VIRGINIA TECH™

NOVEMBER 2018

Blacksburg Plan

Beyond Boundaries 2047

The Campus Plan

VIRGINIA TECH™

NOVEMBER 2018

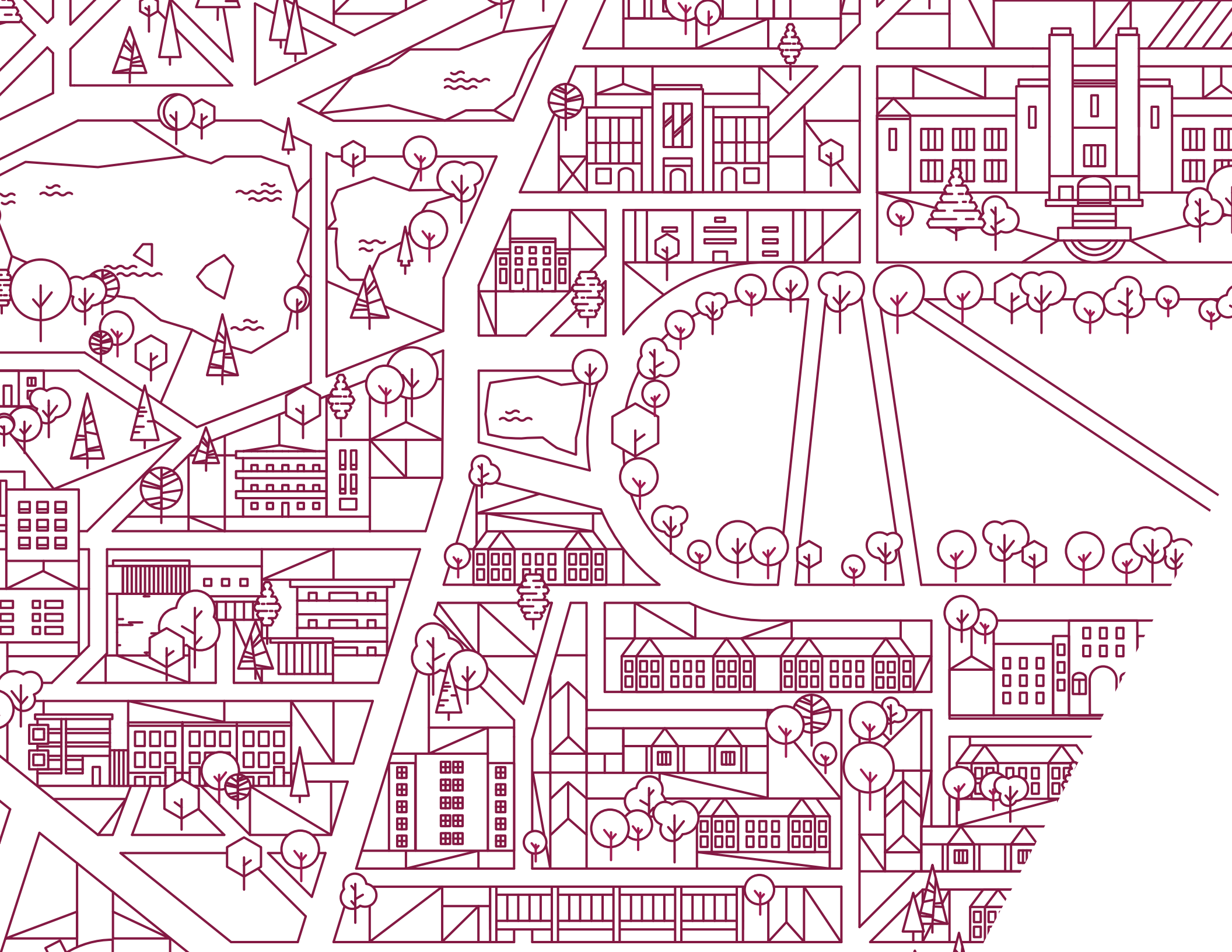
Blacksburg Plan

Beyond Boundaries 2047

The Campus Plan


VIRGINIA TECH: 2017
PRICES FORK ROAD
COLLEGE AVENUE
MAIN STREET
OTEY STREET
KENT STREET
WASHINGTON STREET
DRILLFIELD DRIVE
SOUTHGATE DRIVE
I


VIRGINIA TECH: 2047
Proposed Building
Existing Building
PRICES FORK ROAD
DRILLFIELD DRIVE
MAIN STREET
OTEY STREET
KENT STREET
WASHINGTON STREET
SOUTHGATE DRIVE
WEST CAMPUS DRIVE
PERIMETER ROAD
HEAVY CONSTRUCTION LABS ROAD
HEAVY CONSTRUCTION LABS ROAD
DUCK POND DRIVE
HAMPTON BOULEVARD
HAMPTON BOULEVARD
HAMPTON BOULEVARD





Beyond Boundaries 2047
The Campus Plan

Blacksburg Campus Plan

Beyond Boundaries 2047: The Campus Plan sets out a vision for each of Virginia Tech's campuses, building off of the goals, objectives and aspirations of the 2016 *Beyond Boundaries* visioning document.

This volume, the **Blacksburg Campus Plan**, providing recommendations for physical campus interventions for academics and research, strategic partnerships, campus life, landscape, and mobility. Additional and related volumes cover more detailed studies and recommendations and can be obtained from the Office of University Planning.

Additional volumes include:

- The Accessibility Assessment
- The Agricultural Research and Extension Centers (ARECs) Online Atlas Documentation
- The Blacksburg Plan Technical Appendix
- The Campus Life Report
- The Intelligent Infrastructure for Human-Centered Communities (IIHCC) Partnerships Study
- The Space Utilization Study
- The National Capital Region (NCR) Plan
- The Virginia Tech Carilion (VTC) Academic Health Center Plan

Related volumes include:

- The Campus Wayfinding Master Plan
- The Drillfield Master Plan
- The Energy and Utilities Master Plan
- The Parking and Transportation Master Plan
- The "Stunning Entries" Gateway Study

Consultant Team

Sasaki | Lead Consultant

Accessibility Consultants, Inc. | Accessibility

AEI | Utilities

BRR | Building Assessment

Draper Aden | Stormwater Management

VHB | Transportation

Contents

01 INTRODUCTION 01

02 PLAN DRIVERS 21

03 CAMPUS VISION 41

04 FRAMEWORKS 57

05 DISTRICTS 171

06 ACCESSIBILITY OUTCOMES 313

07 SUSTAINABILITY OUTCOMES 321

08 PHASING & UTILITIES 333

09 APPENDICES 341

01

Introduction

In May 2016, Virginia Tech launched a planning process to develop a comprehensive master plan for its campuses in Blacksburg, Roanoke, and the National Capital Region (NCR). "**Beyond Boundaries 2047: The Campus Plan**" looks ahead 30 years to the year 2047, the 175th anniversary of Virginia Tech.





BEYOND BOUNDARIES 2047: THE CAMPUS PLAN

The Master Plan provides a framework for strengthening Virginia Tech's place among its national and international peers.

Guided by the **Beyond Boundaries** vision for the future of Virginia Tech, a larger, more globally engaged institution is imagined. Beyond Boundaries 2047: The Campus Plan (The Master Plan) sets out a corresponding vision for each of Virginia Tech's (VT's) campuses, building off of the goals, objectives and aspirations of the greater Beyond Boundaries process, and responding to ambitious growth targets and a renewed vision for the institution.

The Master Plan is more than merely an update of the previous master plan; it provides a rethink of how the University can best use the Blacksburg and Roanoke campuses, NCR sites, and Agriculture Experiment and Research Centers (ARECs) to support the evolving mission of the University. The Master Plan provides the first major update of physical planning at Virginia Tech in over thirty years.

The Master Plan is documented in several volumes. This volume provides an overview and details for the Blacksburg campus.

BEYOND BOUNDARIES: A 2047 VISION

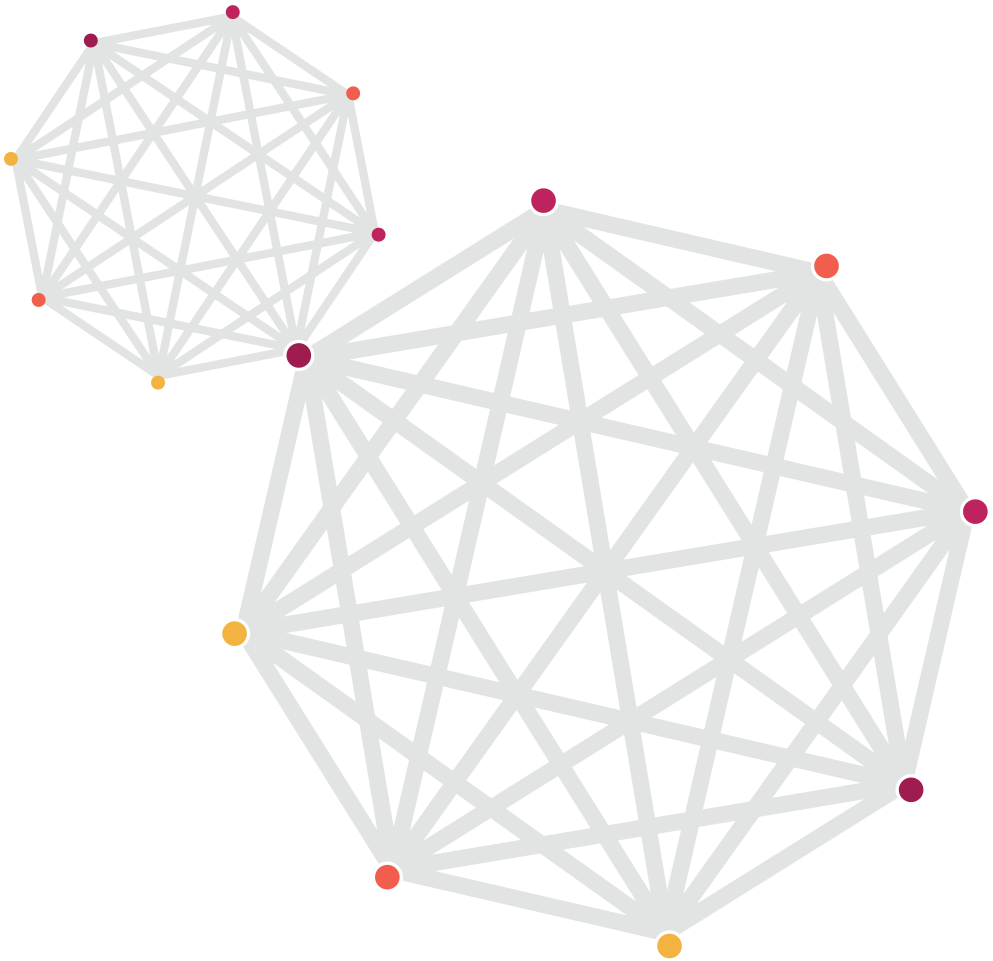
Released in 2016, Beyond Boundaries: A 2047 Vision (Beyond Boundaries) serves as the far-reaching and imaginative visioning framework for Virginia Tech. Drawing from VT's legacy as a land-grant institution, Beyond Boundaries positions Virginia Tech as a premier global institution of higher education, research, and innovation.

Recognizing the competing duality of an increasing demand for flexible and well-rounded students in today's knowledge economy and the limitations imposed on public universities by reductions in state funding, Beyond Boundaries calls for creative resource investment aimed at promoting the tripartite land-grant mission of academic excellence, world-class research, and community engagement driven by the university motto, Ut Prosim (That I May Serve).

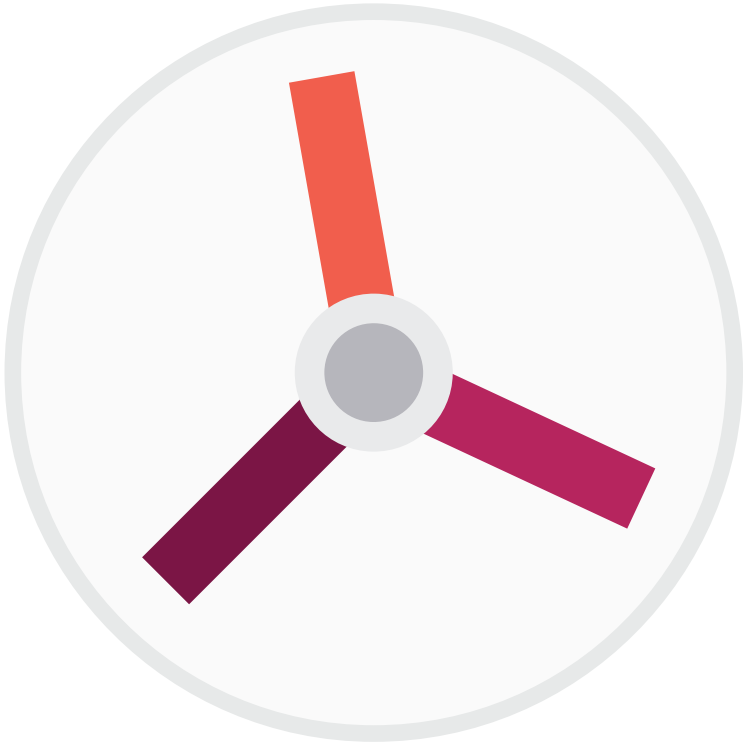
Beyond Boundaries focuses on three discovery-based themes: VT-Shaped Discovery, Communities of Discovery, and Nexus of Discovery. These topics draw from the human-centered inquiry that is so fundamental to education to ensure that students develop deep disciplinary understanding and broad interpersonal skills, pursue experiential learning and applied research through strategic partnership initiatives, and strive to address complex societal problems. These themes and their implications for the Master Plan are further discussed on the following pages.



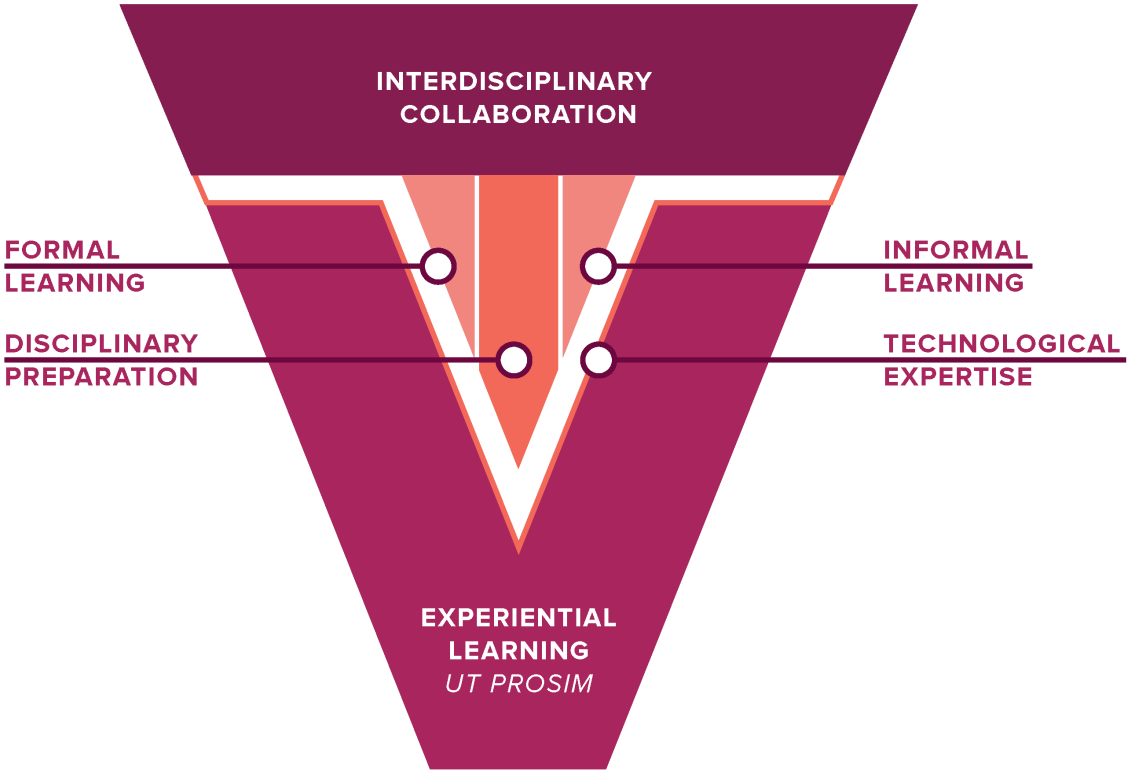
VT-shaped Discovery



Communities of Discovery



Nexus of Discovery



VT-Shaped Discovery

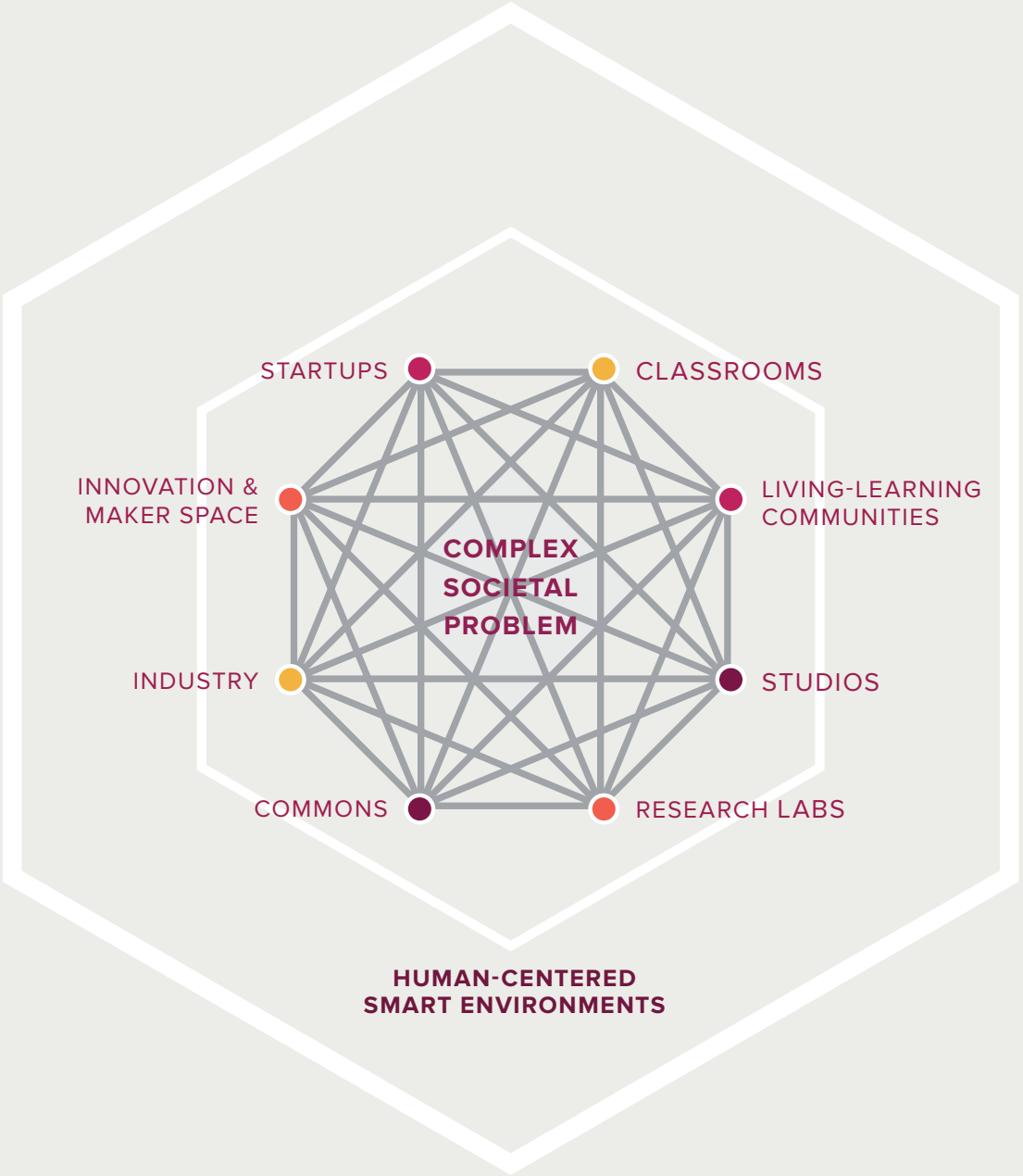
Virginia Tech is seeking to transform student learning outcomes and the student experience by educating "VT-shaped" students. The VT-shaped student of 2047 is one that learns by doing, creating, and engaging; one that engages in service to humanity with the support of the broader VT community; and one that works on interdisciplinary teams with a purpose-driven and person-centered curriculum.

The concept of the VT-shaped student builds off of the idea of the "T-shaped" student, a widely-used metaphor in education representing the need for breadth of transdisciplinary knowledge (the horizontal line) and disciplinary depth (the vertical line). The "V" is incorporated to represent Virginia Tech's commitment to outreach and the application of knowledge through *Ut Prosim* and the land grant mission. The "V" signifies the importance of experiential, purpose-driven learning and is achieved through a variety of intentional activities that support the curriculum, including undergraduate research opportunities, internships, study abroad programs, and First Year Experiences.

Communities of Discovery

Beyond Boundaries envisions that experiential learning wrapped around an issue, problem, or topic of the community will become the core of the educational experience. To achieve this goal, Communities of Discovery are conceived as opportunities to convene students, faculty, and industry professionals from a variety of backgrounds and specializations to tackle compelling social, technological, and scientific questions.

The Master Plan proposes several physical campus design and programmatic elements to support these communities. Innovation hubs, mirroring urban innovation districts in their mix of uses and compact dynamic form, are intended to facilitate the kinds of serendipitous encounters that spur creative thought and invention. Human-centered smart environments pair immersive augmented or virtual reality spaces with big data analysis, medical imaging, or artistic creation. Enhanced mobility networks such as the Infinite Loop and Green Links (see *Campus Vision*) allow Communities of Discovery to engage members across the campus by providing improved access, while cross-Commonwealth transit concepts and innovative digital communication technologies are envisioned to further increase the geographic reach of these communities.



Nexus of Discovery

Beyond Boundaries envisions Virginia Tech as a model for cross-cutting learning opportunities, integrating a multitude of academic and institutional lenses through the Nexus of Discovery concept. This distributed approach to problem-solving will serve to strengthen the breadth of student experiences while also positioning Virginia Tech as a premier global research institution.

The Nexus of Discovery concept is embodied in two distinct organizational structures—Destination Areas and Strategic Growth Areas—both of which serve to direct learning and collaboration across Virginia Tech. The Master Plan seeks to translate these programmatic concepts to the physical realm through the creation of spatial arrangements that are designed to encourage innovation and new working relationships that go beyond established disciplines.

Innovation districts, collaboration hubs, and a more deliberate integration of living and learning environments are envisioned. Environments that enable students to explore the full range of what Virginia Tech has to offer with the guidance and direction that lead to academic success are imagined. This reimagining of the student experience and the physical environments that contribute to the quality of that experience are integral to the plan.

DESTINATION AREAS

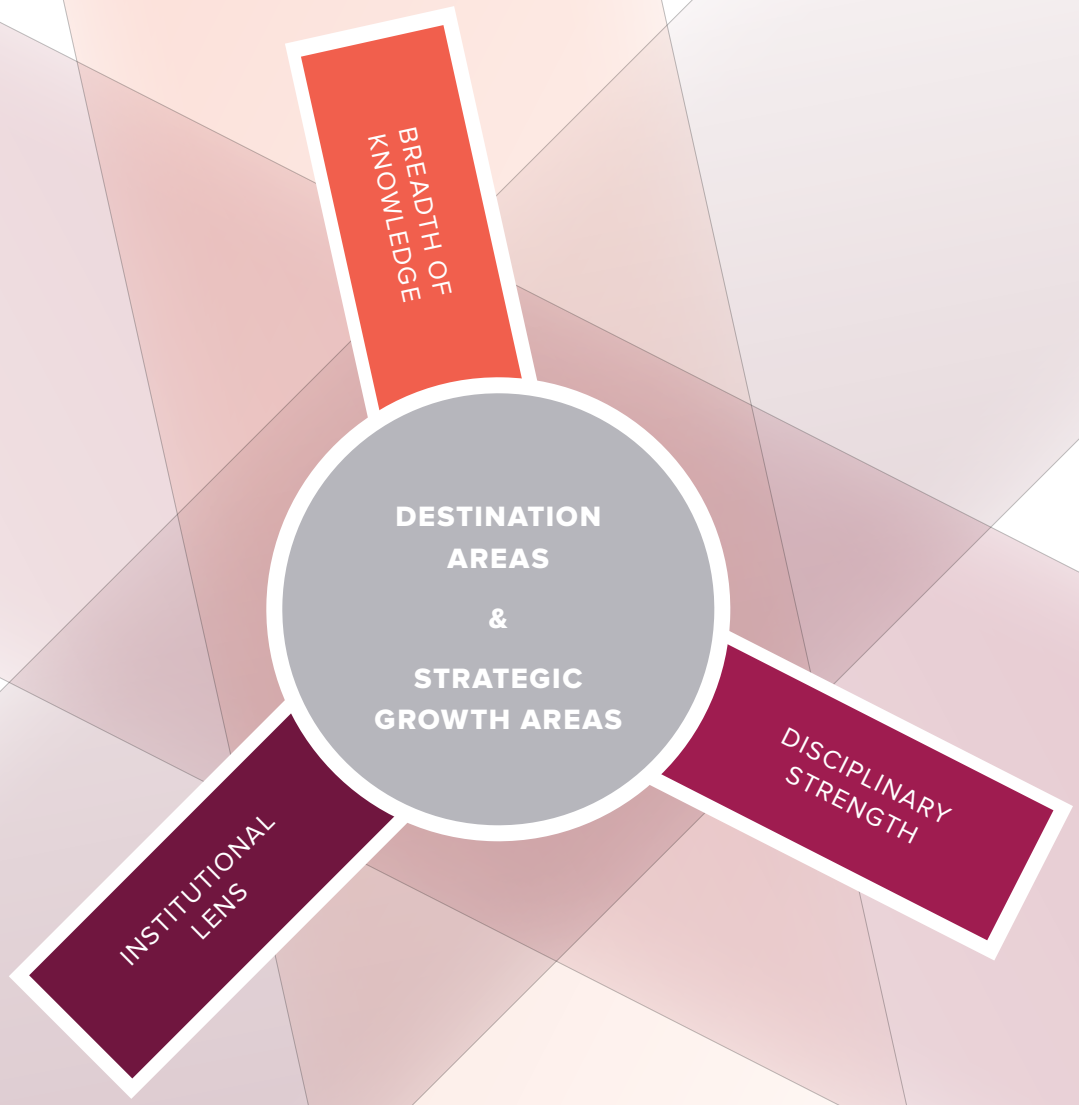
Destination Areas focus on complex problems through research, education, and engagement. They connect the breadth of relevant knowledge necessary for comprehensive planning while transcending traditional academic boundaries, such as those that separate science, technology, engineering, mathematics and the liberal arts.

The Destination Areas provide faculty and students with new tools for identifying and solving complex problems in areas focused on Virginia Tech's strengths and in areas where the University can take a global leadership role. The intent is to position Virginia Tech as an international destination for talent, partnerships, transformative knowledge, and discoveries. To that end, partnerships with industry, government, and communities open up new opportunities for collaboration and funding.

The Master Plan proposes specific programmatic recommendations for the various Destination Areas while recognizing that the names, focuses, and compositions of each Destination Area are likely to be refined as they continue to develop.

STRATEGIC GROWTH AREAS

Strategic Growth Areas are similar to Destination Areas in structure but are of smaller scale and aim for regional or national leadership opportunities.


BREADTH OF KNOWLEDGE
DESTINATION AREAS
&
STRATEGIC GROWTH AREAS
DISCIPLINARY STRENGTH
INSTITUTIONAL LENS

CREATING THE PLAN

VIRGINIA TECH ACROSS THE COMMONWEALTH

Work on the Master Plan began in the spring of 2016 as part of an in-depth Commonwealth-wide process. In addition to physical planning for Virginia Tech's flagship Blacksburg campus—the focus of this document—the Master Plan's other volumes generate recommendations for student life and space programming elements in Blacksburg and set forth plans for VT's additional campuses in Roanoke and the National Capital Region.

This volume focuses on the comprehensive series of strategies recommended to translate the goals of Beyond Boundaries into the physical form and layout of the Blacksburg campus. References to other volumes of the Master Plan are provided within this text where further detail is required.

These additional volumes focus on specific elements of the Blacksburg campus and provide plans for VT's other properties throughout Virginia. Related plans completed outside the scope of the Master Plan, are also referenced throughout this document where appropriate.

Master Plan Volumes

BLACKSBURG

- The **Blacksburg Campus Plan** (this document) lays out a vision for the next 30 years of development on VT's flagship campus, covering broad recommendations for academic, partnership, campus life, landscape, and mobility strategies.
- The Blacksburg Plan **Technical Appendix** provides detailed recommendations on utilities and infrastructure, stormwater management, and mobility.
- The **Space Utilization Study** volume analyzes the utilization of academic, student life, and administrative space on campus and discusses methods for increasing efficiency and improving experience.
- The **Campus Life Report** takes an in-depth look at the programming and layout of Blacksburg's student housing, social and study spaces, and dining and recreation facilities.
- The **Accessibility Assessment** highlights opportunities for improving site-level ADA-compliance across the exterior of the Blacksburg campus.

COMMONWEALTH

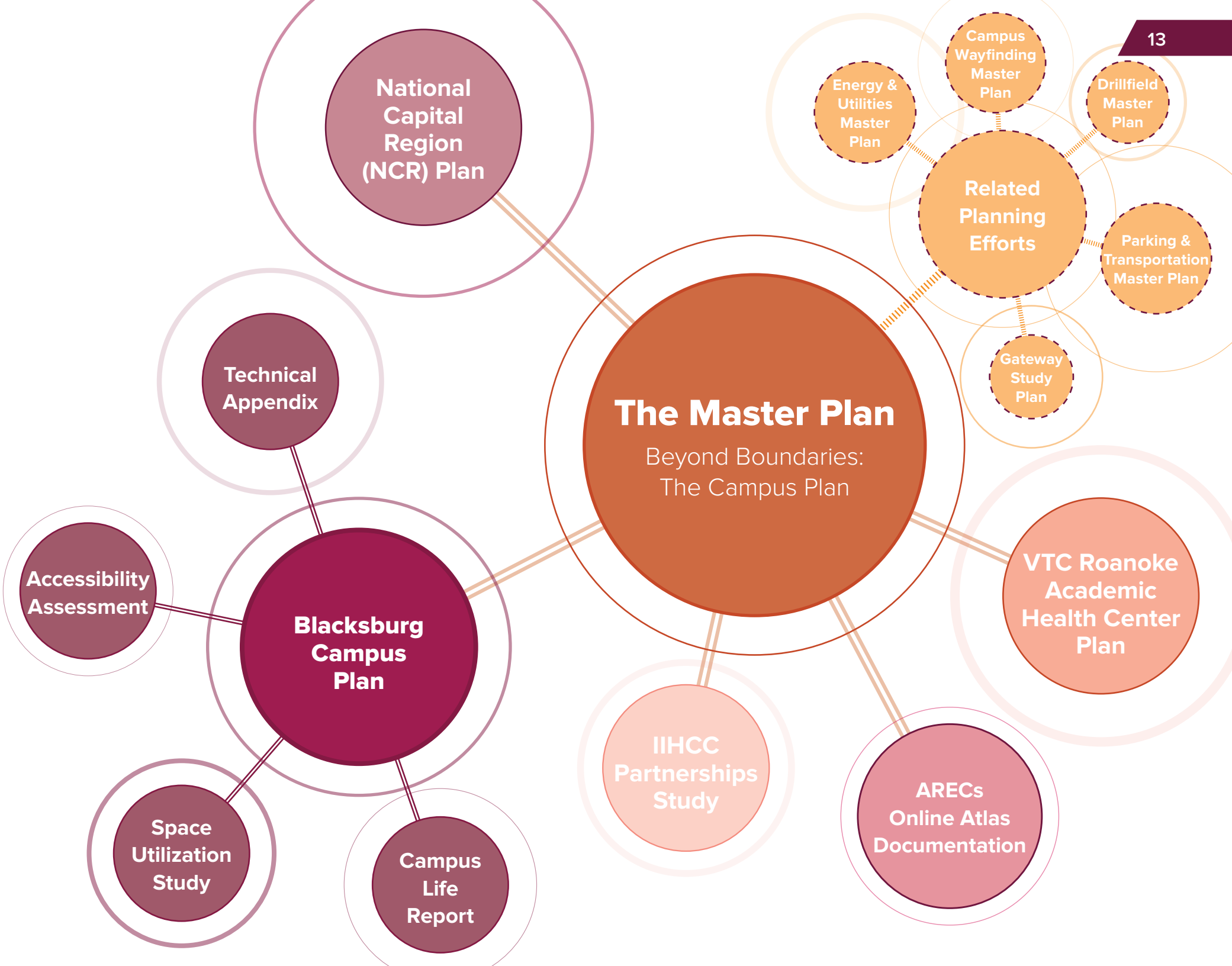
- The **Virginia Tech Carilion (VTC) Academic Health Center Plan** lays out the physical needs of a burgeoning partnership between VT and Carilion Clinic in Roanoke.
- The **National Capital Region (NCR) Master Plan** makes recommendations for VT's holdings in Northern Virginia.
- The **Intelligent Infrastructure for Human-Centered Communities (IIHCC) Partnerships Study** recommends strategies for realizing the IIHCC vision through strategic partnerships.
- The **Agricultural Research and Extension Centers (ARECs) Online Atlas Documentation** catalogs the extents and uses of VT's agricultural research stations throughout the Commonwealth via a dynamic web-mapping tool.

Related Documents

- **Energy and Utilities Master Plan**
  Strategies laid out in the Master Plan have been shaped by, and further refine, the findings of the Energy and Utilities Master Plan based on updated development needs.
- **Parking and Transportation Master Plan (PTMP)**
  Strategies laid out in the Master Plan have been shaped by, and further refine, the findings of the PTMP
- **Drillfield Master Plan**
- **"Stunning Entries" Gateway Study**

Recommended Future Studies

- **Campus Lighting**
- **Expanded ADA Assessments**
- **Universal Design Guidelines**
- **Campus District Design Guidelines**


National Capital Region (NCR) Plan
Technical Appendix
Accessibility Assessment
Blacksburg Campus Plan
Space Utilization Study
Campus Life Report
The Master Plan
Beyond Boundaries: The Campus Plan
Campus Wayfinding Master Plan
Energy & Utilities Master Plan
Drillfield Master Plan
Related Planning Efforts
Parking & Transportation Master Plan
Gateway Study Plan
VTC Roanoke Academic Health Center Plan
IIHCC Partnerships Study
ARECs Online Atlas Documentation

THE PLANNING PROCESS

The master planning process for the Blacksburg campus consisted of three phases, beginning with a series of stakeholder interviews, site visits, and research undertakings aimed at uncovering existing conditions and future needs.

Future development alternatives designed to respond to these needs were explored and discussed with members of the VT community through meetings, workshops, and presentations in the second phase. A detailed record of community outreach and engagement is available in the separate *Technical Appendix*. This complex and collaborative process resulted in the final plan, laying out a vision for the next 30 years of Virginia Tech's Blacksburg campus that is at once aspirational and attainable, full of possibilities and pragmatism, and tailored to position Virginia Tech as a premier global institution of higher education.

Developed through an iterative and collaborative process, the Master Plan remains a living document, designed to adapt to future conditions and demands. Continued engagement from the entire VT community will be needed as elements of the plan are implemented and the plan continues to evolve.



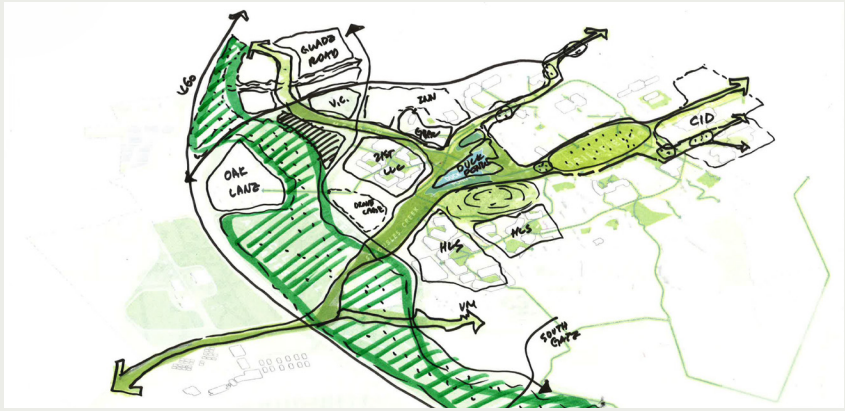
PHASE 1: DISCOVERY AND ANALYSIS

The discovery and analysis phase of the Master Plan involved the collection and synthesis of a variety of quantitative and qualitative data gleaned from a multitude of sources. These studies focused on the people of Virginia Tech, the distribution and uses of campus spaces, and the environmental conditions that shape the physical form of the campus and the behavior of its users.





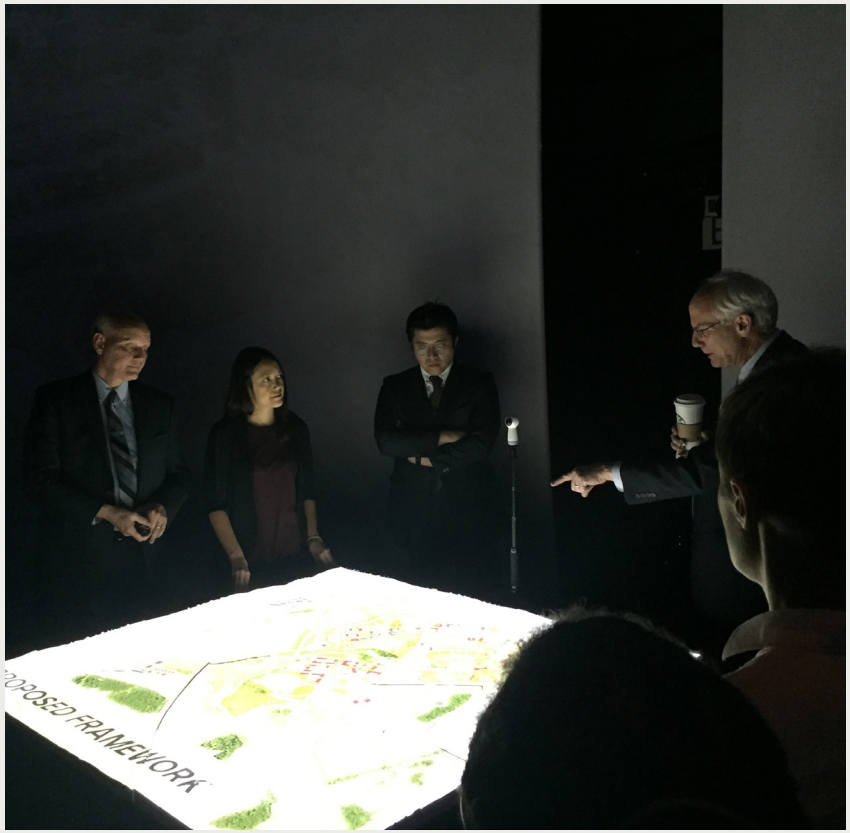
Critical to gaining a deep understanding of the University's needs was the series of work sessions and public meetings with campus stakeholders undertaken during this process. Feedback provided at these events yielded insight into the daily personal experiences of a diverse group of campus users, allowing for a richer and more comprehensive view of campus conditions and community desires.





PHASE 2: CONCEPT ALTERNATIVES

Drawing from the information gathered during the discovery and analysis phase, the designs and ideas generated during the concept alternatives phase informed the development of the Master Plan. Options for campus form, building use, circulation, and overall land use were presented to members of the VT community in order to advance a preferred plan concept. The resulting plan is a hybrid of the initial alternatives, combining the most appropriate elements into a cohesive path for the future of the Blacksburg campus.

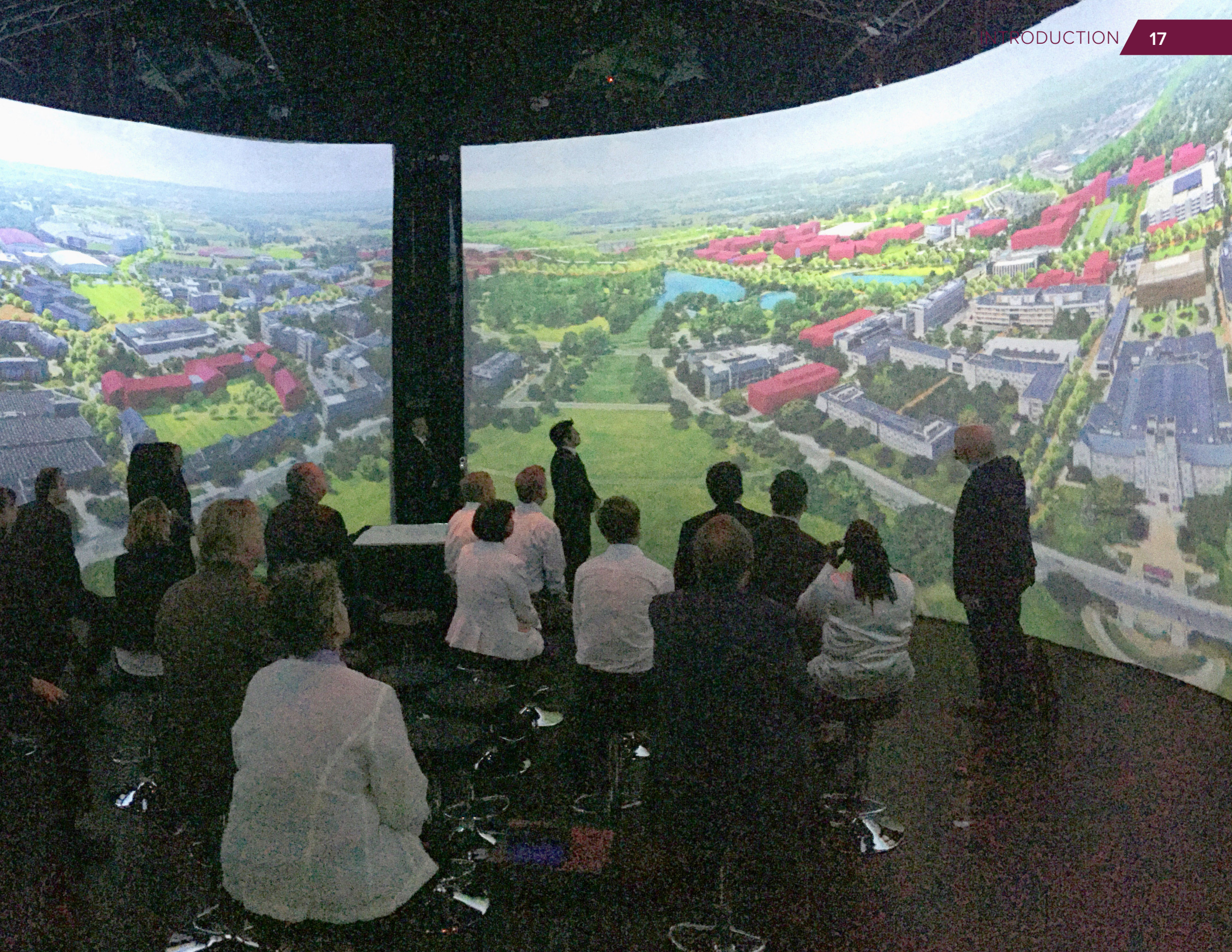


PHASE 3: FINAL PLAN DOCUMENTATION

Phase 3 of the process focused on the refinement and documentation of the preferred concept alternative which was further modified to meet the dynamic needs of the VT community through additional work sessions and meetings, including digital representation of the plan on a physical campus model with 3D terrain and a 360-degree immersive presentation in The Cube theater at VT's Moss Arts Center. This report and its supporting graphics and appendices will serve to guide the incremental implementation of the Master Plan over the next 30 years.

IMMERSIVE PRESENTATIONS

By projecting 360-degree images of select plan recommendations onto the cylindrical screens of the Cyclorama at the Moss Arts Center, members of the VT community were able to understand the future of the campus in an innovative and experiential way.



READING THE PLAN

The chapters of this report align with the organizational structure of the Master Plan and present the plan's recommendations at a variety of scales.

The **Plan Drivers** chapter discusses the present conditions and context of Virginia Tech's campus and the master planning process. Drivers give direction to the plan and serve as benchmarks for all recommendations.

The **Campus Vision** chapter covers the overall design structure of the campus and lays out the key interventions of the Master Plan.

The **Frameworks** chapter deals with the thematic groupings of related campus-wide strategies, from academics to campus life to mobility. The frameworks are driven by aspirational principles aimed at translating VT's strategic goals into physical interventions.

Recommendations are also explored in place-based detail in the **Districts** chapter. Districts group programmatically compatible facilities into geographically proximate layouts, each with their own distinct character.

Specific recommendations for accessibility and sustainability are covered in the **Accessibility Outcomes** and **Sustainability Outcomes** chapters, respectively.

To better describe how the components of the Master Plan can be carried out, the **Phasing** chapter provides details on the potential phasing of future development and utilities considerations. This chapter is currently under development pending coordination between the appropriate University offices.

The **Appendices** section provides additional details on VT's historic properties.

The *Technical Appendices* companion document, not included in this report, contains several technical memos which better explain the Master Plan's strategies for utilities and infrastructure planning, mobility planning, and stormwater management and documents the extensive community engagement process undertaken during the creation of the plan.

As members of the VT community read this report, it is important to keep in mind that the Master Plan is not a construction document. The detailed design of elements set forth in this report will require specific design processes with their own discovery, analysis, and engagement phases. Indeed, future planning-level studies are recommended for elements like campus lighting strategies, detailed accessibility improvements, and design principles for each of the Districts.

The Master Plan is a living document, designed to provide development recommendations that are both driven by an understanding of current needs and flexible enough to adapt to future conditions.

06 **Accessibility Outcomes**

- Broad Accessibility Recommendations
- Accessibility Themes

02 Plan Drivers

- The VT Experience
- Sense of Place
- Connections
- Growth
- Access for All
- Sustainability

03 Campus Vision

- The Central Spine
- The Agricultural Belt
- The Campus Districts
- Tech & Town
- The Infinite Loop
- The Green Links

04 Frameworks

- Academic and Research
- Strategic Partnerships
- Campus Life
- Landscape
- Mobility

05 Districts

- North Academic
- Northeast & Upper Quad
- Creativity & Innovation
- Student Life
- Life Sciences & Technology
- 21st Century Living-Learning
- Intelligent Infrastructure Corridor
- Peripheral Districts

07 Sustainability Outcomes

- Broad Sustainability Recommendations
- Sustainability Themes

08 Phasing & Utilities

- Development Phasing
- Utilities and Infrastructure

09 Appendices

- Historic Resources Survey
- Stormwater BMP Precedents

02

Plan Drivers

PLAN DRIVERS

The Plan Drivers support the goals of Beyond Boundaries, the 2016 visioning document, and respond to the overarching elements important to the planning and design of the Blacksburg campus.

They represent a synthesis of the existing conditions and formative considerations of the Blacksburg campus. The Plan Drivers serve as the impetus for the creation of the Master Plan and help to give it direction and purpose.

Each Driver is expressed in the form of an aspirational goal for the Blacksburg campus and VT's locations across the Commonwealth. These goals direct the recommendations of the Master Plan towards the achievement of meaningful results.

01

The VT Experience

Enhance the sense of community for an increasingly diverse population by providing environments that encourage social, cultural, and academic engagement for resident students, commuter students, faculty, staff, and partners.

04

Growth

Create academic, research, and campus life facilities to accommodate a larger campus population and support the collaboration, innovation, and partnership objectives of the University in a sustainable and efficient manner in order to promote VT as an internationally recognized global land-grant institution.

02 Sense of Place

Acknowledge the established and highly-valued identity established by the architecture and landscape of the campus by means of appropriate renovation, infill development, and landscape improvements while addressing the need for flexible environments that support collaboration, engagement, and innovation.

03 Connections

Provide an integrated mobility strategy emphasizing inclusive access, bicycles, and transit connectivity within the campus and to the surrounding neighborhoods in Blacksburg while improving physical and virtual connections to facilitate a more distributed VT community across the Commonwealth and at the University's global engagement hubs.

05 Access for All

Establish a comprehensive and coordinated network of campus-wide circulation routes to be used by all members of the VT community, and recommend future studies to address issues of access and Universal Design that go beyond the scope and level of detail of the Master Plan.

06 Sustainability

Pursue enhanced environmental quality, economic stability, and social equity across the Commonwealth while serving as a model community for a sustainable society through spaces and programs that demonstrate commitment to ecological stewardship, efficient facility design and operation, and inclusivity and diversity.

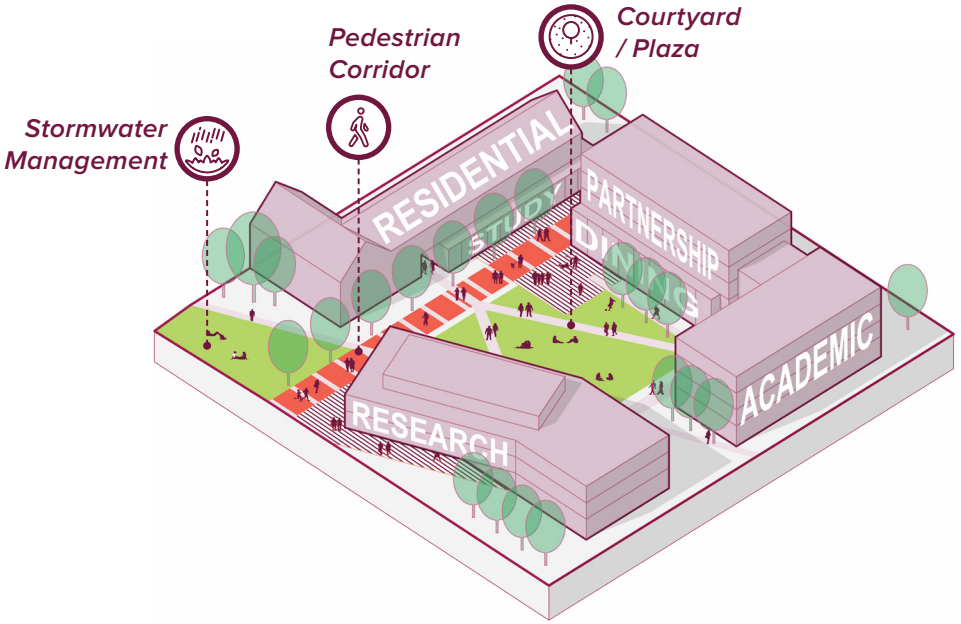
The VT Experience

Developing a campus environment to support the Virginia Tech Experience is a key driver of the Master Plan.

As noted in *Beyond Boundaries - A 2047 Vision*, the VT Experience highlights the University's commitment to providing opportunities for deeper learning, allowing students to grow as individuals and encouraging leadership and community engagement through the university motto, *Ut Prosim* (That I May Serve).

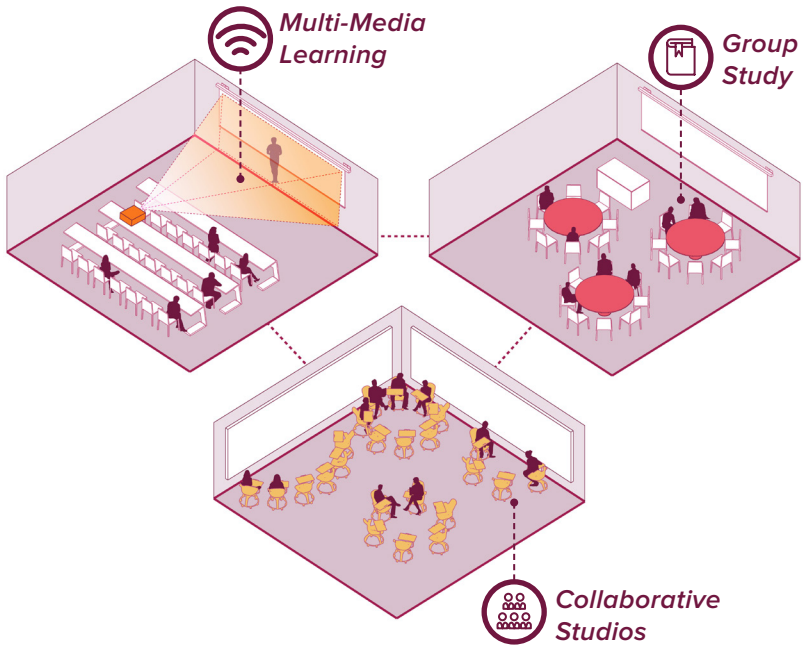
The Master Plan provides spaces on campus to enhance the VT Experience and better support student learning wherever it happens—spaces referred to as VT-Shaped Spaces. VT-Shaped Spaces serve as the physical embodiment of the VT-Shaped Student, encouraging educational breadth and depth and building a sense of community.

These spaces include mixed-use environments with academic, research, and campus life elements; flexible and shared learning spaces; opportunities for interaction with local industry partners; spaces for outdoor recreation; collaboration hubs, fusion labs, and maker spaces; comprehensive mobility corridors, and public spaces that extend experiential learning opportunities.



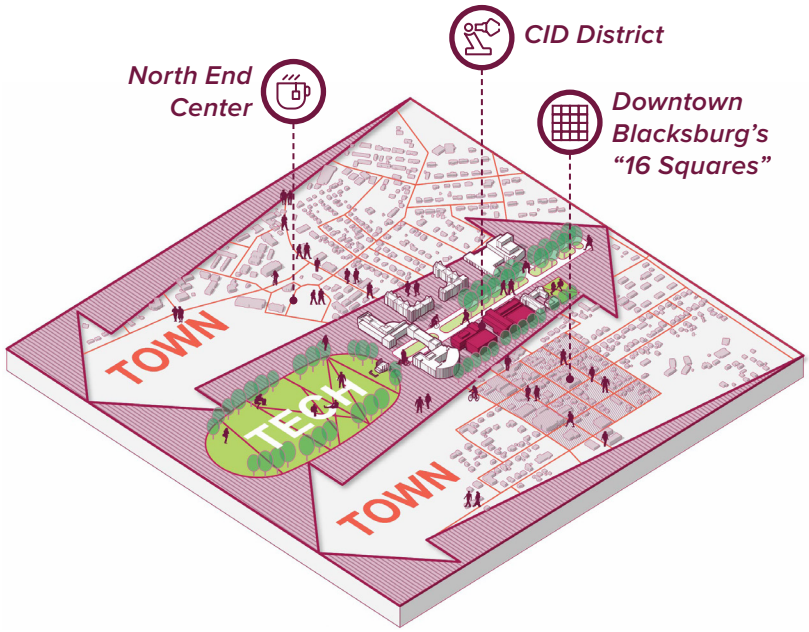
MIXED-USE ENVIRONMENTS

While organized into distinct districts with specific programmatic concentrations, the campus is envisioned as a collection of mixed-use environments. These comprehensive communities incorporate multiple aspects of the VT Experience, including academics, research, student life, and outreach activities. The Master Plan integrates these uses across buildings, open spaces, and circulation routes, creating a holistic approach to the future of higher education.



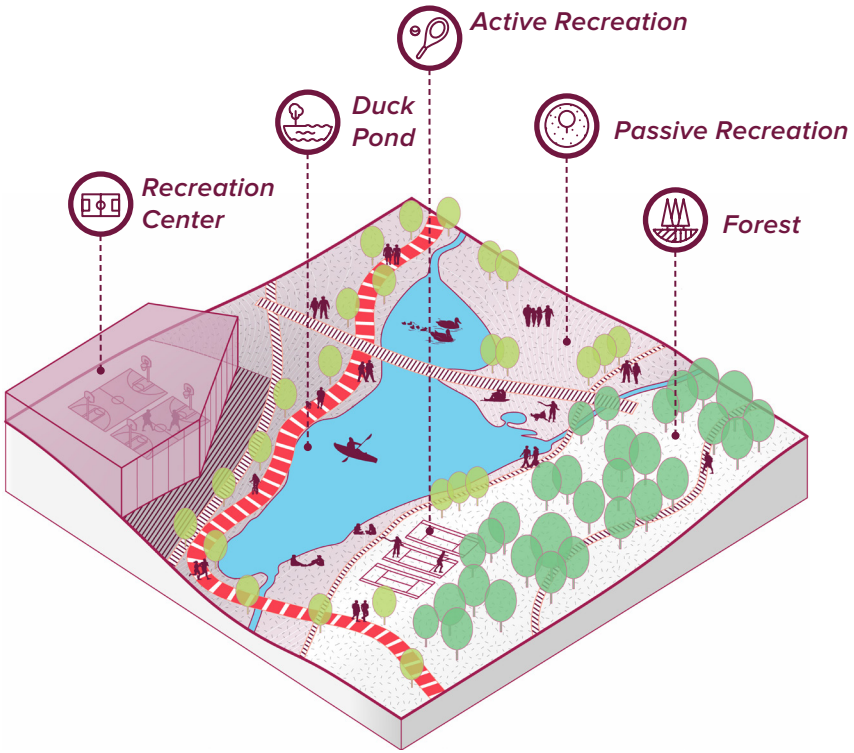
FLEXIBLE LEARNING SPACES

As new models of delivering education are developed, learning spaces must continue to adapt. Virginia Tech's academic spaces will respond to changes in pedagogy—both anticipated and unforeseen—through the use of flexible arrangements. These innovations, including interactive media and digital technologies, hands-on group study spaces, and creativity-driven collaborative studios, will position the University to provide high-quality, experiential learning well into the future.



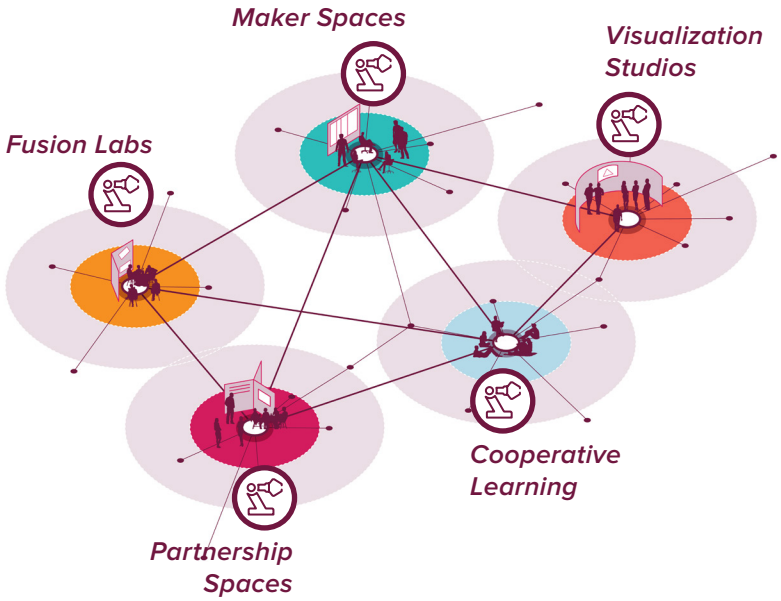
TECH-TOWN

The VT Experience extends beyond the boundaries of the campus to include the amenities of nearby Downtown Blacksburg and the opportunities for partnership that proximity brings. As the University continues to grow, especially in the outward-facing Creativity & Innovation District, a strong relationship with the Town will be crucial to maximizing investments and promoting collaboration. Opportunities for Tech & Town interaction are also possible in other districts with a strong connection to their surroundings, such as the Northeast District and North End Center, the Glade Road District, and the Intelligent Infrastructure Corridor.



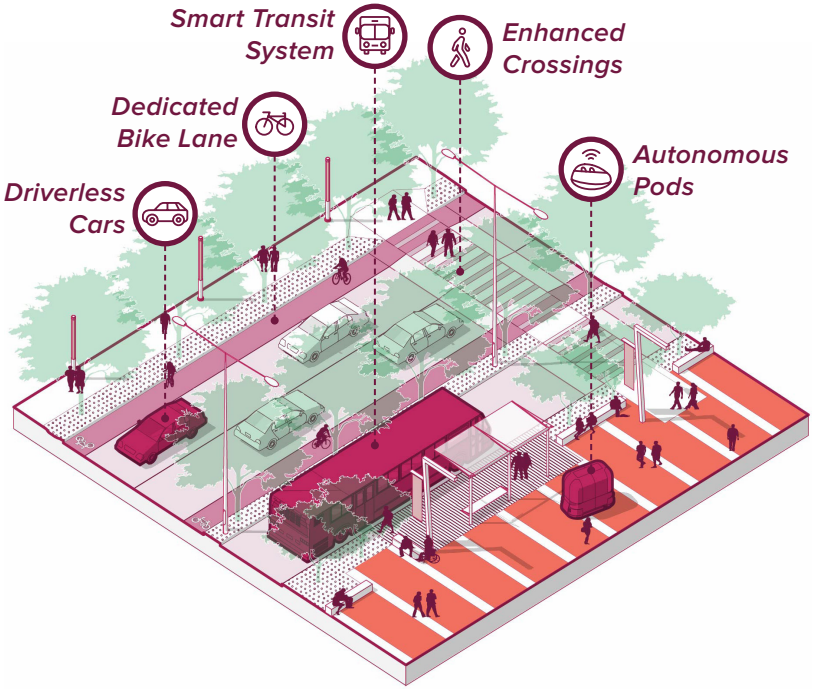
HEALTH & WELLBEING

The VT Experience leverages the unique, natural setting of the campus to promote healthy lifestyles. The Master Plan proposes improved circulation networks to connect to existing trail systems and expands active and passive recreational opportunities. Further, the major environmental amenities of the campus such as the Duck Pond, Stroubles Creek, and existing forested areas are celebrated and enhanced, strengthening VT's rural character and contributing to users' spiritual wellbeing.



COLLABORATION HUBS

Aimed at strengthening the connections between students, faculty, and staff, the VT Experience necessitates spaces for cross-pollination of ideas in order to spur innovation. Collaboration hubs proposed throughout the campus provide opportunities for discussion, invention, and demonstration and support new models for interaction and exploration.



COMPLETE STREETS

Opportunities for interaction occur not only within campus facilities, but also along major circulation routes. To that end, the Master Plan proposes the use of complete streets, integrating multiple modes of travel and prioritizing non-auto transportation. In this way, enhancing users movement across campus serves to extend the VT Experience beyond the walls of University buildings.



PUBLIC REALM

In addition to paths of travel, the broader public realm of the campus is envisioned as a primary setting for strengthening the Virginia Tech Experience. In particular, the inclusion of diverse amenities such as outdoor gathering spaces, recreation considerations, and dining providers within campus open spaces is supported by investments in improved accessibility and a dedication to the creation of vibrant, multi-use landscapes.

Sense of Place

The Blacksburg campus is defined by its location in Virginia's Blue Ridge and Allegheny Mountains and the ridges and valleys that shape the open space and development patterns of the campus—patterns that follow the region's dramatic topography and natural systems including the three forks of Stroubles Creek that traverse the campus.

These underlying patterns inform the open space and landscape structure of the campus with the Drillfield occupying a key location along the main axis. The formality of this axis continues eastward to Main Street along the ceremonial entrance of Alumni Mall.

The physical character of the Blacksburg campus reflects its chronological and stylistic development as an institution, signifying periods of history, pedagogical trends, programmatic directives, and aesthetic selectivity. Such factors shape the "sense of place" present today—a sense of place for which the University is well known and remembered.

The predominant themes of "place" that define the campus came into favor during 1920s and '30s: Collegiate Gothic architecture and a consistent use of Hokie Stone as a building material. Today, buildings around the Drillfield reflect this Collegiate Gothic style, complete with the characteristic rough Hokie stone, lancet-arched doors and windows, and corner towers. This style dominates the campus architecture, except for a few buildings constructed in the late 1960s and early 1970s.

Across the campus, there are several primary aspects of form that define the "sense of place" and account for VT's basic spatial structure. These include the bowl shaped topography of the Drillfield, the arrangement of buildings in upland areas around quadrangles, and the central axis comprised of Alumni Mall, the Drillfield, and the Duck Pond. Collectively, these aspects of form create a campus that generally is unified and coherent—a balance and dialogue between buildings and landscape. A pattern of quadrangles and plazas create a repetitive theme that is subordinate to the larger monumental spaces of the campus such as the Drillfield and the Duck Pond.















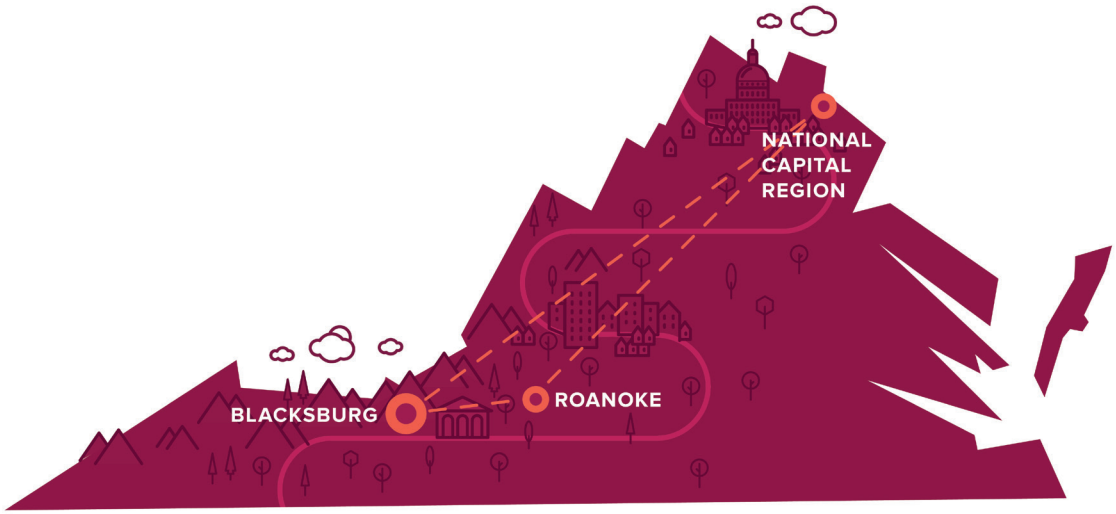
Connections

Connections between people, ideas, and places are central to the recommendations of the Master Plan.

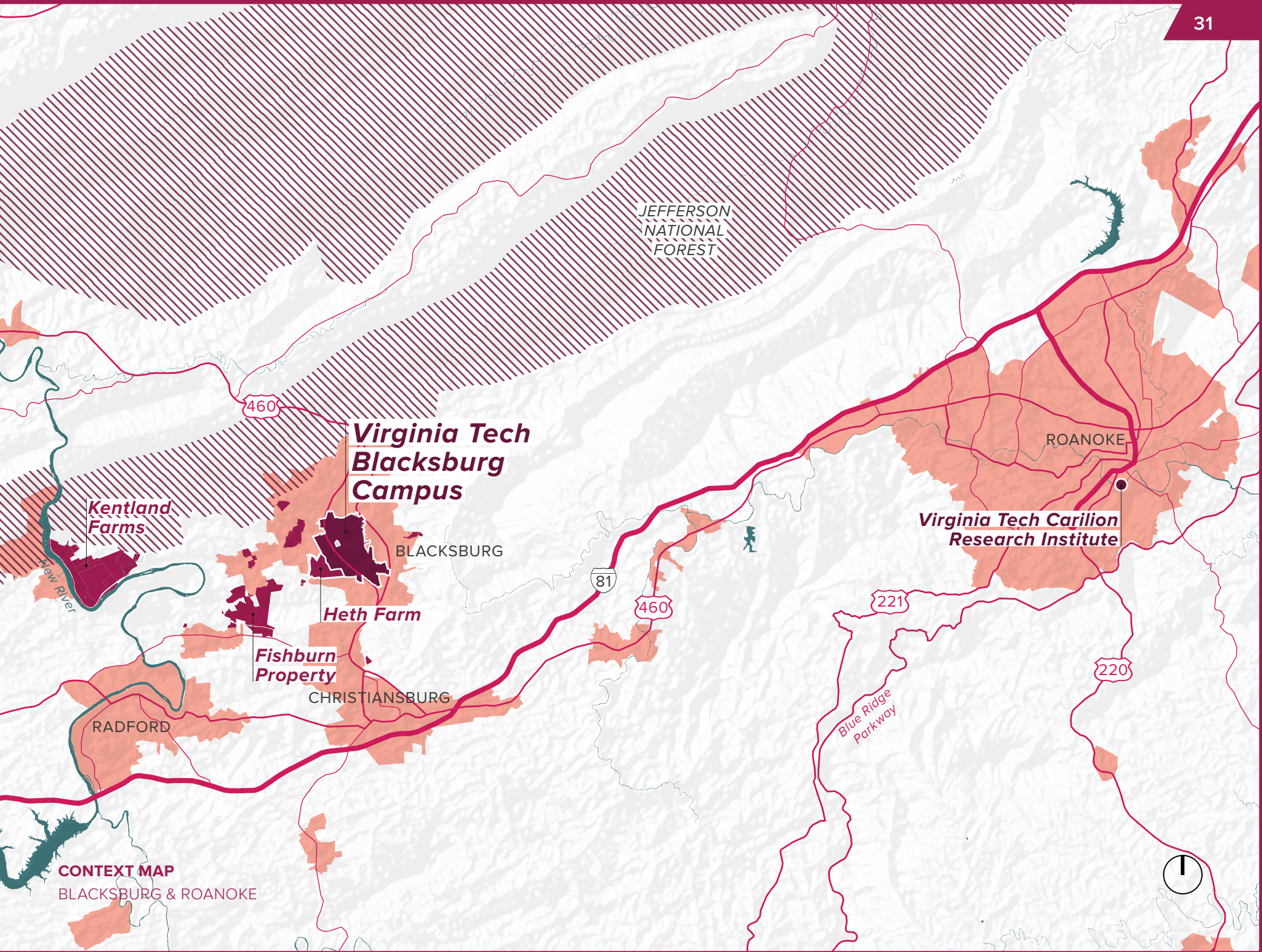
The Master Plan focuses on enhancing connections within the Blacksburg Campus as well as across Virginia Tech's campuses and establishes a vision for operating Virginia Tech as one entity. To highlight these strong cross-Commonwealth connections, VT often refers to its campuses as a "binary star," with activities in Blacksburg and Roanoke representing one center of gravity and those in the National Capital Region (NCR) representing the other.

Blacksburg continues to be viewed as the flagship campus for the undergraduate student experience and for core academic and research programs. Roanoke is envisioned as the center for health-related professions, medical research, and related business and industry partnerships. The NCR sites, forming the second "star," are planned for programs, research, and other activities that benefit from proximity to Washington, D.C.

The Master Plan establishes a strong identity in which all VT locations contribute to a new definition of the Virginia Tech Experience informed by innovative ideas for connecting the campuses through transportation and telecommunication, including telepresence, augmented reality, virtual environments, and complex systems simulations.



CROSS-COMMONWEALTH CONNECTIONS



CONTEXT MAP
BLACKSBURG & ROANOKE

Growth

Drawing from the University's strong land grant legacy, The Master Plan envisions a Blacksburg Campus that celebrates its history while improving access to higher education for a diverse and growing population.

Campus History and Change

Established as Virginia Agricultural and Mechanical College in 1872, Virginia Tech was founded as a land grant institution under the auspices of the 1862 Morrill Act. In addition to teaching the agricultural and mechanical arts, the school served as a military institute, resulting in the prominent location of the Drillfield, now the central campus open space and a major organizing element of the campus layout.

As Virginia Tech's academic mission has evolved, so too has its campus. Through the late 19th and early 20th centuries, the campus consisted of only a handful of buildings and occupied fewer than 100 acres between downtown Blacksburg's Main Street and the Duck Pond of the former Solitude Farm.

By the end of World War II, the campus had more than doubled in size and the school changed its name to Virginia Polytechnic Institute. Additional buildings organized around The Drillfield served the expanding mission and began to create the now-familiar Campus Districts with academic uses to the north and student life uses to the south.

In 1970, the school name changed again to the current Virginia Polytechnic Institute and State University (Virginia Tech, for short), and the campus again doubled in size to nearly 500 acres with additional buildings and landholdings south of Washington Street.

Today, the campus spans over 2,600 acres and boasts 125 buildings containing nearly 12 million gross square feet, 4.6 million of which (38%) has been constructed since 1997, largely through infill in the campus core.

The Master Plan seeks to build off of this pattern of growth in a way that meets the needs of a growing 21st century global land grant institution while preserving the rural character of the campus setting through sustainable infill development.

Enrollment Growth and Diversity

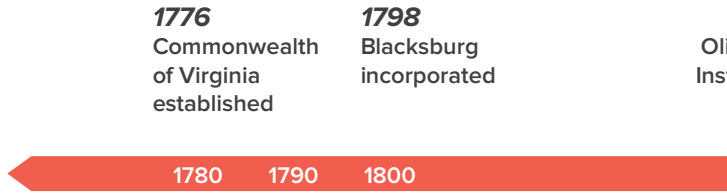
The Master Plan responds to significant anticipated growth in enrollment. Proposed growth targets, if achieved, mean a faster rate of growth than Virginia Tech has experienced in decades.

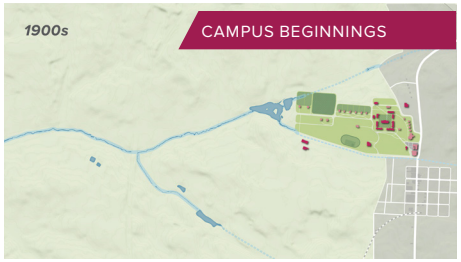
Growth to 30,000 undergraduates in Blacksburg by 2023 and the potential to grow beyond that level will generate a need for additional teaching and student life space. It is important to remember that growth in STEM-H areas impacts all colleges through both major enrollments and service courses.

Each college is expected to experience growth, but as pedagogies evolve towards more interdisciplinary work, an understanding of relationships and collaborations between colleges and faculty members, including the Destination Areas and Strategic Growth Areas, will be ever more important and will require shared spaces to support interdisciplinary experiences.

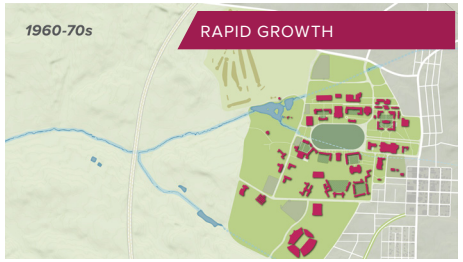
In addition to overall anticipated enrollment growth, Virginia Tech expects to attract increasing student diversity. Since 2007, Virginia Tech's student body has become more racially diverse with the proportion of students self-identifying as non-white increasing from 30% to 37%.

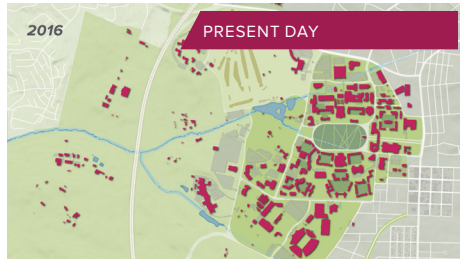
The Master Plan addresses increasing diversity through the design and programming of inclusive, collaborative spaces throughout the campus.











FOUNDING OF LAND GRANT INSTITUTION

PRE-WAR

POST-WAR

RAPID GROWTH

GLOBAL IMPACT

FUTURE EVOLUTION

Student Enrollment
Cadet Enrollment

1851
in and Preston
titute opens in
Blacksburg

1862
Morrill Act passed by Congress

1872
Virginia Agricultural and Mechanical College established

1879
Daily military training instituted

1896
"Polytechnic Institute" added to College name

1921
First women admitted as full time students

1923
Corps of Cadets requirement reduced to two years

1944
"Agricultural and Mechanical College" dropped from name

1953
First Black student

1964
Corps of Cadets participation becomes optional

1970
Addition of "University" to name reflects an expanded mission

1987
Enters top 50 U.S. research universities

2007
Carilion School opens in Roanoke

2011
Virginia Tech Research Center opens in Arlington

2015
"Beyond Boundaries" establishes vision for 2047

2016-17
Campus Master Planning process

132
727
3,582
5,698
10,254
21,584
26,257
32,663

1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2047

Access for All

Virginia Tech is committed to providing an accessible and inclusive campus for the VT community. This requires examining multiple aspects of campus design and operations as well as recommending future planning and design studies that go beyond the level of detail addressed in this Master Plan, which is focused on exterior or site level recommendations.

Recommended future planning and design studies include the development of Universal Design principles to address a broader range of considerations that go beyond just physical access.

Master Plan Scope

The Master Plan provides high-level integrated planning strategies for the campus natural systems, landscape, building placement and renovation, infrastructure, and circulation networks, including exterior accessibility issues. The scope of the Master Plan focuses on “access for all” in the exterior environment of the Blacksburg Campus. The goal over time is to establish a network of barrier-free circulation routes for use by all members of the campus community. This requires strategies for addressing the significant topographic conditions of the campus and the barriers identified in the separately documented Accessibility Assessment.

The establishment of a barrier-free circulation network is supported by two design strategies that respond to the topography of the campus: the Green Links and the Infinite Loop. The Links and the Loop are designed to eliminate stairways, vertical impediments, and pathways with more than a five percent slope, thereby minimizing the need for handrails and ramps.

Additional information about the Infinite Loop and the Green Links is available in the Campus Vision, Landscape Framework, and Mobility Framework sections of this report. For more detail on the Master Plan’s accessibility recommendations, refer to the Accessibility Outcomes chapter.

EXTERIOR ACCESSIBILITY ASSESSMENT

The Master Plan responds to the charge set out by VT at the beginning of the planning process to evaluate the exterior circulation conditions of the campus relative to the requirements of the Americans with Disabilities Acts (ADA) Standards for Accessible Design.

To that end, an evaluation, or Accessibility Assessment, of existing exterior campus circulation routes and conditions in the campus core is one of several detailed assessments completed as part of the planning process. The findings of the Accessibility Assessment are documented in a report completed in March of 2017 by Accessibility Consultants, Inc. of Arlington, Virgina. This report is on file with the Office for Equity and Accessibility and is being used by VT to inform a range of ongoing and future exterior projects.

SCOPE OF ACCESSIBILITY ASSESSMENT

- Pedestrian routes from public streets and sidewalks
- Pedestrian routes from accessible parking spaces to accessible entrances
- Pedestrian routes between buildings
- Bus and shuttle stops
- Sidewalks
- Entry area loading and unloading zones
- Curb Ramps
- Ramps
- Barriers
- Protruding objects and head clearance obstructions
- Accessible entry door signage
- Wayfinding and signage

Sustainability

In 2009, the Virginia Tech Board of Visitors approved the Virginia Tech Climate Action Commitment (VTCAC) and an accompanying Sustainability Plan. These efforts led to the creation of the Office of Sustainability to oversee the implementation of the VTCAC and to track VT's commitment to sustainability.

The VTCAC establishes targets for the reduction of greenhouse gas emissions, emphasizes energy efficiency, promotes recycling and alternative transportation, commits the University to LEED Silver certification or better for all new construction and major renovation projects, and calls for continued student engagement in campus sustainability. Information on the current status of VT's sustainability metrics and initiatives is available on the Office of Sustainability website.

What is Sustainability?

Sustainability is the simultaneous pursuit of environmental quality, economic prosperity, and social justice and equity through action, education, and engagement to address current needs without compromising the capacity and needs of future generations.

Virginia Tech's Sustainability Mission

Virginia Tech serves as a model community for a sustainable society. Sustainability is an integral part of the fabric of the University as it pursues enhanced economic stability and affordability, diversity and inclusion, environmental stewardship, expansion of knowledge, and education of future leaders.

Sustainability & The Master Plan

Sustainability strategies laid out in the Master Plan consist of both broad recommendations and specific themes aimed at advancing VT's Sustainability Mission through the physical form of the Blacksburg Campus. Details on these approaches are discussed in the Sustainability Outcomes chapter.

SUSTAINABILITY RATING SYSTEM

Since moving forward with the VTCAC and Sustainability Plan, Virginia Tech has transitioned to the Sustainability Tracking Assessment & Rating System (STARS). Designed to assist institutions with sustainability planning utilizing defined standards, goal-setting, and implementation, STARS provides a framework for adopting the best sustainability strategies and for sharing information among a network of institutions.

STARS resulted from an Association for the Advancement of Sustainability in Higher Education (AASHE) led collaborative effort to develop a standardized system by which higher education institutions could measure their progress toward sustainability. Using this self-assessment and rating system, institutions like Virginia Tech can benchmark their sustainability progress over time and compare results with other institutions.

VT has been recognized for its achievements in sustainability through the STARS rating on several occasions, including its most recent gold rating in 2017. Ratings are submitted on a three-year cycle.

STARS RATING CATEGORIES

1. Education and Research

- Co-curricular education
- Curriculum
- Research

2. Planning, Administration & Engagement

- Coordination and planing
- Diversity and affordability
- Human resources
- Investment
- Public engagement

3. Innovation

- Creative solutions and initiatives unique to an institution

4. Supplemental

- Student orientation
- Food education
- Bike sharing

5. Operations

- Buildings - operations and maintenance, building design and construction, and indoor air quality
- Climate - greenhouse gas emissions inventory, GHG reduction, air travel emissions, and local offsets
- Dining services - food and beverage purchasing, tray-less dining, vegan foods, pre- and post-consumer waste composting, etc.
- Energy - building energy consumption, clean and renewable energy, energy management systems, energy metering, etc.
- Grounds - integrated pest management, native plants, wildlife habitat, Tree Campus USA
- Purchasing - computers, cleaning products, office paper, etc.
- Transportation - campus fleet, modal split, bike sharing, transit, etc.
- Waste - waste reduction and diversion
- Water - water consumption, stormwater management, metering, etc.

THE VIRGINIA TECH CLIMATE ACTION COMMITMENT

PRESIDENTIAL POLICY MEMORANDIUM 262, REVISION 1, MAY 2013

Virginia Tech's Sustainability Goals

The VTCAC lays out the following University-wide sustainability goals:

1. VT will be a leader in Campus Sustainability
2. VT will ensure that the VTCAC is reflected in the Strategic Plan for the University
3. VT will reduce greenhouse gas (GHG) emissions to the 2000 emissions level of 255,000 by 2025 and to 38,000 tons—80% of the 1990 level—by 2050
4. VT will improve energy efficiency, reduce energy waste, and replace high-carbon fuels
5. VT will maintain the Office of Sustainability
6. VT will pursue LEED Silver certification or better for all eligible and applicable new buildings and major renovations and will evaluate the feasibility of LEED for existing buildings certification for its existing buildings
7. VT will strive for improved electricity and heat efficiency by exceeding the most current version of the ASHRAE 90.1 standard performance metric by 10% for all new buildings and major renovations; capital budgets will account for future energy price, life-cycle cost of building operation, and environmental benefits of achieving this level of performance.
8. VT will work towards a 50% recycle rate by 2020
9. VT will make smart purchases by purchasing or leasing Energy Star rated equipment and by considering the life-cycle costs and impacts of potential purchases
10. VT will engage students, faculty, and staff to develop and implement innovative strategies for the efficient and sustainable use of energy, water, and materials in all University-owned facilities
11. VT will aim for transportation efficiency through parking, fleet, and alternative transportation policies and practices
12. VT will develop and implement innovative sustainability-related academic programs in instruction, research, and outreach
13. VT will monitor energy use and GHG emissions and change internal and external conditions and will prepare an annual "report card" showing progress towards targets
14. VT will provide funding to support sustainability programs

↓80%

Emissions Goal: reduce emissions to 80 percent of 1990 levels by 2050

↑10%

Renewable Energy Goal: provide 10 percent renewable energy

↑80%

Fuel Source Goal: 80 percent natural gas + 20 percent coal

↑50%

Recycling goal: increase recycling rate to 50% by 2025

03

Campus Vision

CAMPUS VISION

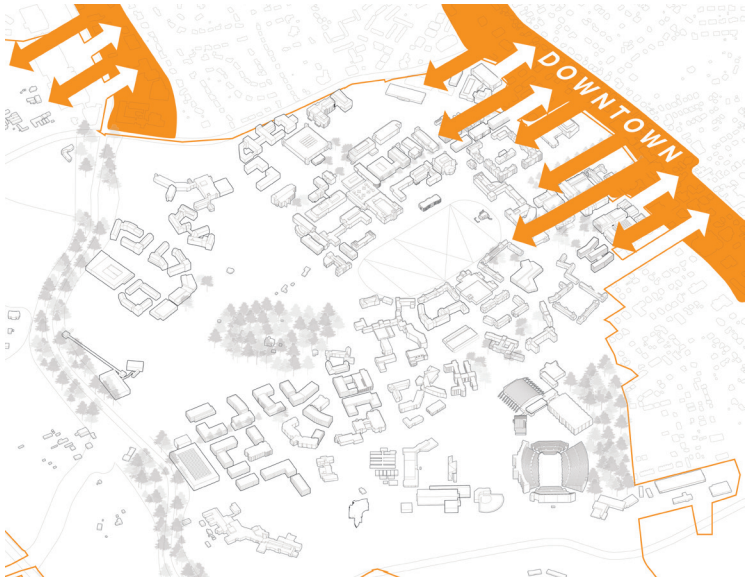
The Master Plan establishes a vision for a vibrant campus rooted in the history and traditions of the university, the unique sense of place, and the academic, research, and partnership initiatives of Beyond Boundaries.

The Master Plan's vision is based on the broad goals established for Virginia Tech in the *Beyond Boundaries* visioning document and responds to the Plan Drivers. It is organized around six Key Elements focused on specific design interventions aimed at addressing the present and future needs of the VT community.

These Key Elements build on the existing physical assets of the campus and seek to combine VT's land grant legacy with its goals of becoming a 21st century global institution.



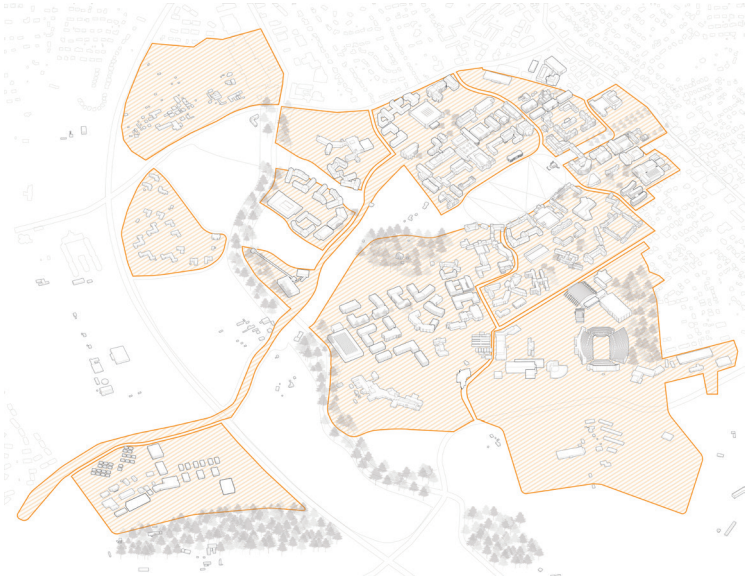
01: The Central Spine



04: Tech + Town



02: The Agricultural Belt



03: The Campus Districts



05: The Infinite Loop

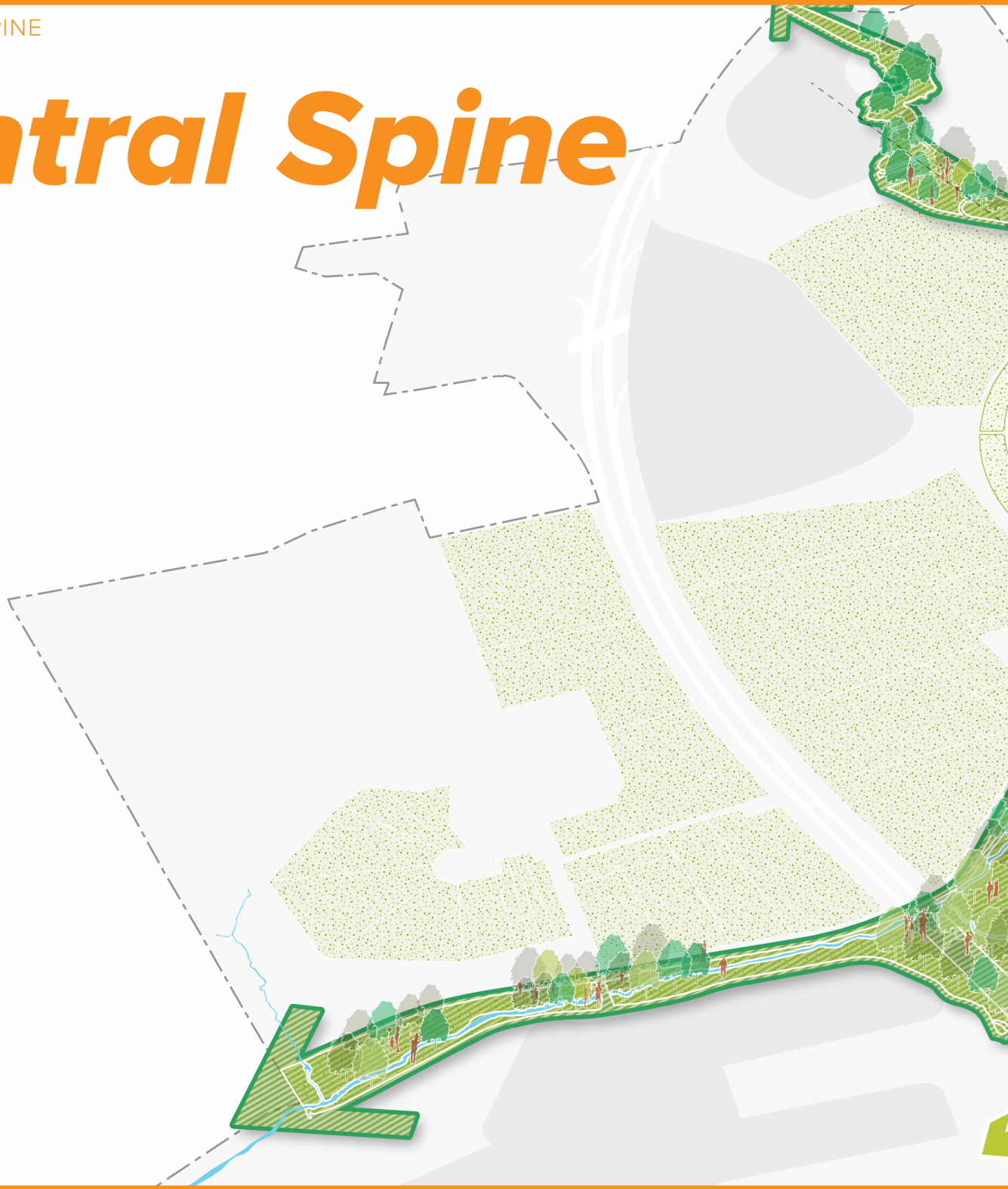


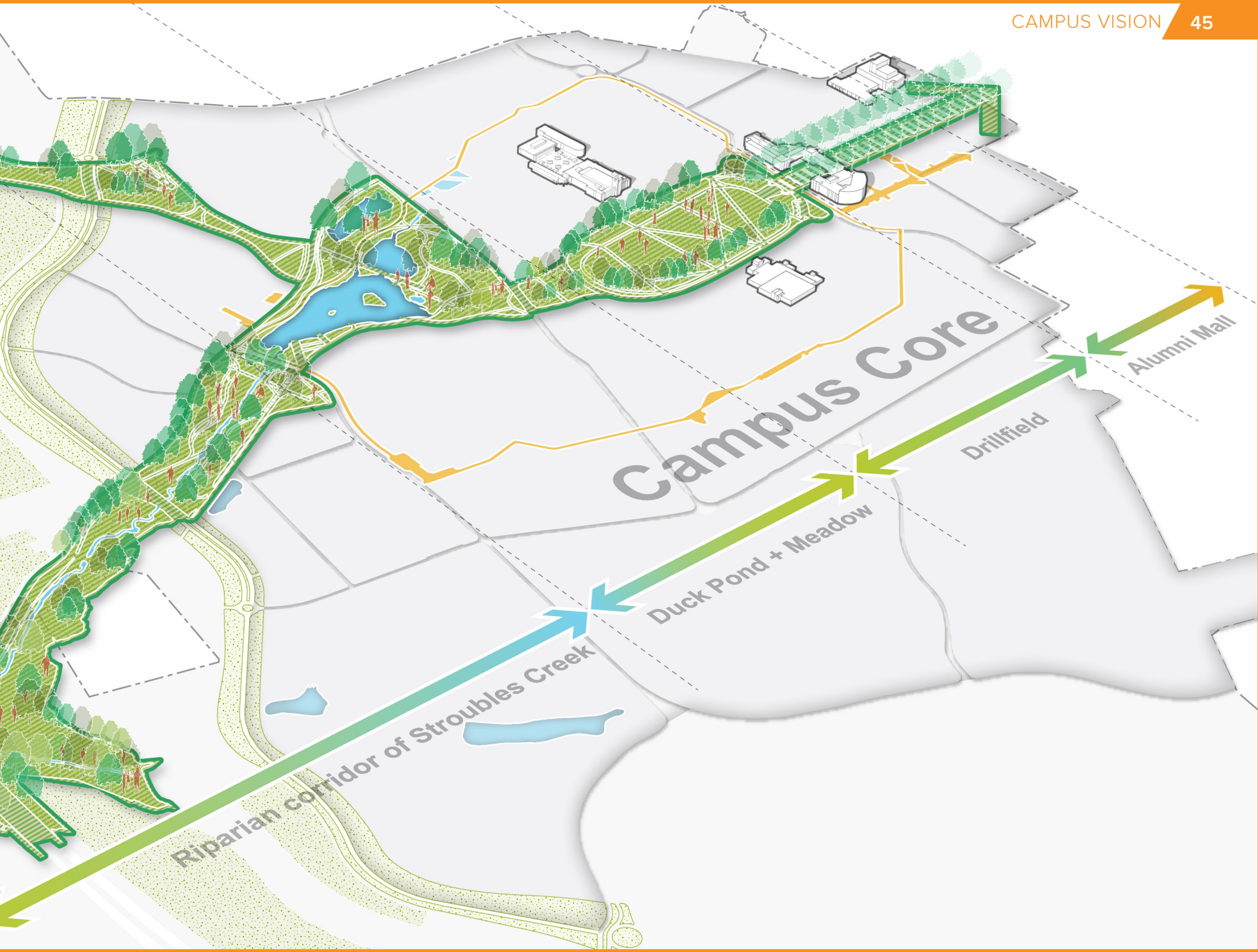
06: The Green Links

The Central Spine

Comprised of Alumni Mall, the Drillfield, the Duck Pond, the riparian corridor of Stroubles Creek, and the Meadow landscape west of the Inn, the Central Spine visually defines the VT campus, helping to organize the siting and character of development and highlighting the historic natural spaces of the campus.

The Master Plan enhances the Central Spine through comprehensive planting, stormwater, and circulation strategies. Strategies include respecting and enhancing the legacy of these iconic spaces, reimagining how the campus community interacts with these landscapes, utilizing the spaces for strategic research initiatives, and introducing ecological design and sustainable maintenance principles. See the Landscape Framework for more details.




Campus Core
Alumni Mall
Drillfield
Duck Pond + Meadow
Riparian corridor of Stroubles Creek

The Agricultural Belt

In order to preserve the agricultural legacy and rural character of the VT campus, the Agricultural Belt maintains land west of the Western Perimeter Road as pasture and agricultural land.

This land is intended for use by the College of Agriculture and Life Sciences, the College of Veterinary Medicine, the College of Natural Resources and Environment, and other land-intensive needs. The retention of agricultural land recognizes the practical need for a contiguous and diverse land resource to support the land grant mission.

This strategy utilizes the Western Perimeter Road (WPR)—a planned arterial designed in coordination with VDOT to relieve traffic pressure from West Campus Drive by connecting Prices Fork Road to Southgate Drive—as a growth boundary for the University's expansion.

The goals of the Agricultural Belt policy are:

- Ensure that land in close proximity to the academic core is available to support educational and research activities
- Meet the land requirements associated with stormwater management
- Establish a landscape buffer along the periphery of the campus with the intent of preserving the rural character of the campus when viewed from U.S. 460, an increasingly important consideration as the Blacksburg area is developed.

