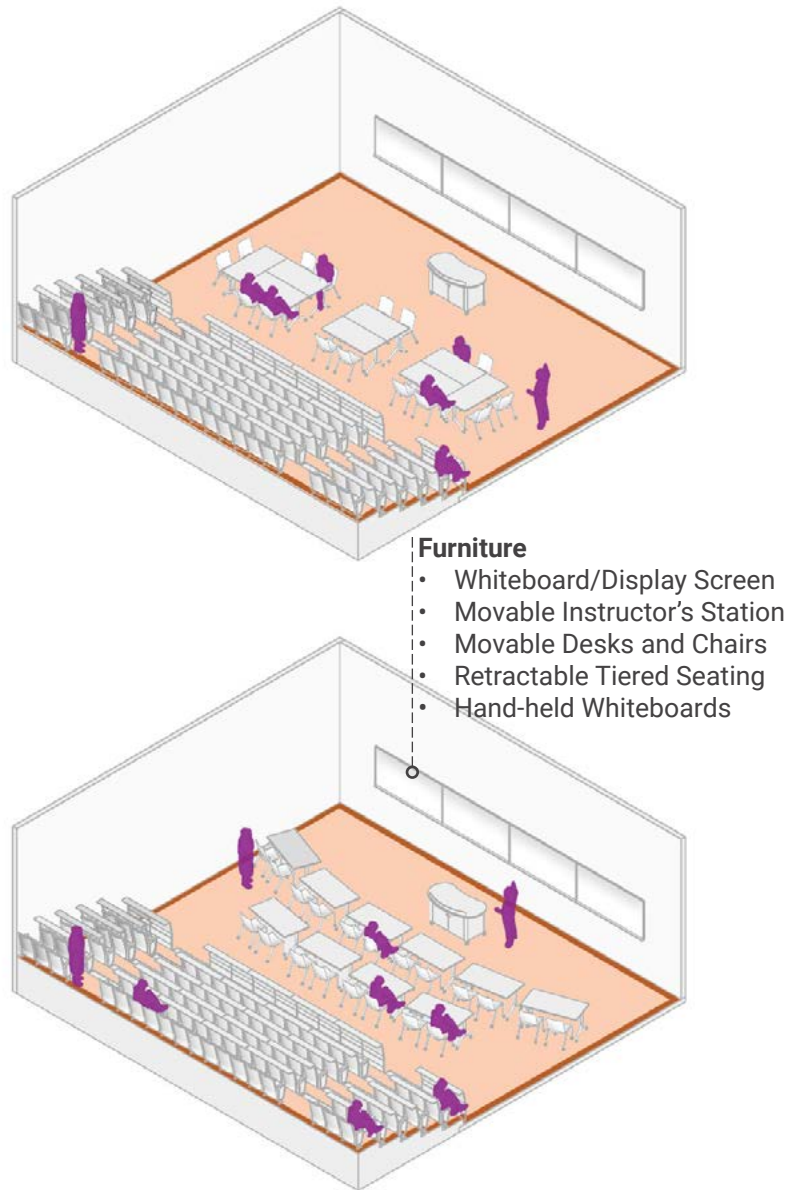
- Consider controlled views into rooms
- Room technology should support DE and hybrid modes of engagement



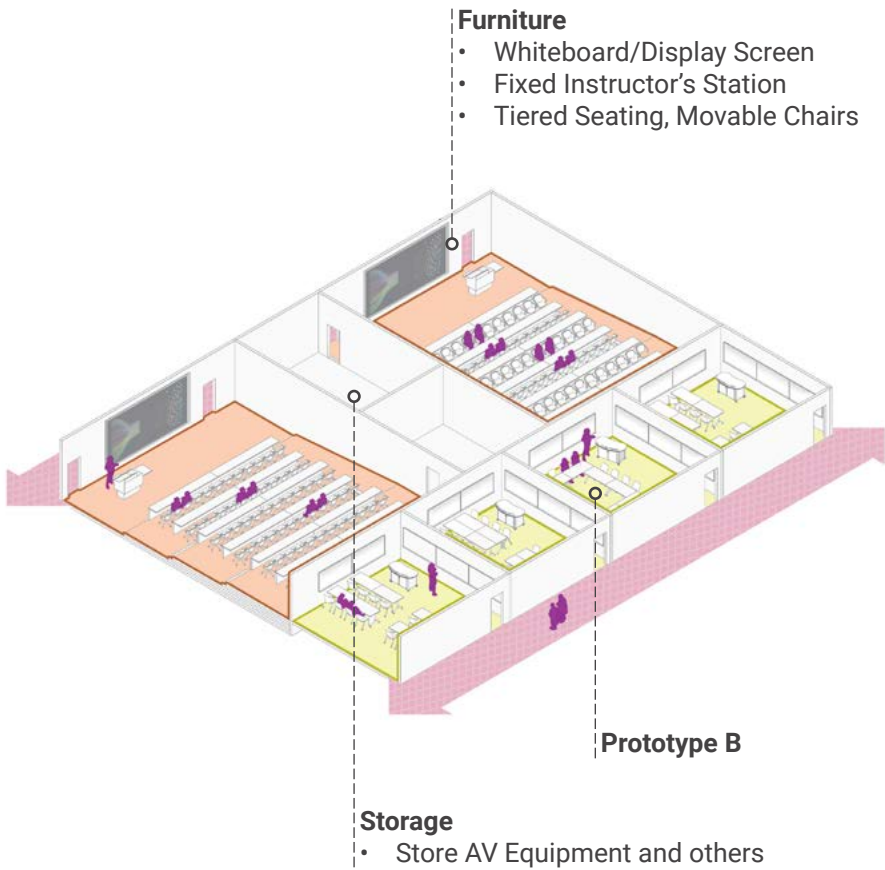
PROTOTYPE C: ACTIVE LEARNING CLASSROOM (42 SEATS)
Example of NC State's Versatile Team Classroom (40 seats)
(views of two different configurations)



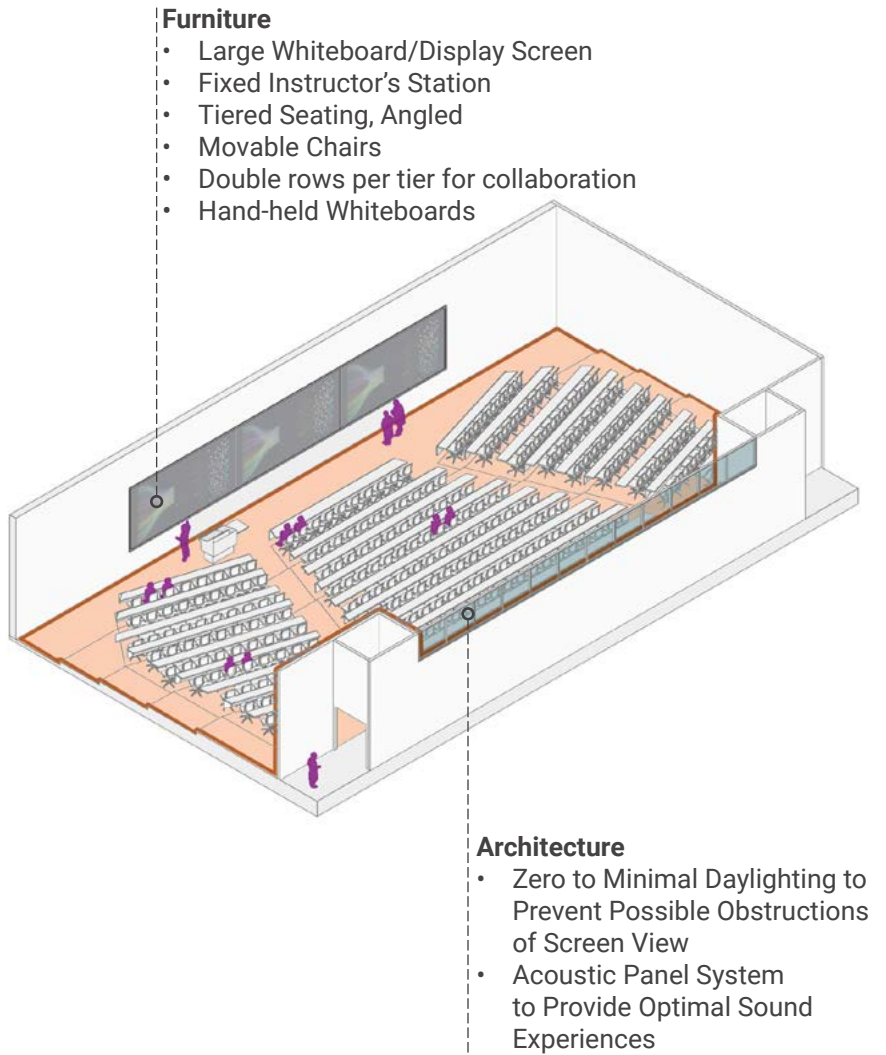
PROTOTYPE D: LARGE LEARNING CENTER (80 SEATS)
Example of NC State's Versatile Team Classroom (80 seats)
(views of two different configurations)



