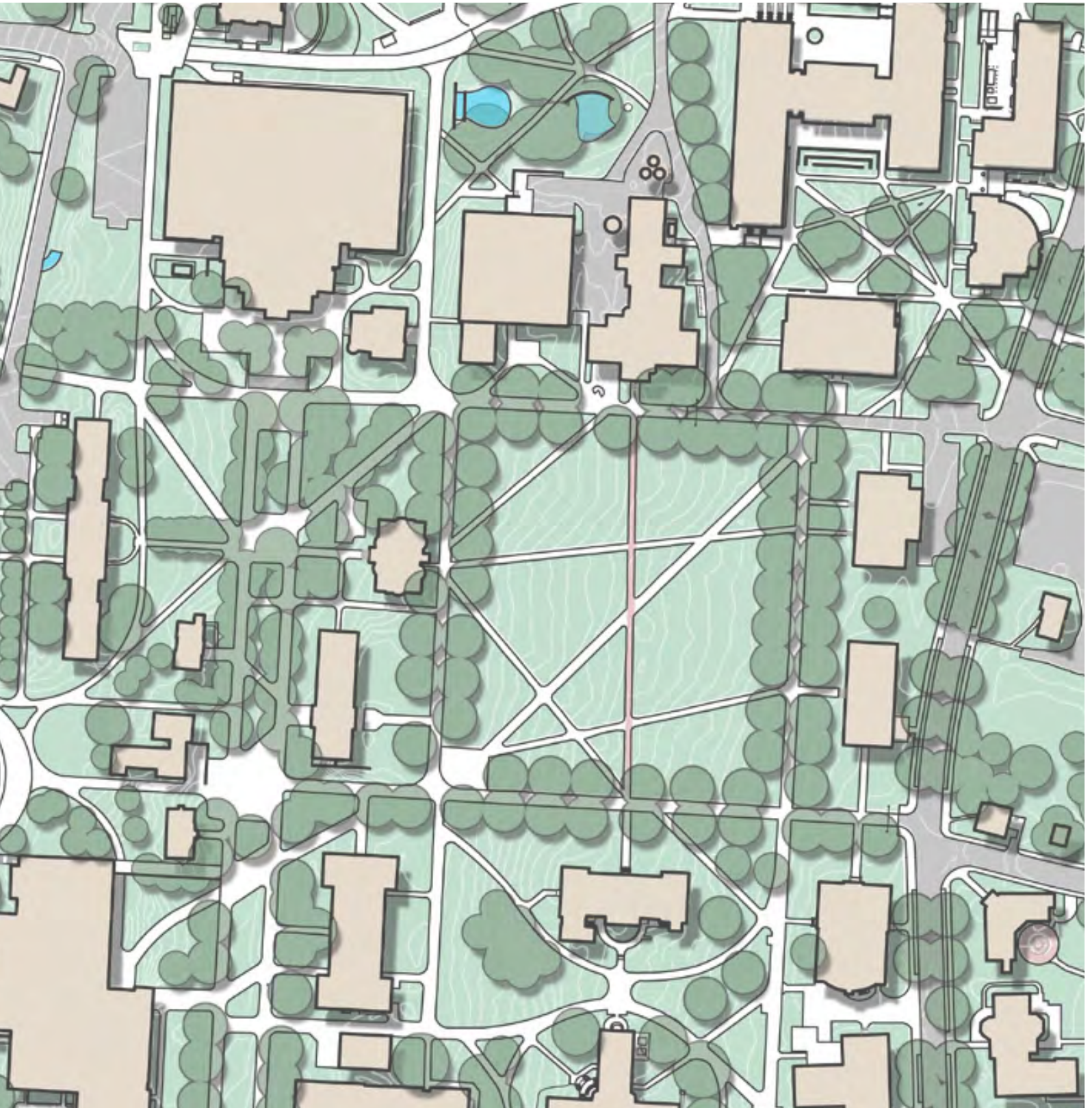


# THE UNIVERSITY OF RHODE ISLAND 2017 LANDSCAPE MASTER PLAN



SEPTEMBER 2017





# LANDSCAPE MASTER PLAN

## TABLE OF CONTENTS

<b>List of Illustrations</b>	<b>iv</b>
<b>2017 Landscape Master Plan</b>	<b>viii</b>
<b>Executive Summary</b>	<b>x</b>
<b>Section 1: Project Introduction</b>	<b>1</b>
1.1. University Mission, Project Vision & Goals	2
1.2. Campus Input & Engagement	4
1.3. Brief History of Campus Development	7
1.4. Campus Districts	14
1.5. Periphery Campus Landscapes	19
1.6. Previous Planning Documents & Planning Projects Underway	24
1.7. URI By the Numbers, 2016-2017	30
<b>Section 2: Existing Conditions</b>	<b>32</b>
2.1. Core Campus Overview	34
2.2. Existing Open Space: Special Places, Public Art & Significant Viewsheds	38
2.3. Existing Natural Systems: Regional Context, Campus Wetland Systems, Undeveloped Areas, Soils, Canopy Cover & Wildlife Habitat	62
2.4. Existing Stormwater Management & Green Infrastructure	84
2.5. Existing Pedestrian Experience: Significant Walkways, Accessibility & Desire Lines	94
2.6. Existing Vehicular Connections: Campus Gateways, Campus Roads, Transit & Bicycles and Skateboards	107
2.7. Existing Campus Safety & Security: Potential Conflicts, Security Blue Lights & Site Lighting	124

# TABLE OF CONTENTS

<b>Section 3: Landscape Master Plan Recommendations</b>	<b>134</b>
3.1. Guiding Principles & Design Guidelines	136
3.2. Green Infrastructure Guidelines	142
3.3. Historic Preservation Guidelines	146
3.4. Campus Development Recommendations	148
3.5. Vehicular & Transportation Recommendations: Complete Streets, Campus Roadways, Parking & Bicycle Recommendations	154
3.6. Pedestrian Recommendations	170
3.7. Open Space Recommendations	178
3.8. Campus Branding Recommendations	183
3.9. Stormwater & Natural System Recommendations	186
3.10. Periphery Campus Landscapes Recommendations	192
3.11. Miscellaneous Recommendations	195
<b>Section 4: Landscape Master Plan</b>	<b>196</b>
4.1. Landscape Master Plan	198
4.2. Landscape Master Plan, District-by-District	200
4.3. Historic Campus Core District Plan	202
4.4. Mall District Plan	205
4.5. Residential Life District Plan	208
4.6. North Campus District Plan	212
4.7. Service District Plan	216
4.8. Wetlands District Plan	218
4.9. Athletics District Plan	219
4.10. Priority Projects	224
4.11. Priority Projects Cost Estimates	233
<b>Section 5: Campus Trees: Inventory, Assessment &amp; Management</b>	<b>234</b>
5.1. Landscape Impact on Campus Character	238
5.2. Observations	244
5.3. Campus Tree Inventory	246
5.4. Campus Tree Assessment	250
5.5. Campus Tree Recommendations	269
5.6. Recommended Tree Species Lists	297
5.7. Campus Tree Maintenance	299



<b>Section 6: Campus Design Guidelines &amp; Standard Details</b>	<b>308</b>
6.1. Existing Campus Amenities by District	310
6.2. District-based Standards & Details	322
<b>Section 7: Landscape Maintenance</b>	<b>408</b>
7.1. Existing Maintenance Practices	410
7.2. Maintenance Recommendations	416
<b>Bibliography</b>	<b>442</b>
<b>Acknowledgements</b>	<b>450</b>
<b>Appendices</b>	<b>456</b>
A. Student Engagement Pop-up Memo	459
B. URI Stream and Wetland Assessment, 2017	471
C. Student Senate Safety & Lighting Walk Notes, 2016	475
D. Tree Inventory Map, 2017	485
E. Landscape Architecture/Plant Sciences Professor Tree Species Request Lists	489
F. Priority Project Cost Estimates, 2017	495

# LANDSCAPE MASTER PLAN

## LIST OF ILLUSTRATIONS

<b>2017 Landscape Master Plan</b>	<b>viii</b>
<b>Section 1: Introduction</b>	<b>1</b>
Chronology of Campus Development	13
Existing Campus Districts Plan	14
Campus Periphery Landscapes Plan	20
Proposed University of Rhode Island Historic District	27
URI, By the Numbers, 2016-2017	30
<b>Section 2: Campus Landscape Existing Conditions</b>	<b>32</b>
Core Campus Overview Plan	34
Campus Building Uses	36
Campus Landscape Typologies	37
Existing Art & Memorials Plan	40
Existing Significant Viewshed Plan	44
Existing Viewsheds Sections	45
Existing Campus Open Space Plan	54
Pawcatuck Aquifer Diagram	63
Regional & Campus Hydrology Diagrams	64
Regional & Campus Groundwater Diagrams	65
Chipuxet Watershed Diagram	66
White Horn Brook Watershed Diagram	67
White Horn Brook Sub-watersheds Diagram	68
White Horn Creek System Diagram	69
White Horn Brook Wetland Assessment Diagram	70
White Horn Brook & Tributaries	74
Campus Undeveloped Areas Plan	76
Campus Soils Data Diagram	77
Existing Canopy Cover Plan	78
Existing Forest Habitat Plan	79
Wildlife & Habitat Diagram	80
Stormwater Management Plan	86



Existing Impervious Surfaces Plan	88
Campus Walkability Diagram	94
Existing Pedestrian Circulation Plan	96
Campus Accessibility Plan	98
Sections: Pedestrian Access and Emergency/Service Vehicles Only	101
Existing Vehicular Circulation	110
Campus Road Section	112
Major Roadways Leading to/from URI Diagram	114
Existing Bus Routes Diagram	115
Regional Bicycle Routes Diagram	118
Bicycle Connections to Campus Plan	119
Existing Campus Bicycle Routes	120
URI Campus Roads Spreadsheet	122
Existing Pedestrian & Vehicular Conflict Potential Plan	126
Existing Campus Safety & Security Plan	129
Existing Lighting Levels Plan	130
<b>Section 3: Landscape Master Plan Recommendations</b>	<b>134</b>
Campus Development Limit Plan	152
Road Diet Plan	156
Complete Street Sections	158
Parking Improvement Plan	166
Bicycle Route Improvements Plan	168
Pedestrian Walk Improvements Plan	172
Accessible Walk Improvements Plan	174
Standard Pedestrian Path Sections	176
Road Diet Example: Historic Quadrangle	177
Open Space Improvements Plan	180
Open Space Interventions Diagram	182
Campus Branding & Gateways Plan	184
Stormwater & Natural Systems Diagrams	187
Stormwater Improvements Plan	188
Natural Systems Improvements Plan	190

# LIST OF ILLUSTRATIONS

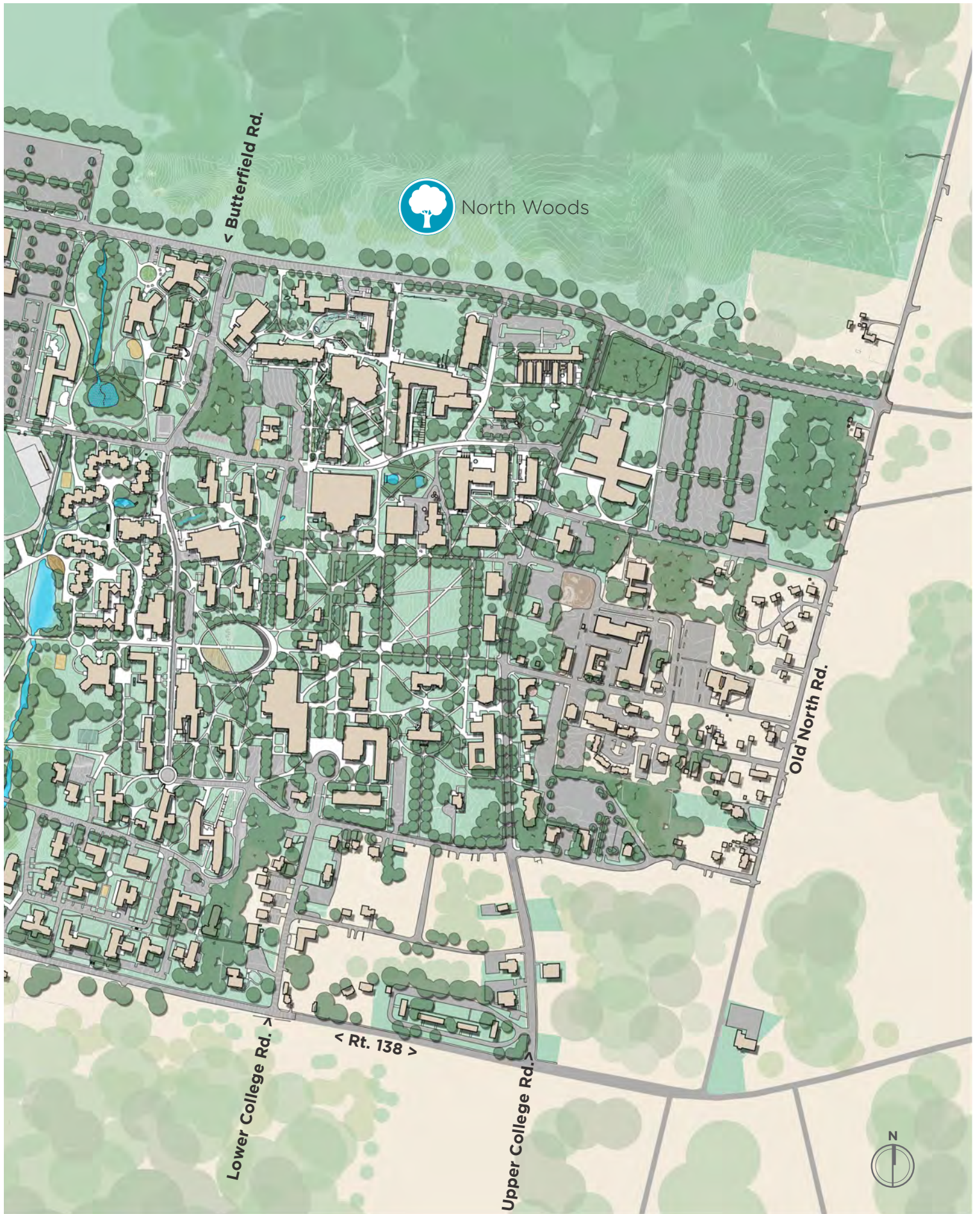
<b>Section 4: Landscape Master Plan</b>	<b>190</b>
Landscape Master Plan	198
Updated District Map for the Campus Core	201
Historic Campus Core District Plan	204
Mall District Plan	207
Residential Life District Plan	210
North Campus District Plan	214
Service District Plan	216
Wetlands District Plan	220
Athletics District Plan	222
Priority Project Locations Plan	224
Historic Quadrangle Project Diagram	226
Elephant Walk Project Diagram	227
Hammerschlag Mall - Phase 1 Project Diagram	228
Hammerschlag Mall - Phase 2 Project Diagram	230
Chafee Green Project Map	232
<b>Section 5: Campus Trees Inventory, Assessment, &amp; Management</b>	<b>236</b>
Tree Inventory: Tree Data Collection Example	247
Tree Inventory Priority Map	248
Tree Inventory Example	249
Tree Inventory: Species Diversity & Conditions Findings	251
Tree Inventory: Size & Conditions Findings	253
Campus Heritage Trees Plan	258
Tree Inventory: Eco-benefits	265
Existing Canopy Cover/Proposed Infill Planting Areas Plan	271
Plantings to Improve Connective Spaces Diagrams	272
Historic Planting Zones Plan	279
Tree Planting Typologies	285
Tree Planting Detail	302



<b>Section 6: Campus Design Guidelines &amp; Standard Details</b>	<b>308</b>
Campus Design Guidelines & Standard Details	322
<b>Section 7: Landscape Maintenance</b>	<b>408</b>
Maintenance Priority Zones Plan	420
Maintenance Character Zones Plan	422
Turfgrass Focus Areas Plan	426







2017 Landscape Master Plan



# LANDSCAPE MASTER PLAN

## EXECUTIVE SUMMARY

Since its founding in 1892, the University of Rhode Island has adapted and continuously transformed its Kingston campus to meet the needs of the student population, faculty, and staff in support of academics and research. This heritage is reflected in the campus landscape that includes formal quadrangles, allées, ornamental gardens, woodlands, and wetlands. The University is at a pivotal time to once again adapt the campus to meet the evolving enrollment, 21<sup>st</sup> century life on campus, and stewardship of the environment. This Landscape Master Plan analyses the current condition of the campus landscape and reflects it against the University's mission and the 2016 Strategic Plan for Campus Sustainability for Climate Action. The Landscape Master Plan defines guiding principles based upon these planning documents established by the University and then makes recommendations to put these into practice. It also analyses the grounds maintenance practices, identifies where improvements can be made, and establishes a vision for the campus aesthetic, stewardship, and care for the upcoming decades.

The scope of the Landscape Master Plan encompasses open space, pedestrian circulation, balancing the needs of pedestrians and vehicles, bicycling, stormwater management, historic preservation, sustainability, identity, tree management, and landscape maintenance. Coordination with the on-going Transportation and Parking Master Plan, the Drainage Master Plan, and other current design/construction projects ensures this plan has taken a comprehensive look at the campus landscape and will provide a strong framework informing the future Campus Master Plan.

An outcome of this plan is the identification of four priority improvement projects for Hammerschlag Mall, the historic Quadrangle, the Elephant Walk, and the Chafee Green; all of which have the potential to be transformative for campus socialization, use for education, and environmental benefits.

The philosophical tenants of the recommendations are summarized in the following set of guiding principles:

1. The campus landscape should reflect the rural character of Kingston Village and South County.
2. URI aspires to be a steward of the environment and the campus landscape should represent this.
3. The campus landscape should provide opportunities that support learning and act as a platform for engaging the natural environment.
4. The campus landscape should reflect URI's history as a Land Grant college at select appropriate locations (i.e. Watson House and the Quadrangle.)

5. Pedestrian circulation shall take a priority over vehicular circulation on the campus. In addition to the consideration of design for walkways and roads, this includes reducing the presence of parking lots within the core of campus.
6. Campus open space should provide a variety of spatial types and functions to serve a diverse university population.
7. Protection of the regional aquifer and local water bodies is a critical concern of the University.
8. Campus features should contribute to the pedagogy, should provide learning opportunities and should function as living laboratories.
9. Campus development should prioritize infill zones within existing development boundaries to protect natural resources (i.e. North Woods and White Horn Brook floodplain), historic features, and the existing campus structure.
10. Significant campus viewsheds should be protected and maintained as essential views that express the character of the University, and should be treated as such.

The Landscape Master Plan was informed by specific comments on campus life and the campus landscape that was provided through outreach at campus events, from the Student Senate, on-line surveys, and social media. There is an expressed desire for a better balance between pedestrian and vehicular needs, enhanced outdoor spaces for social interaction, and protection/enhancement of the natural woodlands and stream corridors.

As part of this Landscape Master Plan, an inventory of the existing trees was initiated involving faculty, Landscape & Grounds staff, and students. This inventory provides a clear snapshot of the species diversity, condition, age, and needs for the campus tree collection. The ecological benefits of the nearly 1,100 trees inventoried are significant, with nearly two million gallons of stormwater filtered per year, nearly 500,000 pounds of carbon removed from the air, and over one million kilowatts of energy conserved per year. The campus trees are diverse in species, which positions the collection well against large-scale damage from pest or diseases. This inventory also revealed that about half of the trees are in fair or poor condition, further illustrating that more investment is needed in the form of pruning, soil decompaction, watering, and pest/disease management. Many areas of the campus need increased tree planting for aesthetics, ecological benefits, and quality of campus life. This means that a concerted effort is needed to plant many new trees annually and to provide the appropriate aftercare.

# EXECUTIVE SUMMARY

Many young trees are currently lost to improper planting, lack of aftercare, and/or mower damage.

On a large campus with multiple on-going design and construction projects, there is a great need for standardization of landscape details to ensure aesthetic and sustainability goals are met and that the completed work can be maintained in an efficient way. The catalogue of standard details in this plan includes paving, furnishings, walls, fencing, lighting and planting and will be a resource for campus planning and consulting design professionals.

The landscape is maintained by a dedicated Landscape & Grounds department and accomplishes great work with limited resources as compared to local peer universities. More funding is needed for staff, equipment, and maintenance buildings to sustain the growing needs of the campus landscape. In addition, maintenance practices can be made more efficient by re-designing areas that require disproportionate levels of effort.

Since the mid-twentieth century, the University of Rhode Island has experienced rapid expansion that was heavily influenced by accommodating vehicles and a commuter population. With more students living on campus, vehicular dependence is less important. Priorities now favor pedestrian routes over roads in the campus core with most parking sited at the campus perimeter. This reflects a reduction in paving, which allows for more sustainable stormwater management, protection of the watershed and aquifer, and opportunities to “re-wild” the campus getting students, staff, and faculty more integrated with the environment of southern Rhode Island.

THIS PAGE INTENTIONALLY LEFT BLANK









# PROJECT INTRODUCTION

- 1.1 UNIVERSITY MISSION, PROJECT VISION & GOALS
- 1.2 CAMPUS INPUT & ENGAGEMENT
- 1.3 BRIEF HISTORY OF CAMPUS DEVELOPMENT
- 1.4 CAMPUS DISTRICTS
- 1.5 PERIPHERY CAMPUS LANDSCAPES
- 1.6 PREVIOUS PLANNING DOCUMENTS & PLANNING PROJECTS UNDERWAY
- 1.7 URI TODAY, 2016-2017

# 1.1 UNIVERSITY MISSION, PROJECT VISION & GOALS

## The University's Mission

*The University of Rhode Island (URI) is the State's public learner-centered research university. We are a community joined in a common quest for knowledge. The University is committed to enriching the lives of its students through its land, sea, and urban grant traditions. URI is the only public institution in Rhode Island offering undergraduate, graduate, and professional students the distinctive educational opportunities of a major research university. Our undergraduate, graduate, and professional education, research, and outreach serve Rhode Island and beyond. Students, faculty, staff, and alumni are united in one common purpose: to learn and lead together.*

*Embracing Rhode Island's heritage of independent thought", the University values:*

- *Creativity and Scholarship*
- *Diversity, Fairness, and Respect*
- *Engaged Learning and Civic Involvement*
- *Intellectual and Ethical Leadership*

The Mission was endorsed by the URI Faculty Senate on October 20, 2005; approved by the President on November 1, 2005; and, approved by the Board of Governors for Higher Education on January 23, 2006.

## Project Vision

As identified in the Request for Proposals issued in 2015, the intent of this Landscape Master Plan is to develop a vision for the campus grounds that advances a beautiful, cohesive, and intentional landscape which supports the University's efforts to strengthen and promote its sense of place. The Landscape Master Plan is an essential document, illustrative in nature, which will result in real and immediate results on the University's Kingston campus. The Landscape Master Plan will put into effect direct physical designs and details for campus landscapes by functioning as a tool kit for administrators, designers, and grounds personnel. The Landscape Master Plan will add to previous master planning to create a series of strategic, action-oriented tools for the on-going planning, design, and stewardship of the URI landscape.

## Project Goals

As identified in the Request for Proposals, the goals for the URI Landscape Master Plan for the Kingston campus include:

1. **Aesthetics and Image:** Develop a cohesive URI campus landscape and hardscape environment that is aesthetically pleasing, district-based, enhances the University sense of place and culture, intentionally expresses the Land Grant heritage and mission of the University, and provides guidance for further campus development and redevelopment.
2. **Effective and Accessible Learning Environment:** Provide an exterior environment that enriches student learning experiences with undisturbed and restored natural landscapes for wildlife habitat; that exhibits a broad inventory of plant species for instruction in botany, horticulture, and landscape architecture; that features exemplary stormwater management engineering; and, provides a platform for intellectual engagement with the natural environment.
3. **Environmental Protection:** Each future project identified in the Landscape Master Plan should mitigate past environmental degradation by developing effective upstream stormwater retention and treatment facilities that clean and filter water. New landscapes should encourage bio-habitats and support species diversity. Projects will meet and exceed regulatory requirements to promote clean water systems for surface and ground waters, reduce polluted runoff and damage from flooding and erosion to the White Horn Brook system. Define ways to improve and maintain soil quality.
4. **Maintainability and Carbon Footprint:** Develop landscapes, planted features, and walkways that are maintainable by the University. Use effective and efficient maintenance methods that require little irrigation and hand labor, and that minimize carbon and public health impacts from machine fuels, fertilizers and herbicides.

# 1.2 CAMPUS INPUT & ENGAGEMENT

## Memorial Union Pop-up

To jump-start the project, the planning team visited the campus on a rainy Wednesday in late April of 2016. Located under the monitors in the Memorial Union from 11 am to 2 pm, the team was able to access approximately fifty to seventy-five students, faculty, and staff. As tools to engage students and discuss the campus landscape, a series of illustrative boards was displayed:

1. “Dot your Spot”: With a 48” by 72” map of campus, students were given an opportunity to place stickers on their favorite and least favorite places on campus. Green dots were good and red dots were bad places. We asked them to explain their thinking and tell us why they did or didn’t like certain places. We asked if there were places on campus that they didn’t feel safe, either due to poor lighting or if they felt that there are places where it was difficult to cross the street.
2. Another 48” by 72” map of the campus was included entitled “Map Your Route”. On this map students were invited to identify their typical walking routes across campus. They were asked to identify if they lived on campus or off, and if off, where they typically park or get off the bus. From that location we tracked their typical walking route from parking lot, residence hall or bus stop to academic halls. (This collected data is partial to students who use the Memorial Union since that is where we were located for this event.)

This information is useful, not just to understand how people use the roads and walks on campus, but also to identify issues with parking and traffic flow. Most students who live off-campus said they preferred to park in the Fine Arts Center lot but unless they were on campus early in the morning that it was difficult to find a space. The result was a long walk up the West Alumni Avenue hill. Few students reported taking the campus shuttle as they felt it did not run frequently enough to be of use.

3. A blank note pad was available for noting any additional comments that students shared.
4. And finally, an on-line survey was posted for additional feedback: The survey was accessible at <https://www.surveymonkey.com/r/designurilmp1> Survey feedback was limited.

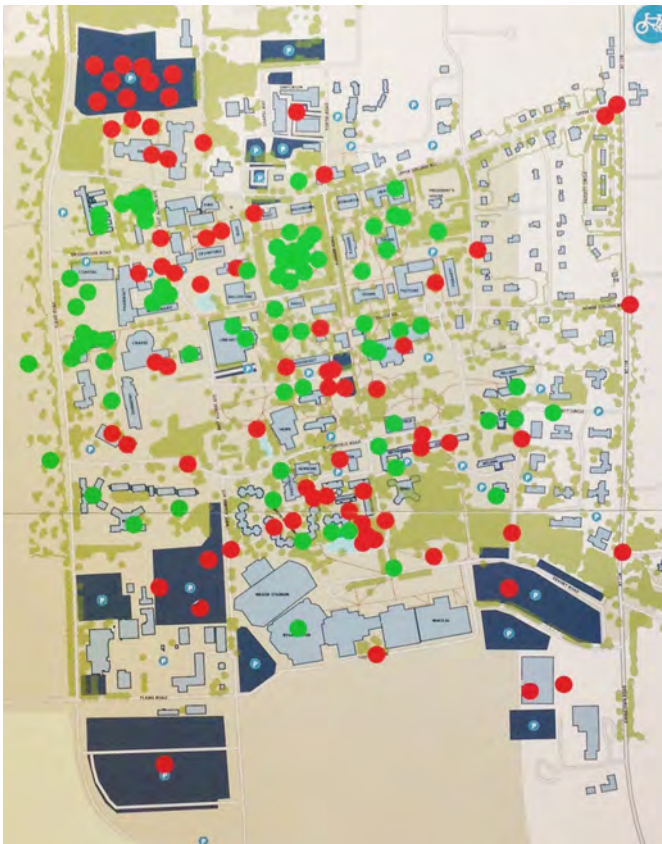
A memo summarizing findings from the pop-up event is included at Appendix A.

## Student Senate

On January 25th, the project was presented to Student Senate—a group of approximately forty students. The Landscape Master Plan was presented in broad strokes: historic overview of campus development; and the inventory and analysis studies and findings, including White Horn Brook and its tributaries, pedestrian movement and lighting. Also reviewed was the tree inventory process, which highlighted the big picture guiding principles for the project, and finally, discussed some of the proposed site improvements and the priority projects.



2016 POP-UP AT THE MEMORIAL UNION: "DOT YOUR SPOT"



2016 POP-UP AT THE MEMORIAL UNION: "MAP YOUR ROUTE"



# 1.2 CAMPUS INPUT & ENGAGEMENT

## Tree inventory with PLS 306

In September 2016, the master planning team worked with students in the PLS 306 course: Landscape Management and Arboriculture. The professor, Brian Maynard, is on the Steering Committee for the Landscape Master Plan. We spent two days in this class: one to present and discuss how landscape management and arboriculture is relevant to our practice of landscape architecture. In the second class, we had the students assist us to inventory a selection of the campus trees. The arborists who work in Landscape and Grounds also assisted in the effort.

## Landscape Architecture Program

Each year, Kyle Zick Landscape Architecture, Inc. hosts the senior class of the Landscape Architecture program at our office. In the spring of 2016, we had asked the students to respond to the above mentioned on-line survey and discussed the results with them when they visited on April 1st. In 2017, we again hosted the graduating seniors and during this visit we shared with them an overview of the Landscape Master Planning efforts completed to date. This included the distinct categories into which we deconstructed the campus landscape in order to study it. (These categories are reflected in Section 2 of this report.)



Landscape Master Plan consultants and Landscape & Grounds' arborists working with the PLS 306 class to inventory a selection of campus trees.



## 1.3 BRIEF HISTORY OF CAMPUS DEVELOPMENT

In 1888, the Oliver Watson Farm House—along with 140-acres of farmland in Kingston Village—was purchased for the newly chartered Agricultural Experiment Station and Agricultural School of Rhode Island. In 1889, Taft Hall was the first building constructed as the Agricultural Experiment Station building, and in the following years was joined by three other buildings for the agricultural school, including College Hall, the University's first library. (College Hall burned to the ground in 1895 and was rebuilt as Davis Hall in the same location.) In 1892, the Second Morrill Act provided additional funding for the school, which was the renamed Rhode Island College of Agriculture and the Mechanic Arts. So began what would become the University of Rhode Island in 1951.



Watson Farm House, c. 1889; Image courtesy of the University of Rhode Island

Key dates of development for the Kingston campus are highlighted below:

- 1894: Rhode Island College of Agriculture and the Mechanic Arts becomes the state's Land Grant college
- 1894: Board of Managers engages premier landscape architecture firm Olmsted, Olmsted, and Eliot to plan the campus, resulting in the quadrangle
- 1897: Lippitt Hall built as armory and drill hall



Agricultural Experiment Station, later Taft Hall, c. 1890; Image courtesy of the University of Rhode Island

- 1907: First master's degree awarded
- 1908: Fraternity system and female students introduced to campus life
- 1909: Renamed to Rhode Island State College
- 1917-1918: United States involvement in World War I
- 1922: College War Memorial dedicated on Upper College Road (Memorial Gateway dedicated in 1928)
- 1920s: Considerable growth for the campus
- 1928: East Farm purchased as research farm



College Hall library burning, 1895; Image courtesy of the University of Rhode Island

## 1.3 BRIEF HISTORY OF CAMPUS DEVELOPMENT

- 1932: Courses of study reorganized into three schools: School of Science & Business, the School of Agriculture & Home Economics, and the School of Engineering
- 1934: Additional farm land purchased on the west side of campus
- 1941-1945: United States involvement in World War II
- 1944: Peckham Farm land enlarged
- 1945: Campus expanded with acquisition of Sherman Farm
- 1946: G.I. Bill of Rights allows thousands of returning soldiers to attend the University, increasing infrastructure demands of the campus



Quonset hut housing and “student union”, 1946; Image courtesy of the University of Rhode Island

- 1951: Officially renamed as the University of Rhode Island
- 1953: Keaney Gymnasium opened beginning the development of the athletics district
- 1954: Memorial Union dedicated as memorial to alumni lost in World War II
- 1958: Hope Dining Hall and three residence halls opened beginning the development of the Residential Life District
- 1959: Wales and Kelley Halls opened as the initial buildings forming College of

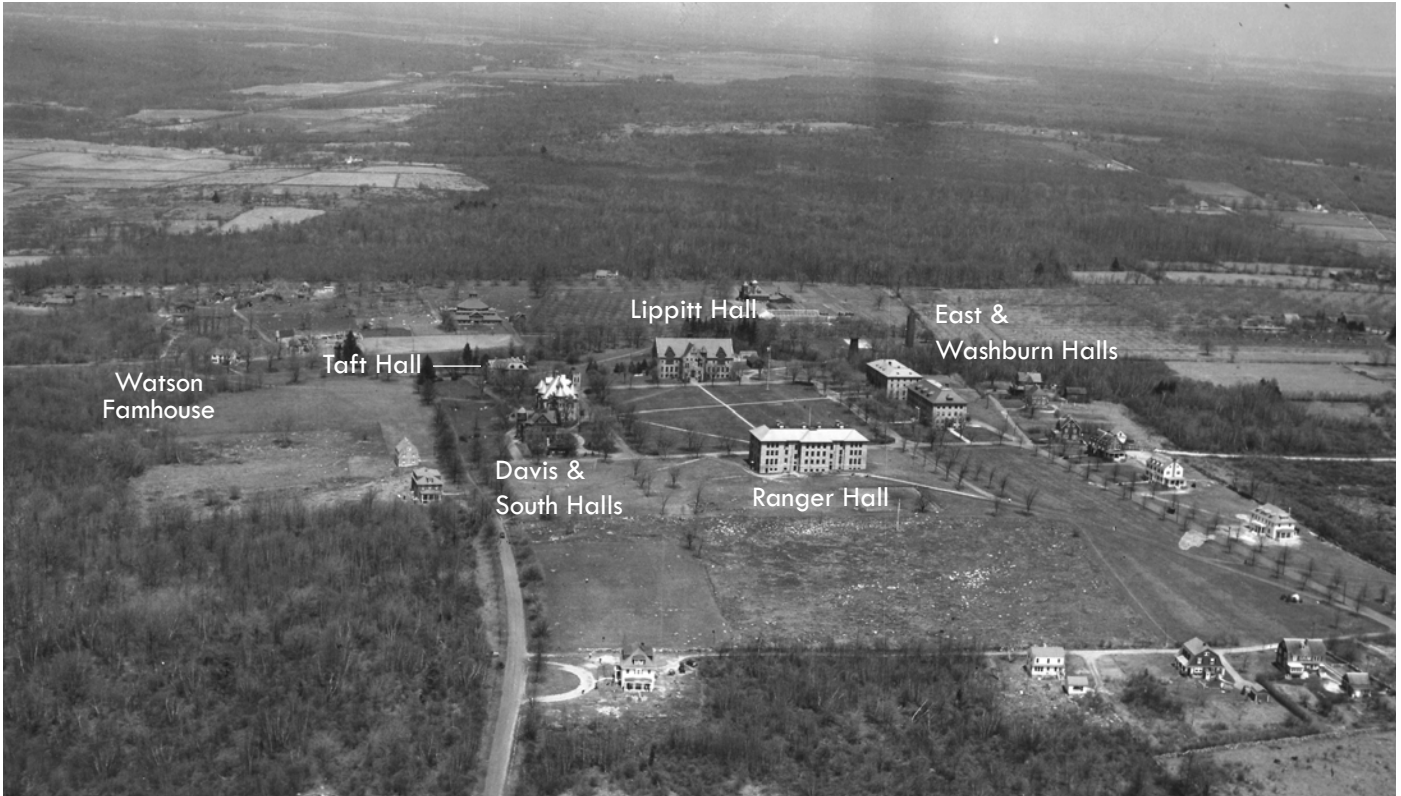


Greenhouses & Botanical Gardens, 1966; Image courtesy of the University of Rhode Island

### Engineering quadrangle

- 1965: Initial phase of Carothers Library (now named) and the Sherman Maintenance Building constructed beginning development of the Services District
- 1967: Ballentine Hall constructed enclosing the historic quadrangle
- 1972: Biological Science Center (located where Coastal Institute now sits) and Chafee Social Science Building open as the initial development of the north campus science district
- 1993: Centennial Walk installed on the quadrangle
- 2000: Campus Master Plan developed
- 2001: Coastal Institute Building opened
- 2002: Ryan Center opened at the north end of the athletics district, shifting the focus of the athletics complex
- 2007: Eddy, Wiley and Garrahy Residence Halls opened
- 2009: Center for Biotechnology & Life Sciences opened in the north campus, with a new campus aesthetic and new focus on campus sustainability
- 2011: Landscape rehabilitation of Ranger & Green Halls included removal of a substantial parking lot for greenspace and circulation improvements





Quadrangle - looking north, 1923; Image courtesy of the University Library Special Collections



Aerial view of campus, 1939; Image courtesy of the University Library Special Collections



## 1.3 BRIEF HISTORY OF CAMPUS DEVELOPMENT

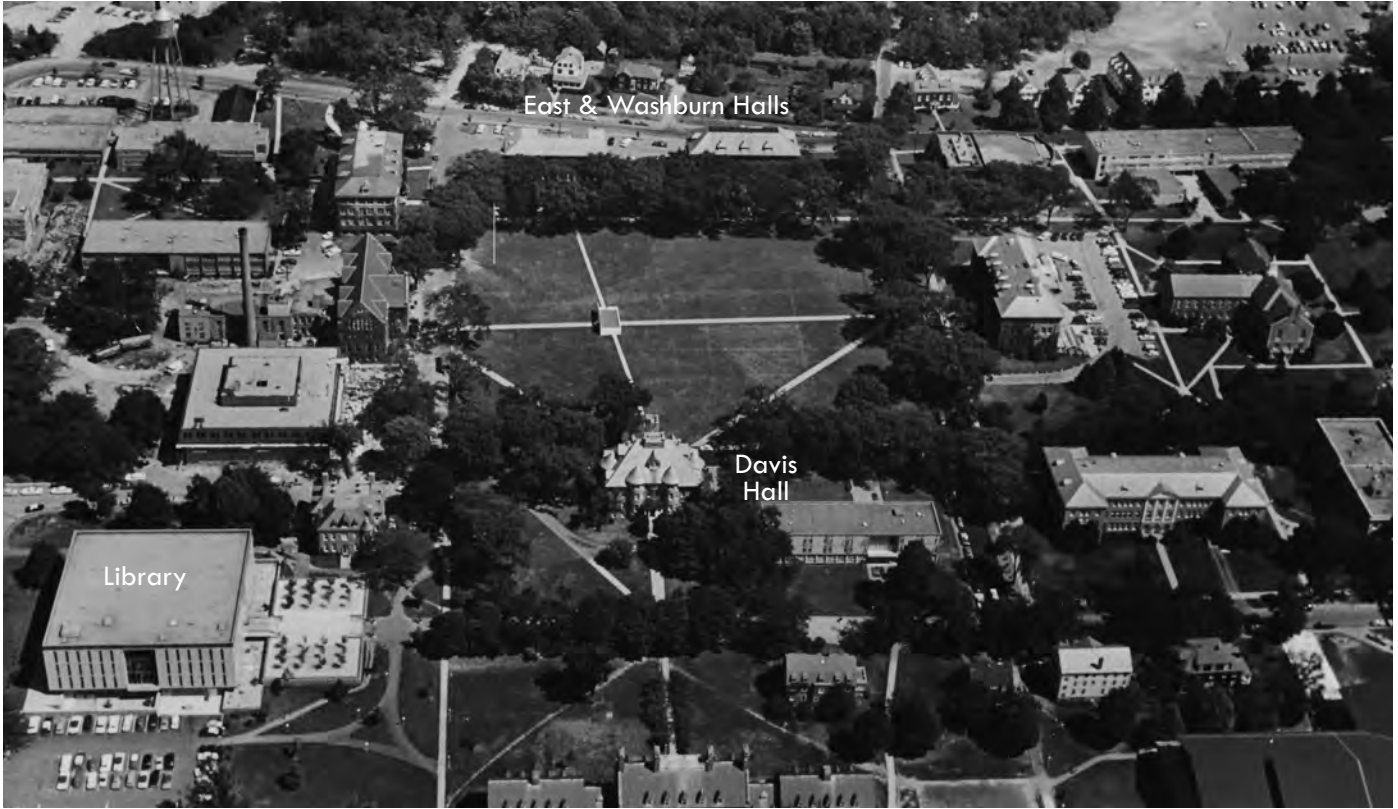


Aerial view of campus, 1951; Image courtesy of the University Library Special Collections



Aerial view of campus, 1963; Image courtesy of [www.historicaerials.com](http://www.historicaerials.com)





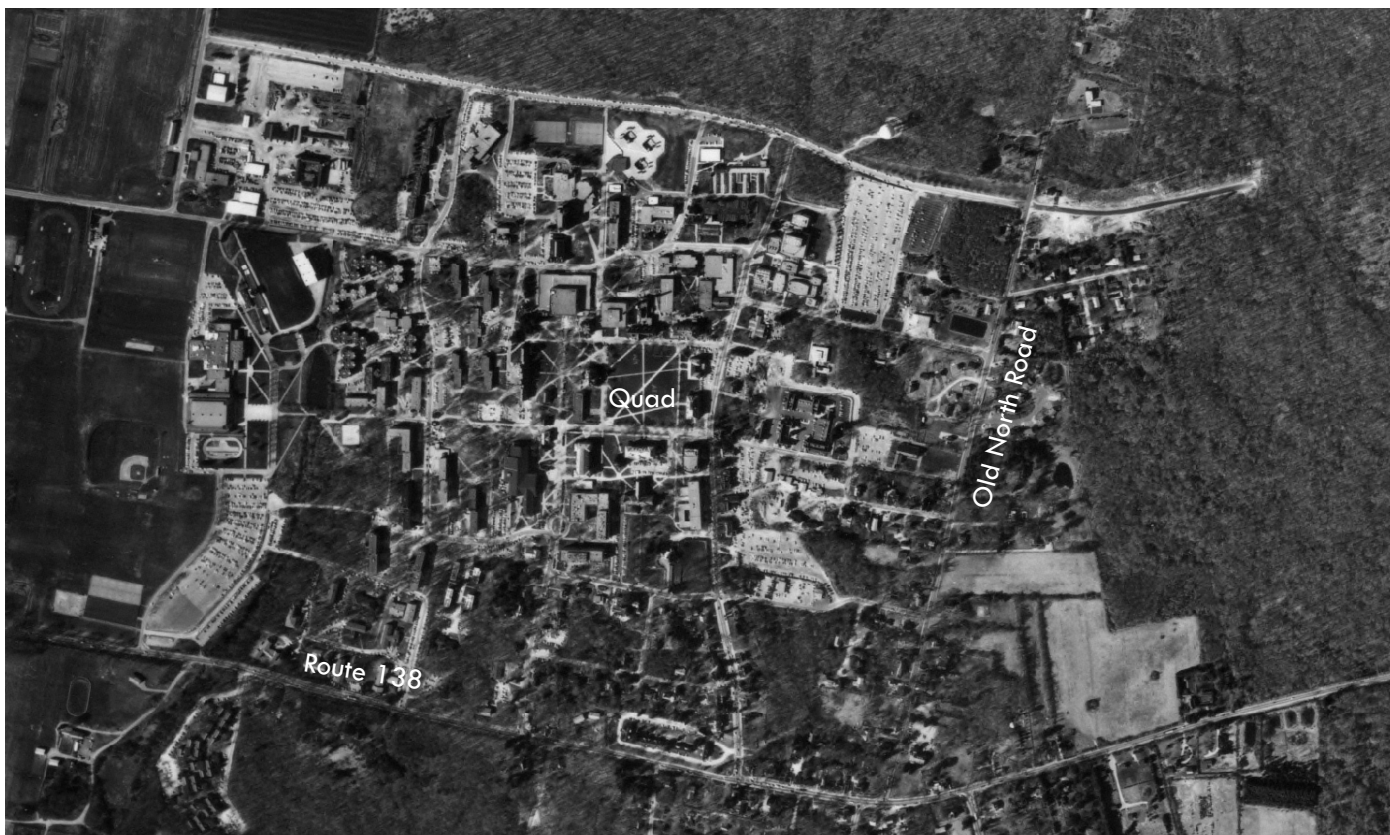
Quadrangle - looking east, 1966; Image courtesy of the University Library Special Collections



Aerial view of campus, 1972; Image courtesy of the University Library Special Collections



## 1.3 BRIEF HISTORY OF CAMPUS DEVELOPMENT



Aerial view of campus, 1988; Image courtesy of the University Library Special Collections



Aerial view of campus, 2016; Image courtesy of the Google Earth

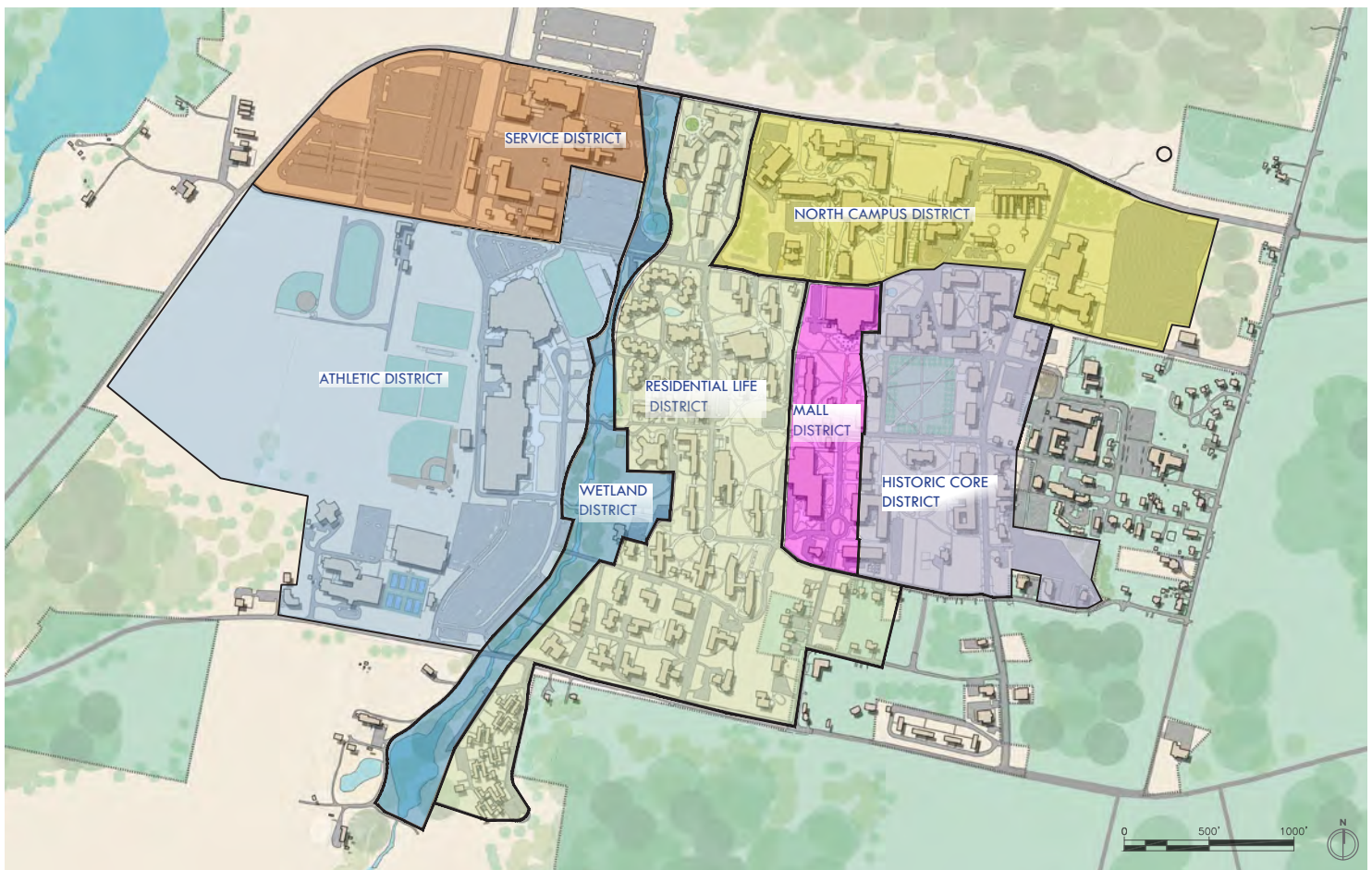




Chronology of Campus Development

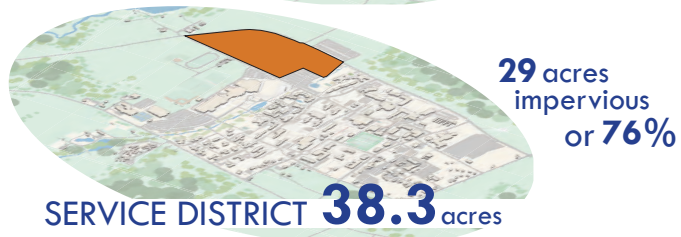
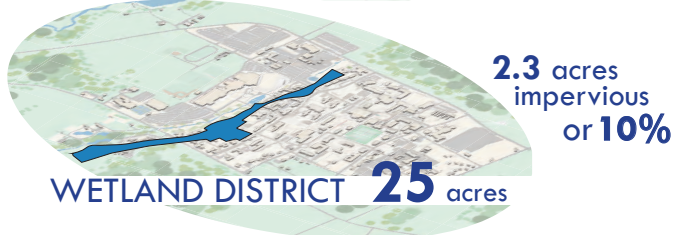
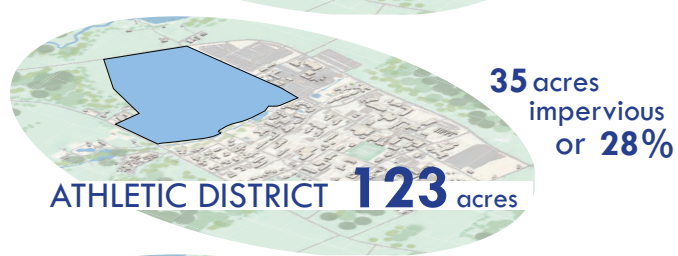
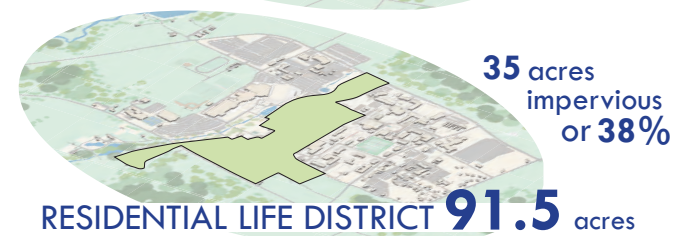
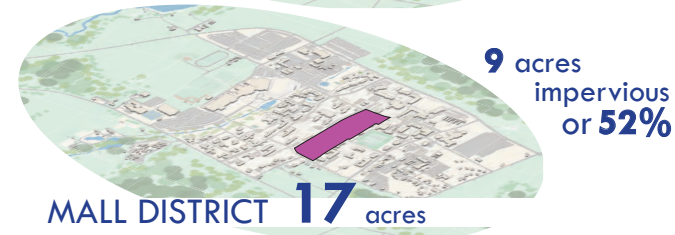
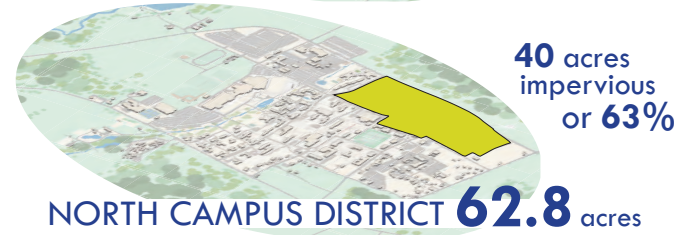
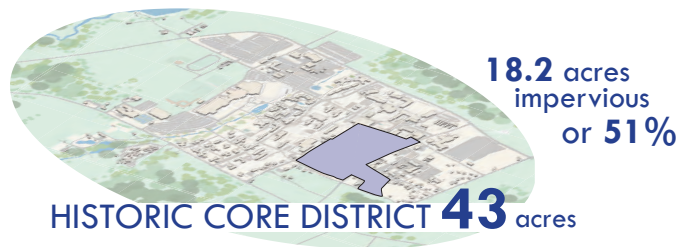
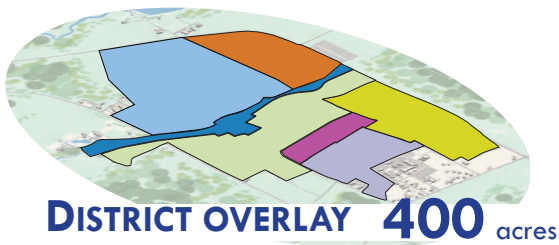
## 1.4 CAMPUS DISTRICTS

The campus districts were established in the 2000 Campus Master Plan. The districts are based on “land use analysis, terrain and natural features, and architectural character” (1.4) Development on campus since 2000 has not significantly changed district boundaries based on the criteria with which they were originally established. Outlying parking areas (Fine Arts, Plains and Flagg Road lots)—some of which have been expanded since the 2000 Master Plan—have been incorporated into adjacent districts.



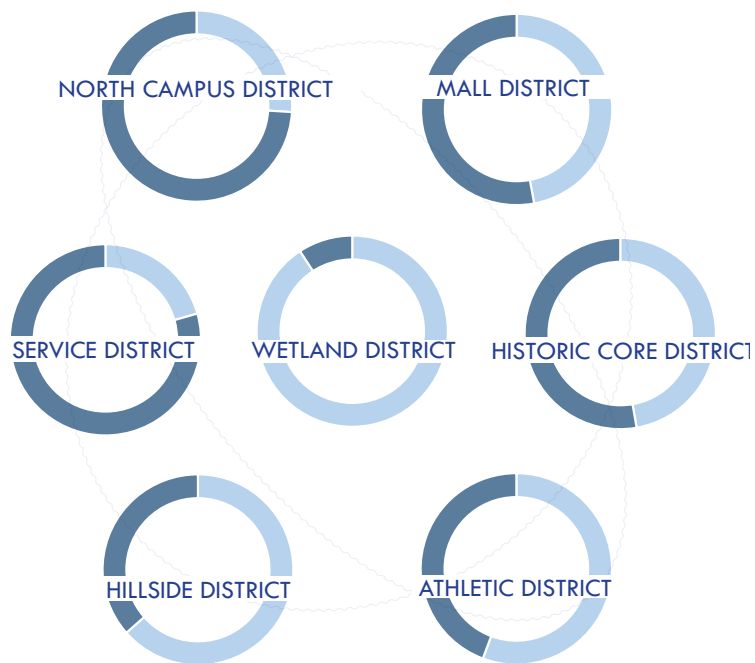
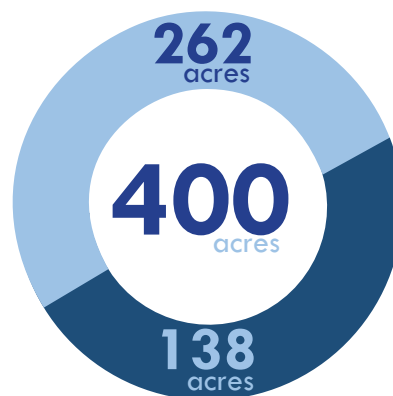
Existing Campus Districts Plan





The overlay districts account for **33%** of the 1200 acre Kingston campus

pervious  impervious 



## 1.4 CAMPUS DISTRICTS

These districts reflect the existing (2016-2017) campus and were originally defined in the 2000 Campus Master Plan. They are the basis for the campus landscape evaluation, inventory and analysis in Section 2 of this report.

### Historic Campus Core District

The Historic Campus Core is the oldest part of campus which includes the historic Quadrangle and the historic structures that surround it. The district stretches from East Alumni Avenue and Campus Avenue, and includes the streetscape and buildings along both sides of Upper College Road to Route 138, the President's House, the Gateway Apartments, and the College of Engineering and its quadrangle.

The buildings along the east side of Upper College Road include the University Club, the Tucker House, the University Foundation Building, the Alumni Center, the International Engineering Program Houses, the Visitor Center and its associated parking, the Gender and Sexuality Center, the Hart House and Labor Research Center, and the Newman House for Admission.



### Mall District

The Mall District extends from Carothers Library to the Memorial Union, and includes Hammerschlag Mall and Lower College Road to Campus Avenue. The district includes the landscapes on the west side of Fogarty, Pastore, Quinn, and Carlotti Halls.



### North Campus District

The North Campus District stretches from Fine Arts Center to Butterfield Road. Its northern boundary is Flagg Road and the southern boundary is East and West Alumni Avenues. Included in the district is Fine Arts, the Greenhouses, the Coastal Institute, Pharmacy, the Center for Biotechnology and Life Sciences (CBLs), White Hall, Chafee Hall and the Social Sciences/Cancer Prevention Research Center. One fraternity (Phi Gamma Delta) is included in the district. The Mallon Outreach Center and the Botanical Gardens are also included.





## Residential Life District

The Residential Life (ResLife) District stretches from Flagg Road to Fraternity Circle/Quarry Road to the south and from White Horn Brook on the west to the rear of the Memorial Union and Farm House Road to the east.

The residence halls, for the most part, are in clusters based on proximity of the individual halls and should be socially connected. Heathman, Garrahy and Wiley Halls are located between Flagg Road, Butterfield Road, West Alumni Avenue and White Horn Brook. Burnside, Aldrich, and Coddington are in the corner of West Alumni Avenue and Butterfield Road. Ellery and Dorr are located to the west of the Fascitelli Fitness & Wellness Center and are nestled between the White Horn Brook and Ellery Pond. Gorham and Fayerweather Halls are joined by an interior courtyard. Hopkins is located between Butterfield Road and Complex Road and is located between the Fascitelli Center and the Potter Building. East of Butterfield Road and between West Alumni Avenue and Hope Commons are Merrow and Tucker Halls. To the south of Hope is Peck and Hutchinson. Butterfield and Bressler Halls are in the corner of Butterfield Road and Campus Avenue. Across Butterfield Road is Browning, Adams, and Eddy Halls. Finally, in the southwest corner of Campus Avenue and Butterfield Road are Weldin, Barlow and Hillside Halls.

Fraternity Circle and the Graduate Village are also included within the ResLife district but feel socially and physically separated, especially the Graduate Village, as it is located to the south of Route 138.

In addition to the residence halls, the ResLife district includes Hope Commons (dining hall, corner store, and market), Butterfield Dining Hall, Fascitelli Fitness and Wellness Center (formerly the Roger Williams Dining Hall), and the Potter Building for Health Services. The historic Watson House is also included in the ResLife district.





# 1.4 CAMPUS DISTRICTS

## Wetlands District

The Wetlands District stretches all the way across campus from Flagg Road south to Route 138. It is situated at the low point of the campus landscape and includes White Horn Brook, some tributaries, and the pond which is formed at the center of campus. A number of roads and parking lots extend into the district.



## Athletics District

The Athletic District includes all the fields and facilities for the University's sports teams and recreation facilities. The athletic complex includes the Ryan Center, Meade Stadium, Tootell Aquatic Center, Keaney Gymnasium, and Mackal Field House which are all connected. Boss Ice Arena and the Independence Square Foundation are located to the southern limits near Route 138. The track, baseball, softball and soccer fields and practice fields are within this district. It abuts White Horn Brook on the east and extends to Plains Road to the west.

## Service District

The Service District is located in the northwest corner of campus between Flagg Road, West Alumni Avenue, and Tootell Road. White Horn Brook is the eastern boundary. The district includes Dining Services Distribution Center, the Central Receiving Warehouse, 210 Flagg Road (houses Campus Planning & Design, Median & Technology Services, Business Services, and Campus Information Technology Services). The Automotive Garage, Salt Barn, Maintenance Building, Sherman House (GIS, Capital Projects, Facilities Services, etc.) are included herein as well.



## 1.5 PERIPHERY CAMPUS LANDSCAPES

There are a few landscapes that are peripheral to the University's campus core and play a significant role. Those that are relevant to this master planning effort are the farms managed by URI's College of Environment and Life Sciences, each of which has a different educational focus: Skogley Memorial Turfgrass Research Facility/Agronomy Farm, Peckham Farm, and East Farm. In addition, North Woods is a 575-acre tract situated just to the north of the core campus. The Emporium is the dining and retail development located to the east of the campus which is heavily used by students, faculty, and staff. It is important to note that the Emporium is not owned by the University. Finally, the Route 138 corridor is an important part of the University landscape. The corridor, as it pertains to this report, extends from Route 108/Kingstown Road to Route 110/Ministerial Road/Plains Road. Finally, the Graduate Village Apartments are located across Route 138 from the Keaney parking lot.

### **Skogley Memorial Turfgrass Research Facility/Agronomy Farm**

The Agronomy Farm is located to the west of the main campus beyond the Athletics District. The agronomy farm is the oldest turfgrass research program in the United States and the oldest continual-use agricultural research plots. In addition to supporting the turfgrass program in the Department of Plant Sciences and Entomology, the facility has developed turfgrass varieties which are more sustainable and more resistant to modern pests and diseases. The facility also is the home of the Turfgrass Disease Identification Clinic. Together these facilities comprise approximately 150 acres.

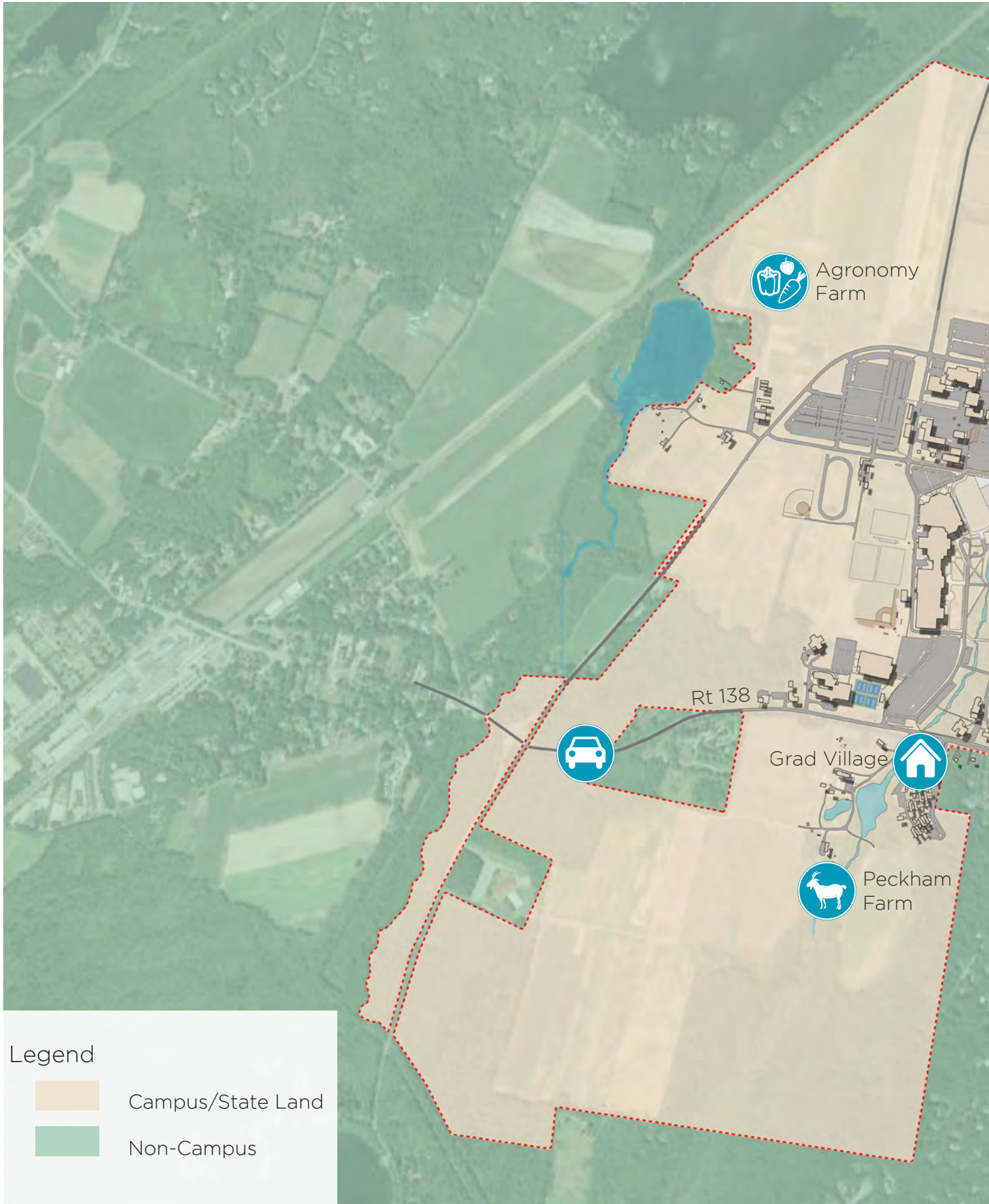
### **East Farm**

East Farm is just under ninety acres and is located a mile to the southeast of the Kingston Campus on Route 108. Several University programs use this farm, including Landscape Architecture, Plant Sciences, Fisheries & Fish Pathology, Aquaculture, Animal & Veterinary Science, Geo-sciences, and Entomology. It provides greenhouses and a field house, as well as demonstration and giving gardens for the URI Master Gardeners program. It also provides office space for the Rhode Island Nursery and Landscape Association and the Rhode Island Natural History Survey.

Over half of the East Farm landscape is forested, with approximately thirty percent occupied by research facilities, buildings and agriculture, while the remainder is undeveloped land. (Figures provided by the Redesigning and Enhancing the Value of the URI Field Lab Management areas prepared by 2012 URI Landscape Architecture Senior Studio under the direction of Professor Richard Sheridan.) The high groundwater table and hydric soils at East Farm make much of the landscape unsuitable for development. A demonstration orchard includes apple and crabapple varieties and is used by many URI courses, as well as for demonstrations and research.

Each year the University's Cooperative Extension hosts a Spring Festival at East Farm that invites the community into the landscape. The intent is to share research, outreach, and information sharing with the South County community. Additionally, from May through October, East Farm is the site for the South Kingstown (Summer) Farmers' Market. (Started in 1982, this is the state's longest running farmers' market.)









## Campus Periphery Landscapes



# 1.5 PERIPHERY CAMPUS LANDSCAPES

## Peckham Farm

Peckham Farm is located to south of the Kingston campus across Route 138. It is just under 350 acres in size. Approximately half of the farmscape is forested land while a little over forty percent is used for agriculture, including grasslands, and eight percent is pasture. A small portion of the landscape (three percent) is developed, with the Central Lab Animal Facility barns and outbuildings. There are also a one-acre pond with wetlands.

Animals managed on site include llama, sheep, dairy cows, pigs, goats, chickens, and donkeys. Students work with the animals in Animal Science and Pre-Veterinary courses and can also intern.

## North Woods

North Woods is located just north of the core campus, immediately across Flagg Road. It is bordered by Flagg, Plains and Old North Road, as well as private land ownership to the north. The 575-acre site is mostly undeveloped, but it is the home of the North Woods Challenge Course, an indoor climbing tower, and a remediated Superfund site. The site also includes a water tower and substation.

Aside from the Challenge Course, the main University use of North Woods is as a learning laboratory. According to an internal report reacting to the URI Research and Technology Park Feasibility Study, the woods are used by nearly 1,300 students each year in courses ranging from plant sciences, wetland sciences, plant ecology, herpetology, dendrology, botany, ornithology, soil sciences, entomology, forestry, and wildlife management. Its proximity and diversity of ecosystems, habitat and wildlife makes it indispensable to many of the programs.

In addition to coursework and the organized team building coursework, the site is used for recreational purposes, including mountain

biking, cross-country skiing, running, hiking, and snowshoeing. Paths into the site can be accessed from Flagg Road, Old North Road, and Plains Road.

## Route 138 Corridor

Route 138 is an important corridor for accessing the campus. For most visits, it is the initial glimpse of the University and the intersection of the two most significant gateways to the campus. Route 138 is also important for people who bike to campus and others walk along this corridor.

Lighting is a significant issue along this corridor for pedestrians, especially on the north side. Students have reported walking in the road so that they can see where they are walking. The light is provided by cobra-head fixtures on the south side of the road. The eastern portion—from Route 108—has a stretch with no sidewalk on the south side of the road. This portion of Route 138 is very residential in character. Street trees on the north sidewalk block the light from the fixtures on the south sidewalk.

At Upper College Road, the Route 138 sidewalk ends on the north side through the Gateway Apartments area and is then intermittent on both sides. The character of Route 138 is more rural as you move west with large forested areas. A sidewalk on the north side does connect the Graduate Village to Fraternity Circle and Lower College Road. But again, street lighting is on the south side with large canopied trees located along the north side. The sidewalk also connects westward to the Keaney parking lot on the west side of White Horn Brook. The cross walk leading from Peckham Farm does not connect to the sidewalk, nor does a sidewalk or bike lane lead out of the farm.

After Keaney Road and the athletic complex and its parking, the University seems to disappear from view, until you reach the intersection with Plains Road. There is no signage and no sidewalk or bike lanes.

## Graduate Village Apartments

The University's Graduate Village Apartments are located south of the campus core across Route 138, and immediately east of Peckham Farm. The apartments are open to graduate and non-traditional undergraduate students, as well as visiting scholars and post-doctoral candidates. There are 100 two- and three-bedroom apartments available for families or for students who wish to have roommates.

The apartments are set up in a village-style complex with shared parking and walkways. The area is wooded and fairly secluded despite being directly across from the university's main campus. The units are surrounded by a loop road (Graduate Circle) that egresses on Route 138. A crosswalk provides pedestrian access across the heavily-traveled road, but there are no other existing traffic control measures. A narrow sidewalk follows Route 138 in both directions, but the tree canopy is heavy and the walkway is very dark at night. The sidewalk ends (to the west) at the southeastern most corner of the Keaney parking lot, adjacent to White Horn Brook. The apartments are on a slope so that the walkways contain a number of stairs which are difficult for Landscape & Grounds to maintain. More than any other residential area on the core campus, there is a high volume of bicycles stored, implying that many of the residents bike through campus. A bus shelter is present near the main drive.

Other amenities include a play structure, community center, and a fenced-in community garden area with raised beds. The engineering shuttle line for on-campus transportation stops near Graduate Circle on Route 138. From the campus transportation website: "Riders must be standing at the bus stop and should wave to the operator to make it completely clear that they want to get on the bus, since there is also a crosswalk collocated with the bus stops."

# 1.6 PLANNING & DESIGN PROJECTS

## Previous Planning Documents

There are a number of planning documents and design projects that directly affected this Landscape Master Plan which have been completed in recent years. These include:

- Strategic Plan for Campus Sustainability and Climate Action, 2015-2020
- Service Sector Master Plan, 2016
- Design Guidelines for a New Campus Commons, 2015
- Fraternity Circle Master Plan, 2013
- Main Street/Hammerschlag Mall Schematic Design, 2011
- Drainage Master Plan for Kingston Campus, 2006
- North District Campus Plan, 2001
- Kingston Campus Master Plan, 2000

## Design & Planning Projects Underway

At the time of the preparation of this master plan, several additional design projects and planning documents were underway in various phases for the University. Those projects and their status are listed below:

- Brookside/White Horn Brook Apartments (Design)
- South County Bike Path URI Campus Extension (Design)
- Gateway Welcome Center (Design)
- College of Engineering (Design)
- Fine Arts Center & Parking Lot (Design)
- North Woods Trail (Design)
- Butterfield Drainage Improvements (Design)
- Lower College Road Reconstruction Project (Design)
- Feasibility Design Study for URI Women's Tennis Center (Design)
- Reconstruction of Fraternity Circle (RFP)
- Memorial Union Master Plan (RFP)

- University Hotel & Conference Center (RFP)
- Transportation & Parking Master Plan (Planning)
- Drainage Master Plan (Planning)
- Draft URI Historic District Nomination Form, 2016 (Planning)

In addition to University-led design projects, the Rhode Island Department of Transportation has Transportation Improvement Plan (TIP) projects in the works which will affect the University and its peripheries. These proposed projects include:

- Plains Road/Route 138/Ministerial Road rotary to serve as new Campus Gateway from the West/Route 95 (90% Design phase)
- Peckham Farm Road/Keaney Road rotary (Design)
- Commuter Rail spur from South Kingstown Amtrak & Inter-modal Center to be located across Plains Road from Ryan Center (Planning)

Additional projects that have been identified for future planning or design by Campus Planning & Design or University Capital Improvements include the following:

- Feasibility Study for Potter Building
- Feasibility Study for a new natatorium, and improvements to Meade Stadium & the track



## Campus Landscape Impacts

All of these projects, when implemented, will impact the University's campus landscape. Any projects where plans had been developed and were made available to the landscape master planning team were incorporated into the proposed recommendations base plan. Those projects that have not yet been implemented at the time of this report but are understood that they will be implemented are discussed herein for an understanding as to how the plans will impact the University's landscape.

The anticipated completion dates of each project is noted in parenthesis by the title; several of these dates are unknown at this time.

### Brookside Apartments (2019)

Brookside Apartments is an apartment-style residence with approximately 500 beds for students of junior and senior standing. The building will be constructed west of White Horn Brook adjacent to the Service Sector on a portion of the existing Dairy Barn parking lot. At least a portion of it will be located in the 100-year floodplain of White Horn Brook and it is within the 200-foot Riparian zone.

The landscape plans create a series of decks along the proposed bike path extension overlooking the wetlands. Patio spaces have also been included on both sides of the building. The plan also introduces a series of walkways around and through White Horn Brook wetlands to connect the new housing to the Heathman/Garrahy/Wiley Residence Halls complex and to bordering sidewalks.

### Service Sector Plan (TBD)

Brookside Apartments and its supporting landscape will require the relocation of several of the Service Sector facilities, including the salt barn, the Landscape and Grounds stockpiles, storage sheds, the gas-filling station, the compressed natural gas tank, and the trash and recycling center. There are numerous sheds and trailers also

located throughout the district which would be moved off-site. In addition, approximately 335 parking spaces will be eliminated from the district.

The Service Sector Plan proposes relocating Landscape and Grounds into the existing structure that Automotive Shop currently uses and will take over the structure that currently houses Housing & Residential Life (HRL) administration. The trash and recycling center is proposed to be relocated to a site across Plains Road from the Flagg Road parking lot, to the northwest. Automotive Shop would be constructed between the HRL maintenance building and warehouse structures. Public Safety and the HRL administration are proposed to be constructed along Flagg Road near the intersection of West Alumni Avenue. HRL will also have an addition to their central receiving building in the north of the district.

### Bike Path Extension (2018)

The University is undertaking an extension of the William T. O'Neill Bike Path—more commonly known as the South County Bike Path. Current plans will connect the existing bike path along Ministerial Road/Route 110 where the extension would meet Peckham Farm south of the West Kingston Elementary School. The trail would follow the wood line to the north on the western edge of the property until reaching Route 138. The bike path will parallel Route 138 to the east until reaching White Horn Brook; from there it will parallel White Horn Brook on its western bank until crossing at West Alumni Avenue. Its northern termination would be near the Flagg Road parking lot.

## 1.6 PLANNING & DESIGN PROJECTS

### Gateway Welcome Center (2018)

The Gateway Welcome Center will replace the existing visitor center. The Welcome Center will have a more substantial presence on Upper College Road and will provide gathering space for visitors who are waiting for tours. In conjunction with the structure, the parking lot to the east will be improved to accommodate a new flow of traffic. The existing Upper College Road access will be eliminated and visitors will be directed east on Briar Lane beyond the Campus Police Station before entering the lot. The new approach and Welcome Center will give visitors a new first impression of the Kingston campus.

### College of Engineering (2019)

The College of Engineering renovation is removing four existing structures—Kelley, Wales, Crawford and Gilbreth—and replacing them with one larger structure which will occupy the north and west edges of the space. The central green will be substantially reduced from its current size but the space—which currently feels less than inviting—will be framed with a large glass structure that will open the college back up to the rest of the campus.

### Fine Arts Center and Parking Lot (TBD)

Improvements to the Fine Arts Center and parking lot will be a two phase construction project. The parking lot improvements will be undertaken first. The plans will effectively divide the lot into three sections so that it can be sectioned for faculty, staff, and visitors versus students. The improvements include walkways that everyone to cross through the parking without walking through drive aisles. The plan also creates swales and berms to capture, treat and infiltrate stormwater. An additional access point on Flagg Road should alleviate some of the vehicle queuing. The plans also provide new access routes into the Fine Arts Center and to Upper College Road on the north side of Fine Arts. The implementation of the plan requires the removal of the Hellenic Studies Center Paideia.

The second phase of the construction will be the renovations to the Fine Arts Center structure. Current plans recommend the removal of several of the building’s “pods” while keeping and improving the three performance spaces including the concert hall, the theatre, and the black box theatre. The addition will be a strong horizontal bar that will reach east and west through the current central gathering space. The removal of the westernmost pod will allow the creation of a large open space to the southeast that will strengthen the visual and physical connection to the campus quadrangle.

### North Woods Trails (Phase I, 2018)

The North Woods trail project is intended to increase access to the natural resources present in the North Woods across Flagg Road as an asset for all students. Many classes currently use the woods and its resources as a laboratory, but developing a trail network will encourage students and visitors to enjoy the area as a part of campus recreation.

### Fraternity Circle (2018)

Improvements to Fraternity Circle will be based on the 2013 master plan. The plan works to create a more cohesive neighborhood of the campus land where the majority of the fraternities and sororities are located. The plan creates communal amenities such as a fire pit, volleyball and basketball courts. It also formalizes parking and walkways and creates a new loop drive paralleling Route 138 with additional parking. Neighborhood open spaces are shared and include a central common, a quadrangle, a tree grove, the existing lawn at Delta Zeta, and the space at the fire circle. Additionally, two gateway spaces have been defined and enhanced: one from the Keaney parking lot and one from Hillside Hall.

### University Hotel & Conference Center (TBD)

The University Hotel and Conference Center will be located in the area of the current University Club, east of Upper College Road. The intent is for the majority of the traffic volume to come from Route 138, to Plains Road and Flagg Road—assuming it is coming from Route 95—to the northern extent of Upper College Road. The University has developed Design Guidelines for the New Campus Commons which is intended to include a hotel, restaurant, apartment, and retail and commercial spaces. The Commons will change the aesthetic, uses and pedestrian movement along and through the central portion of Upper College Road.

### Memorial Union Master Plan (TBD)

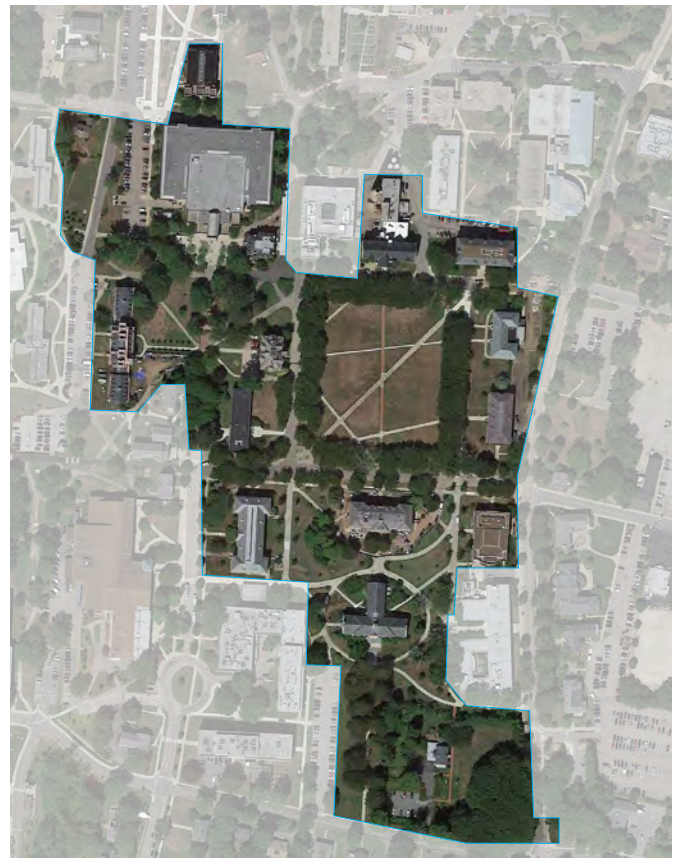
The Memorial Union Master Plan is intended to redevelop the building to meet the 21st century needs of the University. The project will look at the front plaza area along Ranger Road, the rear entry, and outdoor dining facing Campus Avenue and Bressler Hall.

### URI Historic District Nomination Form (TBD)

In 2016, the Rhode Island Historical Preservation and Heritage Commission prepared a draft National Register of Historic Places Nomination Form to create the URI Historic District (HD). The HD is proposed to be focused around the central campus core from Rodman Hall to the President’s House, and Roosevelt Hall to Upper College Road, including the quadrangle. The Nomination Form proposed a Period of Significance of 1888 to 1966 meaning that most structures or landscapes dating to this era are potentially significant and are likely character-defining features of the campus landscape. The limits of the historic district are shown herein.

### Transportation & Parking Master Plan (2017)

The Transportation and Parking Master Plan began after this Landscape Master Plan but the teams met throughout the process to coordinate data and discuss recommendations. The goal of the Transportation Master Plan is to develop a plan to better manage vehicular movement and alternative modes of transportation to, through and around the campus, as well as to develop new strategies for dealing with parking on the campus. In addition to faculty, staff, commuter and resident student parking, the team will study and make recommendations for campus shuttle systems and routes, as well as connections between the various campuses and the broader region.



Outline of proposed University of Rhode Island Historic District



## 1.6 PLANNING & DESIGN PROJECTS

### Drainage Master Plan (2018)

The early phase of the Drainage Master Plan was also developed concurrently to this Landscape Master Plan with key staff meeting to discuss existing conditions and proposed recommendations. The study documents existing conditions, regulatory framework, and the campus stormwater management system.

### RIDOT Route 138 (2021/2023)

The RI Department of Transportation's Transportation Improvement Plan (TIP) funded a two-phase project for Route 138 improvements in Kingston. The first phase was the resurfacing of Route 138 from Route 108 to Fairgrounds Road; this was completed in December of 2016. The second phase will continue the resurfacing to Route 95 and will create two new roundabouts at the Route 138/Ministerial Road/Plains Road intersection and at the Route 138/Peckham Farm/Keaney Road intersection.

### Inter-modal Center (TBD)

Another project still in the planning phase is a potential Inter-modal Center which would be located to the northwest of the Kingston campus at the intersection of Plains and Flagg Roads. The project would include a railroad spur from the Wickford Junction Commuter Rail train station. This would create greater interstate and across state access to the university reducing dependence on vehicles to get onto campus. This project would also establish a new transportation hub at the Gateway Welcome Center so that two new hubs would be created, potentially removing RIPTA access from the Memorial Union.

### Lower College Road Reconstruction Project (2018)

Improvement to Lower College Road will extend from Route 138 to Campus Avenue and include adding sidewalks and the elimination of some of the on-street parking with the goal of providing a safer pedestrian route onto campus. Site lighting and stormwater management infrastructure will also be included.

### Feasibility Design Study for URI Women's Tennis Center (TBD)

The feasibility study has identified two potential locations for a new women's tennis pavilion for the University. The preferred option is south of the baseball fields (north of the Boss Ice Arena). The project would maintain the existing outdoor courts but would provide four to six new indoor courts with seating for approximately 200 spectators.

### Butterfield Drainage Improvements (2018)

This project is necessitated by the high velocity and volume of stormwater flowing downhill from the top of campus. Improvements include slowing runoff in up-gradient structures, as well as new sub-surface and at-grade improvements between the Multicultural Center and Butterfield Road.

THIS PAGE INTENTIONALLY LEFT BLANK

# 1.7 URI, 2016-2017

## University of Rhode Island **BY THE NUMBERS**

Kingston Campus

general

**1892**

year founded

**1,200**

kingston campus acreage

**16,631**

total enrollment

**\$142,587,930**

2014 endowment

**62**

nations represented

**46%** degree seeking men

**59%**

Students have cars on campus

**45%**

Students live on campus

**16:1**

Student-Faculty ratio

housing

**77%** coed dorms **1%** womens dorms

**5%** Fraternity housing **5%** sorority housing

**2%** special housing for international students

**1%** special housing for disabled students

grants

**1892**

year URI was designated  
an Land Grant Institution

**1969**

year URI was designated  
an Sea Grant Institution

**1995**

year URI was designated  
an Urban Grant Institution

campus

**1,200**

kingston campus acreage

**2,300**

alton jones campus acreage

**153**

narragansett bay campus acreage

**2 BUILDINGS**

providence campus







**112**  
species of birds

**\$7,574,115**  
total tree value of 1,095 trees

**2,322** lbs/per year  
\*air quality improved

**1,111,661** kwh/year  
\*energy conserved

**1,968,313** gal/year  
\*stormwater filtered

**2,229,521** lbs  
\*carbon dioxide stored

trees

**100%**  
area of campus that  
overlays ground water  
recharge & ground water  
reservoir

**400**  
acres of campus studied in  
the overlay districts

**7 acres**  
civic space

**147 or 47%**  
acreage of impervious surface  
in the overlay districts

**53%**  
pervious surface

\*numbers calculated 1,095 trees surveyed in 2016 (source: open tree map)







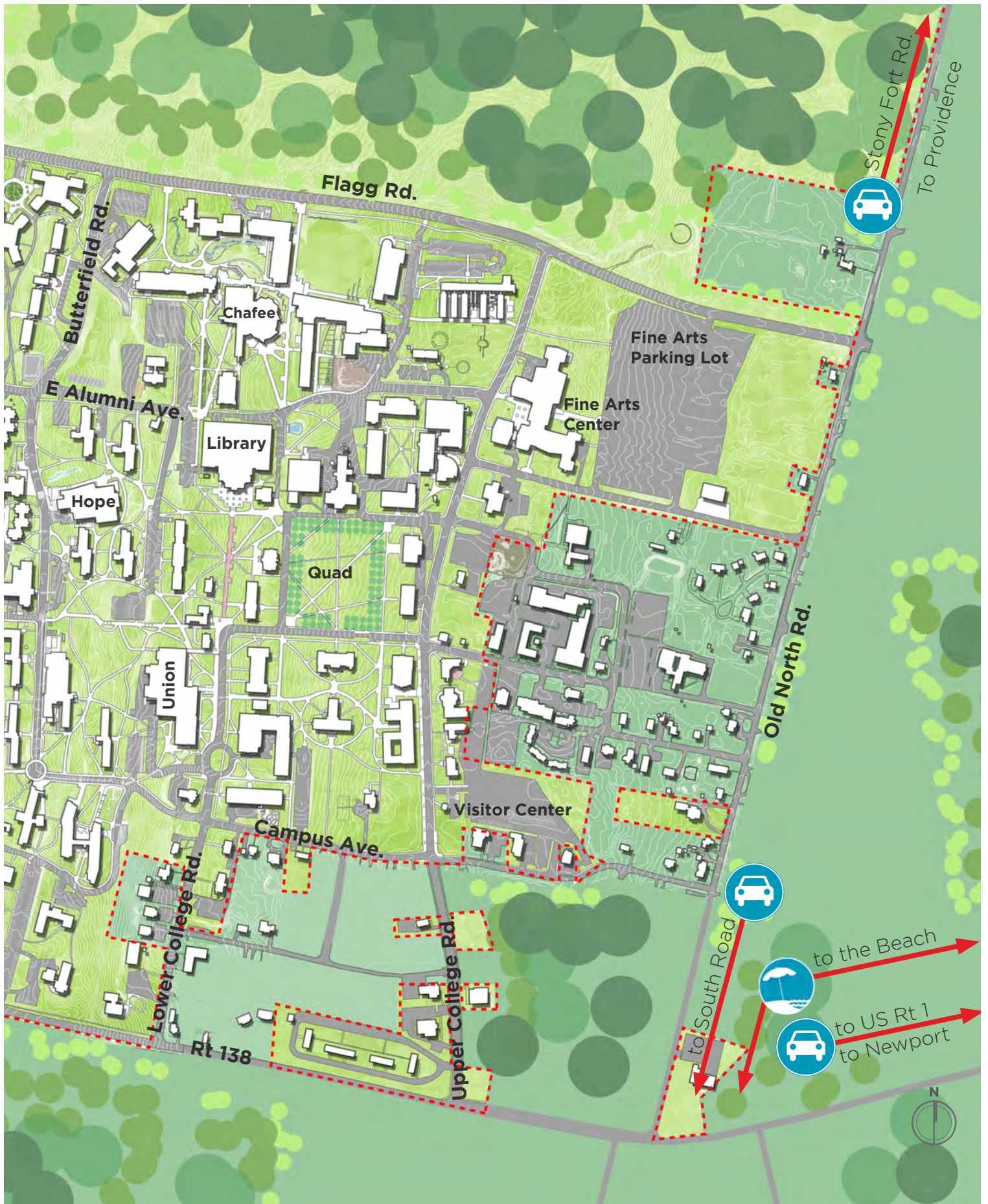
# CAMPUS LANDSCAPE EXISTING CONDITIONS

- 2.1 2016-2017 CAMPUS OVERVIEW
- 2.2 EXISTING OPEN SPACE
  - SPECIAL PLACES
  - PUBLIC ART
  - SIGNIFICANT VIEWSHEDS
- 2.3 EXISTING NATURAL SYSTEMS
  - REGIONAL CONTEXT
  - CAMPUS WETLAND SYSTEMS
  - UNDEVELOPED AREAS
  - SOILS
  - CANOPY COVER
  - WILDLIFE HABITAT
- 2.4 EXISTING STORMWATER MANAGEMENT & GREEN INFRASTRUCTURE
- 2.5 EXISTING PEDESTRIAN EXPERIENCE
  - SIGNIFICANT WALKWAYS
  - ACCESSIBILITY
  - DESIRE LINES
- 2.6 EXISTING VEHICULAR CONNECTIONS
  - CAMPUS GATEWAYS
  - CAMPUS ROADS
  - TRANSIT
  - BICYCLES & SKATEBOARDS
- 2.7 EXISTING CAMPUS SAFETY & SECURITY
  - POTENTIAL CONFLICTS
  - SECURITY BLUE LIGHTS
  - SITE LIGHTING









## Core Campus Overview



# 2.1 2016-2017 CAMPUS OVERVIEW



Percentages are based on building quantities within the core campus and by use, as designated above.



Campus Building Uses





**HISTORIC**



**PLAZA/GATHERING**



**NATURAL**



**RESIDENTIAL**



**STREETSCAPE**



**OPEN SPACE/GARDEN**



**STORMWATER**



**COMMERCIAL**



Campus Landscape Typologies

## 2.2 EXISTING OPEN SPACE: SPECIAL PLACES

### Special Places on Campus

Special places on campus are those where significant events are held regularly, memorial places, and other locations on campus which have an emotional connection to students, faculty, staff, and alumni.

Without question, the Quadrangle is one of the most special places on campus. Commencement, festivals, and classes are held here on a regular basis. It was developed early after the University's charter was established and has remained fairly consistent since its establishment. It is likely one of the first images that come to mind when URI is mentioned. The URI Century Walk is a brick walkway which crosses the quad from north to south. The bricks are personally dedicated based on donors. In 1993, the University buried a time capsule on the western side of the Quad under the four-foot wide walkway which connects Davis and East Halls. To begin the University Commencement ceremony, the graduating students process from Ryan Center up to the Quad and typically file in from the northeast corner. Commencement ceremonies are also held on the Pharmacy Green, and at one time were also held in the Botanical Gardens. (In the past, the Botanical Gardens have also been a site for weddings.) A small stage is included in the Botanical Gardens.

Significant events are held regularly in the gardens and on the lawn of the President's House and, when dignitaries visit, the long approach on the south side of Green Hall becomes an important procession.

Galanti Plaza—the entry plaza to Carothers Library—was dedicated in 1993 to Mildred McKowan and Peter M. Galanti. The entry is one of the more significant University hardscaped gathering spaces which is used by students and faculty alike.

### University Memorials

Memorials have been a part of the University landscape since the College War Memorial (1, on the Existing Art & Memorials plan) was installed in 1922 commemorating the sacrifice of alumni in World War I—located along Upper College Road in front of the President's House. Shortly thereafter, in 1928, the Memorial Gateway (2) was constructed along Upper College Road. After World War II, the Memorial Union was dedicated to URI alumni's contributions to the war. In 1996, a Vietnam Memorial (3) was dedicated near the Mackal Field House and is comprised of three granite benches identifying the sixteen alumni and one staff member lost during the war. In addition, a significant number of memorial trees and benches have been located throughout campus. Also, on both sides of Upper College Road near the President's House there is a grove of oak trees that are a part of the World War I memorial.

Additional memorials include:

4. Heber W. Youngken, Jr. Medicinal Plant Garden, Pharmacy Building
5. Cheryl Tefft Garden Entrance, Botanical Gardens
6. Jennifer Ann Ryan Memorial/Botanical Garden Upper College Road Entrance
7. Dieter Hammerschlag Mall, Ranger Road to Carothers Library
8. Arthur L. Hardge sculpture, Multicultural Center
9. Harry's Garden for Horace "Harry" Amaral, between Ranger and Green Halls
10. Elmer A. Palmatier Garden, between Ranger Hall and Edwards Auditorium
11. Florence Nightingale Memorial Garden
12. Stillwell Bench, Upper College Road
13. Lincoln Almond Plaque, Lincoln Almond Plaza, Ryan Center

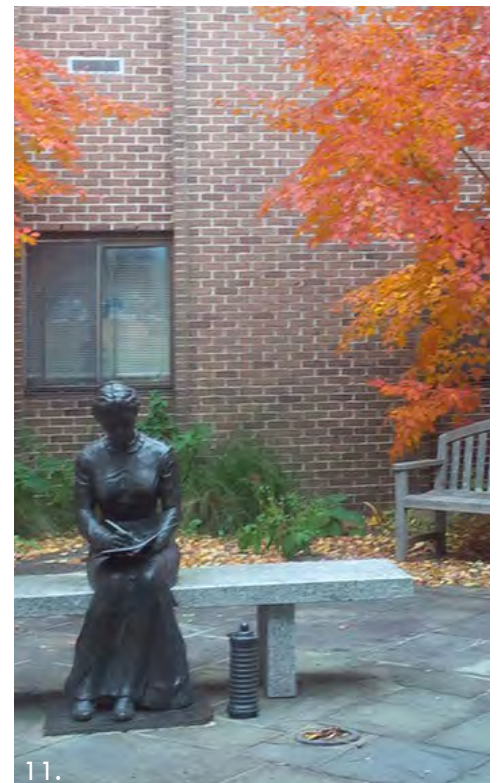


- 14. Tau Beta Pi Chapter, Engineering Quad
- 15. Robert & Gerri Beagle Perennial Garden, Alumni Center

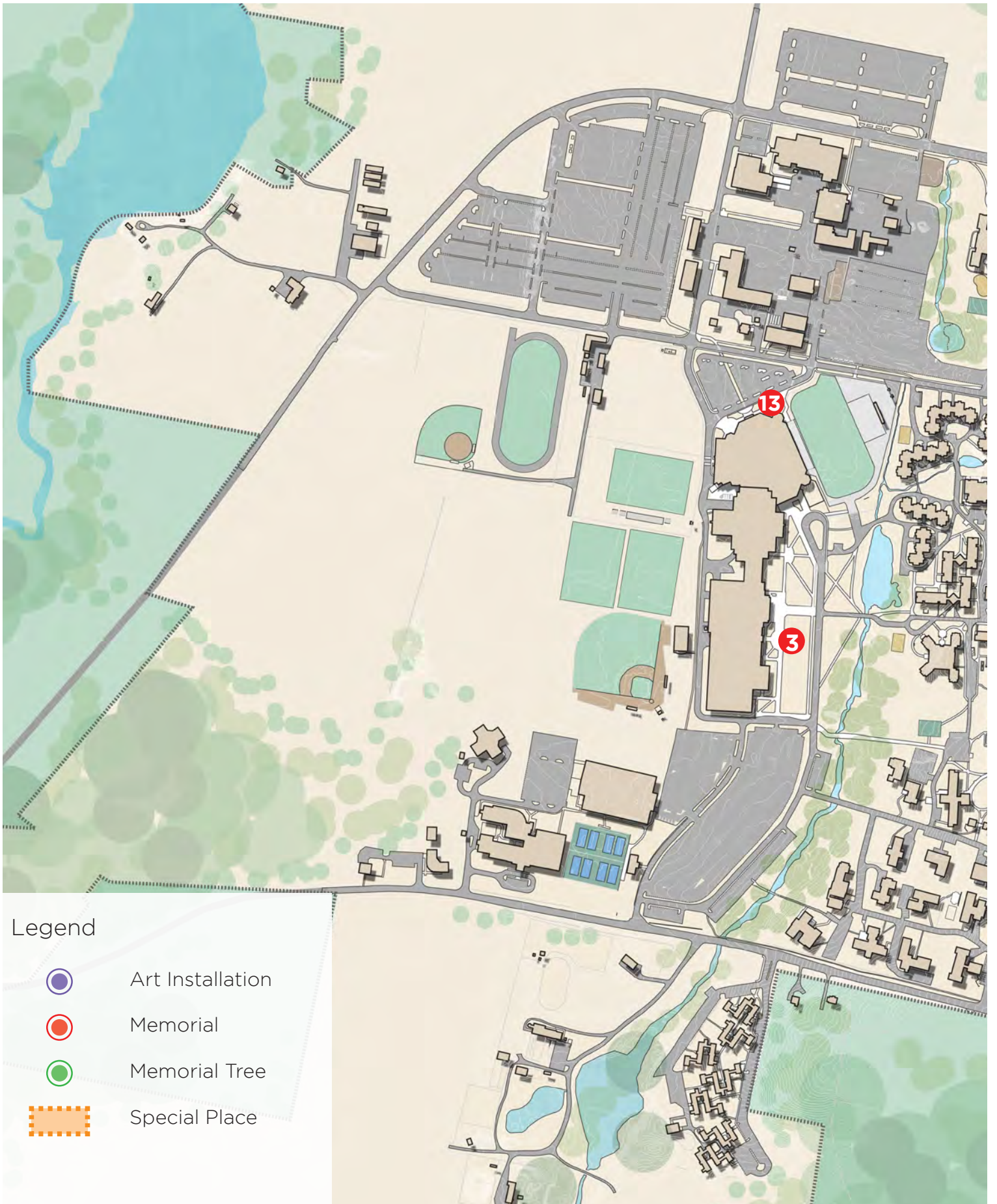
**SPECIAL PLACES ON CAMPUS**







**UNIVERSITY MEMORIALS**



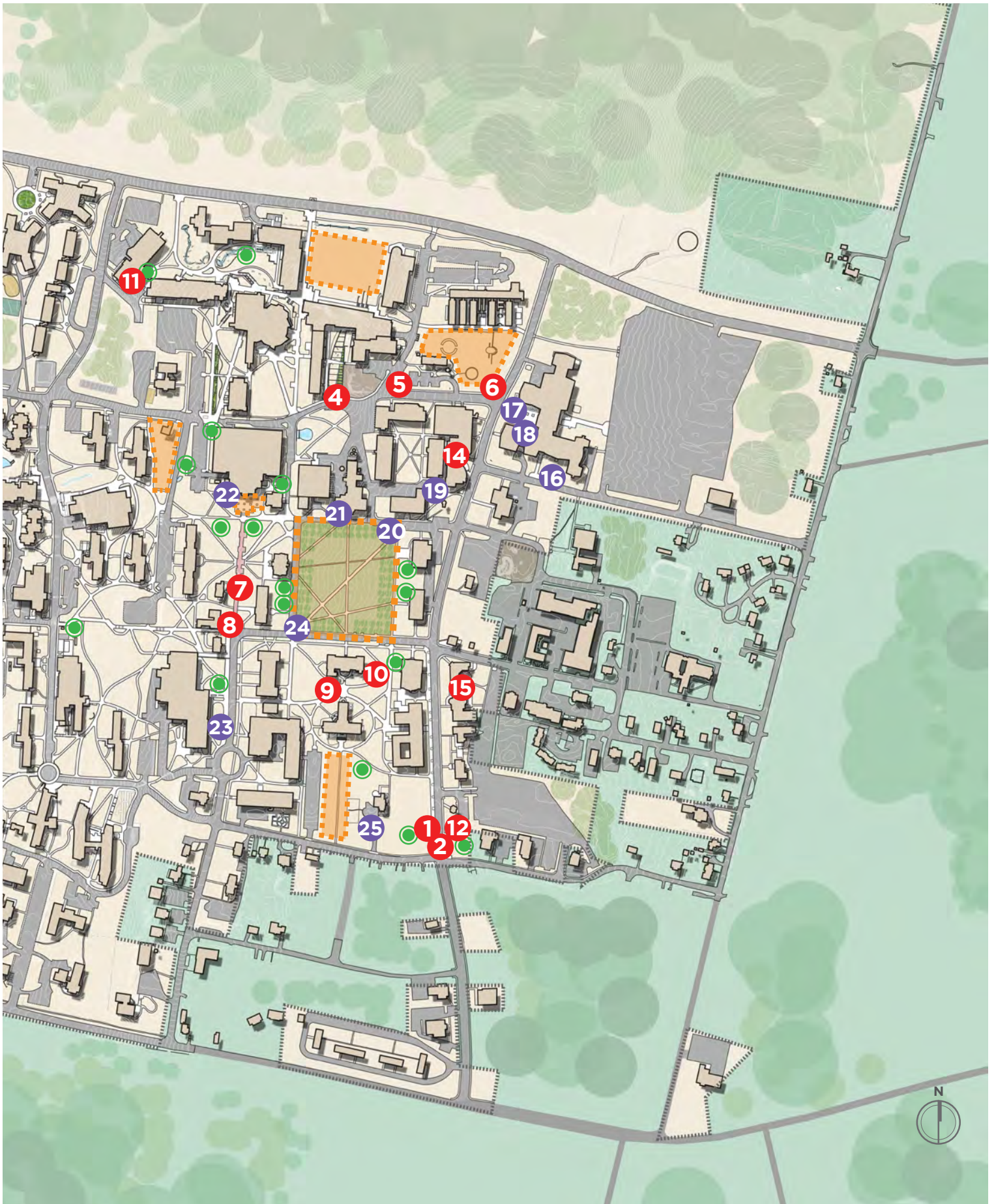




Legend

-  Art Installation
-  Memorial
-  Memorial Tree
-  Special Place





## Existing Art & Memorials



## 2.2 EXISTING OPEN SPACE: PUBLIC ART

### Public Art

In addition to the memorials there are a number of art installations across campus.