Preserving the natural setting of the campus benefits not only the VT community, but the University's neighbors as well. This is especially true of the Smithfield Plantation, which is located within the Agricultural Belt.

The Master Plan also recommends that the University identify an opportunity to showcase its agricultural roots in an aesthetically sensitive way within the Agricultural Belt to celebrate and bring greater visibility to its agricultural heritage. See the Landscape Framework for more details.





WPR PARKWAY
The proposed Western Perimeter Road (WPR) serves as a campus growth boundary and is characterized by linear reforestation efforts.

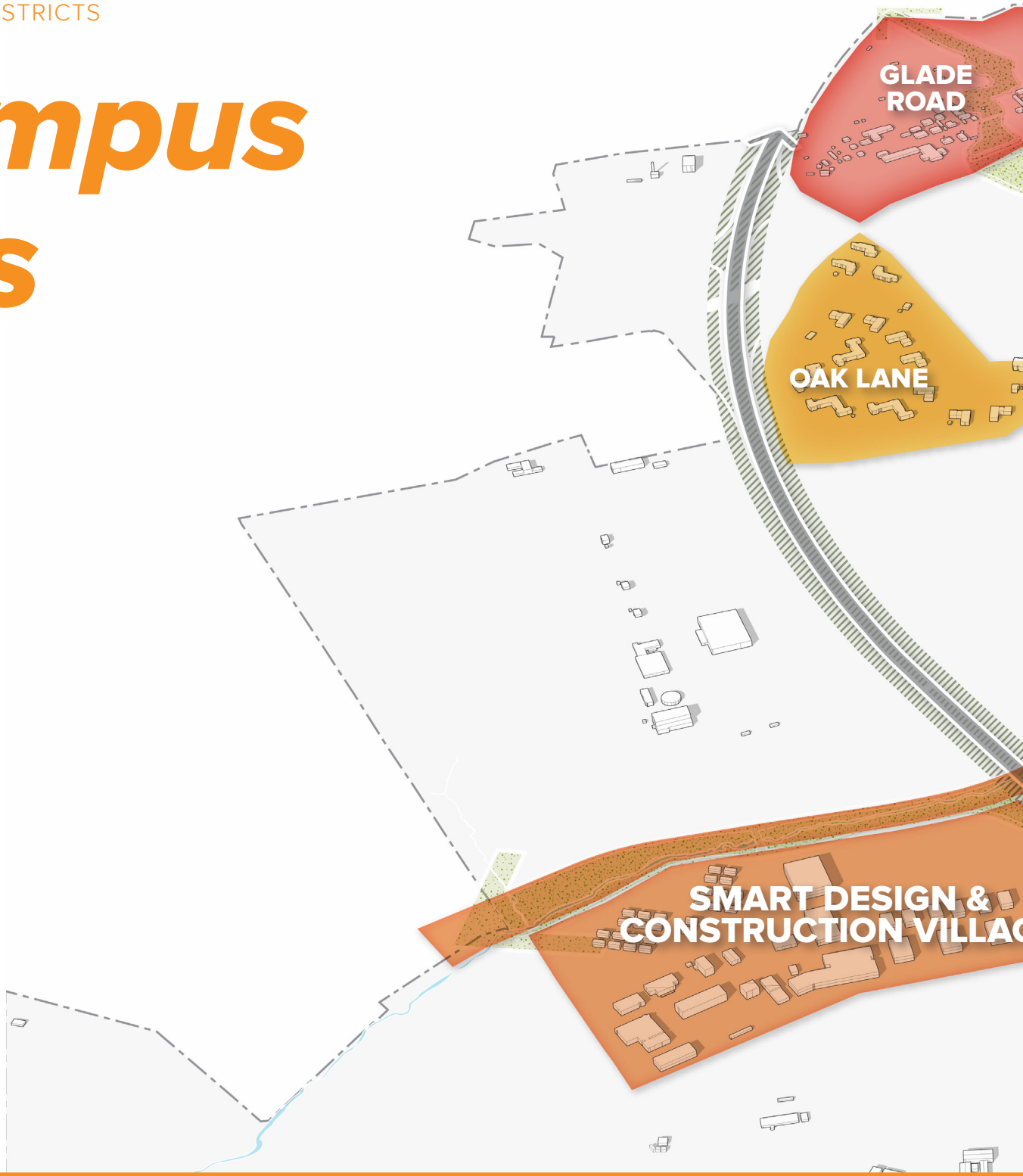
SMITHFIELD PLANTATION
The Smithfield Plantation remains buffered from campus development and benefits from the preservation of its rural surroundings.

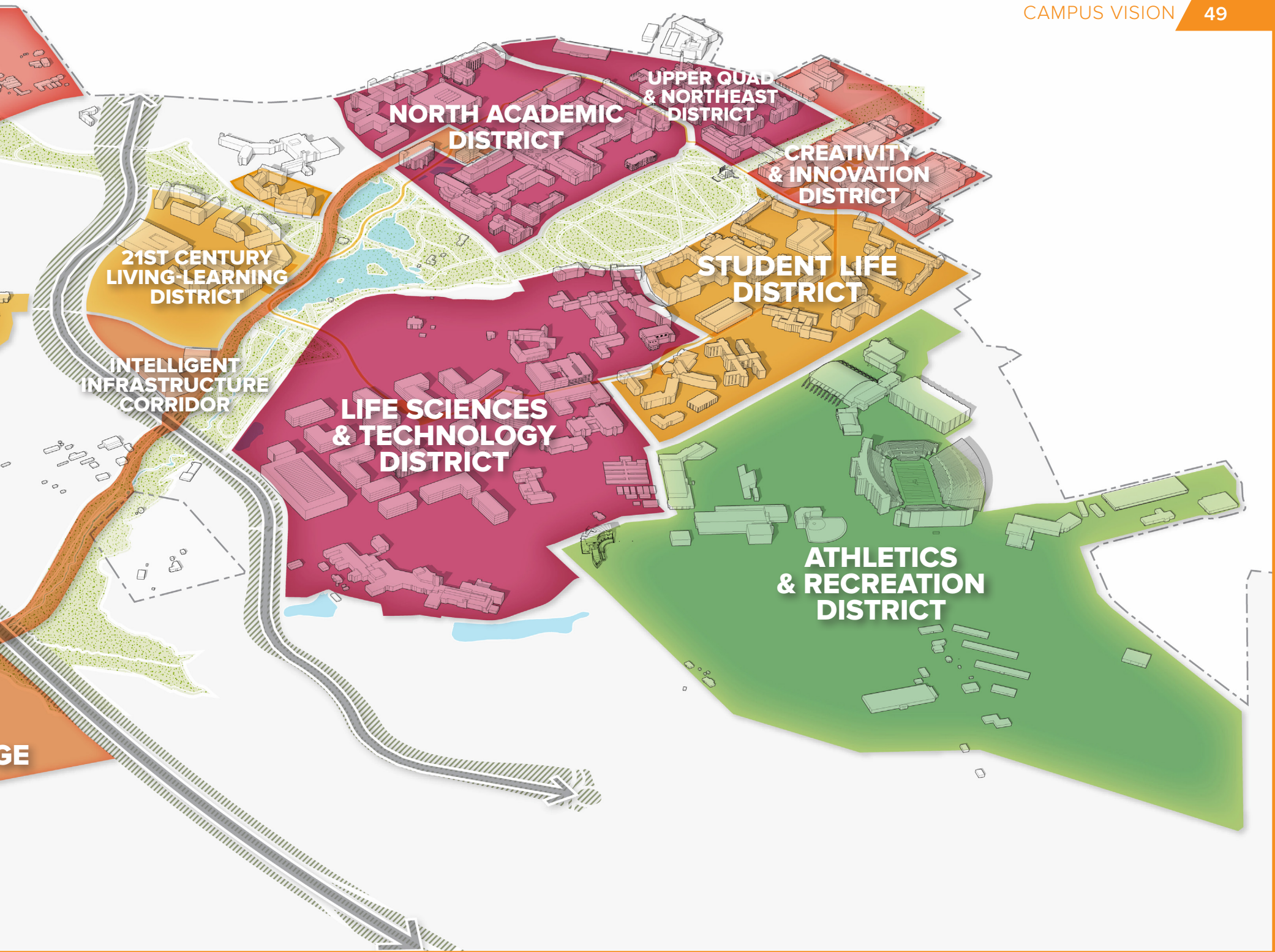
CAMPUS VISUAL IDENTITY
Views of the Agricultural Belt from U.S. 460 highlight VT's rural heritage.

The Campus Districts

The Master Plan organizes the campus into a series of distinct Districts. Each District has a unique character based on the existing and proposed programming it contains.

From the classroom and research facilities in the North Academic District, to the design and collaboration spaces of the Creativity & Innovation District, to the residence and dining halls of the Student Life District, the uses of each District are structured around common themes. Yet while each District is unique, they all contain the kinds of dynamic social spaces and active landscape elements that spur community building and innovation. See the Districts chapter for more details.



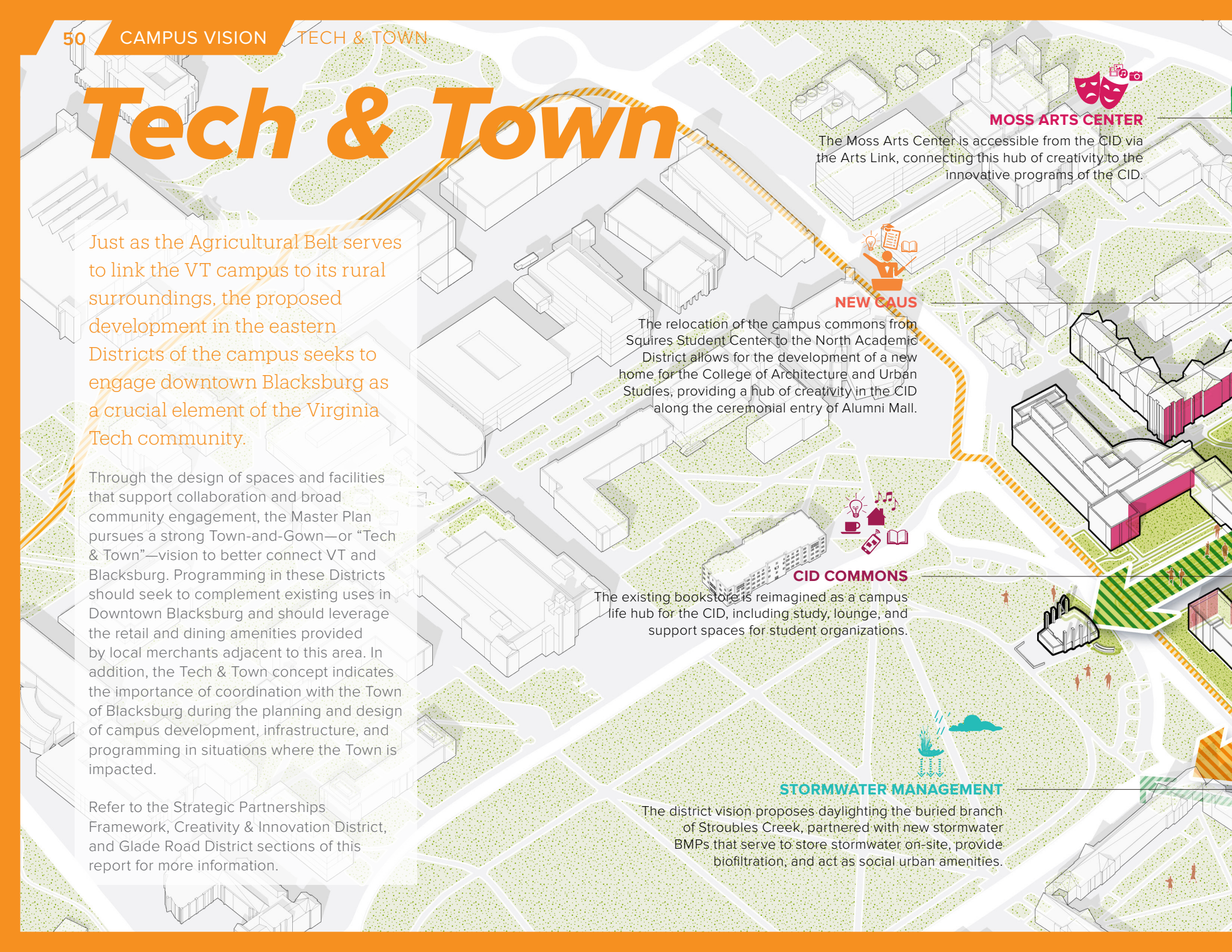

NORTH ACADEMIC DISTRICT
UPPER QUAD & NORTHEAST DISTRICT
CREATIVITY & INNOVATION DISTRICT
21ST CENTURY LIVING-LEARNING DISTRICT
STUDENT LIFE DISTRICT
INTELLIGENT INFRASTRUCTURE CORRIDOR
LIFE SCIENCES & TECHNOLOGY DISTRICT
ATHLETICS & RECREATION DISTRICT
GE

Tech & Town

Just as the Agricultural Belt serves to link the VT campus to its rural surroundings, the proposed development in the eastern Districts of the campus seeks to engage downtown Blacksburg as a crucial element of the Virginia Tech community.

Through the design of spaces and facilities that support collaboration and broad community engagement, the Master Plan pursues a strong Town-and-Gown—or "Tech & Town"—vision to better connect VT and Blacksburg. Programming in these Districts should seek to complement existing uses in Downtown Blacksburg and should leverage the retail and dining amenities provided by local merchants adjacent to this area. In addition, the Tech & Town concept indicates the importance of coordination with the Town of Blacksburg during the planning and design of campus development, infrastructure, and programming in situations where the Town is impacted.

Refer to the Strategic Partnerships Framework, Creativity & Innovation District, and Glade Road District sections of this report for more information.



MOSS ARTS CENTER

The Moss Arts Center is accessible from the CID via the Arts Link, connecting this hub of creativity to the innovative programs of the CID.

NEW CAUS

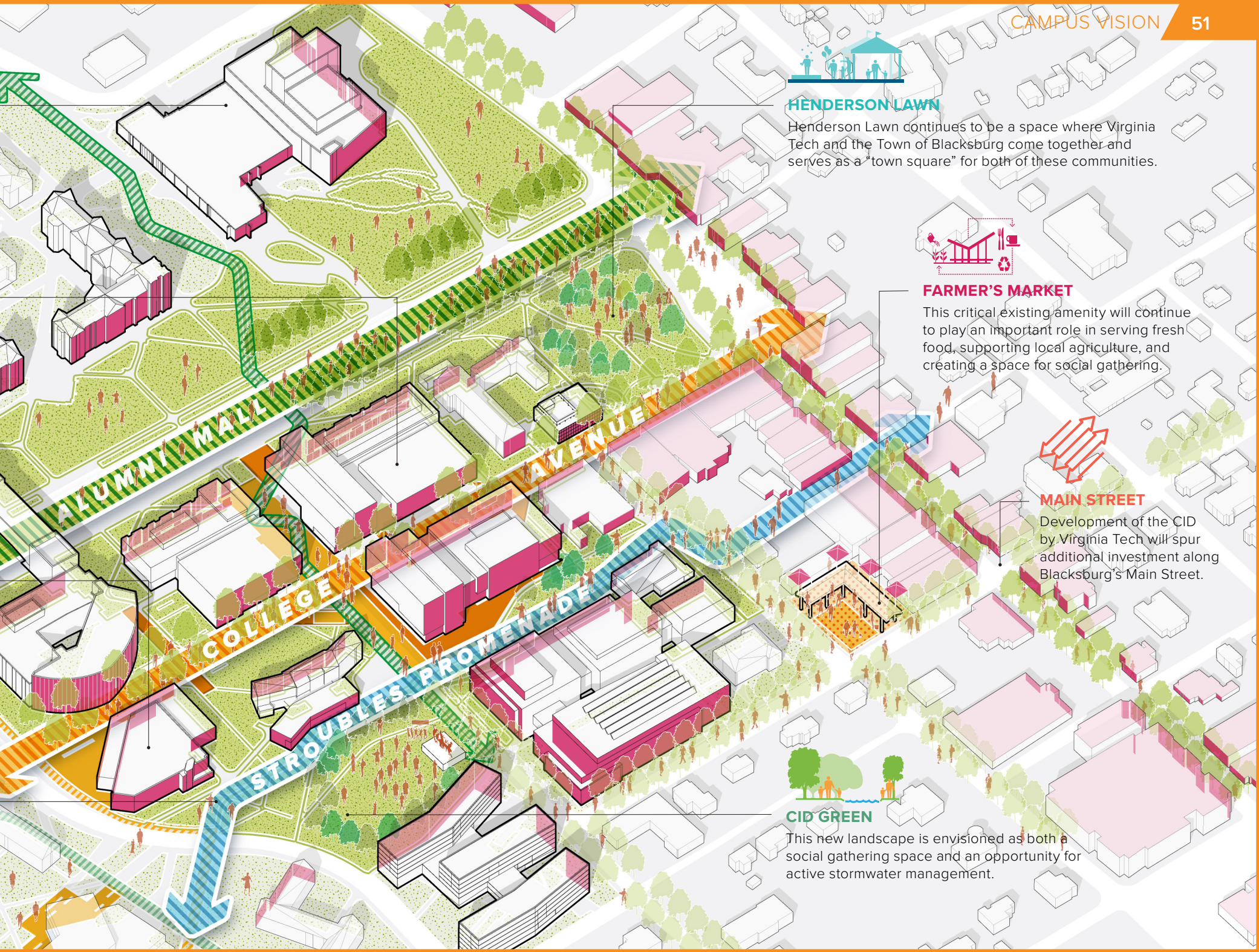
The relocation of the campus commons from Squires Student Center to the North Academic District allows for the development of a new home for the College of Architecture and Urban Studies, providing a hub of creativity in the CID along the ceremonial entry of Alumni Mall.

CID COMMONS

The existing bookstore is reimagined as a campus life hub for the CID, including study, lounge, and support spaces for student organizations.

STORMWATER MANAGEMENT

The district vision proposes daylighting the buried branch of Stroubles Creek, partnered with new stormwater BMPs that serve to store stormwater on-site, provide biofiltration, and act as social urban amenities.



HENDERSON LAWN

Henderson Lawn continues to be a space where Virginia Tech and the Town of Blacksburg come together and serves as a "town square" for both of these communities.

FARMER'S MARKET

This critical existing amenity will continue to play an important role in serving fresh food, supporting local agriculture, and creating a space for social gathering.

MAIN STREET

Development of the CID by Virginia Tech will spur additional investment along Blacksburg's Main Street.

CID GREEN

This new landscape is envisioned as both a social gathering space and an opportunity for active stormwater management.

The Infinite Loop

The Infinite Loop is imagined as an "outer ring" to the iconic Drillfield linking existing and future academic, research and residential Districts. Conceptually, it is intended to assist the University in providing access for all members of the campus community and addressing sustainability objectives.

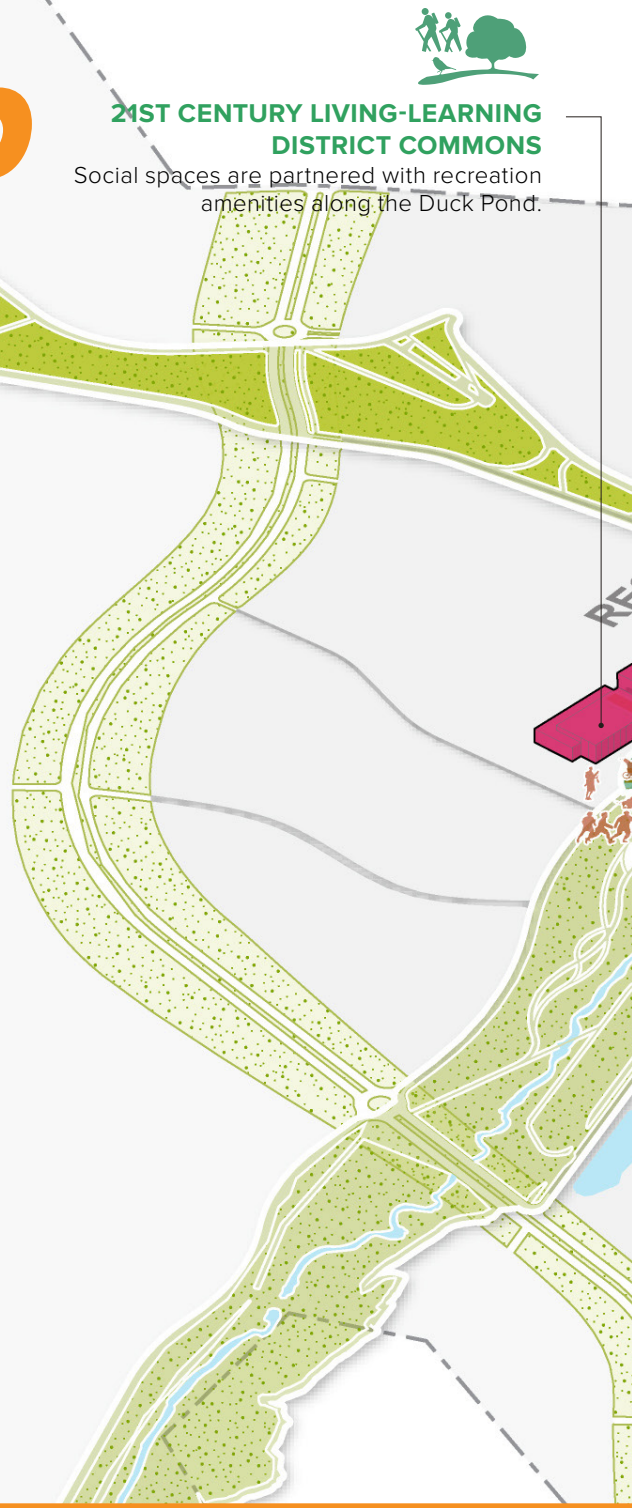
The Infinite Loop (the Loop) is designed to facilitate access for all by eliminating slopes exceeding five percent as well as other vertical impediments to movement. It is woven into the system of north-south Green Links. Collectively the Loop and the Links establish an armature for creating a circulation network that serves the needs of all campus users.

The Loop contributes to the fitness goals of the University by encouraging active transportation. It is designed as a promenade connecting existing and proposed Campus Districts as well as the Campus Commons in those Districts. The Loop is configured to facilitate bicycle access to the various Districts of the campus and is an important component of the proposed regional bike share program.

The Loop provides a rich environment for testing and demonstrating unique infrastructural technologies, including autonomous vehicles and other advanced mobility solutions

21ST CENTURY LIVING-LEARNING DISTRICT COMMONS

Social spaces are partnered with recreation amenities along the Duck Pond.



NORTH ACADEMIC COMMONS

The transformation of Cowgill and Burchard Halls into the North Academic Commons takes advantage of the district's large daytime population.

TECH SQUARE

Burchard Plaza is reimagined as an enhanced "town square" for the entire North Academic District.

CID COMMONS

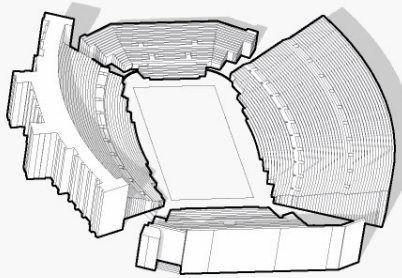
A satellite commons in the existing Bookstore building serves the CID.

NEW OWENS HALL

Owens Hall is replaced with a larger, upgraded facility equipped with dining, ballroom, and lounge spaces.

DIETRICK HALL

This popular dining facility is enhanced to include an outdoor dining terrace and additional gathering spaces.



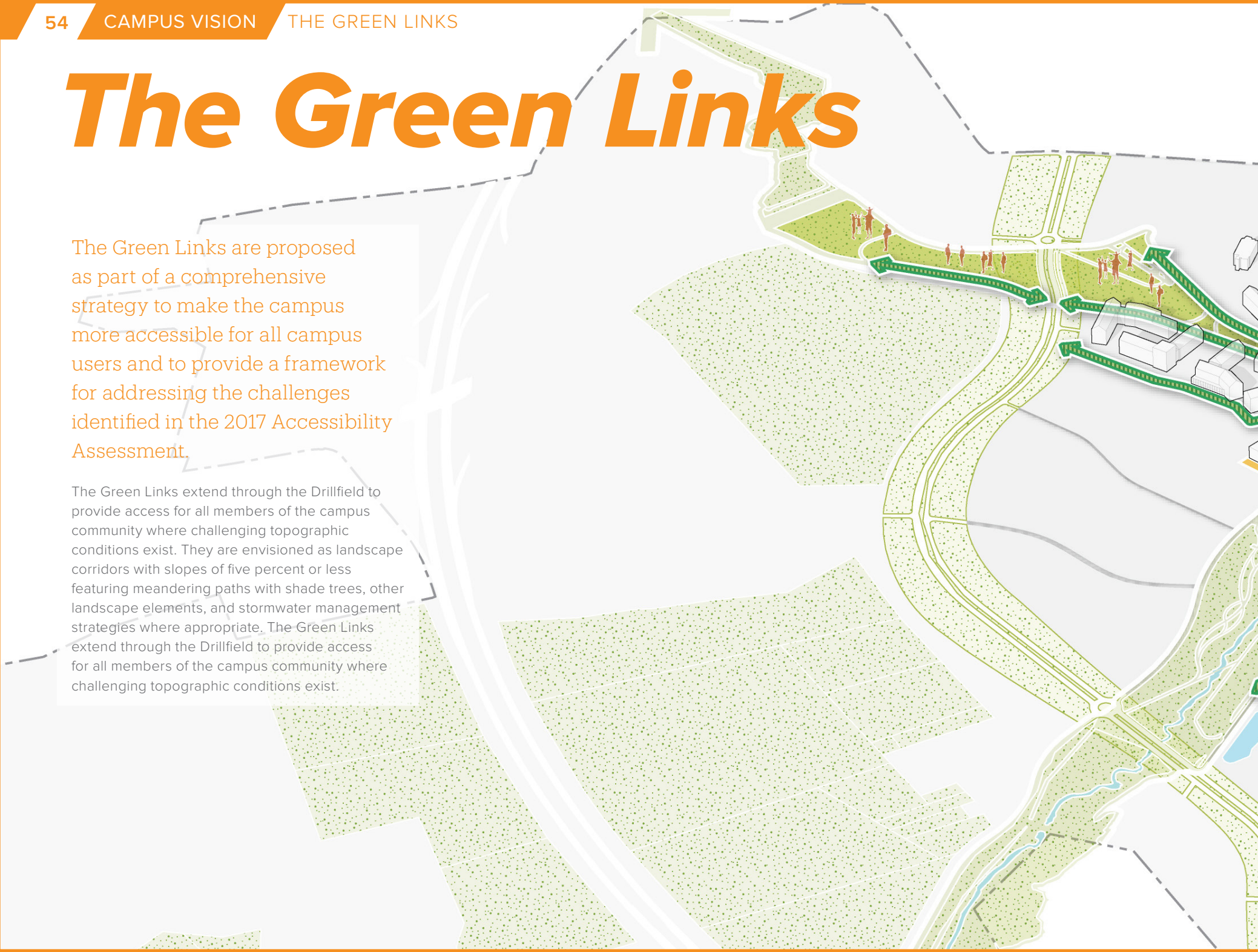
GSS COMMONS

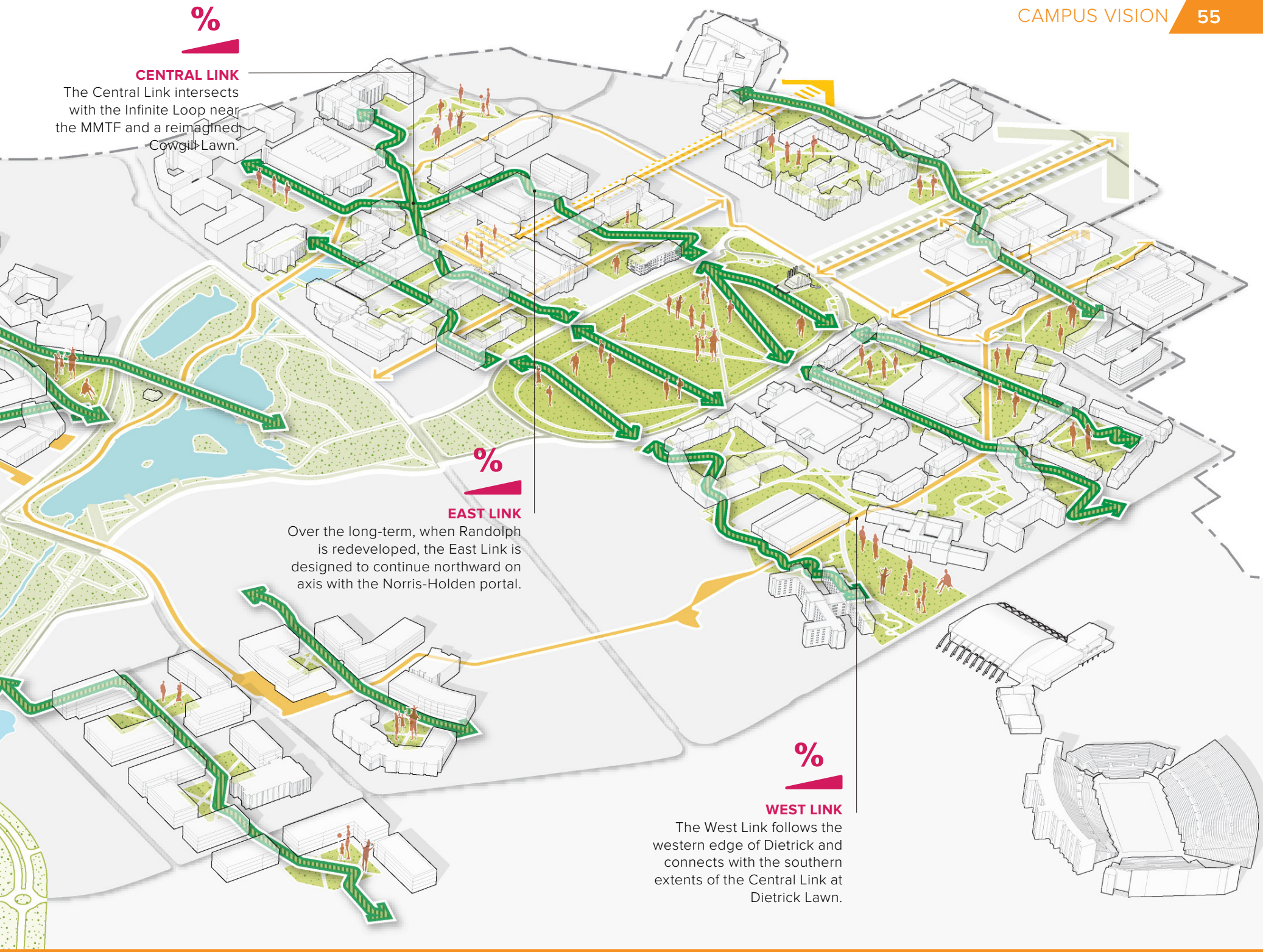
The GSS Commons is located to serve the graduate population engaged in research activities in the LS&T District.

The Green Links

The Green Links are proposed as part of a comprehensive strategy to make the campus more accessible for all campus users and to provide a framework for addressing the challenges identified in the 2017 Accessibility Assessment.

The Green Links extend through the Drillfield to provide access for all members of the campus community where challenging topographic conditions exist. They are envisioned as landscape corridors with slopes of five percent or less featuring meandering paths with shade trees, other landscape elements, and stormwater management strategies where appropriate. The Green Links extend through the Drillfield to provide access for all members of the campus community where challenging topographic conditions exist.





CENTRAL LINK
The Central Link intersects with the Infinite Loop near the MMTF and a reimagined Cowgill Lawn.

EAST LINK
Over the long-term, when Randolph is redeveloped, the East Link is designed to continue northward on axis with the Norris-Holden portal.

WEST LINK
The West Link follows the western edge of Dietrick and connects with the southern extents of the Central Link at Dietrick Lawn.

04

Frameworks

FRAMEWORKS

A Framework is not a final design, but indicates design direction and strategies to help create a physical environment where the campus community can thrive.

The Master Plan's recommendations are organized around six thematic Frameworks for the future of the campus which collectively contribute to a comprehensive and coordinated guide for incremental change.

These Frameworks combine to provide an integrated and comprehensive structure for development and change across the campus. They draw from the Master Plan Drivers, the Key Elements of the Master Plan Vision, and three complementary development themes:

1. The continued concentration of development in the established Districts surrounding the Drillfield
2. The creation of new Districts adjacent to and connected to the Drillfield
3. The protection of the open rural land outside of the established core

The Frameworks are predicated on balancing development in the Districts with Virginia Tech's rural character, reflecting its heritage as a land grant institution. Maintaining this balance supports the missions of the College of Agriculture and Life Sciences and the College of Veterinary Medicine, utilizes campus land efficiently, and promotes a more sustainable pattern of development.

Concentrating development in established and new Districts surrounding the Drillfield will:

- Strengthen an active, lively campus environment
- Reinforce the pattern of human-scaled quadrangles
- Maintain reasonable walking distances within and between Districts
- Minimize the need for extending utilities
- Avoid sprawl and utilize land efficiently
- Establish a sustainable pattern of development.

The Frameworks are designed specifically to be flexible enough to adapt to evolving University strategic priorities and emerging funding opportunities.

FRAMEWORKS

The Frameworks cover a comprehensive array of campus topics, from strategies for organizing human activities to methods for addressing landscape and mobility systems. Each Framework is driven by an aspirational principle highlighting the intent of its recommendations.

01

Academic & Research Framework

ENHANCING LEARNING AND RESEARCH ENVIRONMENTS

The Master Plan provides recommendations for facility renovation, replacement, and construction to address both the practical needs and aspirational goals of the colleges and schools. Transdisciplinary collaboration is promoted through new facilities to support the Destination Areas and Strategic Growth Areas identified in *Beyond Boundaries*.

02

Strategic Partnerships Framework

EXPANDING STRATEGIC PARTNERSHIPS

The outward focus for the University established in Beyond Boundaries is reinforced in the Master Plan by the proposed Destination Areas and public-private partnership facilities designed to facilitate engagement and collaboration between Virginia Tech faculty and students, private sector business partners, outside organizations, and public sector agencies.

03

Campus Life Framework

FOSTERING AN INCLUSIVE CAMPUS LIFE EXPERIENCE

To encourage engagement in the VT Experience, a distributed network of campus commons is proposed to provide social and collaboration spaces for an increasingly diverse University population.

In response to the scale of the campus and the distributed nature of the population, a network of campus commons, food service, and recreation facilities is proposed to enhance the daily routines and mobility patterns of the resident student, commuter student, faculty, and staff populations.

04

Landscape Framework

PROTECTING THE LAND GRANT LEGACY

Virginia Tech's legacy as a land grant institution is evident in the agricultural and pasture lands of the Blacksburg Campus. These lands serve as the labs for agricultural life sciences and natural sciences across all colleges. The Master Plan protects these lands and the natural systems of the campus in support of the programs that rely on these resources and to protect the rural character of the campus periphery – a landscape that forms an essential part of the Virginia Tech identity.

The Master Plan provides a framework for accommodating sustainable campus growth in both existing and future Campus Districts—a framework that aims to improve the campus experience while promoting efficient land use patterns and infrastructure, a balanced approach to mobility and by distributing campus life amenities to serve a diverse and dispersed campus population.

05

Mobility Framework

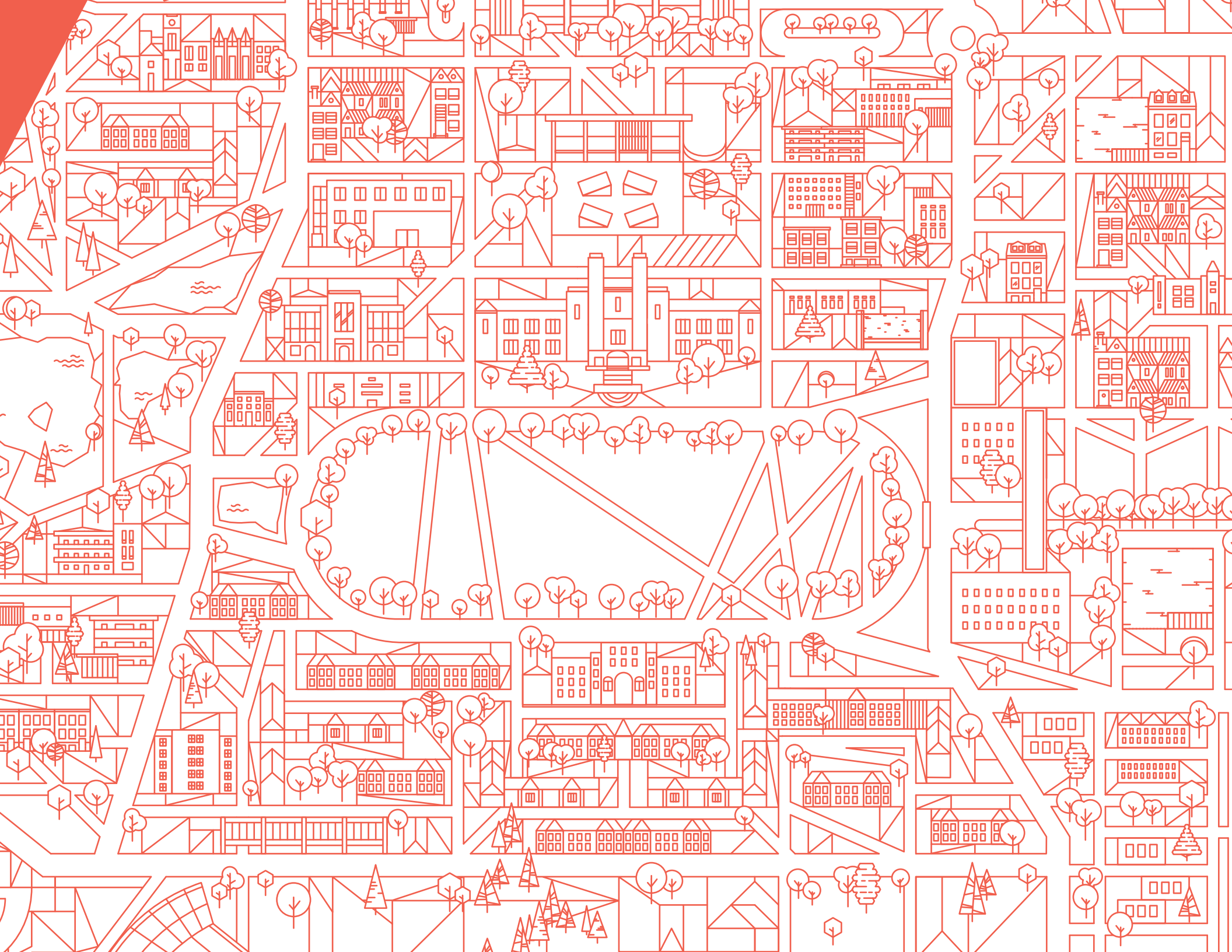
PROMOTING ACCESS AND MOBILITY

As a public university, access is of key importance to Virginia Tech's values and mission. The Master Plan provides a framework for promoting improved physical access throughout the campus—a framework designed to establish an armature for developing a campus-wide system of pathways for use by all members of the VT community.

The Master Plan promotes a balanced approach to mobility—an approach that emphasizes human-powered movement, bicycle, and transit connectivity with the understanding that private auto use is likely to remain an important means of access for the foreseeable future. Emphasis is placed on the user experience for each mode and on reducing transportation related greenhouse gas emissions in support of the sustainability objectives of the University.

Academic & Research Framework





Academic & Research Framework

The Academic & Research Framework sets out programmatic recommendations that identify the facilities needed to support the mission of each of college and school at Virginia Tech

These recommendations take into consideration the existing conditions, projected enrollment increases, aspirational goals, and facilities required to support the Destination Areas and Strategic Growth Areas. They also address the need for innovation, collaboration, and shared research hubs as well as partnership spaces.

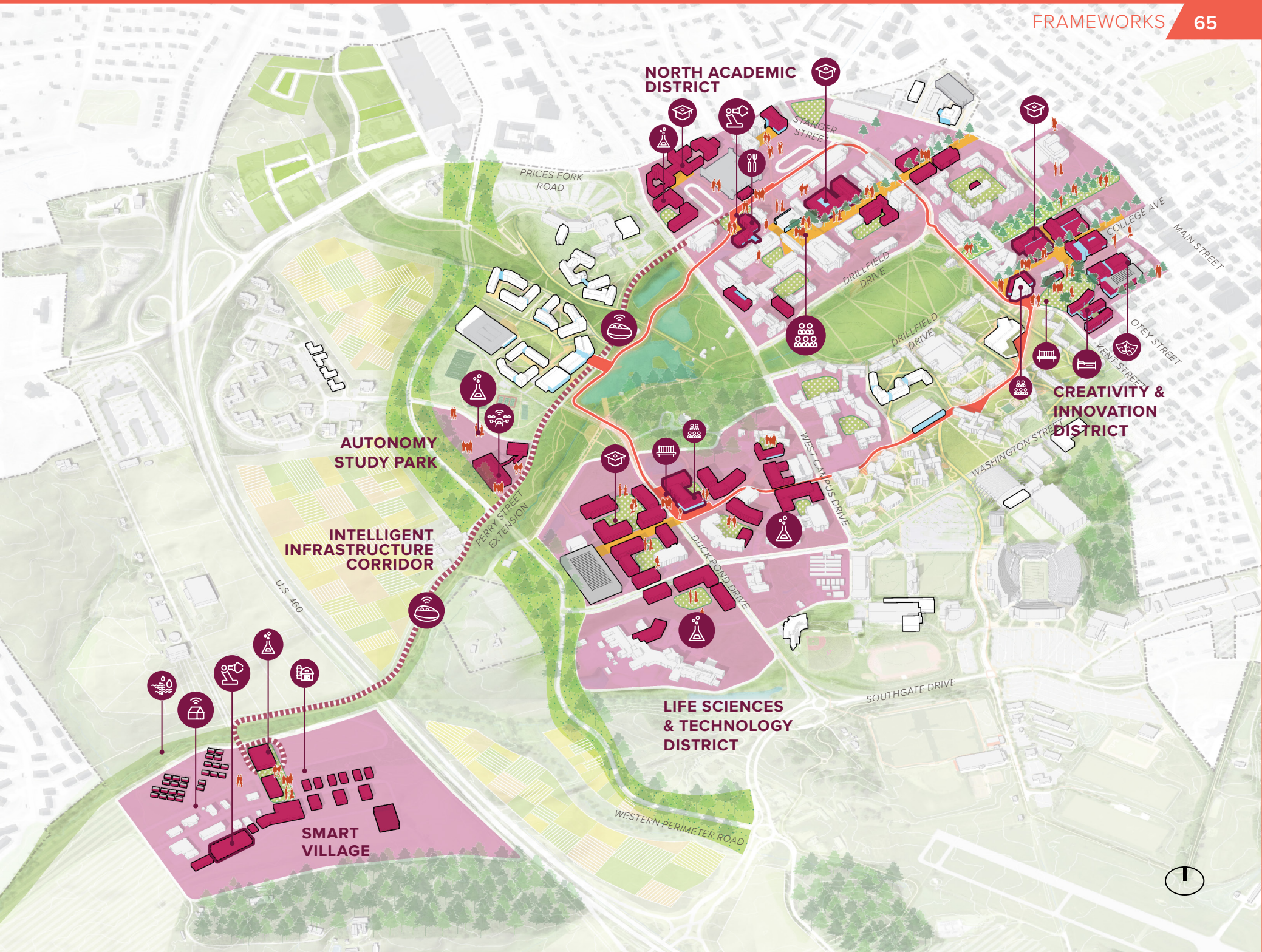
College of Agriculture and Life Sciences (CALS)

Recommendations for CALS include renovation of the Ag Quad to address deferred maintenance as well as current and future space needs. It is suggested that a detailed plan be developed for the Ag Quad as part of future planning studies. These future studies may wish to explore the potential for additional development surrounding the Ag Quad not currently proposed in the Master Plan, including on the surface parking lot west of Price Hall.

Expansion opportunities for CALS are illustrated in the Life Sciences & Technology District. In addition to new facilities, the agricultural land utilized by CALS is protected and maintained in the Master Plan by means of the growth boundary defined by the proposed Agricultural Belt. Additional land is provided on the northern section of the existing golf course (south of Prices Fork Road) to offset losses to roadway construction and potential redevelopment in the Glade Road District.

The acreage of land acquired by CALS to house uses displaced by other development must correspond to the needs of the college. If land adjacent to existing CALS properties is available, it can generally be added at a ratio of 1:1 when compared to the acreage lost to other uses. If non-contiguous land is required, it should be acquired at a ratio of 1.5:1 or 2:1 in order to compensate for the loss of efficiency associated with continuous land holdings. To reduce the need for land, new agricultural technologies can be embraced at CALS facilities. For example, developing a manure composting facility at VT's Kentland property as evaluated by a separate 2018 study would save considerable land acquisition costs compared to continuing the current practice of land application.

Strategies for the relocation of facilities displaced by the planned development of the Glade Road District are discussed in the Peripheral Districts section of this report. A review of these strategies at the time of development may be required to respond to revised needs.


NORTH ACADEMIC DISTRICT
STANGER STREET
PRICES FORK ROAD
DRILLFIELD DRIVE
DRILLFIELD DRIVE
COLLEGE AVE
MAIN STREET
OTEY STREET
KENT STREET
CREATIVITY & INNOVATION DISTRICT
WASHINGTON STREET
WEST CAMPUS DRIVE
AUTONOMY STUDY PARK
PERRY STREET EXTENSION
INTELLIGENT INFRASTRUCTURE CORRIDOR
U.S. 460
DUCK POND DRIVE
LIFE SCIENCES & TECHNOLOGY DISTRICT
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD
SMART VILLAGE

PROGRAMMATIC RECOMMENDATIONS

College of Architecture and Urban Studies (CAUS)

CAUS is currently distributed in several locations on the campus and in leased facilities in downtown Blacksburg. Key facilities include the Cowgill-Burchard complex and the Architecture Annex, both of which are at capacity and offer few opportunities for expansion or consolidation of the programs.

The Master Plan sets out a bold strategy for accommodating growth and consolidation of architecture, landscape architecture, and urban planning programs in a new building located In the Creativity & Innovation District (CID). The new building provides the opportunity for CAUS to redevelop the Squires Student Center site and to construct a building that better reflects the respected ranking and status of the College. Its location also provides the opportunity to build a strong relationship with the proposed public-private partnership (P3) building, Vignette Square, and the proposed Integrated Design facility which promotes collaboration between architecture, industrial design, engineering, business, and the arts.

Additional CAUS academic and research spaces are located in Hitt Hall and the Intelligent Infrastructure Fusion Lab in the North Academic District—buildings associated with the Myers-Lawson School of Construction and the Intelligent Infrastructure for Human-Centered Communities (IIHCC) Destination Area. Further facilities are proposed in the Smart Design and Construction Village, including a High Bay Research Building.

Pamplin College of Business

The College of Business is supported by two new buildings at the southeast corner of Prices Fork Road and West Campus Drive. The Global Business Analytics Complex (GBAC), which includes space for the Data and Decisions (D&D) Destination Area, is envisioned as a gateway architectural statement consolidating the business programs currently located in the existing Pamplin building and the Department of Hospitality and Tourism Management currently located in Wallace. In addition, the Real Estate Program will be a stakeholder in Hitt Hall, to provide cross-program access with CAUS.

College of Engineering

Two major new facilities are identified in the Master Plan to address the needs of the College of Engineering. Both involve the redevelopment of existing buildings with significant deferred maintenance and other issues: Holden Hall and Randolph Hall. Holden Hall is replaced with a taller building making better use of its central location in the North Academic District. Randolph Hall is also identified for redevelopment replacing the existing building with two facilities. Additional expansion sites are identified in the Goodwin Hall area, where a new quadrangle is proposed. The existing Ware Lab and Femoyer Hall sites are also identified for redevelopment over the long-term with the goal of providing new and expanded facilities for the Ware Lab and other programs.

Additional research facilities include the aforementioned Hitt Hall, and several facilities proposed in the Smart Design and Construction Village on Plantation Road including additional Ware Lab and Capstone project lab space.

College of Liberal Arts and Human Sciences (CLAHS)

CLAHS is currently located in several buildings in the Upper Quad and in Wallace Hall. Redistribution of the various programs is proposed in the interest of efficiency, cost, and program delivery. Space for growth is necessary for the College. The recommended approach is as follows:

Life Span Services Building

The existing adult day center and child care center located in Wallace Hall are relocated in the Master Plan to a new or repurposed facility in the Corporate Research Center (CRC). The idea is to create a center outside the campus core where human development programs that engage children and members of the public can be located where convenient auto access and parking are possible.

Space in Wallace Hall vacated by the relocation of the adult day and child care centers and the Department of Hospitality and Tourism Management can be repurposed for the consolidation and expansion of the growing undergraduate and graduate educational programs.

Upper Quad District

The humanities and social science programs of CLAHS are concentrated in the Upper Quad District buildings including Major Williams, Shanks,

and Lane. The administrative offices and home base for the college are planned for the old YMCA building. Additional space for expansion, including offices, academic spaces, and flexible spaces for creative initiatives is accommodated in a future facility planned to replace Femoyer Hall.

Lane Hall, the oldest and most historic building of the campus, is reimagined in the Master Plan as a center for the humanities and social sciences. The idea is to sensitively renovate the building while addressing significant vertical circulation, accessibility, and life safety problems. This idea is achieved by means of an addition to the north side of the building where new stairways, elevators, and restroom facilities are possible.

Creativity & Innovation District

Within the Creativity & Innovation District (CID), CLAHS is accommodated in the future Music and Arts Complex which includes spaces for instruction, rehearsal, and recitals.

College of Natural Resources and Environment (CNRE)

To address the current and future needs of the College of Natural Resources and Environment, the proposed Global Systems Science (GSS) building in the Life Sciences & Technology District provides the opportunity for collaboration between the CNRE, College of Science, College of Engineering, CLAHS, CALS, and others to address the dynamic interplay between natural and social systems.

Additional areas for growth include the facilities at Center Woods and the Thomas M. Brooks Forest Products Center in the Corporate Research Center. An addition to Cheatham Hall could also be considered.

College of Science

In response to previous and anticipated growth, the following facilities are identified for the College of Science in the North Academic District:

- An undergraduate lab building north of New Classroom Building
- A long-term classroom/lab building between the proposed undergraduate lab and GBAC
- A future science building designed as a companion facility to Robeson,
- An westward expansion of Hahn Hall
- The D&D component of the GBAC

College of Veterinary Medicine (CVM)

Known and future programmatic needs of the College of Veterinary Medicine are accommodated in the Master Plan in both new facilities and land use areas. Proposed new facilities include:

- An expansion of the Large Animal Teaching Hospital
- A new animal handling facility
- Pasture land requirements are protected and expanded in the Master Plan

Honors College

Once the Graduate Life Center is relocated to Hillcrest, headquarters and support space for the Honors College is proposed in this historic portion of Donaldson-Brown, a stately structure befitting of the image of the Honors College. Further, this location allows the College to benefit from the collaborative convergence of design, engineering, and the arts envisioned for the surrounding Creativity & Innovation District. In advance of a relocation, students in the growing Calhoun Honors Discovery Program will make use of new collaborative learning spaces in the North Academic, Creativity & Innovation, and Life Sciences & Technology Districts.

Graduate School

The Master Plan recommends creating a network of graduate support facilities across the campus in response to the distributed nature of the graduate population. Potential facilities include:

- A new Graduate Life Center in Hillcrest Hall to consist of academic, support, and social spaces in addition to graduate housing via an expansion of Hillcrest
- A graduate life social hub in the proposed North Academic Commons to serve graduate students based in the North Academic District
- A Graduate Village comprised of a variety of housing types, family support spaces—including affordable child care, and academic / professional facilities in the Glade Road District (see Peripheral Districts for details)

INNOVATION, COLLABORATION, AND SHARED RESOURCES

The Master Plan identifies opportunities for establishing a network of innovation and collaboration hubs.

Generally associated with proposed buildings, these hubs support academic and research collaboration as well as the consolidation of shared research resources that include expensive equipment and other commonly utilized support lab facilities. The proposed framework distributes the hubs to serve key disciplines. Emphasis is placed on building this network over time as new facilities are constructed.

North Academic District

Proposed construction in the North Academic District presents several opportunities to introduce innovation, collaboration and shared resource hubs. Opportunities include:

- GBAC – shared data-analytics collaboration hub
- Future Science Building – teaching / research shared resource hub
- Hitt Hall and Intelligent Infrastructure Fusion Labs – shared robotics and other technical resource hub
- Randolph Hall – engineering innovation hub and teaching / research shared resource hub
- Future Science Building – science innovation, teaching, and research shared resource hub

Creativity & Innovation District

Potential hubs and shared facilities in the CID include the following:

- Vignette Square (P3 Building) – digital media and immersive technology shared resource hub
- Integrated Design Building – shared studio, collaboration and innovation hub supporting transdisciplinary initiatives in “Design Thinking”
- CID Living-Learning Commons – shared studio, collaboration, and engagement hub for students involved in CID activities and programs

Life Sciences & Technology District

Over the long-term, new construction provides several opportunities for creating innovation and shared resource hubs. In the interest of cost and operational efficiency, such hubs are an important consideration for all future buildings, including the Global Systems Science (GSS) Building. Opportunities for GSS include an innovation hub for life sciences and a shared resource hub for research.

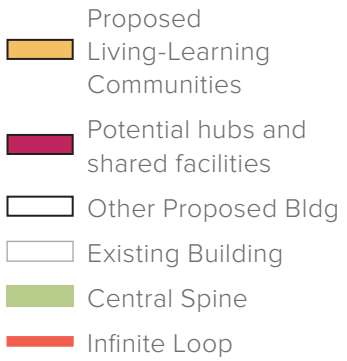
Intelligent Infrastructure Corridor

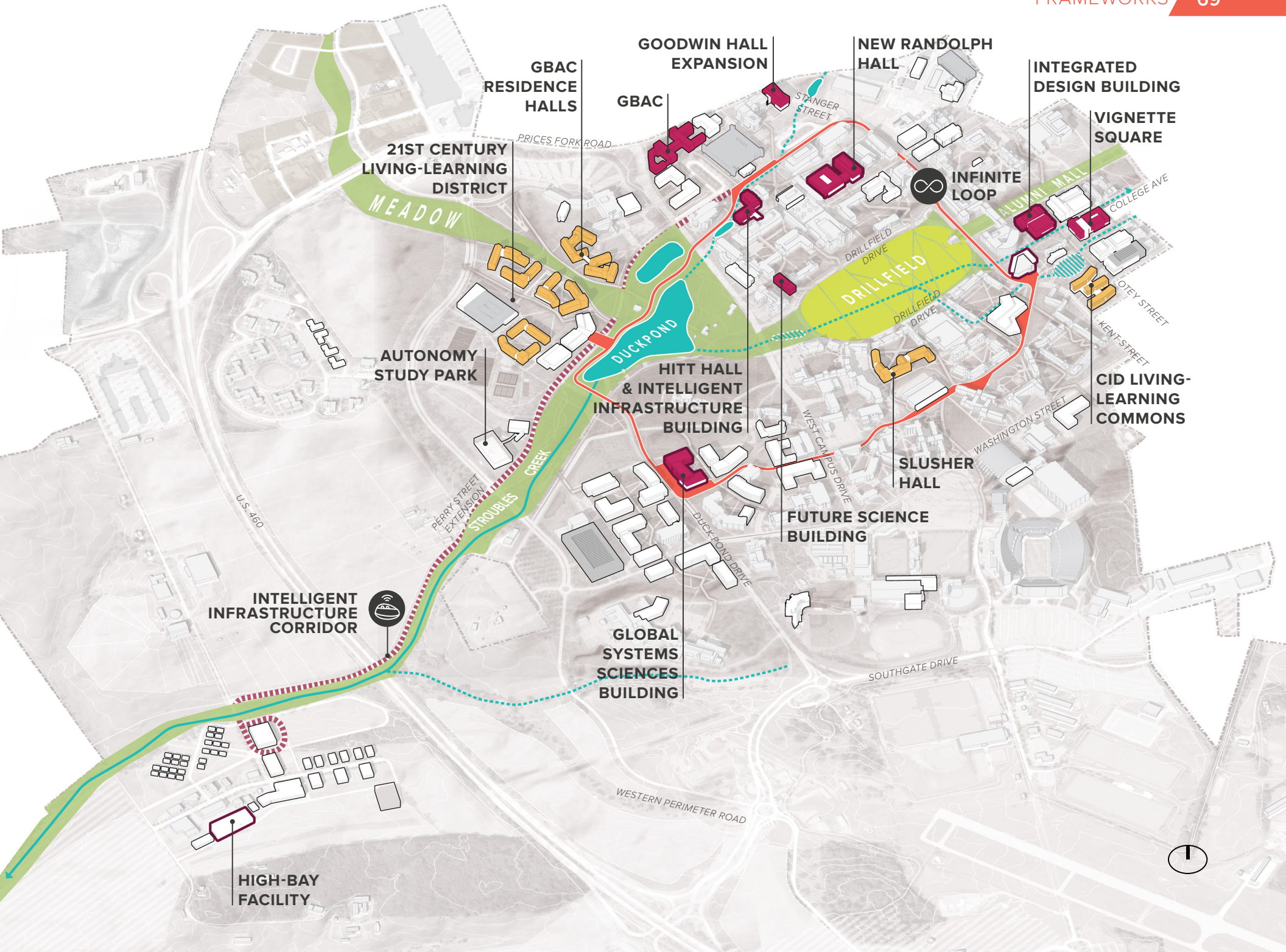
Extending from the North Academic District to the Smart Design and Construction Village at Plantation Road, the Intelligent Infrastructure Corridor serves as a testing ground for a variety of technologies related to energy, transportation, sustainability, and health.

The corridor and the facilities proposed along it such as Hitt Hall, the Intelligent Infrastructure Complex, the Autonomy Study Park, and the High-Bay Facility in the Smart Village are conceived as spaces where students and faculty from a variety of disciplines—architecture, business, engineering, life sciences, physical sciences, and others—can collaborate, research, and explore.

Residential Districts

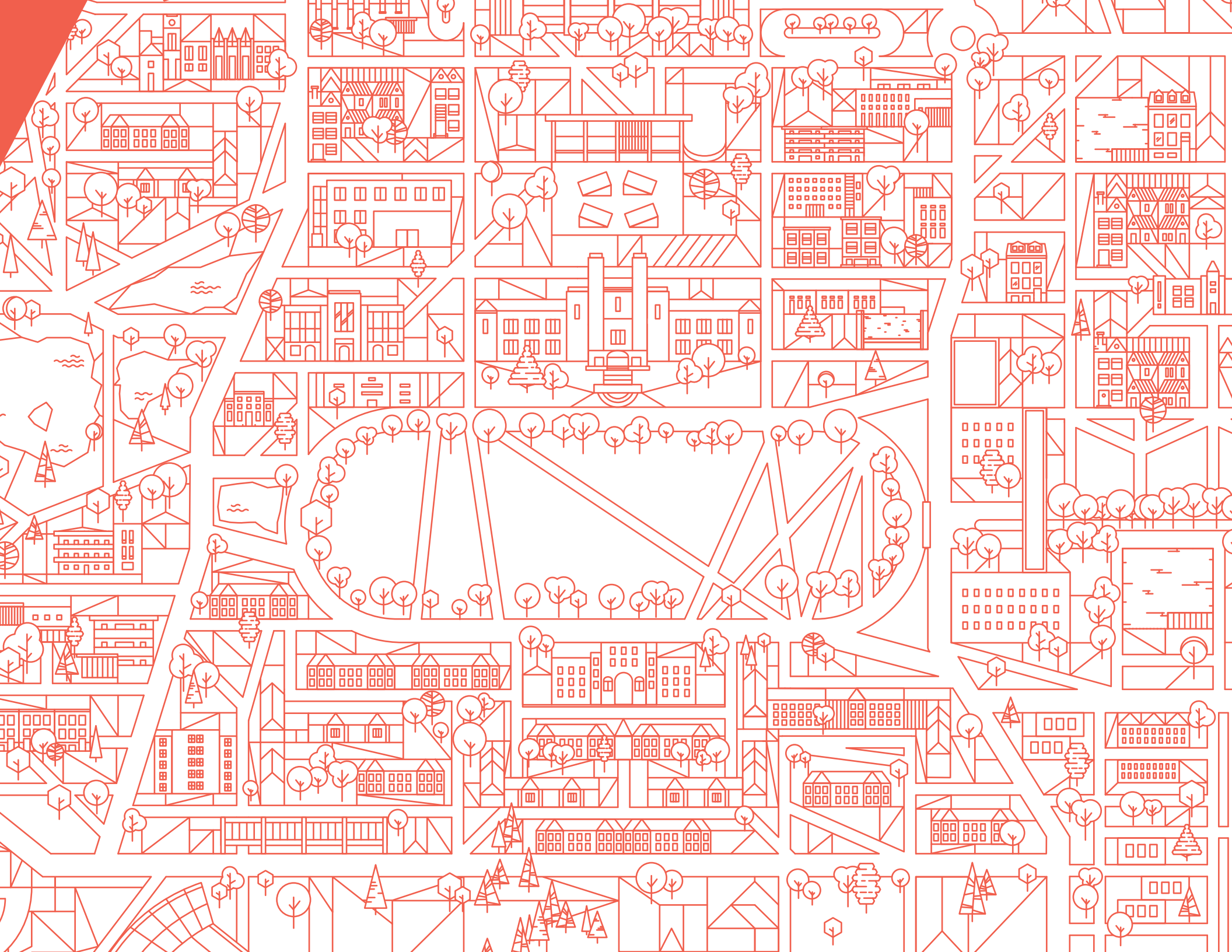
The existing living-learning centers distributed across the Student Life District are an important part of the hub network. Expansion of the network is proposed in the CID Living-Learning Commons as well as in the 21st Century Living-Learning District, notably in the GBAC residence halls which are planned to include living-learning centers in support of the GBAC program. These halls are planned to feature collaboration environments as well as faculty-in-residence apartments.




GOODWIN HALL EXPANSION
NEW RANDOLPH HALL
GBAC RESIDENCE HALLS
GBAC
INTEGRATED DESIGN BUILDING
VIGNETTE SQUARE
21ST CENTURY LIVING-LEARNING DISTRICT
INFINITE LOOP
AUTONOMY STUDY PARK
HITT HALL & INTELLIGENT INFRASTRUCTURE BUILDING
CID LIVING-LEARNING COMMONS
SLUSHER HALL
FUTURE SCIENCE BUILDING
INTELLIGENT INFRASTRUCTURE CORRIDOR
GLOBAL SYSTEMS SCIENCES BUILDING
HIGH-BAY FACILITY
MEADOW
DUCKPOND
DRILLFIELD
ALUMNI MALL
STANGER STREET
PRICES FORK ROAD
COLLEGE AVE
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
WASHINGTON STREET
WEST CAMPUS DRIVE
DUCK POND DRIVE
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
STROUBLES CREEK
U.S. 460

Strategic Partnerships Framework





Strategic Partnerships Framework

Partnerships with industry, businesses, and other institutions and organizations are central to the vision for Virginia Tech. The Master Plan highlights several opportunities for accommodating Virginia Tech's partners on the campus.

Vignette Square

A public-private-partnership (P3) building is planned in the Creativity & Innovation District (CID) to engage business, institutional, and community partners interested in design thinking, media, and digital arts. It is seen as a major catalyst for supporting the goals and objectives of the CID.

The building will feature office, research, meeting, and exhibition space to facilitate collaboration between VT faculty and students and those outside entities that would like to partner with VT. The facility will enable VT's partners to establish a presence on the campus and in downtown Blacksburg.

VT's partners will gain access to emerging research and talent at VT, faculty and researchers will gain access to potential business and commercialization partners, and students will gain access to potential internship and long-term employment opportunities.

The building's proposed exhibition space will enable the University and its collaborators to showcase the outcomes of their partnership activities, hold conferences that are relevant to their combined work, host other campus events, and provide local businesses and community members with the opportunity to engage with the University and its partners.

Hitt Hall and the Intelligent Infrastructure and Fusion-Lab

A center for construction industry-related research and innovation activities and a home for the Building Construction Program is proposed in the North Academic District. The integrated Fusion Lab, maker spaces, and outdoor "sandbox" testing area provide visibility for VT's work in Intelligent Infrastructure and encourage collaboration with outside partners (see Intelligent Infrastructure Corridor for details).

Smart Design and Construction Village

The Smart Design and Construction Village is where several opportunities exist to engage private partners in engineering, architecture, and building construction as well as other areas associated with the IIHCC Destination Area.

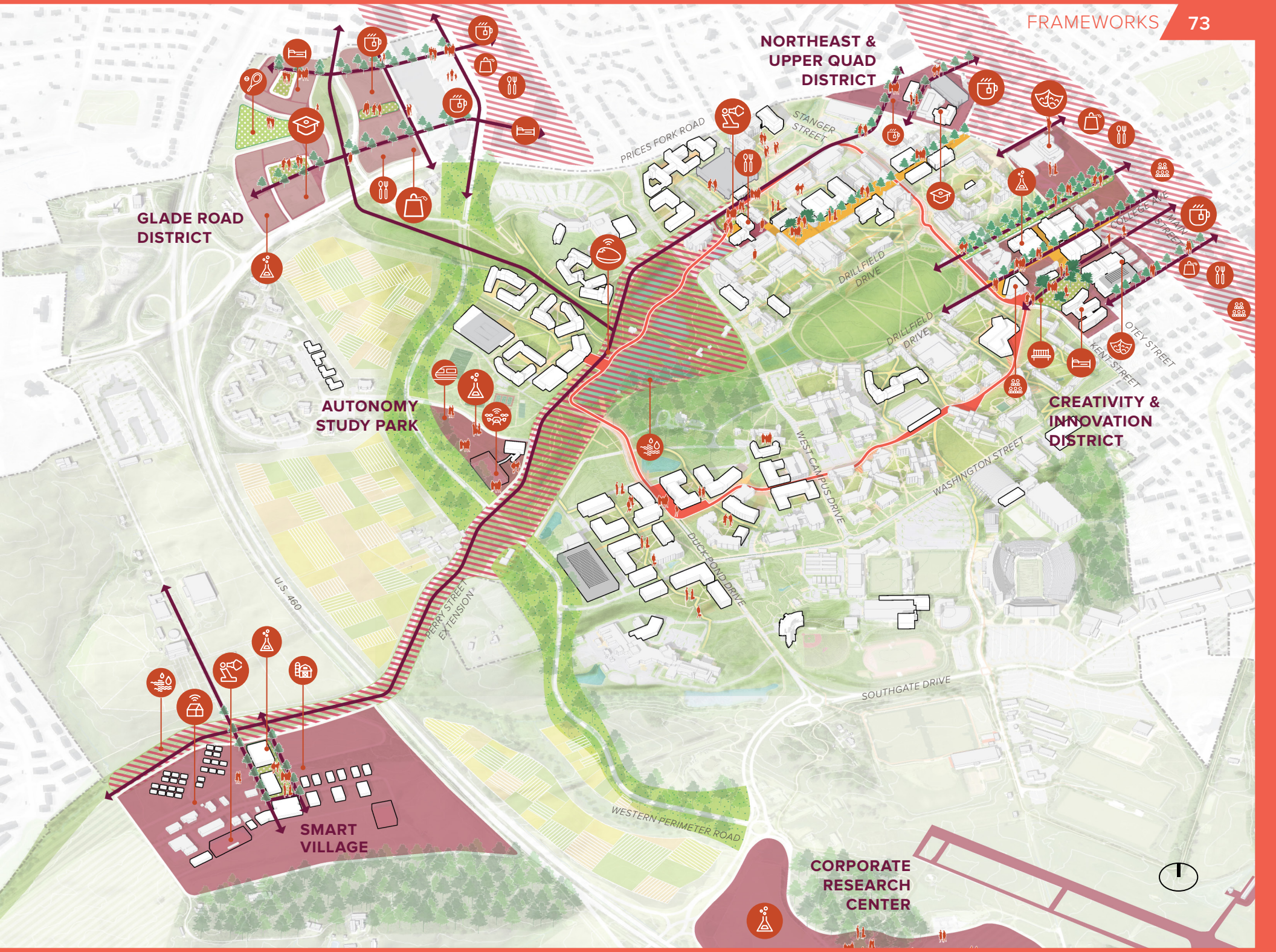
Northeast & Upper Quad District and Glade Road

Public-private development opportunities are possible in support of programmatic and revenue generation goals in the Upper Quad & Northeast District and the Glade Road District. This includes mixed-use development offering amenities, housing, office, and other facilities that support the overall quality of life for both the VT and broader Blacksburg communities.

The Glade Road District in particular is seen as an opportunity to develop a walkable urban environment that simultaneously provides a high quality of life and continued revenue generation. Existing facilities in this area will need to be relocated to the Agricultural Belt, the Life Sciences & Technology District, and other areas of campus as deemed appropriate (see Peripheral Districts for details).

The Corporate Research Center

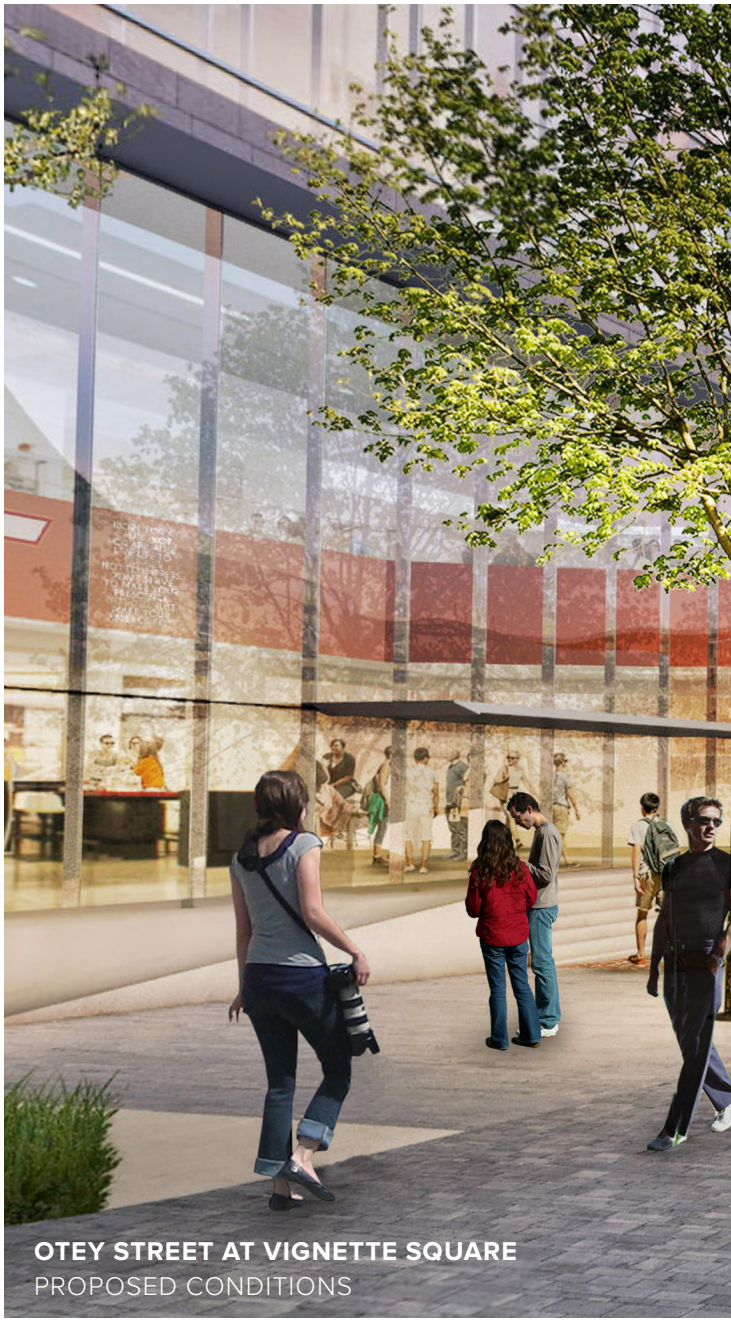
Situated on 230 acres just south of campus, the Corporate Research Center (CRC) is home to over 180 technology and support companies and employs over 3,000 workers. Strengthening connections with the CRC—both physical and programmatic—enhances potential partnership opportunities for VT by leveraging the CRC's corporate and government research relationships.


NORTHEAST & UPPER QUAD DISTRICT
GLADE ROAD DISTRICT
AUTONOMY STUDY PARK
CREATIVITY & INNOVATION DISTRICT
SMART VILLAGE
CORPORATE RESEARCH CENTER
PRICES FORK ROAD
STANGER STREET
DRILLFIELD DRIVE
COLLEGE AVE
MAIN STREET
OTEY STREET
KENT STREET
WEST CAMPUS DRIVE
WASHINGTON STREET
DUCK POND DRIVE
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
U.S. 460

The P3 Building, Vignette Square, looks out on a new pedestrian plaza at the intersection of Otey Street and College Avenue which provides around-the-clock vibrancy and fuels collaboration between VT and its strategic partners.



OTEY STREET AT COLLEGE AVENUE
EXISTING CONDITIONS

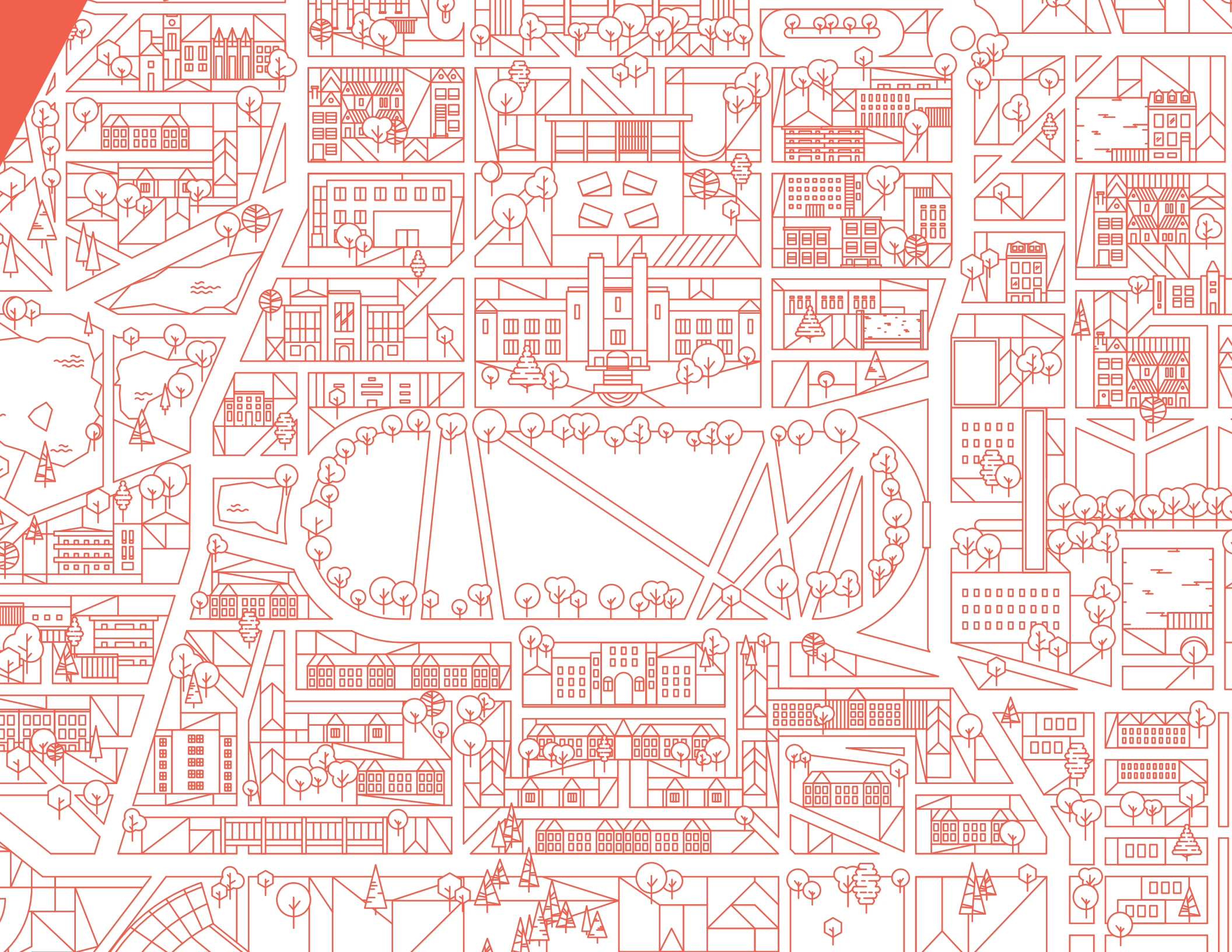


OTEY STREET AT VIGNETTE SQUARE
PROPOSED CONDITIONS


VOX

Campus Life Framework

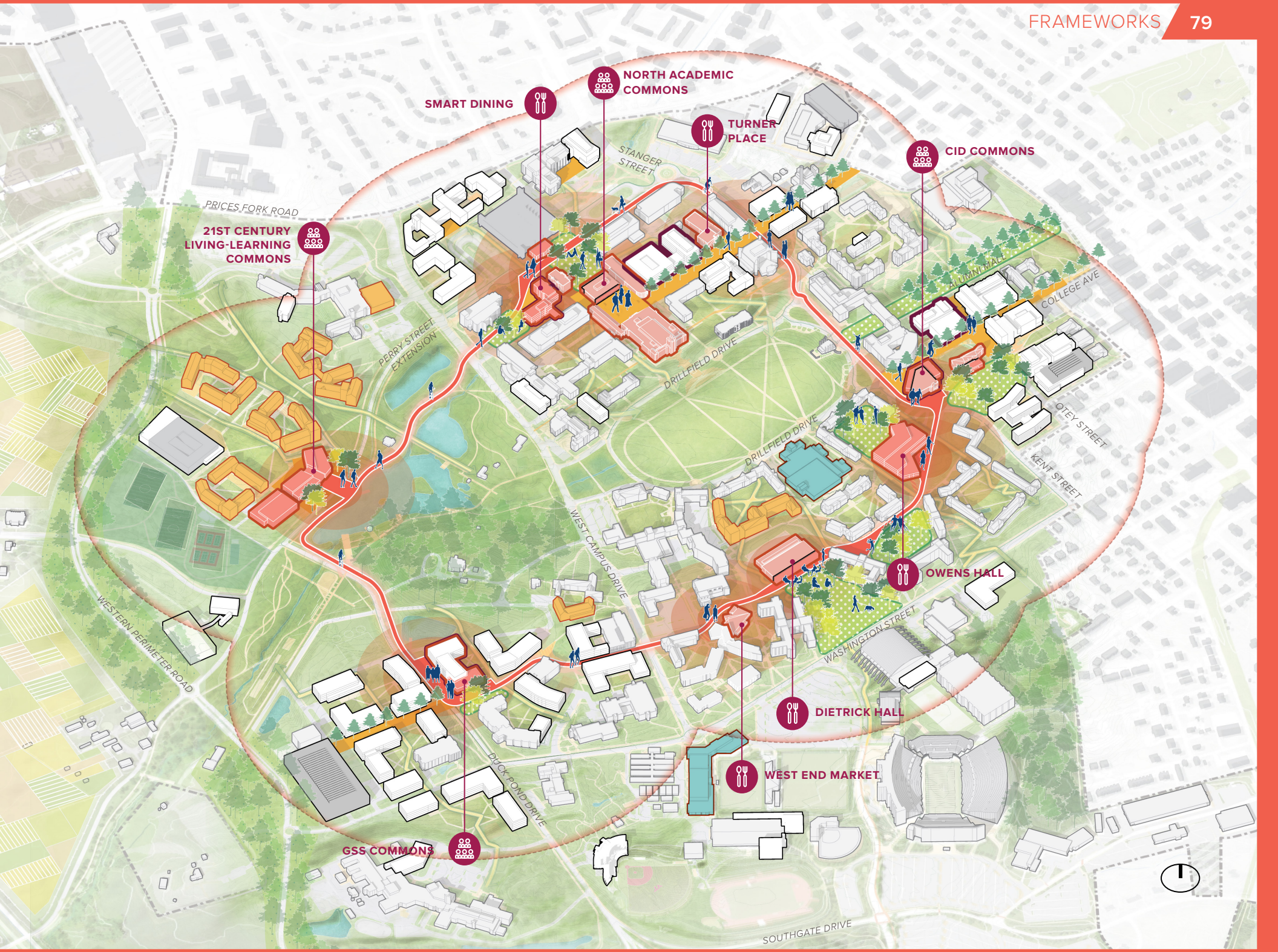




Campus Life Framework

The Master Plan seeks to foster an inclusive campus life experience by providing the amenities, commons, residential communities, and recreation areas that contribute to the quality of life on the Virginia Tech campus.

This begins with a framework that includes the facilities, fields, and landscapes that foster collegial interaction and is planned to respond to the needs of a more diverse student population. The framework supports campus life by establishing a network of amenities to serve the entire university community. Community is addressed at the following levels: 1) Campus Commons, 2) dining and food service locations, 3) residence halls, 4) recreation facilities, and 5) health facilities. The network addresses the various population groups of the campus including resident students, “resi-muters” (those living off-campus within a walking and biking distance), commuter students, faculty, staff, and the broader community consisting of alumni, local residents, visitors, and business and industry partners.


NORTH ACADEMIC COMMONS
SMART DINING
TURNER PLACE
CID COMMONS
21ST CENTURY LIVING-LEARNING COMMONS
OWENS HALL
DIETRICK HALL
WEST END MARKET
GSS COMMONS
PRICES FORK ROAD
STANGER STREET
PERRY STREET EXTENSION
DRILLFIELD DRIVE
ALUMNI MALL
COLLEGE AVE
OTEY STREET
KENT STREET
WEST CAMPUS DRIVE
WASHINGTON STREET
WESTERN PERIMETER ROAD
DUCK POND DRIVE
SOUTHGATE DRIVE

CAMPUS COMMONS

The proposed network of Campus Commons responds to the limitations of current facilities and conditions.

- The campus lacks a comprehensive student center; Squires is not adequately sized or located to serve the entire student population, nor does it provide the gathering and social spaces needed to support all of the student engagement objectives of the University.
- The North Academic District is the center of daytime activity and population density but lacks adequate space for social and academic engagement
- The Graduate Life Center is not conveniently located for much of the dispersed graduate student population on the campus.

In response to the scale of the campus and the dispersed nature of the campus population, a distributed model of Campus Commons is proposed in the following locations: 1) North Academic District (Cowgill Hall), 2) Creativity & Innovation District (bookstore building), 3) Owens Hall (renovation or new construction), Dietrick (including proposed renovation), 4) Life Sciences & Technology District (in the Global Systems Science [GSS] Building), and 5) 21st Century Living-Learning District (future facility). Each of these facilities is linked by the proposed Infinite Loop with the goal of providing a distributed, yet connected network of amenities and campus services responsive to the needs of the various user groups. The commons are considered to be a key component of a campus-wide network consisting of gathering and lounge spaces in existing buildings as well as those proposed for new buildings.

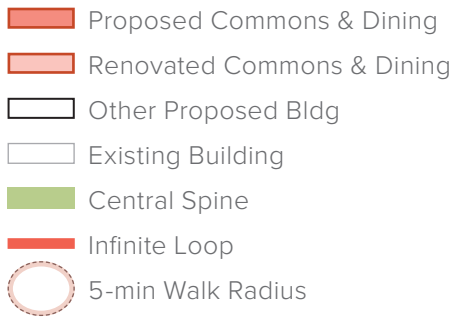
Ballroom facilities displaced by the proposed demolition of the Squires Center will be accommodated in three distributed locations: 1) flexible exhibition space in the P3 building, Vignette Square; 2) a ballroom and banquet hall addition to the Inn at Virginia Tech; and 3) the expansion of large-scale dining and event space in a renovated Owens Hall.

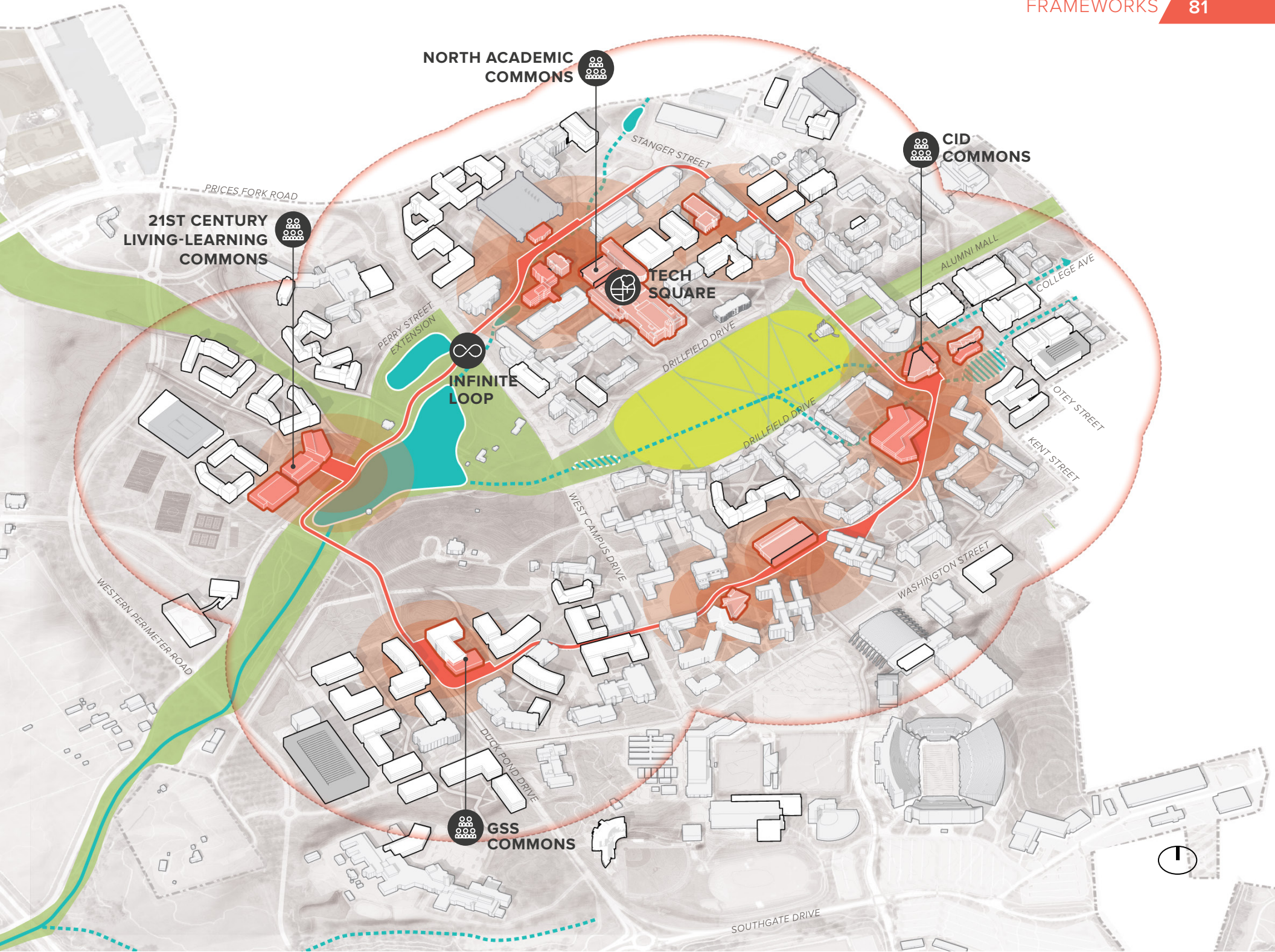
The distributed approach to campus life also applies to the graduate population. Over the long-term, it is recommended that the services and functions provided in the Graduate Life Center (GLC) be redistributed to better serve the population. To that end, graduate commons are proposed in Hillcrest Hall, the North Academic Commons, and Glade Road.

North Academic Commons

The transformation of Cowgill and Burchard Halls into the North Academic Commons is one of the bold recommendations of the Master Plan. The rationale for this transformation is based on the population density of the North Academic District and the existing lack of amenities. Cowgill and Burchard, currently home to the College of Architecture and Urban Studies (CAUS), are situated at the “center” of academic life and population density in the District as evidenced by the number of classroom and lab hours scheduled by the registrar. Over 6,400 people are scheduled to be in the classrooms and labs of the District during peak hours, more than any other District. This overall level of activity is anticipated to increase once the proposed Multi-Modal Transit Facility (MMTF) is completed, making the District the portal into and out of the campus for most of the commuting population. These factors, combined with the expansion and consolidation needs of CAUS, support the idea of relocating CAUS and transforming Cowgill and Burchard into the main Campus Commons.

The vision is to create a true campus center at the heart the day-time population—a vision that transforms existing buildings and exterior spaces including Cowgill and Burchard Halls, GBJ, Burchard Plaza, and Cowgill Lawn. Cowgill and Burchard are reimagined as the hub of informal student gathering and activities as well as the center for student organizations and cultural centers. Renovation of GBJ also is proposed to centrally position the Student Success Center—the main location for academic support services




NORTH ACADEMIC COMMONS
CID COMMONS
21ST CENTURY LIVING-LEARNING COMMONS
TECH SQUARE
INFINITE LOOP
GSS COMMONS
STANGER STREET
PRICES FORK ROAD
PERRY STREET EXTENSION
DRILLFIELD DRIVE
ALUMNI MALL
COLLEGE AVE
OTEY STREET
KENT STREET
WEST CAMPUS DRIVE
WASHINGTON STREET
WESTERN PERIMETER ROAD
DUCK POND DRIVE
SOUTHGATE DRIVE


COWGILL COMMONS
HOKIES
VIRGINIA TECH



A reimagined Cowgill Hall becomes the North Academic Commons, an active, transparent, social hub occupying a central location and fronting the reconceived plaza of Tech Square.



COWGILL HALL
EXISTING CONDITIONS

as well as a Graduate Life satellite center. Burchard Plaza is reimagined as Tech Square, a space featuring outdoor study and gathering spaces. A new lawn north of Cowgill, is proposed to provide an outdoor event and performance space. For specific details on the North Academic Commons, please see the North Academic District section of this report.

North Academic District Social Space Network

In the North Academic District, a network of social spaces is proposed in new buildings as well as in renovated spaces in existing buildings. The intent is to distribute these facilities until such time that the proposed North Academic Commons is complete. These spaces are positioned such that they become part of the daily pattern of movement through the campus. The proposed locations of lounge and gathering spaces across the District include several “found” spaces within existing buildings, such as the proposed Tech Cave. Located in the Burruss Tunnel, the Tech Cave is imagined as a coffee shop and lounge space on one of the major east-to-west pathways of the campus.

Creativity & Innovation District Commons (CID)

The Master Plan calls for the renovation and transformation of the existing Bookstore to create a new CID Commons—a facility envisioned as a technology-enabled environment for informal social engagement and collaboration activities. This will require the Bookstore to be relocated to another facility, such as Vignette Square.

Global Systems Science (GSS) Commons

A new commons is proposed in the Life Sciences & Technology (LS&T) District in conjunction with the Global Systems Science (GSS) building. This facility is intended to serve the population of the District as well as commuters utilizing the adjacent “Cage” Lot. The idea is to create a combined campus center and transit hub, or portal, for commuters as they transition from their cars to the campus transit system. In addition to the commuting population, the Commons is located to serve the graduate population engaged in research activities in the LS&T District. To that end, the Commons is planned to include waiting areas for transit services, lounge areas, food service, graduate services to support those in nearby Hillcrest Hall, and commuter services.

21st Century Living-Learning District Commons

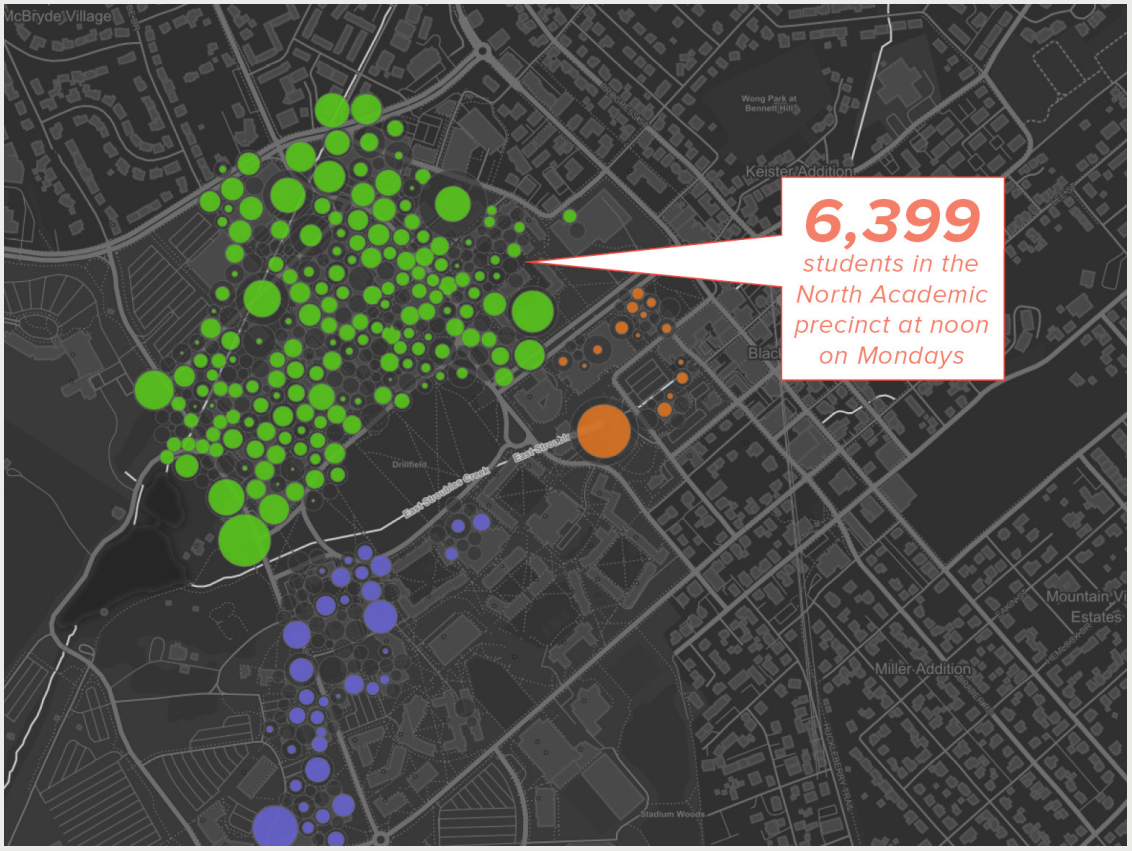
A new Campus Commons and an associated recreation center are proposed for the 21st Century Living-Learning District. This future facility is planned to serve the estimated 2,800 residents of the District as well as the adjacent Oak Lane neighborhood. The Commons is positioned to offer views overlooking the Duck Pond. Recommended spaces include lounges, meeting rooms, dining services, and other amenities for the resident population as well as the commuting population parking in the adjacent interim surface lots and long-term garage proposed in the District.

A future recreation center is integrated with the Commons to create a destination for the broader campus community, support the proposed increase in enrollment, and provide additional space for activities that cannot be supported in the other recreation centers. For example, the outdoor adventure program could be located in this facility where space and convenient auto access are possible. Adjacent recreation field space is also proposed.

University Libraries

A distributed approach is also recommended for VT’s library system in order to better serve all students. Additional satellite locations for specific services of the library may be incorporated into new Campus Commons as well as other new and renovated facilities.

DATA & ANALYSIS



Patterns of Use

During peak daytime hours, nearly 6,400 students occupy the North Academic District (NAD), dwarfing the number of students in either the Creativity & Innovation District (CID) or the Life Sciences & Technology District. While a distributed system of campus life commons is required to accommodate the dispersed nature of the VT campus, the daytime core is clearly located in the NAD.