PROTOTYPE E: RETRACTABLE SEATING LECTURE HALL
Example of NC State's Versatile Team Classroom



PROTOTYPE F: TIERED SEATING LECTURE HALL (72 SEATS)
Example of NC State's Presentation-Focused Classroom



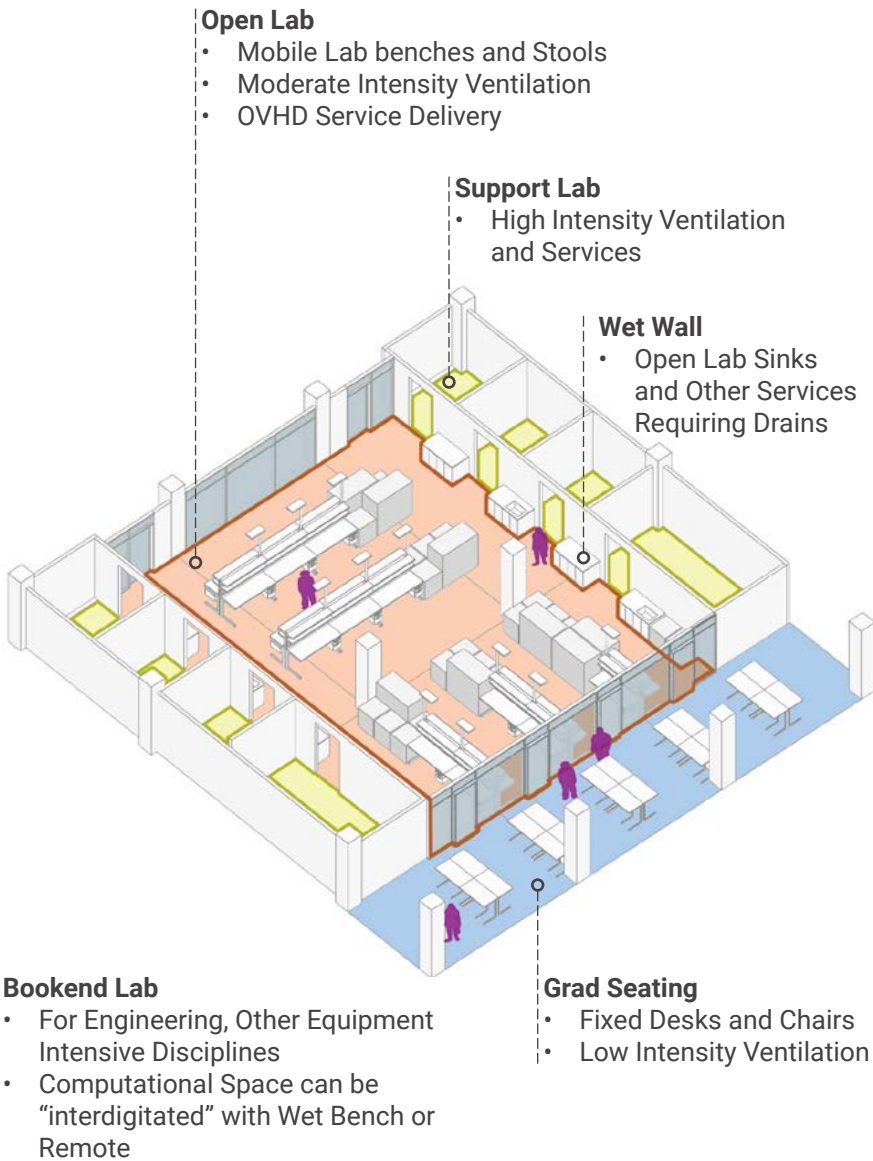
PROTOTYPE G: LARGE TIERED SEATING LECTURE HALL
Example of NC State's Versatile Team Classroom

Research Labs

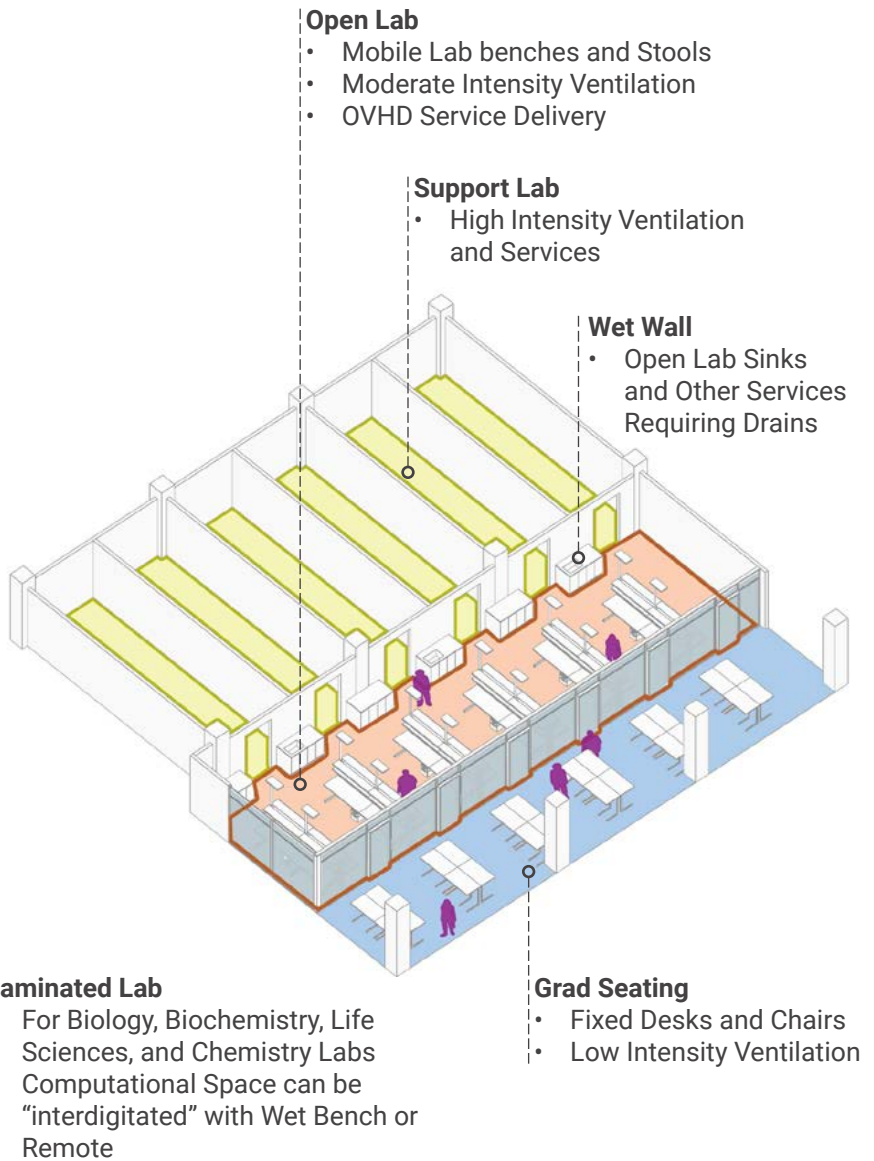
Research spaces are frequently sites for partnership interactions and collaborations. They allow the student population to engage with researchers in the discovery and creation of new knowledge. These spaces must be suitable to the specific research purpose yet be flexible enough to meet ever-changing research needs.

Architectural Standards

- Some research spaces need to be secure and isolated for safety reasons, but all shall have access to Interior Hearths, lobbies, conference areas, entrances, and other community spaces, and visibility to major circulation corridors.
- Research spaces are designed in modules and share support spaces to allow programs to easily expand or contract.
- Research spaces have natural daylight and visibility to the outside.
- All research spaces must include type-specific lab safety features to provide a safe environment for the campus community.