These include:

16. “Untitled” (Concrete pylons), Fine Arts Center plaza
17. “The Performers”, Fine Arts Center plaza
18. “Trees”, Fine Arts Center plaza
19. Steel I-beam sculpture, between Wales & Bliss Halls
20. American Flag, northeast corner of Quadrangle
21. “Torsion III” Sculpture, Lippitt Hall
22. Algonquian Language Carving, Galanti Plaza, Carothers Library
23. Rhody the Ram statue, Memorial Union
24. “Old Ben Butler” cannon, southwest corner of Quadrangle
25. President’s Sun Dial, President’s House

PUBLIC ART



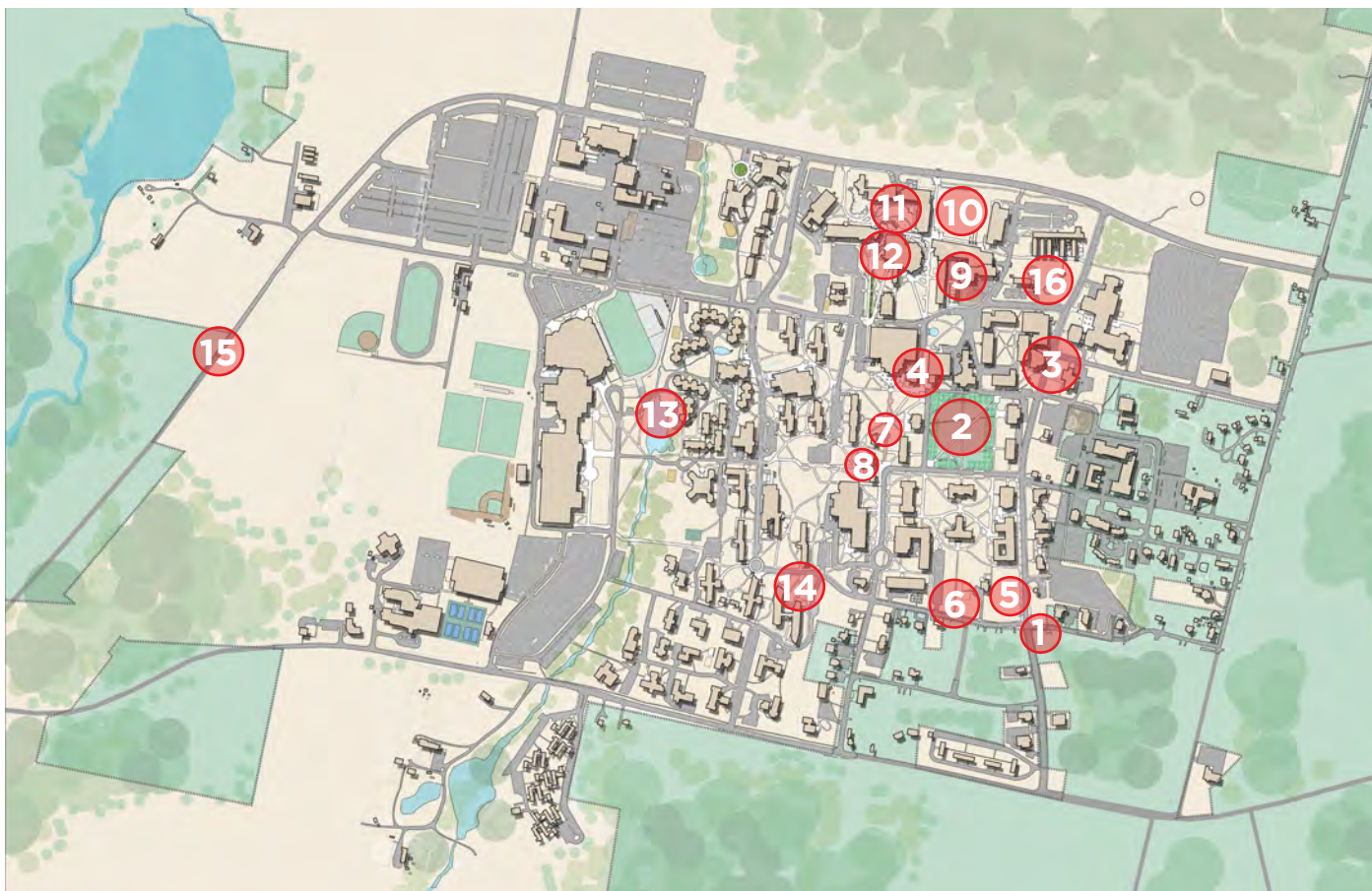


## 2.2 EXISTING OPEN SPACE: SIGNIFICANT VIEWSHEDS

### Significant Viewsheds

There are a number of significant views on campus. The views are of the iconic imagery of the University of Rhode Island and lend to its essential character. These are the memorable sights of the campus. The views looking off campus to the surrounding landscape provide context for the University landscape and ground the University to its region. They include:

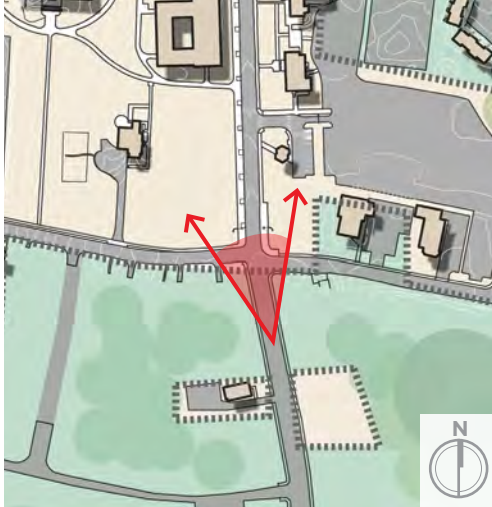
1. View of the Memorial Gateway on Upper College Road from off-campus
2. View across and into the Quadrangle from Upper College Road near Ranger Road
3. View of the Quadrangle from Upper College Road near Fine Arts Center/Bills Road
4. View of Davis Hall from the walkway near Carothers Library
5. View into President's House and Gardens
6. View of Green Hall's south façade
7. View down Hammerschlag Mall towards Carothers Library
8. View down the hill from the Elephant Walk towards the Residential Life District
9. View into the Pharmacy Medicinal Plant Garden
10. View into Pharmacy Green
11. View of CBLS rain garden
12. View from Chemistry building and plaza of the landscape to west of campus
13. Views of White Horn Brook
14. Views into Hillside Hall gardens
15. View of campus from Plains Road
16. Views into Botanical Gardens



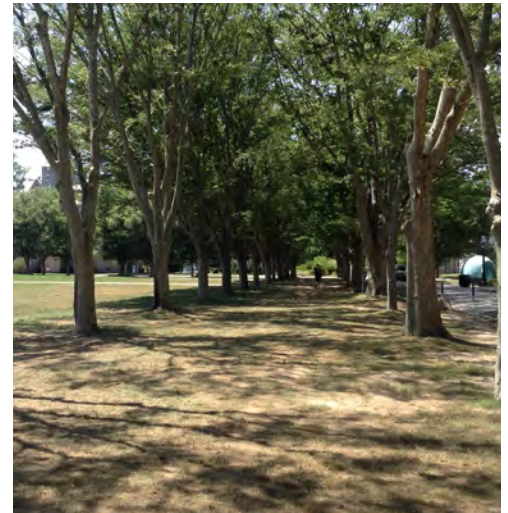
Significant Viewsheds



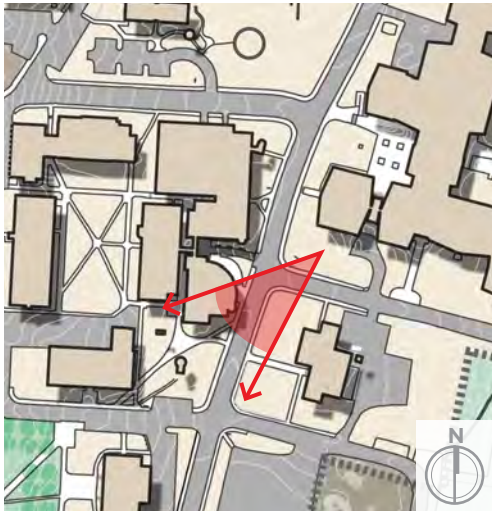
### 1. VIEW OF GATEWAY DOWN UPPER COLLEGE RD. FROM RT 138



### 2. VIEW OF QUADRANGLE



### 3. VIEW FROM FINE ARTS TOWARDS QUADRANGLE

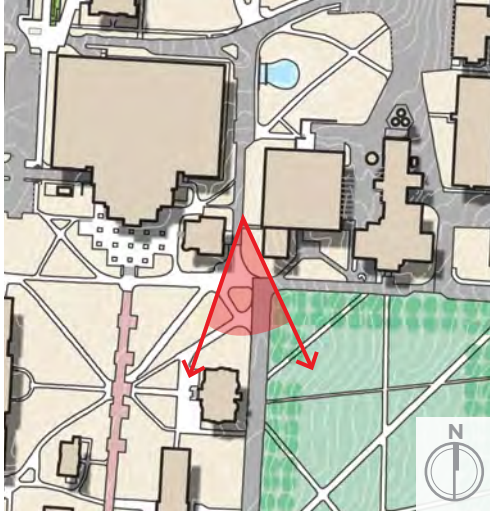


Sections: Viewsheds

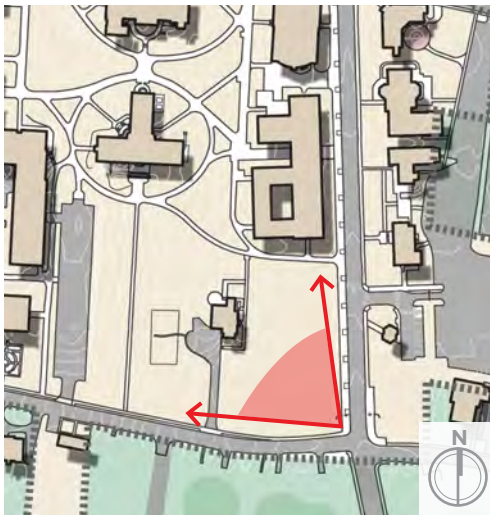


## 2.2 EXISTING OPEN SPACE: SIGNIFICANT VIEWSHEDS

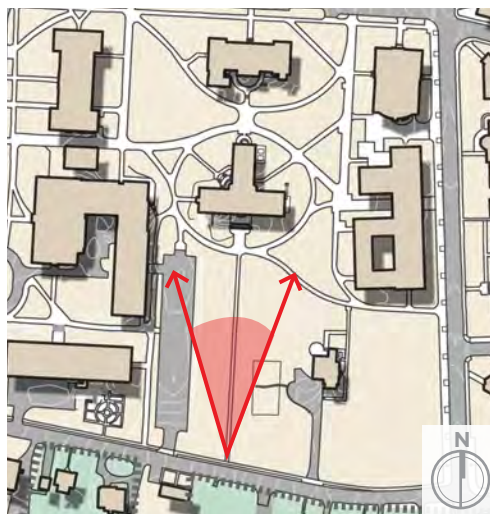
### 4. VIEW TOWARDS DAVIS HALL FROM NORTH



### 5. BLOCKED VIEW INTO PRESIDENT'S HOUSE & GARDENS



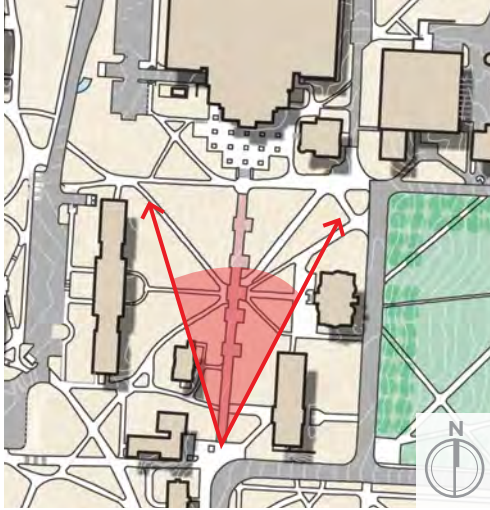
### 6. VIEWS OF SOUTHERN FACADE OF GREEN HALL



Sections: Viewsheds



7. VIEW ALONG HAMMERSCHLAG MALL TOWARDS CAROTHERS LIBRARY



8. VIEW FROM ELEPHANT WALK TO WEST



9. VIEW INTO PHARMACY'S MEDICINAL GARDEN

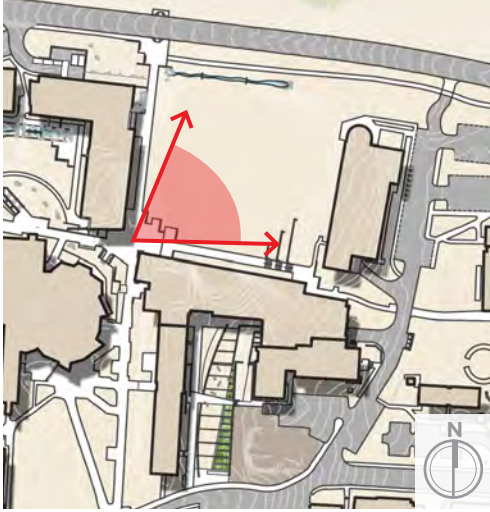


Sections: Viewsheds

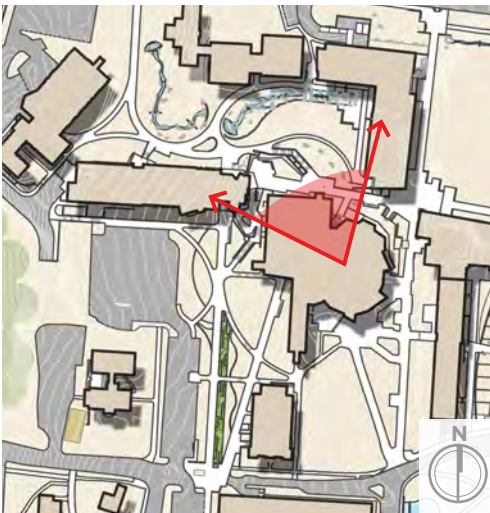


## 2.2 EXISTING OPEN SPACE: SIGNIFICANT VIEWSHEDS

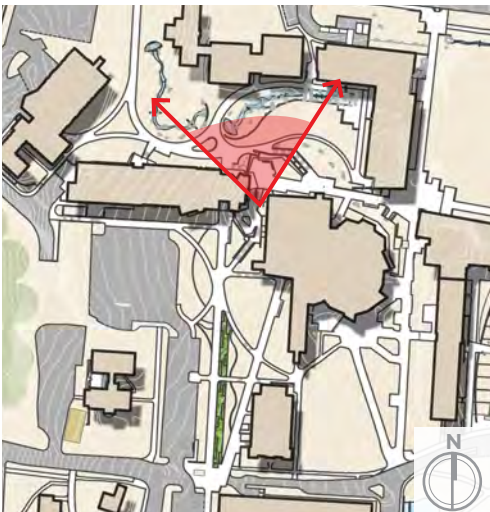
10. VIEW INTO PHARMACY GREEN



11. VIEW INTO CBLS RAIN GARDEN



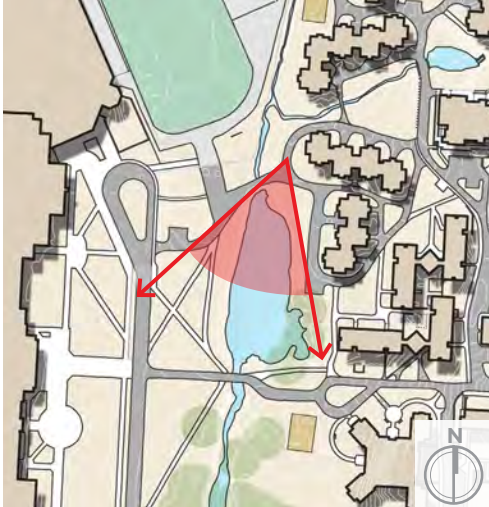
12. VIEW FROM CHEMISTRY BUILDING LOOKING WEST



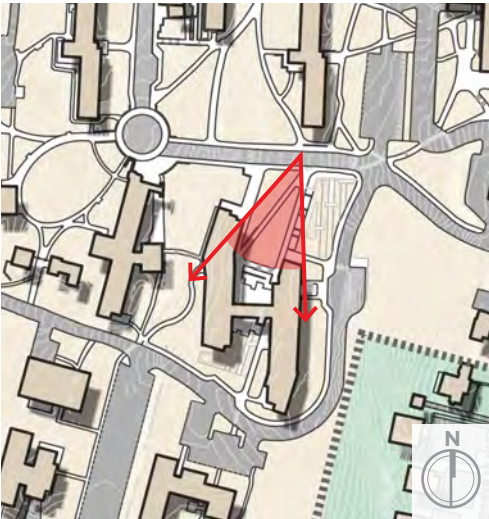
Sections: Viewsheds



13. VIEW OF WHITE HORN BROOK & POND



14. VIEW INTO HILLSIDE RESIDENCE HALL GARDEN



15. VIEW OF CAMPUS FROM PLAINS ROAD



Sections: Viewsheds



## 2.2 EXISTING OPEN SPACE: SIGNIFICANT VIEWSHEDS

There are moments around campus where the views are less than ideal. For the most part, these have to do with the visual impacts of infrastructure. Negative views around campus include (in no particular order):

1. Entrance to campus onto Plains Road from Route 138
2. View of rear of Meade Stadium from West Alumni Avenue
3. Dumpsters on southeast side of Memorial Union
4. Damaged parapet over White Horn Creek near Fascitelli Center
5. Dirt parking area to south of Tyler Hall
6. Western access to Galanti Plaza at Carothers Library
7. Roof of Hope Dining Commons when approaching from the east near Roosevelt Hall
8. Broken culvert headwall of White Horn Creek at Hope Dining Commons
9. Unfinished construction of the Hellenic Studies Center Paideia
10. Parking lot and University power station between Lippitt and Tyler Halls
11. Paving and vehicles along West Alumni Avenue, Flagg Road and Plains Road and at the Fine Arts Center
12. HVAC, utilities, and service area of Butterfield Hall from the Elephant Walk
13. Extensive brown-painted wood guardrail and large swale concrete bollards along Complex Road
14. Jersey barriers as vehicular controls
15. Dumpsters behind Browning Hall from Eddy Hall
16. Clusters of dumpsters and trash bins when in the open and not sufficiently screened by discrete fencing
17. Monolithic concrete bollards

# NEGATIVE VIEWS ON CAMPUS





## 2.2 EXISTING OPEN SPACE: SUMMARY

### District Summaries

#### Historic Campus Core District

The Quadrangle is the physical and emotional core of the Kingston campus. Commencement, festivals, and community events are programmed for the Quad and students and faculty use the greenspace on nice days for classes, gathering, recreation and relaxation. The Quad is a four-and-a-half-acre green lined by 108 zelkova trees. (The zelkovas replaced the original American elms, of which one elm tree remains). Originally conceived of by Olmsted, Olmsted & Eliot in plans as early as 1895, this is the oldest part of the campus.

North of the Quad is Ballentine Hall. Behind Ballentine is a small wooded green space that includes a stormwater outlet area. The plantings around the edge of the pond are quite diverse and attractive in season. This space does not include any seating or other pedestrian amenities and is almost entirely surrounded by roads and parking.

The Engineering Quad is located just to the west of Upper College Road across from the Fine Arts Center. The existing quadrangle is bordered by Bliss, Crawford, Kelley, Gilbreth, and Wales Halls. The existing space doesn't seem to be well used except for circulation. The space is fairly well-enclosed and secluded unless you are using the surrounding buildings. (As of the completion of this report, the construction of the new Engineering building was underway, greatly reducing the size of the central green space.)

The front entries of both Ballentine and Lippitt Halls each have a small plaza space which includes seating and a space to gather.

The other significant open space in the historic campus core is the front lawn of the President's House. This space is used for special events and as part of select Commencement events. The lawn is bordered by a hedge of hemlock trees which—in their decline—are being replaced with oriental spruces.

#### Mall District

Just to the west of the Quadrangle is Hammerschlag Mall. This linear space connects two of the most important buildings on campus: Carothers Library and the Memorial Union. A substantial green space exists on the west wide of the Mall but given the slope, circulation patterns and formal vegetation, this green acts more as a front lawn to Roosevelt Hall than an activated greenspace.

At the entry to Carothers Library is a large plaza—Galanti Plaza—the edges of which are lined by benches. Eight trees are planted within the space but seating under the trees is limited. In better weather, students and faculty can be seen waiting for friends or relaxing between classes on the benches, but the space is rarely filled with people and acts more of a foyer to the library than an active gathering space.

A small sloped greenspace is located in front of the Memorial Union on Lower College Road. The space is bound on two sides by the access walkways which lead to the upper level of the Union. A small plaza is located on the lower level, which can either be accessed from the bookstore or from the sloped walks that lead to Lower College Road. This space is occasionally used for pop-up events and student engagement events.

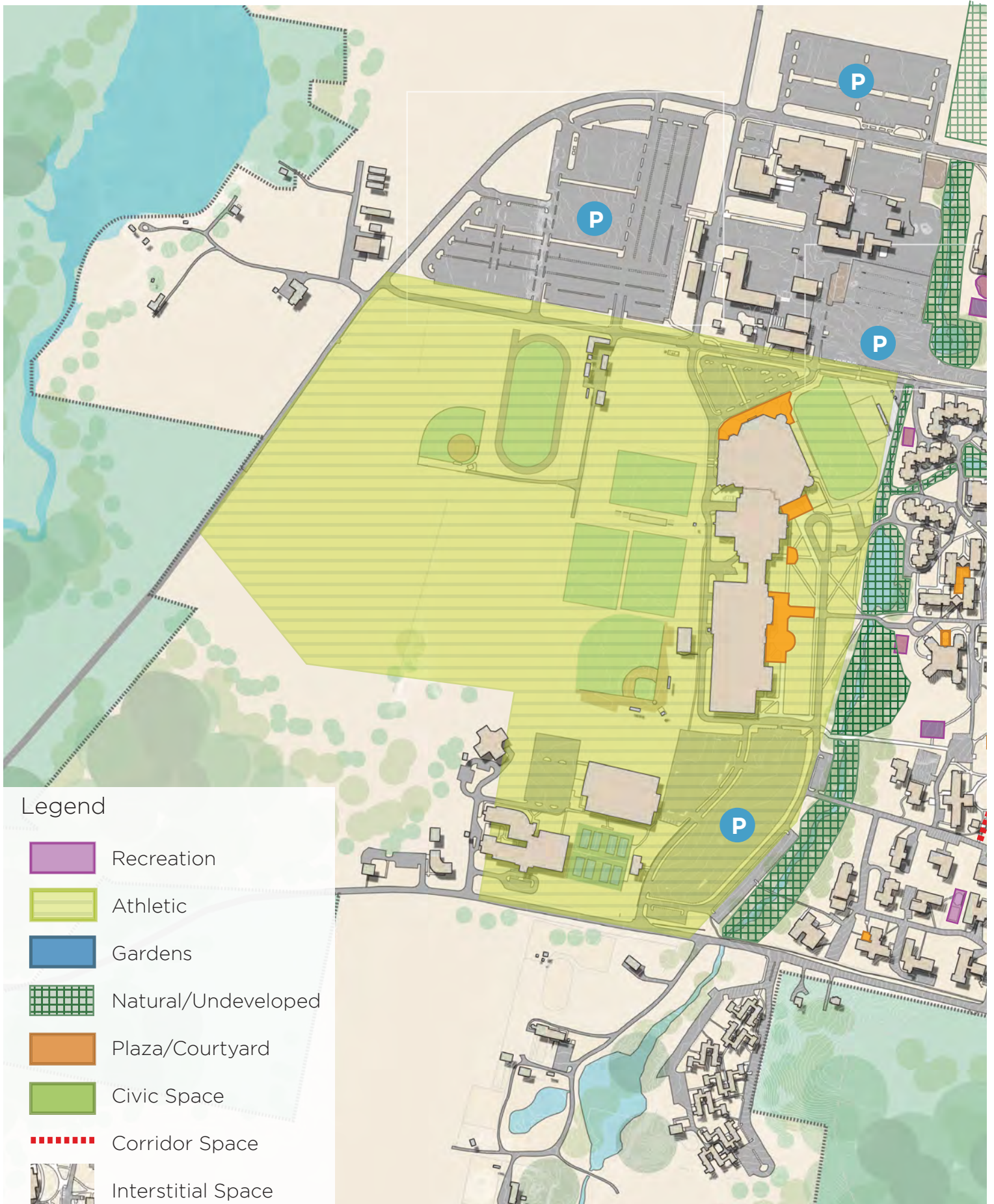
## HISTORIC CAMPUS CORE DISTRICT



## MALL DISTRICT











## Existing Open Space



## 2.2 EXISTING OPEN SPACE: SUMMARY

### North Campus District

The north campus contains one of the most significant green spaces on campus: the URI Botanical Gardens. The two-and-a-half-acre Botanical Gardens is located between the Engineering Quad and the Greenhouses along Upper College Road. The gardens are divided into twelve garden spaces, including shade gardens, a sunny perennial border, an ericaceous plants garden, a white garden, a water garden, perennial gardens, a rose garden, a rain garden, and two all-American display gardens. The gardens are used as learning landscapes by URI students, Master Gardeners, and local school children. It is also used for relaxing, studying, picnicking and for as many as ten weddings a year. These gardens are maintained by the Master Gardeners who are housed in the Outreach Center.

The Pharmacy Garden is a recent addition to the University, installed as part of the new College of Pharmacy Building in 2013. The gardens are located along the east façade of Woodward Hall and include a stepped lawn and display medicinal gardens. They include 200 medicinal plants and ornamental species with a birch tree grove with benches and tables and chairs.

To the west of the Coastal Institute, a two-and-a-quarter-acre lawn was installed, nicknamed Pharmacy Green. Considering that the established lawn is relatively flat, it is assumed that this space was created as a potential future building site. However, since its installation it is used for events including Commencement for the Colleges of Pharmacy and Nursing with large tents temporarily installed. The green is also used for pop-up recreation and sunning. Its location on the northern edge of campus makes it remote. On the southwest corner of the site a small plaza connects the College of Pharmacy building with the Center for Biology and Life Sciences and Chafee Hall. Bench and stone seatwalls are included in the space.

On the south side of the Center for Biology and Life Sciences (CBLS) is an extensive rain garden system. The rain garden is a stormwater feature with a small plaza in the corner of the building with café-style chairs and table and stone seat walls. The gardens function as a learning landscape for several areas of study.

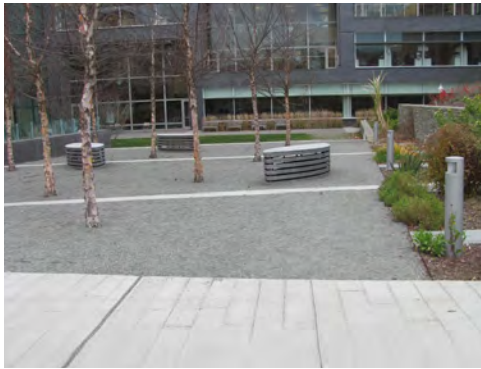
At the node where the Chemistry building and Chafee Hall meet, a significant plaza and green roof (plantings on structure) were installed on the second level. The plaza provides some seat walls, two planting areas and excellent views of the borrowed landscape to the west of campus. This plaza space is a model for usable campus landscapes at URI.

Between Chafee, Rodman, and Woodward Halls is a substantial open space. The green is completely underutilized but has some significant trees and great potential. An elevated plaza serves as one of the main entries to Chafee Hall but none of the doors on the south or east side of the hall meet accessibility guidelines. The stone dust plaza is accessible from the walkway connecting to Chemistry and Pharmacy but it is dated and years of deferred maintenance have made the plaza unattractive.

The Fine Arts Center is at the eastern end of the North Campus District across Upper College Road. A large, elevated plaza is located on the west side of the lobby and main entry. The space contains sculpture and four planters with built-in seating. The space is a bit sterile and is mostly shaded in the mornings and at midday resulting in the space being infrequently occupied. The planters break-up the plaza so there is little usable space except on the southern side which feels as though it is secluded and private.

To the east side of the Fine Arts Center is the URI Center for Hellenic Studies: an outdoor amphitheatre which was to have a structure with classrooms and library. The project was to have been completed in 2013 but sits unfinished.

# NORTH CAMPUS DISTRICT





## 2.2 EXISTING OPEN SPACE: SUMMARY

### Residential Life District (ResLife)

While there is a lot of greenspace in the Residential Life District, very little of it is designed space where students can gather, recreate, socialize, and relax. The newer residence halls incorporate plaza spaces, including Hillside and Eddy Residence Halls; Hillside has a substantial patio with an array of seating areas and types of seating. It provides café-style dining and seatwalls in smaller spaces. The plaza engages the building entries and provides space for students to wait and meet others, to relax, to eat or to study outside; it provides ample space for students to socialize and live outside of the residence hall. Just as the plaza between Chemistry and Chafee Halls are a model for open spaces within the academic core of campus, the spaces at Hillside Residence Hall are a model for semi-public spaces for residence halls at the University.

The entry on the north side of Eddy Residence Hall provides a smaller plaza area but it creates a place for students to gather and sit, though in a more limited way than Hillside. This is also true for the newer Wiley and Garrahy Residence Halls. The renovations at Butterfield created a roof deck that provides a semi-private space that residents can enjoy separate from students coming to dine at the lower level. It provides a small gathering space and some seating.

Heathman Residence Hall has an ample entry plaza which provides seating, bike storage, gathering space and gardens. It feels very much like a welcoming, semi-public entry space. Some of the older residence halls which have been renovated in the last fifteen years have similar, though smaller, entry spaces, including Butterfield, Browning, and Adams. Browning and Adams each have an elevated rear patio off of the common room. Weldin and Barlow also have a covered porch-like space off of the main entry, as does Bressler, but Bressler's faces away from Butterfield without a visual or physical connection making them feel very separate.

The suite-style residences (i.e. Dorr, Ellery, etc.) were built with small patios and hardscape entries or rear patios off of a communal room. Most are enclosed with fieldstone walls and include concrete benches. However, many of these spaces are small, shaded, and less than welcoming.

The north side of Phi Gamma Delta Fraternity functions as a separate residence hall for non-Greek students. It also serves as the main entry for these students with a large concrete plaza.

The west side of Fascitelli Fitness & Wellness Center opens directly onto Complex Road and the east side onto Butterfield Road. On the east side a substantial plaza was incorporated into the renovation of the building which related to the plaza and bottom of the stairs on the west side of Hope Commons. Hope also has a plaza on the northeast corner of the building near Turner Hall.

The ResLife District provides ample opportunity to create spaces where students can engage one another. The landscape and to be able to enjoy living in the landscape, not just indoors. There are several opportunities throughout the district that with some minor infrastructure and site amenities could become programmable spaces. Each cluster of residence halls should have an outdoor space where students can gather, socialize, and study, etc. outside of the housing.

Within ResLife there are three beach volleyball courts (behind Heathman/Wiley, Coddington, and Eddy Halls) and two basketball courts (behind Heathman/Wiley and Adams/Weldin Halls). In addition, one basketball court and one beach volleyball court are centrally located in Fraternity Circle between the houses of Sigma Phi Epsilon and Zeta Tau Alpha. These provide opportunities for social interaction and recreation out-of-doors.

RESIDENTIAL LIFE DISTRICT





## 2.2 EXISTING OPEN SPACE: SUMMARY

### Wetlands District

While White Horn Brook and the surrounding wetlands is comprised mainly of undeveloped floodplain, little of the area constitutes usable open space. The most significant space is the green around the pond between the Villages and Keaney Gymnasium/Tootell Aquatic Center. One seating area has been incorporated on the east side behind Ellery Residence Hall. On the west bank a large fire pit is available for sports rallies and other events.

### Athletics District

At each of the main entries to the sports complex, a plaza space exists. Keaney Gymnasium and Mackal Field house have a center plaza which extends to the front of Keaney. At Tootell Aquatic Center a small plaza connects the entry to the other structures and to the Ryan Center. All of these plazas are on the east side of the complex and connect to Keaney Road. The north side of the Ryan Center—Lincoln Almond Plaza—opens to the main parking lot and has three hardscape entry areas.

The other significant space is the landscape surrounding Meade Stadium. The area is used on game days for queuing and for entering and exiting spectators.

### Service District

There is no significant open space included in the service district.

WETLANDS DISTRICT



ATHLETICS DISTRICT



SERVICE DISTRICT





## 2.3 EXISTING NATURAL SYSTEMS:

### Regional Aquifer & Watersheds

#### Pawcatuck Aquifer

The University of Rhode Island lies within the Pawcatuck Regional Aquifer. This aquifer is designated by the federal Environmental Protection Agency as a “sole source aquifer” under the guidelines set forth in the Safe Drinking Water Act. Sole source aquifers are defined as aquifers that supply at least fifty percent of drinking water used and consumed in areas overlying the aquifer, in combination with the lack of adequate amounts of surface water for drinking water needs.

The Pawcatuck Regional Aquifer stretches through three states: Connecticut, Massachusetts, and Rhode Island, and encompasses nearly fourteen communities covering 295 square miles. The aquifer is the least developed major aquifer in Rhode Island. Despite this, stormwater infiltration and runoff are key issues as many of the wetlands and floodways have been significantly reduced as a result of human modifications over time. These impacts to the natural attenuation systems have resulted in more frequent flooding of developed areas throughout the watershed. The water quality has also slowly degraded due to nutrient loading, increased sedimentation, and high bacteria levels.

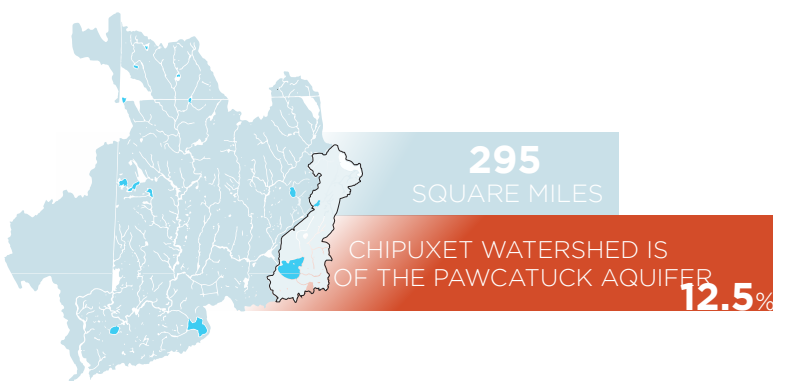
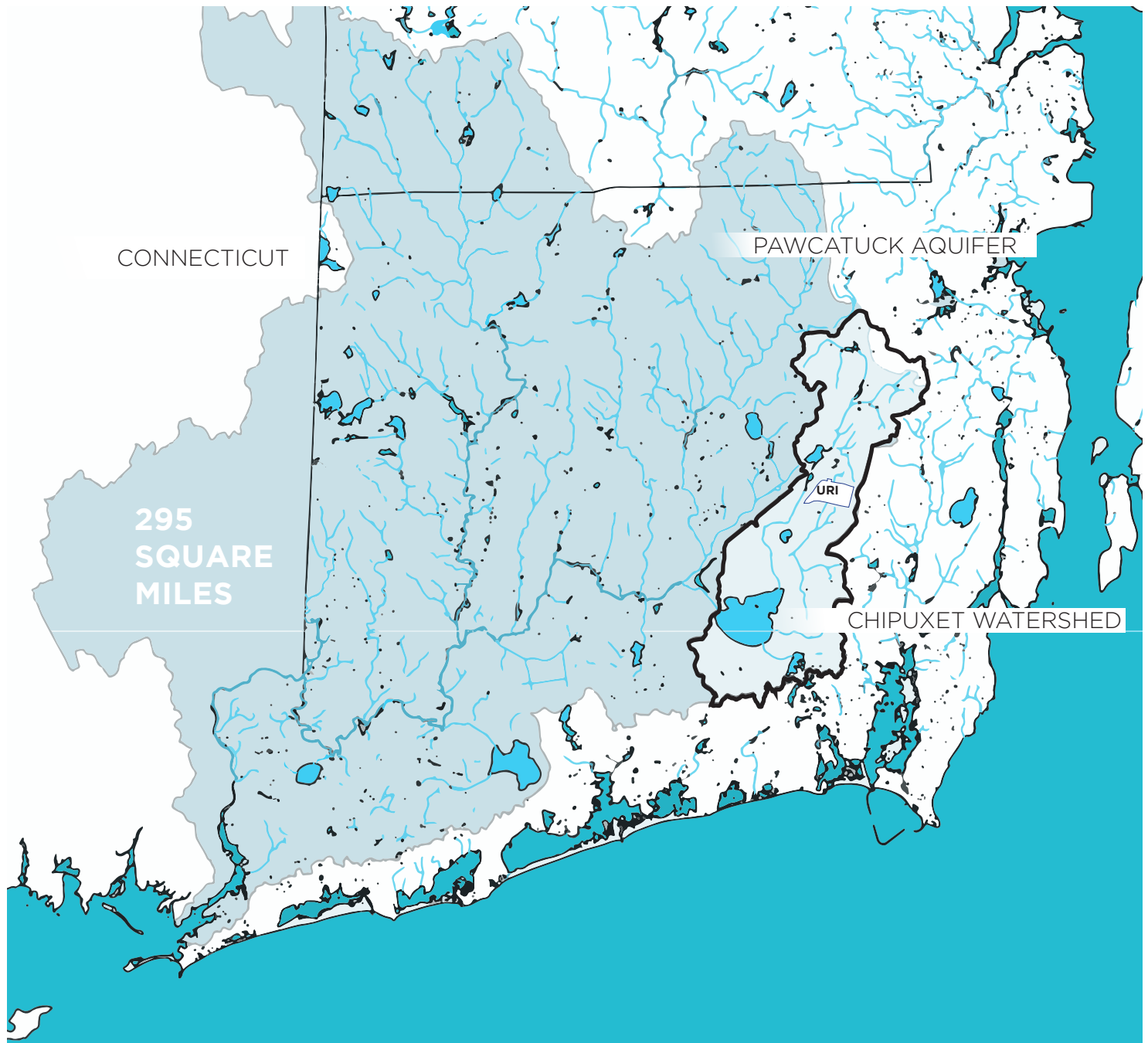
#### Chipuxet Watershed

Within the Pawcatuck Aquifer overlay lies a system of watersheds. These systems are based on topographic conditions, river systems, and their tributaries. The watersheds are not constricted by political boundaries and can tie many communities together in a common goal to protect their shared natural resources.

URI sits within the Chipuxet Watershed totaling thirty-seven square miles of the Pawcatuck Aquifer or roughly twelve-and-a-half percent. The watershed is the primary drinking water source for the Towns of South Kingstown and Narragansett.

In an effort to address areas of concern, watershed initiatives have been created to protect the system’s integrity and reduce developmental impacts from both structural and agricultural encroachments. These initiatives include, but are not limited to, reduction of peak withdrawals, reduction of peak demand during low-flow periods (July through September), the development of new or alternative summer supply sources, and the exploration of other techniques such as dam development, aquifer recharge, and desalination.

# REGIONAL CONTEXT



Pawcatuck Aquifer

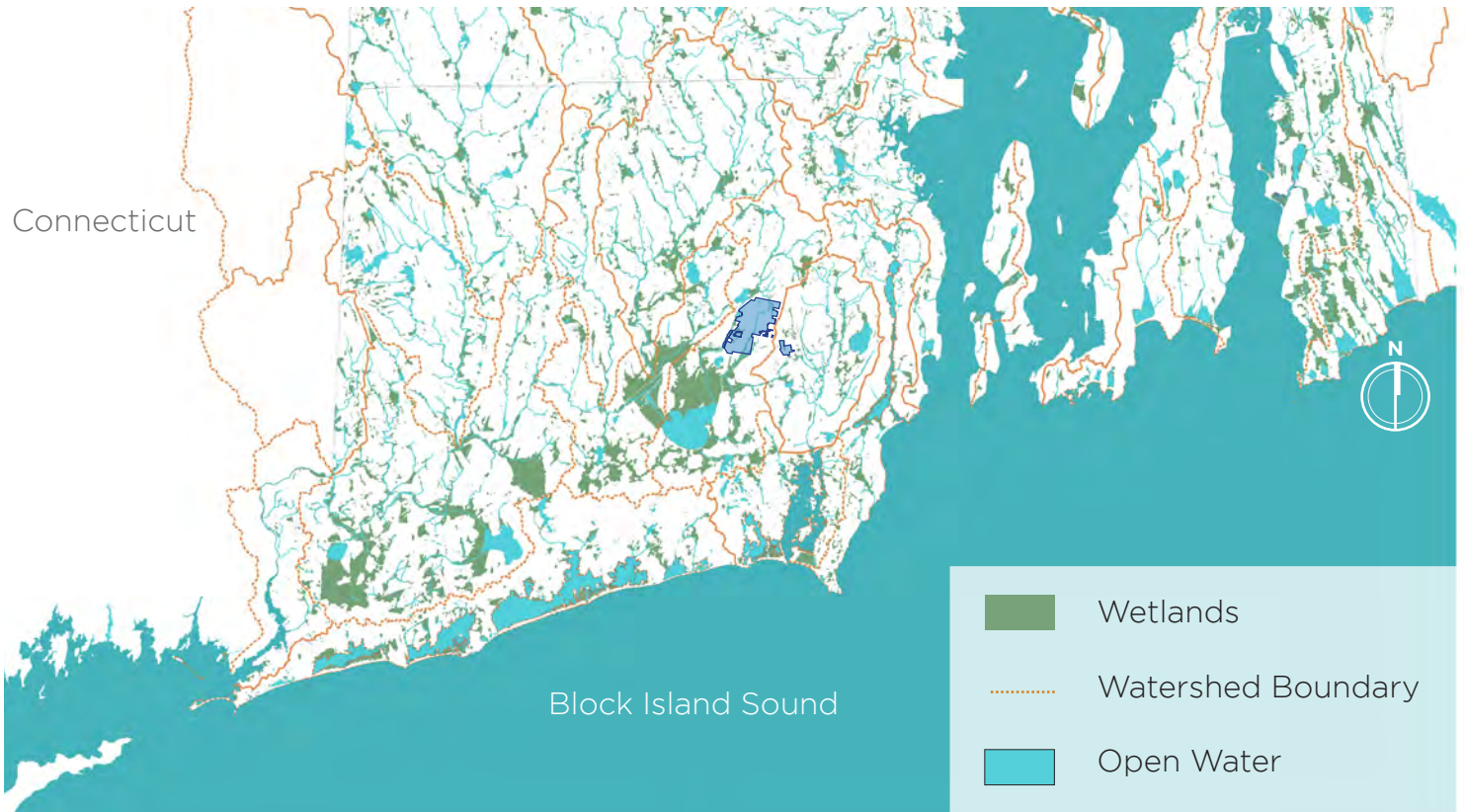
## SOLE SOURCE AQUIFERS

SUPPLY **50%** OF THE DRINKING WATER FOR ITS SERVICE AREA

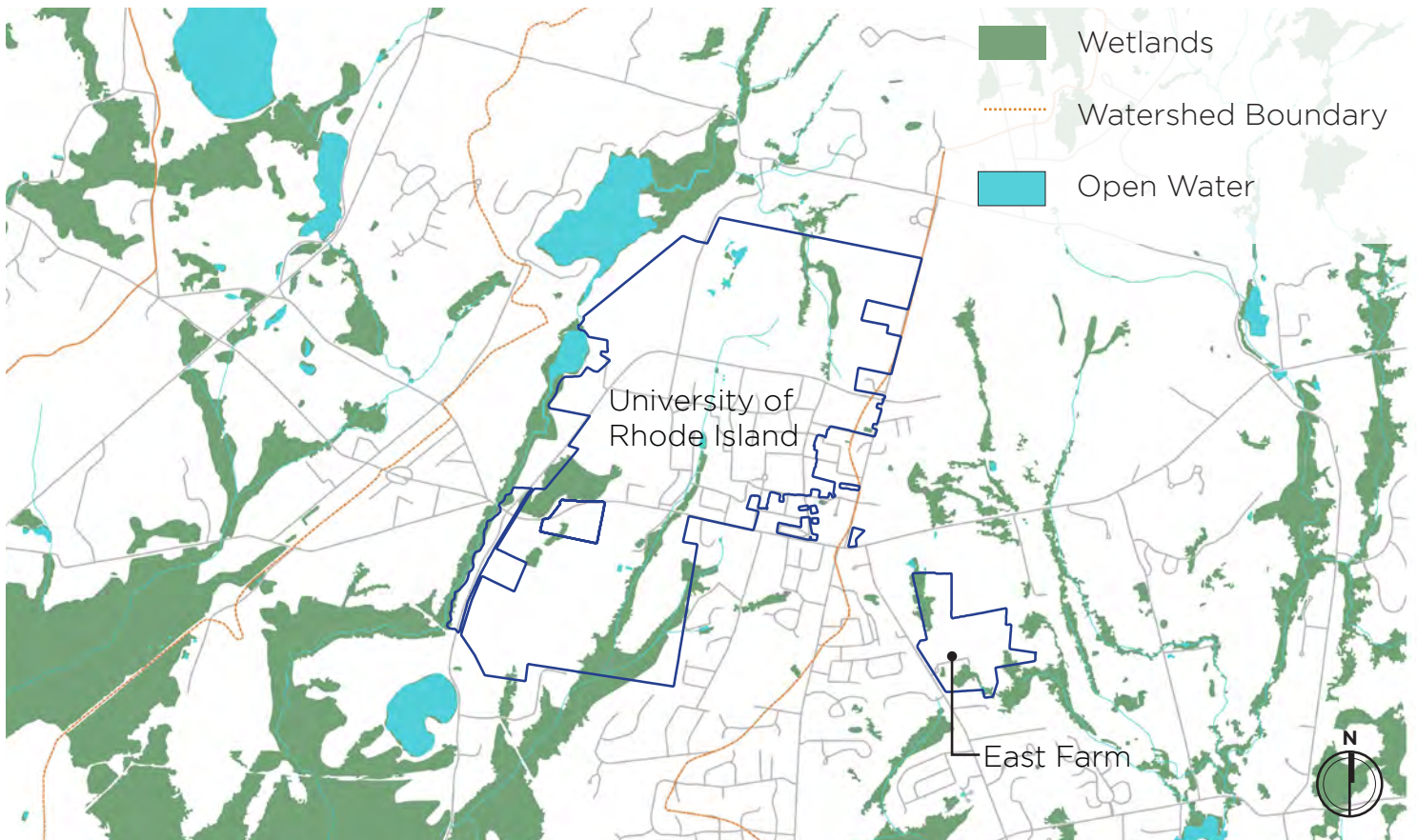
IF CONTAMINATED, NO REASONABLE DRINKING WATER SOURCES ARE AVAILABLE



## 2.3 EXISTING NATURAL SYSTEMS:



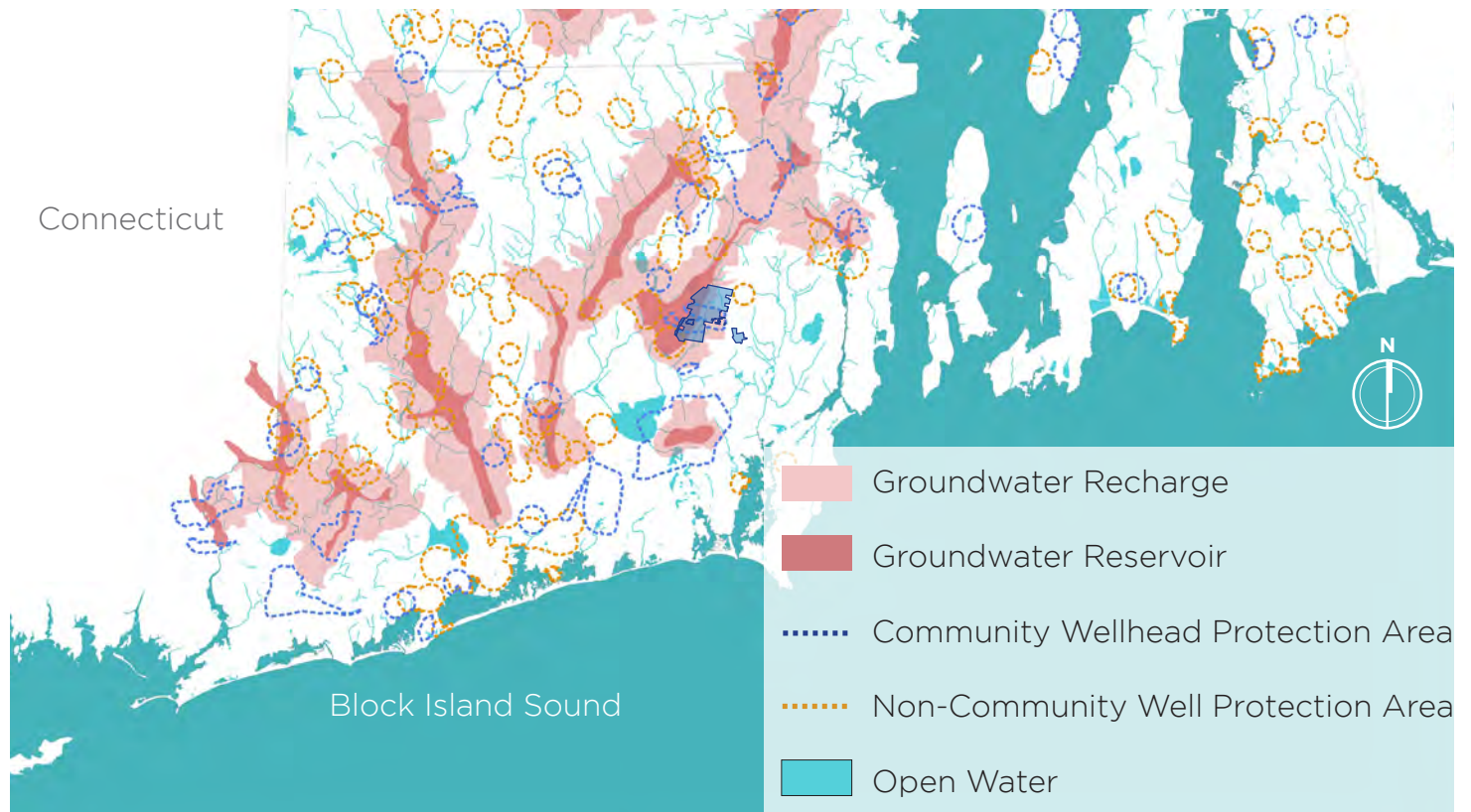
Regional Hydrology



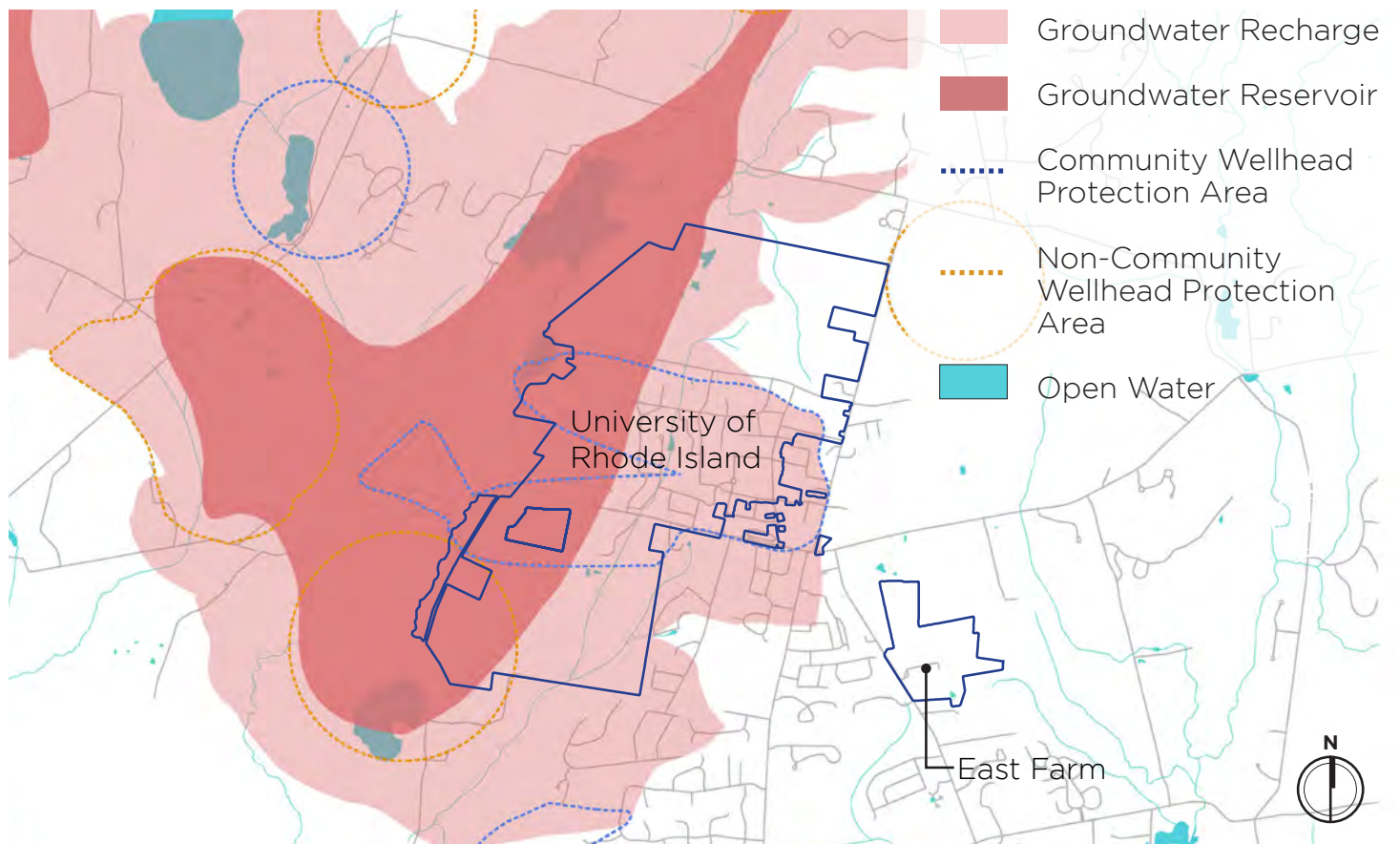
Campus Hydrology



# REGIONAL CONTEXT



## Regional Groundwater

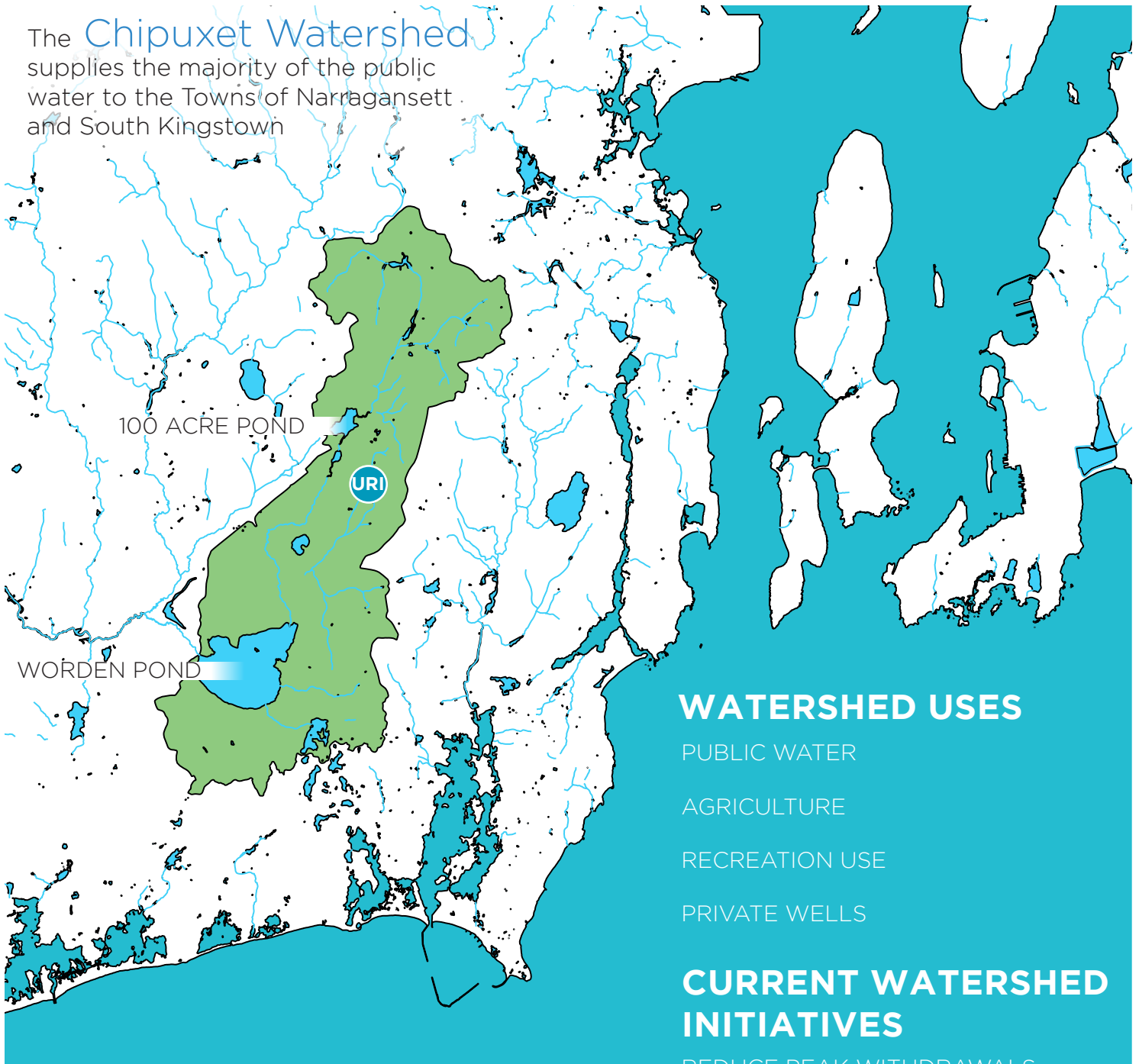


## Campus Groundwater



## 2.3 EXISTING NATURAL SYSTEMS:

The **Chipuxet Watershed** supplies the majority of the public water to the Towns of Narragansett and South Kingstown

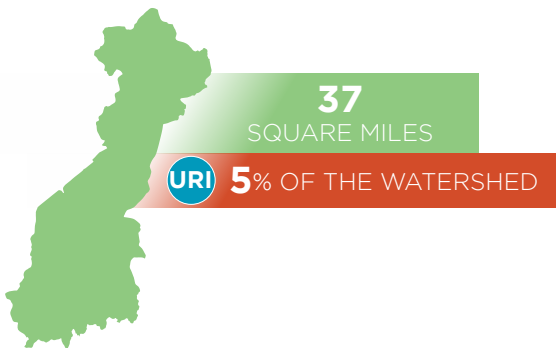


### WATERSHED USES

- PUBLIC WATER
- AGRICULTURE
- RECREATION USE
- PRIVATE WELLS

### CURRENT WATERSHED INITIATIVES

- REDUCE PEAK WITHDRAWALS
- REDUCE PEAK DEMAND DURING LOW FLOW PERIODS (JULY-SEPTEMBER)
- DEVELOP NEW OR ALTERNATIVE SUMMER SUPPLY SOURCES
- EXPLORE OTHER TECHNIQUES
  - DAM MANAGEMENT
  - AQUIFER RECHARGE
  - DESALINATION



Chipuxet Watershed

# REGIONAL CONTEXT

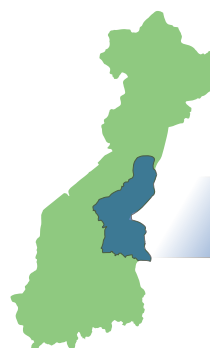
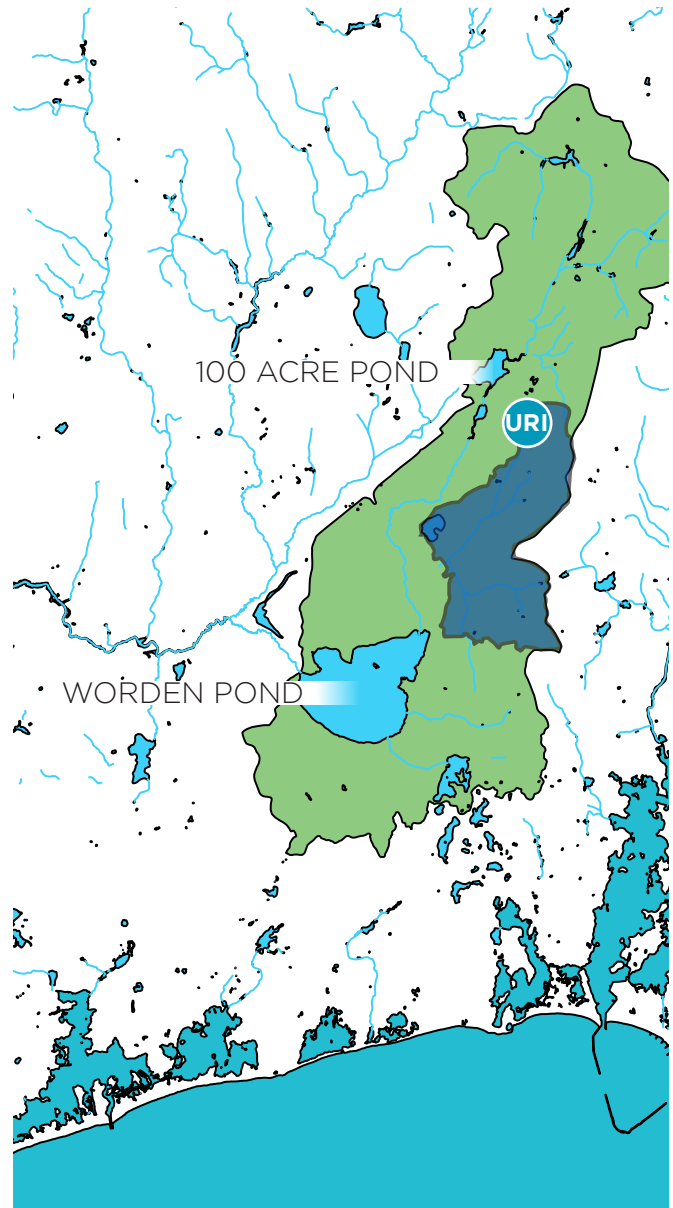
## White Horn Brook Watershed

Within the larger watershed systems of the Chipuxet nests a series of sub-watershed systems. The campus sits within the White Horn Brook watershed of the Chipuxet River drainage, and is a large contributor of impervious surfaces within the four square miles of the watershed boundaries. URI, combined with residential and commercial land uses, account for twenty-seven percent of the land area, fifty-nine percent is undeveloped, eleven percent is occupied by agricultural land uses, and three percent accounts for open water and wetlands per Rhode Island's White Horn Brook watershed summary.

The University campus accounts for a large portion of the developed land uses within the watershed boundary and as such should be heavily invested in the proper management of this resource. While the entirety of the campus does not fall within the White Horn Brook watershed, its boundary is within the groundwater reservoir, groundwater recharge, and the community wellhead limits of the watershed.

A direct portion of White Horn Brook flows north-to-south through campus while a smaller tributary—White Horn Creek—flows east-to-west down the hill. Beginning at a wetland just south of Briar Lane, this watercourse is culverted along its entire length through the Kingston Emporium, across Upper College Road, and through the Engineering Quad. It first is daylighted at Ballentine Pond to the northeast of Carothers Library. The wetland west of the Fine Arts Center parking drains to the closed system along Flagg Road and is part of that sub-watershed.

The **White Horn Brook Watershed** supplies the majority of the public water to the towns of Narragansett and South Kingstown.



4  
SQUARE MILES

## White Horn Brook Watershed

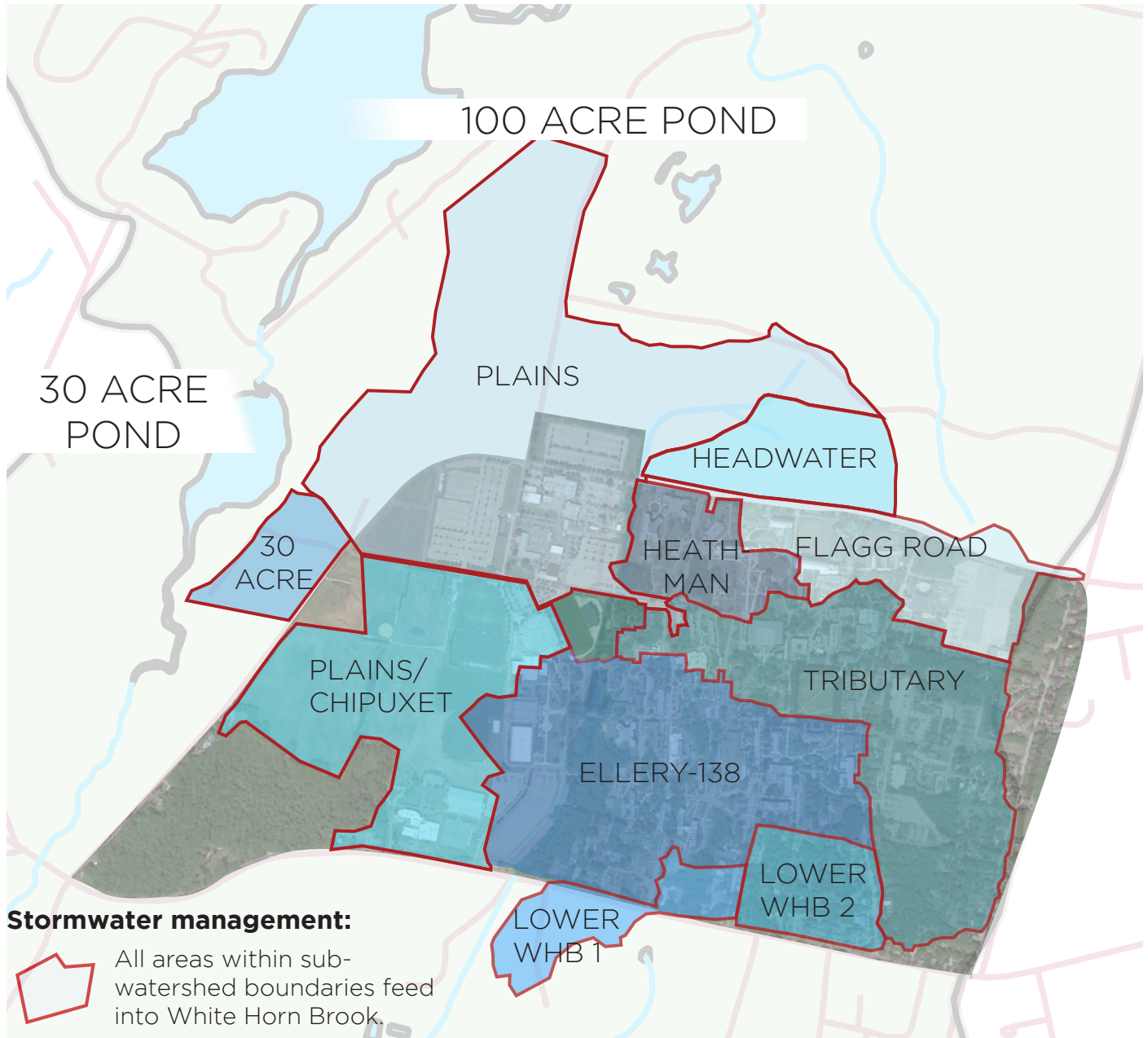


## 2.3 EXISTING NATURAL SYSTEMS:

### Sub-watersheds

Understanding the connection the campus landscape has to the water system at-large is an intricate part in being able to adapt to the pressing needs of stormwater management. The graphic below is adapted from the draft Drainage Master Plan as prepared by Gordon R. Archibald, Inc. in 2016.

This was created in effort to be able to understand drainage aspects of each area and in turn better understand impervious contributions, drainage outlays, and areas that need that need intensive solutions versus minimal interventions.



White Horn Brook Sub-watersheds

# CAMPUS WETLAND SYSTEMS

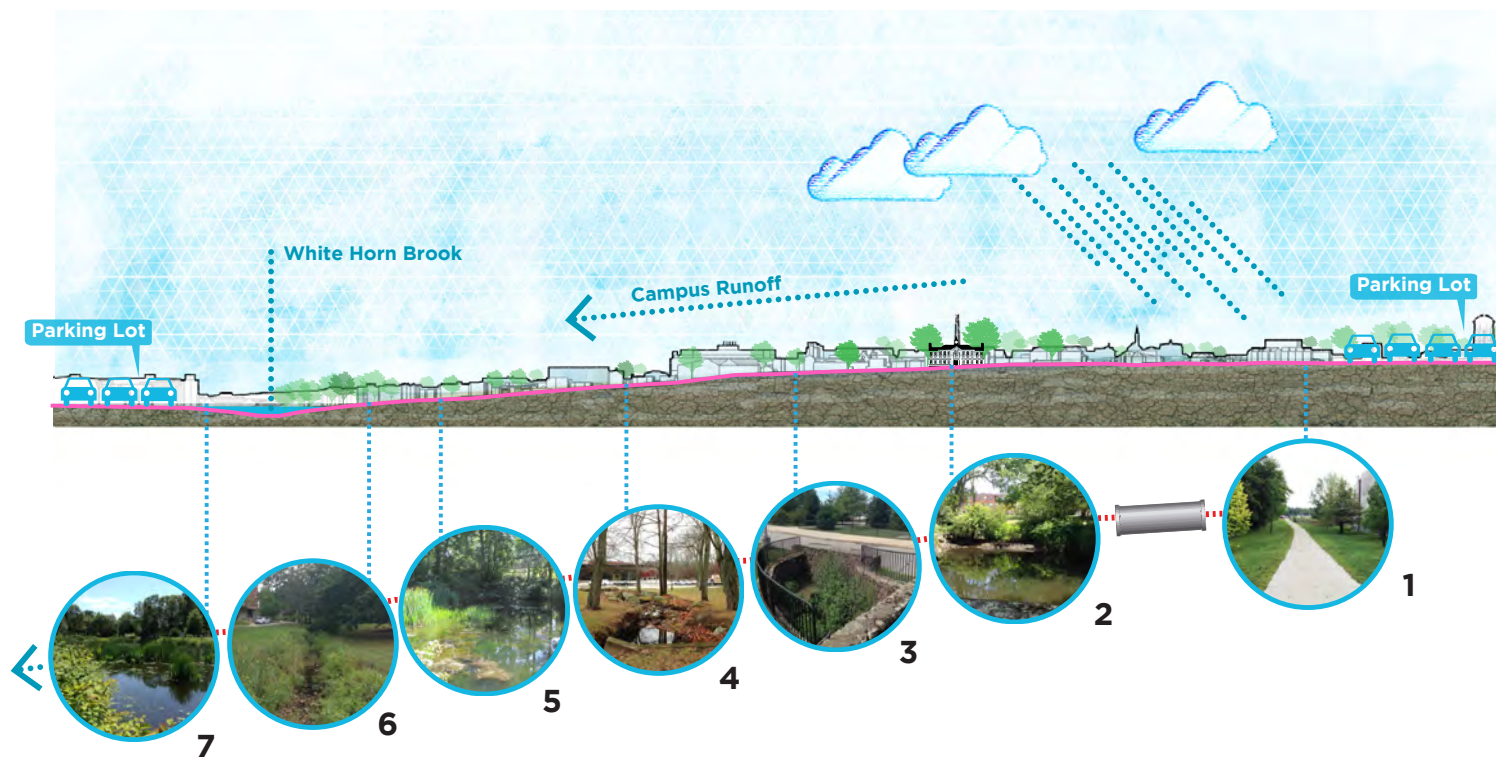
## White Horn Brook

The most significant natural system on campus is White Horn Brook, its tributaries, and the associated wetlands. A wetlands assessment of the system has been described in detail.

## White Horn Creek

The course of White Horn Creek has the potential to add significant value to the campus experience.

Currently, the connection is not as productive in terms of storm water attenuation, conveyance, or as a wildlife corridor. However, the potential to improve this resource and use this tributary to enhance education value, improve social gathering spaces and improve water quality within the White Horn Brook watershed will be critical in the University's adaptation of landscape principles.



White Horn Creek System



## 2.3 EXISTING NATURAL SYSTEMS:

### Area 1. North of Flagg Road to West Alumni Avenue

1. Upstream of culvert under Flagg Road: plugged with debris
2. Downstream of culvert: Outlet south of Flagg Road: sediment-rich
3. Ponded area: shallow with excessive sediment and growth of invasive species
4. Narrow channel
  - a. Upper reach: wetlands along channel on both sides; some invasive species
  - b. Lower reach: wetlands along channel on both sides; Facilities may be leading to sedimentation; some invasive species
5. Upland adjacent to channel: mown turf area
6. Stormwater basin: Filled with sediment which has led to woody vegetation; culvert under walking path is undersized



Key map





# CAMPUS WETLAND SYSTEMS

AREA 1



AREA 2



AREA 3



AREA 4, LOWER REACH



AREA 4, UPPER REACH



AREA 5



AREA 6



AREA 7



AREA 7, WITH SLOPE FAILURES



AREA 8



AREA 9, LOWER REACH



AREA 9, UPPER REACH





## 2.3 EXISTING NATURAL SYSTEMS:

### Area 2. West Alumni Avenue to Elephant Walk extension

7. "V" channel: relatively straight incised channel with rip-rap; bank erosion and slope failures due to velocity of flow
8. Channel confluence: straight channel with rip-rap
9. White Horn Creek tributary
  - a. Upper Channel reach: armored channel bottom; invasive species
  - b. Lower Channel reach: armored channel bottom
10. Upper tributary ponded area: no significant issues
11. Ellery Pond: minimal pedestrian connections to or around pond (largest open water body on campus); minimal shade trees; aquatic, emergent, algae and invasive species; some sedimentation
  - a. Outlet control: newly constructed

### Area 3. Elephant Walk extension to Fraternity Circle

12. Outlet from Main Pond: wide channel with connection to floodplain; minimal bank erosion; good vegetative cover
  - a. Downstream outlet: new box culvert; good vegetative cover
13. Tributary inlet: marginal water quality (drains from parking area)
14. Up-gradient stormwater input: excessive sediment loading and upland sediment transport; good vegetative cover
15. Slow-moving back water stream, Upper reach:
  - a. North: good vegetative cover; good emergent and aquatic vegetation; channel banks are low with good connection to floodplain
  - b. South: good vegetative cover; good emergent and aquatic vegetation; channel banks are low with good connection to floodplain; some invasive species

16. Slow-moving back water stream, Middle reach:
  - a. North: good vegetative cover; good emergent and aquatic vegetation; channel banks are low with good connection to floodplain; some invasive species
  - b. South, from pedestrian bridge looking north: good vegetative cover; good emergent and aquatic vegetation; banks are low with good connection to floodplain
17. Slow-moving back water stream, Lower reach:
  - a. North from pedestrian bridge looking south: good vegetative cover; good emergent and aquatic vegetation; channel banks are low with good connection to floodplain
  - b. South from pedestrian bridge looking north: good vegetative cover; good emergent and aquatic vegetation; channel banks are low with good connection to floodplain
18. Downstream Outlet: connects to system off-campus; little visual connection to the on-campus system



# CAMPUS WETLAND SYSTEMS

AREA 10



AREA 11, MAIN POND



AREA 11, POND OUTLET



AREA 12, OUTLET FROM POND



AREA 12, OUTLET



AREA 13



AREA 14



AREA 15



AREA 16, MIDDLE REACH



AREA 16, FROM BRIDGE



AREA 17



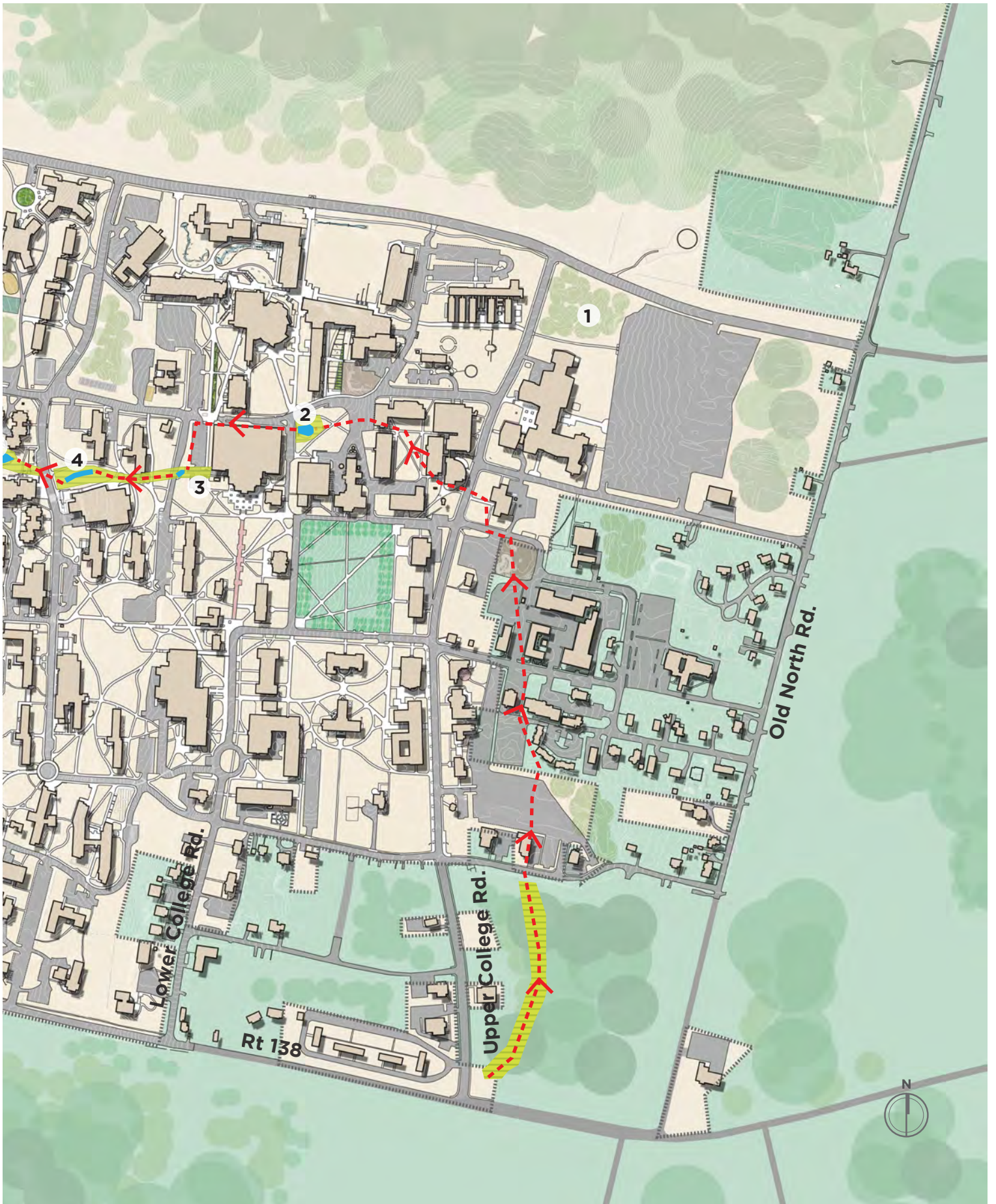
AREA 18











White Horn Brook & Tributaries



## 2.3 EXISTING NATURAL SYSTEMS:

### Undeveloped Areas of Campus

Significant zones of undeveloped areas and ecosystems on campus include the following:

- a. White Horn Brook and its wetlands from Route 138 and Flagg Road
- b. White Horn Creek and pond between Aldrich Hall and the Fascitelli Center
- c. Pond north of Ballentine Hall
- d. Forested wetlands between Fine Arts Center, Flagg Road and Upper College Road
- e. Wetlands throughout the North Woods
- f. Shrub/scrub forest from along White Horn Brook from Eddy Hall to Route 138
- g. Woodland to the northwest of the Memorial Union
- h. Upland deciduous forest to the west of Heathman Hall

### Campus Soils

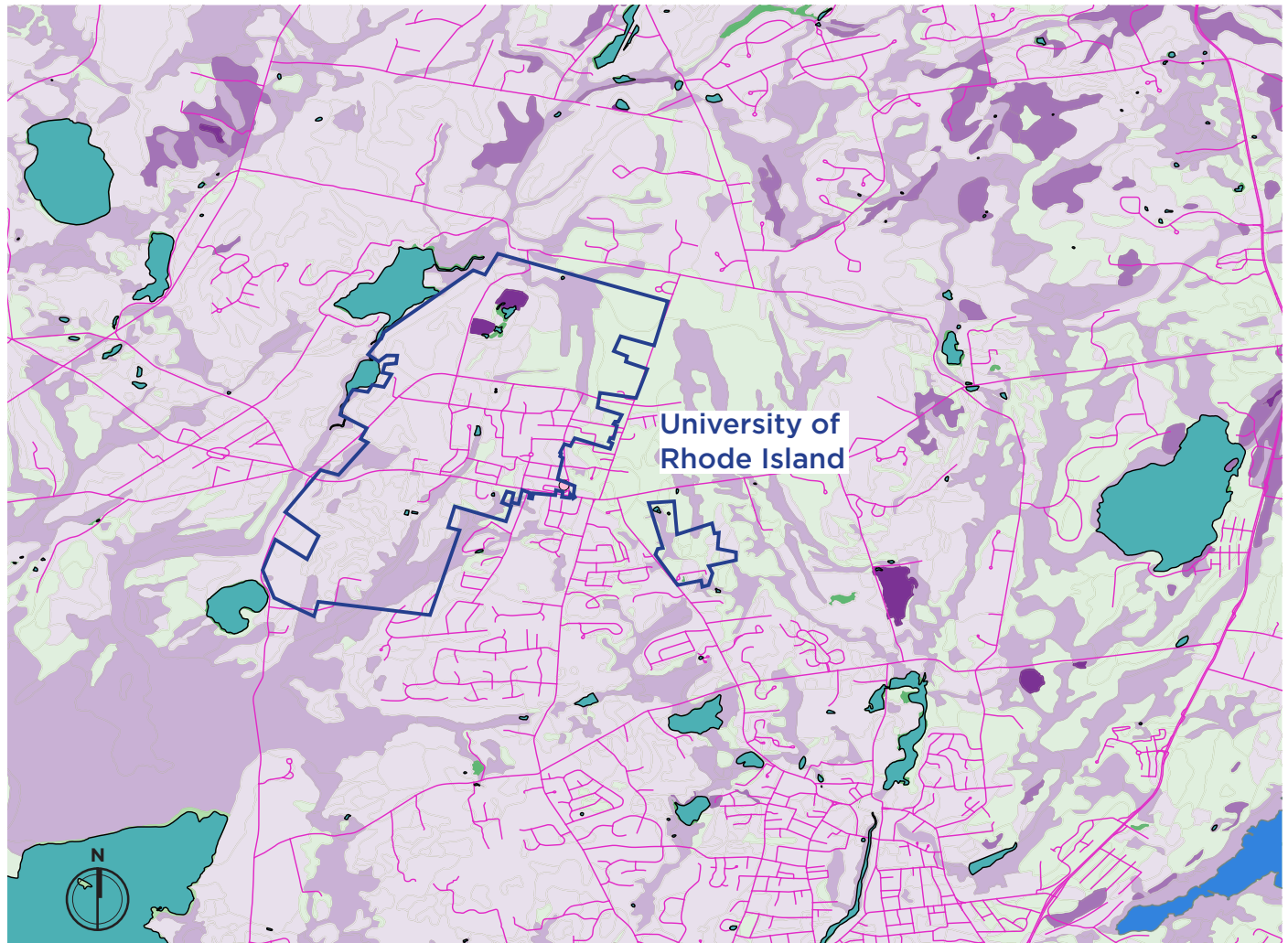
The soil composition of the Kingston campus is varied. Within the overlay district seventeen classifications of soil are accounted for, with the largest areas covered by Canton-Urban land complex (CB), Enfield silt loam (EFA), Udorthents-Urban land complex (UD), and Bridgehampton silt loam (BhA), respectively.

It is easy to understand that most of the soils in these districts have been affected by the constant developments throughout the years. In this, a large portion of the campus' soil conditions consist of urban fill that infiltrates poorly and is of low nutrient value. This soil creates drainage and infiltration concerns often overwhelming the campus' drainage infrastructure.



### Campus Undeveloped Areas

# UNDEVELOPED AREAS & CAMPUS SOILS



- Severe Constraints (Rock, Sand, Etc.)
- Bedrock and/or Slope Constraints (> 15% Slope)
- Hydric Soils-Severe Constraints (0-18 in. depth)
- Moderate Constraints to Development
- Seasonal High Water Table (19-42 in. depth)
- Subaqueous Soils- Severe Constraints
- Waterbodies
- Roads

Campus Soils Data



## 2.3 EXISTING NATURAL SYSTEMS: CANOPY COVER &

### Canopy Cover

The campus has a mixed tree canopy comprised of myriad species of shade and ornamental trees. At the core of its tree canopy coverage lies the Everett P. Christopher Arboretum and the URI Botanical Gardens and Horridge Conservatory. (North Woods was not evaluated as a part of this Landscape Master Plan).

The campus landscape functions as an ecological corridor and productive natural habitat. However, the University should set higher standards in regards to enhancing on-campus natural systems, wildlife habitats, corridors, and eco-tones.

The University is currently in the process of inventorying, qualifying, and categorizing its tree community. This inventory has been initiated as part of this Landscape Master Plan with the intention of increasing the quantitative and qualitative data the campus has in efforts to better understand and manage its trees and natural systems. Additional campus tree information can be found in Section 5 of this report.



Campus Canopy Cover

# WILDLIFE HABITAT

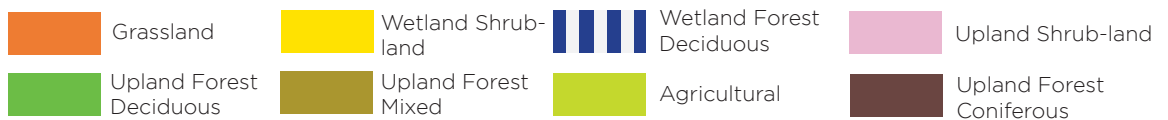
## Wildlife Habitat

Within the overlay districts studied on the core campus, habitats and natural systems have been largely interrupted. This fragmentation has created pockets of wetlands, tree stands, and grasslands that—though fragmented—do offer some reprieve for more prevalent species. However, wildlife species that rely on young forest ecosystems suffer.

The Wetlands District has the most contiguous stretch of what can be considered natural habitat. While this continuous stretch of wetlands, minor waterways, and woodlands are far from pristine, conservation and restoration plans developed in the future could make great strides to reinforce this valuable asset, along with creating a benchmark for environmental design standards for campuses around the country.

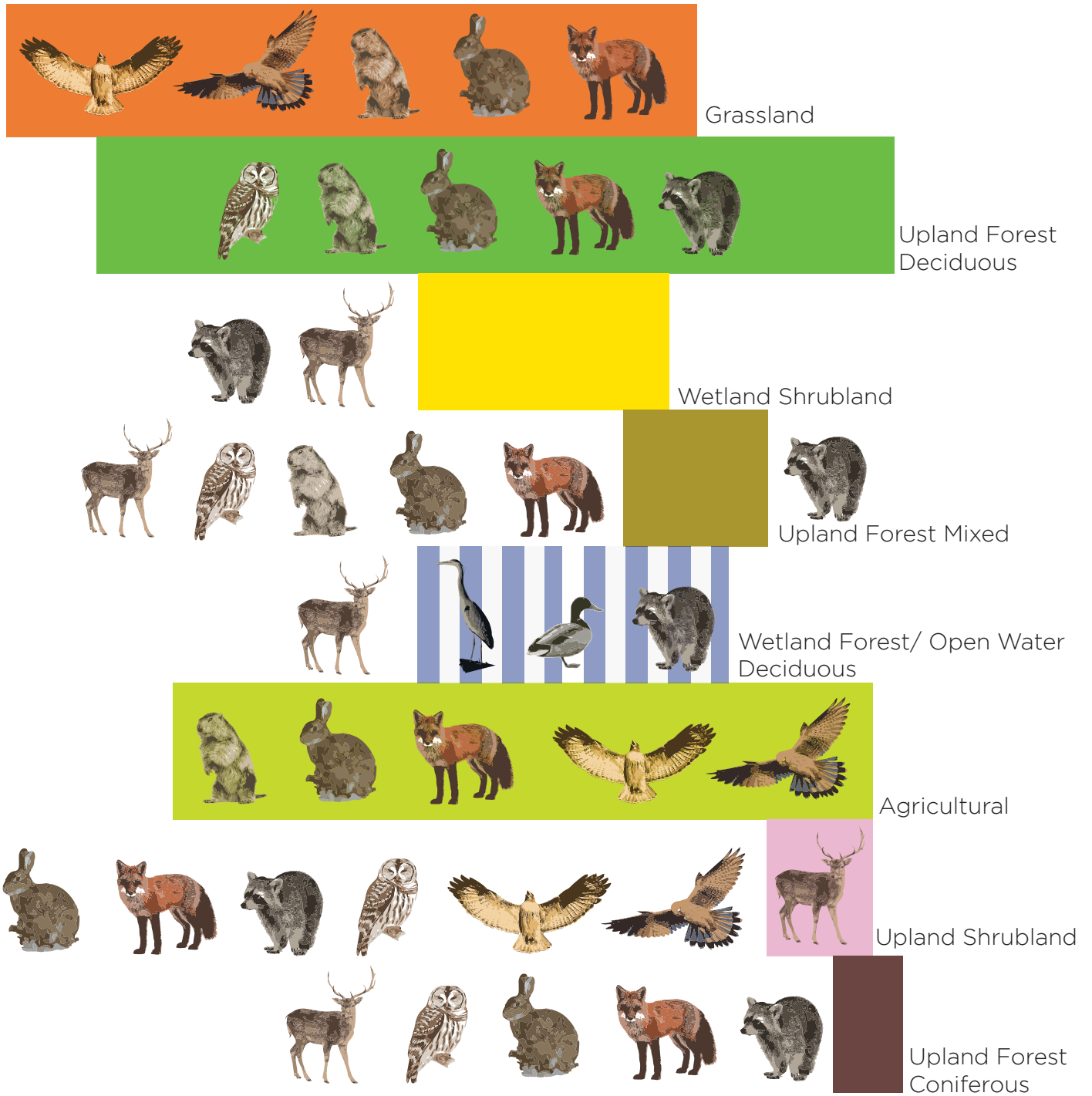


Forest  
Habitat (RIGIS)





## 2.3 EXISTING NATURAL SYSTEMS: SUMMARY



### Wildlife & their Habitats on Campus

## District Summaries

### Historic Campus Core District

The campus core is defined by the campus' main quad with expansive lawns and a double allée of varying sized Japanese zelkova trees. Little could be categorized as part of the natural system remains within this district.

### Mall District

The Mall District is perhaps the longest axial connection on campus. Its natural community is primarily defined by the Norway maple allée that flanks the Hammerschlag Mall. Other ornamental plantings enrich the space; however, the Mall is devoid of any real natural habitat outside of tree canopies.

### North Campus District

Key natural systems include a forested wetland adjacent to the Fine Arts Center parking area that feeds into White Horn Creek as it runs east-to-west and into White Horn Brook. White Horn Creek is underground for a majority of its extent through campus but it is daylighted at the northeast corner of the library and creates a managed wetland and productive edge in a ponded depression before coursing through a culverted pipe under the library. This area does provide a small reprieve for wildlife.

Strides have been made in this district to integrate Best Management Practices into new building sites. Engineered infiltration systems and native planted swales dot the area and help infiltrate and attenuate stormwater, but do not greatly contribute to habitat.

### Residential Life District

The residential district is the most densely populated area of campus. To the west is the Wetlands District, the least developed portion of campus. The natural systems of the Residential Life District are fragmented and largely impacted by the extent of hardscaped area. Natural systems consist of a few daylighted sections of White Horn Creek, a collection of canopy trees, and a few sparsely vegetated woodland groupings. Two of the more significant woodlands areas on campus are within this district: one to the northeast of Bressler Hall and one to the east of Hillside Hall.

Hillside Hall has recently implemented a well-designed planted swale along with a roadside swale and check dam system that works in a coordinated effort to slow, treat, and infiltrate the stormwater before it enters the engineered system of catch basins and pipes. These vegetated treatment areas provide plantings that help connect the woodland edges into the campus and provide systems that begin to fight fragmentation of ecological corridors.

The district also benefits from having daylighted sections of White Horn Creek run east-to-west through its northern limits. These daylighted areas have yet to be enhanced to their full potential as natural system and ecological corridors; however, they do add value to the district and should be earmarked for further study and enhancement.



## 2.3 EXISTING NATURAL SYSTEMS: SUMMARY

### Wetlands District

The Wetlands District sits at the base of the campus and acts as a narrow drainage system of interconnected wetland ponds which are interrupted by a series of culverts and bridges along its way to the Chipuxet River. This area is the least developed district on campus and has the most productive natural system. It acts as a catch-all for the stormwater drainage for most of the campus; in this regard, man-made interruptions to its natural flow and supporting native communities are evident at every stretch as it makes its way south to Route 138. Its edges are varied in condition throughout its course, from well-vegetated and productive tree canopies to areas with significant bank erosion and expanses of mown turf.

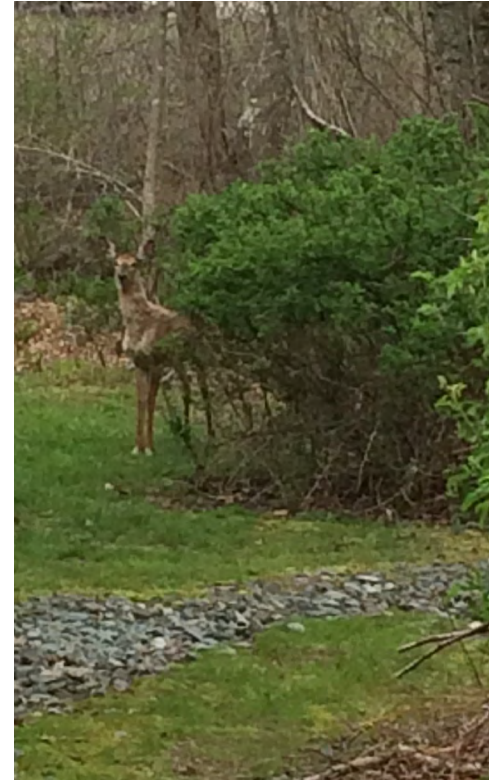
### Athletics District

The natural systems of the Athletics District are characterized by large expanses of turfgrass and a lack of any real ecological diversity. The district does share a border with the Wetlands District and has some variety of large trees (both evergreen and deciduous) in turf conditions.

### Service District

The Service District is devoid of any real natural systems as the majority of the seventeen-plus acre area is impervious with parking areas and structures characterizing the space.

RESIDENTIAL DISTRICT



RESIDENTIAL DISTRICT



HISTORIC CAMPUS CORE



WETLAND DISTRICT



NORTH CAMPUS DISTRICT





## 2.4 EXISTING STORMWATER MANAGEMENT &

The current stormwater conditions at the University have been shaped through the land development of the campus and predate current environmental policies and Best Management Practices. High impervious surface coverage, closed stormwater management facilities, and limited space for build-out will greatly affect how and where stormwater interventions on the campus will work.

The Kingston campus stormwater drainage system is comprised of a matrix of over 900 catch basins, 300 drainage manholes, structural stormwater best management practices, and eighty-nine outfalls. (A 2017 URI Drainage Master Plan was underdevelopment at the time of this publication; see for additional information.)

Stormwater running through this system either infiltrates into the groundwater reservoir/recharge system or the outfall eventually finds its way to White Horn Brook which ultimately leads to the Chipuxet River.

The importance of the campus' stormwater system is polarized by a series of important factors. Perhaps the most critical is the campus' reliance on the groundwater as its source for potable water. That relation is emphasized by its proximity to the 660-acre wellhead protection area. The campus also falls under Municipal Separate Storm Sewer system (MS4) regulations. These regulations are governed by Rhode Island Department of Environmental Management and are classified under the Phase II program of the National Pollution Discharge Elimination System (NPDES).

### Detention Basins

The Plains Road and Flagg Road areas have a variety of detention basins associated with several large parking lots. These detention basins typically are large vegetated depressions of four to six feet in depth with pipes entering in various locations and exiting into a drainage system which discharges into White Horn Brook. (See the 2017 URI Drainage Master Plan for in depth analysis and locations of LIDs and BMPs.)

In general, newly-developed areas of campus incorporate some green infrastructure—particularly the newer buildings in the North Campus District. These include a variety of green infrastructure basins but the majority of the existing drainage system on campus consists of pipes and inlets that ultimately discharge untreated stormwater into the White Horn Brook.

The typical drainage system on campus consists of catch basins, inlets, and storm manholes that form a series of drainage networks discharging into the White Horn Brook system. Turf areas, roofs, and paved areas including walks and roadways are drained into this catch basin system linking into the drainage network.

At the cluster of residence halls along West Alumni Avenue (including Dorr, Hopkins, and Fayerweather), a drainage system including a catchment pond and stream handles the drainage from this development area and the surrounding environs prior to connecting into White Horn Brook.

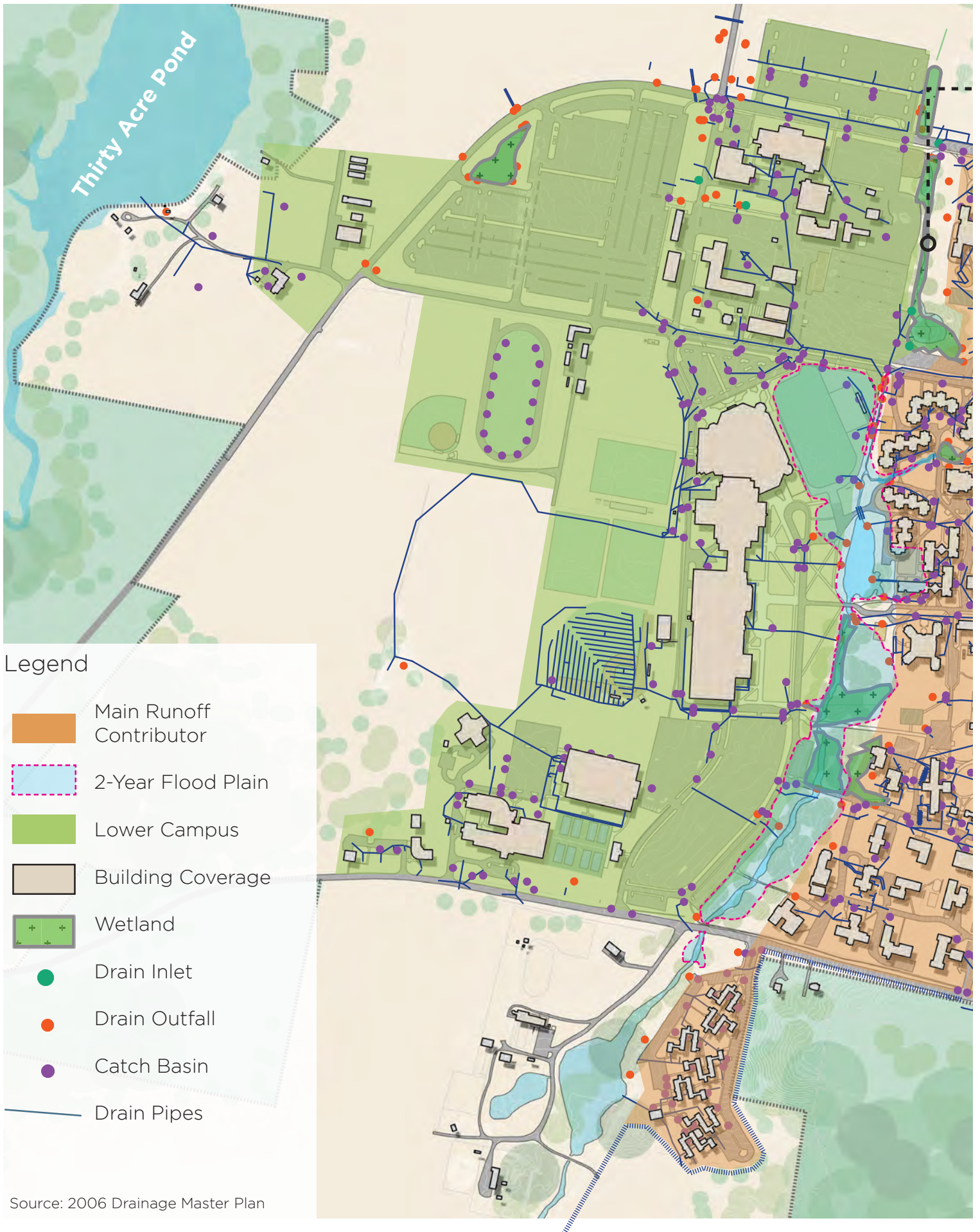
The 2006 Drainage Master Plan for the campus documented a two-year floodplain (included herein on the Stormwater Management plan) as four of the six culverts which controlled White Horn Brook were not able to handle even a two-year storm.

# GREEN INFRASTRUCTURE

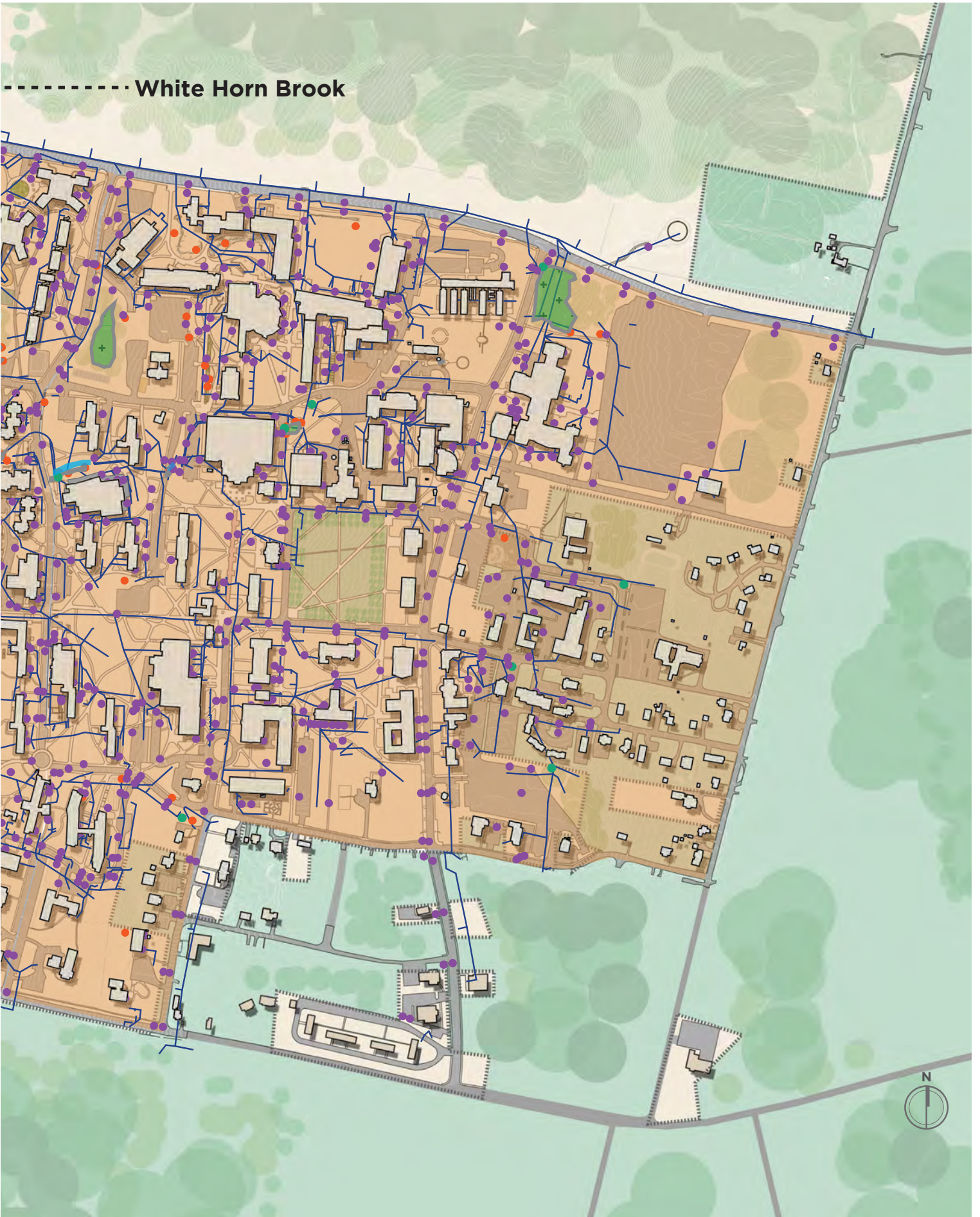
## **Impervious Surfaces**

Approximately forty-seven percent of the core 300-plus acres of campus is comprised of impervious surfaces, including roads, parking lots, walkways, and buildings. Porous pavements have been incorporated on some of the newer parking lots on campus and some pervious pedestrian pavement has been incorporated but they are minimal and their impacts and durability remain to be seen. (Faculty is currently studying the infiltration capacity of the Plain Road lots, but results were not available prior to the finalization of this report.)

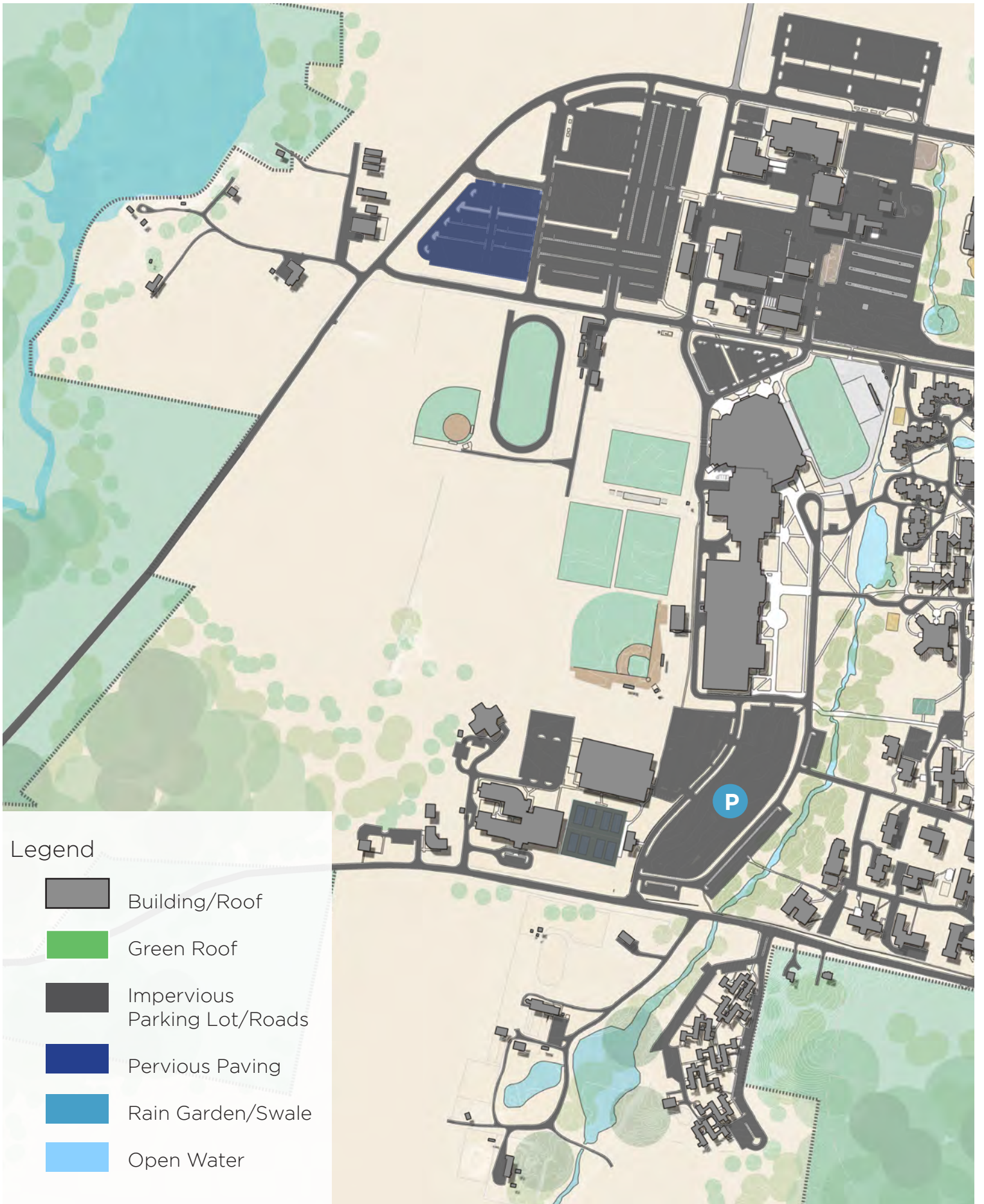














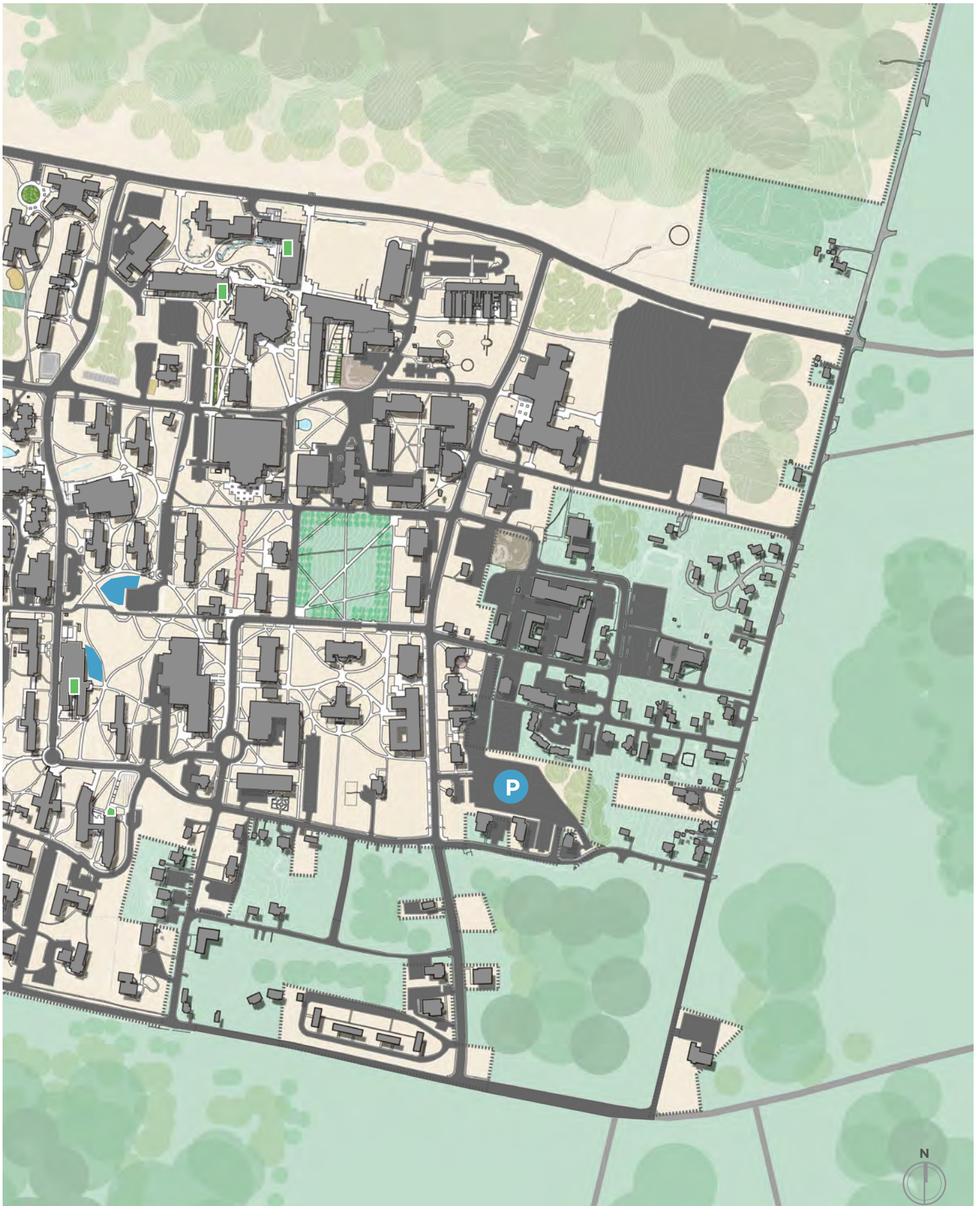




Legend

-  Building/Roof
-  Green Roof
-  Impervious Parking Lot/Roads
-  Pervious Paving
-  Rain Garden/Swale
-  Open Water





Existing Impervious Surfaces



## 2.4 EXISTING STORMWATER MANAGEMENT &

### Green Infrastructure

Green infrastructure is somewhat limited on the University's campus landscape. To date, the following interventions have been incorporated:

1. Green roof on the lower west side roof of the Center for Biotechnology & Life Sciences
2. Green roof on upper level of Butterfield Hall (residence level)
3. Green roof at Beupre Center for Chemical & Forensic Sciences
4. Porous pavement (asphalt) at Plains Road parking lot
5. Plantings of wildflowers in lieu of turf in large landscape areas
6. Above-grade stormwater systems, including bio-swales and rain gardens as noted in the Stormwater discussion

### LEED Certified Buildings

The University has eight buildings certified by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) on the Kingston campus. (Two structures were in the process of certification review at the time of this report. In addition, the Pell Library and the Ocean Science and Exploration Center at the Narragansett Bay campus is LEED Silver.)

Each of these buildings have landscape components and sustainable design interventions associated with them, most of which lead to the interventions listed above. LEED Certified buildings and their rankings include:

- Eddy Residence Hall: Certified, 2008
- Garraghy Residence Hall: Certified, 2008
- Wiley Residence Hall: Certified, 2008
- Hope Dining Commons: Silver, 2008
- Center for Biotechnology & Life Sciences: Gold, 2010
- Hillside Residence Hall: Gold, 2017
- Fascitelli Fitness & Wellness Center: Gold, 2016
- Butterfield Dining Hall: Silver, 2017
- College of Pharmacy: Silver, 2017
- Beupre Center for Chemical and Forensic Sciences: Certification in progress at the time of this report
- Welcome Center: Certification in progress at the time of this report
- Bliss Hall: Certification in progress at the time of this report
- Brookside Apartments: Certification in progress at the time of this report
- College of Engineering: Certification in progress at the time of this report



# GREEN INFRASTRUCTURE

RESIDENTIAL LIFE DISTRICT



NORTH CAMPUS DISTRICT



NORTH CAMPUS DISTRICT



RESIDENTIAL LIFE DISTRICT





## 2.4 EXISTING STORMWATER MANAGEMENT &

### District Summaries

Stormwater management systems are present throughout campus in the following locations, organized by district:

#### Historic Campus Core District

- Closed catch basin and piping system

#### Mall District

- Closed catch basin and piping system

#### North Campus District

- West of Center for Biotechnology & Life Sciences (rain garden)
- North of Beupre Center for Chemistry & Forensic Sciences (planted basin)
- North of the Pharmacy Green along Flagg Road (planted basin)
- North of the Greenhouse parking lot along Flagg Road (planted basin)
- East of Rodman Hall along the new walk to Chemistry (planted basin)
- Closed catch basin and piping system

#### Residential Life District

- North of the Elephant Walk/southern end of Peck & Hutchinson Halls (turf swales)
- East of Butterfield Hall (turf swales)
- North of Hillside Hall (planted basin)
- Closed catch basin and piping system

#### Wetlands District

- Series of outfall pipes drain out into White Horn Brook from the closed catch basin and piping system through campus. (These systems in some cases have been developed and implemented prior to guidelines set forward in the Clean Water Act)
- White Horn Brook and adjacent wetlands function as part of the stormwater system
- The University recently completed a major wetland restoration effort along the reach from the Ellery Pond outlet to Route 138 in 2014.
- These areas are (or contain) freshwater wetlands regulated by the RIDEM Office of Water Resources, and that any work (including restorative activities) within their jurisdictional limits requires authorization from the Freshwater Wetlands Program.