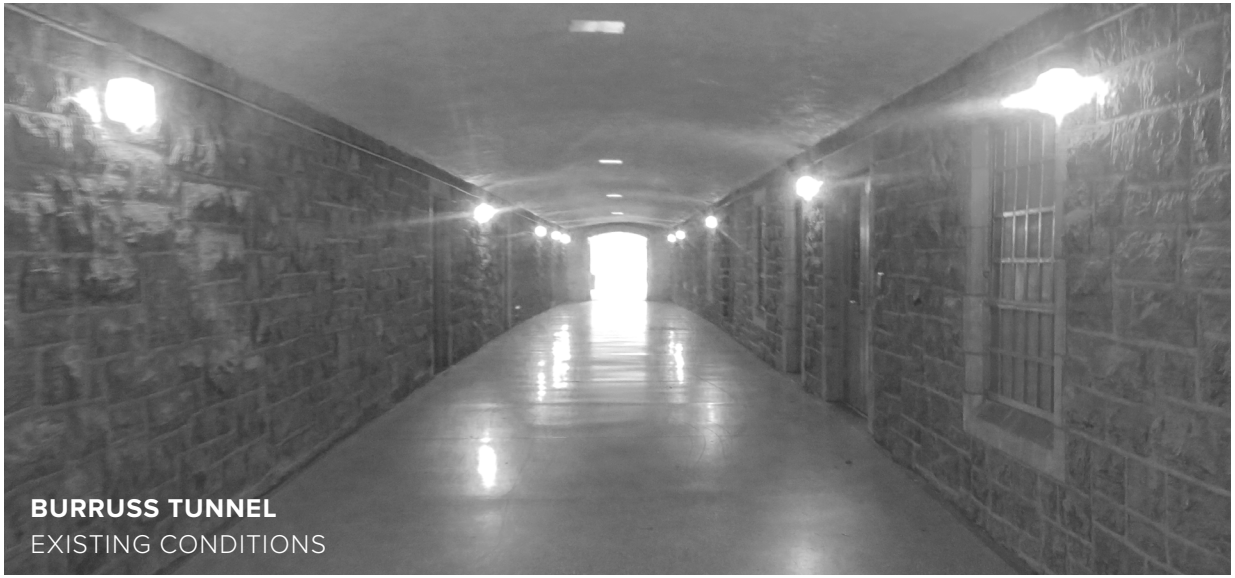
This review of underlying data informed the Master Plan's recommendation to relocate the main campus life uses currently housed in Squires Student Center to the proposed North Academic Commons in Cowgill and Burchard Halls. This central location best serves the majority of students, while additional commons in the other Districts provide critical campus life support spaces for off-peak hours and students who occupy those Districts during the day.

Tech Cave

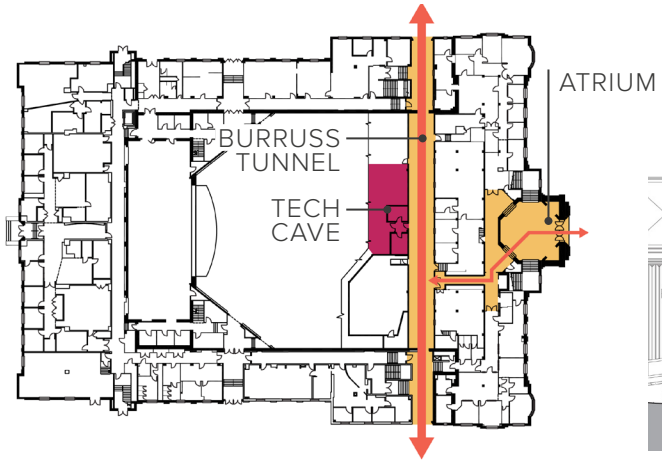
Renovating underutilized space along the Burruss Hall tunnel provides the opportunity to create a new commons—Tech Cave—in the North Academic District prior to completion of the North Academic Commons.

Tech Cave serves as a student-oriented social space in the academic core, placing students at the center of the VT Experience by infusing a largely administrative building with active student uses.

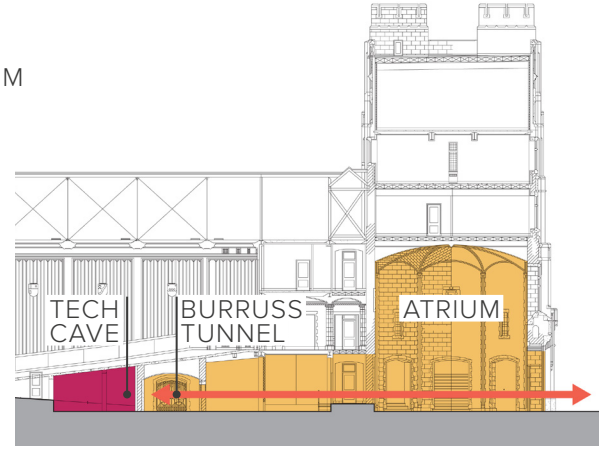
The architectural design process for this space will need to address lighting, queuing, and auditory conditions.



BURRUSS TUNNEL
EXISTING CONDITIONS



TECH CAVE AT BURRUSS TUNNEL
PLAN



TECH CAVE AT BURRUSS TUNNEL
SECTION



TECH CAVE
PROPOSED CONDITIONS

A DISTRIBUTED APPROACH

To better serve the distributed Virginia Tech population, the Master Plan recommends locating Campus Life facilities and programs in multiple Districts across the campus.

The following strategies highlight the benefits provided by a distributed approach to campus life facilities in the context of the Squires Student Center, the Graduate Life Center, and the University Libraries.

Squires Replacement Strategy

Squires is made up of three buildings including the original 1936 Student Union, a brick Georgian building now surrounded by additions dating from the 1960s and 1980s. Continued investment and long term use of the building is not recommended for the following reasons:

- The systems of the building are complicated by the evolution of its development resulting in expensive and challenging upgrades
- The configuration of the building limits renovation options for existing and future programmatic needs, in particular, the student life functions
- The architectural character of the building does not contribute to the campus, especially the ceremonial status of Alumni Mall
- The building also detracts from the goal of a vibrant College Avenue due to its lengthy stretch of un-activated, solid brick walls.

Given these conditions and the long-term view of the Master Plan, substantial investment in the building over the next 20-30 years is not recommended. The goal is to relocate current programmatic uses out of the building and plan for demolition. Uses to be relocated include student center related spaces (lounges, meeting rooms, student government offices, and the office for the Division of Student Affairs), food service, recreation, and large ballrooms and meeting rooms. The building also includes practice, office and performance space for the Department of Music.

STUDENT CENTER PROGRAM REPLACEMENT

The strategy for replacing the Squires student center functions is coordinated with the campus life model promoted in the Master Plan which calls for a series of distributed Campus Commons. The proposed Commons respond to the scale of the campus and the distributed nature of the campus population. The idea is to establish a network of commons as follows:

- The North Academic Commons in the existing Cowgill – Burchard complex
- The CID Commons in the repurposed bookstore
- The proposed New Owens Hall in the Student Life District replaces the existing Owens Hall with an upgraded facility featuring meeting spaces and lounge space for evening use
- The Global Systems Science Commons in the Life Sciences & Technology District
- The 21st Century Living -Learning District Commons (at the existing golf course site)

Each of these locations is envisioned to include student gathering, lounge, meeting spaces, and satellite food services. The North Academic Commons is planned as the “central commons” of the campus featuring lounge, multi-purpose meeting rooms, food service, a graduate life lounge, and cultural centers. It also includes office space for the Division of Student Affairs. Auditorium space in support of campus life activities is available in the adjacent Burruss auditorium.

BALLROOMS AND MULTIPURPOSE ROOMS

The existing ballrooms and large scale meeting spaces of Squires are also distributed across the campus in the Master Plan in response to known uses and proximity to supporting functions. These include:

- An addition to the Inn at Virginia Tech for a large formal ballroom space with breakout areas. This location offers efficiencies in terms of kitchen space in the Inn and the availability of parking. It is also a short walk from the North Academic Commons.
- The P3 Building, or Vignette Square, located in the Creativity & Innovation District. This multipurpose facility supports a variety of functions related to activities in the CID.
- New Owens Commons. This facility will support ceremonies and services held in the nearby chapel as well as day-to-day activities in the Student Life District.

MUSIC SPACES

A new Music and Arts Complex is proposed in the CID to replace the performance, practice, rehearsal, and office spaces located in Squires. This facility is positioned directly adjacent to the CID Parking Garage.

Graduate Life Center Replacement Strategy

The 1960s addition to Donaldson Brown (the residential wing) is located in a floodplain associated with Stroubles Creek and was constructed over the central branch of the creek itself, a condition that contributes to periodic flooding in the area. Looking out to 2047, the age, location, and general condition of this facility suggest that it will not continue to serve the needs of the Graduate School or other uses. The Master Plan proposes the demolition of the 1960s wing and relocating the Graduate School programs to a series of new and renovated facilities located to address the distributed nature of the graduate population. The historic Donaldson Brown portion of the building is maintained and renovated in the Master Plan; potential uses include the proposed Honors College and Faculty Club.

The proposed locations for the distributed Graduate Life functions include:

HILLCREST

A new home is planned for the Graduate School in the existing Hillcrest Building. This building is recommended given its unique architectural character, and its ground floor lounge, dining, and meeting spaces are suitable for the needs of the Graduate School. The building also includes housing on the upper floors. Additional housing is possible south of the building where an expansion site is reserved in the Master Plan. Hillcrest is located adjacent to the Life Sciences & Technology District where there is a concentration of graduate students.

NORTH ACADEMIC COMMONS

In response to the daytime graduate population in the North Academic District, a graduate commons is proposed as part of the North Academic Commons in the Cowgill – Burchard complex. This location is intended to serve the graduate population based north of the Drillfield.

GLADE ROAD MIXED USE VILLAGE

Emerging plans for the Glade Road District include the development of a new mixed use community featuring housing, research, office, retail, and restaurant space. In response to the graduate population with families and children, a new Graduate Life Village is proposed along with support services and amenities such as daycare. Collaboration with the Town of Blacksburg during the planning, design, and implementation of the Graduate Life Village will be critical to its success.

CREATIVITY & INNOVATION DISTRICT

The auditorium in the existing Graduate Life Center will be accommodated within one of the new facilities in the Creativity & Innovation District, such as Vignette Square or the Integrated Design Building.

Library Strategy

The Master Plan includes options for the potential expansion needs and service delivery objectives of the Newman Library. The Master Plan includes the option to expand the Library to the east of the existing building on the Squires site, coordinating the program with the proposed Integrated Design Building and future College of Architecture and Urban Studies facilities.

A satellite Library facility could be accommodated in the Tech Square area of the North Academic District, with the goal of placing select library services at the heart of academic and research activities. One potential location is the ground floor of the north side of Burruss Hall (the south wing of Burruss facing the Drillfield was the former location of the Library). This location offers direct access to Tech Square, which is envisioned as the “central square” of the campus. Tech Square is defined by the proposed North Academic Commons in the Cowgill-Burchard complex and by the GBJ commons, which is repurposed in the Master Plan as the Student Success Center. As an alternative to Burruss, the Library facility could also be located in the GBJ in conjunction with the Student Success Center.

The distributed approach to providing library services calls for a future visioning study to determine how best to site and program satellite library facilities throughout the campus.

DINING AND FOOD SERVICE

In the Master Plan, food service facilities are generally associated with the Campus Commons locations with the exception of major dining halls: Lavery Hall, Owens, Dietrick, and the Intelligent Infrastructure Smart Dining Facility.

The campus life framework addresses the following concerns relative to the existing facilities.

- The dining system is at capacity; expansion of dining facilities and the support facility at Southgate is needed to accommodate growth
- The North Academic District lacks adequate dining space to support the daytime population
- Owens is highly utilized but needs to be renovated or replaced

Future food service locations proposed in the Master Plan include: the Smart Dining Facility in the proposed Intelligent Infrastructure Building, GSS Commons, a new Owens Hall, and a new dining hall in the 21st Century Commons.

Expansion or replacement of the Southgate receiving and preparation kitchens is critical to accommodate enrollment growth and to service the proposed dining locations. Subject to further study, options include expanding in place or relocating to a new facility on the north side of the Corporate Research Center where a site is reserved.

New Owens Hall

The Master Plan anticipates the replacement of Owens Hall to provide a more efficient and adequately sized dining facility to serve the residents of the Student Life District as well as the population of the CID. The new building is planned to include social and meeting spaces, a ballroom, and outdoor dining areas. The facility is also configured to transition slope conditions where existing stairs and slopes limit access for all members of the campus community.

Dietrick Hall

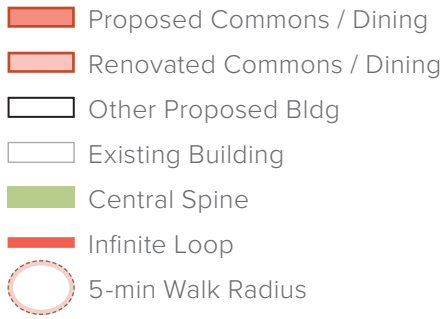
Dietrick currently functions as a center for the resident population living on the west side of the Student Life District. Planned changes include partially enclosing the existing loggia space on the south side of the building to create additional lounge space and the creation of an outdoor dining terrace.

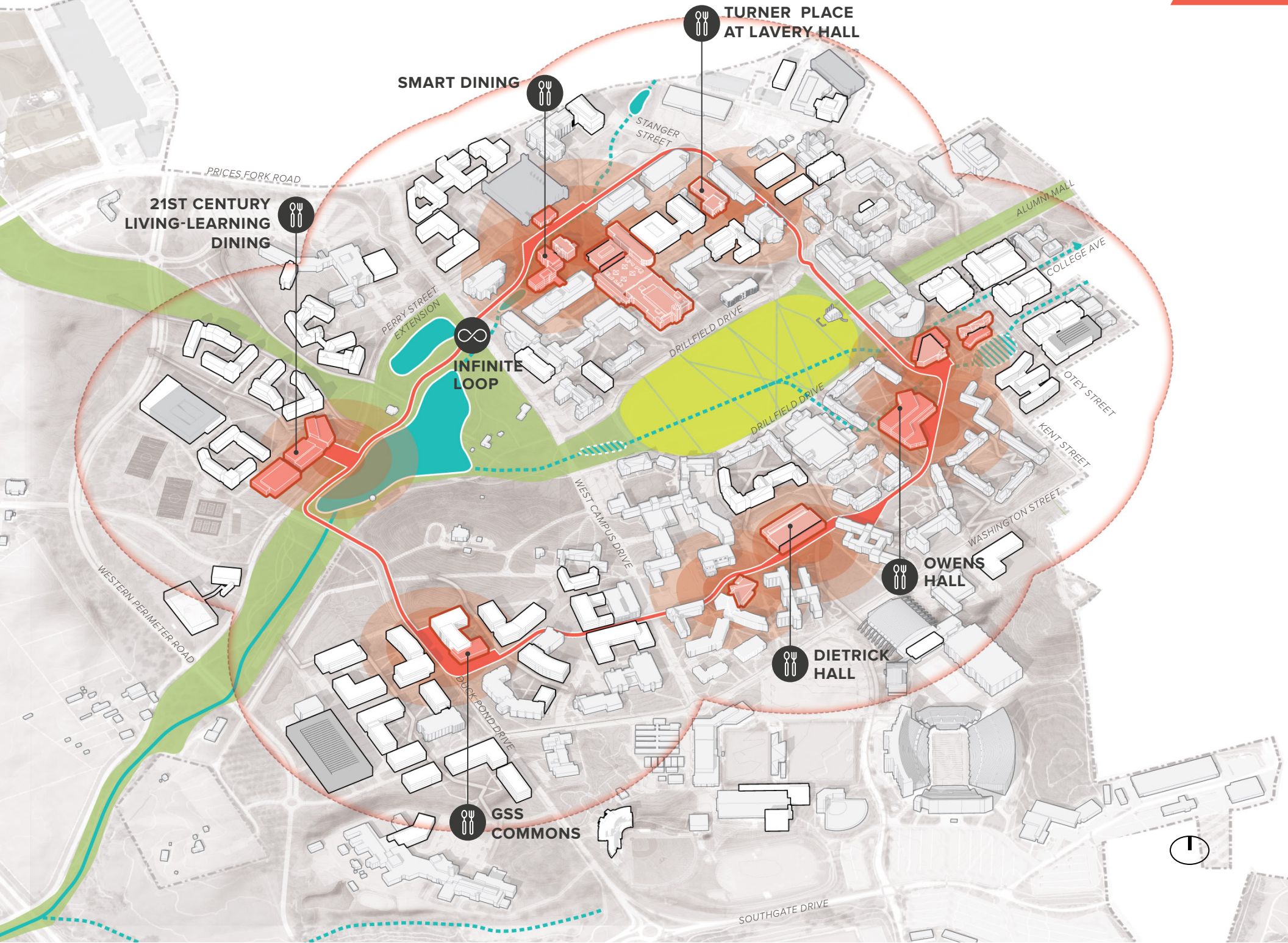
West End Market

While no major changes to the West End Market are proposed in the Master Plan, the facility is integrated into the Campus Commons network via the Infinite Loop.

GSS Commons

The Global Systems Science (GSS) Commons is proposed to provide gathering and collaboration spaces for the graduate students and researchers concentrated in the Life Sciences & Technology (LS&T) District. Proposed food service focuses on convenience options catered towards members of the LS&T community as well as commuting students arriving at the nearby Cage Lot.




TURNER PLACE AT LAVERY HALL
SMART DINING
21ST CENTURY LIVING-LEARNING DINING
INFINITE LOOP
OWENS HALL
DIETRICK HALL
GSS COMMONS
STANGER STREET
PRICES FORK ROAD
ALUMNI MALL
COLLEGE AVE
PERRY STREET EXTENSION
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
WASHINGTON STREET
WEST CAMPUS DRIVE
WESTERN PERIMETER ROAD
DUCK POND DRIVE
SOUTHGATE DRIVE

Intelligent Infrastructure Smart Dining Facility

A 30,000 square foot dining facility seating up to 1,000 people is proposed on the ground floor of the Intelligent Infrastructure Building—the companion facility to the proposed Hitt Hall—in response to the dining capacity needs in the North Academic District. High throughput during peak hours is a priority. Beyond the practical need for dining capacity, the facility is envisioned as a showcase for technology and innovation supporting food quality, the user experience, and emerging best practices and technologies appropriate for Virginia Tech's top ranked on-campus dining program.

21st Century Living-Learning District Dining Facility

A new dining facility is proposed as part of a new Campus Commons in the 21st Century Living-Learning District—a new residential community of approximately 2800 students focused on living-learning environments, including those associated with the proposed Global Business Academic Complex (GBAC).

Cafes

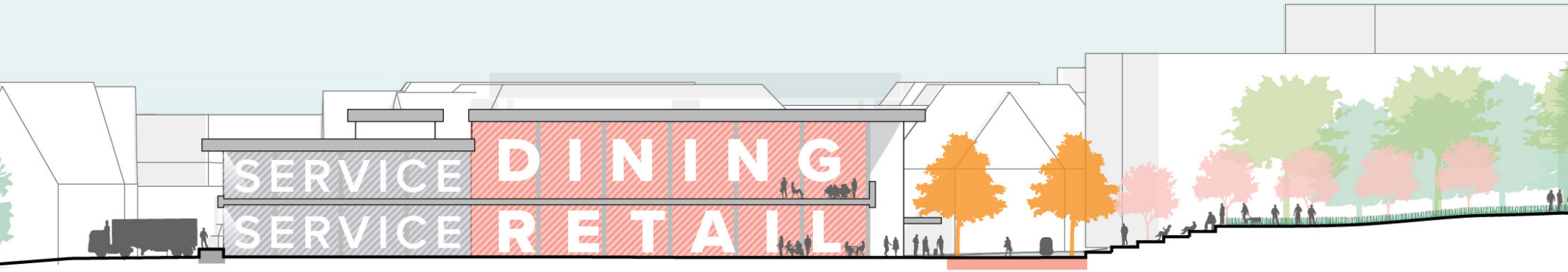
Cafes add texture and richness to the dining experience. They serve as much of a social function as they do. Cafes average roughly 50 low dollar amount transactions per hour, compared to larger dining halls that may process thousands of higher dollar transaction amounts each day. Not to say that they are not important, just not profit centers

Food Trucks

The Periodic Table and the Grillfield food trucks opened in 2016. Both are popular and successful additions to the campus dining portfolio, but are not solutions to long term capacity issues.

Dietrick Hall

Proposed renovations to Dietrick Hall include enclosing the southern facade to create a loggia space and enhance connections with the proposed Infinite Loop and Dietrick Lawn.



LOADING | DIETRICK HALL | INFINITE LOOP | AMPHITHEATER | DIETRICK LAWN

HOUSING

The Master Plan includes a renovation and renewal strategy for existing housing in the Student Life District. New housing is proposed in the Creativity & Innovation District, on the Slusher site, and in the 21st Century Living-Learning District.

The housing recommendations of the Master Plan address the University's aspirations of housing 40% of students on campus and 60-65% of resident students in living-learning communities.

GBAC and 21st Century Living-Learning District Housing

The Global Business and Analytics Complex (GBAC) housing is planned in conjunction with the new Global Business building in the North Academic District with the goal of establishing a living-learning community (LLC) to support students involved in business, data analytics, and international affairs programs.

Faculty-in-residence apartments, classroom, meeting, and other spaces supporting the business programs are proposed. Combined, the buildings are planned for approximately 700 students.

Additionally, six new living-learning communities are accommodated in the 21st Century Living Learning District on the site of the current golf course. These new communities will house approximately 2100 students and are supported by a proposed commons, dining, and recreation facility.

CID Housing

A new living-learning community is proposed in the Creativity & Innovation District directly south of the existing Graduate Life Center. This facility includes approximately 600 beds with ground floor spaces accommodating activities and programs associated with the CID such as studio space, maker space, performance, and practice space. The CID living-learning community is intended for students associated with programs in the CID as well as varsity athletes. Near-term construction of the facility facilitates the relocation of some program uses out of the Squires Student Center.

New Slusher

Over the long-term, the Master Plan recommends that Slusher Hall be replaced rather than renovated. A new structure located on the same site will provide upgraded building systems, reduce maintenance costs, and would be more in keeping with the character and image of the rest of the campus. In conjunction with the new building, changes to Campbell Quad are proposed to address barriers to access for all members of the VT community. Specific recommendations include a regraded Campbell Quad to provide inclusive access through the introduction of Green Links on the east and west sides of the Quad.

Oak Lane

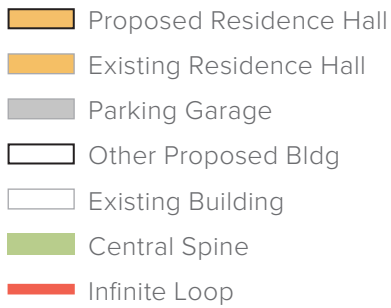
Space for four new Greek Life housing facilities is accommodated in the Oak Lane District, providing room for growth while maintaining the character of this community.

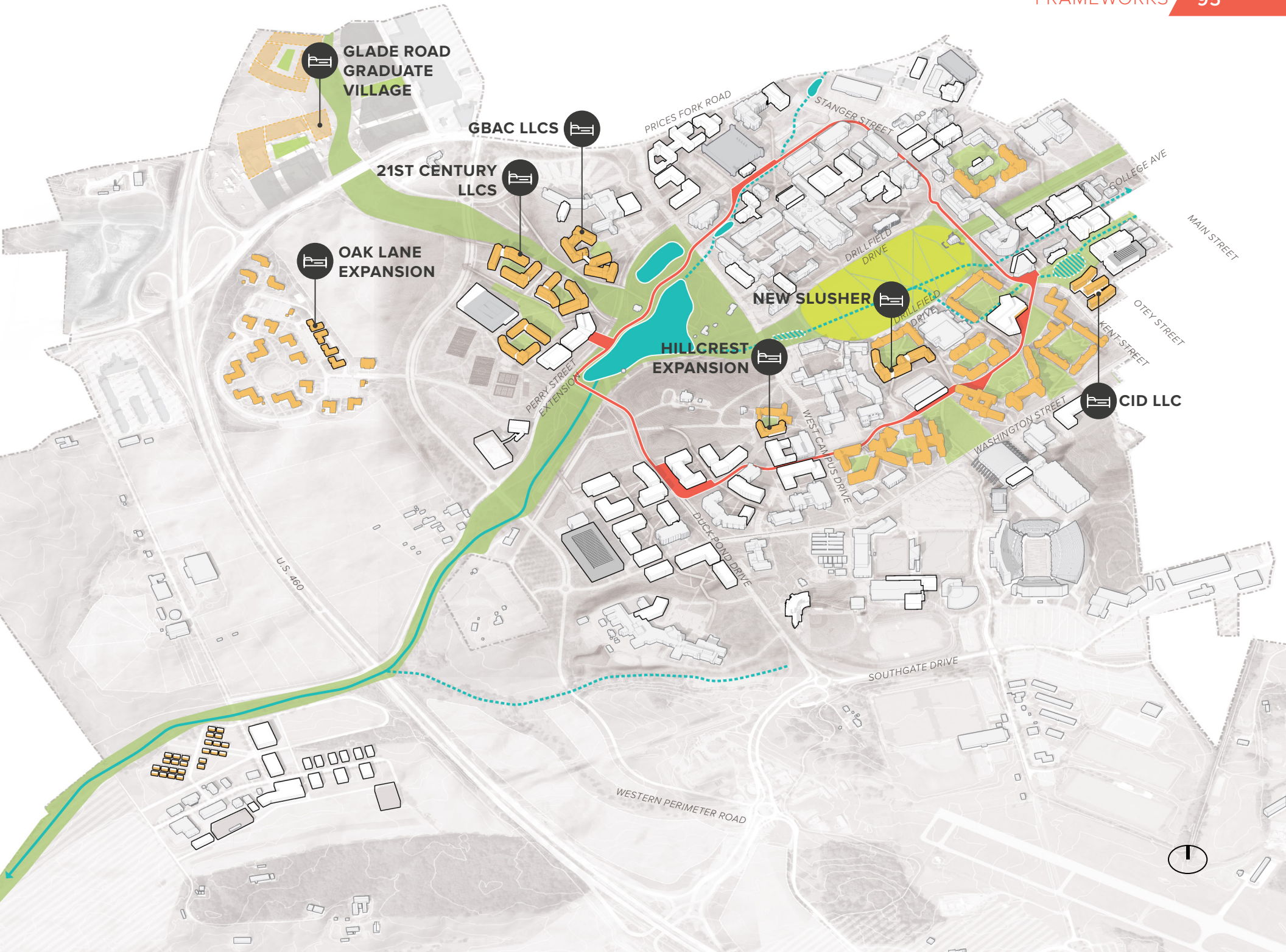
Glade Road

The planned mixed-use development in the Glade Road District provides not only retail, office, and research space, but also includes housing for graduate students, faculty, and young professionals seeking proximity to VT and downtown Blacksburg.

Upper Quad

The recently completed Pearson and New Cadet Halls replace Brodie, Monteith, Rasche, and Thomas Halls and house over 460 cadets.

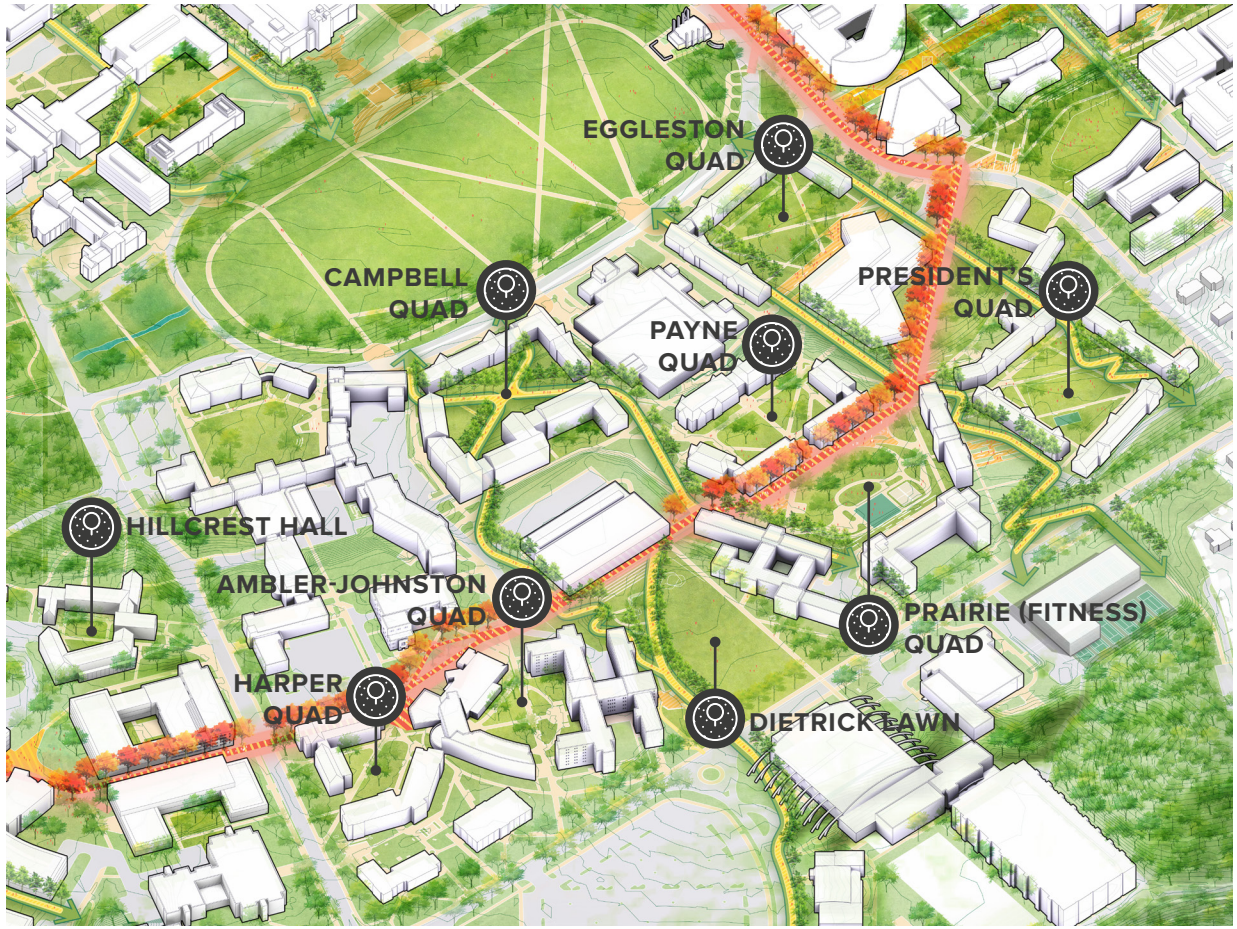



GLADE ROAD GRADUATE VILLAGE
GBAC LLCS
21ST CENTURY LLCS
OAK LANE EXPANSION
NEW SLUSHER
HILLCREST EXPANSION
CID LLC
PRICES FORK ROAD
STANGER STREET
COLLEGE AVE
MAIN STREET
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
WASHINGTON STREET
DUCK POND DRIVE
U.S. 460
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD

Housing Renovation Strategies

The Master Plan incorporates the recommendations of the 2005 Residence Halls Facility Condition Assessment performed by EYP and updates them in the context of broader planning strategies. General recommendations for the existing residence halls address building conditions, accessibility, social space, restroom facilities, and other needs. The overall strategy responds to the following conditions and goals:

- Most of the existing residential buildings are valued for their contribution to the overall sense of place defined by Collegiate Gothic architecture, Hokie Stone, and quadrangles; however, many of these facilities are in need of upgrades and many do not provide the desired types of amenities and social space.
- Additional housing is needed in response to enrollment growth and VT's goal of housing 40 percent of the undergraduate population.
- The goal of housing 65 percent of resident students in Living-Learning Centers, along with the goal of providing more spaces for social engagement, requires new design strategies in existing residence halls, potentially resulting in the loss of beds.
- The residential quads are socially isolated from one another.



Renovation recommendations are informed by broader Master Plan concepts including landscape strategies for the residential quads, the Infinite Loop, and the Green Links. The detailed building recommendations are aligned with social, accessibility, and programmatic objectives identified during the planning process, including locating social spaces on the lower levels of the buildings where they are coordinated with exterior gathering and social environments, using exterior landscapes such as the Green Links to provide access to the buildings, and incorporating and locating living-learning communities within the buildings such that they contribute to the social and access-for-all goals of the Master Plan.

The building and landscape recommendations for existing residential facilities are organized around ideas for each quad including: Eggleston Quad, President's Quad, Prairie Quad, Payne Quad, Dietrick Lawn, Ambler-Johnston Quad, and Harper Quad. For specific details on the proposed building renovations, please see the Districts chapter of this volume or the separately documented Campus Life Report.

Campbell Quad

The goal over the long-term is to replace Slusher Hall with a new facility defining a renewed Campbell Quad. The new quad is envisioned to provide access for all members of the campus community, terraces for outdoor seating, and areas for programmed outdoor gathering and passive recreation. In the meantime, changes to the pathways leading from the Campbell portal are proposed to create the Central Link.

Eggleston Quad

Eggleston Hall defines one of the most iconic residential quads of the campus and reflects the Collegiate Gothic style of architecture. Recommendations include the creation of new student study spaces on the lower level of Eggleston in association with entries and circulation routes. Landscape changes are coordinated with the reconstruction of Owens Dining Hall. New Owens is sited to engage with the significant slopes to the north and east of the Quad, the intent of which is to eliminate existing stairways and promote barrier-free circulation via a Green Link extending from the Eggleston portal on the Drillfield southward to Washington Street. Known as the O'Shaughnessy Link, this Green Link engages with New Owens Hall.

Dietrick Lawn

Dietrick Lawn is defined by Dietrick Dining Hall, Ambler-Johnston, and Pritchard Halls. Ambler-Johnston serves as a model for the renovation of the 1960s-era residence halls; the concepts developed in this renovation inform the renovation of Pritchard. Proposed changes to Dietrick Lawn include the introduction of the Infinite Loop along the south facade of Dietrick and the introduction of a Green Link along Ambler-Johnston on the western edge of the Lawn. This link is coordinated with the Spirit Walk and the game-day activities and other events scheduled on the Lawn.

Dietrick Lawn's prime location and gentle grading makes it a cherished student life open space and promotes VT's socialization and recreation goals. These benefits far outweigh the potential advantages to developing the site for additional student housing.

Payne Quad

Payne Quad is defined by Payne, Peddrew-Yates, and New Residence Hall East, some of the newest residence halls on campus. To provide access for all members of the campus community, the Master Plan proposes an accessible pedestrian bridge connecting Payne Quad and War Memorial, utilizing the extreme grade change along the southern face of the building.

Ambler-Johnston and Harper Quads

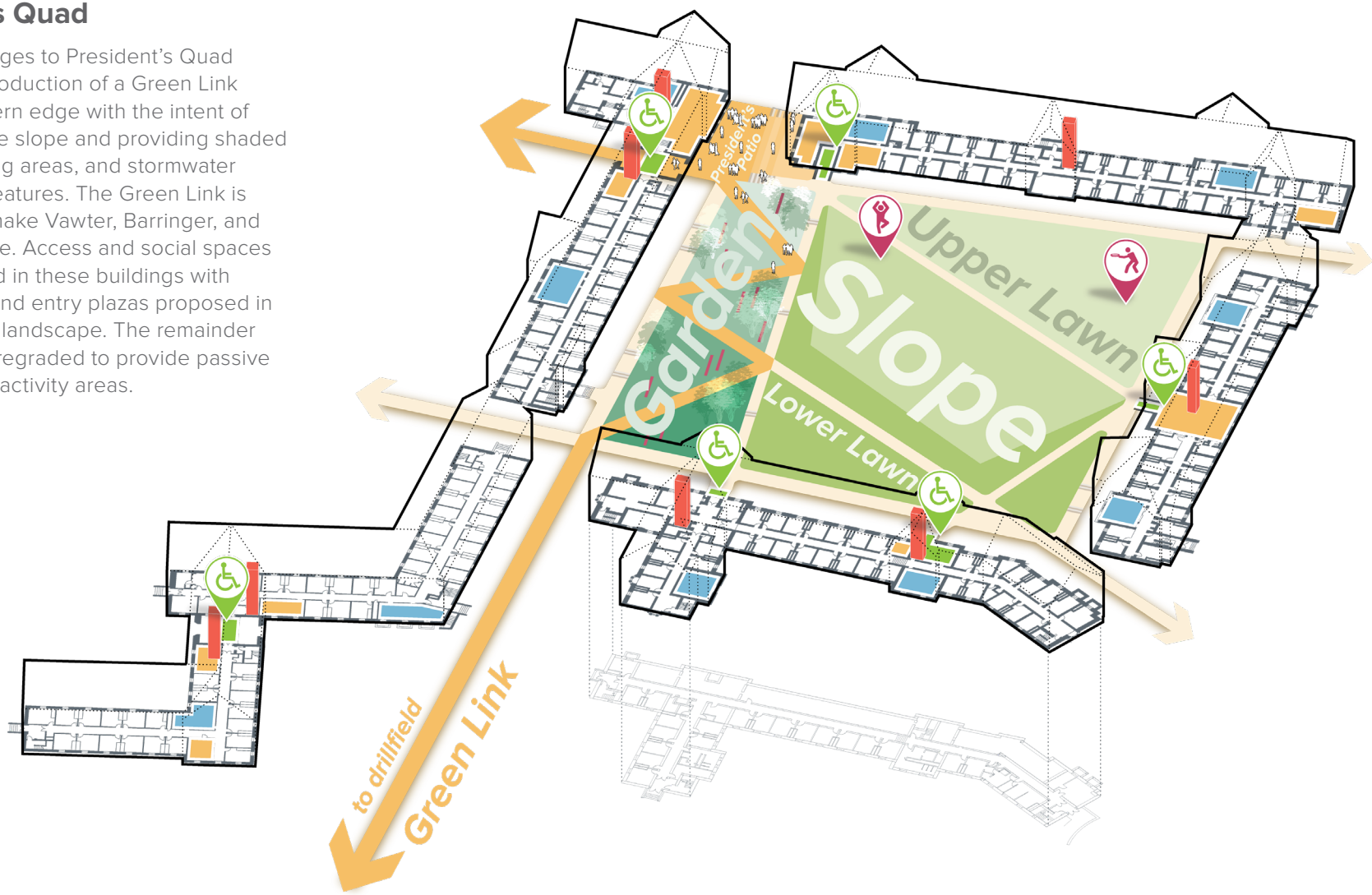
No major changes are proposed for Ambler-Johnston or Harper Quads given that both are in good condition and include some of the newest or most recently renovated residence halls on campus. The Infinite Loop is introduced to the north of each quad thereby connecting them into the overall system of student life.

Hillcrest Hall

Hillcrest is located on the Infinite Loop and is expanded in the Master Plan to create a quadrangle, accommodating the relocated Graduate Life Center including academic support, collaboration, and community spaces along with graduate residences.

President's Quad

Proposed changes to President's Quad include the introduction of a Green Link along the eastern edge with the intent of transitioning the slope and providing shaded gardens, seating areas, and stormwater management features. The Green Link is positioned to make Vawter, Barringer, and Miles accessible. Access and social spaces are coordinated in these buildings with social spaces and entry plazas proposed in the Green Link landscape. The remainder of the Quad is regraded to provide passive recreation and activity areas.



Prairie Quad

Prairie Quad is defined by residential buildings constructed in the 1960s including O'Shaughnessy, Lee, and Pritchard. It is the largest of the residential quads and is surrounded by some of the largest and tallest buildings on the campus. Proposed changes in the Quad include the introduction of the Infinite Loop and Green Links to the east and west of the Quad. Given existing and future connectivity to the Quad, its central location and proximity to the War Memorial Gym, Prairie Quad is reimagined as a fitness quad, featuring court space and outdoor fitness equipment.



RECREATION AND HEALTH

The Master Plan proposes additional capacity for recreation and improved facilities for student health to promote comprehensive campus wellness.

Recreation

The proposed recreation strategy for the campus responds to the following conditions:

- Virginia Tech does not have adequate space to support the current population; additionally, the types of spaces and facilities may not support current activities
- Additional space is needed to accommodate growth
- Planned renovation of the War Memorial Gymnasium offers the opportunity to address near-term needs, but additional strategies are needed to address long-term needs

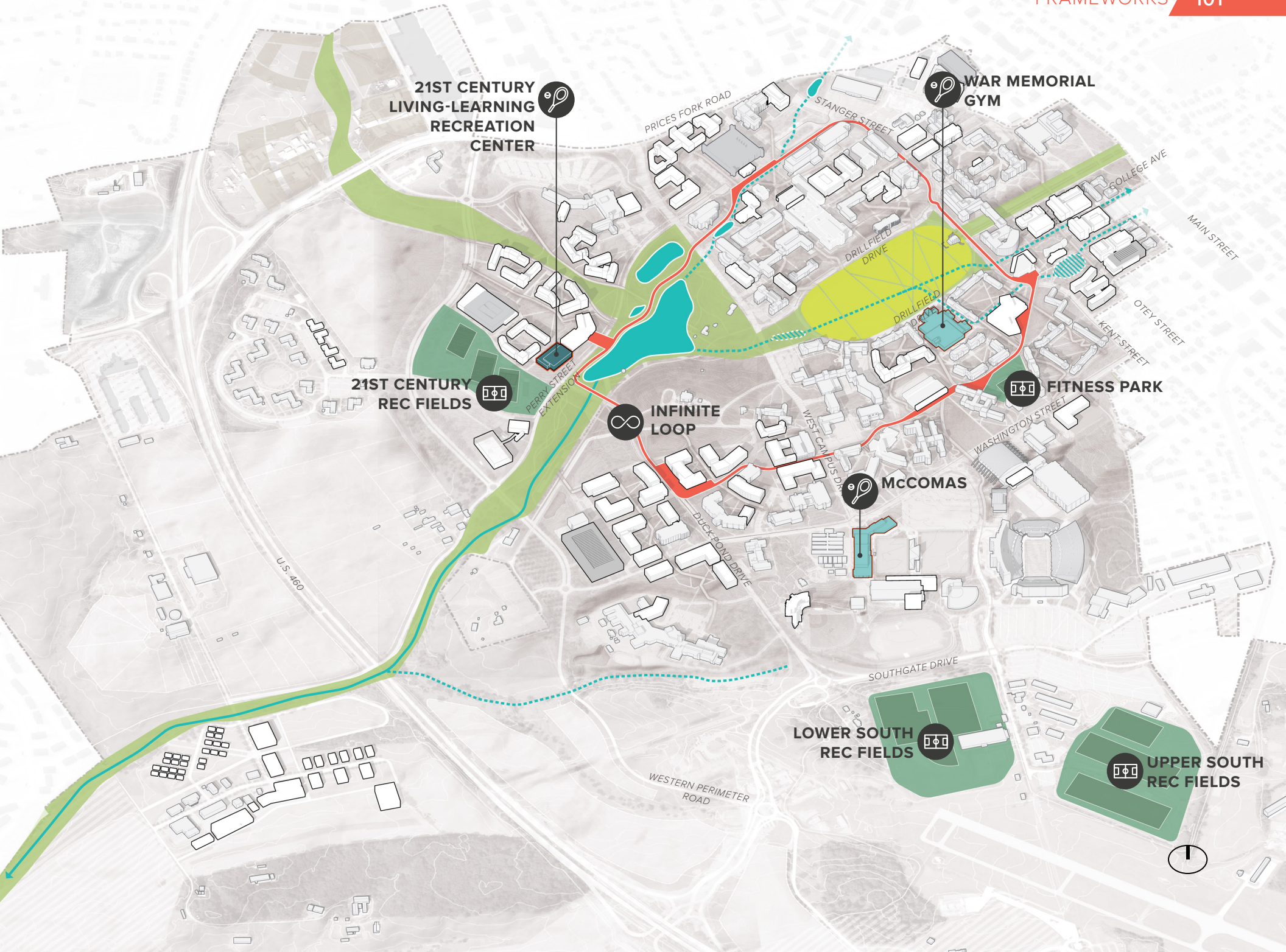
In response, the Master Plan reserves a site in the 21st Century Living-Learning District for an additional recreation center. The proposed location offers room for expansion, providing flexibility until such time that activities and population growth warrant investment in a new facility. Land is also reserved for future recreation fields.

The Master Plan also recommends a new field house at the south recreation complex to provide space for equipment storage as well as administrative space to operate the recreation programs. Mobility is also a feature of the campus recreation network with the intent of encouraging human powered movement. The Infinite Loop and the campus trail networks are part of the network to promote active transportation and recreation.

Health Centers

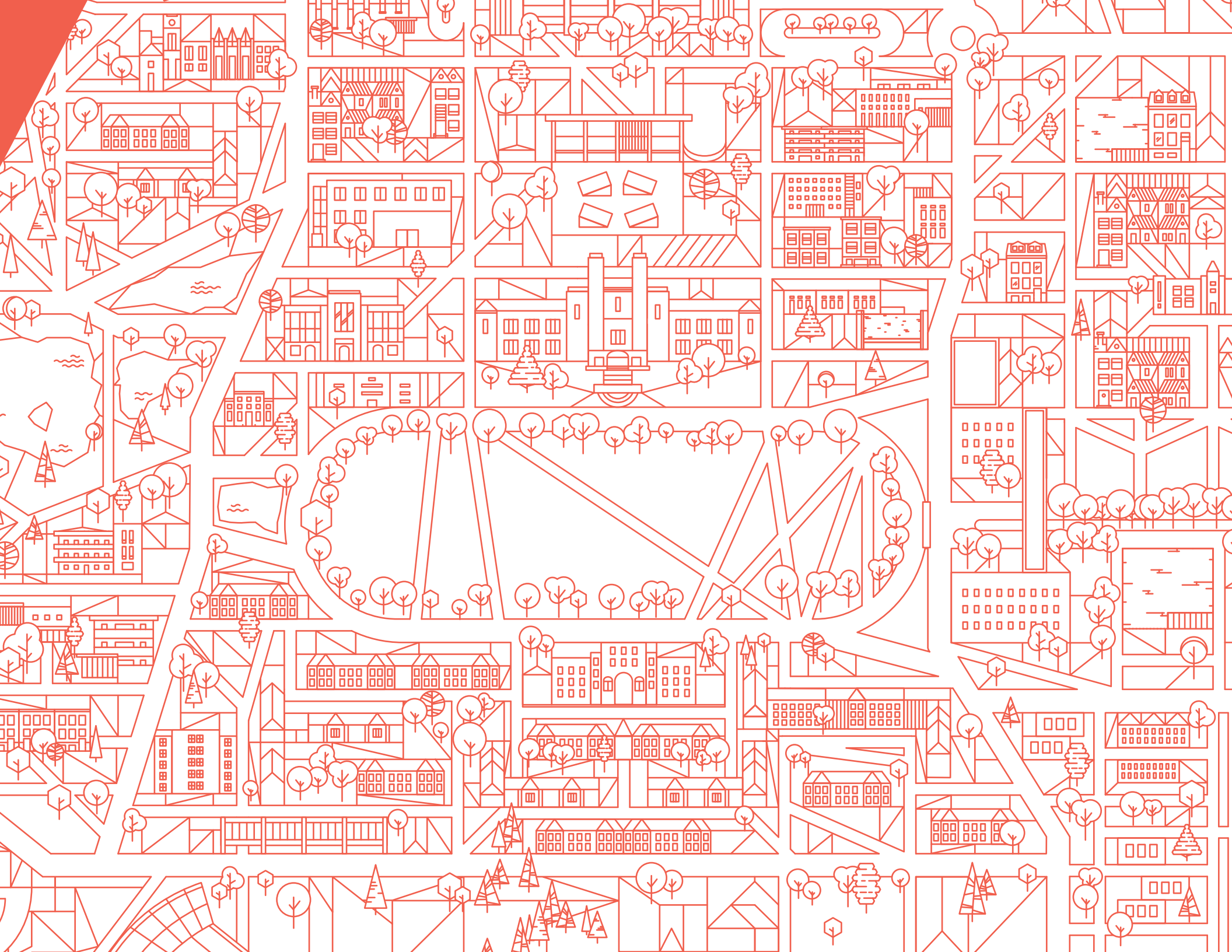
In response to projected growth and functional needs, expansion of the existing Health Center is proposed within McComas Hall. Relocation of Counseling Services to renovated space in the War Memorial Gymnasium frees up space in McComas for the proposed expansion.




21ST CENTURY LIVING-LEARNING RECREATION CENTER
WAR MEMORIAL GYM
21ST CENTURY REC FIELDS
INFINITE LOOP
FITNESS PARK
McCOMAS
LOWER SOUTH REC FIELDS
UPPER SOUTH REC FIELDS
PRICES FORK ROAD
STANGER STREET
COLLEGE AVE
MAIN STREET
DRILLFIELD DRIVE
DRILLFIELD
OTEY STREET
KENT STREET
PERRY STREET EXTENSION
WASHINGTON STREET
WEST CAMPUS DR
DUCK POND DRIVE
U.S. 460
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD

Landscape Framework





Landscape Framework

The Landscape Framework builds upon the existing structure of the campus defined by its topography, hydrology, and wooded areas and highlight's VT's land grant legacy by celebrating the University's natural setting and agricultural heritage.

The framework incorporates a comprehensive stormwater strategy for the campus and also responds to the formal development patterns of the campus including the numerous quadrangles and the central axis or Central Spine formed by Alumni Mall, the Drillfield, the Duck Pond, and the Stroubles Creek corridor. These underlying patterns inform the open space and landscape structure with the Drillfield occupying a key location along the Central Spine of the campus. The formality of the central axis continues eastward to Main Street along the ceremonial entrance, Alumni Mall.

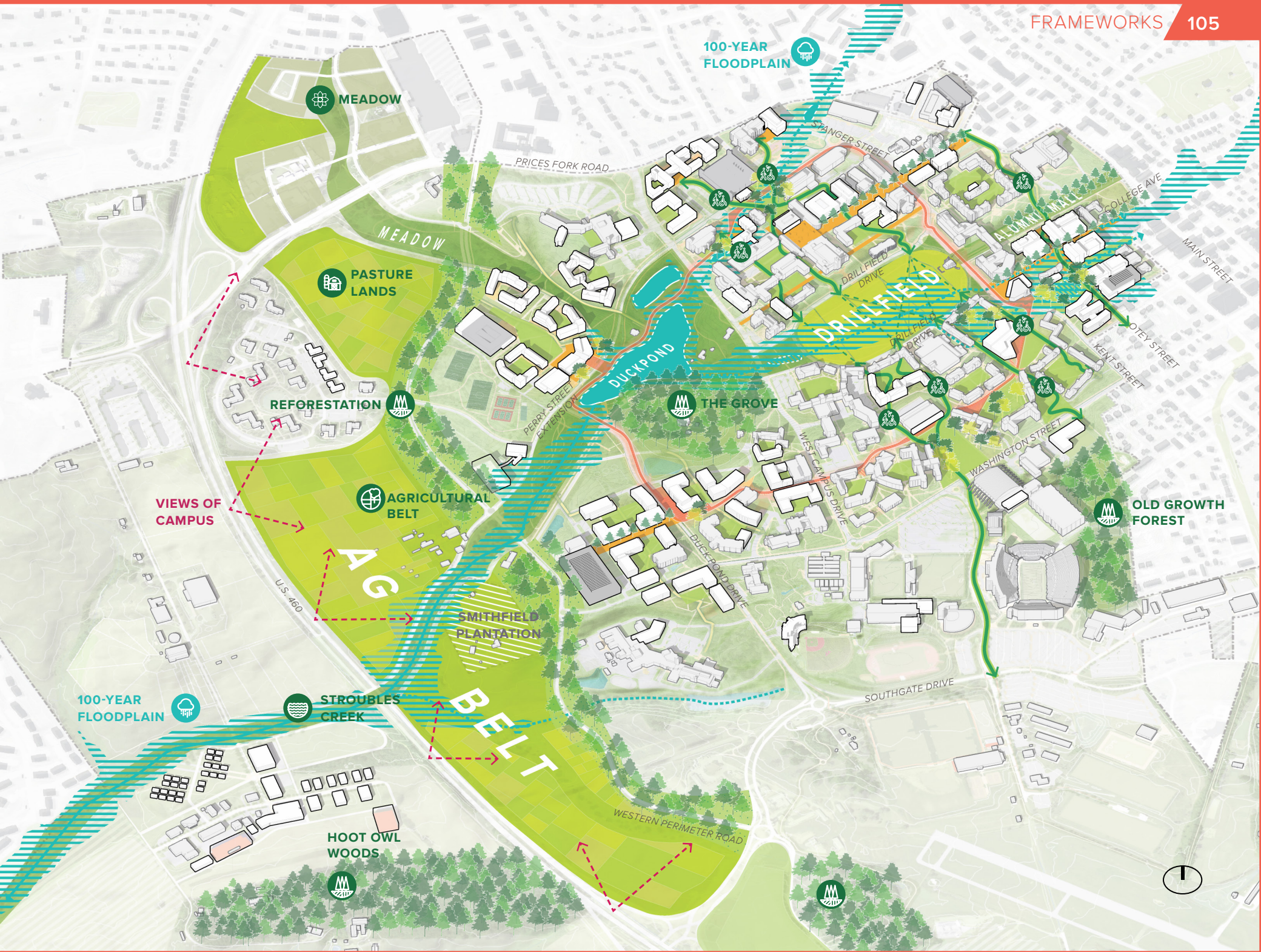
The formal landscape of the campus is further organized as an interconnected system of quadrangles and courtyards. The quad pattern dominates the Student Life District south of the Drillfield. North of the Drillfield, two major quads east and west of Burruss Hall are shaped by existing buildings. East of the Drillfield, the Upper Quad is the most historic and iconic quad, recently redefined by new residential buildings. Several lawn areas are also present including Henderson Lawn at the intersection of Alumni Mall and Main Street which functions as the town green for Blacksburg. Other lawn areas utilized for campus activities include Dietrick Lawn and Alumni Lawn at the Holtzman Alumni Center.

Proposed Landscape Framework

The proposed landscape framework builds upon the existing structure defined by the topography, hydrology, wooded areas, and formal development patterns of the campus. New Campus Districts are laid out in response to these underlying patterns emphasizing open space and pathway connectivity and coordinating the framework with programmatic, circulation, and functional needs. The framework reintroduces a native landscape pattern that ties the campus to the larger regional environment.

Sustainable landscape practices are proposed to assist the University in developing a "working landscape." A working landscape strategically positions trees and other landscape elements to provide shade, mitigate the heat island effect, and contribute to a comprehensive stormwater management strategy. A working landscape also contributes to energy efficiency goals by shading buildings, thereby reducing the energy required for cooling.

Key aspects of the proposed landscape framework are summarized in this section with specific details provided in the description of the Campus Districts.


100-YEAR FLOODPLAIN
MEADOW
PRICES FORK ROAD
STANGER STREET
COLLEGE AVE
ALUMNI MALL
MAIN STREET
MEADOW
PASTURE LANDS
DRILLFIELD DRIVE
DRILLFIELD
DUCKPOND
OTEY STREET
KENT STREET
REFORESTATION
THE GROVE
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
WASHINGTON STREET
VIEWS OF CAMPUS
AGRICULTURAL BELT
OLD GROWTH FOREST
AG BELT
U.S. 460
SMITHFIELD PLANTATION
DUCKPOND DRIVE
SOUTHGATE DRIVE
100-YEAR FLOODPLAIN
STROUBLES CREEK
WESTERN PERIMETER ROAD
HOOT OWL WOODS

PROTECTING THE LAND GRANT LEGACY

The Master Plan seeks to celebrate the agricultural roots of Virginia Tech. As a land grant institution, VT's heritage is inexorably tied to stewardship of the land, a connection fortified by the design of the Agricultural Belt and the Central Spine.

The Agricultural Belt

In order to preserve the agricultural legacy and rural character of the VT campus, the Agricultural Belt is proposed west of the new Western Perimeter Road. Land west of the road is maintained as pasture and agricultural land for use by the College of Agriculture and Life Sciences, the College of Veterinary Medicine, the College of Natural Resource and Environment, and other land-intensive needs.

The retention of agricultural land recognizes the practical need for a contiguous and diverse land resource to support the land grant mission.

This strategy utilizes the Western Perimeter Road (WPR)—a planned arterial designed in coordination with VDOT to relieve traffic pressure from West Campus Drive by connecting Prices Fork Road to Southgate Drive—as a growth boundary for the University's expansion. The WPR is also envisioned as an opportunity to promote reforestation efforts on the campus through the creation of a naturalized, tree-lined parkway.

The goals of the Agricultural Belt policy are to:

- Ensure that land in close proximity to the academic core is available to support educational and research activities
- Meet the land requirements associated with stormwater management
- Establish a landscape corridor along the periphery of the campus with the intent of preserving the rural character when viewed from U.S. 460, an increasingly important consideration as the Blacksburg area is developed.

The Agricultural Belt designation applies to the land located west of the proposed Western Perimeter Road and east of U.S. 460. It extends from Prices Fork Road on the north to Southgate Drive on the south. Existing uses such as the Oak Lane residential community and Smithfield Plantation are maintained and protected within the larger Agricultural Belt designation. The historic Smithfield Plantation is incorporated into the Agricultural Belt along with its associated cemetery to the south. To shield the Plantation from traffic on the Western Perimeter Road, a thick band of trees and vegetation is proposed east of the site. A new vehicular entrance is proposed on the south end of the Plantation providing direct access to the Western Perimeter Road via the proposed Washington Street roundabout.

Where possible, existing pasture land is included in the Agricultural Belt except where disrupted by recent and proposed roadway alignments. Proposed changes in the Master Plan include designating the golf course area west of the Western Perimeter Road and north of Oak Lane as pasture land. This is intended to offset some of the land losses occurring as a result of the UAV cage construction, the extension of Perry Street, and the construction of the Western Perimeter Road. The land area associated with the former dairy complex is also designated for future agricultural uses. The dairy farm is now located off campus, a move required as a result of the Southgate Drive realignment and the expansion of the Virginia Tech Montgomery Executive Airport runway.

The Master Plan also recommends that the University identify an opportunity to showcase its agricultural roots in an aesthetically sensitive way within the Agricultural Belt to celebrate and bring greater visibility to its agricultural heritage. See the Landscape Framework for more details.

The Central Spine

The series of iconic landscapes and natural areas running through the heart of campus forms the Central Spine. Beginning with Alumni Mall in the east, continuing through the Drillfield, and running along the Stroubles Creek floodplain corridor, including the Duck Pond and the Meadow landscape stretching north towards the Inn at Virginia Tech, the Central Spine is a major contributor to VT's sense of place.

The Master Plan enhances the Central Spine through comprehensive planting, stormwater, and circulation strategies including by reimagining how the campus community interacts with these landscapes, utilizing the spaces for strategic research initiatives, and introducing ecological design and sustainable maintenance principles.

DATA & ANALYSIS



TOPOGRAPHIC CONDITIONS

The development patterns of the campus respond to the ridges and valleys associated with its dramatic topography. The academic and residential areas generally occupy the ridges to the east, north, and south of the Drillfield. Lane Hall, in the Upper Quad, is located at the highpoint of the campus at elevation of 2100 feet above sea level, some 62 feet above the low point of the Drillfield. Development north of the Drillfield is aligned along a ridge with Burruss Hall sited approximately 30 feet above the Drillfield. This ridge then descends some 40 feet down to meet the north branch of Stroubles Creek before rising again toward Prices Fork Road. South of the Drillfield, the Student Life District rises some 60 feet from the Drillfield. While dramatic, this underlying topography presents several challenges especially with regard to accessibility. The result is a series of natural topographic divisions with slopes exceeding 20 percent in some areas limiting development and circulation.



NATURAL AND FORESTED AREAS

The tree canopy on the campus varies significantly from the original regional pattern. At present, only seven percent of the campus is covered by trees, significantly lower than the regional coverage. Major wooded areas include the Old Growth Forest east of Lane Stadium, the Grove south of the Duck Pond, the Hahn Gardens on Washington Street, and Hoot Owl Woods as well as other wooded areas west of U.S. 460. Remnant trees are also present in the golf course meadow located west of the Inn at Virginia Tech and Skelton Conference Center.

Reforestation

Existing campus forest areas and open areas proposed for reforestation are identified in the Master Plan. There are four long-term objectives:

- Maintain stands of large native trees with associated understory
- Support the environmental benefits of cooling, carbon sequestration, enhanced stormwater management, erosion control and water quality protection, increased species diversity, and reduced water consumption and energy expenditure for grounds maintenance
- Provide areas for research, education, and passive recreation in close proximity to the campus
- Serve as an example of environmental stewardship that heightens public awareness of the relationship between human society and the natural environment.
- Preserve, protect, and manage the Old Growth Forest near Lane Stadium per the 2016 Forest Stewardship Plan

A program of reforestation is proposed along the future Western Perimeter Road and the realigned Southgate Drive to enhance the campus arrival sequence and to reintroduce the regional tree canopy to the campus. The program is intended to tie together existing naturally wooded areas and soften the visual effect of disparate building forms and parking areas. Implementation of the reforestation concept requires careful study to ensure that key views of the regional landscape, campus open space, and campus landmarks are preserved. Reforestation benefits ecosystem functions providing erosion control, water quality improvement, air purification and cooling and provides the opportunity to reduce long-term maintenance requirements in the campus landscape.


PRICES FORK ROAD
STANGER STREET
ALUMNI MALL
COLLEGE AVE
PERRY STREET EXTENSION
DRILLFIELD DRIVE
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
THE GROVE
REFORESTATION
WEST CAMPUS DRIVE
WASHINGTON STREET
WESTERN PERIMETER ROAD
DUCK POND DRIVE
OLD GROWTH FOREST
SOUTHGATE DRIVE

THE DRILLFIELD

The Drillfield is the preeminent iconic space on the Virginia Tech campus and serves as the University's historic and physical heart.

This open space is central to the campus core and serves as the "playground" of the institution, hosting numerous events and functions including Corps of Cadet ceremonies and drills, Student Affairs functions and events, community gatherings, and other campus life activities.

However, the visual and spatial character of the Drillfield in its existing condition does not reflect the high quality of the institution that is Virginia Tech. Existing pathways lack clear definition, and steep slopes at the edges of the Drillfield prevent inclusive access across the campus. The Drillfield Enhancement Plan currently being developed by the Office of University Planning puts forward several recommendations aimed at enhancing the function and visual quality of this premier campus feature. The Master Plan, in turn, highlights several of these recommendations; however, readers should reference the separately documented Enhancement Plan for further detail.

Path Material and Alignment

Drillfield paths should be clearly delineated and paved to reflect their hierarchy, major paths paved with colored concrete or concrete pavers and minor paths paved with asphalt. The number of paths should be kept to a minimum to preserve open lawn space and maintain ample space for Corps of Cadets ceremonies and drills; however, natural paths created from strong student desire lines should be paved to reduce maintenance costs and preserve an attractive appearance.

In addition to transverse paths, the Drillfield Enhancement Plan proposes a circumferential path to serve as a recreational loop. This asphalt-paved path allows recreational users to continue to enjoy the Drillfield even during busy class changes.

Further, select site regrading can serve to extend the proposed Green Links across the Drillfield, providing cross-campus access for all members of the Vt community. Regrading strategies are needed most along the western paths of the Drillfield where existing slopes exceed five percent.

Trail Heads / Crossing Plazas

Opportunities for seating, gathering, and improved wayfinding exist where Drillfield paths intersect with the surrounding Drillfield Drive. Enlarged crossing plazas, or trail heads, designed with stone seat walls, high quality paving, ornamental landscaping, and technological amenities like electrical outlets and Wi-Fi hotspots can present a more welcoming face to Drillfield users.

These efforts should be coordinated with improvements to crossings including attractive, high-visibility paving; lighting upgrades, and enhanced signage.

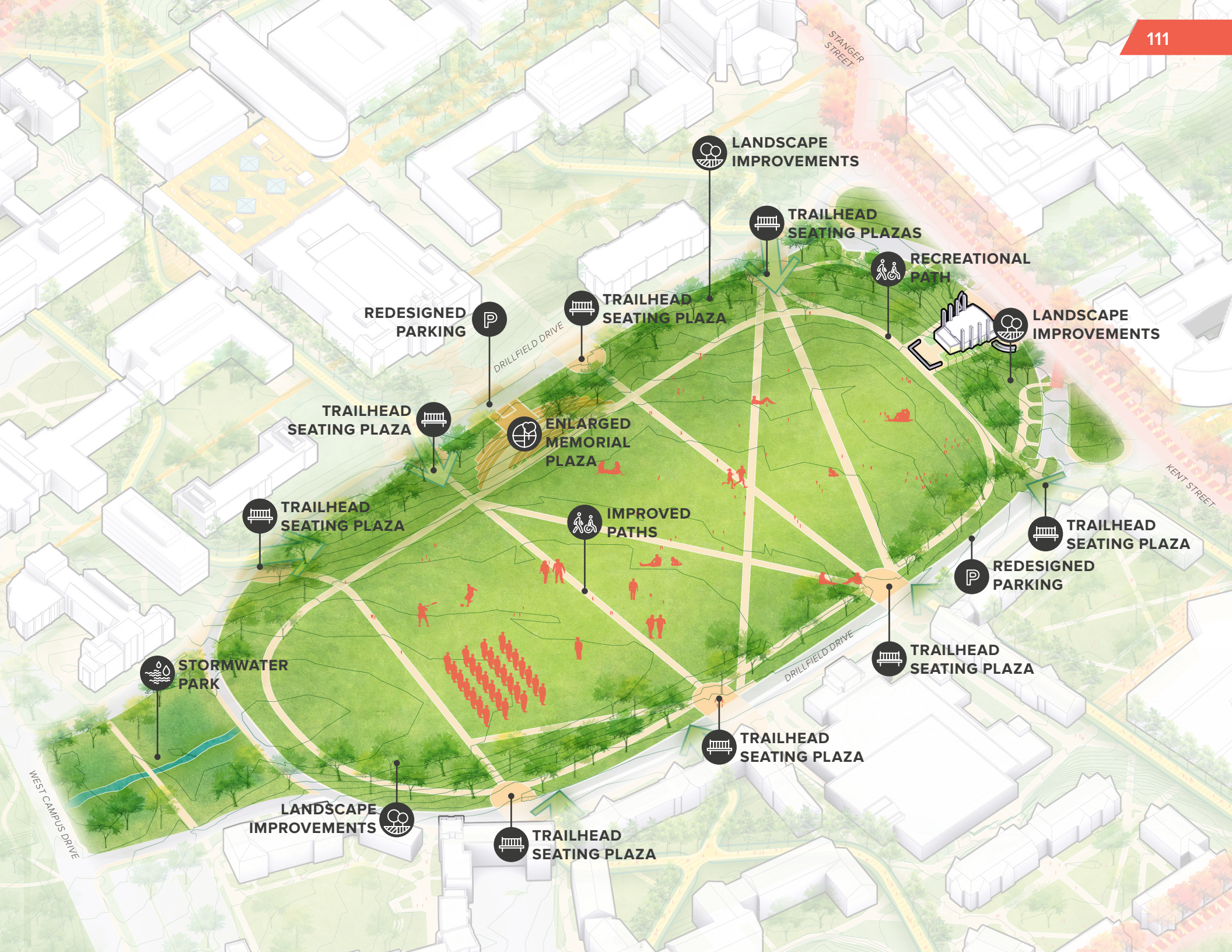
Landscape Improvements

In order to guide movement through the site, ornamental plantings and additional tree cover should be added to the edge of the Drillfield. This "landscape edge" will also beautify views of the Drillfield and can serve to address erosion concerns.

Additionally, opportunities for secluded amphitheater seating exist along the edge of the Drillfield away from pathways. By embedding stone seatwalls into existing steep slopes, these discreet elements can create spaces for study or socialization while simultaneously preventing erosion.

The Master Plan also recommends an expansion of the April 16 Memorial Plaza to provide additional seating and improved inclusive access from both Drillfield Drive to the north and the lawn of the Drillfield to the south.

Finally, the Master Plan proposes daylighting Stroubles Creek withing the landscape area between Drillfield Drive and West Campus Drive. By converting this currently underutilized lawn into a performative stormwater park, VT can both achieve its sustainability goals and improve the western gateway of the campus core.


LANDSCAPE IMPROVEMENTS
TRAILHEAD SEATING PLAZAS
RECREATIONAL PATH
REDESIGNED PARKING
TRAILHEAD SEATING PLAZA
LANDSCAPE IMPROVEMENTS
TRAILHEAD SEATING PLAZA
ENLARGED MEMORIAL PLAZA
TRAILHEAD SEATING PLAZA
IMPROVED PATHS
TRAILHEAD SEATING PLAZA
REDESIGNED PARKING
STORMWATER PARK
TRAILHEAD SEATING PLAZA
TRAILHEAD SEATING PLAZA
LANDSCAPE IMPROVEMENTS
TRAILHEAD SEATING PLAZA
STANGER STREET
DRILLFIELD DRIVE
DRILLFIELD DRIVE
KENT STREET
WEST CAMPUS DRIVE

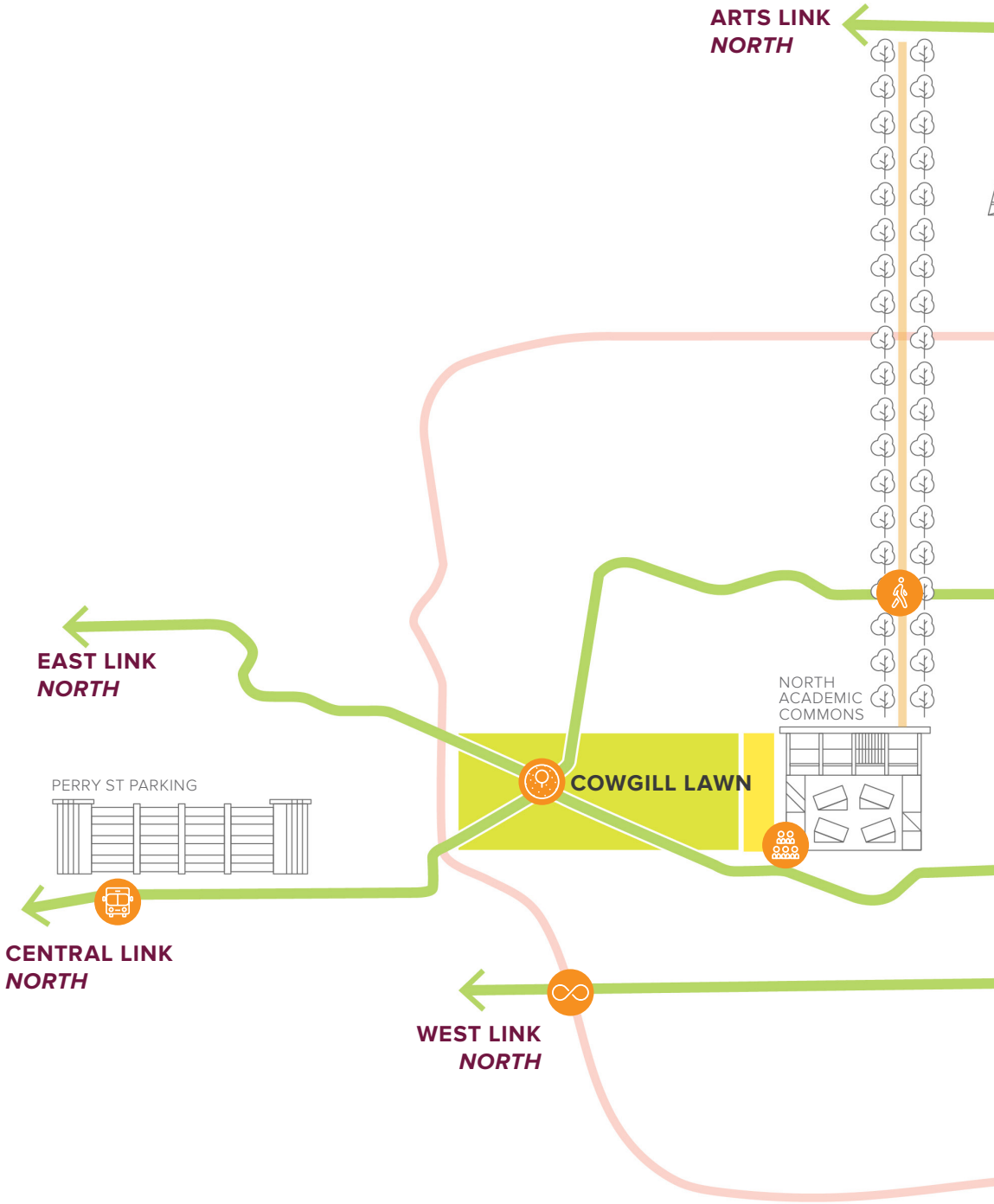
THE GREEN LINKS

Green Links leverage select grading and landscape interventions to establish circulation routes that meet the needs of all members of the campus population while activating the campus experience.

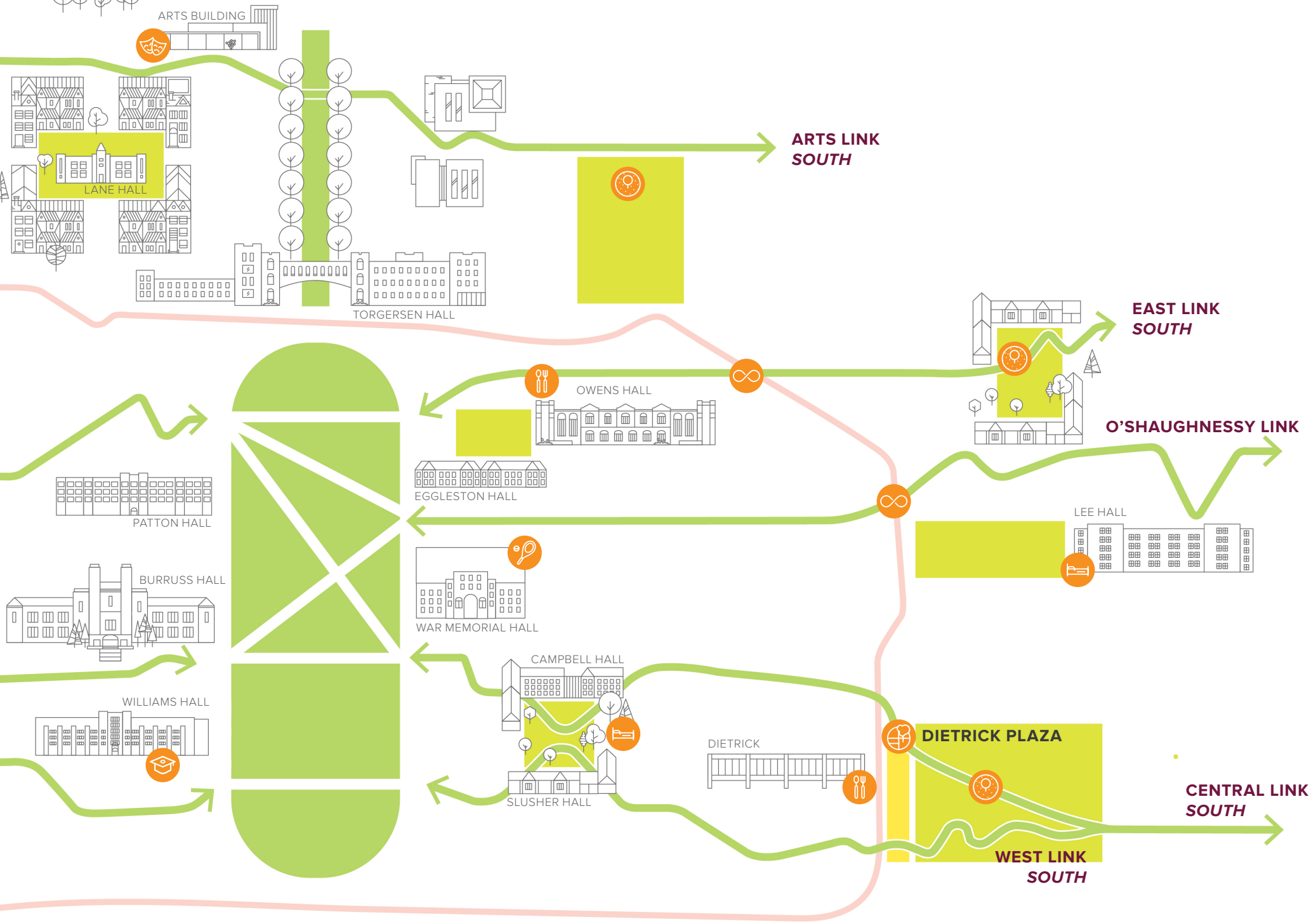
The result is a holistic network of circulation, open spaces, and expanded building programs that spans the campus. Each Green Link takes on a unique character based on its context.

The Green Links proposed in the Master Plan include:

- The Arts Link
- The East Link
- The O'Shaughnessy Link
- The Central Link
- The West Link
- Peripheral Links (*within the Life Sciences & Technology and 21st Century Living-Learning Districts*)






ARTS BUILDING
LANE HALL
TORGERSEN HALL
ARTS LINK
SOUTH
EAST LINK
SOUTH
O'SHAUGHNESSY LINK
OWENS HALL
EGGLESTON HALL
PATTON HALL
LEE HALL
BURRUSS HALL
WAR MEMORIAL HALL
CAMPBELL HALL
WILLIAMS HALL
DIETRICK
DIETRICK PLAZA
SLUSHER HALL
CENTRAL LINK
SOUTH
WEST LINK
SOUTH

Arts Link

East of the Drillfield, the Arts Link is designed to connect the Upper Quad to Alumni Mall and Otey Street (following the replacement of the Squires Student Center). This link anticipates future conditions when the Creativity & Innovation District is developed and the Squires Student Center is demolished. Ultimately, the Link is intended to connect the North End Center, Turner Way, the Upper Quad, and Alumni Mall to Otey Street, creating a new pathway and bicycle route through the east side of the campus. Key areas of change along the link include the area between the Upper Quad residence halls and the Moss Arts Center.

East Link

The northern extent of the East Link connects the Drillfield to Goodwin Hall. The alignment follows Drillfield Drive, travels diagonally in a northwesterly direction to the existing portal through Norris and Holden Halls. It provides a connection to the proposed east-west Turner Way which extends from Burchard Plaza, or Tech Square, to Stanger Street. Over the long-term, when Randolph is redeveloped, the East Link is designed to continue northward on axis with the Norris-Holden portal, transitioning the slope from Turner Way northward to Barger Street. At this point, the Loop continues westward behind Whittemore to Cowgill Lawn and then northward to connect with Goodwin Hall.

To the south, the East Link connects to President's Quad along Kent Street. It is deliberately positioned to not only transition the slope conditions but to provide accessible entrances to Vawter, Barringer, and Newman Halls. Within President's Quad, the East Link corridor defines a shaded garden space with outdoor seating, study areas and rain gardens in support of the stormwater strategy for the District. Rain gardens are recommended to slow the flow of water downhill toward Eggleston Quad where flooding has been experienced in the past. The East Link concept is coordinated with the overall landscape strategy for President's Quad.

O'Shaughnessy Link

The O'Shaughnessy Link enters the Student Life District via the Eggleston portal moving southward where existing slope conditions are mitigated as part of the proposed replacement for Owens Hall and continuing uphill between O'Shaughnessy and Johnson. Between O'Shaughnessy and Johnson, the link transitions to a garden setting featuring shade trees, outdoor seating, study areas, and rain gardens. The O'Shaughnessy link ultimately connects to Washington Street.

Central Link

The Central Link connects the campus from north to south - from the North Academic District to the Student Life District through the Drillfield. In the north, it originates at the new Global Business Analytics Complex (GBAC) in a series of plazas integrated with the new Multi-Modal Transit Facility (MMTF). This 24-hour facility infuses constant life into the Green Link and provides transit users a direct connection to the campus core.

The Central Link intersects with the Infinite Loop near the MMTF and a reimagined Cowgill Lawn, where a new amphitheater and performance space help to create a student life hub in the landscape. Moving through the mid-level plaza, the Central Link continues past Derring Hall and into a new landscape at the west entry of GBJ, which significantly regrades the area near Pamplin Hall and replaces the existing stairs with a new pathway sloping at less than five percent. The Link continues past Pamplin, crosses the lower path near the Burruss Tunnel, and provides a new barrier-free connection to the Drillfield

South of the Drillfield, the Central Link passes through the ground-level portal in Campbell Hall and enters Campbell Quad. The Link provides access to Prairie Quad along an alignment located between Dietrick and Payne Hall intersecting with the Infinite Loop to the east of Dietrick and continuing diagonally across Dietrick Lawn, ultimately connecting to Washington Street and southward to Cassell Coliseum.

West Link

The northern component of the West Link provides an inclusive access from the Drillfield to the New Classroom Building. As users leave the northern edge of the Drillfield, the West Link carries them along the west side of Williams Hall before continuing through the ground-level opening between Robeson Hall and Pamplin Hall. After passing alongside the new garden west of the G. Burke Johnston Student Center (GBJ), users cross through Derring Hall and continue past the proposed Intelligent Infrastructure Fusion Lab and Dining Complex before reconnecting with the Infinite Loop at the New Classroom Building.

To the south, the West Link leads from the Drillfield along a new diagonal pathway originating between Hutcheson and Campbell Halls into a transformed Campbell Quad. Completion of the link is contingent on the redevelopment of Slusher Hall, through which the link passes before following the western edge of Dietrick and connecting with the southern extents of the Central Link at Dietrick Lawn.

Peripheral Green Links

Green Links are also proposed in the Life Sciences & Technology District and the 21st Century District. In the 21st Century District, the Green Links align with the meadow. Details for these links are provided in the detailed discussion of each Campus District.

Anatomy of a Green Link

Every Green Link is comprised of several urban design elements: landscape typologies, water and topography, mobility, and building programs. Together, these elements combine to create a comprehensive system of campus enhancement.

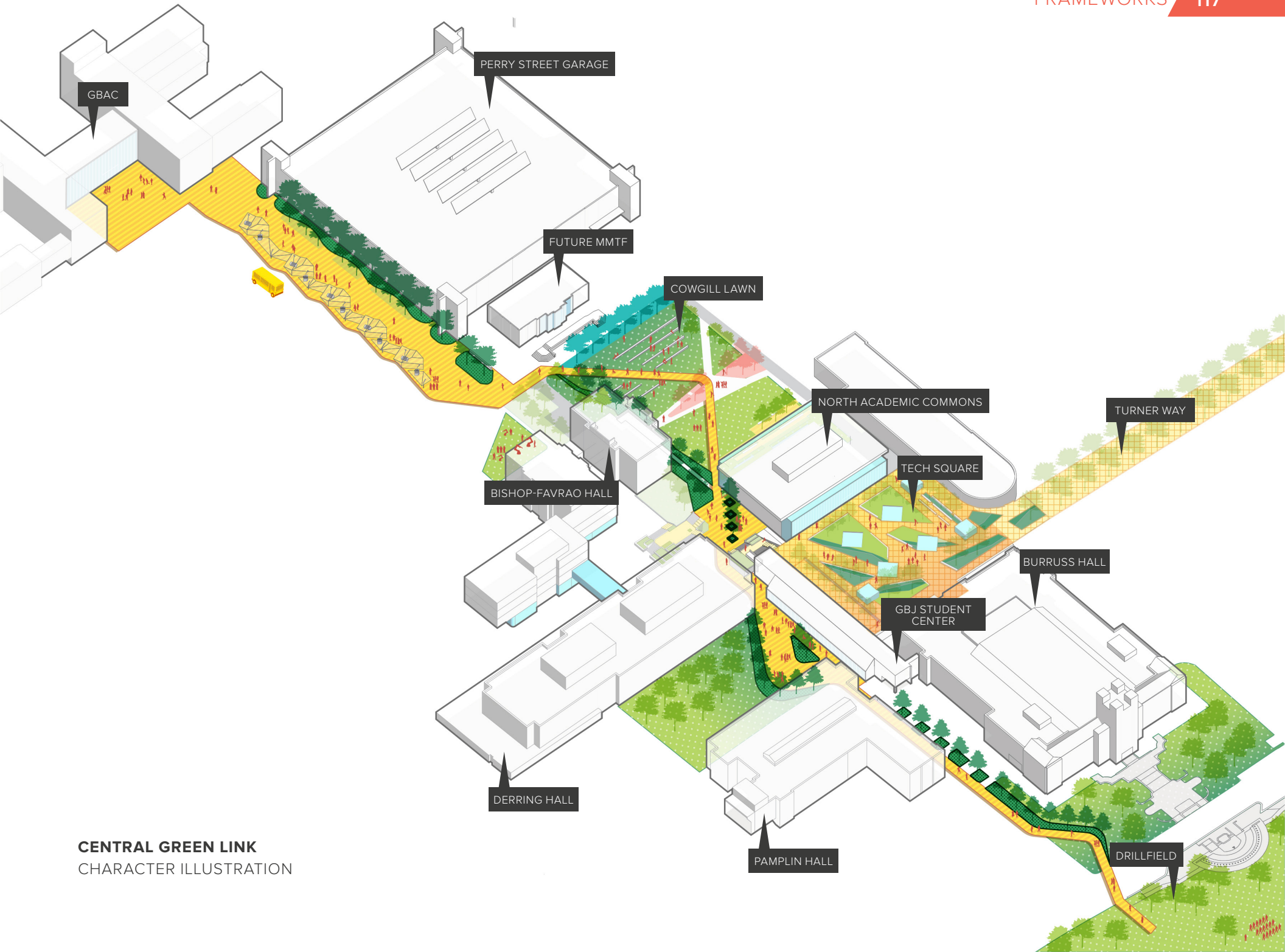
The Central Link provides an example of how these elements interact. By connecting major open spaces like Cowgill Lawn, Tech Square, and the Drillfield along a corridor with new tree plantings, the Link highlights and improves the landscape character of the campus.

The Link both responds to existing topography and carves out new terrain through select re-grading, providing opportunities for on-site stormwater management and improving campus accessibility.

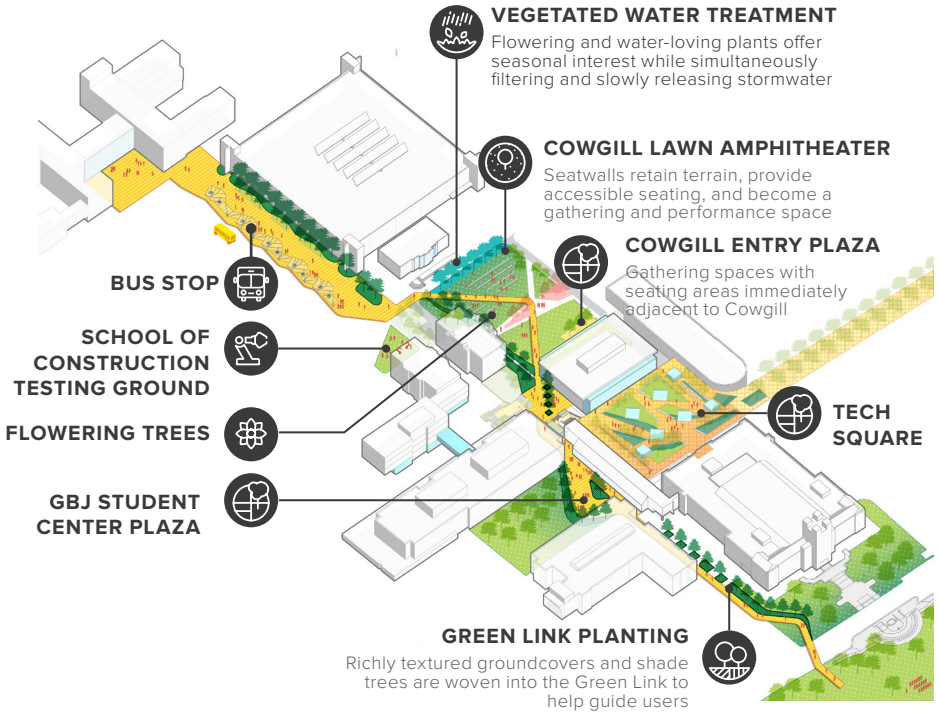
Connections to other means of mobility are also made possible, as the Link intersects several major pathways and the Infinite Loop, and terminates near the Multi-Modal Transit Facility.

By engaging major entrances of adjacent buildings, the Link helps to activate these interior spaces, providing space for indoor-outdoor integration and expanded building programming.

A more detailed examination of these layered systems is available on the following spread.

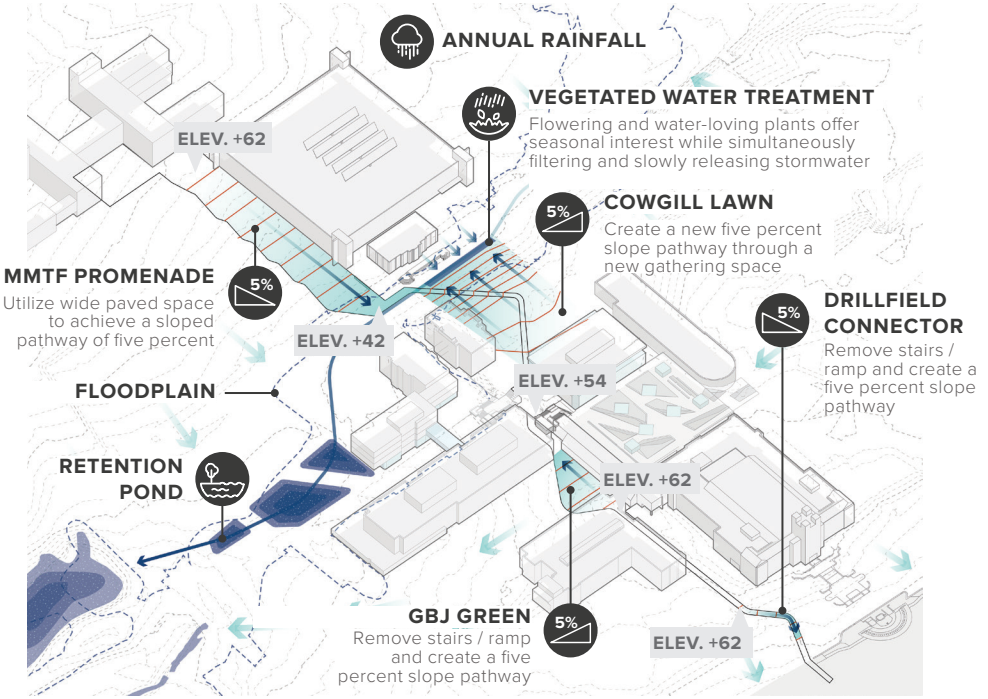


CENTRAL GREEN LINK
CHARACTER ILLUSTRATION



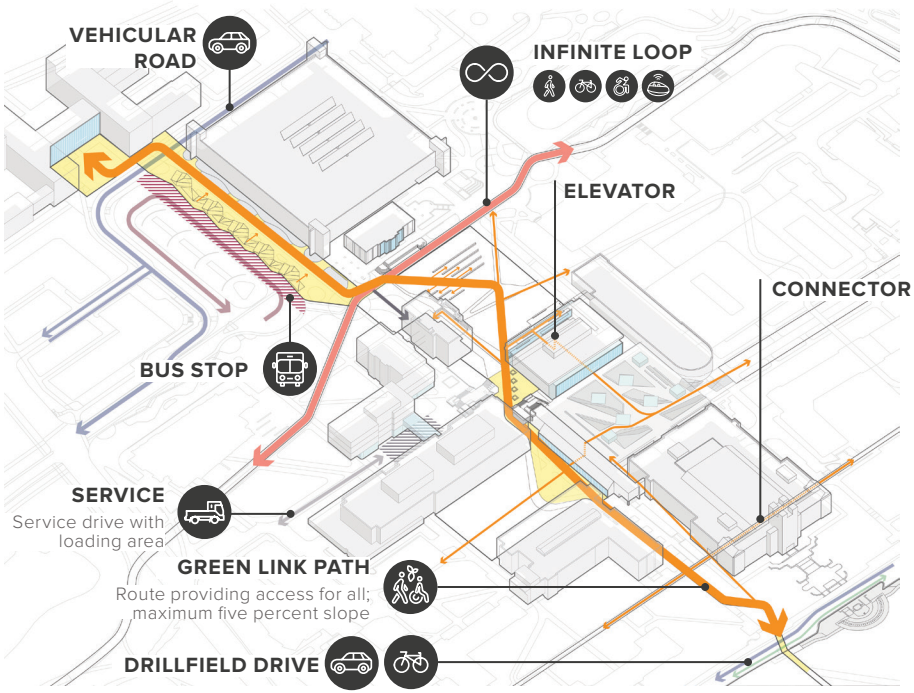
Landscape Typologies

Each Green Link has a unique opportunity to enhance the campus landscape by introducing seating and stopping points, adding trees and canopy cover, and creating planting zones, gardens, and vegetated areas. This approach to placemaking creates a series of landmarks on campus and signals a novel type of open space at Virginia Tech.



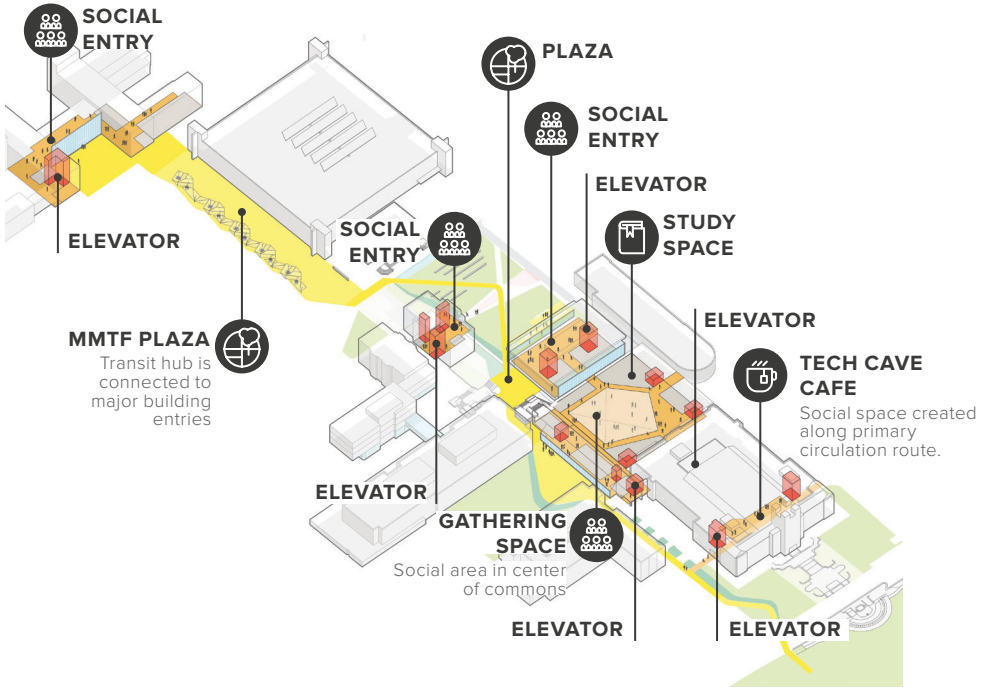
Water and Topography

To achieve access for all along each Green Link, strategic re-grading of some pathways and landscapes is necessary. These topographic interventions create an opportunity to connect stormwater management solutions through campus, improving the quality of the environment while addressing a central sustainability goal.



Mobility

The pathways of the Green Links are designed to slope at less than five percent and are wide enough to accommodate inclusive access, bicycles, and small service vehicles. By creating barrier-free pathways for all, new connections across campus are provided. Each Green Link also provides access to the Infinite Loop, bus stops, and other amenities.



Buildings and Program

The design of the Green Links responds to important building entries and acts to unify the indoor-outdoor experience on campus. In many cases, this impacts the programming of new facilities which will now be able to support more outdoor collaboration space.