PROTOTYPE A: BOOKEND LAB

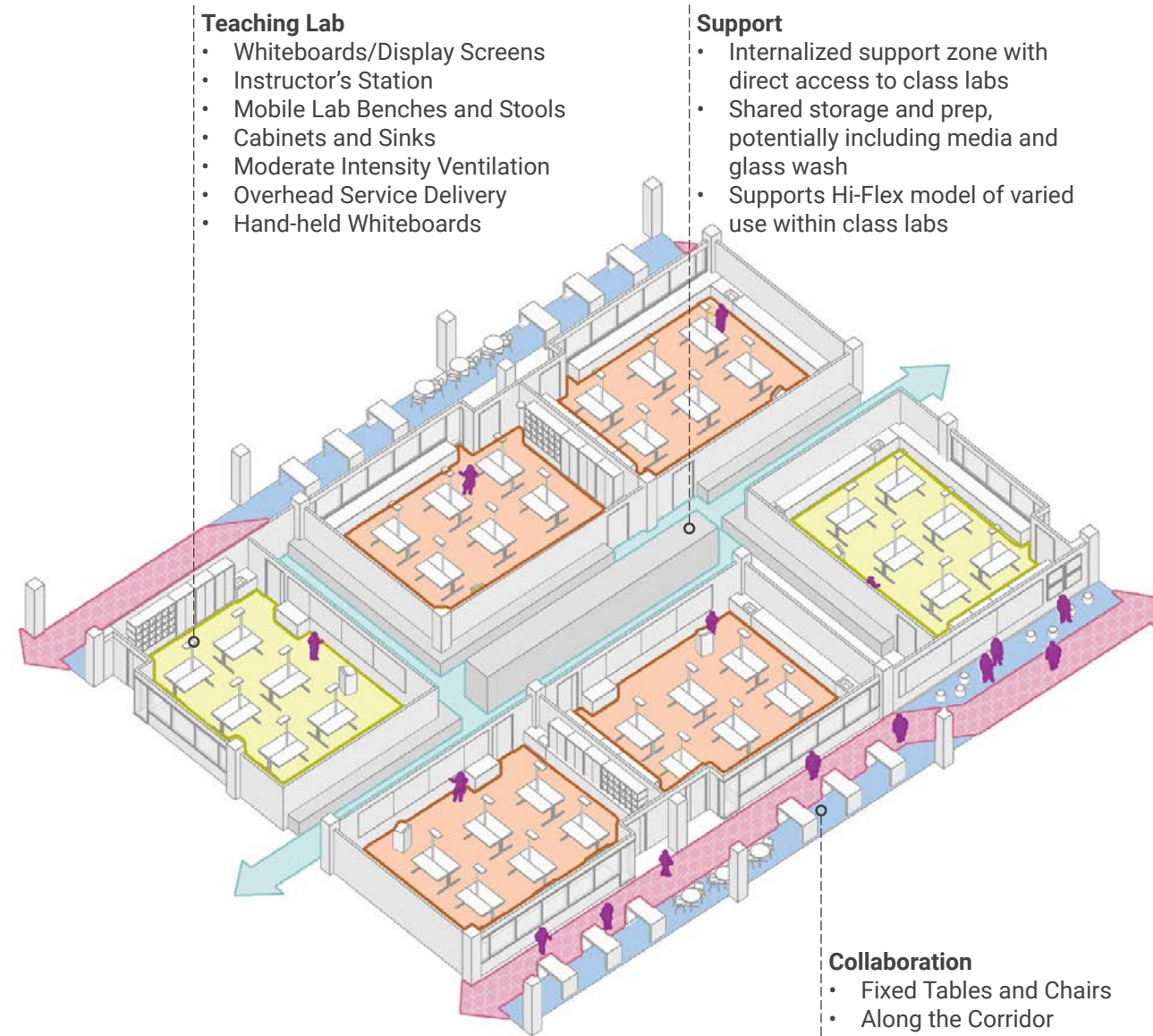


PROTOTYPE B: LAMINATED LAB

Teaching Labs

Used primarily for regularly-scheduled classes that require special-purpose equipment or a specific room configuration for student experimentation, observation or practice, teaching labs (also known as class labs) have decentralized scheduling by departments for distinct disciplines.

- Configurations should be modular but as flexible as possible for shared use by similar disciplines.
- Fixed cabinets and sinks along the room perimeter with movable benches/tables in the center space is preferred.
- High volume spaces allow for AV monitors to be mounted with less obstruction for viewing.
- Robust overhead infrastructure allows for adaptability to different uses or disciplines in the future.
- Adequate shared storage and prep saves space.
- Class labs that stack vertically on the bottom floors maximize efficiency for vertical chases.



PROTOTYPE: TEACHING LAB

Informal Learning Spaces

- These are spaces not included in the libraries' space inventory.
- For instructional space intensive buildings or floors, ensure informal learning spaces are present and scaled based on the number of students anticipated to occupy rooms.
- Consider outdoor locations that are adjacent to food service and/or popular areas of campus.
- Ensure areas have strong Wi-Fi connection.
- Provide capability for charging multiple devices at furniture configurations.
- Provide a variety of seating as appropriate for the location.
- Provide opportunities to connect to displays to share content.

Office/Workspaces

- Future workspace design should consider the need for private offices, shared workspaces, open/unassigned workspaces.
- Many users prefer to select the workspace needed to support focus and encourage collaboration as appropriate.
- Include technology to allow for scheduling spaces.
- Use modern programming space standards which recognize the shift to digital material, less physical storage.
- Allow for democratic design in which private workspaces are in the interior of the floor with open/shared workspaces on the perimeter.
- Use materials that allow for natural daylight to permeate throughout the spaces while still maintaining occupant desire for privacy.
- Account for small breakout areas to allow for small collaboration sessions, private phone calls, etc. and 1-2 person virtual meeting rooms with high sound transmission coefficient (STC) ratings to limit distractions in open and adjacent work areas.
- Consider shared meeting spaces on floors/in buildings, which would be managed through an electronic scheduling system.
- Meeting/collaboration spaces should include appropriate technology

to connect with virtual participants.

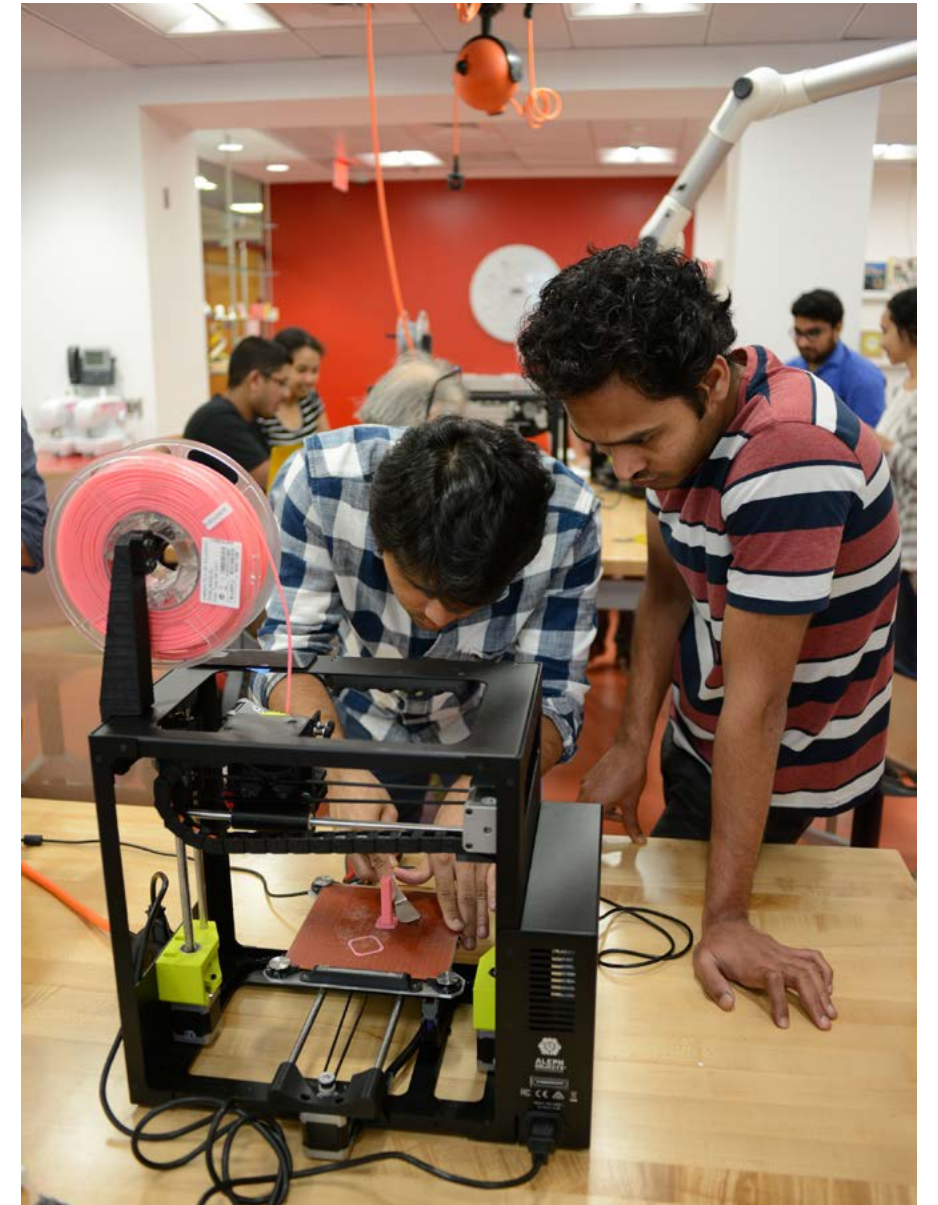
- Consider the appropriate amount of writing surfaces needed.
- Adjacency to kitchenette/lounge areas.

Maker Spaces

- Distributed locations throughout campus with a centralized information system (i.e. website), so students are aware of options/resources.
- Consider a centralized management system with dedicated staff to coordinate trainings and usage.
- Adjacency to instructional and collaboration areas.
- Design should allow for "learning on display".