#### Athletics District

- Series of swales and grass depressions aid in the stormwater management of this area
- Closed catch basin and piping system

#### Service District

- Closed catch basin and piping system
- Five major detention basins surround the expansive parking lots located to the north and west of the Service District

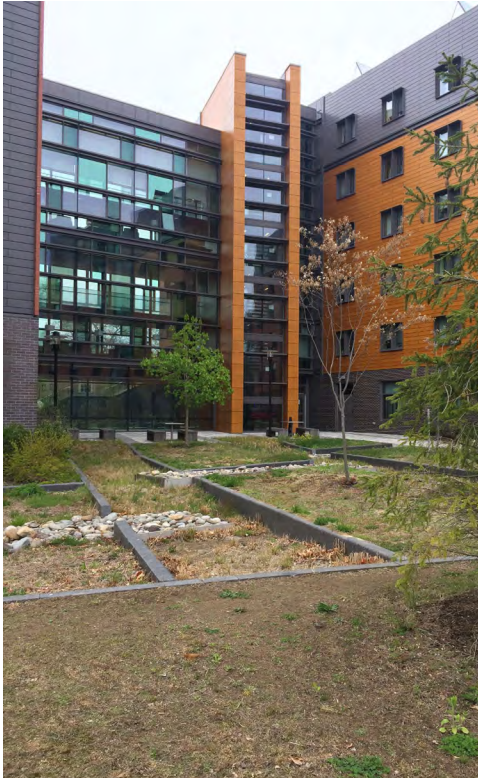


# GREEN INFRASTRUCTURE

RESIDENTIAL DISTRICT



RESIDENTIAL DISTRICT



NORTH CAMPUS DISTRICT



WETLAND DISTRICT



NORTH CAMPUS DISTRICT



WETLAND DISTRICT





## 2.5 EXISTING PEDESTRIAN EXPERIENCE: WALKWAYS

The Kingston campus is a very compact and walkable university campus. From the Quadrangle the core campus is reachable in one-quarter mile, or approximately five minutes. (Of course, it is worth noting that the walk east leads uphill and may take a minute or two longer than the walk downhill to the west.) From this same point, the vast majority of campus is reachable in ten-minutes, or one-half mile walk, and the extreme limits of the athletics district is reachable in fifteen minutes from the Quad.

Most of the newer walkways are being constructed in concrete with standardized walk widths. Older walkways are typically paved in bituminous concrete and vary greatly in width.

### Significant Walkways/Connections

There are several significant pedestrian corridors on campus. Portions of most of these follow roads or campus driveways, while others are pedestrian and bicycle-only. Hammerschlag Mall and the Elephant Walk are two of the more significant pedestrian corridors.

The Elephant Walk is a major east-west connection for students and faculty which connects the Hillside Residential Life District to the campus core and academics and the athletic district. It is a short pedestrian connection extending from Butterfield Road to the Ranger Road/Lower College Road intersection. The Elephant Walk has two sets of stairs along its length and is therefore not accessible. However, each stair run has



### Campus Walkability

## & ACCESSIBILITY

a parallel path to the south which follows the slope of the stairs. The lower end of the Elephant Walk shifts to the north by several feet disrupting its alignment. To the west of the Walk is Complex Road following the same alignment.

The other major pedestrian spines follow East/West Alumni Avenues to commuter parking lots on Plains Road or at the Fine Arts Center. One major north-south connection begins in front of the Memorial Union and follows Lower College Road to the Hammerschlag Mall, passing Carothers Library into north campus. The other two major north-south connections follow Upper College Road and Butterfield Road; both of these rely on the sidewalks paralleling the roads.

The Dieter Hammerschlag Mall connects the northern terminus of Lower College Road to Carothers Library on the north-south axis. It averages sixteen feet wide and is paved with bricks and granite cobbles. One significant intersection is located at the center between Roosevelt and Davis Halls where five other walkways intersect at the same point. The secondary walks vary in width and are either concrete or bituminous. The walk also has several seating areas located along its path. The mall is relatively flat but the pavers can make it difficult to walk for people with mobility impairments.

Hammerschlag Mall ends at the stairs and plaza leading to Carothers Library, but the pedestrian circulation continues to the north. The majority of students and faculty continue to the east side of the library, along Ballentine Hall, and follows the pathways which connects Woodward, Chafee, Pharmacy, and CBLS. The walkway varies in width and is mostly concrete except for a length to the north and south of the intersection with East Alumni Avenue which is bituminous pavement. On the northwest side of Carothers Library two new walkways have been installed as part of the construction of the Beaupre Center for Chemistry. These walkways are fifteen feet

wide and are concrete. One leads due north from the intersection of Farm House Road and East Alumni Avenue to the main entry of Chemistry while the other heads to the northeast to the western entry of Chafee Hall.

Sidewalks are included along the major campus roads, including Butterfield Road, West Alumni Avenue, East Alumni Avenue (from Upper College Road to Greenhouse Road), Greenhouse Road, Farmhouse Road, Campus Avenue, Ranger Road, and Lippitt Road. Nearly all of these are used as pedestrian corridors and the narrow sidewalks constrain pedestrian flow.

### Accessibility

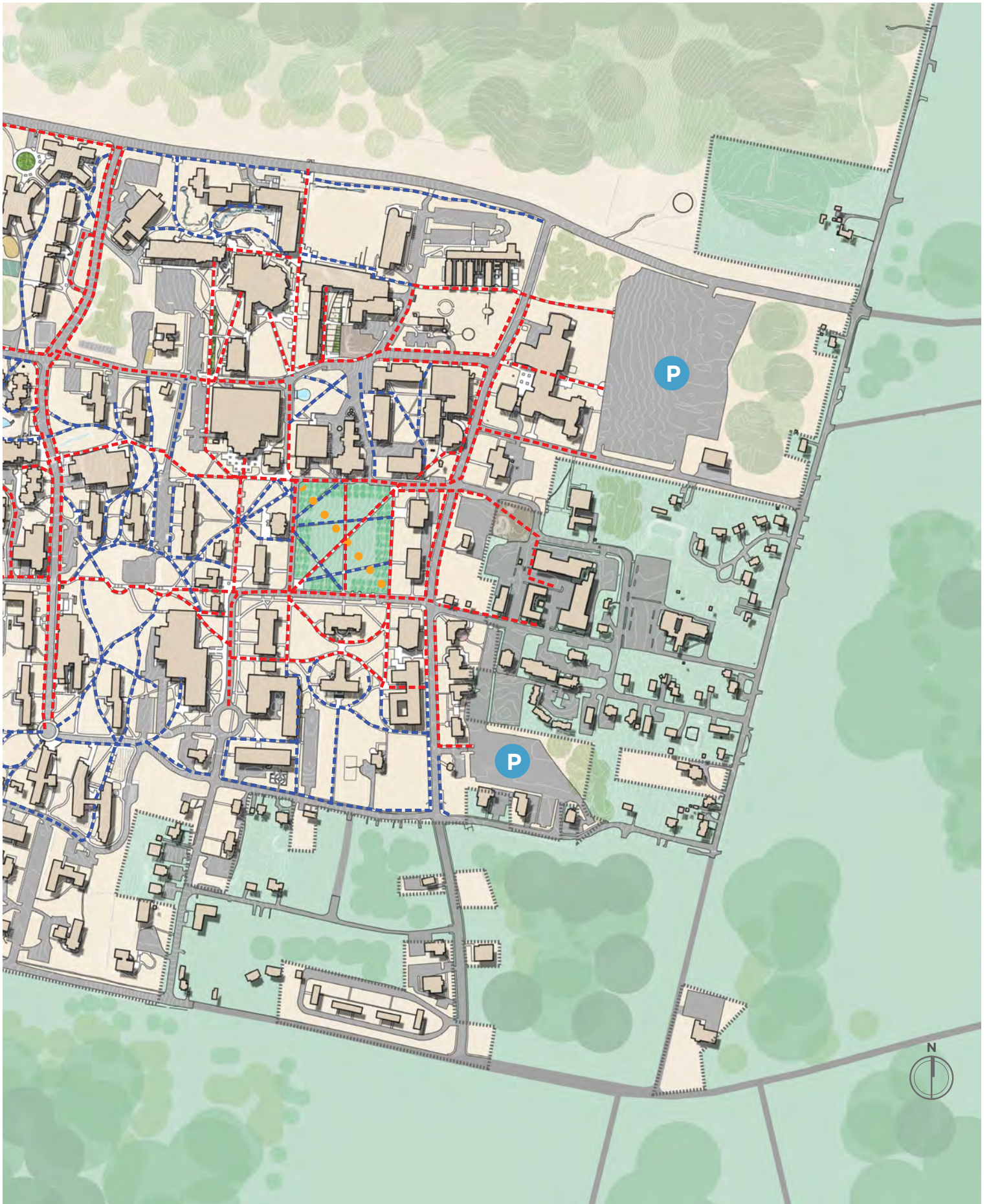
The University has prepared a map of campus which shows accessible entrances for campus buildings and parking lots. Based on this information almost all of the buildings on campus have at least one accessible entrance. Those that do not include Davis Hall, the Watson House, Meade Stadium, the Tucker House, the Food Science & Nutrition Research Center, the International Center, the Pharmacy Conference Center/Weldin House on Lower College Road, Research and Grant Accounting Office, Ruggles House and several residence halls: Aldrich, Coddington, Ellery, and Heathman. Those listed as having very limited accessibility include Bliss Hall, Ranger Hall, Taft Hall, Washburn Hall, Adams House, Fernwood Apartments, and the Transition Center.

Because of the layout of the campus on a hillside, ADA-compliant walkways are easier to achieve in the north-south direction (parallel to the hillside), but up and down the hill (east-west) is difficult to achieve in many instances.



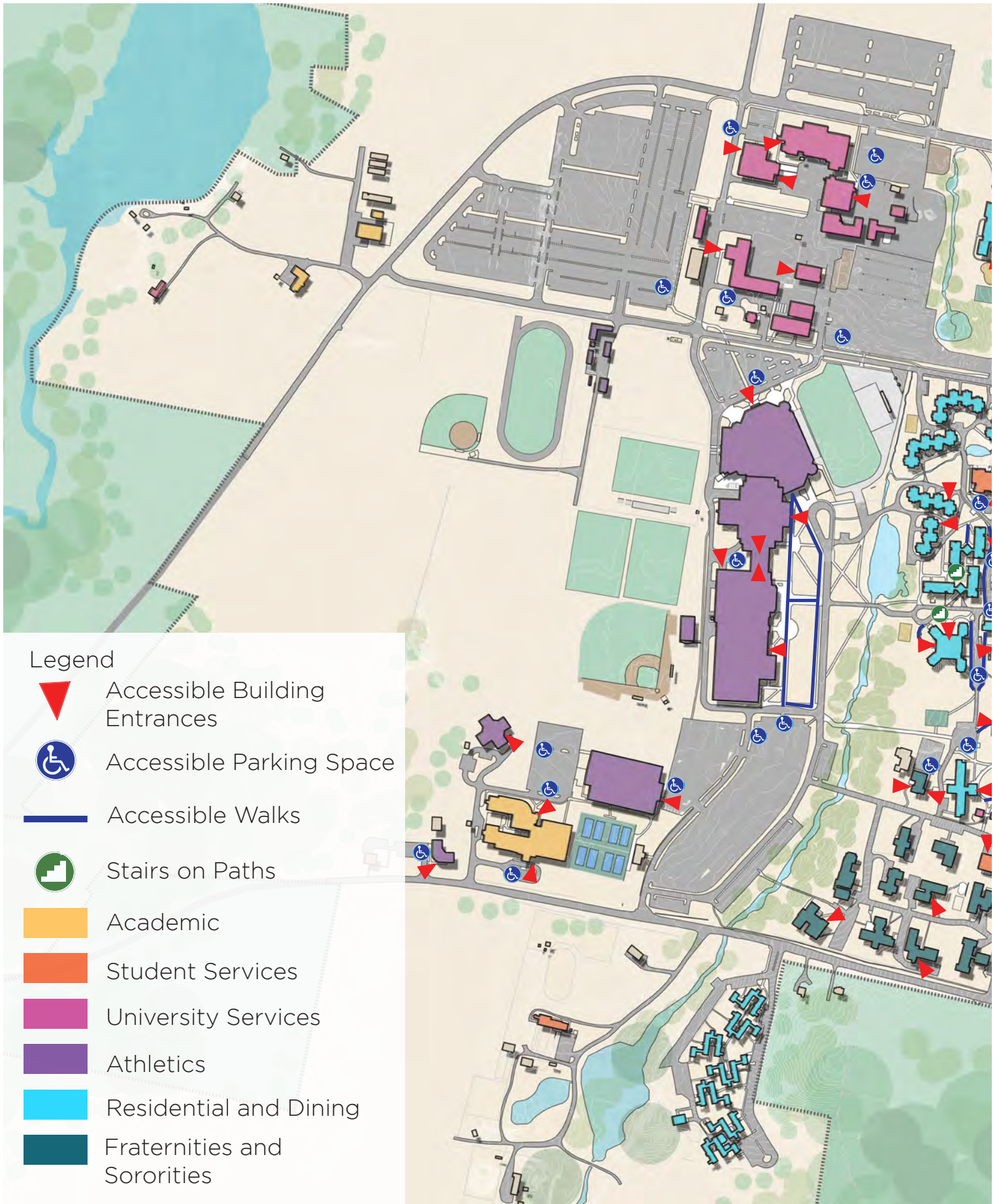
















Existing Pedestrian Circulation

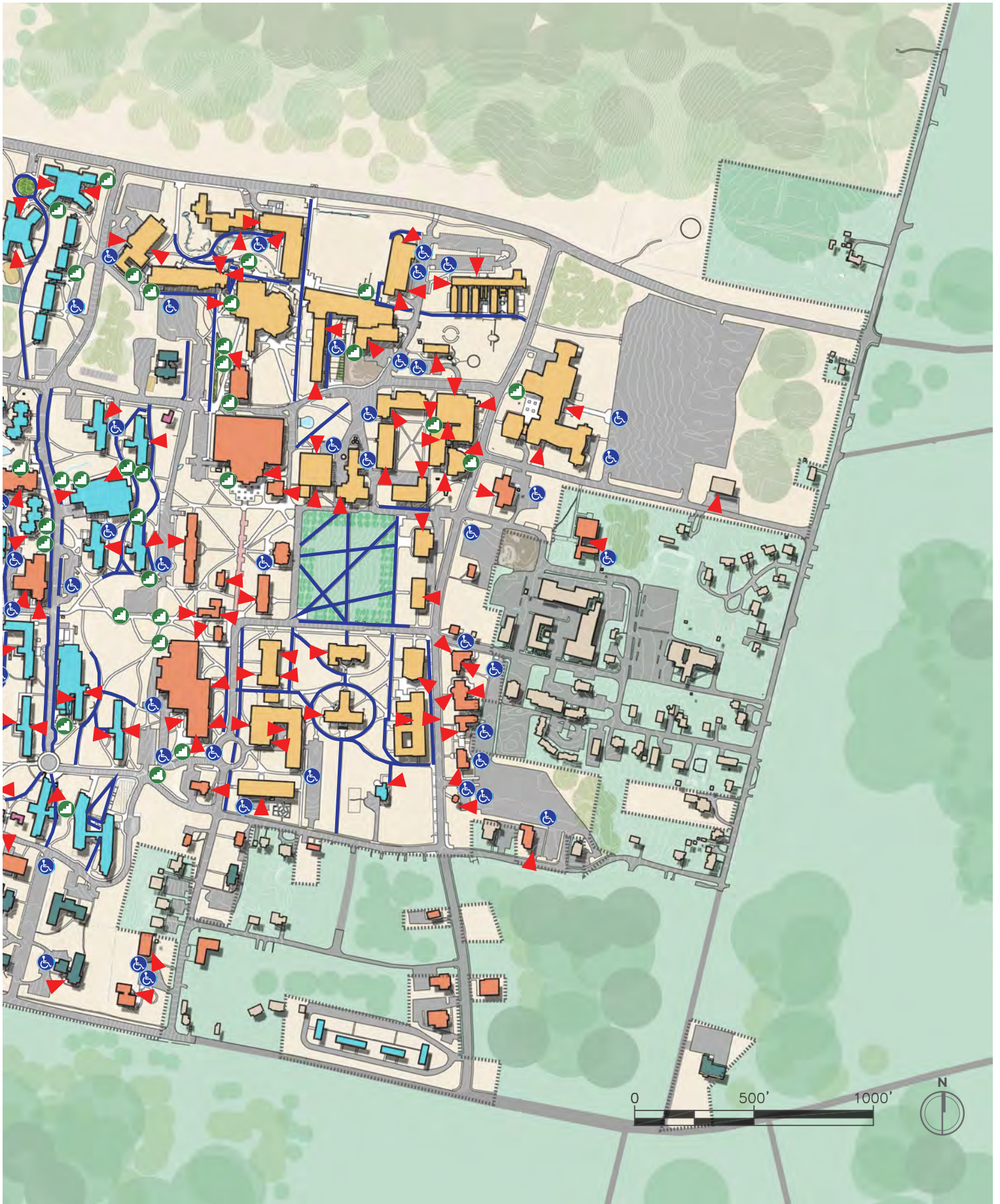




Legend

-  Accessible Building Entrances
-  Accessible Parking Space
-  Accessible Walks
-  Stairs on Paths
-  Academic
-  Student Services
-  University Services
-  Athletics
-  Residential and Dining
-  Fraternities and Sororities





## Campus Accessibility

EXISTING CONDITIONS



## 2.5 EXISTING PEDESTRIAN EXPERIENCE: DESIRE LINES

The majority of newer construction and renovation projects (e.g. Hillside, Chemistry, Pharmacy, Ranger and Green Halls) all achieve some level of accessibility. However, there are major gaps in the accessible network, especially in the Residential Life district. The village-style residences of Burnside, Coddington, Aldrich, Dorr, Ellery and Hopkins have few, if any, accessible entrances and no elevators are included in the structures to render the upper level suites accessible. In addition, because of the location of these residence halls near the bottom of the campus hill, many of the slopes of the surrounding walkways do not meet ADA requirements for maximum gradients.

Another significant issue is the sidewalks along Upper College Road. While the running slope of the sidewalks are generally within the ADA guidelines, street lights and signs are located within the sidewalks, reducing the clear width to as little as twenty-eight inches. While most of these technically meet ADA guidelines for one-way pedestrian travel, the sidewalks feel tight and constrained even to able-bodied people and they do not permit two people to pass.

As seen in the Campus Accessibility Map, there are large portions of the campus that are lacking an accessible network. It is assumed that students, faculty, and staff with mobility-impairments need to rely on automobiles for access round campus—whether a personal auto or University transit.

Crosswalks are also a significant issue throughout campus. Just ahead of move-in in the fall, temporary bituminous “ramps” were installed within the roadbeds all over campus where a crosswalk exists with no curb ramps. Shortly after move-in period, these ramps were removed. Per ADA, all crosswalks should have associated curb ramps to allow universal access as well as a safer roadway crossing.

Note that the accessible walks were not evaluated based on topographic information, but generally assessed for compliant

gradients, surfaces, and clear widths. A topographic survey would be required to accurately determine which walkways are compliant with slope requirements.

### **Desire Lines**

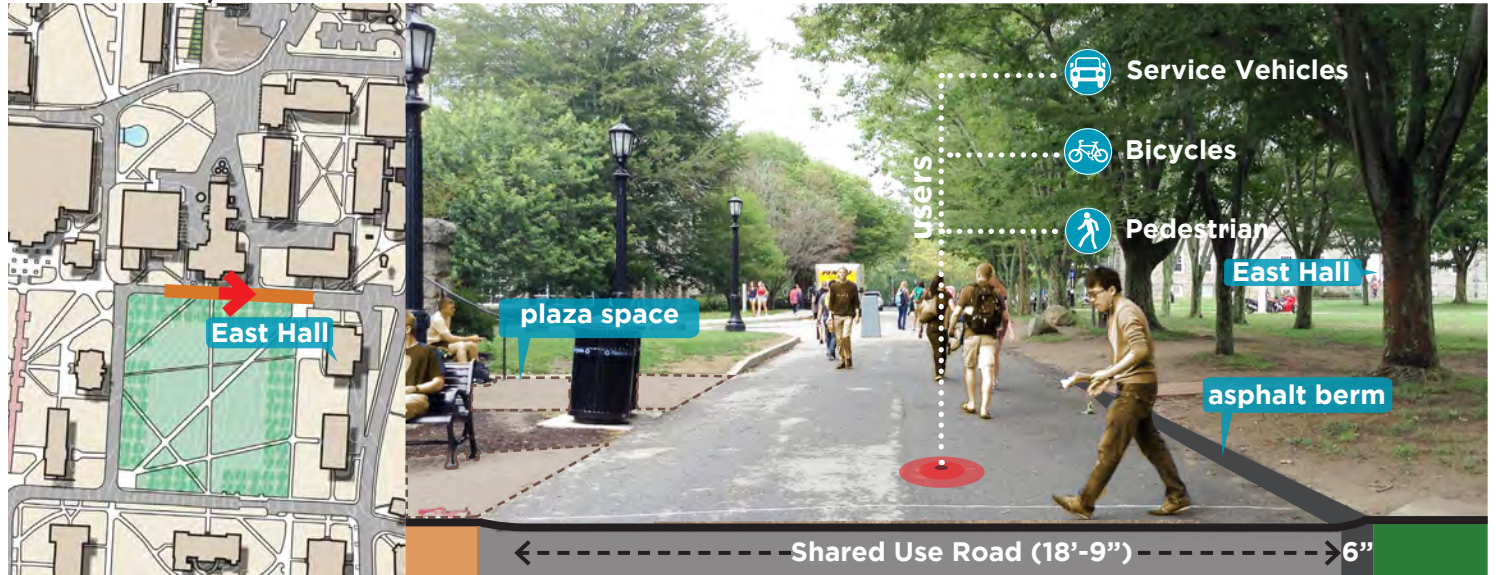
Worn desire lines are fairly limited on campus. Where they do occur it is typically where people cut corners of walkways that meet at a geometric intersection, but occasionally they identify a need for a new path. One example is on the north side of the Hope Dining Commons. The northeast entrance of Hope does not provide a direct access to the Merrow Hall which has an entry on its southeast corner and a desire line has been established cutting through the evergreen planting and turf.

Another heavily used axis is the diagonal connection from the northwest to southeast corners of the quadrangle. (Carothers Library towards Edwards Hall). While this connection is used frequently, the turf in the quad along this axis is in decent condition and does not show wear.

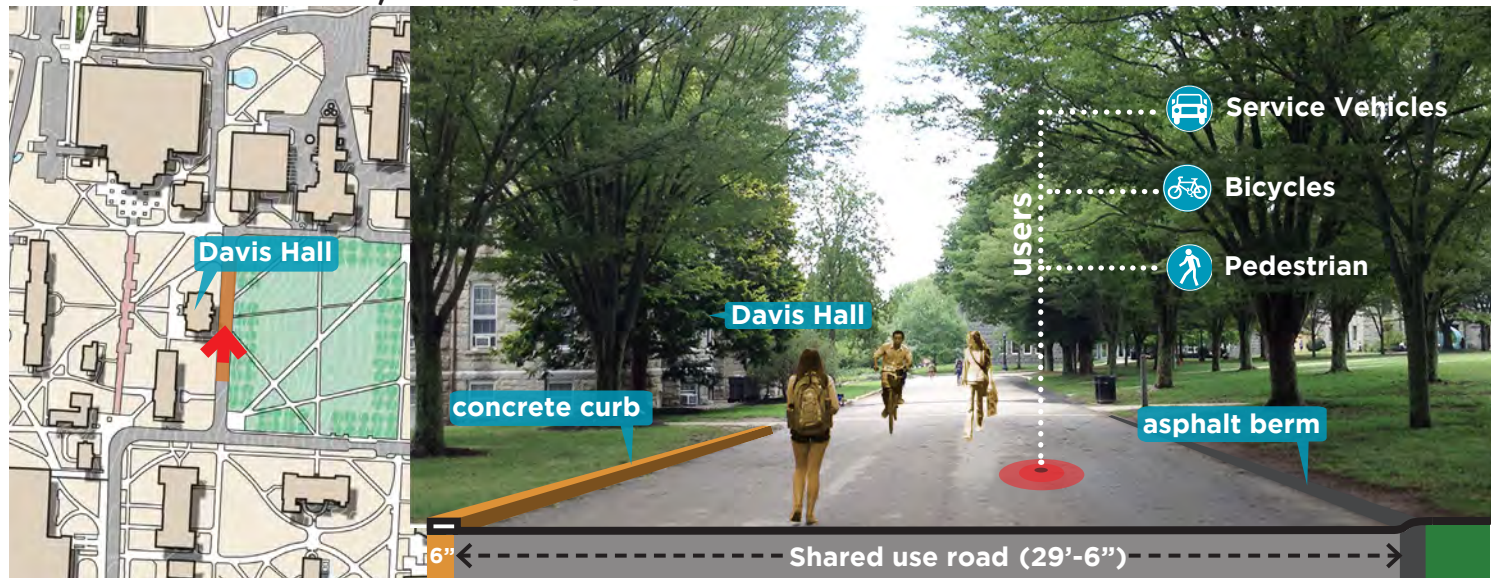
When a desire line appears on campus, one of two solutions is used to treat the condition: if deemed an undesirable connection, a berm or split rail fence may be installed to deter the pedestrian traffic; if deemed desirable, the path should be formalized with widths and materials which match the campus standards established in Section 6: Design Guidelines & Standard Details of this report.



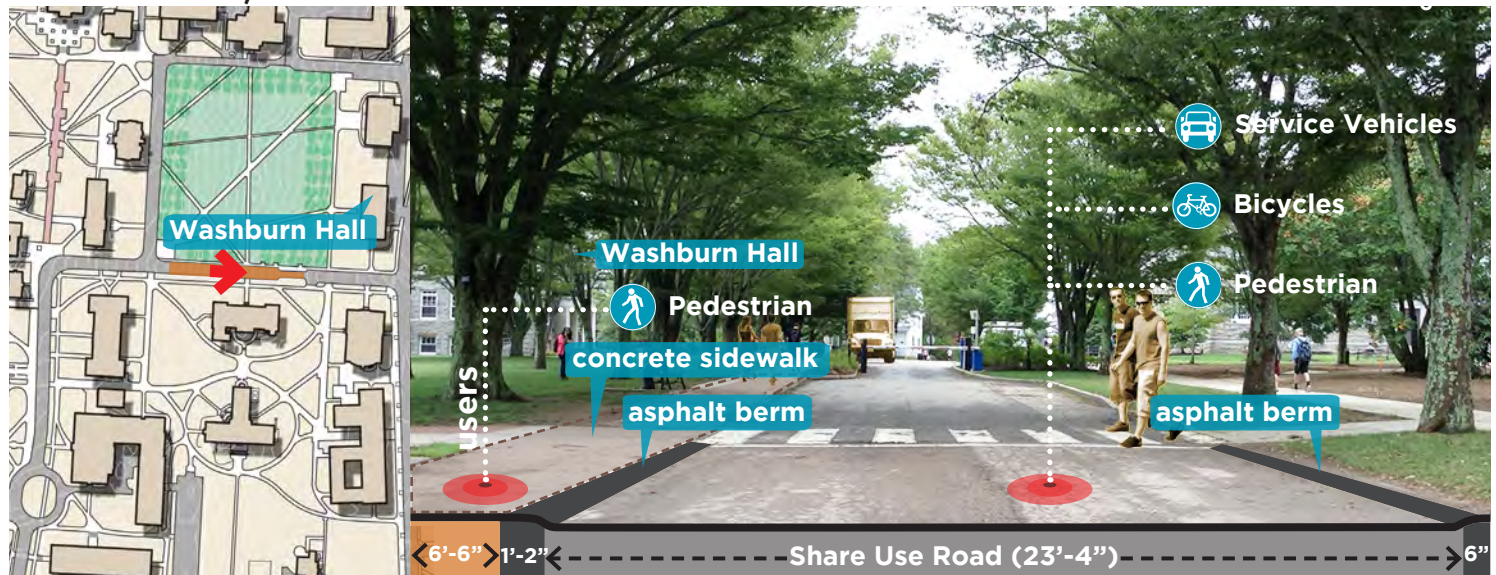
LIPPITT ROAD, NORTH OF QUADRANGLE



LOWER COLLEGE ROAD, WEST OF QUADRANGLE



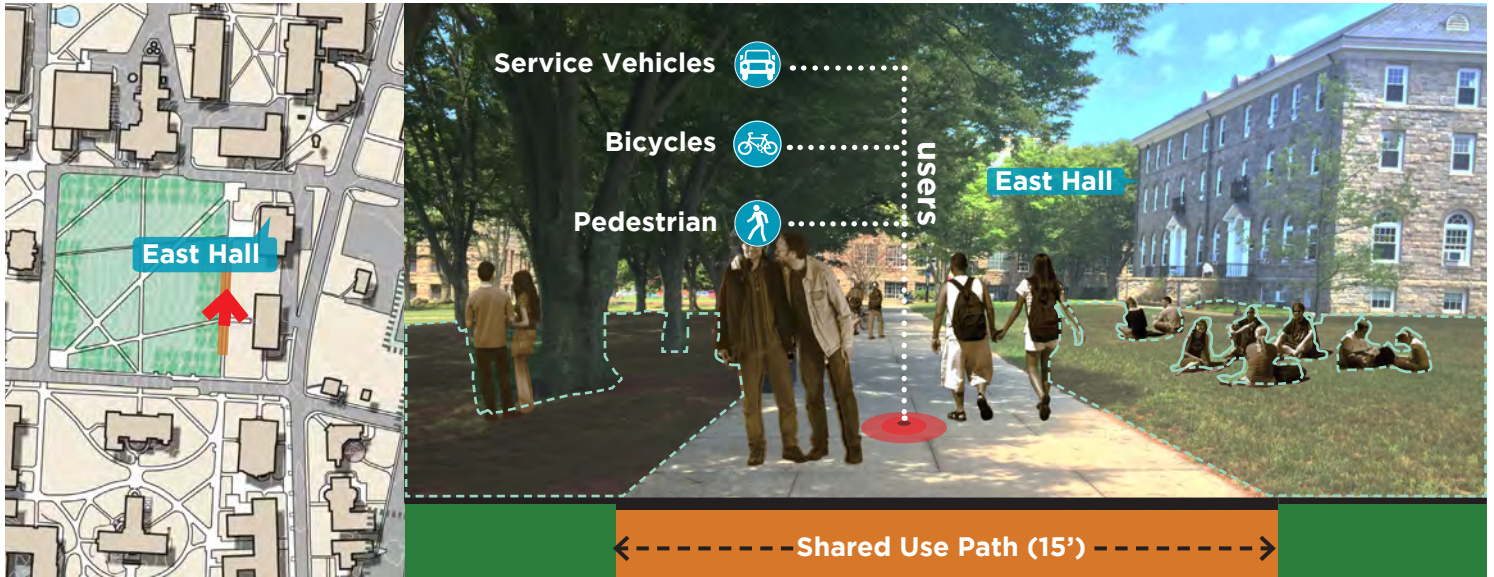
RANGER ROAD, SOUTH OF QUADRANGLE



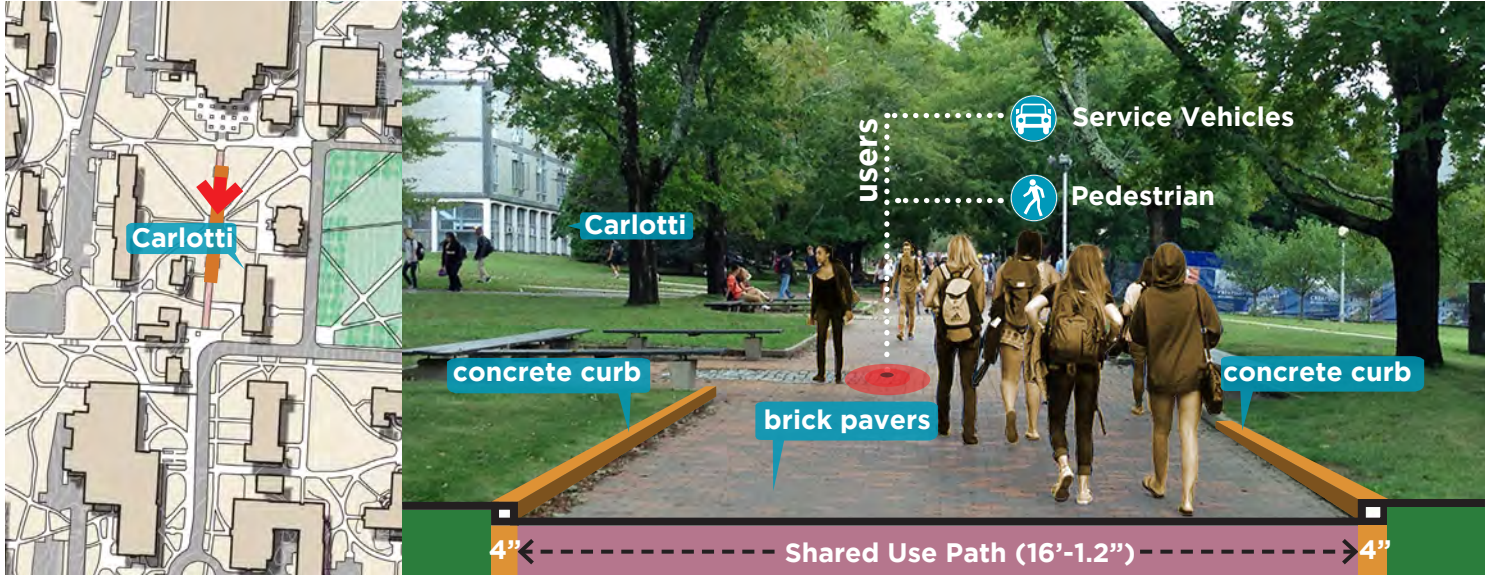
Sections: Pedestrian Access & Emergency/Service Vehicle Access Only



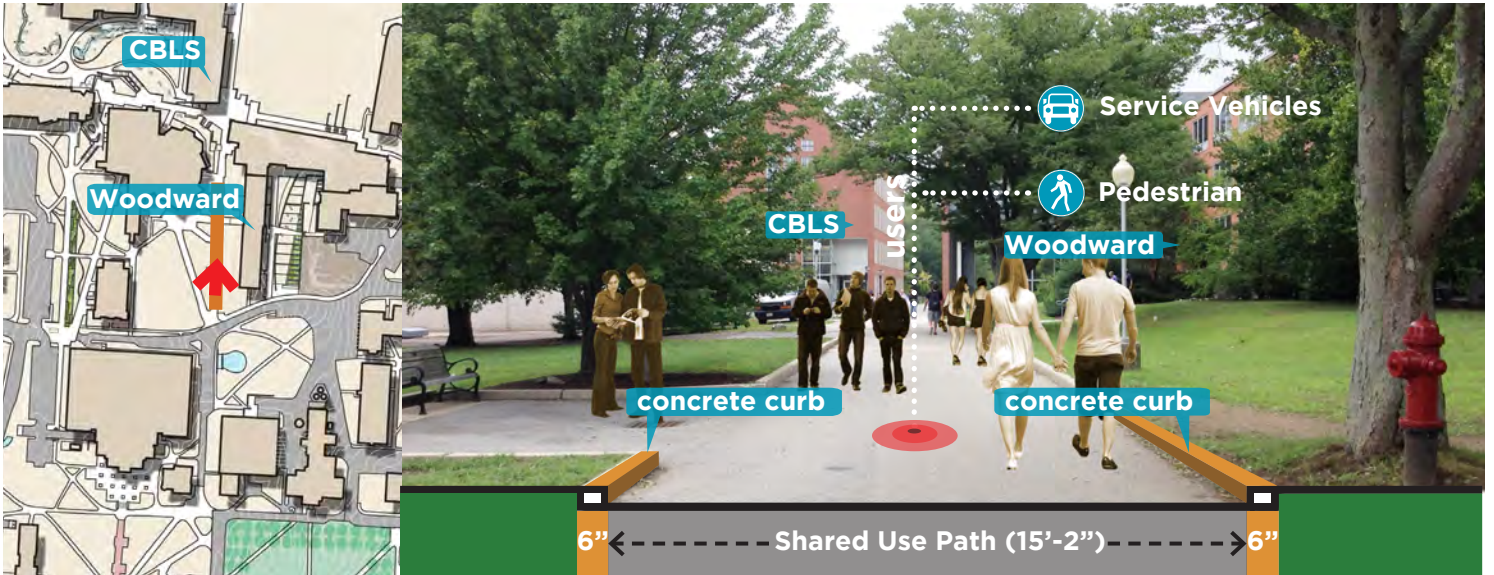
WALKWAY ON EAST SIDE OF QUADRANGLE



HAMMERSCHLAG MALL



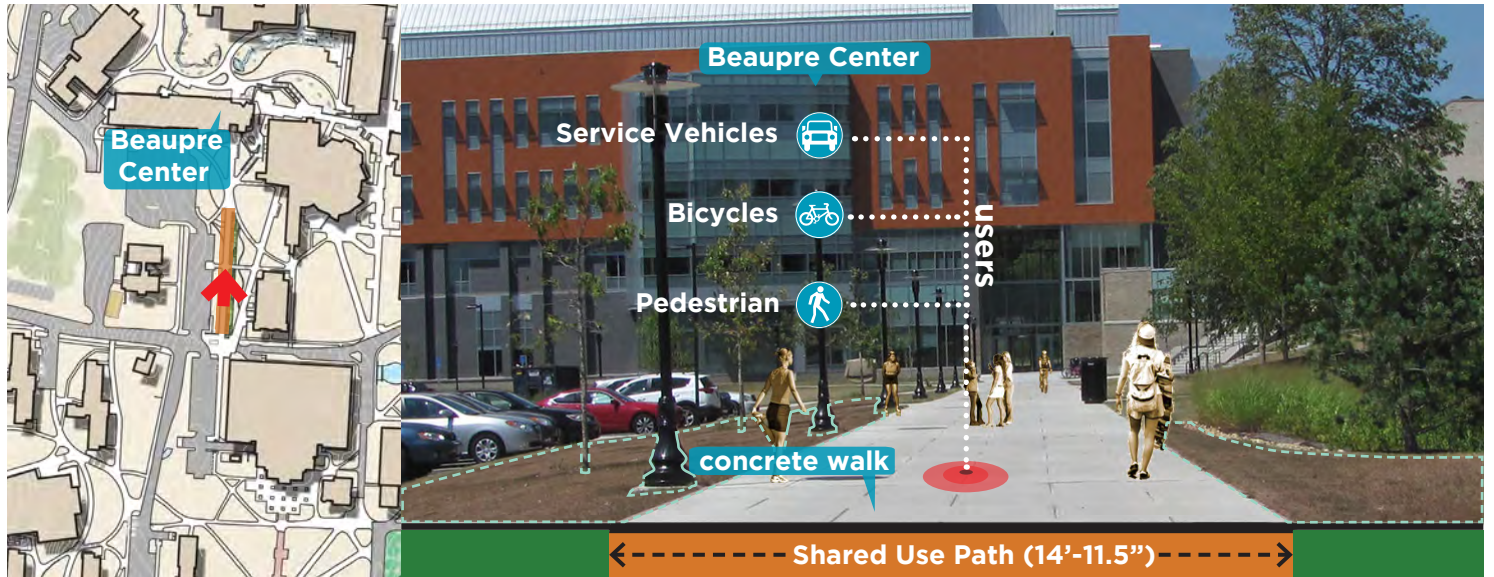
WALKWAY LEADING TO CBLS



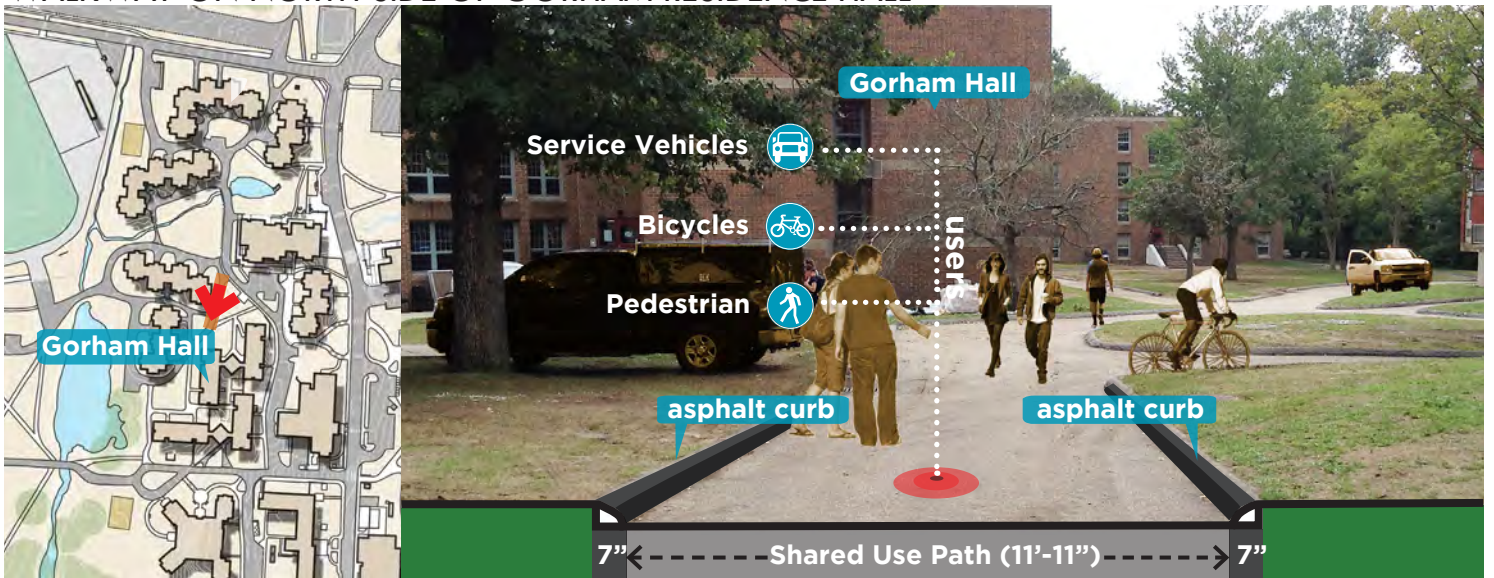
Sections: Pedestrian Access & Emergency/Service Vehicle Access Only



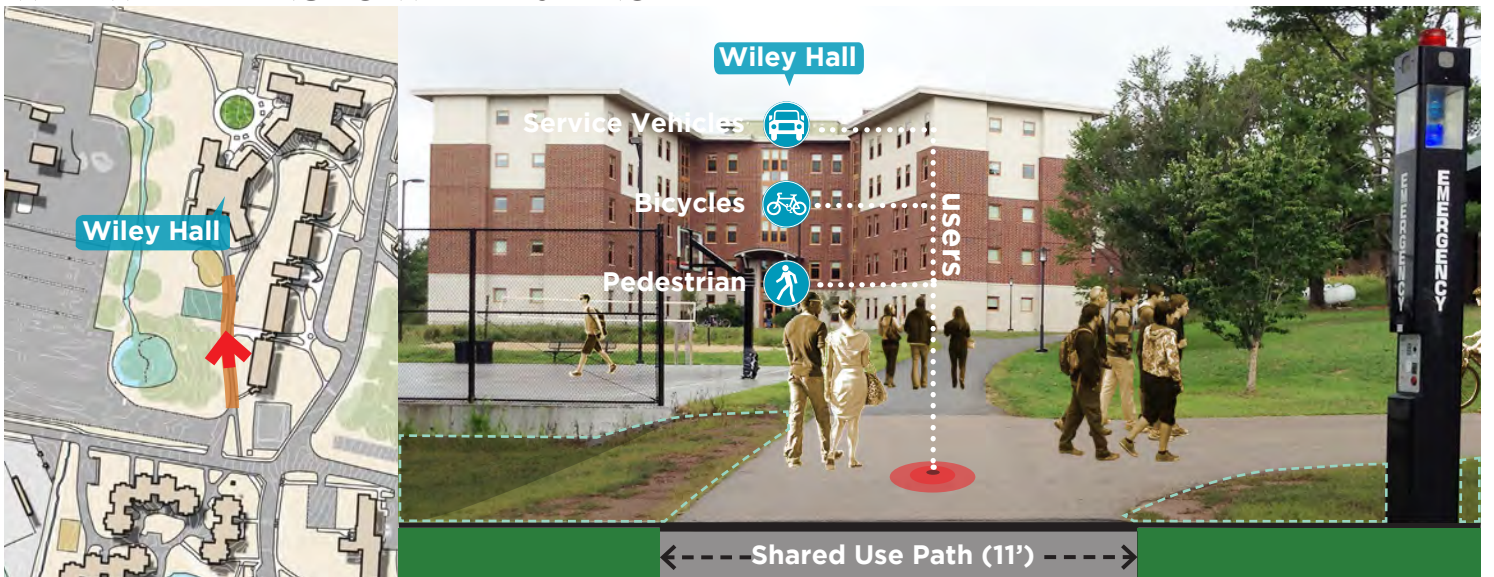
WALKWAY LEADING TO CHEMISTRY



WALKWAY ON NORTH SIDE OF GORHAM RESIDENCE HALL



WALKWAY LEADING TO WILEY RESIDENCE HALL



Sections: Pedestrian Access & Emergency/Service Vehicle Access Only



## 2.5 EXISTING PEDESTRIAN EXPERIENCE: SUMMARY

### District Summaries

#### Historic Campus Core District

The walks crossing the Quadrangle are some of the most important in the campus core. There are six walkways which vary in width, materials and conditions. The URI Centennial Walk crosses in a north-south direction from Ranger Hall to Lippitt Hall. It is the only brick walk and is eight feet wide. The pavers are inscribed with donor names or short phrases and were initially installed in 1993. The widest walk is the one which connects the southwest corner of the Quad by the cannon to the northeast corner; it is a concrete walk that is ten feet wide. The narrowest walk is only four feet wide and connects Davis Hall to East Hall. The remainder of the walkways are eight feet wide, constructed of concrete, and some are in extremely poor condition. The walkway on the east side of the Quad—the only non-road bordering the Quad—is a fifteen-foot wide concrete walk. Significant pedestrian traffic crosses the lawn in all directions, but not enough to create wear patterns in the turf.

The walks in the gardens between Ranger and Green Halls vary between six feet, eight feet and fifteen feet wide and all concrete. On the west side of Edwards Auditorium and Swan Hall is a straight concrete walk which connects to that on the east side of the Quad and pulls students and faculty off of the Upper College Road sidewalk.

The sidewalks along Upper College Road vary in width. Those on the west side are more comfortable and are typically eight feet wide, while those on the east side vary from six feet to eight feet wide (with obstructions) and have light poles located in the sidewalk. On the east side the linden trees are located inside of the sidewalk whereas on the west side the trees are between the walkway and the street with pavers laid outside the tree pits; the light poles are located in the paver fields.

The Engineering Quad is being redesigned with a new structure that will significantly reduce the green at the center of the buildings. The new landscape (as reviewed in Design Development phase in November 2016) will have concrete walks which vary between six feet wide and eight feet wide. To the west of the new structure, a fifteen foot-wide concrete walk will replace the southern extent of Greenhouse Road.

South of Green Hall is a linden-lined allée which connects the President's House to Green Hall. Green Hall hosts many essential offices for the University, including the offices of the President, the Registrar, and the Provost, Enrollment Services, and several others. The walkway is eight-and-a-half feet wide and serves as a ceremonial walkway.

#### Mall District

In addition to Hammerschlag Mall—which dominates the Mall District—there are a number of walks which cross or intersect with the Mall. Most of these are narrow walks paved with bituminous concrete. The extension of Hammerschlag Mall to the south currently is concrete sidewalks which line either side of Ranger Road in front of the Memorial Union. On the west side, directly in front of the Union, the walk is much broader at twenty feet wide, whereas on the east side, the walk is separated from the road by a planted strip. These sidewalks are either pushed outside of the bus circle, or the walk cuts across it.

The walks around the front of Carothers Library and the terminus of the Mall are all bituminous and vary greatly in width. These walks support a lot of the campus movement and may be undersized. Some, to the west side near Roosevelt Hall, have Cape Cod berms which are meant to control stormwater.

RESIDENTIAL LIFE DISTRICT



MALL DISTRICT



MALL DISTRICT



HISTORIC CAMPUS CORE



NORTH CAMPUS DISTRICT



HISTORIC CAMPUS CORE





## 2.5 EXISTING PEDESTRIAN EXPERIENCE: SUMMARY

### North Campus District

A substantial amount of the recent construction on campus has occurred in the north Campus, including Center for Biotechnology and Life Sciences (CBLS), and the Chemistry and Pharmacy buildings. The walkways for each of these have been designed and constructed in concrete at a width of fifteen feet. These major walks contain the majority of the north-south pedestrian flow from the campus core to Flagg Road and parking. Similarly, the walk which extends from the Fine Arts Center/Upper College Road south of the Greenhouses are both concrete, but the one leading from the Fine Arts parking lot to Upper College Road is less than the typical fifteen feet wide. The walkways leading to Chafee are broad and paved in bituminous concrete.

### Residential Life District

Hillside has a wide array of walkway widths but they are comprised of two materials: bituminous and concrete. In the Garrahy, Wiley, and Heathman Halls area, the paths are all bituminous with concrete plazas near building entrances. The one exception to this area is the circle on the north side of Wiley Hall and west side of Garrahy Hall which is a wide concrete pathway (used for service, emergency and move-in/out). In the Village the pathways are also mainly bituminous concrete. The sidewalk which follows Complex Road through the development is narrow and feels very constrained.

Many of the hall-style residence halls had entry updates completed in the early 2000s and their main walkways were then upgraded to concrete, but older walkways are in bituminous.

### Wetlands District

The Wetlands District contains very few walkways. Two are wood chip paths that are fairly informal, but well used in this district. These include the extension of Complex Road which connects across the wetlands to Keaney Road and bypass the existing roadway. The second path occurs about 500 feet downstream and connects the Chi Phi parking area to the Keaney Road parking lot. There is a third path that connects Fraternity Circle to the Keaney Road parking lot. It is very narrow and is paved with bituminous concrete. Two additional walks connect the athletics to the residential zones. Both are paved and the one at the western end of Complex Road is wide enough for vehicles, but have bollards to control access.

### Athletics District

On the east side of the Mackal/Keaney/Tootell complex there is a grid of concrete walkway and plazas which connect to Keaney Road. East of Keaney Road are a few additional walkways, all narrow and paved with bituminous. These walkways and plazas date to before the construction of the Ryan Center when the east façade was the main entrance for all of the athletic facilities. These entrances are still used, especially by students living on campus as they cross through the wetlands district, but the amount of paving in the areas is excessive for the current level of use.

### Service District

There are no distinct walkways through the Service District, except for sidewalks providing access from parking into the buildings.

## 2.6 EXISTING VEHICULAR CONNECTIONS: GATEWAYS

### Campus Gateways

There are six campus gateways; the two most significant are the intersection of Route 138 and Upper College Road and Route 138 and Plains Road. While neither of these lead directly onto campus grounds, they are the representational gateways onto campus.

Secondary gateways include:

- The intersection of Upper College Road and Campus Avenue/Briar Lane—where the memorial gateway is located
- The intersection of Route 138 and Lower College Road
- The intersection of Route 138 and Keaney Road
- The intersection of Upper College Road and Flagg Road

There are a number of other ways to access campus but these are less significant entries and feel like “back door” entries.

At these gateways, there are few elements to announce that you are, in fact, on campus. The Route 138/Upper College Road intersection has a large granite sign and is controlled by a traffic signal. Just beyond the intersection of Upper College Road and Campus Avenue is the memorial gateway which was installed in 1928. It is located between the President’s House and the Visitor Center and just beyond this location, to the north, is a banner which crosses Upper College Road to celebrate and announce campus events. The intersection at Plains Road is not as well marked but is the main entry for anyone approaching campus from the south, especially Route 95.

### Campus Roads

The University is bound on all four sides by streets: Upper College Road to the east, Route 138 to the south, Plains Road to the west, and Flagg Road to the north. None of the streets are well marked along their approach to the campus, which is also true for Old North Road which sits just east of campus and is another significant access point.

Upper College Road varies substantially in character. Between Route 138 and Campus Avenue/Briar Lane the road is dominated by residences and smaller campus structures. The newer buildings constructed for campus uses maintain the residential character with appropriate setbacks, architectural style, mass, and height; their landscapes are also relatively consistent. These buildings include Newman Hall (Admissions), Gender & Sexuality Center, the Women’s Center, the Ruggles House, and the Hart House for Labor Research. The Gateway Apartments are located on Faculty Drive immediately after the Route 138 intersection opposite the Kingston Free Public Library.

From Campus Avenue to Ranger Road/Fortin Road, Upper College Road is dominated by Swan Hall and Edwards Auditorium on the west side. This is the only point along Upper College Road where the sidewalks are located inboard of the street lights and trees. Historically, the road was lined with linden trees on both sides, many of which still remain in grand form. The east side was once lined with fraternities, but now has two International Engineering Program houses, the Alumni Center, and the URI Foundation Building. Each of these structures maintain a similar setback off of the road, and also maintain the large-scale residential-style of architecture.



## 2.6 EXISTING VEHICULAR CONNECTIONS: ROADS

From Ranger Road to Lippitt Road/Chapel Way, the west side is dominated by the historic structures that line the quadrangle as well as a faculty and staff parking lot. The east side has two remnant residential structures used by the University: the Adams House and the Tucker House. Behind these buildings is the Emporium and several parking areas, only one of which is owned by the University and is designated for faculty/staff parking.

Between Chapel Way and Bills Road is the University Club which has a deeper setback than the other Upper College Road structures and a different architectural aesthetic. On the west side is the College of Engineering and the dominating Kirk Center for Technology. In several locations this building sits directly adjacent to the sidewalk.

The final segment of Upper College Road has the Fine Arts Center to the east and the Botanical Gardens, URI Outreach Center, and Greenhouses on the west. This is the most distinct segment of the road which is heavily planted on the west and fairly open and stark on the east until the very end and the forested wetland reaches to the roadway.

All segments of Upper College Road have a wide roadbed, thirty to thirty-five feet wide with two-way traffic and sidewalk on both sides. Only the first segment of Upper College Road has on-street parallel parking which uses seven feet of the roadbed.

Flagg Road has a very different character. It is two-way with parking on the south side only. It is forty feet wide and heavily wooded on the north side from Old North Road to Butterfield Road. In the past, the University allowed parking on the north side as well, but due to safety issues it is no longer permitted. However, the roadbed has never been narrowed. Because of the width of Flagg Road and its location (campus perimeter road), as well as its relatively straight alignment, drivers tend to exceed speed limits, creating dangerous conditions. Flagg Road has sidewalks only on the south side.

Plains Road feels expansive. It is surrounded by athletic and turf fields, with few structures. Its road bed is wide with no sidewalks. It feels remote to campus given its separation by fields but provides some of the best views of the hillside campus and its notable buildings.

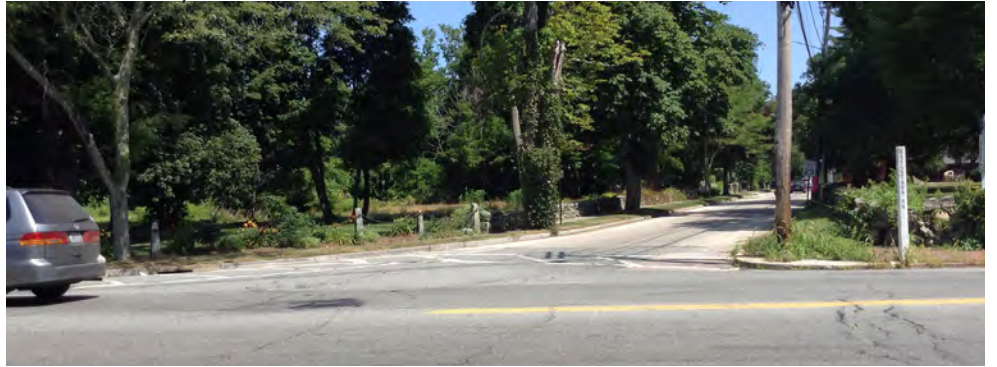
The internal campus roads are plentiful. Given that the biggest push of campus development occurred at URI in the mid to late twentieth century, roads wind through the entire campus giving it a suburban feel. Many of these roads are used now to access central parking areas, or for service and emergency vehicles only. The roads were designed as two-way roads with a variety of curb types. They are all also used as pedestrian routes. Only two campus roads are designated as one-way: Complex Road which winds through Residential Life from Butterfield Road to West Alumni Avenue and the remnant of Baird Hill Road which connects from the Lower College Road turnaround to the parking behind the Memorial Union. Complex Road, despite being signed as one-way, has the roadbed width of a two-way road and is used in both directions to access parking and the residence halls.

The newer construction on campus, including Hillside Hall, Pharmacy and Chemistry buildings have established pedestrian-oriented paths that are used by emergency vehicles. The fifteen-foot wide concrete paths are designed for H-20 loading but with no curbs, which create a more pedestrian-oriented character to the paths while providing ample infrastructure for the vehicles that do need to access them.

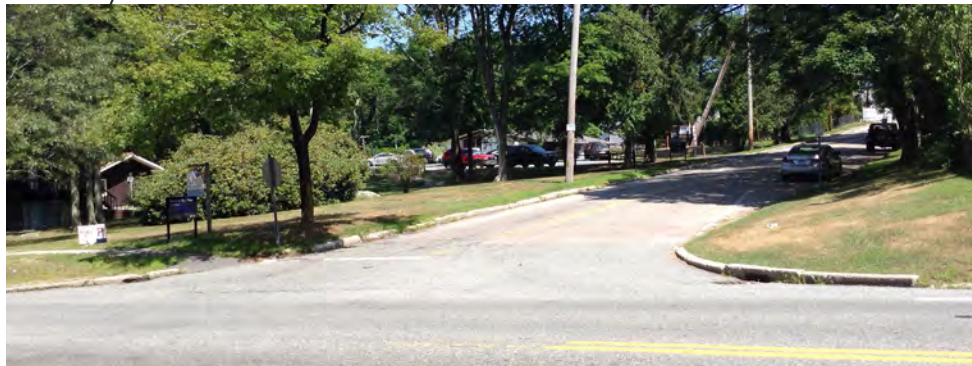
RT 138/UPPER COLLEGE ROAD OLD NORTH ROAD/FLAGG ROAD



OLD NORTH ROAD/BILLS ROAD ROUTE 138/OLD NORTH ROAD



RT 138/LOWER COLLEGE ROAD



OLD NORTH RD/FORTIN RD



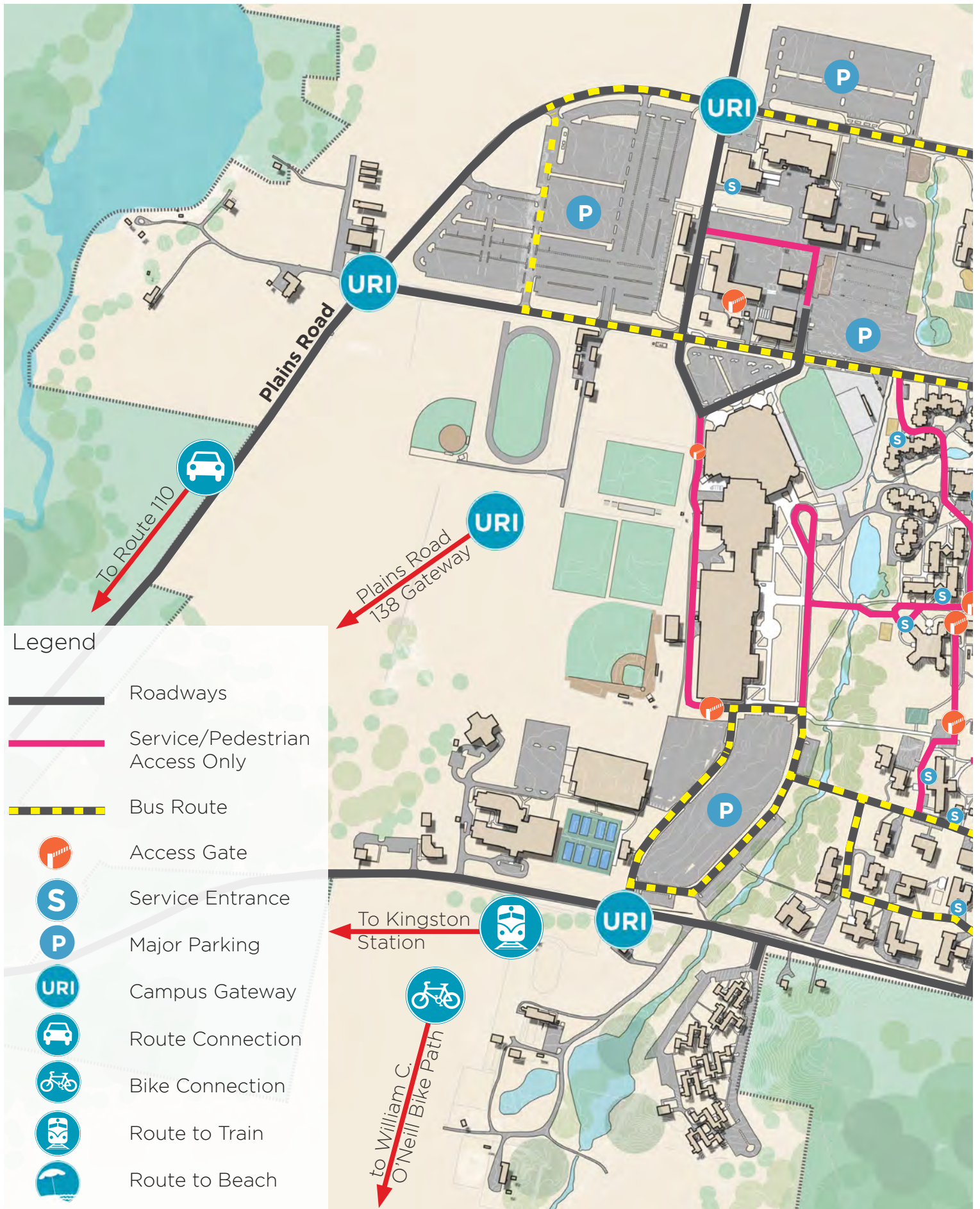
ROUTE 138/KEANEY ROAD













ROUTE 138/PLAINS ROAD



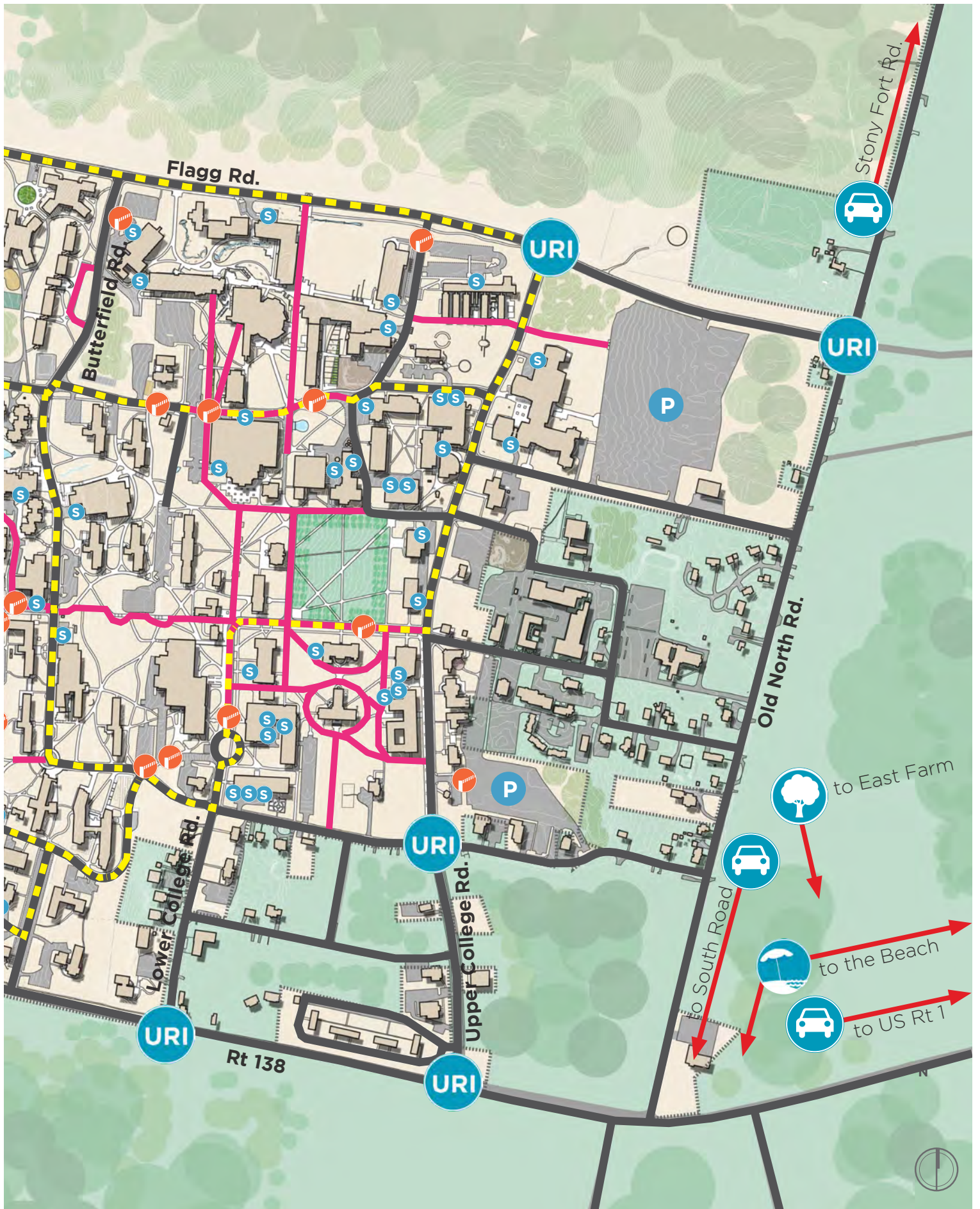




Legend

-  Roadways
-  Service/Pedestrian Access Only
-  Bus Route
-  Access Gate
-  Service Entrance
-  Major Parking
-  Campus Gateway
-  Route Connection
-  Bike Connection
-  Route to Train
-  Route to Beach

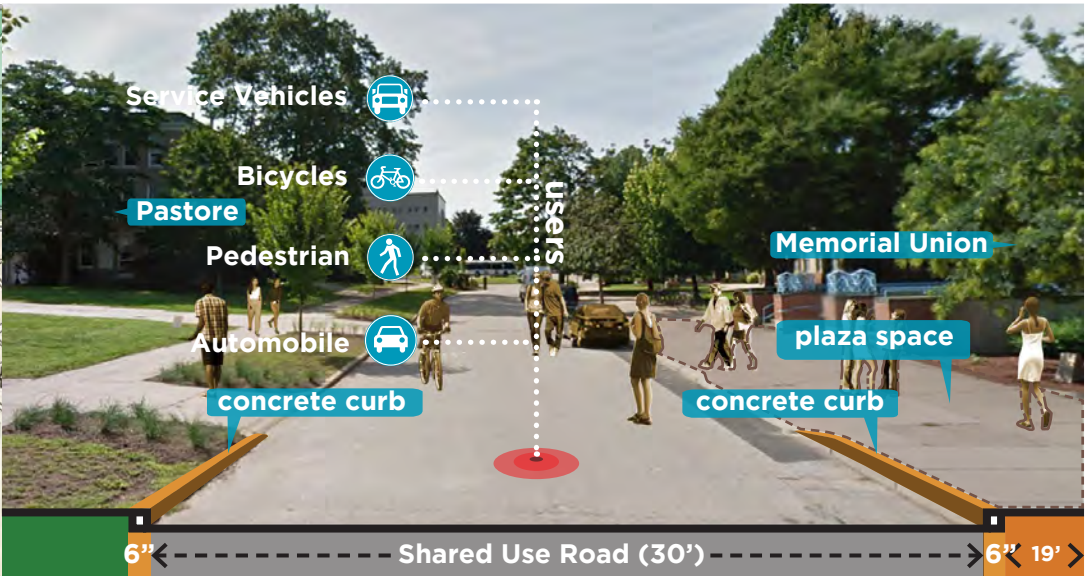
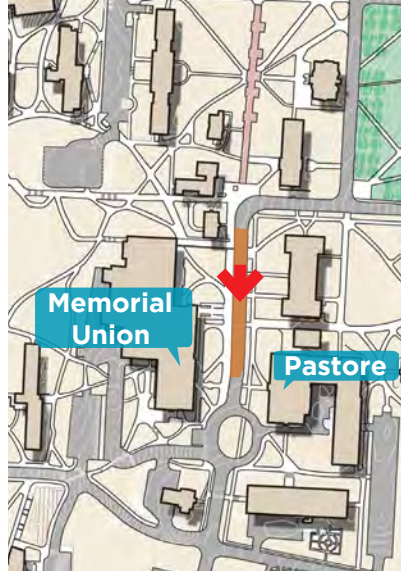




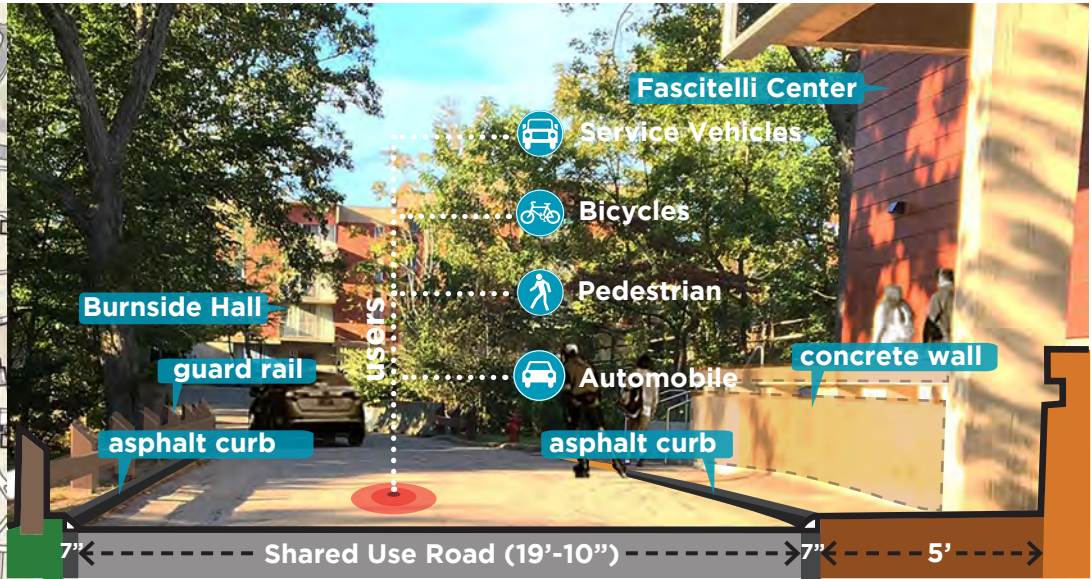
## Vehicular Circulation



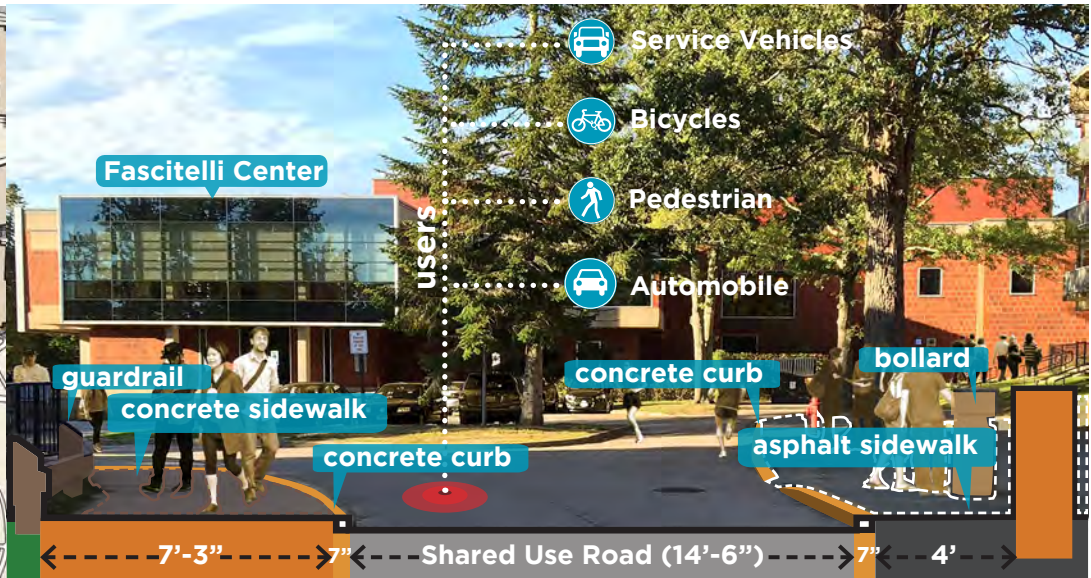
LOWER COLLEGE ROAD



COMPLEX ROAD AT FASCITELLI CENTER



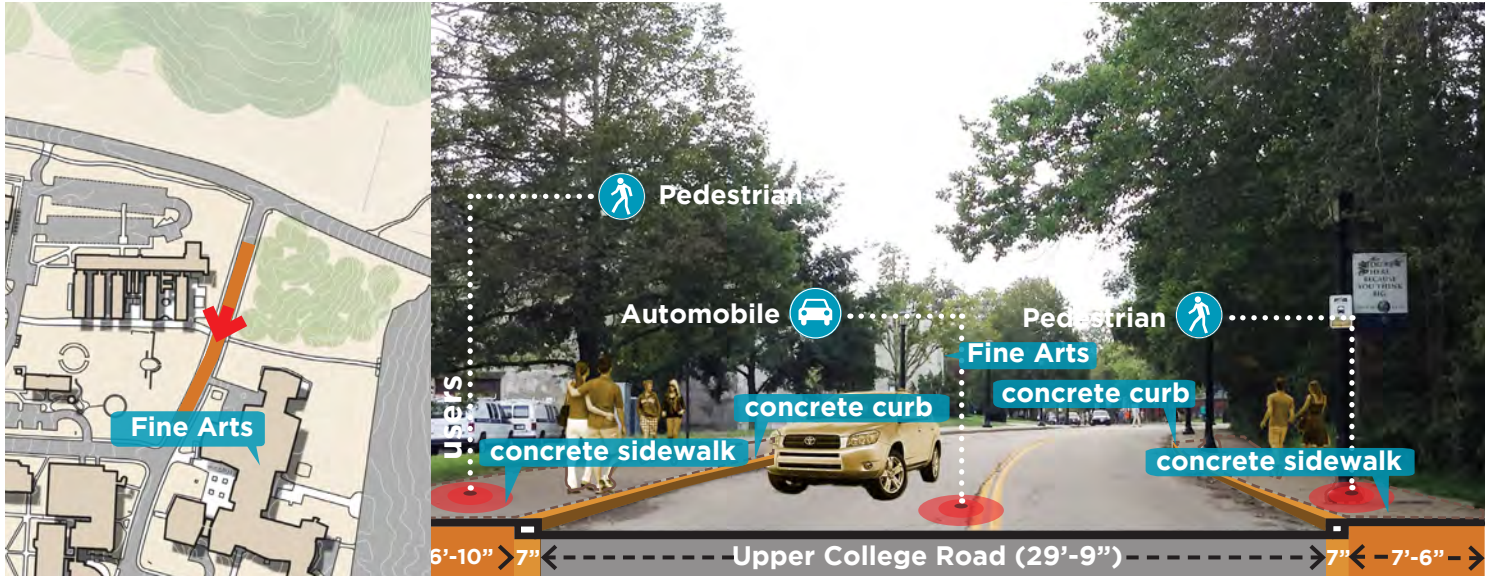
COMPLEX ROAD AT GORHAM RESIDENCE HALL



Sections: Campus Roads



UPPER COLLEGE ROAD AT FLAGG ROAD



UPPER COLLEGE ROAD AT ROUTE 138



Sections: Campus Roads



## 2.6 EXISTING VEHICULAR CONNECTIONS: TRANSIT

There are several modes of alternative transportation to and around the URI campus.

### Off-Campus

First, the Rhode Island Public Transit Authority (RIPTA) offers two routes that access the university (Routes 64: URI from Newport, NUWC and the Bay Campus, and Route 66: URI from Galilee, Wakefield & Wickford and north to Providence). Both of these routes stop at the Memorial Union.

Kingston Station is located in West Kingston just two miles west of the Memorial Union on Route 138. The station is a stop along the Northeast Regional Amtrak line which connects Boston to Virginia Beach, Virginia. Other stops in Rhode Island include Providence and Westerly. Both RIPTA Routes provide transportation from Kingston Station to the University. Walking to campus from the station is less than ideal and would take

approximately forty minutes along Route 138. The route takes approximately fifteen minutes by bicycle. Kingston Station can be accessed by RIPTA Routes 64 & 66.

### On-Campus

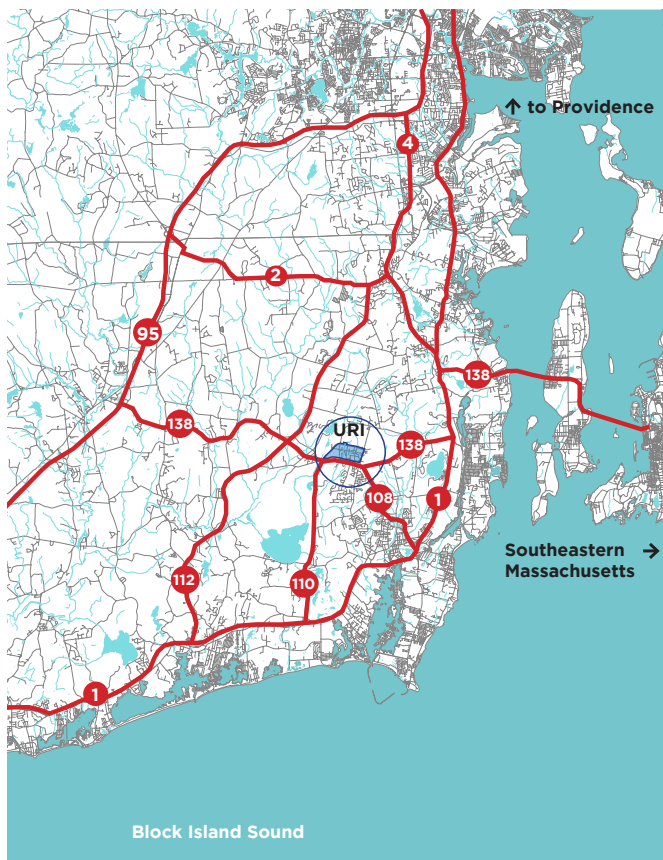
On campus, RIPTA also runs the RamLine (Route 211) and the Hill Climber (Route 69). The RamLine is the more extensive line on campus with more stops and runs south of West Alumni Avenue.

The RamLine follow a route that connects the following locations with twenty-two stops in a counterclockwise direction:

- Upper College Road
- East Alumni Avenue
- Carothers Library
- Ranger Road
- Memorial Union
- Lower College Road
- Campus Avenue
- Butterfield Road
- Hope Commons
- Butterfield Hall
- Fraternity Circle
- Keaney Road parking lot

The Hill Climber makes a loop through the North Campus and Service Districts. Its twelve stops connect the following destinations in a clockwise direction:

- Plains Road parking lot
- Flagg Road
- Upper College Road
- Alumni Avenue
- Carothers Library



Major Roadways Leading to/from URI

Three stops are duplicated on these two lines and often the buses can be seen following each other down East Alumni Avenue. On campus, RIPTA lines are free for URI students, faculty and staff. Neither of these lines run on weekends or holidays.

Recently, the Engineering Line (RIPTA Route 70) was initiated. It connects the Kingston campus at the Memorial Union and the College of Engineering to a temporary satellite Engineering building located at 132 Fairgrounds Road in Kingston. The shuttle runs every thirty minutes, Monday through Friday. It also stops near Graduate Village Apartments on Route 138. This line is free to students.



## Bus Routes



## 2.6 EXISTING VEHICULAR CONNECTIONS:

### Bicycles on Campus

Bicycles as a mode of transportation are not extensively used at the University of Rhode Island. However, bike racks are abundant. At the University of Rhode Island, bicycles are simply not a part of the culture. The assumption is that the campus hill is an impediment to bicycles, but there are many universities with steeper hills where bicycles play a significant role in campus transportation. It may be because a significant amount of students live off campus and drive to campus, it may be because the relatively dense campus is walkable, and/or it may be the abundance of small parking lots within the campus core allows students/faculty/staff to drive from destination to destination.

In South County, there is the William C. O'Neill Bike Path—locally referred to as the South County Bike Path. The trail leads from Mumford Road in Narragansett to the Kingston Station on Route 138. Plans are underway to extend the trail further into Narragansett. Additionally, the University is looking to extend the bike path through campus. The proposed alignment would extend from Route 110 to the West Kingston Elementary School, along the treeline of the fields in Peckham Farm, across Route 138 into campus. Once on campus, the bike path would follow Route 138 until it reaches White Horn Brook and then would follow the wetlands and brook north to the Flagg Road parking lot.

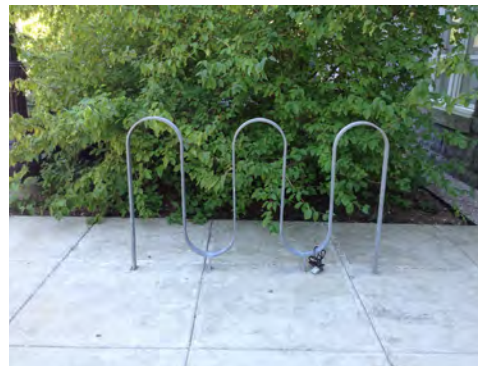
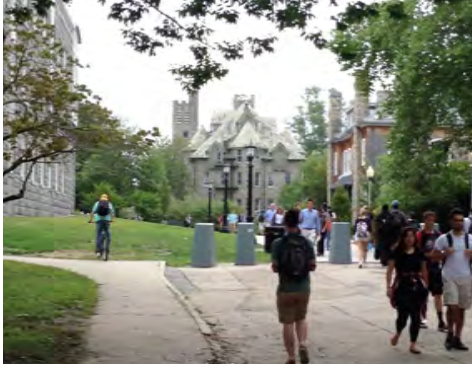
### Skateboards on Campus

The campus assessment found that skateboards are as much a means of transportation across campus as bicycles. Long boards are used to get from residence halls and parking areas to academic and other campus destinations. Unlike bicycles, skateboards can be carried into buildings and do not require any additional infrastructure. Similar to accessibility, the east-west connections on the hills are more limiting on skateboards.

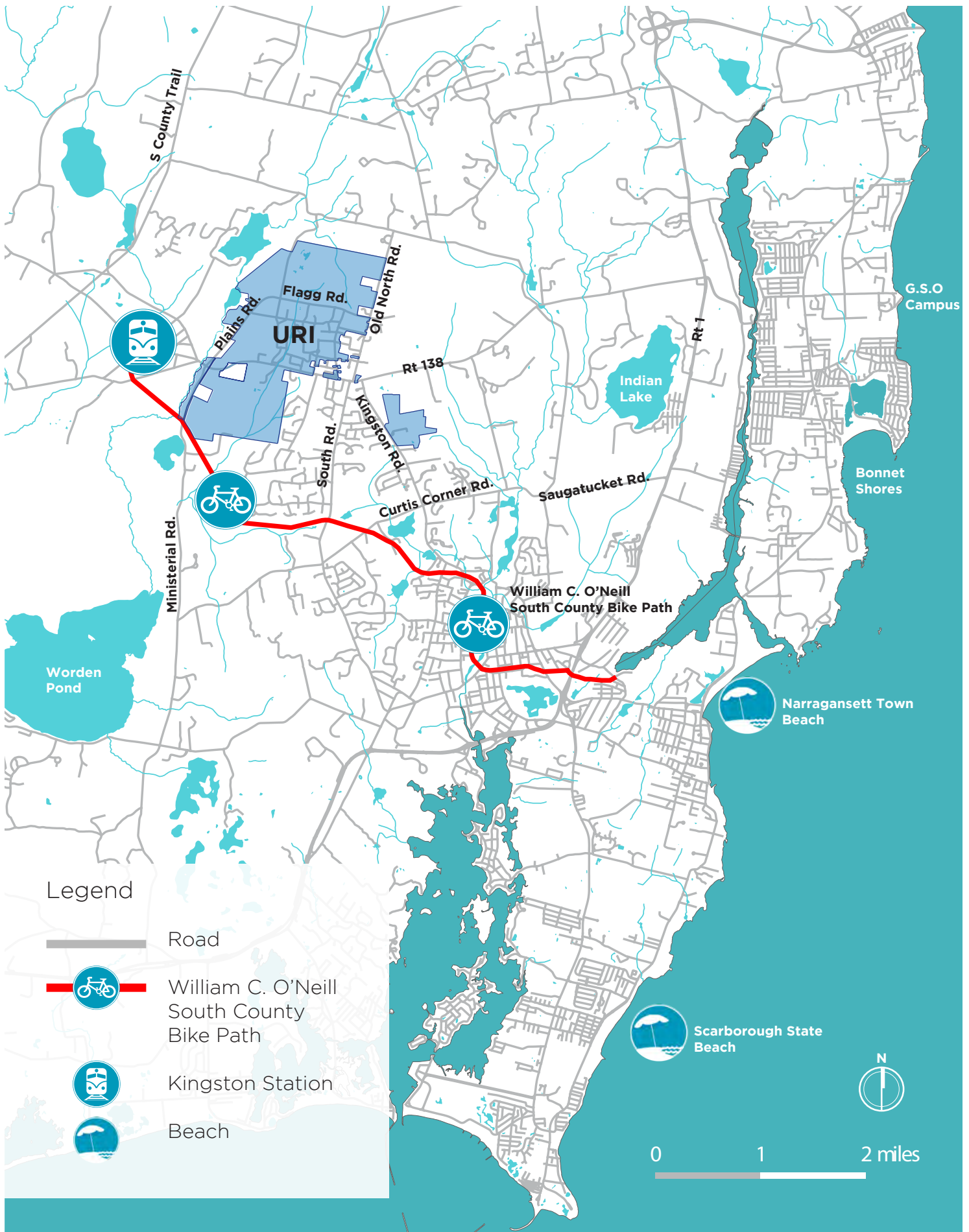
The Student Handbook (2015-2017 edition) states that skateboards are prohibited from campus roads and within thirty feet of University buildings.

# BICYCLES & SKATEBOARDS

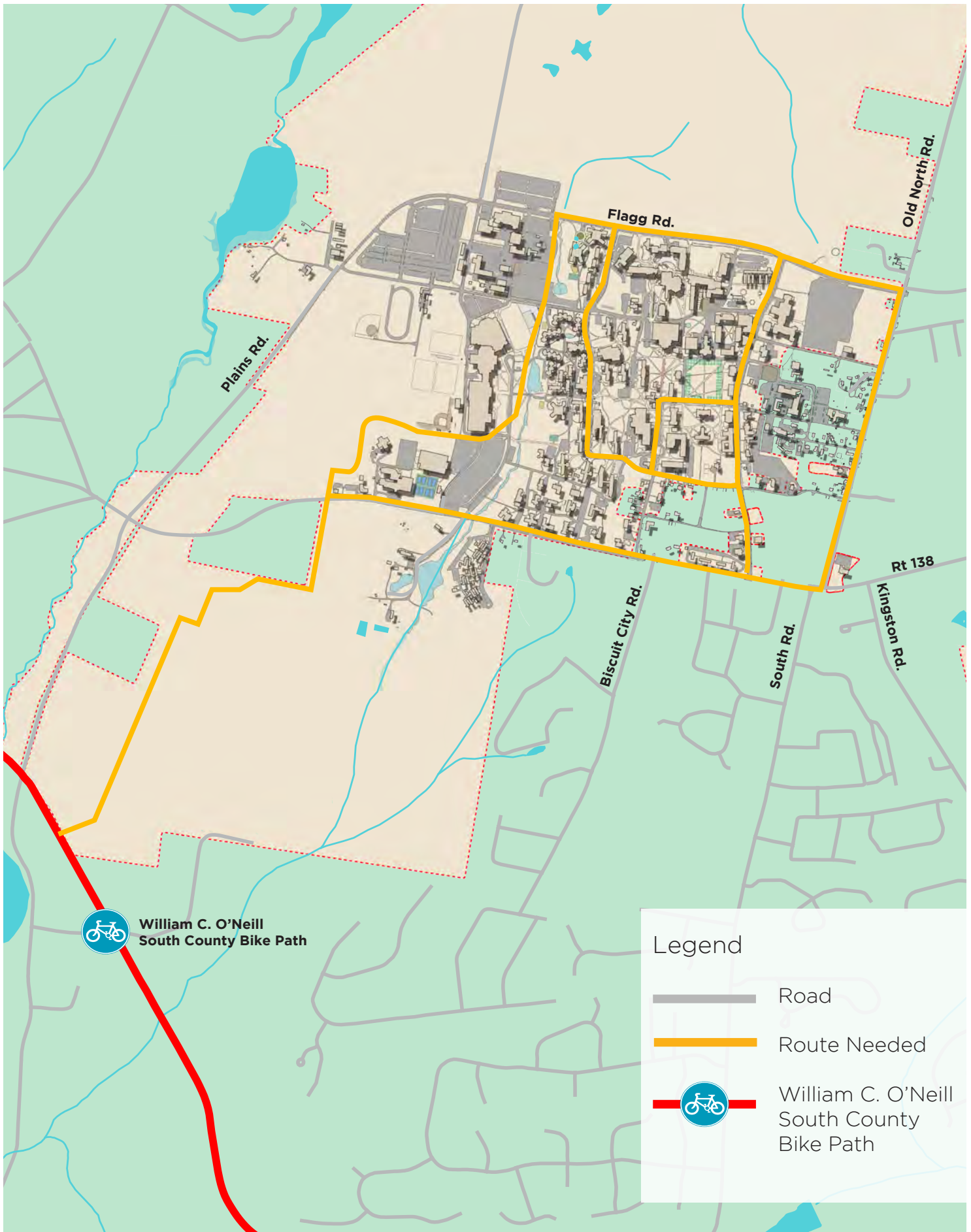
## BIKE RACKS ON CAMPUS





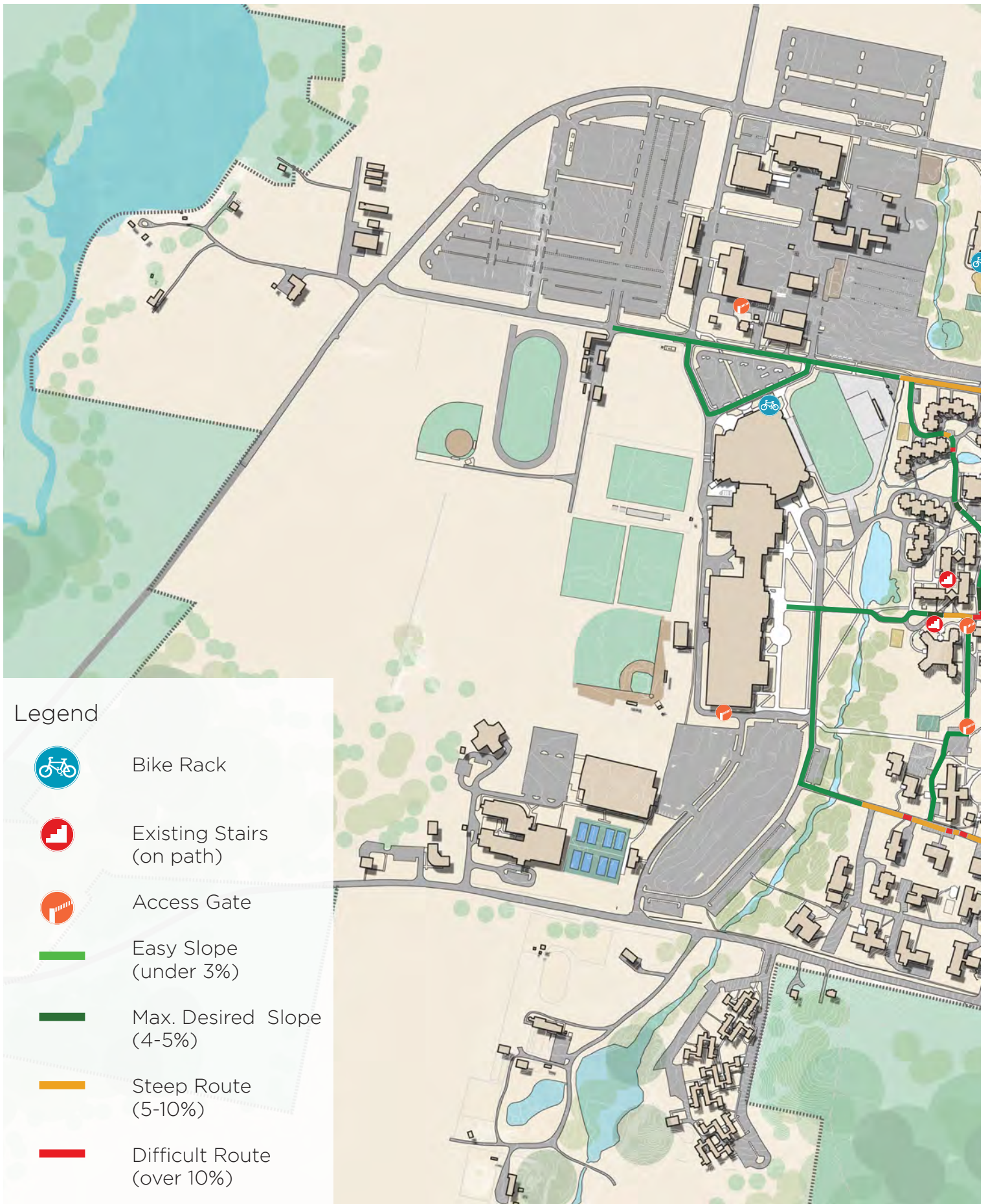


## Regional Bicycle Routes



Bicycle Connections to Campus





Legend



Bike Rack



Existing Stairs  
(on path)



Access Gate



Easy Slope  
(under 3%)



Max. Desired Slope  
(4-5%)



Steep Route  
(5-10%)



Difficult Route  
(over 10%)





Existing Campus Bicycle Routes



## 2.6 EXISTING VEHICULAR CONNECTIONS: SUMMARY

### District Summaries

Following is a schedule of the roads on campus. Pertinent information as it relates to the campus landscape includes: whether the road is one-way or two-way; if it has sidewalks; roadbed width; direction of flow, if one-way; if there is parallel parking; and, the curb style. The table includes only the named roads, not the various other wide walkways that are unnamed and are detailed with curbs so that they feel as if they are roads.

District Road Name	One-way or Two-way	Direction of Travel	Roadbed Width (approx.)	Sidewalk	Curb Style	On-street Parking	Traffic Control Structure
<b>Historic Campus Core</b>							
Upper College Road (Between Route 138 & Campus Ave)	Two-way	North-south	30 feet (35 feet with parking to south)	Yes, both sides	Concrete	Between Rt. 138 & Campus Ave	Signage
Ranger Road	Two-way	North-south	25 feet (varies)	Yes, both sides	Concrete, Bituminous	Unofficial	Gate at Lower College Road
Lippitt Road	Two-way, limited	North-south	19 feet	Yes, Partial	Concrete, Bituminous	Unofficial	Bollard at Greenhouse Road
Lower College Road	Limited access	East-west	30 feet	No	Concrete, Bituminous	Unofficial	None
Baird Hill Road	One-way	West to East	24 feet (varies)	No	Concrete	No	Jersey barrier at Campus Avenue
<b>Mall District</b>							
Ranger Road	Two-way	North-south	25 feet (varies)	Yes	Concrete	Unofficial	None
Lower College Road	Two-way, limited	North-south	30 feet	Yes	Concrete	Unofficial	Gate

URI Campus Roads, 2017

District Road Name	One-way or Two-way	Direction of Travel	Roadbed Width (approx.)	Sidewalk	Curb Style	On-street Parking	Traffic Control Structure
<b>North Campus District</b>							
Upper College Road	Two-way	North-south	30 feet	Yes, both sides	Concrete	No	No
Flagg Road	Two-way	East-west	40 feet (varies)	South side only	Concrete	Yes	Signage
Greenhouse Road	Two-way	North-south	25 feet (varies)	Very limited	Granite, Concrete	Unofficial	Gate at Flagg Road
East Alumni Avenue	Two-way	East-west	20 feet (varies)	North side only	Concrete	North side only	Gate at Woodward Hall & Farm House Road
West Alumni Avenue	Two-way	East-west	22 feet (varies)	South of Butterfield Road only	Concrete	No	Gate north of Watson Farm
<b>Residential Life District</b>							
Butterfield Road	Two-way	North-south	24 feet (varies)	Yes, both sides	Granite	No	Signage
Campus Avenue	Two-way	East-west	24 feet (varies)	Yes, both sides	Granite, Concrete	No	Signage
Farm House Road	Two-way, Dead end		24 feet (varies)		Concrete	Flanking, head-in	None
Flagg Road	Two-way	East-west	40 feet (varies)	South side only	Concrete	No	Signage
Complex Road	One-way	South to North	15 to 20 feet	Very limited	Concrete, Bituminous	Unofficial	Signage
Quarry Road	Two-way	Mostly north-south	24 feet (varies)	West/north side only	Granite	No	Signage
Fraternity Circle Road	Two-way	East-west	22 feet (varies)	Yes, limited	Bituminous, None	Unofficial	None
<b>Wetlands District</b>							
Flagg Road	Two-way	East-west	40 feet (varies)	South side only	Concrete	South side only	None
West Alumni Avenue	Two-way	East-west	22 feet (varies)	North side only	Concrete	No	None
Complex Road	One-way	South to North	17.5 feet (varies)	No	Bituminous	No	Signage
Fraternity Circle Road	Two-way	East-west	22 feet (varies)	No	Bituminous	No	None
<b>Athletics District</b>							
Keaney Road	Two-way	Loop road	28 feet (varies)	No	Bituminous, None	No	None
Tootell Road	Two-way	North-south	24 feet (varies)	East side only	Concrete, Bituminous, None	Unofficial	Gates at Ryan Center & Mackal
Lincoln Almond plaza	Two-way	Loop road	24 feet (varies)	Internal to loop	Concrete	No	None
<b>Service District</b>							
Flagg Road	Two-way	East-west	40 feet (varies)	South side only	Concrete	South side only	None
Rhody Ram Way	Two-way	North-south	26 feet (varies)	None	None	Unofficial	None
Garage Road	Two-way	North-south	20 feet (varies)	None	None	Unofficial	None
Tootell Road	Two-way	North-south	24 feet (varies)	None	Concrete	No	None



## 2.7 EXISTING CAMPUS SAFETY & SECURITY:

### Pedestrian/Vehicular Conflict Zones

The overlay of the pedestrian circulation plan and the vehicular circulation identify significant conflict points between the two user types on campus.

The following conflict points have been identified:

1. Lower College Road in front of the Memorial Union: While this portion of Lower College Road is limited by gates, there is a high volume of vehicles which park directly in front of the Union in what should really be a pedestrian-dominant space which is open and safe for free pedestrian movement and flexible for pop-up events. In addition, the Memorial Union and the Quadrangle should be the hub of university life and the movement between these spaces should be safe, clear and easy.
2. The intersection of the Elephant Walk and Butterfield Road: This, literally, is the crossroads for students living on campus. The Elephant Walk is the major pedestrian connection between the academic zone and the hillside residential district and Butterfield Road is the major vehicular connection in the north-south direction through the residential district. Currently, the crosswalk spans the entire intersection and vehicles are required to stop in both directions. While the crosswalk is significant, the road still feels like the dominant feature in what should be a pedestrian-oriented campus. In comparison, a mid-block crossing in front of the entrance to Butterfield Dining Hall has a raised crossing.
3. The length of Complex Road which winds through the core of the Village feels unsafe. While it is marked as a one-way road, vehicles still drive in both directions. It is poorly lit at night and sidewalks are limited to the west side of the road in front of Fayerweather and Gorham Halls. When you reach the Fascitelli Fitness and Wellness Center, there are no sidewalks as well as a guardrail on the west side,

and a concrete wall to the east. Crossing White Horn Creek there are parapet walls on both sides without a sidewalk. The northern portion of the road is lined on both sides with Cape Cod berm and wood guardrail. All of these conditions requires pedestrians to walk in the road. Presumably, the guardrail is there to prevent parking on the sides of the fire lane, but it creates the feeling of a road and a trap if vehicles are moving quickly and pedestrians need to get out of the way.

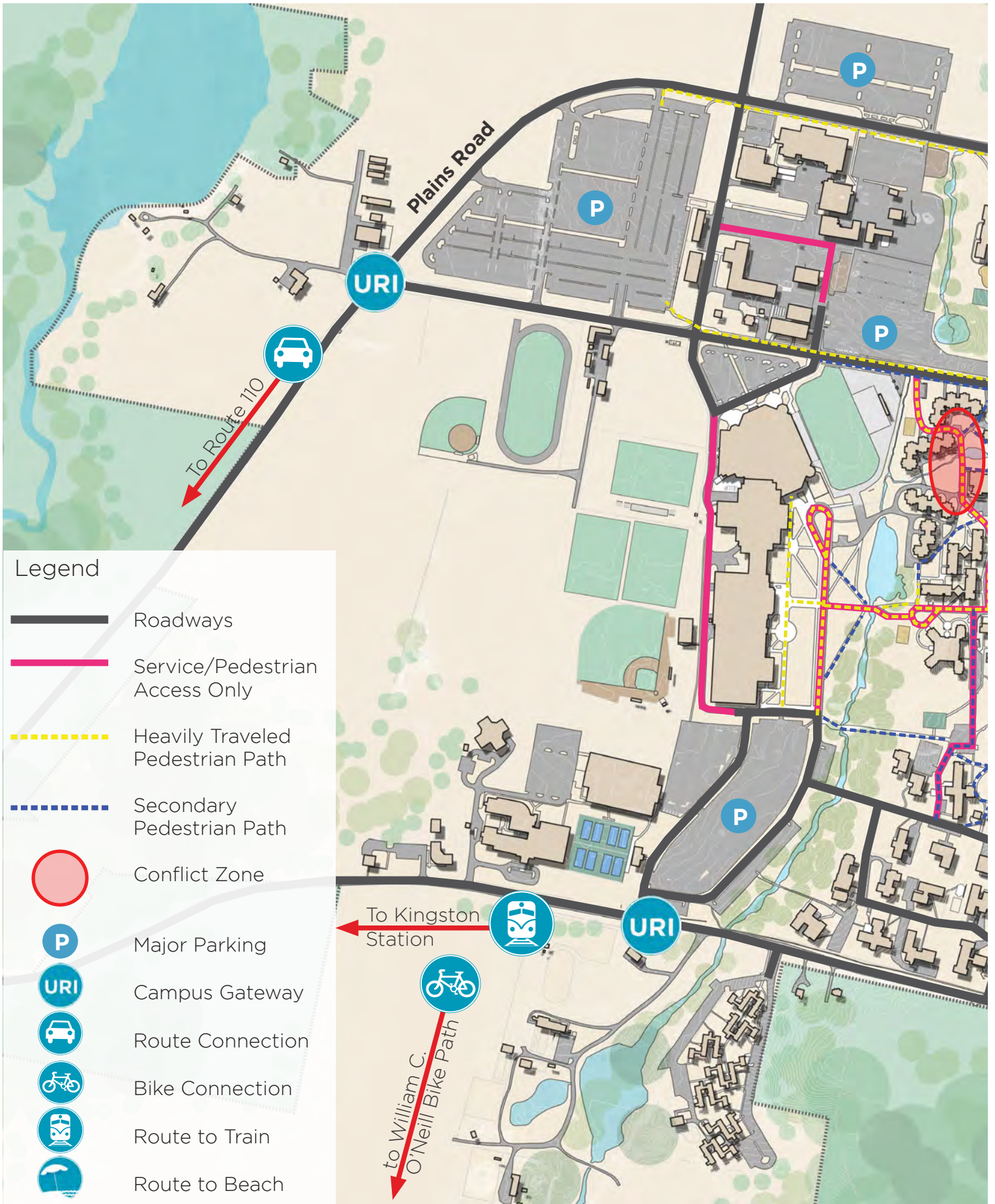
The remaining issues are all along East and West Alumni Avenue. While portions of the road are limited to campus shuttles, service and emergency vehicles, the volume of traffic is high. This is a major pedestrian corridor, especially for commuter students parking either at the Fine Arts Center lot or the Plains Roads lots. The road is also a significant vehicular connection which cuts through the campus and effectively divides the north campus from the historic core.

4. The intersection of East Alumni Avenue and Greenhouses Road: In its current state, the intersection is directly between two mid-sized parking lots for faculty and staff. The crosswalks lead to very narrow sidewalks (none of which meet ADA Accessibility Guidelines) that abruptly end, dumping pedestrians into the roadbed. (The proposed plans for the College of Engineering improvements should markedly improve these conditions.)
5. The intersection of East Alumni Avenue and the walk which connects Carothers Library and Chafee Hall: this intersection—despite the fact that only one drive is a “road”—gets a high volume of traffic. Again, the campus shuttles pass through here very regularly (approximately every five minutes) and the expanse of bituminous concrete is extensive. In addition, there is a shuttle stop at this intersection with no place for pedestrians to stand except in the road bed or on the Chafee/Rodman green.