ADDITIONAL LANDSCAPE ELEMENTS

Open Spaces

In addition to recommendations for improvements to the Drillfield, the Landscape Framework builds upon the Central Spine of the campus, enhancing the associated open spaces and extending them as appropriate. Proposed enhancements include:

- The Meadow: located west of the Inn at Virginia Tech, the enhancement of the existing Meadow is proposed to provide connections to outlying Districts and natural areas of the campus, including extending into the Glade Road District
- Stroubles Creek Corridor / Intelligent Infrastructure Corridor: a continuation of the Central Spine, the Stroubles Creek Corridor is enhanced by improvements to the riparian landscape, by new roads and trails, and by a fitness park. The enhancements also contribute to the Intelligent Infrastructure Corridor which includes elements along the creek
- CID Green: a new park-like Green proposed in the Creativity & Innovation District—made possible over the long-term by the relocation of the Graduate Life Center (see Academic & Research Framework) and the removal of the 1960s expansion of Donaldson-Brown—is designed to contribute to stormwater management and programmatic objectives
- Dietrick Lawn: the largest open space in the Student Life District, Dietrick Lawn provides space for social gathering, recreation, and large events. Its preservation as an open space is an important recommendation of the Master Plan

Quadrangles

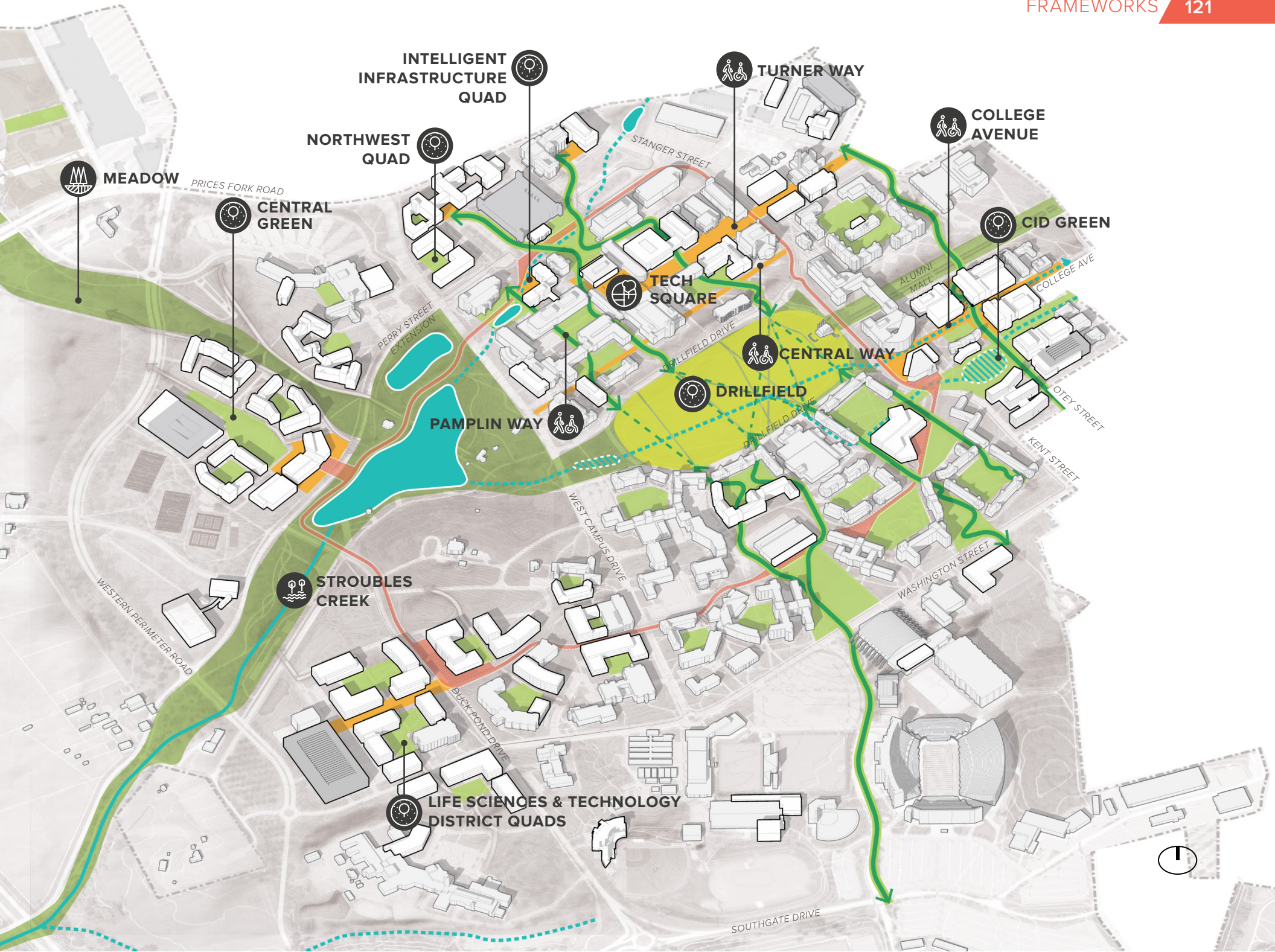
The existing quadrangles of the campus are maintained and enhanced in the Master Plan. In proposed or expanded Districts, the landscape framework introduces new or reimagined quadrangles including:

- Northwest Quad: a new quad defined by the proposed Undergraduate Science Lab and the proposed Science Building along West Campus Drive
- Intelligent Infrastructure Quad: a new quad in the North Academic District associated with new facilities supporting the Intelligent Infrastructure Destination Area
- Tech Square: a reimagined “town square” on the existing Burchard Plaza associated with the proposed North Academic Commons
- Central Green: a new green and associated quads in the 21st Century Living-Learning District
- Life Sciences & Technology District Quads: quads formed and shaped by future buildings

Landscape Circulation

Several circulation corridors contribute to the landscape framework by connecting quadrangles and open spaces. They are envisioned as landscape corridors coordinated with pathways and the Green Links. Key corridors include:

- Turner Way, Central Way, and Pamplin Way in the North Academic District
- College Avenue and Otey Street along Stroubles Creek in the Creativity & Innovation District
- South Duck Pond Trail, connecting West Campus Drive to Duck Pond Drive


INTELLIGENT INFRASTRUCTURE QUAD
TURNER WAY
COLLEGE AVENUE
NORTHWEST QUAD
MEADOW
PRICES FORK ROAD
CENTRAL GREEN
CID GREEN
STANGER STREET
TECH SQUARE
ALUMNI MALL
COLLEGE AVE
PERRY STREET EXTENSION
DRILLFIELD DRIVE
CENTRAL WAY
DRILLFIELD
OTEY STREET
PAMPLIN WAY
KENT STREET
WEST CAMPUS DRIVE
WASHINGTON STREET
STROUBLES CREEK
WESTERN PERIMETER ROAD
DUCK POND DRIVE
LIFE SCIENCES & TECHNOLOGY DISTRICT QUADS
SOUTHGATE DRIVE

STORMWATER

Virginia Tech's campus can serve as a national showcase for innovative and holistic stormwater management while creating opportunities for student learning, hands-on research, and landscape amenities.

A thoughtful stormwater management system integrated into the landscape can enhance the quality of quads, plazas, and open spaces. The Master Plan proposes stormwater management recommendations that speak to knowledge-based stewardship and management of water and soil resources in urban and rural setting and employ best management practices (BMPs) that are functionally and aesthetically integrated into the campus landscape.

Following this comprehensive stormwater management vision, BMPs can meet water quantity and quality requirements while simultaneously enhancing learning and research opportunities in the design, implementation, and monitoring of stormwater management facilities.

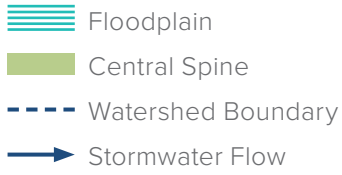
When possible, interventions aimed at managing the impacts of multiple campus developments will be explored and a district-based approach will be taken. Innovative project funding and phasing will allow stormwater management elements to be designed as shared amenities, increasing their efficiency and creating a memorable campus experience.

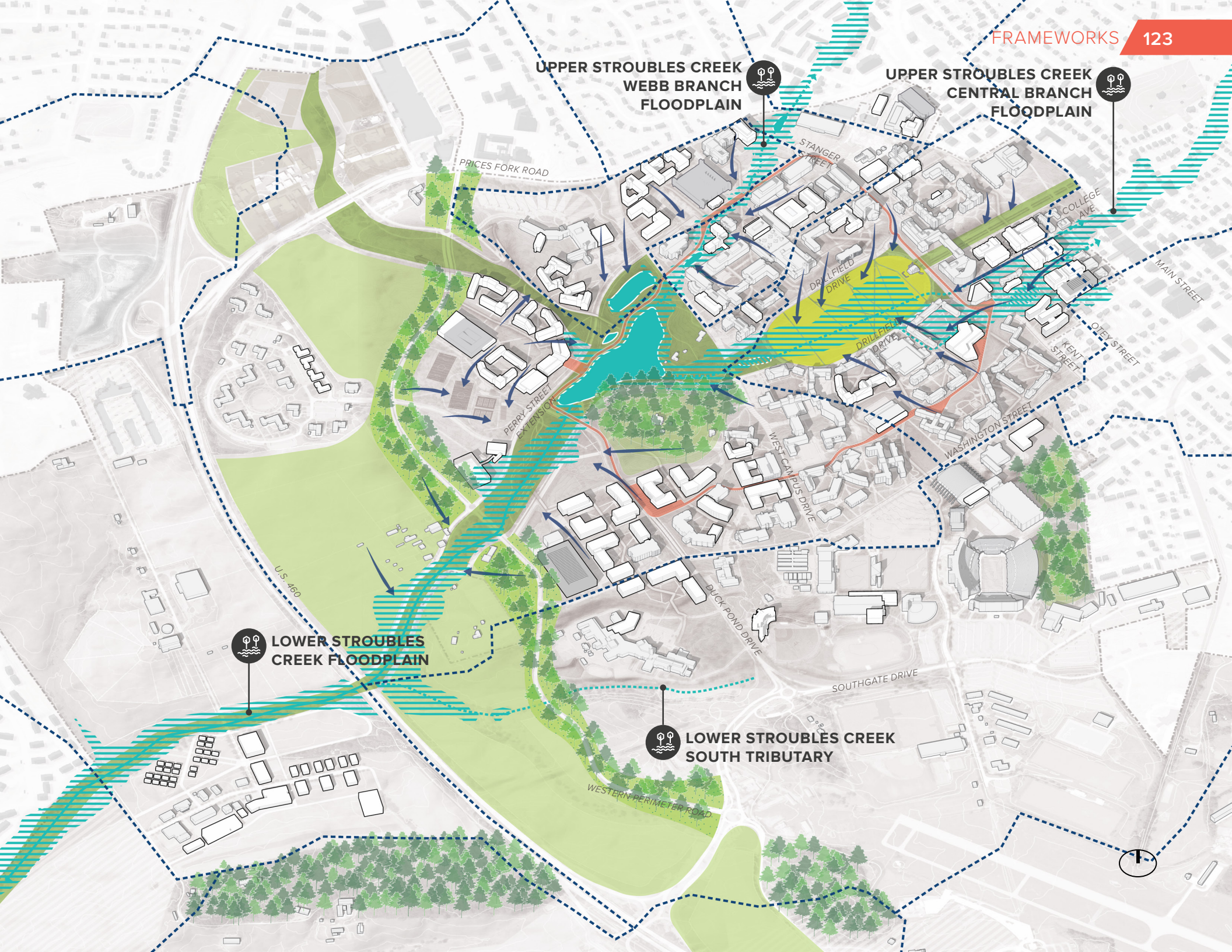
THE STREAM LAB

Stormwater management is intended to become an important part of the campus infrastructure and is intended to incorporate ongoing research on Stroubles Creek associated with the Stream Research, Education, and Management Lab (StREAM Lab). The StREAM Lab is operated by Biological Systems Engineering (BSE), an engineering discipline applying concepts of biology, chemistry, and physics along with engineering science and design principles to solve problems in biological systems. It is run jointly by the College of Engineering and the College of Agriculture and Life Sciences.

The StREAM Lab is positioned along Stroubles Creek on the Heth Farm and consists of more than 50 acres of riparian habitat where water quality and other sensors are monitored by faculty and students. The goal of the StREAM Lab is to remove Stroubles Creek from the Clean Water Act list of impaired waters. Specific project objectives include the following:

- Reduce sediment loading by removing cattle access and by restoring the stream banks
- Improve aquatic habitat within Stroubles Creek
- Reduce bacteria loading by removing cattle access and restoring forested riparian buffers
- Assess the effectiveness of three methods of stream rehabilitation: 1) livestock exclusion, 2) livestock exclusion with stream bank reshaping and replanting, and 3) livestock exclusion with natural channel design.

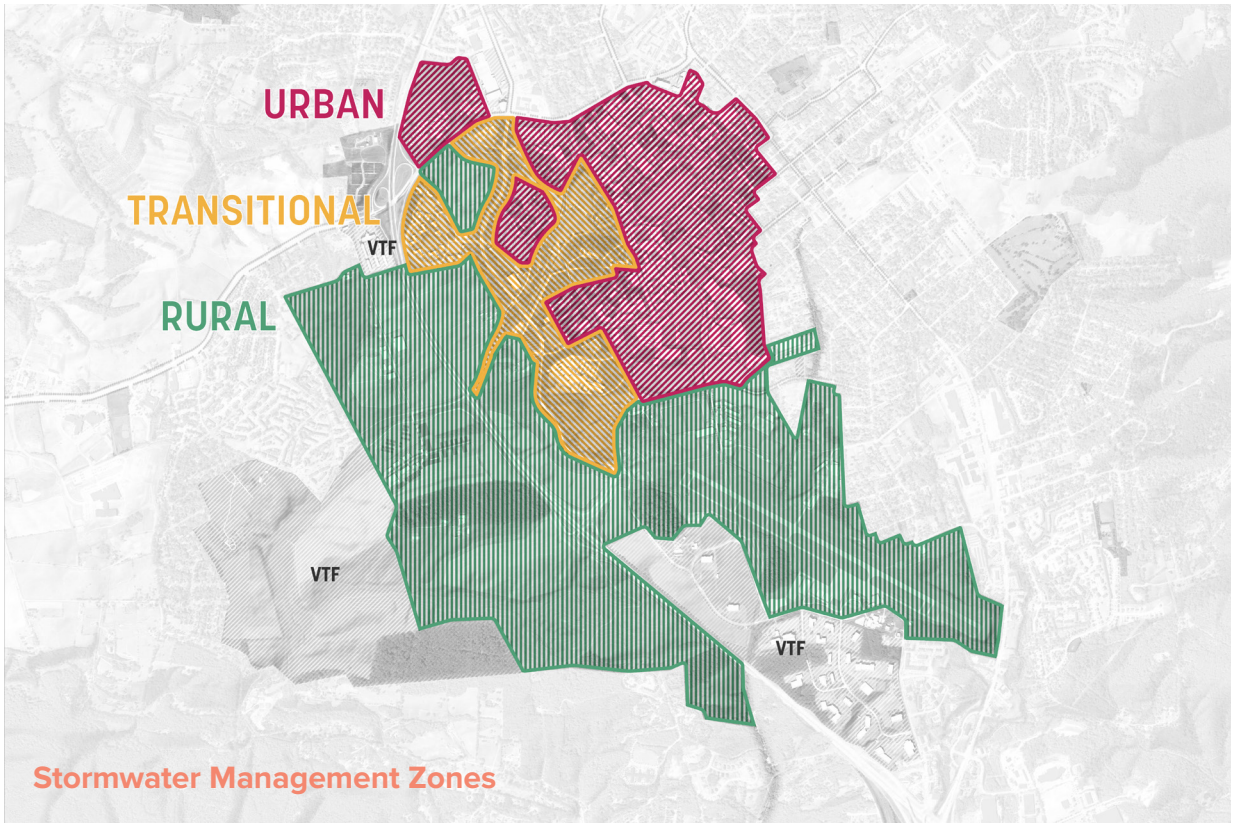



UPPER STROUBLES CREEK
WEBB BRANCH
FLOODPLAIN
UPPER STROUBLES CREEK
CENTRAL BRANCH
FLOODPLAIN
LOWER STROUBLES
CREEK FLOODPLAIN
LOWER STROUBLES CREEK
SOUTH TRIBUTARY
PRICES FORK ROAD
STANGER STREET
COLLEGE AVE
MAIN STREET
DRILLFIELD DRIVE
OLEY STREET
KENT STREET
WASHINGTON STREET
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DUCK POND DRIVE
SOUTHGATE DRIVE
U.S. 460
WESTERN PERIMETER ROAD

Strategy and BMPs

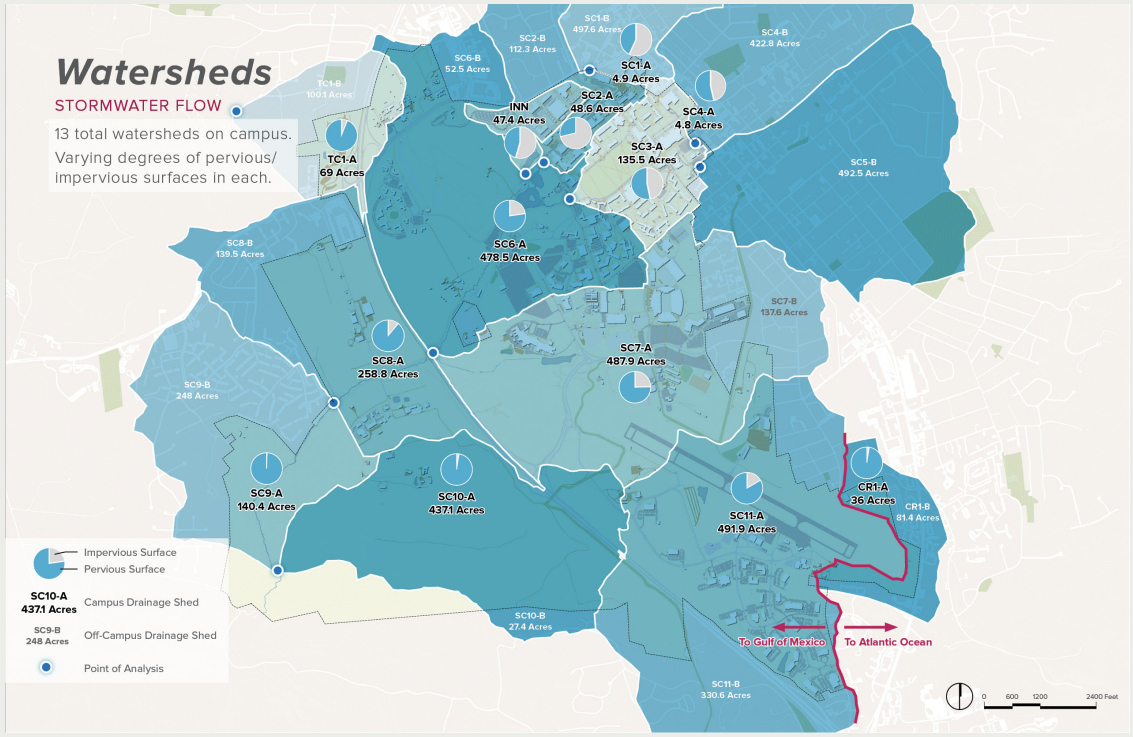
To achieve this comprehensive stormwater management strategy, three general zones or circumstances are identified where water can be managed in a manner appropriate for the context. These include: 1) urban areas of the campus core, 2) transitional areas along the Western Perimeter Road and Stroubles Creek, and 3) rural areas of the Agricultural Belt and beyond.

- Urban Areas: In the developed core, stormwater is managed by means of underground conveyance systems that ultimately lead to Stroubles Creek. In general, these systems remain unchanged with the exception of those in the North Academic District and the Creativity & Innovation District, where new approaches are proposed in response to development and known flooding conditions (see the Districts chapter for details). To reduce the impact on the existing systems and to address water quality, several stormwater best management practices (BMPs) are proposed in the established core. These include rain gardens, bioswales, pervious paving, and green roofs among others integrated with the overall landscape framework.
- Transitional Areas: A 100-foot wide stream protection buffer is proposed along all branches of Stroubles Creek. The buffer is envisioned to incorporate appropriate riparian planting to minimize erosion and control runoff. Additionally, areas of development outside of, and adjacent to the campus core—including Oak Lane, the Autonomy Study Park, and the Western Perimeter Road are seen as areas where the character of BMPs should bridge between those of the more urban and more rural parts of campus.
- Rural Areas: The parts of campus dedicated to agriculture and natural resources require BMPs designed to reflect their rural surroundings through more naturalized plantings and land forms. These areas also contain conserved open spaces—land that is presently determined to not be used for development, allowing it to act as an infiltration zone for stormwater. Detailed information on conserved open spaces can be found in the separate Technical Appendix.



Stormwater Management Zones

DATA & ANALYSIS



Hydrology

The hydrological patterns of the campus are defined by the three branches of Stroubles Creek: Webb Branch, the Central Branch, and the South Tributary. Webb Branch enters the campus near the intersection of Prices Fork Road and Stanger Street where it flows through a detention basin before entering underground culverts. It daylights and merges with the Central Branch near the Duck Pond. The Central Branch enters the campus near the intersection of College and Otey Streets and is channeled through culverts under the Graduate Life Center and Eggleston Hall before continuing westward beneath the Drillfield. The Central Branch also daylights near the Duck Pond. The South Tributary parallels Southgate Drive in a box culvert, daylighting at Duck Pond Drive before flowing westward to merge with Stroubles Creek near U.S. 460.

The Virginia Tech Campus encompasses 13 watersheds with those in the established core having the highest percentage of impervious area. The established core, generally defined by Washington St, Prices Fork Road, West Campus Drive, and Main Street, is 51.8 percent impervious. Overall, the campus is 17.2 percent impervious.

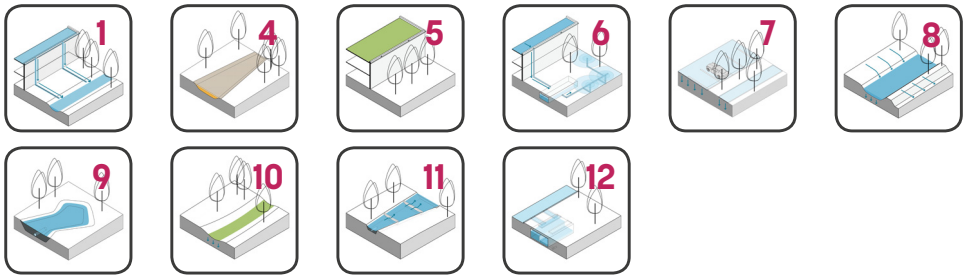
BMP Matrix

This matrix illustrates diagrammatic representations of the Virginia Department of Environmental Quality's (DEQ) BMPs as applied to the three character zones of the campus. The Master Plan highlights which BMPs are appropriate for each management zone, and which should be modified to adapt to different character settings. For more details, see the Stormwater Management Report in the separate Technical Appendix

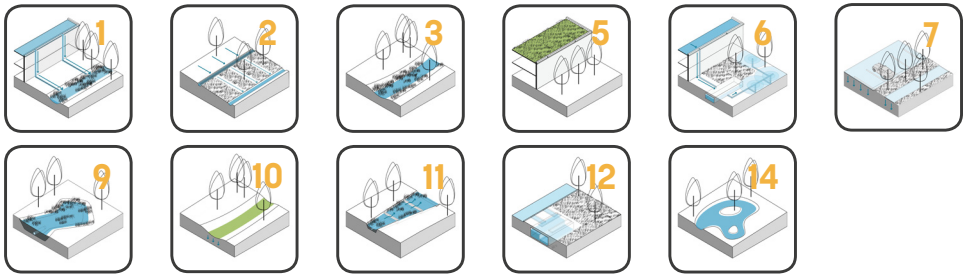
The BMPs adapted in the plan include:

1. **Rooftop Disconnection:** runoff directed towards pervious areas rather than storm sewer system
2. **Sheetflow:** runoff from impervious and turf areas drains through native vegetation and undisturbed soils
3. **Grass Channel**: linear turfgrass swale slows and filters runoff
4. **Soil Amendments:** tilling and amending of compacted soils with compost
5. **Vegetated Roof:** evapo-transpiration of rooftop plantings reduces runoff rates
6. **Rainwater Harvesting:** intercepts, stores, and retains roof runoff for future use
7. **Permeable Pavement:** porous paving units allow infiltration through paved areas. Currently not preferred by VT due to maintenance considerations and sensitivity of regional karst topography
8. **Infiltration:** temporary surface or underground storage allows incoming runoff to exfiltrate into underlying soils. Not permitted by DEQ is areas of shallow karst topography
9. **Bioretention:** shallow landscaped area designed to mimic a forested ecosystem; must have impervious liners and underdrains
10. **Dry Swale:** a linear bioretention facility
11. **Wet Swale:** a linear combination of a swale and a wetland
12. **Filtering Practice:** a sand filter with a turf surface
13. **Constructed Wetland:** designed to mimic a natural wetland ecosystem
14. **Wet Pond:** permanent pool of standing water for gravitational settling
15. **Extended Detention Pond:** temporary (12-24hr) detention of runoff regulated by undersized outlet structure

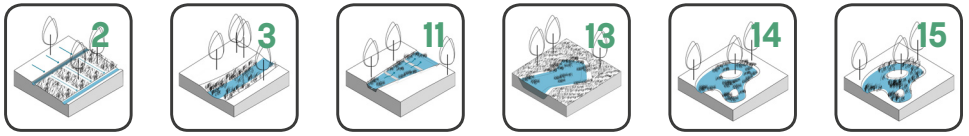
A URBAN
Selective Strategies for the Core Campus



B TRANSITIONAL
Deploying BMPs at the Campus Crossroads



C RURAL
Enhancing the Land Grant Mission

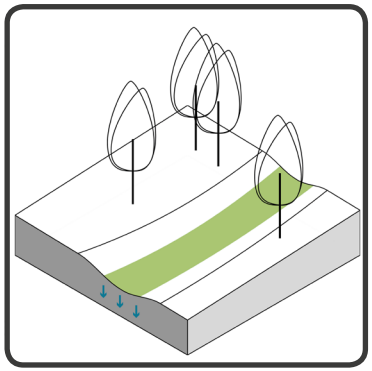


BMP Scorecard

The Master Plan recommends that VT develop "scorecards" similar the one below for each BMP to provide additional details, illustrate related precedents, and suggest potential applications for streamlined implementation by VT Facilities staff and contracted designers and engineers.

A10 DRY SWALE

URBAN



Dry swales are bioretention cells that are shallower, configured as linear channels, and covered with turf or other surface material (other than mulch and ornamental plants).

AVAILABLE SPACE
Narrow corridors and tight areas with many constraints

TOPOGRAPHY
Longitudinal slopes less than 4% (2% preferred). Check dams can be used to limit runoff velocities.

CONTRIBUTING DRAINAGE AREA
Maximum 5 acres

AVAILABLE HYDRAULIC HEAD AND HYDRAULIC CAPACITY
3-4 feet; 10-year flow within swale banks

MAINTENANCE
Typical landscape maintenance. Short ponding time (less than 6 hours) should not create mosquito issues.

POTENTIAL APPLICATION AREAS
Road medians or shoulders, ROWs, commercial buildings, parking lots, dry extended detention basins



Recycled stone and construction debris

Arizona State Polytechnic Campus, Glendale



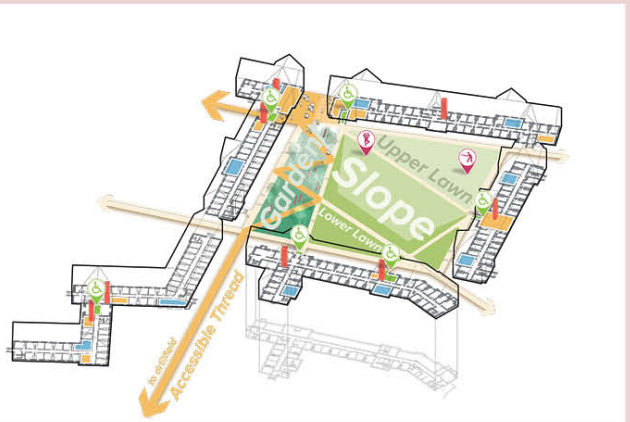
Aggregate and gravel

North Point Park, Boston



Lawn and select tree planting

North Point Park, Boston



APPLICATION: PRESIDENT'S QUAD

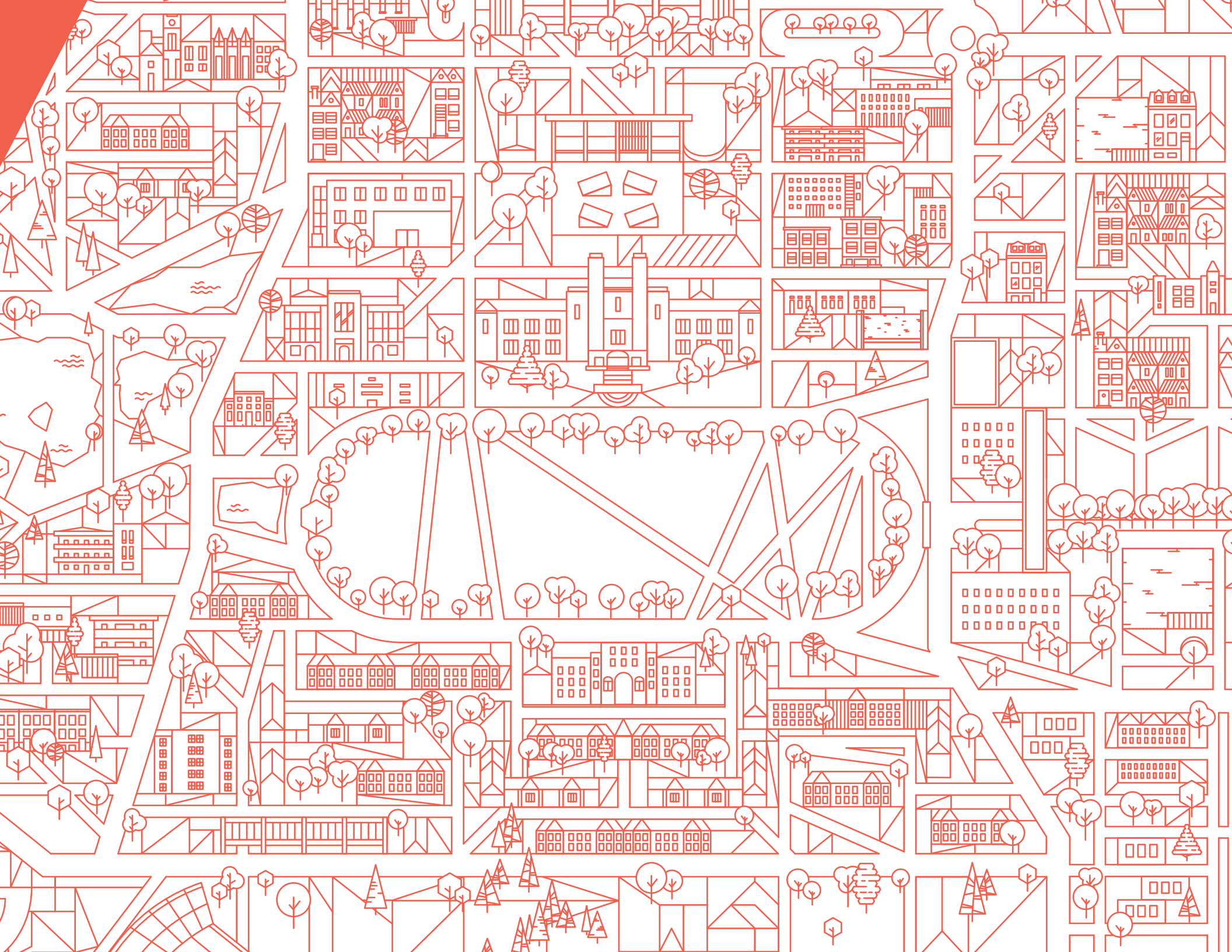
Coupled with the "Green Link" accessible thread weaving through the President's Quad is the Dry Swale, adding an additional dimension and function to this student life landscape. Artful placement of Hokie Stone within the swale bottom, as well as the addition of check dams (the longitudinal slope of the Green Link exceeds 4%) create a unique garden setting experienced by large numbers of students on a daily basis.


STANGER STREET
PRICES FORK ROAD
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
DRILLFIELD DRIVE
COLLEGE AVE
OTEY STREET
KENT STREET
WESTERN PERIMETER ROAD
WASHINGTON STREET
DUCK POND DRIVE
BEAMER WAY
SOUTHGATE DRIVE

The Landscape Framework builds upon the existing structure of the campus defined by its topography, hydrology, and wooded areas and highlight's VT's land grant legacy by celebrating the University's natural setting and agricultural heritage.

Mobility Framework

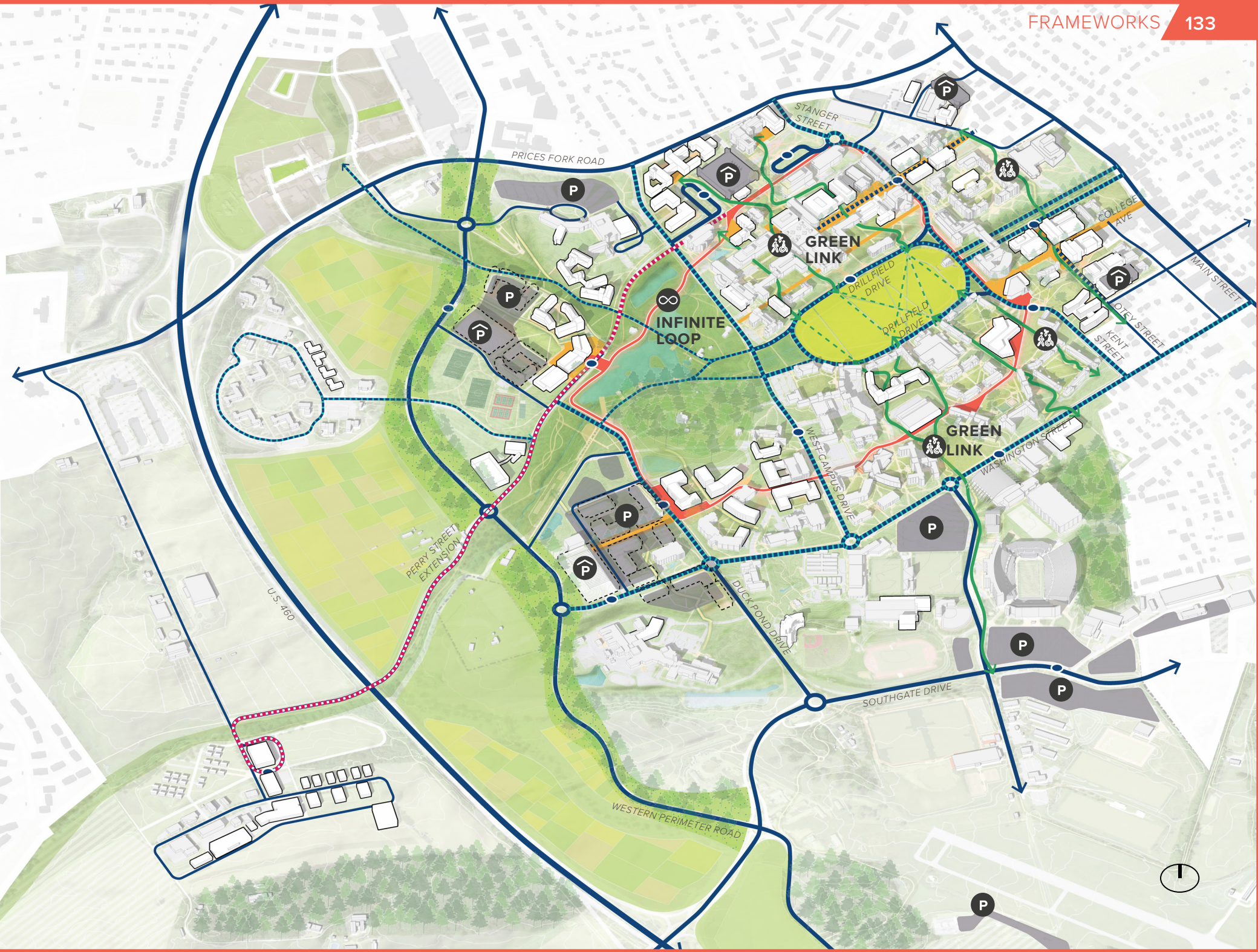




Mobility Framework

Virginia Tech believes that everyday commuting choices can have a community-wide impact, and it is committed to encouraging multi-modal travel as an attractive alternative to single-occupancy driving.

The Master Plan reflects this philosophy by prioritizing human-powered movement, bicycle, and transit access with the goal of providing an integrated approach to mobility. It also addresses the prospect of providing autonomous vehicle shuttle services on the campus. The recommendations of the plan build upon the previously developed Parking and Transportation Master Plan (PTMP) completed by VHB in 2015, refining elements of the PTMP based on a broader assessment of VT's development needs.


PRICES FORK ROAD
STANGER STREET
GREEN LINK
INFINITE LOOP
DRILLFIELD DRIVE
COLLEGE AVE
MAIN STREET
OTEY STREET
KENT STREET
GREEN LINK
WASHINGTON STREET
WEST CAMPUS DRIVE
PERRY STREET EXTENSION
U.S. 460
DUCK POND DRIVE
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD

PATHWAY NETWORK

Virginia Tech is committed to enabling the campus community to live a low-impact lifestyle to achieve a healthier, greener campus environment that is accessible to all.

As part of the mobility plan, the University intends to continue enhancing pathways across key Campus Districts. To support these efforts, the major circulation interventions of the Master Plan include the Infinite Loop and Green Links (see the Campus Vision chapter) as well as the general network of paths and routes throughout the campus. An overarching principle is to make the campus accessible for all members of the campus community. This requires incremental improvements to vertical connectivity as paths are replaced and extended over the years ahead.

Major elements of the pathway network as laid out in the Master Plan include:

North Academic District

- Turner Way: extending from Tech Square to Turner Street, the closure of Old Turner Street to vehicular traffic enhances accessibility and the public realm (vehicular access for ADA parking, service, and emergency access is maintained)
- Central Way: extending from West Campus Drive to Stanger Street via the Burruss Tunnel

Creativity & Innovation District

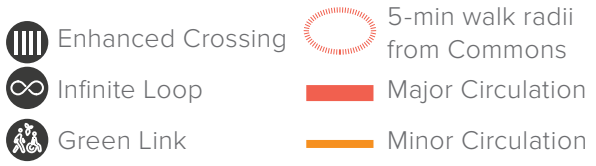
- College Avenue: pathway linking Main Street to the Drillfield
- Otey Street: pathway functioning as a continuation of the Arts Link connecting to Roanoke Street

Crossings

One challenge that the campus community faces is inadequate or confusing street crossings. To provide clarity and direction, it is recommended that Virginia Tech consolidate crossings where appropriate, such as along West Campus Drive.

In addition to the consolidation of crossings, several improvements are recommended to facilitate east-west movement. Major crossing considerations include:

- Perry Street Extension: an enhanced crossing featuring new paving materials and road markings is proposed at the intersection with West Campus Drive. High volumes of non-motorized traffic are anticipated at this intersection following construction of the 21st Century Living-Learning District.
- Infinite Loop North: a crossing is proposed where the Infinite Loop crosses West Campus Drive at the Duck Pond Drive intersection. This segment of the Loop diverts from the Perry Street extension accommodating bike and autonomous vehicles routes.
- Infinite Loop South: new paving materials and road markings are proposed where the Loop crosses West Campus Drive.
- North and South Drillfield Drive: enhanced crossings are proposed to provide access to The Grove and Duck Pond.
- West Green Link at West MMTF Loop: due to the regularity of vehicular and bus traffic leaving the West MMTF Loop, this crossing should be de-emphasized to discourage unsafe conflicts.




PRICES FORK ROAD
STANGER STREET
ALUMNI MALL
COLLEGE AVE
PERRY STREET EXTENSION
DRILLFIELD DRIVE
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
WEST CAMPUS DRIVE
WASHINGTON STREET
WESTERN PERIMETER ROAD
DUCK POND DRIVE
SOUTHGATE DRIVE

THE INFINITE LOOP

The Infinite Loop is critical to the achievement of the University's accessible circulation goals and provides connections between the campus districts for all members of the VT community.

The Loop is designed as a comprehensive circulation corridor accommodating pathways, cycle ways where appropriate, and autonomous vehicle routes. The proposed alignment responds to topographic changes and the dimensions between the buildings and site features of each District. It also intersects at key moments with the proposed Green Links.

Aesthetically, the Loop is envisioned as a distinctive corridor contributing to the character of the campus and featuring unique paving materials, lighting, and other identity elements. Technically, the Loop is imagined to include sensors that monitor mobility patterns and vehicle systems. Importantly, the sensors are interchangeable allowing researchers to incorporate emerging technologies and respond to new opportunities

Loop Alignment

The alignment of the Loop weaves through the Campus Districts surrounding the Drillfield. Beginning in the North Academic District, the Loop connects West Campus Drive to Stanger Street on a route entering the District south of the New Classroom Building to connect with the Perry Street corridor. At Stanger Street, the Loop turns south towards Vawter Hall with bicycles shifting to designated bike lanes on the road. The Loop then heads west near Owens Hall through Prairie Quad ultimately linking to Dietrick Quad and beyond to West Campus Drive (bicycle circulation is proposed on Kent and Washington Streets).

A continuation of the Loop extends westward through the proposed Life Sciences & Technology District to Duck Pond Drive then north to a new road, known as Perry Street Extension, linking West Campus Drive to the future Western Perimeter Road. From this point, the Loop turns east following the existing Duck Pond Drive alignment to West Campus Drive where it connects to the North Academic District south of the New Classroom Building.

Infinite Loop

Green Link

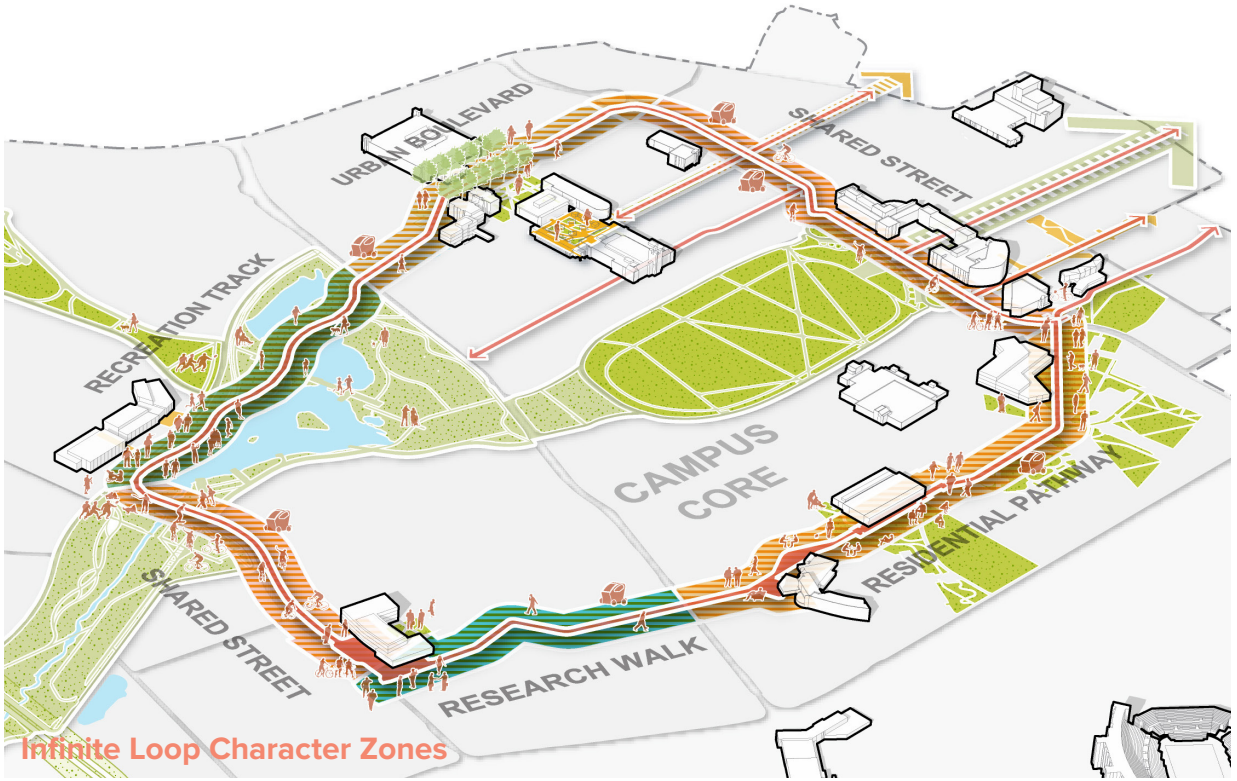
5-min walk radii from Commons



Character Zones

The 2.1 mile long Infinite Loop is organized into several distinct Character Zones. These zones shape the physical details of the Loop and respond to the conditions of each District. The Character Zones include:

- **Urban Boulevard:** Through the North Academic District, the Loop incorporates a mix of modes as it passes by key transit stops and open spaces.
- **Shared Street:** Along Stanger Street, Kent Street, and Duck Pond Drive, bikes shift to dedicated lanes on adjacent roadways as the loop takes on a more pedestrianized character.
- **Residential Pathway:** Because bikes are supported in proposed dedicated lanes along Washington Street, the Loop can more easily support the high pedestrian traffic in the Student Life District.
- **Research Walk:** In the Life Sciences & Technology District, the Loop is integrated with the proposed research quads and serves as a potential testing ground for discovery.
- **Recreation Track:** As it passes by the Duck Pond near the 21st Century Living-Learning District, the Loop combines with the adjacent trails and bikeways to contribute to a more recreational feel.

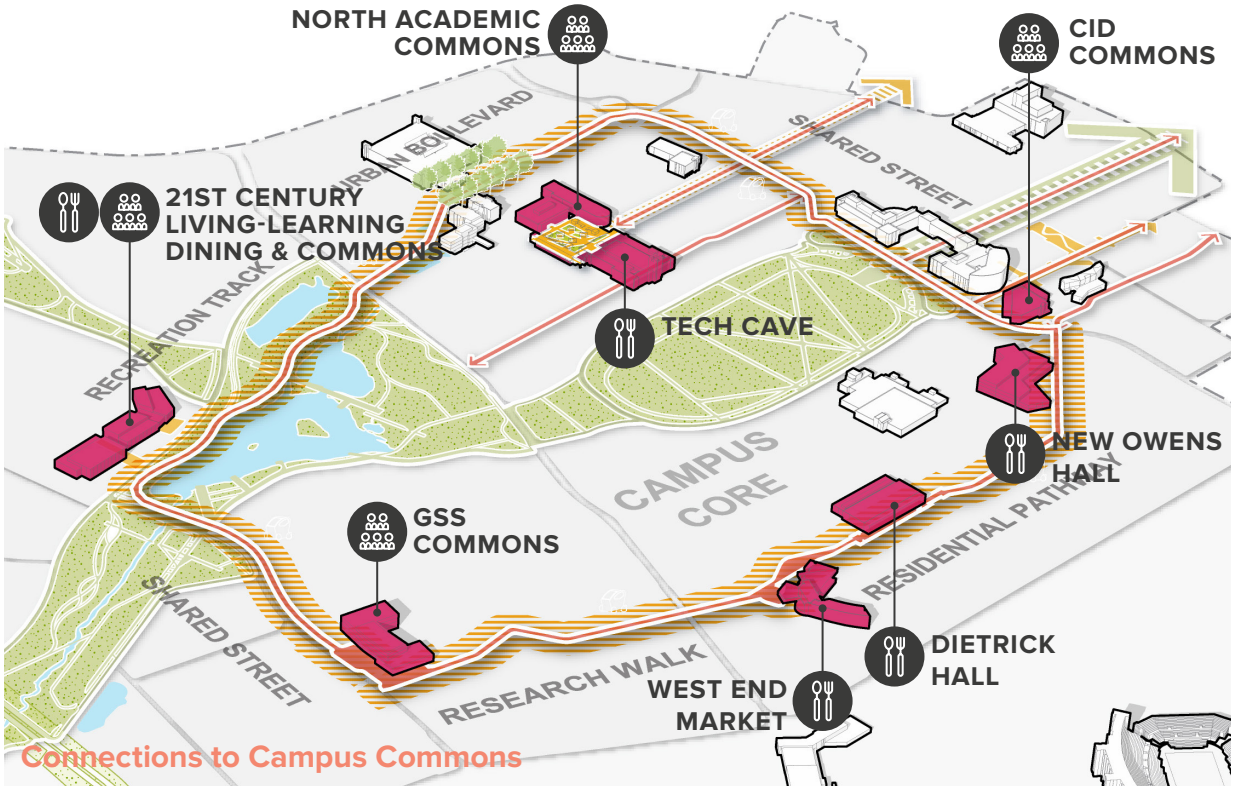


Infinite Loop Character Zones

Campus Commons

In addition to providing accessible circulation between campus districts, the Infinite Loop serves as an organizing structure for the distributed Campus Commons. The Commons, as well as the major dining halls, serve as VT's primary student life hubs and are situated throughout the campus to meet the needs of the University's large and geographically dispersed population.

As the Loop moves through each district, it expands into pedestrianized plazas to engage with these hubs and support socialization and collaboration. By acting as both a connective tissue and an active element of student interaction, the Loop solidifies itself as an integral part of the VT campus.



The Infinite Loop serves to connect the Districts and amenities of the VT campus through a variety of modes.

It is designed to provide access to all members of the campus community and also accommodates bicycle and, potentially, autonomous vehicle traffic. Through contextual landscape interventions, the Loop also addresses stormwater management concerns and acts to link several campus plazas and open spaces. Overall, the Loop is approximately two miles in length.

The sections on the following pages describe these strategies in more detail.



Pathways

The Infinite Loop provides inclusive access across and between the Campus Districts. It also ties in to the Green Links and other existing pathways.

Bicycle

Where conditions allow, bicycle traffic is permitted on the Infinite Loop. In settings where the Loop's width is reduced or where pathway use is particularly heavy, bicycles are accommodated in dedicated bike lanes on adjacent roadways.

Bus

The Infinite Loop connects users to existing bus routes and the MMTF bus loops proposed in the North Academic District.



Autonomous Vehicle

The Loop also could serve as a testing ground for the use of autonomous vehicles (AVs) on campus. Findings from these investigations could inform future interactions between AVs and non-motorized users in slow-moving applications.

Vehicular

No vehicular traffic is permitted on the Loop, with the exception of service and emergency access.

Bioswale

Where the opportunity arises, the landscapes integrated into the Infinite Loop serve to direct, store, and filter stormwater.

Plaza

To add to the dynamic experience of traveling along the Loop, the path expands to incorporate active plazas at major building entries and other central outdoor spaces.

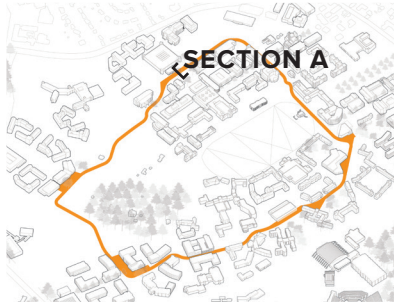
Other

The Infinite Loop also interacts with several other kinds of spaces including transit plazas, performance spaces, and a variety of transitional landscapes.

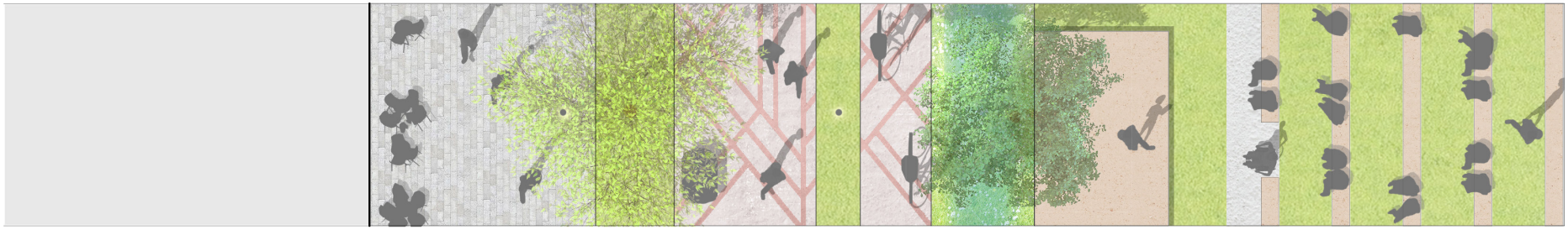
Section A

MULTI-MODAL TRANSIT FACILITY & COWGILL LAWN

In the North Academic District, the Infinite Loop supports adjacent outdoor gathering spaces including the MMTF plaza and the recommended amphitheater seating at a reimagined Cowgill Lawn. Space is included for inclusive access, bikes, and autonomous vehicle "pods" while the adjacent landscape acts as a bioswale to filter stormwater runoff. Throughout the campus, unique paving, lighting, and seating elements highlight the Loop's importance to campus connectivity and innovation.



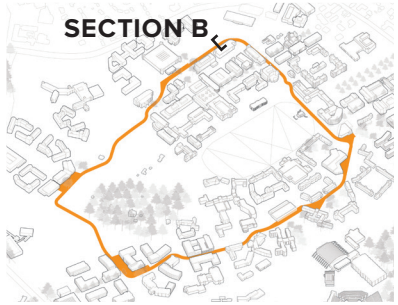


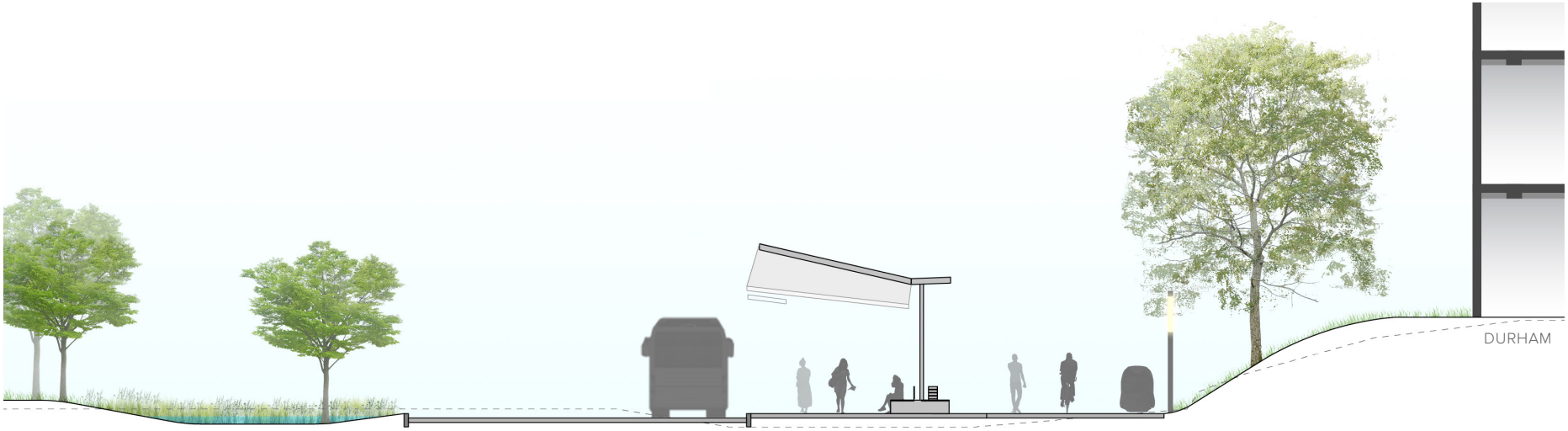


Section B

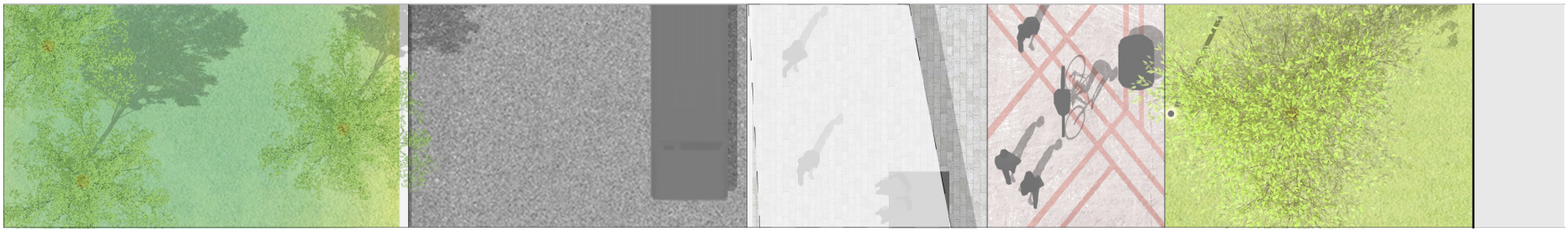
MULTI-MODAL TRANSIT FACILITY: EAST BUS LOOP

At the MMTF's East Loop, the Infinite Loop connects users to the new campus transit routes, integrating the designs of the adjacent bus stop plazas into the Loop's open space network.





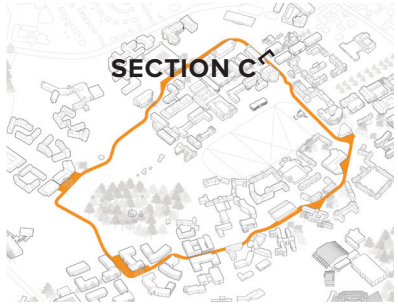
30' BUS LANE	Varies MEDIAN	40' BUS LANE AND DROP OFF	25' BUS SHELTER	20' INFINITE LOOP	35' PLANTING



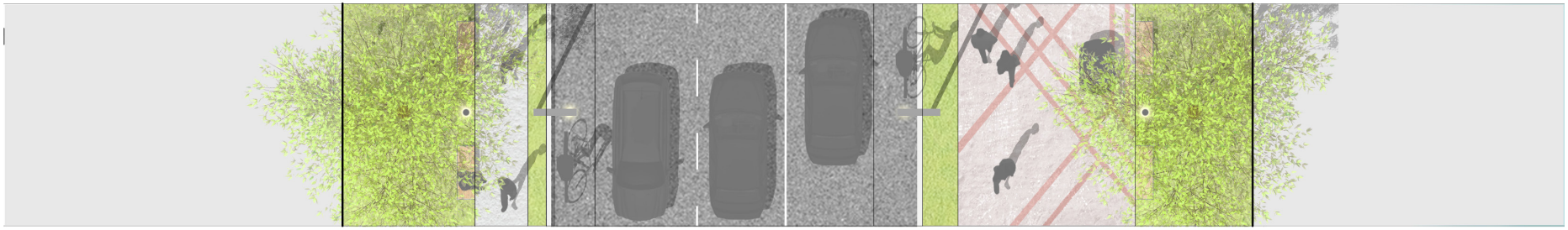
Section C

STANGER STREET AT KELLY HALL

Along Stanger Street the Infinite Loop supports inclusive access and autonomous pods while bike travel is located in dedicated lanes on Stanger Street.



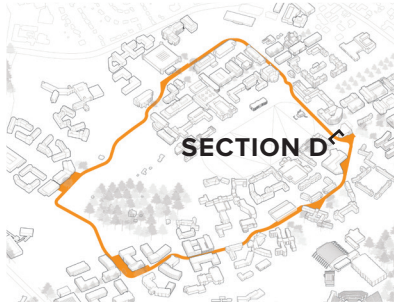




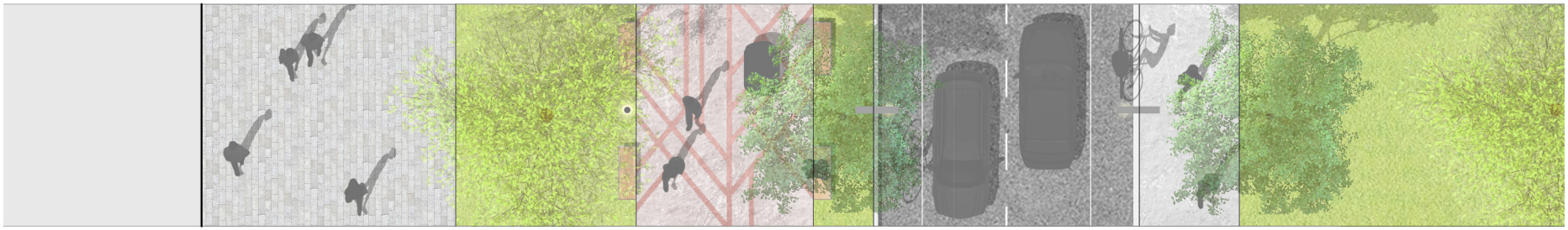
Section D

KENT STREET AT CID COMMONS

As the infinite Loop passes through the Creativity & Innovation District, it links users to the CID Commons while following the alignment of Kent Street. As is true along Stanger Street to the north, bike travel is supported via dedicated lanes on the roadway rather than within the Infinite Loop.



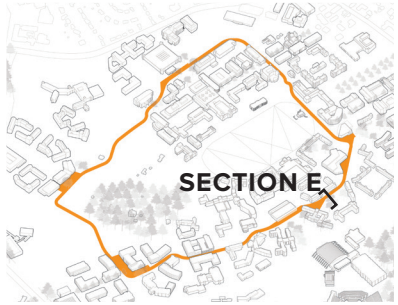




Section E

PRAIRIE (FITNESS) QUAD

Through the Student Life District, the width of the infinite Loop changes in response to its surrounding context. Moving past the proposed outdoor fitness park at Prairie Quad, the Loop's width reduces to 16' as bike traffic shifts to Washington Street. Integrated seating elements allow the Loop to serve as an extension of the District's many residential quads.





PEDDREW YATES

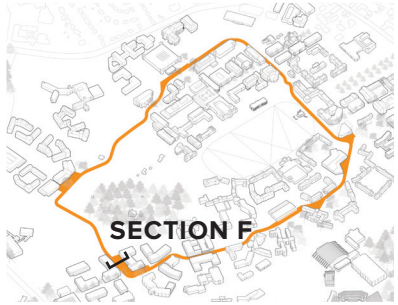




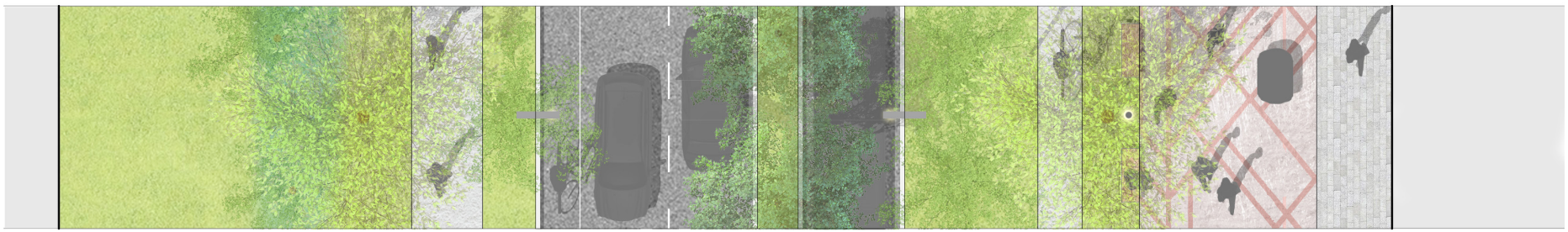
Section F

DUCK POND DRIVE AT GLOBAL SYSTEMS SCIENCE

In the Life Sciences & Technology District, the Loop again widens to 20’ to support the volume of users parking in the nearby Cage Lot and taking advantage of the commuter services located in the proposed Global Systems Science building. Bike travel is supported in dedicated lanes along Duck Pond Drive.







Section G

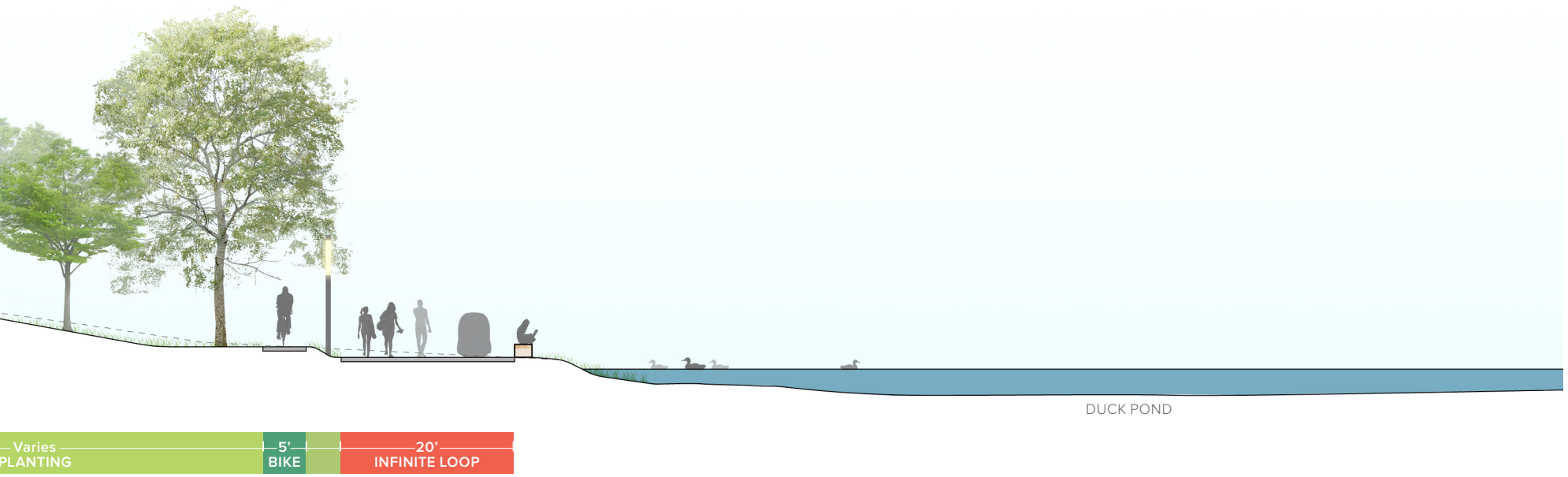
21ST CENTURY LIVING-LEARNING COMMONS & DUCK POND

The Infinite Loop takes on a more recreational character as it passes through the 21st Century Living-Learning District. Serving as a promenade at the edge of the Duck Pond, the Loop boasts views of the Stroubles Creek Corridor and connects to the recreational trails running along the adjacent Intelligent Infrastructure Corridor.



Aesthetically, the Loop is envisioned as a distinctive corridor contributing to the character of the campus and featuring unique paving materials, lighting, and other identity elements.







BIKE NETWORK

Given the scale of the Blacksburg campus, VT views bicycling as an important travel mode that enables students and employees to reach destinations efficiently.

A goal of the Master Plan is to encourage the use of bicycles within the campus and from surrounding neighborhoods. The University has made several investments to support bicycling on campus, including building on-campus infrastructure and coordinating with existing community routes to create a complete system.

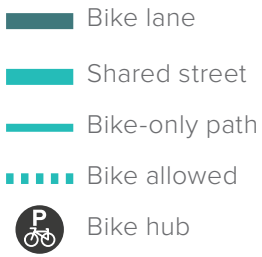
Within the campus, the Infinite Loop and other pathways are laid out to facilitate bicycle access to the various Districts. Bike routes in the established core are connected to outlying trails including Huckleberry and trails in the Intelligent Infrastructure Corridor along Stroubles Creek. Bike routes extend from the North Academic District to the proposed Smart Design and Construction Village (south Plantation Road area) via the Stroubles Creek Corridor, providing access to the campus for students living west of Plantation Road in adjacent apartment developments.

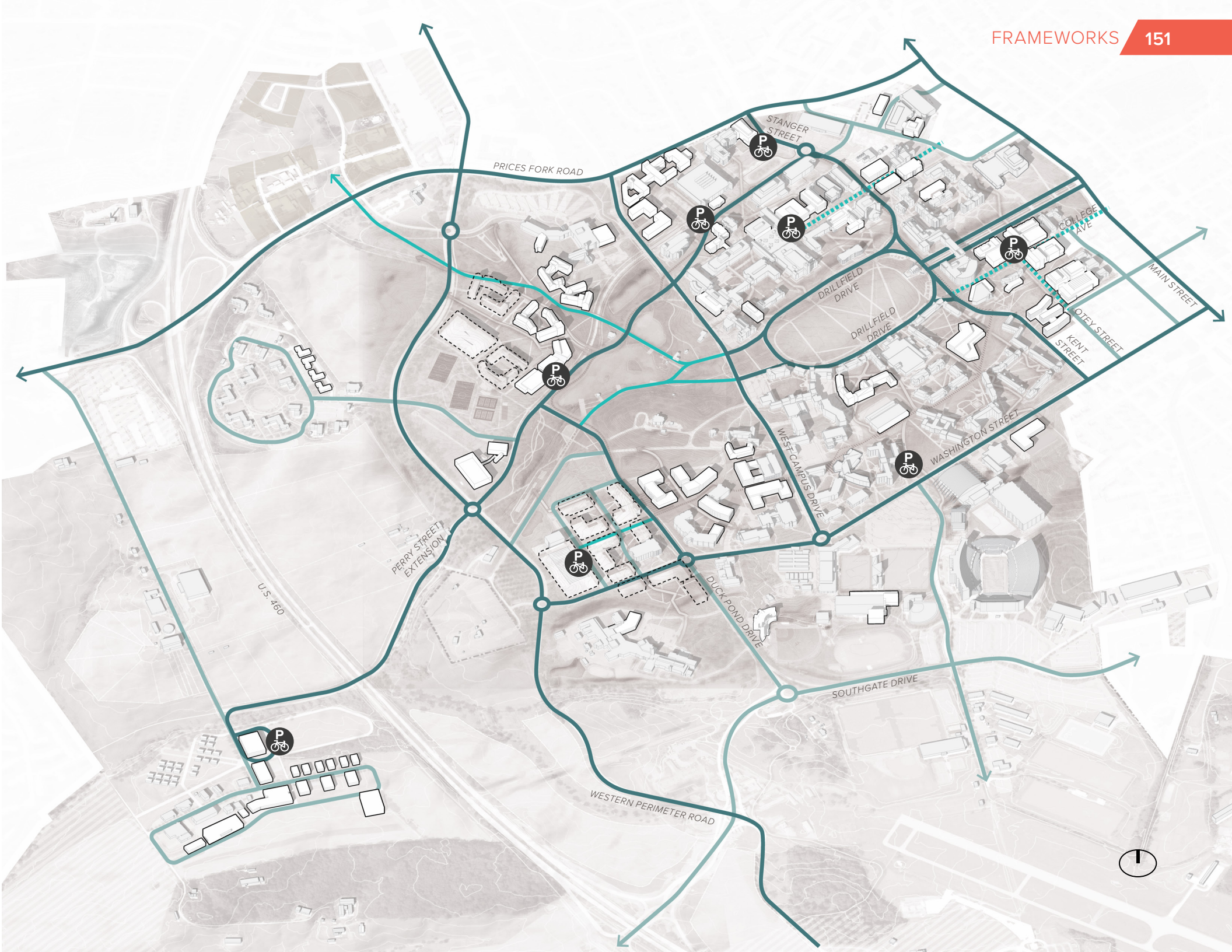
Other recommended improvements include:

- The addition of bicycle lanes on Washington Street
- Removal of on-street parking on Kent Street to accommodate an uphill climbing bike lane
- The addition of a buffered bicycle lane on Drillfield Drive
- Continued implementation of the 2014 Bicycling Parking Master Plan
- Covered bike parking facilities located in areas of high bike parking demand
- Creation of enhanced shower facilities for bike commuters at major hubs such as the distributed Campus Commons, dining halls, and recreation centers

Bike Share Program

The proposed regional bike share program is intended to facilitate movement within the campus and to provide options to the commuting population who may take transit or drive to campus. While additional studies are needed as the bike share program continues to develop, the Master Plan proposes bike share stations at campus transit stations, including the MMTF, and in the peripheral parking areas to encourage commuters to bike once they arrive on campus. Additional bike share stations and personal bike parking are concentrated in “bike corrals” at major campus destinations such as the Campus Commons.




PRICES FORK ROAD
STANGER STREET
DRILLFIELD DRIVE
DRILLFIELD DRIVE
COLLEGE AVE
MAIN STREET
OTEY STREET
KENT STREET
WASHINGTON STREET
WEST CAMPUS DRIVE
DUCK POND DRIVE
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
U.S. 460

TRANSIT NETWORK

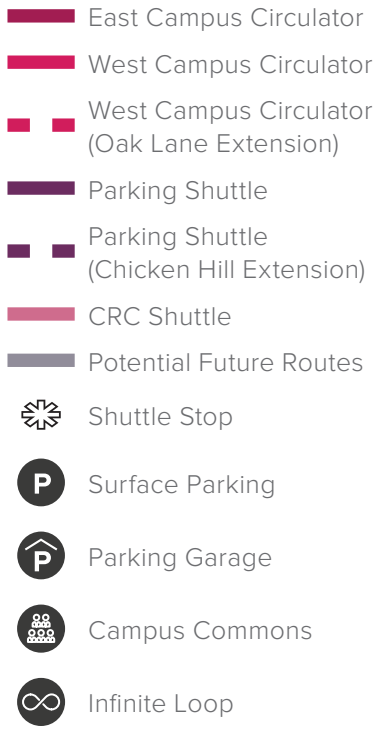
Transit connectivity is an important aspect of the integrated mobility strategy for the campus.

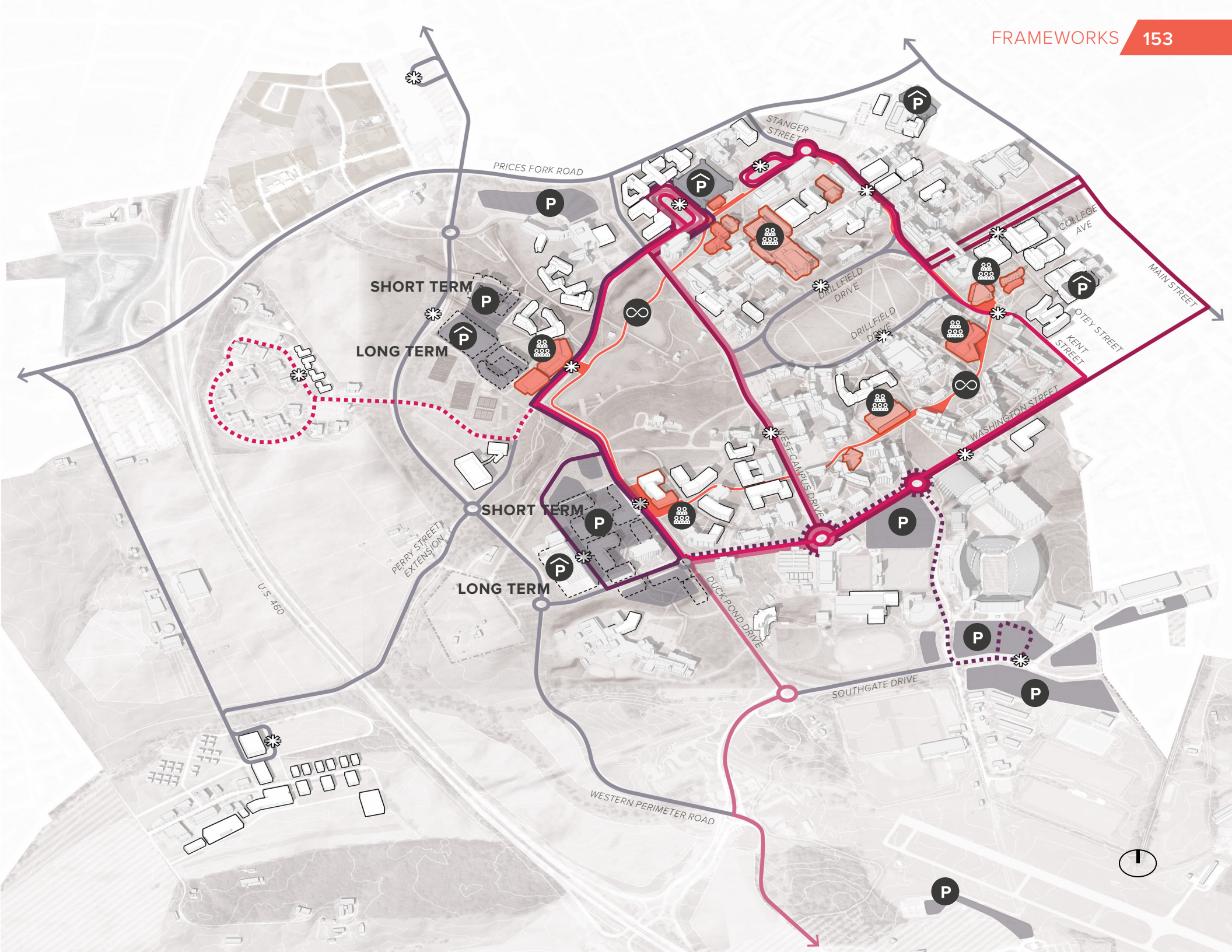
An outward shift in campus parking locations for commuting students, combined with transit facility improvements, will allow transit (as well as active transportation) to play a larger role in connecting commuters to the campus core. The most critical transit investment on campus is the Multi-Modal Transit Facility (MMTF) proposed in the North Academic District as recommended by studies that precede this Master Plan. The MMTF, combined with other bus hubs, establishes a campus-wide network.

To improve the transit experience, the MMTF and other transit hubs are coordinated with the Campus Centers and other locations offering amenities and shelter. The East and West MMTF facilities are designed as portals into the campus for transit users originating at destinations off campus as well as those who park in the various remote parking facilities of the campus.

In addition, the introduction of circulator shuttle routes with high frequencies will encourage the use of more remote parking lots by providing quick and convenient travel around the campus. Potential future routes make use of roadways that currently support transit and connect the campus to the surrounding town and region, including the Hethwood residential area.

Proposed routes and stops shown in the adjacent image are conceptual in nature and will require close coordination with Blacksburg Transit to ensure appropriate lane widths and infrastructural needs.




PRICES FORK ROAD
STANGER STREET
COLLEGE AVE
MAIN STREET
DRILLFIELD DRIVE
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
WASHINGTON STREET
WEST CAMPUS DRIVE
SHORT TERM
LONG TERM
SHORT TERM
LONG TERM
PERRY STREET EXTENSION
U.S. 460
DUCK POND DRIVE
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD

VEHICULAR NETWORK

The existing road network is modified in the Master Plan in response to changes in land use and circulation. Recommended improvements include:

Western Perimeter Road

The Western Perimeter Road (WPR) is a planned roadway linking Prices Fork Road to the Southgate Drive designed in coordination with VDOT to relieve congestion on local arteries. This new parkway features a central landscape median and off-road bike paths on the east side of the road. The WPR is intended to provide an alternative north-south route through the campus with the goal of decreasing the volume of traffic on West Campus Drive. Existing and proposed commuter parking areas are planned along the WPR including the Cage Lot and the interim parking area proposed in the 21st Century Living-Learning District. The WPR intersects with east-west roads at the Inn at Virginia Tech, at the Perry Street Extension, at Washington Street, and at Southgate Drive. Roundabouts define each of these intersections. The WPR also intersects Oak Lane by way of a "T" junction.

Perry Street

Within the North Academic District, Perry Street is reconfigured and closed to through-traffic in response to the MMTF design. It is extended westward from West Campus Drive, following the Stroubles Creek Corridor and passing under U.S. 460 to connect with Plantation Road. From West Campus Drive to the Western Perimeter Road, Perry Street is open to general traffic. From the WPR to Plantation Road, the road is known as the "Smart Link" and is closed to general traffic in order to facilitate the testing of autonomous vehicles. A new multi-use bike path is proposed parallel to the north side of the road. The alignment of the Perry Street extension is located north of Duck Pond Drive. The existing east-west segment of Duck Pond Drive is re-utilized to connect the Infinite Loop to the North Academic District.

Washington Street

East of Duck Pond Drive, Washington Street is extended westward to Western Perimeter Road.

West Campus Drive

Decreased traffic volume is anticipated on West Campus Drive following the completion of the Western Perimeter Road allowing changes to the road width and the redesign of crossings to favor non-motorized mobility. To that end, the intent is to redesign the road as a "complete street" by removing the left turn lanes that exist north of Drillfield Drive, extending the bike lanes northward to intersect with Prices Fork Road, and accommodating transit access. South of Drillfield Drive, the current street section reflects the intended design for the northern portion: two travel lanes and two bike lanes. Turning lanes are maintained north of the Perry Street Extension to accommodate the anticipated volume of left turns.

Roundabouts

Roundabouts are employed throughout the updated road network. They encourage lower travel speeds, improve traffic flow, and eliminate incentives for drivers to "beat the light." Key areas where roundabouts are envisioned include Washington Street and Duck Pond Drive, Washington Street and Beamer Way, and Stanger Street and Perry Street.

Emergency and Service

Emergency and service access is maintained in the Master Plan throughout the campus including non-vehicular areas where service and emergency routes are provided on pathways where needed.

The Master Plan resolves conflicts between major pathways and service vehicles where possible. For example, a redesigned Barger Street will help more clearly define crossings and create a more inviting streetscape.

Design for service on proposed new construction projects will minimize negative visual impact to the campus and prioritize major pathways.

North Academic District

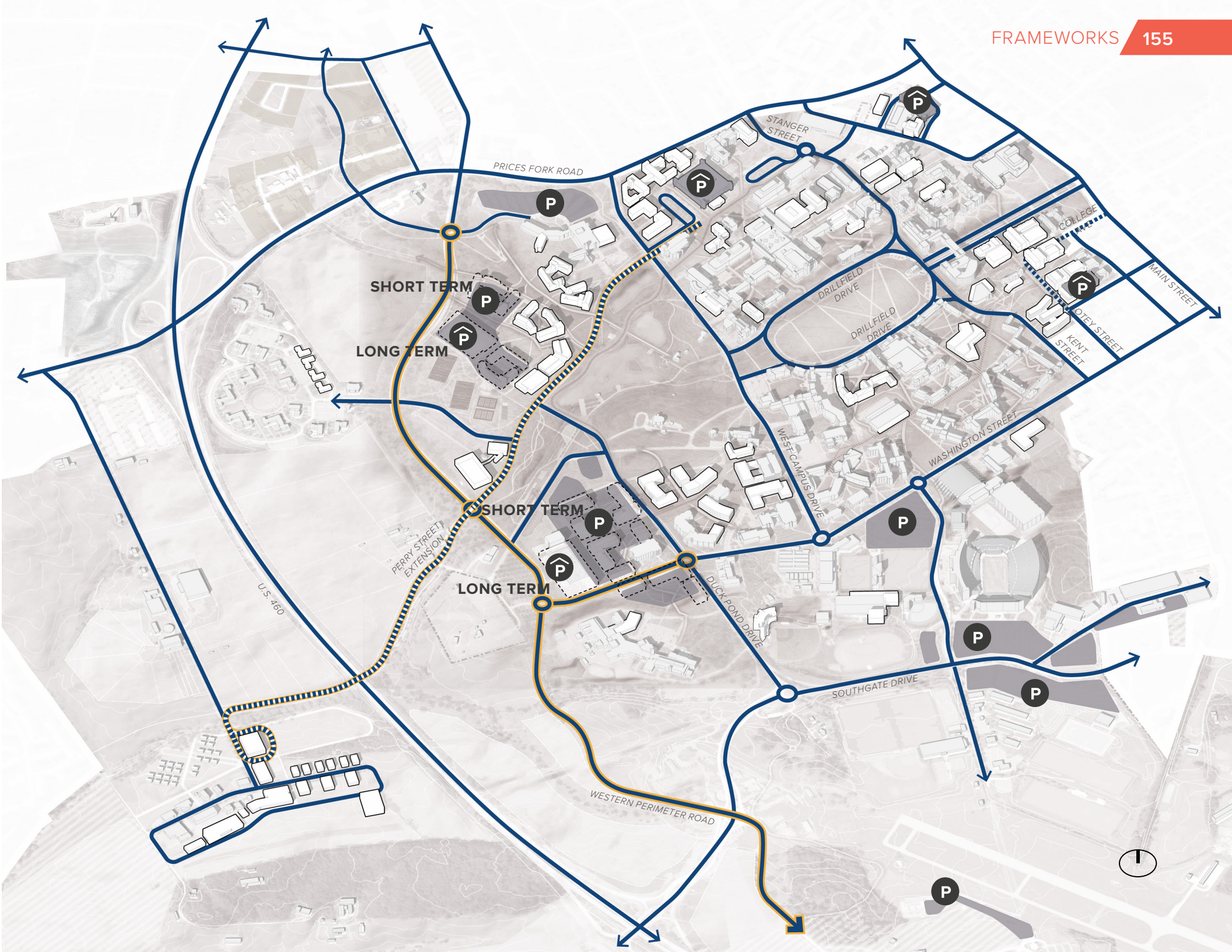
Improvements to the vehicular network in the North Academic District, including roadway changes to accommodate the Multi-Modal Transit Facility and access to the Perry Street Garage are described in the Districts chapter.

Vehicular roads

New roads

Perry Street Extension

Parking


PRICES FORK ROAD
STANGER STREET
COLLEGE
MAIN STREET
DRILLFIELD DRIVE
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
SHORT TERM
LONG TERM
WEST CAMPUS DRIVE
WASHINGTON STREET
SHORT TERM
LONG TERM
PERRY STREET EXTENSION
U.S. 460
DUCK POND DRIVE
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD

PARKING

The Master Plan reorganizes existing campus parking based on the strategies of the 2015 Parking and Transportation Master Plan and in response to proposed development and changes in circulation patterns.

Parking

Commuter student parking is displaced from the established core to accommodate development, notably in the North Academic District. Faculty, staff, and accessible parking will remain available within the center of campus. The proposed strategy makes better use of under-utilized parking on the periphery of the established core. This strategy also minimizes driving within the core and is partnered with providing connections to the core by means of transit services, bike share program and network, and improved pathways.

Existing peripheral parking areas include the Cage Lot and Chicken Hill. The Cage Lot is planned as the major commuter parking lot with convenient access from the proposed Western Perimeter Road. Chicken Hill and other lots in the south campus are designated for use by resident students.

A potential remote lot containing approximately 550 spaces is also considered between the Montgomery Regional Airport and Phase 2 of the Corporate Research Center.

The Master Plan identifies sites for new parking garages to address near-term as well as long-term parking demand. These include:

Creativity & Innovation District Garage

A new garage is planned in the Creativity & Innovation District at the corner of Otey and Roanoke Streets to replace spaces lost due to construction. It is intended to serve demand generated by the library, performance venues and new academic buildings proposed in the District.

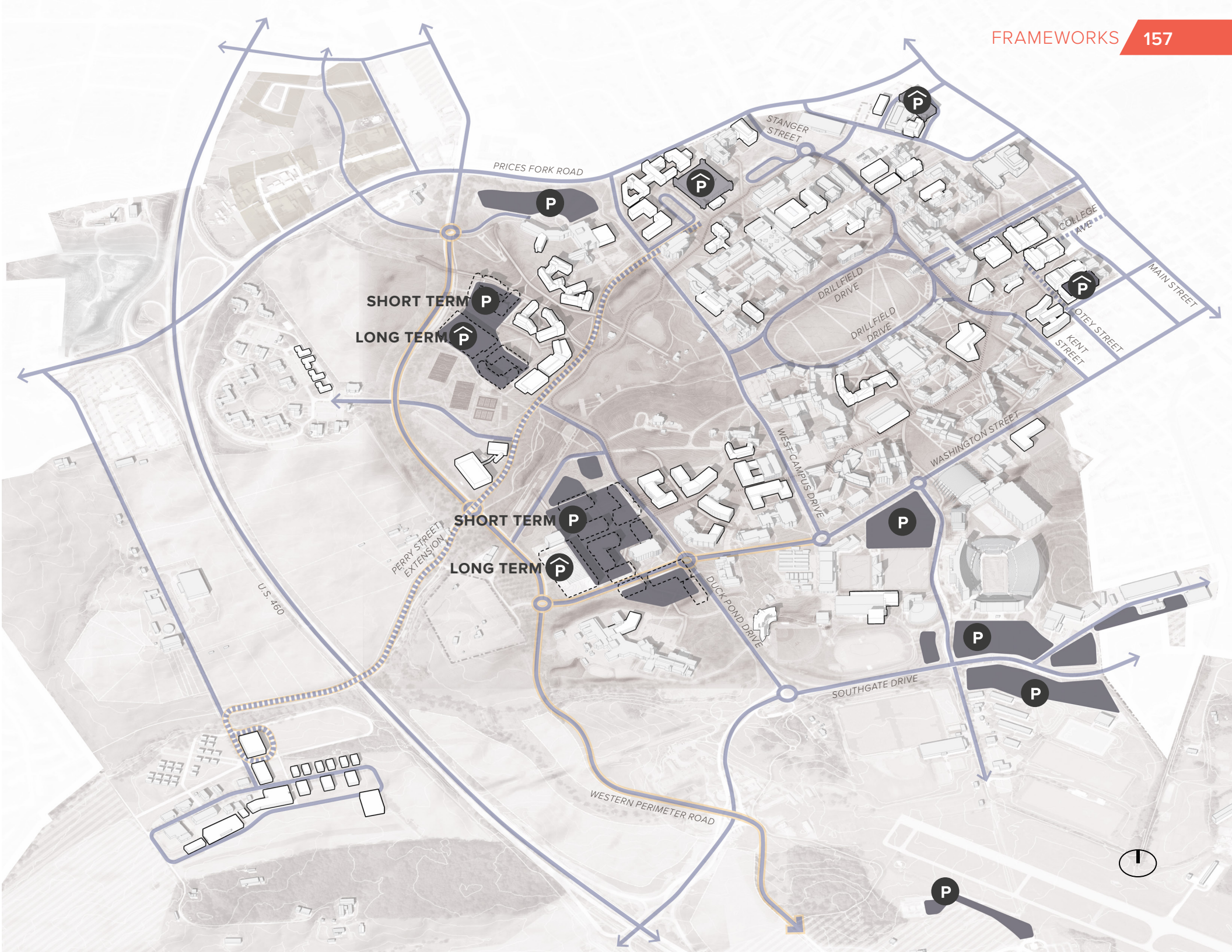
West Garage

Over the long-term, a garage is proposed on the Cage Lot to replace parking lost to the westward expansion of the Life Sciences & Technology District. It is located to be accessible from the Western Perimeter Road.

North Garage

Another long-term garage is identified in the Master Plan in the 21st Century Living-Learning District. This garage is proposed in advance of full build out of the District; surface parking is recommended in the interim years. The intent of locating parking in this District is to intercept commuters entering the campus from the north via the future Western Perimeter Road.

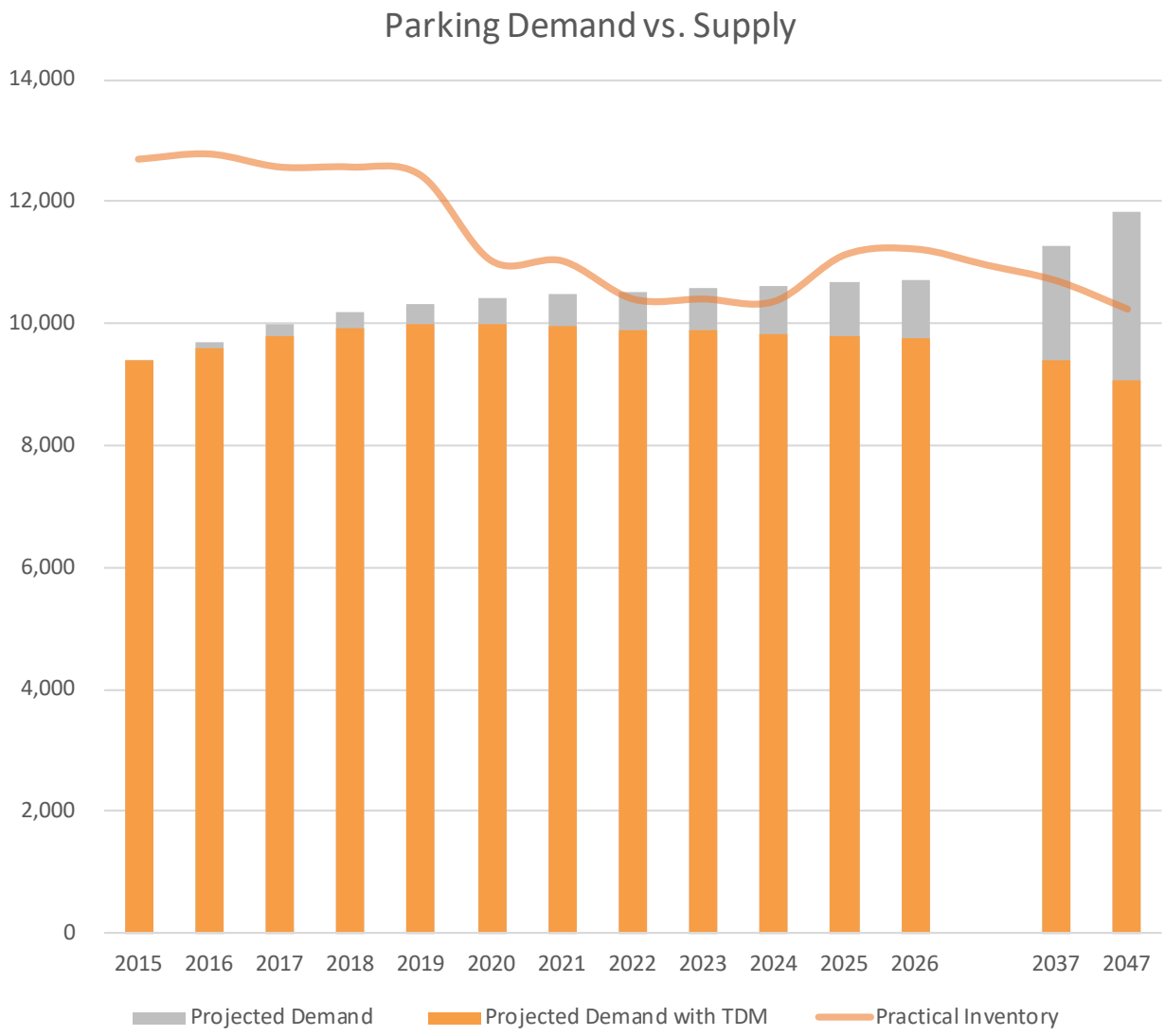
P P Parking


PRICES FORK ROAD
STANGER STREET
COLLEGE AVE
MAIN STREET
DRILLFIELD DRIVE
DRILLFIELD DRIVE
OTEY STREET
KENT STREET
SHORT TERM
LONG TERM
WASHINGTON STREET
WEST CAMPUS DRIVE
SHORT TERM
LONG TERM
PERRY STREET EXTENSION
U.S. 460
DUCK POND DRIVE
SOUTHGATE DRIVE
WESTERN PERIMETER ROAD

Parking Capacity and Demand

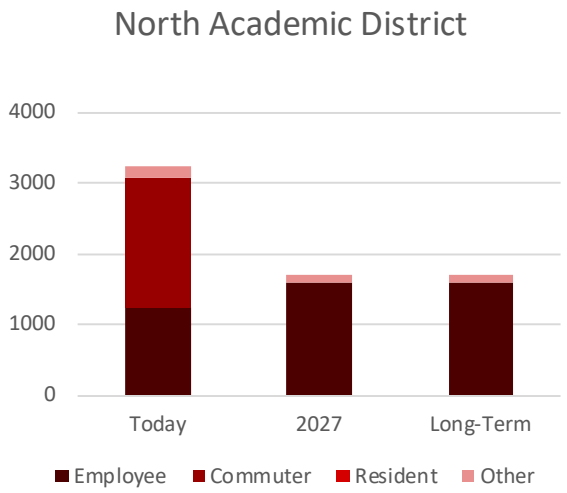
The Master Plan maintains most existing parking capacity—which far surpasses current demand—on campus in the short-term by taking advantage of unused capacity at peripheral locations and improving pedestrian, bicycle, and transit connectivity within the campus core. In the long-term, capacity reductions across the campus will provide opportunities for development of additional academic, research, and campus life facilities while supporting VT's goals of reducing auto-oriented transportation. ADA-accessible spaces in the core of campus will be maintained.

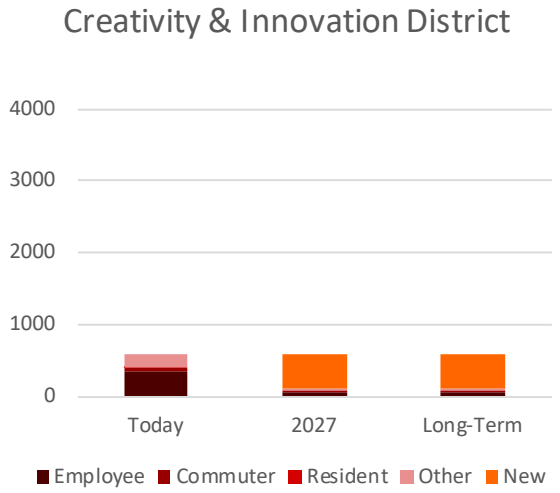
To prevent a capacity deficit as demand increases due to enrollment growth, the University will need to incorporate a variety of transportation demand management (TDM) strategies to encourage the use of other travel modes. Such strategies will be determined based on future assessments of policies, plans, and practices aimed at reducing private vehicle use and, therefore, parking demand.