Informal Learning Space



Maker Space at Hill Library

Administrative and Support Spaces

Administrative and support spaces have access to Interior and Exterior Hearths, and visibility to the outside and to major corridors. Customer service areas are easy to find, welcoming and sized appropriately to accommodate the flow of pedestrian traffic generated by these offices. Conference rooms, multipurpose rooms, training rooms, and customer service areas are ideally shared to maximize their use and to minimize duplicating spaces and the costs associated with extra construction. These spaces must be adaptable to future uses.

Site Standards

- Administrative buildings are sited around a Shared Open Space and are grouped to provide easy access to services.
- At support buildings, service yards are designed so that unsightly views are screened from paths, streets, and adjacent buildings and neighborhoods.

Architectural Standards

- The architecture and detailing of administrative and support buildings is consistent with the NC State style.
- Conference rooms are located on main circulation corridors, rather than being embedded within an office suite, to encourage use by more than one user group and for ease in wayfinding.
- In open offices there is easy access to adjacent private areas for phone calls, meetings, lactation/personal health, and other uses.
- Private offices are centered in the office suite to allow open office workstations access to natural light and views to outside.

Support Spaces

To embrace individuality and equality, support spaces like Single Occupancy restrooms, Wellness Rooms, Lactation/Personal Health Rooms, and Reflection Rooms should be placed at visible locations around Interior Hearths. These spaces would create safer environments for people of all identities across the campus.

Living Spaces

The residential experience influences how well students learn and develop. Living and learning villages support student programs and services, and comprise residence halls and other facilities that enhance students' educational experience and performance. Each village is unique and offers "a variety of opportunities for students to engage in active and collaborative learning with peers, faculty, and staff." The design of residence halls and their Shared Open Spaces support both indoor and outdoor activities. Interior and Exterior Hearths are strategically located within each Living and Learning Village, creating a vibrant campus neighborhood.

Site Standards

Living Spaces:

- Are organized around a Shared Open Space.
- Are directly accessed from an All Campus Path.
- Are located along Wofline routes.
- Provide a variety of shaded and sunny outdoor spaces, and a variety of seating types.
- May have designated outdoor spaces for specific activities or sports.
- Share site amenities that support gatherings.
- Incorporate hardy, low-maintenance edibles in the landscape design.
- Have exterior power outlets at seating areas.
- Provide numerous locations for, and types of, bicycle storage.
- Provide locations for recycling, composting and landfill waste disposal.



Centennial Campus Housing at Wolf Ridge



Campus Health Center

COLOR

Color evokes emotional and physical responses; its use brings added dimension to the experience of being on campus. The use of color on buildings and in the landscape can aid in wayfinding and animate a Campus Neighborhood. Color can be used to celebrate a building entrance, highlight an important activity space in the landscape, identify a neighborhood Hearth, or accentuate architectural detailing.

Since architectural trends and neighborhoods change as the campus develops, color must be used in ways that can be easily and inexpensively modified. Surfaces that require routine finish maintenance; e.g., painted surfaces, interior walls, furnishings, and floor coverings, are ideal surfaces on which to introduce color. Surfaces of long-lasting, durable materials; e.g., floor or wall tile, laminates, toilet partitions, must employ timeless or neutral color selections.

General Use of Brand Colors

NC State's core palette colors are red, black, and white. Red will be used in the campus environment only when specifically associated with university branding or wayfinding signage. For clarity of wayfinding, the use of red is limited in the environment and on building exteriors. For additions, material colors and textures blend with those of the existing building. Red, white, and black should be used where intentional branding opportunities exist, and use of expanded palette colors should be considered for complementary options. The use of red and white as a predominant interior color scheme is limited to athletics and student activity spaces.

Rooftops

- Sloped roofing should be neutral in color, or blend with neighborhood context.
- Flat roofing should have a high albedo color for temperature reduction and energy savings with consideration given to mitigate potential glare impacts on neighboring buildings.



NC State signage at Talley Student Union

Exterior

- NC State uses a consistent palette of exterior materials throughout the campus for a sense of continuity that clearly and consistently demonstrates the campus identity.
- Flashed, red, wire cut, modular brick is preferred and is the predominant exterior material for all buildings. Brick and mortar color unify new construction with that of the existing buildings and neighborhood.
- For additions, brick size and color blend closely with that of the existing building.
- Metal panels, screens, trellises, brise-soleils, railings, and similar elements should be light in color or blend with the building materials.
- Glazing shall be clear or lightly tinted so as not to impair vision lines.
- Window mullions should generally be light in color.

Utilities

Equipment is dark architectural bronze in color, and is concealed by landscaping or screen walls less than eight feet in height.

Interior

NC State uses a neutral palette of colors that stand the test of time for flooring, wall, door, frame, and ceiling materials and finishes. Natural and durable materials that are locally sourced are preferred. Pops of color may be applied to finishes that are easily changed, such as paint or furniture. They may also be applied to permanent components that are intentional focal moments integrated with the building design.

Branding/Graphics

NC State's core palette consists of three colors: Wolfpack Red, Wolfpack White and Wolfpack Black. In all communications/graphics, Wolfpack Red should dominate.

Donor Recognition

Donor recognition for smaller rooms or outdoor features have signs that comply with the signage standards. For details, refer to the NC State University Exterior and Interior Signage Manuals. Donor recognition for larger spaces or outdoor features, donor walls, and building dedications are custom designed to integrate with the buildings and their surroundings. Their form, scale, materials, finishes, and colors are appropriate for, and compatible with, the spaces' scale, aesthetics, materials, finishes, and/or landscaping.