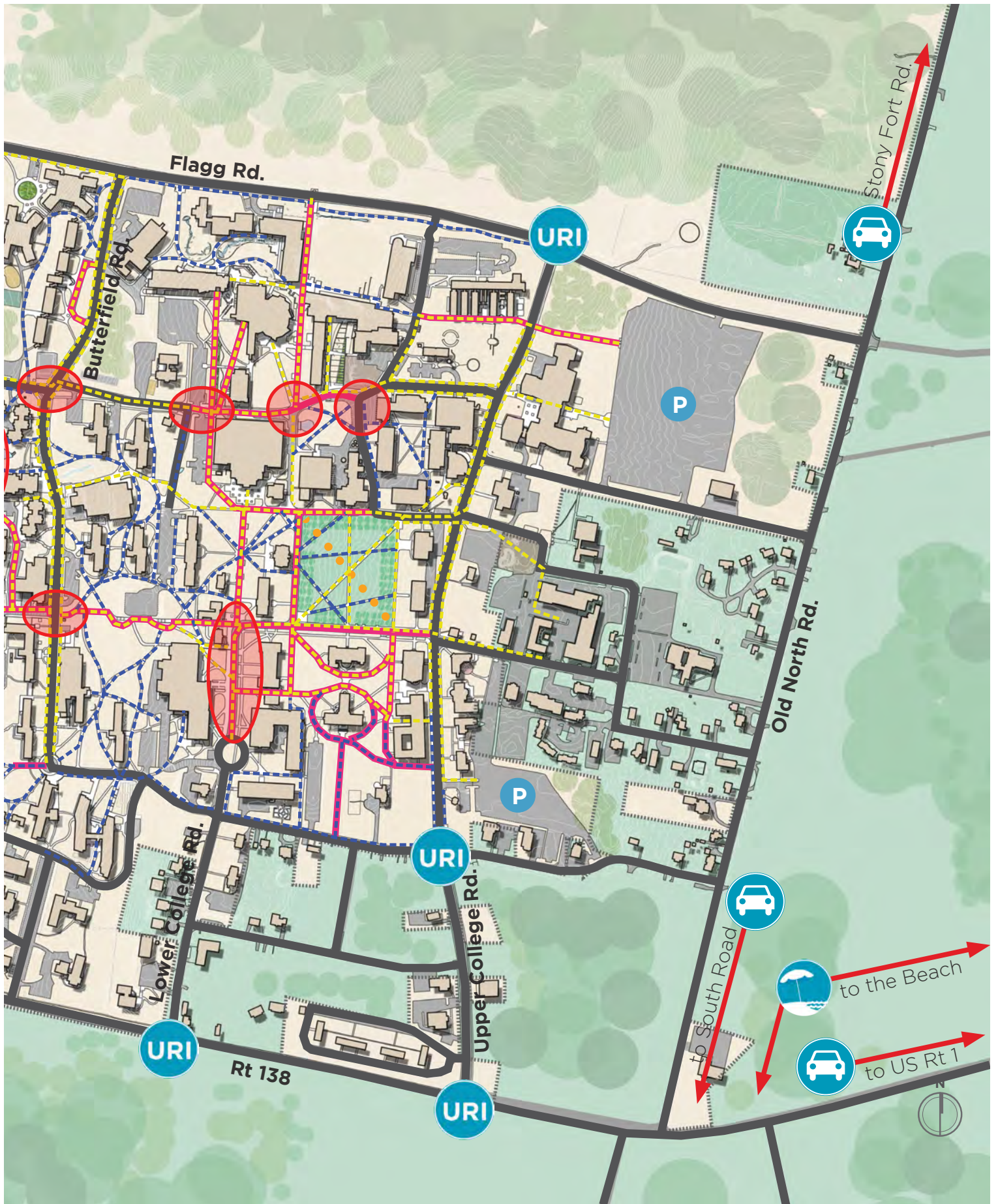
# PEDESTRIAN/VEHICULAR CONFLICT ZONES

6. The intersection of East Alumni Avenue and the walk which connects Carothers Library and Chemistry/Farm House Road: this intersection was improved as part of the construction of the Beaupre Center for Chemistry and Forensic Sciences project which was completed in early 2016; however, the improvements end at the northwest corner of Carothers Library. The intersection extends to the west to Farm House Road. With parking immediately to the north and south of East Alumni Avenue pedestrians must cross the road with vehicles coming from four directions. And those that are heading south into the residential district are forced to walk along a sidewalk on the west side of Farm House Road, despite limited traffic flow on the road which leads only to staff/faculty parking areas in the core of the campus.
7. The intersection of West Alumni Avenue and Butterfield Road: The final point of conflict affects both students living on campus and commuters. West Alumni Avenue meets Butterfield Road at an odd angle on the east which results in a very broad intersection with difficult sight lines due to the change in topography. Crosswalks are awkwardly placed for pedestrians and sidewalks are not continuous on the northeast corner also due to the angle of West Alumni Avenue. The extremely wide intersection creates a long crossing for pedestrians in an area with some poor sight lines.









Pedestrian + Vehicular Conflict Potential



## 2.7 EXISTING CAMPUS SAFETY & SECURITY:

### Security Blue Lights

Blue lights have been located regularly around campus, especially through the Res Life district. Three notable gaps appear based on the spacing through rest of the campus: on the stretch of parking and walkway from the Watson Farmhouse to the west side of the Memorial Union, on the west side of the Quadrangle, and on the south side of Green Hall and Swan Hall.

Each year the Student Senate hosts a Safety and Lighting Walk to review the blue lights and site lighting across campus. In the fall of 2016 it was held in October. The walk noted that thirty-three of the 105 blue lights were broken (31%) and of those, five were also broken on the 2015 walk. It was noted that blue lights should be added near the Fascitelli Center, behind Ellery Residence Halls, between Ellery and Dorr Residence Halls, and at the corner of Ranger Hall/Upper College Road.

Other major issues identified were that the two blue lights in the Fine Arts Center parking lot—a fairly remote part of campus—were not universally accessible. In addition, the sidewalk on Route 138 near the Graduate Village was found to be unsafe due to tree roots growing under and heaving the sidewalk creating a tripping hazard. (The notes from the 2016 walk are included in the Appendices.)

### Site Lighting

On September 26th, 2016, a lighting level study was conducted between 7:00–8:30 pm. A few lights were not functioning, rendering the immediate landscape spaces dark, however the majority of the campus landscape felt comfortable. Exceptions include areas that were very dark and/or had low lighting level combined with spaces that had edges that provided opportunities for hidden hazards. None of the fixtures appeared to be automatic dimming that responds to pedestrian activity and energy saving measures.

Areas of concern that had low light levels included:

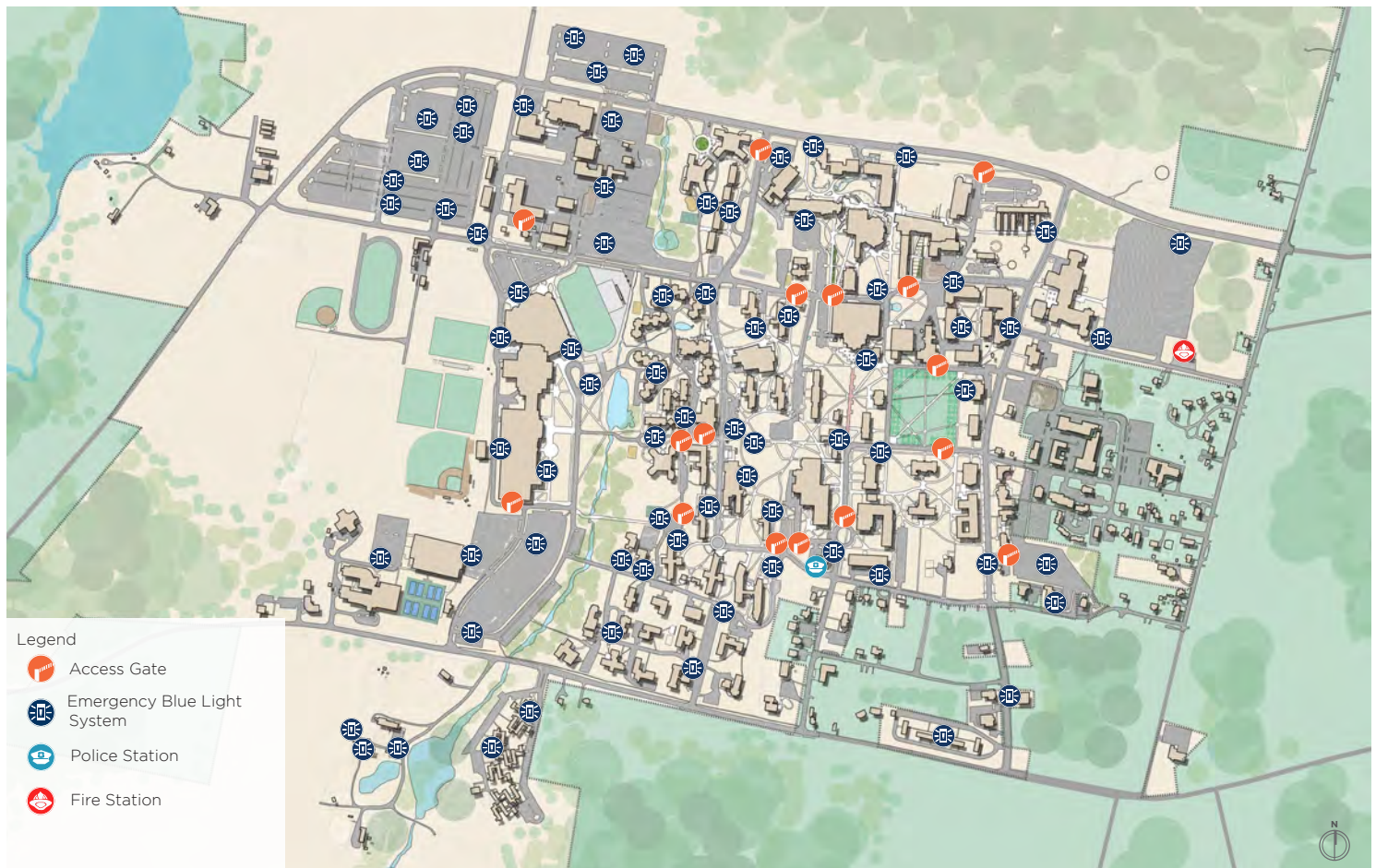
- Path connecting Complex Road to Keaney Road
- Along Complex Road at the Fascitelli Center
- Space between Fogarty and Pastore/Morrill Halls
- Walkway between Heathman Hall and Butterfield Road
- Space between Heathman and Wiley Halls
- Gateway between Weldin and Barlow Halls and Fraternity Circle
- Green Hall walkways west of the President's House
- Campus Avenue sidewalk south of the President's House
- Parking lot at the Greenhouses (Pole lights were not on at the time of study apparently due to lighting conflicts with the plants in the greenhouses)
- Northern edge of the Pharmacy Green is under-lit along the Flagg Road sidewalk
- Botanical Gardens (When existing landscape lights are not on)
- Core of the Fine Arts parking lot is very dark

# SECURITY BLUE LIGHTS & SITE LIGHTING

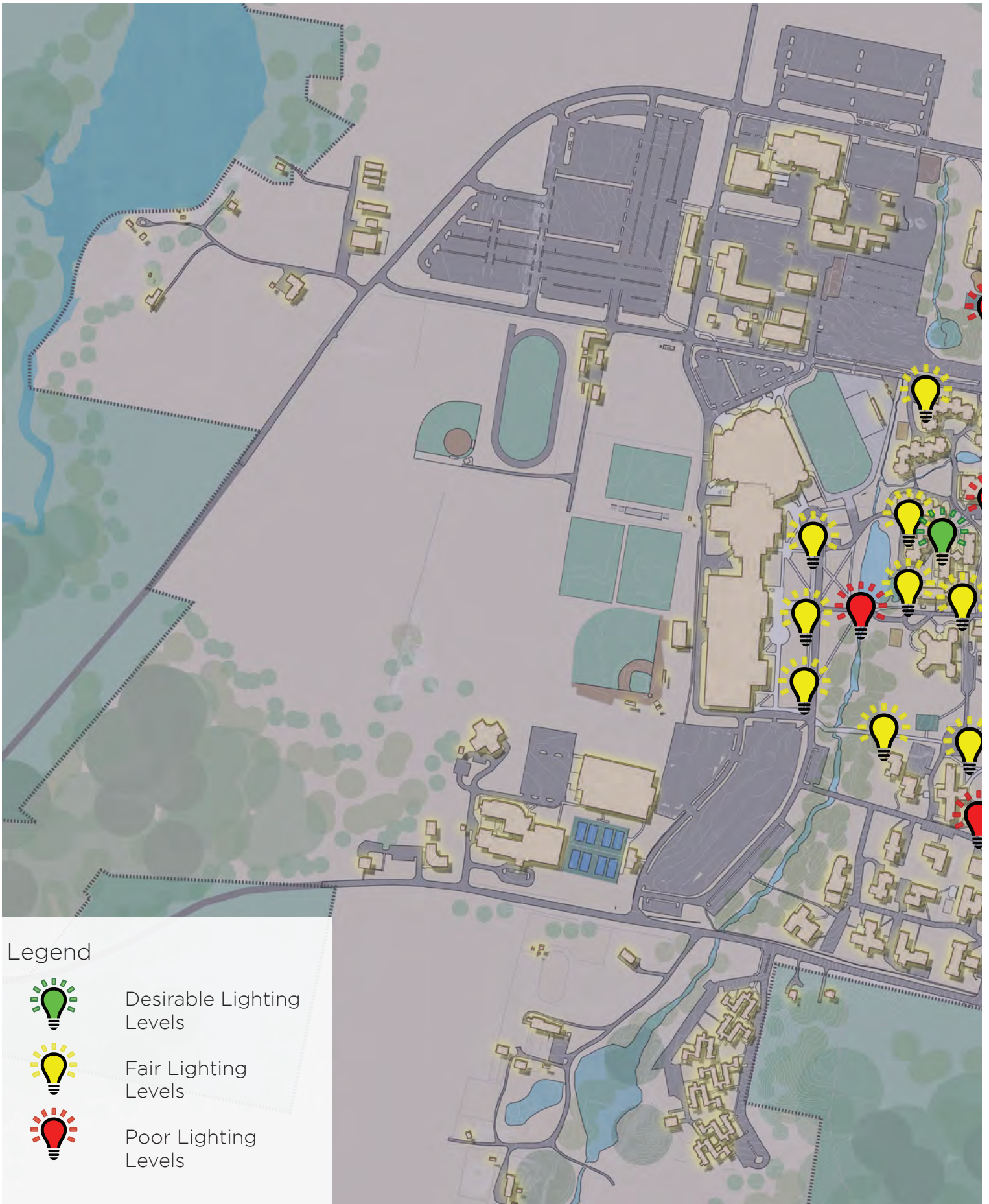
- Long stair run between the Coastal Institute and Pharmacy Hall (Tread lights were installed, but few were working during the study)
- Walkway in front of the Athletics complex (The building entries are well lit, but the light levels fall immediately outside the building)

Additional notes from the Senate walk include the following:

- Lights behind the Visitor Center flicker
- Entire western side of the Plains Road lot was out
- All of the lights at CBLS and the Greenhouses are out
- Heathman Hall lights were entirely out
- Fascitelli Center was very dark with lights out leading to the Roger Williams complex
- Sidewalk across the street from the Memorial Union is dark
- Fine Arts Center parking lot needs more lighting
- Sidewalks are needed along Flagg Road







Legend



Desirable Lighting Levels

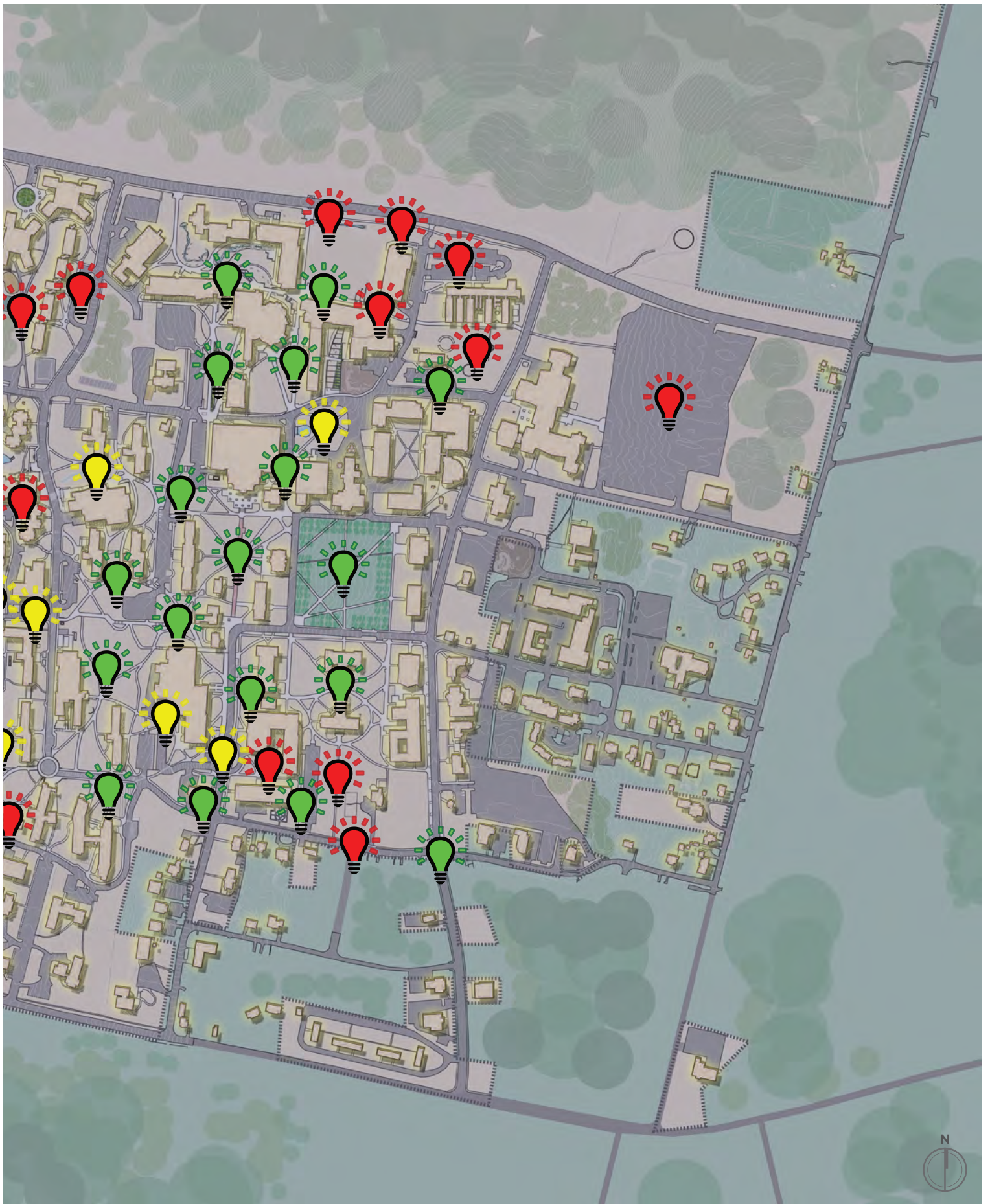


Fair Lighting Levels



Poor Lighting Levels





Fall 2016 Light Levels



## 2.7 EXISTING CAMPUS SAFETY & SECURITY:

There are certain areas on campus that have low lights levels which appear to be intentional, for example the Quadrangle. During the lighting level study, the Quadrangle was extremely dark. Having dark sky areas on campus where students and faculty are able to be beneficial for educational purposes but also to simply experience the night sky. The desire for these spaces needs to be balanced with the need to create a safe atmosphere for everyone using the campus with the consideration that the campus has courses and programs which run late into the evening and the residential district of campus is a twenty-four hour community.

Across campus there is a huge diversity of light fixtures and poles. In spring of 2015 the University prepared a plan of lighting and bench districts. This plan breaks the core campus into the historic core, an academic district, and a residential district—which is the remainder of the campus. (For a more in depth study of existing light fixtures, see Section 6: Campus Design Guidelines & Standard Details.) The academic and residential light fixtures and poles are the same and are direct cutoff fixtures.

Each of these districts has a specific light fixture and pole and a bench assigned to it. In addition, a roadway and parking lot fixture and pole has been selected. These standards are being applied to the campus project-by-project when new construction occurs. This is a cost efficient method but it leaves a jumble of fixtures.

Artistic lighting is used very sparingly on campus. Two instances are the stained glass effect over the southeast entry of Tyler Hall and the light cages at the end of the ramp leading to the Memorial Union. Lighting to highlight specimen trees is limited in use only in the Botanical Garden. Artistic lighting can be used throughout campus to highlight significant trees, architectural features, and public art. It can be used as a way to add character and a sense of place to zones of campus.

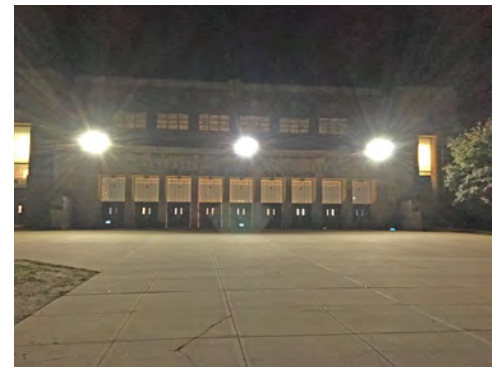
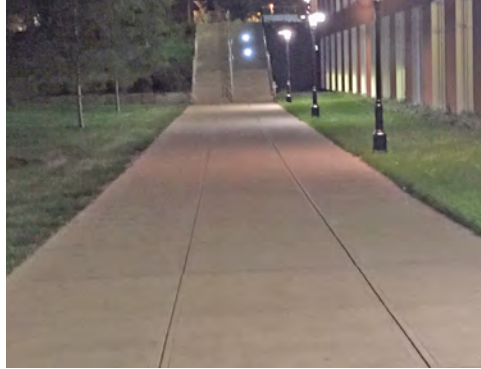
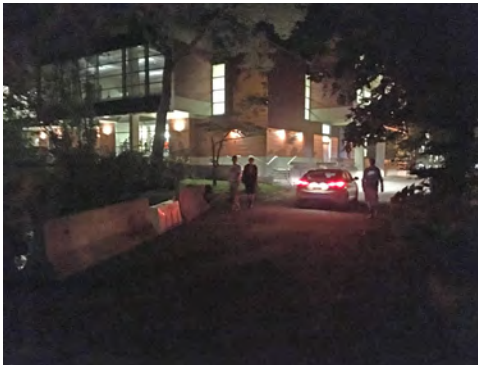
### **Additional Security Features**

Campus Police has its main office located at 85 Briar Lane, east of the Visitor Center with a Community Policing Substation located at the ground floor of Barlow Residence Hall to have a more immediate presence in Hill Residential District. Kingston Fire Station, which serves the campus is located at 35 Bills Road to the east of the Fine Arts Center.

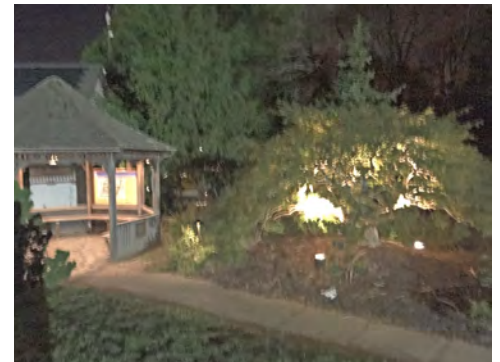
A number of access gates are located throughout campus. While these are intended primarily to restrict vehicular traffic in certain areas it also helps to prevent people who have no reason to be on campus with vehicles. In today's climate, managing who has the ability to be on campus and to what extent is of the utmost importance.

# SITE LIGHTING

## LIGHTING ISSUES



## ARTISTIC LIGHTING











# LANDSCAPE MASTER PLAN RECOMMENDATIONS

- 3.1 OVERARCHING GUIDING PRINCIPLES & DESIGN GUIDELINES
- 3.2 GREEN INFRASTRUCTURE GUIDELINES
  - SUSTAINABLE CAMPUS DEVELOPMENT GUIDELINES
  - STORMWATER MANAGEMENT DESIGN GUIDELINES
- 3.3 HISTORIC PRESERVATION GUIDELINES
- 3.4 CAMPUS DEVELOPMENT RECOMMENDATIONS
- 3.5 VEHICULAR & TRANSPORTATION:
  - COMPLETE STREET RECOMMENDATIONS
  - RECOMMENDATIONS
  - PARKING RECOMMENDATIONS
  - BICYCLE RECOMMENDATIONS
- 3.6 PEDESTRIAN RECOMMENDATIONS
- 3.7 OPEN SPACE RECOMMENDATIONS
- 3.8 CAMPUS BRANDING RECOMMENDATIONS
- 3.9 STORMWATER RECOMMENDATIONS
- 3.10 PERIPHERY CAMPUS LANDSCAPE RECOMMENDATIONS
- 3.11 MISCELLANEOUS RECOMMENDATIONS

The recommendations in this section of the report establish design guidelines that should be used in any future development of the campus landscape. The guiding principles were established early in the project process and informed all proposed design recommendations throughout the process. The design guidelines were established on a range of topics pertinent to the development of the campus landscape.



# 3.1 OVERARCHING GUIDING PRINCIPLES &

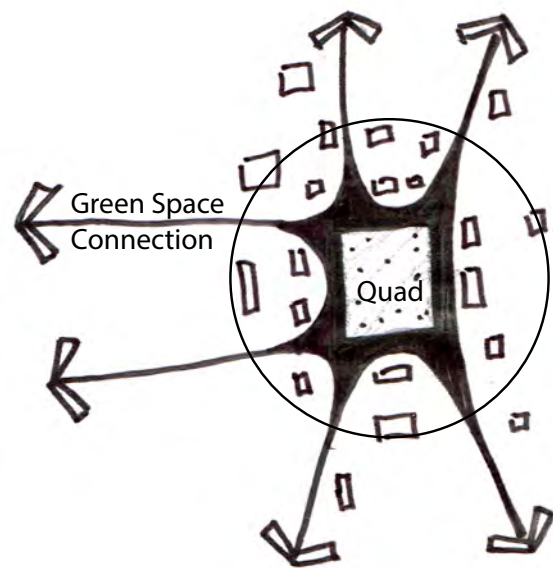
## Overarching Guiding Principles

1. The campus landscape should reflect the rural character of Kingston Village and South County.
2. URI aspires to be a steward of the environment and the campus landscape should represent this.
3. The campus landscape should provide opportunities that support learning and act as a platform for engaging the natural environment.
4. The campus landscape should reflect URI's history as a Land Grant college at select appropriate locations (i.e. Watson House and the Quadrangle.)
5. Pedestrian circulation shall take a priority over vehicular circulation on the campus. In addition to the consideration of design for walkways and roads, this includes reducing the presence of parking lots within the core of campus.
6. Campus open space should provide a variety of spatial types and functions to serve a diverse university population.
7. Protection of the regional aquifer and local water bodies is a critical mission of the University.
8. Campus features should contribute to the pedagogy, should provide learning opportunities and should function as living laboratories.
9. Campus development should prioritize infill zones within existing development boundaries to protect natural resources (i.e. North Woods and White Horn Brook floodplain), historic features, and the existing campus structure.
10. Significant campus viewsheds should be protected and maintained as essential views that express the character of the University, and should be treated as such.

## Design Guidelines

### Historic Quad & Open Space

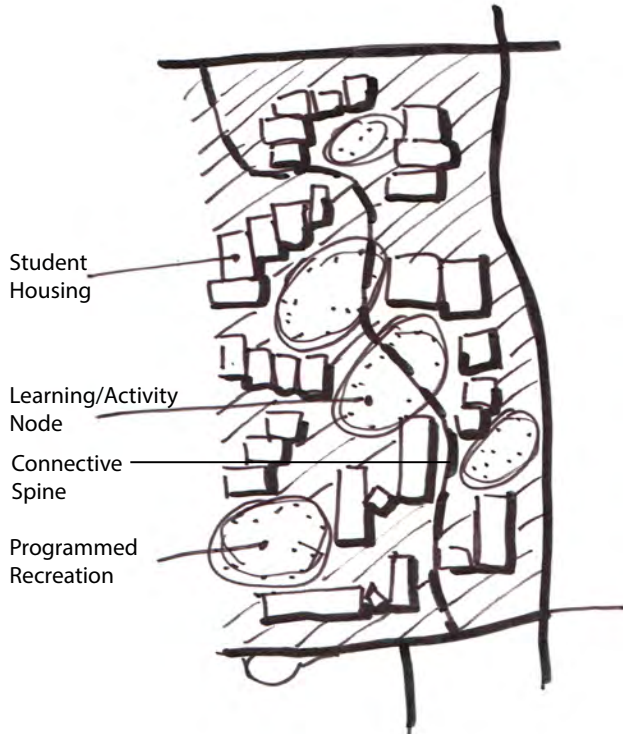
- A. The Quadrangle (designed by Olmsted, Olmsted & Eliot) is the physical and emotional heart of campus. Any proposed interventions to the Quad should respect its history and its significance to the URI community.



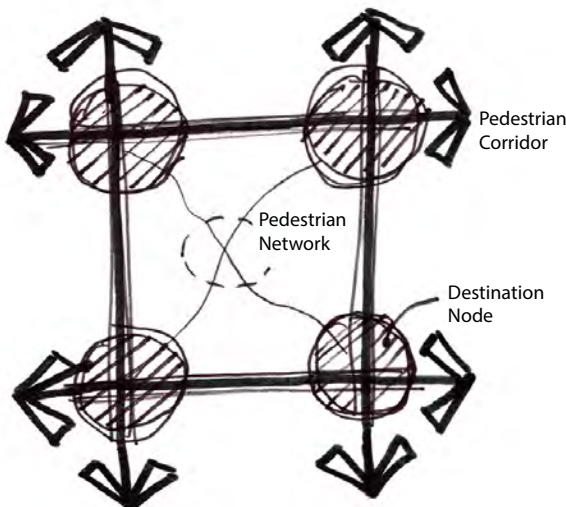
- B. Open spaces should offer a variety of opportunities: hardscape spaces with amenities for dining and studying, casual and informal spaces for waiting and resting, and flexible greenspaces open to programming.
- C. Open space throughout campus should reflect a hierarchy with the Quadrangle serving as the most significant space.
- D. Open space should provide a continuous corridor along White Horn Brook and its tributaries which would support both the University community as well as wildlife.
- E. No additional greenspace should be converted to parking, enforcing the concept of a pedestrian-oriented campus.

# DESIGN GUIDELINES

- F. Open space in the residential district should provide an array of living spaces: i.e. formal gathering spaces, intimate gathering spaces, and programmed recreation.



- G. Open space should be provided at significant intersections/nodes of pedestrians corridors, at significant viewsheds, and at existing/natural gathering spaces.



## Pedestrian Experience, Connections & Viewsheds

- A. Pedestrians should take precedence over vehicles in the campus landscape and should be supported with a network of safe and comfortable walkways, as well as alternative transportation systems to reinforce the walkways.
- B. The campus pathways should provide an accessible network throughout campus, to the extent possible, considering the topographic challenges.
- C. A hierarchy of campus pathways should be established throughout the campus. The hierarchy should be expressed through walk widths, materials, and supporting amenities.
- D. The campus pedestrian network should provide a variety of experiences, including routes that are direct and connect destination to destination; routes that meander and that encourage interaction with others, interaction with nature, and that promote relaxation.
- E. Pedestrian pathways should be reinforced with wayfinding signage, lighting, and amenities to ensure a comfortable experience and a sense of security.
- F. Throughout the campus, there should be better integration of sidewalks/ walkways, crosswalks, and curb ramps. Crosswalks should be reviewed at each roadway crossing for safe crossings and accessibility. Every roadway crossing should have a clear and safe crosswalk with accessible curb ramps.
- G. Sidewalks and walkways should be coordinated with loading and service access areas to ensure safety of pedestrians.



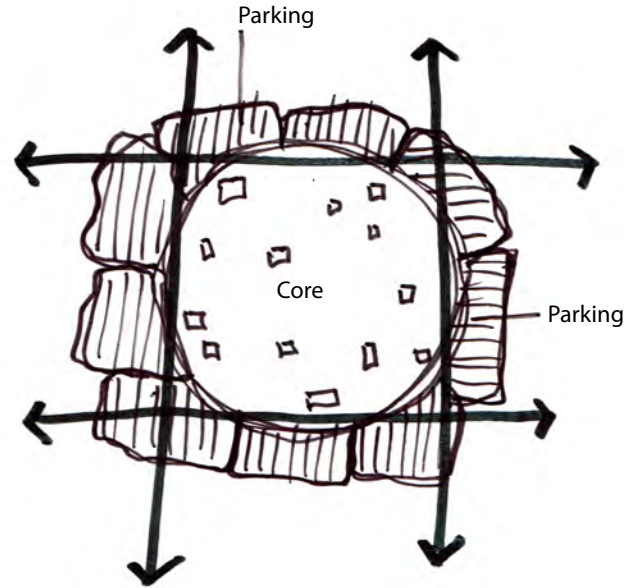
# 3.1 OVERARCHING GUIDING PRINCIPLES &

## Bicycle & Skateboard Circulation

- A. Bicycle use should be promoted and appropriate support facilities (bike lanes, cycle tracks, connections to regional bike trails, bike share program and bicycle parking) should be developed and encouraged at the University.
- B. As a method of transportation, skateboards (in particular, longboards) should be accommodated rather than discouraged on campus.
- C. Any proposed bike path should be considered an alternative mode of transit both from the residential district to the academic district as well as for commuters coming onto campus.

## Gateways & Vehicular Connections

- A. Parking should be minimized within the campus core except as necessary for accessibility and support services.



- B. University transit options should support the walkability of the campus. Transit should provide commuters access to campus, should provide transit from remote parking locations, and access across campus for mobility-impaired students, faculty, and staff. A maximum walk of ten minutes (approximately one-half mile) should be the goal of parking and transit stops.
- C. Vehicular routes should be minimized as much as possible while providing the access necessary for emergency, service, and campus transit vehicles. Where possible, campus roads should be reduced to a pedestrian scale and reinforced by design details.
- D. Arrival to campus should be marked with “gateways” that have a distinct URI identity.
- E. Large scale parking lots should be broken down in scale with landscape buffers, appropriate lighting, and stormwater management.
- F. Perimeter campus roads should be designed as complete streets that encourage slow speeds and balance the needs of all modes of transportation.

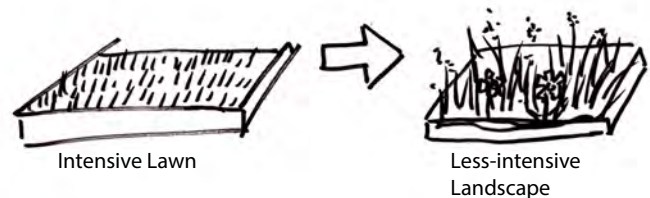
# DESIGN GUIDELINES

## Campus Identity & Branding

- A. University identity should be evident at campus gateways and should be expressed consistently throughout the campus.
- B. The campus smokestack, ram sculpture, the Lippitt Hall bronze sculpture, the memorial gateway, and “Old Ben Butler”—the cannon—should be highlighted as important iconic elements of the landscape.
- C. First time visitors, including prospective students and their families, are concentrated in discrete areas: the Visitor Center, the Memorial Union, the Quadrangle, and other parts of the historic campus core. Visitors for athletic events often use West Alumni Avenue near Meade Stadium and the Ryan Center, and art events are held at the Fine Arts Center. All of these areas, corridors, and/or landscapes surrounding buildings should have significant University branding to enhance the sense of place.

## Natural Systems & Resources

- A. Existing natural landscapes on campus should be protected and/or restored. As well as contributing to the quality of the campus, these ecosystems character and provide wildlife habitat and can be used as teaching laboratories.
- B. Natural landscape systems should be established and managed on campus replacing more resource-intensive landscapes such as turfgrass.



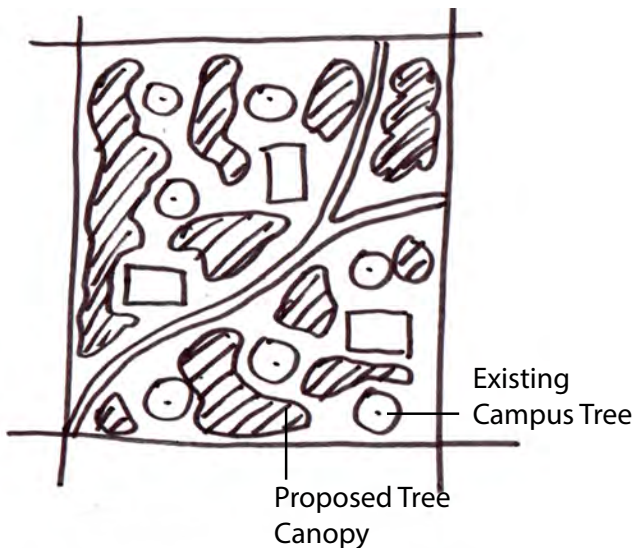
- C. White Horn Brook, its tributaries, and watershed traverse campus from Flagg Road to Keaney Road. It should be enhanced to highlight its unique character on campus and to help unify its extent on campus.
- D. A “re-wilding” or natural-ness should be brought to campus in a manner that reduces the maintenance burden, restores ecosystems, and allows habitat restoration. White Horn Brook and White Horn Creek should be the epicenter for this, with areas expanding outward from these areas and into campus.



## 3.1 OVERARCHING GUIDING PRINCIPLES &

### Campus Trees, Plantings & Maintenance

- A. Existing trees are valued as an asset (i.e. memorial, heritage, and champion trees) and shall be actively managed.
- B. Trees that are significant to teaching and research should be identified and every effort should be made to maintain and preserve these trees, replacing only when necessary.
- C. Proposed plantings on campus should improve and enhance the existing plant species collection to serve as an educational tool. Coordinate with landscape architecture/plant sciences faculty for plant species needs.
- D. Tree planting should be promoted to increase tree canopy coverage on campus.
- G. Proposed plantings should be suited to campus microclimates and should not rely on irrigation or require heavy maintenance needs, except in select locations such as the President's House and the Botanical Gardens. Landscapes that are water-intensive or require irrigation from potable water should be avoided.
- H. Plant selections should be focused on species and varieties which are low maintenance, drought tolerant plants for the region.
- I. Use of reclaimed water (grey water, rainwater harvesting) for landscape watering is encouraged.



- E. The plant collection should have species and age diversity to safeguard against large-scale pest and disease damage.
- F. Shrub and perennial beds should be minimized and focused to highlight campus gateways, building entrances, specialty gardens, and green infrastructure.

# DESIGN GUIDELINES

## Standard Details & Materials

- A. Campus standards should reinforce the predetermined campus zones.
- B. Standard details and materials should help to unify the various building styles across the campus.
- C. Standard hardscape materials should be durable, and maintainable.
- D. When appropriate, existing non-conforming site amenities should be replaced with the campus standards.
- E. Non-conforming details and materials should not be used without careful consideration and approval.
- F. All decisions regarding campus standards, or exceptions to campus standards, should consider the University's sustainability goals.
- G. Any proposed deviation from the campus standard details—established in Section 6 of this report—should be approved by Campus Planning & Design after careful consideration.

## Exterior Lighting

- A. Lighting levels should be uniform and provide safe circulation.
- B. Light fixtures should utilize efficient lamps (LED) and should be controlled with dimming capabilities.
- C. All lighting shall be dark sky compliant to minimize light pollution.
- D. No exterior lighting shall be used in the Quadrangle or Pharmacy green to provide areas on campus where the night sky is visible.
- E. Opportunities for artful lighting to highlight unique campus features should be explored.



## 3.2 GREEN INFRASTRUCTURE GUIDELINES

### Changing Perspective on Sustainability

The University has developed a *Strategic Plan for Campus Sustainability and Climate Action (2015-2020)*; it identifies five focus areas:

- Transportation
- Facilities & Operations
- Curriculum & Research
- Community Culture & Outreach
- Climate Action

While all of these are related to the campus landscape on some level, certainly some have a more direct correlation. These goals are written to relate to building and infrastructure, but not necessarily for the landscape, though they could. For example, Transportation Goal 2 states: “Significantly reduce the number of single-occupancy vehicle trips taken by students, staff, and faculty to/from campus.” This goal is reflected in the shift to reduce parking in the core of campus and the development of the South County Bike Path extension and bike lanes on campus roadways.

Facilities & Operations Goal 2 states: “Strengthen water conservation efforts and protect water quality” which is reflected in the reduction of turfgrass on campus interstitial zones. Replacing turfgrass with “no mow” fine fescues or meadow grasses means that these grass species require less water to thrive, putting more back into the groundwater.

Curriculum & Research Goal 2 states: “Increase research opportunities that incorporate links between the local campus and global sustainability issues”. By treating and designing the campus landscape as a learning laboratory, the landscape will serve as a microcosm for the broader community and practices emphasized at the University can be reflected globally.

### Green Infrastructure Opportunities

Green infrastructure features that could be incorporated into the landscape to a higher degree include pervious pavements, green roofs, and turfgrass alternatives.

Porous pavements have been tested in some of the Plains Road parking lots. Their success is being studied by classes on campus. Concern over the proximity of the aquifer led to the discussion of the potential for spills, clean-up procedures, and the potential contamination of the aquifer. These are important conversations to have when considering pervious pavements.

Green roofs have been attempted on campus to varying levels of success. When CBLS was constructed, a small green roof was established with a mix of perennials, grasses and sedums, but the difficulty for maintenance crews to access the roof led to the system’s failure in just a few years after installation. However, the elevated planting beds on the east side of the Chemistry building are, in fact, also green roofs in that they are vegetated areas on structure. These were initially planted with native species such as low-bush blueberry. To date, these planted areas appear to be successful: they are easily accessible, planted with native species requiring minimal maintenance, and also provide a teaching opportunity in a convenient location.

Turfgrass alternatives include but are not limited to: blends of “no mow” fescues, meadow grasses, and wildflower plantings. Wildflower planting zones have been established in select location on campus, such as on the east side of the Fine Arts Center, and the slope surrounding the stairs to the south of Garrahy Residence Hall. Meadow plantings might focus more on grass and forbs. Broad spectrum seed mixes will allow better establishment rates. These alternatives reduce mowing needs, saving resources.

## Developing a Sustainable Stormwater Approach for the Campus

Stormwater is a byproduct of urbanization. Stormwater can be a problem; rainwater, however, is a resource. By changing our perspective on the problem, we are able to see new challenges and opportunities with sustainable approaches to stormwater management. Sustainable stormwater management is perhaps better thought of as “rainwater management”, where green water and blue water flows are considered equally important.

As described by the Stockholm International Water Institute, rainwater falling on the ground is transformed into either “green water” or “blue water”. Green water is for the soil, and consumed by our terrestrial bio-systems through plant uptake and evaporation, and blue water is runoff. Maximizing soil/water contact and plant evapo-transpiration will minimize the blue water/runoff flows and reduce the need for constructed stormwater controls.

Sustainable stormwater management requires consideration of three components. First, the peak rate of flow from a site or watershed is considered to be important for flood control. Adverse downstream effects are a concern when stormwater is released quickly from building roofs and paved surfaces. Accordingly, practices that reduce the peak rate of flow (or slow down) such as detention basins have been part of the stormwater engineer’s tool kit for many years.

Water quality is a concern for receiving waters. Rain falling on roads and parking lots, as well as maintained landscapes washes off pollutants such as nutrients, metals and fertilizers into White Horn Brook. Since runoff water quality is a major concern in urban watersheds, stormwater management practices that cleanse runoff have been required by regulations for more than twenty years and have helped to improve water quality in our streams and rivers.

The last element of stormwater management is runoff volume. Impervious campus surfaces such as rooftops and pavement prevent rainfall from contacting the soil—thereby reducing green water flows. A consequence of this action is a corresponding increase in blue water flow/runoff. Increased runoff from the developed portion of the campus adds to the flooding conditions of White Horn Brook.

Sustainable stormwater management involves understanding the balance between green and blue water flows. Estimating these rainwater components is a matter of evaluating the urban land cover and hydrologic conditions, as well as the precipitation patterns for a specific climate. Rather than consider single storm events such as stormwater engineers do for the ten-year or 100-year storm, a more sustainable stormwater management approach is to consider the annual rainfall amount and patterns. This “water balance” approach can help demonstrate how important the green water flows are in an urban environment, and allow planners to determine the value of landscape and soil enhancements as rainwater management solutions. URI should consider using this approach to establish “water budgets” for recharge, evapo-transpiration and runoff.

Because campus development decreases green water flows and increases blue water flows, increasing pavement and rooftop areas naturally create more runoff that needs to be “managed”. What if, instead of creating the problem in the first place we are able to prevent the increase in runoff from happening at all? Low-Impact Development (LID) practices do just this. LID generally reduces runoff (volume) by increasing green water flows. By promoting LID practices on the URI campus, runoff would be minimized while correspondingly increasing aquifer recharges and lessening flooding downstream in White Horn Brook.



## 3.2 GREEN INFRASTRUCTURE GUIDELINES

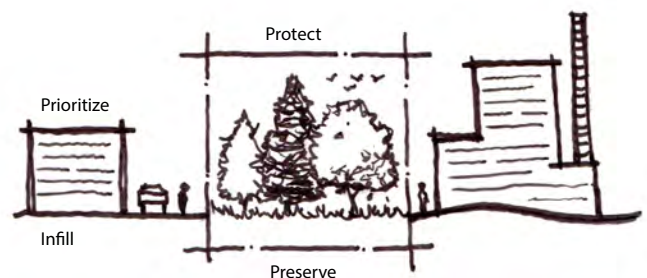
Using landscape-based rainwater practices will naturally enhance green water flows, and reduce runoff. With URI's temperate climate, the majority of rainfall events experienced from day-to-day are relatively light. Infrequently we have extreme storms with heavy precipitation. In the northeastern U.S., about ninety percent of the storms will occur with one-inch of rainfall or less.

Looking at rainfall this way allows a better understanding of how our terrestrial ecology works. Natural systems such as our plant and soil communities have adapted to the amount and frequency of rainfall naturally falling on them.

The LEED and SITES rating systems use the methods in the U.S. EPA's guidance for determining rainfall frequency and depth, by analyzing at least thirty years of daily rainfall data available from a nearby weather station. Determining the current rainfall patterns can then be a basis for some "what-if" scenarios, such as factoring climate change.

### Sustainable Campus Development Guidelines

- A. Recognize the water cycle: Develop "water receiving" landscapes to increase groundwater recharge and evapo-transpiration while decreasing stormwater runoff.
- B. Promote biodiversity: Plant native species to improve habitat and pollination.
- C. Enhance transit alternatives: Provide and incentivize alternatives to single-occupant vehicle trips.
- D. Reduce the acreage of paved parking surfaces within the core of campus, especially small, discrete lots which require additional drives and curbing. Focusing parking to consolidated lots at the edges of campus reduces infrastructure and material needs, limits the impacts of development, and increases open space within the campus core. Transit options should support this shift in campus development.
- E. Use responsible materials: Seek locally-sourced, responsibly produced materials with strong recycling/recyclability characteristics and low life-cycle impacts.
- F. Create multi-functioning social spaces that enhance the campus and support its mission of excellence in education while contributing to environmental and human health.
- G. Preserve and protect existing natural systems within the campus. Enhance them and encourage them to thrive in order to create learning opportunities and provide inherent campus character.

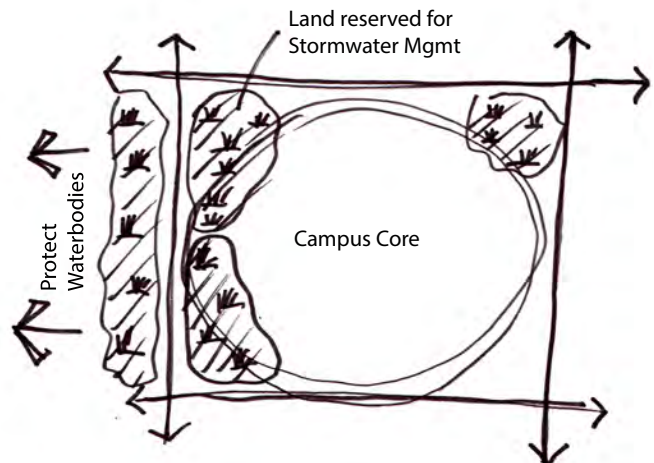


The University should maintain its commitment to its ecological resources by preserving them. Greenspaces on campus should be protected, most especially, with no additional conversion of greenspace to parking. This helps protect natural resources and reduces the amount of impervious surface.

- H. Green roofs should be considered in projects, so long as the greenspace can be readily accessible so as to provide an educational opportunity, a social function, and for ease of maintenance. The University should consider ways to add funding to the capital budget for constructing and maintaining green roofs as part of the building program.
- I. Establish tree planting goals for the campus to enhance the quantity and quality of the campus' tree canopy cover. This will help to moderate the temperature on campus, and reduces carbon dioxide. In addition, strategic tree plantings should be undertaken to complement energy efficiency initiatives.
- J. Seek renewable sources of energy (solar, wind, geothermal etc.) for site electrical demands. Use energy efficient, low intensity/low contrast site lighting.

## Stormwater Management Design Guidelines

- A. Protect the Chipuxet watershed and Pawcatuck aquifer downstream of the campus.
- B. Minimize hydraulic loading of White Horn Brook through retainage, evapotranspiration and infiltration.
- C. Identify floodplain of White Horn Brook and establish development guidelines within it.
- D. As much as practical, disconnect stormwater from impervious areas and promote soil/water contact.
- E. Promote stormwater infiltration to recharge aquifer.
- F. Stormwater interventions should work with the natural systems present in the landscape.
- G. Stormwater management systems should be visibly expressed in the landscape, to the extent practical, so that they can be used as an educational tool.
- H. Utilize green infrastructure as a management device, but develop with consideration of its contribution to campus life, to the campus aesthetic, and/or to natural systems.
- I. Reserve land for stormwater management to serve current and future development.





## 3.3 HISTORIC PRESERVATION GUIDELINES

### Historic Preservation Guidelines

Preservation guidelines, similar to the Landscape Master Plan guiding principles, provide guidance for the proposed development on campus. These preservation guidelines pertain mainly to the Historic Campus Core District where the state has established the University of Rhode Island Historic District.

Two critical components define the preservation guidelines:

1. Integrity—as established by the U.S. Department of the Interior’s National Park Service—is “the authenticity of a property’s historic identity, evidenced by the survival of physical characteristics that existed during the property’s historic period”. The National Register of Historic Places established seven qualities of integrity that must be considered when evaluating the integrity of a resource: location, setting, feeling, association, design, workmanship, and materials. Low integrity of these qualities means that the resource no longer contributes to the Historic District.
2. Character-defining features are defined by the National Park Service as “a prominent or distinctive aspect, quality, or characteristic of a cultural landscape that contributes significantly to its physical character.” These are the features that give the building or landscape its essence, and that without which its historic integrity would be lost. For the Olmsted, Olmsted & Eliot-designed Quadrangle, the character-defining features are:
  - The open, rectilinear turf panel lined with vase-shaped trees;
  - Pedestrian-dominated broad walk/driveways on all four sides;
  - Crossing paths providing access along the major patterns of movement; and

- Granite block buildings of three to four stories located within sixty to ninety feet of the central turf area.

While this is a Landscape Master Plan, preservation guidelines pertaining to the University of Rhode Island Historic District (as developed by the State’s Historical Preservation and Heritage Commission) include recommendations for the structures included within the District. Substantial changes to the architecture of the structures would impact the design, setting, and feeling of the Quadrangle.

- A. The University should continue to acknowledge and celebrate the historic campus core. The historic Quadrangle is the heart of the campus landscape and is a major University recruiting tool for prospective students and faculty.
- B. The location and association with the Olmsted, Olmsted & Eliot firm cannot be changed, but it will be important not to significantly impact the other qualities that contribute to the integrity of the Quad. Renovation to facades of buildings located on the historic Quadrangle should remain substantially intact with no significant alterations to façades facing the Quad.
- C. Original building materials, craftsmanship, and design should be maintained to the greatest extent feasible when alterations are proposed to historic buildings and landscape features.
- D. Character-defining features should be preserved, maintained and protected. When possible, missing features should be restored or reconstructed.
- E. When alterations (renovation or repair) or demolition of original or historic features are proposed, they should be appropriately documented to preservation standards prior to any alterations.

- F. Consider removal of past alterations that detract from the integral qualities of the space.
- G. Preserve significant historic building facades, including but not limited to: Green Hall south façade, Quadrangle-oriented building façades, Roosevelt Hall east façade, etc.
- H. The University should consider establishing a design review process for any work proposed within the historic campus core, in addition to what will be required by the State Historic Preservation Office for the URI Historic District.

The review committee should include preservation professionals who assess any proposed alterations, renovations, or improvements to the historic elements (building or landscape), with greater consideration for any features listed as contributing resources on the University of Rhode Island Historic District Nomination Form.

Beyond the Historic Campus Core District, preservations guidelines should refer to the Overarching Guiding Principles established in this Landscape Master Plan. The first of which being: the campus landscape should reflect the rural character of Kingston Village and South County. Protecting the agrarian setting which surrounds the western portion of the campus is not only essential to maintaining the campus character, but also to the vitality of the state's sector of agriculture-based economy.

The Overarching Guiding Principles also state that the campus landscape should reflect URI's history as a Land Grant college at select appropriate locations. A careful balance between providing parking resources that are absolutely necessary for the campus to function and preserving the natural and agricultural resources on campus is imperative to this principle.



## 3.4 CAMPUS DEVELOPMENT RECOMMENDATIONS

### **Campus Development Boundaries & Redevelopment Zone Recommendations**

Based on the assessment of the campus landscapes, the spaces on campus have been placed into four categories:

- Special campus landscapes to be protected
- Landscapes to be enhanced
- Landscapes to be restored
- Landscapes to be considered for redevelopment

### Special Campus Landscapes to be Protected

The special places on campus that should be preserved and protected. These places contribute to the campus ethos and are essential to the URI experience; these include:

- a. The Quadrangle
- b. The Botanical Gardens
- c. The gardens at the President's House
- d. Heber W. Youngken Jr. Medicinal Plant Garden

Changes to these spaces should be limited improvements that do not change the essential character of the place, and/or restore that landscape to an earlier, more authentic version. Improvements that are necessary to meet ADA Accessibility Guidelines or new campus standards for detail or materials, or that reduce maintenance requirements should be considered as they provide a benefit to the campus-at-large. While maintenance is a critical consideration and cost, these landscapes should not be changed for maintenance requirements unless there is a comprehensive review process.

## Landscapes to be Enhanced

The next category of landscapes are those that are essential to the campus aesthetic but could be enhanced to better contribute to URI's 21st century campus landscape and its community. These landscapes include:

- e. The stormwater management bio-swales at Chemistry and Center for Biotechnology and Life Sciences
- f. The walkway connecting the Beaupre Center for Chemical and Forensic Sciences to Carothers Library
- g. The Pharmacy green
- h. The undeveloped wooded areas between White Horn Brook, the Phi Gamma Delta Fraternity House, and White Hall
- i. Dieter Hammerschlag Mall
- j. The President's walkway from Campus Avenue to Green Hall
- k. The Agronomy Farm and Skogley Turfgrass Research Center
- l. Plains Road streetscape from Route 138 to West Alumni Avenue
- m. West Alumni Avenue from Plains Road to Butterfield Road (Most visitors to campus for athletic events use this corridor. It should promote URI better.)

These landscapes should be fundamentally preserved but minor alterations to improve the usage, to enhance plant palettes, to expand opportunities for education, to meet ADA Accessibility Guidelines, or to enhance the space overall should be considered.

## Landscapes to be Restored

URI campus landscapes to be restored are those that landscapes that predominantly contribute to the campus ecosystems, especially wetlands and wooded areas. The majority of these spaces have been excluded from the development limits so that the spaces are protected from development in the future. These spaces include:

- n. The entire White Horn Brook corridor from Peckham Farm to Flagg Road
- o. The open turf areas between White Horn Brook and Heathman Residence Hall
- p. White Horn Creek from Carothers Library to White Horn Brook
- q. Ballentine Pond
- r. The forested wetlands north of the Fine Arts Center
- s. The forested wetlands east of the Fine Arts Center

These spaces should be restored for their ecological and educational value. Improvements may include wetland restoration, stormwater management, especially for flood storage capacity, trails and overlooks, etc. Landscapes such as the White Horn Creek system should be daylighted as much as possible to contribute to the *genus loci* of campus, to create valuable outdoors spaces, and to improve the health and functionality of the entire system.



## 3.4 CAMPUS DEVELOPMENT RECOMMENDATIONS

### Landscapes to be Considered for Redevelopment

The Landscape Redevelopment category contains the areas designated for landscape redevelopment. These include spaces that are dated and in poor condition, and are not contributing to the campus community to their full potential. These spaces include:

- t. The Village areas of Hillside Residential District: Coddington, Aldrich, Dorr, Burnside, Ellery, Gorham, Fayerweather and Hopkins Residence Halls, in addition to the Potter Building
- u. The landscape (mainly parking lots) between Roosevelt Hall and Hutchinson Residence Hall
- v. The landscape between the Memorial Union and Butterfield and Bressler Halls
- w. The landscape east of the Memorial Union along Ranger Road
- x. The Chafee/Rodman Halls green
- y. University Gateway Apartments

These spaces have been deferred for development for several decades and can greatly contribute to the campus community and aesthetic. Each of these spaces should be considered for redevelopment to remove or reduce extraneous pavement (roads and/or parking lots) and to create new gathering spaces and activity areas for the campus community. Interventions do not have to be extensive to make a significant impact on the campus.

Finally, there is a category of Landscape Redevelopment that includes potential building sites. These sites have been identified by the University as a potential building site, or the building is no longer appropriate within its context in the 21st century University landscape. These spaces include:

- z. Phi Gamma Delta and its surrounding landscape

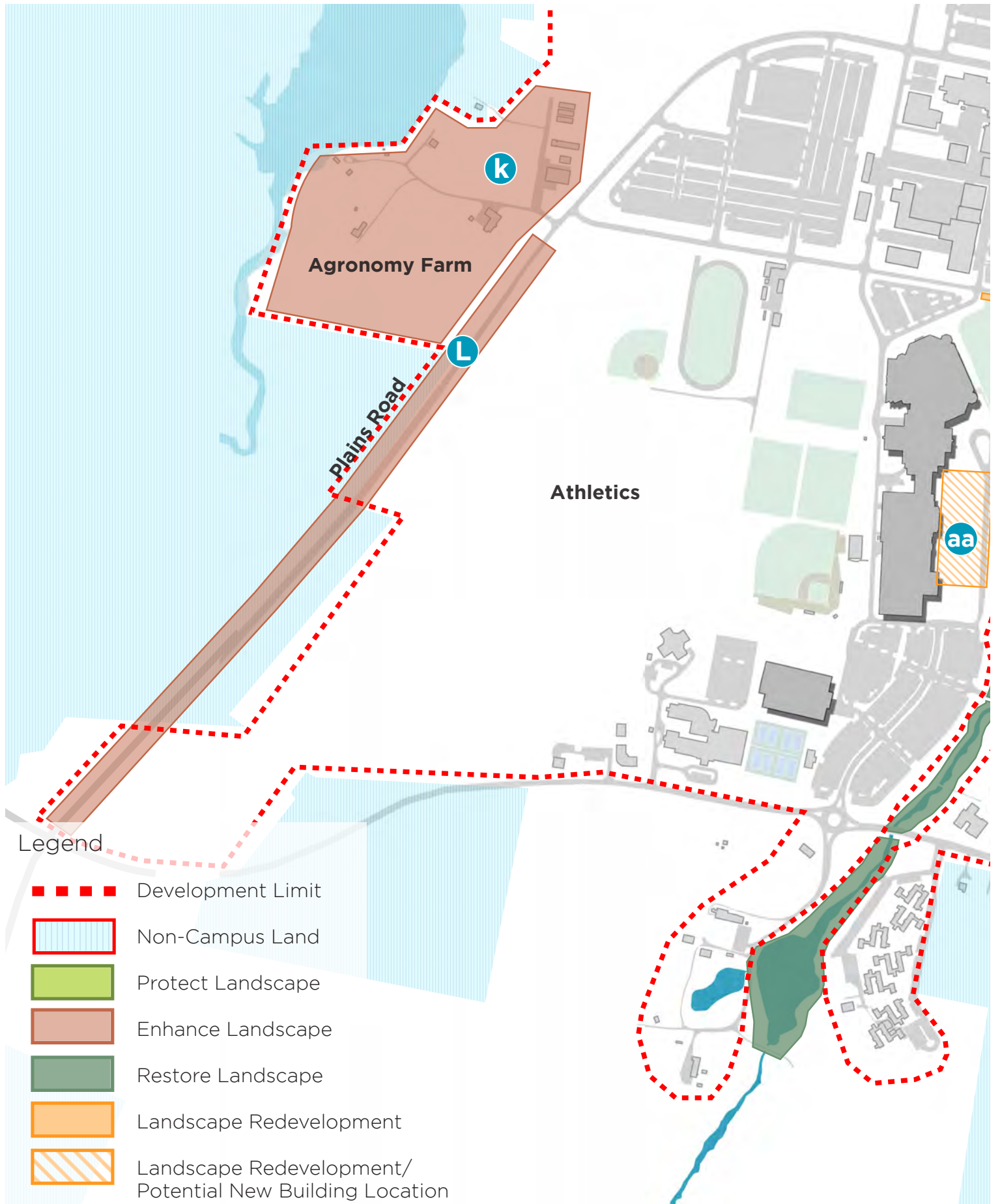
- aa. The landscape to the east of the Athletic Complex (potential future natatorium site)
- ab. The landscape in between Fogarty, Morrill and Pastore Halls, and to the south of Fogarty Hall
- ac. White Hall and its surrounding landscape
- ad. The Social Sciences Research Center and its surrounding landscape
- ae. The landscape to the south of Tyler Hall

### Campus Development Boundary








Additionally, a redevelopment limit has been designated on this map. The limit includes most of the campus/University-owned land but it does exclude select parcels. As mentioned above, all of the lands associated with White Horn Brook, White Horn Creek, and other associated wetlands have been excluded from this boundary.

The North Woods landscape has also been excluded from the boundary. The forested landscape provides a huge variety in ecosystems and educational and recreation opportunities for the University community. These extremely valuable landscapes should be protected from development at all costs. Acceptable limited improvements should include trails and non-intrusive gathering spaces that are context sensitive and aid in facilitating education.





Legend

-  Development Limit
-  Non-Campus Land
-  Protect Landscape
-  Enhance Landscape
-  Restore Landscape
-  Landscape Redevelopment
-  Landscape Redevelopment/  
Potential New Building Location

North Woods



Campus Development Limit



## 3.5 VEHICULAR & TRANSPORTATION

### Complete Streets, Roadway, Parking & Bicycle Recommendations

Based on calculations of the 400 acres of the campus core, nearly fifty percent is impervious. The quick growth and suburban development of the University in the mid-20th century has created a campus landscape that appears to be dominated by roads and parking lots. Two significant alterations can drastically improve this statistic:

1. Reducing vehicular access to the campus core with the exception of emergency access and necessary service access and the re-purposing of existing roadbeds for pedestrian access and greenspace.
2. Moving student, staff, and a majority of faculty parking out of the campus core—except for handicap access—and providing replacement parking on the campus fringes with transit upgrades.

Both of these measures will make great strides to stitching the campus landscape back together by creating a safer, more pedestrian-friendly campus that reduces the reliance on vehicles. By phasing out a majority of the small parking lots littered throughout the campus core and providing options to park outside the core, the network of roadways can immediately be reduced. Roadway improvements should also include accommodations for alternative forms of access: skateboards and bicycling.

These recommendations have been coordinated with the recommendations proposed in the 2017 Transportation and Parking Master Plan. See that report for additional and more in depth discussion on parking and roadways improvements.

### Road Diet Recommendations

1. Convert the following campus roads to primarily pedestrian ways with limited vehicular access only (i.e. emergency services and service vehicles):
  - Ranger Road from Upper College Road to Campus Avenue
  - Lower College Road from Lippitt Road to the Memorial union bus loop
  - Lippitt Road from the accessible parking, west to Carothers Library
  - Greenhouse Road from the Greenhouses parking lot south to Lippitt Road
  - Complex Road from Fraternity Circle to West Alumni Avenue, and west from Butterfield Road to the Athletics District
  - Keaney Road from the northern limit of Keaney parking lot to Meade Stadium
  - Tootell Road from the northern limit of Keaney parking lot to Lincoln Almond Plaza
  - Farm House Lane
  - Baird Hill Road

Converting these roads includes reducing the roadbed width to a maximum of fifteen feet wide (with special accommodations for emergency vehicles where necessary), and changing paving materials. It also includes eliminating curbing and sidewalks that are outboard of the roadbed, guardrails, and other vehicle-oriented details to meet University design standards (See Section 6: Campus Design Guidelines & Standard Details of this Landscape Master Plan).

2. If the campus shuttles remain on their current route, convert East Alumni Avenue to one-way heading east to west for shuttles access (as well as emergency and service vehicles, but no faculty or student use) from the service yard at Kirk

# RECOMMENDATIONS

Engineering Lab to Butterfield Road. This would allow a reduction in the width of the roadbed width but would still use typical roadway details to help pedestrian awareness of the likelihood of interacting with vehicles.

If the shuttle routes should change so that they are no longer using East Alumni Avenue, the roadway could be converted to a pedestrian way, similar to those roads listed above.

If the University shuttle system uses smaller vehicles rather than full-size buses, the shuttles could continue to use East Alumni Avenue even if it is converted to the pedestrian-oriented pathway. However, frequency and size limits would have to be established, and signage would have to be provided to make it clear that pedestrians and shuttles are sharing an access route.

3. Convert Butterfield Road to one-way from near the intersection with Campus Avenue to Flagg Road. It is recommended that the direction of travel be from south to north, but studies of service access to Butterfield Dining Hall are necessary to determine the best direction.

The conversion to one-way traffic allows the expansion of sidewalks widths to meet the new campus standards—as well as ADA Accessibility Guidelines—without a loss of greenspace.

4. Convert existing roads to complete streets with either dedicated bike lanes or shared-use lanes demarcated by ‘sharrows’. The use of bikes lanes or shared-use lanes will depend on the existing road bed width and volume of traffic. Consider the following campus roads:

- Upper College Road
- Flagg Road
- Campus Avenue
- West Alumni Avenue

5. Depending on the adjusted use of road bed widths as noted in road diet recommendation 4, consider including a median as part of gateway improvements and/or to help control direction change (U-turns) for the following roads leading onto campus:


- Flagg Road
- Plains Road at Route 138

6. Additional road enhancements should be implemented for the other roads which access campus. Some of these are University roads while others are Town-owned roads, but they all impact and support the University. These include:

- Lower College Road (University)
- Briar Lane (Town road)
- Fortin Road (Town road)
- Bills Road (Town road)
- Old North Road (Town road)



Legend

 Convert to Complete Streets

 One-way Access Only

 Ped/Service/Emergency Only

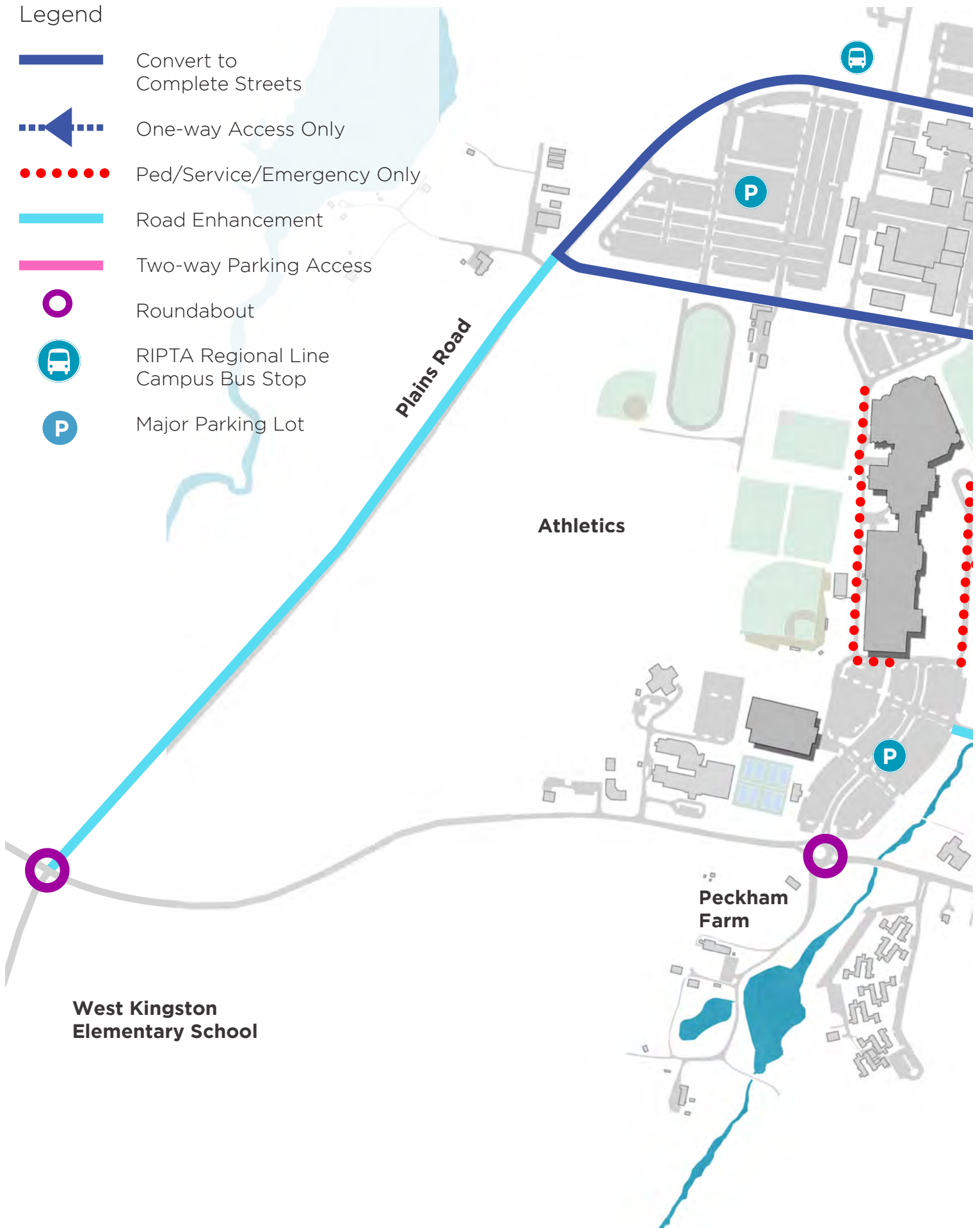
 Road Enhancement

 Two-way Parking Access

 Roundabout

 RIPTA Regional Line Campus Bus Stop

 Major Parking Lot



**West Kingston  
Elementary School**

**Athletics**

**Peckham  
Farm**

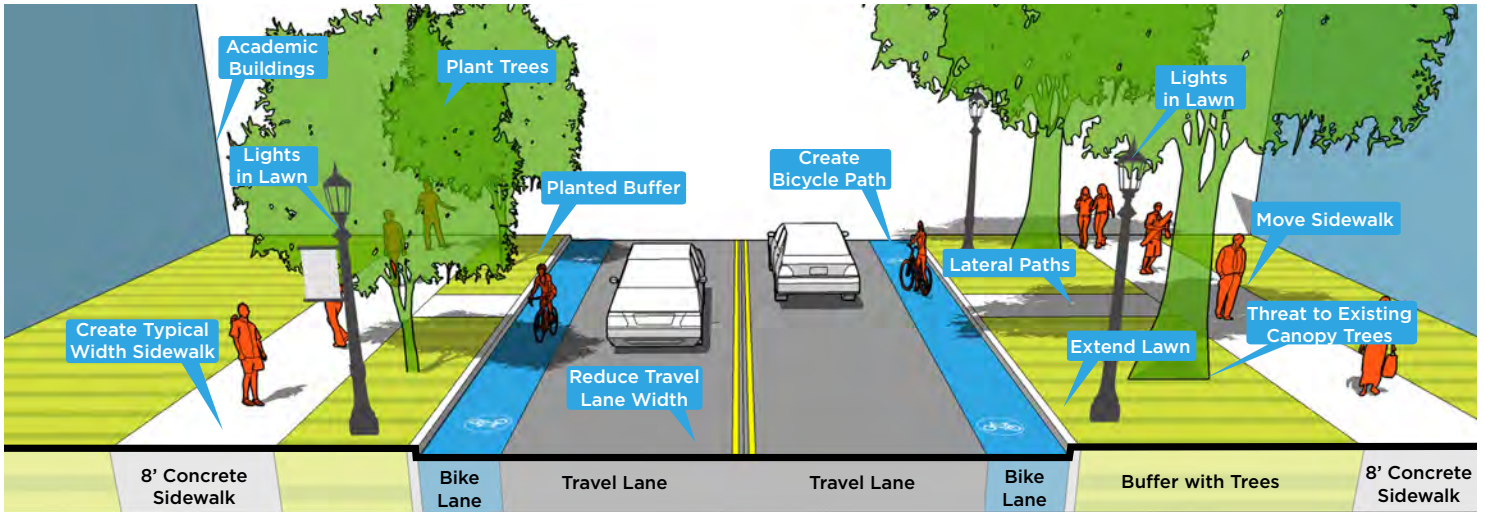


Road Diet



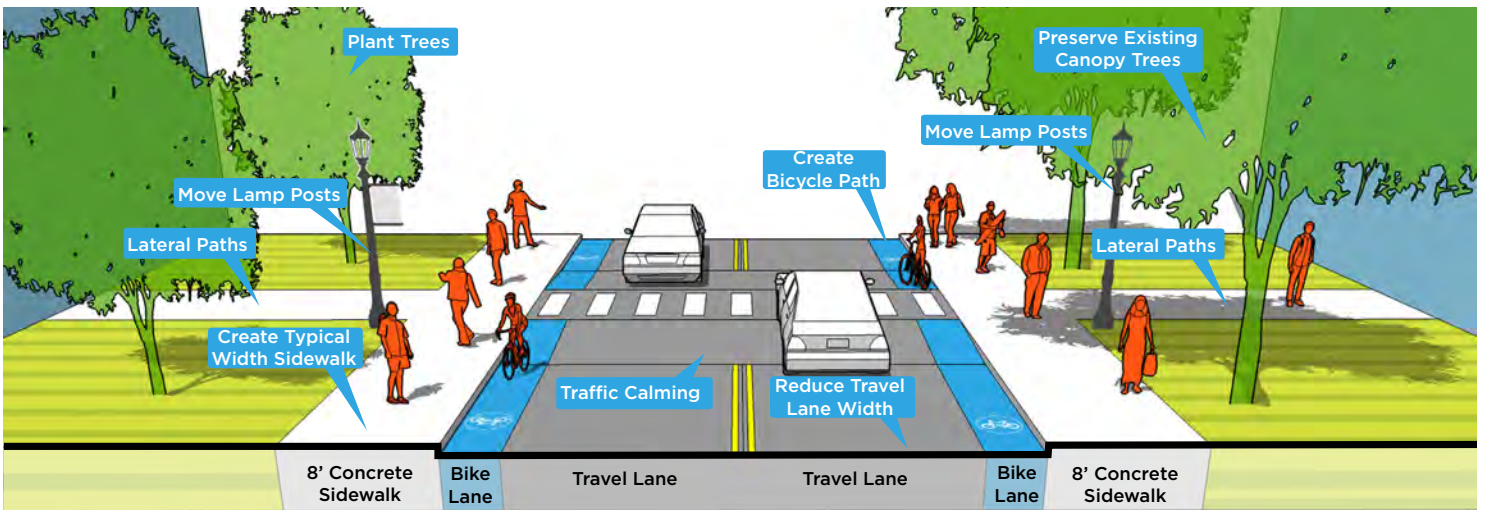
# 3.5 VEHICULAR & TRANSPORTATION

## UPPER COLLEGE ROAD COMPLETE STREETS STUDY



Upper College Road

- Sidewalks moved to create vegetated buffer from road for infrastructure and snow storage
- Sidewalks widened for accessibility and for ease of snow removal
- Travel lanes narrowed to accommodate bike lanes
- Light fixtures moved out of sidewalk and into vegetated strip
- Plant trees evenly to enhance allée
- Maintain existing trees until they become hazardous, then relocate walkways

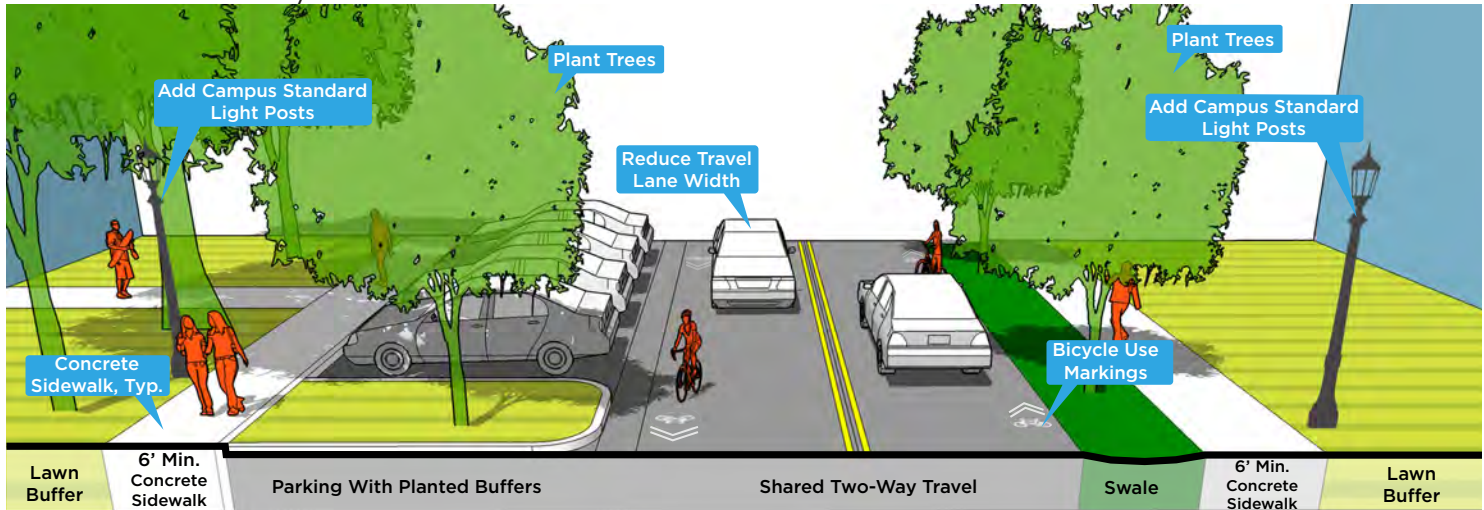


Upper College Road

- Revised crosswalks clearly highlight road crossing/intersection
- Highlighted intersection gives opportunity for URI branding

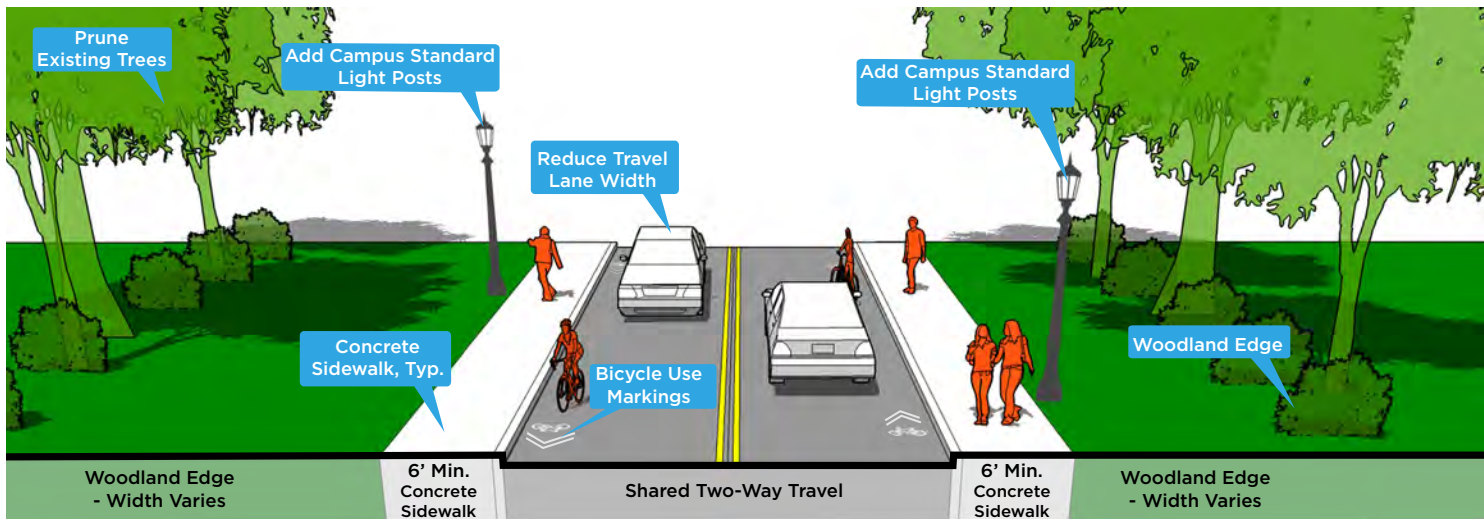
# RECOMMENDATIONS

## FRATERNITY CIRCLE/QUARRY ROAD COMPLETE STREETS STUDY



Frat Circle/Quarry Road

- Add bike lane markings on shared-use roads
- Add consistent campus details (lighting, benches, walls, etc.)
- Plant street trees and buffers



Frat Circle/Quarry Road

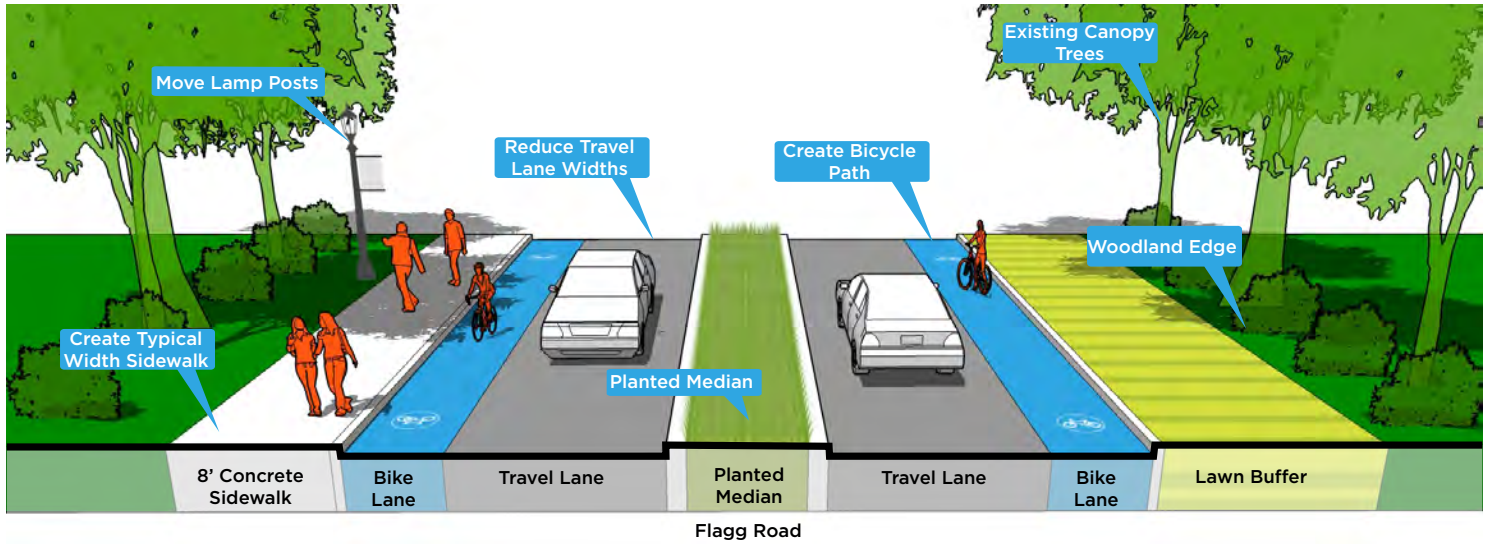
- Add bike lane markings on shared-use roads
- Add consistent campus details (lighting, benches, walls, etc.)

## Complete Street Sections

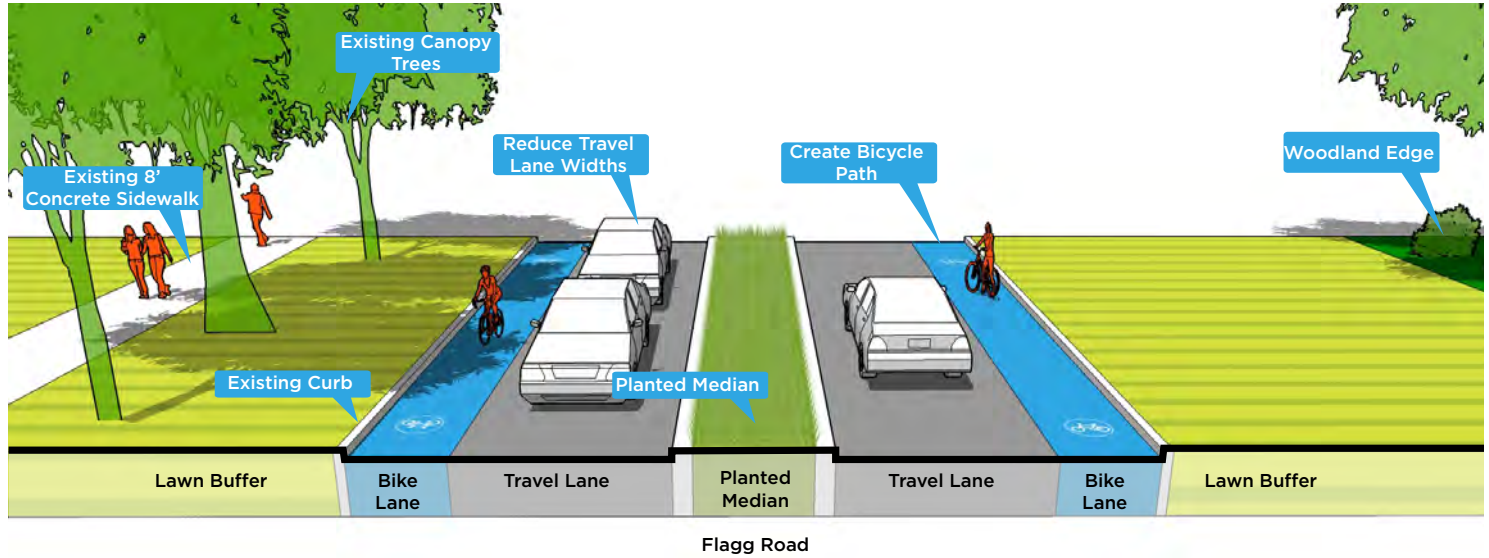


# 3.5 VEHICULAR & TRANSPORTATION

## FLAGG ROAD COMPLETE STREETS STUDY



- Add sidewalks where missing for safety and universal accessibility
- Travel lane narrowed to accommodate bike lane
- Add consistent campus details (lighting, benches, walls, etc.)
- Add planted median

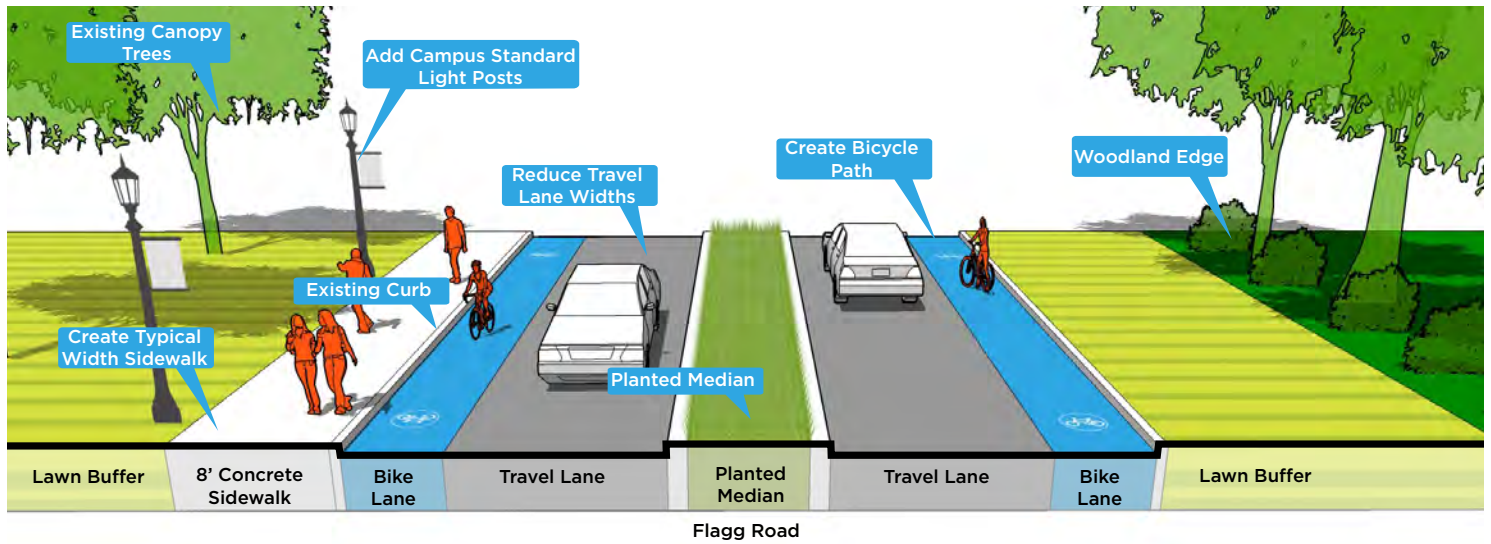


- Travel lane narrowed to accommodate bike lane
- Add consistent campus details (lighting, benches, walls, etc.)
- Add planted median

### Complete Street Sections

# RECOMMENDATIONS

## FLAGG ROAD COMPLETE STREETS STUDY



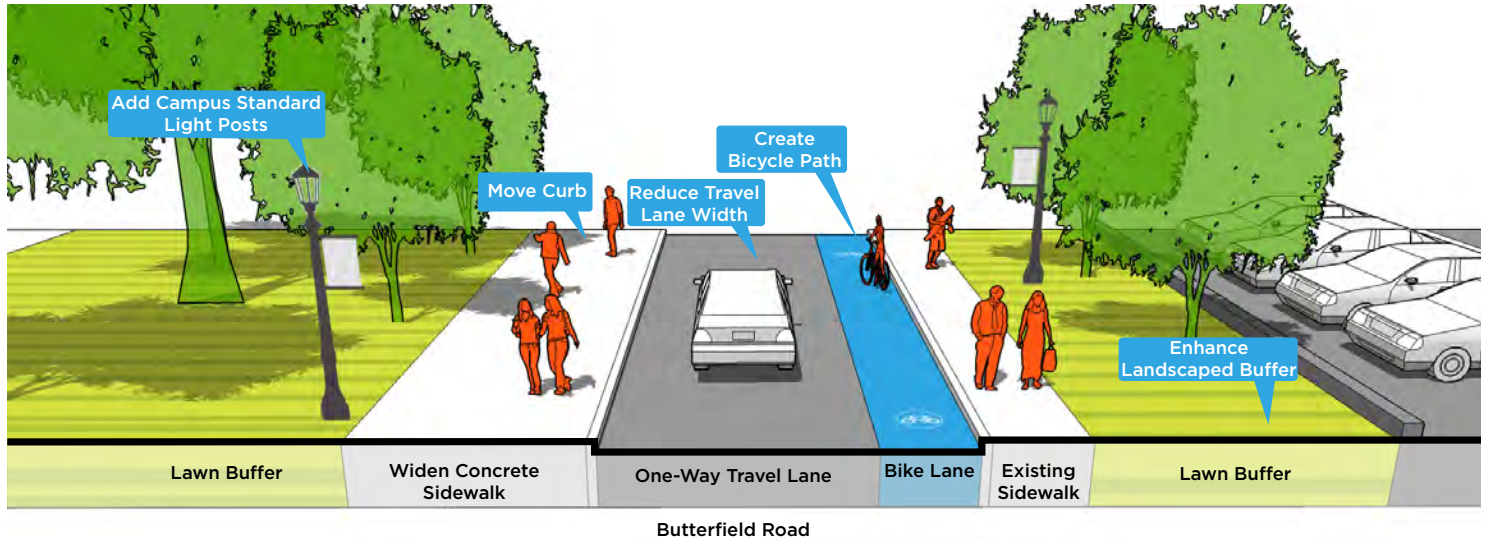
- Travel lane narrowed to accommodate bike lane
- Add consistent campus details (lighting, benches, walls, etc.)
- Add planted median

## Complete Street Sections



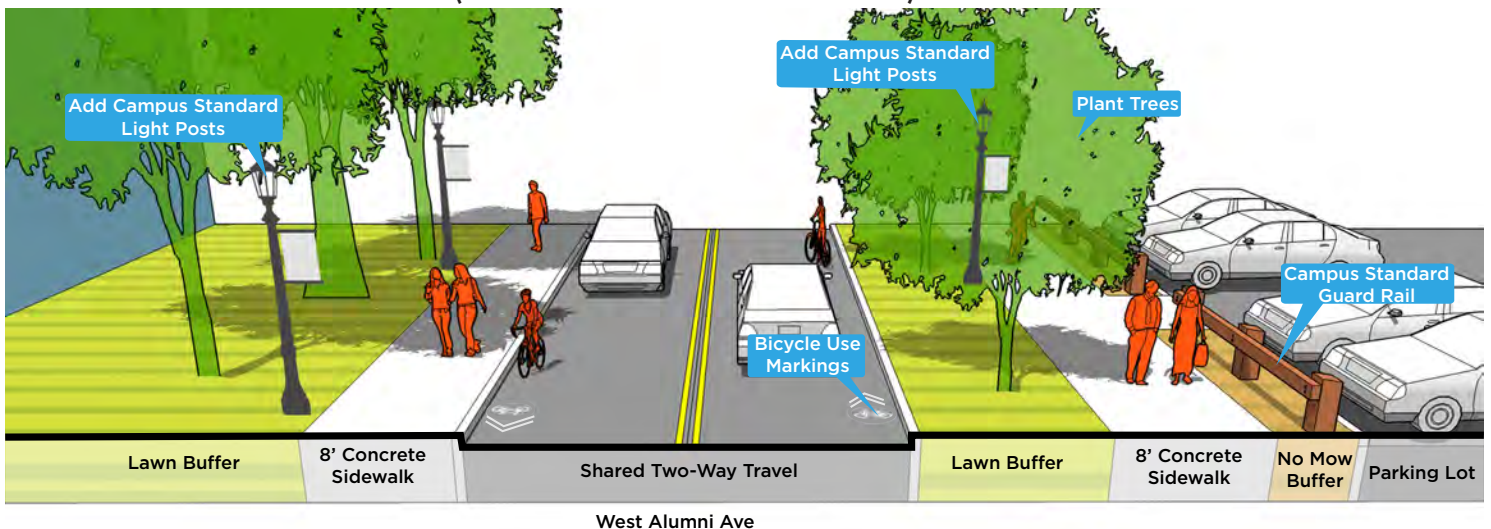
# 3.5 VEHICULAR & TRANSPORTATION

## BUTTERFIELD ROAD (BETWEEN FLAGG ROAD & WEST ALUMNI AVE) COMPLETE STREETS STUDY



- Sidewalks widened for accessibility
- Travel lane narrowed to one-way
- Create bike lane
- Add consistent campus details (lighting, benches, walls, etc.)
- Plant street trees for shade/screening

## WEST ALUMNI AVENUE (WEST OF BUTTERFIELD ROAD) COMPLETE STREETS STUDY

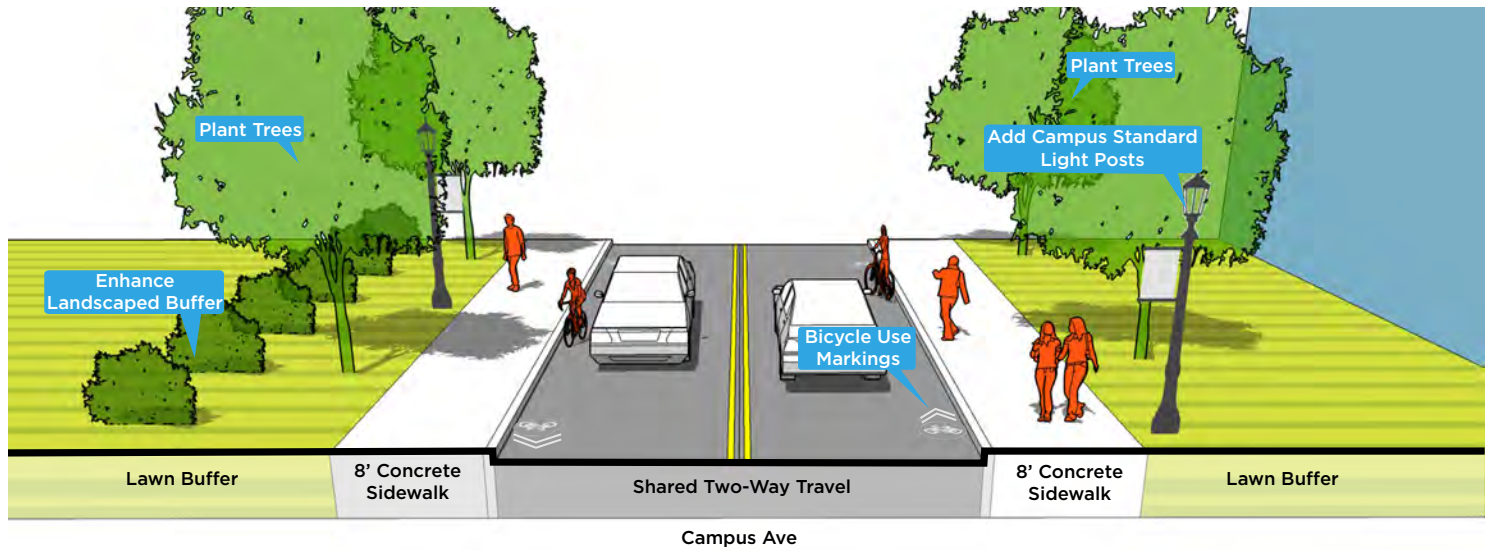


- Create standard sidewalk and buffer along street
- Add consistent campus details (lighting, benches, walls, etc.)

### Complete Street Sections

# RECOMMENDATIONS

## CAMPUS AVE COMPLETE STREETS STUDY



- Add shared-use markings on shared-use road
- Add consistent campus details (lighting, benches, walls, etc.)
- Plant street trees

## Complete Street Sections



## 3.5 VEHICULAR & TRANSPORTATION

### Parking Recommendations

1. Reduce parking in the campus core except for accessible parking needs. This area has been defined as the campus landscape from Flagg Road to Campus Avenue and Fraternity Circle and Upper College Road to the eastern extents of White Horn Brook landscape. (It should be noted, however, that no parking should be included in the White Horn Brook floodplain.) Specifically identified lots which should be removed, or significantly reduced are identified on the Parking Improvement Plan. These include the following:

- Kelley/Ballentine Hall lots
- Tyler Hall lot
- Bliss Hall lot (north side)
- Merrow Residence Hall lot (west side)
- Carothers Library lot (southern extents)
- Davis Hall lot
- Peck Residence Hall lot
- All lots in the Village, along Complex Road
- Adams & Browning Residences Hall lots
- Fogarty and Pastore Hall lots

2. A few of the larger lots in the campus core (not including major parking lots which are located on the campus edges) should be reduced in size. These smaller lots can rededicate a portion of their parking areas to open space yet provide accessible parking to University buildings. The extent of their reduction will be determined by the 2017 Transportation and Parking Master Plan. These include:

- The lot located between East & Washburn Halls and Upper College Road
- West of Roosevelt Hall
- Between White Hall and Butterfield Road

Those existing lots identified to remain will provide accessible parking, and some parking for faculty and service vehicles. These include the following:

- Greenhouse lots
- Mallon Center lot
- Bliss Hall lot (east side; ADA spaces only)
- Chemistry lot
- Carothers Library lot (reduced)
- Merrow Residence Hall lots (east side; ADA spaces only)
- Green Hall/President's House lots
- Public Safety/Parking Services lots
- Memorial Union lot
- Farm House Lane lot
- Social Science Research Center lot

3. On-street parking locations should also be carefully considered. Per the 2017 Transportation and Parking Master Plan, Flagg Road could be considered for conversion to faculty/visitor parking from student parking. Reducing parking to discrete locations along Flagg Road would also improve visibility along the length of the road, as well as provide new opportunities for traffic calming and planting, while enhancing Flagg Road as one of the perimeter roads of campus with several significant campus gateways.

It is understood that some faculty parking, service parking, and accessible parking must be provided throughout the campus, but these lots should be in locations that are discrete, that do not require their own road to access the lot, and that are located on the limits of the campus core—with the exception of accessible parking which must be located within 200 feet of accessible building entries.

# RECOMMENDATIONS

## Bicycle & Skateboard Recommendations

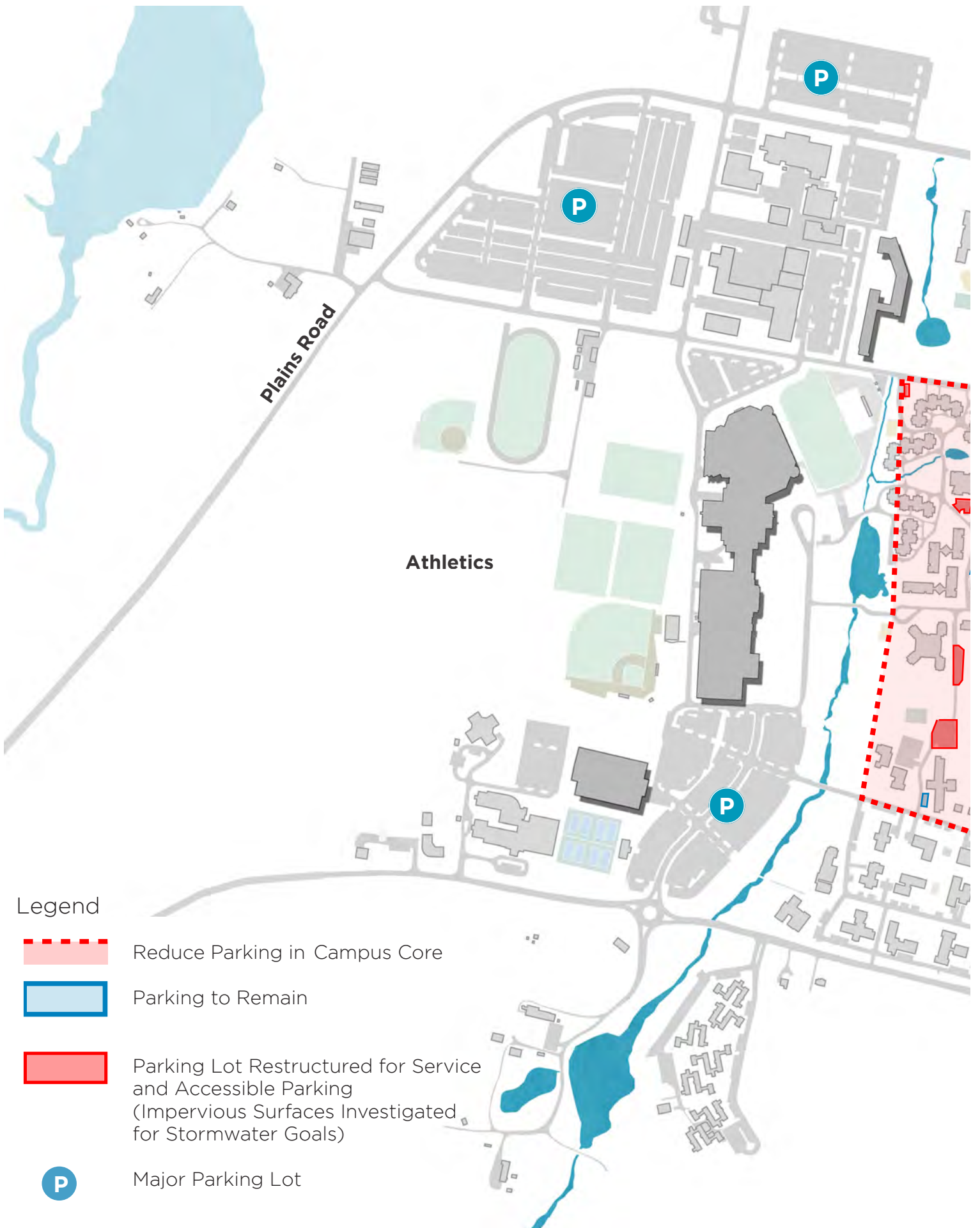
1. Convert the following roads to complete streets with separated bicycle lanes:
  - Upper College Road
  - Campus Avenue
  - Butterfield Road from Campus Avenue to Complex Road
  - West Alumni Avenue from Butterfield Road to Plains Road
  - Flagg Road from Old North Road to Plains Road
  - Plains Road from Flagg Road to West Alumni Avenue

These are the major roads which provide access to and around the campus. They should accommodate commuter and transit vehicles, as well as people using bicycles. In addition, they should provide additional University branding/identification.

2. Shared-use bike lanes—where drivers and cyclists share the drive lane—should be designated in campus roads where the road bed is limited by existing conditions (i.e. wetlands or mature trees) and cannot be widened. These roads include:
  - Fraternity Circle from Campus Avenue to Keaney Road
  - Quarry Road
  - Briar Lane from Welcome Gateway Center parking access to Upper College Road
  - Bills Road from Fine Arts Center parking lot access to Upper College Road
3. Enhance existing pedestrian access routes across campus to accommodate bicycles. Most of the major pedestrian corridors on campus could accommodate bicycle access with some minor modifications. (See Pedestrian Walk Improvements Plan.)
4. Extend a bike path from the William C. O'Neill Bike Path from Peckham Farm, through campus to Flagg Road.

5. Consider amending the University policy that states that skateboards are prohibited from roadways on campus. The University should consider allowing longboards as a form of transportation on and across campus, while still prohibiting skateboards—which are primarily used for recreation—from campus roadways.





Legend



Reduce Parking in Campus Core



Parking to Remain



Parking Lot Restructured for Service and Accessible Parking  
(Impervious Surfaces Investigated for Stormwater Goals)



Major Parking Lot

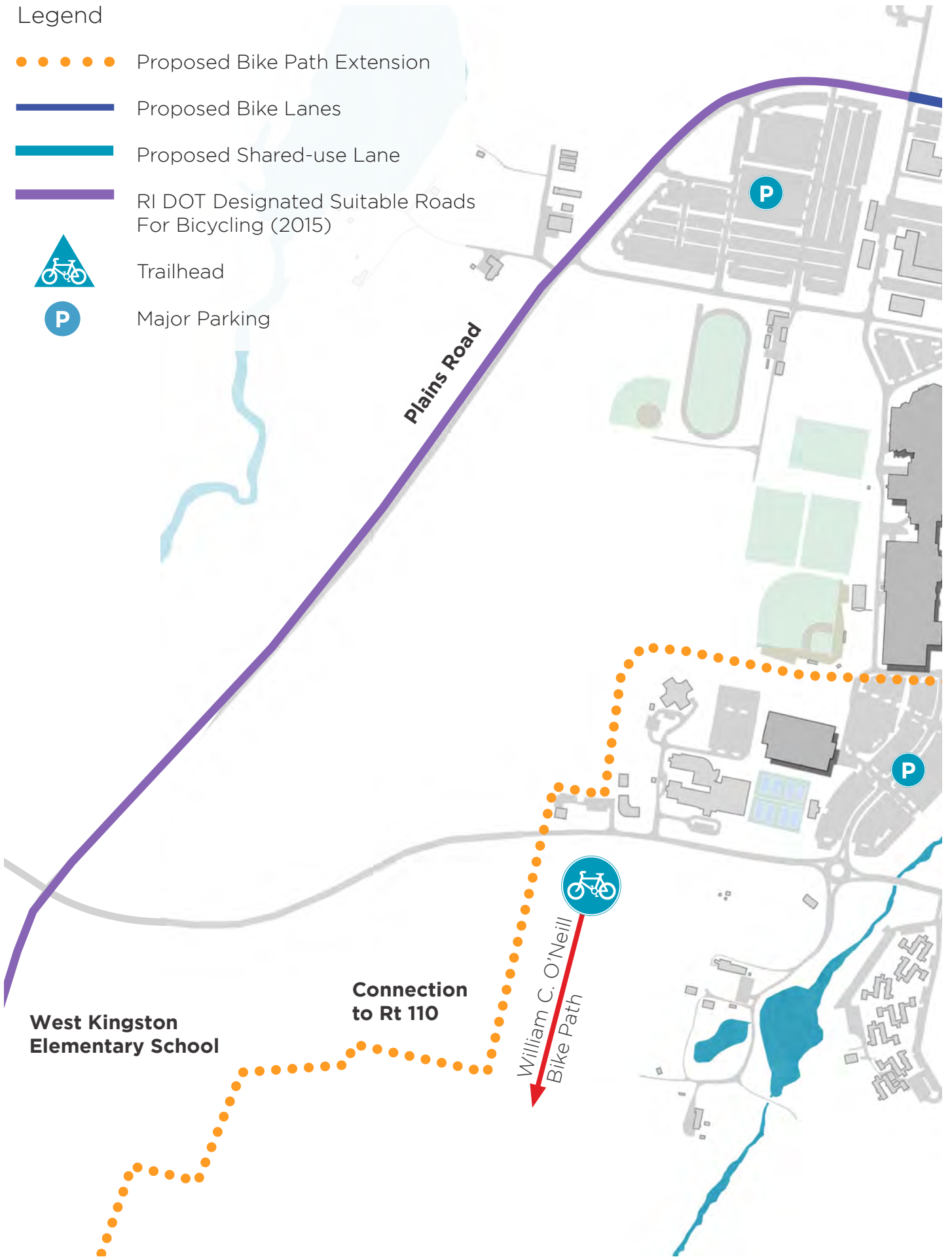


Parking Improvements



Legend

- Proposed Bike Path Extension
- Proposed Bike Lanes
- Proposed Shared-use Lane
- RI DOT Designated Suitable Roads For Bicycling (2015)
- Trailhead
- Major Parking





Bicycle Route Improvements



## 3.6 PEDESTRIAN RECOMMENDATIONS

### **Pedestrian Improvements & Accessibility Recommendations**

By reducing the roadway network on campus and converting miles of roads to pedestrian-oriented walkways, the Landscape Master Plan requires improvements and enhancements to the pedestrian network on campus.