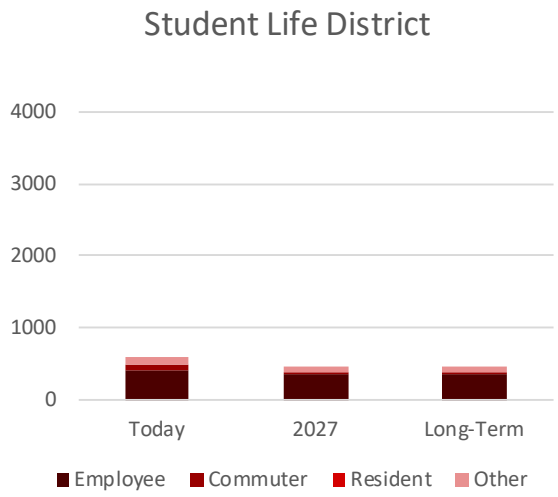


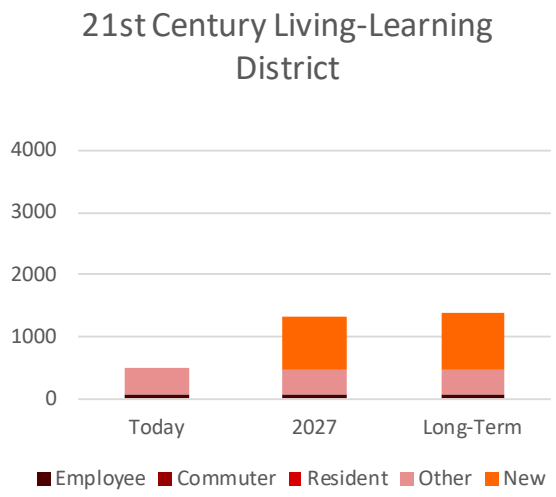
Parking Capacity by District

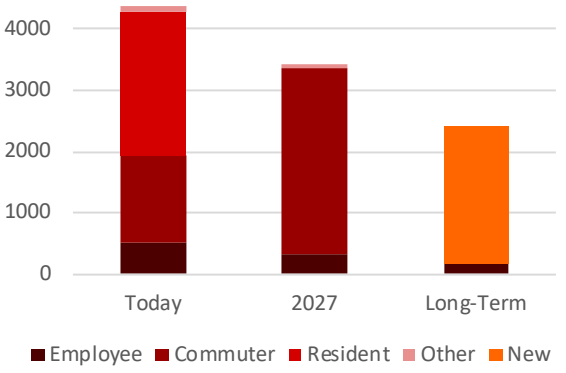
The Master Plan shifts the location of campus parking from the core to the periphery, encouraging the use of other modes in the center of the campus. As new development is phased in each District, existing surface lots are removed, reducing District capacity, though ADA-accessible spaces will be maintained. The exception to this is the 21st Century Living-Learning District which will see the current golf course converted to residence halls and surface parking in the short term, creating new parking that is within walking distance of the North Academic District. A garage in the Creativity & Innovation District and long-term (Phase 2) garages in the Life Sciences & Technology District and the 21st Century Living-Learning District help to offset some loss of capacity due to the displacement of surface lots.











PROPOSED STREET SECTIONS

The Master Plan recommendations make campus streets better suited to multi-modal mobility.

In addition to adjustments to the network of campus streets, the Master Plan proposes changes to the layout of select roadways to respond to the Parking and Transportation Master Plan and to align with VT's commitment to promoting a shift towards more biking and transit use. While driving will continue to be a popular choice for members of the VT community, the relocation of parking from the campus core and improvements to transit, bike, and pathway networks will allow roadways to be redesigned for a wider range of mode choices. These interventions include lane width reduction to discourage speeding, the introduction of separated bike lanes to promote active transportation, and improved pathways to encourage active mobility.

The sections on the following pages describe these strategies in more detail.



Vehicular

Narrow drive lanes allow for more diverse use of roadways, encourage reduced driving speeds, and still provide room for bus traffic.



Bicycle

Separated bicycle lanes with a minimum width of 5-to-6-feet provide comfortable and efficient routes for increased bicycle traffic. Where possible, these lanes will connect to the greater campus bicycle network including regional trails and the Infinite Loop.

Bus

Bus traffic will be supported by lanes shared with general auto use. Adjustments to the transit network will determine which streets see the most bus traffic.

Pathways

Changes to existing pathways, such as shifting paths away from the curb and away from moving traffic, provide a more comfortable user experience. Where the Infinite Loop runs parallel to select roadways, it acts as a widened pathway to provide more room for movement.

Autonomous Vehicle

At this time, autonomous vehicle (AV) traffic is expected to be tested only in non-motorized zones like the Infinite Loop. Accommodations for AVs on existing roadways will require additional future studies.

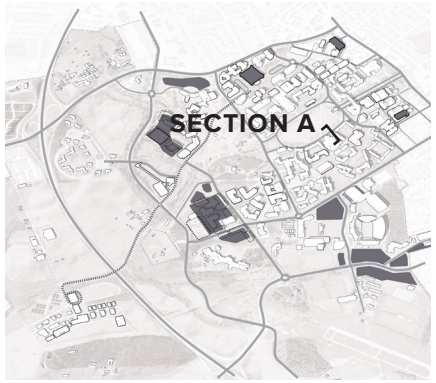
Planting

Streetscape planting interventions improve the user experience by adding visual interest and providing a buffer between pathways and traffic.

Section A

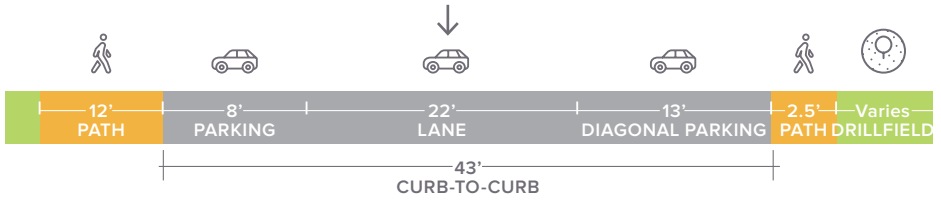
DRILLFIELD DRIVE (SOUTH)

Per the Drillfield Enhancement Plan developed by the Office of University Planning, existing angled parking spaces are shifted to the outside edge of Drillfield Drive to preserve views of the Drillfield. In most places, parallel parking spaces are removed entirely. Bus pull-offs are maintained where necessary.

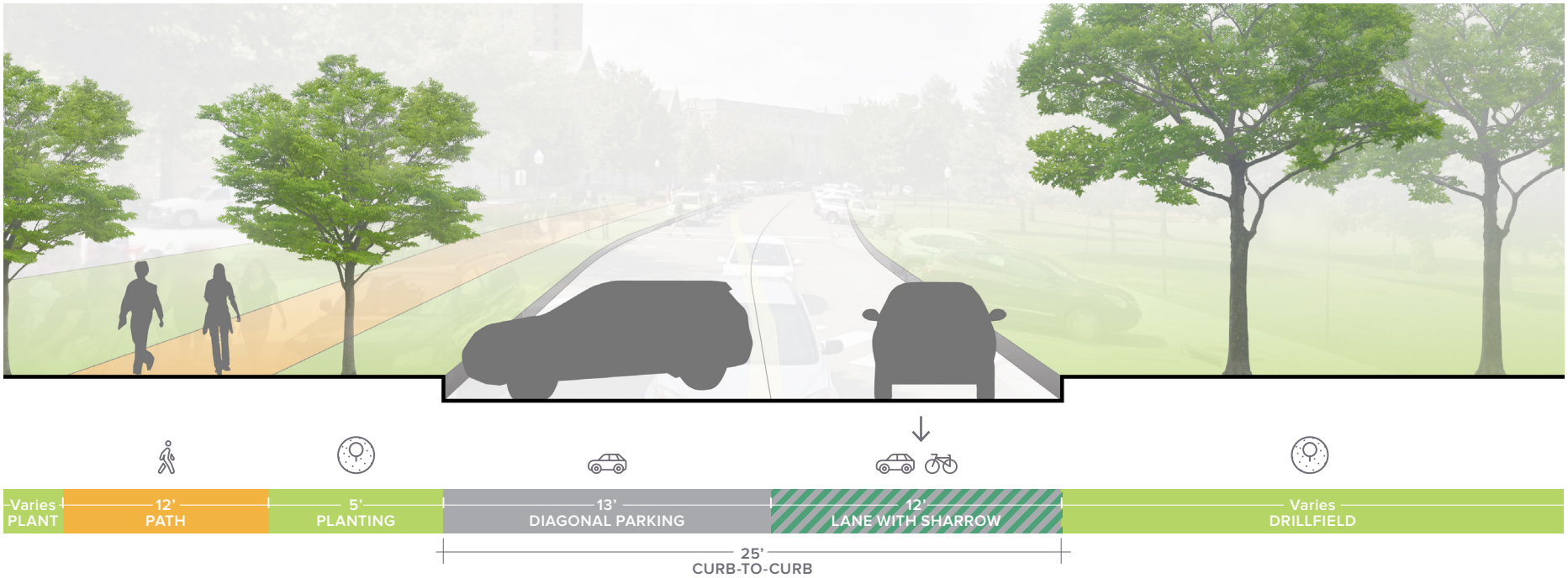


EXISTING

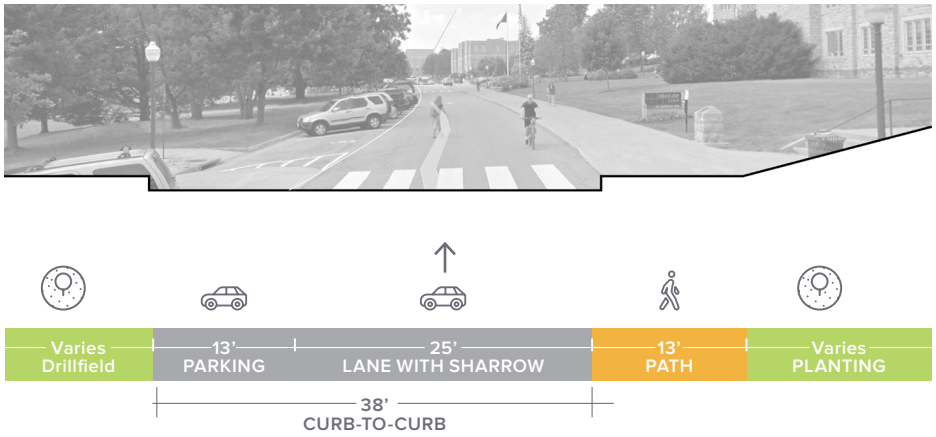




PROPOSED



EXISTING





Section B

DRILLFIELD DRIVE (NORTH)

As with the southern part of Drillfield Drive, parking is shifted to the outside curb, leaving a 12' traffic lane with a "sharrow" indicating a shared bike lane.

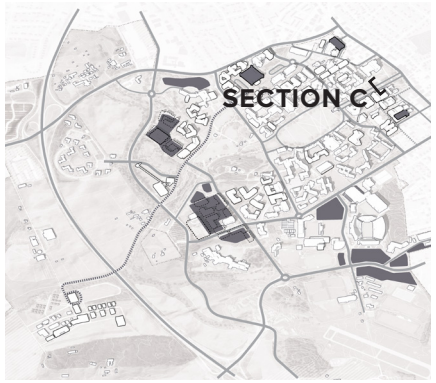
PROPOSED

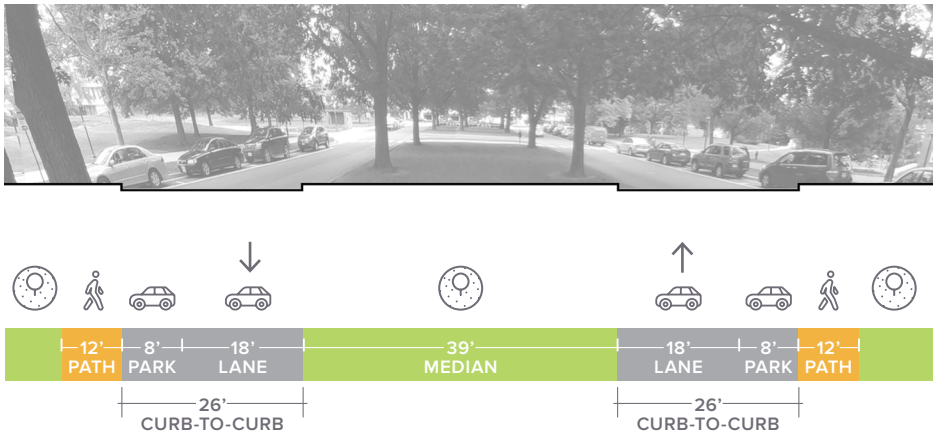


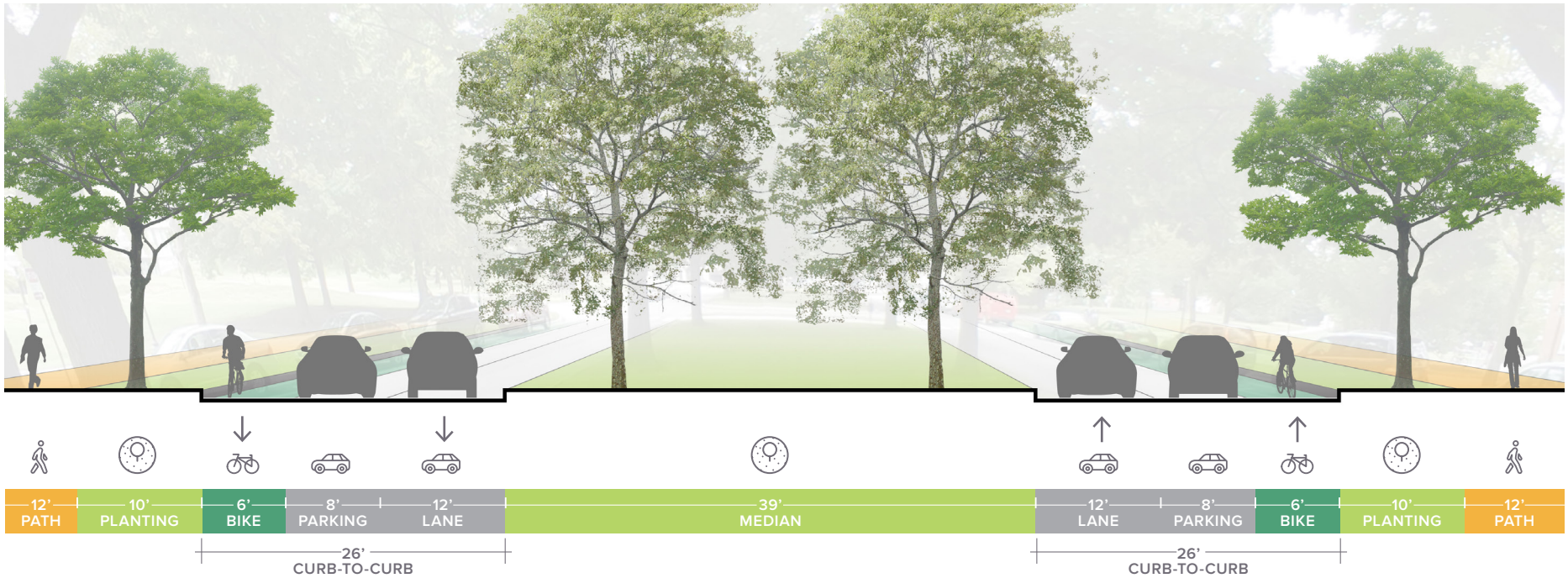
Section C

ALUMNI MALL

Reducing existing lane widths from 18’ to 12’ allows for the addition of a 6’ bike lane without removing street parking. Bikes are kept within the roadway, buffered by the parking lane, rather than accommodated within the median in order to preserve the ceremonial aesthetic of Alumni Mall and to maintain cyclists’ access to adjacent buildings.









ALUMNI MALL

In addition to dedicated bike lanes along Alumni Mall, landscape and circulation improvements are also proposed. Extending the median tree plantings and introducing additional street trees improves human comfort levels, while the inclusion of seating elements help to activate the space. The Arts Link, one of the proposed Green Links, crosses Alumni Mall, creating an accessible connection between the Northeast & Upper Quad District and the Creativity & Innovation District.

Section D

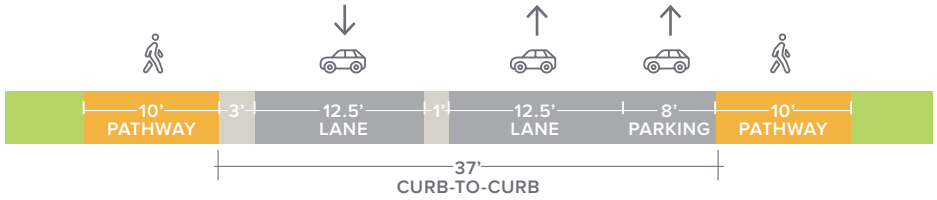
WASHINGTON STREET

Improvements to Washington Street include reducing travel lane widths to 12', removing street parking, and adding bike lanes in each direction.

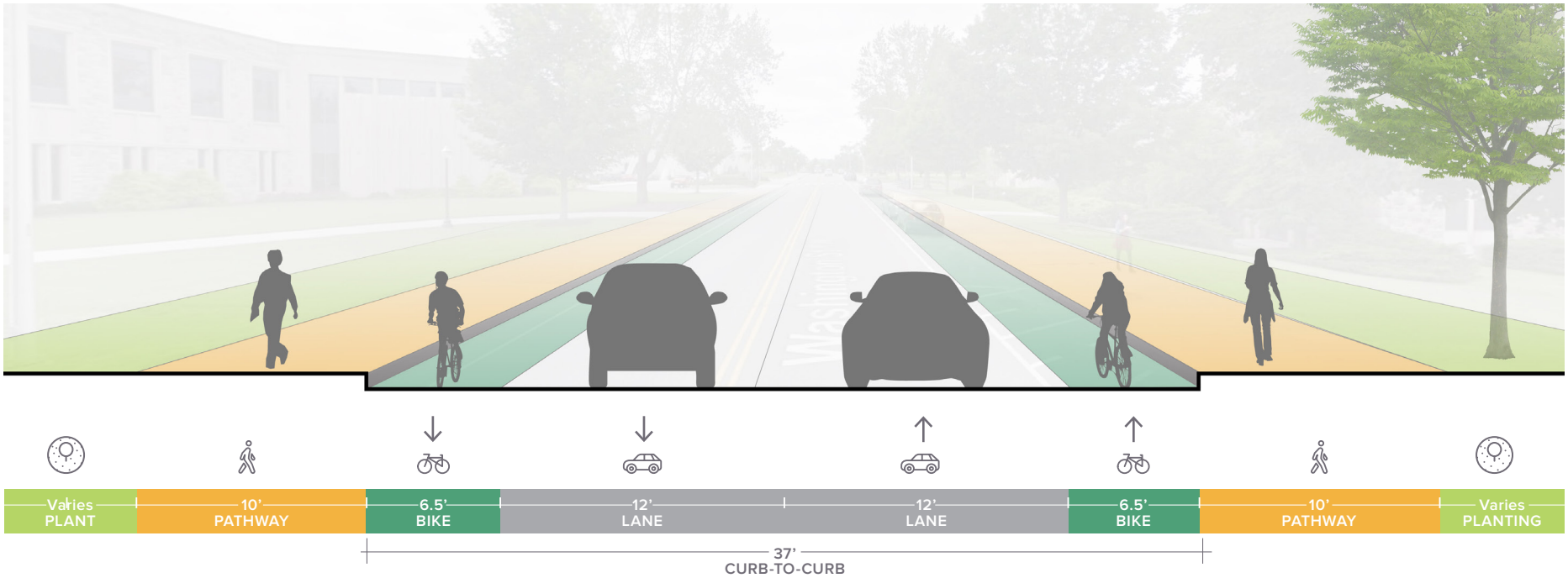


EXISTING

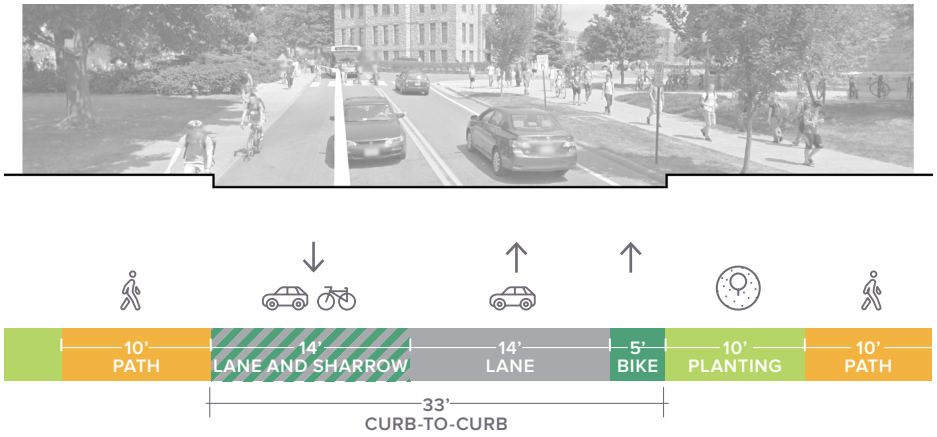




PROPOSED



EXISTING



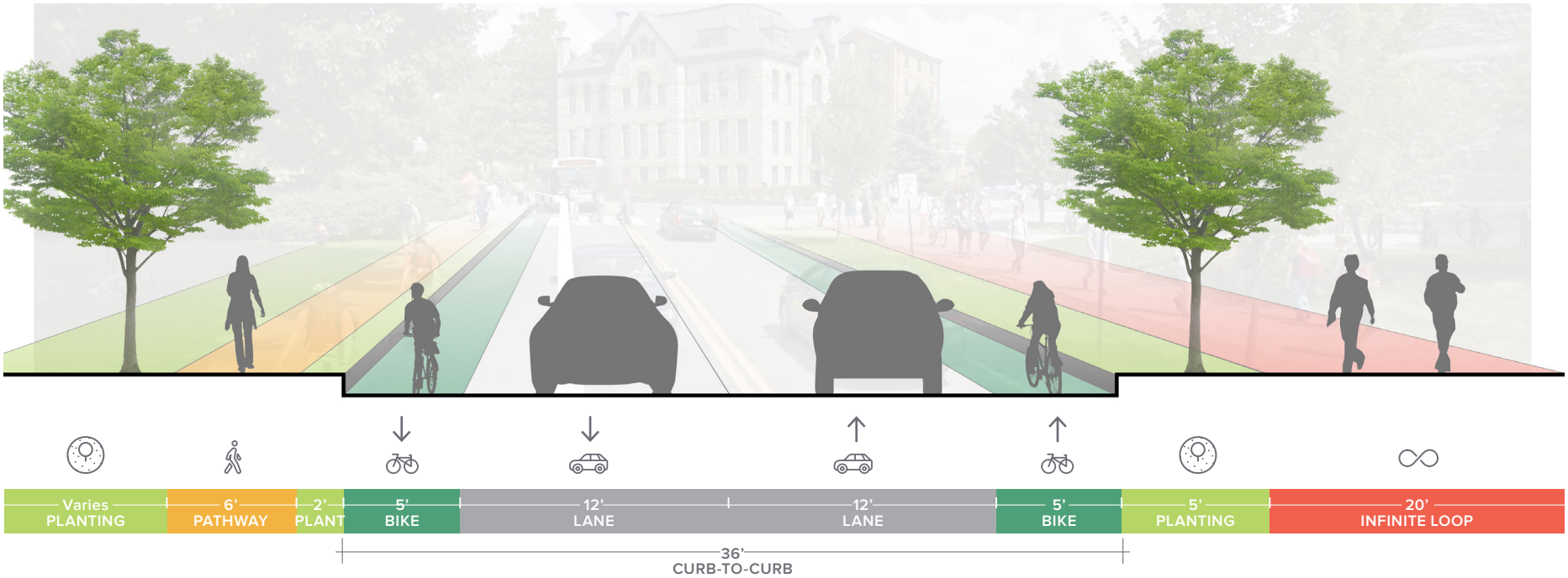


Section E

STANGER STREET AT McBRYDE HALL

On Stanger Street east of McBryde, travel lane widths are reduced in order to add a southbound dedicated bike lane in place of the existing "sharrow" setup. Additionally, the proposed design of the Infinite Loop on the east side of the street includes a planting zone to buffer pathways from adjacent traffic.

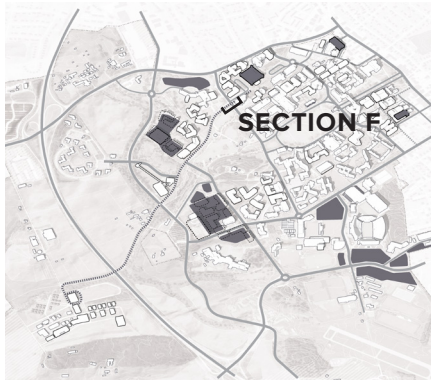
PROPOSED



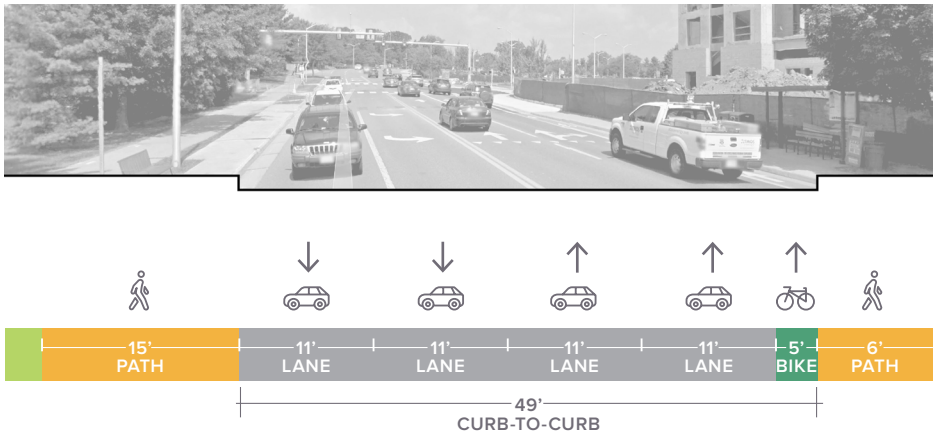
Section F

WEST CAMPUS DRIVE AT NEW CLASSROOM BUILDING

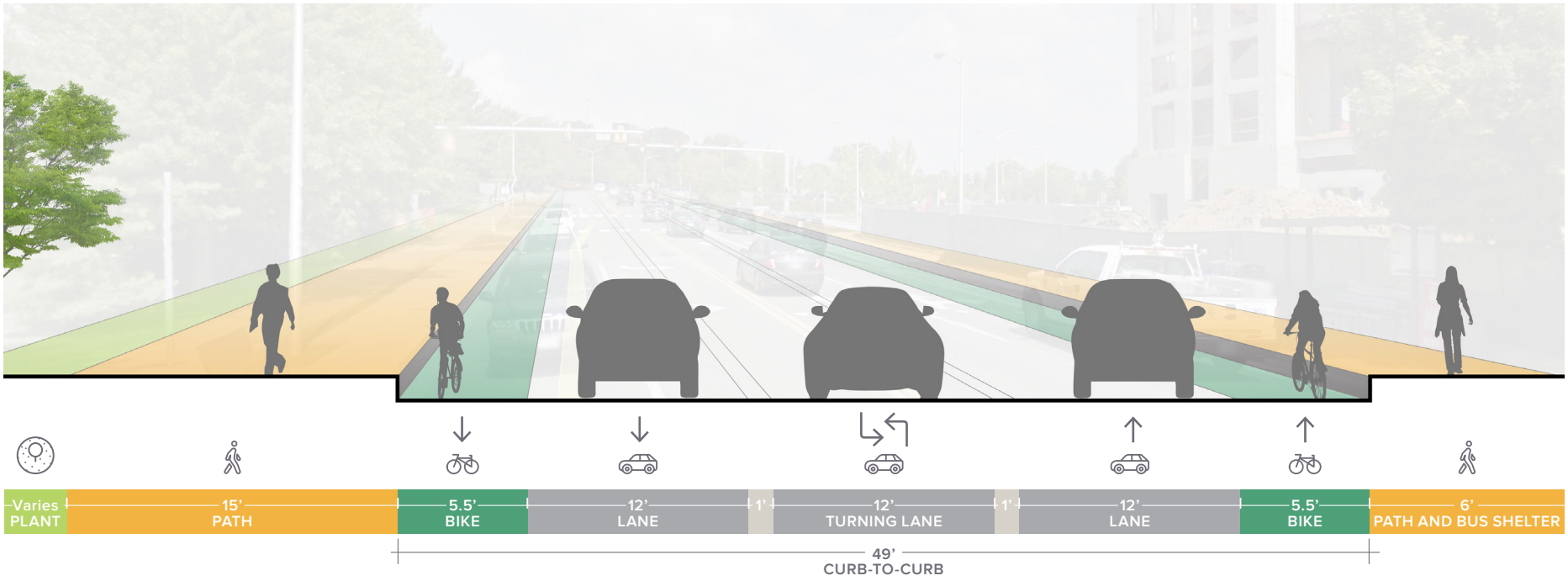
By transforming West Campus Drive from a four-lane road to a three-lane (including a central shared left-turn lane) once the Western Perimeter Road is opened, north- and south-bound dedicated bike lanes can be extended from Drillfield Drive to Prices Fork Road.



EXISTING

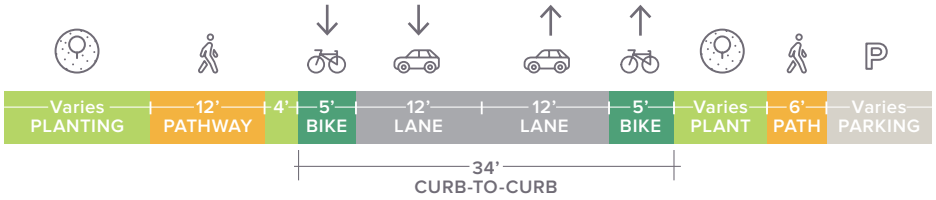


PROPOSED



EXISTING





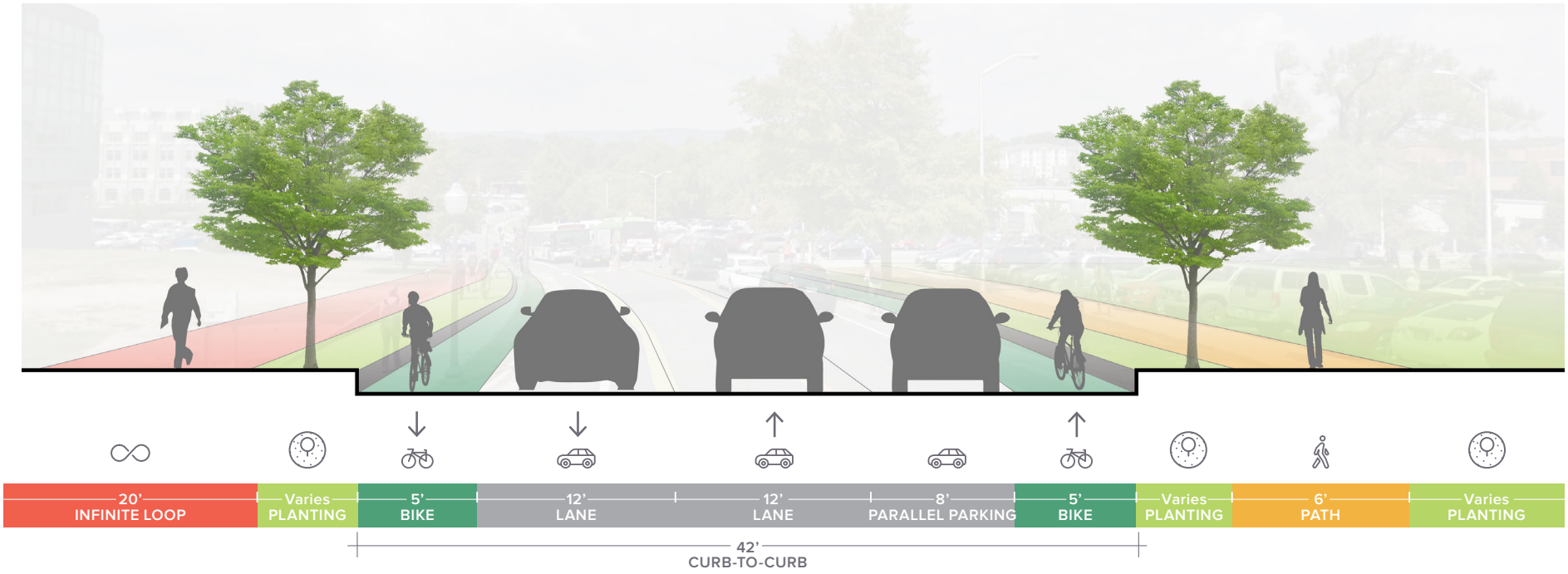


Section G

STANGER STREET AT DURHAM HALL

Recommendations for the stretch of Stanger Street east of Durham Hall include widening the right-of-way to preserve two way vehicle traffic, preserving existing bike lanes, and adding one lane of parallel parking between the northbound bike lane and the adjacent travel lane.

PROPOSED



05

Districts


PRICES FORK ROAD
STANGER STREET
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
DRILLFIELD DRIVE
COLLEGE AVE
OTEY STREET
KENT STREET
WESTERN PERIMETER ROAD
WASHINGTON STREET
DUCK POND DRIVE
BEAMER WAY
SOUTHGATE DRIVE

The Master Plan establishes Campus Districts based on the vision and initiatives of Beyond Boundaries.

DISTRICTS

The Districts respond to existing conditions, emerging programmatic needs, and campus life goals.

Each district is organized around a particular focus, such as academics, research, or student life. This programmatic emphasis drives the physical form of district buildings, open spaces, and circulation networks and gives each district a distinct character. It also serves to intensify collaboration opportunities between students, faculty, and staff.

In addition to its primary focus, each district is also planned to contain a variety of campus life and support uses, including social and gathering spaces, dining opportunities, and considerations for experiential learning and external partnerships.

This chapter lays out the comprehensive vision for each district and enumerates the proposed development, open spaces, stormwater strategies, and circulation networks therein.

01 **North Academic District**

02 **Northeast & Upper Quad District**

03 **Creativity & Innovation District**

04 **Student Life District**

05 **Life Sciences & Technology District**

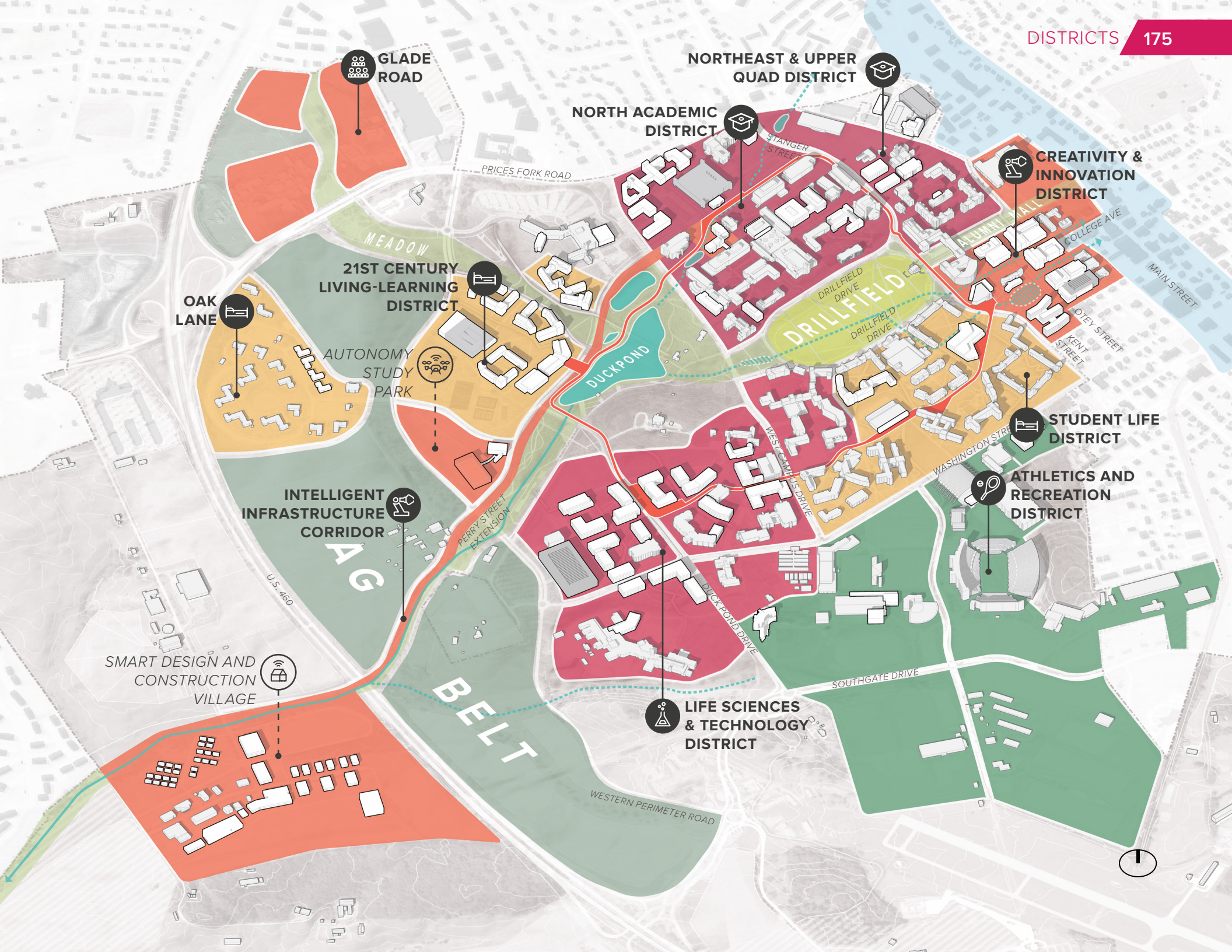
06 **21st Century Living-Learning District**

07 **Intelligent Infrastructure Corridor**

Autonomy Study Park
Smart Design and Construction Village

08 **Peripheral Districts**

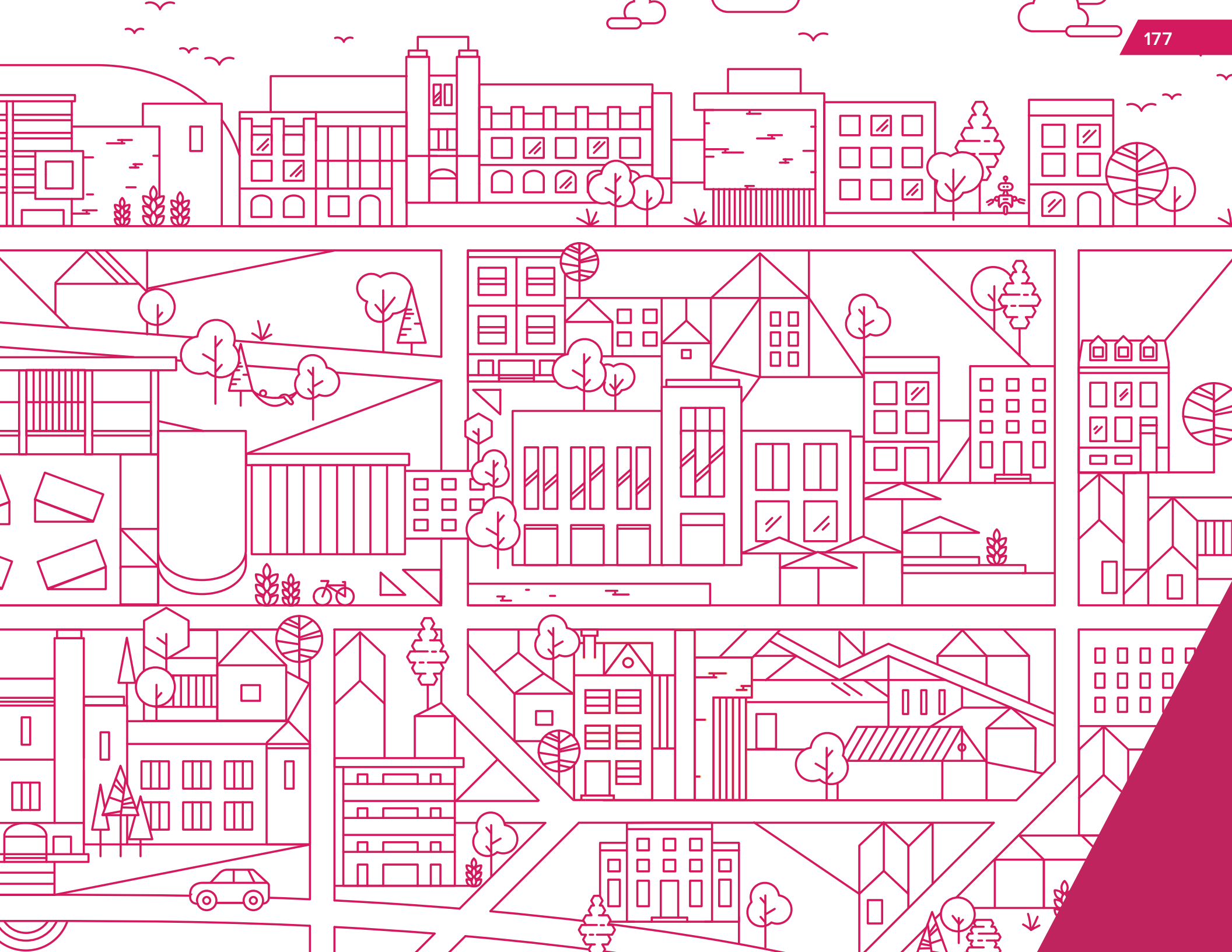
Athletics and Recreation
Glade Road
Oak Lane


GLADE ROAD
NORTHEAST & UPPER QUAD DISTRICT
NORTH ACADEMIC DISTRICT
CREATIVITY & INNOVATION DISTRICT
PRICES FORK ROAD
STANGER STREET
ALUMNI HALL
COLLEGE AVE
MAIN STREET
MEADOW
21ST CENTURY LIVING-LEARNING DISTRICT
OAK LANE
AUTONOMY STUDY PARK
DRILLFIELD DRIVE
DRILLFIELD
DUCKPOND
OTEY STREET
KENT STREET
STUDENT LIFE DISTRICT
WASHINGTON STREET
WEST CAMPUS DRIVE
ATHLETICS AND RECREATION DISTRICT
INTELLIGENT INFRASTRUCTURE CORRIDOR
PERRY STREET EXTENSION
AG
U.S. 460
DUCK POND DRIVE
SOUTHGATE DRIVE
SMART DESIGN AND CONSTRUCTION VILLAGE
BELT
LIFE SCIENCES & TECHNOLOGY DISTRICT
WESTERN PERIMETER ROAD



MASTER PLAN DISTRICTS

North Academic District



North Academic District

The North Academic District is the traditional center of the formal learning experience at Virginia Tech, accommodating the following Colleges and Schools:

- College of Architecture and Urban Studies (CAUS)
- Pamplin College of Business
- College of Engineering
- College of Science

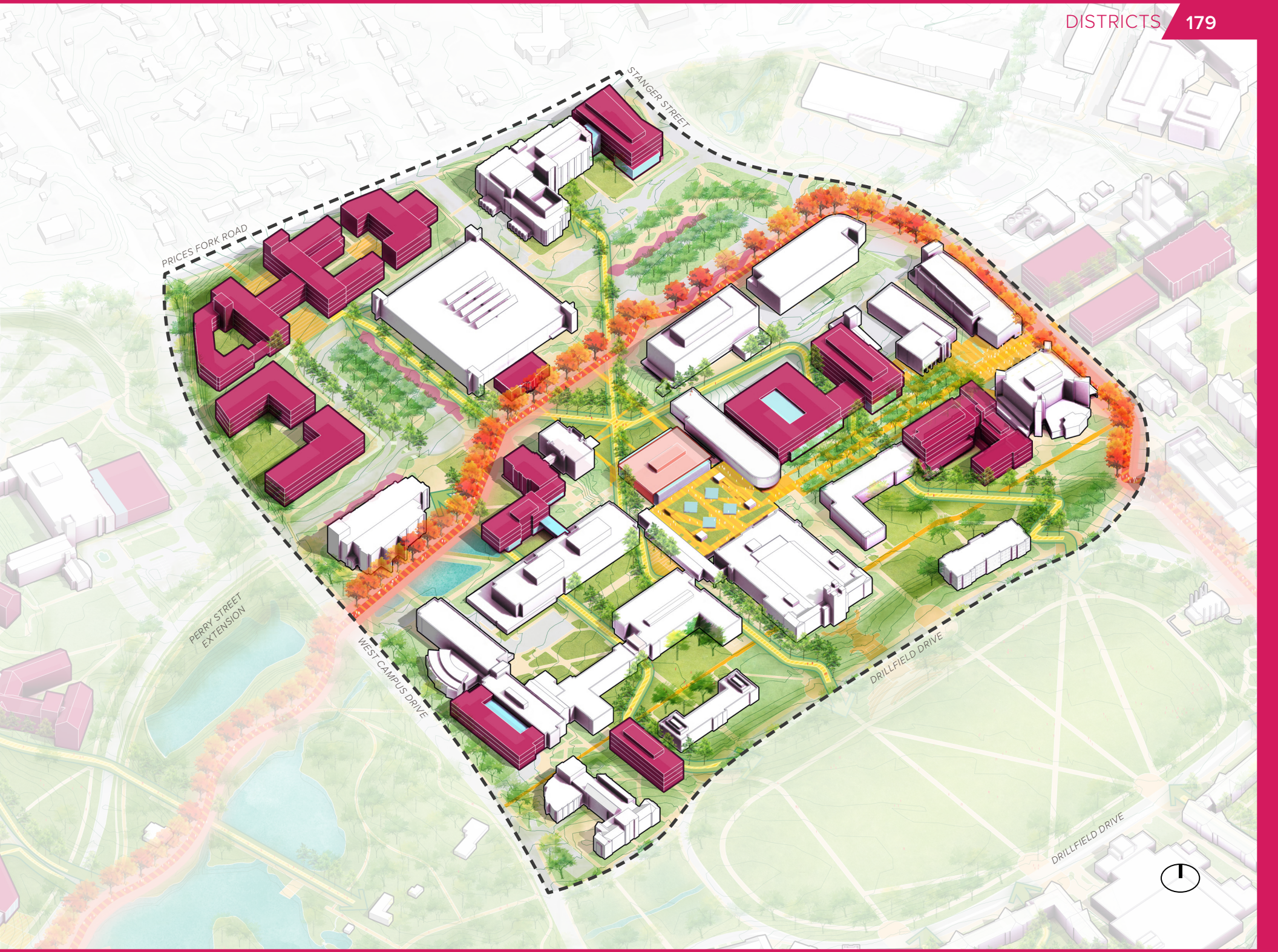
It is a District dominated by academic and research facilities, including some of the most iconic buildings of the campus. It also is the most intensely utilized academic District, supporting a majority of the classroom and lab activity scheduled by the registrar. Given the level of activity and the population density in the District, it lacks adequate gathering, collaboration, and amenity space including food service and convenience retail. Lavery Hall and GBJ are currently the only dining locations, with Lavery at capacity on most days.

The northern portion of the District, characterized by surface parking lots and the Perry Street Garage, is the focus of several planning initiatives that precede the master planning process. These include new academic buildings, food services, and transportation facilities like the Multi-Modal Transit Facility (MMTF). The MMTF is planned as the portal to campus for commuters utilizing the transit system as well as those who park in remote commuter parking lots. It is planned as the arrival and departure point for a majority of the campus transit services and is comprised of bus terminals on the east and west side of the Perry Street Garage.

Vision

The Vision for the North Academic District takes into consideration several previously planned facilities, emphasizing the following strategies for improving the user experience:

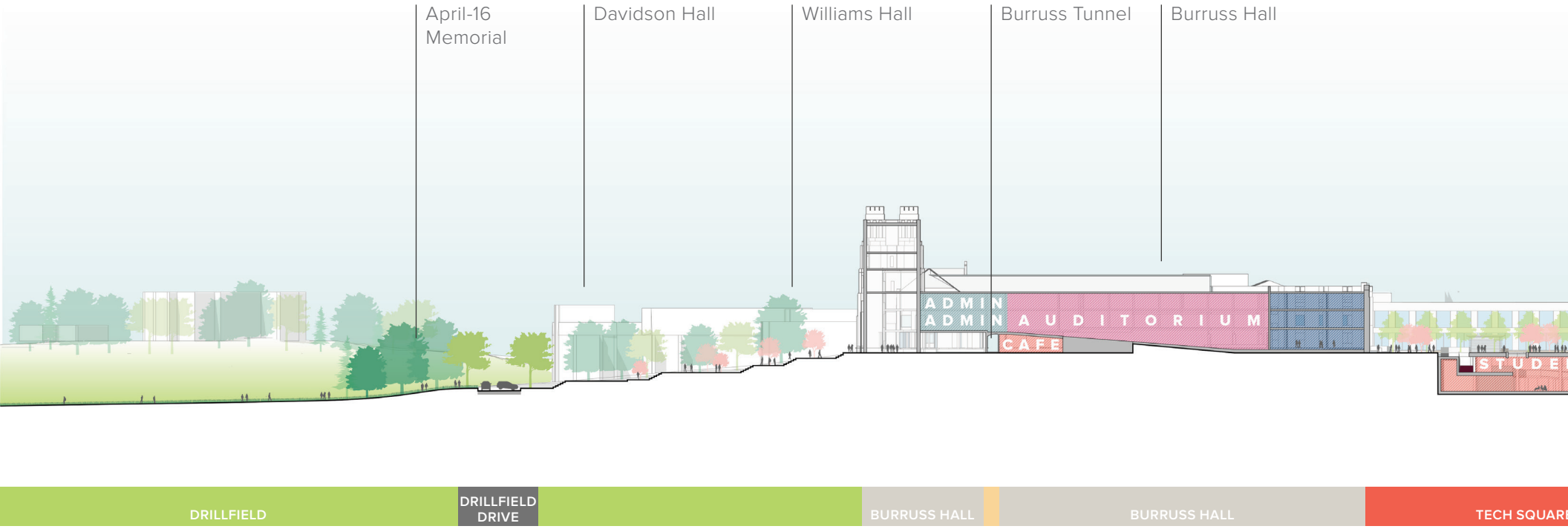
1. Major improvements are proposed to the public realm and landscape structure of the District. This includes a system of new pathways, open spaces, and outdoor gathering areas designed to enhance connectivity, extend the learning environment outdoors, and integrate the northern portions of the District to the established academic core.
2. Collaboration, engagement, innovation, and gathering spaces are distributed across the District in both existing and proposed facilities. To ensure that a vibrant and engaging academic environment emerges, these spaces are located along major pathways where movement is expected to be the highest. Over the long-term, the goal is to transform Cowgill and Burchard Hall into the North Academic Commons (see the Campus Life Framework for details)
3. Classroom, lab, and other instructional activities are concentrated in the District with the intent of limiting the need to travel to other areas of the campus for classes. Specifically, the plan is to relocate classrooms out of the Surge Space Building into the District, thereby reducing the distance that students must travel between classes.

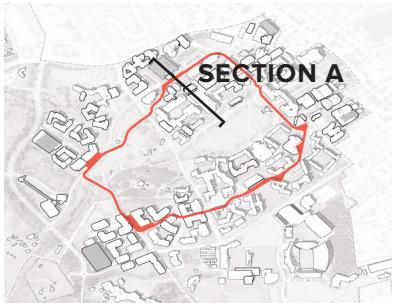

PRICES FORK ROAD
STANGER STREET
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
DRILLFIELD DRIVE

Section A

DRILLFIELD TO PERRY STREET GARAGE

The North Academic District slopes up from the Drillfield to the Burruss Hall entrance and terraces back down through the reimagined Burchard Plaza—now Tech Square—on its way to the proposed MMTF and the Perry Street Garage. The Master Plan envisions centering daytime campus life activity on top of this plateau, with the student organizations, cultural centers, and gathering spaces of North Academic Commons occupying Cowgill and Burchard halls. Three Green Links in this District provide access for all members of the campus community to major campus destinations and infuse high quality landscapes and stormwater management into the academic core.





GBJ Student Services Center

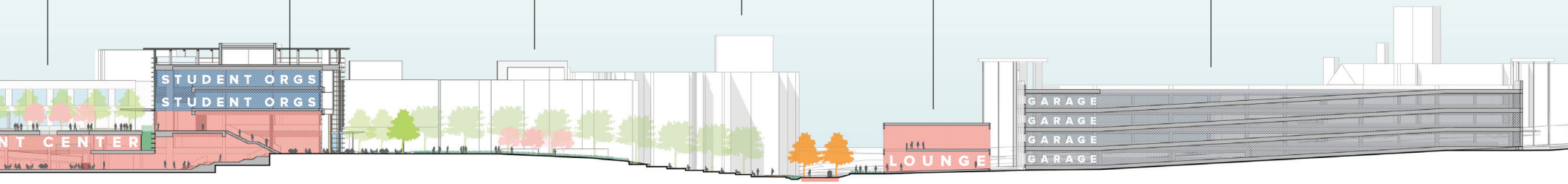
North Academic Commons

Bishop-Favrao Hall

New Classroom Building

MMTF

Perry Street Garage



E / NORTH ACADEMIC COMMONS | PLAZA | COWGILL LAWN | AMPHI-THEATER | LOOP | PLAZA | PERRY ST GARAGE

Proposed Building
Repurposed Building
Existing Building

PROPOSED DEVELOPMENT

Several new facilities and major renovations to existing buildings are proposed throughout the North Academic District to accommodate expanding academic programming.

GLOBAL BUSINESS AND ANALYTICS COMPLEX (GBAC)

A new academic and research facility is proposed at the intersection of Price's Fork Road and West Campus Drive. The Global Business and Analytics Complex (GBAC), which includes space programmed for the Data and Decisions (D&D) Destination Area, is envisioned as a gateway building. This facility is imagined as a multidisciplinary collaboration hub associated with Architecture, Business, Engineering, and Science programs as well as the Integrated Security Destination Area.

The GBAC companion living-learning communities, which also house the International Affairs and Outreach program, are located in the 21st Century Living-Learning District (see 21st Century Living-Learning District section for more details).

UNDERGRADUATE LAB BUILDING

A new lab facility is planned to accommodate much needed undergraduate lab space in response to enrollment increases and interest in STEM programs.

RANDOLPH HALL

A strategy is provided for replacing Randolph Hall in two separate buildings, one incorporating the existing wind tunnel. Phase I of this development will accommodate garage, support, and lounge space for the Virginia Tech Rescue Squad.

HOLDEN HALL

To accommodate and enhance the Materials Science and Engineering program, the one story portion of Holden Hall is replaced in the Master Plan. The new facility includes labs and offices.

HITT HALL & INTELLIGENT INFRASTRUCTURE BUILDING

A companion facility to Bishop Favrao, known as Hitt Hall, is proposed for expanding the School of Construction. The directly adjacent and connected Intelligent Infrastructure Fusion Lab is proposed to house emerging activities in Unmanned Autonomous Vehicles (UAVs) and other robotics technologies associated with the building industry. The Fusion Lab is planned to include a smart dining facility on the ground floor and an outdoor testing area or "sandbox" for robots and other technologies.

PAMPLIN HALL

Construction of the new GBAC building facilitates the repurposing of Pamplin Hall for other uses. A detailed programming study is recommended for the building to determine the best uses and to identify opportunities for strategic co-locations that strengthen interdisciplinary partnerships, particularly in Destination and Strategic Growth Areas. A portion of the building may also be used to expand classroom capacity to support enrollment growth.

G. BURKE JOHNSTON (GBJ)

The G. Burke Johnston Student Center (GBJ) is repurposed in the Master Plan to provide additional student academic support facilities.

HAHN HALL & ROBESON EXPANSION

Additional academic and research space for the Department of Chemistry, the Department of Physics, and other College of Science programs is accommodated in an expansion of Hahn Hall and a proposed companion building to Robeson Hall.

Proposed Buildings		
01	Future Development Site	100,000 GSF
02	Future Science Building	44,000 GSF
03	Future Science Lab	99,000 GSF
04	Future Undergraduate Science Lab	102,000 GSF
05	Global Business Analytics Complex	224,000 GSF
06	Goodwin Hall Expansion	100,000 GSF
07	Hahn Hall Expansion	53,000 GSF
08	Hitt Hall	30,000 GSF
09	Intelligent Infrastructure Building	50,000 GSF
10	Multi-Modal Transit Facility	14,000 GSF
11	New Holden Hall	101,000 GSF
12	New Randolph Hall	293,000 GSF
Renovated Buildings		
A	GBJ Student Services Center	20,000 GSF
B	North Academic Commons (Cowgill and Burchard)	104,000 GSF
C	Pamplin Hall Renovation	106,000 GSF


PRICES FORK ROAD
STANGER STREET
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
DRILLFIELD DRIVE
01
02
03
04
05
06
07
08
09
10
11
12
A
B
C

North Academic Commons

Cowgill and Burchard Halls are reimagined in the Master Plan as the North Academic Commons—the heart of campus life for the day-time and commuting population. Cowgill is centrally located relative to the academic buildings of the District and relative to the MMTF and Perry Street Garage. Its central position and configuration make it an ideal location for a Campus Commons.

Renovations to the building support the idea of creating a central gathering point for social and informal activities and for consolidating student government offices, meeting space, and collaboration space as well as offices for the Division of Student Affairs. VT's cultural centers will also be accommodated in the North Academic Commons with supporting amenities such as communal kitchens, meeting rooms, and quiet spaces for contemplation and reflection.

Cowgill is envisioned as the "living room" for the day-time campus population, supported by a range of amenities including small-scale food service, thereby supplementing the dining facilities provided in Lavery and the proposed Smart Dining Facility at the Intelligent Infrastructure Building. Combined, these facilities form a network of dining options in the North Academic District.

To facilitate the transformation of Cowgill and Burchard, the College of Architecture and Urban Studies (CAUS) is relocated to a new building on the Alumni Mall, enabling the College to consolidate its programs at the heart of the Creativity & Innovation District (CID). The new CAUS building replaces the Squires Student Center and architecturally defines the southern edge of the Alumni Mall while offering a major opportunity for an innovative design, representing the vision and mission of CAUS. The building is viewed as the anchor for the CID which is envisioned to be a vibrant 24-hour hub of activity.

Relocation of CAUS to the CID introduces 2000 students, faculty, and staff to the District, thereby creating a critical mass of activity and population to support the University's mission of fostering collaboration and innovation. Further, because integrating student life activities into the academic core is a priority for the University, strategies for expediting the space moves necessary for the creation of the North Academic Commons are in the best interest of the entire VT community.



COWGILL HALL
EXISTING CONDITIONS

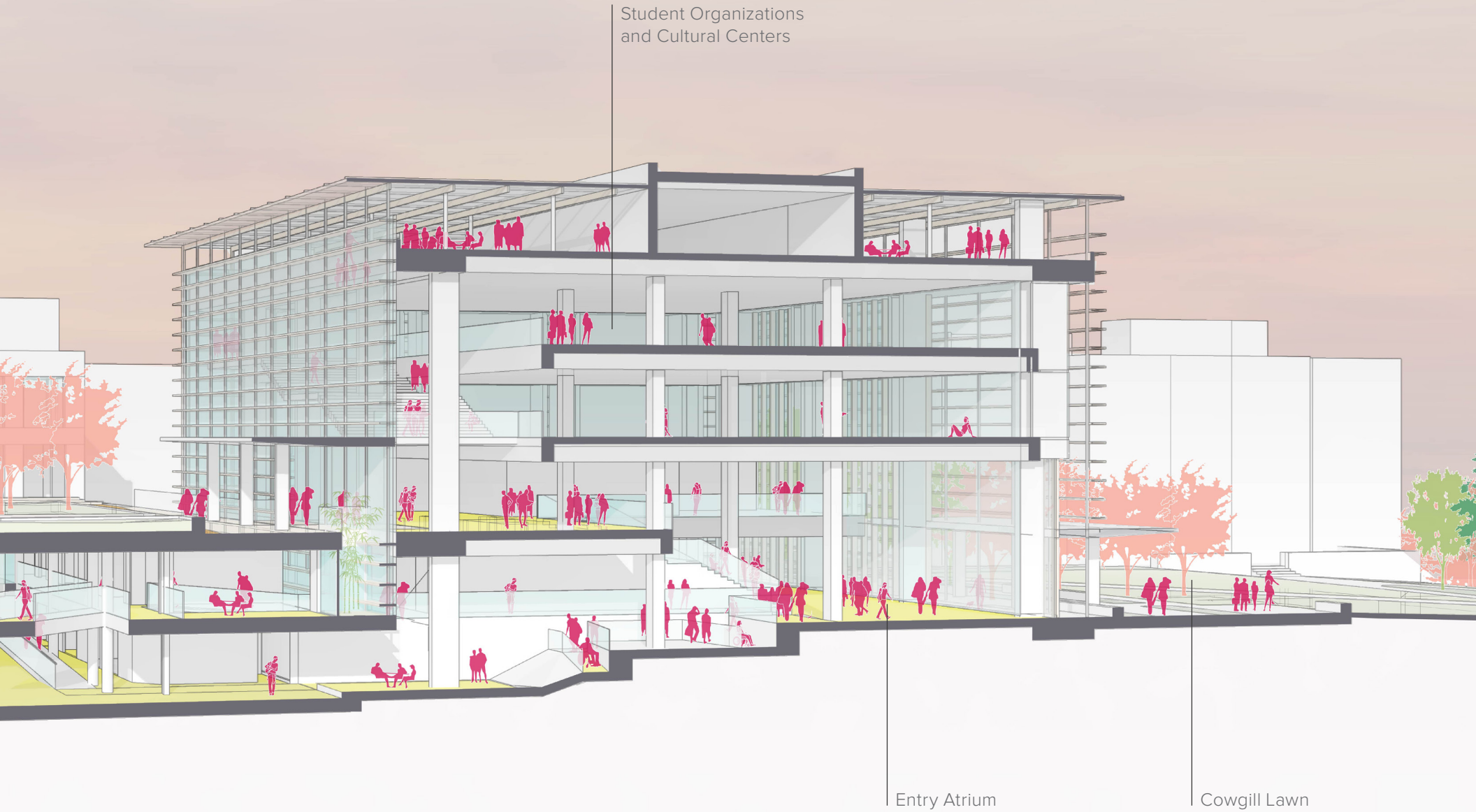


NORTH ACADEMIC COMMONS
Moving the primary student life hub to the center of the North Academic District adds vibrancy to the area and allows for the architectural transformation of the facility.

North Academic Commons

Cowgill and Burchard Halls are reimagined as the North Academic Commons — a vibrant campus life hub in the center of daytime academic activity. Spaces for student organizations, collaboration, and social events are located throughout the new facility, and the buildings seamlessly engage the adjacent Tech Square plaza to encourage opportunities for interaction.




Student Organizations
and Cultural Centers
Entry Atrium
Cowgill Lawn

PUBLIC REALM AND LANDSCAPE

In support of enhancing the campus experience, the Master Plan includes several new quads and pathways designed to unify the North Academic District.

The intent is to extend the learning environment outdoors and to create a pathway network reinforced by quality landscape and hardscape elements and a distribution of activities that enhance key corridors. Several outdoor learning environments are proposed replete with seating, shade, lighting, and Wi-Fi access. The improvements provide access for all members of the campus community and address important issues of operations, infrastructure, and service access to the North Academic District.

Infinite Loop and Green Links

Circulation in the Master Plan builds upon the two campus-wide circulation concepts focused on providing access for all members of the campus community. First, the Infinite Loop moves in an east-west direction through the District. This multi-modal corridor provides a barrier-free pathway between the Campus Districts and permits the testing of autonomous vehicles. Second, three Green Links are proposed to provide north-south access linking the Drillfield to the facilities on the north side of campus:

WEST LINK

The West Link provides access for all members of the campus community from the Drillfield to the New Classroom Building. The West Link is located along the west side of Williams Hall before continuing through the ground-level opening between Robeson Hall and Pamplin Hall where steep slopes require ramps and handrails. After passing alongside the new garden west of the Johnston Student Center (GBJ), users cross through Derring Hall and continue past the proposed Intelligent Infrastructure Fusion Lab and Dining Complex before reconnecting with the Infinite Loop at the New Classroom Building.

CENTRAL LINK

The Central Link connects the Drillfield to the GBAC building on the extreme north side of campus. The alignment runs parallel to the west side of Burruss, along the west side of GBJ, and through the proposed GBJ garden, connecting diagonally in a northeasterly direction to the Cowgill Lawn area. On Cowgill Lawn, it swerves in a northwesterly direction to navigate the slope condition down to the Perry Street elevation. From there it travels north along the west side of the Perry Street Garage.

EAST LINK

The East Link is more circuitous due to the slope conditions east of Burruss Hall. The alignment follows Drillfield Drive and travels diagonally in a northwesterly direction to link to the existing portal through Norris and Holden Halls. This route provides a connection to the proposed east-west Turner Way which extends from Burchard Plaza, or Tech Square, to Stanger Street. Over the long-term, when Randolph is redeveloped, the East Link is designed to continue northward on axis with the Norris-Holden portal. This future Link transitions the slope from Turner Way northward to Whittemore and Durham Hall. It then follows the south side of Whittemore to connect with Cowgill Lawn. The East Link then continues northward to provide access to Goodwin Hall and future development on the north side of campus.

Quads and Open Spaces

Through the reimagining of existing quads and the design of wholly new landscapes, several open spaces are proposed for the District. These spaces serve to connect building interiors with major circulation paths, expanding the realm of learning and research on the campus.

These spaces include Tech Square, Turner Way, GBJ Garden, Cowgill Lawn, Northwest Quad, and the Intelligent Infrastructure Quad.

TECH SQUARE

The existing Burchard Plaza is reimagined as the “center” of student engagement activities and is renovated to provide seating, greenery, signage, and architectural elements that facilitate outdoor study and informal gatherings and that provide a location for student organization promotional activities. It is envisioned as the “town square” of the campus. As part of the renovation strategy, the existing pyramid skylights are replaced such that views across the plaza are possible.


NORTHWEST QUAD
PRICES FORK ROAD
STANGER STREET
COWGILL LAWN
TURNER WAY
INTELLIGENT INFRASTRUCTURE QUAD
GBJ GARDEN
TECH SQUARE
EAST LINK
INFINITE LOOP
WEST LINK
CENTRAL LINK
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
DRILLFIELD
DRILLFIELD STORMWATER PARK
DRILLFIELD DRIVE

TURNER WAY

The existing parking lot leading from Burchard Plaza to McBryde is redesigned in the Master Plan as a pathway providing inclusive campus access and featuring shade trees, consistent paving, seating, and signage elements. It is imagined as an enhanced pathway that also accommodates service vehicles and emergency access as well as ADA and other convenience parking spaces. The eastward continuation of Turner Way links to the new Corps Leadership and Military Science building proposed in the Upper Quad and beyond to the businesses located on Main Street in downtown Blacksburg.

GBJ PLAZA

A new plaza and planting area is proposed west of GBJ in conjunction with the Central Green Link. This plaza serves as a gateway to the student life uses in GBJ and significantly regrades the area near Pamplin Hall by eliminating the stairs and providing a new pathway that is accessible to all members of the campus community.

COWGILL LAWN

A new campus open space, Cowgill Lawn, is proposed as the foreground to the Campus Commons featuring a gathering space for campus events and day-to-day activities. As such, the design includes accessible seating terraces, plaza areas, and a performance stage.

NORTHWEST QUAD

The Northwest Quad is defined by Undergraduate Lab Building and new Science Building along West Campus Drive. The landscape provides a visual break for those traveling on West Campus Drive, and the space is designed to encourage collaborative opportunities between users of the two buildings, while simultaneously providing a space to showcase the work occurring within these facilities.

INTELLIGENT INFRASTRUCTURE QUAD

The proposed Intelligent Infrastructure Corridor, linking the North Academic District to the Smart Design and Construction Village, follows the Stroubles Creek corridor. In the North Academic District, the corridor extends into the Intelligent Infrastructure Quad (IIQ), an open space defined by the New Classroom Building and the proposed Hitt Hall and Intelligent Infrastructure Fusion Lab.

The IIQ is envisioned as a water-receiving landscape featuring:

1. Outdoor gathering and seating areas associated with the smart dining facilities proposed on the ground floor of the Intelligent Infrastructure Fusion Lab
2. A “sand-box,” or outdoor testing area, for robotics and other technologies
3. A diagonal pathway linking the West Green Link and Derring Hall steps to the New Classroom Building



BURCHARD PLAZA
EXISTING CONDITIONS



TECH SQUARE
Burchard Plaza transforms into Tech Square—a social space that fosters collaboration and provides space for comfortable outdoor study through enhanced seating, planting, and lighting strategies.



TURNER WAY
PROPOSED CONDITIONS



Old Turner Street is reimagined as Turner Way, a pedestrianized promenade providing seating, accessible mobility, and enhanced landscaping while maintaining service, emergency, and ADA parking access.



TURNER STREET
EXISTING CONDITIONS

A reimagined Cowgill Lawn serves as the nexus between two Green Links and the Infinite Loop and activates the northern entry of the North Academic Commons through a proposed amphitheater for outdoor learning and socialization.

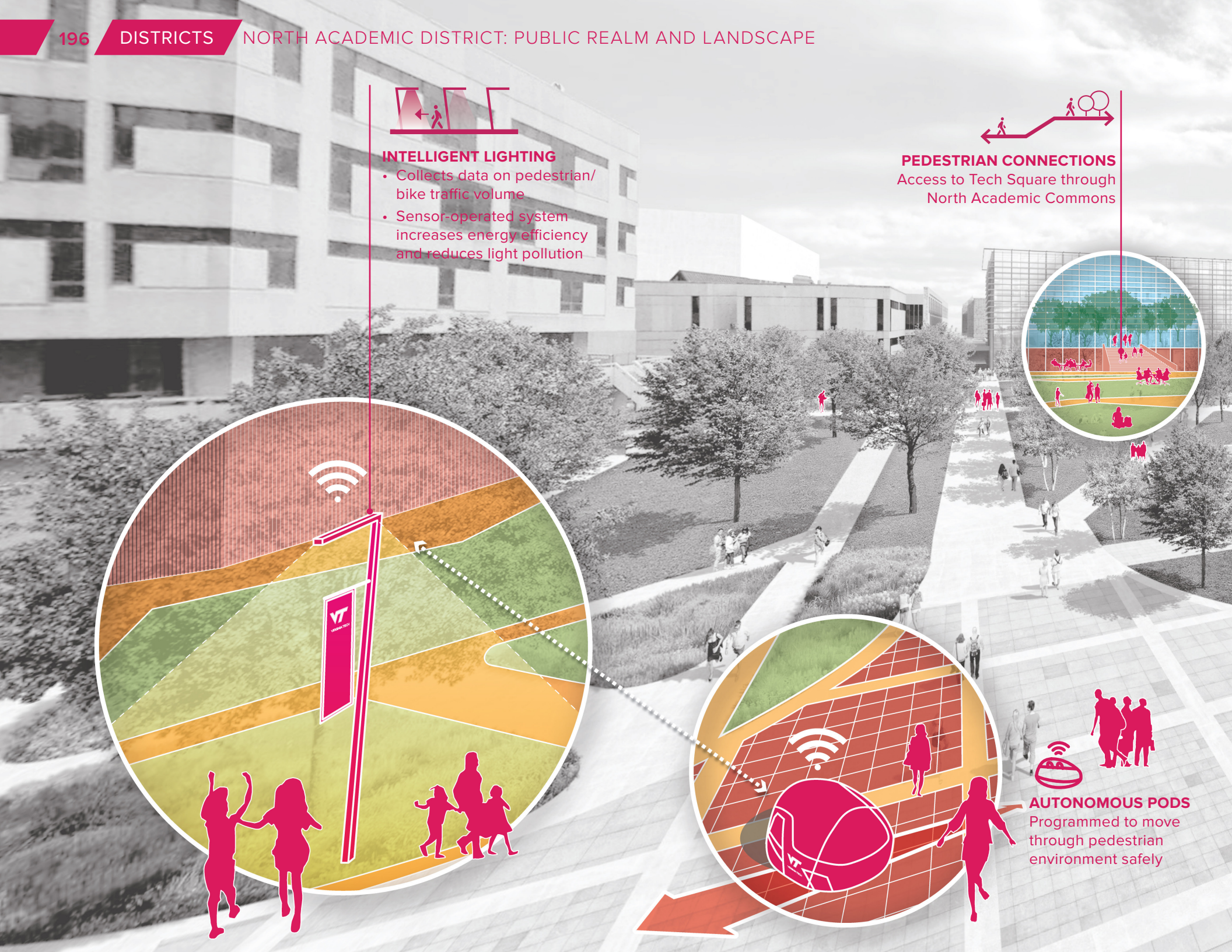


COWGILL LAWN
EXISTING CONDITIONS



COWGILL LAWN
PROPOSED CONDITIONS





INTELLIGENT LIGHTING

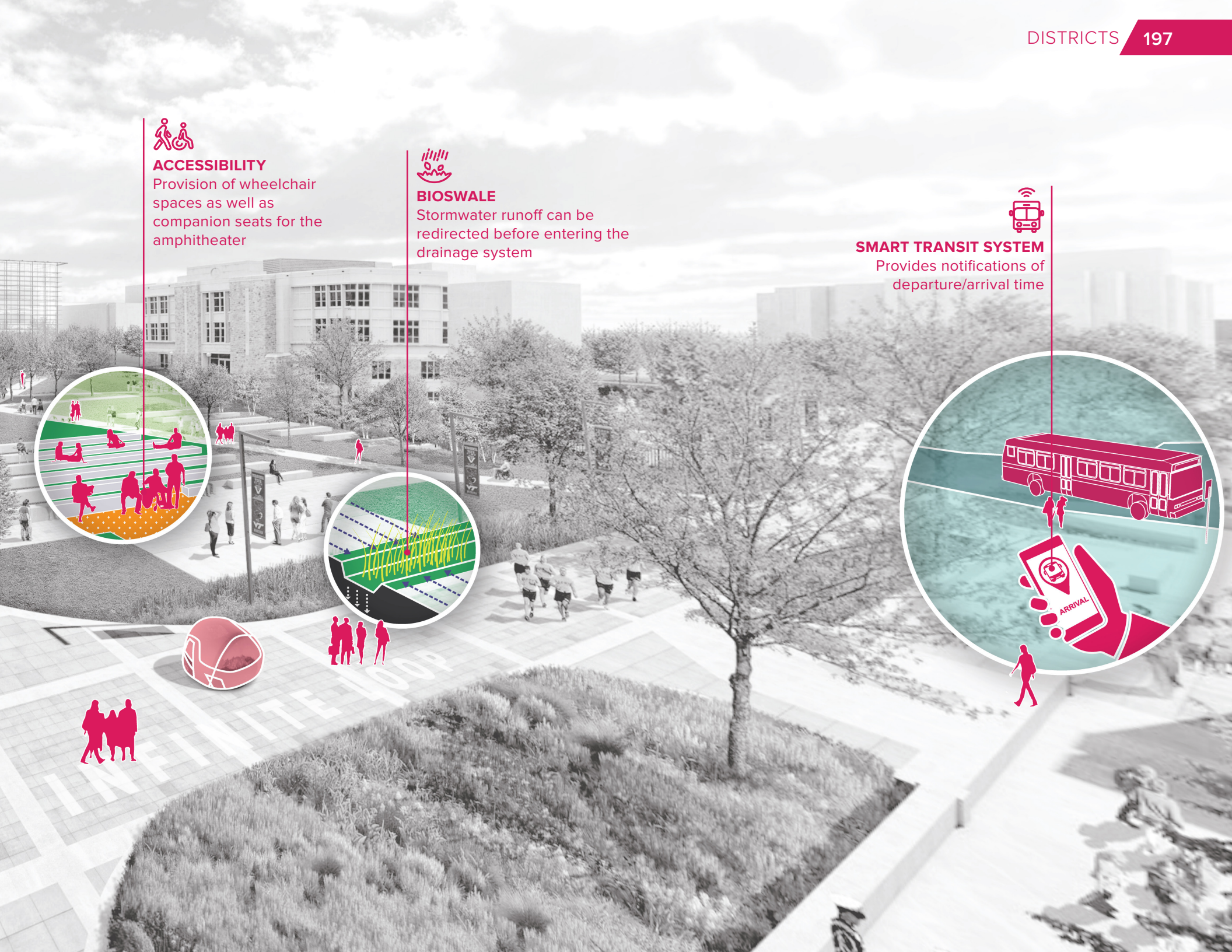
- Collects data on pedestrian/ bike traffic volume
- Sensor-operated system increases energy efficiency and reduces light pollution

PEDESTRIAN CONNECTIONS

Access to Tech Square through North Academic Commons

AUTONOMOUS PODS

Programmed to move through pedestrian environment safely


ACCESSIBILITY
Provision of wheelchair spaces as well as companion seats for the amphitheater
BIOSWALE
Stormwater runoff can be redirected before entering the drainage system
SMART TRANSIT SYSTEM
Provides notifications of departure/arrival time
ARRIVAL

STORMWATER

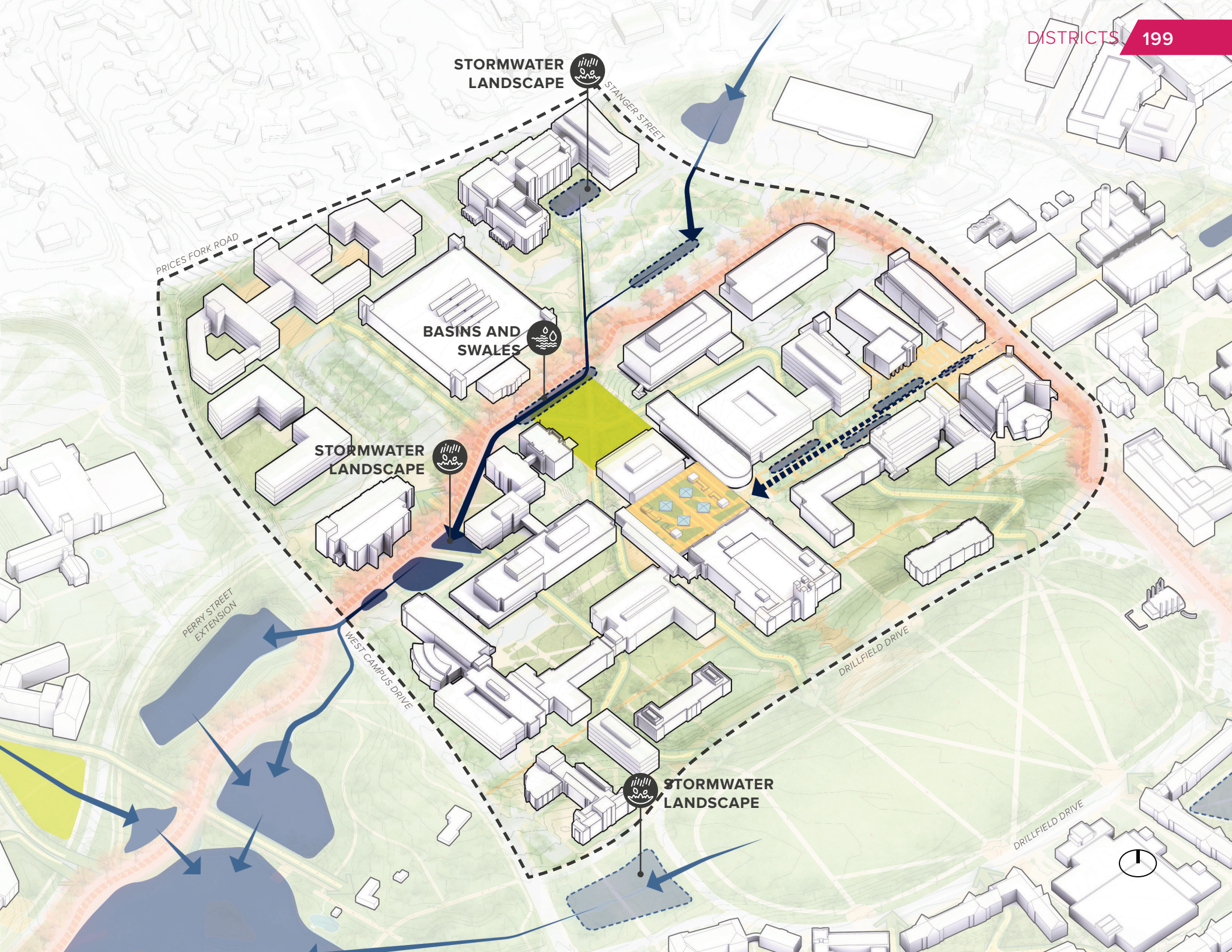
In order to accommodate future development, additional green space and landscape strategies are proposed in response to the ebb and flow of the Stroubles Creek during major storm events.

In the North Academic District, the Webb Branch of Stroubles Creek is currently diverted into culverts that run diagonally across the District from a point near the intersection of Stanger and Prices Fork Road to West Campus Drive near the New Classroom Building. The proposed strategy relies on sustainable techniques to manage water including stormwater best management practices (BMPs) designed to direct, detain, and filter water.

Throughout the District, urban stormwater strategies should be used when possible to correspond to the density of development. Additionally, due to the limited large open spaces in the District, on-site BMPs will need to be heavily supplemented through the use of Conserved Open Space (refer to the Landscape Framework section of this report for more information).

Stormwater Strategy Elements

1. New water-receiving landscapes are planned south of Goodwin Hall to collect building runoff and direct water towards the day-lit Stroubles Creek.
2. A series of urban basins and swales, fed by surface flow and dedicated curb-cuts, is located along the Infinite Loop from Whittemore Hall to the New Classroom Building.
3. A water receiving landscape is proposed between the New Classroom Building and Derring Hall. This open space is defined by Hitt Hall and the Intelligent Infrastructure Building and is envisioned to include water management features as well as areas for outdoor study, dining, and reflection. The Infinite Loop is routed through this space connecting areas west of West Campus Drive to the Perry Street corridor.
4. Just south of the North Academic District, a stormwater park is proposed west of the Drillfield between Drillfield Drive and West Campus Drive. By daylighting Stroubles Creek and activating this space with seating, landscape, and circulation amenities, the Drillfield gains an attractive western gateway while achieving VT's sustainability goals.


STORMWATER LANDSCAPE
STANGER STREET
PRICES FORK ROAD
BASINS AND SWALES
STORMWATER LANDSCAPE
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
STORMWATER LANDSCAPE
DRILLFIELD DRIVE

CIRCULATION

Major changes to circulation are proposed in the North Academic District in response to proposed buildings, the MMTF, and campus-wide circulation concepts such as the Infinite Loop and Green Links.

The presence of the Perry Street Garage and MMTF in the District reinforce its importance as the portal into and out of the campus for a majority of the population. In response, circulation in the District is designed to facilitate inclusive access, bicycles, transit and, to a limited degree, private vehicle movement. The following provides an overview of the key circulation improvements in the District.

Circulation

In conjunction with the landscape framework, other improvements to the pathway network are intended to facilitate access for all members of the campus community while linking together the academic and research activities of the District. The goal is to create a car-free zone in the North Academic District, a zone accessed by transit at the MMTF and by private car in the Perry Street Garage.

As noted, the Infinite Loop and Green Links serve as the armature for providing access for all throughout the District and connect to other pathways including Turner Way and Central Way (through the Burruss Tunnel). Other key routes in the District include:

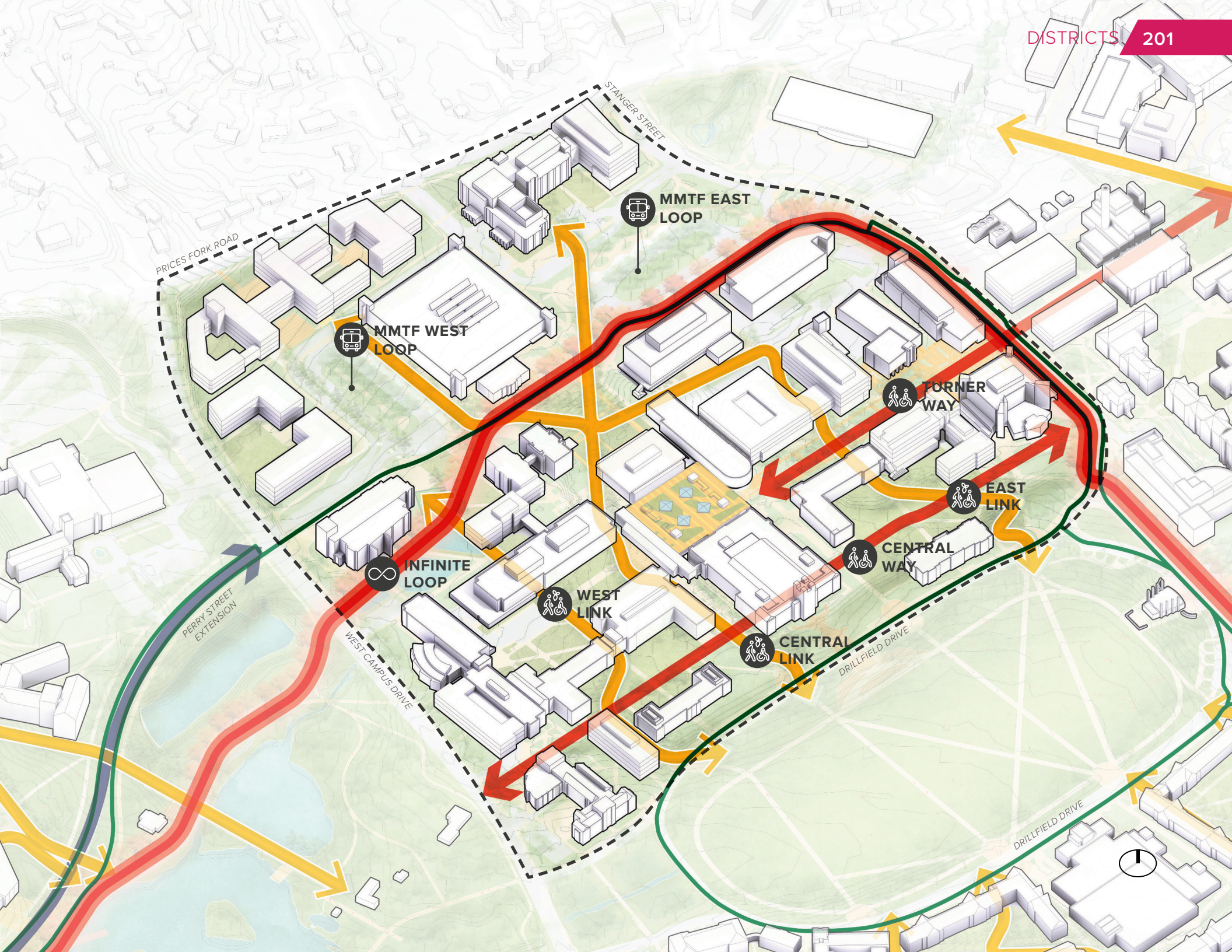
- Perry Street – the Perry Street alignment is closed to general vehicular traffic in accordance with the MMTF circulation strategy. The alignment is maintained for bus access on the east and west ends; it is closed at the center between the Perry Street Garage and Cowgill Lawn with the goal of eliminating pedestrian-vehicular conflicts.
- Central Way – the Central Way and the Burruss Tunnel are enhanced by means of pavement and landscape improvements and new outdoor seating areas. A key feature of Central Way is the proposed coffee lounge, known as the “Tech Cave,” located at the midpoint of the Burruss Tunnel. The Tech Cave provides additional amenities and services to passersby as well as the occupants of Burruss Hall. Issues of queuing and noise will be addressed as part of the detailed design process for this project.

Bicycle Circulation

Bicycle access to the District, in particular east-west movement, is provided via the Infinite Loop. Bike parking areas are positioned at several points along or near the Loop: 1) the Intelligent Infrastructure Quad, 2) Cowgill Lawn / West MMTF area, 3) GBAC entry plaza, 4) Goodwin Quad, and 5) the East MMTF.

Bicycle movement is permitted on the eastern portion of Turner Way. All other pathways are part of the car-free zone. The intent is to concentrate bike circulation along the Loop, Turner Way east of Stanger Street, and the Drillfield. North to south movement is provided along West Campus Drive and Stanger Street.

Pathway Network
New Vehicular Network
Bicycle Network


STANGER STREET
PRICES FORK ROAD
MMTF EAST LOOP
MMTF WEST LOOP
TURNER WAY
EAST LINK
CENTRAL WAY
INFINITE LOOP
WEST LINK
CENTRAL LINK
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
DRILLFIELD DRIVE

Multi-Modal Transit Facility

The Multi-Modal Transit Facility (MMTF) is intended to serve as the portal into and out of the campus for much of the population commuting by bus as well as students commuting by car and parking in the peripheral commuter parking areas as recommended in the Parking and Transportation Master Plan. Peripheral parking areas include the Cage Lot and new parking areas proposed in the 21st Century Living-Learning District. In addition to the bus queuing facilities, the MMTF includes an operations building and waiting lounge directly south of the Perry Street Garage.

The elimination of much of the surface parking along with the construction of the Multi-Modal Transit Facility (MMTF) will result in a change in the traffic patterns in this District. While the total amount of vehicular traffic will reduce in the District with the loss of parking, there will be additional bus activity and a changeover from commuter student to primarily faculty/staff parking, resulting in more common AM peak entering and PM peak exiting traffic.

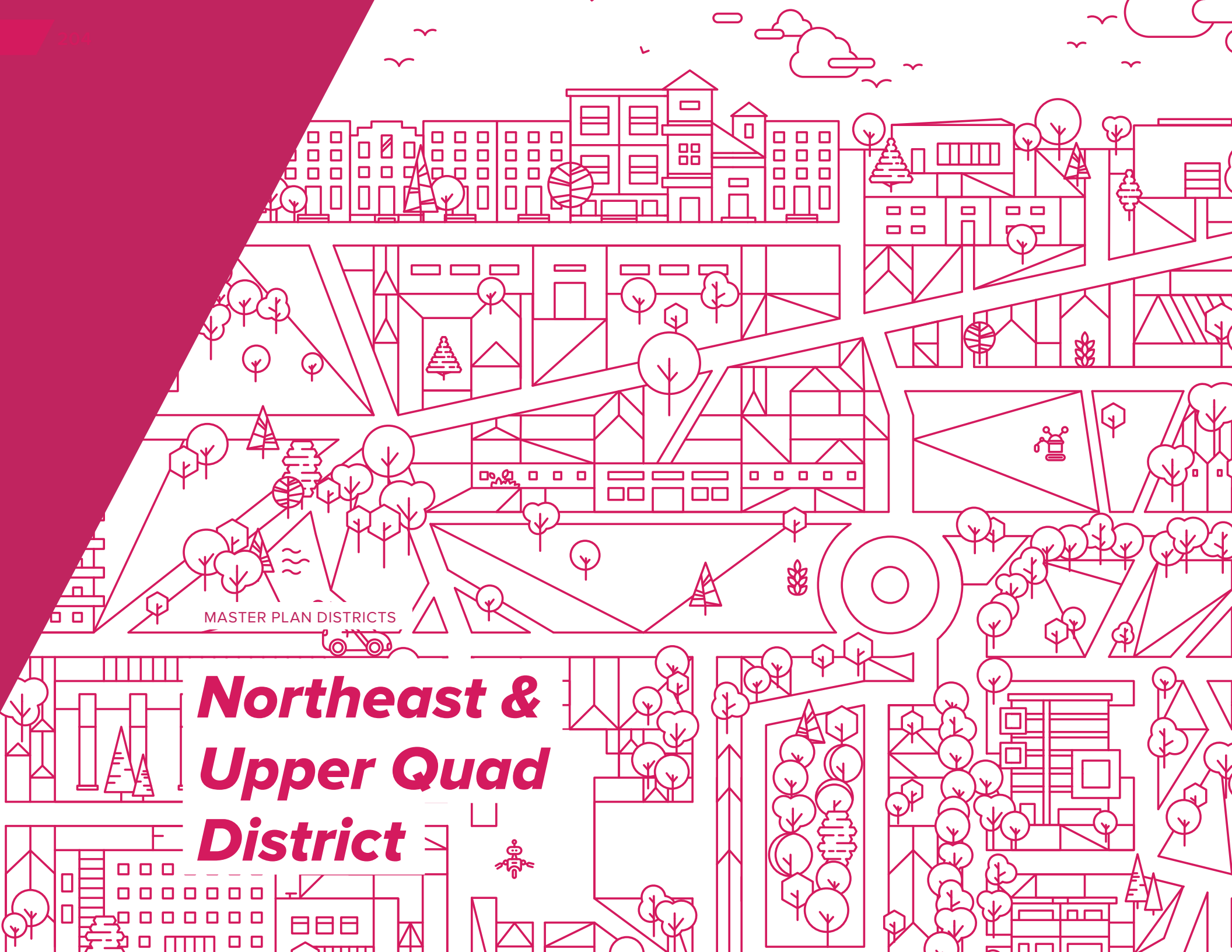
A traffic analysis was conducted to ensure that the District has adequate access to serve existing and future travel demand (see Technical Appendix for details). Based on the results of the analysis, all intersections are expected to operate at acceptable levels of service. The MMTF west hub will have full access to West Campus Drive at the existing signalized intersection and a new roundabout will be constructed to assist ingress and egress into the MMTF east hub onto Stanger Street. Both intersections will operate at acceptable levels with minimal delays to the buses using the MMTF.

The Perry Street Garage will have ingress options off of Prices Fork Road and Stanger Street, effectively serving vehicles arriving from the west, north and east. A potential West Campus Drive access would provide access to the garage to the south as well as access to adjacent existing surface parking lots. However, once surrounding developments are completed, this access road can be removed as drivers can instead continue north to Prices Fork Road and then access the garage from the main driveway. A northbound right-turn overlap phase should be considered at the Prices Fork Road at West Campus Drive intersection to enhance this movement.

Garage egress to the north and east is accomplished via the Prices Fork Road and Stanger Street driveways. Egress to the west and south is accomplished via a one-way connection to the MMTF west hub driveway. While northbound left-turn access is currently allowed at the Prices Fork Road driveway, the movement is very difficult due to lack of a signal, resulting in very little demand for this move. The Town has expressed interest in eliminating this movement to improve safety.

The Prices Fork Road at Toms Creek Road / Stanger Street intersection has the highest combination of vehicular, pedestrian, and bicycle conflicts in the Town and has been the location of several crashes between these modes. As a result, the Town has funding to make improvements to the crossing signals, expand pathways, staging areas at the corners, and enhance streetscape elements at this location. Keeping the exclusive right-turn lane, but eliminating the free-flowing receiving lane is recommended to improve bicycle safety at this location. Adding a second northbound left-turn lane may be considered in the long-term to reduce queuing, however the intersection is currently projected to operate at acceptable levels of service.