Branding Colors used at Reynolds Coliseum



Talley Student Union Interior



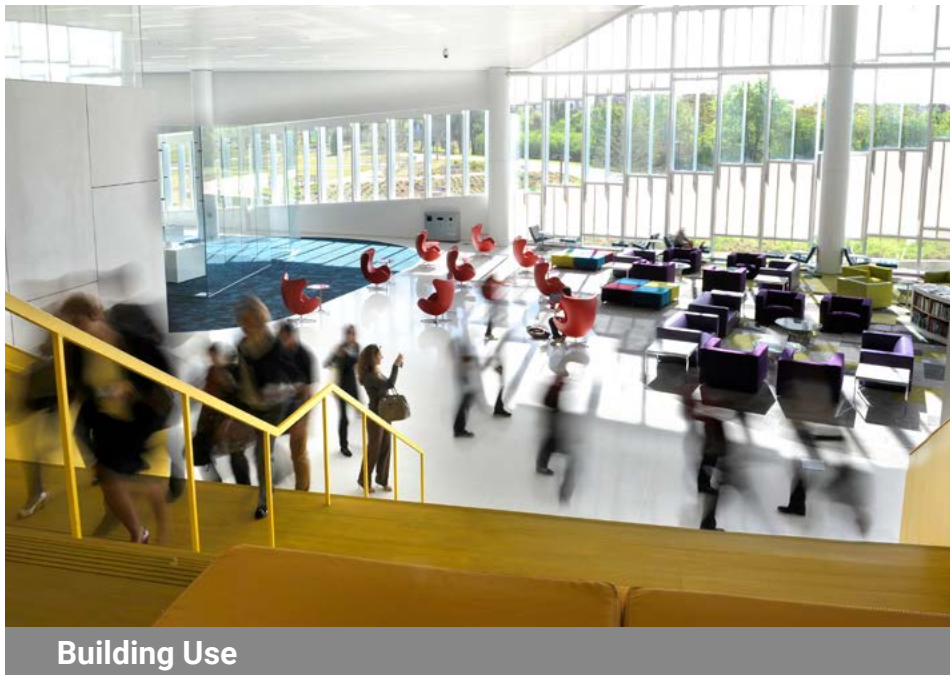
04

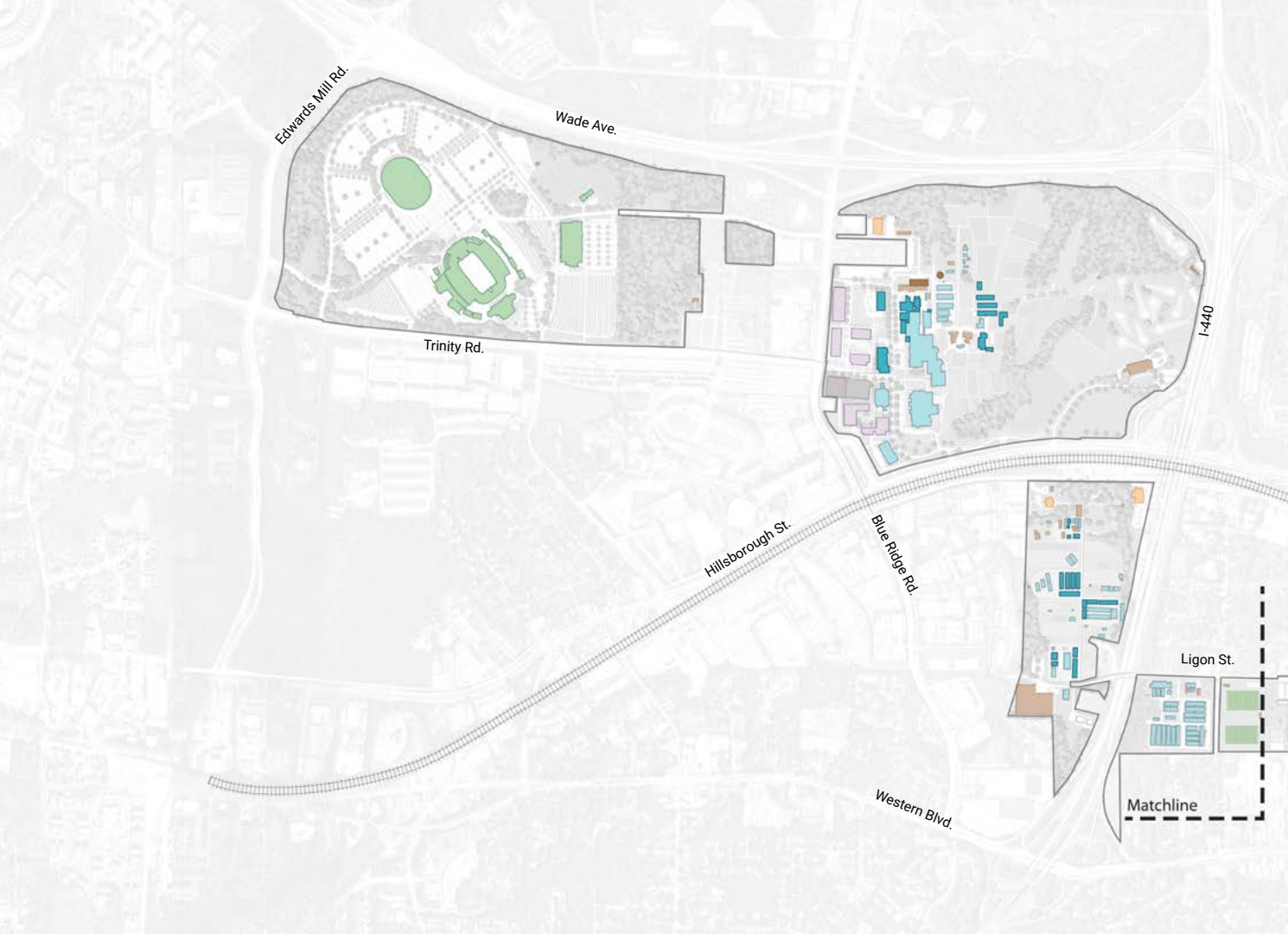
CAMPUS SYSTEMS

CAMPUS SYSTEMS

Campus systems are designed as a unified approach to enhancing the academic, research, and student life experience. The strategy to achieve this goal implements a mix of building uses, open space, and pedestrian first mobility networks. Campus systems facilitate in the creation of vibrant Neighborhood Hubs and contribute to a successful Polycentric Campus. NC State is committed to prioritizing non-vehicular movement through the improvement of pedestrian and micromobility networks which align with goals for a safe, sustainable, and healthy campus. In addition, open spaces are identified as important campus assets and are therefore to be preserved. Campus pathways and buildings are organized in a way that enhances the system of open spaces and their unique features and functions.

The following pages suggest building use, open space, and mobility systems that advance campus-wide goals. Some of the potential projects recommended in these pages maybe developed by or in collaboration with others.