#### Pedestrian Walkway Recommendations

1. On those campus roadways that will continue to provide vehicle access, sidewalks should be improved. Sidewalks should be moved away from road curbs a minimum of five feet clear to provide a vegetated strip to locate street trees, light poles, and signs, and which can also be used for snow storage. Roadways where these improvements are necessary include:
  - Upper College Road
  - West Alumni Avenue
  - Butterfield Road from Flagg Road to West Alumni Avenue
  - Quarry Road
  - Fraternity Circle
  - Parking lot access at the Greenhouses and Bliss Hall, as well as the service yard at Kirk Engineering Laboratory
2. Light poles and signs should be relocated outside of all walkways.
3. Existing major pedestrian access routes should be improved to ensure they meet the new campus standards and details, including materials and walkway width. Portions of these also need to be improved to meet ADA Accessibility Guidelines. The two major access routes are:
  - The Elephant Walk, with extensions from Upper College Road to the athletics complex
  - Hammerschlag Mall, with extensions south to the Memorial Union and north to East Alumni Avenue, on both the west and east sides of Carothers Library.

## Campus Accessibility Recommendations

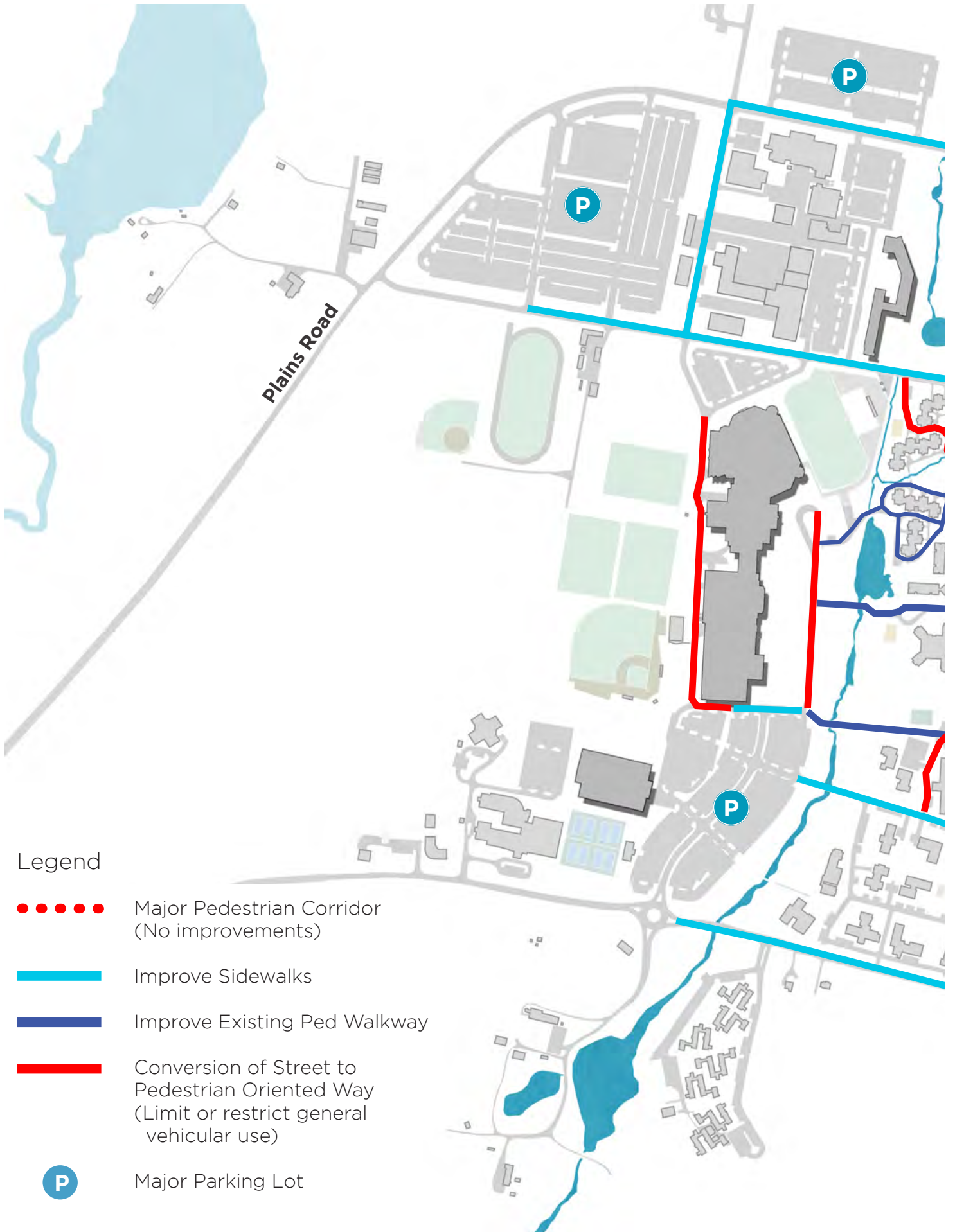
The University of Rhode Island's Kingston campus is built on a hillside with significant grades. Because of this, universal accessibility based on pedestrian walkways is a challenge with the existing infrastructure. As new projects are designed and constructed, the University has ensured that the American with Disabilities Act Accessibility Guidelines are incorporated into the projects, but this does not ensure that the campus landscape is universally accessible. Because of the slope of the hillside, students, faculty, or staff with mobility impairments have to rely on automobiles—personal, state, or University-provided—to get up or down campus.

The University has established Disability Services for Students in the Dean of Students Office, and the URI President's Commission on People with Disabilities. In reviewing the materials on the University website, neither of these provide information on handling universal accessibility around campus.

Recommendations for an accessible campus landscape include:

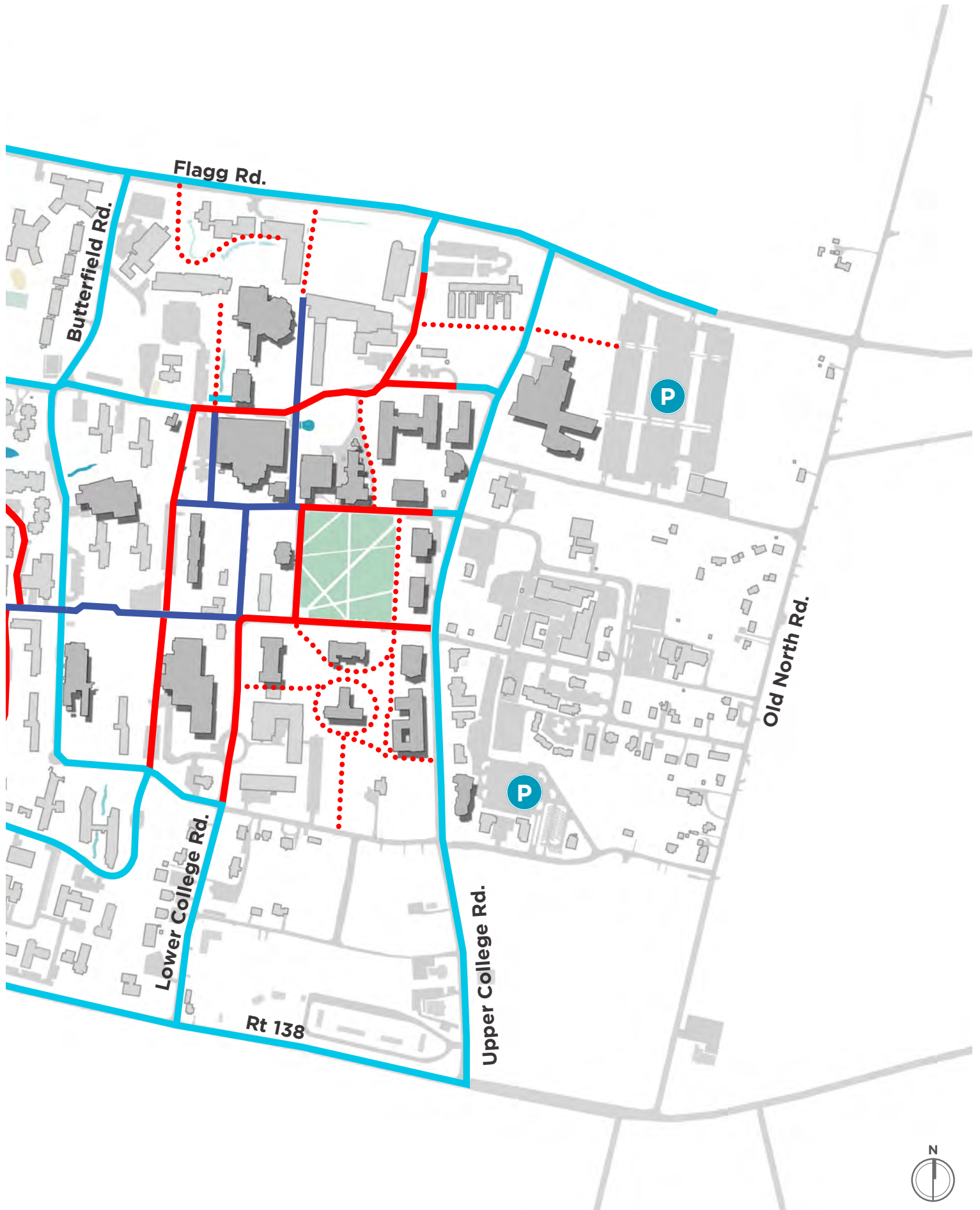
1. Develop a Comprehensive Accessibility Plan for the campus establishing a clear objective for the level of accessibility to be provided. As part of this Plan, a comprehensive study of gradients based on existing topography on walkways should be prepared to determine which walkways meet ADA Accessibility Guidelines.
2. Universal accessibility at URI relies on transit and compliant ADA parking spaces for students, faculty, and staff with mobility impairments to get around. Given the topography of campus, these methods must provide convenient, safe and comfortable access to all buildings and destinations across campus within 200 feet maximum from the main or accessible entrance.
3. There are a number of campus buildings that have limited or no accessible entries. All buildings should be updated to provide an accessible entry. Ideally, the universal access would be provided to the main entrance to building/destination.
4. Accessible entrances should be discretely incorporated into the landscape and/or building entry spaces.
5. At an absolute minimum, ensure that north-south connection (across fairly level terrain) make accessible connections across the campus. This requires improved/widened sidewalks, new sidewalks, and walkways to be re-graded to meet ADA Accessibility Guidelines.
6. Repair/replace existing sidewalks that are in poor condition (such as heaving, significant cracking, or subsiding), challenging to those with mobility impairments, and hazards to all pedestrians.
7. Transitions from sidewalk to roads should always incorporate proper curb ramp transitions along with detectable warning strips, per ADA Accessibility Guidelines.





Legend

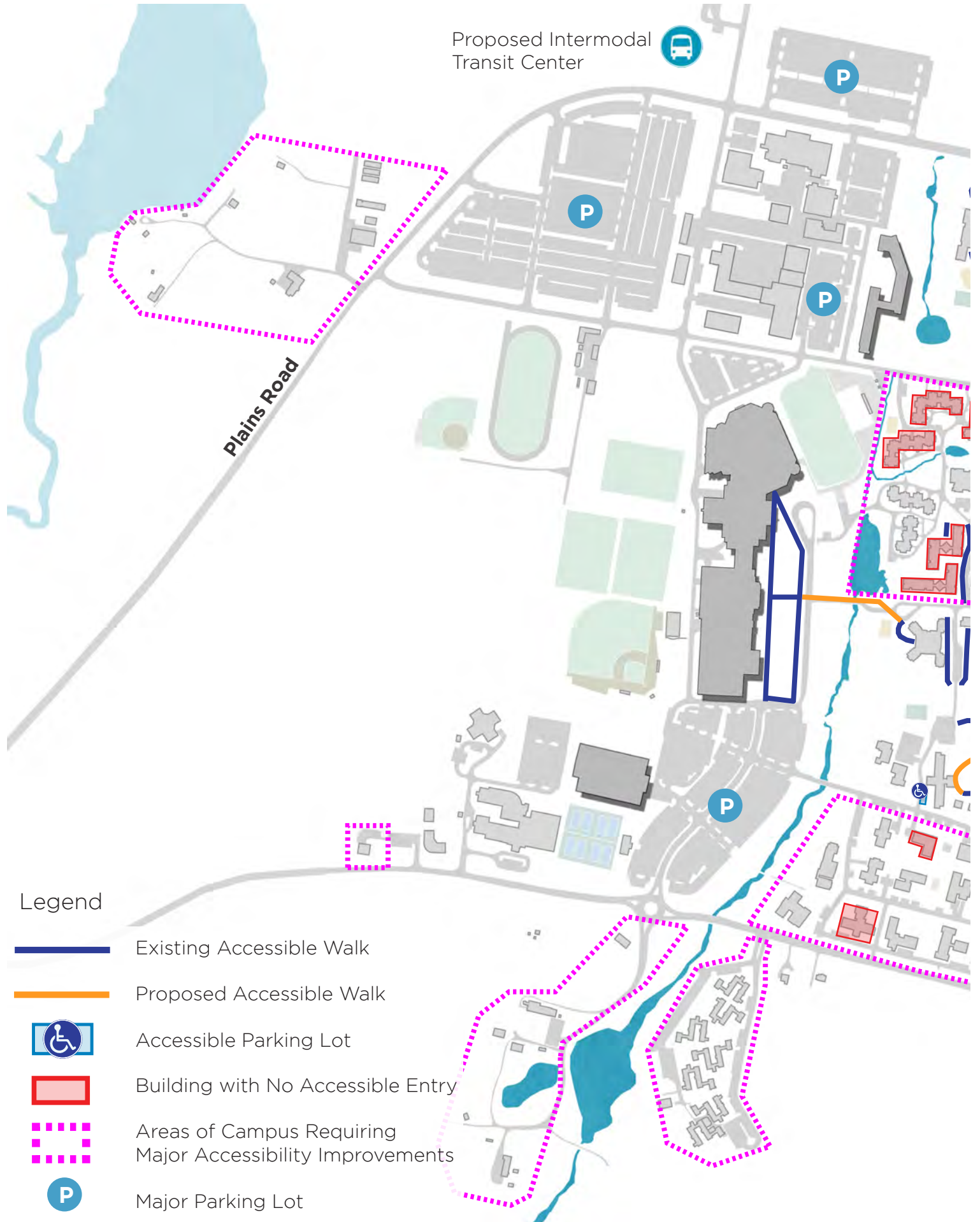
- ● ● ● ● Major Pedestrian Corridor (No improvements)
- ▬ Improve Sidewalks
- ▬ Improve Existing Ped Walkway
- ▬ Conversion of Street to Pedestrian Oriented Way (Limit or restrict general vehicular use)
- Ⓟ Major Parking Lot



PedestrianWalk Improvements



Proposed Intermodal  
Transit Center



Legend

-  Existing Accessible Walk
-  Proposed Accessible Walk
-  Accessible Parking Lot
-  Building with No Accessible Entry
-  Areas of Campus Requiring Major Accessibility Improvements
-  Major Parking Lot

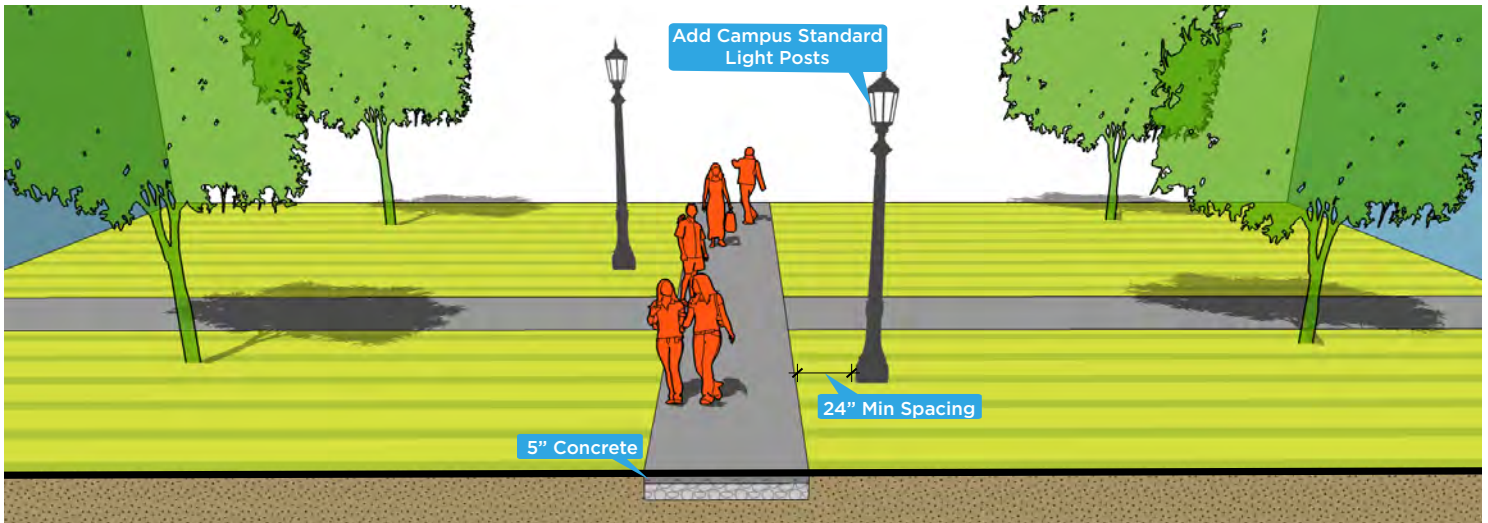


Accessible Walk Improvements

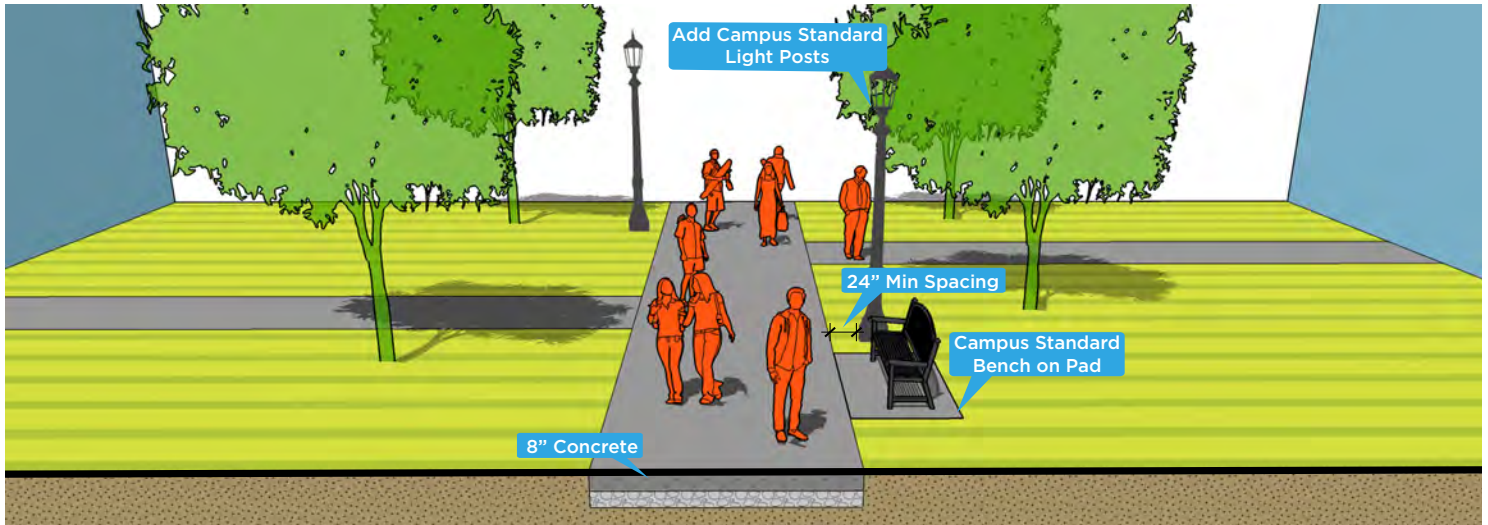


# 3.6 PEDESTRIAN RECOMMENDATIONS

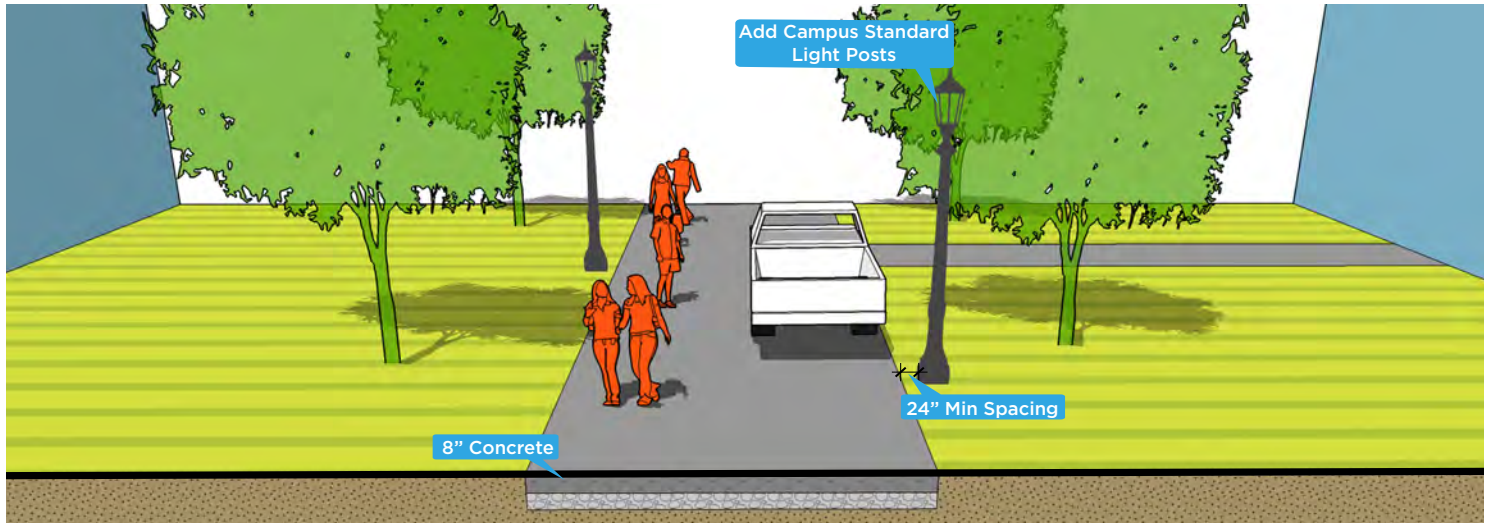
## 6-FOOT WIDE SECONDARY WALKWAY



## 8-FOOT WIDE PRIMARY WALKWAY

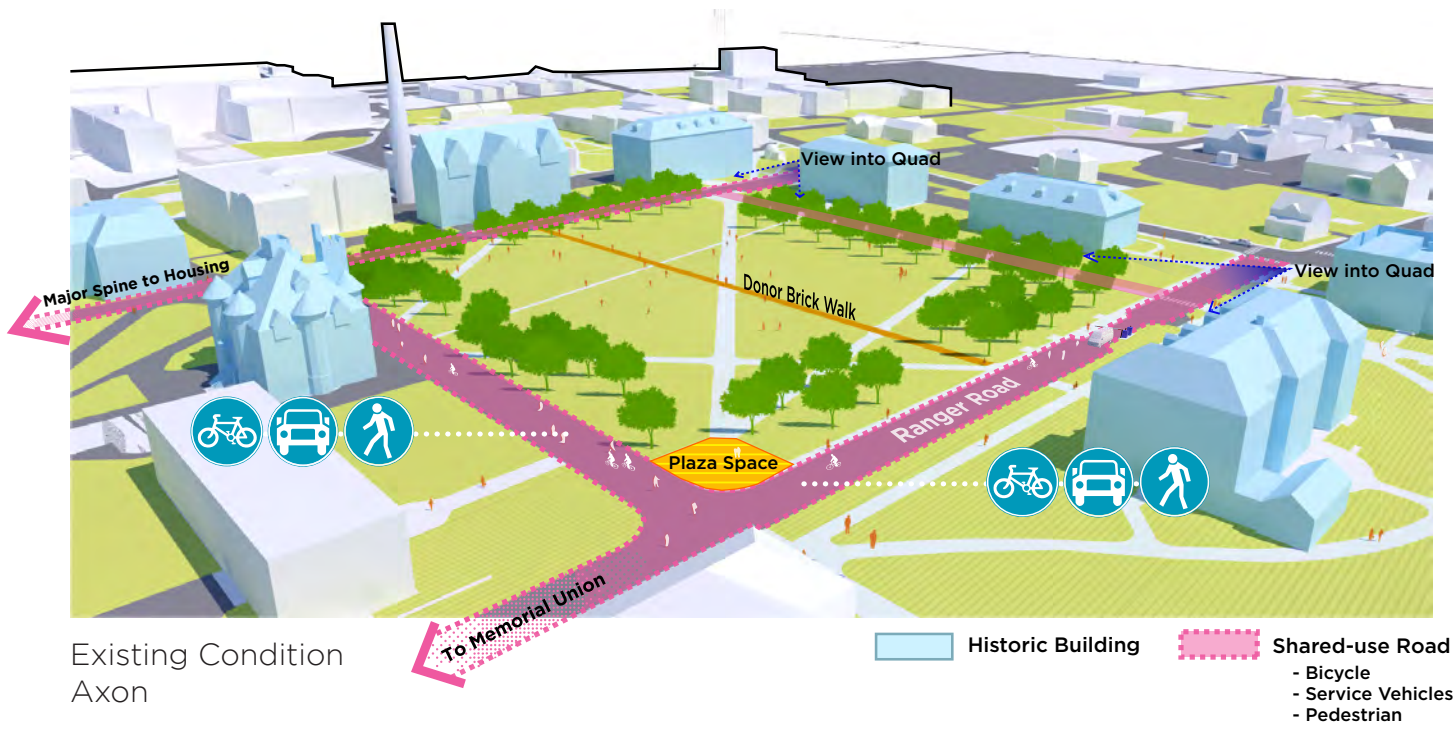


## 15-FOOT WIDE MAJOR WALKWAY (WITH EMERGENCY & SERVICE VEHICLE ACCESS)



Standard Pedestrian Path Sections





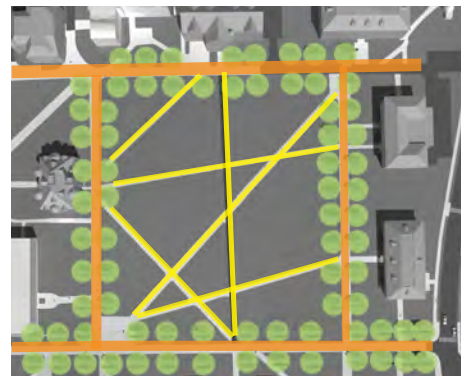
Existing Condition  
Axon

- Historic Building
- Shared-use Road
  - Bicycle
  - Service Vehicles
  - Pedestrian



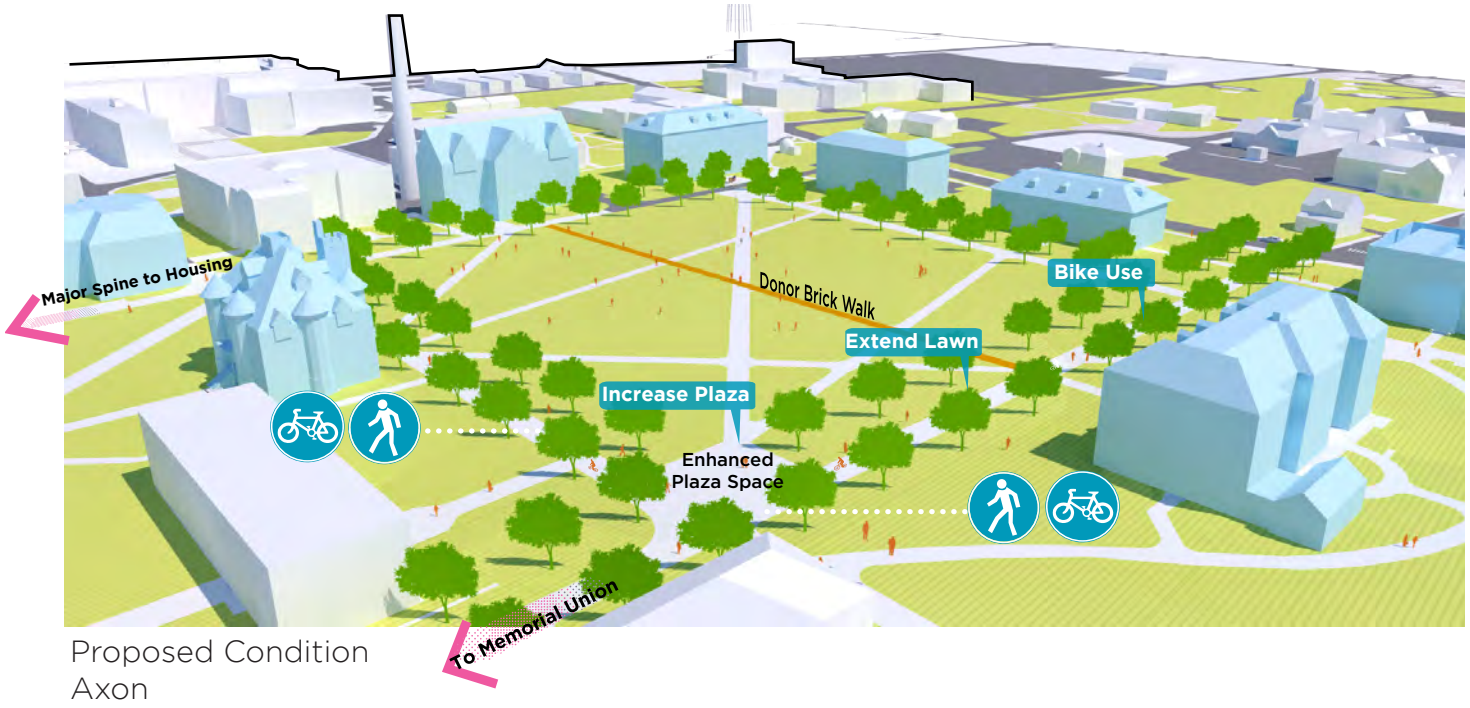
Existing Paths

- Width**
- >25'
  - >20'
  - 15-20'
  - <10'



Proposed Paths

- Width**
- 15'
  - <10'



Proposed Condition  
Axon

Road Diet Example: Historic Quadrangle - Conversion of Roads to Walkways



## 3.7 OPEN SPACE RECOMMENDATIONS

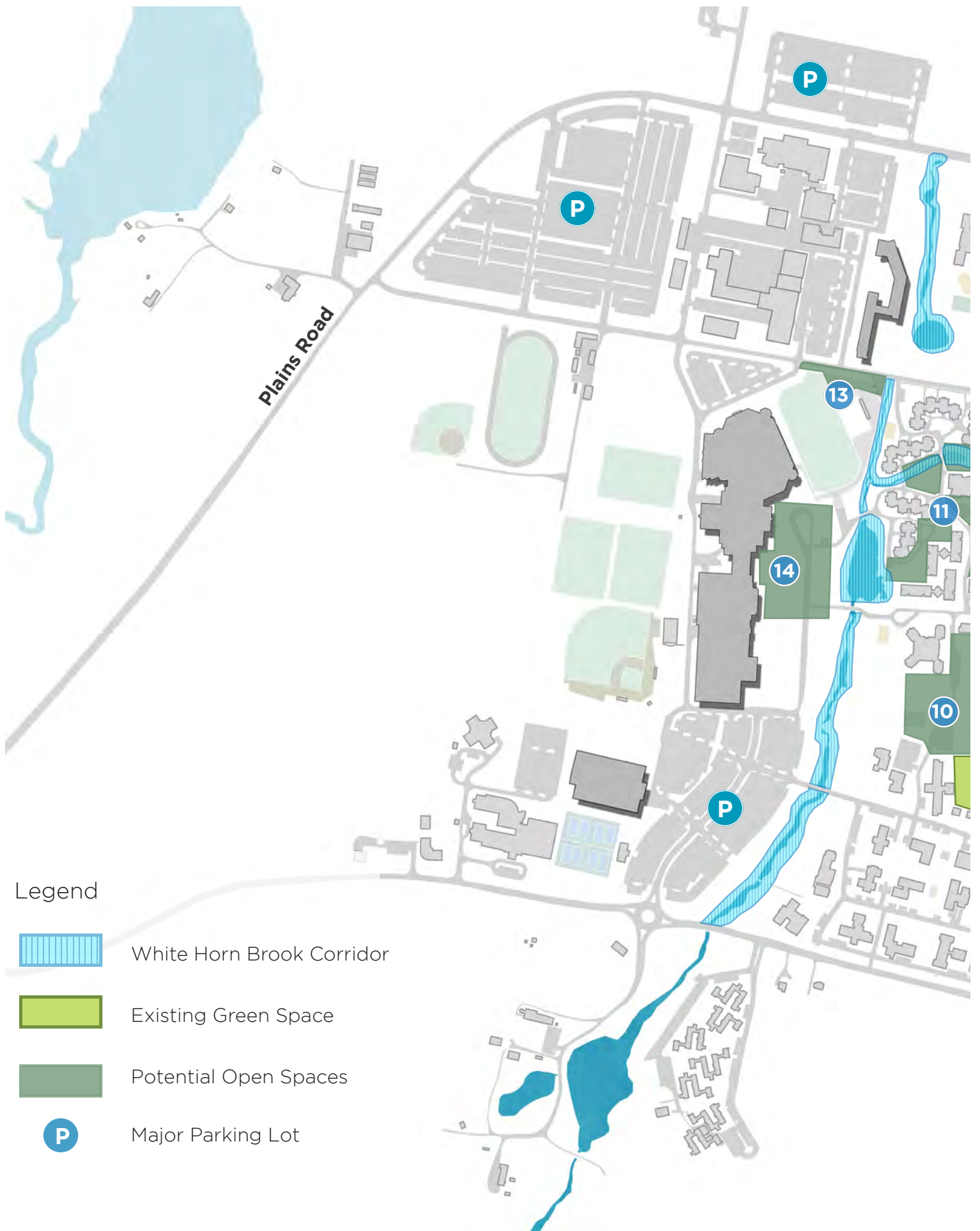
### Open Space Recommendations

Much of the existing campus landscape can be classified as interstitial space; it functions only to support walkways and contributes little value to the campus landscape. They are missed opportunities. Several spaces have been identified for redevelopment. These spaces can provide new gathering spaces, new community places, and moments to meet. Some of these spaces are locations of existing parking that are proposed to be removed or reduced from the campus core. Those spaces have been identified for redevelopment are as follows:

1. The space surrounding the Elephant Walk from between Roosevelt Hall/Hutchinson Residence Hall to between the Memorial Union/Butterfield Residence Hall: This is a significant transition space between the academic zone and the residential zone. It also falls on the most significant east-west cross-campus pedestrian route.
2. The White Horn Creek corridor from Carothers Library to Butterfield Road: This is a valuable opportunity to daylight the creek and create a unique campus experience with the natural systems and residential life.
3. The parking north of East Alumni Avenue, on the east and west side of Phi Gamma Delta Fraternity House, as well as the building site should the building be removed.
4. Chafee/Rodman Green: This space provides an interesting opportunity in the North Campus District. The plaza on the south side of Chafee Hall can be redeveloped to provide universal access to the main entry of the building and to provide a modern space to keep up with the rest of the developing District. In addition, the existing green has significant specimen trees and is located adjacent to a major pedestrian node on campus. Having the Landscape Architecture Department in Rodman Hall also provides some unique opportunities.
5. The parking at the intersection of East Alumni Avenue and Greenhouses Road: Both of these roads should be converted to pedestrian-oriented walkways and the parking in this area can be eliminated. This provides an opportunity to expand on the naturalistic character of Ballentine pond and the detention basins which will be installed as part of the College of Engineering project.
6. College of Engineering quadrangle will be updated with the development of the College of Engineering project. The much reduced greenspace will no longer function as a traditional quadrangle.
7. Fine Arts Center: With the redevelopment of the Fine Arts Center, a number of opportunities are created for better functioning spaces.
  - The creation of a green space near the intersection of Bills Road and Upper College Road which redefines the areas and relates to the Quadrangle.
  - A universally accessible entrance on the west side which relates to the redeveloped parking.
  - Redevelopment of the western façade and the Fine Arts Center's complex relationship to the rest of the North Camps District across Upper College Road.
8. The parking lot east of East and Washburn Halls: This is one lot proposed for removal due to its visual impact on the Upper College Road corridor. Given its visibility along Upper College Road and the proposed development of the hotel and conference center across Upper College Road, this will become a valuable space on the exterior of the Quadrangle and the transition from campus to hotel and conference center.

9. The parking west of the Green Hall walkway and the parking and open space surrounding Fogarty and Pastore Halls: The landscape surrounding these building feels leftover and forgotten. There is no 'place', only walkways and interstitial landscape.
10. Landscape between Weldin, Adams, Browning, and Eddy Residence Halls: Provide opportunities for gathering, recreation, relaxing, etc.
11. Landscape between and surrounding the Villages (Gorham, Ellery, Dorr, Hopkins, Aldrich, Burnside, Coddington Residence Halls, etc.): Provide opportunities for gathering, recreation, relaxing, etc.
12. Landscape between Heathman, Wiley and Garrahy Residence Halls: Provide opportunities for gathering, recreation, relaxing, etc.
13. Meade Stadium along West Alumni Avenue: The stadium should be a positive and attractive statement for the University. The stadium is a prime opportunity to infuse some campus branding and Rhody pride.
14. Landscape east of the Athletic Complex: This space is currently a dead zone of high maintenance turf areas and underutilized roads. The space should be redeveloped to create a new programmable space that helps knit the Athletics District, the Wetlands District and the ResLife District together. The siting of the proposed natatorium will be important so as to establish usable open space that serves the University community, especially the resident students.





Legend

-  White Horn Brook Corridor
-  Existing Green Space
-  Potential Open Spaces
-  Major Parking Lot



Open Space Improvements



# 3.7 OPEN SPACE RECOMMENDATIONS



Open Spaces across Campus - Existing



Open Spaces across Campus - Proposed

## 3.8 CAMPUS BRANDING RECOMMENDATIONS

### Campus Branding Recommendations: Gateways & Icons

There are a number of locations where campus branding can be infused into the landscape. Branding could include URI-themed public art such as Rhody the Ram, site lighting to highlight the icons of campus, and/or locating University logos at key nodes. In addition, the campus gateways need significant enhancements to herald ones arrival at the University of Rhode Island. These branding recommendations include:

1. Enhancing the following campus gateways:
  - Upper College Road/Route 138
  - Upper College Road/Flagg Road
  - Flagg Road/Plains Road
  - Flagg Road/Old North Road
  - Plains Road/West Alumni Avenue
  - Plains Road/Route 138
  - Keaney Road/Route 138

These campus gateways should make it abundantly clear that you are approaching the University of Rhode Island. Visually attractive, legible, and significant signage should help to mark these locations, along with URI branding.
2. Consider simple, graphic branding along the major roadways which lead onto campus, including:
  - Upper College Road
  - Flagg Road
  - Plains Road
  - Keaney Road
3. Re-branding of pedestrian corridors to include Rhody pride
  - Elephant Walk from Upper College Road to athletics
  - Hammerschlag Mall from Carothers Library to the Memorial Union

4. Consider key campus nodes for branding elements
  - Intersection of the Elephant Walk and Hammerschlag Mall
  - Southwest corner of the Quadrangle with “Old Ben Butler”, the cannon
  - Gathering space of the proposed Welcome Center at Upper College Road
  - Arrival plaza at the Athletics Complex from the Hillside Residential District
5. Consider secondary campus gateways for branding elements
  - Intersection of Lower College Road and Campus Avenue
  - Intersection of Upper College Road and Briar Lane
  - Intersection of Upper College Road and Fortin Road
  - Intersection of Upper College Road and Bills Road
6. All signage and logos should be consistent with the URI Brand Visual Standards Guide.



Legend



Thresholds, Landforms, and Intersections



URI Branding Needed



Proposed Complete Street

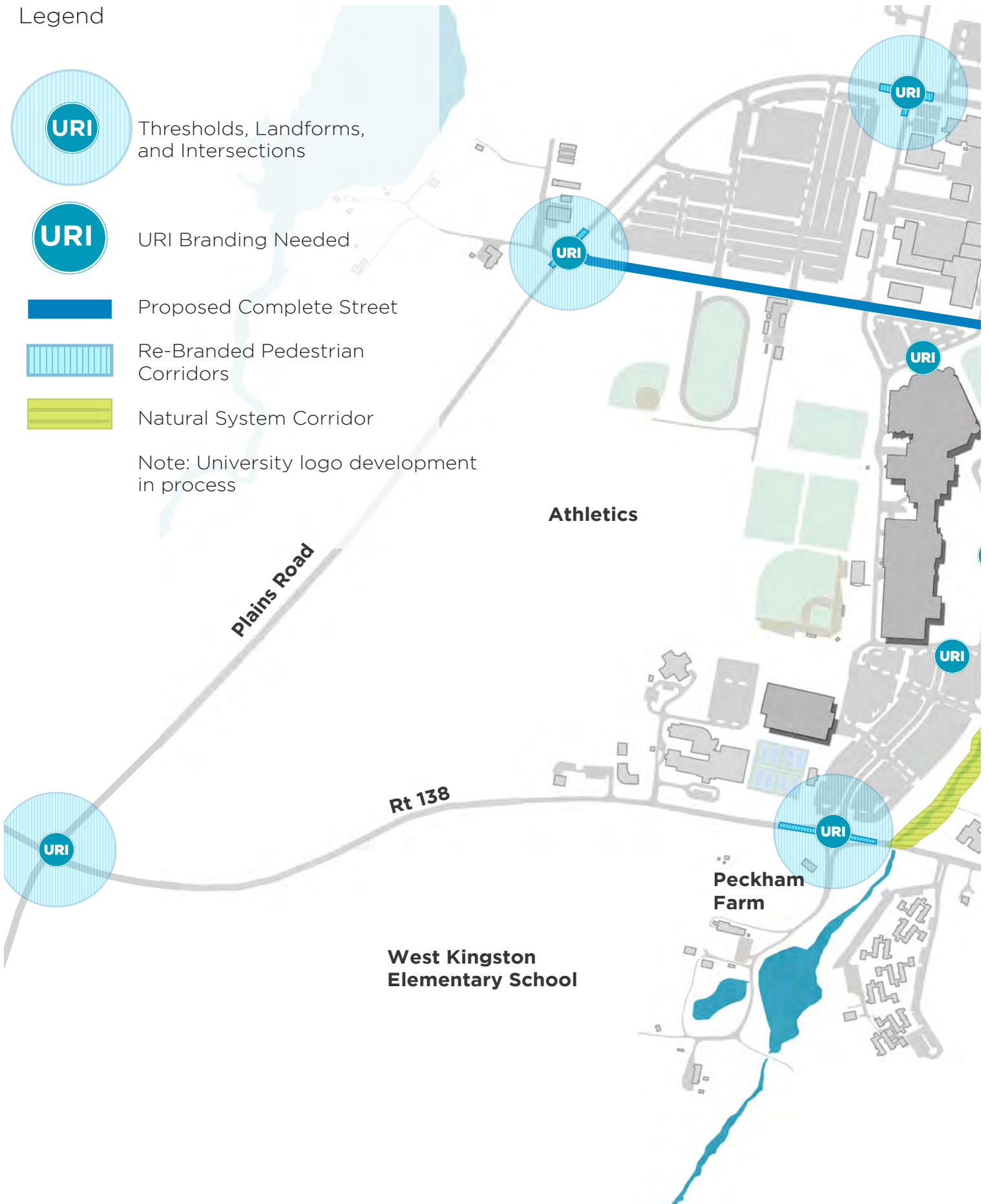


Re-Branded Pedestrian Corridors



Natural System Corridor

Note: University logo development in process





Campus Branding & Gateway Improvements



## 3.9 STORMWATER & NATURAL SYSTEMS

### Stormwater Management, Greenways & Natural Systems Recommendations

White Horn Brook and Creek are major components of the campus stormwater management and wetland system. These spaces should be restored for their ecological and educational value. Waterways should be daylighted to the extent possible to improve the health and functionality of the entire system.

#### Stormwater Management

1. Consider bio-swales for smaller tributaries to filter stormwater leading into White Horn Brook from parking areas
2. Consider a series of north-south running stormwater management systems that integrate into axial connections and provide gathering areas while slowing the flow of stormwater into White Horn Brook
3. Invest in current daylighted portions of White Horn Creek—specifically Ballentine Pond located at the northeast corner of the library. Key natural water features should be emphasized and integrated into campus life to help balance the man-made stormwater systems
4. Existing culverts should be routinely cleaned of debris in efforts to prevent localized erosion damage
5. Undertake routine maintenance at outfalls of drain pipes along White Horn Brook to relieve sediment build up and overgrowth of exotic species should be explored
6. Providing parking lot filter strips and buffer strips will help to reduce stormwater velocity and sedimentation throughout the man-made stormwater drainage system
7. Explore restoration measures along the course of White Horn Brook such as sedimentation forebays to isolate areas for maintenance and energy dissipation zones to control velocity in larger storm events.
8. More efficient/more frequent vacuuming of porous pavement areas to prolong their lifespan and treatment capabilities.

#### Greenways & Natural Systems

1. Remove exotic plants from all undeveloped areas and enhance plantings, as necessary, with native or naturalized species
2. Daylight and enhance White Horn Creek from Hope Dining Commons to Butterfield Road and through the Village residential area
3. Enhance Ballentine pond and the College of Engineering detention basins with a naturalistic aesthetic similar to what currently exists
4. Protect the woodland areas on campus as habitat and learning laboratories but maintain them to ensure safety
  - East of White Horn Brook and west of Eddy Residence Hall
  - Northwest of the Memorial Union
  - East of Hillside Residence Hall
  - East of Butterfield Road, south of White Hall
5. Protect the forested wetland north of the Fine Arts Center
6. Rehabilitate White Horn Brook and its associated wetland landscapes and floodplain
  - Remove sedimentation of open ponding areas to improve diversity of wetland types (as well as flora and fauna species) and improve flood storage capacity
  - Replace undersized culverts and/or replace with open box culverts
  - Enhance wetlands plantings with emergent species, as appropriate
  - Re-grade bank slopes, repair existing bank erosion, and implement bio-engineering solutions to prevent future erosion
  - Reconstruct floodplain benches
  - Restore channels or naturalize with step pools, where necessary
  - Plant banks with shrubs to improve habitat and reduce mowing requirements



# RECOMMENDATIONS

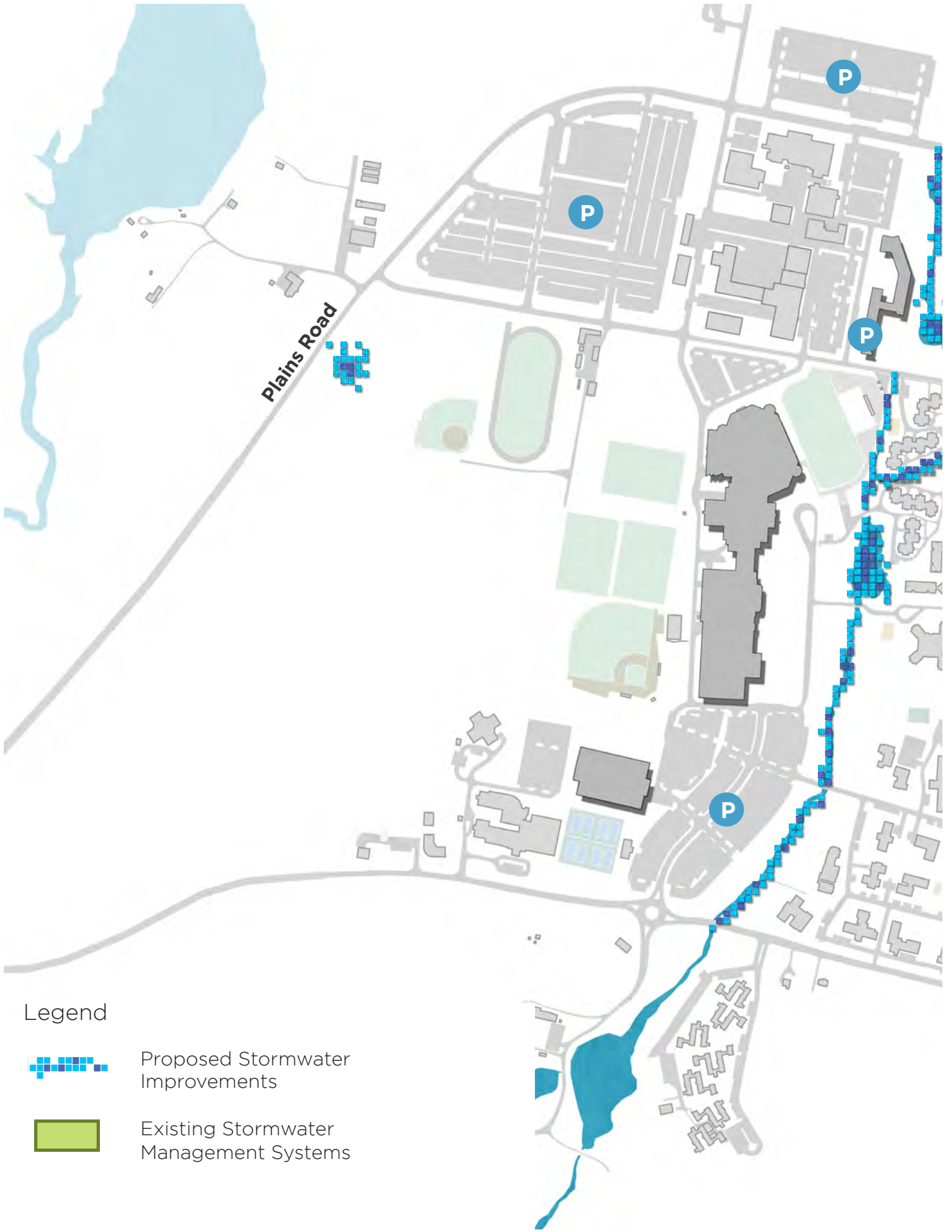


Stormwater & Natural Systems - Existing



Stormwater & Natural Systems - Proposed





Legend



Proposed Stormwater Improvements

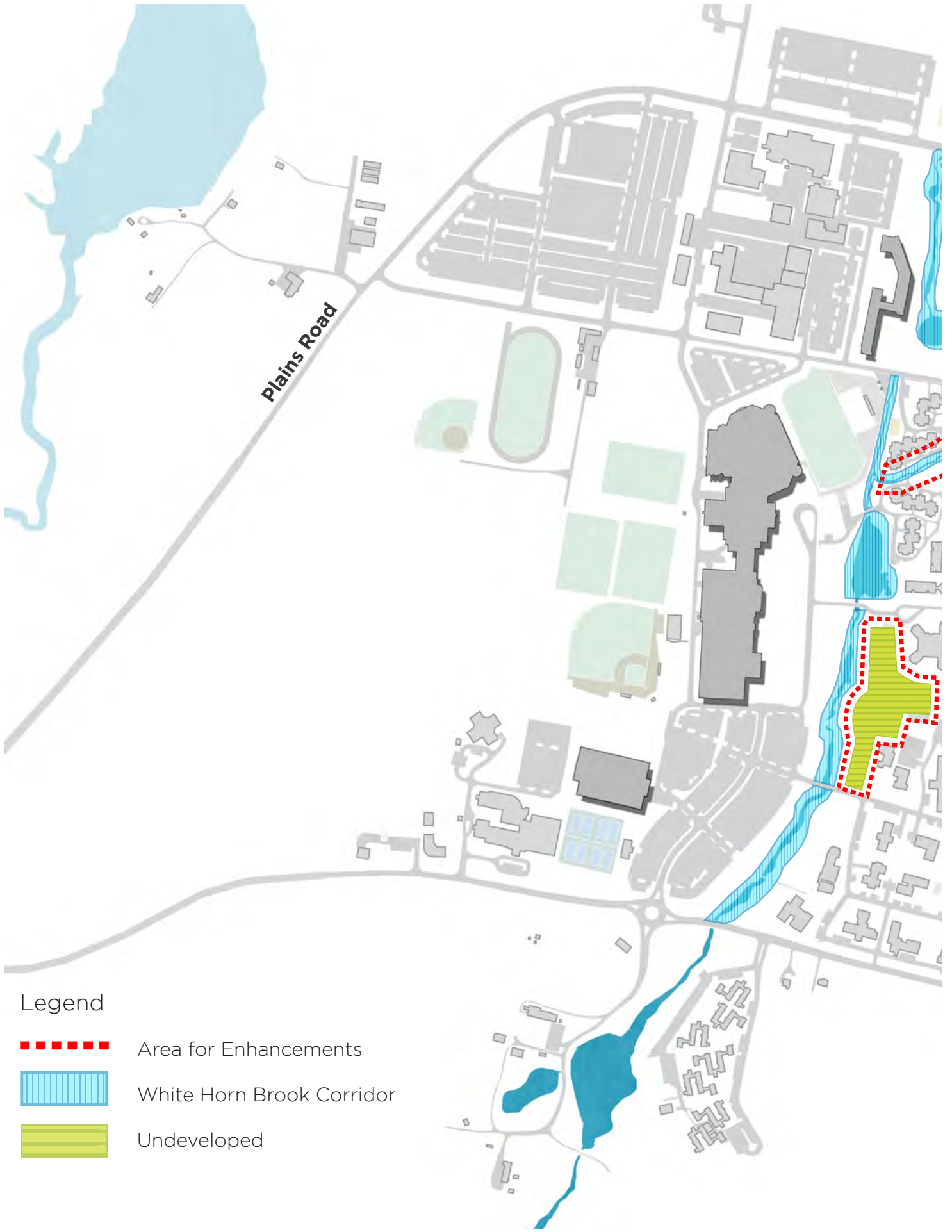


Existing Stormwater Management Systems



Stormwater Management Improvements

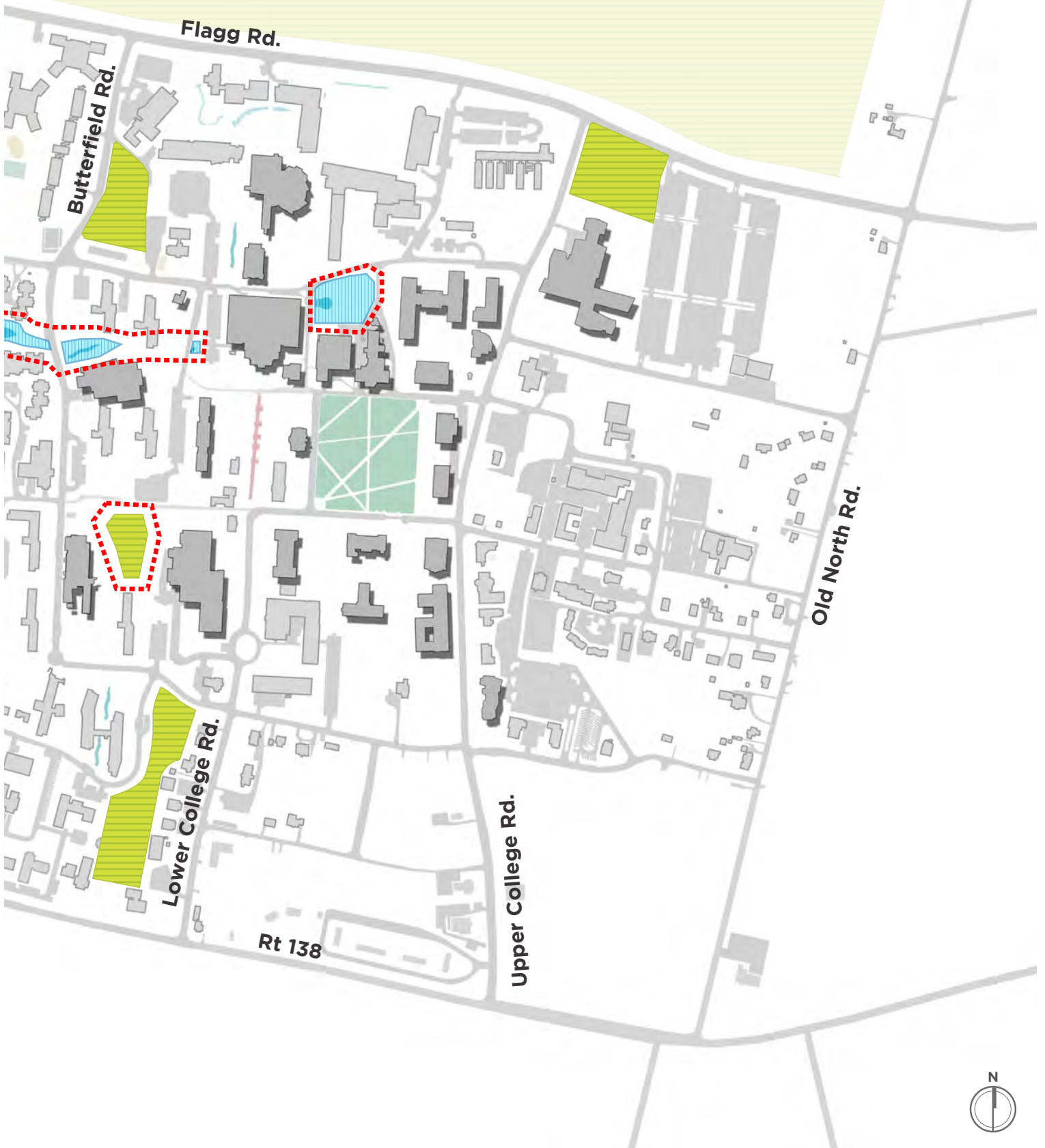




Legend

- ■ ■ ■ ■ Area for Enhancements
- ▨ White Horn Brook Corridor
- ▨ Undeveloped

North Woods





## 3.10 PERIPHERY CAMPUS LANDSCAPES

### Skogley Memorial Turfgrass Research Facility/Agronomy Farm Recommendations

- A. Coordinate Agronomy program needs with proposed Inter-modal Transit Center.
- B. Preserve and protect the agrarian landscape character along Plains Road.
- C. Improve pedestrian connections and alternative transportation to campus core.



Agronomy farm currently lacks pedestrian walks.

### Peckham Farm Recommendations

- A. Utilize compost and manure resources for campus heating.
- B. Prioritize URI Wind Farm and Energy Research Center.
- C. Connect to William C. O'Neill Bike Path extension.
- D. Consider trail network through farm campus to increase awareness of research and education work for students and broader community.
- E. Study wetlands resources and prepare wetlands restoration plan.
- F. Upgrade road infrastructure including drainage.
- G. Study management of animal waste and stormwater.
- H. Maintain viewsheds from Route 138 into farm, manage vegetation along road, and improve identity signage so public knows this is a URI property.
- I. Improve pedestrian access and alternative transportation from the campus core for students and visitors.



Animal waste impact on water systems should be studied.

# RECOMMENDATIONS

## East Farm Recommendations

- A. Consider trail network through farm campus to increase awareness of research and education work for students and broader community.
- B. Study wetlands resources and prepare wetlands restoration plan.
- C. Study creation of a sidewalk connecting East Farm to campus.
- D. Study adding bike lanes or “sharrows” if appropriate leading to East Farm.
- E. Plan for repaving of road and parking pavement in five to ten year period.
- F. Improve road front with vegetation management and stone wall repair for a better public image.
- G. Replace signage to meet campus standards.
- H. Plant more tree collections in available open spaces.
- I. Consider alternative transportation options from campus core.



East Farm entrance should be enhanced and have a pedestrian connection to the campus.

## University Graduate Village Apartments Recommendations

- A. Complete a study of handicap access to the buildings and site.
- B. Study stormwater and drainage patterns to provide treatment of parking lot and dumpster pad water prior to entering White Horn Brook.
- C. Manage vegetation: i.e. grove of trees between Route 138 and parking.
- D. Rebuild unstable boulder retaining walls.
- E. Add trees to interior courtyards.
- F. Reconsider landscape to reduce maintenance needs, i.e. mowing practices and snow removal.
- G. Provide visual connection and safe pedestrian access to the campus core. Consider alternative transportation options.



A stronger connection to the main campus should be made.



## 3.10 PERIPHERY CAMPUS LANDSCAPES

### North Woods Recommendations

- A. Formalize trail network to provide access to key learning ecosystems, as well as enhanced recreation opportunity.
- B. Preserve woodlands and ecosystem for expanded use for educational purposes (i.e. an outdoor classroom and laboratory).
- C. Promote North Woods as a recreational asset for campus.
- D. Improve trails, but do not overdevelop the landscape.
- E. Manage exotic vegetation.
- F. Study extension of north-south bicycle path through or to the edge of North Woods.
- G. Add trailheads and wayfinding with trail maps and rules.



Educational and recreational opportunities in the North Woods

### Route 138 Corridor Recommendations

- A. Improve gateways to embrace University branding, especially at Upper College Road and Plains Road.
- B. Provide safe crossing of Route 138 from both Peckham Farm and the University Graduate Village Apartments.
- C. Work with Town of South Kingstown and RIDOT to add sidewalks wherever missing along Route 138 corridor, especially along the north side of the road. Add/improve site lighting and prune trees where canopy shields light from sidewalk. Ensure sidewalks are accessible and meet code requirements and are free from tripping hazards.
- D. Work with Town of South Kingstown and RIDOT to study opportunities for bike lanes along Route 138 as many commuters may find the William C. O'Neill Bike Path extension out of the way if they are coming from Route 1 (North Kingstown) or Narragansett.



Upper College Road gateway at Route 138

# 3.1 1 MISCELLANEOUS RECOMMENDATIONS

## Campus Planning & Design Staff

### University Landscape Architect

The University Landscape Architect position should act as a liaison between Campus Planning & Design and several of the University's boards and staff. The Campus Planning & Design's University Landscape Architect should be a full-time position. Based on the various groups and information that was provided and discussed during this report, the University Landscape Architect should be responsible for the following tasks:

- Liaison between Campus Planning & Design (CPD) and Landscape & Grounds
- Design review of landscape components of all campus design projects
- Construction oversight for the landscape components of project installation
- Serve on the Tree Management Advisory Committee
- Serve on the Accessibility Commission
- Enforcing campus standards for new design projects
- Coordinate with the Sustainability Coordinator
- Coordinate with Housing & Residential Life

## Additional Studies

1. The University is preparing to begin an update to the Campus Master Plan. It is recommended that as part of this project, a Wayfinding Signage Master Plan also be prepared. The numerous projects that will be developed in the coming years, as well as the recommendations of the Transportation and Parking Master Plan and this Landscape Master Plan will have significant impacts to the transportation, circulation, and access to and around campus. Wayfinding signage should be an integral component of most, if not all, future development projects.
2. Design consultants will look for a simple and clear logo, which is graphic in nature, and can be used for campus branding. Pertinent to the Landscape Master Plan, this simple graphic could be used to help define campus gateways, used on signs, roadways, and site furnishings, etc. to reinforce the notion of the University of Rhode Island district within Kingston Village.
3. An Athletic District Master Plan should be developed to understand campus needs for team and intramural recreation fields and facilities. This should also include a study of the facilities and storage necessitated by the Landscape and Grounds crew that maintains the athletic fields. Development pressures will likely increase on the lands available within the district.
4. A Pond Management Plan should be prepared for Ellery Pond. The management plan should consider dredging of sediment, control of algae and invasive species, as well as emergent and aquatic vegetation improvements. Scenic and recreational opportunities should also be considered as part of the study.









# 4 LANDSCAPE MASTER PLAN

- 4.1 LANDSCAPE MASTER PLAN (GRAPHIC PLAN)
- 4.2 LANDSCAPE MASTER PLAN, DISTRICT-BY-DISTRICT
- 4.3 HISTORIC CAMPUS CORE DISTRICT PLAN
- 4.4 MALL DISTRICT PLAN
- 4.5 RESIDENTIAL LIFE DISTRICT PLAN
- 4.6 NORTH CAMPUS DISTRICT PLAN
- 4.7 SERVICE DISTRICT PLAN
- 4.8 WETLANDS DISTRICT PLAN
- 4.9 ATHLETICS DISTRICT PLAN
- 4.10 LANDSCAPE MASTER PLAN PRIORITY PROJECTS
- 4.11 PRIORITY PROJECTS COST ESTIMATES

The Landscape Master Plan incorporates all the recommendations discussed previously in the report. The final Landscape Master Plan covers the campus core and is followed by enlargements of each district.

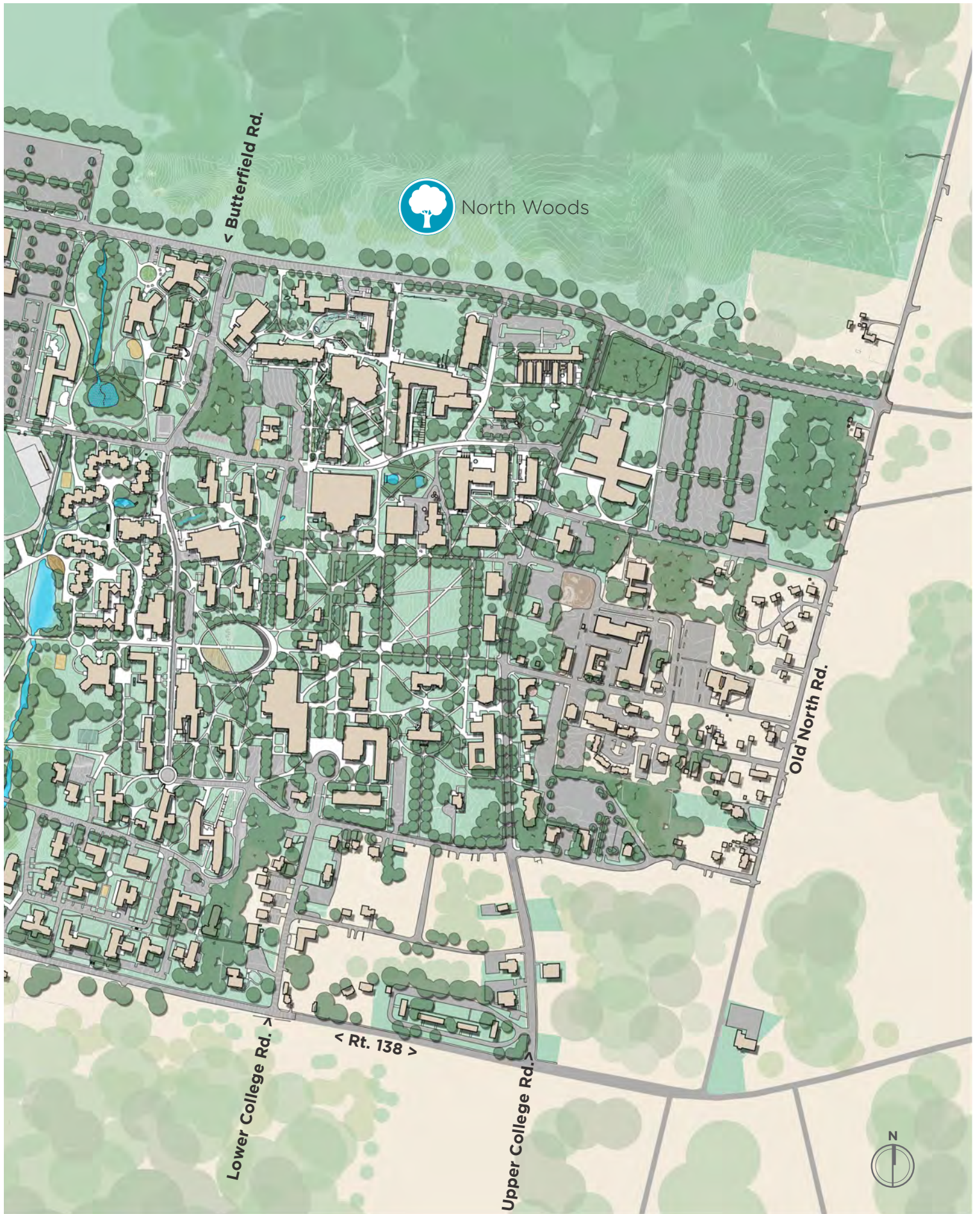
Next, four priority projects were identified by the Campus Planning & Design office for more in-depth study. These projects are highlighted with conceptual diagrams and notes intended to guide the next phase of design.

Finally, this section of the report includes cost estimate summaries for each of the four priority projects. The itemized cost estimates have been included at Appendix F.











## 4.2 LANDSCAPE MASTER PLAN, DISTRICT-BY-DISTRICT

### District Updates

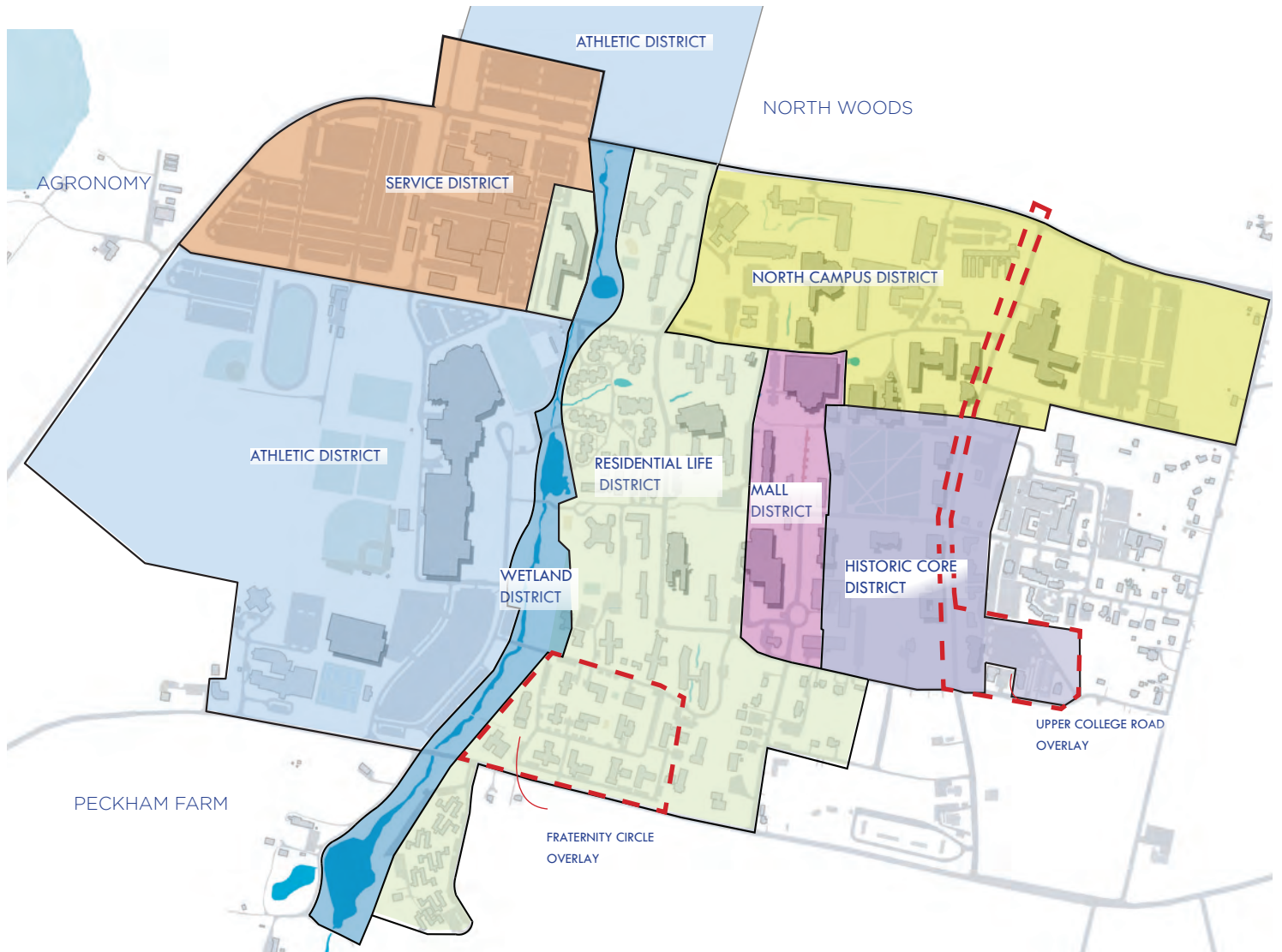
A few significant alterations have been made in the delineation of these districts. The College of Engineering and its quadrangle has been removed from the Historic Campus Core District and placed in the North Campus District. This change has been made given the design improvements that underway for the College's buildings. The project removes Kelley, Gilbreth, and Crawford Halls for a new structure which will occupy the north and west sides of the Engineering green. The Historic Campus Core District will now include the front façades (facing the Olmsted quadrangle) of Ballentine, Bliss, and Lippitt Halls, while the College of Engineering's new central green space, Kirk Hall, and the new building are included within the North Campus District.

The Service, Athletics, and Residential Life districts have been altered to reflect the proposed Brookside Apartments located between White Horn Brook and the Service district. The zone where the Brookside Apartments will be constructed has been removed from the Service/Athletics Districts so that the Residential Life District spans the Wetlands District in this area only.

Two overlay districts have been added: the Upper College Road Overlay District and the Fraternity Circle Overlay District. The Upper College Road Overlay District includes the road, as it extends through the campus, as well as the proposed Welcome Center and its associated parking lot. The Welcome Center has been included in the Historic Campus Core District, as a matter of adjacency and based on its role in the University. The Welcome Center and most of the newer University buildings along Upper College Road have a different aesthetic than the rest of the Historic Campus Core District. Similarly, the Fraternity Circle Overlay District has been established within the Residential Life District. Fraternity Circle is where the vast

majority of the fraternity and sorority houses are located on campus. Separate planning documents have been previously created for each of these overlay districts.

It is important to note that the limits of the districts are fluid and should not be perceived as hard edges in the landscape. As the University campus continues to develop, the districts may also evolve. However, the districts—as defined herein—and their associated recommendations should be used as guidelines for development and will help to unify the campus.



Overlay Districts 

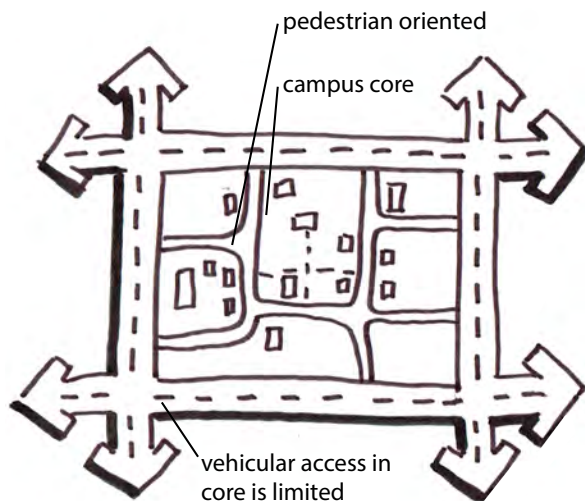
Updated District Map for the Campus Core



## 4.3 HISTORIC CAMPUS CORE DISTRICT PLAN

### Historic Campus Core District Improvement Projects

- A. The historic Quadrangle is a priority project. This space should be protected as one of the most important landscapes in the University. Maintain existing zelkovas lining Quadrangle for as long as possible; remove hazard trees as necessary. In long term: study tree species diversity to mitigate wholesale loss from pests or disease and study the historic Olmsted, Olmsted and Eliot plans to determine planting locations. (Section 5 of this report defines long-range and replacement recommendations.) See the priority project discussion for additional recommendations.
- B. Roadways and vehicular access should be limited to essential points of access within the campus core. Consider converting two-way roads to one-way with emergency/service vehicle access only, reducing roadbed width, and changing materials and details to pedestrian-oriented walkways.

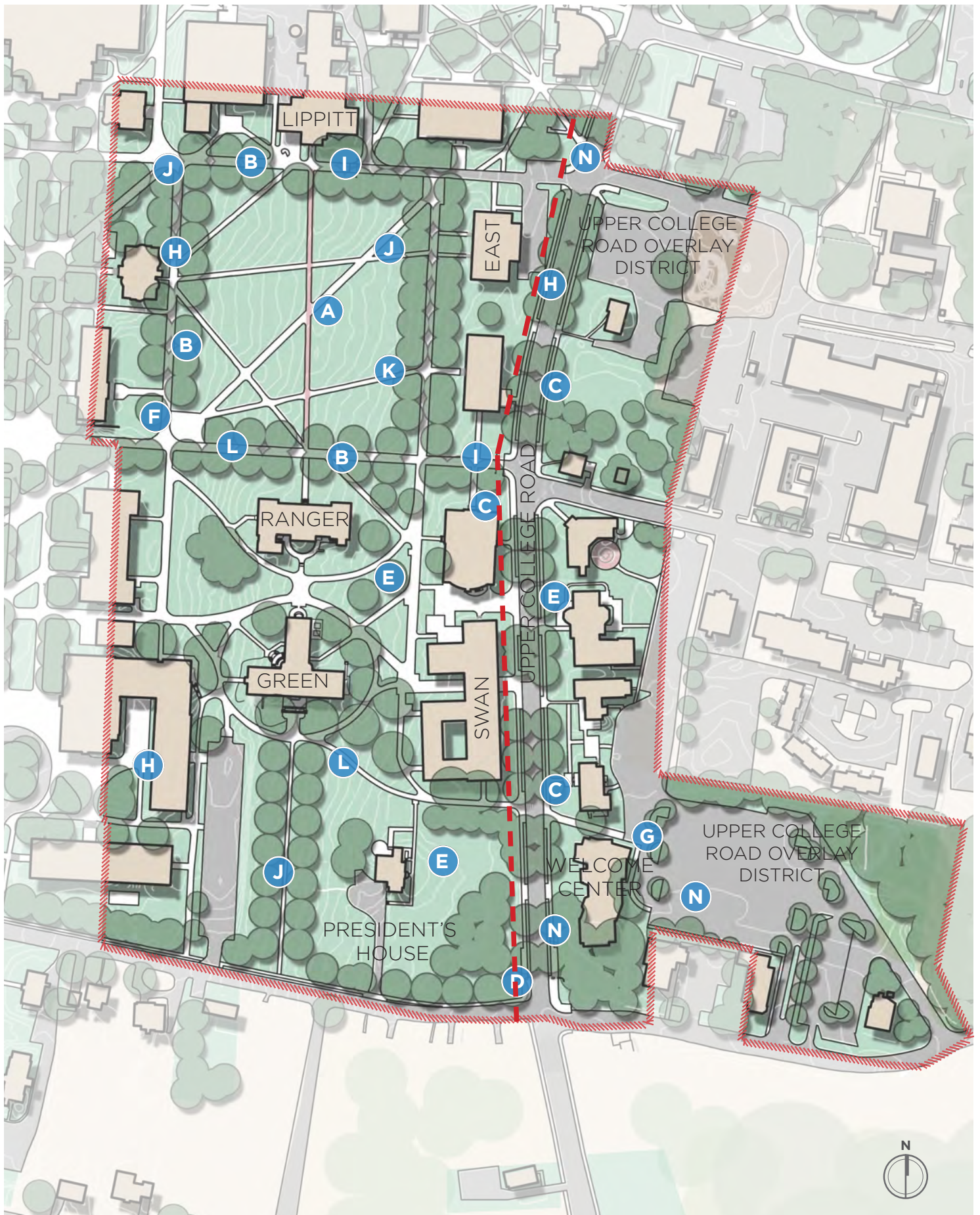


- Reduce the following roads to pedestrian-oriented walkways with access for emergency & service vehicles:
  - Ranger Road

- Lower College Road from Ranger Road to Lippitt Road
  - For Lippitt Road: From Greenhouse Road extension to Upper College Road convert to one-way heading east; from Greenhouse Road extension to Lower College Road reduce the road to a pedestrian-oriented walkways with access for emergency and service vehicles.
- C. Upper College Road is the most significant roadway on campus, especially for first time visitors. The University's presence should be carried along the entire length, requiring improvements between Fortin Road and Chapel Way.
- The complete streets concept should be integrated into Upper College Road, including accessible and pedestrian-oriented walks as well as accommodations for alternative forms of transportation (i.e. bike lanes).
- D. The President's House is one of the first representational landscapes and structures that is encountered when coming into campus. Select views should be opened up to suit this role and accent the public nature of the grounds while being careful to preserve the residential quality and privacy.
- E. Maintain arboretum-level planting collection throughout district.
- F. The structure or landscape of Carlotti Hall should be redesigned to reinforce the vertical edge of the Quadrangle, similar to all other structures lining the Quad.
- G. The proposed Welcome Center should be highlighted as the initial destination for first-time visitors. Its location should be clearly marked, and the point of vehicular access designated with artistic lighting, public art, and/or other elements to acknowledge the entry.

- Wayfinding signage should be incorporated into the landscape to help orient and direct visitors within the campus.
- H. Reduce parking within the campus core. Small parking lots should be limited to provide only what is required for accessibility requirements, for service vehicles, and for limited faculty parking. Consider eliminating or reducing the following lots:
- Redevelop parking at center of Pastore Hall and replace with courtyard.
  - Reduce the existing lot between East and Washburn Halls and Upper College Road.
  - Small lot on Lippitt Road near the intersection of Upper College Road
  - The Davis Hall lot should be reduced and relocated to function better with the proposed changes in the campus roads.
- I. Introduce a pedestrian access and vehicular control gate near terminus of Ranger and Lippitt Roads near Upper College Road, as well as other locations where a fifteen-foot wide walk terminates at a road. (See Section 6 of this report for the proposed detail.)
- J. Update all walkways to meet new campus standards for widths, materials and accessibility. Maintain the Centennial Walk with current materials.
- K. Balance the need for safe and comfortable nighttime environments with areas for students, faculty, and staff to experience the night sky and stars. Consider the use of automatic dimmers that respond to pedestrian activity and provide energy saving measures on the edges of spaces that can provide these opportunities, i.e. the Quadrangle.
- L. Public art should be celebrated throughout this district. Consider adding branding elements and artistic lighting to the landscape. However, the historic and formal nature of much of the district should not be adversely impacted, nor should the two significant landscapes in this district (the Quadrangle and the President's House landscape) be adversely impacted.
- M. Maintain aesthetic continuity with additions of benches, lighting and other site amenities. (See Section 6: Campus Design Guidelines & Standard Details of this report.) Replace non-compliant site amenities as necessary.
- N. See the 2015 Design Guidelines for a New Campus Commons which makes additional recommendations for Upper College Road corridor.





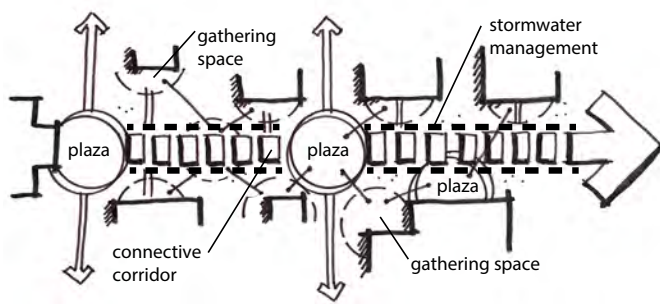
LMP Historic Campus Core District Plan



## 4.4 MALL DISTRICT PLAN

### Mall District Improvement Projects

- A. Extend pedestrian-oriented mall from Ranger Road/Multicultural Center to the length of the Memorial Union. Unify ground plane materials and enhance site amenities. Create plaza spaces for events and activities in front of Memorial Union and small gathering and seating areas along length of Mall.



- B. The Dieter Hammerschlag Mall—from Carothers Library to the Memorial Union—is a priority project; to be executed in three phases. See the priority project discussion for more detail on phases 1 and 2. Phases 3 is intended to be the full implementation shown in the Landscape Master Plan and in this district plan enlargement.

Redefine Hammerschlag Mall to create an enhanced memorial walk that honors Professor Hammerschlag's legacy at URI that while creating a universally accessible walkway, creates small gathering spaces and enhances the quality of plantings. Incorporate site lighting and consider artistic lighting within the Mall to reflect the legacy of Professor Hammerschlag.

- Redevelop Mall with green infrastructure (stormwater management), accessible materials, and supporting small gathering spaces. Consider relationship of Mall to surrounding structures, i.e. Roosevelt Hall.

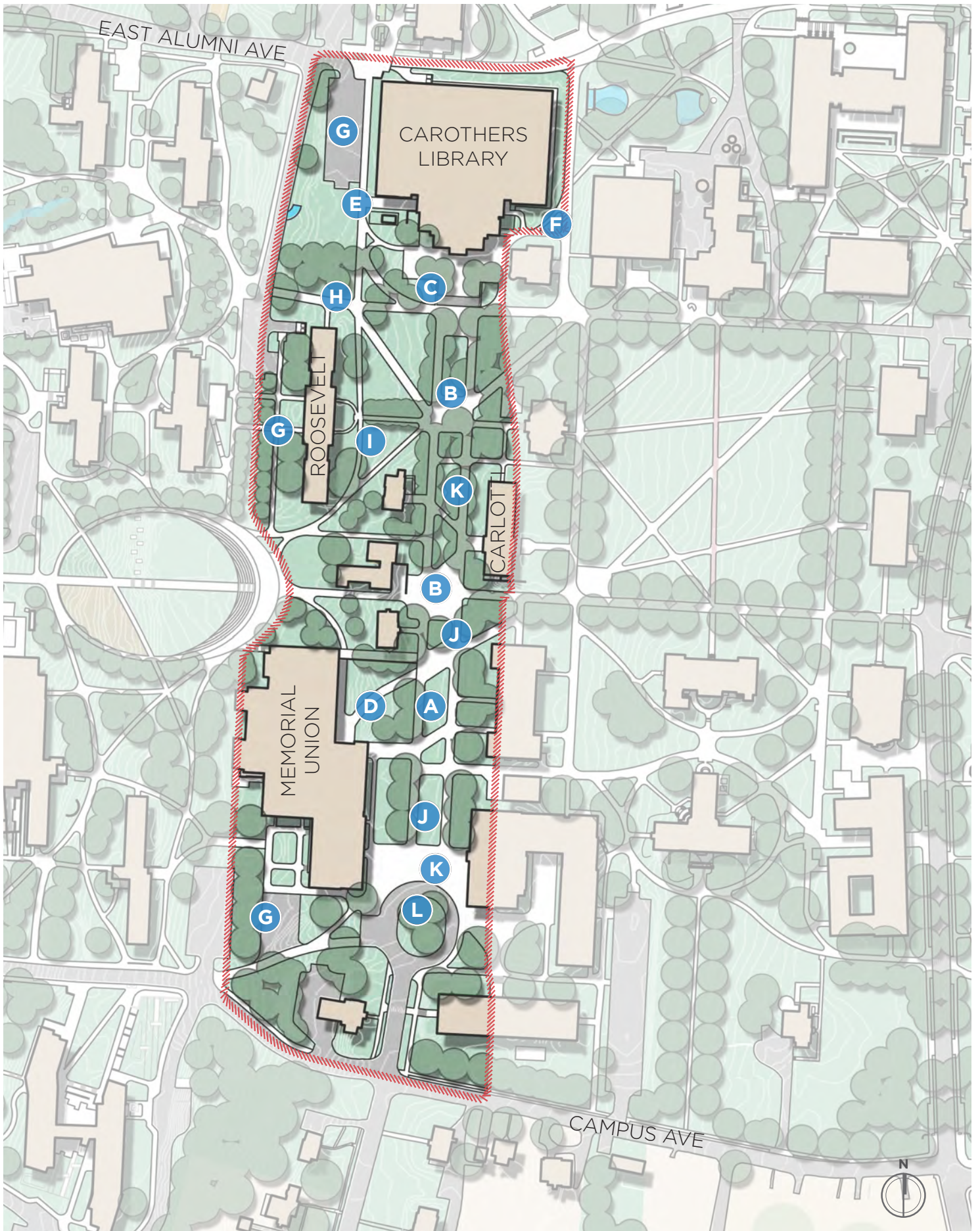
- Strengthen east-to-west connections across Mall. Eliminate redundancies, when they exist, and adapt connections to meet the new campus design standards.
- Redefine node of Hammerschlag Mall and Elephant Walk with significant University branding and an enhanced gathering space.
- If RIPTA shuttles are relocated away from the Memorial Union, reduce or eliminate the shuttle turnaround at the terminus of Hammerschlag Mall/Lower College Road.

- C. Redevelop Galanti Plaza to be inclusive (universally accessible), to open into adjacent landscapes, and to be an appropriate northern terminus to the updated Hammerschlag Mall.
- D. Redevelop space on east side of Memorial Union to provide universal accessibility and create new plaza space.
- E. Extend walkway on west side of Carothers Library—from Chemistry—and redevelop walkway on the east side to be pedestrian-oriented and connecting at Galanti Plaza. Shift library parking as necessary to extend the walkway axis.
- F. Improve walkway on the east side of Carothers Library to meet new walkway standards. Eliminate monumental concrete bollards and introduce pedestrian access and vehicular control gate.
- G. Reduce parking within the campus core. Consider eliminating or reducing the following lots:
- Reduce parking adjacent to Carothers Library
  - Maintain loading and short-term parking on the west side of the Memorial Union, but eliminate additional parking.



## 4.4 MALL DISTRICT PLAN

- H. Improve circulation patterns (pedestrian and vehicular) on the west and south side of Carothers Library/Galanti Plaza. Update walkways to meet new campus standards.
- I. Redevelop the expanse of turf to the east of Roosevelt Hall to treat and collect stormwater.
- J. Roadways and vehicular access should be limited to essential points of access within the campus core. Consider converting two-way roads to one-way and emergency/service vehicle access only, reducing roadbed width, and changing materials and details to pedestrian-oriented walkways.
  - Reduce the following roads to pedestrian-oriented walkways with access for emergency and service vehicles:
    - Lower College Road from Ranger Road to Campus Avenue
- K. Rhody pride and public art should be celebrated throughout this district. Consider adding URI branding elements and artistic lighting.
- L. With development of proposed Welcome Center and proposed Inter-modal Center, remove shuttle stop at the Memorial Union and eliminate roundabout. Redevelop space as a significant node in district and as the terminus of the Mall.
- M. Planting should enhance axial connections, provide shade, and define social gathering spaces. Improve/enhance plantings surrounding Carothers Library.
- N. Signage should be minimal and should adhere to campus standards. Wayfinding is especially important in this district for first-time visitors



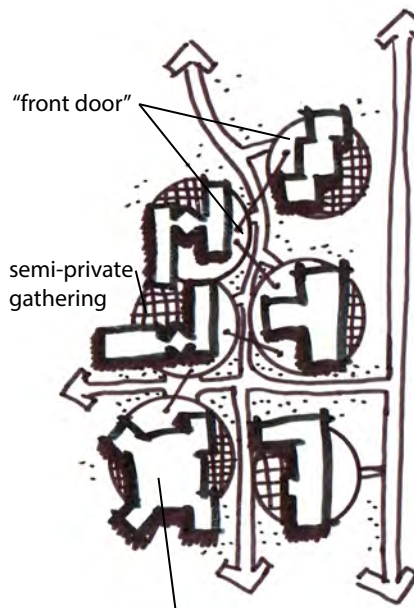
LMP Mall District Plan



## 4.5 RESIDENTIAL LIFE DISTRICT PLAN

### Residential Life District Improvement Projects

- A. Adapt all residence halls so that each has a distinct “front door” space and semi-private gathering space. For some residence halls, these may be the same space.
- B. Provide outdoor spaces by residence hall cluster to encourage interaction between halls. Incorporate elements of recreation and opportunities for fun and relaxation. Consider residence halls in clusters based on proximity:

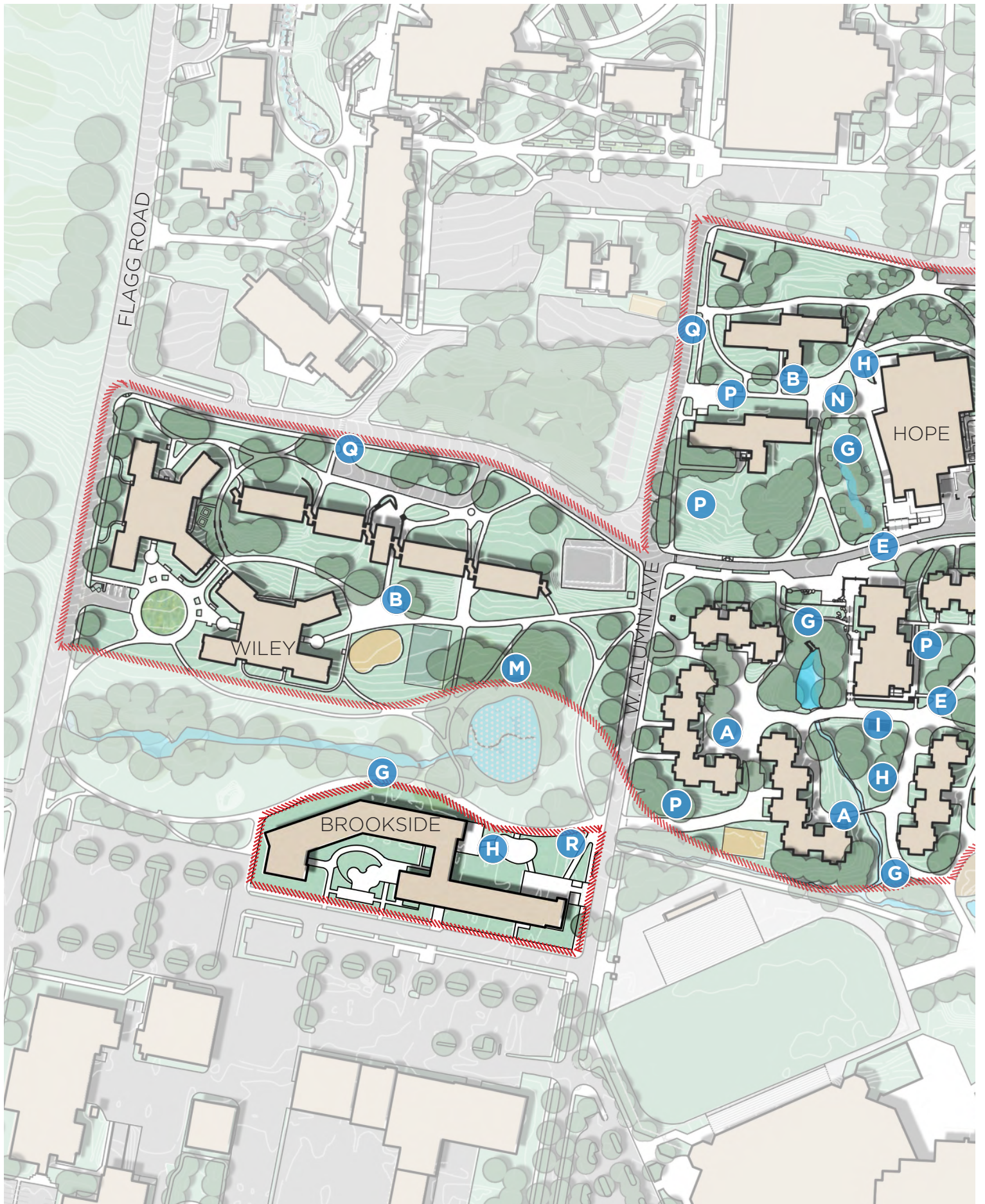


- Aldrich, Burnside, and Coddington Residence Halls
- Heathman, Garrahy, and Wiley Residence Halls
- Dorr, Ellery, Gorham, and Fayerweather Residence Halls
- Hopkins Residence Hall
- Eddy and Browning Residence Halls
- Adams, Weldin and Barlow Residence Halls
- Butterfield and Bressler Residence Halls
- Hillside Residence Hall

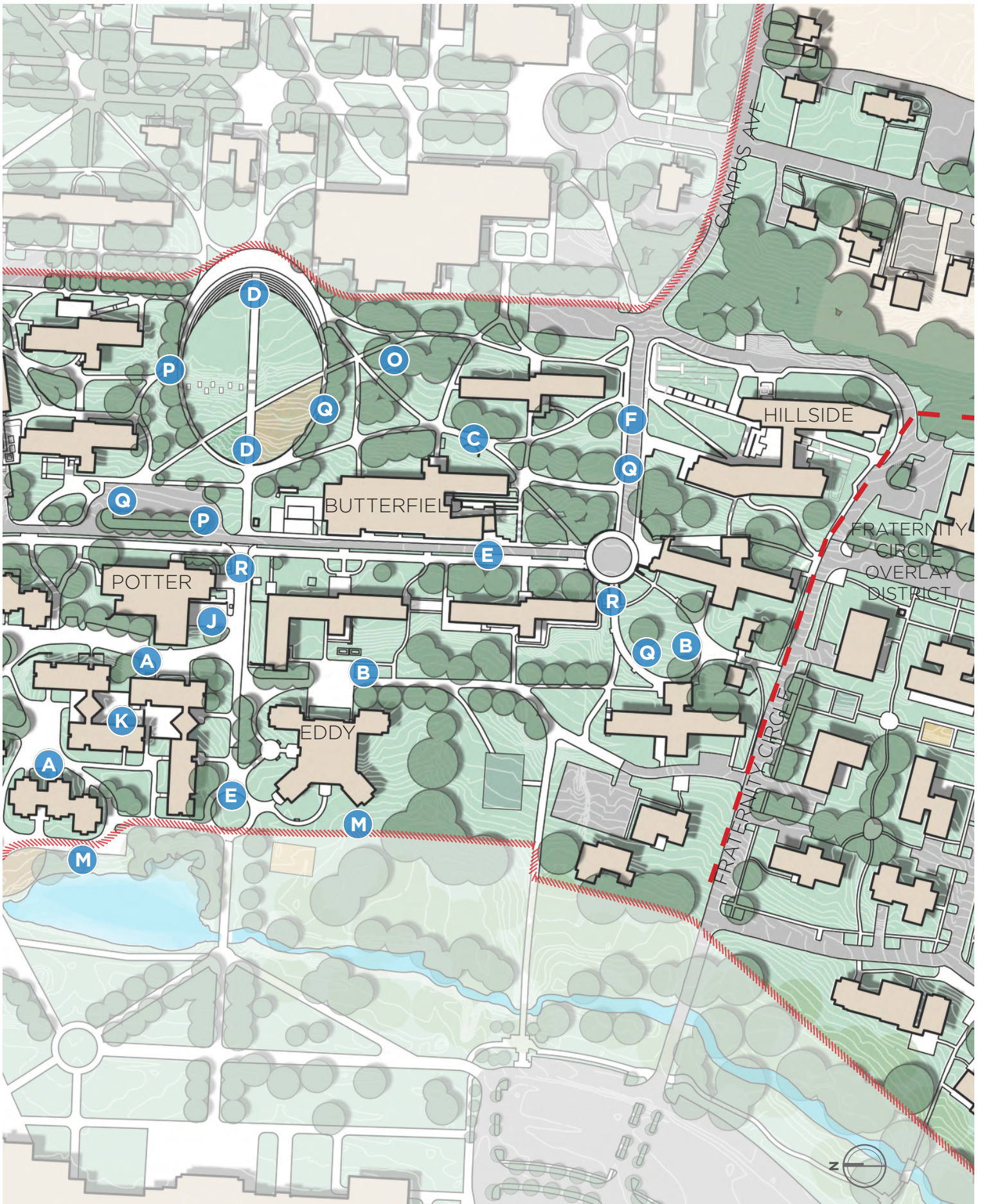
- Hutchinson and Peck Residence Halls
  - Merrow and Tucker Residence Halls
- C. Refocus non-communicative entries, such as Bressler and Browning Residence Halls entrances so that each residence hall feels part of a collective community.
  - D. The Elephant Walk, from Ranger Road to Butterfield Road, is a priority project. The walk should be redeveloped to provide a series of outdoor spaces. See the priority project discussion in this Section of the report for additional information.
    - The zone between the Memorial Union and the Elephant Walk, should be redeveloped to create an outdoor gathering space that supports the Memorial Union and creates a gateway between the ResLife District and the Mall District.
    - Reconnect the direct axial connection from the Hammerschlag Mall to Butterfield Road.
  - E. Roadways and vehicular access should be limited to essential points of access within the campus core.
    - Convert Complex Road to pedestrian-oriented walkway with emergency/service vehicle access only. Reduce roadbed width and change materials and details to reflect pedestrian ways, and eliminate guardrails, curbs, and sidewalks.
    - Consider reducing Butterfield Road from the Campus Avenue intersection to the parking at White Hall to be one-way to provide service and emergency access, as well as delivery access to Butterfield Dining Hall. With the reduced road bed, provide a parallel pedestrian-oriented walkway and bicycle access.
    - Convert Complex Road—which winds through the Village—to pedestrian-oriented walkway while maintaining service and emergency access.

- F. Convert to complete streets interventions, including removing parking from corridor, adding bike lanes, reducing roadbed width for tree and sidewalk improvement:
- Campus Avenue from Upper College Road to Butterfield Road
- G. Enhance and improve the White Horn Creek corridor:
- Replace White Horn Creek outlet adjacent to Hope Commons, and remediate channel from here to Butterfield Road
  - Create outdoor dining space and hang out spaces at Hope Commons that relates to White Horn Creek.
  - Replace bridge parapet at Complex Road and White Horn Creek
  - Enhance wetlands/woodlands planting along White Horn Creek near Fascitelli Center to reduce invasive species, increase habitat, and improve aesthetics.
  - Enhance naturalistic landscape near Fascitelli green with pond, bridge, and stream.
- H. In outdoor spaces, site amenities—especially seating—should be movable for flexibility but heavy or large enough so that they do not end up in private rooms.
- I. Redevelop the green between Coddington and Dorr Residence Halls as outdoor activity area for movie nights, concerts, etc. Redevelop the west side of Fascitelli Center to open onto the green with potential amphitheatre seating.
- J. If Potter Building is re-purposed, eliminate parking associated with it.
- K. Redevelop the Gorham/Fayerweather courtyard to open onto the pedestrian-oriented Complex Road to create a more open, inviting, and usable space.
- L. Community-Supported Agriculture/student gardening program should be considered at residence halls.
- M. Reduce turf areas on slopes and consider meadow or “no mow” seed mixes to provide habitat and to reduce maintenance requirements and maintenance-based emissions:
- West of Eddy Residence Hall
  - West of Heathman Residence Hall
  - In floodplain of White Horn Brook and its wetlands
- N. Redevelop hardscape/greenspace area between Hope Commons and Hutchinson Residence Hall where desire line has been established through evergreens.
- O. Manage woodlands northeast of Butterfield Residence Hall to reduce aggressive species. Understory plants should be minimized in order to reduce any obstructions to sight lines to ensure safety.
- P. Consider reducing or eliminating parking in the following locations:
- Spaces to the south of the Fascitelli Center, along Complex Road
  - Lot between the Elephant Walk and Hutchinson Residence Hall
  - Lot between Eddy/Browning Residence Halls
  - Lot to the east of Butterfield Road across from the Potter Building
  - Lot northwest of Mellow Residence Hall
- Q. Improve sidewalks to meet new campus standards in the following locations:
- Campus Avenue from Lower College Road to Butterfield Road
  - Butterfield Road from West Alumni Avenue to Flagg Road
  - West Alumni Avenue from Farmhouse Road to Butterfield Road
- R. Introduce pedestrian access and vehicular control gate at locations where fifteen-foot walkway meets a road.
- S. See the 2013 Fraternity Circle Master Plan which makes additional recommendations for this portion of the district.









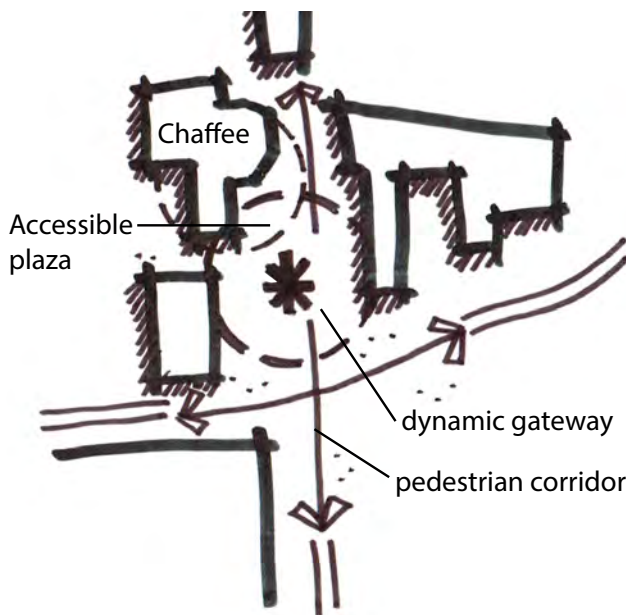
LMP Residential Life District Plan



## 4.6 NORTH CAMPUS DISTRICT PLAN

### North Campus District Improvement Projects

A. Chafee Green is a priority project. Redevelop Chafee Green to create dynamic gathering space that functions as the gateway into the arts and sciences portion of the campus.

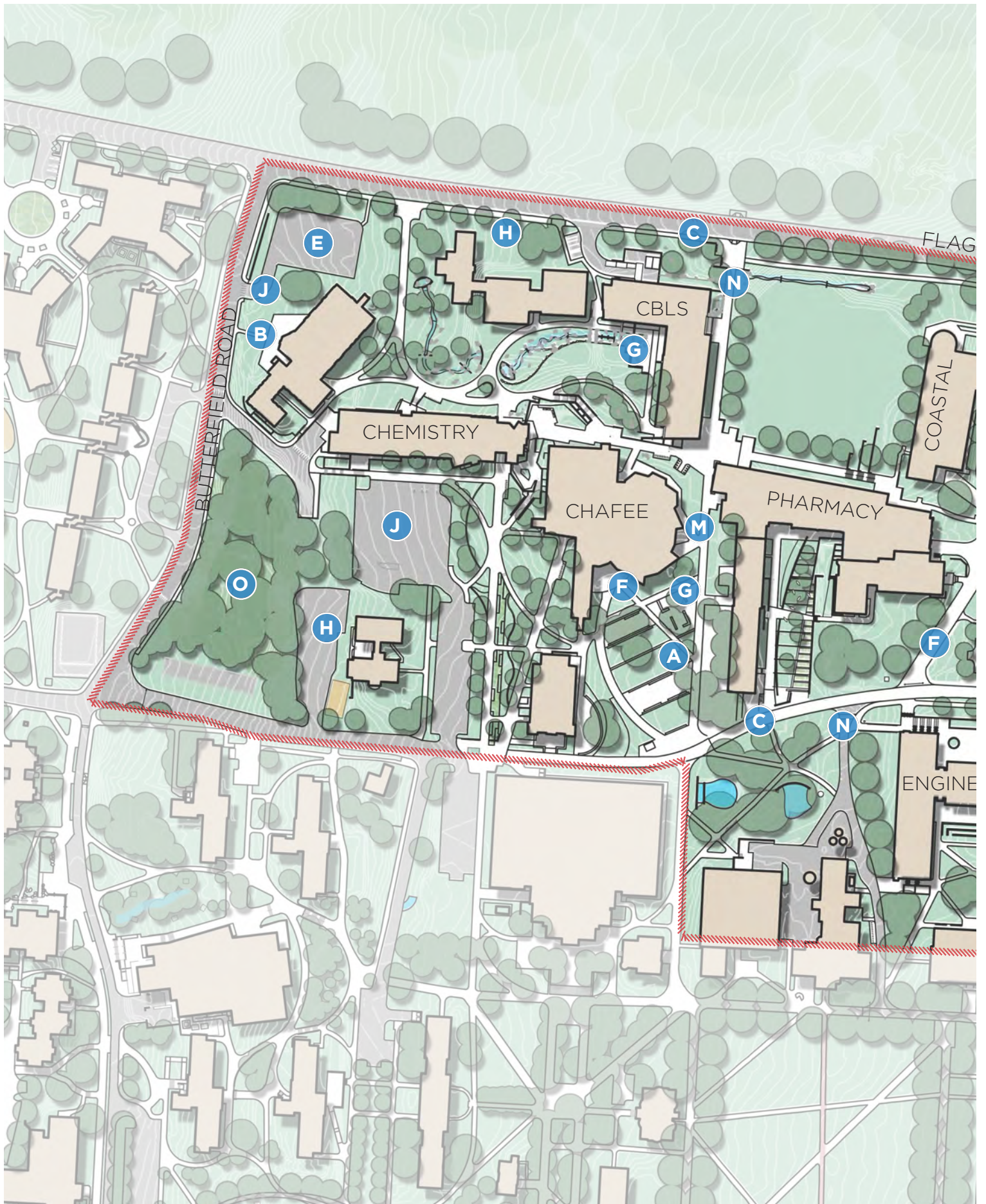


- Redevelop entry plaza of Chafee Hall to be inclusive/accessible. Update walkways to pedestrian standard. (See Section 6: Campus Design Guidelines & Standard Details for additional information.) Accessibility should be a priority and the ample space will allow for a fully accessible main entry on the south façade.
  - The stone dust plaza space and Chafee south entry should be redeveloped to provide an accessible entry to the main façade of Chafee and create a new gathering space.
- There is also space to create a landscape architecture laboratory where the Department of Landscape Architecture students can experiment with spatial design in a real scale.