PERRY STREET GARAGE
MMTF EAST LOOP
MMTF WEST LOOP
MMTF BUILDING
MULTI-MODAL TRANSIT FACILITY



MASTER PLAN DISTRICTS

Northeast & Upper Quad District



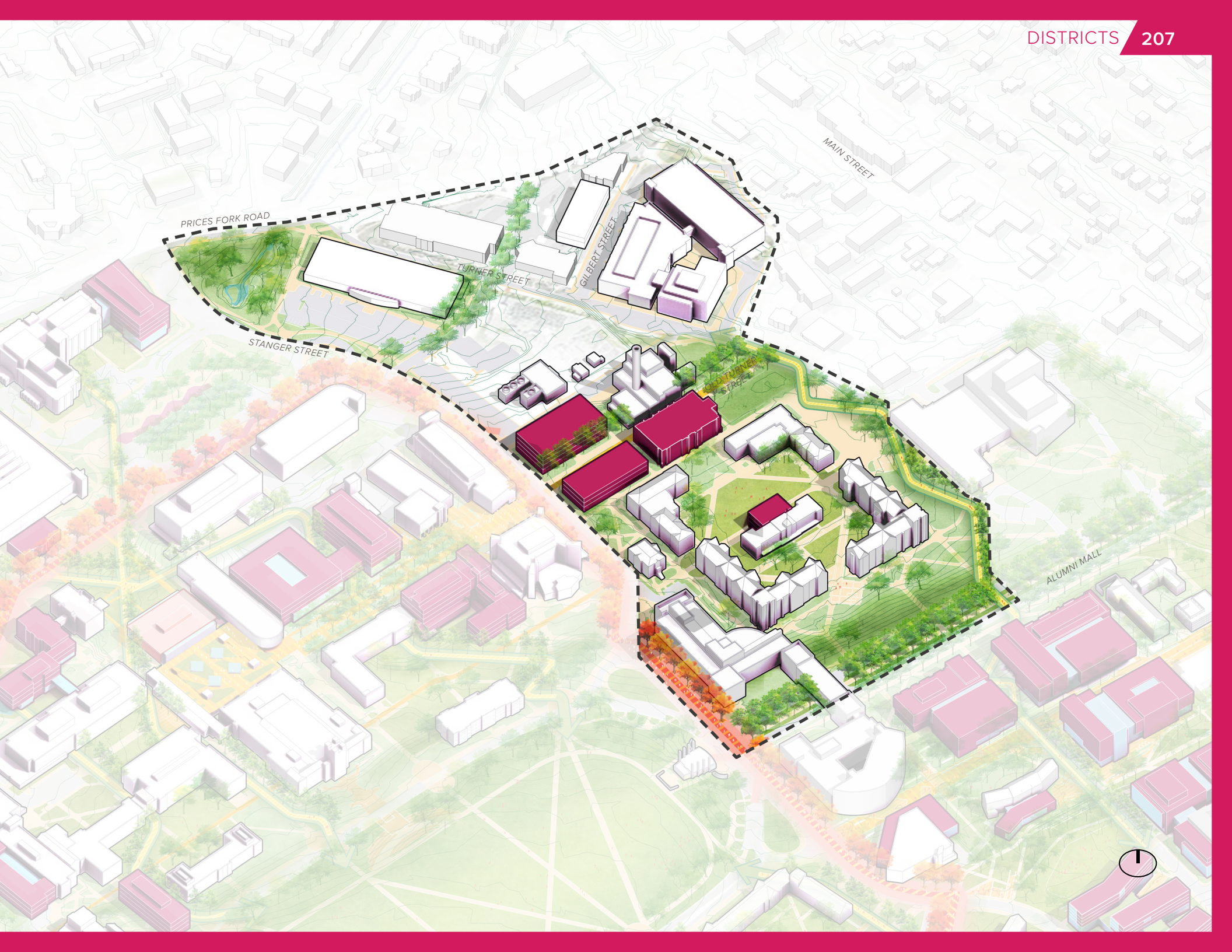
Northeast & Upper Quad District

The Northeast & Upper Quad District is characterized by the historic buildings of the Upper Quad as well as support uses such as the power plant and electrical substations.

Historically, the area north of the Upper Quad included functional and operational uses with limited engagement with the town and the campus. In recent years, the Virginia Tech Foundation developed the North End Center, introducing facilities and establishing a new pattern of development at this important seam between the campus and community. The North End Center includes an office building utilized by the University, a parking garage, and an adjacent retail area (located at the intersection of Price's Fork and Turner Street). A future building is planned as part of the complex.

Vision

The Master Plan provides a framework incorporating existing uses, accommodating future development, and providing connections between the campus and the downtown area. The framework establishes connectivity between the North Academic District, the North End Center, and beyond via Perry Street and Old Turner Street, both of which are viewed as circulation and landscape corridors. The intent is to reinforce the organizational structure of the District, maintaining existing uses while establishing a strategy for accommodating redevelopment and future uses. In the Upper Quad, new life is given to Lane Hall, a building on the National Register of Historic Places, through a thoughtful renovation and addition. Landscape enhancements to the Quad are also proposed.


PRICES FORK ROAD
TURNER STREET
GILBERT STREET
MAIN STREET
STANGER STREET
OLD TURNER STREET
ALUMNI MALL

Proposed Building
Existing Building

PROPOSED DEVELOPMENT

The Master Plan proposes new facilities in the Upper Quad that respond to the historic military programming of the District.

This new development accommodates both Military Science and ROTC in the proposed Corps Leadership and Military Science (CLMS) building and new residence halls. The CLMS building displaces the Art and Design Learning Center building; the programs located in the building are proposed for relocation to the Creativity & Innovation District.

The Upper Quad also accommodates several programs in the College of Liberal Arts and Human Sciences (CLAHS). The framework sets out a new strategy for accommodating CLAHS programs in existing and proposed buildings. In the Upper Quad, the humanities and social science programs of CLAHS are located in Major Williams, Shanks, Lane, and Femoyer. The administrative offices for the college are located in the renovated Liberal Arts building along with a student engagement and learning center.

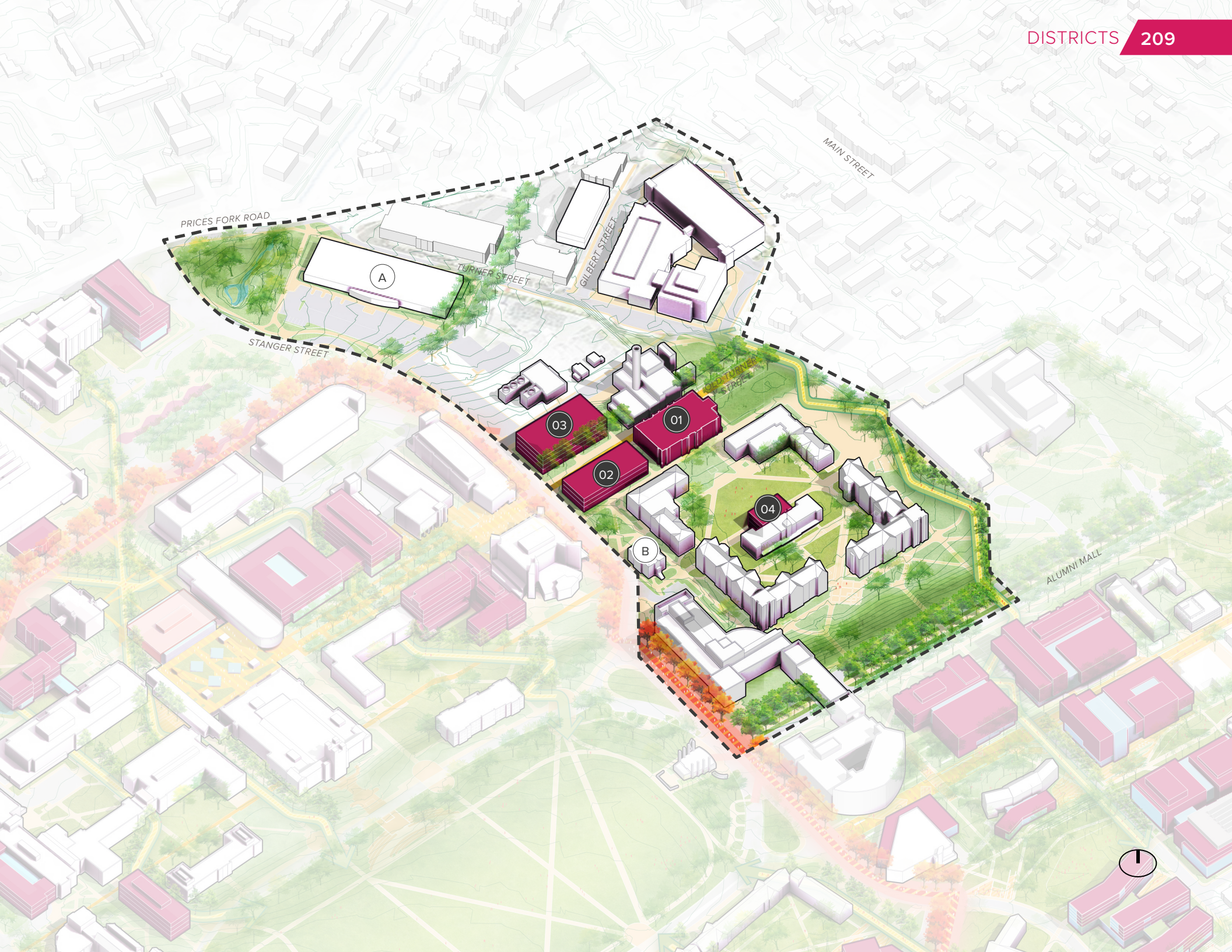
Lane Hall is reimagined in the Master Plan as a center for the humanities and social sciences.

The idea is to renovate and sensitively preserve the building while addressing significant vertical circulation, accessibility, and life safety issues by adding new stairways, elevators, and restroom facilities on the north side of the building.

Beyond the Upper Quad, several redevelopment sites are identified in the framework plan for the District, including long-term academic buildings on the Femoyer, Old Military Building, and Old Security Building sites along Old Turner Street. The sites of the now-demolished Thomas and Monteith Halls are slated to serve as open space in support of the proposed Arts Link.

A potential replacement for the College of Engineering Ware Lab is proposed on the combined site of the Old Security and Military Buildings. The Power House also offers redevelopment potential on the site of the existing coal yard. The future of this land use is contingent on the transition to natural gas in the Power House to reduce the facility's footprint. The existing Surge Building is also a potential redevelopment site if other suitable uses are identified in the future. To support redevelopment of this site and the surrounding context, a parking garage may be required.

Proposed Buildings		
01	Corps Leadership and Military Science	75,000 GSF
02	Future Academic (CLAHS)	47,000 GSF
03	Future Engineering Lab	78,000 GSF
04	Lane Hall Expansion	10,000 GSF
Renovated Buildings		
A	Surge Space Building	43,000 GSF
B	Liberal Arts Building	12,500 GSF

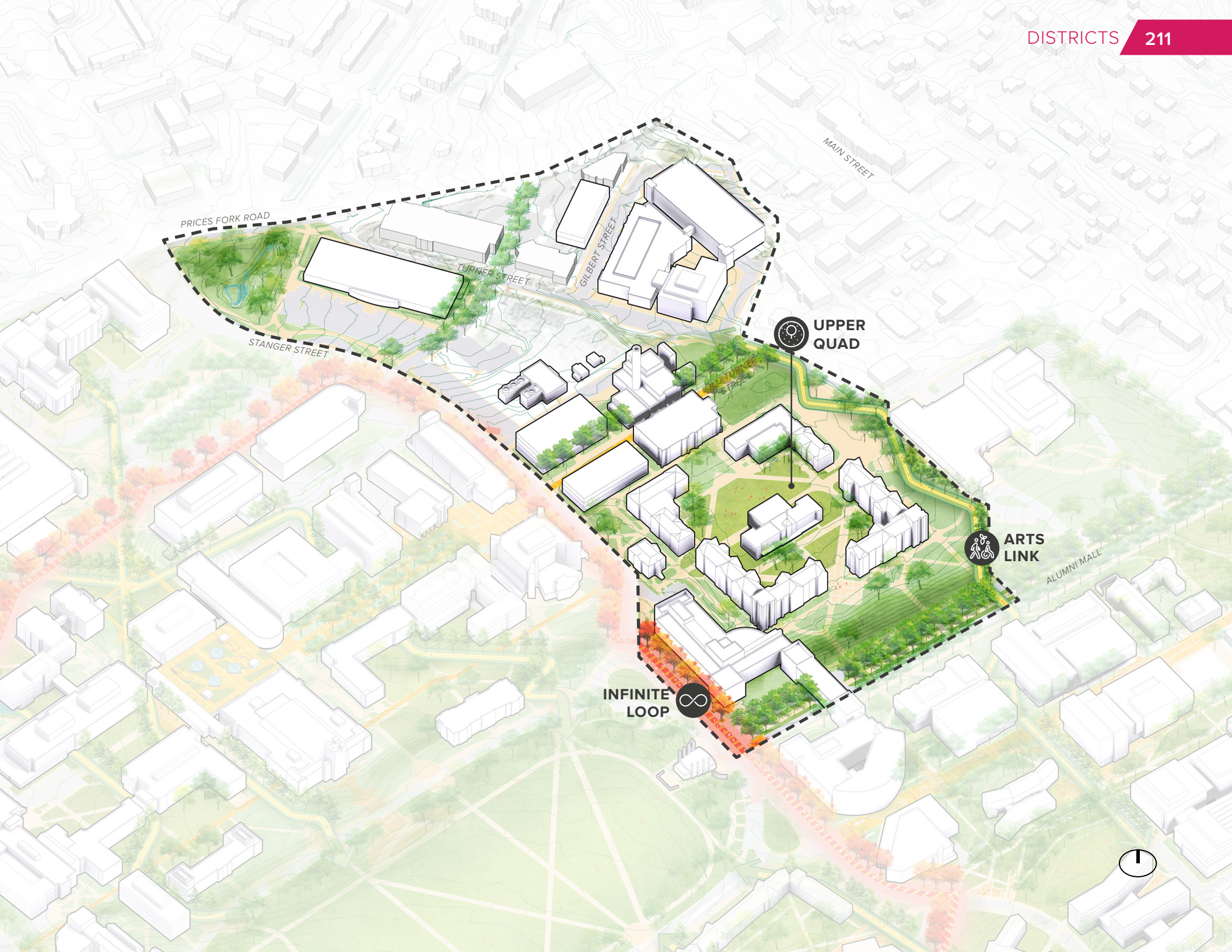

PRICES FORK ROAD
STANGER STREET
TURNER STREET
GILBERT STREET
MAIN STREET
OLD TURNER STREET
ALUMNI MALL
A
B
01
02
03
04

PUBLIC REALM AND LANDSCAPE

Improvements to the public realm focus on enhancing the Upper Quad landscape, improving existing street corridors, and introducing a Green Link, the Arts Link, between the Upper Quad and the Moss Arts Center.

The Arts Link is a landscape and circulation corridor proposed for functional and aesthetic reasons. Functionally, the link provides an access for all members of the campus community from the Alumni Mall level to the Upper Quad level and beyond to Turner Street. Like other Green Links on campus, it is envisioned to include rain gardens, shade trees and seating areas. The Arts Link connects the Upper Quad to the Mall and southward to future development in the Creativity & Innovation District (once the Squires site is redeveloped).

The existing east-west streets north of the Upper Quad are reimagined in the Master Plan to provide connections from the North Academic District to the North End Center and beyond to the downtown Blacksburg. Perry Street is envisioned as a complete street linking the North Academic District to the North End Center. Old Turner Street is reimagined as Turner Way linking Tech Square (Burchard Plaza) to the office buildings of North End Center.


PRICES FORK ROAD
STANGER STREET
TURNER STREET
GILBERT STREET
MAIN STREET
OLD TURNER STREET
UPPER QUAD
ARTS LINK
ALUMNI MALL
INFINITE LOOP

STORMWATER

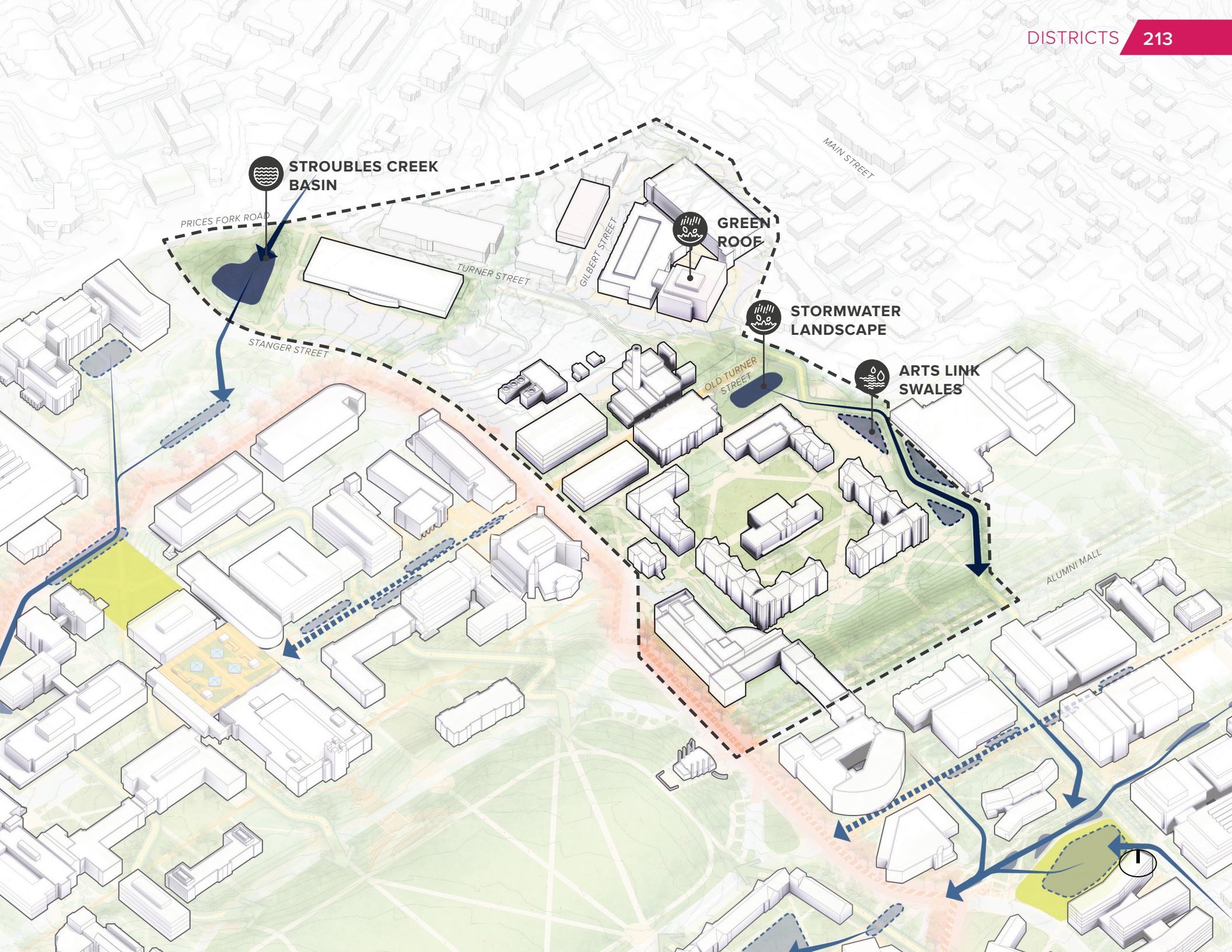
Selected on-site stormwater interventions are balanced with the District's formal landscapes and dense development.

At the northwest corner of the Northeast & Upper Quad District, the Webb Branch of Stroubles Creek enters the campus and is day-lit through the enhancement and enlargement of an existing filtration basin. The formalized landscapes of the Upper Quad and Alumni Mall are not well suited for stormwater BMPs; however, new landscapes associated with building demolitions and the creation of the District's Green Link offer the opportunity for infiltration.

As in the North Academic District, urban stormwater strategies should be used to correspond to the density of development. Additionally, due to the limited large open spaces in the District, on-site BMPs will need to be heavily supplemented through the use of Conserved Open Space (refer to the Landscape Framework section of this report for more information).

Stormwater Strategy Elements

1. At the point where Stroubles Creek enters the campus, the existing basin is maintained as part of an open space and landscape setting at the intersection of Prices Fork Road and Stanger Street, forming a gateway to the University.
2. The recent demolition of Thomas and Monteith Halls provides the opportunity for the creation of a series of water-receiving landscapes, continuing along the Arts Link between Pearson Hall and the Moss Arts Center.
3. Green roofs are included in the design of any new buildings with contemporary architecture, such as those in the North End Center.

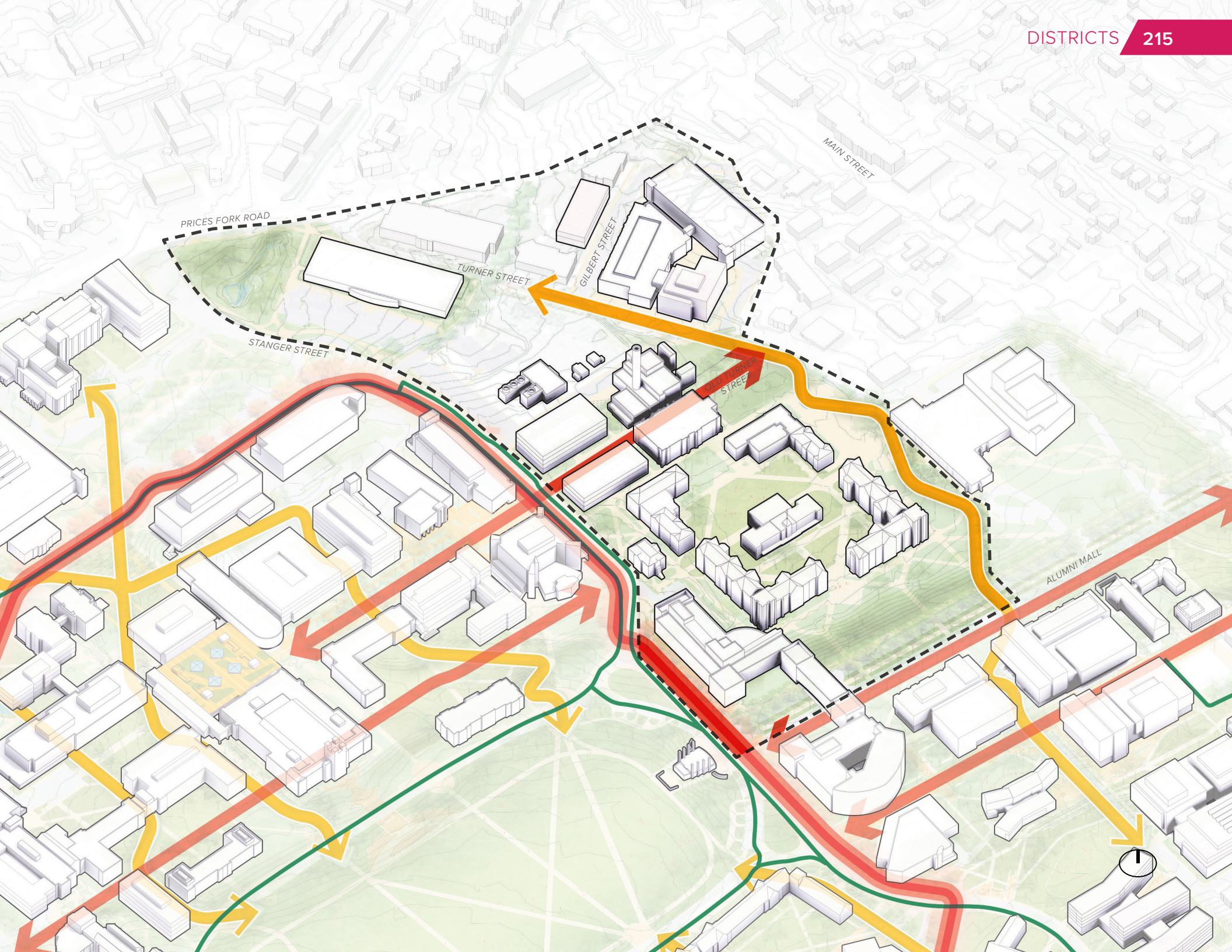

STROUBLES CREEK BASIN
PRICES FORK ROAD
TURNER STREET
GILBERT STREET
MAIN STREET
GREEN ROOF
STORMWATER LANDSCAPE
STANGER STREET
OLD TURNER STREET
ARTS LINK SWALES
ALUMNI MALL
1

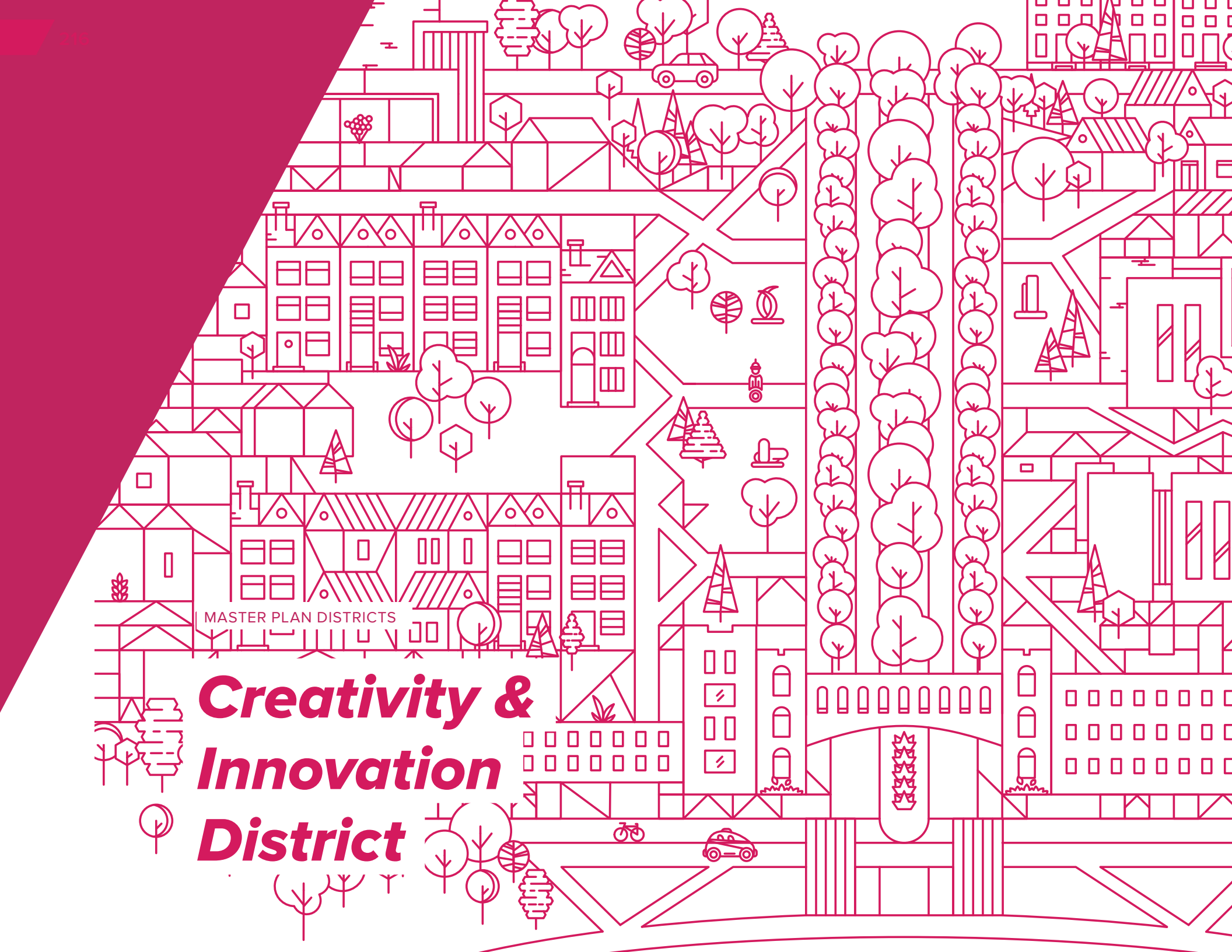
CIRCULATION

Circulation networks are modified to accommodate a modal shift towards active transportation and transit.

Vehicular circulation is maintained on Perry Street. Old Turner Street is closed in the Master Plan to create a more pleasant setting for non-motorized mobility, extending Turner Way from the North Academic District. The Infinite Loop engages with the District along Stanger Street providing connections to the North Academic District and the Creativity & Innovation District to the south.

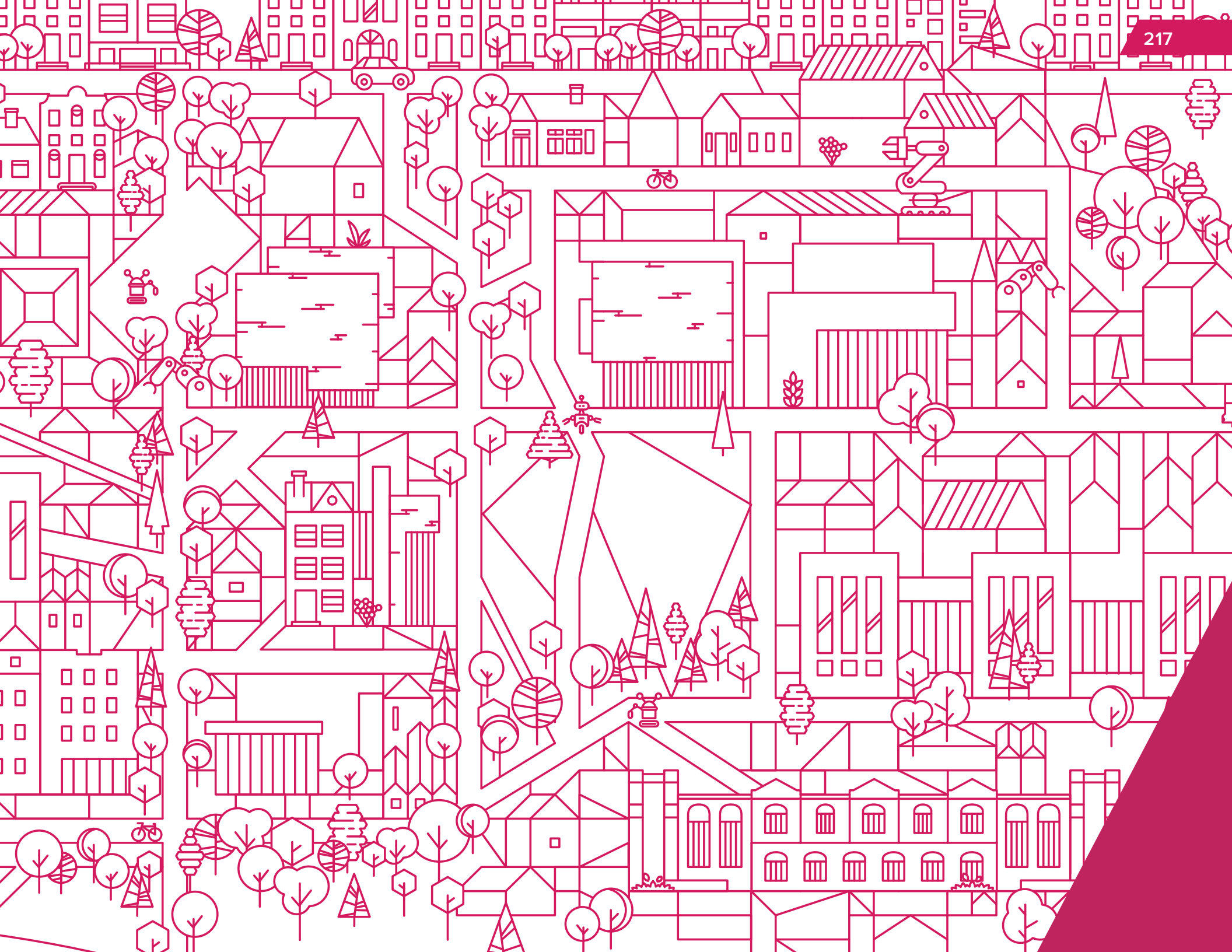
Pathway Network
Bicycle Network


MAIN STREET
PRICES FORK ROAD
TURNER STREET
GILBERT STREET
STANGER STREET
OLD TURNER STREET
ALUMNI MALL



MASTER PLAN DISTRICTS

Creativity & Innovation District



Creativity & Innovation District

The Creativity & Innovation District (CID) is envisioned as a signature new activity hub on the eastern edge of the campus where Virginia Tech meets downtown Blacksburg.

The boundaries of the District extend from the Alumni Mall on the north, Main Street and Draper Road on the east, Roanoke on the south and Kent Street on the west. The District encompasses a range of existing programs and facilities including the School of Performing Arts; the Institute for Creativity, Arts, and Technology; and the School of Visual Arts. Existing facilities include the Moss Arts Center, Squires Student Center, Newman Library and Torgersen Bridge, Henderson Hall, Theatre 101, the Donaldson Brown Graduate Life Center, the University Club, the Architecture Annex, the Media Building, the Media Building Annex, the Armory, and the Bookstore.

Vision

The CID is envisioned as a vibrant hub of student, faculty, partnership, and community activities focused on innovation and creative initiatives involving existing and future programs in the District.

The vision statement for the District is as follows:

> *"The Creativity & Innovation District at Virginia Tech engages local and global communities in a new discourse around the relationship between the arts and technology. The District will showcase indoor and outdoor space for the arts, performance, education, demonstration, and research. It will also represent a new, forward-looking mindset that crosses traditional academic boundaries to promote creativity and innovation."*

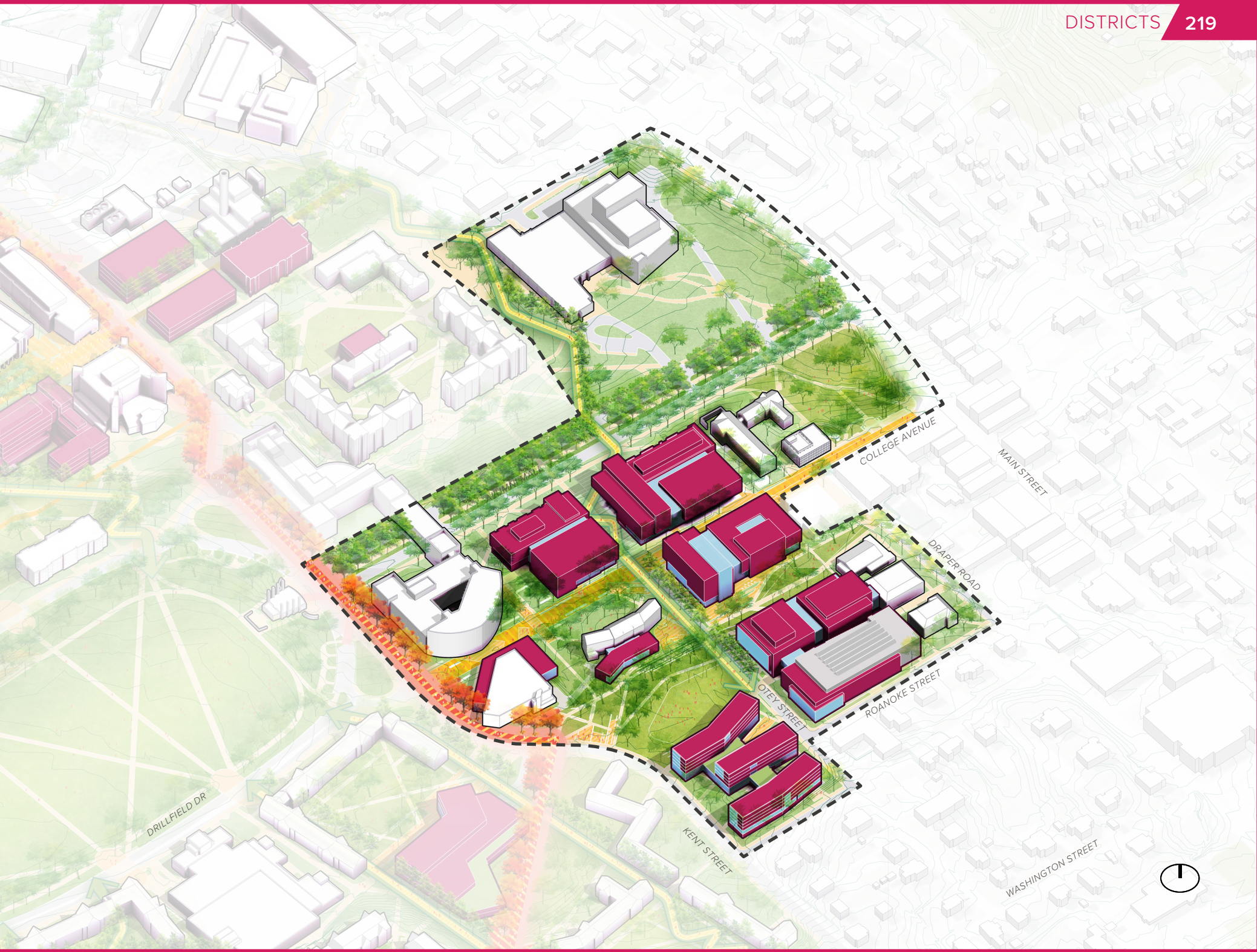
The design vision for the CID builds upon Virginia Tech's strengths in creativity and collaborative innovation. The proposed programs and activities promote strategic partnerships among students and faculty, the local community, and private companies and organizations.

To this end, the CID includes interdisciplinary faculty clusters for members of the Creativity and Innovation (C&I) Strategic Growth Area. From imagination to innovation, C&I empowers students, faculty, and external partners to collaborate beyond boundaries. It is a vibrant ecosystem that melds the exploration of innovative technologies and the design of creative experiences with best practices for developing impact-driven and meaningful outcomes and solutions. C&I builds and strengthens creative communities; supports economic development; and enhances quality of life through self-sustaining and entrepreneurial activities. Truly transdisciplinary, C&I draws students, faculty, and external partners from a broad range of disciplines.

A sample of University departments represented in C&I includes: Architecture, Arts (Art, Cinema, Dance, Music, Theatre), Business (Marketing, Management), Communication, Computer Science, Creative Writing, Design, Education, Engineering, History, and Science (Chemistry).

As a place, the CID is imagined as a playful, creative, and inspiring environment, merging the concepts of an innovation district and an arts district. As such, it is envisioned as a gateway to the campus for university partners who seek to leverage both creative and entrepreneurial activities. Collaborative facilities, tools, and technologies are proposed to facilitate the translation of ideas into commercial offerings.

The District is planned as a destination for members of the campus and broader communities interested in merging creative and entrepreneurial activities. The Master Plan focuses on transforming this area of campus and downtown Blacksburg into a vibrant and active district by: 1) introducing new programs, 2) constructing new facilities, and 3) establishing a new public realm featuring performance and gathering spaces, public art, and exterior studios.

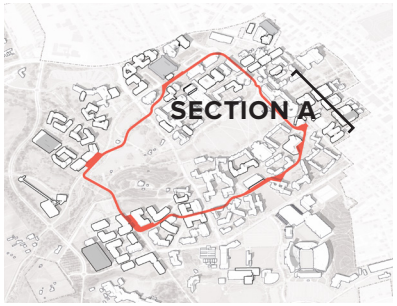

COLLEGE AVENUE
MAIN STREET
DRAPER ROAD
ROANOKE STREET
OTEY STREET
KENT STREET
DRILLFIELD DR
WASHINGTON STREET

Section A

ALUMNI MALL TO ROANOKE STREET

As campus users move south from the Northeast & Upper Quad District, the campus terrain slopes down towards the Creativity & Innovation District. This movement is aided by a proposed Green Link, known as the Arts Link. In addition to physically connecting these two districts, the Arts Link also programmatically links the Moss Arts Center, located north of Alumni Mall, to the design and performance spaces planned in the proposed facilities of the CID. The topographic low-point of this area, currently buried by the 1960s expansion of Donaldson-Brown, is reimagined as CID Green, a vibrant campus open space that also serves to detain and filter stormwater.

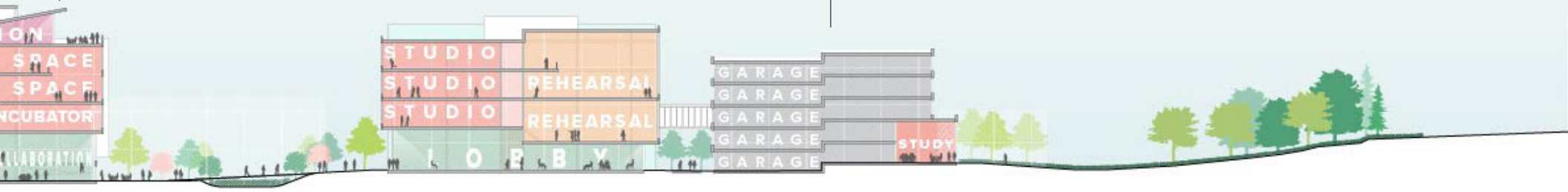




Vignette Square
(P3 Building)

Music and Arts
Complex

CID Garage



CID GREEN | MUSIC AND ARTS COMPLEX | NEW CID GARAGE | ROANOKE ST | BLACKSBURG RESIDENTIAL AREA

Proposed Building
Proposed Garage
Existing Building

PROPOSED DEVELOPMENT

The vision for the CID includes several key programmatic recommendations to ensure that a critical mass of people and activities are concentrated in the District and to ensure that the character of the CID—driven by arts, music, design, and technology—is always on display.

Vignette Square (P3 Building)

The first focuses on a public-private partnership (P3) center, known as Vignette Square, which is proposed as near-term development with the intent of facilitating and encouraging activities and partnerships between the University, the community, private companies, and other outside organizations.

Vignette Square is seen as a catalyst for "jump-starting" activities in the CID, providing a place where students, staff, and faculty from across the University can come together around creative and entrepreneurial activities. More specifically, it is a place for members of the College of Business, CAUS, Engineering, Liberal Arts and others to collaborate with one another and with industry partners.

This P3 building includes office, research, meeting and exhibition space designed to facilitate collaboration. In particular, the exhibition space is seen as part of a three-part strategy to replace the loss of the Squires ballrooms (see Campus Life Framework for details).

As imagined, the building enables University partners to establish a presence on the campus and in downtown Blacksburg and to gain access to emerging research and talent at the University. Virginia Tech faculty and researchers, in turn, gain access to potential business and commercialization partners while students gain access to potential internship and long-term employment opportunities. The building also includes exhibition space and retail space. The exhibition space is intended to: 1) provide a place to showcase the outcomes of University and business partnerships, 2) accommodate conferences associated with partnership activities, and 3) facilitate interaction and engagement between both local and global businesses and community members.

The building is situated at the heart of the CID, extending the townscape character associated with the adjacent retail buildings. Pending phasing considerations for Squires, New CAUS, and the North Academic Commons, Vignette Square can either be located on the exsiting Squires parking lot at the southest corner of College Avenue and Otey Street, or on the Squires site itself. Planned programming includes a new bookstore to replace the existing facility and innovative collaboration, exhibition, and support spaces designed to complement the retail and dining services of adjacent downtown Blacksburg.

College of Architecture and Urban Studies

Another programmatic recommendation calls for the relocation of the College of Architecture and Urban Studies (CAUS) from North Academic District to the CID

The CAUS space move introduces approximately 2,000 students, faculty, and staff to the District—members of the VT community with a focus on creativity and innovation. This sizable population

Proposed Buildings		
01	CID Living-Learning Community	203,000 GSF
02	CID Parking Garage	178,000 GSF
03	College of Architecture and Urban Studies	176,000 GSF
04	Faculty Club at Donaldson-Brown	12,000 GSF
05	Integrated Design Building	138,000 GSF
06	Music and Arts Complex	169,000 GSF
07	Vignette Square (P3 Building)	203,000 GSF
Renovated Buildings		
A	Bookstore Renovation & Addition (CID Commons)	67,000 GSF
B	Donaldson Brown Renovation (Alumni Hall Honors College)	16,000 GSF
C	Newman Library Core Infrastructure Renovation	212,000 GSF


COLLEGE AVENUE
MAIN STREET
DRAPER ROAD
ROANOKE STREET
OTEY STREET
KENT STREET
DRILLFIELD DR
WASHINGTON STREET
01
02
03
04
05
07
08
A
B
C



COLLEGE AVENUE AT VIGNETTE SQUARE

A reimagined College Avenue creates a pedestrian-friendly zone from Draper Road to Kent Street, passing between the proposed CAUS building and Vignette Square (P3 Building). The design introduces amenities like seating, lighting, innovative stormwater management, and landscape improvements aimed at supporting the programming of the surrounding facilities and invigorating the activities of the CID.

brings a 24-hour range of activities, contributing to the vitality and vibrancy of the District as well as the adjacent areas of downtown Blacksburg. The relocation also enables CAUS to consolidate its programs while providing additional space for potential growth. Further, it enables the University to transform Cowgill and Burchard Halls into the North Academic Commons (see the North Academic District for details).

Pending phasing considerations, the new CAUS building is proposed either on the site of the Squires Student Center, an important location along Alumni Mall, or on the site of the existing Squires parking lot at the southeast corner of College Avenue and Otey Street. The building consolidates CAUS programs and accommodates future growth. In design terms, the building is positioned to create a significant and iconic architectural statement befitting the highly ranked CAUS programs. Its design will also create an active edge along College Avenue. The building program features studio and maker spaces, classrooms, offices, and gallery spaces.



COLLEGE AVENUE
EXISTING CONDITIONS

Integrated Design

Programmatically linked to CAUS is the Integrated Design building, a proposed facility containing shared studios, collaboration spaces, and innovation hubs supporting transdisciplinary initiatives in “Design Thinking.” Integrated Design brings together collaborators from CAUS, Industrial Design, the College of Engineering, the College of Business, and other creative individuals. Its proximity to Newman Library provides the opportunity for the expansion of digital media and design-oriented collections.

Music and Arts Complex

A new Music and Arts Complex is proposed at the center of the District to replace office, practice, and performance spaces displaced once the Squires Student Center is demolished in order to make way for the new CAUS building. This complex would need be completed prior to the Squires demolition to ensure program continuity. The Media Building, located at the intersection of Draper and Otey Streets, is integrated into the design for the Music and Arts Complex. Presently the Master Plan illustrates a new facility at this location; however, additional future studies are required to determine if the Architecture Annex could be repurposed to contribute to this complex.

CID Living-Learning Community

A new residence hall is planned on the University Club site to provide a living-learning community aligned with the creative and entrepreneurial activities proposed in the CID. This facility includes a range of traditional and apartment-style room configurations on the upper floors and houses approximately 600 students. The ground floor features studio, performance, and practice spaces. It is planned as one of the first facilities in the CID.

Parking Garage

A parking garage is proposed on the south edge of the CID to replace parking displaced by development as well as to accommodate the demand generated by the P3, CAUS, and Music and Arts Complex. The garage’s capacity should be maximized to the extent allowed by the constrained site. One possible configuration would see four levels of parking accommodate approximately 500 parking spaces. Additionally, to activate the adjacent streetscape, a portion of the garage could be slated to accommodate student service offices, private retail, or a mail services facility.

Proposed Renovation

NEWMAN LIBRARY

Like most university libraries, Newman is being transformed to provide more group study, collaboration, and engagement spaces in order to create an active learning commons. The Libraries will continue to evaluate the demand for print collections and evolve the physical footprint of facilities to address emerging teaching, learning, and research needs. The emphasis will be on maintaining a diverse ecosystem of academic

services, studios, and technology-rich rooms, as well as collaborative and quiet work spaces. Additional satellite locations for specific services of the library may be incorporated into new commons as well as other new or renovated facilities. The Master Plan recommends a future comprehensive visioning study for the Libraries.

UNIVERSITY BOOKSTORE

The existing University Bookstore is repurposed as the CID Commons, one of a series of commons facilities planned around campus to serve the distributed nature of the population. This new Commons is positioned along the Infinite Loop, providing connections to adjacent Districts, and its proximity to the Drillfield makes it an ideal location for student life. Informal gathering, study, and social spaces are planned for the building. This activation also serves to spur demand for the University Bookstore.

GRADUATE LIFE CENTER

The Graduate Life Center (GLC) serves as the center for graduate student organizations and services and provides housing for approximately 100 students. The original historic portion of the GLC, known as Donaldson-Brown, is maintained as part of the vision for the CID and transformed into the Honors College and Faculty Club.

Demolition of the 1960s portion of the building is recommended to address existing flooding and stormwater problems caused by the building's siting atop the buried Central Branch of Stroubles Creek. It is also recommended given the unfavorable condition and architectural character of the building. A smaller addition is proposed in its place on the south side of Donaldson-Brown to include meeting social spaces along with a terrace overlooking the proposed CID Green.

The entirety of existing Donaldson-Brown must remain intact until the needs of the GLC are met. The displaced Graduate Life uses would be relocated in a more distributed model that includes social and student organization spaces in the North Academic Commons, a new Graduate Life Center and on-campus housing proposed in an expanded Hillcrest Hall, a commons and lounge for commuting graduate students in the GSS Commons in the Life Sciences & Technology District, and additional housing and support uses in a redeveloped Glade Road District.



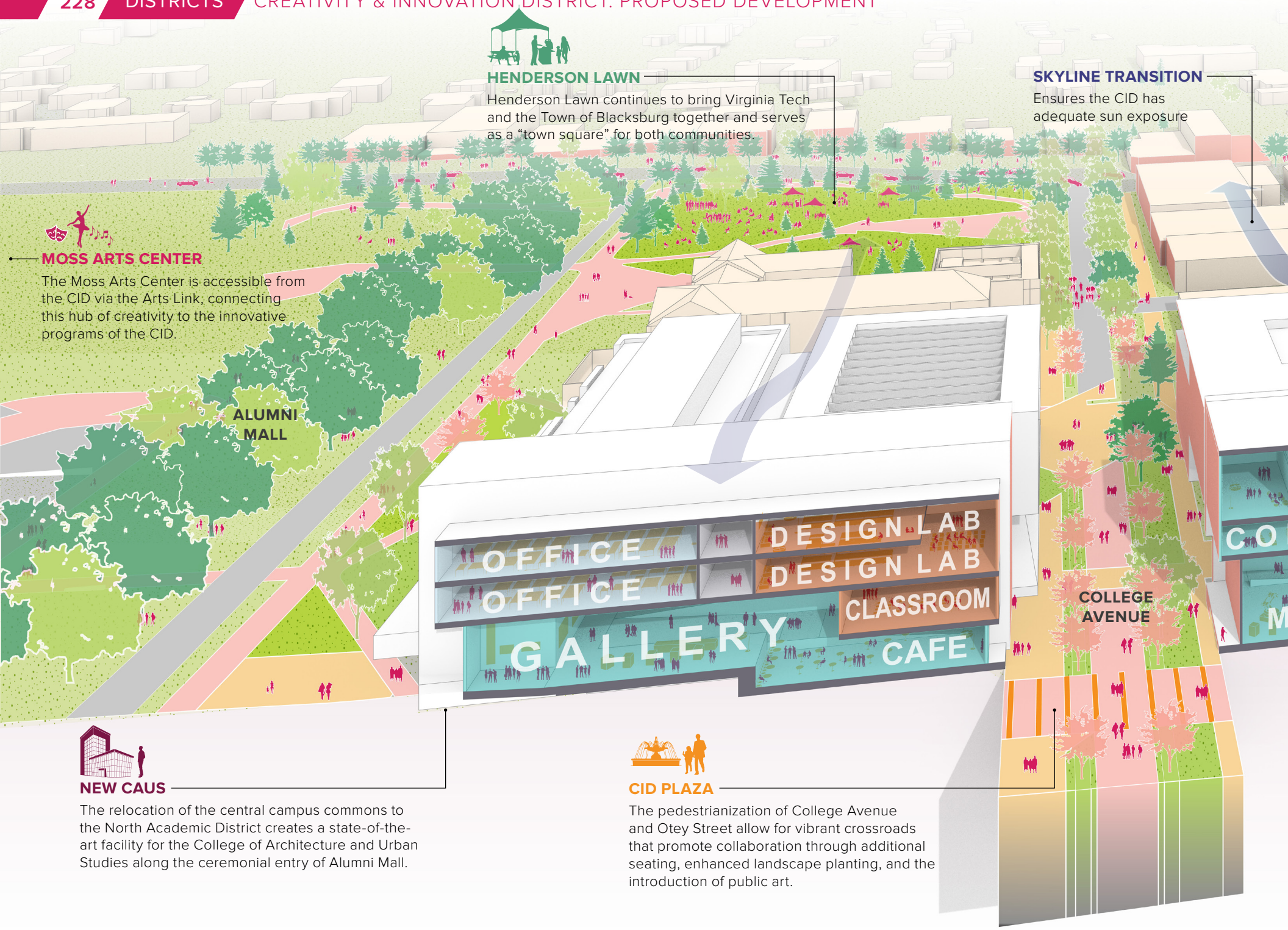
SQUIRES STUDENT CENTER
EXISTING CONDITIONS

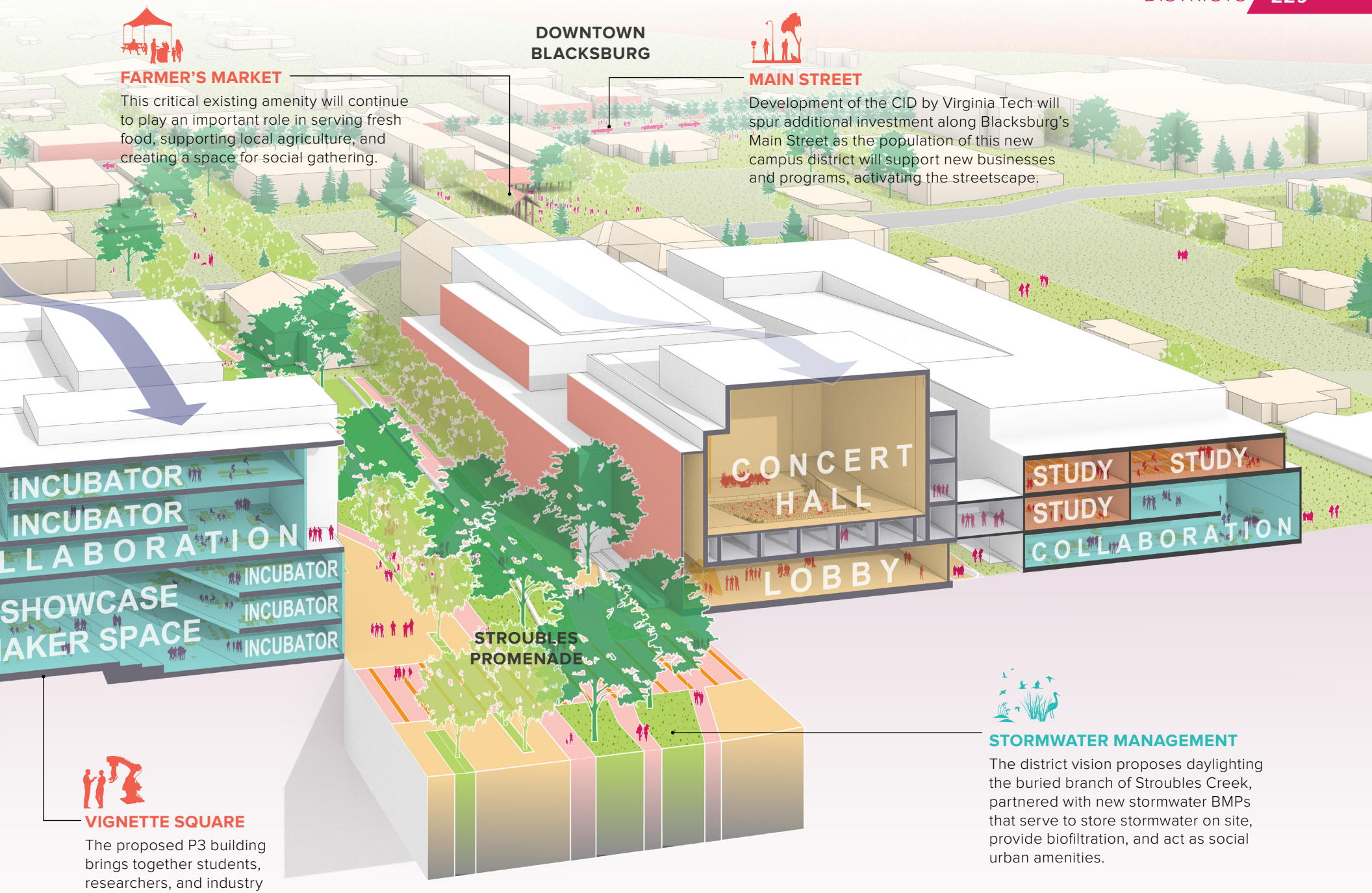




ARTS LINK PLAZA

The demolition of the Squires Student Center supports the development of the new CAUS Building and the Integrated Design Building. Between the two, a proposed Green Link, known as the Arts Link, expands into a vibrant plaza. This accessible space connects Alumni Mall to the CID and provides the opportunity for the integration of public art and performance spaces.


HENDERSON LAWN
Henderson Lawn continues to bring Virginia Tech and the Town of Blacksburg together and serves as a "town square" for both communities.
SKYLINE TRANSITION
Ensures the CID has adequate sun exposure
MOSS ARTS CENTER
The Moss Arts Center is accessible from the CID via the Arts Link, connecting this hub of creativity to the innovative programs of the CID.
ALUMNI MALL
OFFICE
OFFICE
DESIGN LAB
DESIGN LAB
CLASSROOM
GALLERY
CAFE
COLLEGE AVENUE
NEW CAUS
The relocation of the central campus commons to the North Academic District creates a state-of-the-art facility for the College of Architecture and Urban Studies along the ceremonial entry of Alumni Mall.
CID PLAZA
The pedestrianization of College Avenue and Otey Street allow for vibrant crossroads that promote collaboration through additional seating, enhanced landscape planting, and the introduction of public art.



FARMER'S MARKET

This critical existing amenity will continue to play an important role in serving fresh food, supporting local agriculture, and creating a space for social gathering.

MAIN STREET

Development of the CID by Virginia Tech will spur additional investment along Blacksburg's Main Street as the population of this new campus district will support new businesses and programs, activating the streetscape.

VIGNETTE SQUARE

The proposed P3 building brings together students, researchers, and industry partners in a collaborative and innovative setting.

STORMWATER MANAGEMENT

The district vision proposes daylighting the buried branch of Stroubles Creek, partnered with new stormwater BMPs that serve to store stormwater on site, provide biofiltration, and act as social urban amenities.

PUBLIC REALM AND LANDSCAPE

The CID vision calls for the transformation of the public realm by integrating new facilities in a framework defined by new public spaces, performance spaces, courtyards, and pathways that connect the District with the rest of campus and downtown Blacksburg.

The public realm is imagined as a highly active series of corridors and spaces providing opportunities to showcase and demonstrate the activities of the District. Conceptually, the public realm strategy for the District is defined by a combination of north-south and east-west "corridors."

North-South Corridors

The north-south landscape corridors include the Arts Link and Otey Street.

THE ARTS LINK

The Arts Link extends from the Upper Quad and the Moss Arts Center southward to College Avenue. It is intended to provide an access for all members of the campus community from Alumni Mall northward to the Upper Quad and southward to College Avenue and Otey Street. Completion of the Arts Link is dependent on the demolition and replacement of the Squires Student Center.

OTEY STREET

The streetscape along Otey Street is redesigned as a continuation of the Arts Link with goal of providing a consistent landscape expression and edge conditions while providing access for all members of the campus community and improving bicycle circulation. Enhanced pedestrian amenities are proposed west of Draper Road.

East-West Corridors

The east-west corridors include: 1) Alumni Mall, 2) College Avenue, and 3) Stroubles Creek. These corridors connect the campus to downtown Blacksburg and organize movement from the town into the campus and vice versa. The design vision for each corridor responds to unique conditions and opportunities.

ALUMNI MALL

As the ceremonial gateway to the campus, Alumni Mall is enhanced in the Master Plan by means of additional tree planting on the north and south edges and in the central median to reinforce the formality of this iconic landscape. Views of the Torgersen Bridge are maintained by creating a lawn in the central median extending from the Arts Link eastward. In addition to landscape improvements, locations for public art are proposed along the Mall. East of the Torgersen Bridge, a new "public square" is proposed in association with the Infinite Loop. The square is envisioned as a location for commemorative and other public events associated with the War Memorial or other activities along Alumni Mall. Henderson Lawn is maintained in the Master Plan supporting its longtime role as the "Town Green" for Blacksburg.

COLLEGE AVENUE

The concept for College Avenue builds upon the recent streetscape improvements completed by the Town from Main Street to Otey Street. A major redesign is proposed from Otey Street to the Drillfield to create new public spaces in association with improvements to the underground stormwater conveyance system. The intent is to provide more outdoor seating and study environments associated with the Newman Library, the Donaldson-Brown Lawn, and the CID Commons planned for the existing bookstore.

STROUBLES CREEK CORRIDOR

This corridor generally follows the path of the culverted Central Branch of Stroubles Creek. In the Master Plan, the pathway is enhanced by a new landscape leading to the proposed CID Green. Functionally, the path provides a connection from downtown to the proposed CID Green and beyond to the Student Life District. Significant stormwater management intervention is required in the CID due to the presence of Stroubles Creek. This provides a signature opportunity to express stormwater strategies in the landscape that serve as a true amenity and showcase VT's student learning, research, and sustainability goals.


HENDERSON LAWN
COLLEGE AVENUE
VIGNETTE SQUARE PLAZA
COLLEGE AVENUE
MAIN STREET
STROUBLES CREEK (DAY-LIT)
DRAPER ROAD
ARTS LINK
OTEY STREET
INFINITE LOOP
OTEY STREET
ROANOKE STREET
CID GREEN
DRILLFIELD DR
KENT STREET
WASHINGTON STREET



DONALDSON-BROWN LAWN
PROPOSED CONDITIONS

Public Spaces and Quads

Several new public spaces, quads and courtyards are included in the District:

CREATIVITY & INNOVATION GREEN

This major new park-like open space associated with the Central Branch of Stroubles Creek features performance areas, locations for public art, and pathways. Landforms, rain gardens, and other stormwater management elements are proposed. The Green is envisioned as the signature open space and activity area of the CID, hearkening back to a formal open space that existed on the site prior to the expansion of Donaldson-Brown in the 1960s. This former space featured formal gardens and a pond associated with Stroubles Creek. It is intended to once again become a functional part of the stormwater management strategy for the CID.



DONALDSON-BROWN LAWN
EXISTING CONDITIONS

In the short term, while the rear expansion of Donaldson-Brown remains, the CID Green provides passive open space with improved stormwater management. Once this portion of the building is removed; however, the Green is envisioned as an activated campus landscape and a more performative stormwater infiltration space

DONALDSON-BROWN LAWN

A redesign of the GLC, or Donaldson-Brown, Lawn is proposed in association with the streetscape changes along College Avenue. The new lawn is intended to function as the central gathering point and public space given its proximity to the CID Commons and Newman Library.

HENDERSON LAWN

As an important public space for both VT and the wider Blacksburg community, Henderson Lawn will benefit from proposed enhancements to seating, lighting, and landscape amenities.

Plazas

Several plazas are proposed to demonstrate and showcase the activities underway in the District. Outdoor “studios” or plazas are proposed in association with the future CAUS building and CID Living-Learning Community. In the short-term, a renovation of the existing plaza south of the Squires Student Center would better activate this space and serve as a physical and temporal bridge to the proposed College Avenue plaza. Plazas also are envisioned along the pathways of the District to display digital art, physical art, and sculpture and to facilitate formal performances or performance art.

In the CID Living-Learning Community, courtyards are proposed on both the east and west sides of the building. The eastern courtyards are dedicated to “maker” and demonstration activities associated with the studios in the building, while those on the west are associated with student life, fitness, and gathering spaces.

An enhanced landscape anchored by the new CID Living-Learning Center provides activated open space and improved stormwater filtration while Donaldson-Brown continues to be used by the GLC.



DONALDSON BROWN
EXISTING CONDITIONS



CID GREEN
PROPOSED SHORT TERM CONDITIONS

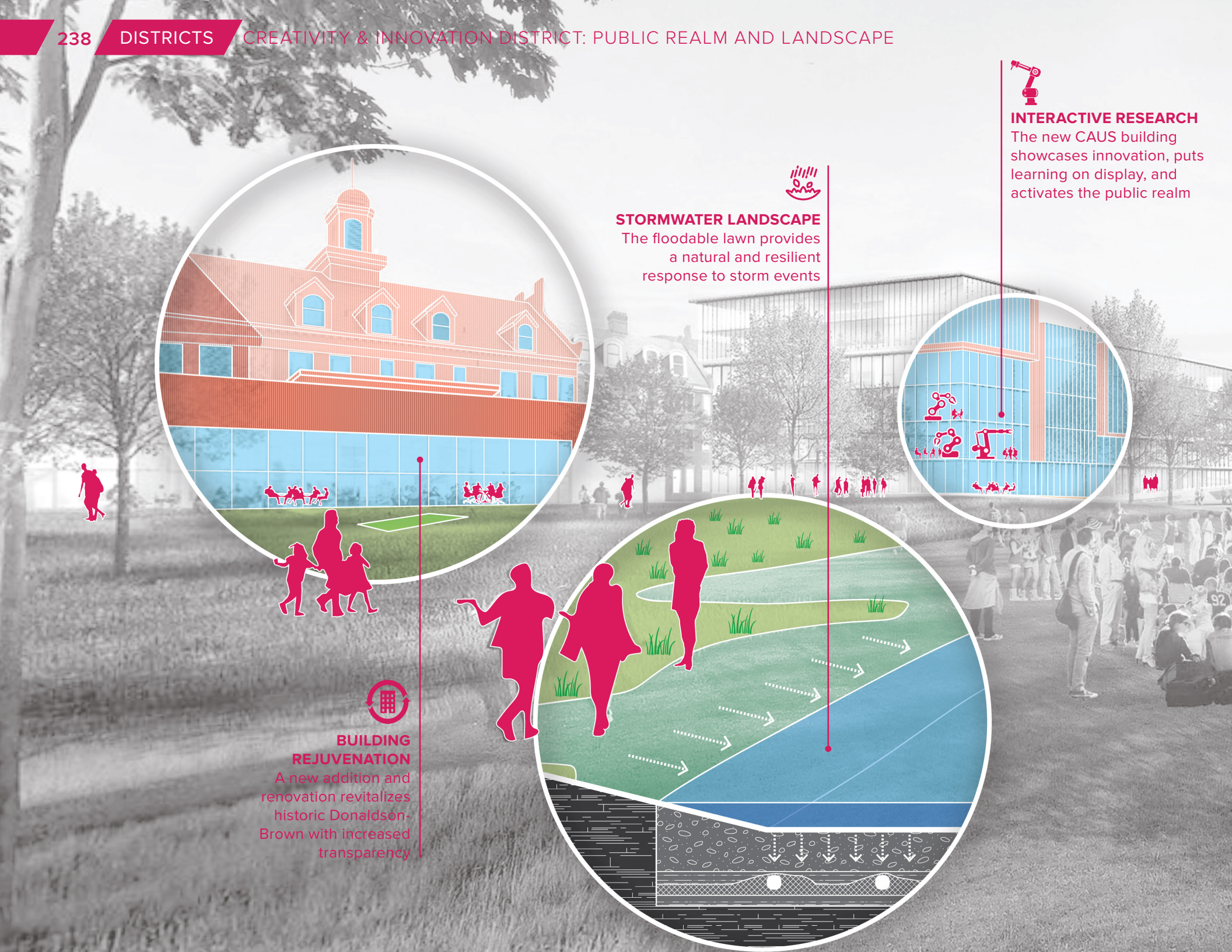




CID GREEN LONG TERM

With the Donaldson-Brown addition demolished, opportunities for more extensive stormwater management and improved views of Vignette Square arise.

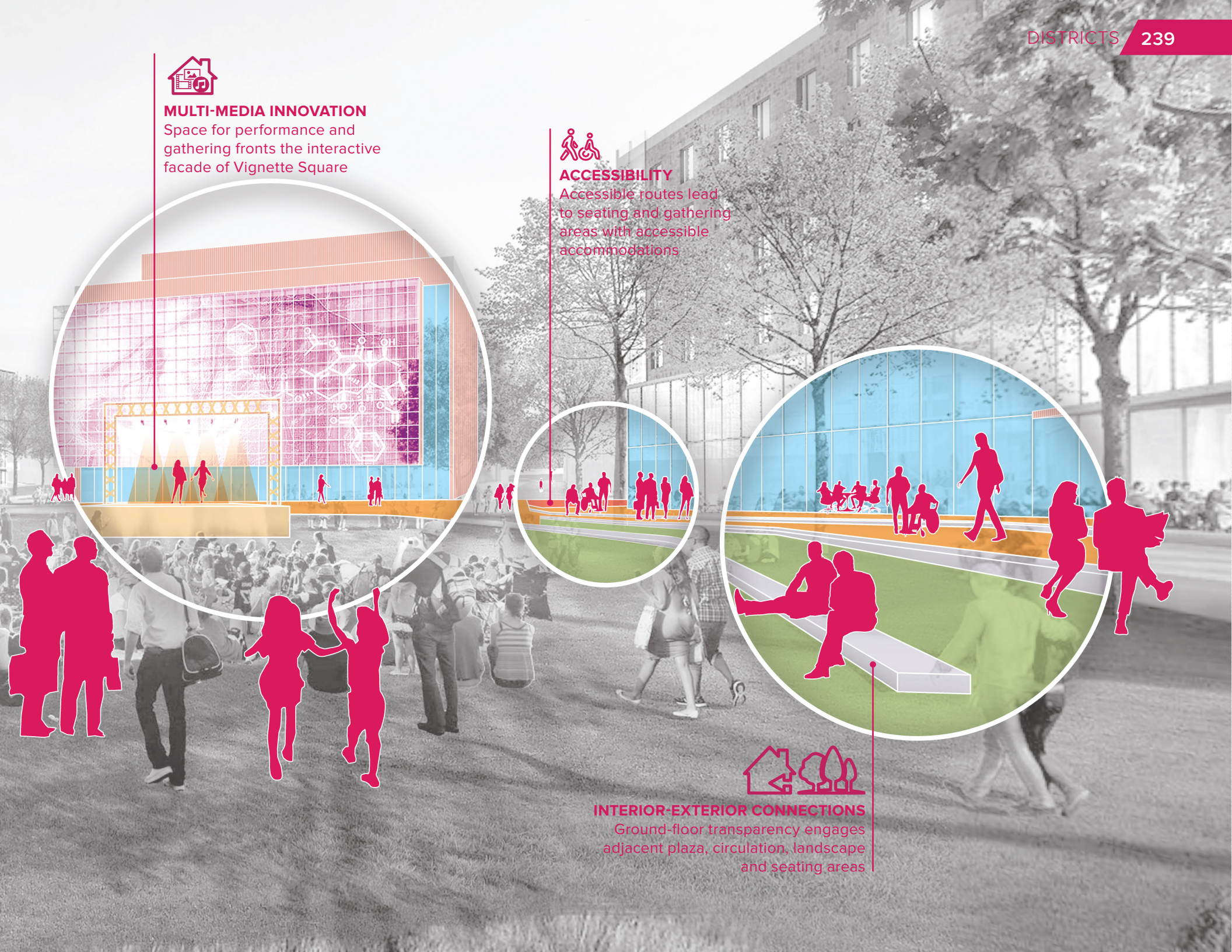




BUILDING REJUVENATION
A new addition and renovation revitalizes historic Donaldson-Brown with increased transparency

STORMWATER LANDSCAPE
The floodable lawn provides a natural and resilient response to storm events

INTERACTIVE RESEARCH
The new CAUS building showcases innovation, puts learning on display, and activates the public realm



MULTI-MEDIA INNOVATION
Space for performance and gathering fronts the interactive facade of Vignette Square

ACCESSIBILITY
Accessible routes lead to seating and gathering areas with accessible accommodations

INTERIOR-EXTERIOR CONNECTIONS
Ground-floor transparency engages adjacent plaza, circulation, landscape and seating areas

STORMWATER

The CID lies along the Central branch of Stroubles Creek which is culverted for some distance starting north of the campus running through downtown Blacksburg and entering the campus to the north of the Architecture Annex.

Stroubles Creek continues under Otey Street, the Graduate Life Center (GLC), and Eggleston Quad. It then diverts north and west, traveling beneath the Drillfield and surfacing in the area of the Duck Pond. This extended underground section of the Creek, coupled with the extensive impervious surface area of downtown Blacksburg, contributes to periodic flooding, especially in the area around the GLC.

Flooding is exacerbated by the circuitous nature of the underground stormwater conveyance systems that converge on the east side of the GLC. As presently configured, stormwater conveyance lines from College Avenue and the parking areas along Otey Street intersect with the main Stroubles Creek culvert just east of the GLC. The Master Plan provides several strategies for mitigating these conditions including the long-term plan to remove the south (1960s) wing of the GLC.

Urban-style BMPs are best suited to the contemporary architecture of the CID. Additionally, while Conserved Open Space while the reimagining of existing landscapes and the implementation of green roofs provide considerable on-site stormwater management, Conserved Open Space will certainly play an important role in the District's stormwater strategy (refer to the Landscape Framework section of this report for more information).

Stormwater Strategy Elements

1. The conveyance systems under College Avenue are reconfigured to connect directly to the culverts under the Drillfield. At present, the conveyance systems are diverted southward to join the main Stroubles Creek culvert just to the east of the GLC at a point of convergence among several culverts. This reconfiguration at College Avenue requires considerable sitework, providing the opportunity to redesign the College Avenue streetscape from Otey Street to the Drillfield to include enhanced stormwater swales and basins.
2. In the initial phases of CID development, new water-receiving landscapes are proposed between the GLC and CID Living-Learning Commons. This landscape includes new circulation pathways and, where possible, outdoor seating and study environments.
3. An expanded CID Green is proposed following the demolition of the 1960s wing of the GLC and the daylighting of Stroubles Creek south of Vignette Square in order to establish a central open space designed to accommodate the ebb and flow of the Creek.
4. The contemporary architecture of the CID allows for the implementation of green roofs to help reduce impervious surface area in the District.


BIOSWALES
GREEN ROOF
STROUBLES CREEK (DAY-LIT)
GREEN ROOF
STORMWATER LANDSCAPE
ALUMNI MALL
MAIN STREET
COLLEGE AVENUE
DRAPER ROAD
ROANOKE STREET
KENT STREET
DRILLFIELD DR
WASHINGTON STREET

CIRCULATION

Proposed circulation routes in the CID build upon and enhance the existing corridors and streets including Alumni Mall, College Avenue, Stroubles Creek, and Otey Street.

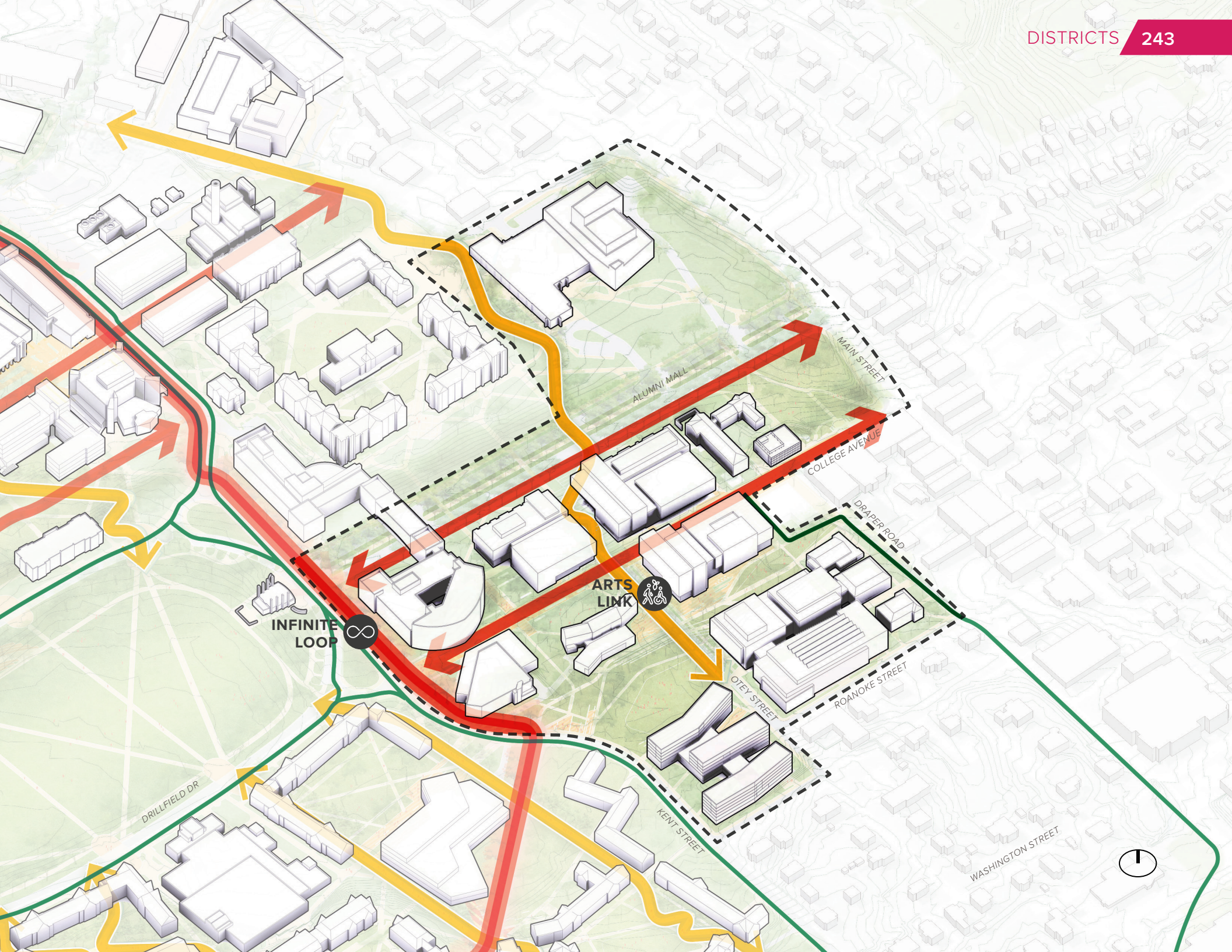
The intent is to facilitate inclusive access and bike movement between the campus and downtown by envisioning a shared streets concept. The Master Plan recommends that VT coordinate with the Town of Blacksburg to explore enhanced pedestrianization of College Avenue west of Draper Road and Otey Street from College Avenue southward to Roanoke Street. Additional traffic studies should be performed to test the potential impacts of this strategy as site and development projects are funded.

Pathways are proposed along each of these corridors, with a pedestrianized plaza located at the intersection of College Avenue and Otey Street at Vignette Square. Bicycle access is provided by means of the Infinite Loop located along Kent Street as well as on College Avenue, Otey Street, and the Bicentennial Greenway located east of the Vignette Square site.

Transit stops are proposed on Alumni Mall at the CAUS building and on Kent Street in the vicinity of the CID Commons. Parking is provided in the proposed garage with access provided from W. Roanoke Street.

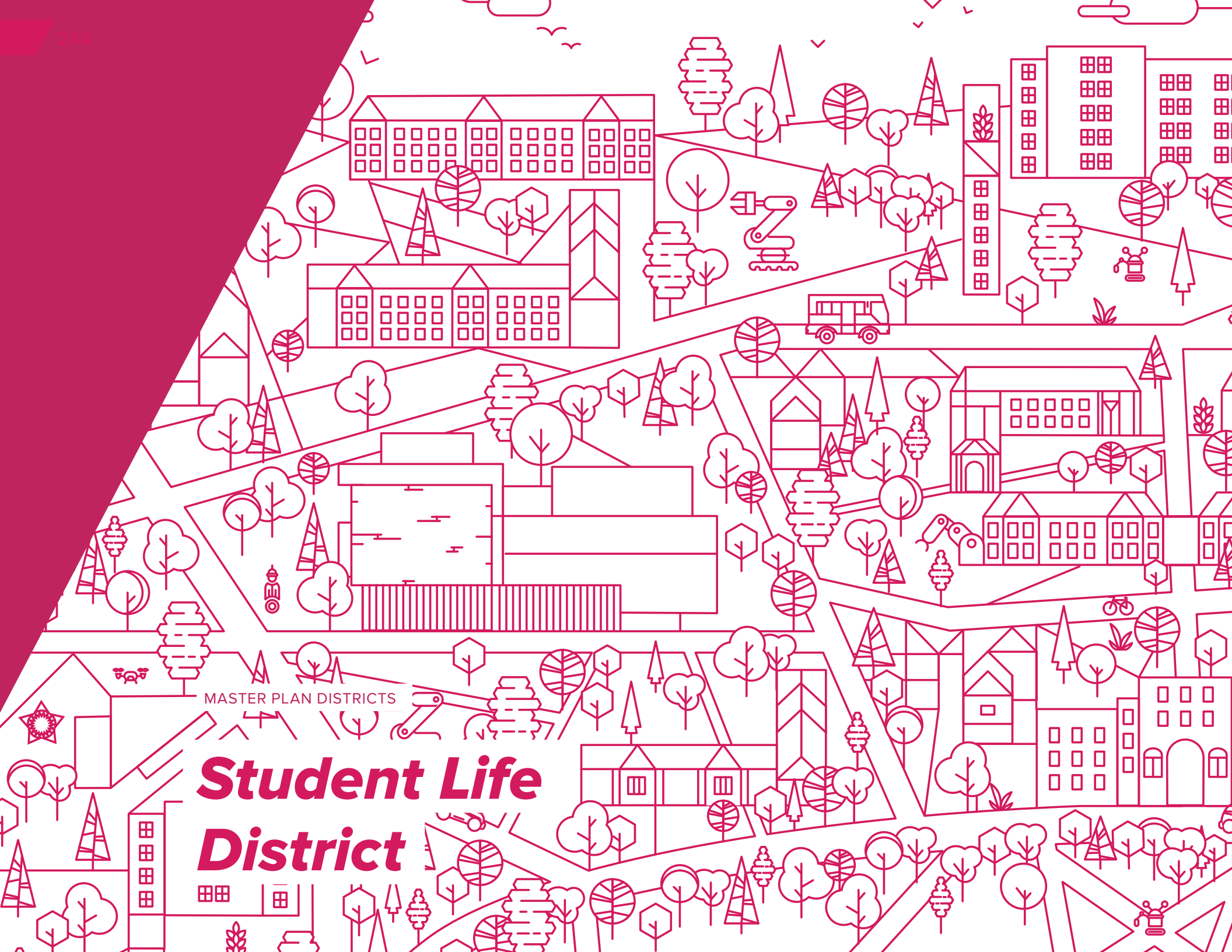
Pathway Network

Bicycle Network


MAIN STREET
ALUMNI MALL
COLLEGE AVENUE
DRAPER ROAD
ARTS LINK
INFINITE LOOP
OTEY STREET
ROANOKE STREET
KENT STREET
DRILLFIELD DR
WASHINGTON STREET

MASTER PLAN DISTRICTS

Student Life District





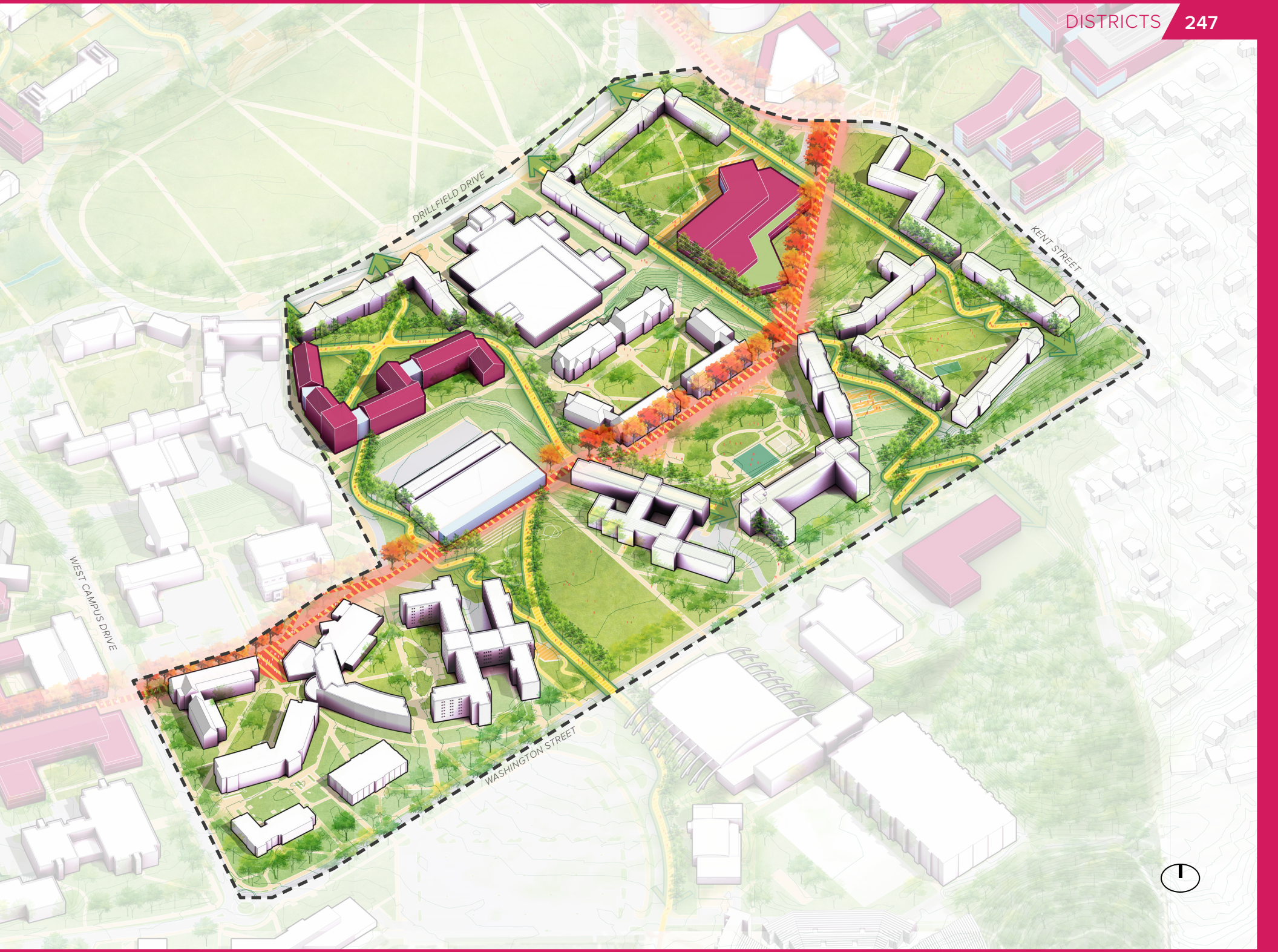
Student Life District

The Student Life District is the established residential area south of the Drillfield defined by significant residence halls and a pattern of quadrangles that characterize the Virginia Tech campus.

This pattern is punctuated by three dining facilities that also serve as community commons buildings: Owens Dining Hall on the east and Dietrick Dining Hall and the West End Market on the west. At the center of the District, the War Memorial Gymnasium provides recreational facilities for the District and broader campus populations and is planned to accommodate campus-wide counseling services. Like much of the campus, existing topographic conditions in the District present barriers to access for all members of the VT community.

Vision

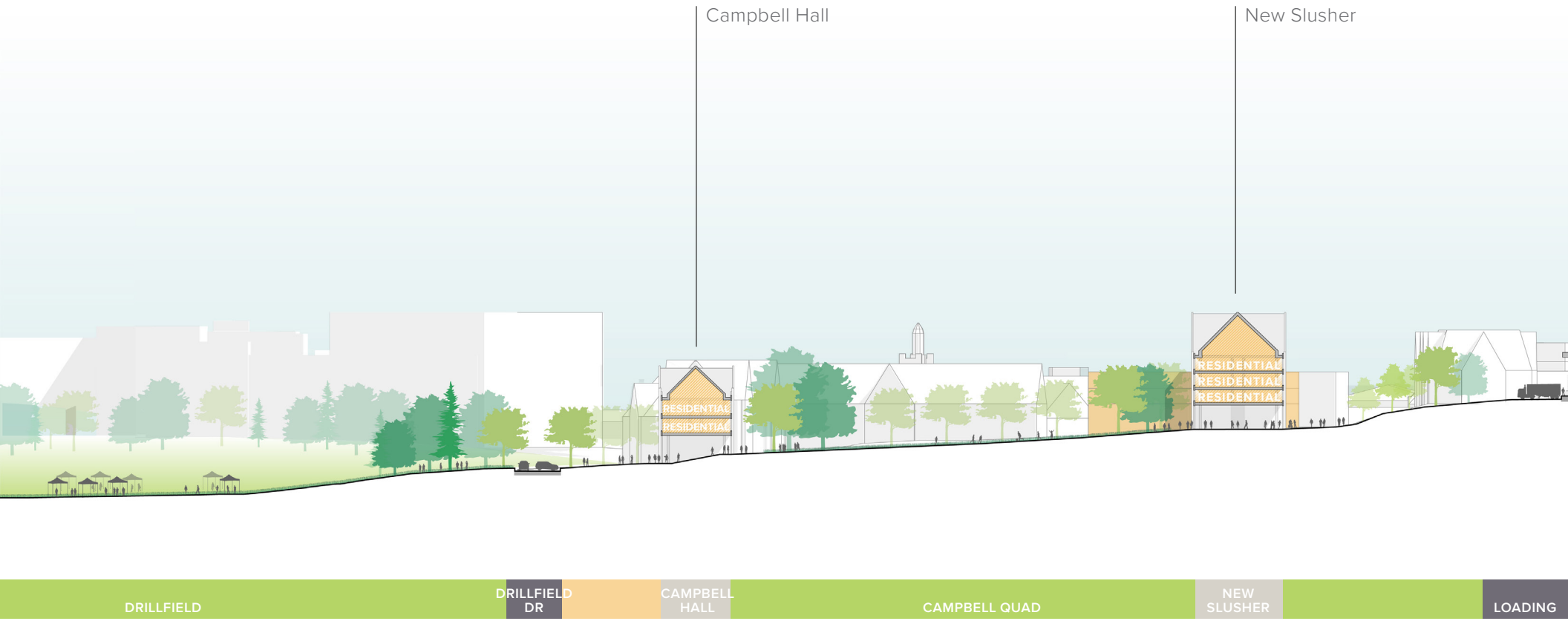
The vision for the Student Life District improves and enhances the existing buildings and quadrangles while introducing new campus-wide strategies for circulation, namely, the Infinite Loop and Green Links. Overall, improvements in the District are intended to enhance the residential experience by accommodating existing and future living-learning programs, introducing social and collaboration spaces, renovating residential and dining facilities, enhancing existing quadrangles and outdoor spaces, and improving connectivity within the District and beyond.


DRILLFIELD DRIVE
KENT STREET
WEST CAMPUS DRIVE
WASHINGTON STREET

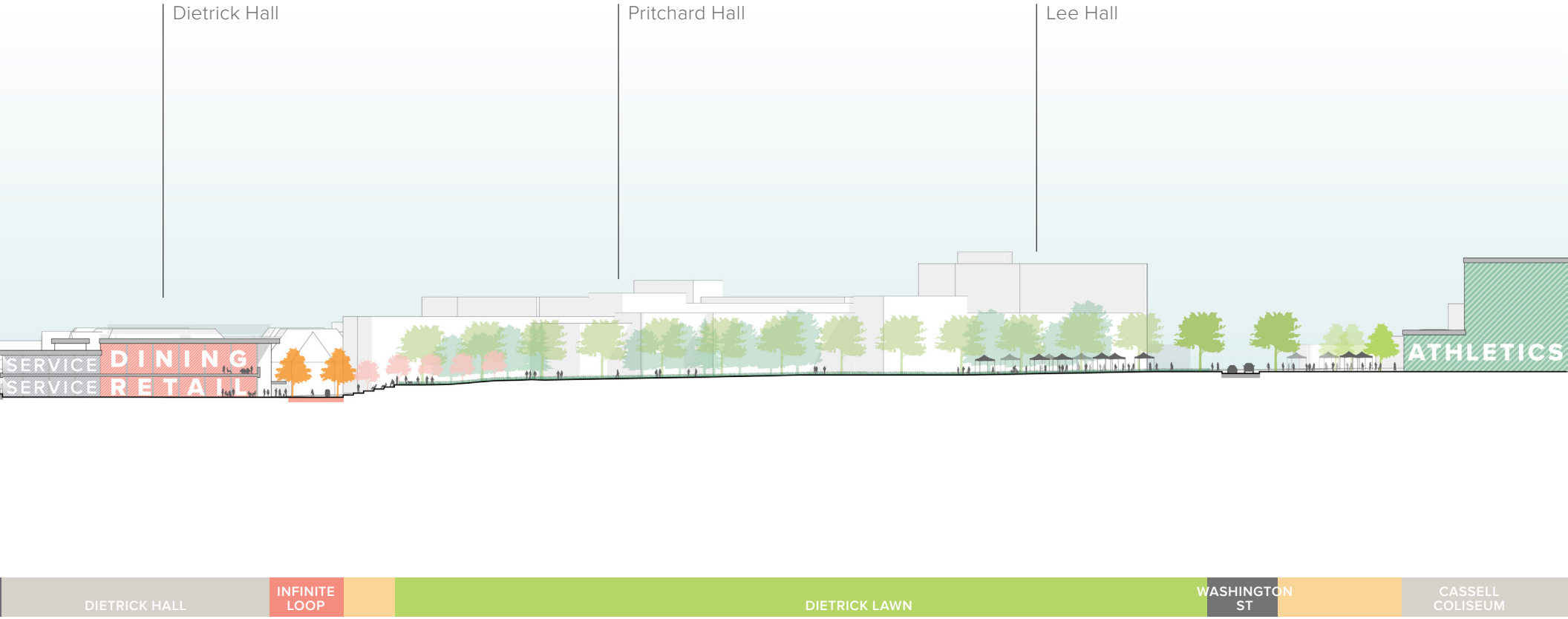
Section A

DRILLFIELD TO WASHINGTON STREET AT DIETRICK HALL

Sloping up from the Drillfield, the Student Life District is defined by its series of student life quads. Campbell Quad, bounded by Campbell Hall and the proposed New Slusher Hall, supports passive recreation and is transformed to integrate the West and Central Green Links. A renovated Dietrick Hall fronts the Infinite Loop with an activated dining terrace and plaza space. As users continue south, the Green Links connect to Dietrick Lawn which is preserved in the Master Plan as a grand open space serving the entire Student Life District.




SECTION A


Dietrick Hall
Pritchard Hall
Lee Hall
SERVICE
DINING
SERVICE
RETAIL
ATHLETICS
DIETRICK HALL
INFINITE LOOP
DIETRICK LAWN
WASHINGTON ST
CASSELL COLISEUM

Section B

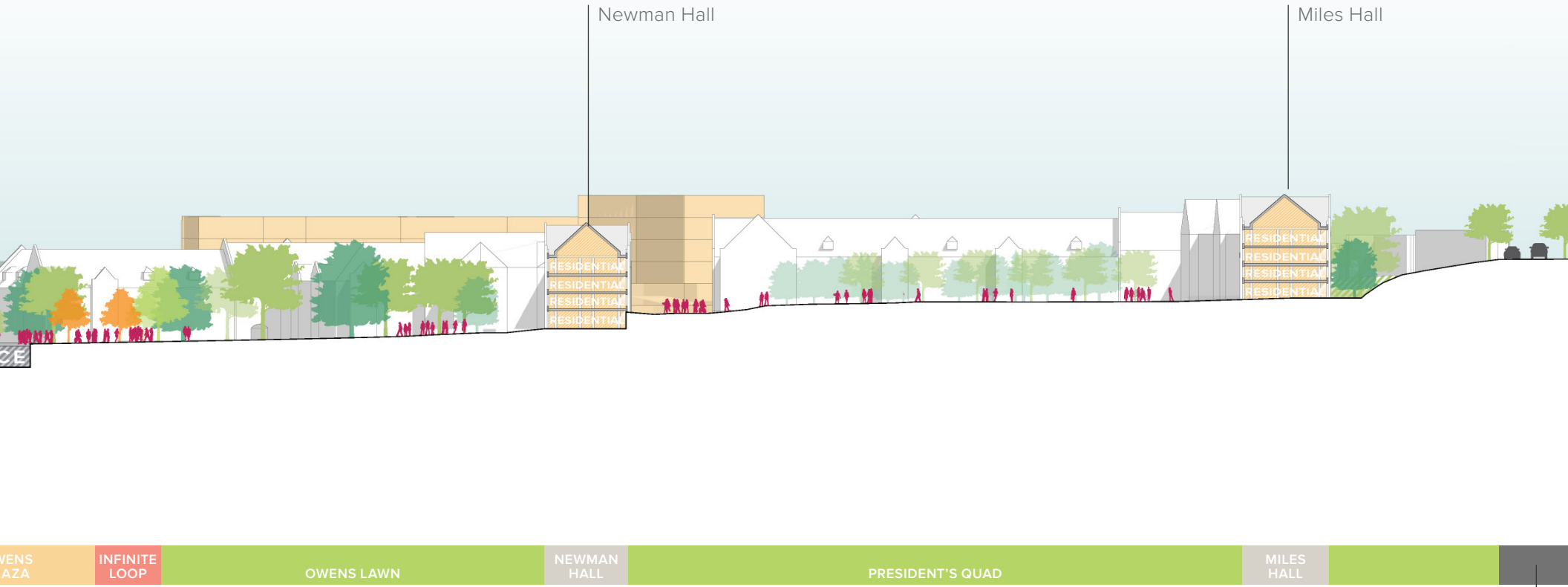
DRILLFIELD TO WASHINGTON STREET AT NEW OWENS

The eastern portion of the Student Life District is home to a reimagined Owens Hall, providing updated dining, gathering, and ballroom spaces. This new facility also serves to help users navigate the grade change between Eggleston and President's Quads.