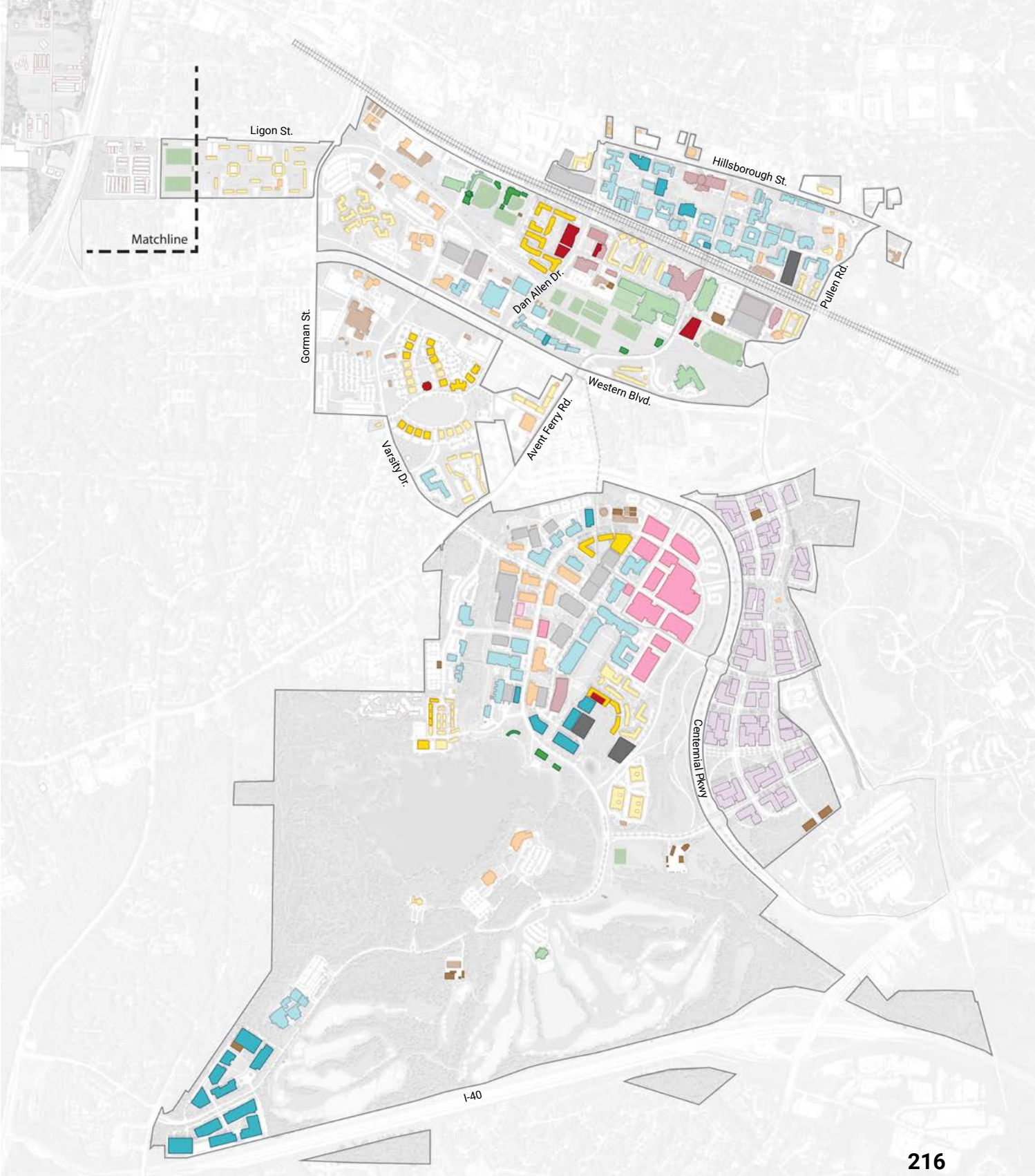




Building Use

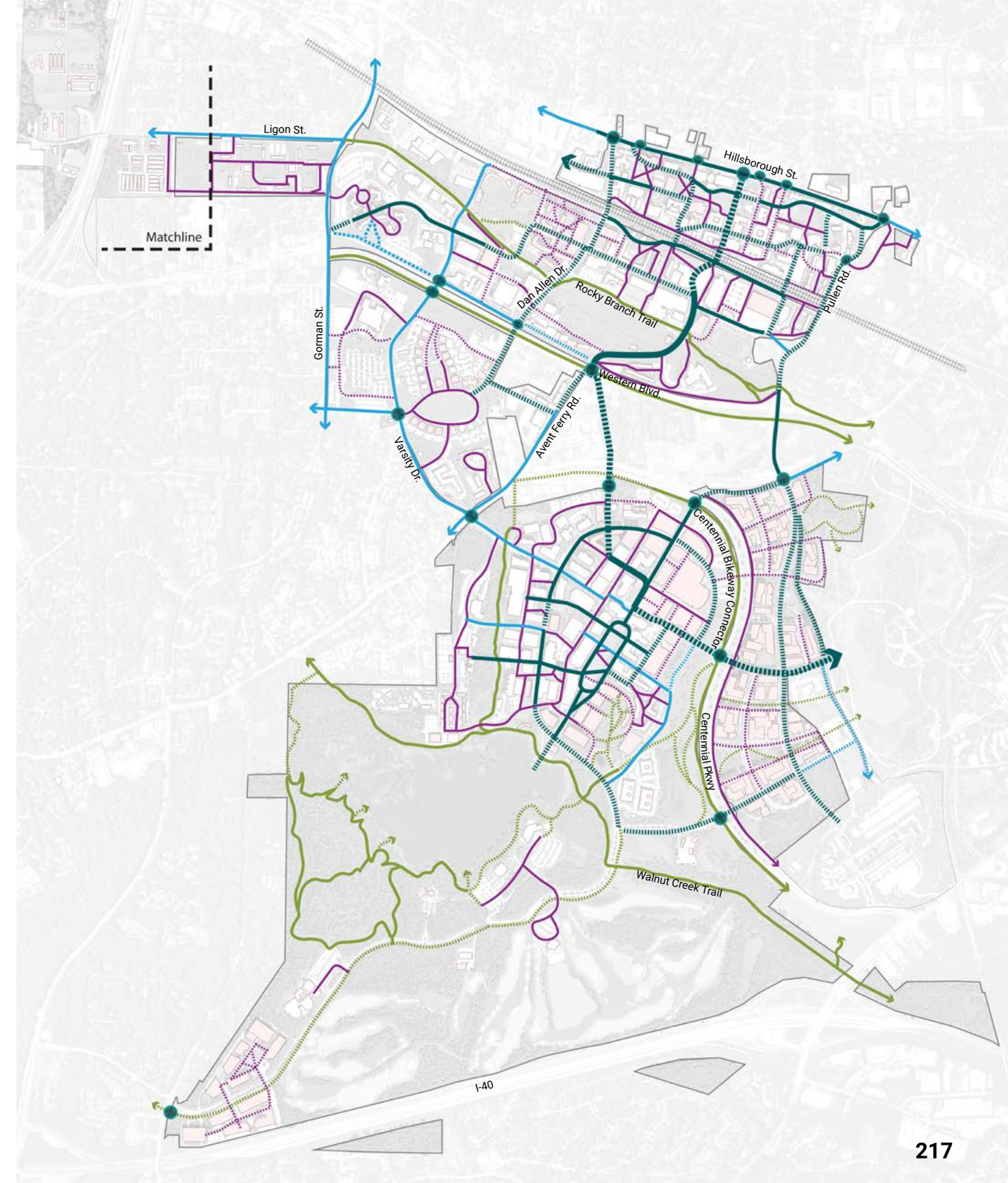
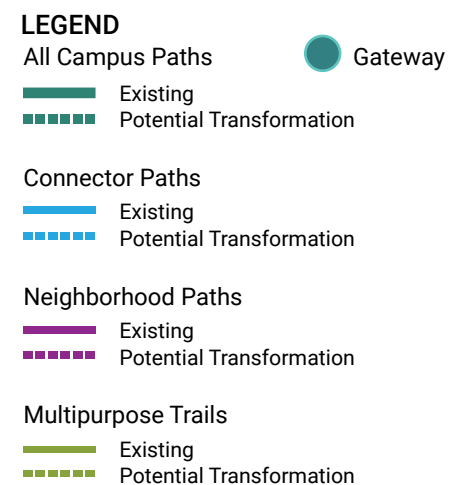
A mix of building uses and activities contributes to vibrant, dynamic, and unique campus neighborhoods. The planning process revealed current and future campus facility needs which the Physical Master Plan has addressed through a variety of approaches such as renovation, re-purposing, or the construction of new buildings. Buildings may have a mix of uses, however, primary building use is indicated on the map. Academic and research facilities have been evaluated to support university strategic goals. Student Life facilities, such as at Cates West, are recommended for transformation. Parking structures have been added along the perimeter to align with an enhanced mobility framework.

LEGEND		
Existing	Potential	
		Academic/Research
		Student Life/Services
		Office
		Residential
		Recreation/Athletics
		Parking Structure
		Support/Other
		Mixed Use
		Future Unspecified



Pedestrian Paths

The Physical Master Plan suggests a series of enhancements to promote pedestrian safety, accessibility, and connectivity through a hierarchy of pedestrian pathways. Successful pedestrian paths are essential to the identity and linkage of Campus Precincts and Neighborhood Hubs, which can be achieved through a combination of All Campus and Connector Paths. Several interior streets in North Campus Precinct are recommended to be converted to paths that prioritize pedestrians and micromobility with occasional service traffic. Improved Campus Gateways at key entry points to each precinct will increase porosity between campus and community.



Micromobility Paths

Improving conditions for non-motorized mobility is essential to NC State’s goal of inter-precinct connectivity and reducing reliance on personal vehicles. This can be achieved through the preservation and enhancement of a variety of micromobility pathway types to facilitate safe and comfortable movement between campus neighborhoods and precincts. The Plan suggests a series of multi-modal paths that often separate pedestrians from faster movement non-motorized vehicles such as bikes, scooters, and skateboards, and limits use of sharrows. Links to existing and potential regional greenway trails are enhanced to strengthen campus and community connectivity.

LEGEND

Bike Lane

Existing

Potential Transformation

Sharrow

Existing

Potential Transformation

Sidepath

Existing

Potential Transformation

Greenway Trail (Paved)

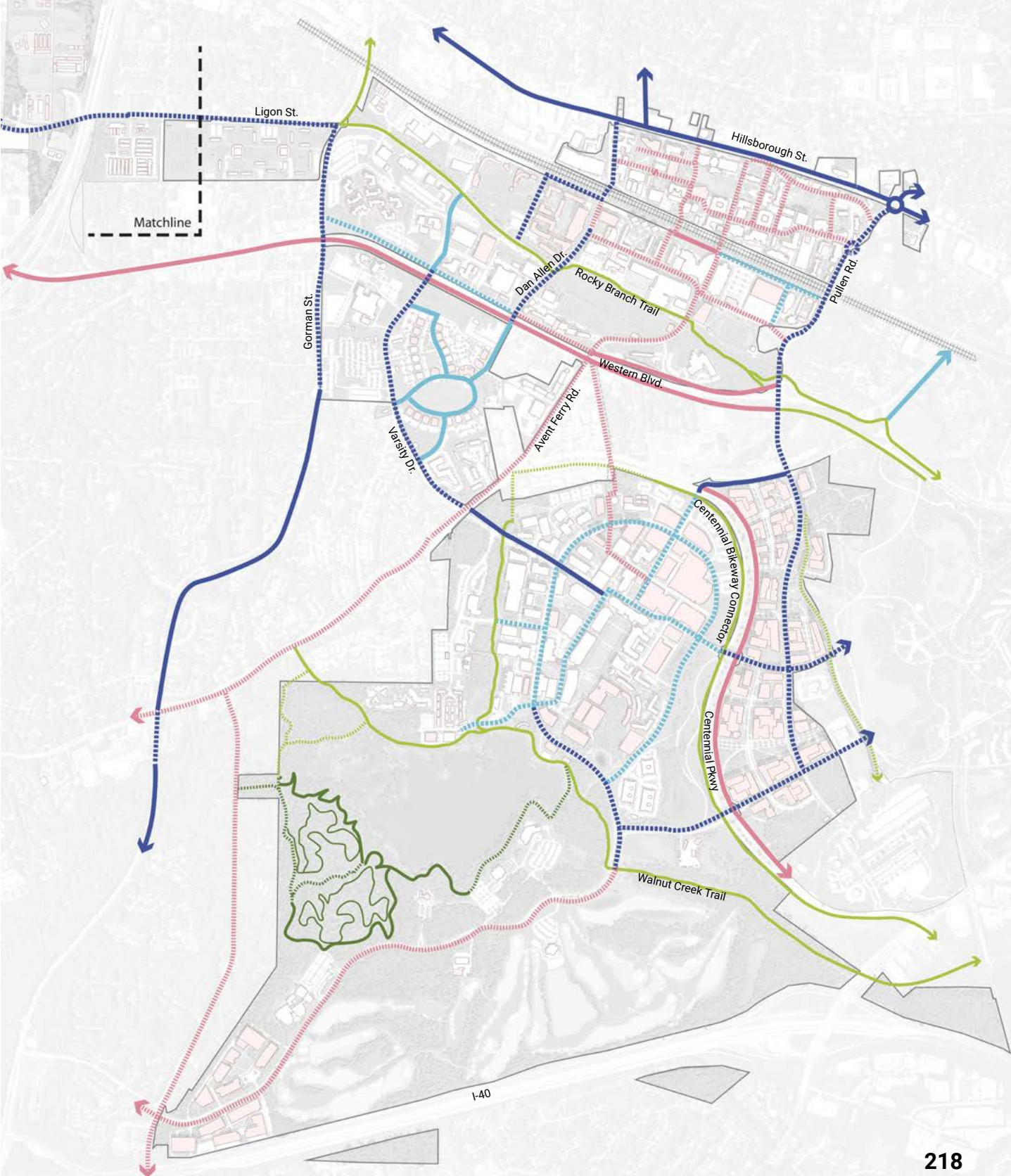
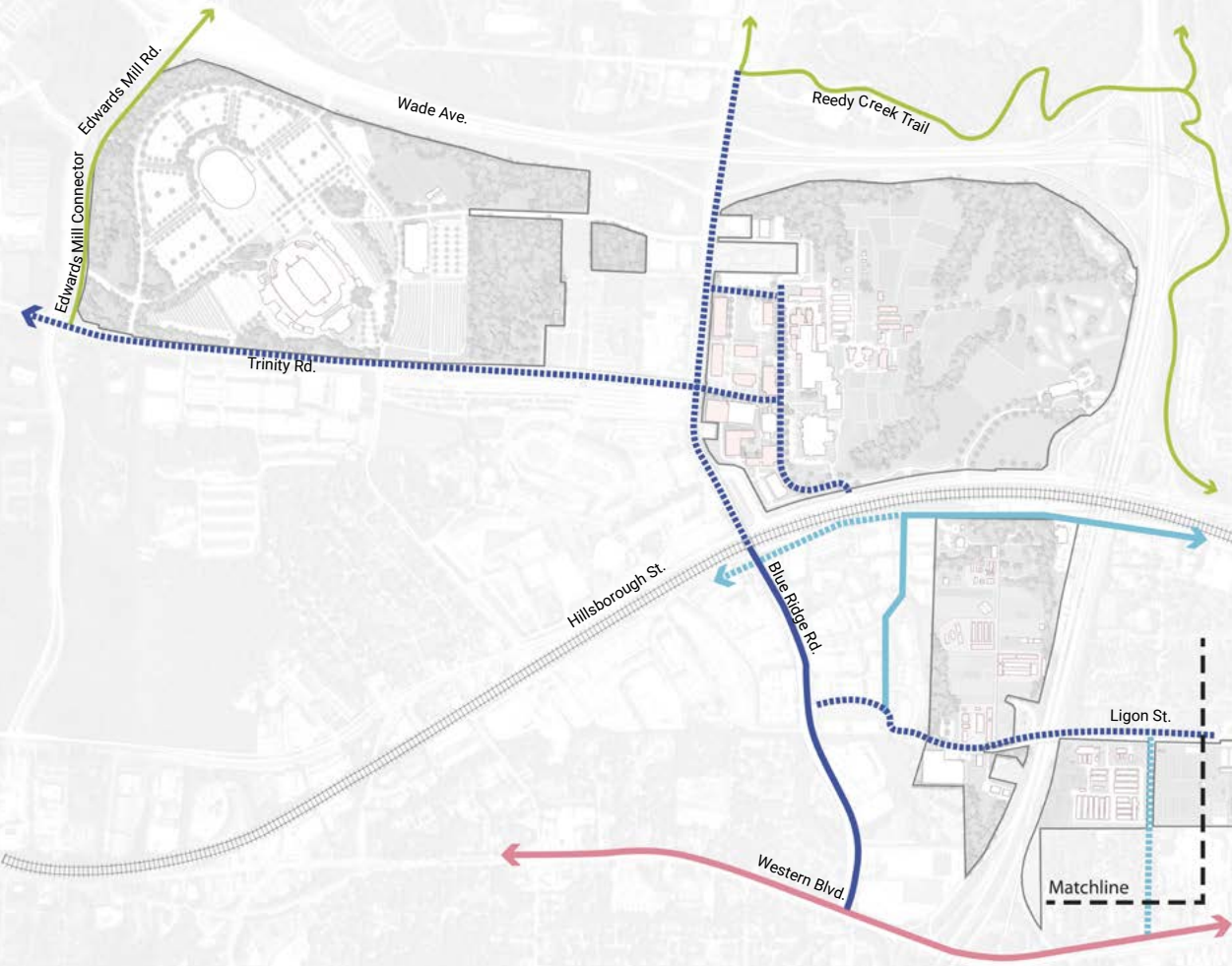
Existing