- A substantial open turf area should be maintained for gathering and flexible use with provisions, such as dumpsters.
- B. Redevelop west side of White Hall to reduce parking or reduce visual impact of parking from Flagg Road, and to create a more attractive and functional landscape.
- C. Roadways and vehicular access should be limited to essential points of access within the campus core.
- Convert Greenhouse Road to pedestrian-oriented walkway with emergency/service vehicle access only. Maintain two-way access from Flagg Road to Greenhouse parking area. Reduce roadbed width and change materials and details.
  - Flagg Road from Old North Road to Plains Road: Complete streets interventions, including removing parking from corridor, adding bike lanes, and reducing roadbed width for tree and sidewalk improvements
  - Reduce the following roads to pedestrian-oriented walkways with access for emergency & service vehicles:
    - East Alumni & West Alumni: open to bus routes as well; two-way access to College of Engineering service yard to Upper College Road
    - Greenhouse Road: two-way access from Flagg to Greenhouses parking lot
- D. With the proposed improvements to the Fine Arts Center, develop southwest corner to create a greenspace which is oriented to the Quad.
- E. Break up expanses of large-scale parking lot pavement with tree plantings and stormwater management systems to reduce urban heat island effect and to treat and infiltrate rainwater.

- F. Infuse University branding throughout district.
- G. Movable and flexible café-style seating and tables should be considered for gathering spaces.
- H. Convert select areas of high maintenance turf to wildflower, no mow turf, or meadow grass plantings to increase habitat, and educational opportunity, to reduce maintenance requirements and reduce emissions (i.e. north-facing slope of Chemistry).
- I. Develop site lighting plan that provides safe and comfortable lighting around the Greenhouses landscape and parking but does not affect the natural systems of the plants in the Greenhouses.
- J. Provide adequate lighting in all parking lots. Consider the use of automatic dimmers which respond to pedestrian activity and provide energy saving measures.
- K. Curbing should be used in all parking areas adjacent to wetland areas to prevent pollutants, salt, and sediments from entering wetland system. Vegetated filter strips should be incorporated at edges to treat runoff before it enters the wetland system, i.e. Fine Arts Center parking.
- L. Consider utilizing the North Campus District as a testing ground for renewable energy infrastructure to add to the learning laboratory aspect of the science-based district.
- M. Improve sidewalks and walkways to meet new campus standards, including but not limited to:
  - Widen, or construct, a sidewalk on the south side of Flagg Road
  - Widen walkway on north side of Fine Arts Center to meet new walkways standard details
- N. Introduce pedestrian access and vehicular control gate at locations where fifteen-foot walkway meets a road.
- O. Manage woodlands to reduce aggressive species. Understory plants should be minimized in order to reduce any obstructions to sight lines to ensure safety.









LMP North Campus District Plan

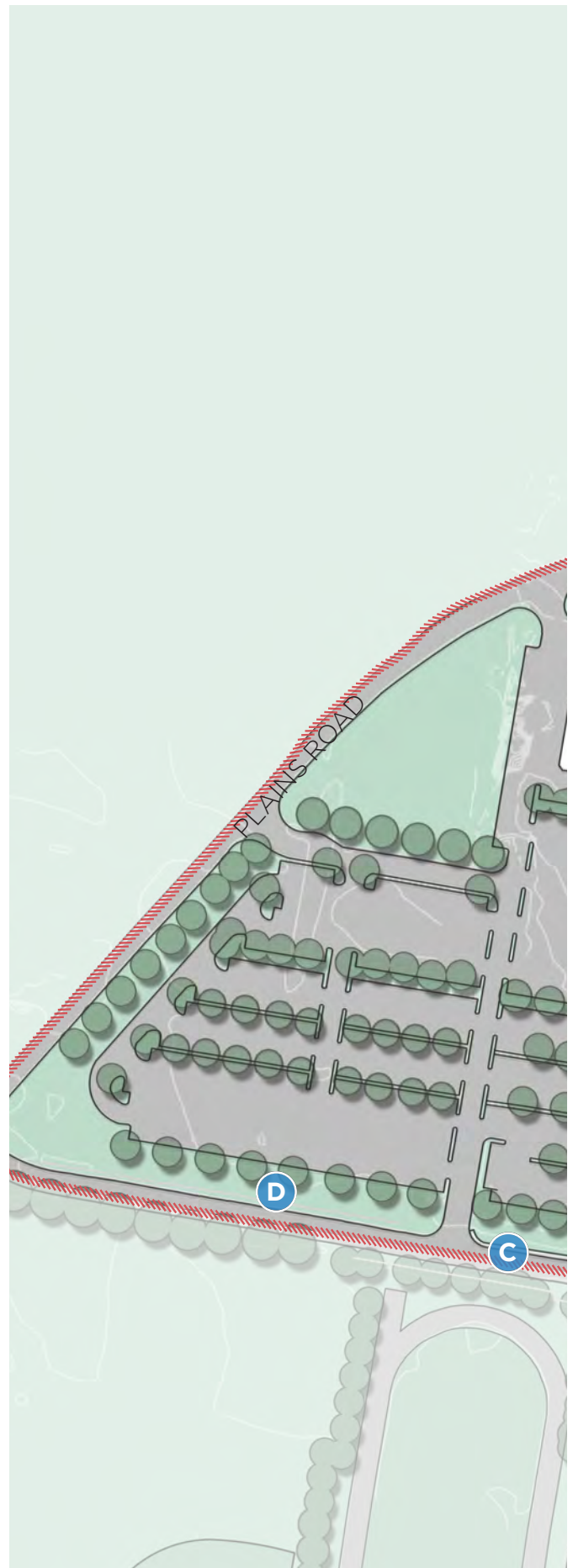


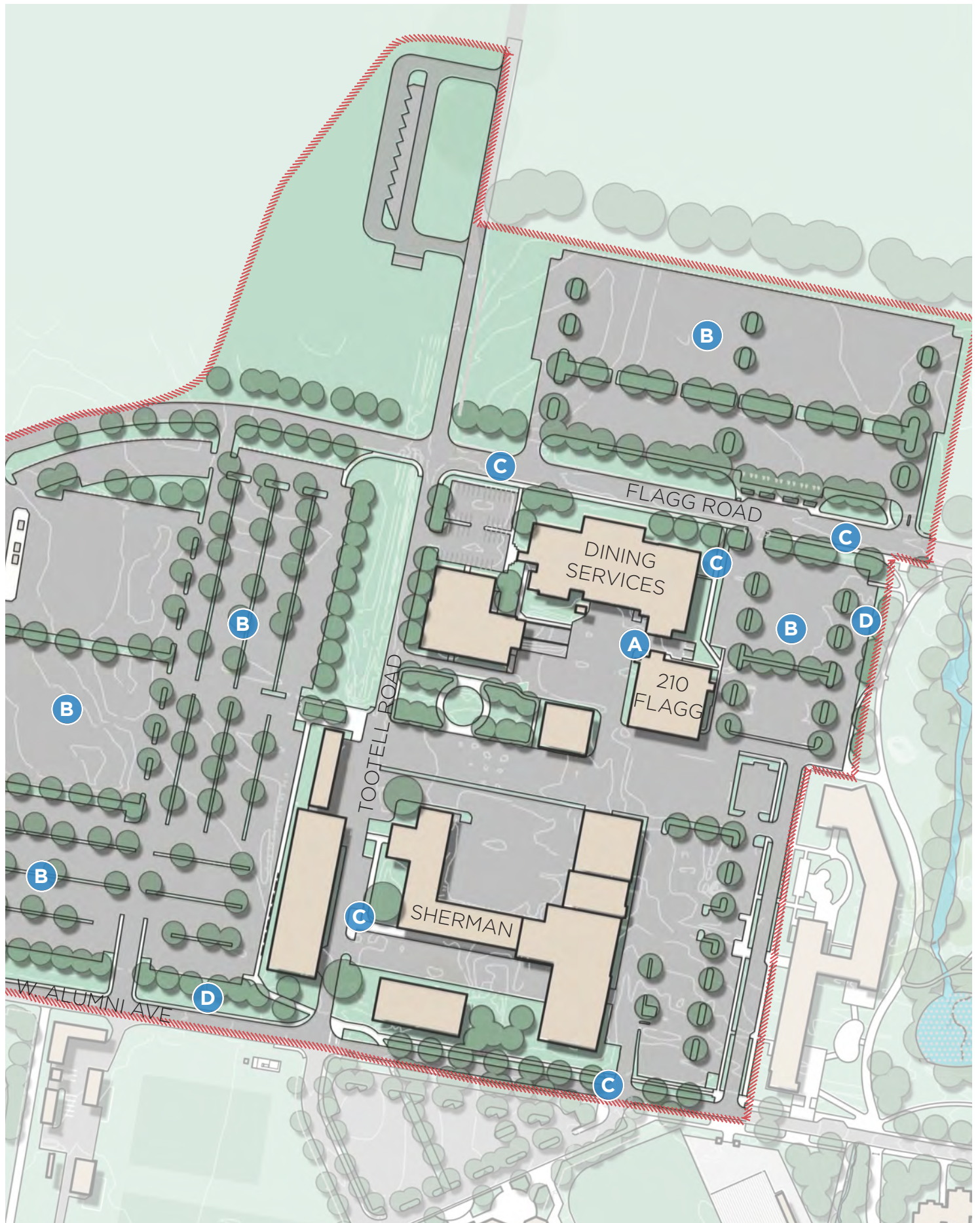
## 4.7 SERVICE DISTRICT PLAN

### Service District Improvement Projects

A Service Sector Master Plan has been developed as a part of the Brookside Apartments design process; recommendations included herein are limited.

- A. Provide outdoor space for staff to have lunch, gather and relax.
- B. Break up expanses of pavement with tree plantings to reduce urban heat island effect.
- C. Improve sidewalks to meet new campus standards in the following locations:
  - West Alumni Avenue from Butterfield Road to Plains Road parking lot
  - Tootell Road
  - Flagg Road from Butterfield Road to Tootell Road
- D. Curbing should be used in all parking areas adjacent to wetland areas, to prevent pollutants, salts, and sediments from entering wetland system. Vegetated filter strips should be incorporated at edge to treat runoff before it enters the wetland system.



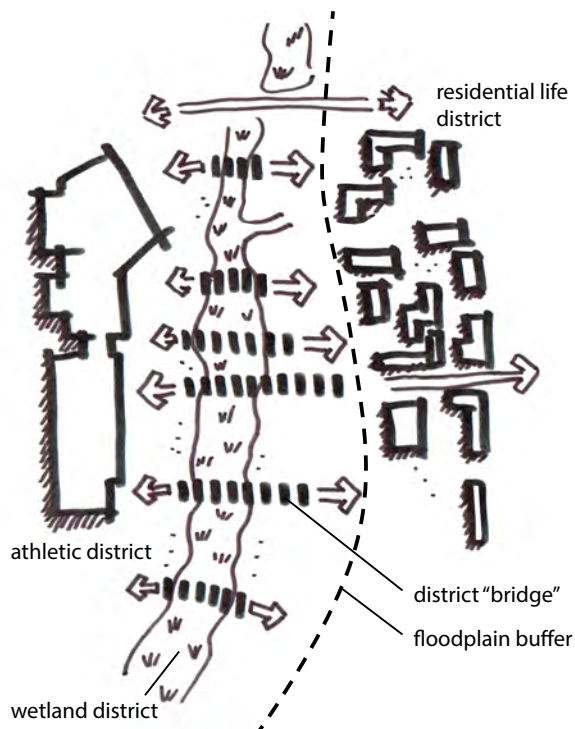




## 4.8 WETLANDS DISTRICT PLAN

### Wetlands District Improvement Projects

A. Use the district as a bridge to reconnect the Athletics District to the rest of the campus, especially the Residential Life District. Improve physical and visual connections.



B. Keep district as undeveloped as possible. Hardscape and developed areas should be minimized to protect floodplain zones. Maintain buffer zones established by Rhode Island Department of Environmental Management regulations, especially for building footprints.

C. Eliminate invasive plant species from ecosystem. Introduce native species as opportunities arise.

D. In expansive, managed turf areas adjacent to White Horn Brook, introduce reduced management grass plantings or other vegetation that supports diverse habitat communities, i.e. east side of Brook adjacent to Wiley Residence Hall.

E. In larger basins or ponded areas, remove sediment to increase storage volume.

F. Study hydraulic capacity of culverts under walking paths/roads to determine if increased size will eliminate water flow restrictions and flooding potential.

G. Enhance wetland edges with habitat features and emergent plantings to reintroduce a more complete pond ecosystem.

H. Reconstruct floodplain bench to manage storm flows, reduce velocity, reduce erosion during high water events, and to increase flood storage capacity.

I. Prepare a pond management plan for long term strategies on maintaining Ellery Pond.

J. Consider additional trails or boardwalk systems to increase awareness, educational role, and recreational potential of Wetlands District.

K. With introduction of proposed bike path, create safe and strong connections from path to existing circulation systems on campus.

L. Create gathering spaces to enhance connections to natural/ecological corridor areas. Site amenities in this district should be fixed so that they do not end up in White Horn Brook or its wetlands.

M. Introduce pervious paving methods where applicable.

N. Update walkways and sidewalks to meet new campus standards. Improve site lighting on all walkways.

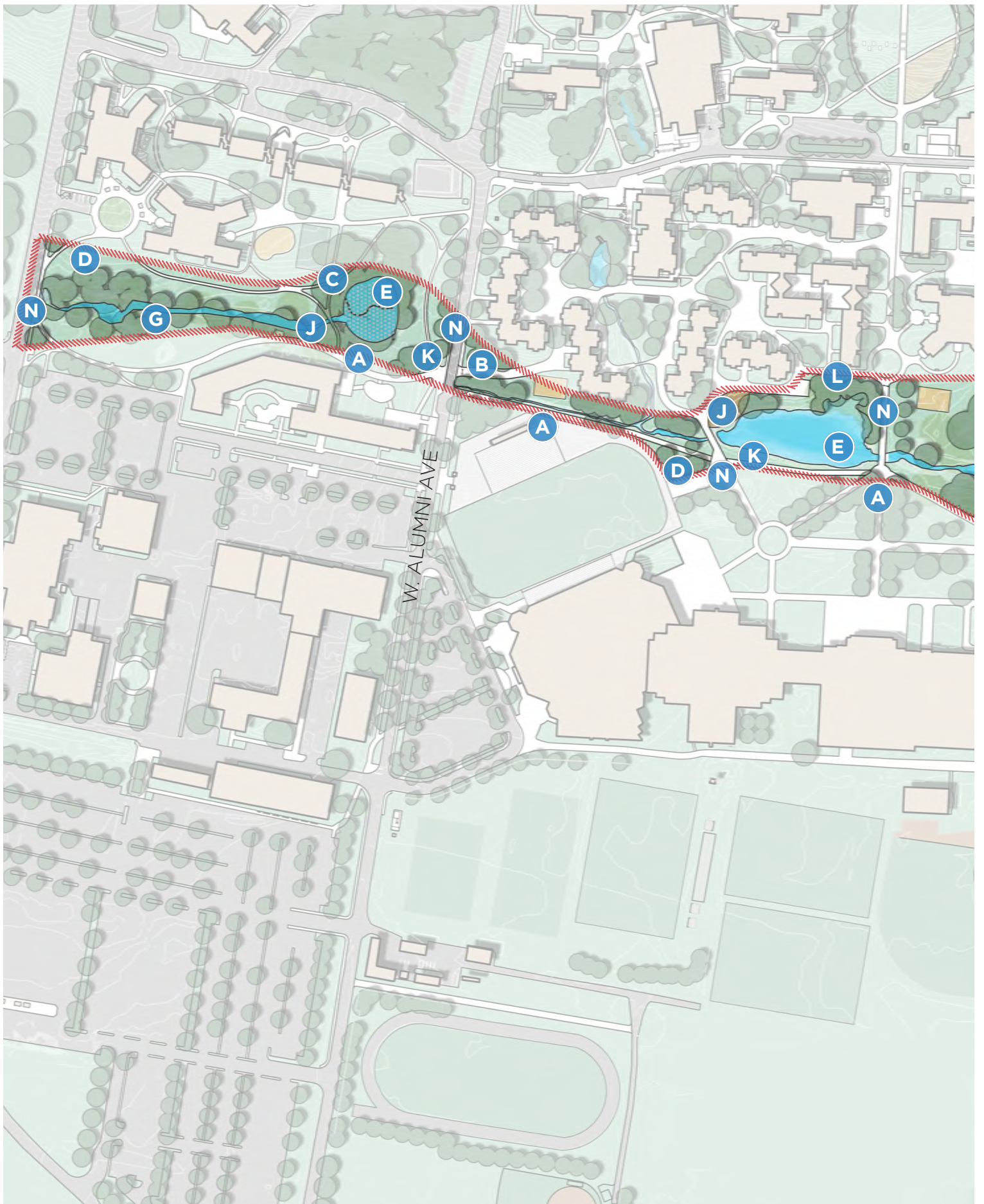
- Add sidewalk to Fraternity Circle extension to Keaney parking lot.

## 4.9 ATHLETICS DISTRICT PLAN

### Athletics District Improvement Projects

- A. Prepare an Athletic District Master Plan to assess needs of facilities, and determine a long-range plan considering development pressure.
- B. Redevelop the plaza to the east of the Athletics Complex. Reduce pavement, reorient pedestrians to main building entries, and provide site lighting. Consider the location of the proposed natatorium to create a programmable space that caters to the University's community and special events.
- C. Provide better awareness and interpretation of the historic Niles Family Burying Ground adjacent to the Convocation Center
- D. Provide pedestrian access through the District so that venues are accessible to spectators, faculty, staff, and students and to ensure that people are not walking through athletic service facilities and wash down areas.
- E. Reduce the following roads to pedestrian-oriented walkways with access for emergency and service vehicles only:
  - Keaney Road from the parking lot toward the Ryan Center
  - Tootell Road from the Keaney Road parking lot to Lincoln Almond Plaza
- F. Improve views of Meade Stadium from West Alumni Avenue.
- G. Enhance streetscape along West Alumni Avenue on both parking and stadium sides. Include complete street interventions, i.e. expand sidewalks, include bike lanes, site lighting
- H. Provide context-appropriate (agrarian) storage building for Athletics division of Landscape and Grounds.
- I. Connections between Athletics and Residential Life District and parking areas must feel comfortable and safe. Improve site lighting along pedestrian paths.
- J. Curbing should be used in all parking areas adjacent to wetland areas, to prevent pollutants, salts, and sediments from entering wetland system. Vegetated filter strips should be incorporated at edge to treat runoff before it enters the wetland system.
- K. Break up expanses of pavement with tree plantings to reduce urban heat island effect.



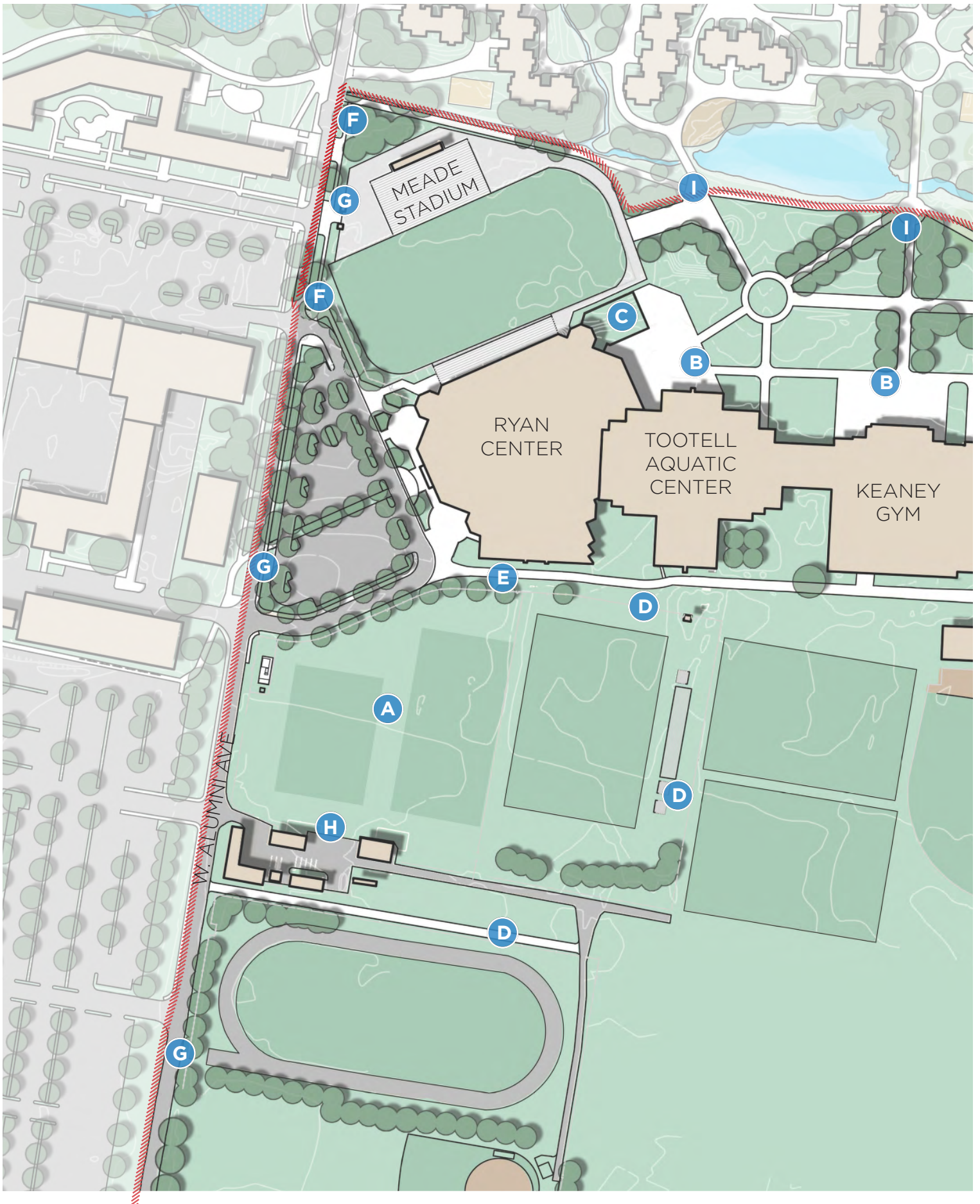




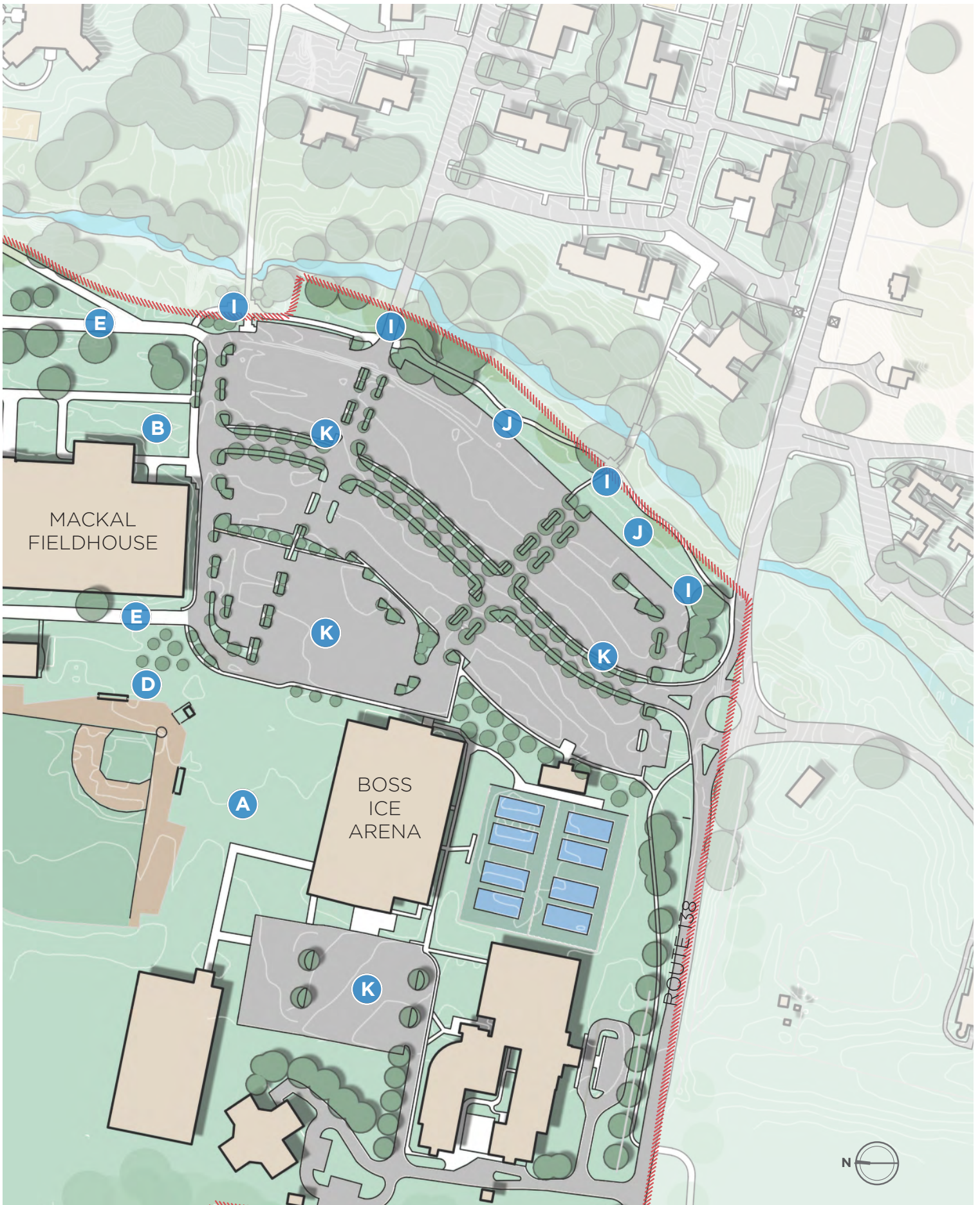


LMP Wetlands District Plan











## 4.10 PRIORITY PROJECTS

Through the master planning process, four project areas emerged as priorities for the development of the campus landscape. These projects and their recommended boundaries include:

1. Historic Quadrangle (Historic Campus Core District)

The historic quadrangle priority project should include the entire existing turf area, the surrounding rows of trees, and the three surrounding roadways: Lower College Road, Ranger Road, and Lippitt Road, as well as the existing walkway on the east side of the quadrangle.

2. Elephant Walk (Residential Life District)

The Elephant Walk priority project extends from the space to the south of Roosevelt Hall, west of the Multicultural Center to Butterfield Road. It reaches as far north as Hutchinson and Peck Residence Halls and south to the wooded area between Butterfield Residence Hall and the Memorial Union.

3. Hammerschlag Mall (Mall District)

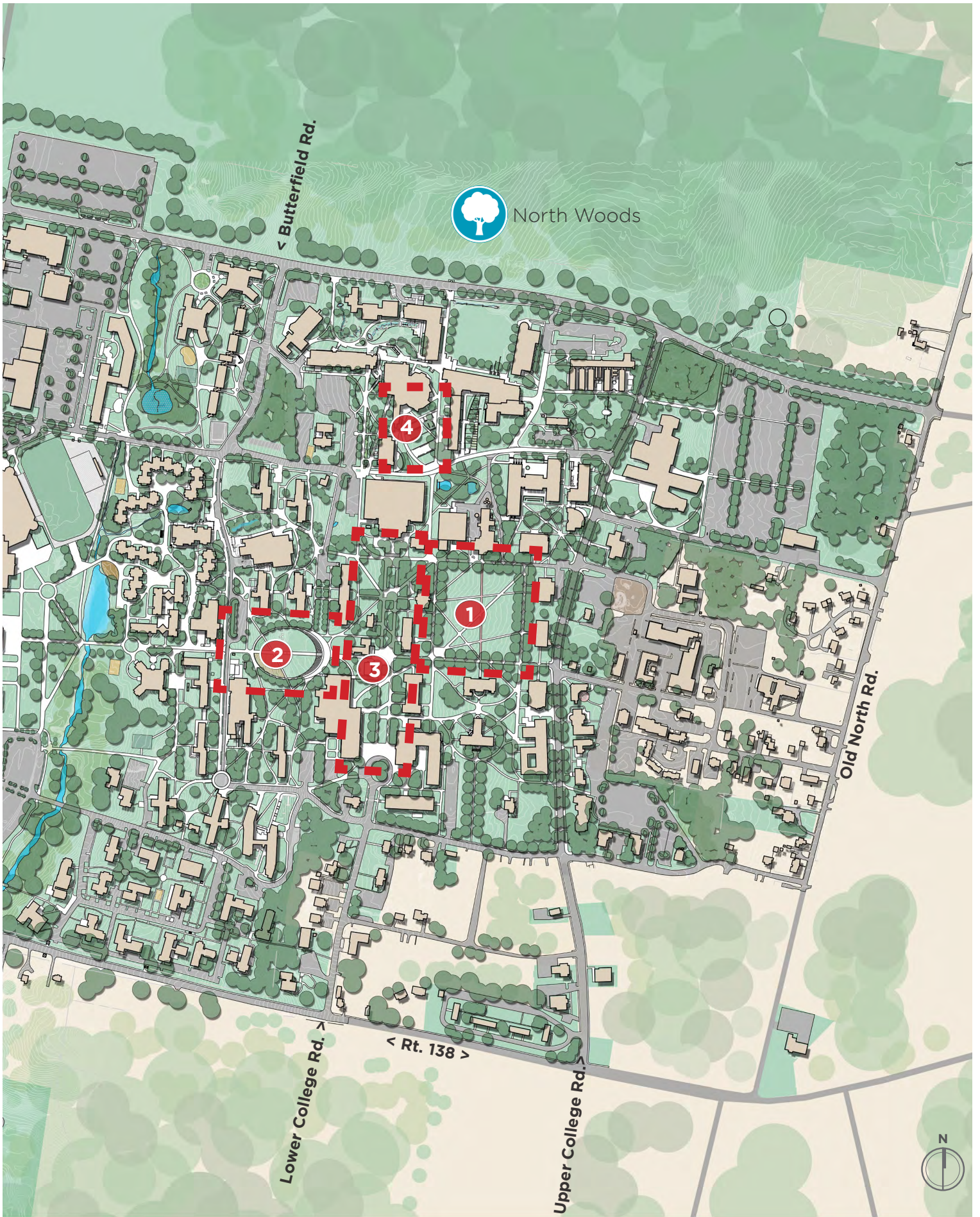
The Hammerschlag Mall priority project includes all of the existing mall from the base of Galanti Plaza in front of Carothers Library to the intersection of Ranger and Lower College Roads and extends the mall to the southern limits of the Memorial Union at the bus turnaround. This priority project includes two phases of work.

4. Chafee Green (North Campus District)

The Chafee Green priority project includes the green space to the south of Chafee Hall to East Alumni Avenue, including the existing elevated plaza space at the main entry of Chafee and west to Woodward Hall.



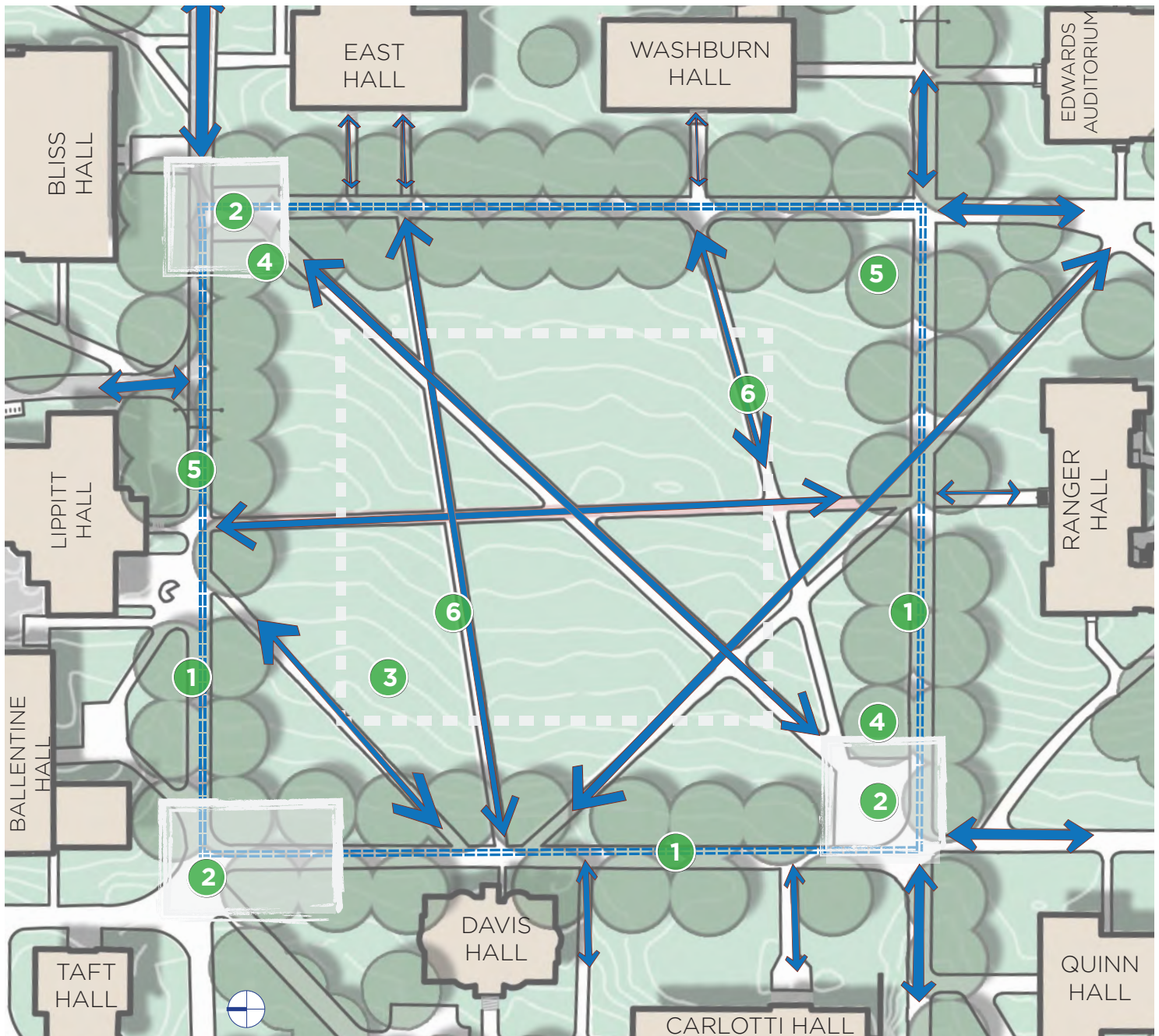




Priority Project Locations



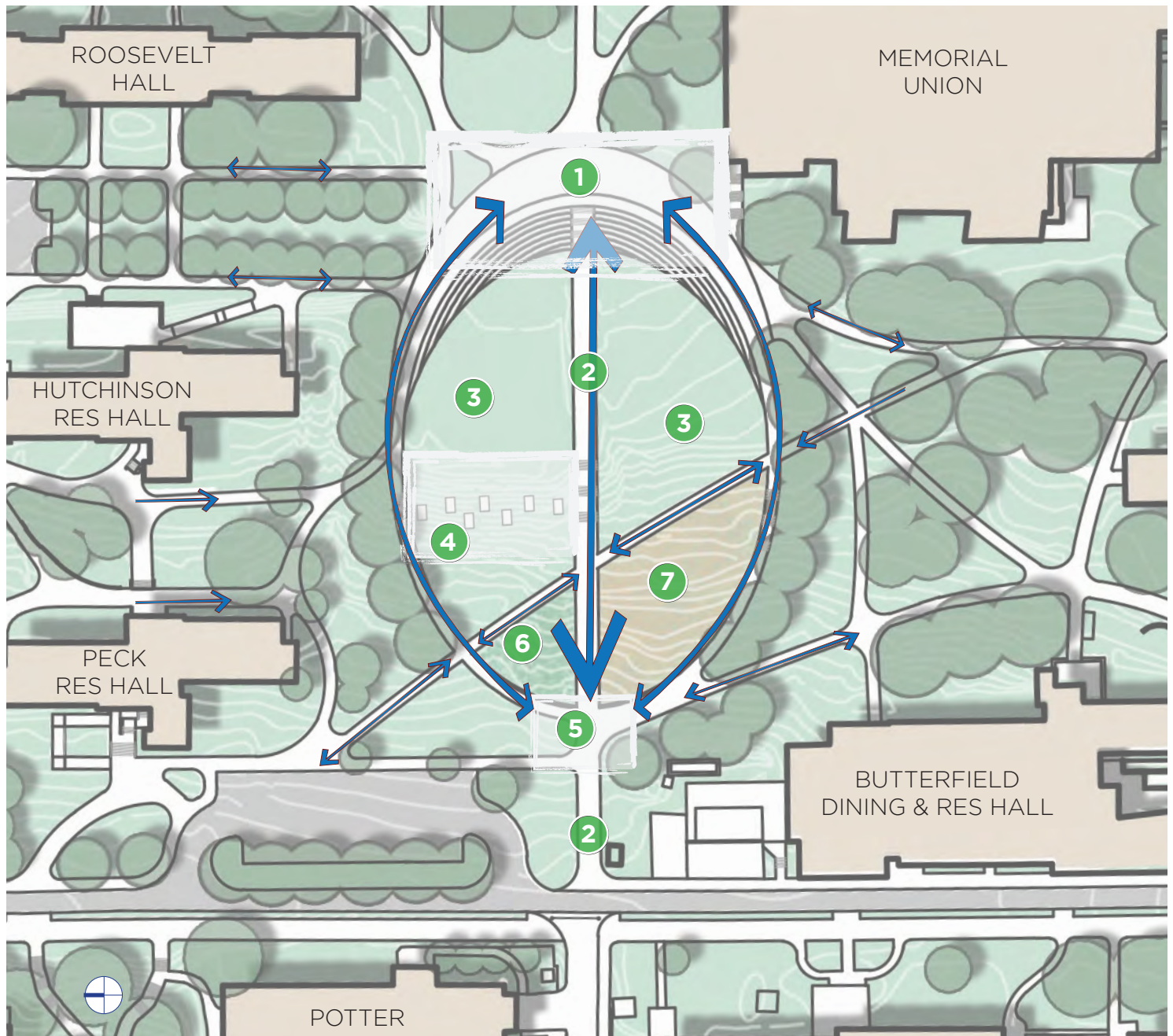
## 4.10 PRIORITY PROJECTS



- 1 Redevelop surrounding roads as pedestrian-oriented walkways.
- 2 Enhance nodes at intersections and study as transitions into adjacent districts.
- 3 Explore underground stormwater storage under the Quad. Consider use for irrigation.
- 4 Maintain and enhance supporting site features such as flagpole, "Old Ben Butler", etc.
- 5 Maintain existing zelkovas lining Quadrangle for as long as possible. Remove hazard trees as necessary. In long term: study tree species diversity to mitigate wholesale loss from pests or disease. Study layout of trees comparing historic elm allée spanning roads by Olmsted, Olmsted & Eliot against today's double row of zelkovas in the Quad.
- 6 Reconstruct paths to maintain new standard widths of 6 feet, 8 feet, and 15 feet. Maintain Century Walk.

### Historic Quadrangle Project



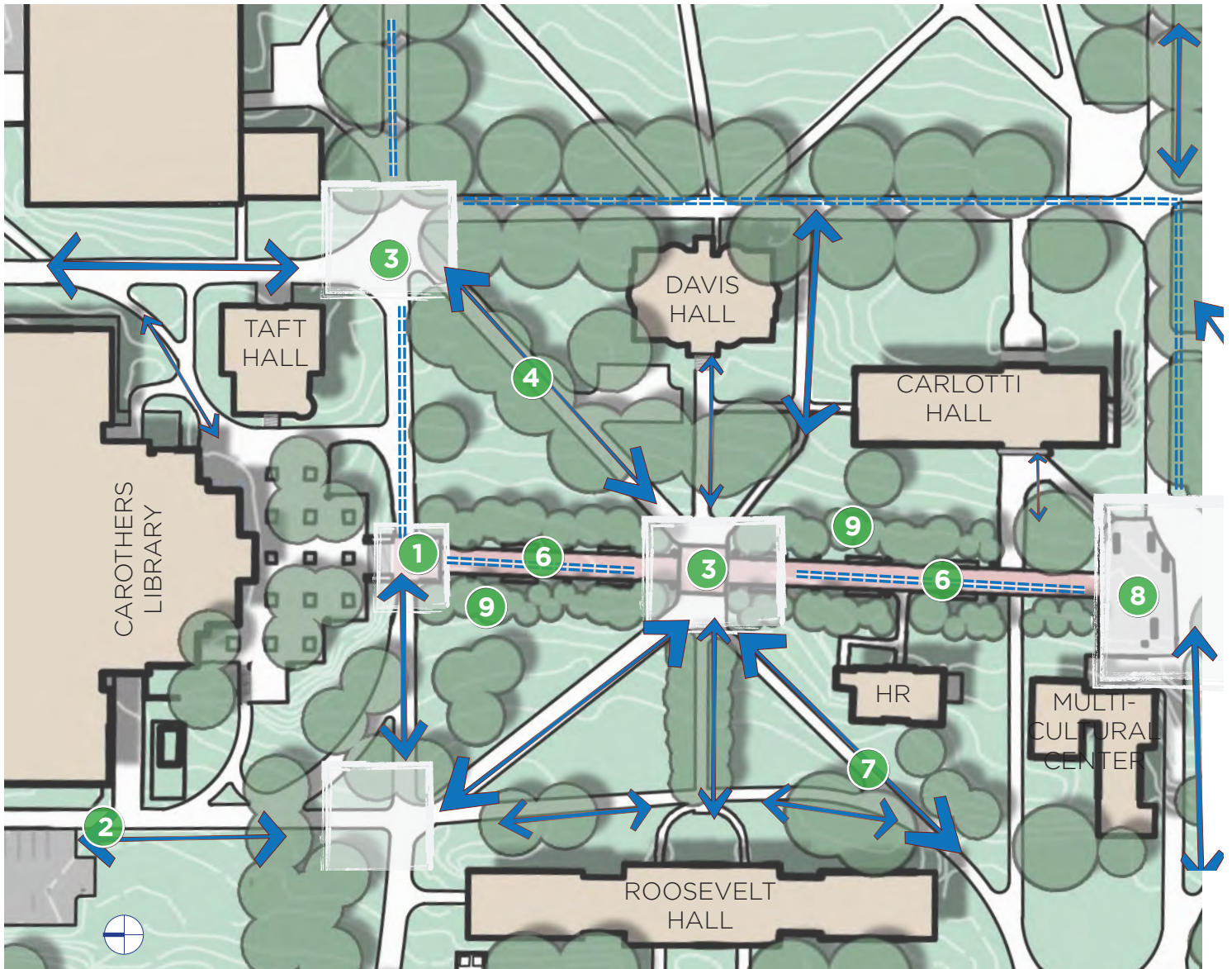


- 1 Develop hardscape gathering area that creates transition between Residential District and Historic Campus Core District
- 2 Enhance major pedestrian connector from Memorial Union to Athletics District and formalize the direct connection.
- 3 An open turf area should be maintained for gathering and flexible use.
- 4 Provide slope-side gathering/seating area(s).
- 5 Cultivate a communal connective spaces
- 6 Integrate stormwater management/ bio-retention areas
- 7 Plant slope with turf alternative to reduce maintenance.

## Elephant Walk Project



## 4.10 PRIORITY PROJECTS

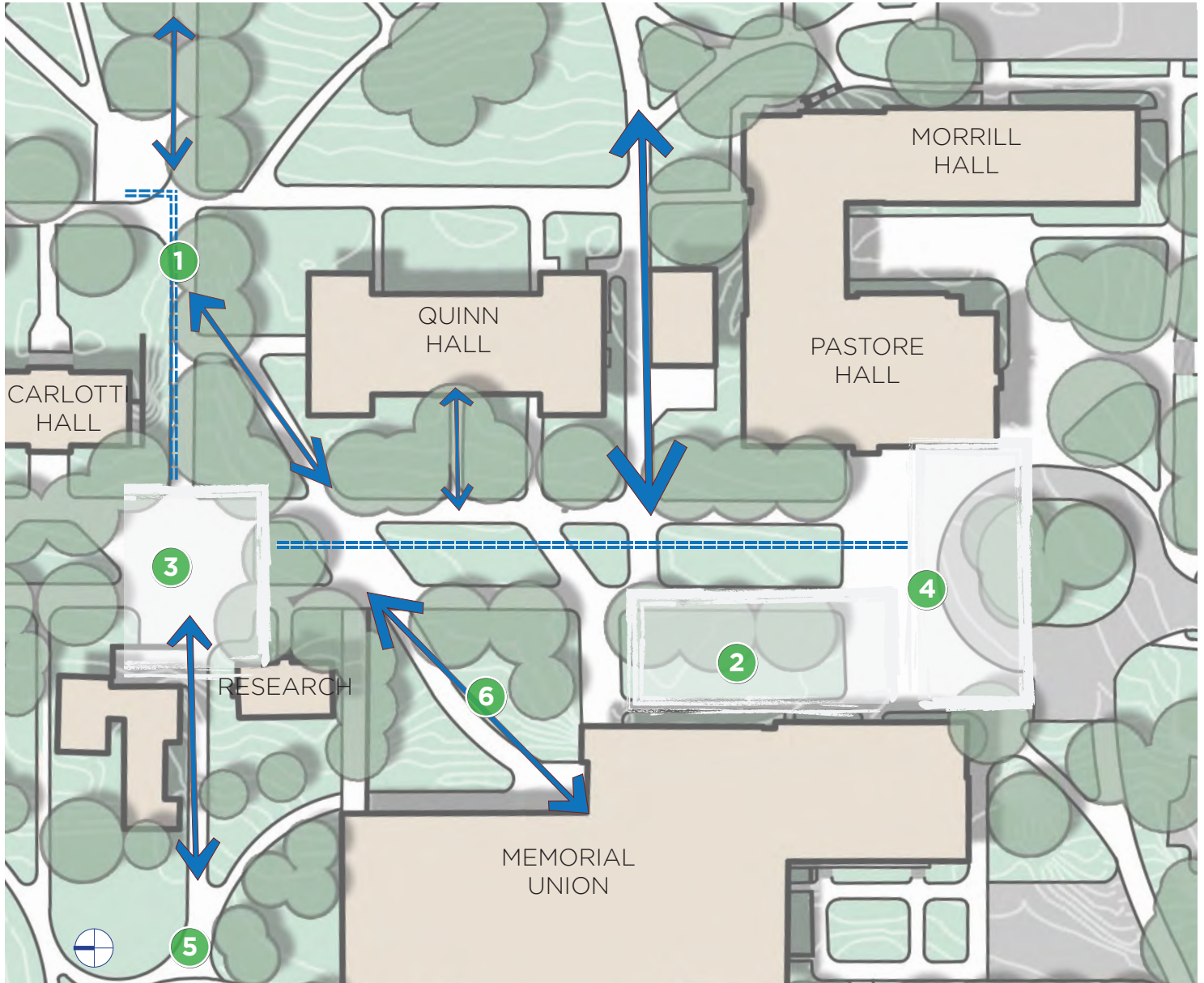


Hammerschlag Mall Project - Phase 1 Improvements

- 1 Develop node at intersection of Hammerschlag Mall and Galanti Plaza stairs
  - 2 Shift library parking to west to allow walkway to connect to Chemistry walkway & to meet campus standard details.
  - 3 Develop node at intersection of significant walkways.
  - 4 Simplify walkways to reduce pavement, strengthen nodes, and eliminate redundancies.
  - 5 Create new major node at significant intersection of Mall and secondary walkways.
  - 6 Redevelop Hammerschlag Mall with enhanced seating opportunities and enhanced lighting.
  - 7 Eliminate underused walkways to reduce unnecessary pavement.
  - 8 Strengthen node at intersection of Hammerschlag Mall and the Elephant Walk: a significant pedestrian intersection on campus.
  - 9 Replace invasive tree species with grove planting of species native to Norway. Reinforce linearity of Hammerschlag Mall with canopy trees. Species to be determined.
- \* Protect significant specimen trees, but not at detriment to accessibility, safety, or design.
  - \* Incorporate lighting as a significant feature of Hammerschlag Mall to reflect the legacy of Professor Dieter Hammerschlag. Lighting should go beyond safety measures to add an artistic feature to the Mall.



## 4.10 PRIORITY PROJECTS

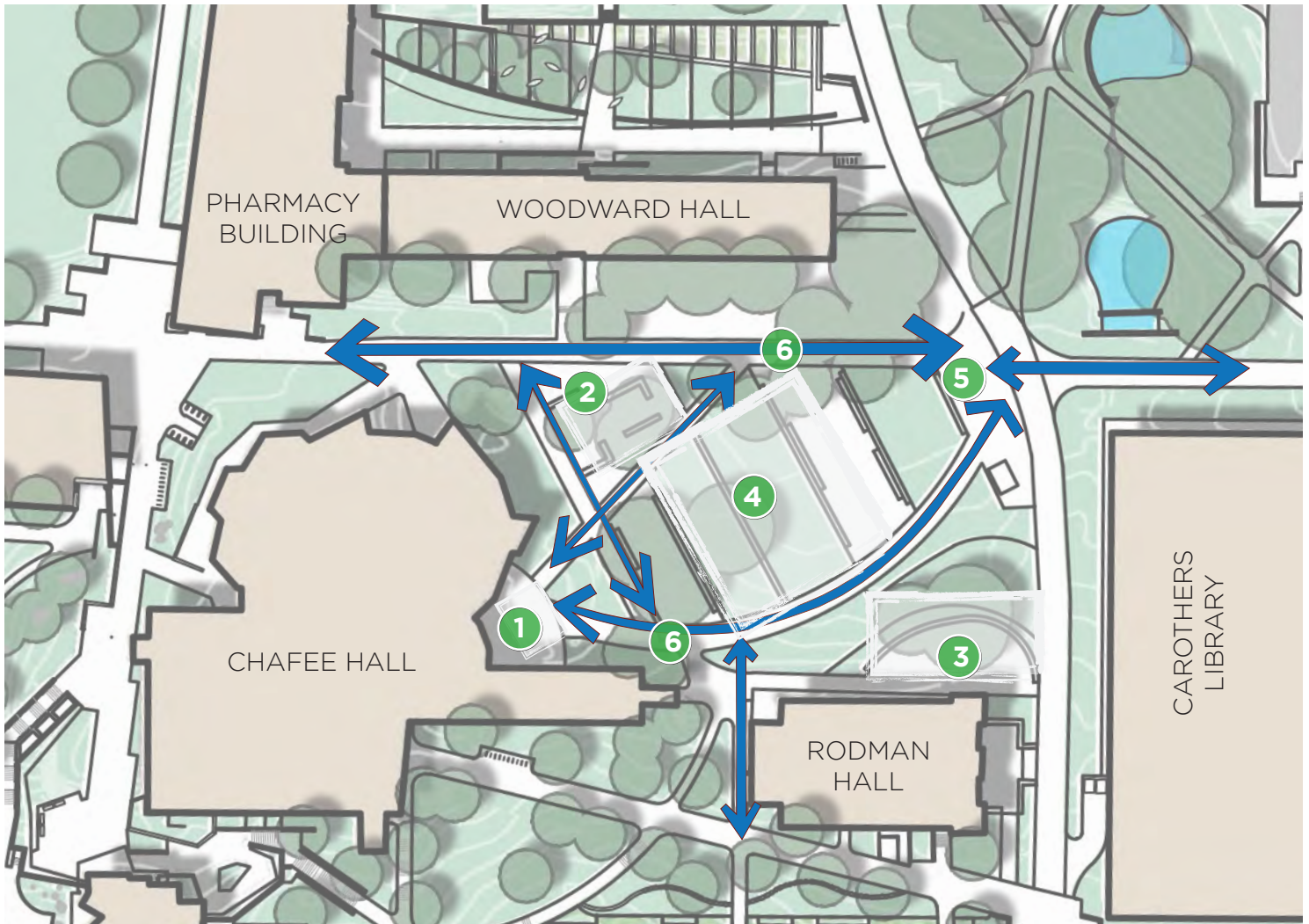


Hammerschlag Mall Project - Phase 2 Improvements

- 1 Strengthen pedestrian corridor on Ranger Road with road diet & pedestrian enhancements.
  - 2 Create new major node on the east side of the Memorial Union to provide gathering and event space for student activities.
  - 3 Expand node at intersection of Hammerschlag Mall and the Elephant Walk after Lower College Road is closed to vehicular traffic.
  - 4 Create new plaza at new terminus of the Mall. Opportunity to include Rhody pride/branding and/or art. The significance of this node should balance Galanti Plaza. (Assumes bus circle is eliminated with new bus routes and Intermodal Hub.)
  - 5 Enhance open spaces along Elephant Walk and strengthen connection to the Memorial Union.
  - 6 Redevelop open space on northeast corner of the Memorial Union to provide an accessible entrance to the lower level from the expanded Mall.
- \* Reinforce linearity of Hammerschlag Mall with canopy trees. Species to be determined.
  - \* Protect significant specimen trees, but not at detriment to accessibility, safety, or design.
  - \* Incorporate stormwater management as a design feature: part of the learning laboratory. Stormwater should be captured, treated and infiltrated at top of the campus hill.
  - \* Incorporate lighting as a significant feature of Hammerschlag Mall to reflect the legacy of Professor Dieter Hammerschlag. Lighting should go beyond safety measures to add an artistic feature to the Mall.



## 4.10 PRIORITY PROJECTS



- 1 Redevelop entry plaza of Chafee Hall to be inclusive/accessible.
  - 2 The stone dust plaza space should be redeveloped to provide an accessible entry to the main façade of Chafee and create a new gathering space.
  - 3 Create a landscape architecture laboratory where the Department of Landscape Architecture students can experiment with spatial design in a real scale.
  - 4 A substantial open turf area should be maintained for gathering and flexible use.
  - 5 Bus node enhancement.
  - 6 Update walkways to meet new campus standards
- \* Protect significant specimen trees, but not at detriment to accessibility, safety, or design.

### Chafee Green Project

## 4.1 1 PRIORITY PROJECT COST ESTIMATES

Construction costs estimates were prepared for this Landscape Master Plan based on the schematic-level plans on the preceding pages, as well as the existing conditions documented in Section 2 of this report.

Projects were priced in 2017 dollars and, when planning, should be escalated per year after 2017. The price estimates are conservative under the assumption that they are schematic-level design and additional details and design decisions will be required.

The projects were priced assuming that they could be constructed in conjunction with one another and escalated to include mobilization/demobilization costs for the assumption that they would be constructed as separate jobs; from this, the range in the estimates was derived. The range includes a 15% markup for general conditions and contractor's general overhead and profit; 20% for design contingency; and, 10% for construction/owner contingency.

Detailed design cost estimates have been included in Appendix G. For several items, cost allowances were assumed. These line items include site furnishings, utility connections, tree and shrub plantings, stormwater handling, and site lighting. The temporary works line item is a percentage of the project estimated cost.

No hazardous waste, contaminated soil removal/abatement, or archaeological services have been included.

As noted, these plans are schematic in nature and are meant to suggest key features and recommendations which should be considered by the landscape architect and their sub-consultants when taken further into the design process. With this understanding, design soft costs have also been included and estimated at 8% of the construction cost estimate. This includes schematic design through the preparation of construction documents suitable for public bid.

### **Historic Quadrangle 2017 Construction Estimate**

#### Construction Cost Estimate

\$3,910,000 to \$6,200,000

#### Design Soft Cost Estimate

\$312,000 to \$500,000

### **Elephant Walk 2017 Construction Estimate**

#### Construction Cost Estimate

\$1,490,000 to \$2,400,000

#### Design Soft Cost Estimate

\$120,000 to \$190,000

### **Hammerschlag Mall - Phase 1 2017 Construction Estimate**

#### Construction Cost Estimate

\$400,000 to \$600,000

#### Design Soft Cost Estimate

\$32,000 to \$48,000

### **Hammerschlag Mall - Phase 2 2017 Construction Estimate**

#### Construction Cost Estimate

\$1,020,000 to \$1,600,000

#### Design Soft Cost Estimate

\$80,000 to \$130,000



## 4.1 1 PRIORITY PROJECT COST ESTIMATES

### **Chafee Green 2017 Construction Estimate**

Construction Cost Estimate

\$770,000 to \$1,200,000

Design Soft Cost Estimate

\$60,000 to \$95,000

THIS PAGE LEFT INTENTIONALLY BLANK





Campus aerial, 1923; Image courtesy of the University Library Special Collections



A large, semi-transparent number '5' is overlaid on the left side of the page. The background is a black and white aerial photograph of a campus landscape, showing several buildings, open green spaces, and scattered trees. The number '5' is positioned in the upper left quadrant of the page.

# 5

## CAMPUS TREES INVENTORY, ASSESSMENT, & MANAGEMENT

- 5.1 LANDSCAPE IMPACT ON CAMPUS CHARACTER
- 5.2 OBSERVATIONS
- 5.3 CAMPUS TREE INVENTORY
- 5.4 CAMPUS TREE ASSESSMENT
- 5.5 CAMPUS TREE RECOMMENDATIONS
- 5.6 RECOMMENDED SPECIES LISTS
- 5.7 CAMPUS TREE MAINTENANCE

Trees are one of the primary defining features of the University of Rhode Island's Kingston campus landscape. They create structure for open green spaces and improve the overall quality of campus life. However, many of these valuable trees are in declining condition due to increased stresses.

The purpose of this section of the Landscape Master Plan is to create a framework that will assist the decision-making process for how to maintain and preserve the trees that define the campus character. These guidelines will allow the University to have a better understanding of the importance of its campus trees and why they should continue to build upon the existing diversity. The recommendations presented will set a standard for what the campus landscape should be and how to achieve it.



# 5.1 LANDSCAPE IMPACT ON CAMPUS CHARACTER

## Historic Influences

Since the University's origination from farmland, the Kingston campus has worked to maintain its agrarian roots. Up until the late 1800s, the campus consisted primarily of undeveloped pasture land which lacked notable diversity of vegetation. In 1894, the Boston-based landscape architecture firm Olmsted, Olmsted, and Eliot began to plan the development and organization of the campus. The best remaining element from the original design is the central Quadrangle which continues to serve the University today.

The plan developed by Olmsted, Olmsted, and Eliot recommended that the University plant American elms around what was originally a pair of quadrangles. In 1899, sixty-five American elms were planted on either side of the surrounding drives, most of which have since died due to Dutch elm disease, a prevalent disease spread by the elm bark beetle. In the early 1980s, many of the American elms were replaced with a non-native species: the Japanese zelkova. Although the mature size does not compare to the large sinuous branches of the American elm, the Japanese zelkova has a similar vase-like shape and is resistant to Dutch elm disease.



Lippitt Hall from pasture lot (1907); Image courtesy of the University of Rhode Island Special Collections

Although the vast majority of the original farmland and orchards have been built upon, the original campus design continues to influence modern campus development. The central core of campus maintains the historic standards, while the perimeter still consists of woodland and fields on the edges. Planted swales and detention basins used throughout the campus help tie back to the agrarian aesthetic.

## Understanding Site Context and Campus Character

The village of Kingston, Rhode Island is the quintessential historic New England landscape. The Kingston Historic District was established in 1959. Much of the village became a National Register historic district in 1974 and contains examples of 18th and 19th century architecture.

The Kingston campus reflects its historic and woodland context. The historic core of campus has preserved several original granite buildings, and the landscape continues to reflect the simple naturalist design that Olmsted, Olmsted, and Eliot had intended. Many roads and walkways are punctuated by large trees many of which date to the early campus development. These large mature trees are a symbol of the land's cultural heritage and are links of nostalgia for University alumni who share a great appreciation for the historic landscape charm.

Originally established as the Agricultural Experiment Station, today the University continues its extensive efforts in botanical research. One of the best reminders of the University's agrarian history can be seen in the Botanical Gardens in the North Campus District of the campus. The gardens—which were established in 1992—serve as an important learning laboratory that showcases a variety of unique specimens. The gardens have been designed to display year-round

interest and are organized to reduce the risk of insect and disease spread.

### Character-defining Features

The character of the Kingston campus can be defined by its landscape. Natural pockets of woodland serve as reminders of the native landscape, while “champion trees” give a sense of the history and growth of the University.

The historic gateway is often the first impression for visitors. During the original design phase of the campus, Olmsted, Olmsted, and Eliot recommended the planting of maples or ash trees along Upper College Road. This road serves as an important cross-campus connection and is one of the most used streets by both pedestrians and vehicles. Ultimately, the linden tree was selected in 1909 to line the street, several of which remain today. In 1990 or 1991 Crimean lindens were introduced to continue the row along Upper College Road.



Upper College Road - Main Entrance

Since the original design set forth by Olmsted, Olmsted, and Eliot, the vegetation on campus has become an important component that shapes all outdoor spaces. While not all spaces have well-maintained vegetation, an exemplary example of defining vegetation can be found in the Quadrangle. The Quad, which serves as the heart and

focal point of campus, is the epitome of a formal Olmstedian landscape. The allée of Japanese zelkova reinforces the Quadrangle giving it vertical definition and making it the largest “room” on campus.



Japanese zelkovas line the Quadrangle

Since the University was built upon pasture lands, it is only fitting that another defining feature of today’s landscape is in the botanical research and plant diversity. In addition to the select woodland pockets of native New England species, the University also promotes the use of specimen species to aid in the educational value of the campus landscape. In this way, the Kingston campus itself can be used as an outdoor classroom. This is of particular importance to the Plant Sciences and Landscape architecture Departments.



# 5.1 LANDSCAPE IMPACT ON CAMPUS CHARACTER

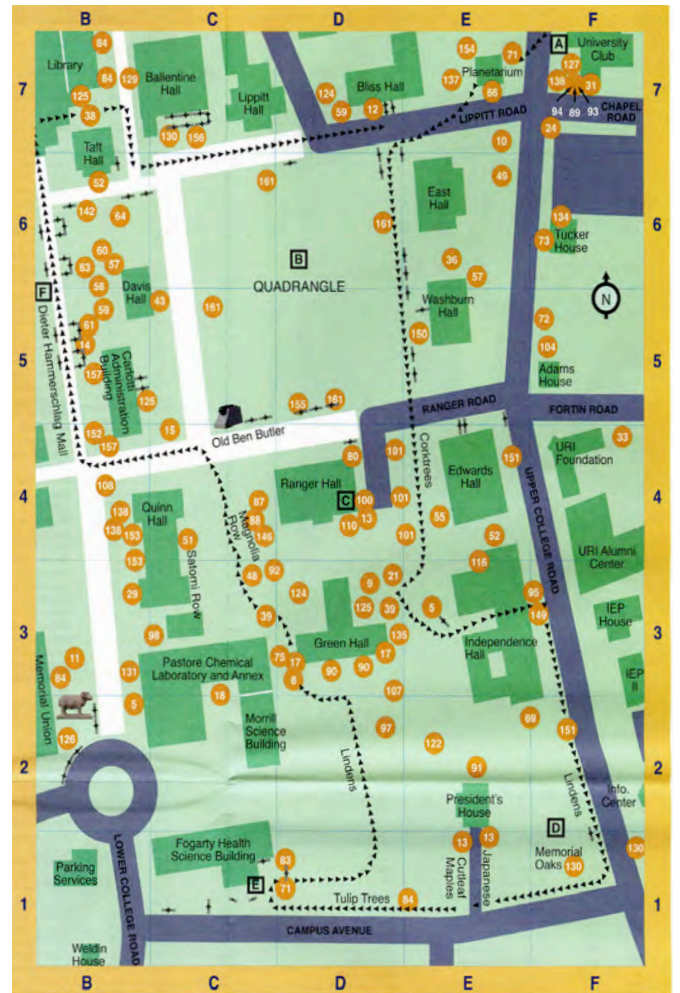
## Christopher Memorial Arboretum

### Existing Tree Organization

The most publicly accessible source of existing tree information can be found in the Christopher Memorial Arboretum. The arboretum contains over 160 species of deciduous and evergreen trees found throughout the Kingston campus. A numerical tagging system was used to catalog trees. The selected trees were incorporated into a self-guided walking tour which identifies the historically significant trees on campus.

The arboretum was named in memory of Dr. Everett P. Christopher, '26, a long-time faculty member and former Associate Dean of the College of Resource Development. Dr. Christopher created endowments in the URI Foundation to support the development and maintenance of the University's arboretum.

The walking tour pamphlet contains information about each significant tree, and some of the history that shaped the campus into what it is today. The tagging system does not contain full information regarding health concerns and other related issues that are important to preserving and managing the campus forest.



Map from the walking tour pamphlet



Tree ID tag found along campus walking tour

## Tree Committee Inventory Data

The University currently has a non-digital collection of tree information that helps keep track of diagnosed diseases and the history of maintenance applications. This inventory consists of hand-written input on data sheets that use silver ID tags on trees and codes for remarks. The tree identification tags relate to the data sheets, which can then show what remarks have been noted on the particular tree. This information can be very helpful, but is currently out-of-date and should be made digital for easy access and updates. The first phase of the inventory was completed in 2004; the second phase in 2009.



Silver tree ID tag

Example of Data Sheet:

\* KWC 51  
\* KWC 51

COPY TAG DATA

The F. A. Mott Tree Expert Co. Property Inventory Data Sheet

Property: PHASE TWO # 201-431 Date: \_\_\_\_\_ Tech: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Tag #	Location	Street House Num	PS	Code	DBH	Hgt	Cond	Pruning Code	Hrs	Cable Code	# of Cable	# of Belt	Removal Code	Hrs	Lot Pct	Fertilization Code	Unit	Special Treatment	Remarks
✓ 201	D3			KWC	51	M	8			C1	2							RX	PP, V, ER
✓ 202	B5			PTA	3"	S	6											RX	P.05
✓ 203	C3			KAT	41"	L	6			CB2						FB2		FT, RE	MS, RS, D, SW
✓ 204	C3			NOM	27"	L	6												P, CL1
✓ 205	C3			SYM	135"	L	2						T						S
✓ 206	C3			AMH	12"	L	6									FB2			S, M
✓ 207	C3			AMH	19"	L	8									FB2			MS, M
✓ 208	C3			AMH	125"	M	4									FB2		RX	OBL, DL, RE, M
✓ 209	C3			HJM	1.5"	S	4											RX	M
✓ 210	C3			PNO	26"	L	8											CC1	D, M, HA
✓ 211	D3			HJM	25"	S	8												M
✓ 212	D2			LIN	24"	L	6			EW						FA1			PP, M, V
✓ 213	D2			LIN	38"	L	6			EW						FA1			PP, M, DE
✓ 214	D2			LIN	39.5"	L	6			EW						FA1			PP, M, DE, V
✓ 215	D2			LIN	30"	L	6			EW						FA1			PP, M, V
✓ 215	D2			LIN	33"	L	6			CB1						FA1			PP, M, V, OK

Hgt: S = 15'  
M = 15-35'  
L = +35'

Condition: 0 = Dead  
2 = Poor  
4 = Fair  
6 = Good  
8 = Excellent  
10 = Champion

Fertilization: FA = Apply within 1 year  
FB = Apply within 2 years  
FT = Apply within 3 years

LIN - Linden

PP - Poor Pruning Practices

V - Weak Joined Limb

\* This tree removed November 2016 and replaced by similar species



# 5.1 LANDSCAPE IMPACT ON CAMPUS CHARACTER

## Shade Trees on the Campus of the Rhode Island State College

In 1934, S.C. Damon published a paper that described the shade trees of the Rhode Island State College, now the Kingston campus. The paper serves as a descriptive narrative of the condition of some of the oldest trees on campus and gives a brief understanding as to why it is important to preserve them.

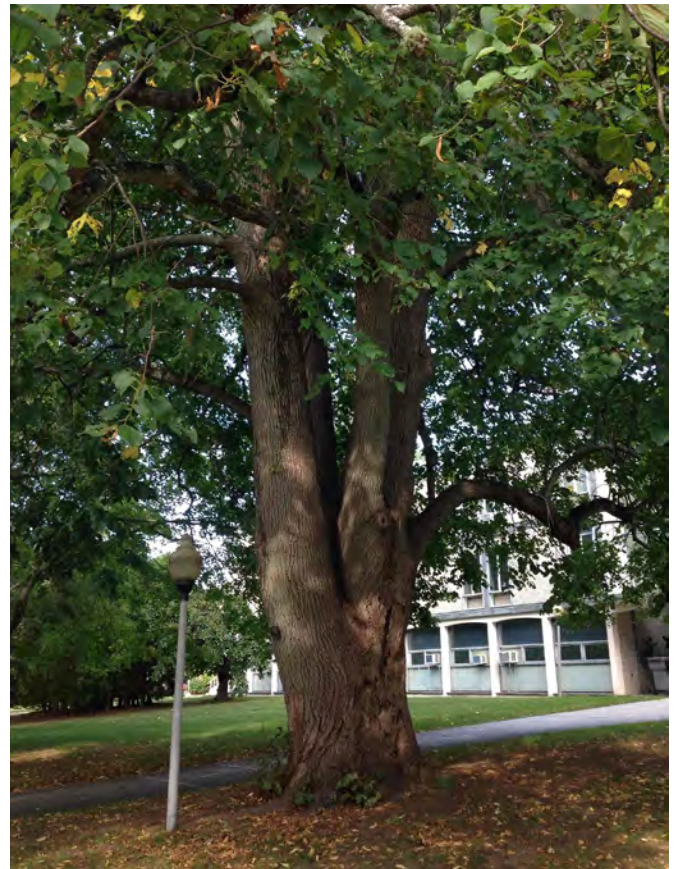
Regarding the age of the trees, Damon writes: “[this] is all more appreciated when one stops to consider that the institution is comparatively young and that the land on which it is built was purchased no longer ago than 1888, and that every tree now growing about the main campus is a planted tree.” There are still several of these trees on campus that date back to the early establishment of the University and have witnessed over a century of campus development. These trees should be preserved for their historical and educational value.

In the paper, Damon identifies important nodes on the campus that have significant shade trees and planting palettes. Some of these nodes include:

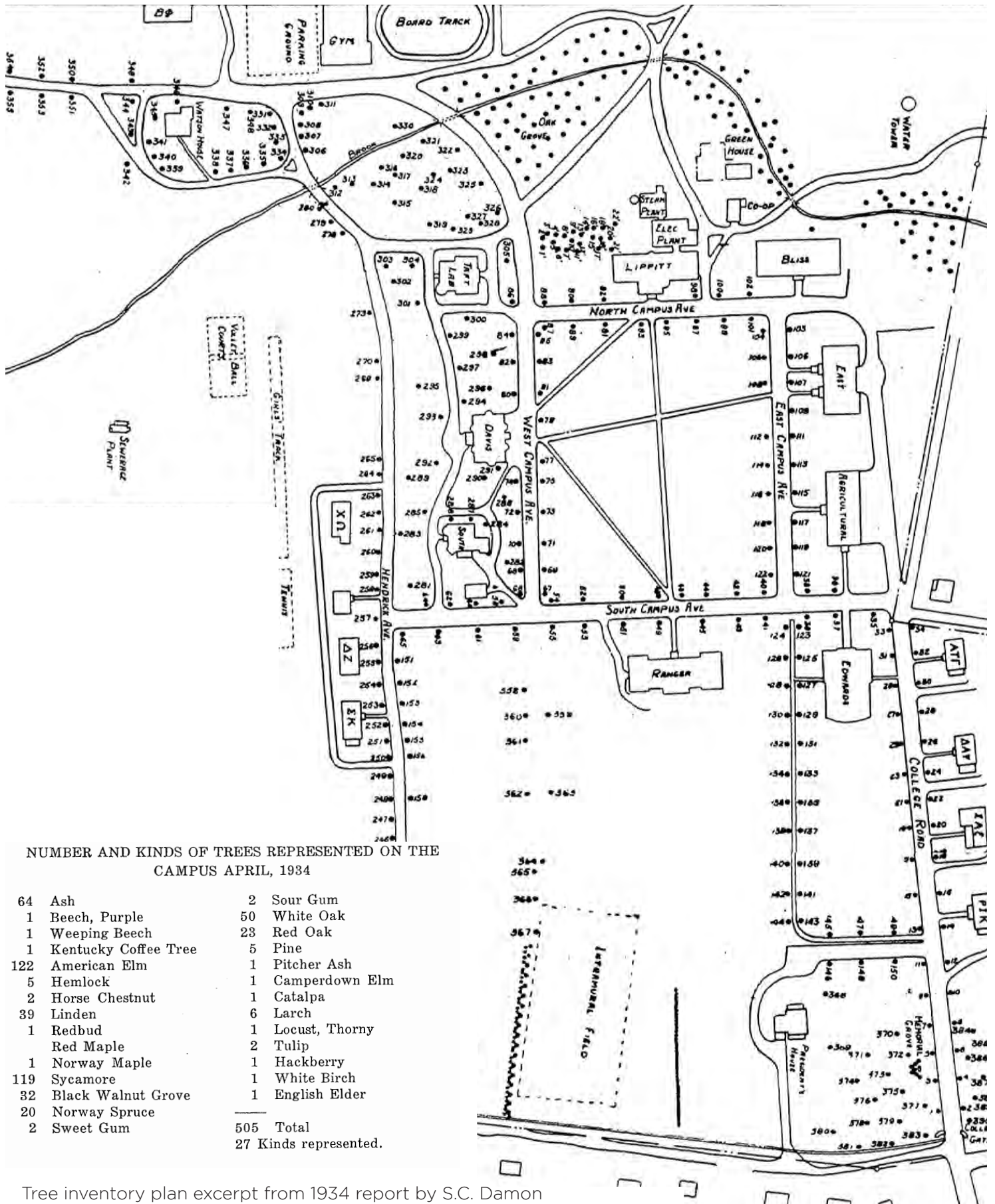
- Lindens along College Road (Upper College Road)
- Elms around the Quadrangle (Replaced with zelkovas today)
- Elms along the walk between Edwards and Ranger Halls
- Maples along Hendrick Avenue (Lower College Road)
- Ash Trees along the former athletic field (Parking adjacent to President’s House)
- Red oaks at the gateway arches on Upper College Road
- Evergreens on road to the gymnasium (Rodman Hall)
- Oak groves along the former brook that ran through campus
- Tulip Trees along Campus Avenue

Several of these areas still represent traces of the historic tree plantings. For example, some of the original linden trees on Upper College Road still exist today. These trees have contributed to the first impression of the campus since 1909. In other areas, some existing trees might have descended from former original planted trees on site. For example, there are several oak species near the water feature behind Ballentine Hall. This water outlet is part of White Horn Creek, which was once visible through campus with swamp white oaks planted along it. Although much of the original creek is no longer visible, oak species still grow along the former route.

These nodes should continue to be planted with historically appropriate species since they are space defining elements that add to the overall history and character of the campus.



A notable linden tree can be found at the entrance of Hammerschlag Mall near Ranger Road. The tree was planted in 1919 by Amicron Alpha Alpha (now Chi Omega) in memory of the heroes of World War I.



NUMBER AND KINDS OF TREES REPRESENTED ON THE CAMPUS APRIL, 1934

64	Ash	2	Sour Gum
1	Beech, Purple	50	White Oak
1	Weeping Beech	23	Red Oak
1	Kentucky Coffee Tree	5	Pine
122	American Elm	1	Pitcher Ash
5	Hemlock	1	Camperdown Elm
2	Horse Chestnut	1	Catalpa
39	Linden	6	Larch
1	Redbud	1	Locust, Thorny
1	Red Maple	2	Tulip
1	Norway Maple	1	Hackberry
119	Sycamore	1	White Birch
32	Black Walnut Grove	1	English Elder
20	Norway Spruce		
2	Sweet Gum	505	Total
		27	Kinds represented.

Tree inventory plan excerpt from 1934 report by S.C. Damon



## 5.2 OBSERVATIONS

Expanding upon the campus landscape inventory and analysis included in Section 2 of this report, general observations made pertaining to the campus trees include:

1. The natural woodland aesthetic is an important feature of the Kingston campus
2. Open spaces are fragmented and lack connective corridors
3. The existing trees within the core of campus need to be prioritized

### Natural woodland Aesthetic

Key natural systems on campus are being neglected and not fully appreciated for what they contribute. Natural systems throughout campus have experienced a steady decline due to the increase in development seen on campus. Elements such as White Horn Brook are integral components that define the campus, but over the years have been piped and redirected in unnatural ways that reduce its functions and values. As part of this Landscape Master Plan, it is recommended that White Horn Brook be improved to maximize habitat and create an efficient stormwater management system.



White Horn Brook has become a neglected resource instead of a functioning asset.

Woodland pockets throughout campus maintain the natural aesthetic and serve as a wildlife habitat and corridor. Removal of invasive species in these pockets will improve the quality of habitat as well as enhance growth of the native species. It is important that these spaces be maintained and preserved to continue provide to ecological benefits.

The restoration and protection of these natural systems will create a functioning component of the campus framework.

### Fragmented Open Spaces

Many roads and significant pedestrian pathways break up the landscape and lack the feeling of an efficient shared-use connection. To create a continuous vegetative network that spreads across the campus, these roads should become green corridors that will replace interstitial zones with designed functioning spaces. There is a strong need for more plantings to expand the network in the North District, Residential Life District, and Service District.

### Trees within Campus Core

The campus core consists of the historic Quadrangle, extends south to include the President's House and gardens, the landscape around Ranger and Green Halls. Within this perimeter are many specimen trees, some of which have historical significance. These trees contribute significantly to the campus by providing shaded open spaces for gathering as well as adding visual structure that complements important architecture. Trees within the campus core should be prioritized and receive routine maintenance.





Ornamental planting beds can become difficult to maintain (left) and should be used only in significant locations with sufficient resources (right)



Plantings can look unsightly if not maintained



Planting can be used to create outdoor rooms and focal points



Older trees, although majestic, can pose risks to pedestrians if not pruned throughout the tree's lifespan



Slopes should require low maintenance, "no mow" vegetation



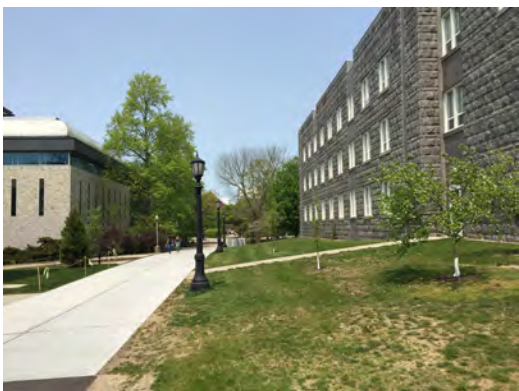
Dense shrubs can often become large and reduce visibility if not maintained



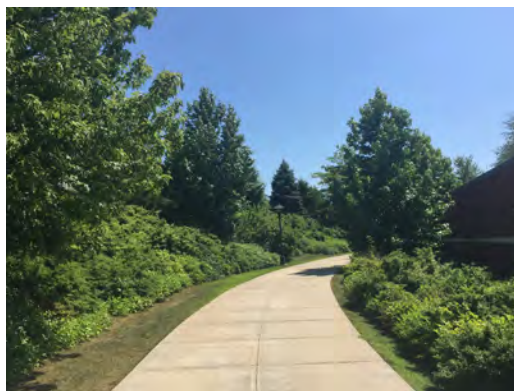
Small areas of lawn do not provide recreational use & are difficult to mow



Avoid large plant material along narrow paths



If space allows, long paths should be lined with tall canopy trees to provide shade



Layered planting creates structure and enjoyable views along pathways



Vegetative screening can often be unnecessary and difficult to maintain



## 5.3 CAMPUS TREE INVENTORY

### Intent

In the fall of 2016, a preliminary digital tree inventory for the Kingston campus was conducted. (It is important to note that the 1,095 trees inventoried are a small collection of the entire campus tree collection.) The purpose of this inventory was to create a database that will assist in the future management decisions of existing and proposed trees. These decisions include consideration of tree health, value of preservation, and public safety.

The data collected is intended to:

- Document tree condition, health, and vigor
- Recommend removal of hazardous trees
- Recommend pruning, pest treatments, and soil management
- Maintain landscape aesthetics

### Objective

Conducting a tree inventory allows the campus to:

- Create an overall organization of landscape types and arrangements
- Monitor the health and diversity of the campus tree canopy
- Plan for best management practices

The campus contains a variety of different landscape types. These landscape types include open spaces, streetscape and plazas, natural landscapes, residential landscapes, special places, interstitial landscapes, and civic spaces. While some of these existing spaces are well developed, the organization and connections between them tend to feel disjointed. By organizing the arrangement of these landscape types, the University can achieve a seamless sense of order and rhythm as the campus transitions from academic to historic to residential academic to historic areas.

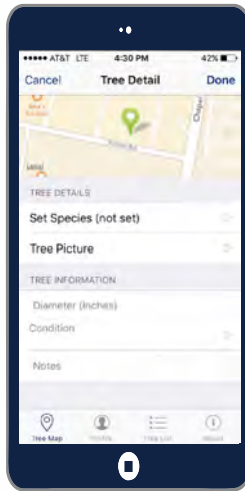
Creating a digital inventory of trees allows the campus to plan for maintenance schedules and establish priority areas. The tree data collected can be synthesized to define areas of improvement for all aspects of tree management from root growth to the canopy.

Geographic Information Systems (GIS) software is used to manage the collected tree data. The benefit of managing the digital tree data with GIS is that it can be viewed and updated in-field with mobile devices as changes are observed over time. Using a publicly available application allows the tree information to be accessed by anyone with a mobile device.

### Approach

A crowd-sourced tree inventory session was held on campus during the fall 2016 semester. The intent of creating an inventory of campus trees was to identify the diversity of species, range of ages, and health conditions, as well as creating an educational resource for faculty, students, and visitors. With this information, an appropriate maintenance plan can be developed to ensure that historic trees are preserved and new plantings will be properly cared for.

Members of the master planning team met with a class of plant sciences students to collect in-field data and initiate the foundation of a digital campus tree inventory. The locations of campus trees to be collected were broken down into sections. Each section had a group assigned to it which was composed of a tree expert and several students. Participants collected tree data via the use of personal smartphones. Data collected included the species type, size (diameter at breast height [DBH]), condition, and other notes regarding tree health. The results have provided conclusive evidence of the diversity of the campus forest, and a possible maintenance approach needed to preserve and protect the existing forest.



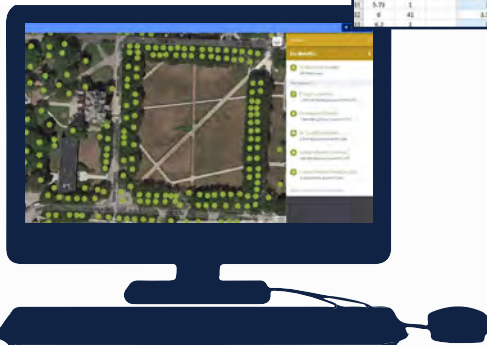
### Step One:

- Download the OpenTreeMap Application for Smartphones
- Access “URI Tree Map” file
- Collect tree data using personal smartphone and GPS coordinates

Diameter	Count	Range	Diameter Range	Count	Range	%
1	2	1.0-1.4	1.0-1.4	2	1.0-1.4	40.00%
1.1	2	1.5-1.9	1.5-1.9	2	1.5-1.9	40.00%
1.2	1	2.0-2.4	2.0-2.4	1	2.0-2.4	20.00%
1.3	8	2.5-2.9	2.5-2.9	8	2.5-2.9	160.00%
1.4	2	3.0-3.4	3.0-3.4	2	3.0-3.4	40.00%
1.5	2	3.5-3.9	3.5-3.9	2	3.5-3.9	40.00%
1.6	2	4.0-4.4	4.0-4.4	2	4.0-4.4	40.00%
1.7	1	4.5-4.9	4.5-4.9	1	4.5-4.9	20.00%
1.8	1	5.0-5.4	5.0-5.4	1	5.0-5.4	20.00%
1.9	1	5.5-5.9	5.5-5.9	1	5.5-5.9	20.00%
2.0	1	6.0-6.4	6.0-6.4	1	6.0-6.4	20.00%
2.1	1	6.5-6.9	6.5-6.9	1	6.5-6.9	20.00%
2.2	1	7.0-7.4	7.0-7.4	1	7.0-7.4	20.00%
2.3	1	7.5-7.9	7.5-7.9	1	7.5-7.9	20.00%
2.4	1	8.0-8.4	8.0-8.4	1	8.0-8.4	20.00%
2.5	1	8.5-8.9	8.5-8.9	1	8.5-8.9	20.00%
2.6	1	9.0-9.4	9.0-9.4	1	9.0-9.4	20.00%
2.7	1	9.5-9.9	9.5-9.9	1	9.5-9.9	20.00%
2.8	1	10.0-10.4	10.0-10.4	1	10.0-10.4	20.00%
2.9	1	10.5-10.9	10.5-10.9	1	10.5-10.9	20.00%
3.0	1	11.0-11.4	11.0-11.4	1	11.0-11.4	20.00%
3.1	1	11.5-11.9	11.5-11.9	1	11.5-11.9	20.00%
3.2	1	12.0-12.4	12.0-12.4	1	12.0-12.4	20.00%
3.3	1	12.5-12.9	12.5-12.9	1	12.5-12.9	20.00%
3.4	1	13.0-13.4	13.0-13.4	1	13.0-13.4	20.00%
3.5	1	13.5-13.9	13.5-13.9	1	13.5-13.9	20.00%
3.6	1	14.0-14.4	14.0-14.4	1	14.0-14.4	20.00%
3.7	1	14.5-14.9	14.5-14.9	1	14.5-14.9	20.00%
3.8	1	15.0-15.4	15.0-15.4	1	15.0-15.4	20.00%
3.9	1	15.5-15.9	15.5-15.9	1	15.5-15.9	20.00%
4.0	1	16.0-16.4	16.0-16.4	1	16.0-16.4	20.00%

### Step Two:

- Collected data is uploaded onto the OpenTreeMap website
- Administrative users can edit data as needed, and export results
- Results can determine overall campus tree health and monitor changes



### Step Three:

- Tree data is available for public use
- Public can upload new data, but only administrative users can edit data
- Changes can be noted in field and edited as needed





## 5.3 CAMPUS TREE INVENTORY

### Focus Area

Due to the scale of the campus and the little amount of existing tree records, not all areas were to be assessed in this inventory. The core of campus, which includes most residential and academic buildings, was considered the high priority area. This area has the highest amount of use and is nearly fully developed. Areas of low priority included parking lots and athletic fields. Heavily wooded areas as well as the neighboring North Woods were not included in this inventory assessment.

During the inventory, nearly 1,100 trees were identified and cataloged. It is the intent that the University faculty and staff continue the process. Multiple members of Campus Planning and Design, Landscape and Grounds, as well as Plant Sciences and Landscape Architecture faculty were made administrators for the on-line inventory which allows them to edit the data sets and data collected.

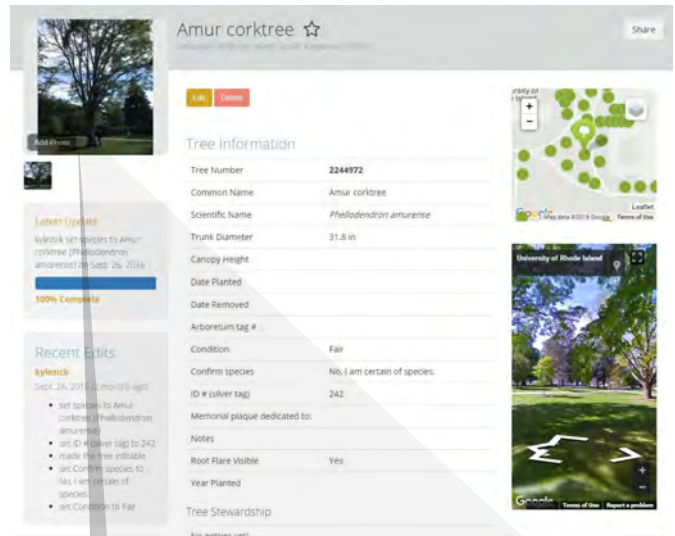


Tree Inventory Priority Map

## Field Data Attributes

The master planning team selected a number of criteria that help determine individual tree health and potential concerns. The tree data sets collected include:

- Botanical Name
  - Genus
  - Species
- Common Name
- Trunk Diameter (DBH)
- Canopy Height
- Date Planted, if known
- Date Removed, if appropriate
- Root Flare Visible (Y/N)
- Species confirmation requested (Y/N)
- ID # (Existing silver tree tag)
- Arboretum Tag # (Existing Tree Plaque)
- Memorial Plaque (dedicated to:)
- Condition
  - Good
  - Fair
  - Poor
  - Dead
  - Stump
- Additional Notes
  - Branching habits, Diseases, etc.
- Tree photos



The screenshot shows a web interface for a tree inventory system. At the top, it displays the tree's name 'Amur corktree' with a star icon and a 'Share' button. Below this is a 'Tree information' section with a table of data. To the left, there are sections for 'Latest Updates' and 'Recent Edits'. To the right, there is a map showing the tree's location and a photo of the tree.

Tree information	
Tree Number	2244972
Common Name	Amur corktree
Scientific Name	<i>Phellodendron amurense</i>
Trunk Diameter	31.8 in
Canopy Height	
Date Planted	
Date Removed	
Arboretum tag #	
Condition	Fair
Confirm species	No, I am certain of species.
ID # (silver tag)	242
Memorial plaque dedicated to:	
Notes	
Root Flare Visible	Yes
Year Planted	
Tree Stewardship	



### Example:

Amur corktree (Tree number: 2244972)

- Scientific name: *Phellodendron amurense*
- Diameter (DBH): 31.8"
- Condition: Fair
- Silver Id Tag (#242)
- Root Flare Visible: Yes
- Updated: September 26, 2016

## 2016 Tree Inventory Example



## 5.4 CAMPUS TREE ASSESSMENT

### Findings

The inventory results indicate where trees need more attention to pruning and where other tree care techniques such as soil amendments would be beneficial. By identifying areas where trees are lacking in health, more campus resources can be allocated to ensure that proper care is given to improve trees from fair condition to good condition. Twenty-seven percent—or 298—of the trees collected, are currently in fair condition. Eight percent of trees collected are currently in poor condition.

Collected data shows that there is a high level of species diversity, with seventy-five percent of inventoried trees contributing less than one percent of the overall forest. The percentage of species diversity is much different when looking at a particular area of the campus, for example the Quad that is lined with a double row of Japanese zelkova. Zelkova contributes nearly thirteen percent of the total campus trees and a large majority of all trees present in the region of the Quad.



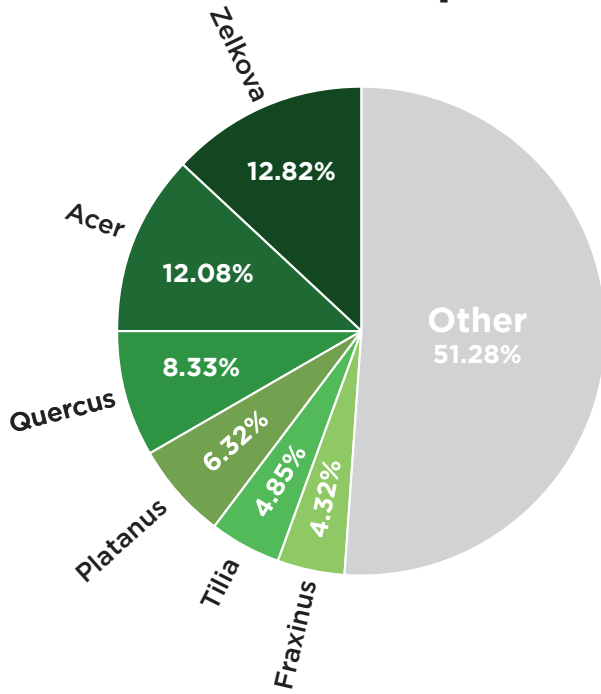
Japanese zelkova contribute 12.82% of the total inventoried trees on campus

Tree size and age are particularly important factors to consider when developing a master plan that aims to preserve historical trees and promote the healthy growth of new plantings. Nineteen percent, or 203 trees, are recorded as under five inches diameter at breast height (DBH). Of these recently planted trees, thirty percent are in fair condition, and seven percent are in poor condition. With this information, it becomes clear that more care needs to be given during the beginning stages of new plantings on campus to promote a healthy growing life. Larger trees that range from eighteen to twenty-nine point nine inches contribute nearly twenty-three percent of the trees inventoried. The majority of these trees are in good condition; however, thirty-four percent are in fair condition and could benefit from tree care practices. The largest trees recorded, thirty inches DBH and over, contribute eight percent of the inventory. Of these ninety trees, sixteen percent are in poor condition, thirty percent are in fair condition, and fifty-one percent are in good condition. Methods to improve the quality of these larger trees include pruning, soil decompaction, fertilization, and mulching. With almost half of the total number of the largest campus trees being in less than good condition, increased care and protection should be provided to ensure these historical icons of the campus are preserved.

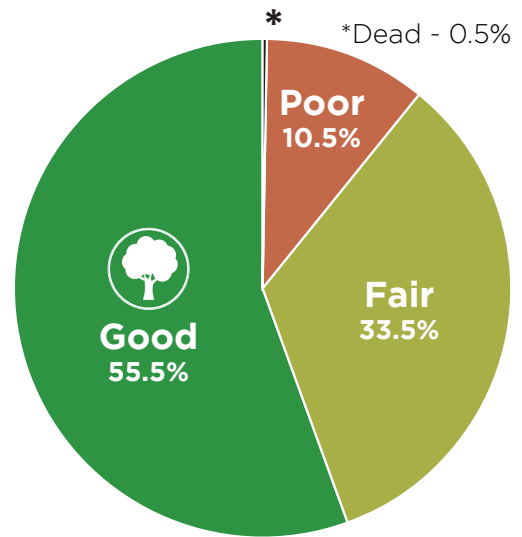
**1,095** Trees Inventoried

**59** Different Genera

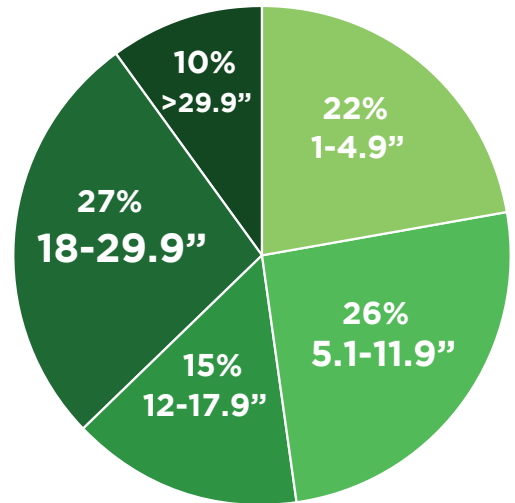
**104** Different Species



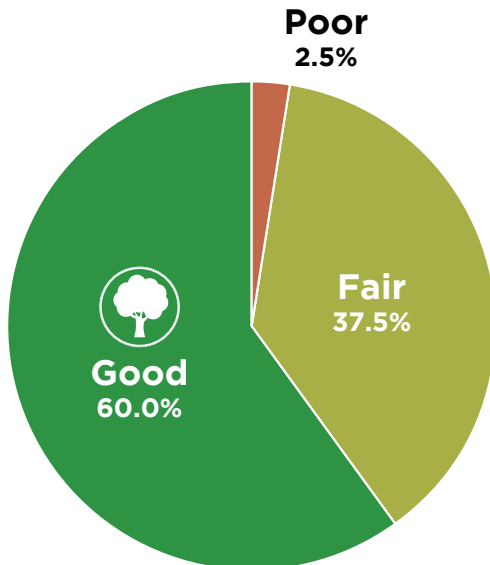
**Tree Diversity (Genus)**  
of all trees inventoried



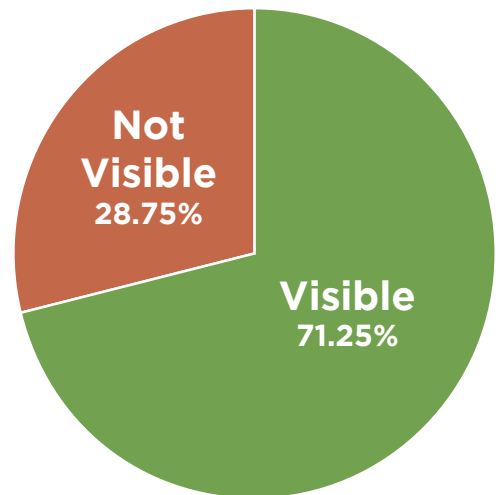
**Overall Condition**  
of all trees inventoried



**Size**  
of all trees inventoried



**Condition of Most Common Tree:**  
**Japanese zelkova**  
of all trees inventoried



**Visible Root Flare**  
of all trees inventoried

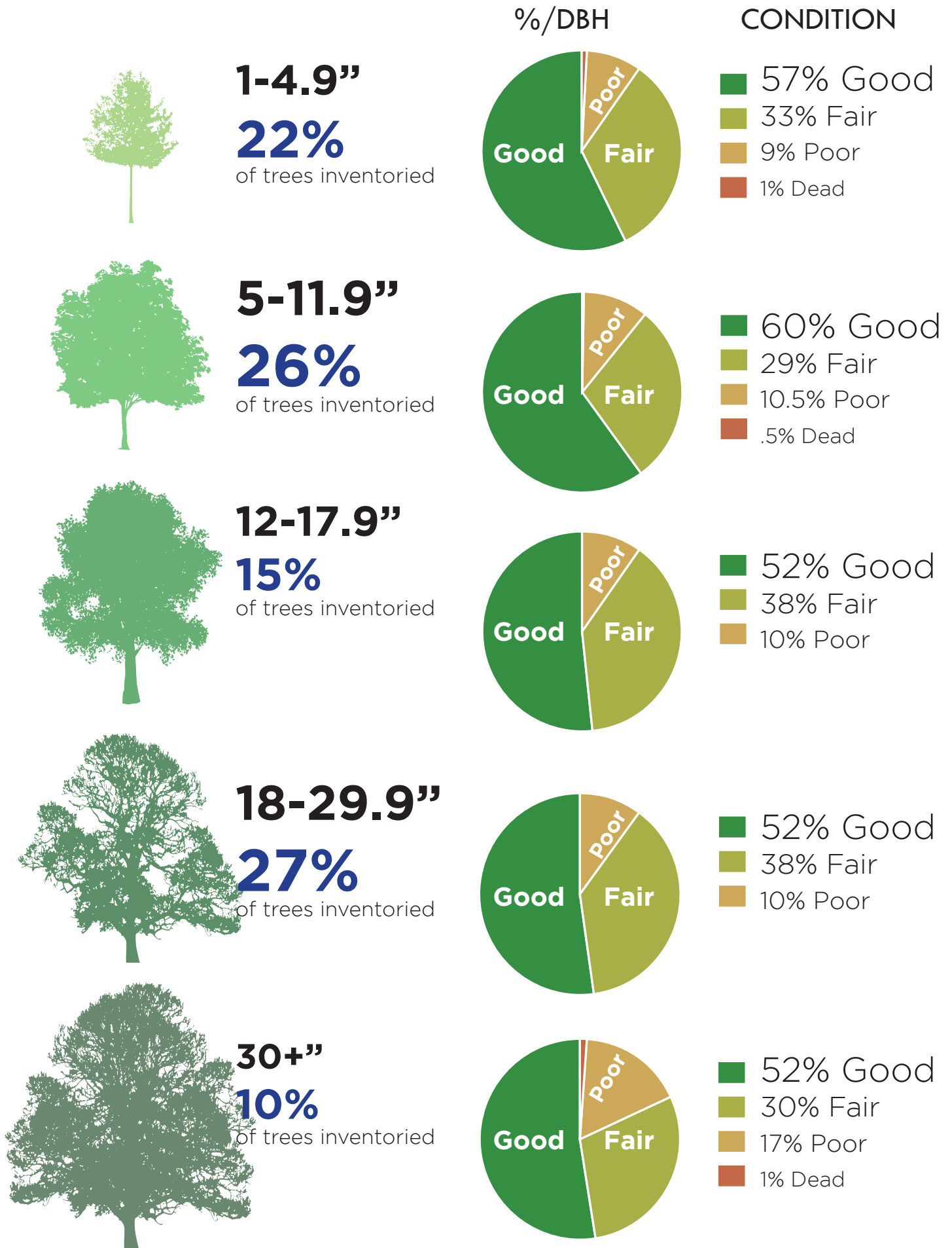


## 5.4 CAMPUS TREE ASSESSMENT

### Existing Species of Inventoried Trees

The following tree species were identified during the initial tree inventory:

*Abies balsamea*  
*Abies concolor*  
*Acer negundo*  
*Acer platanoides*  
*Acer platanoides 'Crimson King'*  
*Acer palmatum*  
*Acer campestre*  
*Acer platanoides*  
*Acer griseum*  
*Acer rubrum*  
*Acer saccharinum*  
*Acer saccharum*  
*Acer pseudoplatanus*  
*Aesculus hippocastanum*  
*Aesculus x carnea*  
*Amelanchier canadensis*  
*Betula papyrifera*  
*Betula nigra*  
*Betula pendula*  
*Carpinus caroliniana*  
*Carpinus betulus*  
*Carya texana*  
*Carya glabra*  
*Catalpa bignonioides*  
*Catalpa speciosa*  
*Cedrus atlantica*  
*Cercidiphyllum japonicum*  
*Cercis canadensis*  
*Chamaecyparis thyoides*  
*Cladrastis kentukea*  
*Cornus mas*  
*Cornus florida*  
*Cornus kousa*  
*Cornus alternifolia*  
*Crataegus laevigata*  
*Cryptomeria japonica*  
*Fagus grandifolia*  
*Fagus sylvatica*  
*Franklinia alatamaha*  
*Fraxinus excelsior*  
*Fraxinus pennsylvanica*  
*Fraxinus americana*  
*Ginkgo biloba*  
*Gleditsia triacanthos var. inermis*  
*Gymnocladus dioica*  
*Hamamelis virginiana*  
*Ilex opaca*  
*Juglans nigra*  
*Juniperus virginiana*  
*Koelreuteria paniculata*  
*Larix decidua*  
*Liquidambar styraciflua*  
*Liriodendron tulipifera*  
*Maackia amurensis*  
*Magnolia denudata*  
*Magnolia x soulangiana*  
*Magnolia acuminata*  
*Magnolia stellata*  
*Magnolia virginiana*  
*Malus spp.*  
*Metasequoia glyptostroboides*  
*Nyssa sylvatica*  
*Ostrya virginiana*  
*Ostrya carpinifolia*  
*Oxydendrum arboreum*  
*Phellodendron amurense*  
*Picea mariana*  
*Picea pungens*  
*Picea abies*  
*Picea glauca*  
*Pinus nigra*  
*Pinus strobus*  
*Pinus sylvestris*  
*Platanus x acerifolia*  
*Populus deltoides*  
*Prunus serotina*  
*Prunus subhirtella*  
*Prunus serrulata*  
*Ptelea trifoliata*  
*Quercus velutina*  
*Quercus macrocarpa*  
*Quercus robur*  
*Quercus palustris*  
*Quercus rubra*  
*Quercus palustris*  
*Quercus bicolor*  
*Quercus alba*  
*Sassafras albidum*  
*Sciadopitys verticillata*  
*Sophora japonica*  
*Stewartia pseudocamellia*  
*Styrax japonicus*  
*Syringa reticulata*  
*Taxodium distichum*  
*Thuja occidentalis*  
*Tilia americana*  
*Tilia platyphyllos*  
*Tilia x euchlora*  
*Tilia cordata*  
*Tsuga canadensis*  
*Ulmus americana*  
*Ulmus glabra*  
*Ulmus parvifolia*  
*Zelkova serrata*



2016 Tree Inventory: Size & Conditions



## 5.4 CAMPUS TREE ASSESSMENT

### Issues

A variety of tree health defects and undesired growth habits were found during the tree inventory. These issues were found in 44% of the trees inventoried which were determined to be in less than “good” condition.

Tree condition notes included in the data set listed common defects to address:

- Buried root flare
- Girdling roots
- Pests/diseases (hemlock woolly adelgid, gypsy moth, etc.)
- Hazardous branches
- Severely leaning stem
- Co-dominant stems
- Root decay
- Damage from steam lines
- Aging evergreens with sparse branching
- Evergreen screens that fail due to lack of proper pruning
- Inappropriate planting locations for tree species (i.e. undersized tree pit)
- Dead trees, or stumps, to be removed



Dead tree to be removed



Visible root decay



Hazardous branches





Co-dominant stems



Weakly-attached branch



Hazardous branching



Girdling roots



Sparse evergreen branching



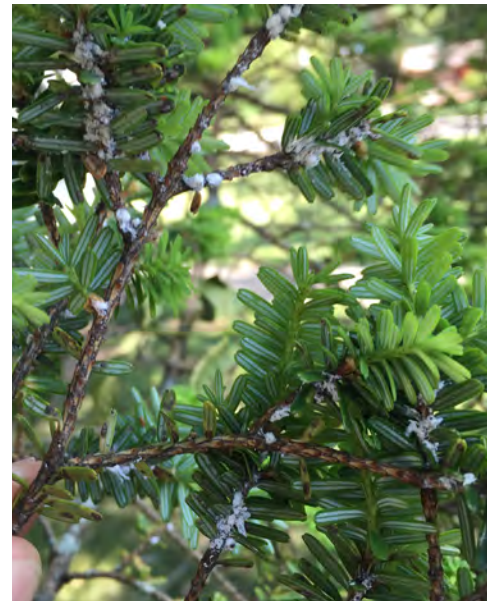
Poor tree location



Large limb loss



Pest (Gypsy moth)



Pest (Hemlock woolly adelgid)



## 5.4 CAMPUS TREE ASSESSMENT

### Invasive Species

Invasive plants are defined as species that are non-native to a region and have a high potential for rapid establishment. The major issues with invasive plants is their ability to rapidly and widely disperse. These species can be disruptive to native plant systems and difficult to manage since they can dominate the available resources that native species need. However, some trees that are considered invasive can still provide benefits that make them worth consideration.

There are some invasive trees that could be carefully planted for educational use if properly managed. In managing these species, their location and intent should be considered prior to their removal. For example, all invasive species should be removed in undeveloped woodland pockets that are intended to have a natural aesthetic. Removing these invasive species will promote a healthy native habitat that is beneficial to the wildlife on campus. After removing invasive species, it is important to replace them with native species that will thrive in that particular area. This will help promote biodiversity among native wildlife that can make use of the plants. Native plants can provide food and shelter for native wildlife, whereas invasive species may provide wildlife with little benefit.

It is important to consider the role of the University in educating students and the community to identify, treat, and manage these invasive species.

#### Invasive Species as Specimens

In areas of ornamental plantings, invasive species can serve as educational resources if maintained properly. Invasive plants such as the amur corktree can be problematic due to the production of berries that encourage widespread seed dispersal by birds. Other invasive species such as burning bush, barberry, or privet are commonly used as manicured hedges, but require a lot of maintenance in order to stay contained.

These species should be removed and replaced with native species in areas where extensive maintenance will be required.



A single invasive corktree planted as a specimen.

#### Non-Native Species

Not all non-native species should be considered invasive. There are currently a variety of non-native species that can be found throughout campus in various contexts. Ginkgo trees, for example, are non-native but do not spread easily within the landscape. This tree species is particularly useful for education purposes because they are a rare example of a living fossil.

## Invasive Management

Non-native plant selection should be closely considered for plantings on campus, particularly in areas of native woodland plantings. A diverse range of native plants should be selected when possible to ensure the best chance of success and suitability of soil, water, and climatic factors. Selecting native plants that are less prone to pests and disease will aid in the lessening of maintenance requirements and increase the longevity of campus plantings. If non-native species are desired, they should be planted as specimens in locations that will have a lesser chance of impacting native vegetation.

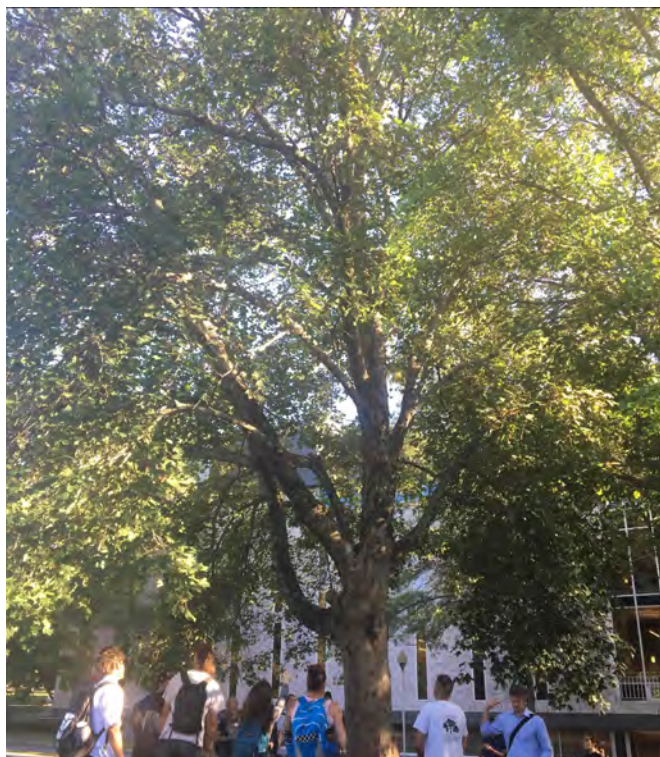
## Invasive Trees to Assess When Used

For a species to be considered invasive to the campus landscape, versus non-native, it must:

- Be non-indigenous to Rhode Island
- Have the potential for rapid growth and establishment
- Have the biologic potential for widespread dispersal away from the initial planting site
- Have the potential of existing in high numbers if not planted in an intensively managed artificial habitat

Some of the species that are likely to be found on campus that can have negative impacts if not properly managed are:

- *Ailanthus altissima* - Tree of heaven
- *Acer platanoides* - Norway maple
- *Acer pseudoplatanus* - Sycamore maple
- *Berberis vulgaris* - Common barberry
- *Elaeagnus umbellata* - Autumn olive
- *Alnus frangula* - Glossy buckthorn
- *Phellodendron amurense* - Amur corktree
- *Ligustrum spp.* - Privet species



Sycamore maple seeds spread very rapidly and establish easily. These saplings should be quickly removed to reduce unwanted plantings.