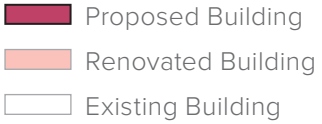


DRILLFIELD | DRILLFIELD DRIVE | EGGLESTON HALL | EGGLESTON QUAD | NEW OWENS | OW PL


SECTION B


Newman Hall
Miles Hall
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
WENS AZA
INFINITE LOOP
OWENS LAWN
NEWMAN HALL
PRESIDENT'S QUAD
MILES HALL
WASHINGTON STREET

PROPOSED DEVELOPMENT



The Student Life District offers no vacant or unencumbered sites for future development.

Existing open spaces, like Dietrick Lawn, serve as important quads and must remain as landscapes to support recreational and campus life activities. Emphasis, therefore, is placed on renovating the existing buildings, which in most cases warrant continued investment and use given their scale and architectural character. However, there are two sites identified for redevelopment in response to the age, condition, and character of the existing facilities. These include the Owens Dining Hall and Slusher residential buildings.

OWENS HALL

A new dining hall is proposed on the Owens site to provide a more contemporary, flexible, and efficient dining complex that addresses a broader range of campus and student engagement objectives. The proposed facility is programmed to include full-service dining, a ballroom, and student gathering and meeting spaces that serve the surrounding residential and CID population.

The conceptual design for Owens Hall responds to the topographic conditions of the site, incorporating the Infinite Loop which is planned to provide access from Kent Street to West Campus Drive. The O'Shaughnessy Green Link is incorporated in the design and the new building is configured to views to Eggleston Quad, where outdoor dining and stormwater management features are planned.

NEW SLUSHER

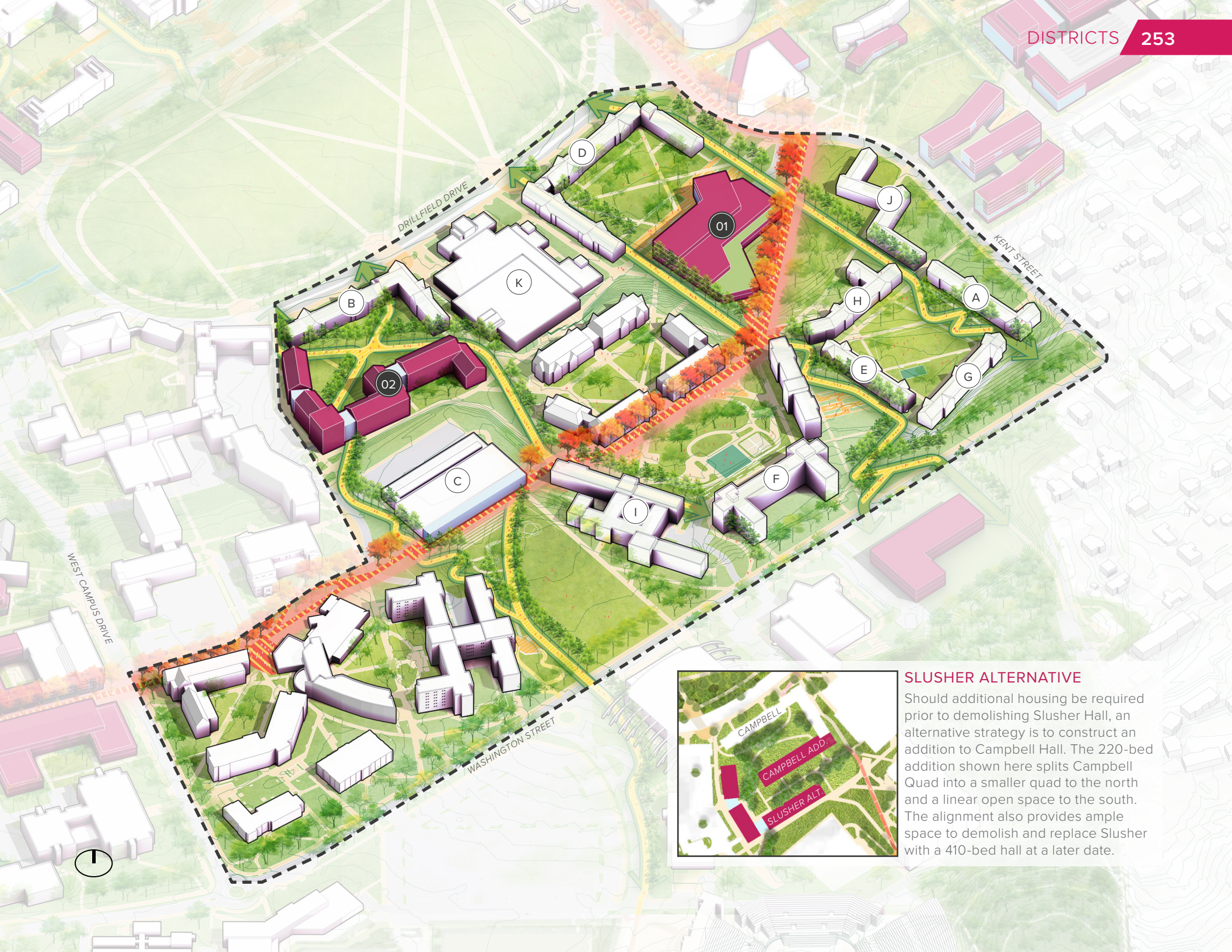
Over the long-term, the Master Plan recommends that Slusher Hall be replaced rather than renovated. A new structure located on the same site will provide upgraded building systems, reduce maintenance costs, and would be more in keeping with the character and image of the rest of the campus. In conjunction with the new building, changes to Campbell Quad are proposed to provide improved access for all members of the campus community. Specific recommendations include a regraded Campbell Quad providing inclusive access through the introduction of Green Links on the east and west sides of the Quad.

New Slusher is imagined as a four story building with ground floor collaboration, maker spaces, and living-learning community spaces at key locations associated with building entries and other circulation routes across and through Campbell Quad.

Proposed Renovations

The existing residential buildings of the District, with the exception of Slusher, are maintained in the Master Plan. Renovation strategies are provided on a building-by-building basis and documented in the separate Campus Life Report developed in conjunction with the Master Plan. The overall renovation goal is to ensure that a broader range of amenities are coordinated and considered as each of the buildings is renovated.

Proposed Buildings		
01	New Owens Hall	185,000 GSF
02	New Slusher Hall	176,000 GSF
Renovated Buildings		
A	Barringer Hall	35,000 GSF
B	Campbell Hall	36,000 GSF
C	Dietrick Hall	107,000 GSF
D	Eggleston Hall	84,000 GSF
E	Johnson Hall	29,000 GSF
F	Lee Hall	138,000 GSF
G	Miles Hall	39,000 GSF
H	Newman Hall	49,000 GSF
I	Pritchard Hall	179,000 GSF
J	Vawter Hall	48,000 GSF
K	War Memorial Gymnasium	181,000 GSF



SLUSHER ALTERNATIVE

Should additional housing be required prior to demolishing Slusher Hall, an alternative strategy is to construct an addition to Campbell Hall. The 220-bed addition shown here splits Campbell Quad into a smaller quad to the north and a linear open space to the south. The alignment also provides ample space to demolish and replace Slusher with a 410-bed hall at a later date.

PUBLIC REALM AND LANDSCAPE

The public realm strategy for the District builds upon the pattern of quadrangles and recommends interventions in the quads to enhance the landscape character and programmatic opportunities.

CAMPBELL QUAD

The goal over the long-term is to replace Slusher Hall with a new facility defining a renewed Campbell Quad. The new quad is envisioned to provide access for all members of the campus community, terraces for outdoor seating, and areas for programmed outdoor gathering and passive recreation. In the meantime, changes to the pathways leading from the Campbell portal are proposed to create the Central Link.

DIETRICK LAWN

Changes to the Dietrick Lawn area include the integration of the Infinite Loop in conjunction with the south terrace of Dietrick as well as the Central and West Links. The south terrace of Dietrick is envisioned as a dining and outdoor gathering area transitioning up to the level of Dietrick Lawn. The Lawn itself is upgraded with improved turfgrass for day-to-day recreation and is redesigned to accommodate the Central Link.

PRAIRIE QUAD

The centrally located Prairie Quad is transformed to accommodate the Infinite Loop, the Central Green Link, and a proposed fitness park while reinforcing the spatial qualities of the Quad. The fitness park is intended to provide outdoor workout space for the District population and is programmatically linked to the indoor recreation amenities of the War Memorial Gym and connected to the broader fitness trails accessible from the Infinite Loop.


EGGLESTON QUAD
DRILLFIELD DRIVE
EAST LINK
KENT STREET
CAMPBELL QUAD
O'SHAUGHNESSY LINK
PRESIDENT'S QUAD
PAYNE QUAD
CENTRAL LINK
WEST LINK
WEST CAMPUS DRIVE
INFINITE LOOP
DIETRICK LAWN
PRAIRIE (FITNESS) QUAD
WASHINGTON STREET
AMBLER-JOHNSTON QUAD
HARPER QUAD

Prairie Quad transforms into an outdoor fitness and recreation space and is connected to the greater trail network through the Infinite Loop.



PRAIRIE QUAD
EXISTING CONDITIONS



PRAIRIE (FITNESS) QUAD
PROPOSED CONDITIONS

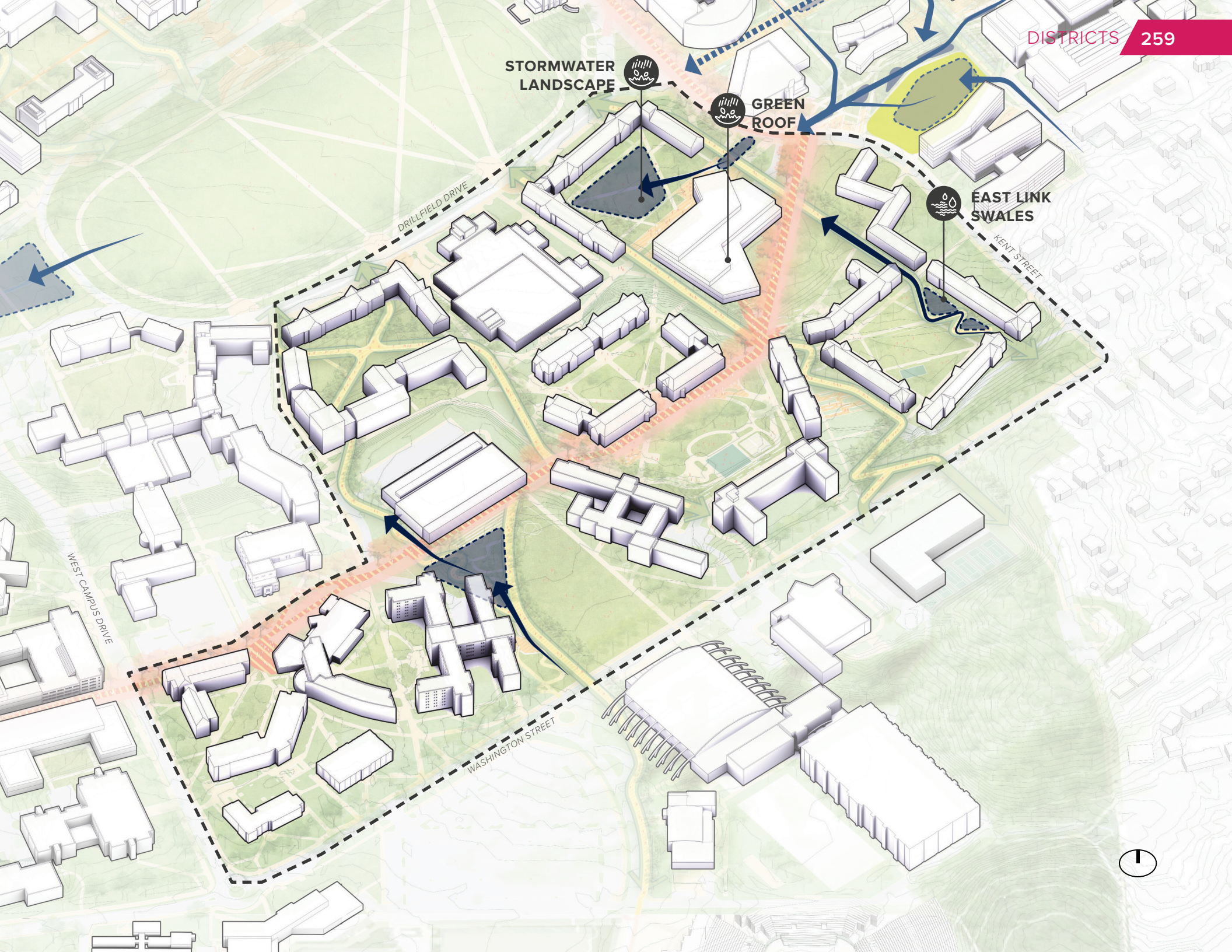
STORMWATER

Active student life landscapes and existing architectural styles provide limited opportunities for on-site stormwater management.

The concentration of urban on-site stormwater strategies in the eastern portion of the District highlights the outsized role Conserved Open Space will play (refer to the Landscape Framework section of this report for more information).

Stormwater Strategy Elements

1. Due to its location over the culverted Stroubles Creek, a portion of Eggleston Quad is envisioned as a stormwater-receiving landscape, serving as an amenity for residents of the surrounding Eggleston Hall.
2. While most Green Links in the District pass through active landscapes ill suited for stormwater infiltration, basins along the southern portion of the East Link near Barringer Hall are proposed.
3. The contemporary architecture of New Owens makes a green roof possible to reduce the impervious surface of this large footprint facility.


STORMWATER LANDSCAPE
GREEN ROOF
EAST LINK SWALES
DRILLFIELD DRIVE
KENT STREET
WEST CAMPUS DRIVE
WASHINGTON STREET

CIRCULATION

Proposed changes to circulation in the Student Life District focus on the Infinite Loop and Green Links.

Existing service routes and some parking areas are maintained in the District, including those serving the Ag Quad and Dietrick Hall areas. The Infinite Loop is also planned as part of the service and emergency vehicular network. The parking and access surrounding Owens Hall is removed as part of the proposed redesign of the building.

Infinite Loop and Green Links

Circulation in the District builds upon the campus-wide circulation concepts of the Infinite Loop and Green Links. The Infinite Loop moves in an east-west direction through the District, connecting Kent Street, Owens Hall, Dietrick Hall, and West Campus Drive. This pathway provides an access for all members of the campus community and supports limited testing of autonomous vehicles (bicycles are excluded from this segment of the Loop; instead, cycle lanes are provided on Kent and Washington Streets). To establish the route, changes to the slope conditions are proposed in association with the Owens Hall replacement and in the Dietrick area. Changes are also proposed in the parking lots adjacent to Harper and Cochrane as the Loop heads toward West Campus Drive.

Several Green Links are planned in the District to provide north-south access connecting the Drillfield to the upper levels of the District.

EAST LINK

The East Link connects to President's Quad along Kent Street. It is deliberately positioned to not only transition the slope conditions but to provide accessible entrances to Vawter, Barringer, and Newman Halls. Within President's Quad, the East Link corridor defines a shaded garden space with outdoor seating, study areas, and rain gardens in support of the stormwater strategy for the District. The rain gardens are recommended to slow the flow of water downhill toward Eggleston Quad where flooding has been experienced in the past. The East Link concept is coordinated with the overall landscape strategy for President's Quad.

O'SHAUGHNESSY LINK

The O'Shaughnessy Link enters the Student Life District via the Eggleston portal moving southward where existing slope conditions are mitigated as part of the proposed replacement for Owens Hall The Link continues uphill between O'Shaughnessy and Johnson, transitioning to a garden setting featuring shade trees, outdoor seating, study areas, and rain gardens. The O'Shaughnessy link ultimately connects to Washington Street.

CENTRAL LINK

The Central Link passes through the ground-level portal in Campbell Hall and enters Campbell Quad. The link provides access to Prairie Quad along an alignment located between Dietrick and Payne Hall intersecting with the Infinite Loop to the east of Dietrick and continuing diagonally across Dietrick Lawn, ultimately connecting to Washington Street and southward to Cassell Coliseum.

WEST LINK

The West Link leads from the Drillfield along a new diagonal pathway between Hutcheson and Campbell Halls into a transformed Campbell Quad. Completion of the link is contingent on the redevelopment of Slusher Hall, through which the link passes before following the western edge of Dietrick and connecting with the southern extents of the Central Link at Dietrick Lawn.

Pathway Network

Bicycle Network


DRILLFIELD DRIVE
KENT STREET
EAST LINK
CENTRAL LINK
INFINITE LOOP
WEST LINK
O'SHAUGHNESSY LINK
WEST CAMPUS DRIVE
WASHINGTON STREET

Green Link at Dietrick Hall

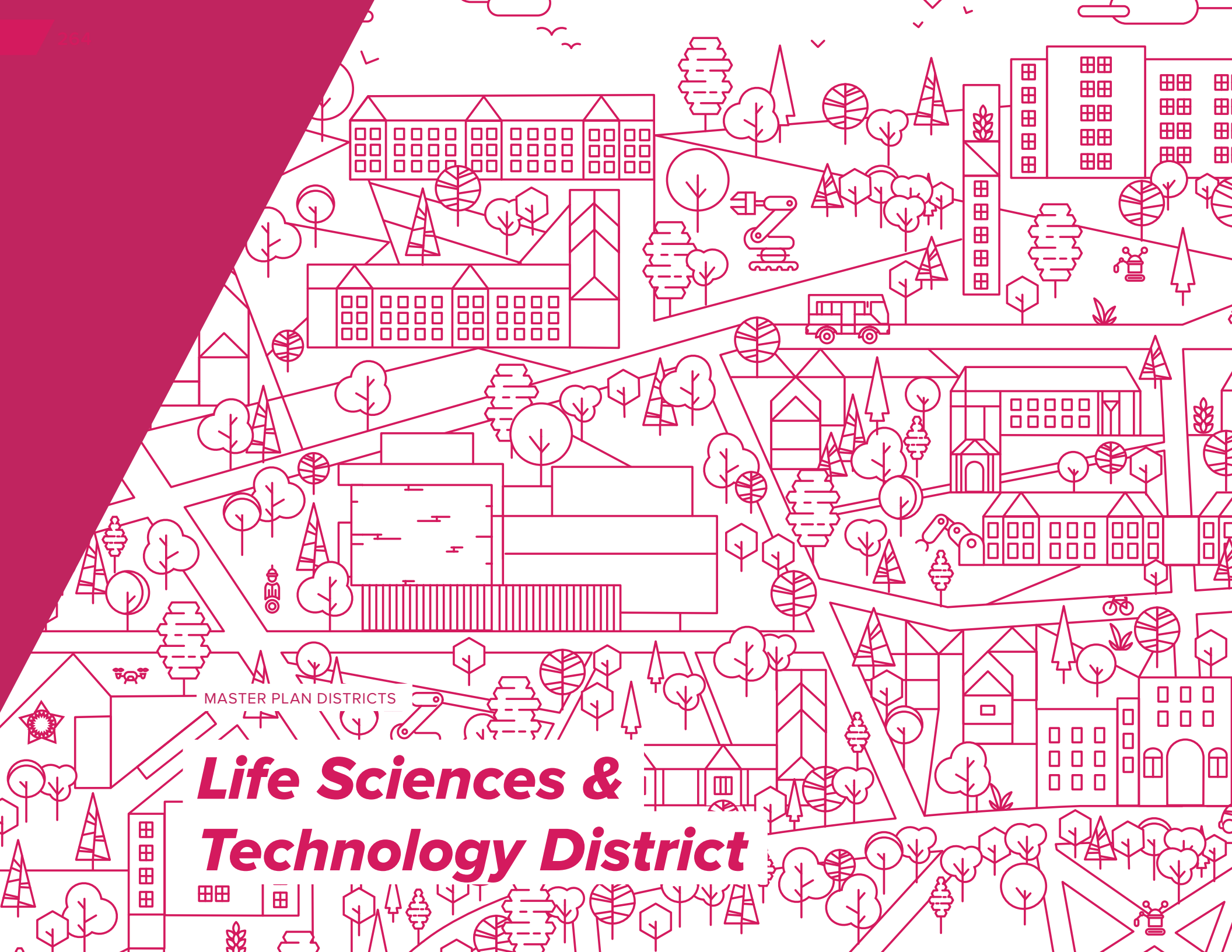
The Central Green Link connects with the Infinite Loop at Dietrick Hall, providing accessible mobility in an area where movement is currently challenged by steep slopes and steps. This enhanced circulation infrastructure supports proposed improvements to Dietrick Hall and Dietrick Lawn and activates this critical crossroads with spaces for seating, gathering, and collaboration.




New
Slusher Hall
Campbell
Hall
2%
5%
To
Prairie Quad
Green Link
(Central)

MASTER PLAN DISTRICTS

Life Sciences & Technology District





Life Sciences & Technology District

The Life Sciences & Technology District is home to much of the VT's advanced research facilities but lacks the sense of place necessary to complement its important standing within the University.

It contains a number of existing buildings including Hillcrest Hall (graduate residence hall), Wallace Hall, Litton Reaves, ICTAS II, Life Sciences I and Steger Hall. The District extends eastward to encompass the Ag Quad and westward to encompass the existing Cage parking lots. Other than the Ag Quad, it currently lacks the cohesive campus-like quality envisioned in the prior Master Plan update.

Vision

The vision for the Life Sciences & Technology (LS&T) District provides a public realm and landscape framework to guide future development and to integrate the District with other areas of the campus. The buildings are laid out to define quads consistent with the pattern of the Ag Quad and the other quads of the campus. The Infinite Loop is extended into the District connecting West Campus Drive to Duck Pond Drive. The goal is to provide a campus-like environment accommodating future academic and research programs.

The District includes the existing College of Veterinary Medicine Complex and extends eastward across Duck Pond Drive to include the existing Food Science and Technology Building, the Hahn Horticultural Garden and the Virginia Tech Greenhouses. To the south of the Veterinary Medicine Complex, the District includes the South Branch of Stroubles Creek and a stormwater management pond.

The vision for the LS&T District supports the existing Veterinary Medicine programs as well as future associated development, some of which may be relocated from the Glade Road area as that District develops. The framework concentrates future development in a new quadrangle at the intersection of Washington Street and Duck Pond Drive. The goal is to position future buildings such that they serve as a bridge between the existing Veterinary Medicine Complex and new development north of Washington Street.


WEST CAMPUS DRIVE
WASHINGTON STREET
WESTERN PERIMETER ROAD
DUCK POND DRIVE

PROPOSED DEVELOPMENT

The LS&T District provides for long-term development and expansion in two key areas:

1. Near term development is proposed for the first area generally defined by West Campus Drive, Washington Street, Duck Pond Drive, and the hill and wooded areas associated with Hillcrest Hall.
2. Longer term development is proposed in the second area defined by the Cage Lot. For the Ag Quad, renewal and refurbishment is recommended to accommodate existing and future programs.

The Master Plan illustrates significant development capacity for the LS&T District. Only one facility, the Global Systems Science (GSS) Building, is proposed in the near term. The building is planned as the main facility for the Global Systems Science (GSS) Destination Area and, as such, is intended to become a destination for the interdisciplinary programs. The GSS building is also planned to include the GSS Campus Commons serving the existing and future population of this emerging District. In addition to occupants of the District, the Commons is positioned to serve the sizable population of commuters utilizing the Cage Lot as well as graduate students. One of three graduate life centers planned for the campus is proposed for the building.

The GSS Commons is sited north of Steger Hall at the point where the Infinite Loop intersects Duck Pond Drive to serve both the District and commuting population. This pivotal site is proposed for several reasons: 1) it places the GSS building along the Infinite Loop, thereby connecting it to other Districts and Campus Centers; 2) it is well positioned to serve the existing and future population of the District; and 3) it is positioned along Duck Pond Drive directly across from the Cage Lot where commuter services and amenities are most needed. The Commons is intended to become a commuter portal into and out of the campus, and bus stops are positioned west of the building on Duck Pond Drive where bus services to the North Academic District MMTF as well as other areas of the campus are proposed. A regional bike share station, along with the Infinite Loop and other pathways, connects the District to other areas of the campus.

In addition to future science and research buildings, the Master Plan relocates the Graduate Life Center (GLC) to Hillcrest Hall due to flooding issues in the GLC's current home at Donaldson-Brown. Hillcrest serves as the headquarters for the GLC and contains graduate student housing. Additional Graduate Life facilities are located in Tech Square and at Glade Road (see the Campus Life Framework). The Honors College residential community will be relocated to another new or renovated residence hall. Honors College programming and administration will move into the renovated historic portion of Donaldson-Brown (also known as Alumni Hall).

As noted, long-term expansion is proposed on the Cage lot site. The public realm framework extends into this area suggesting future building layouts and open spaces. A site for a parking garage is reserved to replace spaces lost to development.

The uses proposed in the new quad include a potential future replacement facility for the Food Science and Technology Building and other Vet Med-related facilities such as those relocated from Glade Road, which can be accommodated in the HABB II buildings (refer to the Peripheral Districts section of this report for more details).

An addition is proposed to the Veterinary Complex to accommodate expansion of the Large Animal Teaching Hospital.

Proposed Building
Proposed Garage
Existing Building

Proposed Buildings		
01	Cage Lot Garage	780,000 GSF
02	Future Research / Academic	116,000 GSF
03	Global Systems Science	120,000 GSF
04	HABB II (East)	80,000 GSF
05	HABB II (Main)	132,000 GSF
06	HABB II (West)	70,000 GSF
07	HABB III (HABB I Expansion)	68,000 GSF
08	HABB IV	70,000 GSF
09	HABB V	146,000 GSF
10	Hillcrest Hall Expansion	54,000 GSF
11	ICTAS II Expansion	106,000 GSF
12	Science Research 1	152,000 GSF
13	Science Research 2	96,000 GSF
14	Science Research 3	145,000 GSF
15	Science Research 4	116,000 GSF
16	Southwest Chiller Plant Expansion	10,000 GSF
17	Steger Hall Expansion	27,000 GSF
18	Veterinary Medicine Expansion	65,000 GSF
19	Wallace Hall Expansion	83,000 GSF


01
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16
17
18
19
WEST CAMPUS DRIVE
WESTERN PERIMETER ROAD
DUCK POND DRIVE
WASHINGTON STREET

PUBLIC REALM AND LANDSCAPE

The public realm framework for the District serves as an "overlay" to organize existing as well as future buildings.

The framework extends the Infinite Loop into the District and sets out a network of pathways and quads defined by future buildings. The long-term vision is to create a District defined by quadrangles and landscape corridors consistent with the development pattern of the broader campus. Trees are strategically planted to provide shade and comfort along major pathways and in association with outdoor study and dining areas. The proposed stormwater management strategy diverts water downhill toward Stroubles Creek where detention facilities are proposed. Within the quads and along landscape corridors in the District, rain gardens, bioswales, and other BMPs are proposed to detain, infiltrate, and treat rainwater.

The proposed quadrangles organize future development and provides a much needed sense of place and outdoor gathering areas in this District. Green Links extending from the quadrangles are proposed to provide landscaped pathways to the Veterinary Medicine Complex.

The existing wooded areas on the east and south are maintained and extended into the District. Additional pasture and field land is proposed in the area formerly occupied by the Dairy Science program. Reforestation is proposed along the Western Perimeter Road to enhance this important gateway route into the campus and to buffer views to the west or "back side" of the Veterinary Medicine complex.


RESEARCH QUAD
INFINITE LOOP
GRADUATE LIFE QUAD
WEST CAMPUS DRIVE
RESEARCH QUAD
GSS PLAZA
RESEARCH QUAD
GREEN LINK
WASHINGTON STREET
RESEARCH QUAD
RESEARCH QUAD
WESTERN PERIMETER ROAD
RESEARCH QUAD
DUCK POND DRIVE
RESEARCH QUAD
GREEN LINK

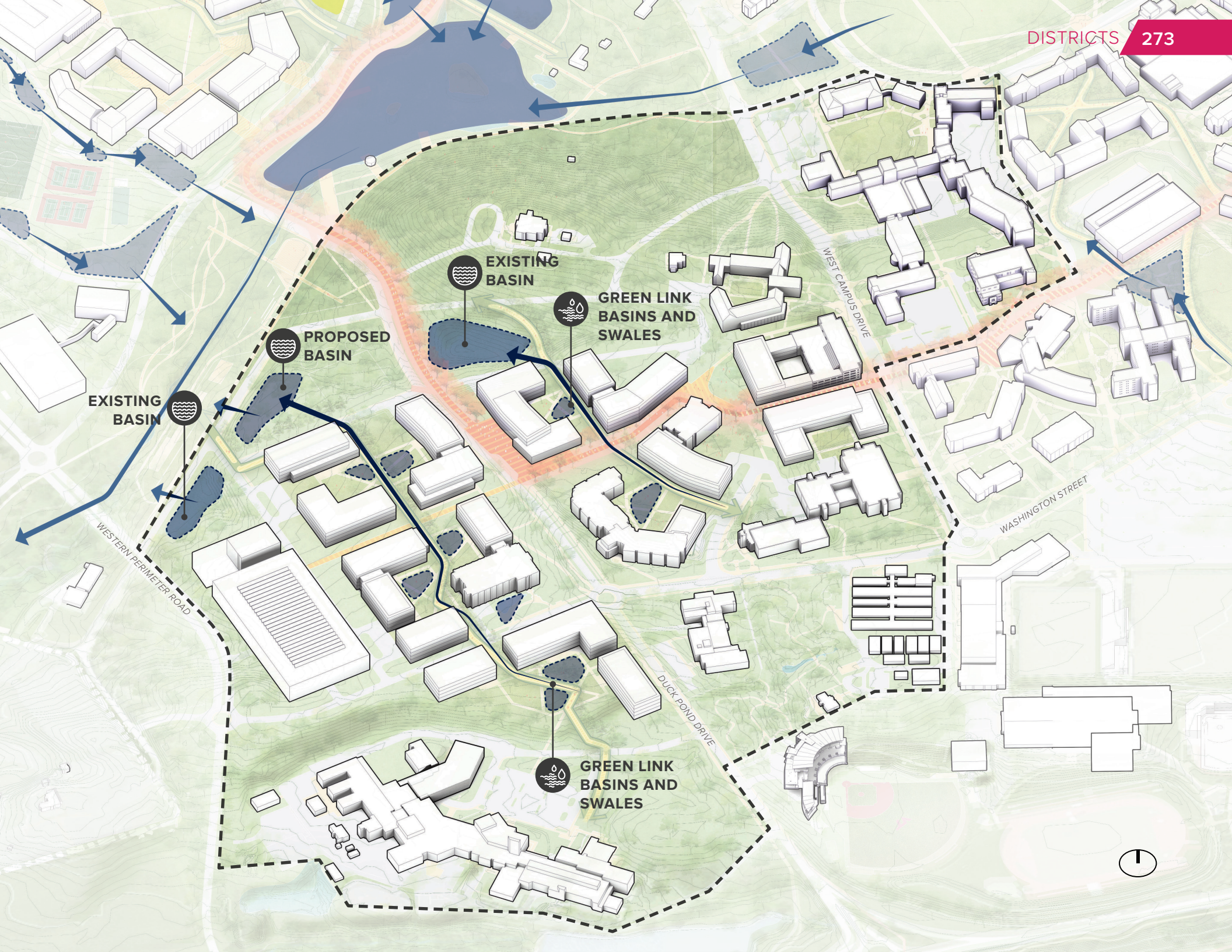
STORMWATER

The long-term development strategy for the District transforms existing parking lots into a series of landscape stormwater amenities that support the proposed facilities and open spaces.

Organized around proposed Green Links, features such as basins and swales filter stormwater as it flows north towards Stroubles Creek. A blend of urban and transitional stormwater elements are most appropriate. Further, due to the expected gradual pace of development in the District, a considerable amount of stormwater management is proposed on-site, allowing the Conserved Open Space strategy to be reserved for denser districts (refer to the Landscape Framework section of this report for more information).

Stormwater Strategy Elements

1. Basins and swales are incorporated into the proposed Green Links, which also open up into larger stormwater landscapes within select quads when appropriate.
2. Enhancements to existing stormwater basins may be required as new facilities are constructed.
3. An additional stormwater basin is proposed north of the western cluster of facilities to detain heavy runoff before it can enter Stroubles Creek.


EXISTING BASIN
GREEN LINK BASINS AND SWALES
PROPOSED BASIN
EXISTING BASIN
WEST CAMPUS DRIVE
WASHINGTON STREET
WESTERN PERIMETER ROAD
DUCK POND DRIVE
GREEN LINK BASINS AND SWALES

CIRCULATION

Proposed circulation changes focus mostly on upgrades to pathways and bicycle networks.

The Infinite Loop is extended into the District south of Wallace, connecting West Campus Drive to Duck Pond Drive. A continuation or segment of the Loop extends into the Cage Lot site to provide access to this long-term development area including a proposed parking garage. Other pathways provide connectivity within the District and to the adjacent Student Life and Life Sciences District (Vet Med).

Bicycle access to the District is provided on the Infinite Loop as well as via dedicated bike lanes on West Campus Drive and Washington Street. The GSS Commons also serves as the transit hub for the District, providing connections to the North Academic and other Districts of the campus. Service and emergency access is provided on the Infinite Loop paths and other dedicated service routes.

Proposed changes to vehicular circulation in the District include the future construction of the Western Perimeter Road (WPR) and the extension of Washington Road to meet the WPR.

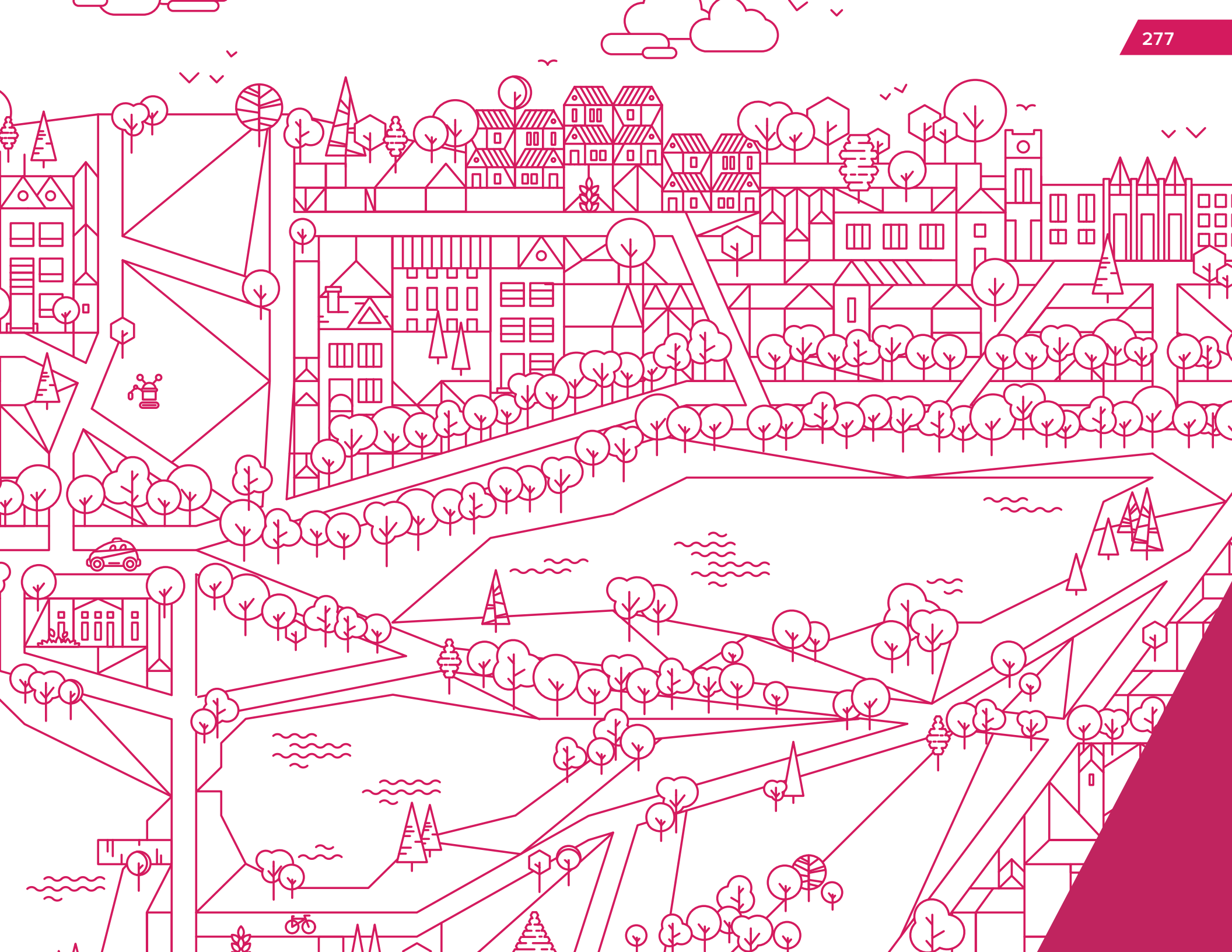
Pathway Network
New Vehicular Network
Bicycle Network


INFINITE LOOP
GREEN LINK
GREEN LINK
WEST CAMPUS DRIVE
WASHINGTON STREET
WESTERN PERIMETER ROAD
DUCK POND DRIVE



MASTER PLAN DISTRICTS

21st Century Living-Learning District



21st Century Living-Learning District

The 21st Century Living-Learning District is envisioned as a new residential neighborhood accommodating up to 2,800 beds of housing in support of the enrollment targets of the University.

Located on the site of the golf course, this new District is programmed to include housing, a new Campus Commons and a satellite recreation center. The context surrounding the District includes the Visitors and Undergraduate Admissions Center, the Inn at Virginia Tech, the Skelton Conference Center, and the Holtzman Alumni Center. The site itself is characterized by the rolling hills of the golf course, Stroubles Creek, and the Duck Pond. The picturesque landscape of the Meadow separates the site from the adjacent Inn and Conference Center.

The District lies at the heart of significant programmatic and infrastructure changes planned for the campus. The first involves the extension of Perry Street westward along the Stroubles Creek corridor to connect with Plantation Road, west of U.S. 460. The extension is paralleled by multipurpose paths, including a segment of the Infinite Loop located on the current alignment of Duck Pond Drive. Combined, Stroubles Creek, the Perry Street extension and its pathways, and the Infinite Loop, along with other facilities, form the proposed Intelligent Infrastructure Corridor, supporting the Intelligent Infrastructure for Human-Centered Communities (IIHCC) Destination Area.

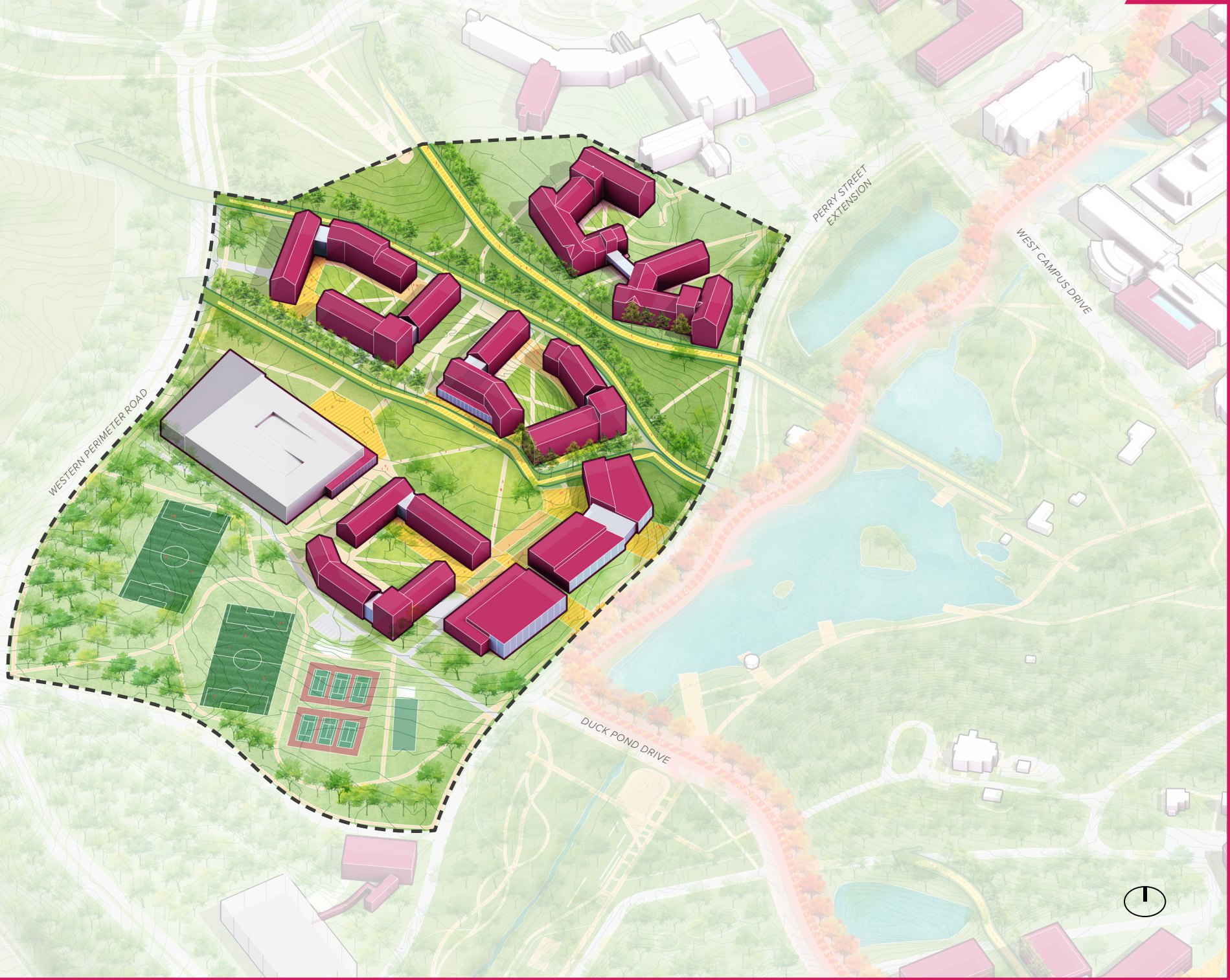
The Western Perimeter Road (WPR) is the second significant change informing the layout of the District. As planned, the WPR follows a north-south alignment through the campus, connecting Prices Fork Road to Southgate Drive. This future roadway defines the western edge of the District and the proposed Agricultural Belt to the west.

Vision

The vision for the 21st Century Living-Learning District is to establish a new residential community of approximately 2,800 students focused on living-learning environments, including those associated with the proposed Global Business Analytics Complex (GBAC).

The GBAC community is proposed as a programmatic extension of the GBAC academic buildings planned for the southeast corner of the Prices Fork Road and West Campus Drive intersection. Two residence halls featuring a total of 700 beds, faculty-in-residence apartments, and classroom / study space dedicated to the business learning community and the International Affairs and Outreach program are proposed.

Additional living-learning communities designed to house approximately 2100 students are possible in the three future housing quads planned on the golf course. The vision also calls for a Campus Center, replete with lounges, dining, and services, and a recreation center to serve the District as well as the adjacent Oak Lane population.

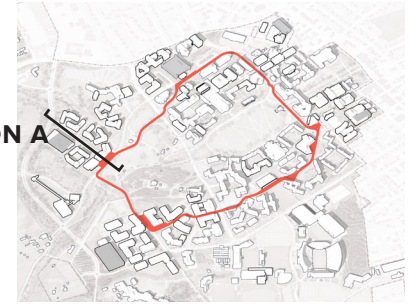

WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DUCK POND DRIVE

Section A

WESTERN PERIMETER ROAD TO THE DUCK POND

The proposed 21st Century Living-Learning residence halls occupy the site of the current golf course. The re-forestation buffer running along the proposed Western Perimeter Road shields the Central Green of the district and separates the residence halls from the traffic of this new parkway. As the site slopes down towards the southeast, the proposed Commons engages the terrain and connects users to, the Perry Street Extension, the Infinite Loop, and the Duck Pond.

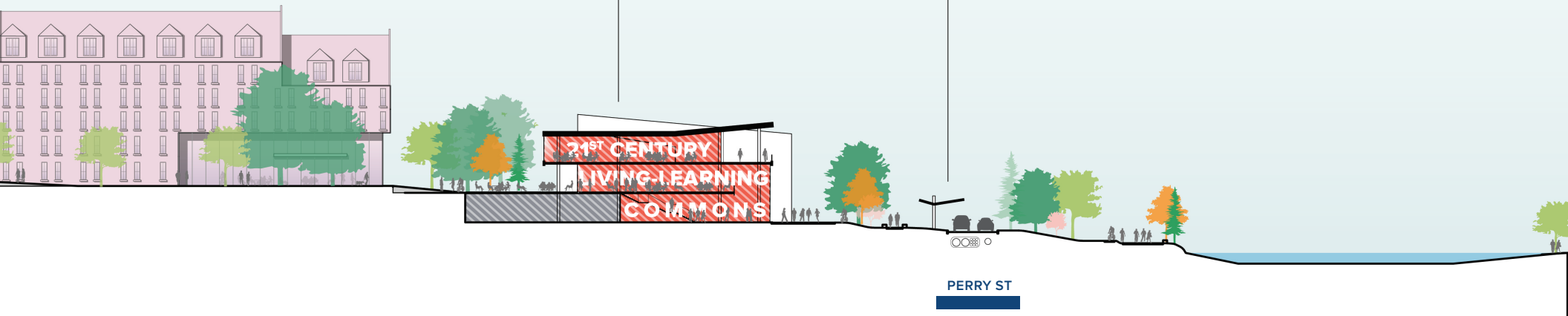




21st Century
Living-Learning 5,6

21st Century
Living-Learning
Commons

Infinite Loop
/ Intelligent
Infrastructure
Corridor



CENTRAL QUAD | 21ST CENTURY LIVING-LEARNING COMMONS | INFINITE LOOP | DUCK POND

Proposed Building
Proposed Garage
Existing Building

PROPOSED DEVELOPMENT

The proposed layout responds to the natural features of the site including the hills of the golf course, the adjacent Meadow, and the Duck Pond.

Buildings are integrated with the District's topography to enhance views of the Duck Pond and surrounding context and to help transition the slope conditions. Five quadrangles patterned on those of the Student Life District are proposed.

GBAC RESIDENCE HALLS

The GBAC halls are located on the east side of the District in close proximity to the conference center. Two 350-bed halls are planned and linked to the new GBAC business building by means of pathways leading to West Campus Drive at the Perry Street intersection. These living-learning communities also include faculty-in-residence apartments and classroom / study space dedicated to the business learning community and the International Affairs and Outreach program.

RESIDENTIAL QUADS, CAMPUS COMMONS, AND RECREATION CENTER

Three residential quads are located on the golf course where they, along with the Campus Commons, define a central green. The Campus Commons and Recreation Center are integrated into the topography on the south end of the site offering views of the Duck Pond. The District includes commuter parking and a transit hub establishing a portal into and out of the campus. The intent is to intercept commuters entering campus via Prices Fork Road and the Western Perimeter Road.

AUTONOMY STUDY PARK AND INTELLIGENT INFRASTRUCTURE CORRIDOR

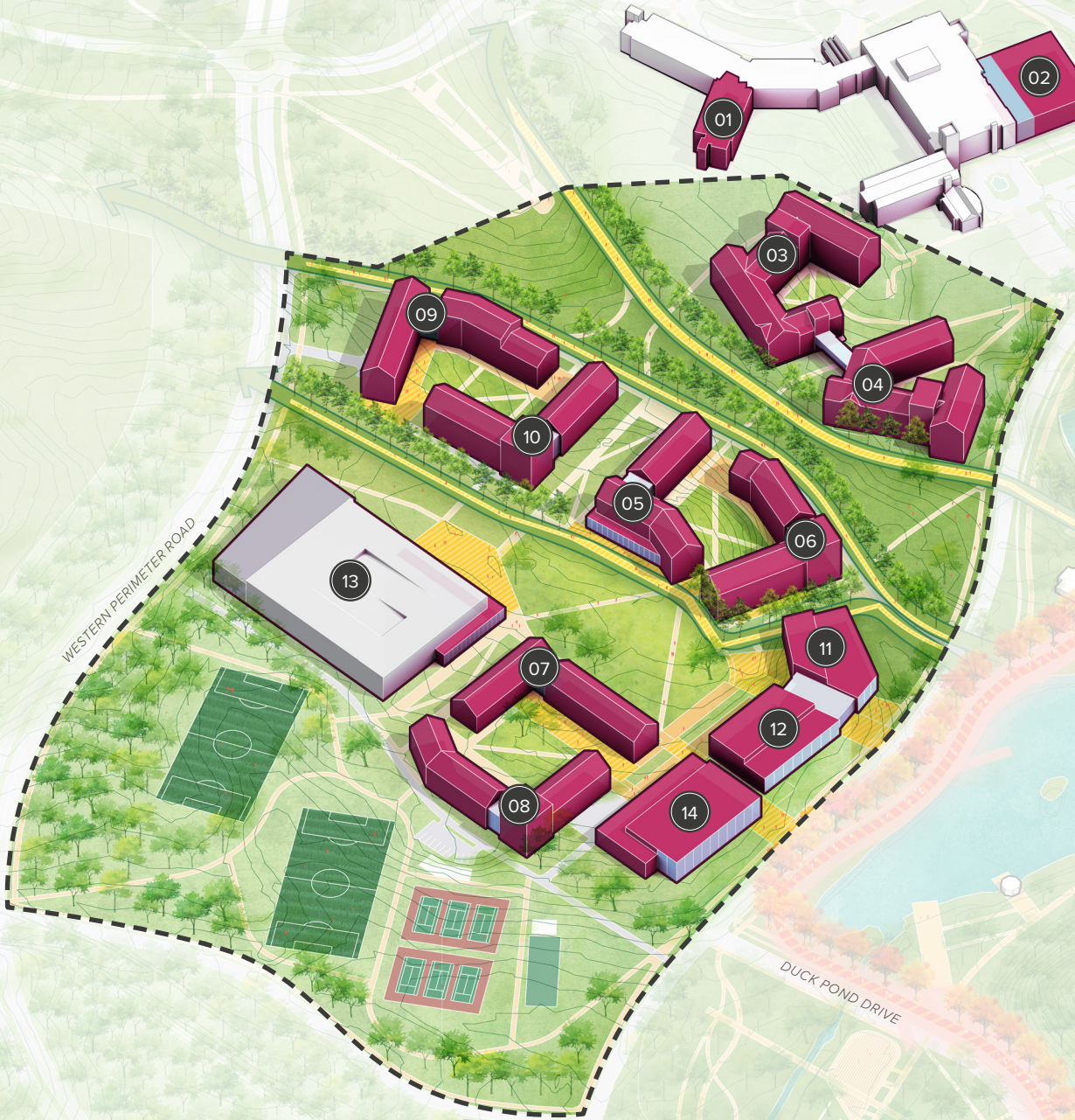
Facilities associated with the Intelligent Infrastructure for Human-Centered Communities (IIHCC) Destination Area are located in the western portion of the site directly adjacent to the Western Perimeter Road. This includes the UAV test cage and support buildings in the Autonomy Study Park. Connections to the Smart Design and Construction Village, west of U.S. 460, and the North Academic District are provided via the Intelligent Infrastructure and Infinite Loop pathways. The reforestation buffer surrounding the proposed Western Perimeter Road will serve to shield these structures and preserve the outward rural character of the campus.

SITE DEVELOPMENT

Development in the District is anticipated in several phases over time. In response, it is recommended that the site be graded to accommodate the quadrangles and surface parking in the interim years. The intent is to provide maximum flexibility as well as to replace the commuter parking displaced from the North Academic District. As the site is developed incrementally, a parking garage is proposed in the northwest corner of the site, adjacent to the proposed Western Perimeter Road.

Adjacent to the District, other facilities are proposed in response to programmatic needs. Specifically, additions are planned to the Inn at Virginia Tech to provide additional guest rooms as well as new meeting and ballroom spaces to replace those displaced by the redevelopment of the Squires Student Center site.

Proposed Buildings		
01	Inn at Virginia Tech - Addition	36,000 GSF
02	Inn at Virginia Tech - Ballroom	84,000 GSF
03	GBAC Living-Learning 1	130,000 GSF
04	GBAC Living-Learning 2	130,000 GSF
05	21st Century Living Learning 1	98,000 GSF
06	21st Century Living Learning 2	100,000 GSF
07	21st Century Living Learning 3	110,000 GSF
08	21st Century Living Learning 4	99,000 GSF
09	21st Century Living Learning 5	99,000 GSF
10	21st Century Living Learning 6	113,000 GSF
11	21st Century Living-Learning Commons	47,000 GSF
12	21st Century Living-Learning Dining	50,000 GSF
13	21st Century Living-Learning Parking Garage & Chiller Plant	347,000 GSF
14	21st Century Living-Learning Recreation Center	75,000 GSF


01
02
03
04
05
06
07
08
09
10
11
12
13
14
WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DUCK POND DRIVE

PUBLIC REALM AND LANDSCAPE

The public realm of the District is informed by the topography and natural features of the site.

Three of the proposed residential quadrangles are positioned on the golf course hilltop, with the GBAC halls located east of the Meadow. The Meadow itself is reimagined as a Green Link, providing pathways and bicycle connections to the Glade Road District north of Prices Fork Road. To facilitate circulation, an underpass is proposed to connect the meadow to the Glade Road area. The Meadow landscape also serves to strengthen the District's physical connection with the Holtzman Alumni Center.

Within these natural features, an overlay of circulation and landscape corridors is proposed to unify the District. A Green Link, transitioning the slope at the intersection of the Meadow and Infinite Loop, provides access for all members of the campus community to the central green and hilltop quadrangles. West of the quadrangles, recreation fields are integrated in a park-like setting in close proximity to the future recreation center.

A Green Link also extends in an east-west direction through the District connecting Perry Street to the Oak Lane residential area. This route is coordinated with pathways designed to connect residents in the District and the adjacent Oak Lane area with the North Academic District.


GREEN LINK
LIVING-LEARNING QUAD
GREEN LINK (TO GLADE ROAD DISTRICT)
MEADOW
LIVING-LEARNING QUAD
GREEN LINK
CENTRAL GREEN
INFINITE LOOP
DUCK POND
REC FIELDS
LIVING-LEARNING QUAD
STROUBLES CREEK
WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DUCK POND DRIVE

The Infinite Loop

The Infinite Loop connects the 21st Century Living-Learning District to the adjacent Districts of the campus. In addition to providing multi-modal circulation, the Loop serves to support the recreational activities of the Duck Pond, the Stroubles Creek corridor, and the residence hall quads and recreation fields.



DUCK POND DRIVE
EXISTING CONDITIONS





INFINITE LOOP AT THE DUCK POND
PROPOSED CONDITIONS

STORMWATER

The District stormwater strategy leverages existing natural landscapes in combination with more urban improvements.

The living learning communities proposed in the District benefit from their proximity to the Duck Pond. Similarly, the creation of additional stormwater landscapes can serve as visual amenities and opportunities for outdoor learning. The existing Meadow, for example, provides considerable infiltration opportunities for much of the District. In addition, the reforestation buffer along Western Perimeter Road along with a series of basins adjacent to the proposed recreation fields offer a comprehensive storage and filtration system.

Supplementing these more transitional features are the urban stormwater elements within the developed zone of the District, primarily taking the form of green roofs on the dining, commons, and recreation facilities. The strategy for the 21st Century Living-Learning District relies on the Conserved Open Space in the form of the existing Meadow (refer to the Landscape Framework section of this report for more information).

Stormwater Strategy Elements

1. The preserved Meadow landscape serves to slow and filter runoff from adjacent impervious areas.
2. Basins and swales surrounding the recreation fields capture stormwater before it enters Stroubles Creek.
3. Green roofs on the large, flat-roofed facilities in the District reduce the coverage of impervious surfaces.


PRESERVED MEADOW
GREEN ROOF
GREEN ROOF
BASINS AND SWALES
DUCK POND FOREBAY
DUCK POND
WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DUCK POND DRIVE

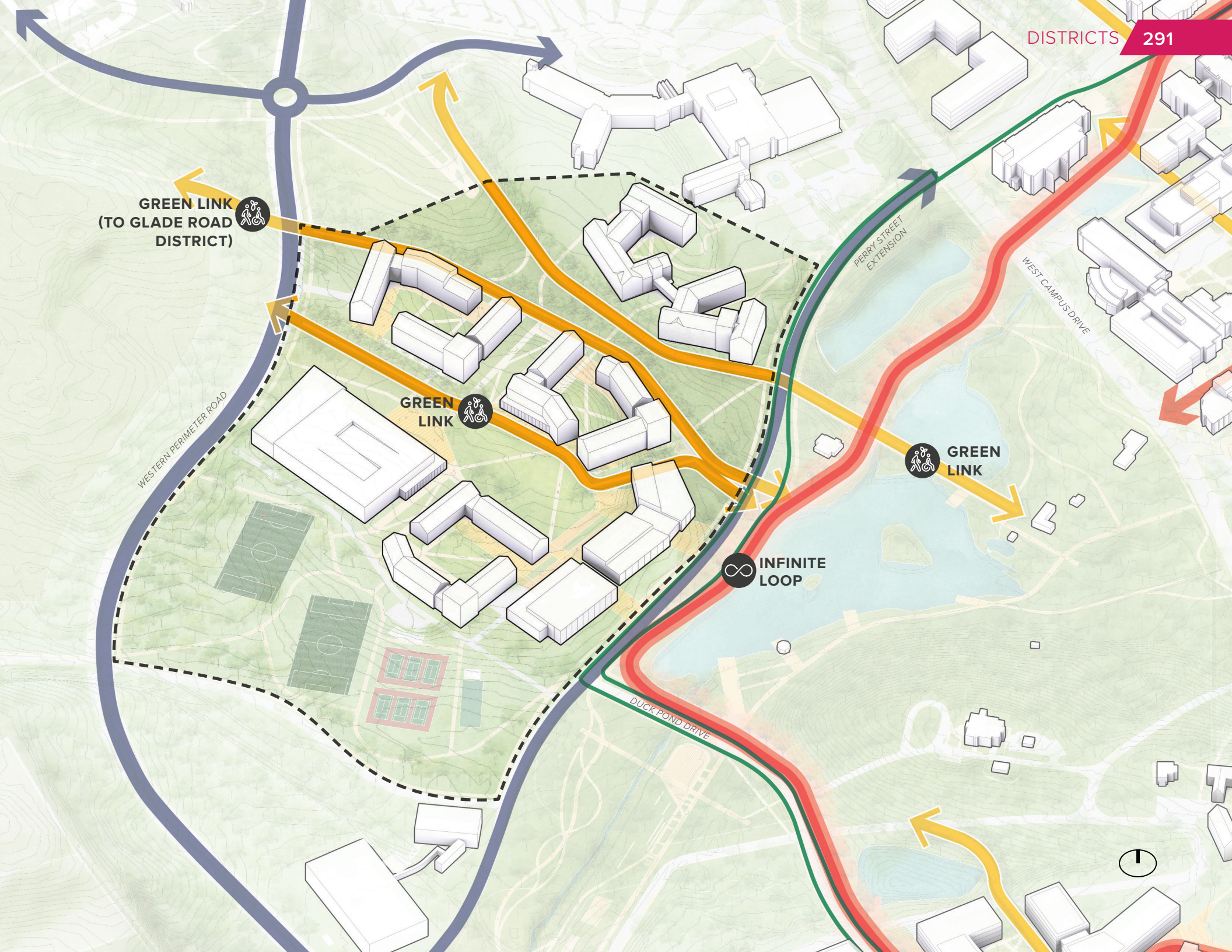
CIRCULATION

Pathways and bicycle connections are provided from the District to the North Academic District by means of the Infinite Loop.

Pathways along the adjacent Intelligent Infrastructure Corridor (IIC) connect the District to Oak Lane and the proposed Smart Design and Construction Village, located west of U.S. 460. Both the Loop and IIC follow the Stroubles Creek corridor. Additionally, the Meadow includes north-south pathways and bicycle connections linking the District to the Glade Road District via a grade-separated connection.

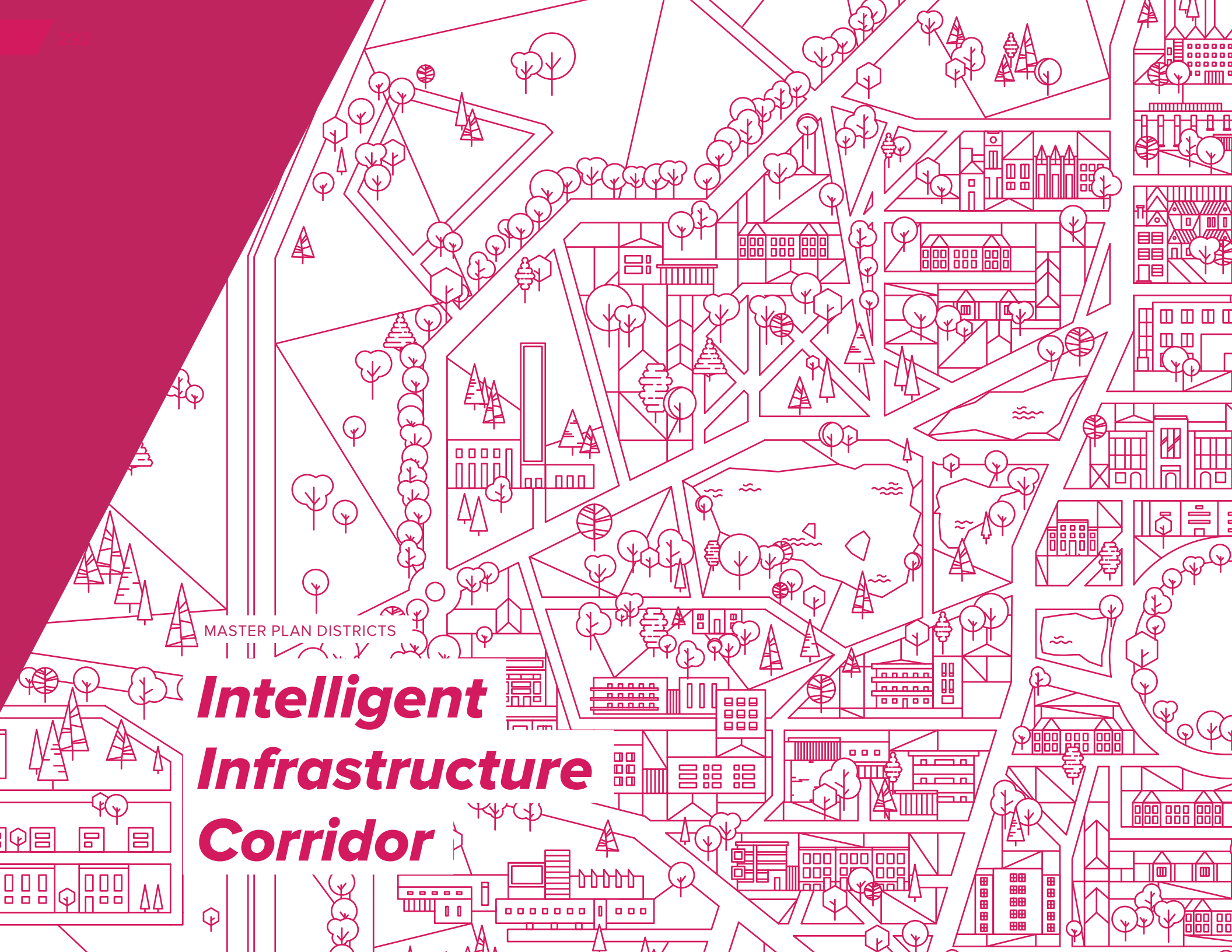
All interior routes within the District are planned to ensure access for all members of the VT community as well as fire and emergency access. A transit hub is proposed in conjunction with the future Campus Commons to connect the District to other areas of the campus. Vehicular access is possible via the Perry Street Extension, Oak Lane and the Western Perimeter Road.

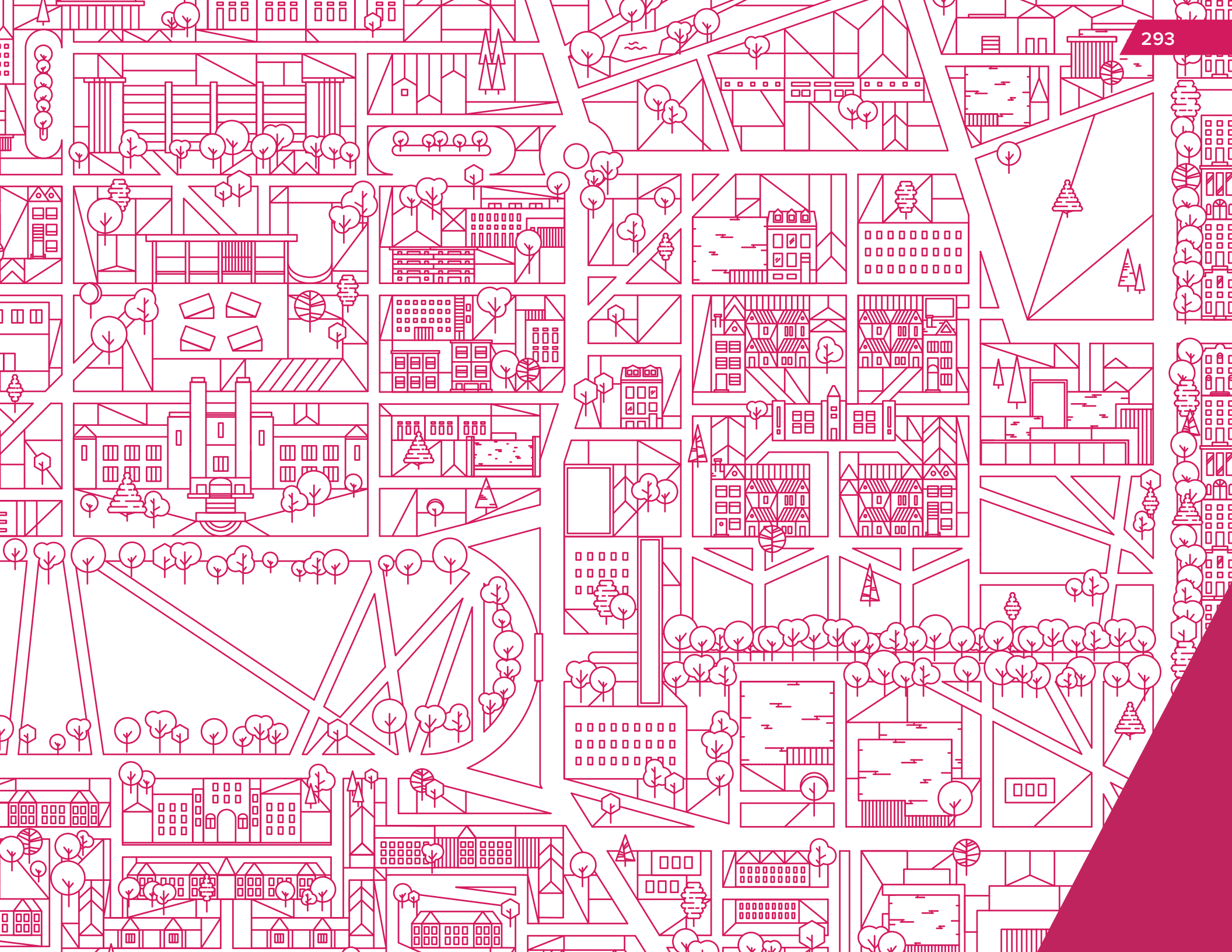
Pathway Network
New Vehicular Network
Bicycle Network


GREEN LINK (TO GLADE ROAD DISTRICT)
GREEN LINK
GREEN LINK
INFINITE LOOP
WESTERN PERIMETER ROAD
PERRY STREET EXTENSION
WEST CAMPUS DRIVE
DUCK POND DRIVE

MASTER PLAN DISTRICTS

Intelligent Infrastructure Corridor





Intelligent Infrastructure Corridor

The Intelligent Infrastructure for Human-Centered Communities Destination Area (IIHCC) focuses on the ways in which people interact with one another and with their environment.

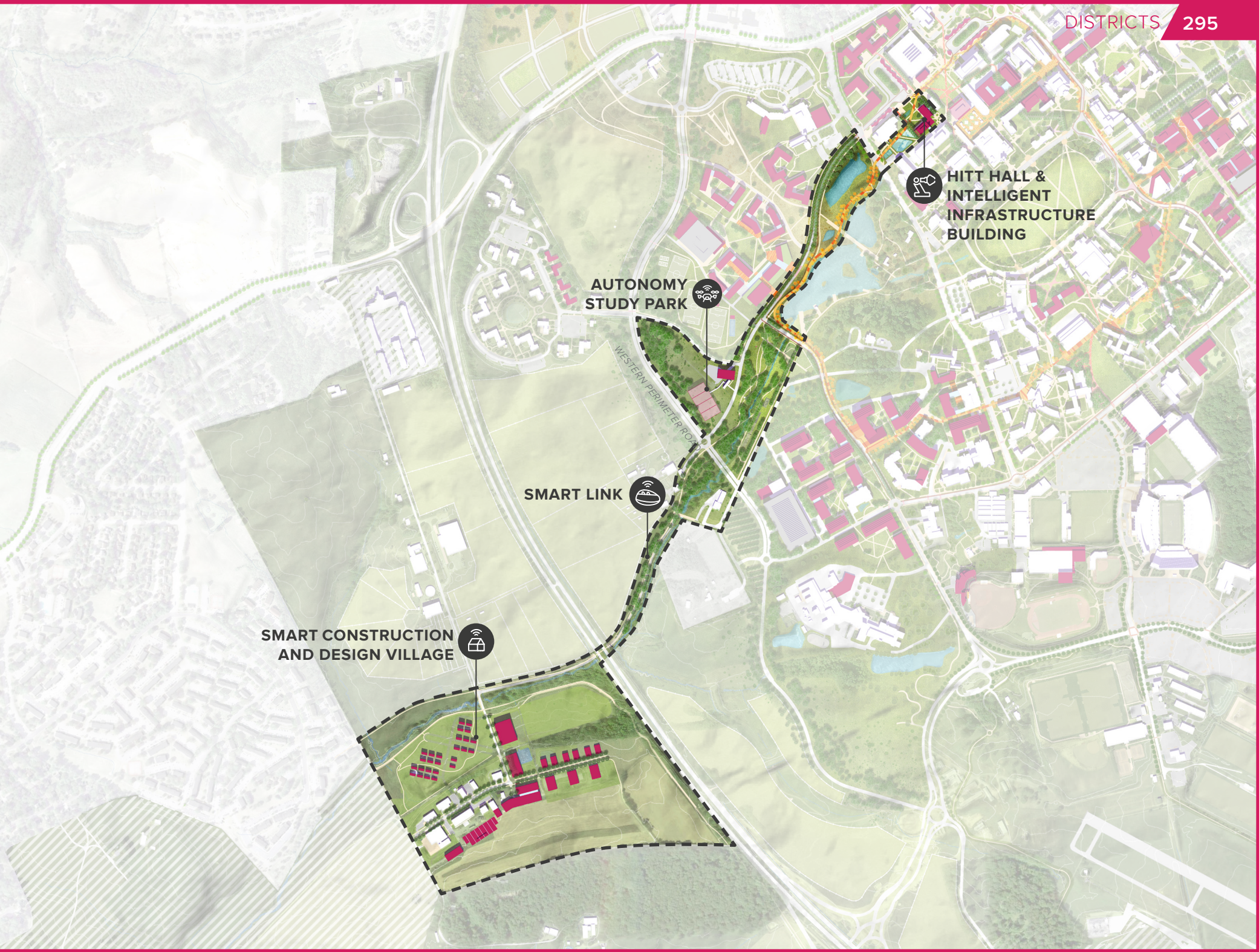
Interests in this Destination Area include smart, healthy, and sustainable cities and communities; transportation systems; human safety, health, and wellness; integrated energy systems; network science and engineering; public policy; and cyber-physical systems.

The IIHCC impacts a wide range of areas, from the competitiveness of Virginia Tech's students when they are ready to serve the community to the quality of life senior citizens will enjoy by being able to "age in place" due to new advances in technology. Building smarter infrastructure will improve systems while making them more intuitive, safer, cleaner and more efficient.

The IIHCC focuses on four themes:

- **Ubiquitous Mobility:** The location-agnostic promise of new communication and information technologies
- **Automated Vehicle Systems:** vehicles that can transit safely and efficiently through our communities independent of a human operator
- **Smart Design and Construction:** an intelligent, integrated, adaptable, responsive, and sustainable human-centric built environment
- **Energy:** the underlying innovations that will be required in the production, distribution, and consumption of energy to realize such a system.

The IIHCC Destination Area balances advancing technology with economic and policy structures that are equitable and fair and that lead to the overall well-being of society.


HITT HALL &
INTELLIGENT
INFRASTRUCTURE
BUILDING
AUTONOMY
STUDY PARK
WESTERN PERIMETER ROAD
SMART LINK
SMART CONSTRUCTION
AND DESIGN VILLAGE

VISION AND PROPOSED DEVELOPMENT

Facilities and infrastructure supporting the Intelligent Infrastructure for Human-Centered Communities (IIHCC) Destination Area are incorporated into the campus along a "corridor" extending from the North Academic District westward along Stroubles Creek to the Plantation Road area.

Conceptually, the Intelligent Infrastructure Corridor connects existing assets and proposed facilities in support of the activities of the IIHCC Destination Area. The corridor includes several segments and areas.

NORTH ACADEMIC DISTRICT

The IIHCC corridor extends from the Joseph F. Ware, Jr. Advanced Engineering Lab, a lab for undergraduate design projects in the College of Engineering, along Perry Street to the proposed Intelligent Infrastructure Complex and the Intelligent Infrastructure Quad (IIQ) in the North Academic District.

PERRY STREET EXTENSION / DUCK POND DRIVE AREA

From the IIQ, the corridor extends across West Campus Drive following the existing Duck Pond Drive and the Infinite Loop alignment. From West Campus Drive, it connects to the proposed Autonomy Study Park (ASP).

DUCK POND DRIVE TO PLANTATION ROAD

The extension of Perry Street is located north of Stroubles Creek traveling under U.S. 460 via the existing Smithfield Road underpass to intersect with Plantation Road. From Duck Pond Drive to Plantation Road, the street is designated for use by transit shuttles, service, and autonomous vehicles. This segment, known as the "Smart Link" is paralleled by a proposed pathway and bikeway connecting the Plantation Road area to the North Academic District. Potential features on the Perry Street Extension include sensors, innovative paving, and efficient lighting.

Proposed Development

Several new facilities are proposed to support the objectives of the IIHCC Destination Area.

HITT HALL AND THE INTELLIGENT INFRASTRUCTURE FUSION LAB

Affiliated with the Myers-Lawson School of Construction, CAUS, and the College of Engineering, these new facilities in the North Academic District provide academic, research, and showcase space for intelligent infrastructure, construction, and design education.

A companion facility to Bishop Favrao, known as Hitt Hall, is proposed for the expansion of the School of Construction. The directly adjacent and connected, Intelligent Infrastructure Fusion Lab is proposed to house emerging activities in Unmanned Autonomous Vehicles (UAVs) and other robotics technologies associated with the building industry. The Fusion Lab is planned to include a dining facility on the ground floor and an outdoor testing area or "sandbox" for robots and other technologies.

AUTONOMY STUDY PARK

Located along the Intelligent Infrastructure Corridor west of the 21st Century Living-Learning District, the Autonomy Study Park contains facilities designed to test tools and techniques for the future of autonomy.

UAV TESTING FACILITY

The UAV Testing Facility, also known as the Drone Cage, is a semi-enclosed area designed to safely test unmanned aerial vehicles in real weather conditions.

MODULAR BUILDING

A modular building also is proposed initially to provide storage and shop space with permanent buildings proposed over the long-term.

SMART DESIGN AND CONSTRUCTION VILLAGE

The Smart Design and Construction Village is planned as an area to showcase research and foster collaboration among various participants and stakeholders. The proposed design integrates several existing facilities in the south Plantation Road area and includes new facilities to supplement those already in place. These include:

HIGH BAY FACILITY

A New High Bay Facility is proposed to the south of the Architecture Demonstration and Research Building. It is envisioned as a large, enclosed, hangar-like facility where faculty and students connect basic research to practical applications in areas ranging from smart houses to smart energy to construction robotics. The preliminary design features an open high-bay structure with supporting observation and office space. It is located adjacent to the Foundry in order to facilitate the movement of parts and materials.

BUILD YARD

The Build Yard, an outdoor “sandbox” for testing construction equipment, is proposed adjacent to the High Bay Facility. The Build Yard is intended to provide a secured outdoor space for the testing and using construction equipment. Covered space is also provided to house and maintain the equipment.

KROEHLING ADVANCED MATERIALS FOUNDRY

The Kroehling Advanced Materials Foundry is an existing metal casting teaching facility. The foundry portion of the building includes equipment for making molds, melting metal, cleaning castings, and storage and is used by engineering senior design students, architecture students, and Ware Lab teams. A 4,000 sf expansion is proposed in response to anticipated growth in foundry-based classes.

NEW WARE LAB

A new state-of-the-art building is proposed in the Smart Design and Construction Village to serve the needs of Ware Lab teams and to accommodate the large number of visitors that tour the facility each year. The proposed 25,000-35,000sf facility responds to the projected increases in engineering enrollment. It is envisioned to include team bays, a machine shop, multimedia classroom, CAD lab, and offices. A braking and acceleration test track and a Baja Team test area are also proposed nearby.

MULTI-DISCIPLINARY BUILDING FOR ENGINEERING

A multi-disciplinary building to support capstone projects and entrepreneurial activities with the College of Engineering and industry partners is proposed in conjunction with the Ware Lab.

DEPARTMENT OF MINING AND MINERALS ENGINEERING LABS (MME LABS)

The Department of Mining and Minerals Engineering (MME) Labs are currently located on Plantation Road in a 40,000 sf facility. The MME Labs focus on sustainably supplying energy and critical raw materials. A new facility and pilot plant

is proposed in the Smart Design and Construction Village to provide a hands-on experiential learning environment for undergraduate and graduate students to serve as a "showcase" for perspective students, sponsors and industry.

The facility is intended to support and expand current capabilities and to explore the goals and objectives of the IIHCC Destination Area, as well as other Strategic Growth Areas. Proposed focus areas include clean energy programs, Greenhouse gas management technologies, separation technologies related to mineral purification and recycling, environmental technologies in the sustainable raw materials supply chain, geo-energy characterization, and automation and intelligent processes.

SMART DESIGN AND CONSTRUCTION VILLAGE HOUSING

The Smart Design and Construction Village includes a housing area to be occupied on a short-term and temporary basis, featuring emerging construction, infrastructure, monitoring, and energy techniques. The idea is to establish a housing community that enables students to monitor and collect data on the operation and performance of the housing. The proposed neighborhood is designed to facilitate incremental expansion over time; it includes development parcels planned to accommodate single housing units such as the solar challenge or the Lumenhaus-type structures that are developed each year by CAUS. Larger communal-type residential buildings also are possible.

A more detailed vision plan and strategy is recommended for the Village. Guidelines for design, materials, technology, and infrastructure need to be developed with the goal of creating a truly innovative neighborhood. Issues of life safety, code requirements, and supervision also need to be addressed, especially if students are to construct the units.

SMART ENERGY PARK

A new power plant site is proposed within the Smart Design and Construction Village as part of the infrastructure master plan for the campus. The power plant provides the opportunity to: 1) address practical needs for the campus, 2) respond to aspirational student learning and research goals, and 3) respond to the energy theme of the IIHCC Destination Area. The idea is to create a "Smart Energy Park".

Potential opportunities associated with the facility include, among others:

- Installation of monitoring and dashboard displays to educate students about plant operations and technology
- Utilization of alternative energy technology to supplement conventional fuel sources: solar panels, geothermal, or biomass generation facilities
- Incorporation of smart grid technology

DESIGN OPPORTUNITIES

Design and construction of the Smart Design and Construction Village presents several opportunities for innovation including passive design / solar strategies, net-zero buildings, and living buildings. Infrastructure supporting the village also presents opportunities for smart grid technology as well as alternative techniques for treating waste (living machines, composting toilets, etc.). With regard to landscape, best management practices for rainwater management potentially align with the adjacent StREAM Lab projects on Stroubles Creek. Ultimately, the goal is to test sustainable design and community development strategies, including opportunities for community agriculture, composting, and energy production.

Proposed Buildings		
01	High Bay Facility & Build Yard	10,000 GSF
02	Kroehling Foundry Expansion	8,500 GSF
03	Mining and Minerals Engineering Lab	60,000 GSF
04	Multi-Disciplinary Engineering Building (and New Ware Lab)	50,000 GSF
05	Smart Energy Park	75,000 GSF
06	Smart Design and Construction Village Housing	15,000 GSF


SMART LINK
U.S. 460
PLANTATION ROAD
05
06
04
03
02
01
ADDITIONAL TESTING & RESEARCH
ADDITIONAL TESTING & RESEARCH
ADDITIONAL TESTING & RESEARCH

STORMWATER

Extending along Stroubles Creek, the Intelligent Infrastructure Corridor possesses the potential to serve as a model for campus riparian stormwater management.

The landscapes surrounding Stroubles Creek are naturalized and include amenities for infiltration and human interaction. By reducing adjacent impervious areas and introducing additional recreation paths, members of the VT community will be able to enjoy an improved Stroubles Creek. Further, the technology embedded within the Intelligent Infrastructure corridor can be used to monitor the health and functionality of the waterway.

At the terminus of the Corridor, the Smart Design and Construction Village incorporates a series of tiered, linear basins and swales to control stormwater before it enters Stroubles Creek.

The transitional BMPs proposed along the Corridor supplement the existing Conserved Open Space within the Stroubles Creek floodplain (refer to the Landscape Framework section of this report for more information).

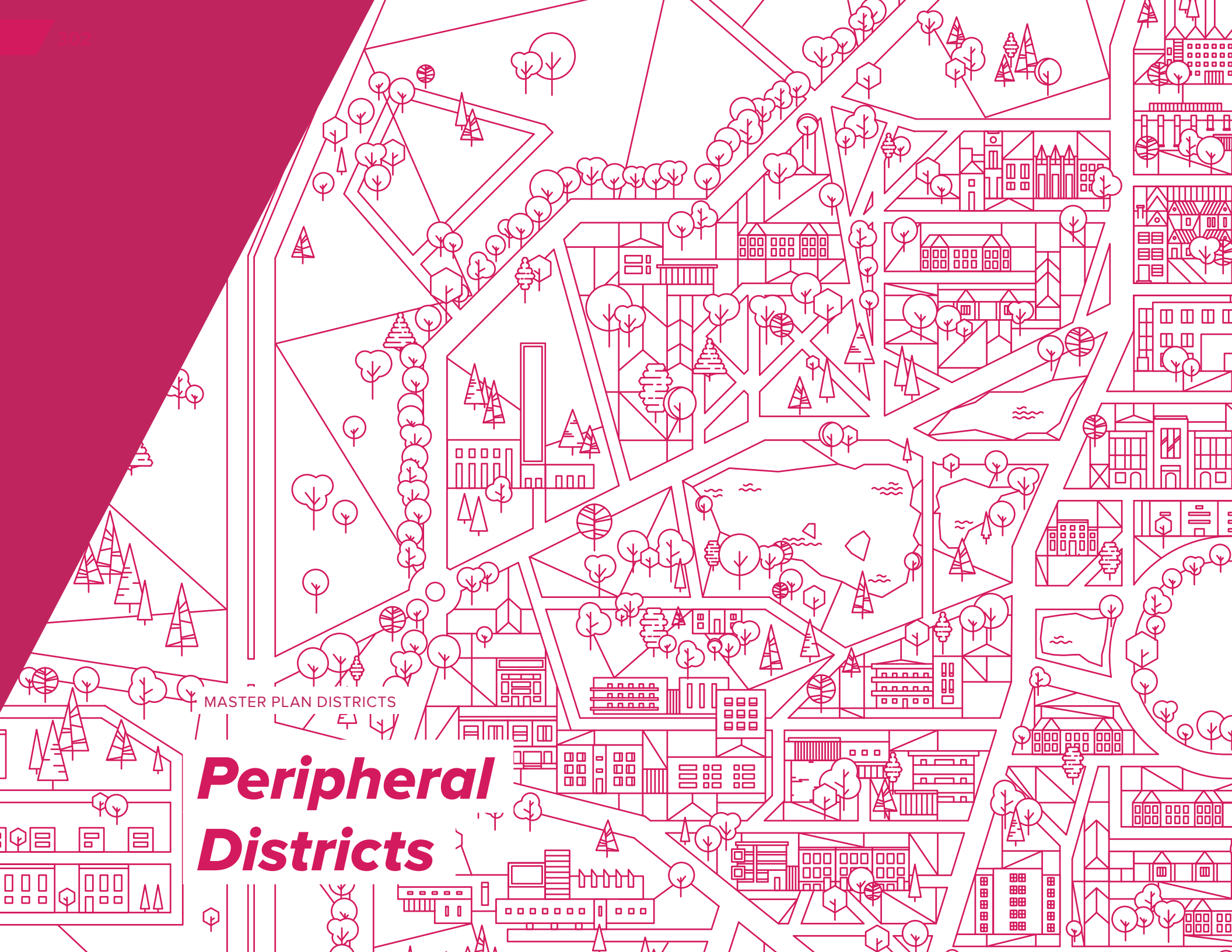
Stormwater Strategy Elements

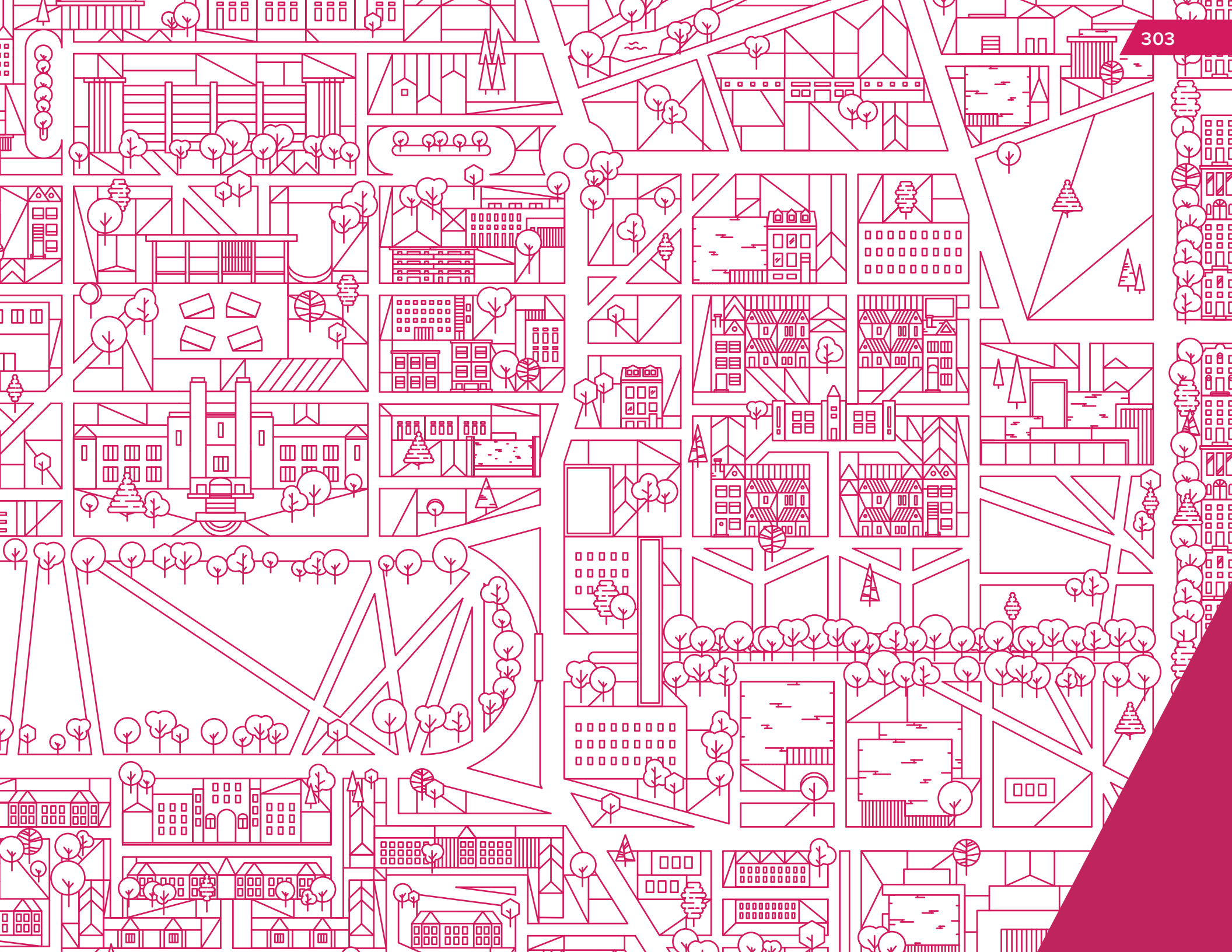
1. The creation of a northern forebay at the Duck Pond allows for the increased stormwater treatment capacity necessitated by the construction of the 21st Century Living-Learning District.
2. The reduction of impervious surfaces along Stroubles Creek serves to improve stormwater quality and reduce runoff.
3. Terraced, linear swales follow the topography of the Smart Design and Construction Village, providing stormwater management and landscape amenities.


DUCK POND
FOREBAY
DUCK
POND
STROUBLES CREEK
LANDSCAPE
LINEAR BASINS
AND SWALES

MASTER PLAN DISTRICTS

Peripheral Districts





ATHLETICS AND RECREATION

The Athletics and Recreation District extends from Washington Street southward to include Lane Stadium and other sports venues of the south campus area. It also includes the recreation fields and other facilities located south of Southgate Drive.

Vision

The Master Plan includes an Athletics and Recreation District that builds upon its current character with upgraded facilities and improved connections to the rest of campus. The Master Plan acknowledges the Athletics Department's desire to consolidate administrative and training activities in a centrally-located facility, though planning and design strategies for this facility are not considered within the scope of the current plan. The vision also hinges on the preservation of the Old Growth Forest east of Lane Memorial Stadium. Following the recommendations of the 2016 Forest Stewardship Plan, the Master Plan celebrates and protects this vital campus asset.

Proposed Development

BURROWS-BURLESON TENNIS CENTER

New team lounges, locker rooms, and spectator amenities are proposed.

CASSELL COLISEUM

A renovated west entrance welcomes visitors with a more streamlined traffic flow and improves weather-proofing. Full air-conditioning for the arena is also under consideration. New seats in the lower bowl of the arena were added in 2017.

ENGLISH FIELD AT UNION PARK (BASEBALL)

Renovations for the baseball field, recently completed at the time of this Master Plan, help program recruitment and spectator experience. The project brings new club areas, premium seating, a video scoreboard, new locker rooms, renovations to the press box, and much more.

RECTOR FIELD HOUSE

Additions to the Rector Field House are under construction at the time of this Master Plan. Rector Field House contains a full-size AstroTurf football field and a 200-meter, banked indoor track. The renovated and expanded Rector Field House include improved Olympic indoor sports facilities including Track and Field facilities and Softball batting, fielding, and practice facilities. Support space for participants include training, team, official's rooms, and storage areas. Support spaces serving the public include new entry lobbies, new and expanded restrooms, and new spectator seating.

STUDENT-ATHLETE PERFORMANCE CENTER

Currently, the Bowman Room on the fourth floor of Jameson Athletic Center is used as gathering room. Hokie Club donors often meet there for basketball games, and Virginia Tech feeds the media in the Bowman Room for basketball games as well. For much of the year, Bowman sits empty with little to no use. The proposed conversion of the Bowman room creates a whole nutrition center that serves as a dining facility for athletes and the campus as a whole.

WASHINGTON STREET TENNIS COURTS

The existing recreational tennis courts east of the basketball practice facility do not make the best use of this prime site. Instead a new facility related to athletics or recreation with an engaging and welcoming design could serve as a campus gateway. Accordingly, the Master Plan identifies this area as a potential development site until such time as an appropriate program is identified.

CROSS COUNTRY TRACK

Outside the district, an expanded cross country track is proposed, taking advantage of the land made available by the realignment of Southgate drive. Grade-separated crossings will allow passage under the new Western Perimeter Road. Implementation will require coordination between the Athletics Department, CALS, Vet Med, and other key stakeholders.

Proposed Buildings		
01	Washington Street Tennis Courts Development Site	
Renovated Buildings		
A	Burrows-Burleson Tennis Center	7,000 GSF
B	Cassell Coliseum	
C	English Field at Union Park	50,000 GSF
D	Rector Field House	44,000 GSF
E	Student Athlete Performance Center	20,000 GSF


01
B
E
CENTRAL LINK
D
C
A
EXISTING CROSS COUNTRY TRACK
EXPANDED CROSS COUNTRY TRACK
WASHINGTON STREET
DUCK POND DRIVE
BEAMER WAY
SOUTH GATE DRIVE
HUCKLEBERRY TRAIL
WESTERN PERIMETER ROAD
U.S. 460

GLADE ROAD

The prominent and highly visible location of the Glade Road District makes it a desirable location for reuse or redevelopment. As such, the District is identified as a strategic partnership site in the Master Plan, providing the opportunity to address a number of University needs including revenue generation opportunities..

Vision

The vision for the Glade Road District is to redevelop the area in association with a third party investor to create a mixed-use development featuring housing, retail, office, and research facilities. The idea is to work with the Virginia Tech Foundation to lease the site, or portions thereof, to a developer with the goal of addressing VT's indirect needs for housing, retail, office, and research facilities while generating income for the University.

Existing Conditions

Currently, the Glade Road District includes a number of agricultural and animal-handling facilities developed incrementally in response to the evolving needs of the College of Agriculture and Life Sciences (CALS) and the College of Veterinary Medicine (CVM). Today, these legacy land uses are somewhat isolated from the campus by Prices Fork Road as well as adjacent retail uses such as the University Mall shopping center.

- Existing uses include a total of 115,521 square feet of facilities ranking from lab and office space to barns and sheds. The facilities fall into the following categories:
- Plant Pathology, Physiology, and Weed Science greenhouses, offices, and labs (32,344 SF)
- Entomology Urban Pest Control Facility (4,379 SF)
- CVM infectious disease buildings, poultry isolation units, poultry virus holding facilities, and hog, goat, and calf barns (41,512 SF)
- BSL3 Facilities - recently completed facilities for CVM including a Research Center and a center for One Health Research (35,477 SF).

In addition to the above, an area of associate pasture and agricultural plot land is required in support of current activities.

Facility Replacement

Redevelopment of the District requires the relocation and replacement of the above noted facilities, either on campus or on outlying land holdings of the University. A detailed programming study is needed to determine the best approach for replacing the facilities in support of existing and future space requirements. It is understood that efficiencies may be achieved when the facilities are replaced, given the incremental and somewhat informal way in which development on the Glade Road site occurred.