Potential Transformation

Greenway Trail (Unpaved)

Existing

Potential Transformation

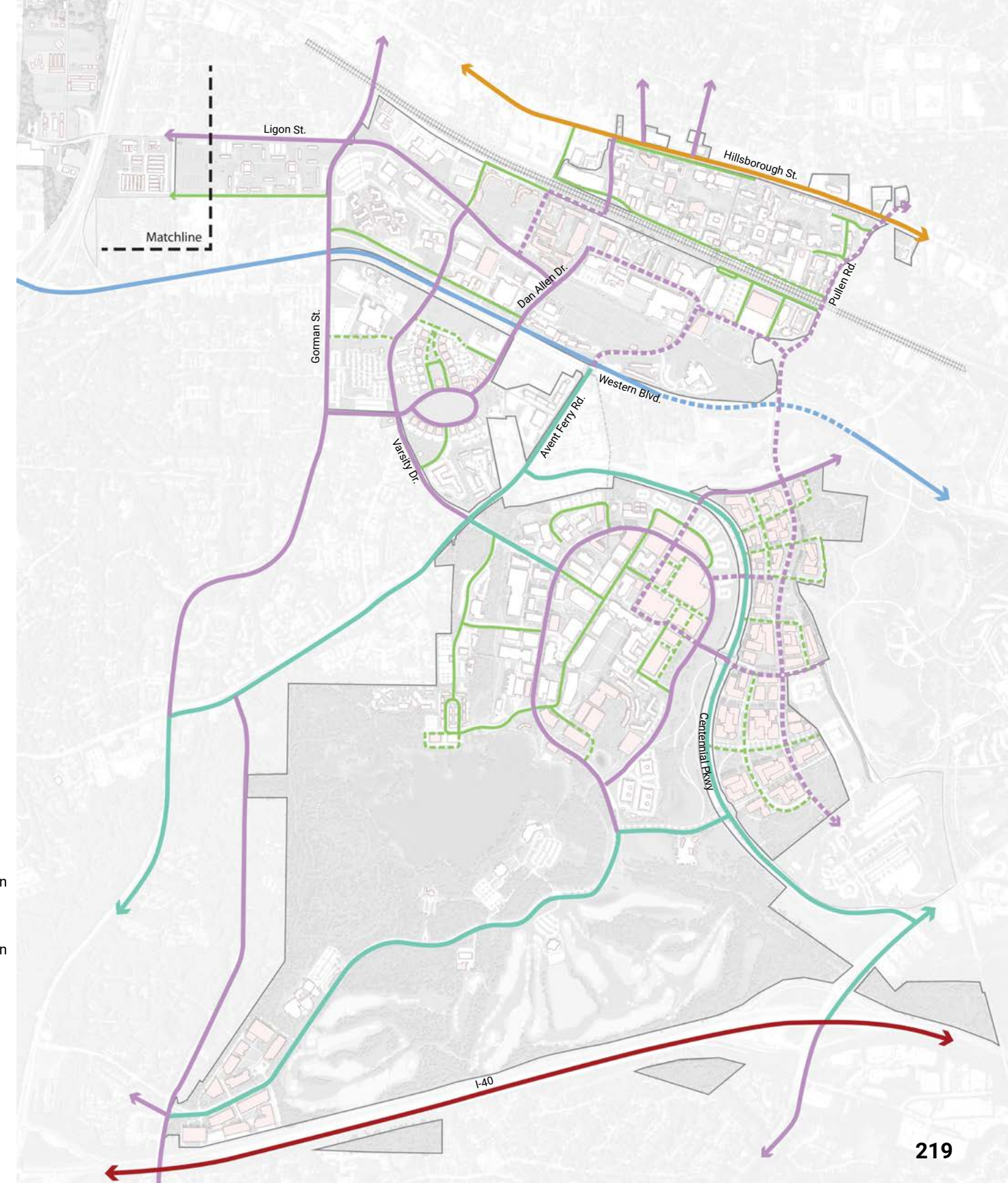


Vehicular Paths

While vehicular transportation is essential to campus mobility, the overarching vision is to reduce reliance on single occupancy vehicles and move toward a more pedestrian oriented campus. Positioning most vehicular paths on the perimeters of Campus Precincts allows for enhanced pedestrian and bicycle movement. Physical Master Plan recommends limiting interior roads to emergency and service use only, while allowing access to new and existing accessible parking spaces. Intersection improvements are recommended along Western Boulevard to increase safety.