Black locust spreads rapidly by root suckering and can shade out smaller native species; however, they are beneficial to pollinators.

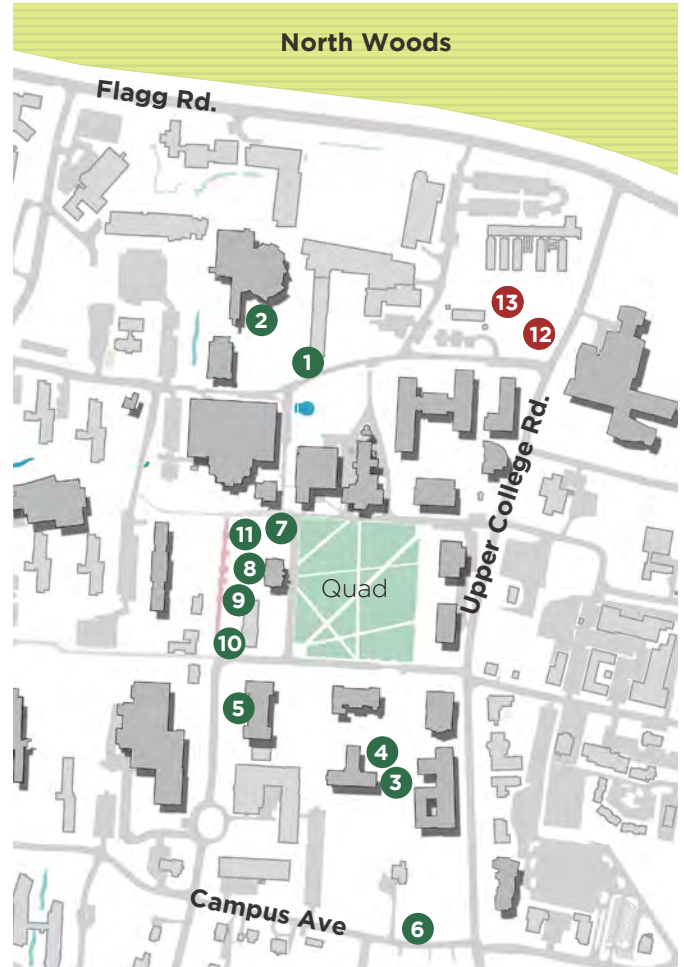


# 5.4 CAMPUS TREE ASSESSMENT

## Heritage Trees

Heritage trees are exceptional specimen trees that are large and have a unique form, or are a rare species. Many of these are large specimens and some have been planted as memorials. Heritage trees have significant impacts on defining the image of the campus landscape. A heritage tree can depict the ideal form of a species at maturity and often has historical significance. The University has several outstanding heritage tree species which are majestic specimens and should receive a higher level of tree care. It is recommended that these particular trees receive an annual inspection from a tree specialist to note any changes in the tree's health in order to determine what maintenance efforts are required. When moving forward with future development, the protection of these trees should be strongly encouraged.

- In 1934, The Lions Club was involved in the planting of thirteen trees; one for each club that was invited to a College celebration. They selected tulip trees to line Campus Avenue, several of which, (#6, right) still exist today.
- The umbrella pine (#3, right) was planted in 1955 to commemorate the tenth anniversary of the United Nations.
- The camperdown elms (#9, right) can be found on plans dating back to 1934.
- The linden tree (#10, right) can be found at the entrance of Hammerschlag Mall near Ranger Road. The tree was planted in 1919 by Amicron Alpha Alpha (now Chi Omega) in memory of the heroes of World War I.
- The American elm (#11, right) is believed to be one of the original trees planted in that part of campus. If so, the tree could date to late 1800s to early 1900s.



### Legend

- Heritage Tree
  1. Weeping beech near Pharmacy Building
  2. Linden outside of Chaffee Hall
  3. Umbrella pine near Green Hall
  4. Weeping cherry near Green Hall
  5. Two weeping hemlocks outside Quinn
  6. Tulip trees lining Campus Ave
  7. Weeping beech near Davis Hall
  8. Fern-leaf beech near Davis Hall
  9. Camperdown elms by Carlotti
  10. Linden at Hammerschlag Entrance
  11. American elm near front of Library
- Rhode Island State Champion Trees
  12. Dove-tree in Arboretum
  13. Silverbell in Arboretum
- North Woods/Undeveloped

## Heritage Trees





1

27" DBH Weeping beech located on the corner of Woodward Hall



2

48" Linden stands as a focal point in a turf area outside of Chaffee Hall



3

36" DBH Japanese umbrella pine between Green Hall and Swan Hall



4

33" DBH Weeping cherry outside of Green Hall



5

Two weeping hemlocks arc to create an interesting main entrance at Quinn Hall.



6

Tulip trees Lining Campus Avenue



7

42" DBH weeping beech behind Davis Hall adds a playful form along a pathway



8

60" DBH 'Fernleaf' beech behind Davis Hall



## 5.4 CAMPUS TREE ASSESSMENT

### Memorial Trees

Many trees on campus have been donated to the University, most of which have been dedicated as living tributes in memory of individuals. The trees generally have a dedication plaque in front of them. These trees can be found throughout campus and are not limited to any particular species. It is important that these trees be properly selected and receive additional care to ensure healthy growth. Location of these trees should be carefully selected to minimize stresses that could shorten their long term success.

There are currently three categories of memorial trees on campus: URI Foundation trees, Rhode Island Nursery & Landscape Association trees, and Arbor Day trees. The University should map all memorial trees to understand how many trees are present and to locate future memorial trees.

#### Notable Historic Memorial Trees

- Red oaks planted along both sides of Upper College Road near the memorial gateway in the President's Lawn and by the Visitor Center
- Large linden at the entrance of Hammerschlag Mall; planted by Omicron Alpha (Chi Omega) in 1919 to commemorate the heroes of WWI
- Crabapples planted in 1938 (since replanted) dedicating the Women's Dormitory, now Roosevelt Hall



Campus standard memorial plaque



Memorial tree with plaque (out-of-date standard)

## Special Places

The Kingston campus is full of botanically interesting and historically significant trees. Many of these trees are incorporated into special places that serve as places of significant interest, outdoor classrooms, or memorials. Below are some of the special places on campus, where the trees planted should receive special attention and proper maintenance.

### The Quadrangle

The Quad would be less impressive without its distinctive landscape. The presence of the allée has existed since its original implementation in 1899; however, the trees that stand today do not reflect the original intent of Olmsted, Olmsted, and Eliot. The American elm was originally selected for its vase-like shape, arching limbs, and high branching habits. The monoculture ultimately led to the downfall of these trees once Dutch elm disease began to spread. After their death, their locations were shifted inside the Quad and the elms were replaced with the Japanese zelkova which is resistant to Dutch elm disease and other pests. Although it is a common replacement for the American elm, the form and branching habit of the Japanese zelkova is very different.



Japanese zelkovas lining the Quad

The Japanese zelkova does not have a high enough canopy, and does not frame the Quadrangle the same way the elms once did. Most of the Japanese zelkova trees were planted around the Quad in the early 1980s, and are currently in need of continued care in order for them to be successful over the next fifty years.

It is not recommended to remove the zelkovas until they begin to pose a risk to pedestrians, but replacing them with a different species should be considered. It is recommended to consider multiple tree species to avoid monoculture and to reduce the risk of a single pest devastation. The location of the trees should also be studied and reviewed against the historic conditions.

### Oak Grove by Memorial Gateway

One of the best reminders of the age of the campus forest is located at the historic gateway on Upper College Road. In 1922, a grove of red oaks was planted by the Alumni Association in memory of the twenty-two undergraduates and one faculty member who died in World War I. Of the original trees, several still exist today in the President's House lawn and across Upper College Road. These trees are in good health, largely due to the lack of disturbance from any development in the area. Since they are a focal backdrop to the President's House, these trees should receive a higher level of routine maintenance.



Oak grove from President's House



## 5.4 CAMPUS TREE ASSESSMENT

### President's Japanese Maple Collection

A collection of Japanese maple specimens line the President's Driveway. There is a potential for the garden to be used as an educational resource.



President's Japanese maple collection

### Botanical Gardens & Horridge Conservatory

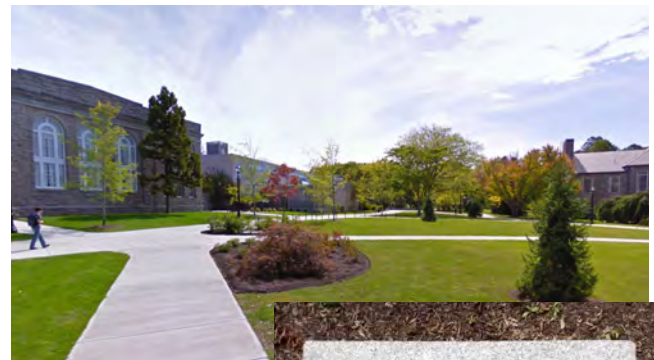
A reminder of the University landscape's educational role can be seen in the botanical gardens in the North Campus District. The Botanical Gardens, which were started in 1992, serve as an important educational feature that showcases a variety of unique specimens. Most trees in the garden are of good health, but the educational value of the gardens warrants additional resources to be allocated to protect existing trees and introduce new species. The Botanical Garden are listed as #45 of the "50 Most Stunning University Gardens and Arboretums" by Best Masters Programs website.



Botanical Gardens: Jennifer Ann Ryan Memorial entrance

### Palmatier Garden

The Palmatier Garden was originally installed in the early 1980s with a red cutleaf Japanese maple planted as a tribute to URI Botany professor Elmer Palmatier's wife. When Professor Palmatier retired in 1982, additional plant materials that he was fond of were added, including a sourwood tree and a bristlecone pine. The garden was originally located on the southeast corner of Ranger Hall, but when work was done around the Hall in 2016, the components of the garden were relocated to an area adjacent to one of the sidewalks to the east. The bristlecone pine did not survive.



Palmatier Garden & memorial stone (right)



### Robert & Gerri Beagle Perennial Garden, Alumni Center

The Beagle Perennial Garden was dedicated in Spring 2017 by former URI Vice President of University Advancement, Robert Beagle and his wife Gerri. The garden showcases native perennials and is the setting for many alumni events.

### Heber W. Youngken, Jr. Medicinal Garden

The Heber W. Youngken, Jr. Medicinal Garden was opened in 2013 and is planted

with species that prevent or cure a variety of illnesses. The garden is named after the College of Pharmacy's founding dean who was a pioneer in the study of medicinal plants. The garden currently contains 200 medicinal plants, 500 ornamental plants, and several trees. The easily accessible educational value of the garden is of a quality that should be used as a precedent and introduced throughout the rest of the campus.

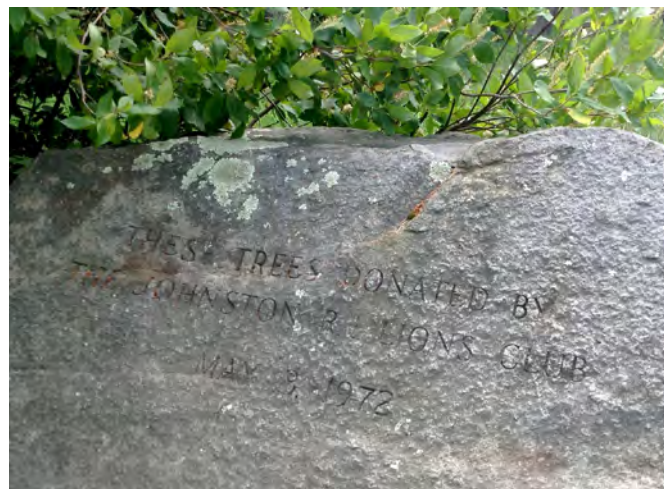
The garden received an Honor award from the Vermont chapter of the American Society of Landscape Architects (ASLA) in 2013 and Rhode Island chapter's President's Award of Excellence in 2013.



Top and bottom: Heber W. Youngken Jr. Medicinal Garden

### Johnston, RI Lions Club

A grove of trees and shrubs can be found at the intersection of the Elephant Walk and Butterfield Road. An engraved stone reads "These trees donated by The Johnston R.I. Lions Club/May 3, 1972."



An engraved stone marks a collection of dedicated trees and shrubs planted in 1972



## 5.4 CAMPUS TREE ASSESSMENT

### Economical and Environmental Benefits

With the tree data collected, OpenTreeMap can calculate the ecological benefits of the existing campus trees. This information is derived based on the size, species factor, condition, location, and price for replacement of trees. These benefits include, but are not limited to: energy conservation, stormwater filtration, air quality improvements, noise abatement, and wildlife habitat. This information shows how big of an asset the campus forest is for the University, as well as its regional neighbors.

When properly placed in a landscape, trees reduce the heating and cooling demands of buildings by providing wind and sun protection. According to the U.S. Department of Energy trees can reduce wind speeds for a distance of as much as thirty times their height. This windbreak helps regulate the internal temperatures of nearby buildings as well as outdoor spaces.

### Tree Benefits Compared to Impervious Surfaces

Trees play a major role in mitigating rainfall impact and stormwater. Depending on the density of canopy, trees can hold as much as 0.8-of-an-inch of initial rainfall. This is a significant number since an average rainfall on the Kingston campus is approximately one-inch of rain.

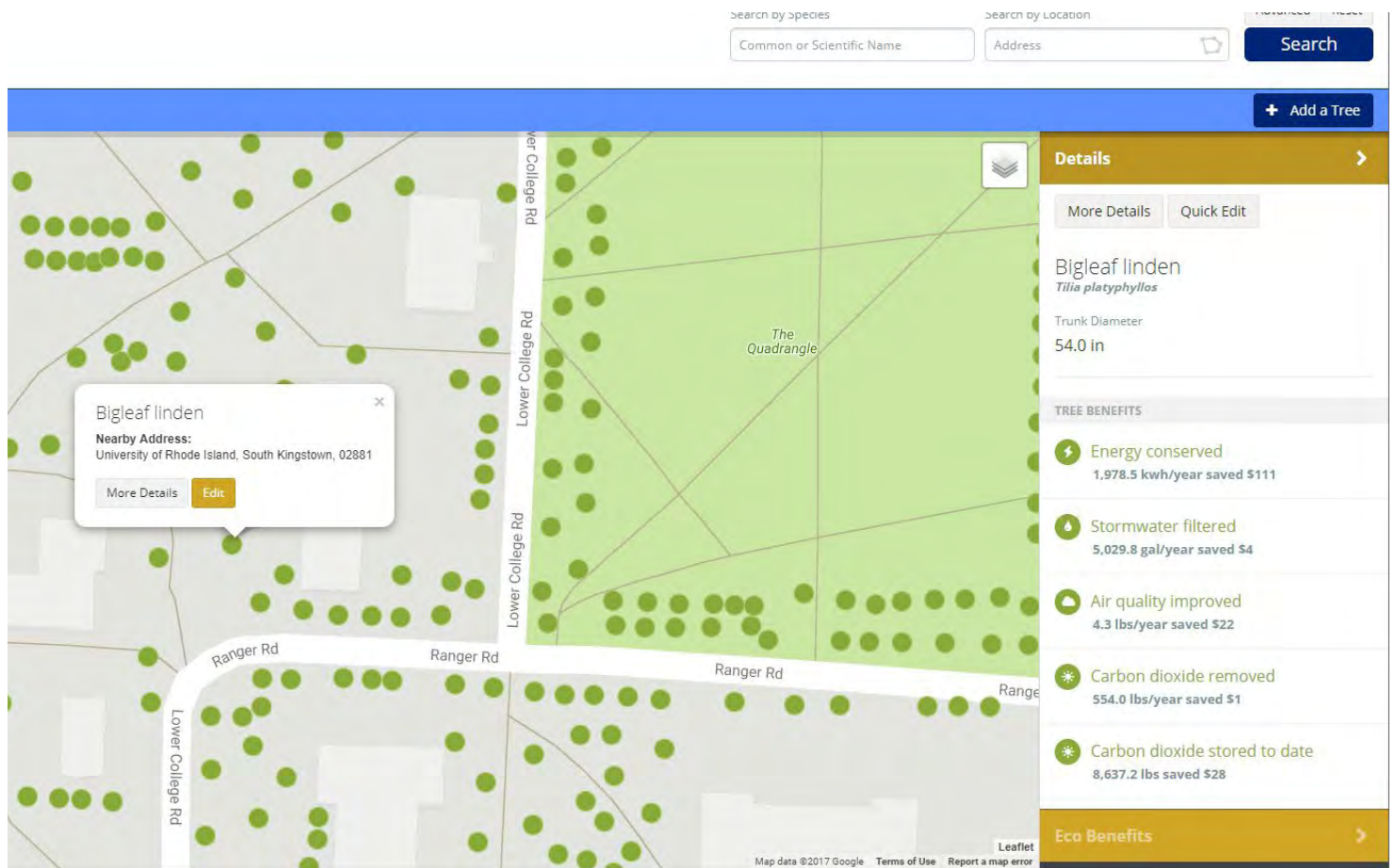
Tree canopies are considered to have static and dynamic storage capacities. Static storage is the amount of water that can be held after a rain event ends. This calculation is approximately 0.2 mm per m<sup>2</sup> of leaf area. Dynamic storage is the amount of water than can be held during a rain event. This calculation is approximately 0.77 mm/m<sup>2</sup> per broadleaf tree and 1.25 mm/m<sup>2</sup> per coniferous evergreen.



A dense canopy can help reduce the impacts of rainfall intensity and erosion.

As an example: a fourteen-inch hackberry tree has a height of fifty feet, a thirty-five-foot crown width, and leaf area of 7,000 ft<sup>2</sup>. The static storage of this tree is approximately thirty-four gallons and the dynamic storage is approximately 132 gallons (example provided by USDA Forest Service).

In addition to storing rainwater, tree canopies also reduce the intensity of rainfall events. According to the USDA Forest Service, canopy cover can reduce the rainfall intensity as much as fifteen to twenty-five percent in a forest depending on the location, canopy density, and species of trees. This is important because reducing rainfall intensity impacts erosion and the amount of surface runoff. Compared to impervious surfaces, canopy cover greatly reduces the amount of runoff. As an example; 10,000 sq ft of impervious surface during a oneinch rainfall event will result in 639 cubic feet of runoff. With trees, the runoff rates reduce greatly to just under four (3.9) cubic feet (example provided by USDA Forest Service).



## Tree campus eco-benefits:

(Based on 1,095 trees inventoried)

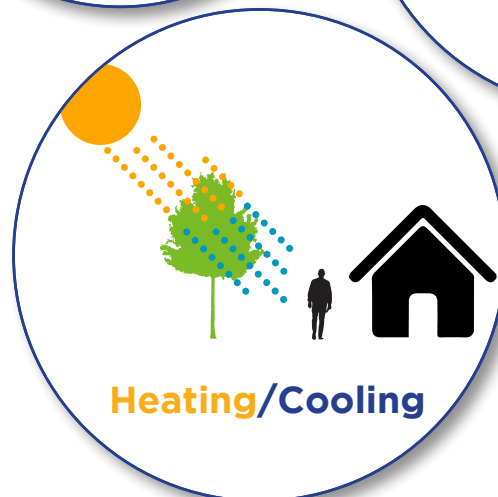
Energy conserved:  
**1,111,661 kwh/year**

Stormwater filtered:  
**1,968,353 gal/year**

Air quality improved:  
**2,322 lbs/year**

Carbon dioxide removed:  
**491,237 lbs./year**

Carbon dioxide stored to date:  
**2,229,521 lbs**



## 2016 Tree Inventory: Eco-benefits



## 5.4 CAMPUS TREE ASSESSMENT

### Tree Appraisal

The value of a tree can be determined by the benefits and functions they contribute to the landscape. These benefits can be graded and used in a mathematical formula that assigns a monetary value to the particular tree. Monetary values can have a large impact in the decision-making process of protecting or removing campus trees. Tree appraisal can often prove that the removing and replacing of a tree can be much costlier than protecting it.

The method applied to the University's campus trees is called the Trunk Formula Method, which is authored by the Council of Tree and Landscape Appraisers (CTLA). The method considers various factors in determining a tree's monetary value, such as: species, condition, size, location, and replacement cost.

The value of a tree species is determined by experts that understand the benefits of particular species in specific regional environments. The condition and location of a tree is subjective and is made by the appraiser during an inspection. The replacement cost considers the largest size tree a nursery can typically provide within reason. Replacing large trees over eighteen inches in diameter with an equal size tree is unrealistic from a budget perspective and often, but not always, would be best to be replaced with a smaller, more manageable four-inch caliper tree.



47.4" DBH linden stands as a focal point in an open lawn outside of Chaffee Hall

The Trunk Formula Method is often used when large trees are being considered for removal and their benefits are compared with smaller replacement trees.

- Linden (47.5" DBH) Value

The recommended replacement size would be a four-inch caliper tree, since smaller trees often have a better chance of a quick and healthy establishment compared to large transplants.

- Replacement Cost (4" cal. max): \$1000

The species rating can be determined by using a chart provided by CTLA. In this case, a linden tree has a species rating of 0.70.

- Species rating: 0.70

The location and condition value of trees can be determined only by visual assessment. The location factor considers the placement and relation of a specific tree to contextual landscape. The function of the tree is also a factor in determining the location value. This example tree is in a good location, with little obstructions that would prohibit growth. The condition value is determined by the overall health and structure of the tree.

- Location: 0.90
- Condition: 0.90

The base value of a tree is calculated from the cost of replacement tree divided by the trunk cross-section area of the replacement tree. A four-inch caliper replacement tree has a cross section area of 12.6 inches squared and would cost \$1,000. The cost divided by 12.6 in<sup>2</sup> determines that one square inch costs \$79.40 (rounded); which is the base value input.

- Base value: \$79.40

## Monetary Value of Campus Forestry

This formula can be applied to the average tree size on campus by using approximate values for species, location, and condition. Of the inventoried trees on campus, the average tree has a DBH (diameter at breast height) of eighteen inches and is in fair condition. Assuming these trees would be replaced with a maximum four-inch caliper tree valued at \$1,000, we can determine the estimated value of inventoried trees as a whole. The average condition of the inventoried trees is fair to good condition; therefore the formula uses 0.70 for the species, location, and condition.

## Average Value of Total Trees Inventoried

- $\$1,000 + ((\$79.40 \times (254 \text{ in}^2 - 12.6 \text{ in}^2)) \times 0.70 \times 0.70 \times 0.70 = \$6,917 \text{ per tree}$
- = **\$7,574,115** for 1,095 Trees

### Formula:

Area of 4" caliper tree  
Area of existing tree

Base value —————→

Replacement cost —————→

Species x Location x Condition —————→

$$\begin{aligned}
 & \$1,000 + ((\$79.40 \times (1,772 \text{ in}^2 - 12.6 \text{ in}^2)) \\
 & \times 0.70 \times 0.90 \times 0.90 = \\
 & \text{Monetary Value of Tree} = \mathbf{\$79,775}
 \end{aligned}$$



## 5.4 CAMPUS TREE ASSESSMENT

### Educational Value of Campus Forestry

The creation of a comprehensive digital arboretum is the first step in preserving and enhancing the campus forest. Using modern technology such as personal smartphones encourages hands-on interaction with the campus trees, which increases awareness of the ecological changes trees experience over time.

By cataloging the size and condition of trees, the preservation of iconic trees on campus can be studied and documented. The use of a digital application will aid in maintaining records and maps and gives students and faculty the opportunity to be involved with the observation of tree growth processes over time.

Certain areas of campus may be considered sites for experimental landscapes. The Botanical Gardens and Pharmacy Garden are existing examples of experimental landscapes. In proposed experimental areas, interpretive signage should be included to educate visitors. When new trees are added on campus, it is imperative that they be cataloged from the start to see how they progress over time. Recording new species can allow for a trial-and-error study to see what species work best in certain locations and microclimates.

### Regional Campus Arboretums

Several regional colleges and universities have arboretums and botanical gardens; these can be evaluated and studied for maintenance practices, partnership examples, and education and interpretive interventions. These include:

- Connecticut College
- Carnegie Science Arboretum, Bates College
- Fay Hyland Botanical Plantation, University of Maine
- Lyle E. Littlefield Ornamentals Trail Garden, University of Maine
- Perkins Arboretum, Colby College
- Shoreway Arboretum, Southern Maine Community College
- Arnold Arboretum, Harvard University
- Babcock Arboretum, Eastern Nazarene College
- Botanical Garden of Smith College
- Mount Holyoke College Botanic Garden
- Wellesley College Botanic Gardens

## 5.5 CAMPUS TREE RECOMMENDATIONS

The results from the tree inventory and assessment establish the foundation for making decisions regarding campus tree needs and priorities. These decisions are outlined herein as overall recommendations for the trees located throughout the campus landscape. Recommendations were guided by the overall aesthetic of the University and the appropriateness relating to Kingston's historical character.

### General Goals and Priorities for Campus Trees

- Existing trees need more care: structural pruning, buried root flare exposure, construction impact protection, protection from mower damage, etc.
- Heritage trees should receive special care, including sufficient mulch.
- Natural areas should be managed as such, including invasive management.
- A more diverse tree palette, which is supportive of learning, campus aesthetic, ecological goals, etc., should be supported.
- Street trees should line campus roads.
- New trees should be selected and located thoughtfully for multi-layered impact (aesthetic, educational, ecological, spatial, etc.)
- Consider certification of significant tree collection with national horticultural organizations.
- Maintain tree inventory: record maintenance performed, add tree identification tags to all trees, and continue to inventory trees not included in initial data collection.



The landscape around the President's House is a good example of multi-layered tree plantings.

### Environmental Goals

Increasing tree canopy can have a positive contribution to improving environmental conditions on campus. The significant environmental benefits of planting trees are mitigating the heat island effect, shading buildings, reducing rainfall impact, and improving pedestrian comfort. Tree canopies can also aid in absorbing carbon dioxide from the environment. According to the U.S. Environmental Protection Agency (EPA), a typical passenger vehicle emits about 10,500 pounds of carbon dioxide per year. According to OpenTreeMap.com, It is estimated that the 1,092 trees collected during the campus tree inventory can remove 490,788 pounds of carbon dioxide per year. (The equivalent of removing forty-six cars per year.) For these reasons, canopy coverage should be increased to help improve the overall environmental quality of campus.

### Environmental Goals

- Plant trees to increase environmental benefits.
- Expand tree canopy to improve shade coverage and pedestrian comfort.
- Plant trees each year to achieve long term canopy coverage goal.



# 5.5 CAMPUS TREE RECOMMENDATIONS

## Canopy Goals

### Need to Increase Canopy Coverage

Tree canopy coverage at the University should be increased, particularly near social gathering spaces to regulate micro-climate temperatures, to provide environmental benefits such as stormwater filtration, to increase pedestrian comfort, increase wildlife habitat, and to improve campus aesthetics. There are currently many walkways and spaces on campus that lack sufficient canopy cover. These walkways and other areas of fragmented coverage should be considered priority areas for new tree plantings. It is recommended that current interstitial spaces on campus be replaced with functional spaces through infill planting.

Increased canopy coverage will benefit the campus year-round and will provide benefits during each season. During the late spring and summer months, canopies will help shade walkways and plaza spaces. In the fall and winter, canopies will assist to divert cold winds. Visually, tree canopies provide a pedestrian scale element to spaces and direct desirable—or block undesirable—views.



Tree canopies create enjoyable environments for pedestrians.

### Existing canopy cover

- **15.75% (total)**
- Total acres of canopy coverage (within districts) = **63 out of 400 acres**

### Coverage within Districts

- Historic Campus Core District = **28%**
- Mall District = **18%**
- North Campus District = **15%**
- Residential Life District = **15%**
- Wetland District = **50.5%**
- Service District = **9%**
- Athletic District = **5.5%**

\* Percentages based off GIS information and aerial imagery.

### Canopy Cover Goal

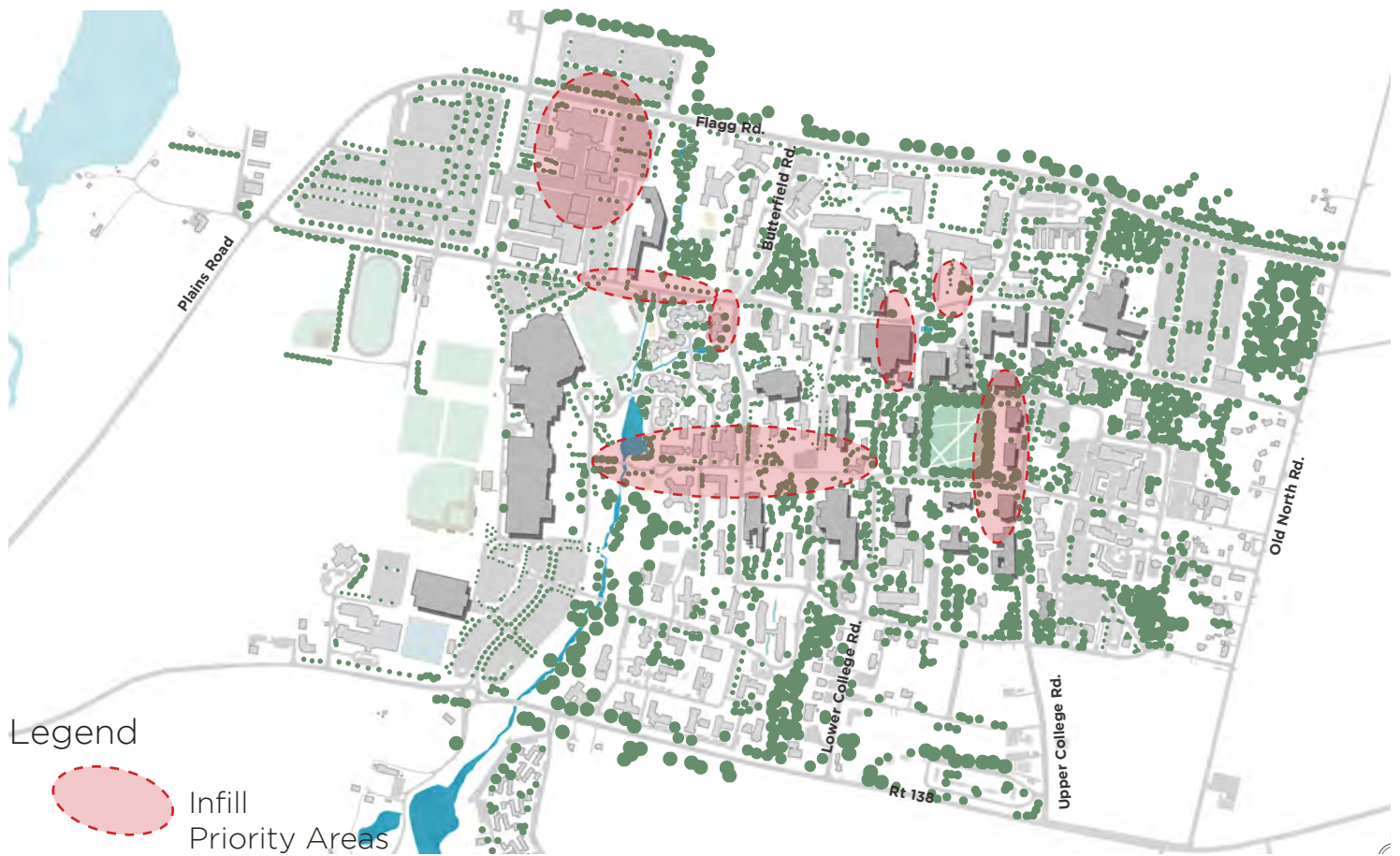
- Campus Core Canopy Cover Goal: **25%** coverage

## Infill Planting

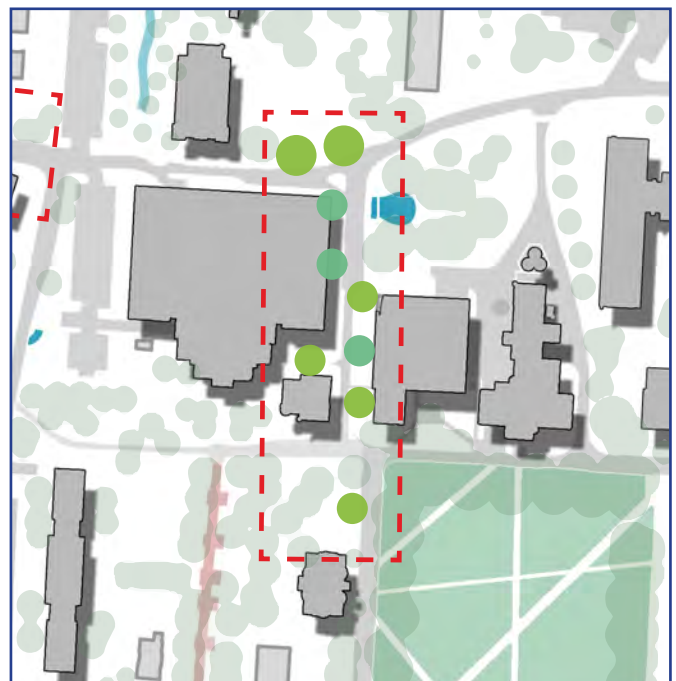
New trees should be planted in areas where the canopy feels segmented. In formal spaces, such as the Quadrangle, infill tree planting should be implemented to maintain consistent spacing as appropriate. As a campus-wide recommendation, new trees should be planted to create a shaded corridor along pedestrian and vehicular routes.



New trees can be planted in gaps between trees to maintain regular spacing.



West Alumni Ave infill plantings



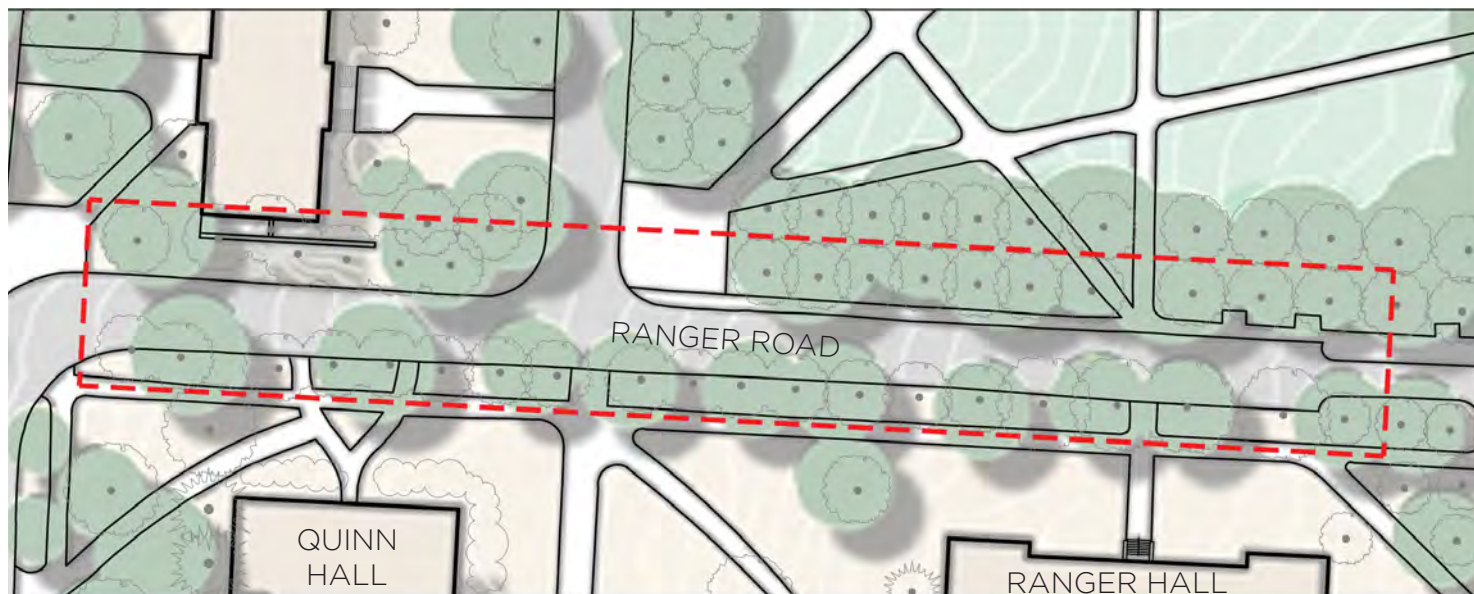
Quad to CBLS connection infill plantings.

## Existing Canopy Cover/Proposed Infill Planting Areas Plan

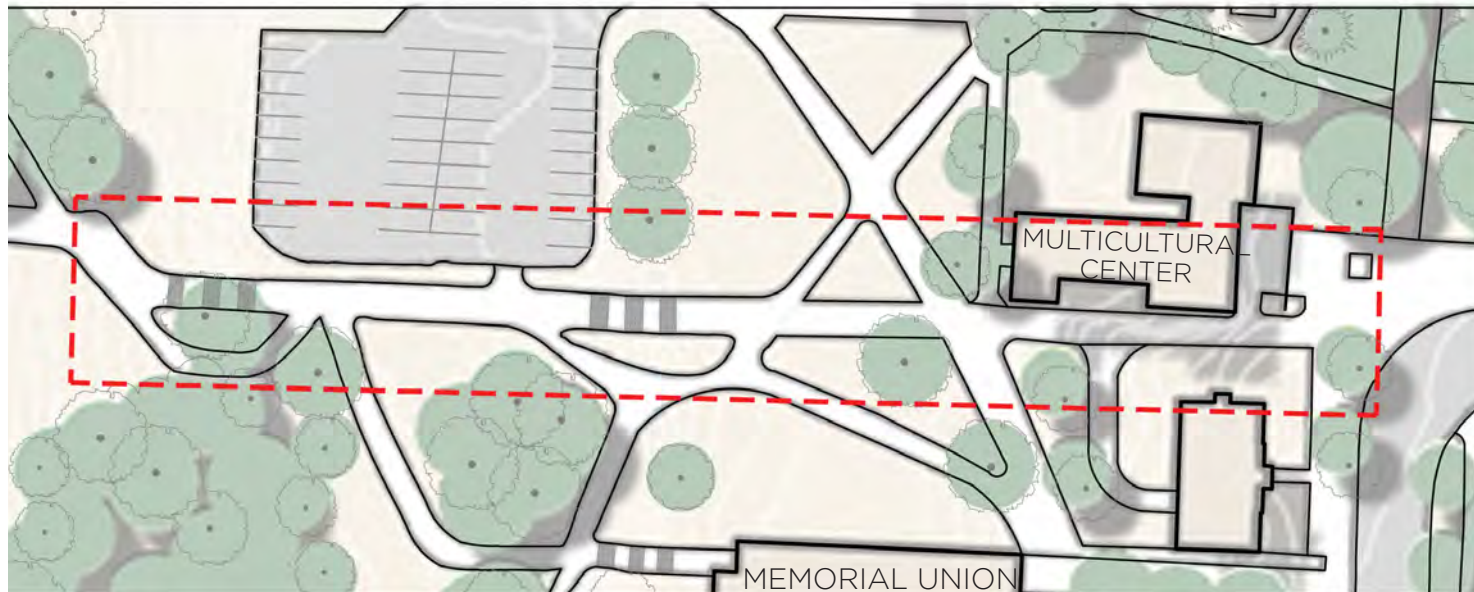


## 5.5 CAMPUS TREE RECOMMENDATIONS

SUCCESSFUL CONNECTIVE SPACE: 54% CANOPY COVER



FRAGMENTED CONNECTIVE SPACE: 13.5% CANOPY COVER



Plantings to Improve Connective Spaces



## SUCCESSFUL CONNECTIVE SPACE: RANGER ROAD



A continuous allée creates a unified corridor along Ranger Road and frames views of the historic Quadrangle.

## FRAGMENTED CONNECTIVE SPACE: ELEPHANT WALK



Existing



Suggested increase in tree canopy planting/  
canopy coverage

The Elephant Walk is a major pedestrian corridor that connects the historic Campus Core district to the Residential Life District. Currently, the walk has little canopy coverage and feels disconnected from the rest of the campus aesthetic.



## 5.5 CAMPUS TREE RECOMMENDATIONS

FRAGMENTED CONNECTIVE SPACE: PATH LEADING TO MERROW HALL FROM BUTTERFIELD ROAD



FRAGMENTED CONNECTIVE SPACE: BUS LOOP ON LOWER COLLEGE ROAD



FRAGMENTED CONNECTIVE SPACE: PATH BETWEEN FOGARTY & PASTORE HALLS





FRAGMENTED CONNECTIVE SPACE: ALONG BUTTERFIELD ROAD ACROSS FROM HEATHMAN HALL



FRAGMENTED CONNECTIVE SPACE: PATH LEADING TO BRESSLER HALL FROM CAMPUS AVE



FRAGMENTED CONNECTIVE SPACE: SIDEWALK/PLAZA SPACE IN FRONT OF KEANEY GYM





## 5.5 CAMPUS TREE RECOMMENDATIONS

### Diversity Goals

#### Why plant new trees?

Increasing the diversity of the campus trees can provide environmental, economic, and social benefits to the landscape. Having a greater number of tree species allows for more ecological niches—such as the canopy/understory growth relationship—and increases the educational resources.

In addition to the benefits provided, a diverse landscape also reduces the risk of mass vegetation loss due to pests and diseases. During stress periods in the landscape, such as during construction, having a wider variety of tree species can lower the probability of transmission between plants.

#### Diversity Goals

- Campus Tree Advisory Committee to determine the selection of diverse species.
- Consider location: establish a list of trees intended for specimen use as part of the University's learning arboretum.
- Establish zones for exotic ornamental species and zones for native, natural tree plantings.
- Utilize memorial tree awareness for funding of diversity of species.
- Reduce monoculture by adding different species within close areas. No single species should account for more than 10% of overall campus trees.
- Increase number of species found on campus by 125%.
- Refer to “Recommended Species Lists” in this Section of the report for recommended trees to plant in specific locations.
- Respond to environmental changes that effect the ability for trees to thrive in certain climates.
- Stay aware of new pests and diseases in order to prescribe preventive measures.



The Botanical Gardens host a wide variety of tree species and serves as an outdoor classroom.

#### Successional Growth

The University's Kingston campus contains a wide variety of tree species that range in age from newly planted to mature specimens. The average size is eighteen-inch diameter at breast height, which means that much of the campus is considered mature. Even with preventative techniques it is inevitable that mature trees will eventually die, leaving a void in the cultural landscape. For this reason, it is important to plant new trees to ensure the successional growth of the campus.

In areas with mature trees, new trees should be strategically planted to avoid a gap in the function the mature trees may be contributing. For instance, large trees may shade a garden that consists of shade tolerant plants. Once a tree is removed, the landscape will experience a drastic change in environment since no other trees can provide similar shade. Since trees grow at different rates, continuing to plant a variety of species will encourage the continuous growth of the campus, similar to the natural growth of a forest.

## Planting Goals

- Maintain historical planting concepts
- Manage canopy gaps
- Complement/frame architecture
- Improve and enhance the existing plant species collection to serve as an educational tool

New tree species should be introduced to increase biodiversity in the campus forestry for education use, but not to the extent of disrupting the unity of characterizing plant species. The Historic Campus Core District, in particular, should maintain a historically-inspired plant palette as closely as possible to preserve the character. These areas may have relatively limited plant species that unify the space. Other areas, such as plaza spaces, may have more diverse plantings. One reason to implement a diverse planting palette is to reduce the risk of pests and diseases that can tend to have devastating impacts on a particular species.



Newly planted lindens replaced mature lindens that were considered hazardous to pedestrians.



An example of monoculture can be seen at Hammerschlag Mall.



Plantings along East Alumni Ave consist of a diverse palette of unique ornamental trees and shrub specimens.



# 5.5 CAMPUS TREE RECOMMENDATIONS

## Historical Tree Goals

### Historic Influence

New tree selections for the Historic Campus Core District should be appropriate for the cultural landscape. The original Olmsted, Olmsted, and Eliot plans called for highly symmetrical tree plantings that lined major corridors, particularly around the Quadrangle, and along Upper College Road. New trees within the Core District should be closely related to the species that were originally selected and should have similar form to what was originally intended.

When large, historic trees are removed, new trees may be planted in their place to maintain the original design. Aside from replicating the same location of the previous tree, the new tree should function similarly as the previous tree was intended to. For instance, trees that were intended to frame views should be replanted with trees of similar form in order to serve the same purpose.

### Historic Tree Goals

- Maintain original planting palette
- Encourage planting of original species in historic core
- Provide additional care for existing historic trees
- Replace historic trees with similar species when removed

This Record is not to be taken from Office

**OLMSTED, OLMSTED & ELIOT, Landscape Architects**  
 EDWARD D. BOLTON, Sup't of Construction.      WARREN H. MANNING, Sup't of Planting.

Date of Plan: *Apr. 22<sup>nd</sup> 1897*  
 Date of List: *Apr. 15<sup>th</sup> 1897*  
 Place to arrive: \_\_\_\_\_  
 By: \_\_\_\_\_  
 By Express: \_\_\_\_\_

Planting Order List for *Rhode Island College*  
*Kingston, R.I.*

No. and Alt.	Scientific and Popular Name <i>as in formal</i>	Actual Cost				Prepared Cost				Authorial
		Spec.	Total	Per Cent	Per Cent	Where from	Price	By	Cost	
1	<i>Berberis thunbergii</i> <i>Japane. barberry</i>									
2	<i>Berberis thunbergii</i> <i>Cajuputa japonica</i> <i>Japane. guinea</i> <i>Spiraea Menziesii</i> <i>Thunbergia Schimper</i> <i>Wisteria japonica</i> <i>Albizia floribunda</i>									
3	<i>Albizia chinensis</i> <i>Sassa parviflora</i> <i>Sida</i> <i>Robinia pseudo-acacia</i> <i>Fraxinus americana</i> <i>Ailanthus glandulosa</i> <i>Syringa vulgaris</i> <i>Prunella vulgaris</i> <i>Rosa rugosa</i> <i>Ribes coccineum</i> <i>Flowering Raspberry</i>									
4	<i>Cornus Stolonifera</i> <i>Red Adonis</i> <i>Spirea</i> <i>Prunella</i> <i>Spiraea</i> <i>Ribes</i> <i>Albizia</i> <i>Wisteria</i> <i>Flowering Raspberry</i>									

Page from original planting order list.



Oak trees have been planted along White Horn Creek near Ballentine Pond since the early 1900's. These trees stand on the former path of the creek, which has since been piped through campus.



Legend

Planting Zones:



Historic Planting

Historic Planting Zones



# 5.5 CAMPUS TREE RECOMMENDATIONS

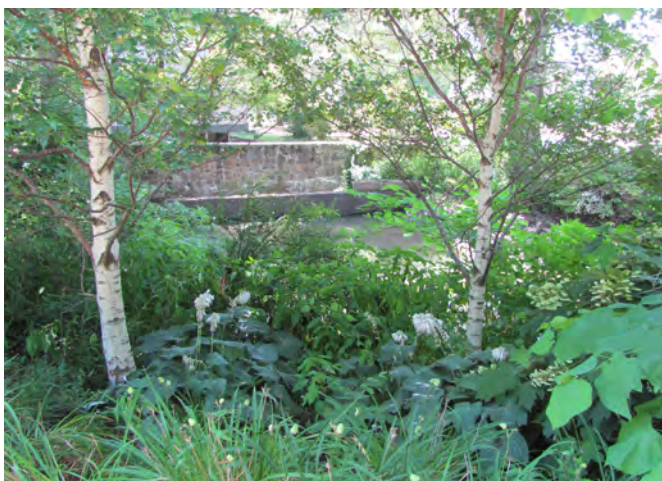
## New Plantings

### Selecting New Trees

Selection of trees should be based on several factors including hardiness, function, visual aesthetic, and practical factors such as availability. When planting new trees, it can be beneficial to select healthy smaller trees (two-an-a-half-inch to three-inch caliper) versus large trees (four-inch caliper or greater). Small trees, when properly planted and maintained, have a better chance of acclimating to new sites and cost less to install. Certain uncommon species that should be introduced are typically easier to find in smaller sizes. For newly planted small trees, supplemental watering should be implemented as necessary.

Tree selection should also be based on species to ensure that no nuisance trees are introduced in unsuitable locations. Trees that are fruit-bearing or have low-branching habits should be avoided near sidewalks and parking lots, and shallow rooted trees should be avoided near paving of any kind.

Form, size, and site condition preferences should be considered prior to planting trees. Large canopy trees with strong wood should be planted along sidewalks and roads to create shaded walkways. Plant species that can be beneficial in stormwater management should be planted in zones that experience frequent flooding.



Birches are properly located near a water feature.

### Selecting Tree Locations

New trees should be located in areas where a maximum level of environmental benefits can be achieved. These benefits include, but are not limited to: improving human health, regulating microclimates, reduce cooling and heating demands of nearby buildings, slowing and reducing the volume of runoff water, controlling soil erosion, and providing habitat. Spacing of new trees should consider mature height and canopy width sizes.



Hardy species of trees can tolerant harsh conditions near parking areas.

### Designing Planting Conditions

Trees that are planted in turf add to the historic and natural aesthetics of the University. Trees located in turf islands can reinforce the design of open spaces and have a better chance of reaching mature sizes. When planting in turf, mulching should be applied to reduce the risk of damage from maintenance equipment and vehicles.

Trees that are planted in tree pits along pavement can help enhance hardscape areas. When planting in front of buildings, trees in pits create a pedestrian-scale element that creates comfortable spaces. When located in paving, tree pit size should be maximized to promote larger root systems. Creating a continuous planting strip for trees in pavement can also benefit the trees by decreasing soil compaction. Trees in paving should be selected from species with have deeper root systems to avoid heaving of paving, thereby requiring less maintenance.

In areas of vast pavement, such as parking lots, shade trees can be placed around the perimeter and in vegetated island buffers to reduce stormwater runoff and counteracting the heat island effect. By breaking up these areas of pavement with plantings, stormwater has a chance to slow down and be absorbed into the ground before entering catch basins. Tree islands in parking lot should be no less than six feet width minimum, with ten feet an ideal width, to ensure a sufficient root zone.



A large expanse of pavement should be broken up with trees to help with stormwater mitigation.



Tree staples should be used to stabilize trees.

### Planting in Collections/Communities

As the University is an educational facility with degrees in horticulture and landscape architecture, a program for planting two of each species or variety is suggested. Therefore, one plant can be labeled for learning and the other planted without a label for testing purposes.

In addition, while invasive species or plants with pest or disease issues are problematic and maintenance-intensive, these plants also provide teaching and/or research opportunities for the plant pathology, horticulture, and entomology programs on campus.

Consideration should also be given to plantings in ecological communities or horticultural assembles, i.e. evergreen collections, berry-bearing shrubs, floodplain communities, etc., when these natural communities are not already in existence on campus.



A collection of evergreen trees located between Hope Dining Hall and Roosevelt Hall provide an excellent educational area to compare a variety of species.



# 5.5 CAMPUS TREE RECOMMENDATIONS

## Spatial Experiences

In addition to their ecological benefits, canopy trees play an important role in the definition of outdoor spaces. All plants should be planted purposefully, with an intent to add scale, shape, and/or character to a space.

Designs that require extensive and unnecessary planting designs should be avoided to reduce the amount of resources needed to properly maintain them. Smaller scale plantings may be used in visually important areas such as building entrances to accentuate access points. These plantings should complement the architecture that they are supporting rather than distract from them. Simpler plantings should be used in large open space areas, civic spaces, and streetscapes to unify the spaces with minimal additional maintenance requirements.

As previously mentioned, plantings in the Historic Campus Core District should reflect the design intention of the original landscape architects: Olmsted, Olmsted, and Eliot. The historical design intention of many campus projects was to use canopy trees to frame views and maintain a simplistic palette so as to not distract from the important focal objects.

Trees and shrubs should be used to create a natural aesthetic that is consistent with the campus context. Connecting plantings between green spaces will reinforce the idea of a forestry fabric that evokes the naturalistic campus nature. It is also ideal to maximize this level of tree canopy coverage in many areas to provide desirable social nodes.



Canopy trees help reduce the scale of the large building to a pedestrian-friendly level.



Overgrown shrubs direct pedestrians, but block views of other walkways and buildings.



A lack of a connective elements makes the gym feel disconnected from the rest of campus.

## Planting Design

The height, form, shape, and color of plant material is continuously changing. When designing spaces, the changes a particular species will experience over time needs to be accounted for in order to avoid long term consequences of inappropriate tree selection. When properly planted, trees become a functioning asset of a design. The range of size and shape allows trees to take on multiple roles in a design, such as:

- Creating a pedestrian-scale canopy
- Screening/creating views
- Stabilizing slopes
- Directing movement
- Adding verticality and building outdoor “rooms”
- Blocking wind, sun, and other elements
- Defining spatial edges (defining the limits of a space)
- Improving the natural ecosystem

The proper use of trees helps to organize spaces and solve visual connection problems.



Long sidewalks without vegetation are not comfortable for pedestrian travel.



A perimeter of large trees defines the extents of the Quad.



An allée of crabapples frames the view to a historic building façade.



## 5.5 CAMPUS TREE RECOMMENDATIONS

### Tree Planting Typologies

#### Tree Communities

The use of tree type, species, and height should be determined by the style of landscape in which they are being planted. Examples of these different styles, or typologies, of landscapes are: grove, allée, streetscapes, ornamental, and woodland plantings. The campus landscape needs to be organized into “zones”, which will enforce the consistency of planting organization across campus. Trees planted in appropriate zones will not only serve their purpose as intended, but also contribute to the larger image of the whole campus landscape.

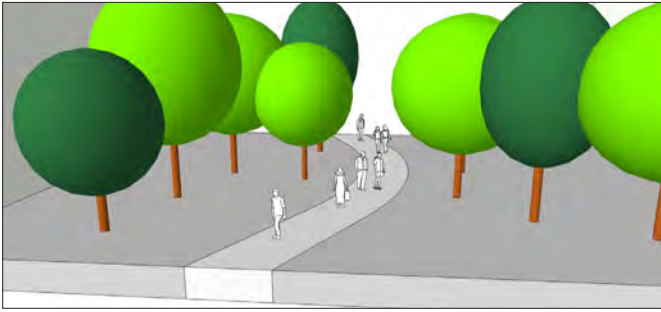
#### Woodland Plantings: Re-claiming the Natural Aesthetic

Much of the undeveloped landscape within the campus has been diminished, leaving behind a few pockets of natural woodland. This has resulted in a lack of natural ecosystems which would otherwise benefit the campus. The University should strive to bring the woodland back into the campus rather than push it to the perimeter—a “re-wilding” of the campus landscape.

One way to achieve this is to use neutral interstitial spaces, to re-create the natural habitat. (See later discussion on transitional landscapes). Another way to bring the woodland aesthetic back into campus is to recreate the natural wetland system corridor that runs east-west through campus. Trees can be the vertical elements that create a corridor that both connects green spaces and creates a natural backbone to the campus. Re-interpreting what the site would have looked like prior to campus development will serve as a visual cue of how development effects the natural system and be a reminder of what needs to be protected.

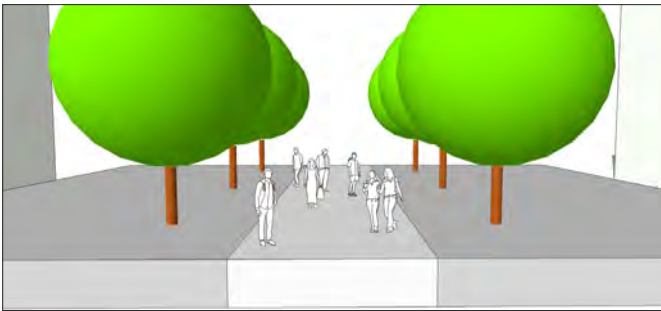
#### Ornamental Plantings

Ornamental trees are typically planted in small groups and provide a unique visual interest. Often, but not always, ornamental trees can be specimen species that also provide learning opportunities on campus. These trees should be planted only where appropriate so as to not disrupt the formal historic aesthetic found within the core of campus. Appropriate uses of ornamental trees are: as focal points in gardens, to accentuate building facades, and in non-historic areas that are used as learning landscapes.



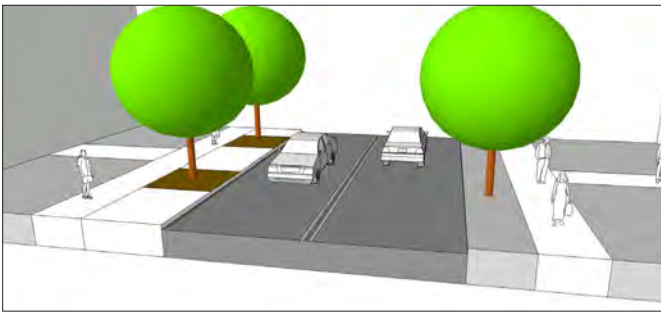
#### Groves:

- Massing of trees
- Adds to naturalistic identity
- Increases campus habitat



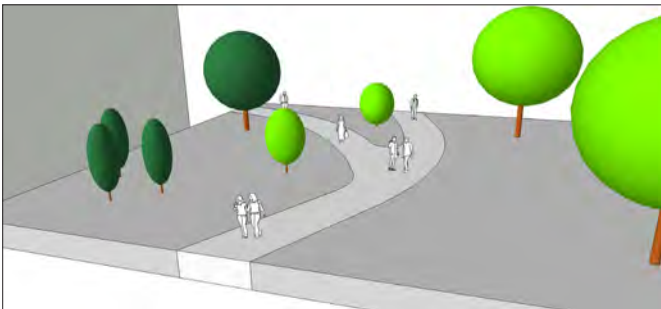
#### Allées:

- Consistent spacing
- Similar species
- Can be used to help identify campus destinations



#### Street Trees:

- Consistent spacing
- In tree pits or vegetated strips
- Provide comfortable spaces for pedestrians



#### Ornamental:

- Focal objects
- Planted in gardens or near buildings
- Specimen plantings (individual or small groups)



#### Woodland:

- High density plantings
- Mixed age and species
- Successional growth
- Limited viewsheds
- Pockets versus woodland context

## Tree Planting Typologies



# 5.5 CAMPUS TREE RECOMMENDATIONS

## Groves

Groves are masses of trees or large shrubs with minimal understory plantings. These can often take on a naturalized appearance or serve as a vegetative screen. Several groves were planted during the early phases of campus development for educational purposes and to establish woodland habitat on the former open farmland. Oak groves were suitably planted along White Horn Creek to improve the natural corridor and walnut trees were planted in groves for nut production. In 1891 the first class of the College (1894) planted a grove consisting of twenty-six trees—one for each class member—of various species.

An example of a grove that serves as a screen can be found at the historical gateway on Upper College Road. A cluster of large native rhododendrons was planted to create a semi-enclosed reflective space where the Stillwell Memorial Bench is placed. A more recent example of a planted grove is at the Pharmacy Building’s Medicinal Garden. Rather than creating a screen, these river birches create a sense of uniformity within the space and provide shade for pedestrians.

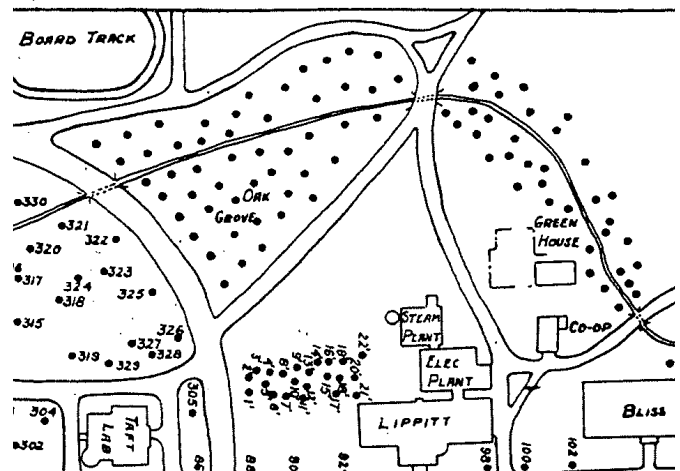
The University should continue to plant groves in appropriate locations, as well as maintain existing groves, to increase the “re-wilding” of campus by adding to the growth of woodland habitat.



Grove of magnolia species forms an ornamental collection of specimen trees.



A rhododendron grove creates a semi-enclosed space around a memorial bench.



Groves have been an important part of planting design since the original layout of campus.

## Allées

An allée is traditionally a straight road or walkways that is lined with trees of the same species on both sides; it is a formal planting. The design intent of planting an allée is to create a framed or forced perspective of an element or viewshed. Trees are typically spaced equally along a path to add a sense of rhythm and symmetry.

There are several allées on campus, most of which relate to the original planting plan by Olmsted, Olmsted, and Eliot. These allées should be maintained and protected to keep with the original intent. If a tree within the allée is removed, the University landscape architect should develop an appropriate plan for the replacement.

Allées should continue to be planted along major pedestrian and vehicular routes to create vegetated corridors that connect important destinations and architectural features.

### The Quadrangle

The first allée planted on campus was in 1899 when George E. Adams (then Dean of the School of Agriculture) planted sixty-five American elm trees in double rows around the double quadrangle. Due to the spread of Dutch elm disease many of these elms died and were replaced in the early 1980's with Japanese zelkovas in a double row inside the Quad which still exists today.

The existing zelkova trees do not provide the same characteristics as the original elms once did. For this reason, it is debated that they should be removed and replanted with a disease-resistant elm variety. It is recommended that the University maintain the zelkovas as long as possible until they begin to show signs of decline. Once declining, they should be replaced with a historically appropriate species and in the original allée layout. New tree plantings in the historic core should be no less than five-inch caliper.

### President's Walk

Another example of an allée can be found south of Green Hall. This linden-lined path connects Green Hall to the President's House and primarily serves as a route for the President's guests. In November 2016, the allée consisted of large lindens (averaging thirty-inch DBH) that were removed since they posed a safety hazard to pedestrians. Some of the trees had recently lost large limbs and others had limbs that were cabled together for structural support. The trees were replaced with four-inch caliper lindens and now line the path leading towards Green Hall, replicating the original design.



A double row of Japanese zelkovas line the perimeter of the Quad. These trees replaced the historic American Elms that once lined the Quad, but died due to Dutch elm disease.



After the removal of the older lindens, a new allée was planted.



## 5.5 CAMPUS TREE RECOMMENDATIONS

### Hammerschlag Mall

The third example of an allée is located along the Dieter Hammerschlag Mall, which serves as the primary pedestrian corridor connecting Carothers Library to the Memorial Union. The Hammerschlag Mall allée consists of Norway maples which average twenty-two inches diameter at breast height. Although considered invasive, these large trees create a tall continuous canopy and frame the view of the library entry.

Their condition varies, but several are in a severe decline. Norway maples tend to be weak wooded, and the loss of large limbs is not uncommon. Norway maple seeds disperse and germinate easily, resulting in seedlings which can be difficult to control. Their dense canopy prohibits the growth of understory plantings, and their roots cause them to compete with other landscape elements such as turf and groundcover and can heave pavements. It is recommended to maintain these trees for as long as possible, while removing hazardous limbs. However, the future re-design of Hammerschlag Mall should include trees that are stronger wooded, have roots that do not compete with turf, and provide a lighter canopy.



Mature Norway maples flank Hammerschlag Mall



Crabapple trees framing the front entrance of Roosevelt Hall

### Roosevelt Crabapples

The walkway leading from Hammerschlag Mall to the main (east) entrance of Roosevelt Hall is lined with two rows of crabapples. Eleanor Roosevelt supposedly planted the first crabapple in 1938 during the dedication ceremony for the women's dormitory that was named in her honor. The original crabapples have been removed due to poor condition and replaced with similar species.

It is recommended that these trees be properly maintained to preserve the historic view of the building façade and the memory of Eleanor Roosevelt.

## Street Trees

Street trees can be a visually important component in the branding of a landscape. They can mark the point of arrival onto the campus and serve as a pedestrian amenity along complete streets. In addition to the many environmental benefits of planting street trees, they also serve as roadside safety features for pedestrian walks. Street trees can break up large areas of paving and serve as a space-defining feature.

The University has a limited amount of significant street trees. This is largely due to poor growing conditions along streets. Street trees are under considerable stresses such as road salt and soil compaction, and therefore need additional planning prior to being planted.

All campus roads should be studied for the potential benefits of adding or replacing street trees. Existing street trees are irregularly planted and lack a standard detail to unify them throughout the campus. Some of the important locations of existing street trees and other important streets to consider are as follows:

### Upper College Road

Upper College Road is the primary north-south artery of the campus, and is the best example of existing street trees with predominantly linden and oak species. The road starts at the memorial gateway into campus and is lined with parallel sidewalks and trees planted on both sides. These large trees are a significant part of the first impression for the University and mark the initial point of arrival. Trees that flank the eastern side of the road are of similar species (linden) and diameter. These lindens were planted in 1909 in a formal allée consisting of seventeen trees per side. A sidewalk is currently encroaching upon the base of the trees, and trunks are at severe risk of damage from snow removal equipment. In contrast to the eastern side of the road, the western side is irregularly planted with species of different

ages and size. These trees are planted within tree pits connected with pervious paver strips in between. The empty tree pits were replanted in the spring of 2017 with six-inch lindens. This side of the road greatly contrasts with the formality and historic aesthetic of the opposite side, where trees are uniformly planted in a turf strip.

A planting standard should be set to determine how street trees should be planted, particularly along Upper College Road. Street trees planted along this road are the highest priority to maintain and protect since they have such an impact on the first impression of the campus. Establishing a standard will create a cohesive landscape that is consistent and uniform.

The design aesthetic of Upper College Road plantings needs to reflect the image of the University. Because of this, the standard planting of street trees along Upper College Road should be planted in connective turf strips. This will evoke the historic formality of the road and give the trees the greatest chance of a healthy longevity.



Tree planted in tree pit with pervious pavers (Upper College Road)



## 5.5 CAMPUS TREE RECOMMENDATIONS

### Lower College Road

Lower College Road contains various street tree conditions. There is no single species, size, or spacing that unifies the road through the campus. The beginning of the road starts at Route 138 where trees are irregularly and informally spaced in turf. This irregularity creates a woodland aesthetic typical of the surrounding neighborhoods. As the road approaches the center of campus, there is a subtle shift in landscape, but no clear defining character for the University.

The segment of Lower College Road in front of the Memorial Union presents an opportunity to become a pedestrian corridor and serve as the defining backbone of the campus. This segment creates a funnel of pedestrians from both the Quad and library and is an important connecting space leading students from resident halls to academic buildings. Currently, the eastern side of this segment of road has a formal style of planting, where a lawn strip is lined with elm species. This contrasts with the opposite side of the street where trees of different species and sizes are planted in trees pits within the sidewalk. The varying conditions of street trees creates a disjointed feel nor an identity of University character.

Lower College Road ends at a plaza that transitions into Hammerschlag Mall, which serves as a linear pedestrian corridor, and contains a formally planted allée of Norway maples. The formality of this planting is characteristic of the historic campus charm and should be the connective design element that is used throughout the street.

Lower College Road needs a standard planting detail to create a sense of organization. Trees pits are used along the front of Memorial Union to break up the plaza space, however the condition of these trees varies from poor to fair. The health of a mature tree in a tree pit is determined by the original planting method and medium, so it is difficult to improve a tree after years of suppressed root growth.

Aside from the additional resources and planting efforts required, the visual aesthetic of tree pits does not reflect the historic charm of the campus. Incorporating a formal tree layout along Lower College Road will reinforce the historic landscape style that the campus core should maintain and create a distinct arrival onto campus.



Tree planted in continuous lawn strip along road (Lower College Road)



Tree planted in tree pit in sidewalk (Lower College Road)



Historically, trees were planted uniformly in lawn along entrance of Upper College Road, date unknown; Image courtesy of the University of Rhode Island



Tree in planted edge along sidewalk (Butterfield Road)



Tree in planted edge along sidewalk at the entrance of Upper College Road.



## 5.5 CAMPUS TREE RECOMMENDATIONS

### Transitional Landscapes

All landscapes are intended to be designed purposely to meet the campus needs. An increase in recent development has created some new open space opportunities but left many unused interstitial spaces. Some of these spaces serve as idle sites of possible future development. These areas should be used for experimental tree plantings that will tie the planted campus corridors together. During the idle periods of development, creating transitional landscapes in these spaces will benefit the campus on multiple levels, such as:

- Creating connections between green spaces
- Building ecologically valuable sites rather than vacant or inappropriately used sites (i.e. temporary parking/material stocking)
- Bringing the desired natural woodland aesthetic into campus

Fast-growing plants can quickly add structure and habitat to the site, while also providing comfortable areas for social gathering. Poplar trees and birches, for instance, are very fast growing and can create a thriving grove typical of a New England forest. Creating a low-maintenance woodland pocket will create a naturalized aesthetic resembling the context of the campus. A simple palette can produce an efficient design and allow for easy removal when the site is needed for a development. These new “pop-up” planting sites will encourage the exploration of the natural environment while benefiting the campus ecologically and socially.

These landscapes are appropriate for five to twenty years in interim prior to development of a building or another use.



This open location next to the Pharmacy Medicinal Garden could function as a temporary landscape that benefits the environment during the inbetween phases of campus development.



A sloped lawn along Butterfield Road is currently unused space. This site should be planted to take advantage of environmental benefits such as filtering stormwater runoff from the adjacent parking lot.

Tree species that are appropriate for transitional planting locations:

- *Alnus incana* - Speckled Alder
- *Betula populifolia* - Grey Birch
- *Betula papyrifera* - Paper Birch
- *Populus deltoides* - Eastern Cottonwood
- *Populus tremuloides* - Quaking Aspen
- *Salix nigra* - Black Willow



This sloped lawn area runs along the south side of Peck and Hutchinson Hall. Swales were recently added to catch stormwater, but the site remains relatively unusable for campus life. This area could be used as a valuable grove until future development alters the adjacent parking lot.



# 5.5 CAMPUS TREE RECOMMENDATIONS

## Certified Landscapes

Many campuses apply for landscape certifications in order to apply for grant funding. Landscapes such as the Kingston campus can be awarded for exemplifying high standards of horticultural practices and showcasing a commitment to environmental stewardship. There are many organizations that look for outstanding examples of public landscapes and provide funding to support horticulture practices.

Organizations such as Tree Campus USA help schools maintain a high level of healthy campus forestry by standing behind the school's practices. Schools that are certified under Tree Campus USA are able to apply for grants to fund landscape maintenance and improvements. Other organizations such as the American Public Gardens Association (APGA), award grants for public gardens that demonstrate extraordinary practices. Certifying the Kingston campus landscape will help the University seek additional grant funding that could be used for increased maintenance opportunities and improvements.

### Tree Campus USA

Tree Campus USA is a program that recognizes college and university campuses that



strive to improve and protect their forests. Becoming a Tree Campus USA recognized campus gives the college or university recognition materials to showcase their dedication to the environment.

In order to apply to become part of Tree Campus USA, there are five standards that a campus must meet:

- Standard 1: Campus Tree Advisory Committee

A committee consisting of faculty, facilities, students, and community.

- Standard 2: Campus Tree Care Plan  
The tree care plan should be goal-oriented and suggest how to plant, maintain, and remove campus trees.
- Standard 3: Campus Tree Program with Dedicated Annual Expenditures  
The campus must allocate funds for an annual program. It is recommended that expenditures equal \$3 per full-time enrolled student.
- Standard 4: Arbor Day Observance  
Campuses should incorporate Arbor Day as a celebration that benefits the trees on campus.
- Standard 5: Service Learning Project  
This project should engage students with tree related projects on campus. An example could involve volunteer tree planting and maintenance.

In 2010, the University established its Campus Tree Advisory Committee. The Kingston campus should continue to push forward with applying to become part of Tree Campus USA. Program recognition would allow the University to apply for grants that support tree health. The recognition would also benefit University majors that use the trees as an education resource such as Horticulture and Landscape Architecture. In combination with the existing tree information, this Section of the Landscape Master Plan should be used to support the application.

The University currently has around 13,000 full-time enrolled students, which would provide approximately \$39,000/year of funds allocated to benefiting trees. This funding would help support annual expenditures and also promote opportunities for service learning projects.

Regional Tree Campus USA college and universities:

#### Connecticut

- University of Connecticut

#### Maine

- Kennebec Valley Community College
- College of the Holy Cross

#### Massachusetts

- Smith College
- University of Massachusetts Amherst
- University of Massachusetts, Lowell

#### New York

- Bard College
- Cazenovia College
- Cornell University
- Fordham University
- Hobart and William Smith Colleges
- Jamestown Community College
- Jefferson Community College
- Morrisville State College
- Skidmore College
- St. Bonaventure University
- St. John's University
- State University of New York College at Cortland
- State University of New York College of Environmental Science & Forestry
- Stony Brook University
- SUNY Geneseo
- Syracuse University
- University of Rochester
- Vassar College

#### Rhode Island

- Salve Regina University

#### Vermont

- Middlebury College
- The University of Vermont

#### Pennsylvania

- Carnegie Mellon University
- Chatham University
- Franklin & Marshall College
- Haverford College Arboretum
- Messiah College
- Moravian College
- Muhlenberg College
- Penn State Erie, the Behrend College
- Pennsylvania College of Technology
- Temple University Ambler Campus
- University of Pennsylvania
- University of Pittsburgh at Bradford
- Washington & Jefferson College
- West Chester University



## 5.5 CAMPUS TREE RECOMMENDATIONS

### American Conifer Society

The American Conifer Society (ACS) promotes the



use of conifers in the landscape to educate the public about their care and preservation. They aim to foster public appreciation for conifers and educate them about the immense diversity of varieties.

Grants and awards are given annually to those who have made significant contributions to conifer collecting, propagation, education, horticultural research, or public service. Some gardens can apply to become “reference gardens”, that partner with the Society to receive additional funding grants and host events. Nearby reference gardens that are partially funded with ACS grants are located at: Arsenal at Central Park, New York; Wellesley College Botanic Gardens, Massachusetts; and, Graver Arboretum, Pennsylvania.

Reference gardens contain a wide variety of conifer specimens that are labeled for public education. To participate in the ACS Reference Garden program, a garden must be “sponsored” by a group of ACS members (two to four). There is also a list of criteria the garden must meet such as: public access at least forty hours a week, a collection of at least thirty conifers that represent eight genera, accurate plant labeling, etc.

More information may be found on their website: <http://conifersociety.org/>

## 5.6 RECOMMENDED TREE SPECIES LISTS

For additional recommended tree species, see the URI Manual for Sustainable Trees and Shrubs.

### Appropriate Tree species for General Planting across Campus

*Abies balsamea*

*Abiesconcolor*

*Acer palmatum*

*Acer griseum*

*Acer rubrum*

*Acer saccharinum*

*Acer saccharum*

*Aesculus ippocastanum*

*Aesculus x carnea*

*Amelanchier canadensis*

*Betula papyrifera*

*Betula lutea*

*Betula nigra*

*Betula populifolia*

*Carpinus caroliniana*

*Carpinus betulus*

*Carya tomentosa*

*Carya glabra*

*Catalpa speciosa*

*Cedrus atlantica*

*Celtis occidentalis*

*Cercidiphyllum japonicum*

*Cercis canadensis*

*Chamaecyparis thyoides*

*Cladrastis kentukea*

*Cornus florida*

*Cornus kousa*

*Cornus alternifolia*

*Crataegus laevigata*

*Cryptomeria japonica*

*Fagus grandifolia*

*Fagus sylvatica*

*Franklinia alatamaha*

*Ginkgo biloba*

*Gleditsia triacanthos var. inermis*

*Gymnocladus dioicus*

*Hamamelis virginiana*

*Ilex opaca*

*Juglans nigra*

*Juniperus virginiana*

*Koelreuteria paniculata*

*Larix laricina*

*Liquidambar styraciflua*

*Liriodendron tulipifera*

*Magnolia acuminata*

*Magnolia denudata*

*Magnolia x soulangiana*

*Magnolia stellata*

*Magnolia virginiana*

*Nyssa sylvatica*

*Ostrya virginiana*

*Oxydendron rboreum*

*Picea abies*

*Picea glauca*

*Picea pungens*

*Picea rubens*

*Pinus nigra*

*Pinus strobus*

*Pinus sylvestris*

*Populus deltoides*

*Prunus subhirtella*

*Prunus serrulata*

*Quercus alba*

*Quercus bicolor*

*Quercus coccinea*

*Quercus macrocarpa*

*Quercus palustris*

*Quercus rubra*

*Quercus velutina*

*Sassafras albidum*

*Sciadopitys verticillata*



## 5.6 RECOMMENDED TREE SPECIES LISTS

*Syringa reticulata*  
*Taxodium distichum*  
*Thuja occidentalis*  
*Tilia americana*  
*Tilia cordata*  
*Tsuga canadensis*  
*Ulmus americana*  
*Ulmus glabra*

### Appropriate Tree Species for Historic Campus Core

The following species were included on planting lists from Olmsted, Olmsted, and Eliot, and should be planted within the Historic Campus Core District to maintain the original design intent.

*Acer saccharinum*  
*Amelanchier canadensis*  
*Betula papyrifera*  
*Betula lenta*  
*Cercis canadensis*  
*Cornus florida*  
*Crataegus laevigata*  
*Cryptomeria japonica*  
*Fagus grandifolia*  
*Hamamelis virginiana*  
*Liriodendron tulipifera*  
*Pinus strobus*  
*Sassafras albidum*  
*Picea alba*  
*Quercus alba*  
*Quercus rubra*  
*Ulmus americana*: DED-resistant & other hybrids

### Appropriate Specimen Tree Species for Educational Use

Specimen tree species should only be planted in garden environments or as focal points in the landscape. They should be limited in quantity and planted for educational purposes.

Landscape Architecture and Plant Sciences faculty plant species request lists have been included in Appendix E.

### Appropriate street tree species

Campus streets should be lined with trees as appropriate. Consideration of overhead utilities should be advised when selecting large trees.

*Celtis occidentalis*  
*Gymnocladus dioica*  
*Ginkgo biloba*  
*Gleditsia triacanthos var. inermis*  
*Liquidambar styraciflua*  
*Platanus x acerifolia*  
*Quercus rubra*  
*Quercus alba*  
*Sophora japonica*  
*Tilia cordata*  
*Ulmus americana*: DED-resistant & other hybrids

## 5.7 CAMPUS TREE MAINTENANCE

The existing trees on campus create a strong physical framework for the campus. Providing the appropriate level of care for the existing trees is important to maintaining the character of the campus. When aiming to increase the campus forest, it is important to first ensure that proper care and resources can be given to the existing trees. Environmental stresses on trees can lead to the additional decline of trees in poor condition, so it is important to maintain healthy trees that have a better chance of overcoming these stresses.



Some tree species like this fernleaf beech should have mulch applied to the extent of the dripline to protect their shallow roots.



Tree trunks should be protected during construction to avoid damage from equipment.

### Care for Existing Trees

The digital inventory of tree data will help monitor the changes of tree health over time. With this information, management efforts should be assigned accordingly. In addition to pruning, other maintenance efforts include, but are not limited to: soil decompaction, soil amendments, cabling and bracing of significant tree limbs, and the application of mulch. Pest, diseases, and other defects should be closely monitored to see how effective treatment efforts are over time.

Trees should receive a comprehensive level of routine tree care. During the tree inventory several health concerns were noted that should be addressed and improved upon:

- Trunk damage from mowers
- Buried root flare
- Girdling roots
- Soil compaction
- Dead wood
- Pest infestations
- Weak limbs

Large trees in fair condition should be closely monitored and given extra care. This extra attention may include temporary fencing around the drip line area, soil decompaction and amendments, and mulch applications.

Aside from increased tree care, special attention should be provided during special events and construction projects. During these occasions, University Landscape and Grounds and outside contractors should prevent any heavy equipment being located within the driplines of trees. Trees should also be protected to prevent any accidental damage from equipment. Other event preparation could include the prevention of possible soil decompaction from heavy concentrations of pedestrians, and from equipment, vehicles, etc.



## 5.7 CAMPUS TREE MAINTENANCE

### Risk Assessment

The University should conduct a risk assessment of all of the campus trees to better understand the level of risk trees pose along sidewalks, roads, parking lots, or adjacent to buildings. The existing tree inventory can be used as a basis for seeing how tree condition has changed over time, and what can be done to prevent further decline. The digital inventory will contain a history of poor condition trees and allows for notes to be added regarding changes in condition and treatment actions. When assessing the risk factor of trees there are several factors to consider such as: site changes, soil conditions, species risks, wood strength, crown density, pruning history, root flare visibility, etc. All factors should be considered to determine why a tree is failing and what should be changed to ensure a future tree does not succumb to the same ailment.



An allée of lindens were removed due to poor condition and potential risk factor. This linden tree is an example of the damages that may result in the eventual demise of the tree.

### When to Let Go of Trees

Although most large, significant trees should be preserved, there are some instances when the removal of the tree is the preferred solution. If a significant tree is removed, a design study should be conducted to determine whether or not a tree of similar species should replace it. This study should also include an analysis of why the tree was unsuccessful and determine the cause of its demise. If the need for removal was due to inappropriate species, a different species should be selected for replacement.

As some trees mature, larger limbs may benefit from cabling methods. An older tree might be considered for removal if it has a poor branching habit that poses a potential threat to pedestrians and is at the point when cabling is no longer recommended.



This iconic magnolia tree was matched by another to frame the south entry of Green Hall. Declining condition of the tree should be closely monitored. When removal is necessary, both trees should be replaced to keep with the original design intent.

## New Planting Issues

Planting site-appropriate species will reduce maintenance requirements since suitable species will require less supplemental resources provided by University Landscape & Grounds. Determining the right tree for the right location requires considerable thought including solar aspect, soil types, soil pH, soil moisture, adjacent utilities, shade from other trees or buildings, environmental impacts (de-icing salt), diversity goals, canopy coverage goals, educational value, and contribution to outdoor space.

The first step in planting a new tree is to remove all packaging from the trees. This includes all wire, twine, burlap, etc. Since trees are imported from off-site nurseries, they often contain soils that are not native to the proposed planting site. A majority of foreign soil should be removed from the rootball. This is especially important since nurseries may have a high level of clay in their soil, that can become a long-term issue for tree health if the clay dries out. Removing all soil gives the tree a better chance of establishing its roots after planting and helps reduce the effects of root-bound trees that could ultimately lead to girdling root issues. This level of disturbance to the rootball should be considered on a case-by-case basis to determine the benefit. At a minimum, the rootball should be disturbed enough to



Root girdling often starts when the tree is still in the nursery. Before planting, all roots should be inspected to avoid future tree health issues.

expose the root flare and expose the top girdling roots.

The hole for the new tree should be three times wider than the rootball, and backfilled with planting soil mix. The depth should be determined by the size of the rootball and the height to the root flare. If the root flare is buried the tree will have an increased risk of decay which can encourage the spread of pests and diseases. The root flare should be slightly higher than existing finish grade. It is safer to have trees planted higher as a precaution.

The planting soil mix should have minimal amendments to encourage rooting beyond the planting hole. Soil amendments, such as biochar, can be applied to both new and existing trees. Biochar is a charcoal product that stores moisture for root use and replenishes soil microbes that help with nutrient absorption. It is created from biomass and is a more earth-friendly alternative to many chemical applications, and can be combined with other additives such as nitrogen, phosphorous, and potassium fertilizers.

New trees should only be staked as needed (typically on in locations that are very windy, when planting on slopes, or in areas prone to vandalism) but ensuring that trees are plumb will impact the growth habit.



A newly planted cherry tree is staked for stability but did not receive necessary mulch.



## 5.7 CAMPUS TREE MAINTENANCE

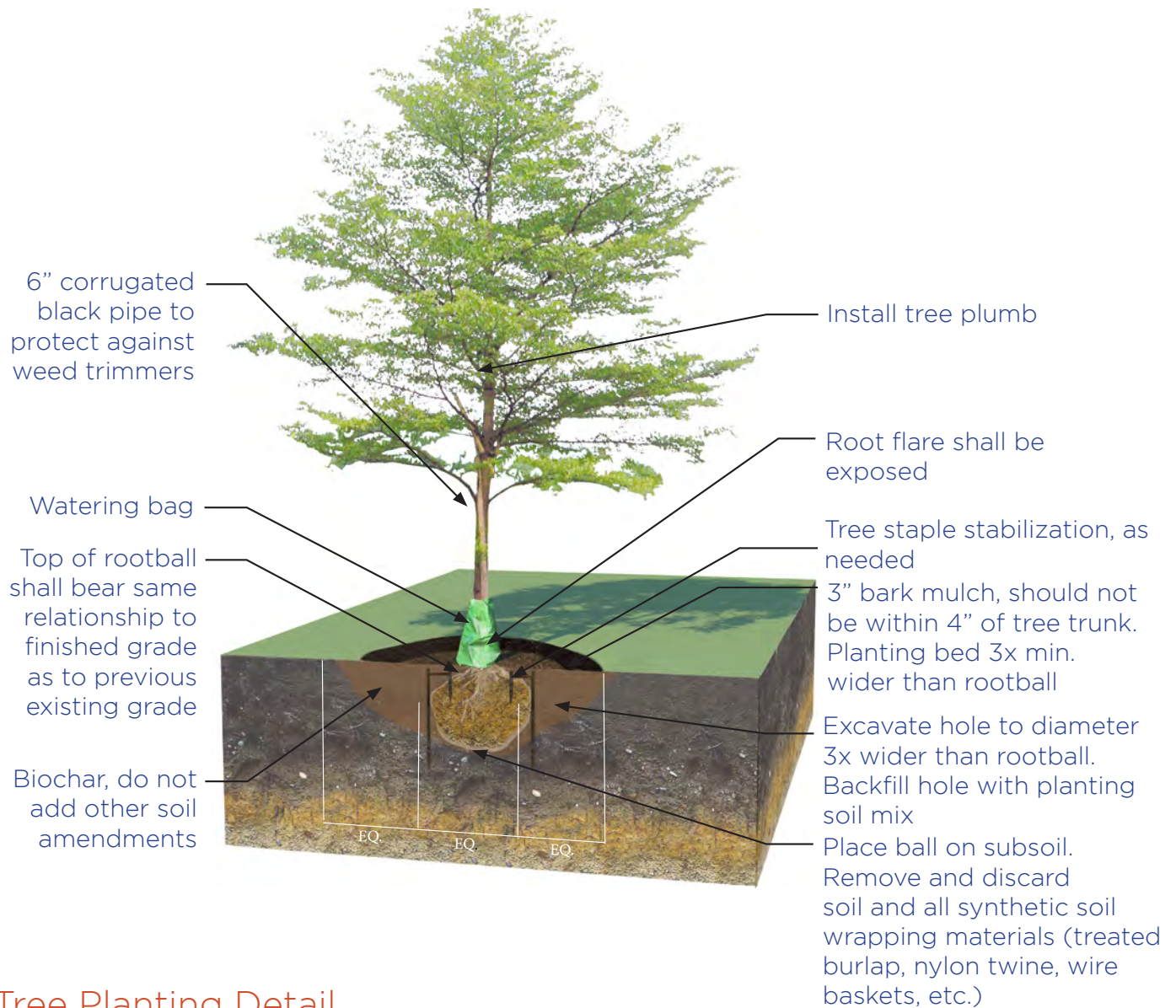
Mulch should be placed three inches deep around the tree, avoiding direct contact with the trunk. The maintenance of bark mulch should continue vigilantly for five years to prevent accidental damage from equipment such as mowers. Because trunk damage from lawn mowers is so frequent, corrugated pipe trunk protection should be considered.

Watering should be conducted frequently during the first two years after planting. Deep soaking during routine watering is preferred to reach the roots and keep the mulch layer moist. Mulch becomes particularly important during the establishment of newly planted trees because it retains moisture which will

benefit the tree and reduce the frequency of Landscape and Grounds staff maintenance.

All new trees should be pruned properly to resist potential broken weak limbs due to wind and ice. Well pruned trees are also easier to maintain, and have a greater chance of healthy growth habits. Structural pruning can help shape young trees and will make it a more desirable form in the landscape.

As new trees are planted, all work should be recorded and added to the GIS database. All new trees should be added into the digital inventory and all associated data should be kept up-to-date.



Tree Planting Detail

## Soil Decompaction

Most soil on campus is classified as Canton-urban land complex soil, which is typical to Rhode Island. This soil is often found on sloped sites and has areas of exposed bedrock. The soil is considered very acidic and drains moderately well. Due to the structure of the soil and the lay of the campus, there are many rock outcrops which may prohibit planting and limit some equipment. However, much of the soil on campus has also been affected by development. This impacted soil is classified as urban fill which provides little nutritional value to trees. For this reason, soil should be tested before planting new trees since the composition will greatly affect the health of roots. Soil around existing trees should also be tested since tests can determine if the soil is lacking in nutrients resulting in adverse impacts on a tree.

In addition to testing the chemistry of the soil, the compaction level of soil can affect the health of a tree. Soil can become overly compacted from excessive pedestrian use, vehicular use, heavy equipment, etc. When soil becomes too compacted, less voids are present, and this impacts plant air and water intake and root development issues.

Compacted soil also creates drainage issues that have a larger effect on the campus landscape. Areas that are considered too compacted can be de-compacted and aerated using either manual or mechanical equipment.



Parking on campus can be difficult during occasions such as move-in day, or during construction. (Above) Cars are parked on lawn within the root zones of trees. Restricting vehicular access near trees will reduce soil compaction and increase the life span of these trees.



# 5.7 CAMPUS TREE MAINTENANCE

## Sufficient Watering

The watering requirements of trees varies on the season and species of tree. For newly planted trees, the most important time to provide supplemental watering is during the first few years after planting. Newly planted trees should be watered two to three times a week for the first few months. Scheduled watering should continue for the next couple of years, particularly during the hot months of summer. Supplemental watering should also be scheduled for all existing trees, particularly during drought periods.

### Type of Plant/Size Weekly Watering Rate

New trees should be inspected for watering needs at least twice per week. Watering rates depend on soil condition, but weekly watering rate guidelines for free draining soil are:

Deciduous Trees:

- 2" to 2-1/2" caliper = 61 gallons
- 2-1/2" to 3" caliper = 70 gallons
- 3" to 3-1/2" caliper = 80 gallons

## Pest and Disease Prevention

The most common issues found during the tree inventory were gypsy moth damage and hazardous branching habits. At this time, gypsy moths are the only pest or disease that should be considered a widespread threat to the vegetation on campus.

Gypsy moths are considered to be destructive to forests and can quickly defoliate a large area of trees. The dangerous cycle begins as the larvae emerge from eggs in early spring and continue to eat vegetation until early July before they enter their pupal stage and emerge as moths through September. They eat a variety of tree species but prefer deciduous hardwoods such as maple and oak. Many trees that experience a complete defoliation by gypsy moth caterpillars can be weakened, leaving it vulnerable to other pests and diseases.

A common way to control gypsy moths is by means of spraying pesticides. Trees should be closely observed during early spring to detect any eggs. If eggs or larvae are found, they should be sprayed every two to three weeks to control the spread to nearby trees. Gypsy moth traps are also a common device that helps control moth population during the summer mating season.



Gypsy moths in caterpillar form can completely defoliate trees,



Female gypsy moths do not fly, but can lay 500-1,000 eggs. Egg masses (as shown above) are approximately 1.5” long and covered in dense tan colored hair.

## Increase maintenance staff and resources

The University Landscape and Grounds staff are tasked with a considerable amount of work, given the resources provided. The Kingston campus has thousands of trees, all of which need routine pruning as well as other forms of tree care. Properly maintaining every tree is no easy task, but a healthy tree collection will stand a much better chance of increased longevity.

Currently, most tree maintenance is reactive versus proactive. Tree care is often administered once there is an issue with the tree that needs to be promptly addressed, such as a broken limb or a disease that becomes unmanageable. Pruning is sporadic, as budget allows, rather than routine.

During the site inventory conducted as part of this Landscape Master Plan, it was found that the average tree on campus has an eighteen-inch diameter breast height and is in fair condition. This is important to note because it means that most trees on campus are considered mature. If the trees that are in fair condition do not receive correctional maintenance, many large trees will see a decline in health that may ultimately result in a large quantity of removals. Several large trees are specimens that should receive additional care such as pruning, watering, and mulching.

For these reasons, it is suggested that there be an increase in maintenance staff and available resources dedicated specifically to the trees on the campus core.



## 5.7 CAMPUS TREE MAINTENANCE

### Pruning Cycle

Establishing a pruning cycle for campus trees will help schedule routine maintenance. The maintenance schedule should include both newly planted trees and mature trees. Newly planted trees should be pruned early on to reduce the amount of corrective pruning that might be needed later. Trees that are inspected and pruned regularly also have a reduced risk of unexpected limb loss.

Trees that have a one- to eight-inch diameter at breast height should receive structural pruning one or two times at this size to establish a good long term structure. More frequent structural pruning is required for fast growing species such as the disease-resistant American elms. Trees larger than eight-inch diameter breast height should be on a three to seven year cycle to be pruned to address deadwood and structure. Heritage trees, those already cabled or braced, exceptionally large specimens, and other weak-wooded species will require more frequent pruning.

Trees should be inspected annually for structural deficiencies and deadwood. Proactive pruning will ensure a healthier and safer canopy as well as reduce the amount of reactive pruning needed.

THIS PAGE LEFT INTENTIONALLY BLANK









# CAMPUS DESIGN GUIDELINES & STANDARD DETAILS

## 6.1 EXISTING CAMPUS AMENITIES BY DISTRICT

### 6.2 DISTRICT-BASED STANDARDS & DETAILS

The University of Rhode Island has a varied matrix of site amenities. This section of the Landscape Master Plan catalogs the existing details and amenities on site and documents comprehensive list of existing standards which has been compiled by the University's Campus Planning & Design Department. This section also distills the current standards while suggesting new working standards for implementation on future projects on campus.

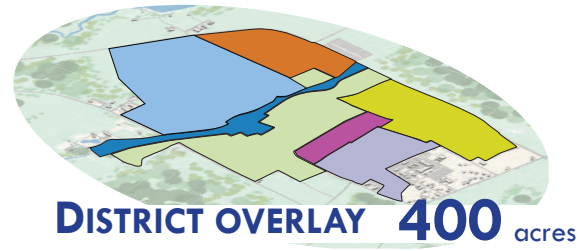
Working from this base set of standards, it is the goal of these guidelines to establish an understanding of how these standards are currently represented throughout the districts on campus and what affect this has on the overall aesthetic quality of the campus landscape.

The benefit to a varied landscape of site amenities is that there is a large palette in which to move forward with. Holding designers to these standards in the future will be important. This approach allows the University to control aesthetic continuity and sustainability as the campus grows.



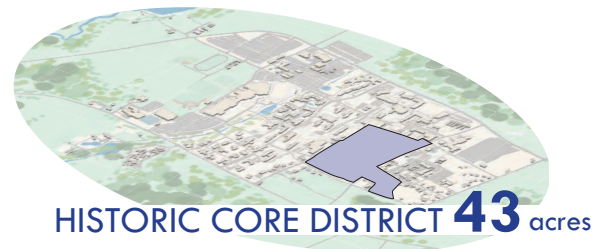
## 6.1 EXISTING CAMPUS AMENITIES BY DISTRICT

The following is a breakdown of existing site amenities by campus district. During site walks on the campus, it becomes clear that the number of different site features is staggering. To put these variations in perspective: the Kingston campus has twenty-one different types of stone walls, eighteen varieties of light poles, and thirty-one varieties of benches. These numbers are approximate and it is conceivable that they are a conservative count. While variation in design aesthetic can be a desirable feature of campus design, selecting a standard set of amenities can greatly impact the creation of a sense of place and reduce levels of maintenance.



### Historic Campus Core District

This is the oldest part of campus which includes the historic Quadrangle and the majority of historic structures. It stretches from East Alumni Avenue to Campus Avenue, and includes the streetscape and buildings along both sides of Upper College Road to Route 138, the President's House, the Gateway Apartments, the landscapes to the east of Fogarty, Pastore, Quinn, and Carlotti Halls. The remaining green in the center of the College of Engineering has been relocated to the North Campus District.

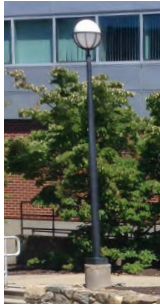
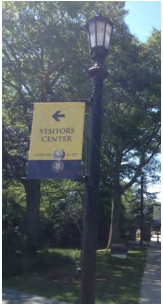


The standards throughout the Historic Campus Core District provide the most cohesive aesthetic continuity on campus. Seating remains disparate throughout this district, though strides have been made to unify the seating style in the historic zone.

**SEATING & BENCHES**



**LIGHTING**



**BOLLARDS**



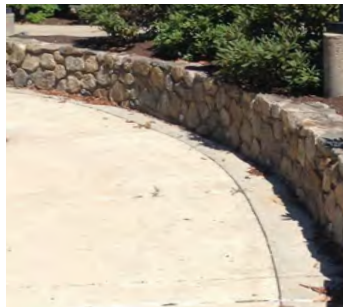
**MEMORIAL**



**PUBLIC ART**



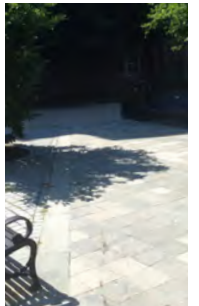
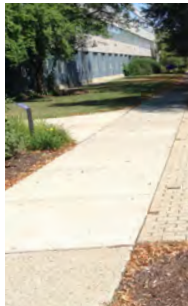
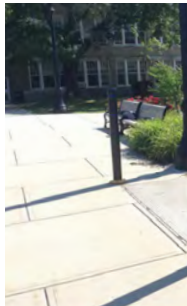
**WALLS**



**BIKE RACKS**



**PAVING**





# 6.1 EXISTING CAMPUS AMENITIES BY DISTRICT

## Mall District

The Mall District extends from Carothers Library to the Memorial Union and includes Hammerschlag Mall and Lower College Road to Campus Avenue. The district includes the landscapes on the west side of Fogarty, Pastore, Quinn, and Carlotti Halls.

The Mall District is one of the most important axial connections on campus. The existing road widths, path widths, and edge conditions do not reinforce this significance and seem to cater to vehicular travel over pedestrian connectivity.

Variable conditions and amenities are apparent throughout the pedestrian-oriented Hammerschlag Mall and the transition to the Memorial Union, which is more vehicular-oriented. This disconnect between typologies reduces the impact of this heavily-traveled corridor.

The Carothers Library terminates the long north-south connection yet adds little in the way of placemaking for student interactions. This underutilized space has tremendous potential to become a thriving social node as it hinges on the axis of two heavily-traveled areas on campus.



## SEATING & BENCHES



## MEMORIAL & PUBLIC ART



## WALLS



## LIGHTING



## PAVING





# 6.1 EXISTING CAMPUS AMENITIES BY DISTRICT

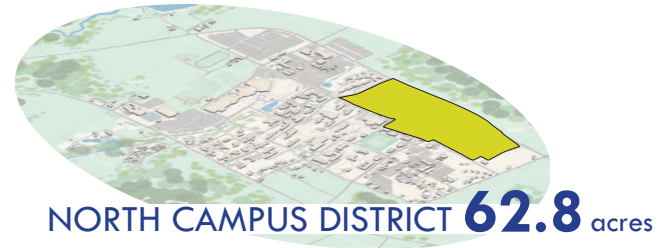
## North Campus District

The North Campus District stretches from the Fine Arts Center to Butterfield Road. Its northern boundary is Flagg Road and the southern boundary includes the Engineering green and the rear of Bliss, Lippitt and Ballentine Halls, excluding Carothers Library and then follows West Alumni Avenue to the west. Included in the district is Fine Arts, the Greenhouses, the Coastal Institute, Pharmacy, the Center for Biotechnology and Life Sciences (CBLS), White Hall, Rodmall Hall, Chafee Hall and the Beaupre Center for Chemical & Forensic Sciences. One fraternity (Phi Gamma Delta) is included in the district. The Mallon Outreach Center and the Botanical Gardens are also included.

The North Campus District has seen the most constant capital improvement projects over the last decade including the Beaupre Center for Chemical and Forensic Sciences, the Pharmacy Building, Medicinal Garden and Pharmacy green on the north side.

Within these improvements, landscape elements have been adopted that appreciate the overall aesthetic continuity of the district. Standards such as site lighting, pathways, edging, bike racks, etc. have all begun to fall within a more regimented program. However, certain elements which have been installed as part of these improvements should be realized as undesirable and the University should plan to avoid these conditions as they move into other design and construction projects in the future.

Examples of the problematic areas include over-designed and under-maintained stormwater systems, open aggregate pavement strips, expansive roadbed widths, and pedestrian areas need to feel more pedestrian-oriented.



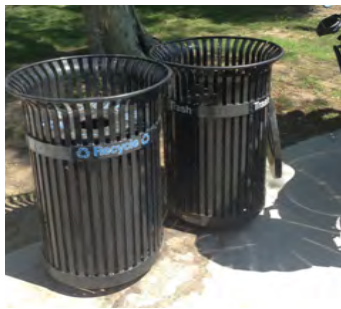
## SEATING & BENCHES



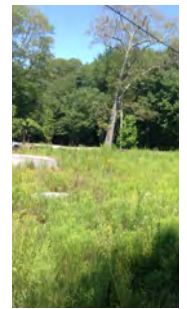
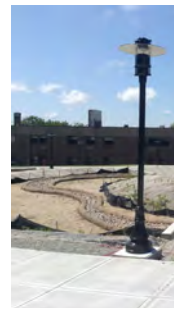
## LIGHTING



## TRASH RECEPTACLES



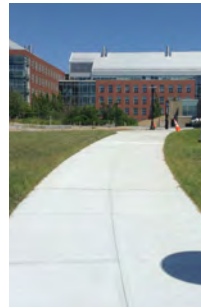
## SWALES



## WALLS



## PAVING





# 6.1 EXISTING CAMPUS AMENITIES BY DISTRICT

## Residential Life District

The Residential Life (ResLife) District stretches from Flagg Road to Fraternity Circle/Quarry Road to the south and from White Horn Brook on the west to the rear of the Memorial Union and Farm House Road to the east.



Residential Life District is the second largest district on campus and houses most students outside of the fraternity and sorority housing units. Within this district is the largest and most diverse array of campus site amenities and the lack of aesthetic continuity is most notable due to this fact.

Some Residential Life clusters struggle to provide a visual appeal to users and with this the usable space suffers. Edge treatments, walkways, and roads feel more geared to service connectivity than to the pedestrian-oriented students living in this district.

Hillside Residence Hall was recently completed and offers a good example of the balance of site amenities and variety in usable spaces. Swales and bio-retention systems integrate with living spaces and seat walls interpret the University's agrarian heritage.

It is notable that construction oversight needs to be addressed in regard to quality of site work; for example, stone walls which have been installed in recent years are already crumbling, there are noticeable dents on site light shields, as well as imperfections in the new black granite walls at Hillside Residence Hall. Perhaps the biggest construction concern is the freedom construction and service trucks have throughout the campus landscape. Allowing sub-contractors to park anywhere has created compacted soil conditions and will likely have lasting impacts on tree and turf health.



## SEATING & BENCHES



## LIGHTING



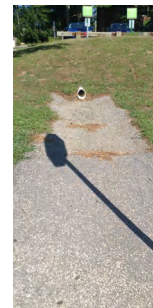
## BIKE RACKS



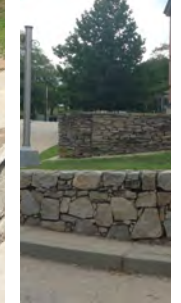
## TRASH RECEPTACLES



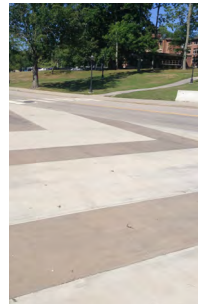
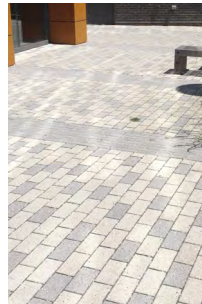
## SWALES



## WALLS



## PAVING





# 6.1 EXISTING CAMPUS AMENITIES BY DISTRICT

## Wetlands District

The Wetlands District stretches all the way across campus from Flagg Road to beyond Route 138. It is situated at the low point of the campus landscape and includes the brook, some tributaries and Ellery Pond which is formed at the center of campus. A number of roads and parking lots extend into the district.



The Wetlands District is the least developed district on campus and has the least amount of landscape improvements and site amenities. This twenty-five-acre segment of land acts as the stormwater filtration system for the vast majority of the campus.

The lack of programming suits the natural environment, while opening the door for enhancement of its filtration and attenuation qualities.

### SEATING & BENCHES



### WALLS



### AMENITIES



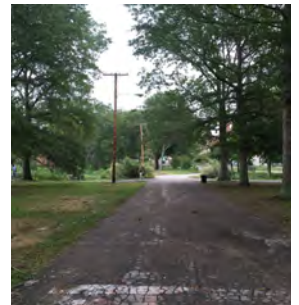
### TRASH BINS



### WETLANDS



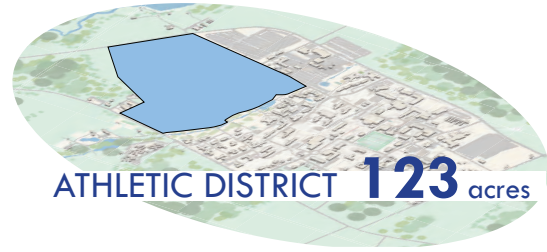
### PAVING



## Athletics District

The Athletic District includes all the fields and facilities for the University's sports teams. The Athletic Complex includes the Ryan Center, Meade Stadium, Tootell Aquatic Center, Keaney Gymnasium and, Mackal Field House, which are all connected. The Boss Ice Arena and the Independence Square Foundation are located to the southern limits near Route 138. The track, baseball, softball, soccer, and practice fields are within this district as well. It abuts White Horn Brook on the east and extends to Plains Road to the west.

Of the one-hundred-and-twenty-three acres within the Athletic District, the most notable in terms of campus standards are the areas



related to the Ryan Center, Tootell Aquatic Center, Keaney Gym, and Mackal Field House.

These areas have a varied set of campus standards; those associated with the Ryan Center are more modern than those associated with the older Athletic Complex. The unprogrammed landscape spaces seem designed for through travel more than activation and gathering.

### SEATING & BENCHES



### BIKE RACK



### FIELDS



### WALLS



### MEMORIAL



### PAVING

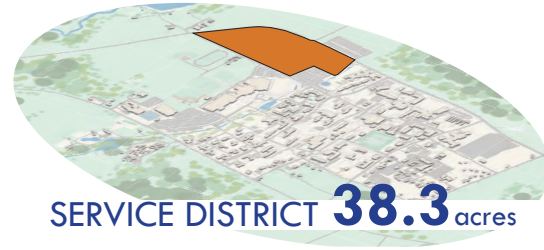




# 6.1 EXISTING CAMPUS AMENITIES BY DISTRICT

## Service District

The Service District is located in the northwest corner of campus between Flagg Road, West Alumni Avenue, and Tootell Road. White Horn Brook is the eastern boundary. The district includes Dining Services Distribution Center, the Central Receiving Warehouse, 210 Flagg Rd. (Campus Planning & Design, Median & Technology Services, Business Services and Campus Information Technology Services). The Automotive Garage, Salt Barn, Maintenance Building, Sherman House (GIS, Capitol Projects, Facilities Services, etc.) are included herein as well.



This district is defined by service buildings, storage, and parking lots. There is little in the way of campus standards included. Few site amenities exist and even sidewalks are limited.