Preliminarily, the strategy for replacing the existing Glade Road facilities is as follows:

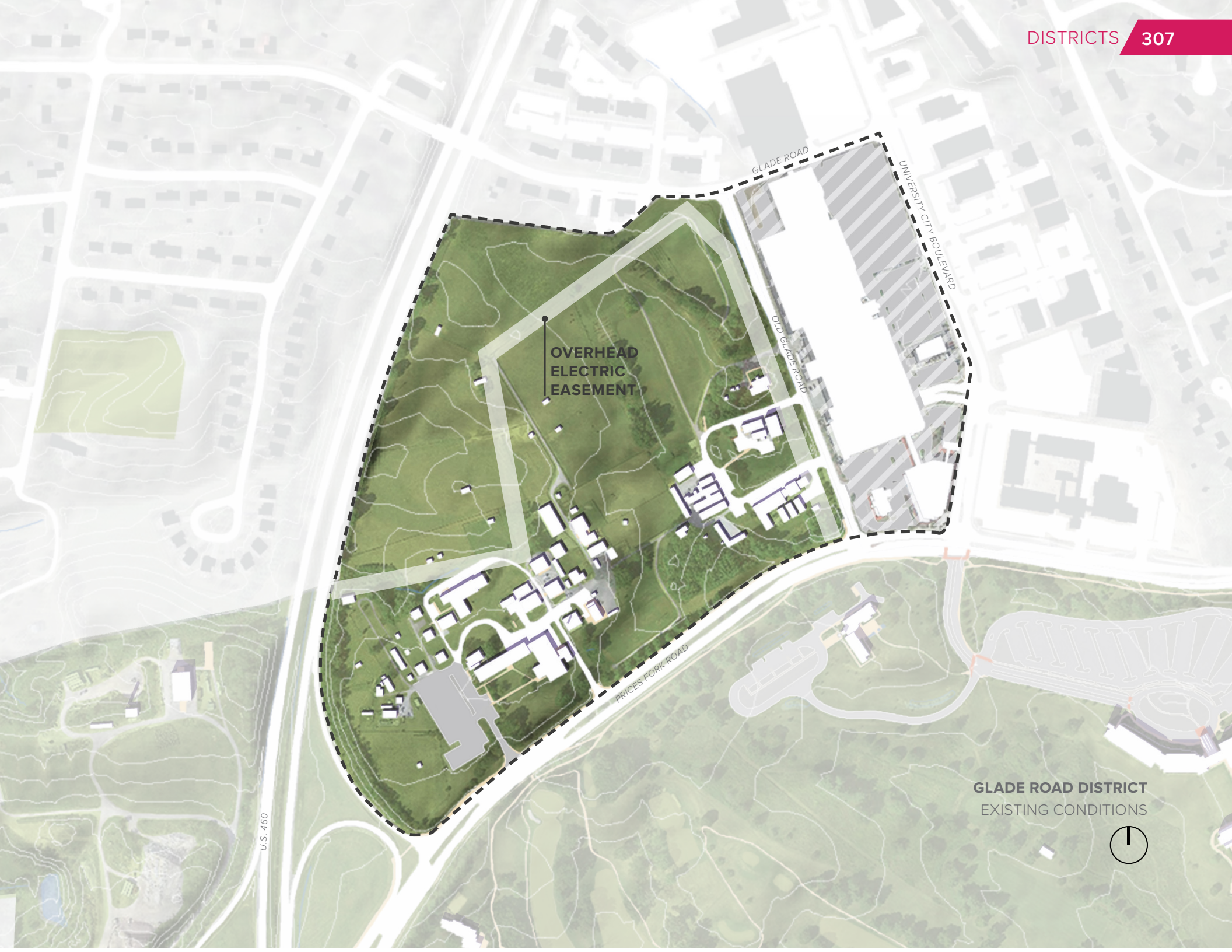
COLLEGE OF VETERINARY MEDICINE REPLACEMENT FACILITIES

It is understood that all indoor CVM facilities could be combined into a more efficient complex near the CVM buildings on campus. The Master Plan identifies future development on the southwest corner of Duck Pond Drive and Washington Street for this purpose. In addition to the indoor facilities, approximately 16 acres of pasture land are needed. The golf course area north and west of the proposed Western Perimeter Road is a possible site.

COLLEGE OF AGRICULTURE AND LIFE SCIENCES REPLACEMENT FACILITIES

It has been suggested that the Plant Pathology, Physiology and Weed Science greenhouses could be replaced on the rooftop of the proposed Global Systems Science (GSS) building in the Life Science & Technology (LS&T) District. Preliminarily, it is estimated that one-half to one-third of the current area could be accommodated in the GSS building. The remaining greenhouse space will be located elsewhere in the LS&T District with the understanding that new state-of-the-art facilities may result in a reduction in the total amount of required space.

In addition to greenhouses and other facilities, 8-9 acres of plot land are required.



GLADE ROAD DISTRICT
EXISTING CONDITIONS

Potential Glade Road District Redevelopment

As noted the Glade Road District is a highly desirable redevelopment site given its adjacency to Highway 460, Prices Fork Road and the established retail area on University Avenue. The District offers convenient access to both the VT campus and the wider regional road network.

The exact range of uses on the site will be the subject of future development agreements between the Virginia Tech Foundation and private developers and will need to be closely coordinated with the Town of Blacksburg. As envisioned, the Glade Road District will be developed in partnership with the Virginia Tech Foundation and private development entities selected through a competitive process. This approach is in keeping with Virginia Tech's broader goal of expanding strategic partnerships as a way to accelerate fulfillment of the University's mission and to create new sources of revenue generation.

The layout and development vision for the site will be determined in association with the selected development partner(s). Redevelopment may need to occur in a phased approach to allow adequate time for relocating the 115,000 SF of CALS and CVM facilities. While a specific site plan is not possible at this time, the Master Plan provides guidance on the key aspects of the site and facilities that VT would like to include in the redevelopment of the District.

PROGRAMMATIC USES

A diverse, mixed-use district of multi-family housing for graduate students, young professionals, and those seeking a more urban living experience replete with green space and retail amenities is envisioned. Within this urban-like context, graduate housing is a key need identified by VT. Specifically, VT envisions a new housing complex—or "Graduate Village"—for graduate students and families along with support amenities including social spaces, recreation, parks and daycare. A renewed vision for graduate housing is needed to recruit students, faculty and researchers to Blacksburg. In addition to students, the housing is needed for visiting faculty as well as others seeking transitional housing while they relocate to Blacksburg.

A master planning process specific to Glade Road is needed to determine the best approach to redevelopment based on the agreements reached with private developers as well as market analysis.

SITE DEVELOPMENT CONSIDERATIONS

Although the exact layout of the site is the subject of future planning studies, the Master Plan includes guidance relative to the landscape and open space structure of the site. The adjacent diagram provides a preliminary land use and open space concept intended to inform future discussions and master planning processes. Major features of the concept include the following:

- **The Meadow:** The Meadow located west of the Inn at Virginia Tech is extended into the Glade Road District as an open space organizational concept and as a means by which to provide pathway and bicycle connectivity to the campus. An underpass at Prices Fork Road is proposed to provide direct connections from the 21st Century Living / Learning District to Glade Road.
- **The Agricultural Belt:** The Agricultural Belt proposed along Highway 460 is extended along the west side of the Glade Road District as a reforestation buffer to extend the rural character of Virginia Tech to the north and to buffer the development from highway noise.
- **Utility Easements:** Some existing utilities—the overhead electrical lines in particular—have access easements that will impace the form of development and ciruclation routes.


OVERHEAD ELECTRIC EASEMENT
GLADE ROAD
UNIVERSITY CITY BOULEVARD
HOUSING
HOUSING
HOUSING
HOUSING
RETAIL OFFICE
RETAIL OFFICE
RETAIL OFFICE
RETAIL OFFICE
COMMERCIAL QUAD
MEADOW
STORMWATER LANDSCAPE
REFORESTATION BUFFER
CIVIC QUAD
OLD GLADE ROAD
ACADEMICS RESEARCH
ACADEMICS RESEARCH
ACADEMICS RESEARCH
ACADEMICS RESEARCH
HOTEL
PRICES FORK ROAD
GREEN LINK (TO 21ST CENTURY LIVING-LEARNING DISTRICT)
WESTERN PERIMETER ROAD
U.S. 460
GLADE ROAD DISTRICT
PROPOSED CONDITIONS

OAK LANE DISTRICT

The Oak Lane District accommodates residential living areas for Greek and non-Greek organizations and includes 18 buildings, recreational facilities and a pavilion for group activities.

Vision

The Oak Lane District will continue to accommodate Greek and non-Greek organizations that seek to have communal living arrangements and meeting space.

Proposed Development

Limited expansion for up to four additional houses, one of which is currently being planned at the time of this Master Plan, is possible on the east side of the District along Oak Lane.


POTENTIAL
OAK LANE
EXPANSION
PRICES FORK ROAD
OAK LANE
WESTERN PERIMETER ROAD
U.S. 460

06

Accessibility Outcomes

Accessibility Outcomes

The Master Plan proposes a framework for campus accessibility and recommends the continued development of strategies and solutions for universal access and inclusion.

The plan's focus on the physical aspects of the campus concentrates these efforts on addressing mobility-related accessibility to meet and exceed the Americans with Disability Act (ADA) standards.

While ADA design standards certainly help to address accessibility concerns, additional efforts can be taken to address a broader range of design considerations for the users of the VT campus. Consultation meetings held during the master planning process revealed strong support for embracing the concept of Universal Design.

Universal Design provides a more comprehensive "design for all" approach and acknowledges the diversity of needs in the campus population. The Master Plan, in turn, proposes interventions aimed at providing accessible routes, spaces, and amenities for use by all members of the campus community.

Broad Accessibility Recommendations

To establish a barrier-free campus and address the call for Universal Design, the Master Plan puts forward the following recommendations:

- Develop a plan to implement the recommendations of the 2017 Accessibility Assessment as developed by Accessibility Consultants, Inc.
- Perform additional accessibility surveys to address physical barriers in exterior areas of campus outside the scope of the 2017 Assessment; physical barriers in interior campus spaces; and auditory, visual, and digital barriers present throughout the campus
- Prioritize the most significant problems for inclusion in annual operating and capital budgeting development.
- Implement the proposed Green Links and Infinite Loop concepts to address the most challenging topographic conditions on the campus
- Hire a consultant to assist in the development of Universal Design principles and policies to guide future construction projects as well as address the broader aspects of Universal Design
- Require teams for active projects to demonstrate knowledge and experience in Universal Design principles, and require documentation of Universal Design practices throughout the design process

UNIVERSAL DESIGN

The principles of Universal Design provide a broader framework for evaluating future building, interior, and site design projects on the campus as well as a wider range of considerations relative to creating a more welcoming and inclusive campus.

The Master Plan recommends that VT work with a Universal Design consultant to develop principles and policies that are responsive to the needs of the Virginia Tech community.

PRINCIPLES OF UNIVERSAL DESIGN

1. **Equitable Use:** the design is useful and marketable to people with diverse abilities
2. **Flexibility in Use:** The design accommodates a wide range of individual preferences and abilities
3. **Simple and Intuitive Use:** use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level
4. **Perceptible Information:** the design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities
5. **Tolerance for Error:** the design minimizes hazards and the adverse consequences of accidental or unintended actions
6. **Low Physical Effort:** the design can be used efficiently and comfortably and with a minimum of fatigue
7. **Size and Space for Approach and Use:** appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility

Source: Adapted from The Center for Universal Design

ACCESSIBILITY THEMES

To translate the tenets of Universal Design into targeted recommendations, the Master Plan considers accessibility through the lens of three distinct themes.

These themes help to organize the plan's specific strategies and chart a path for future studies, plans, and designs. Drawing from the aforementioned broad accessibility recommendations, the recommendations listed under each theme seek to achieve meaningful progress towards a holistic vision of accessibility across the campus.

Master Plan Accessibility Themes



CROSS-CAMPUS ACCESSIBILITY

- Implement the Green Links
- Implement the Infinite Loop



BUILDING AND SITE ACCESSIBILITY

- Implement improvements to residential quads
- Address Accessibility Assessment recommendations
- Expand the Assessment to building interiors



ACCESSIBILITY & INCLUSIVITY

- Perform studies of campus auditory and visual accessibility
- Review programs and policies for addressing intellectual disabilities
- Consider elements related to gender, race/ethnicity, and age inclusivity



Cross-campus Accessibility

The Master Plan proposes two major interventions to improve cross-campus accessibility: the Green Links and the Infinite Loop. These critical strategies work together to address the challenging topography of the campus and improve movement across the campus for users of diverse abilities.

The Green Links connect through the Drillfield to provide north-south routes where challenging topographic conditions exist. They are envisioned as ADA-compliant pathways and landscape corridors for use by all members of the campus community. Similarly, the Infinite Loop is designed as a barrier-free pathway connecting the Campus Districts surrounding the Drillfield. Although it "loops" the campus, functionally it is intended to provide better connectivity between adjacent Campus Districts. For example, it connects the North Academic District to the 21st Century Living-Learning District proposed on the existing golf course. Refer to the Campus Vision, Landscape Framework, and Mobility Framework sections of this report for additional detail.

Together the Links and the Loop provide an armature for developing a campus-wide system of pathways for use by all members of the VT community. They also establish a framework for addressing the challenges identified in the Accessibility Assessment as part of future site and building improvement projects.



Building and Site Accessibility

The Master Plan also proposes interventions at the site and building scale. These strategies are aimed at improving accessibility at building entrances and across major open spaces.

Open spaces through which Green Links pass, especially the quads associated with the residence halls in the Student Life District, are envisioned as prime locations for accessibility improvements. Recommendations include select site re-grading, the removal of stairs where possible, and the creation of accessible gathering areas. Additional details are available in the Landscape Framework section of this report.

Building-level recommendations are focused on renovations to existing residence halls and include improvements to building entries and vertical circulation. Refer to the Campus Life Report for more information.

The Master Plan also indicates the need to address the site-level elements noted in the 2017 Accessibility Assessment. While low-priority improvements can be addressed as part of other nearby planned alterations or construction projects, high-priority improvements are required to be addressed in the short-term in order to meet ADA Standards. Therefore, the Master Plan recommends exploring funding sources for the implementation of accessibility-specific projects.

As the 2017 Accessibility Assessment only covered exterior circulation routes, the Master Plan further recommends that an additional assessment be carried out to note any ADA violations in building interiors across the campus. Again, dedicated funding sources for short-term improvements should also be identified.



Accessibility & Inclusivity

Due to the physical nature of the Master Plan, recommendations focus on mobility-related access issues. By expanding accessibility to incorporate concepts of inclusivity, Virginia Tech will continue working to meet the needs of those with auditory, visual, and other sensory impairments, as well as individuals with intellectual disabilities. In addition, future studies should consider how the University can best support users of different genders, races/ethnicities, ages, and other identifiers.

To address sensory-related issues, the Master Plan recommends that future building and site design projects refer to existing planning studies such as the Wayfinding Master Plan in order to achieve previously developed goals. In addition, design teams for construction projects should be aware of best practices related to auditory, visual, and other sensory concerns.

Similarly, designing spaces that meet the needs of individuals with intellectual disabilities requires specific expertise on future design teams. Virginia Tech will continue to review non-physical elements such as academic and student wellness programs and policies to ensure a broader understanding of inclusivity.

A truly inclusive VT campus creates spaces that are welcoming to all members of the University community. Future studies will assess how physical spaces, programmatic needs, and campus operations can evolve to celebrate Virginia Tech's diversity.

07

Sustainability Outcomes

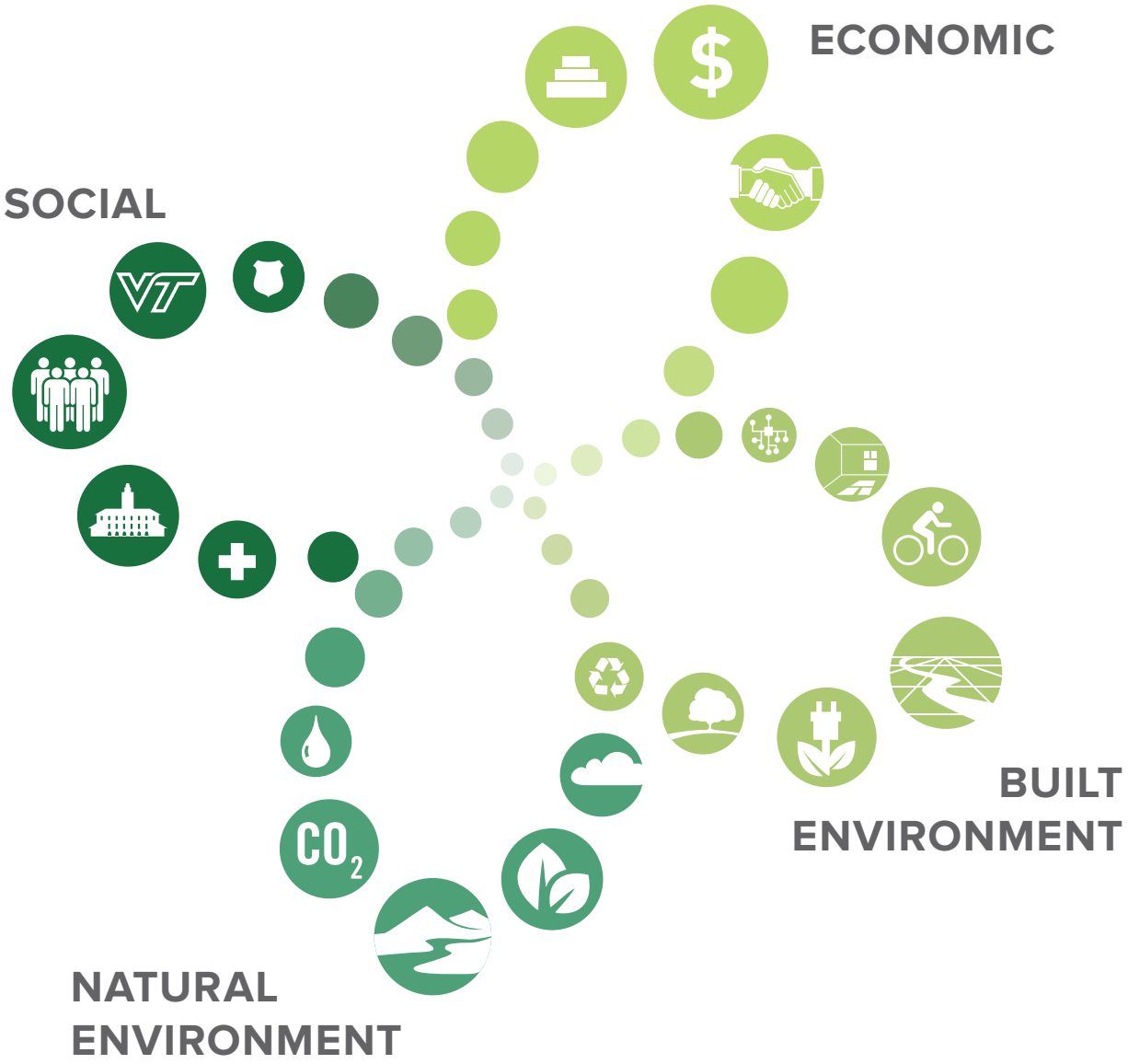
Sustainability Outcomes

Sustainability strategies laid out in the Master Plan consist of both broad recommendations and specific themes aimed at advancing VT's Sustainability Mission through the physical form of the Blacksburg Campus.

These strategies are designed to support Virginia Tech's sustainability objectives including those metrics of The Association for the Advancement of Sustainability in Higher Education's (AASHE) STARS rating system applicable to the physical environment. The plan also supports the waste management goals of the University and includes recommendations that support the mission and curriculum metrics of STARS.

Broad Master Plan Sustainability Recommendations

- Utilize the Blacksburg campus as a showcase for sustainable design and operations practices
- Focus on infill development in established Districts and compact, efficient layouts for proposed Districts to more efficiently utilize utility infrastructure
- Utilize sustainable siting recommendations for optimal solar orientation
- Create human-scaled protected campus spaces with an emphasis on human comfort
- Improve the resiliency of the campus by minimizing development in floodplains
- Utilize regionally appropriate planting materials, preserve existing trees, and plant new trees with the goal of aligning campus tree cover with that of the region
- Develop human-scale Districts and campus amenities to establish better connections among VT's diverse student groups, faculty, and staff
- Enhance student life to build a stronger sense of community
- Develop an integrated mobility strategy to improve access for all and reduce transportation-related carbon emissions
- Reduce waste stream volume through increased composting



SUSTAINABILITY CONSIDERATIONS

Sustainability at Virginia Tech concerns social interactions, economic performance, and the design and management of both the built and natural environment of the campus.

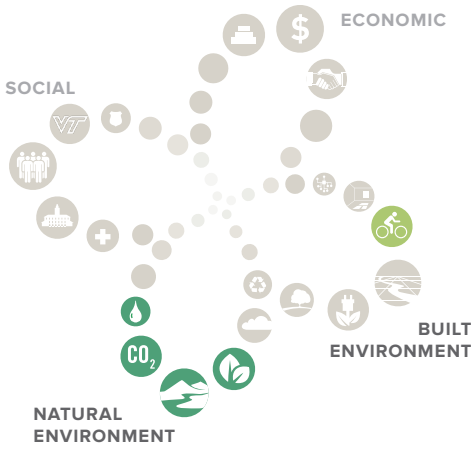
While academic and research initiatives currently underway at VT offer numerous opportunities for using the campus and surrounding context as a living laboratory for sustainable practices, the Master Plan focuses on those elements most concerned with the design and operations of the physical campus, highlighted in the Sustainability Themes discussed on the next page.

SUSTAINABILITY THEMES

The Master Plan supports a systems-thinking approach to campus design and development, establishing an integrated and interconnected framework to ensuring all campus systems contribute to the sustainability goals and objectives of the University.

These themes listed here, drawn from the full spectrum of sustainability considerations, are the most relevant to the translation of VT's Sustainability Mission to the physical form of the Blacksburg Campus and are woven into the fabric of the plan's recommendations. The themes serve to focus the plan on the promotion and implementation of sustainable principles and practices wherever possible and address Virginia Tech's commitment to campus-wide sustainability.

The summaries on the following pages highlight the sustainability strategies laid out in the Master Plan as organized around the Sustainability Themes.



Land and Ecological Stewardship

The Master Plan prioritizes infill development in order to minimize the consumption of agricultural and natural land and the impacts of human activities on the ecological systems of the campus.

Landscape

Through the use of regionally appropriate planting strategies and increased campus tree cover, the Master Plan's landscape recommendations address human comfort and environmental needs.

Water Resources

By removing development from the Stroubles Creek floodplain, introducing infiltration and conveyance to campus landscapes, integrating regional water planning efforts, and improving facilities to reduce non-point-source and point-source pollution, the Master Plan promotes sustainable stormwater practices.

Mobility

The Master Plan responds to VT's commitment to encouraging non-auto mobility by enhancing pathways and bike networks, integrating improved transit connections, and prioritizing non-motorized transportation in the campus core.

Energy and Emissions

Supporting VT's ongoing sustainability efforts, the Master Plan recommendations promote energy-efficient building siting and design, conversion to alternative energy sources, emissions reductions through sustainable mobility strategies, and reduced wast stream volume through increased composting.



Land and Ecological Stewardship

The Master Plan encourages compact development via the Academic & Research, Campus Life, and Mobility Frameworks with the goal of facilitating human-powered and transit-oriented mobility within the campus. Compact development is also proposed for more efficient infrastructure distribution systems and to conserve the limited land resources of the University.

Several strategies set forth by the Landscape Framework support the Land and Ecological Stewardship sustainability objectives of the University. The recommended growth boundary defined by the Agricultural Belt and the future Western Perimeter Road limits the western expansion and sprawl of campus development and in the process protects existing agricultural land and natural areas.

Establishing the Agricultural Belt and protecting agricultural land is important for several reasons:

- Land critical to the missions of the Colleges of Agriculture and Life Sciences, Veterinary Medicine, and School of Natural Resources and Environment is protected
- Underlying natural systems and ecosystems are protected
- The rural character and image of the campus associated with the land grant heritage is protected

Additional ecological considerations are addressed in the forest management strategies recommended in the Landscape Framework. Reforestation strategies along major corridors like Stroubles Creek and the Western Perimeter Road are paired with policies for protecting existing wooded areas such as the Old Growth Forest near Lane Stadium, the Grove, and Hoot Owl Woods.



Landscape

The Landscape Framework addresses the Landscape Sustainability Theme through the inclusion of recommendations and strategies for enhancing the ecosystem services of the campus, the management of stormwater, and the landscape qualities appropriate for the region and for the various campus districts.

The Landscape Framework supports the sustainability objectives of the campus by:

- Recommending new quadrangles and greens to provide additional pervious area and restore the hydrological patterns of the campus, notably in the CID Green and in the Intelligent Infrastructure Quad
- Establishing the Green Links as new circulation and landscape corridors that stitch the major open spaces of the campus together
- Extending tree cover within the formal and peripheral landscapes to provide human-comfort and to reduce the heat island effect adjacent to buildings. This reduces the cooling load in adjacent buildings.
- Coordinating BMPs (rain gardens, swales, green roofs) with the overall Landscape Framework in association with a holistic stormwater management strategy



Water Resources

The Landscape Framework addresses the Water Resources Sustainability Theme and supports campus sustainability objectives in several ways:

- The Framework preserves existing wooded areas and recommends a long-term strategy for reforestation along key corridors, notably Stroubles Creek, the future Western Perimeter Road, and Southgate Drive, improving water quality and reducing the quantity of stormwater runoff in these areas.
- Best Management Practices (BMPs) for stormwater are recommended to reduce impervious area, detain and treat rainwater, and mitigate potential flooding issues. The BMPs are part of a comprehensive stormwater strategy for the campus and are most apparent in the CID Green and the Intelligent Infrastructure Quad proposed in the North Academic District. Additional details can be found in the Stormwater Management Plan included in the separate Technical Appendix.
- Conserved open spaces, one of the proposed stormwater BMPs, are designated as areas that are not to be disturbed by development. Conserved open spaces provide stormwater filtration in areas that are hydrologically connected to a protected stream buffer, wetland buffer, floodplain, or forest conservation area. Land within conserved open spaces can be un-designated if other land use needs arise, but an equivalent acreage must be replaced in an area that provides the required functionality.
- The recommendations for the Intelligent Infrastructure Corridor along Stroubles Creek include the removal of paved areas from the floodplain. An overarching goal is to remove Stroubles Creek from the impaired waterways list.
- The Duck Pond is the focus of clean-up and remediation



Mobility

In support of reducing campus emissions to 80 percent of 1990 levels by 2050, the Mobility Framework promotes a balanced approach to transportation. The long-term goal is to shift the modal split to human-powered and transit modes. Modal split is the suggested metric to gauge progress over time. The following provides an overview of the key recommendations all of which align with the Transportation Demand Management (TDM) strategies in the Transportation Master Plan. In addition to providing mobility options, the TDM strategies include a range of policy and operational approaches for reducing the reliance on single occupancy vehicles.

PATHWAYS

Active transportation is encouraged in the plan through the compact land use patterns of the Campus Districts and by recommended improvements to campus pathways. Major features include the Infinite Loop and the Green Links, both of which connect the Districts and provide inclusive access throughout the campus. Other improvements include enhanced crossings and pathways to create a comprehensive and well connected network.

BICYCLE CIRCULATION

Bicycle circulation is promoted by means of a comprehensive network of campus bike lanes, paths, and shared roadways that connect with the town and regional trail networks. The routes, including portions of the Infinite Loop and facilities supporting the regional bike share program are also integrated into the framework. Bike share stations are proposed at the Campus Commons as well as at other major campus destinations.

TRANSIT

Transit use is facilitated by investment in the Multi-Modal Transit Facility (MMTF) in the North Academic District. The MMTF is the planned terminus for campus transit services as well as those that extend into the surrounding community. Other transit hubs are proposed in association with various segments of the Infinite Loop and the Campus Commons; the intent is to improve the user experience by locating major transit hubs where services and amenities are possible.

Pending coordination with Blacksburg Transit, major transit hubs are proposed in conjunction with the following campus centers in addition to the North Academic Commons at the MMTF:

- Alumni Mall at the Integrated Design Building
- Creativity & Innovation District Commons
- Global Systems Science Commons
- 21st Century Living-Learning District Commons

AUTONOMOUS VEHICLES

Autonomous vehicles are accommodated in the Master Plan by means of a supporting pathway network. Autonomous vehicles provide the opportunity for specialized transit services and connectivity. For example, connections between Hitt Hall and the Intelligent Infrastructure Fusion Lab and the Smart Design and Construction Village are possible via the Smart Link portion of the Intelligent Infrastructure Corridor along the Perry Street Extension.

LAND USE

In addition to the aforementioned mobility strategies, the land use and housing recommendations of the Master Plan offer opportunities to reduce transportation-related emissions. The Plan's compact land use pattern facilitates human powered circulation, especially for those who live on campus. The proposed increase in campus housing (40 percent of the undergraduate population) also reduces the need for auto use and transit services.



Energy and Emissions

The Virginia Tech Climate Action Commitment (VTCAC) and Sustainability Plans set out the following goals relative to energy and emissions:

- Emissions Goal: reduce emissions to 80 percent of 1990 levels by 2050
- Renewable Energy Goal: informal goal to provide 10 percent renewable energy
- Fuel Source Goal: 80 percent natural gas; 20 percent coal

The projected population growth and increases in total campus square footage present challenges to meeting these energy consumption and emissions reduction goals. The challenge is complicated by potential increases in energy intensive research lab space.

In response, a series of passive and active energy reduction, fuel source and renewable energy strategies are required.

Active energy and emissions reduction strategies include transitioning the power plant fuel source from coal to natural gas and the possibility of constructing a new power plant in the Smart Design and Construction Village. The new plant, known as the Smart Energy Park, offers the opportunity to build an efficient state-of-the art natural gas facility associated with the smart grid and intelligent infrastructure research objectives. Incorporating supplemental renewable energy such as solar, wind, or geothermal also provides educational and research opportunities. Virginia Tech's focus on intelligent buildings and infrastructure, coupled with its strengths in engineering and architecture provide opportunities for

integrating visible sustainability initiatives and technologies that reduce energy use and emissions. In response, it is recommended that the University consider the following strategies:

- Building Utilization: Utilize existing building space efficiently, recognizing the connection between space, energy, and emissions. All campus space consumes energy and, therefore, contributes to total emissions. This requires a new mindset with regard to the true cost of space.
- Passive Solar: Orient buildings to optimize passive solar benefits.
- Solar Hot Water and Photovoltaics (PV): Incorporate solar hot water and photovoltaic technology in proposed buildings and existing building retrofits.
- Landscape (Shade) Strategy: Deliberately plant trees to reduce the heat islands adjacent to buildings, in gathering areas, and on the east and west facades of buildings.
- Mobility: Emphasize pedestrian, bike and transit mobility with the goal of shifting the modal split toward lower carbon intensive forms of transportation.
- Improve the Energy Performance of Existing Buildings: Reduce energy consumption when deferred maintenance issues are addressed. The energy usage intensity (EUI) of existing buildings needs to be decreased or stabilized as existing buildings and systems are remodeled.
- Establish Target EUI for New Construction: Establish EUI targets for all proposed building types in support of energy and emissions planning objectives. Consider net zero building opportunities as appropriate.

08

Phasing & Utilities

Phasing & Utilities

Implementation of Master Plan recommendations relies on a strong understanding of project phasing and utility needs.

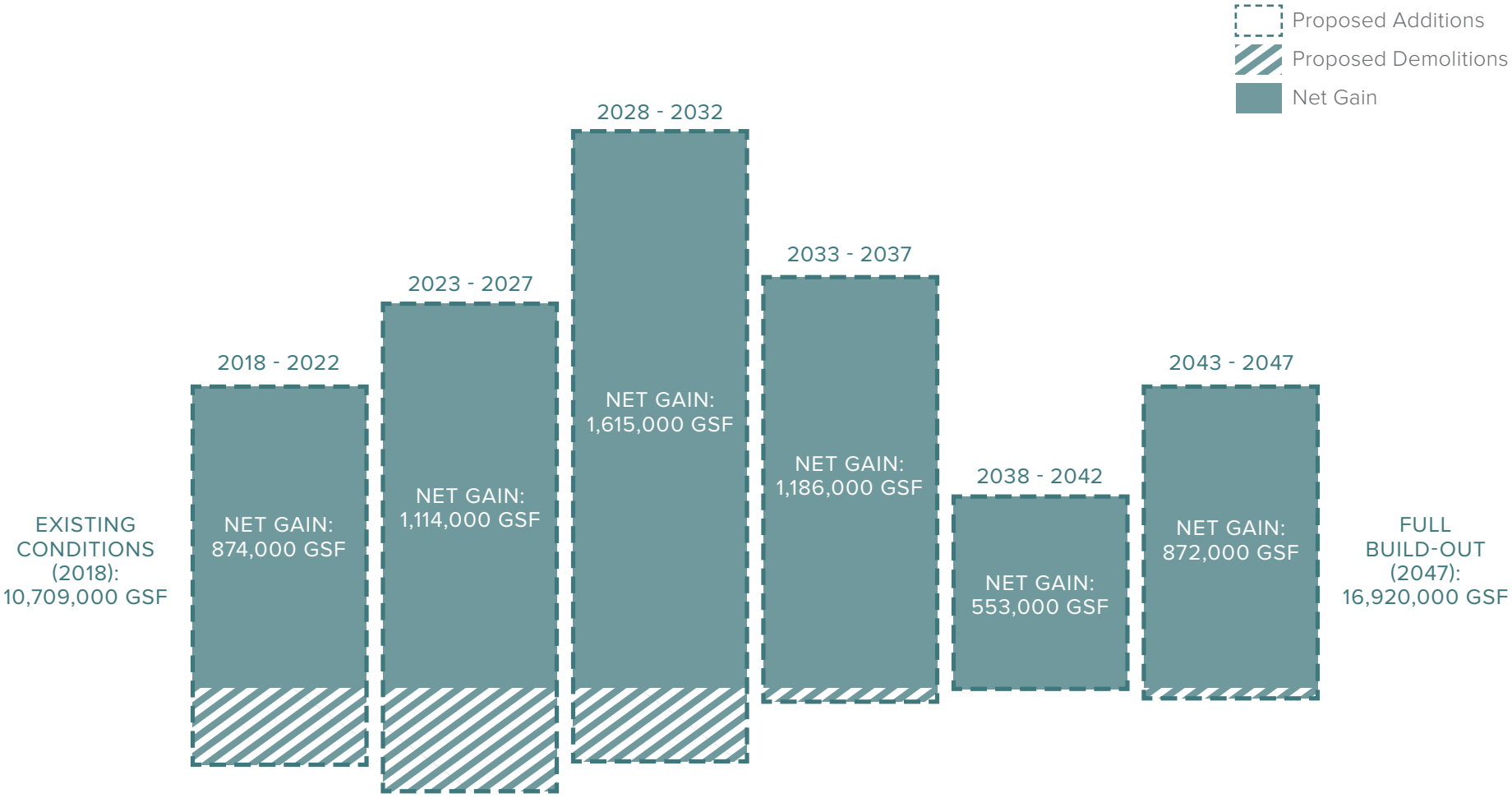
This chapter lays out the high-level phasing strategy for proposed development, illustrating the pace of overall development. It also reviews appropriate locations for the expansion of critical infrastructure capacity.

Proposed Development Phasing

Proposed developments are phased to achieve programmatic goals while balancing capital planning considerations. Short term developments either already have funding allocated or are currently being reviewed for inclusion in upcoming capital outlay plans.

Over the next five years, approximately 1,093,000 gross square feet (GSF) of development is proposed, accompanied by 219,000 GSF of demolition. The resulting net gain of 874,000 GSF represents an 8.2% expansion of development on campus. The graphic to the right illustrates the net gain in GSF for subsequent five-year increments, the largest of which is the 1,615,000 GSF projected to be completed 10-15 years from today.

In 2047, once all Master Plan projects are complete, Virginia Tech will have added 6,211,000 GSF of development, an increase of approximately 58%. Of course, as funding, programmatic, and operational conditions change over the coming years, the University will continue to review projected completion dates and adjust the development phasing accordingly.



PROPOSED DEVELOPMENT PHASING

FIVE-YEAR INCREMENTS

RECENTLY COMPLETED & ACTIVE PROJECTS

Several projects intended to achieve the goals of the Master Plan have recently been completed, while many others are currently underway.

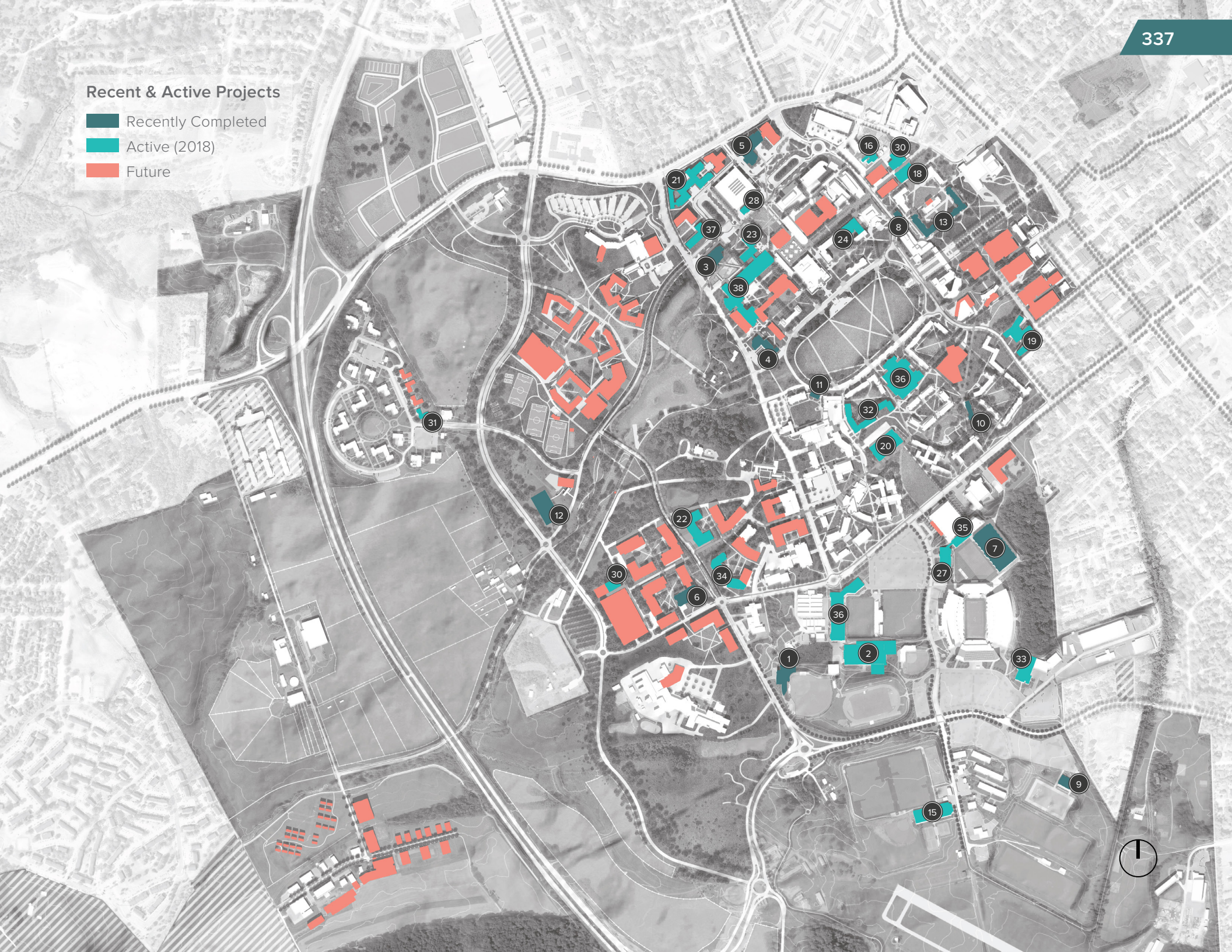
These projects range in scale and scope and are in several different stages of development. The following list enumerates these projects, and the adjacent map highlights their location on campus.

Recently Completed Projects

1. Athletics Facility Improvements - Baseball Facilities
2. Athletics Facility Improvements - Rector Field House
3. Classroom Building
4. Davidson Hall Renovation
5. Goodwin Hall
6. Human & Agricultural Biosciences Building I (HABBI)
7. Indoor Athletic Training Facility
8. Liberal Arts Building Renovation
9. Marching Virginians Practice Facility
10. O'Shaughnessy Hall Renovation
11. Sandy Hall Renovation
12. Unmanned Aerial Vehicle (UAV) Testing Facility
13. Upper Quad Residenital Facilities (New Cadet and Pearson Halls)

Active Projects

14. ACC Network Studio [*Not Shown*]
15. Athletic Facilities Improvements - Tennis Facilities
16. Chiller Plant Phase II
17. Commonwealth Ballroom Improvements [*Not Shown*]
18. Corps Leadership and Military Science Building
19. Creativity & Innovation District Living Learning Community
20. Dietrick First Floor & Plaza Renovation Project
21. Global Business and Analytics Complex (GBAC)
22. Global Systems Sciences (GSS)
23. Hitt Hall and Intellegent Infrastructure Complex
24. Holden Hall Renovation
25. Kentland Facilities [*Not Shown*]
26. Livestock and Poultry Research Facilities I [*Not Shown*]
27. Merryman Center Weight Room Renovation & Expansion
28. Multi-Modal Transit Facility
29. Northern Virginia Academic Center Site Redevelopment (PPEA) [*Not Shown*]
30. Package Boiler 12 (Central Heating Plant)
31. Phi Gamma Delta House (Oak Lane Phase IV)
32. Slusher Hall Replacement Planning
33. Southgate Center Food Processing Facility Renovation
34. Steger Hall Hokie Stone Repairs & Betterment
35. Student-Athlete Performance Center
36. Student Wellness Improvements (McComas Hall and War Memorial Hall)
37. Undergraduate Science Laboratories - New Construction
38. Undergraduate Science Laboratories - Renovations (Derring Hall & Hahn Hall)
39. VT Carilion (VTC Biomedical Research Expansion) [*Not Shown*]


Recent & Active Projects
Recently Completed
Active (2018)
Future

UTILITIES

The Master Plan recommends several utility improvements needed to support proposed increases in development.

Impacted utilities include chilled water (building cooling) and energy production. Existing facilities are nearing full capacity, requiring the construction of new facilities. These facilities must be located in areas that are proximate to proposed development, while also preserving the campus character.

The siting of facilities illustrated here have been developed in conjunction with ongoing utility and infrastructure routing projects to ensure efficient and effective delivery of service.

Refer to the Utilities and Infrastructure chapter of the separately documented *Technical Appendix* for more information.

Proposed Utility Plants

MODULAR (SHORT TERM) CHILLED WATER PLANTS

As chilled water demand increases due to upcoming development projects, additional capacity will be needed. Modular chilled water plants, roughly the size of a semi-trailer, can be installed as a grouping in the near term to avoid funding and siting concerns associated with more permanent facilities. Because short-term development is largely projected to occur in the Creativity and Innovation District, proposed chilled water capacity must be proximate to this location. Therefore, the existing surface parking lot at Washington Street and Beamer Way is noted as a potential location, pending further study.

CHILLED WATER PLANT 1

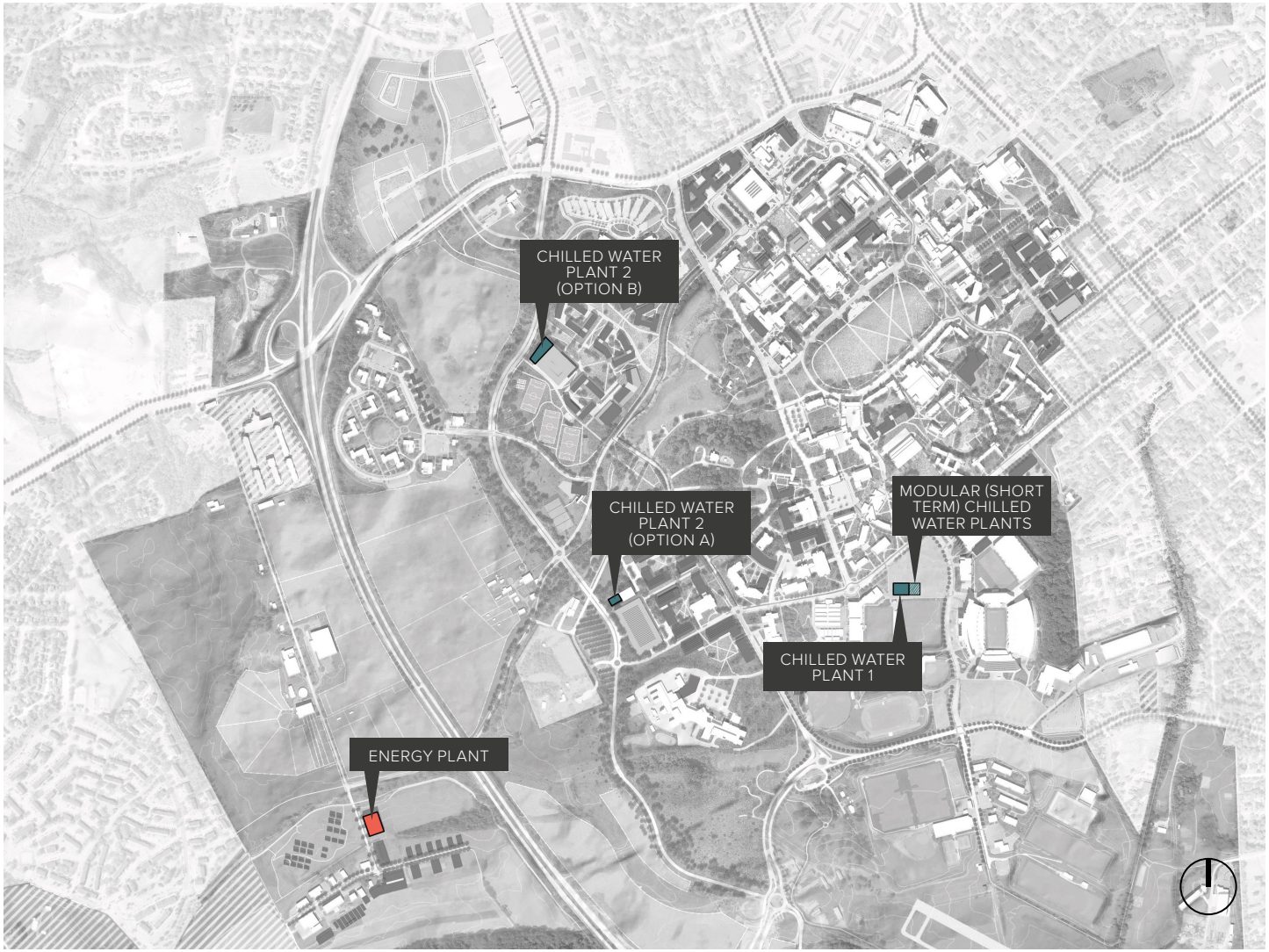
Eventually, demand will exceed even the added capacity of the modular chilled water plants, and a permanent facility will be required—likely by the year 2028. Again, because continued development will largely occur in the eastern portions of campus, the Washington-Beamer surface lot could serve as a possible location. In this scenario, the permanent plant could be constructed adjacent to the modular plants. Once the permanent plant is operational, the modular plants could be removed and replaced with a parking structure to offset the parking spaces displaced by the permanent plant.

CHILLED WATER PLANT 2

As the campus continues to expand, an additional chilled water plant will be needed. This long-term facility should be located near the area of campus where development is most pressing. Therefore, two possible locations are suggested in the Master Plan. Option A, an expansion of the existing Southwest Chiller Plant, should be selected if development pressure is strongest in the Life Sciences & Technology District. Conversely, if the 21st Century Living-Learning District is experiencing more rapid development, Option B, which integrates a plant into the proposed parking garage, should be considered.

ENERGY PLANT

In addition to chilled water demand, increased campus development will also require additional energy capacity. Siting a new energy plant in the Smart Design and Construction Village places this large facility in an area where it will not detract from the character of the core campus while simultaneously providing the opportunity for research and innovation related to the programming of the Smart Village. Should distribution costs make this location unviable, a second, less preferred location exists north of the Life Sciences & Technology District the proposed research facilities and Smithfield Road.



Proposed Utility Plants

- Modular (short-term) Chilled Water Plants
- Permanent (long-term) Chilled Water Plants
- Energy Plant

PROPOSED UTILITY PLANTS

09

Appendices

APPENDIX 01: HISTORIC RESOURCES SURVEY

Virginia Tech celebrates the legacy of its historic resources and recognizes the importance of properly managing these resources for future generations.

Methodology

The purpose of this survey is to identify historic structures that are valued by the University for specific architectural or cultural significance and to establish a baseline guide for initial understanding of the resource in the context of the Master Plan and for future work. The survey does not specifically address landscapes and water features, nor resources listed as eligible but not registered.

- Identify all structures state-wide owned by the University which are listed on the Virginia Landmarks Register or National Historic Register.
- Identify ages of all structures on main campus and categorize in 10-year periods.
- Define categories of significance, review all structures state-wide under each category, and assign category where applies.
- Develop informational mapping of data.

Categories and Definitions

Three categories are defined: Historic, Legacy, and Legacy Contributing.

HISTORIC REGISTER

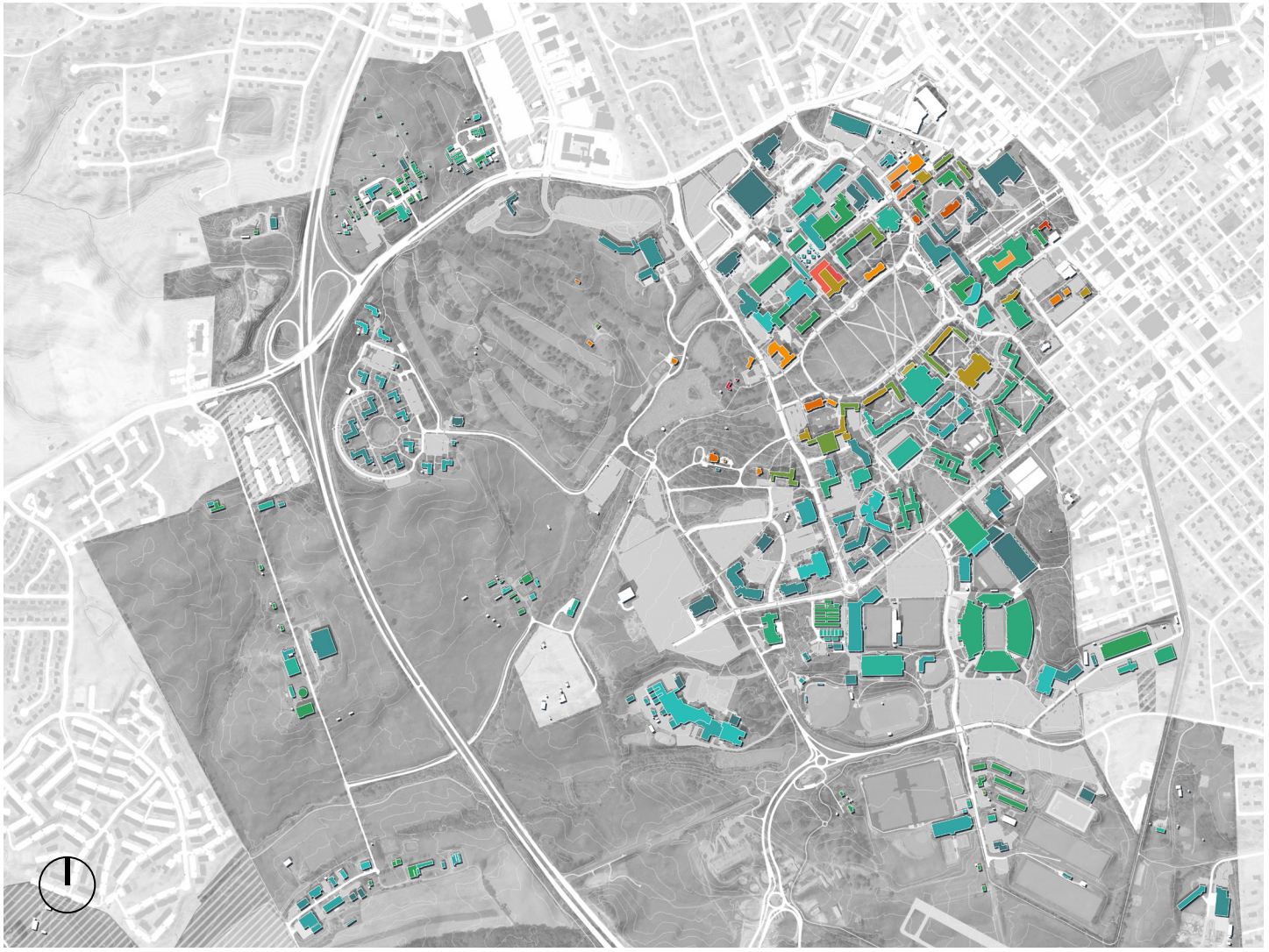
The resource is listed on the Virginia Landmarks Register, National Historic Register or is a National Historic Landmark. The resource is of significant architectural or cultural value and the University is dedicated to servicing and maintaining it. Character defining features, such as historic exterior, interior, or landscape elements, or elements of historic significance, shall be preserved, restored or maintained. Proposed additions or alterations shall comply with the Secretary of Interiors Standards for the Treatment of Historic Properties and Guidelines.

LEGACY

The resource is not listed on the Virginia Landmarks Register or the National Historic Register, but has significant architectural or cultural value to the University, and as such, the University is dedicated to servicing and maintaining it, unless there is a significant and compelling reason to do otherwise. Character defining features include exterior elements which establish a basis for campus design standards or locus specific and adapted Collegiate Gothic architectural language, significant interior spaces, landscape features, or site placement which establish a basis for campus landscape structure, or specific cultural historical value.

LEGACY CONTRIBUTING

The resource is not listed on the Virginia Landmarks Register or the National Historic Register, but adds architectural or cultural value to the University, and as such, the University is dedicated the servicing and maintaining it, unless there is a significant and compelling reason to do otherwise. Character defining features include exterior elements which reinforce the basis for campus design standards or locus specific and adapted Collegiate Gothic architectural language as set by Legacy structures, landscape features, or site placement which reinforce the basis for campus landscape structure as set by Legacy structures, or the resource contributes to the overall cultural historical value of the University.



CAMPUS BUILDINGS BY DECADE BUILT

Blacksburg Campus

The Historic Resources Survey identifies several buildings on the Blacksburg Campus that contribute to the historic legacy of the campus due to their age, quality, or style. These facilities include:

HISTORIC REGISTER

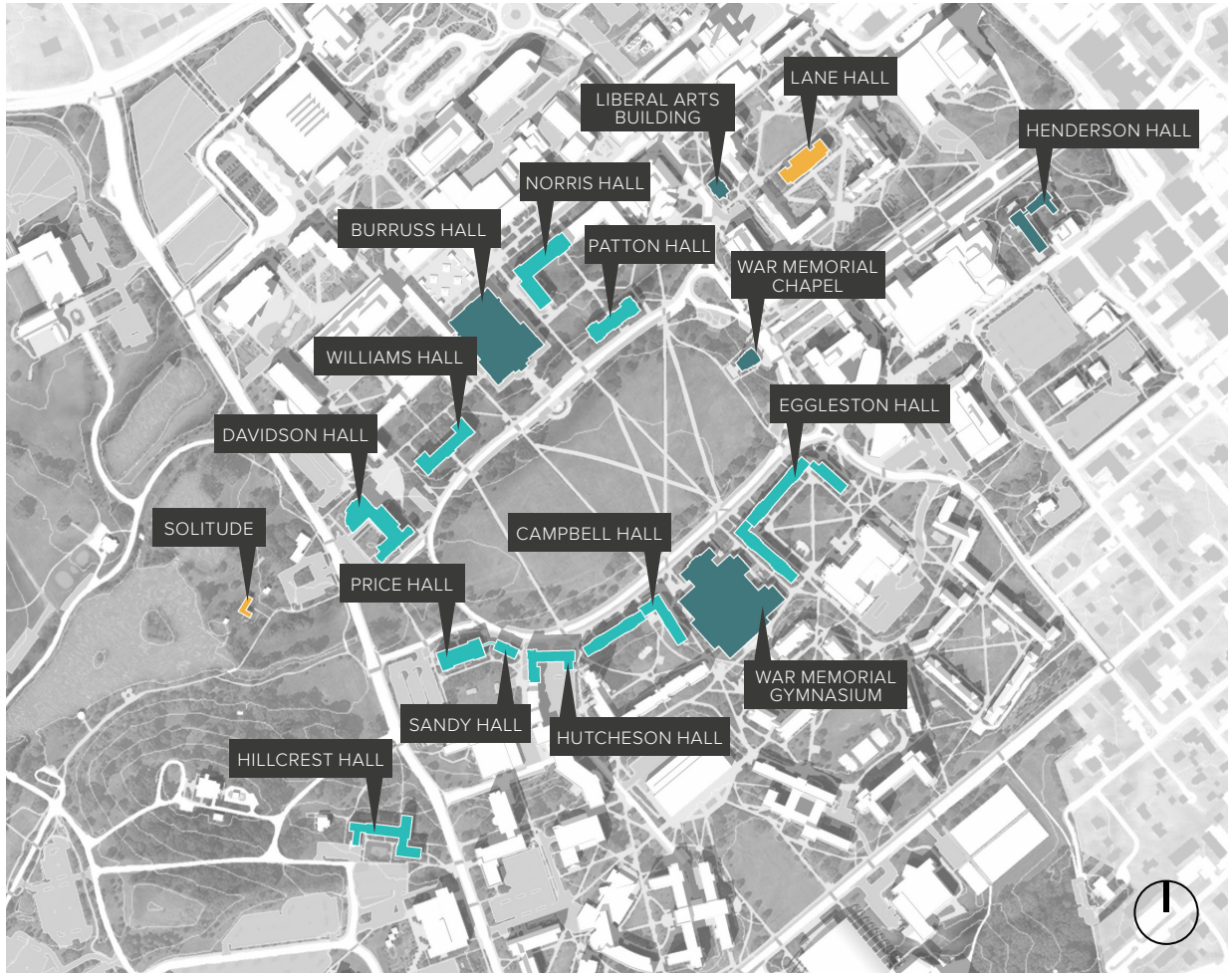
- Lane Hall
- Solitude

LEGACY

- Burruss Hall
- Henderson Hall
- Liberal Arts Building
- War Memorial Chapel
- War Memorial Gymnasium

LEGACY CONTRIBUTING

- Campbell Hall
- Davidson Hall
- Eggleston Hall
- Hillcrest Hall
- Hutcheson Hall
- Norris Hall
- Patton Hall
- Price Hall
- Sandy Hall
- Williams Hall



HISTORIC RESOURCES: *BLACKSBURG CAMPUS*

Kentland Farm

Kentland Farm, located approximately eight miles west of the Blacksburg Campus on New River, is part of the College of Agriculture and Life Sciences College Farm Operation. Facilities at Kentland Farm identified as historic resources include:

HISTORIC REGISTER

- Manor House
- Smoke House



Historic Register

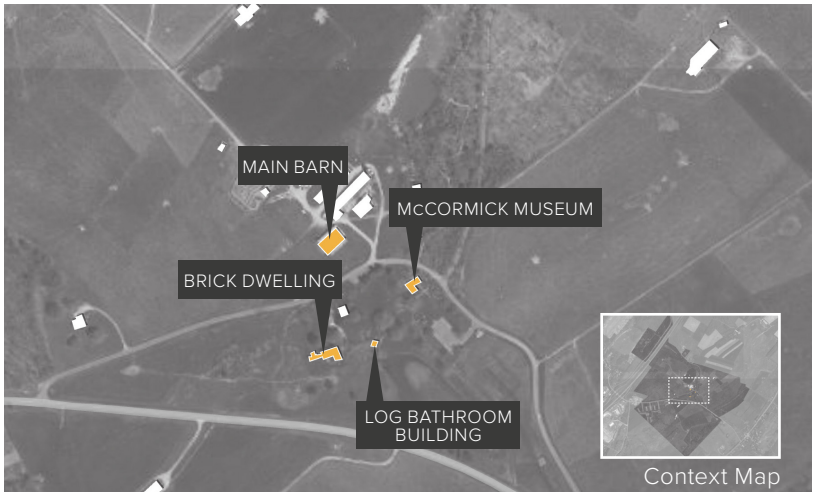
HISTORIC RESOURCES: *KENTLAND FARM*

Shenandoah Valley AREC

The Shenandoah Valley Agricultural Research and Extension Center (AREC) is located about 100 miles northeast of Blacksburg along the Interstate 64/81 Corridor. Facilities at the Shenandoah Valley AREC identified as historic resources include:

HISTORIC REGISTER

- Brick Dwelling
- Log Bathroom Building
- Main Barn
- McCormick Museum



Historic Register

HISTORIC RESOURCES: *SHENANDOAH VALLEY AREC*

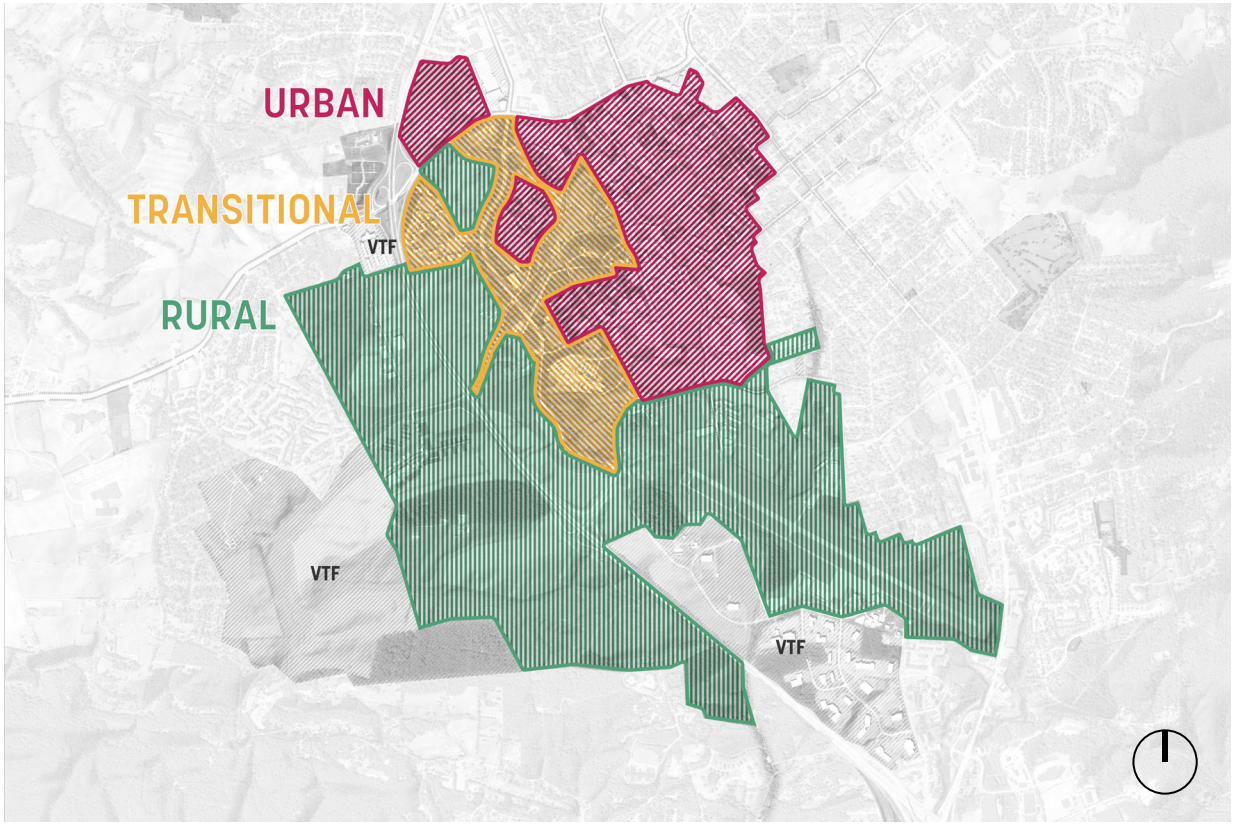
APPENDIX 02: STORMWATER BMP PRECEDENTS

Virginia Tech's campus can serve as a national showcase for innovative and holistic stormwater management.

This comprehensive strategy organizes the Virginia Department of Environmental Quality's (DEQ) best management strategies (BMPs) into stormwater management zones—Urban, Transitional, and Rural—aimed at shaping the visual character of selected improvements (refer to Landscape Framework of this report).

DEQ's BMPs include:

1. Rooftop Disconnection
2. Sheetflow
3. Grass Channel
4. Soil Amendments
5. Vegetated Roof
6. Rainwater Harvesting
7. Permeable Pavement
8. Infiltration
9. Bioretention
10. Dry Swale
11. Wet Swale
12. Filtering Practice
13. Constructed Wetland
14. Wet Pond
15. Extended Detention Pond



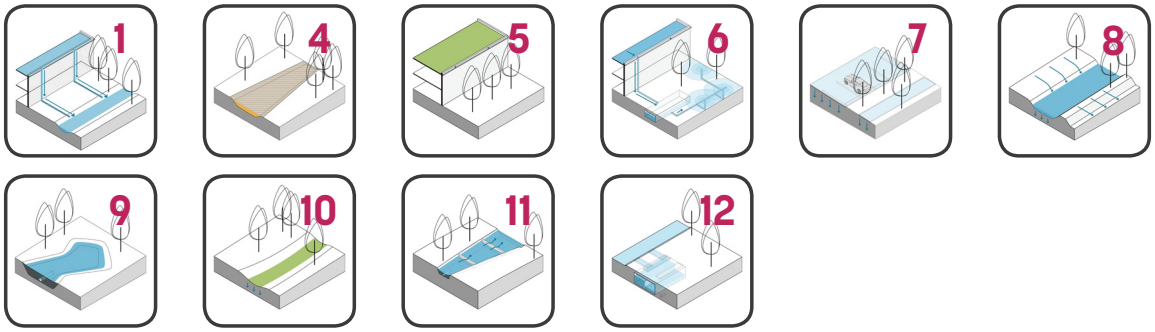
Stormwater Management Zones

BMP Matrix and Precedents

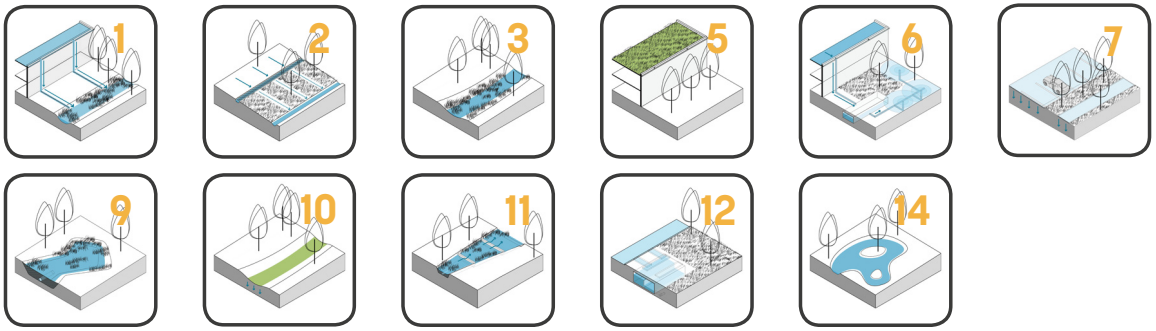
The matrix seen here indicates the BMPs most appropriate for each management zone. Detailed information about each BMP is available in the Stormwater Management Plan included in the separate Technical Appendix of the Master Plan.

The following pages illustrate precedent images highlighting built applications of BMPs similar to those in this matrix and describe considerations for aligning each BMP's

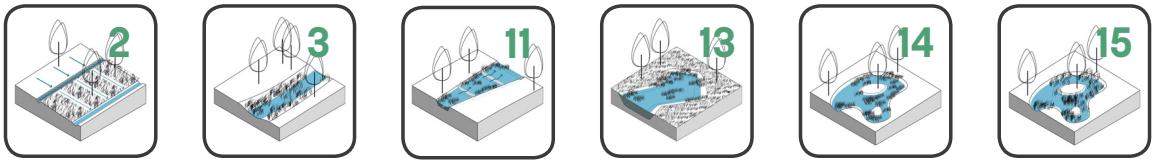
A URBAN
Selective Strategies for the Core Campus



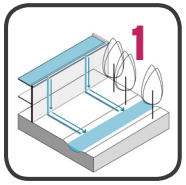
B TRANSITIONAL
Deploying BMPs at the Campus Crossroads



C RURAL
Enhancing the Land Grant Mission



A URBAN
Selective Strategies for the Core Campus



Rooftop Disconnection

SUMMARY

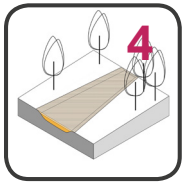
Runoff directed towards pervious areas rather than storm sewer system.

APPLICATION

In urban settings, this BMP takes the form of linear planters along building edges.



Bristol Community College Sbrega Hall
Fall River, MA
Image Credit: Edward Caruso



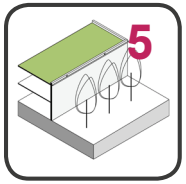
Soil Amendments

SUMMARY

Tilling and amending of compacted soils with compost.

APPLICATION

The regeneration of existing planting beds through soil amendment can introduce infiltration in an otherwise compacted landscape.



Vegetated Roof

SUMMARY

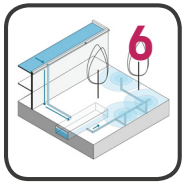
Evapo-transpiration of rooftop plantings reduces runoff rates.

APPLICATION

On roofs with public access, stormwater management is integrated with amenities like seating and gathering spaces.



Northeastern University International Village
Boston, MA
Image Credit: Stephen Stimson Associates



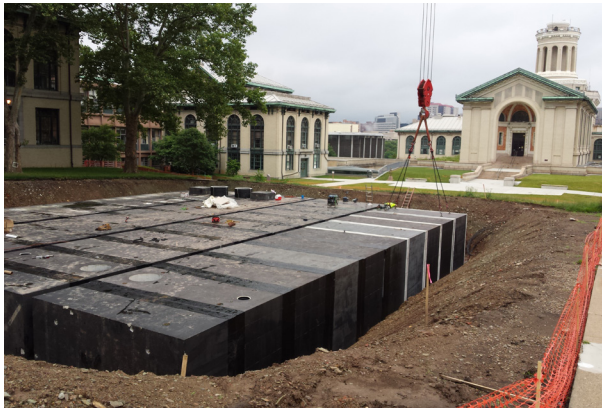
Rainwater Harvesting

SUMMARY

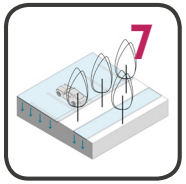
Intercepts, stores, and retains roof water for future use.

APPLICATION

Can be above ground to showcase intervention or below ground to increase capacity while preserving active landscape uses.



Carnegie Mellon University Mall Rainwater System
Pittsburgh, PA
Image Credit: Carnegie Mellon University



Permeable Pavement

SUMMARY

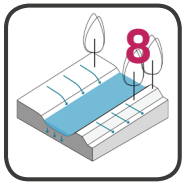
Porous paving units allow infiltration through paved areas. Challenges include maintenance and sensitivity of regional karst topography.

APPLICATION

Due to maintenance costs, this BMP is best reserved for high priority, high traffic areas where other BMPs are not appropriate.



Pedestrian Walkway with Permeable Pavement
Image Credit: Unilock



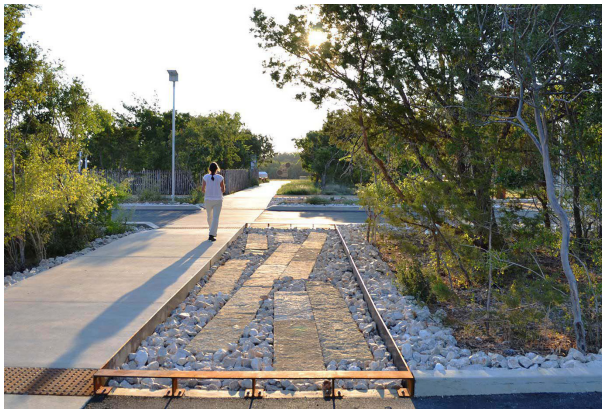
Infiltration

SUMMARY

Temporary surface or underground storage allows incoming runoff to exfiltrate into underlying soils. Not permitted by DEQ in areas of shallow karst geology.

APPLICATION

Specially designed landscape beds mix aesthetic amenity with porous substrates to achieve infiltration.



Phil Hardberger Park
San Antonio, TX
Image Credit: Stephen Stimson Associates



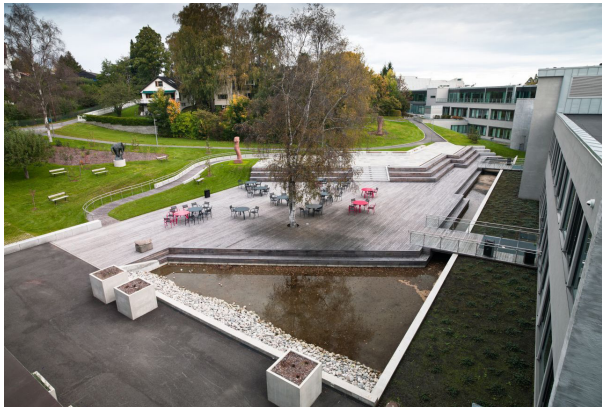
Bioretention

SUMMARY

Shallow landscaped area designed to mimic a forest ecosystem; must have impervious liners and underdrains.

APPLICATION

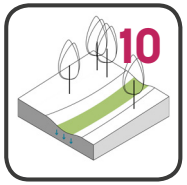
More appropriate in areas with sensitive subsoils, these interventions remain wet after large rains to leverage stormwater for visual interest and ecological services.



Storebrand Offices
Lysaker, Norway
Image Credit: Hundven-Clements Photography



Martin Luther King Park
Paris, France
Image Credit: Martin Ar



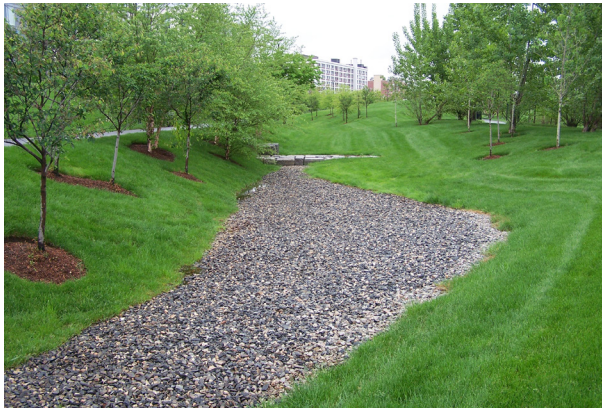
Dry Swale

SUMMARY

A linear bioretention facility.

APPLICATION

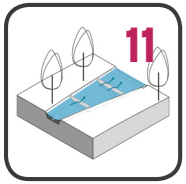
Best used along major circulation routes and roadways, dry swales often utilize stone to fortify low points.



North Point Park
Boston, MA
Image Credit: Ian Scherling



Bristol Community College Sbrega Hall
Fall River, MA
Image Credit: Ian Scherling



Wet Swale

SUMMARY

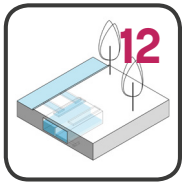
A linear combination of a swale and a wetland.

APPLICATION

Designed as landscaped runnels and often incorporating a series of weirs to slow water flow, urban wet swales become architectural features in the landscape.



Parco Dora
Turin, Italy
Image Credit: Andrea Serra



Filtering Practice

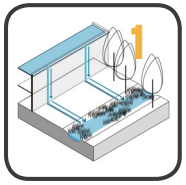
SUMMARY

A sand filter with a turf surface.

APPLICATION

Utilizing underground filtration, these urban features are able to support more active lawn uses above.

B TRANSITIONAL
Deploying BMPs at the Campus Crossroads



Rooftop Disconnection

SUMMARY

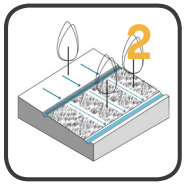
Runoff directed towards pervious areas rather than storm sewer system

APPLICATION

Transitional rooftop disconnects are similar to their urban counterparts and are associated with building edges and walkways.



Bristol Community College Sbrega Hall
Fall River, MA
Image Credit: Ian Scherling



Sheetflow

SUMMARY

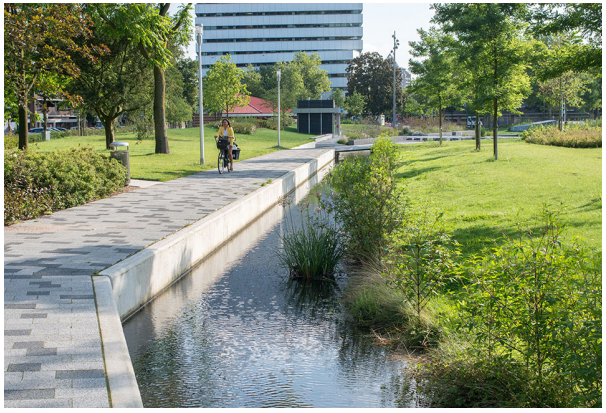
Runoff from impervious and turf areas drains through native vegetation and undisturbed soils.

APPLICATION

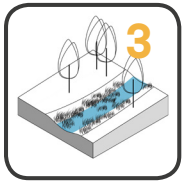
Utilizing wider stretches of open landscape, sheetflow interventions terminate in pastoral waterways during and after rain events.



Westergasfabreik
Amsterdam, Netherlands
Image Credit: Thomas Schlijper



Catharina Amalia Park
Apeldoorn, Netherlands
Image Credit: Annie Beugel



Grass Channel

SUMMARY

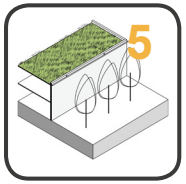
Linear turfgrass swale slows and filters runoff.

APPLICATION

Transitional grass channels should be more open and natural than their urban counterparts, while still maintaining a low-profile appearance.



Quirijn Park
Tilburg, Netherlands
Image Credit: karres+brands



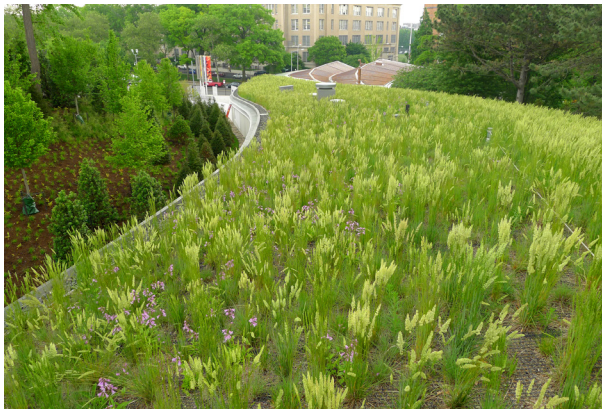
Vegetated Roof

SUMMARY

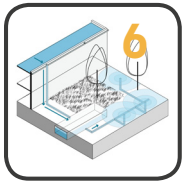
Evapo-transpiration of rooftop plantings reduces runoff rates.

APPLICATION

Rooftops in transitional zones may have fewer active uses, allowing vegetated roofs to cover more area and provide additional evapo-transpiration surface area.



Brooklyn Botanical Garden Visitor's Center
Brooklyn, NY
Image Credit: Aaron Booher



Rainwater Harvesting

SUMMARY

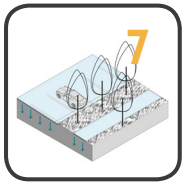
Intercepts, stores, and retains roof runoff for future use

APPLICATION

In transitional settings, more room is available for above ground interventions, saving on installation and maintenance costs.



Rainwater Harvesting System
Image Credit: BMT WBM



Permeable Pavement

SUMMARY

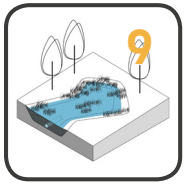
Porous paving units allow infiltration through paved areas. Challenges include maintenance and sensitivity of regional karst topography.

APPLICATION

Transitional applications of permeable pavement include areas with large paving surfaces, such as parking lots.



Parking Lot with Permeable Pavement
Image Credit: NGE



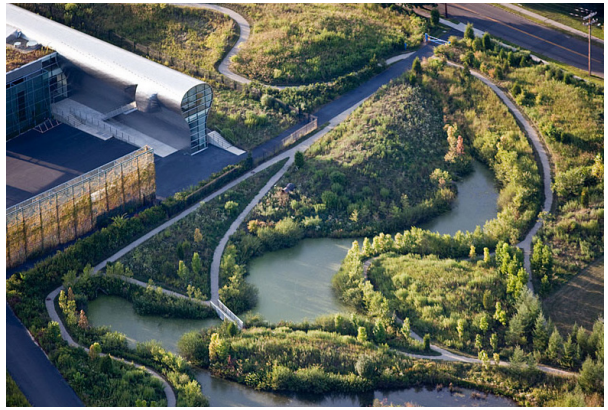
Bioretention

SUMMARY

Shallow landscaped area designed to mimic a forested ecosystem; must have impervious liners and underdrains.

APPLICATION

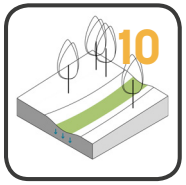
Transitional bioretention BMPs take on a more pastoral feel than their urban counterparts and can incorporate recreational trail systems.



Connecticut Water Treatment Facility
New Haven, CT
Image Credit: Alex MacLean



Rogers Environmental Studies Magnet School
Stamford, CT
Image Credit: Paul Warchol Photography



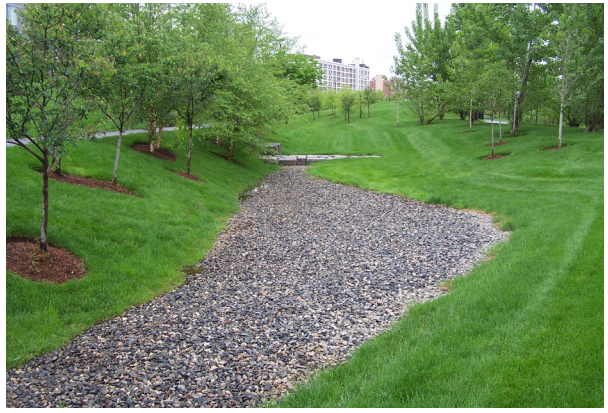
Dry Swale

SUMMARY

A linear bioretention facility.

APPLICATION

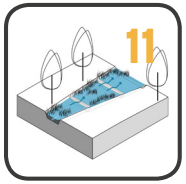
In transitional areas, dry swales form parkways associated with roads and trails.



North Point Park
Boston, MA
Image Credit: Ian Scherling



North Point Park
Boston, MA
Image Credit: Ian Scherling



Wet Swale

SUMMARY

A linear combination of a swale and a wetland.

APPLICATION

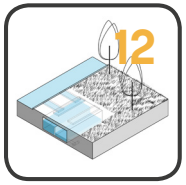
Transitional applications utilize more natural plantings than urban swales, but still provide visual and physical access.



Renaturation of the River Aire
Geneva, Switzerland
Image Credit: Superpositions



Bottière Chênaie
Nantes, France
Image Credit: Bruel-Delmar



Filtering Practice

SUMMARY

A Sand filter with a turf surface.

APPLICATION

In transitional areas, these BMPs generally have greater surface area and can utilize less structured filters.



Wet Pond

SUMMARY

Permanent pool of standing water for gravitational settling.

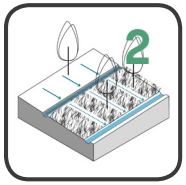
APPLICATION

Transitional wet ponds can be incorporated with building and open space designs to create serene landscape amenities.



CALS Children's Library
Little Rock, AR
Image Credit: Tim Hursley

C RURAL
Enhancing the Land Grant Mission



Sheetflow

SUMMARY

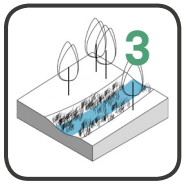
Runoff from impervious and turf areas drains through native vegetation and undisturbed soils.

APPLICATION

Rural areas on campus are prime candidates for sheetflow intervention through the preservation and enhancement of existing natural areas.



Wenying Park
Datong, China
Image Credit: AECOM



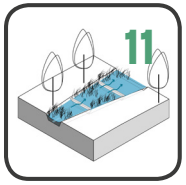
Grass Channel

SUMMARY

Linear turfgrass swale slows and filters runoff.

APPLICATION

Rural grass channels take on a very natural appearance and incorporate native planting palettes.



Wet Swale

SUMMARY

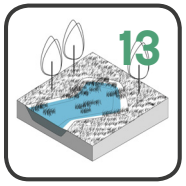
A linear combination of a swale and a wetland.

APPLICATION

As with many other rural BMPs, wet swales can take the form of larger landscape elements on the campus periphery.



Mill River Park
Stamford, CT
Image Credit: Sahar Coston-Hardy



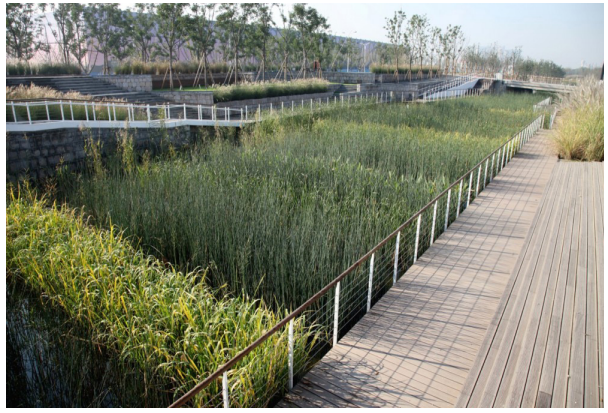
Constructed Wetland

SUMMARY

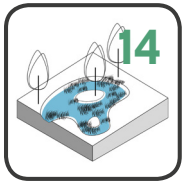
Designed to mimic a natural wetland ecosystem.

APPLICATION

Most appropriate in low-lying areas associated with existing BMPs and water bodies such as the Duck Pond.



Shanghai Houtan Park
Shanghai, China
Image Credit: Peter Vanderwarker



Wet Pond

SUMMARY

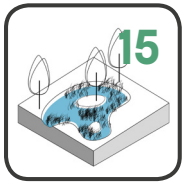
Permanent pool of standing water for gravitational settling.

APPLICATION

When combined with pedestrian areas, ponds can serve as both management tools and gathering areas.



Martin Luther King Park
Paris, France
Image Credit: Arnauld Duboys Fresney



Extended Detention Pond

SUMMARY

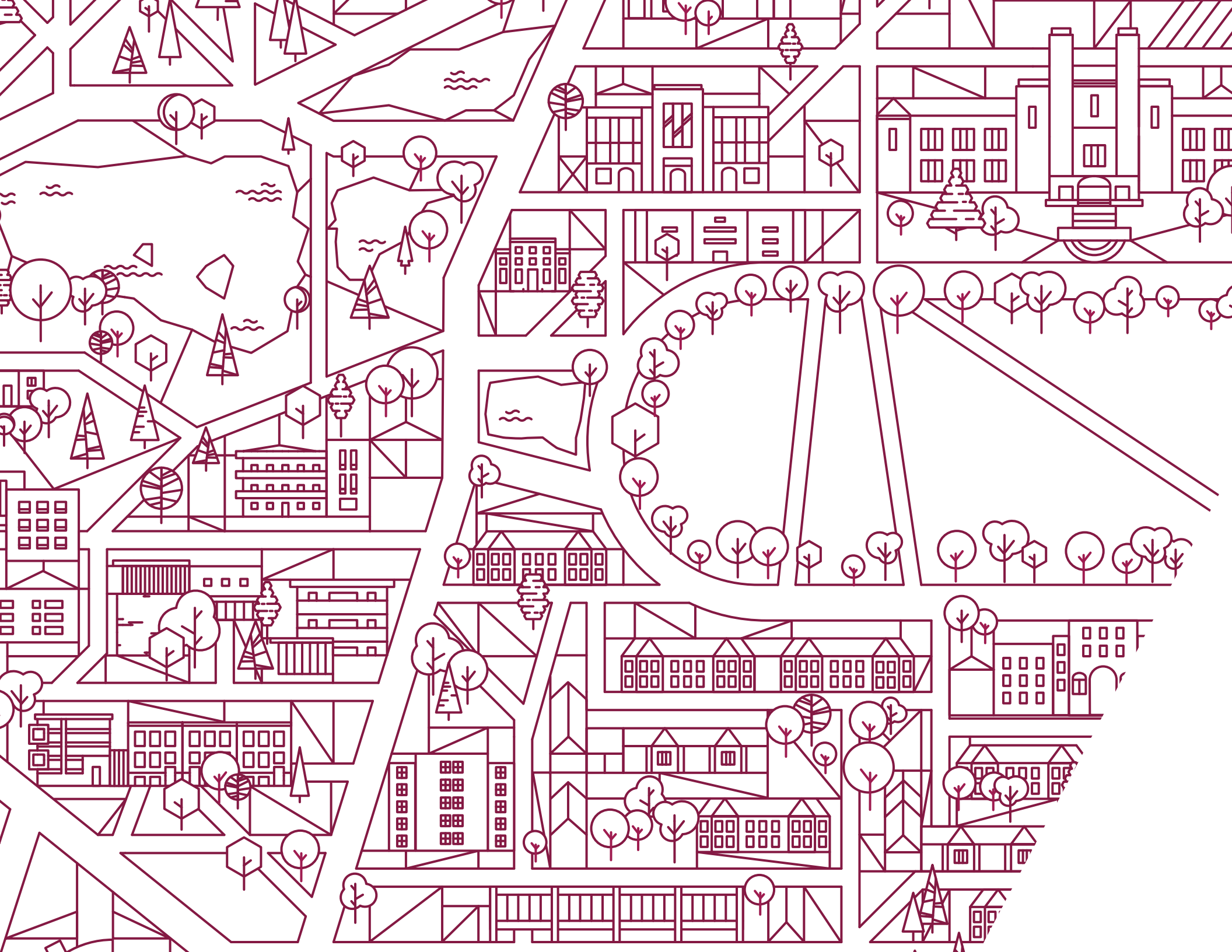
Temporary (12-24 hour) detention of runoff regulated by undersized outlet structure.

APPLICATION

These flexible BMPs can remain wet for up to a day, but eventually drain to reveal naturalized landscape plantings.



Alumnae Valley Restoration
Wellesley, MA
Image Credit: Peter Vanderwarker





Beyond Boundaries 2047: The Campus Plan positions Virginia Tech as a premier global institution of higher learning, research, and innovation.

THE BLACKSBURG CAMPUS PLAN: **EXISTING & PROPOSED FACILITIES**

Existing Facility | **Proposed Facility**

NORTH ACADEMIC DISTRICT

1. Bishop-Favrao
2. Burchard Hall
3. Burruss Hall
4. Davidson Hall
5. Derring Hall
6. Durham Hall
7. **Future Development Site**
8. **Future Science Building**
9. **Future Science Lab**
10. G. Burke Johnston Student Center
11. **Global Business Analysis Complex**
12. Goodwin Hall
13. **Goodwin Hall Expansion**
14. Hahn Hall (north wing)
15. Hahn Hall (south wing)
16. **Hahn Hall Expansion**
17. Hancock Hall
18. **Hitt Hall**
19. Holden Hall
20. **Intelligent Infrastructure Fusion Lab**
21. Kelly Hall
22. Lavery Hall
23. McBryde Hall
24. **Multi-Modal Transit Facility**
25. New Classroom Building
26. **New Holden Hall**
27. **New Randolph Hall**
28. Norris Hall
29. **North Academic Commons** (Cowgill)
30. Pamplin Hall
31. Patton Hall
32. Perry Street Garage
33. Robeson Hall
34. **Undergraduate Science Lab**
35. Whittemore Hall
36. Williams Hall

NORTHEAST & UPPER QUAD DISTRICT

37. **Corps Leadership & Military Science**
38. **Future Academic**
39. **Future Engineering Lab**
40. Lane Hall
41. **Lane Hall Expansion**
42. Liberal Arts Building (YMCA)
43. Major Williams Hall
44. Moss Arts Center
45. New Cadet Hall
46. North Chiller Plant
47. North End Center
48. Pearson Hall
49. Power House
50. Shanks Hall
51. Surge Space Building
52. Torgersen Bridge
53. Torgersen Hall

CREATIVITY & INNOVATION DISTRICT

54. **Architecture and Urban Studies**
55. Armory
56. Bookstore
57. **CID Commons**
58. **CID Garage**
59. **CID Living-Learning Community**
60. Donaldson Brown (Honors College)
61. **Faculty Club @ Donaldson Brown**
62. Henderson Hall
63. **Integrated Design**
64. Media Building
65. **Music and Arts Complex**
66. Newman Library
67. Theater 101
68. **Vignette Square (P3 Building)**

STUDENT LIFE DISTRICT

69. Ambler-Johnston Hall
70. Barringer Hall
71. Campbell Hall
72. Cochrane Hall
73. Dietrick Hall
74. Eggleston Hall
75. Harper Hall
76. Johnson Hall
77. Lee Hall
78. Miles Hall
79. New Hall West
80. **New Owens Hall**
81. New Residence Hall East
82. **New Slusher Hall**
83. Newman Hall
84. O'Shaughnessy Hall
85. Payne Hall
86. Peddrew-Yates Hall
87. Pritchard Hall
88. Smith Career Center
89. Student Services Building
90. Vawter Hall
91. War Memorial Gym

LIFE SCIENCES & TECHNOLOGY DISTRICT

92. Agnew Hall
93. **Cage Lot Garage**
94. Cheatham Hall
95. Engel Hall
96. Food Science & Technology Lab
97. Fralin Biotechnology Center
98. **Future Research / Academic**
99. **Future Science Research 1**
100. **Future Science Research 2**
101. **Future Science Research 3**
102. **Future Science Research 4**
103. **Global Systems Science**
104. Greenhouses
105. HABB I
106. **HABB II (Main)**
107. **HABB II East**
108. **HABB II West**
109. **HABB III (HABB I Expansion)**
110. **HABB IV**
111. **HABB V**
112. Hillcrest Hall
113. **Hillcrest Hall Expansion**
114. Hutcheson Hall
115. ICTAS II
116. **ICTAS II Expansion**
117. Institute for Society, Culture & Environment
118. Latham Hall
119. Life Sciences I Facility
120. Litton-Reaves Hall
121. Price Hall
122. Sandy Hall
123. Saunders Hall
124. Seitz Hall
125. Smyth Hall
126. Southwest Chiller Plant
127. **Southwest Chiller Plant Expansion**
128. Steger Hall
129. **Steger Hall Expansion**
130. Veterinary Medicine
131. **Veterinary Medicine Expansion**
132. Wallace Hall
133. **Wallace Hall Expansion**

ATHLETICS & RECREATION DISTRICT

134. Cassell Coliseum
135. **Cassell Coliseum Expansion**
136. **English Baseball Field Expansion**
137. Hahn-Hurst Basketball Practice Facility
138. Indoor Athletic Training Facility
139. **Jamerson Athletic Center Expansion**
140. Lane Stadium
141. McComas Hall
142. Merryman Athletic Facility
143. Rector Field House
144. **Rector Field House Expansion**
145. Soccer Field Enclosure
146. **Tennis Court Development Site**
147. Weaver Baseball Center
148. Women's Softball Field

21ST CENTURY LIVING-LEARNING DISTRICT

149. **21st Century Commons**
150. **21st Century Dining**
151. **21st Century Garage**
152. **21st Century Living-Learning 1**
153. **21st Century Living-Learning 2**
154. **21st Century Living-Learning 3**
155. **21st Century Living-Learning 4**
156. **21st Century Living-Learning 5**
157. **21st Century Living-Learning 6**
158. **21st Century Recreation**
159. **GBAC Living-Learning 1**
160. **GBAC Living-Learning 2**
161. The Inn at Virginia Tech
162. **The Inn at Virginia Tech Ballroom**
163. **The Inn at Virginia Tech Expansion**

AUTONOMY STUDY PARK & SMART DESIGN AND CONSTRUCTION VILLAGE

164. **High Bay Facility**
165. Kroehling Foundry
166. **Kroehling Foundry Expansion**
167. **Mining and Minerals Engineering Lab**
168. **Multi-Disciplinary Engineering Building**
169. **Smart Energy Park**
170. UAV Testing Facility
171. **Village Housing**

OAK LANE

172. Existing Greek Housing
173. **Proposed Greek Housing**

CENTRAL SPINE

174. Solitude
175. The Grove (President's House)
176. War Memorial Chapel
177. Wright House

STERRETT DRIVE

178. Building 270-J
179. Fleet Services Building
180. Grounds Building
181. Public Safety Building
182. Southgate Center
183. Sterrett Center


Proposed Building
Proposed Garage
Existing Building
PRICES FORK ROAD
STANGER
WEST CAMPUS DRIVE
DRILLFIELD DRIVE
COLLEGE AVENUE
MAIN STREET
OTEY STREET
KENT STREET
WASHINGTON STREET
BEAMER WAY
DUCK POND DRIVE
WESTERN PERIMETER ROAD

NOVEMBER 2018



VIRGINIA TECH | SASAKI