LEGEND

Limited Access Highway		Mixed Use Street 2 (2 Lane)	
	Existing		Existing
	Potential Transformation		Potential Transformation
Major Street 1 (6 Lane)		Local Streets	
	Existing		Existing
	Potential Transformation		Potential Transformation
Major Street 2 (4 Lane)			
	Existing		
	Potential Transformation		
Mixed Use Street 1 (3 Lane)			
	Existing		
	Potential Transformation		



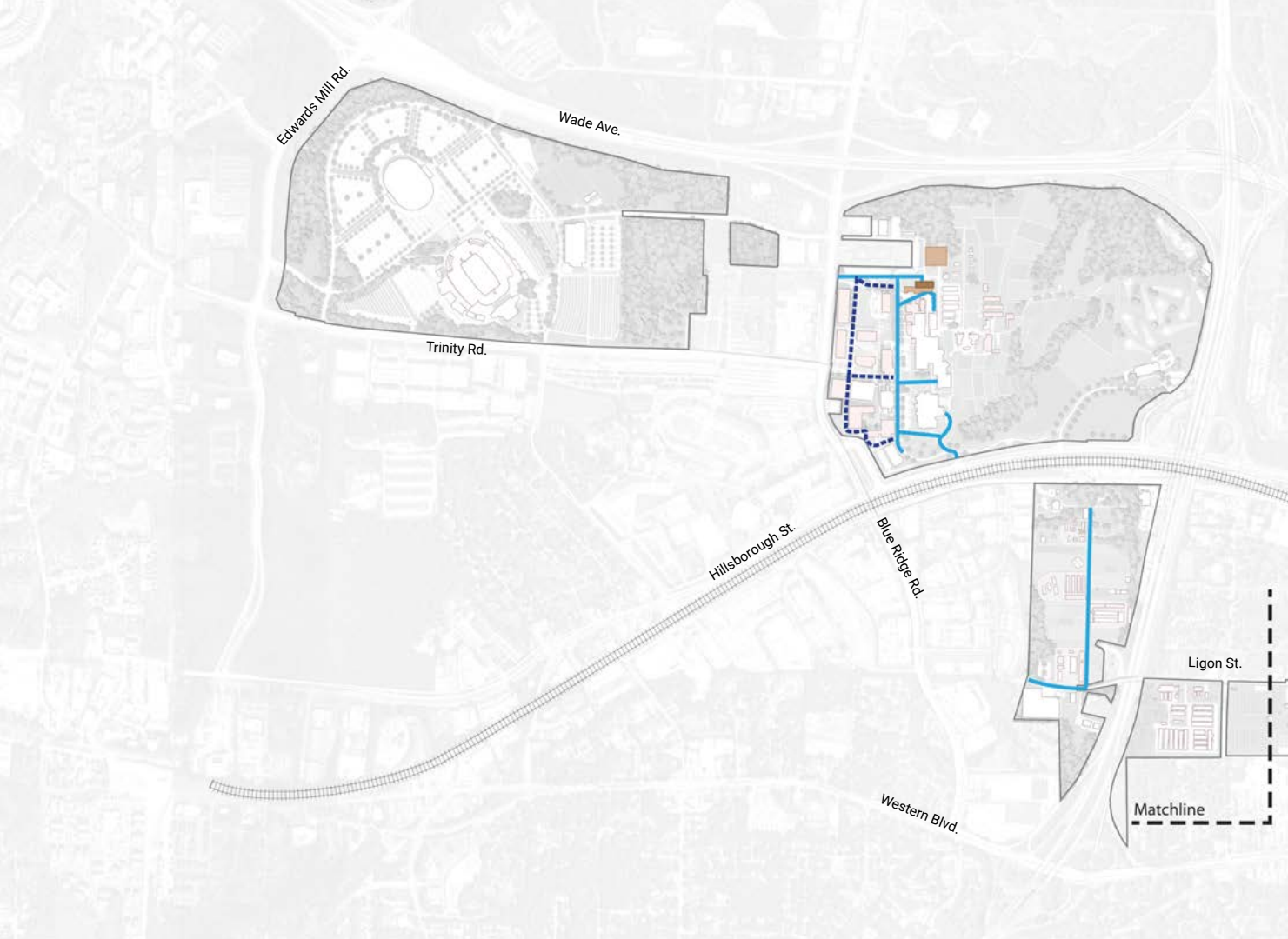
Open Space

NC State is dedicated to nurturing and enhancing its natural and constructed open spaces. Open spaces can be defined by their landscape features and contribute to the overall campus identity. Successful open spaces are achieved through supportive buildings and mobility networks. Plazas, Pedestrian Walks, and Contributing Open Spaces are to be preserved and enhanced to promote a vibrant and inclusive culture. The Physical Master Plan suggests a holistic approach to stormwater that capitalizes on the open space system. The preservation of green space and natural features such as trees, streams, lakes, and wetlands are essential to achieving this goal.

LEGEND

- Contributing Open Space
- Athletics/Recreation+Golf
- Lawn/Fields/Meadow
- Tree/Forest Preserve Areas
- Plazas/Pedestrian Walks
- Stream Buffers
- Lakes/Wetlands/Streams
- Peak Elevation/View Points



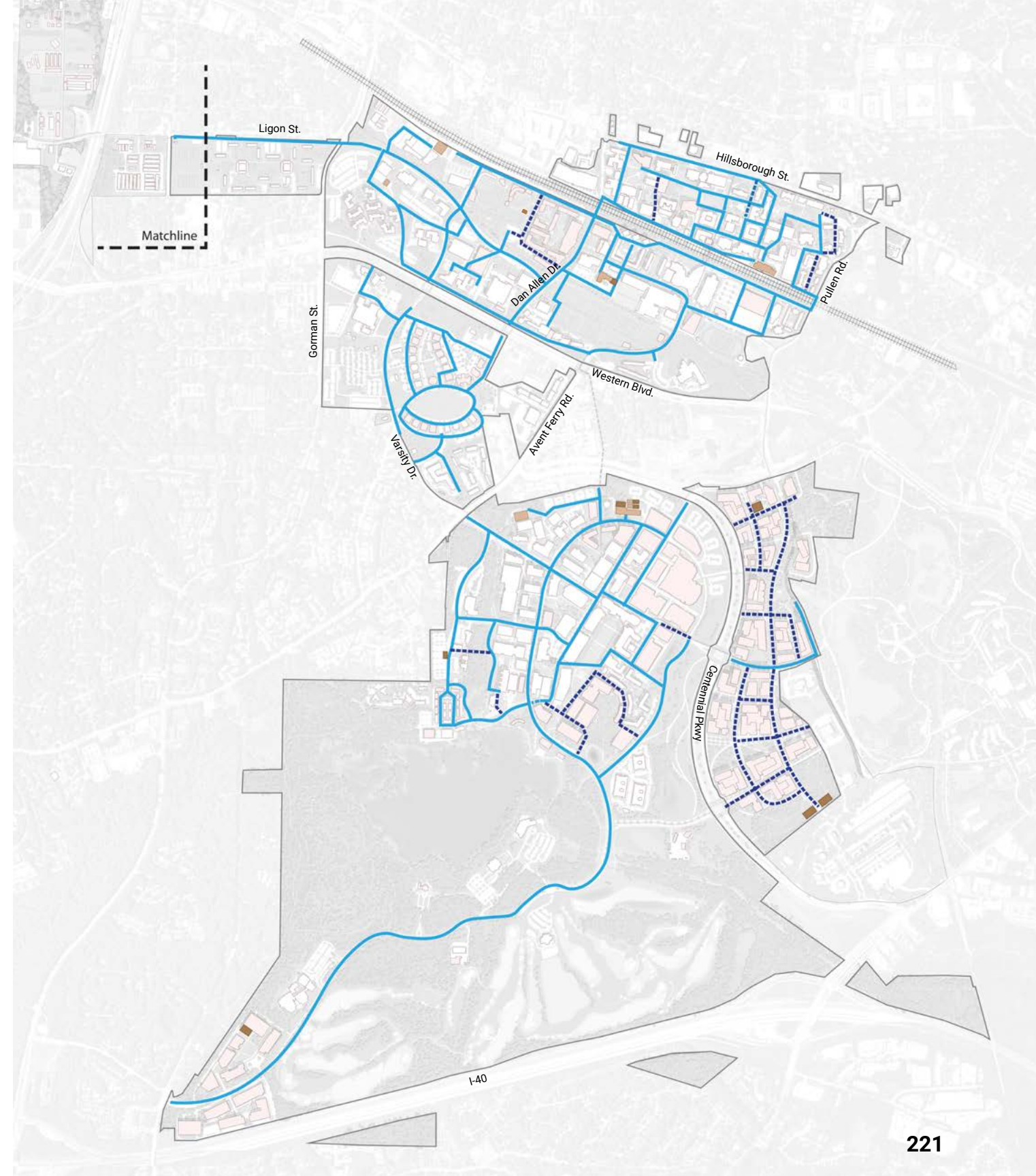


Infrastructure Corridors

There are many existing primary Utility Corridors presently serving the NC State Campus. The Physical Master Plan suggests advancing this effort by grouping utility lines when opportunities for renovation or replacement arise. By adhering to these recommendations, the use of primary Utility Corridors will minimize or eliminate trenching and manholes. It will also help to ensure that future building sites or open space areas will be preserved for long-term development and minimize future construction costs by the need to relocate existing utilities. In addition, the Plan suggests the future location of regional plants or substations to support new development.

LEGEND

- Utility Corridor
 - Existing
 - - - Potential Transformation
- Plant/Substation
 - Existing
 - Potential Transformation





05

APPENDIX



ADDITIONAL STUDIES

Additional studies were developed that explored various aspects of the plan in greater depth. These reports helped inform the final recommendations of the Physical Master Plan.

TECHNICAL REPORTS

- Campus Mobility Recommendations
- Dining Strategic Plan Report
- Space Needs Technical Report
- College of Engineering Expansion
Space Needs Assessment Study



NC STATE

SMITHGROUP