### PAVING



### SWALES



### TRASH RECEPTACLES



### WALLS



THIS PAGE INTENTIONALLY LEFT BLANK



---

*URI LANDSCAPE DESIGN STANDARDS SECTION 6.2*

---

Section 6.2 has been intentionally removed and is under review by Campus Design. Should you have any questions regarding campus standards please contact Planning and Real Estate Development at 401-874-9463

THIS PAGE INTENTIONALLY LEFT BLANK









# 7

## LANDSCAPE MAINTENANCE

### 7.1 CURRENT MAINTENANCE PRACTICES

### 7.2 MAINTENANCE RECOMMENDATIONS

In this Landscape Master Plan, goals for the maintenance of the campus are intended to help make the care of the campus grounds more efficient through improving standard details and resolving areas on campus that require disproportionate levels of effort to maintain. In addition, staffing, equipment, and storage facilities should be improved to help raise the level of maintenance, allowing work to progress beyond the routine and into more proactive, preventative, and corrective work (i.e. deadwood removal in trees, structural pruning, soil decompaction, and pest/disease management). Staffing and equipping grounds to care for the existing and future green infrastructure is critical to serving this evolving campus landscape. In addition, the maintenance of “natural” areas will require new skills and maintenance regimes.



# 7.1 CURRENT MAINTENANCE PRACTICES

## Overview

The University’s campus landscape is a diverse network of built and natural typologies. Each typology, although different, helps contribute to the overall image of the University. The campus is located on a steep hill sloping from east to west. The upper portion—the easterly side—of campus contains almost all academic buildings. The majority of the landscape found in the upper portion of campus represents the iconic New England campus, consisting largely of specimen trees in lawn. At the center of campus is the historic core built around a traditional quadrangle, which reinforces the New England aesthetic with a wide expanse of turf and a formal perimeter of canopy trees. From the core, the campus aesthetic shifts from formal to organic as it transitions downhill towards the west. The lower portion, which is where a majority of the residential dorm buildings are located, is relatively flat and contains the athletic fields, service buildings, the main commuter parking lot, and a large section of White Horn Brook.



Soil erosion can often be found along steep paths. Seeding and re-establishing the turf becomes a continuous maintenance effort.

The slope of campus creates challenges for maintenance because of soil erosion, difficult mowing conditions, and increased pressure to remove snow and apply de-icing materials on paved surfaces for campus safety.

Surrounding the campus core is a mix of undeveloped woodland, suburban neighborhoods, and turf fields. There are a few woodland pockets that exist within campus, but these are disjointed and do not support a diverse population of wildlife. A tributary runs through campus, connecting a wetland in the north-east of campus and feeding directly into White Horn Brook, which runs north to south at the base of the campus.

Landscape maintenance practices greatly influence the overall aesthetic of the campus. Properly maintaining the landscape has a significant impact in the preservation of the campus image and the environmental impact. The guidelines set forth in this report are intended to provide direction regarding maintenance goals, organization, and priorities for how to establish a routine that efficiently maintains the landscape.

## Existing Maintenance Responsibilities

All campus landscape maintenance is performed under the University’s Facilities Services by Landscape & Grounds (L&G). Landscape and Grounds consists of groundskeepers, senior gardeners, landscape maintenance technicians, arborists, equipment operators, supervisors, managers, and students. A six-person group is dedicated to athletic grounds and sportsfield management. L&G duties include, but are not limited to: ground and road repairs, litter control, snow removal, mowing, trimming, leaf collection, turf fertilization, weed control, tree work, planting/pruning shrubs and flowers, sportsfield management, and event support. L&G staff are also involved with fence installation and repair, signage, and drainage installation.

Landscape and Grounds maintains a variety of different landscape conditions, such as: lawns, meadows, green infrastructure, wooded pockets, gardens, trees, etc. With so many different types of conditions it becomes challenging to maintain all effectively. Each condition serves a distinct role in representing the campus image and natural systems, and it is important that they are maintained to function properly.

L&G is particularly important in preparation for events. Significant events that L&G are involved with include:

- Move-in days (early September)
- Open House Days: Prospective Students (October)
- Homecoming/"Rhodyville" (late October)
- Family Weekend (late September/early October)
- Welcome Days: Admitted students (April)
- Move-out days (late May)
- Commencement (late May)
- Orientation: In-coming Students (Summer)
- Athlete move in days (early August)

Non-academic events:

- Balloon festival
- Leap festival
- Antique car festivals
- Summer sports camps
- Special Olympics

Currently, energy is disproportionately assigned to certain maintenance tasks. Due to the large amount of turf on campus, much of the work effort is assigned to mowing and trimming. The L&G crew currently has ten staff solely devoted to mowing. The succeeding priorities consist of general litter clean up, leaf removal, planting, tree care, and snow removal.

## Existing Facilities

The existing maintenance and storage buildings are located in the lower portion of campus within the Service District. There are several buildings at various locations which house equipment and materials. Overall, the buildings and storage yard are in very poor condition. The athletic storage building is very outdated, with no climate control or security for the fertilizer it contains. A barn has been re-purposed to store equipment, but is in a declining state. There is a lack of a proper equipment wash-down system and indoor storage areas for the necessary equipment.

There is, however, a Service Sector plan in development to redesign the Service District, which will change the existing layout of service facilities and maintenance buildings.

It is recommended that L&G be consolidated to one location to improve production, efficiency, and better manage the materials and equipment.



Several buildings in the Service District are used for storing equipment. The barn (pictured) is currently used to store materials, but is in very poor condition.



# 7.1 CURRENT MAINTENANCE PRACTICES

## Existing Equipment

Current equipment owned and used by Landscape and Grounds:

- Ten lawn mowers (six-foot deck, zero turn)
- Hand mowers
- Leaf blowers
- One leaf vacuum
- Four water tanks that can be mounted on vehicles
- Buildings used for bulk storage in L&G yard for loose materials (stone, mulch, etc.)
- Snow plows
- Hand tools
- Five Bobcats/Polaris type vehicles
- Two backhoes
- Bucket truck
- Chipper



A collection of abandoned vehicles and machinery rests in the Service District.

## Athletics

The athletic maintenance crew consists of four full-time employees and a manager. The athletic fields are currently maintained with an up-to-date irrigation system and require a typical athletic field management regime. Most maintenance is performed by University staff; however, some work may be contracted out as needed. Most fields are natural turf, with the exception of one synthetic turf baseball field that is maintained with one groomer.

Current equipment used for athletic fields:

- Two lawn mowers (six-foot deck, zero turn)
- Two reel nine-foot mowers
- One sixteen-foot gang mower
- Four John Deere tractors
- Line painters
- Fertilizer spreaders

As mentioned, the athletic storage buildings are currently in poor and declining condition. Adapted farm outbuildings are used to store tractors, mowers, hand equipment, tarps, chemicals, etc. The buildings are contextually appropriate for this area of campus, but are not weather-tight or secure. There is an urgent need for upgraded buildings that can safely store chemicals and other equipment.



The athletic storage buildings are in need of replacement.

## Existing Snow Removal Procedures

The Kingston campus receives an average of around thirty inches of snow per year. Proper snow removal and de-icing precautions are a top priority in the winter to avoid safety hazards especially on stairs and sloped walkways. The University currently has five Bobcats and five salt spreaders used for routine snow removal and de-icing. Other campus services also share the snow removal duties; for instance, Housing & Residential Life plows everything west of Butterfield Road, including Hillside, and Custodial Services are responsible for clearing building entrances from doors to the first walkway.

Chemical applications are applied as needed to increase the safety of roads and parking areas. Rock salt is used on roads and parking, and magnesium chloride is used on pervious parking lots (Dairy Barn and Plains Road). Landscape and Grounds has acquired a spray attachment and tank to apply magnesium or calcium chloride on walks. The use of sand is only applied when conditions are very icy.

Landscape and Grounds efforts are primarily focused on sidewalks, parking lots, and road clearing, but due to limited available resources most other tasks are contracted. Contractors are hired to perform manual snow removal and ice melt applications for most exposed stairways, handicap ramps, terraces, and some parking areas. Under the L&G purview, all snow removal contractors are responsible for immediate mobilization as soon as snow removal is necessary, and must store the equipment needed no more than five miles away from the campus for quick and easy access.

### Contracted Lots

- Fraternity Circle + Sorority Houses
- Dairy Barn, Plains Road and Flagg Road parking lots
- Ryan Center VIP parking lot

In-house staff provide snow maintenance for the remaining lots, including Peckham Farm, East Farm, and the University Graduate Village Apartments.

Implementation of campus standards can help reduce the amount of contract work needed. Stairs and narrow ramps and paths currently create difficulties for snow removal equipment. Many paths have obstructions, such as site furnishings, which block access for Bobcats, and therefore require manual clearing by hand. This work is very time consuming, and becomes too difficult for L&G to manage without additional contractors. Creating standard walkway and ramp widths will reduce the amount of manual work that needs to be sub-contracted.



This bike rack was likely damaged by an careless use of machinery.



# 7.1 CURRENT MAINTENANCE PRACTICES

## Peer University Campuses

Compared to other Universities of similar scale in New England, the University's L&G is currently understaffed. Peer Universities were compared to see how efficient they perform and track all necessary tasks.

## University of New Hampshire, Durham

- Students: 15,000
  - Tuition (in state/out of state): \$14,410/\$28,210
  - Acreage: 300 campus core (1,100 total)
  - Turf: 100 acres maintained, no staff dedicated to mowing
  - Buildings: Approximately ninety
  - Grounds Staff: Twenty-five (two full-time mechanics) grounds managers, two supervisors, one gardener, one field manager; includes two arborists. Crews crossover and will do trash pick-up and policing grounds.
  - Staff Organization: Two to four man crews tackle all work within zones on campus (turf improvements, mowing, annuals, pruning, trash, etc.); Athletics is own zone
  - Snow Removal: Trucks and loaders maintain parking; smaller vehicles for walkway (seven feet wide); intermediate work ten feet out to wide walks is done by hand crew (in house)
  - Contracted tasks: Walkways and steps from buildings out ten feet; sometimes additional labor crews for snow removal
  - Green infrastructure: Non-grounds staff sweep porous pavements; they may have training, G&E does not. No green roofs, no large designed bio-swales; only some smaller porous pavement lots.
  - Standard materials: Wide variety of materials
- Equipment: Twelve 60-inch zero-turn mowers, multiple ride-on mowers, two Gator utility vehicles, one Gravely commercial mower, one-ton dump truck, several pickup trucks, one dump trailer with a vacuum unit, several ride-on leaf blowers, and backpack blowers.
  - Maintenance buildings: Tucked away on edge of College Woods; also in cluster are two administration/education buildings, water treatment plant, and fish hatchery. Storage barn has salt in three bays, salt/sand mix one bay, cardboard bales in one bay; houses mulch in summer. Dump yard is off campus a couple of miles away; yard waste, and extra materials are stored there: pavers, brush, etc.
  - Irrigation: One building has irrigated turf area, not maintained or managed by G&E
  - Compost: Grass clippings are mulched and left in place; leaves turned in dump yard, worked back into soil and used on campus; tried composting dining hall waste to use on campus but there was too much trash and debris in it
  - Woodland maintenance: Wooded areas on campus are somewhat maintained. They have asphalt walkways through them so low limbs are removed for clearance, hazard limbs removed, and trees that are in poor health are removed. A brook runs through campus, so fallen wood is cleaned up every few years.
  - Trees have been partially inventoried into GIS

## University of Connecticut, Storrs

- Students: 19,324
- Tuition (in state/out of state): \$11,224/\$33,016
- Acreage: 3,826 (includes Depot, farms, and forest tracts)
- Buildings: Approx. 350
- Parking Spaces: 10,800
- Maintenance Staff: in-house staff of eleven; includes: two supervisors, two arborists, and two dedicated to trash/recycle program. Primary focus includes tree program; seasonal flowers, pond fountains, some turf renovation, trash, recycle and litter, snow and ice participation (plowing only), partial campus zone for leaf clean up, misc. site attention, etc. Supported by out-sourced contracted services providing spring clean-up, mulching, mowing, weeding, zone leaf cleanup, shrub pruning, perennial flower care, site improvement projects, etc.
- Staff Organization: in-house softscape-focused group supported by multiple outsourced contractors for: seasonal landscape services, snow and ice management, turf care program, lake care program, tree care program, and in-house department for pavement-hard surface responsibility. Athletics has its own staff for maintaining all fields.
- Snow Removal: in house responsible for plowing and shoveling of sidewalks, internal campus roads, and smaller parking lots. Out-source contractor responsible for hand shoveling, and for larger roads, parking lots, and two apartment/dorm complexes, and regional campuses.
- Green infrastructure: Limited. New programs (internal and external) are being explored and developed. On campus: porous asphalt, pervious concrete, permeable pavers, tree filters, bio-swales, bio-retention,

cisterns, and green roofs.

- Irrigation: athletic fields, in very limited areas elsewhere, not encouraged unless temporary during initial plant establishment period. Lawn maintenance is outsourced.
- Leaf cleanup: combined in house and contracted services. No compost. Dump yard is located on nearby Depot campus.
- Woodland areas primarily managed by Natural Resources Management, Engineering, and Extension Forestry Program
- Trees: less than 2,000 (2010 census). Trees planted per year: varies; around 100 (2015) and around 500 (2016). Trees are inventoried.

## University of Massachusetts, Amherst

- Students: 30,037
- Tuition (in state/out of state): \$14,971/\$32,204
- Acreage: 1,450
- Turf: 100 acres of maintained turf that is fertilized and mowed a minimum of once a week.
- Organization: Areas on campus are categorized into “levels” in order to allocate resources accordingly. Level 1 consists of new buildings and areas used for functions. Level 5 consists of off-campus buildings/areas that are mowed when possible.
- Grounds staff consists of forty-five employees and as many as twelve seasonal students.
- UMass utilizes software such as sight-lines, in order to compare the resources of other peer universities. The software allows grounds to monitor current campus conditions and forecast potential problems in the future. These tools help plan, report, and analyze maintenance performance and efficiency.



## 7.2 MAINTENANCE RECOMMENDATIONS

### Big Picture Recommendations

The following recommendations are intended to help make the maintenance of the campus landscape more efficient through improving standard details and resolving areas on campus that require disproportionate levels of effort to maintain. Additional staffing, equipment, and storage facility improvements will lessen the uneven resources provided per maintenance task, and allow Landscape and Grounds (L&G) to work beyond the minimum routine maintenance needed. Balancing maintenance resources through improvements that increase efficiency will provide more proactive, preventative, and corrective work. Recommendations include changes to standard details, increasing staffing, providing more equipment, increasing and improving storage facilities.

### Efficiency Improvements

Establishing appropriate campus standards can help reduce the amount of intensive maintenance needed. Appropriate details are those that are realistic in maintenance requirements and do not pose any obstacle that makes maintaining them more difficult than it should be. Snow removal, in particular, can be made a much simpler task with the use of standard details included in Section 6 of this report. Removing stairs where possible, for example, creating paths without obstacles that are easier for snow removal. Standard sidewalk widths ensure that snow removal equipment has access. Keeping site furnishings and trees clear of a plow path will avoid any accidental damage. Moving sidewalks away from the edge of roadways and introducing grass strips between the road and walks provides a space to move snow. Avoiding rock salt spray on concrete walkways will help increase the longevity of the walk surfaces.

Mowing is currently one of the major tasks on the campus that requires the most labor. Avoiding narrow strips of turf that require hand-mowing can make mowing tasks more efficient. In areas where access is minimal and

the aesthetic appropriate, meadow “no mow” or alternative plantings can reduce mowing to as little as twice per year.

Event preparation is another large task that can be made more efficient. L&G is proactive in responding to mitigating damages that result from events, but there are several improvements that can be made to ensure that less damage occurs after events, particularly to the turf. Rules and event planning should strictly enforce a restriction to vehicles that park illegally on turf areas. This is a major issue on move-in and move-out days, where vehicles park on the turf near residential buildings. These events can be very destructive to turf, especially if the ground is wet. Areas where turf is more likely to be damaged should be fenced off for the duration of the event. Design that prevents vehicles from using sidewalks would dramatically improve turf and reduce erosion.

### Staff and Equipment Improvements

The Landscape and Grounds staff for the Kingston campus accomplishes a tremendous amount of work with the available resources. However, L&G needs an increase in staffing levels and equipment in order to properly serve the campus landscape and go beyond routine maintenance.

The University is starting to incorporate sustainable practices in its landscape. In order to see the success and benefits of using sustainable practices, it is important that staff be trained to become familiar with these tasks. Time, the scale of the campus, and budgets can restrict the availability of staff, but sustainable landscapes reduce the amount of labor required to properly maintain them. Although these landscapes reduce the amount of work energy needed, they still require an educated staff, as well as a maintenance schedule to track and record the work that has been done.

As discussed in Section 5 of this report, there should also be an increase in staff dedicated to tree management. Their tasks should include: keeping records related to tree inventory, preventative pruning, pest/disease management, and soils. It is also critical that they make sure enough resources are provided to newly planted trees. Having staff monitor necessary watering will increase the percentage of successful new plantings.

Select staff should also be trained in maintaining and protecting the “natural” areas of campus. These areas provide important natural habitat, increase biodiversity, and reinforce the contextual sense-of-place of the University. It is important that plant growth is managed in a way that mimics natural succession in order to function as intended.

## Sustainable Practices

In recent decades, the campus has seen an introduction of green infrastructure. The University is part of a sensitive environment bordered by undeveloped woodland and located along White Horn Brook. A larger emphasis needs to be focused on the importance of watershed protection for White Horn Brook as well as the larger regional watershed and recharge of the local aquifer. Staff needs to be trained in maintaining green infrastructure in order to preserve an ecologically-sound and sustainable landscape.

Green infrastructure that should be implemented on campus includes, but is not limited to:

- Bio-swales: Linear depressions that receive water from impervious surfaces, remove sediment, and allow it to be absorbed into the ground.
- Less intensive design: Over-developed designs are often too complicated and require an unrealistic amount of maintenance in order to keep performing properly.

- Habitat corridors: Providing natural corridors increases biodiversity within the campus and allows wildlife to pass through the campus, rather than avoid it.
- Plant selection: Avoid monoculture plantings to avoid risk of disease spread, such as Dutch elm disease. Certain species are also disease resistant, which can increase their longevity.
- Conversion of turf areas: Narrow strips of turf require hand mowing and should be replaced with a more sustainable options. Replacing areas of turf with meadow plantings still requires weeding of invasive plants and routine mowing one to two times per year at six to twelve inch heights, therefore proper equipment should be available. (See Turf Conversion Plan.)
- Standard Details: implementing standard details in design can make snow removal easier. (See Section 6: Campus Design Guidelines & Standard Details of this report.)
- Stair Removal: Removing stairs where possible reduces the difficulty of snow removal.
- Integrated Pest Management: Pests should be monitored to reduce the need of harmful chemical pesticides.



A newly installed bio-swale will help filter silt and pollution from surface runoff.



# 7.2 MAINTENANCE RECOMMENDATIONS

## Priority Zones

Properly maintaining a campus of the scale of the University is no easy task. The Kingston campus is sprawling former farmland that consists of approximately 1200 acres, with twenty miles of walkways and twelve miles of roads. The overall aesthetic is formal classic New England campus with the introduction of modern green infrastructure.

To help prioritize the maintenance of significant areas the campus should be structured into priority zones. These zones will identify areas of landscape maintenance from most important to less critical. Areas that are the most importance should receive the highest level of maintenance needed due to their location and/or significance to the campus landscape. The Quadrangle and the President’s House and Gardens are currently considered maintenance priorities and receive routine turfgrass fertilizer applications. Areas of less critical importance should still receive proper maintenance as needed, but are not considered an immediate priority.

The Maintenance Priority Zones plan on the following page shows the campus landscape organized into three zones: Highest Importance, Moderate Importance, and Less Critical. Areas of “Highest Importance” are significant places that shape the campus, such as the Quad or the historic campus gateway. These zones are based on the proposed Landscape Master Plan included in Section 4 of this report. The Athletics District has not been included in these designations as it requires another level of maintenance and has a dedicated staff.

Within each of these zones are specific maintenance practices such as: General Maintenance, Tree care, Turf Care, Sustainable Practices, Hardscapes, Site Furnishings, Snow Removal, and Event Coordination.



Highest Importance: The Quadrangle



Moderate Importance: Planted slopes along walkways



Less Critical: Vehicular focused connection roads

## Maintenance Zones

There are several zones on campus that require specialized maintenance practices; these zones are: natural or woodland areas, wetlands, and green infrastructure features.

Natural or woodland areas contain native vegetation and support wildlife habitat. Invasive species should be cleared in these areas to help promote the growth of native species. The understory canopy of woodland areas on campus should be cleared as appropriate to increase safety for vision. Deadwood should be left on site to contribute to a natural wildlife habitat.

There are several wetland areas on campus that require extra maintenance precautions. It is important that no work be conducted within wetlands unless regulatory permission—from the Rhode Island Department of Environmental Management—to do so is granted. If work is allowed, invasive species should be removed from wetland areas.

Vegetative swales are the most common form of green infrastructure used on campus. These swales often collect sediment and debris, which need to be removed regularly in order to function efficiently. Weeding of invasive plants should be done annually to ensure the healthy growth of desired vegetation.



Natural/Woodland: Pockets of native plantings

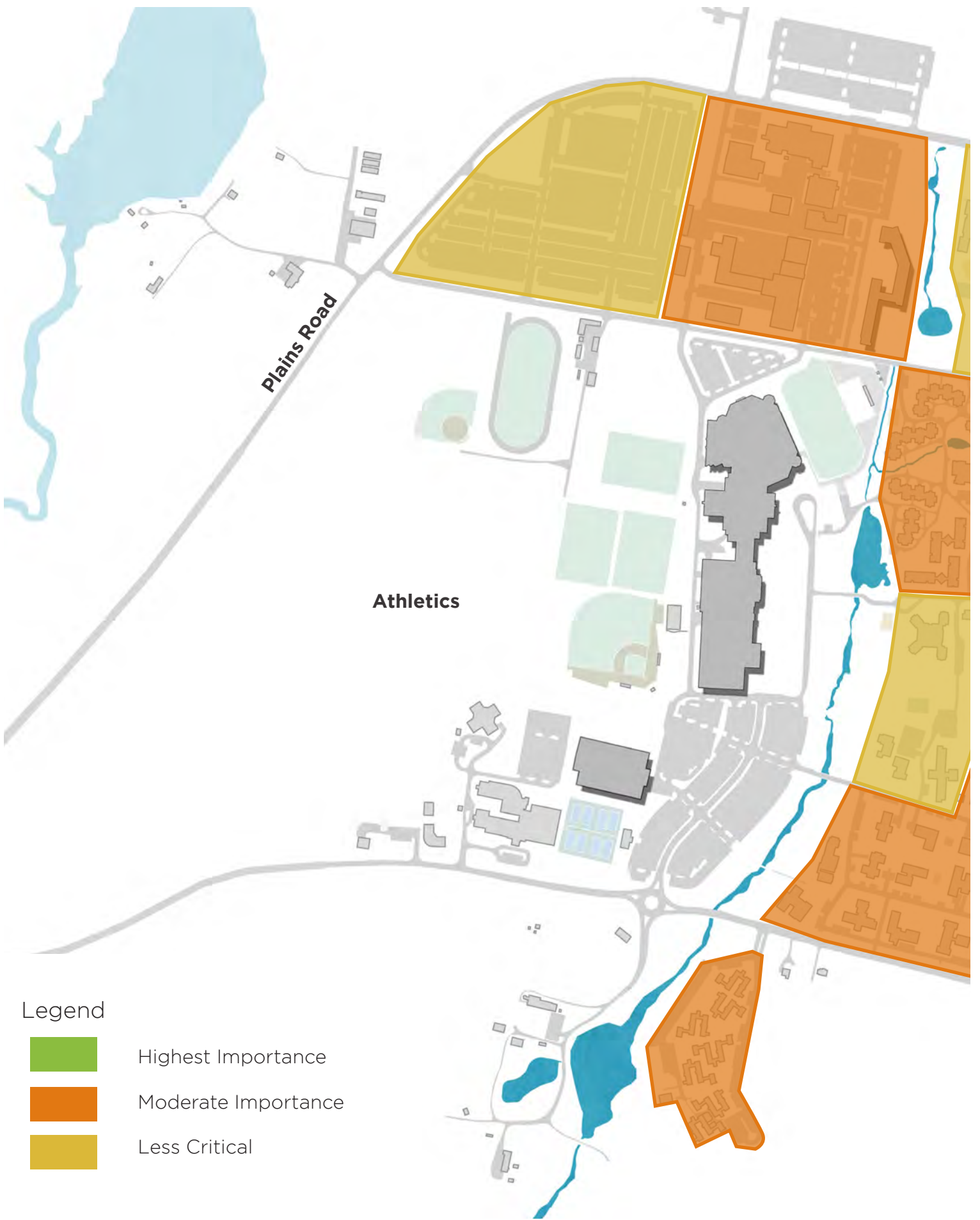


Wetlands: White Horn Brook



Green Infrastructure: Bio-swales along slopes and areas of impervious surfaces





Legend



Highest Importance



Moderate Importance



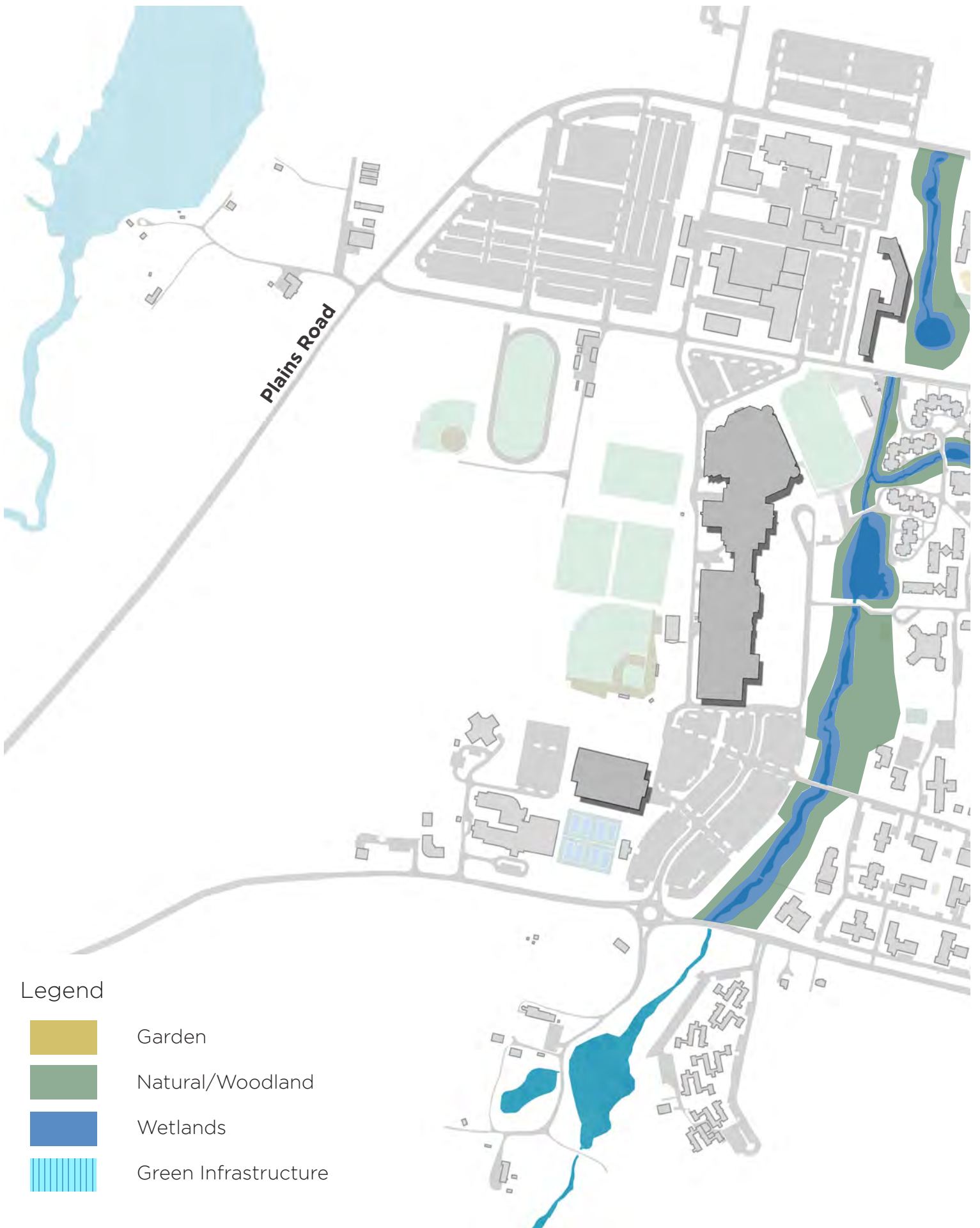
Less Critical

# North Woods



## Maintenance Priority Zones





# North Woods



## Maintenance Character Zones



## 7.2 MAINTENANCE RECOMMENDATIONS

### Maintenance Schedule

Establishing a maintenance schedule will help track what tasks need to be fulfilled and how often. The maintenance calendar will indicate planned dates and frequency of tasks, and will assist in planning the specific tasks associated with each maintenance practice; for example, tree care involves monitoring growth and pest control as well as routine pruning. The calendar will also outline the frequency of the tasks such as bi-annual pruning of undesirable limbs of trees and shrubs.

#### Site Meetings

Seasonal:

- L&G staff should meet seasonally (spring and fall) on-site to discuss changes a landscape is experiencing. These changes should be accounted for and planned for how to best manage each site-specific area.

During Project Design and After Project Construction:

- During design phases, and upon the completion of any project that alters the campus landscape, L&G staff should meet with the designer and contractor to understand what the landscape is intended to achieve. This meeting should review the on-going maintenance associated with the installation.

### Turf Care

The University has several significant turf areas that should receive priority turf care: the Quad, the Green Hall allée, the Pharmacy green, the President's House and gardens, Botanical Gardens, and the athletic fields. Each turf area is used differently and therefore should receive different levels of care. The Quad experiences the highest level of daily foot traffic. In addition to the daily wear, the Quad is also used for events such as Commencement, college club fairs, and occasional performances. The turf along the Green Hall allée does not get as much use, but is a highly visible component to the landscape and of value to the President. The Pharmacy green is in a high visibility area with not much foot traffic but is used as a Commencement venue. The Botanical Garden turf experiences moderate foot traffic, but serves as an important outdoor classroom and is also used for wedding ceremonies. Priority projects proposed by the Landscape Master Plan which would also fall under this discussion include the Chafee Green and turf areas of the Elephant Walk.

#### Mowing

Many areas of turf are difficult to manage and do not provide the campus with usable space. Replacing these areas with a low maintenance option such as “no mow” grass or meadow plantings will provide the campus with sustainable benefits. The plan titled Turfgrass Focus Areas identifies areas for possible conversion of turfgrass to alternative vegetation types. When mowing during dry periods, raising the mower deck will help maintain healthy grass.



Social trails can prohibit the growth of turf. “No mow” grass would reduce foot traffic and look more visually appealing.



Planted edges could deter pedestrians from creating social paths. Proper soil decompaction and temporary fencing would be recommended to re-establish turf.

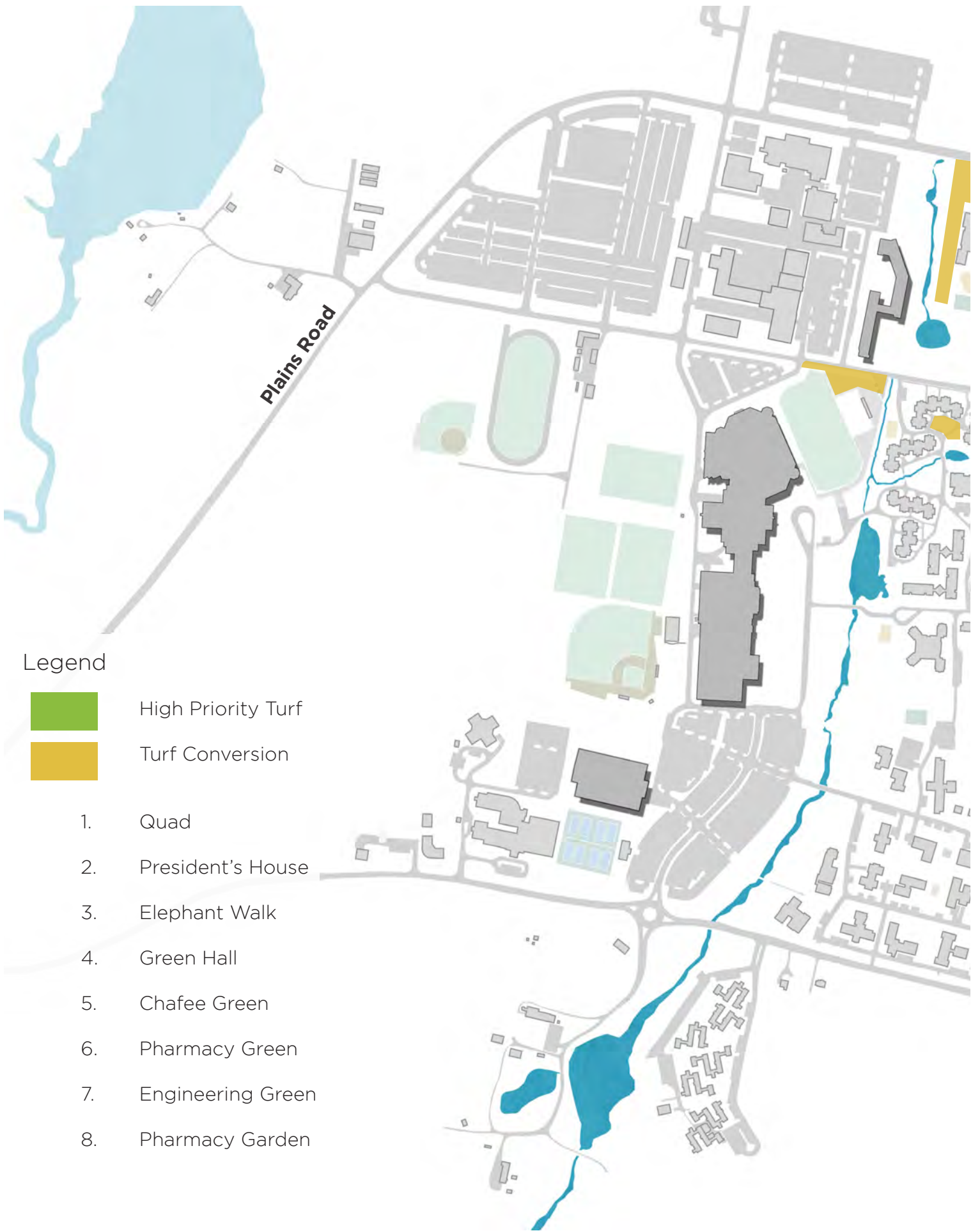


Shallow tree roots can make it difficult to establish turf.



Turf can be difficult to establish along walkways due to foot traffic, salt use, and poor drainage.





Legend



High Priority Turf  
 Turf Conversion

1. Quad
2. President's House
3. Elephant Walk
4. Green Hall
5. Chafee Green
6. Pharmacy Green
7. Engineering Green
8. Pharmacy Garden

# North Woods



## Turfgrass Focus Areas



## 7.2 MAINTENANCE RECOMMENDATIONS

### Edging

Trimming around furnishings, buildings, and other obstacles should be performed in accordance with the mowing schedule. Edging along planting beds, sidewalks, and roads should be performed monthly during the growing season. Efficient edging can only be achieved with additional staffing. Adding mow strips at buildings and along walls would help reduce the amount of intensive hand work needed to maintain these areas.

Trunk damage to trees is a significant concern on campus and the protection of trees through maintained mulching and trunk guards is needed.

### Aeration

Areas of heavy use should be aerated yearly in the fall to mitigate compaction. Aerating turf increases pore space in the soil and allows for a healthier root system. Properly aerated soil also increases the ability to infiltrate water and reduce water trapped on the surface. The Quad is one area that would benefit from more frequent aeration since it experiences the highest level of use.



A lack of proper sidewalk caused pedestrians to walk on the edge of turf. This social trail and excessive use prohibits the growth of any turf.

### Over-seeding

Over-seeding is a technique that disperses grass seed directly of existing turf areas. The goal of the process is to increase the lawn density and fill in bare spots. This technique can be applied to any significant turf that looks sparse and uneven. The seed mix applied should closely resemble the existing turfgrass so that it does not stand out, and watering should occur during the seed germination period. It is critical to add turf protection such as fencing during establishment.

### Sod

If applied correctly, sod can be a quick fix to damaged turf areas. If sod is replacing a portion of a lawn, it should be a similar seed mix to match the existing. Prior to laying down the sod rolls, the area should be clear of any existing grass, and the loam should be loosened. Edges should be lined up cleanly, and newly laid out sod should be watered frequently to prevent the root zone from drying out. Not keeping the sod moist is the most common reason for the roots to fail to establish. Sod requires intensive watering for a successful establishment. Replacement sod can be a good choice for event preparation, such as Commencement.

## Staff Collaboration

The University is known for its turfgrass studies and has one of the oldest turfgrass management programs in the country. To improve the turf quality on campus, select areas should serve as experimental grounds lead by turfgrass management staff, professors, and students. The campus landscape should serve as a research lab for different turf varieties and maintenance techniques.

Collaborating with staff can help create outdoor learning classrooms, benefit the quality in turf health, and aid in the maintenance requirements of campus L&G. Staff are currently working together at the Agronomy Farm, Skogley Memorial Turfgrass Research Facility, and along Plains Road (East of the Agronomy Farm).



The turf along the walkway south of Green Hall is an area that would benefit from irrigation.

## **Trees**

Refer to Section 5: Campus Trees of this report for maintenance recommendations on campus trees.

Landscape and Grounds should be responsible for maintaining and updating the digital Tree Inventory with GIS information. To help keep track of tree maintenance, all trees should be tagged with unique identification numbers. It is important that the inventory data be updated as changes are made and stays accessible for public use.

## Watering

Trees should be watered within the drip line, and benefit from long, deep watering versus frequent quick watering. New trees should be monitored closely for the appropriate watering needed. Soil should be checked frequently to ensure that the root ball remains moist. Newly planted trees should be watered regularly for two years until their root systems become established. Larger transplants may require more watering for a longer period of time. The soil around the drip line of mature established trees should be maintained moist during dry hot months.

Watering is a significant and critical task to maintain the recommended expanding tree collection and to meet the goals of canopy coverage. Staff and equipment dedicated to this task are required.



## 7.2 MAINTENANCE RECOMMENDATIONS

### Shrubs and Perennials

Shrubs and perennials on campus are typically planted in front of buildings to accentuate entrances or used in gardens for educational purposes. The campus currently does not have a large quantity of shrubs, perennials, and annuals, however they still require a large amount of current L&G staff and resources.

Using native plants can help reduce on-going maintenance needs, since the plants are adapted to the soil and climate. Many plants require much less maintenance by being drought tolerant. The location of specific plants may also determine the level of maintenance needed, for example, some plants should avoid direct sun exposure to reduce frequent watering needs. Choosing perennials that do not need frequent division can also reduce maintenance needs.



Additional watering and soil decompaction would help improve the health of the turf.

### Irrigation

Irrigation is currently installed only at the President's House, Botanical Gardens, and the athletic fields. A high quality turf is desired in these areas. It is recommended that additional irrigation be installed for turf areas that are heavily used and highly visible. The Quadrangle experiences heavy use daily, and would benefit greatly from irrigation. Irrigation would create a more lush stand of turf that is more hardy with the extensive daily use. The turf area in front of Green Hall should also be considered for irrigation since it is frequently seen during campus tours.

### Capturing Rainwater

URI is located within the Chipuxet Watershed which is the primary source of drinking water for the towns of South Kingstown and Narragansett. The Kingston campus contributes a large portion of the developed land use within the watershed and has greatly affected stormwater infiltration and increased runoff issues. Because of this, more frequent flooding occurs as well as a degradation of the quality of water.

To help mitigate this impact, rainwater should be harvested when possible and reused for irrigation of turf areas, plantings, and athletic fields. Capturing rainwater will reduce the amount of water that is piped through catch basins and improve stormwater infiltration as well as groundwater recharge.

## Soil Testing

Soil is one of the most important factors that influence the health of trees, shrubs, and turf. The chemical properties and pH should be tested annually, rather than as needed, to prevent any damage inflicting on the tree from poor soil conditions. Nutrient deficiencies can be treated as required with soil amendments. It may also be important to test soils shortly after winter to determine any damage caused from excessive salt levels from snow removal.

In addition to the chemical properties and suitability of soil, testing compaction levels is important for both existing trees and the preparation of planting new trees. A penetrometer should be used to determine compaction levels. These readings should be recorded and compared to the changes observed in tree health to see if there may be any correlation. Trees can suffer greatly from compacted soil or eroding soil. If soils are found to be dangerously compacted, techniques such as air spading can be implemented.

### Fertilization

Balancing the appropriate timing of fertilizing cycles can help improve the quality of turf, trees, shrubs, and perennials. Proper fertilization will improve healthy root systems and give plants a better chance of avoiding disease and pest damage. A healthy root system is important in stabilizing slopes, which in turn reduces maintenance requirements. Fertilizer should be applied twice a year, depending on location and application. Fertilizer and other toxic materials should be avoided near wetlands and other sensitive locations. Rainwater to irrigate may not completely eliminate the use of potable water; however it can reduce the need to drastically.

## Pest Management

The University has seen recent devastation from pests and diseases. In the 1980s, a significant number of mature American elms were removed after succumbing to Dutch elm disease. In this case, monoculture had a direct effect on the quick demise of a whole environment. Avoiding monoculture can give a landscape a better chance of surviving a spread of disease. Planting disease resistant plants is also another way of ensuring the durability of a landscape.

Other pests that are threats to the campus are the emerald ash borer, Asian long-horned beetle, hemlock woolly adelgid, and gypsy moth. Plants that are prone to these pests and disease should be inspected often in order to control the infestation as early as possible.

L&G should continue to collaborate with University teaching staff that are involved with pest management research. Knowledgeable staff can be valuable resources for recommending management techniques and determining appropriate actions to pest related issues. Gypsy moth presence was highly concerning during summer 2016. L&G have recently collaborated with arborists and University faculty to determine the appropriate means of preventing future infestations and how to treat any trees that show signs of impact from the 2016 infestation. Newly planted trees and specimen trees were recently treated with Acelepryn, an insecticide aimed towards controlling caterpillars, and are conducting *Bacillus thuringiensis* (Bt) trials.



## 7.2 MAINTENANCE RECOMMENDATIONS

### Mulching

Mulch retains moisture which helps plants during dry heat periods, as well as protects from winter conditions by insulating the soil. Mulch also helps prevent soil compaction and reduces lawn mower and equipment damage. The protection mulch gives to young trees is significant, particularly while trying to provide sufficient water to help establish the tree. Once the mulch layer is applied, it should be watered to start maintaining moisture. Mulching new trees, up to four inch caliper diameter breast height, should occur annually and is typically phased out after three years.

Heritage trees and trees with shallow root systems should receive mulching annually as needed to help maintain the trees health in terms of moisture retention and trunk protection. Tree species that prefer cool roots should be noted, and mulch should be applied as needed. The University should consider using a composted wood chip or leaf mulch since it can be easily manufactured with waste products from the campus.

A total mulch thickness should not exceed three inches and should not be placed against the tree trunk. Previous years' mulch should be removed prior to placing new mulch, if necessary.



Newly planted trees need routine mulching for the first 3 years to help establishment.

### Leaf Removal

Fallen leaves must be cleared before building up and blocking drainage structures. During the fall, curb gutters and swales should be checked and cleaned weekly to avoid water flow obstructions.

Leaves should be removed from turf and hardscape areas, but should remain in natural areas to benefit the natural ecology.

Where possible, leaves should be mulched in place to provide soil amendments to turf areas.

### Composting

Composting should be done on-site as much as possible to reduce the cost of transportation. Compost made on-site should then be reused and applied into the landscape to receive its many plant nutritional benefits. Since the Kingston campus was formerly a grassy farmland, agrarian practices such as composting can bring the “farm” culture back into the campus landscape.



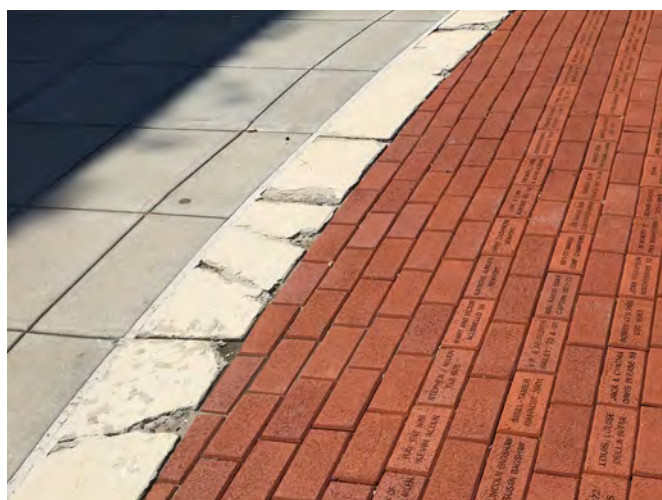
Leaf removal along roads and sidewalk should maintain accessibility.

## Hardscape

The majority of the campus complies with a universal material palette. Roads and parking lots are primarily bituminous pavement, sidewalks and walkways are primarily concrete or bituminous pavement, and brick pavers are used almost exclusively for memorial paths. There are, however, a few details that have failed and should be replaced with more durable materials. For example, many concrete and asphalt curbs are deteriorating and should be replaced with granite curbs that will last longer and require less maintenance.

- Roads: All roads throughout campus are bituminous concrete. Roads should be inspected twice yearly for pot holes and cracks. Pot-holes should be patched as needed, and cracks should be filled with an asphalt-based compound. Street sweeping should be scheduled monthly to avoid excessive debris build up. Crosswalks and pavement markings should be repainted one to three years.
- Parking lots: Should be inspected twice yearly, spring and fall, for pot holes and cracks. Lines should be repainted every five years.
- Concrete walkways, sidewalks and stairs: Inspect twice annually, and repair as needed. When pavement is heaved by tree roots, the section of pavement should be removed, and replaced in a way that will not damage the roots. Weeds growing in cracks should be removed, and the cracks should be filled with sealant. Puddles on paths indicate poor grading, and should be re-graded to drain properly.
- Pavers: There are a few paths and plazas that have areas of pavers. If heaved, pavers should be reset as needed to be accessible. Replacement pavers should match existing.

- Walls: A campus standard should be enforced for wall type. Fieldstone is more durable than veneer and is less likely to require maintenance. Restricting wall type to just the campus standard can ensure the longevity of masonry walls on campus.
- Curbs: New projects that impact curbing should use granite curbs which last much longer than concrete, and will hold up better against snow plows and salt use. Broken and chipped curbs should be removed and replaced with matching pieces.



This concrete banding was either an unsuitable mix or installed improperly.



Hardscape material should be selected based on the ability to maintain it. Joints in this irregular flagstone require routine maintenance and removal of weeds with herbicide.



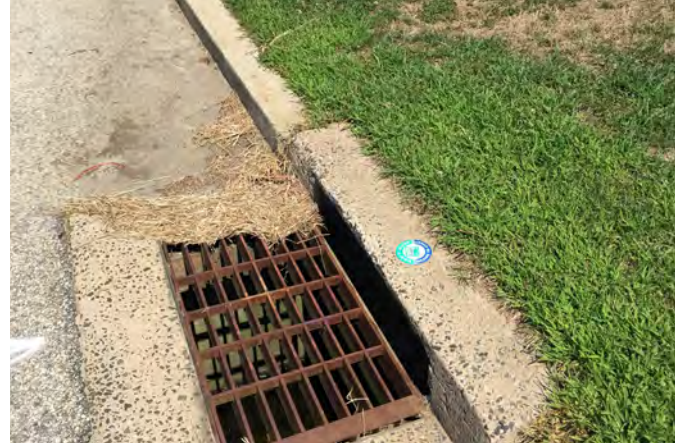
## 7.2 MAINTENANCE RECOMMENDATIONS

### Drainage

Properly designed and maintained drainage systems benefits pavement and prevents erosion in the landscape. Landscape and Grounds is currently on a three-year cleaning cycle for drainage structures. It is recommended that catch basins be inspected twice a year, and should be cleaned and repaired as needed. Debris that builds up around drainage systems should be cleared and properly disposed of. In addition to keeping existing drains clear, it is also important to note wet areas in turf or puddling in pavement that may benefit from an additional drain.

### Erosion Control

Due to the steep slope across campus, erosion control methods should be implemented as needed. Sediment behind these devices should be checked regularly, especially after heavy rains, and be removed if greater than four inches deep. These devices can be used to temporarily establish a slope, or as more permanent structures to prevent future erosion. Erosion control should be a top consideration during and after new construction projects to prevent any downhill pollution.



Sediment and debris should be frequently removed from drainage features.



A dumpster is shown placed in close proximity to a wetland. This dumpster should be relocated away from areas that are sensitive to pollution.



Riprap was added to a sloped swale to reduce erosion and improve drainage, however this is not the most visually appealing solution.

## Storage

In order to improve efficiency, Landscape and Grounds needs to have an updated shop with proper wash down stations. New facilities and equipment are not only needed for proper storage, but would also improve work morale of staff.

Plans for the proposed Brookside Apartments will change the layout of the Service district's facilities and maintenance buildings, but will not update the Athletics buildings. All buildings that are not competently serving the athletic and L&G storage needs should be updated to create a safe and efficient working environment.



Athletic buildings are out of date and do not securely house equipment.



Storage facilities should be improved to safely store equipment and materials.



# 7.2 MAINTENANCE RECOMMENDATIONS

## Staff Training

Staff should be encouraged to attend classes, conferences and lectures, and other events that can help improve their skill sets. A properly trained staff will result in a well-maintained landscape.

Basic training that can help better equip L&G staff may include:

- Green infrastructure design maintenance
- Native and invasive species identification
- Safety/proper equipment use
- Turfgrass care
- Pruning techniques
- Tree inventory/maintenance record keeping
- Landscape maintenance scheduling

### Specialty Maintenance Training

Additional training can help staff with specialty tasks such as identifying native versus invasive species, how to be cautious working near water bodies, and how to improve wildlife habitat. Specialty training is important for staff working within environmentally-sensitive areas on campus.

L&G staff should be trained to monitor and maintain drainage features to ensure there is no build-up of sediment. Proper clean out of drainage features will result in efficient stormwater infiltration.

When planning for new campus projects, it is important that L&G staff be informed of design elements that are new to campus and how to maintain them properly. New projects often include elements that are only successful if they are maintained properly. A few examples of these types of elements are best management practices such as vegetative swales, porous pavement, and green roofs. New designs should be realistic in terms of staff and resource availability, and should include a discussion with L&G as to how to efficiently maintain them.



Staff should be trained in identifying aquatic vegetation and routine cleaning needed for natural water features.



“No mow” grasses can be a low maintenance alternative to turf, but can require additional scheduling for seasonal maintenance.



Staff should be able to determine what plants should be removed during routine weeding of planted pockets.

## Damage Prevention

Development often results with the disruption of the surrounding landscape. Even smaller projects, such as walkways, can also negatively impact the landscape. Improper use of equipment is also a large contributor to damage on campuses. Avoidable damages inflicted from improper use can include trimmer and mower damage to tree bases, digging too close to tree roots, and mowing turfgrass too short, too often, and in drought conditions. L&G must be able to help regulate these disturbances and know how to respond to them.

Currently, there is little enforcement that restricts where service vehicles may drive or park. Turf and vegetation experience a great amount of disturbance because of improper parking of service vehicles. Service vehicles, unless for emergencies, should not be allowed to park on any turf or other surface other than hardscape. Curbing or edging may be considered around areas of turf that are vulnerable to unexpected vehicle damage.

Damage prevention should be a top priority during construction projects. It is recommended that a full-time University landscape architect oversee new construction projects and determine what methods of site protection should be necessary. Site access and stockpiling areas should be considered when determining protection needs to contain all disturbance.

Special events on campus can pose potential risks to turf and the landscape. Extra precautions should be taken when planning for events and additional care should be provided after for the best chance of recovery. Turf restoration after events can require extensive labor and resources. Efficiently watering, fertilizing, and aerating turf throughout the year will give it the best chance of withstanding the wear of events.



It is likely that unexpected vehicular use could be the reason why several walkways through the Quad are in very poor condition.



Cars parked inappropriately during move-in and move-out days have negative impacts on turf and soil compaction.



## 7.2 MAINTENANCE RECOMMENDATIONS

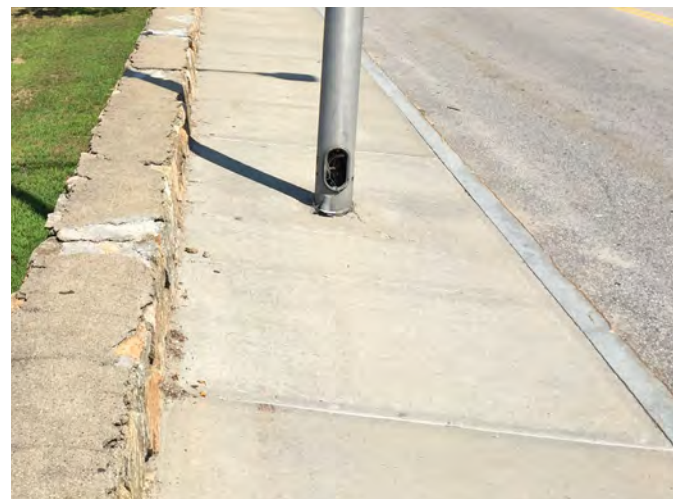
### Snow Removal

The cost of snow removal is about \$30,000 per snow event just for walkways, stairs, and ramps. This number includes in-house efforts as well as contracted work which costs approximately \$16,000. This price does not account for snow removal in parking lots or other paved areas. A major contributor to the need for extensive labor hours is due largely to poor design. Stairs should be avoided as much as possible since they require more hands-on labor than ramps.

It is important to consider snow storage locations in the design of new projects. The University landscape architect or planner should determine the appropriate locations for snow storage and should be coordinated to avoid vegetation or site amenities. No snow should be pushed into natural areas, woodland, or wetlands.



Obstructions within hardscapes can be accidentally hit during snow removal.



Light posts placed in sidewalks makes it difficult to remove snow, and impact accessibility.

## Other Maintenance (Non-L&G)

### Master Gardeners

The Master Gardener program at URI has over 600 trained volunteer educators and helps maintain the Botanical Gardens as well as a few other gardens located on campus. Their efforts go far beyond the campus boundaries to help improve the surrounding communities as well. Special places on campus that require labor that may be too extensive for L&G alone should be considered potential sites for Master Gardener input. These sites may be used for demonstration plantings to help educate the campus community. An example of a successful educational garden on campus is the Pharmacy Garden, which is maintained partially by volunteers and is one of the most picturesque views on campus. More education gardens throughout campus should be encouraged as volunteer efforts allow.

### Endowments/Memorials

The Christopher Memorial Arboretum was named in memory of Dr. Everett P. Christopher, '26, who created two endowments in the URI foundation: one "for use as approved by the Campus Beautification Committee" and another for "the development of maintenance of the University's arboretum..." These endowments were agreed to be used to establish the arboretum in an effort to make the campus more attractive. Since established, other contributions have continued to be made through the URI Foundation. Future contributions and volunteers should be sought to help support the arboretum and provide additional maintenance resources. Memorial trees and walkways are two options for donations that will provide additional income or volunteers for maintenance.



Volunteers contribute to keeping the Pharmacy Garden well-maintained.



URI Staff, Master Gardeners, and volunteers help plant and maintain the Botanical Gardens for educational use.



Memorial trees can seek additional resources for maintenance requirements.



## 7.2 MAINTENANCE RECOMMENDATIONS

### Current Maintenance Issues

- Lack of staff
- Lack of equipment
- Lack of proper storage and cleaning stations for L&G
- Lack of proper storage and cleaning stations for athletics and campus crew
- Increased maintenance due to poor design/details: light pole placement, plant selections, composite benches, ramps too narrow to maintain with equipment (six-foot minimum), etc.
- Extensive resources dedicated to lawn mowing and event preparation.
- Contractors not watering plants for one-year (or as warranty guarantees)
- Contractors not planting correctly
- Stairs increasing snow removal difficulty
- Vehicles, including service, inappropriately parking on turf (especially during move-in/out)
- Trimmer and mower damage to trees
- Intensively-designed landscapes without Landscape and Grounds input

### Recommendation Summary:

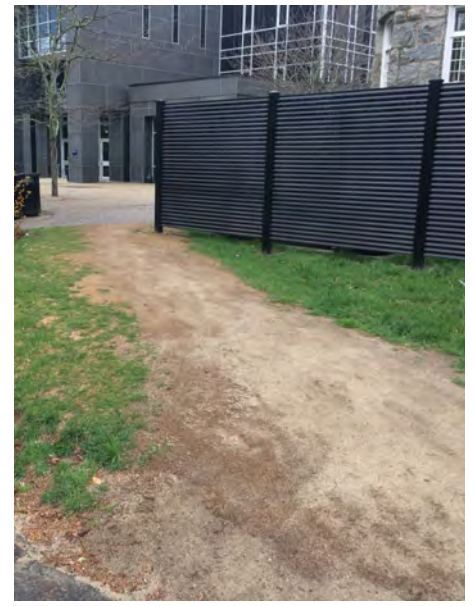
- Increase L&G budget and equipment to meet the current and future needs of the campus
- Hire additional staff to meet current and future maintenance requirements
- Update L&G storage buildings
- Update athletic buildings
- Keep tree inventory up-to-date
- Expand University landscape architect to a full-time position:
  - Assist with design review, construction administration, and enforcement of standard details
- Review turf areas and identify areas that can be converted to less maintenance-intensive ground cover (i.e. “no mow” grasses or meadow)
- Review “problem areas” where detailing or physical conditions impede maintenance and modify for efficiency
- Enforce construction and maintenance parking to preserve and protect landscape areas
- Reduce roads on campus



Walkway in poor condition



Lack of appropriate handrail



Desire line paths



Accessible path widths



Intersecting paths lack radius



Excessive potholes in parking lots



Poorly designed, sloped walkway



Curbs creating tripping hazards

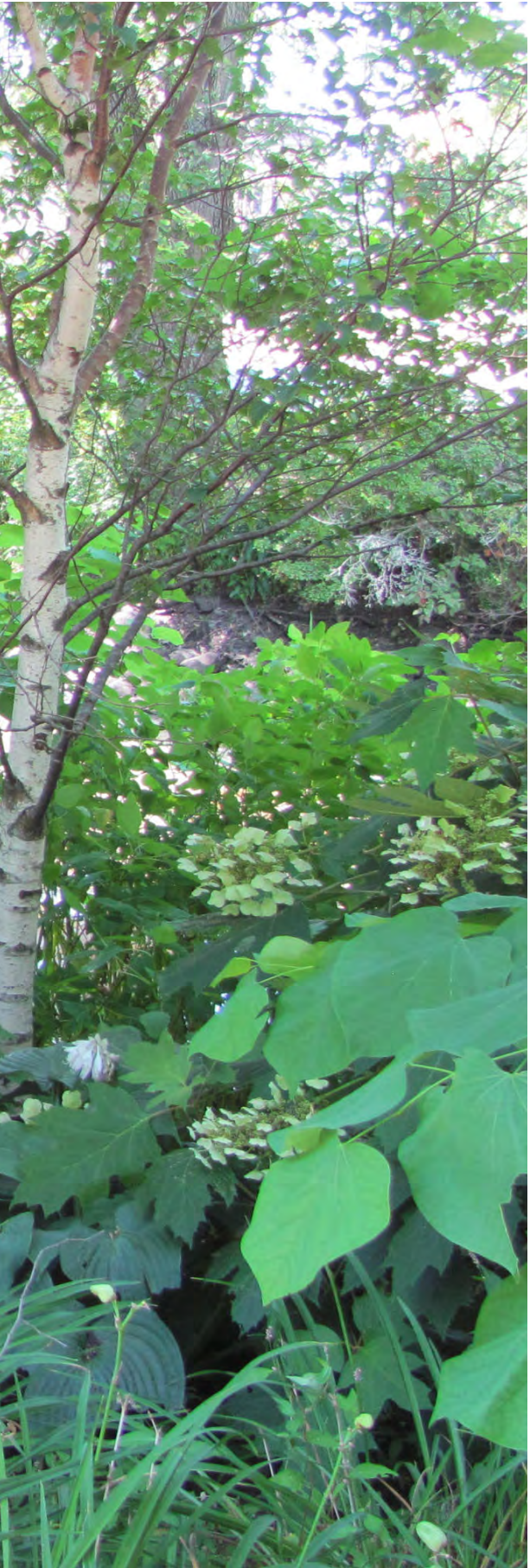


Transitional landscape within core









# BIBLIOGRAPHY



THIS PAGE LEFT INTENTIONALLY BLANK

# LANDSCAPE MASTER PLAN

## BIBLIOGRAPHY

### REPORTS & WRITTEN DOCUMENTS

Anderson, Patrick, Chris Fletcher, & Michael Sherwood. *University of Rhode Island: Tree Inventory and Management Plan*. Seekonk, Massachusetts, 2009.

Buffam, Bill. *Concept for Forest Management Demonstration: Peckham Farm, University of Rhode Island*. URI Department of Natural Resources Science, Kingston, Rhode Island, February 2012.

CBLS Stormwater Treatment Feature Maintenance Manual. Carol R. Johnson Associates, Inc., Boston, Massachusetts, June 2010.

*Campus Design Standards*. URI Campus Planning & Design, Kingston, Rhode Island, no date.

Carini, Frank. *URI Rips Up Fine Farmland to Build Parking Lot*. EcoRI News. Accessed 5 January 2017. [www.ecori.org/](http://www.ecori.org/)

*Campus Shuttle*. URI Parking & Transportation Services, Kingston, Rhode Island. Accessed 29 March 2016.

*Chipuxet Specific Watershed in Southern Rhode Island*. Rhode Island Water Resources Board, Providence, Rhode Island. Accessed 20 October 2016. [www.wrb.ri.gov/documents/Chipuxet\\_specific%20watershed.pdf](http://www.wrb.ri.gov/documents/Chipuxet_specific%20watershed.pdf).

Cox, Deborah C. Letter. *Monitoring of construction in proximity to the Niles Burying Ground, URI Convocation Center, Kingston, RI*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, 11 October 2001.

*Design Guidelines for a New Campus Commons: Upper College Road Mixed-use Development*. URI Campus Planning & Design, Kingston, Rhode Island, 18 August 2015.

*"Disability Services for Students", President's Commission on People with Disabilities*. University of Rhode Island. Accessed 12 January 2017, [web.uri.edu/disability/](http://web.uri.edu/disability/).

*Draft Kingston Campus Drainage Master Plan*. Gordon R. Archibald, Inc., Pawtucket, Rhode Island, October 2016.

*Draft Strategic Plan for Campus Sustainability and Climate Action*. URI Office of Sustainability, Kingston, Rhode Island, 2016.

*Draft University of Rhode Island Historic District Nomination Form*. Rhode Island Historical Preservation & Heritage Commission, Providence, Rhode Island, 6 May 2016.



Enser, Richard W., & Julie A. Lundgren. *Natural Communities of Rhode Island*. Rhode Island Natural Heritage Program, Department of Environmental Management, Providence, Rhode Island & The Nature Conservancy of Rhode Island, Providence, Rhode Island. December 2006.

*Executive Report: Fraternity Circle Master Plan, University of Rhode Island, Kingston, RI*. Union Studio Architecture & Community Design, Providence, Rhode Island, 11 December 2013.

*Feasibility Report for the New Campus Commons/University Inn Study*. Gordon R. Archibald, Inc., Pawtucket, Rhode Island. July 2015.

*Flood Insurance Study: Washington County, Rhode Island*. Federal Emergency Management Agency, Washington, D.C., 16 October 2013.

Flynn, Erin, Alan Leveillee, and Joseph Waller, Jr. *A Study of Pre-Contact Native American Archaeological Features beneath Agricultural Fields: Site RI 1830 and the Expanding University of Rhode Island Kingston Campus*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, no date.

Garman, James, Paul Russo, & Alan Leveillee. *Technical Report: Phase I(c) Archaeological Survey: University of Rhode Island Convocation Center, Ice Rink, & Proposed Drainage Line/Phase II Site Examination of the Meade Field Site*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, May 2000.

Gonzales, Lucinda & Bethany Reyan. Editorial. *The Good 5 Cent Cigar*, 22 October 2015.

Gordon, Susan and Angelo Simeoni. *Native Plant List for the New Chemistry & Pharmacy Landscape*. Rhode Island, Kingston, Rhode Island. No date.

Hammen-Winn, Susan C. "The Christopher Memorial Arboretum, University of Rhode Island: Botanical and Historical Walking Tour". URI Department of Biological Sciences, Rhode Island, Kingston, Rhode Island. 2006. *Special Collections Publications (Miscellaneous)*. Paper 34.

*Historic and Architectural Resources of South Kingstown, Rhode Island: A Preliminary Report*. Rhode Island Historical Preservation & Heritage Commission, Providence, Rhode Island, 1984.

Ives, Timothy H., Joseph N. Waller, & Alan Leveillee. *Technical Report: Phase I(c) Archaeological Survey: URI Residence Hall and Fraternity House Construction Site*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, July 2004.

"Job #1392: Rhode Island College of Agriculture and Mechanical Arts, Kingston, Rhode Island", Olmsted Archives. Frederick Law Olmsted National Historic Site, Brookline, Massachusetts. Accessed 17 November 2015.

Lance, Mark and Alan Leveillee. *Technical Report: Phase I(c) Archaeological Survey: URI Electrical Substation*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, June 2007.

Leveillee, Alan. *Technical Memorandum: URI Flagg Road Parking Lot Extension, Rhode Island: Archaeological Evaluation*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, 19 September 2012.

Leveillee, Alan & Joseph N. Waller. *Technical Report: Phase I(c) Archaeological Survey: 800-Car, Plains Road Parking Lot Project Area*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, January 2002.

*Main Street – Hammerschlag Mall Project Summary*. University of Rhode Island Foundation, Kingston, Rhode Island, no date.

*North District Campus Plan*. William McDonough & Partners, Charlottesville, Virginia, 10 February 2001.

Pesci, Stephen. *University of New Hampshire Evolving Sustainable Transportation Systems*. University of New Hampshire Campus Planning, Durham, New Hampshire, 1 November 2013.

*President's Commission on People with Disabilities*. University of Rhode Island. Accessed 12 January 2017, [web.uri.edu/pcpd/](http://web.uri.edu/pcpd/).

*Request for Preliminary Determination, Supporting documentation for the Replacement of Culverts CV1A, CV2, CV3, & CV4*. Gordon R. Archibald, Inc., Pawtucket, Rhode Island, March 2010.

*Rhode Island Stormwater Design & Installation Standards Manual*. Rhode Island Department of Environmental Management/Coastal Resources Management Council, Providence, RI, March 2015.

Rhode Island Water Resources Board: 2012 Strategic Plan. Rhode Island Water Resources Board, Providence, Rhode Island. March 2012.

Simeoni, Angelo. *Draft URI Campus Landscape Computer Mapping System*. URI Department of Landscape Architecture, Kingston, Rhode Island, 19 January 2010.

*Snow Removal Step Specifications\_final 2016*. URI Facilities Services, Kingston, Rhode Island, Accessed 26 September 2016.

*Summary Report: URI Flagg Road Parking Lot, Kingston, Rhode Island: Archaeological Assessment*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, 20 June 2005.

*Summary Report: University of Rhode Island Center for Biotechnology and Life Sciences Building, Kingston, Rhode Island: Phase I (a/b) Archaeological Reconnaissance and Assessment*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, 3 February 2006.

*Technical Memorandum: URI Alumni Avenue & Heathman Road, Kingston, Rhode Island: Phase I (a/b) Reconnaissance and Assessment Survey*. Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, 6 January 2004.



*University of Rhode Island Specifications for Snow Removal and De-icing for Fraternity/Sorority Properties.* URI Facilities Services, Kingston, Rhode Island, Accessed 26 September 2016.

*Voices in the Landscape: A Discourse of the Trees at the University of Rhode Island.* URI Tree Management Advisory Council, Kingston, Rhode Island. February 2010.

Waller, Jr., Joseph N., Oralee Elquist, and Alan Leveillee. *Technical Report: Phase I(c) Archaeological Survey of the University of Rhode Island Flagg Road Improvements Project and Phase II Site Examination of the URI Experiment Station Site (RI 1830).* Public Archaeology Laboratory, Inc., Pawtucket, Rhode Island, September 2011.

Wanat, Joe. *Draft URI Transportation & Parking Master Plan Emerging Recommendations.* VHB, Providence, Rhode Island, 28 February 2017.

“Watershed Management in the Chipuxet River Watershed”, *Watershed Management.* The WaterSHED Center, Tufts university, Medford, Massachusetts. Accessed 20 October 2016. [sites.tufts.edu/gis/files/2013/02/Hamann\\_Jayme.pdf](http://sites.tufts.edu/gis/files/2013/02/Hamann_Jayme.pdf).

“White Horn Brook Watershed Summary”, Rhode Island Statewide Total Maximum Daily Load (TMDL) for Bacteria Impaired Waters. Rhode Island Department of Environmental Management, Providence, Rhode Island. September 2011.

*URI Brand Visual Standards Guide.* URI Communications & Marketing, Kingston, Rhode Island, 1 September 2016.

*University of Rhode Island: Drainage Master Plan: Kingston Campus.* Joe Casali Engineering, Inc., Cranston, Rhode Island, June 2006.

*University of Rhode Island: Kingston Campus Master Plan.* Goody, Clancy & Associates, Boston, Massachusetts, 26 January 2000.

*The University of Rhode Island, Student Handbook, 2015 - 2017.* URI Dean of Students Office, Kingston, Rhode Island, no date.

*University of Rhode Island White Horn Brook Apartments: Facilities District.* Sasaki Associates, Watertown, Massachusetts, 14 July 2016.

*University of Rhode Island White Horn Brook Apartments: Site Restoration and Stewardship Opportunities.* Sasaki Associates, Watertown, Massachusetts, 26 April 2016.

## **PLANS, MAPS & DIAGRAMS**

- URI Welcome Center by Durkee Brown Viveiros Werenfels Architects, Providence, RI & Birchwood Design Group, Providence, RI  
Welcome Center Progress Plan, 2 May 2016.  
URI Welcome Center Parking Lot, no date.  
Landscape Plan & Hardscape Plan, 1 August 2016.

- Transforming URI for the 21st Century: Kingston Campus by Durkee Brown Viveiros Werenfels Architects, Providence, RI, no date.
- Stair Snow Removal Map by URI Facilities Services, no date.
- Redesign for the Chafee Social Sciences Entrance Plaza by Ka Ying Yang, 26 August 2015.
- Chafee Social Science Center: Art & Environment Concept Design by Zaire Garrett, no date.
- URI Kingston Campus Map with Streetlights & Key by URI Facilities Services, no date.
- Hammerschlag Mall Concept Plan by Veri-Waterman of Providence, RI, no date.
- Tyler Hall Parking Lot Pavement Rehabilitation Alternatives by BETA Group, Inc., Lincoln, RI, May 2012.
- Roof Plan: Ranger Hall Drainage Improvements by Gordon R. Archibald, Inc., Pawtucket, Rhode Island, 2016.
- Bike Trail Graphic for Phil Kydd by URI Campus Planning & Design, no date.
- Addition/Renovations to Butterfield Hall Plan Set Issued for Permit by Vision 3 Architects, Providence, RI, 24 June 2013.
- Plans and Details of Proposed Fine Arts Center Parking Lot, Regulatory Permit Application Submission, Kingston, RI by Gordon R. Archibald, Inc., Pawtucket, Rhode Island, 2014.
- Campus Lighting & Bench Districts by URI Campus Planning & Design, 20 April 2015.
- New Chemistry Axis extended to Memorial Union by URI Campus Planning & Design, 17 November 2016.
- Brookside Apartments 100% Design Development Plan Set by Sasaki Associates, Watertown, MA, 04 November 2016.  
Site Plan, Layout Plan, Materials Plan, Lighting Plan, Tree & Shrub Planting Plan, Herbaceous Planting Plan, Landscape Details & Planting Schedule.
- Service District Plan by Sasaki Associates, Watertown, MA, no date.
- Historic Photographs of URI: University of Rhode Island, Carothers Library, *Special Collections Publications*. Accessed 2014 & 2016.
- "University of Rhode Island", *Historic Aerials by NETR Online*. 1963, 1970. [www.historicaerials.com](http://www.historicaerials.com). Accessed 6 December 2016.
- "URI History & Timeline", *About URI*. [web.uri/about/history-and-timeline/](http://web.uri/about/history-and-timeline/). Accessed 21 September 2016.









# ACKNOWLEDGMENTS



# LANDSCAPE MASTER PLAN

## ACKNOWLEDGMENTS

### URI LANDSCAPE MASTER PLAN STEERING COMMITTEE

Christopher McMahan, AIA, NCARB, LEED AP	Director of Campus Planning & Design/University Architect
Karen Beck, RLA, FASLA	University Landscape Architect, CPD
Angelo Simeoni, RLA	Chairman, Department of Landscape Architecture
William Green, RLA	Former Chairman, Department of Landscape Architecture
Sheleen Clarke	Assistant Director, Facilities Services, Landscape & Grounds
Brian Maynard	Professor, Department of Plant Sciences & Entomology
Marsha Garcia	Campus Sustainability Officer, CPD
Phillip Kydd	Executive-in-Residence, Business Services

### URI CAMPUS PLANNING & DESIGN (CPD)

Dulcie Ilgenfritz	Coordinator, CPD
Elena Pascarella, PLA, ASLA	Interim University Landscape Architect
Diane Soule, RLA	Former University Landscape Architect

### URI FACILITIES SERVICES

Jerry Sidio	Director of Facilities Services
Brian Boesch	Turfgrass & Sportsfield Manager
Mike DiPasquale	Manager, Landscape & Grounds
Jaime Jacob	Arborist, Landscape & Grounds
Joe Majeika	Arborist, Landscape & Grounds
Dave Lamb	Utilities Department, Facilities Services
Bob Bozikowski	Water System Manager, Facilities Services
Dan Cartier	Maintenance & Repair, Facilities Services
Mary Brennan	Coordinator, Recycling & Solid Waste Management

## **URI STUDENT AFFAIRS**

Kathy Collins

Vice President of Student Affairs

John Sears

Assistant Vice President of Student Affairs, Director of Housing & Residential Life

Jeff Plouffe

Associate Director of Housing & Residential Life

Maureen McDermott

Director of Memorial Union/Student Involvement & Center for Student Leadership Development

## **URI DEPARTMENT OF MARKETING & COMMUNICATIONS**

Dave Lavallee

Assistant Director, Department of Marketing & Communications

Shelbey Galliher

Social Media Coordinator, Marketing & Communications

## **URI PARKING SERVICES**

Joe Paradise

Manager, Parking Services & Transportation

## **URI OFFICE OF CAPITAL PROJECTS**

Bob Schultz

Manager, Office of Capital Projects

## **URI PUBLIC SAFETY ADMINISTRATION**

Stephen Baker

Director of Public Safety

## **FACULTY/STAFF**

Keith Killingbeck

Associate Dean of the Graduate School & Professor of Biological Sciences, Emeriti

Larry Englander

Associate Professor, Department of Plant Sciences & Entomology

Dr. Sue Gordon

Adjunct Professor, Department of Plant Sciences & Entomology

Richard Sheridan, RLA

Professor, Department of Landscape Architecture

J. Peter Morgan

Senior Gardener, AHC Operations

Greag Bonyngre

Research Associate IV, Department of Natural Resources Science



# LANDSCAPE MASTER PLAN

## LANDSCAPE MASTER PLAN CONSULTANT TEAM

### **KYLE ZICK LANDSCAPE ARCHITECTURE, INC.**

Prime Consultant/Landscape Architect

Kyle Zick, RLA, ASLA

Danielle D. Desilets, RLA

Braden Drypolcher

Rob Barella

### **SITEGREEN SOLUTIONS, LLC**

Stormwater Design  
ASLA

Steve Benz, PE, LEED Fellow, Hon,

### **NEW ENGLAND ENVIRONMENTAL, INC.**

Environmental Consulting

Michael Marcus, PWS, CPESC

### **TAVEVI & HAESCHE, LLC**

Cost Estimating

Mary Jane Haesche, AIA

## **UNIVERSITY COORDINATING PROJECT CONSULTANTS**

### **TRANSPORTATION & PARKING MASTER PLAN TEAM**

VHB Providence

Joseph Wanat, PE, PTOE, ENV SP

Birchwood Design Group

Kris Bradner, RLA

### **STORMWATER MASTER PLAN TEAM**

Gordon R. Archibald, Inc.

Todd Ravanelle, PE

### **COLLEGE OF ENGINEERING DESIGN TEAM**

Ballinger

Terry Steelman, FAIA, LEED AP

Carol R. Johnson Associates, Inc.

Richard Williams, RLA

### **BROOKSIDE APARTMENTS DESIGN TEAM**

Sasaki Associates, Inc.

Caroline Braga, ASLA, PLA









# APPENDICES

- A. STUDENT ENGAGEMENT POP-UP MEMO
- B. URI STREAM AND WETLAND ASSESSMENT, 2017
- C. STUDENT SENATE SAFETY & LIGHTING WALK NOTES, 2016
- D. TREE INVENTORY MAP, 2017
- E. LANDSCAPE ARCHITECTURE/PLANT SCIENCES PROFESSOR TREE SPECIES REQUEST LISTS
- F. PRIORITY PROJECT ITEMIZED COST ESTIMATES, 2017



THIS PAGE LEFT INTENTIONALLY BLANK

# LANDSCAPE MASTER PLAN

## APPENDIX A

### **STUDENT ENGAGEMENT POP-UP MEMO**

PREPARED BY: KYLE ZICK LANDSCAPE ARCHITECTURE, INC.

DATE: 5 MAY 2016



## Memoranda

University of Rhode Island Landscape Master Plan  
Coordination Meeting, Campus Planning & Design

26 April 2016, 11:00 am to 2:00 pm, Memorial Union

### Student Engagement Pop-up

KZLA set up a pop-up booth in the Memorial Union; we were given a prime location in front of the TVs in the main lobby of the Memorial Union. The booth had several opportunities for engagement with students and faculty as they passed through the Union.

- 1) "Dot your Spot" - With a 48" by 72" map of campus, students were given an opportunity to place stickers on their favorite and least favorite places on campus. Green dots were good and red dots were bad places. We asked them to explain their thinking and tell us why they did or didn't like certain places. We asked if there were places on campus that they didn't feel safe, either due to poor lighting or if they felt that there are places where it was difficult to cross street.
- 2) Adjacent to the "Dot your Spot" we included a note pad where we added comments about what students shared. This data was summarized on sheet 5 and 6.
- 3) On the reverse side, we include another 48" by 72" map of campus entitled "Map Your Route". On this map we invited students to identify their typical walking routes across campus. We asked students to identify if they lived on campus or off and if off, where they typically park or get off the bus. From that location we tracked their typical walking route from parking lot, residence hall or bus stop to academic halls.

This information is useful, not just to understand who people use the drives and walks on campus, but also to identify issues with parking and traffic flow. Most students who live off-campus said they preferred to parking in the Fine Arts Center lot but unless they were early on campus that was near impossible. The result was a long walk up West Alumni Avenue, as few reported taking the campus shuttle as they did not run frequently enough to be of use. (This collected data is partial to students who use the Memorial Union since that is where we were located for this pop up.)

Two additional outlets for engagement are social media-based and on-going.

- 4) On-line survey: available at <https://www.surveymonkey.com/r/designurilmp1> Survey feedback has been limited thus far, but we plan to keep the survey open for several weeks so that students, faculty and staff can responds. We would like to reach out to URI Alumni and would like the University's assistance in doing so.

Prior to the 4/26 pop-up, we created a similar survey to reach out to current students of the Landscape Architecture program.

- 5) Finally, we established three hashtags for the Landscape Master Plan project: #designURI, #URIwickedgood & #URIwickedbad. These can be used on both Instagram and Twitter to collect images of the places on campus that students and faculty like or think need some help. Since the

Kyle Zick Landscape Architecture, Inc.

36 Bromfield Street, Suite 202, Boston, MA 02108  
t: 617-451-1018 e: kzick@kylezick.com www.kylezick.com



hashtags are searchable with these social media venues, we can collect additional data on an on-going basis.

In the three hours that we were set up in the Union, traffic was fairly steady since it was a gray, rainy day and the timeframe fell before, during and after lunchtime. Our best guess is that we maybe spoke with 50-75 students and faculty for an extended conversation and several dozen more for a brief discussion.

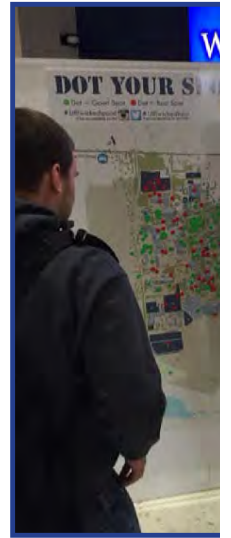
End of memo

Kyle Zick Landscape Architecture, Inc.

36 Bromfield Street, Suite 202, Boston, MA 02108  
t: 617-451-1018 e: kzick@kylezick.com www.kylezick.com



# POP-UP DISPLAY



# URI LANDSCAPE MASTER PLAN

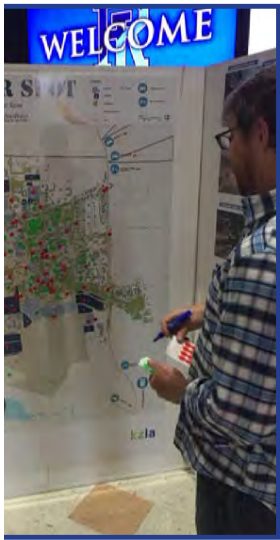
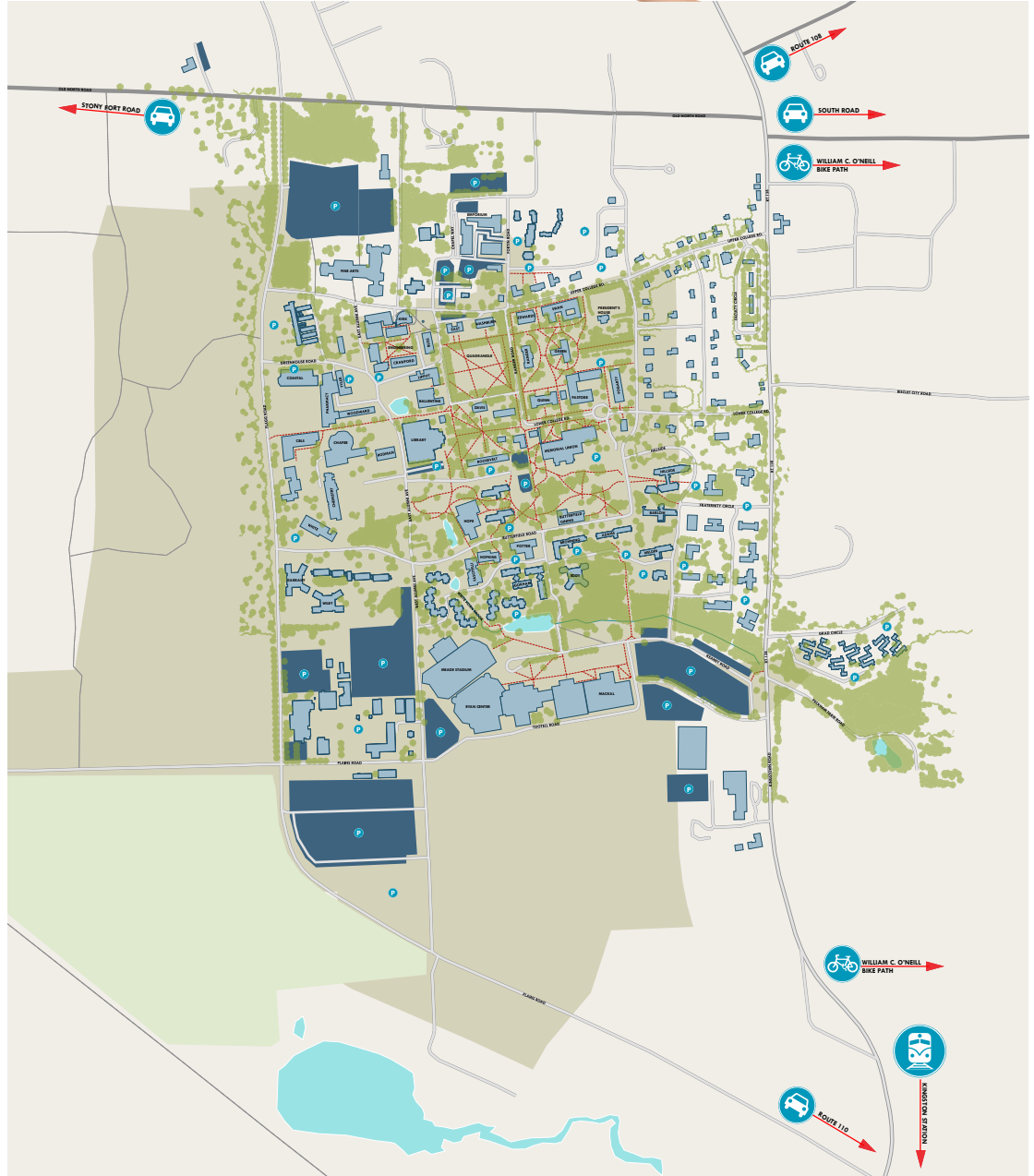
# DOT YOUR SPOT

● Dot = Good Spot ● Dot = Bad Spot

#URLwickedgood  #URLwickedbad   
if you see something you like if you see something you don't like

LEGEND

-  BUILDING
  -  WATER
  -  COMMUTER ROUTE
  -  PARKING
  -  VEGETATION
  -  BIKE CONNECTION
  -  PEDESTRIAN PATH
  -  ROAD
- SCALE: 1"=150'  
0 150' 300' 450'





# DOT YOUR SPOT



## Most Commented Spots:

- Quad + CBLS are favorite spots
- Fine Arts Parking lot is least favorite spot
- Area around engineering quad needs improvements
- Pharmacy garden is a hot spot
- Older residence halls are not favored spots

# URI LANDSCAPE MASTER PLAN

# DOT YOUR SPOT

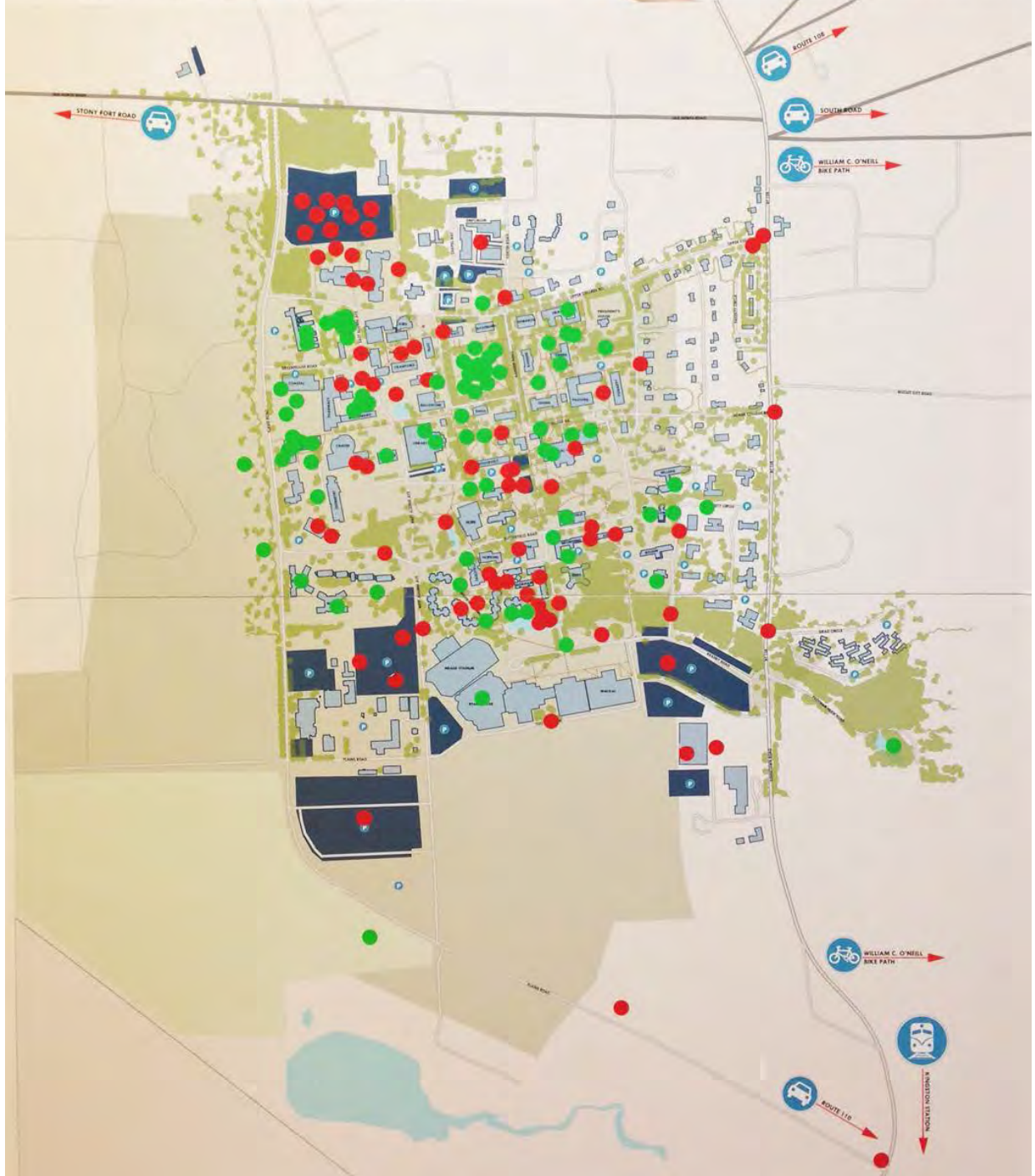
● Dot = Good Spot ● Dot = Bad Spot

#URLwickedgood if you see something you like  #URLwickedbad if you see something you don't like 

LEGEND

-  BUILDING
-  WATER
-  COMMUTER ROUTE
-  PARKING
-  BIKE CONNECTION
-  VEGETATION
-  PEDESTRIAN PATH
-  ROAD

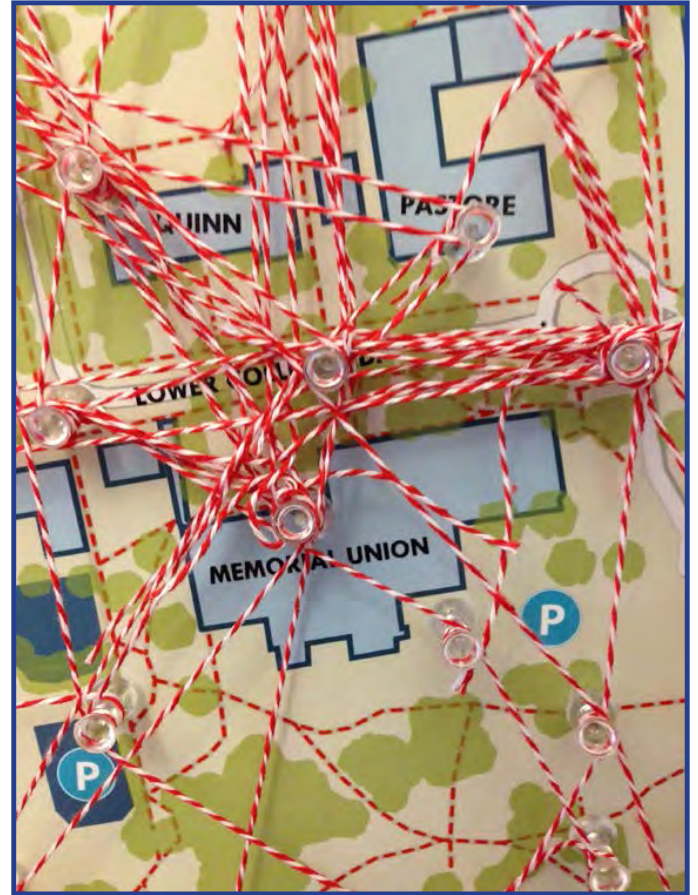
SCALE 1"=150'  
0 150 300 450



kzla



# MAP YOUR ROUTE



## Concentrated routes:

- Lower parking to academic building area is used frequently
- Memorial Union serves as daily hub in between classes
- Most activity occurs in close proximity to quad
- Quad is heavily traveled

# URI LANDSCAPE MASTER PLAN

# MAP YOUR ROUTE

#DESIGNURI

use this tag to record what you see

#URLwickedgood

if you see something you like



#URLwickedbad

if you see something you don't like

## LEGEND



kzla



## COMMENTS

- ✓ outdoor classrooms
- ✗ disconnected sidewalks
- ✗ campus needs sense of place
- ✗ athletics need re-work
- ✗ paving
- ✓ basketball courts = good
- ✓ med. garden big plus (best design on campus)
- ✓ new construction by Hope Dining Hall
- ✓ East Alumni gardens
- ✓ more parking (top of campus)
- ✓ Quad is alive (always things happening)
- ✓ Davis area = quiet + peaceful
- ✗ potholes
- ✓ Gorham Hall tree (hangout spot)
- ✓ CBLS - building is a nice area to hang
- ✓ make bike friendly
- ✗ Peckham farm is open, but not very apparent
- ✓ Browning = cool hangout "small + mellow"
- ✗ North woods trail no real access or clear trails
- ✗ gateway nodes need help
- back of Tootel not pedestrian friendly

- ✗ Elephant walk needs work
- ✗ parking too far
- ✗ shuttles not the most convenient
- ✗ Keaney walk up hill = sketchy (not well lit)
- ✗ Fayerweather to Eddy = not safe feeling
- ✗ Emporium feels battered
- ✗ "greek ruins" closed (Fine Arts parking lot)
- ✗ path to chemistry closed (west side)
- ✓ cars at quad perimeter not a problem
- ✗ Fine Arts parking = bad
- ✗ Butterfield - Upper College Rd. to Adams  
= poor condition
- ✗ walk to Emporium = poor condition
- ✓ like the pond
- ✗ Gorham Hall in poor condition
- ✓ Like Multicultural center
- ✗ Hutchinson Corner very inconvenient
- ✗ Hammerschlag mall walkways need help
- ✗ too much lawn

Key:

- ✓ = positive feedback/suggested improvement
- ✗ = negative feedback/needs improvement

## URI LANDSCAPE MASTER PLAN

## COMMENTS

- X walkway erosion
- X buses not fast/not frequent
- X Keaney = no bus stops/not enough
- X Upper College Road needs to be wider
- ✓ bikes
- ✓ Memorial Union as a base
- ✓ wifi
- ✓ Pond at Fascitelli Center as ecological
- ✓ Washburn open area is nice
- X flooding at tennis path
- X dark behind Ellery
- ✓ Quad + Pharmacy garden
- ✓ Coastal Institute + Pharmacy Quad = hidden jewel
- X stairs back of Pharmacy closed - why?
- X parking is awful, big lots are terrible
- ✓ expand Keaney parking
- ✓ Coastal area open space
- X Chaffee area landscape needs help
- X Ellery Hall - gross (trash + recycling needed)
- X no vegetation at Hopkins
- ✓ likes trails to be able to get away

- ✓ view to pond
- X incomplete amphitheatre (Fine Arts parking lot)
- X walkway between Adams + Browning
- ✓ Rodman green space has potential
- ✓ outdoor space for resident life
- X pond is an eyesore
- ✓ hangout on quad - more benches
- ✓ charging stations would be good
- ✓ zipline
- X ugly parking - poor condition, full greenhouse Road/East Alumni Ave.
- X no URI identity at gateways (Plains Rd/Kingston Rd)
- ✓ parking garage needed
- ✓ more greenery
- ✓ Peckham Farm is a hidden gem
- X fix Fine Arts
- X Adams need update inside/out ("prison feel")
- ✓ garden/Greenhouses = good
- ✓ create connected seating nodes (to enjoy a coffee)
- X parking is unorganized and over used

Key:

✓ = positive feedback/suggested improvement

X = negative feedback/needs improvement

## URI LANDSCAPE MASTER PLAN



THIS PAGE LEFT INTENTIONALLY BLANK

# LANDSCAPE MASTER PLAN

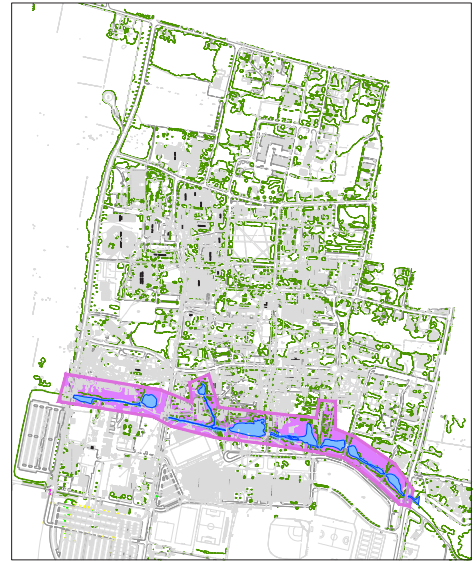
## APPENDIX B

### **URI STREAM AND WETLAND ASSESSMENT, 2017**

PREPARED BY: NEW ENGLAND ENVIRONMENTAL

DATE: 14 FEBRUARY 2017





KEY PLAN  
N.T.S.

**AREA #1 - UPSTREAM CULVERT**

- FROM THIS POINT THE WATERSHED SIZE OF THIS REACH IS 0.44 SQ. MILES.
- ONE CULVERT APPEARS TO BE FLUGGED WITH DEBRIS.
- CULVERTS TO BE REMOVED AND CROSSING TO BE UPDATED TO OPEN BOTTOM BOX CULVERT.

**AREA #4 - LOWER REACH LOW GRADIENT CHANNEL**

- NARROW CHANNEL WITH ADJACENT BORDERING VEGETATED WETLANDS ALONG EITHER SIDE.
- PLATE STORAGE AREA MAY BE A SOURCE OF SEDIMENT AND NUTRIENT TRANSPORT.
- MX OF NATIVE AND INVASIVE SPECIES (BITTERSWEET, MULTIFLORA ROSE, ETC.)
- INVASIVE SPECIES MANAGEMENT

**AREA #5 - UPLAND AREA ADJACENT TO CHANNEL**

- MOWN TURF AREA
- POTENTIAL FOR OPEN MEADOW AREAS
- WILDLIFE HABITAT
- PARKING WITH CONNECTION TO PARKING LOT/FUTURE RESIDENTIAL BUILDINGS

**AREA #7 - INCISED 'V' CHANNEL**

- FROM THIS POINT THE WATERSHED SIZE IS 0.58 SQ. MILES.
- STRAIGHT CHANNEL WITH LARGE RIP-RAP DRAINAGE FROM UPPER REACH OF CHANNEL AS WELL AS INFUS FROM LARGE PARKING AREAS
- NO CONNECTION TO BANKFULL
- NO VEGETATION
- BANK EROSION
- OPPORTUNITY TO RESTORE CHANNEL AND CONSTRUCT A FLOODPLAIN BENCH

**AREA #7 - INCISED 'V' CHANNEL WITH SLOPE FAILURES**

- TOE OF SLOPE IS FAILING DUE TO INCREASED VELOCITY OF STREAM FLOWS WITHIN CONFINED 'V' CHANNEL
- DESTABILIZING SLOPES AND UPPER MOWN TURF AREAS
- RE-GRADE SLOPE BACK TO ALLOW FOR A SMALL BANKFULL BENCH ADJACENT TO CHANNEL REDUCING VELOCITY OF FLOWS AT THE TOE OF SLOPE
- SLOPE TO BE GRADED BACK. THIS WILL INCREASE FLOOD STORAGE CAPACITY.

**AREA #8 - CONFLUENCE OF CHANNELS**

- FROM THIS POINT THE WATERSHED SIZE IS 0.4 SQ. MILES
- STRAIGHT CHANNEL WITH LARGE PLACED DRAINAGE FROM UPPER REACH OF CHANNEL AS WELL AS INFUS FROM LARGE PARKING AREAS
- NO CONNECTION TO BANKFULL BENCH/FLOODPLAIN
- LIMITED RESTORATION OPPORTUNITIES

**AREA #11 - MAIN POND**

- FROM THIS POINT THE WATERSHED SIZE 0.44 SQ. MILES, WITH AREA COVERED BY FOREST AT 2.15 SQ. MILES.
- LAND COVERED BY FOREST BY DEVELOPED (URBAN) LAND FROM AT 64.9 PERCENT
- THIS MAIN POND IS THE LARGEST OPEN BODY OF WATER ON THE CAMPUS AT 39,250 S.F. (0.87 ACRES)
- MINIMAL PEDESTRIAN CONNECTIONS TO AND AROUND POND
- MINIMAL SHADE TREES AROUND POND
- POTENTIAL FOR POND DREDGING OR HYDRO PAVING, EMERGENT AND AQUATIC VEGETATION IMPROVEMENTS, INCREASE PEDESTRIAN AND VISUAL ACCESS TO POND, INVASIVE SPECIES MANAGEMENT
- POND MANAGEMENT PLAN TO BE DEVELOPED

**AREA #2 - DOWNSTREAM OF CULVERT**

- OUTLET APPEARS TO BE SEDIMENT RICH WITH LARGE PILE OF SEDIMENT COLLECTED AT CULVERT
- UPSTREAM SIDE OF CULVERT APPEARS TO BE CLEANED OUT AS NEEDED

**AREA #3 - PONDED AREA**

- SHALLOW PONDED AREA WITH EXCESSIVE SEDIMENT ON BOTTOM
- TOE OF INVASIVE SPECIES (BITTERSWEET, MULTIFLORA ROSE, ETC.)
- AREA MAY HAVE SEDIMENT REMOVED OR DOWN STREAM END COULD BE BUILT UP TO LARGER VOLUME OF STORAGE
- INVASIVE SPECIES MANAGEMENT

**AREA #4 - UPPER REACH LOW GRADIENT CHANNEL**

- NARROW CHANNEL WITH ADJACENT VEGETATED WETLANDS ALONG EITHER SIDE
- TOE OF INVASIVE SPECIES (BITTERSWEET, MULTIFLORA ROSE, ETC.)
- INVASIVE SPECIES MANAGEMENT

**AREA #5 - UPLAND AREA ADJACENT TO CHANNEL**

- MOWN TURF AREA
- POTENTIAL FOR OPEN MEADOW RESTORATION
- WILDLIFE HABITAT CORRIDOR

**AREA #6 - OVERGROWN STORMWATER BASIN**

- AREA IS CHOKED WITH SEDIMENT AND LARGE WOODY VEGETATION
- RE-CONSTRUCT BASIN, REMOVE SEDIMENT, AND REVEGETATE TO ALLOW FOR ADDITIONAL STORAGE
- REPLACE EXISTING STORAGE WITH UNDERGROUND STORAGE
- UNDER WALKING PATH

**AREA #10 - UPPER TRIBUTARY PONDED AREA**

- CULVERT INLET FROM UPPER TRIBUTARY
- PONDED AREA MAY BE ENHANCED WITH HABITAT FEATURES AND EMERGENT PLANTINGS

**AREA #9 - UPPER CHANNEL REACH**

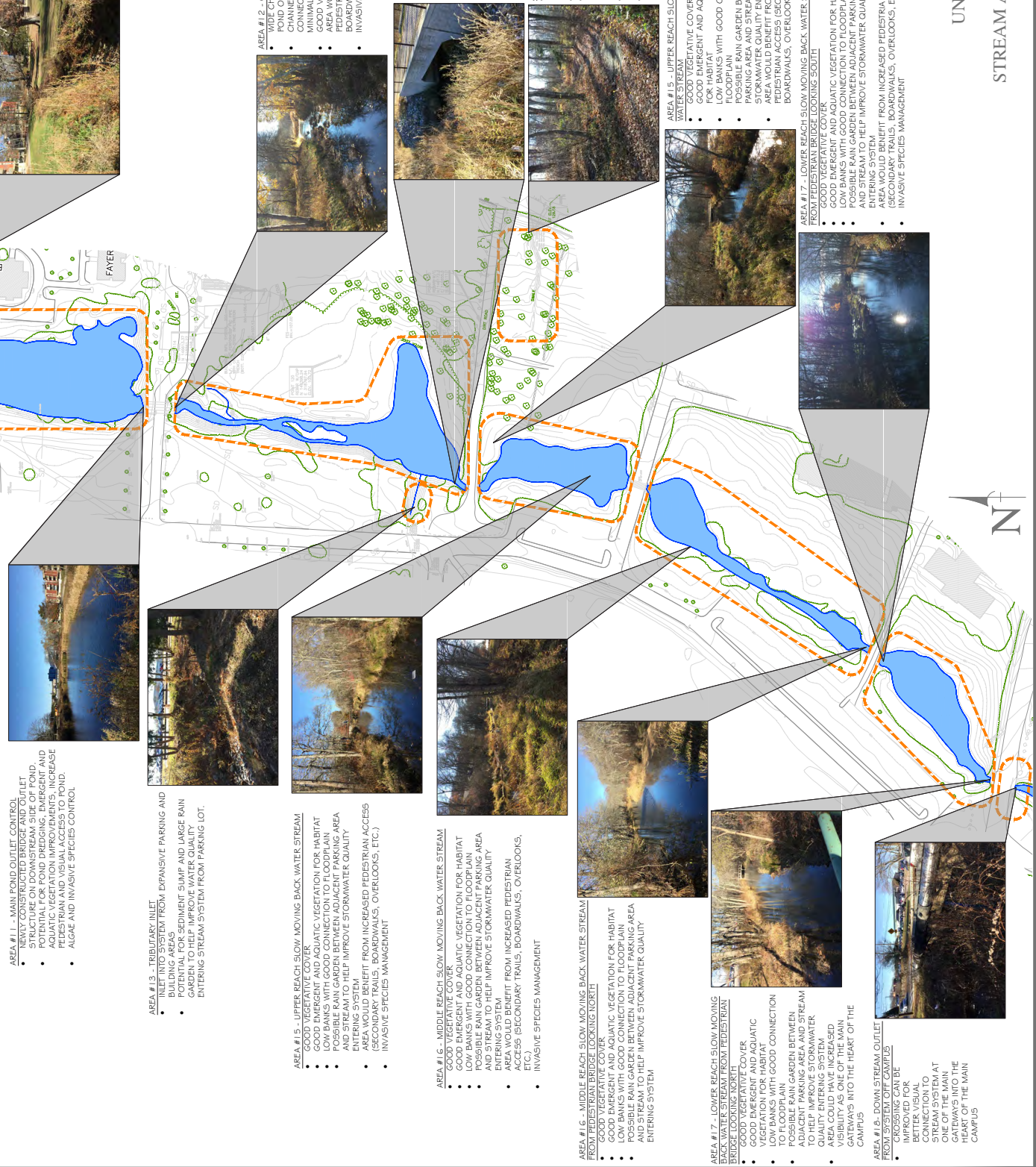
- INLET TO CHANNEL FROM DROP INLET STRUCTURE FROM AREA #10
- CHANNEL BOTTOM ARMORED WITH CONCRETE
- CHANNEL MAY BE NATURALIZED WITH A SERIES OF STEP POOL
- INVASIVE SPECIES MANAGEMENT
- RIPARIAN VEGETATION (TREES)

**AREA #9 - LOWER CHANNEL REACH**

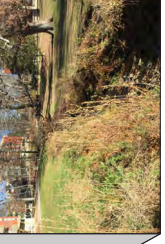
- CHANNEL BOTTOM ARMORED WITH LARGE



UNIVERSITY OF RHODE ISLAND LANDSCAPE ARCHITECTURE, INC.



- AREA #11 - MAIN POND OUTLET CONTROL.**
- NEWLY CONSTRUCTED BRIDGE AND OUTLET STRUCTURE ON DOWNSTREAM SIDE OF POND.
  - POTENTIAL FOR POND DREDGING, EMERGENT AND PEDESTRIAN AND VISUAL ACCESS TO POND.
  - ALGAE AND INVASIVE SPECIES CONTROL.



- AREA #12 - OUTLET FROM MAIN POND.**
- WIDE CHANNEL CONTROLLED BY NEW MAIN POND OUTLET.
  - CONNECTION TO ADJACENT FLOODPLAIN, WITH MINIMAL BANK EROSION.
  - GOOD VEGETATIVE COVER.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #13 - TRIBUTARY INLET.**
- INLET INTO SYSTEM FROM EXPANSIVE PARKING AND POTENTIAL FOR SEDIMENT SWAMP AND LARGE RAIN GARDEN TO HELP IMPROVE WATER QUALITY.
  - ENTERING STREAM SYSTEM FROM PARKING LOT.



- AREA #14 - UPPER BEACH SLOW MOVING BACK WATER STREAM.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



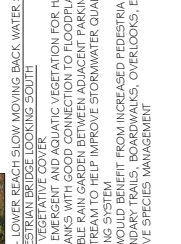
- AREA #15 - UPPER BEACH SLOW MOVING BACK WATER STREAM.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



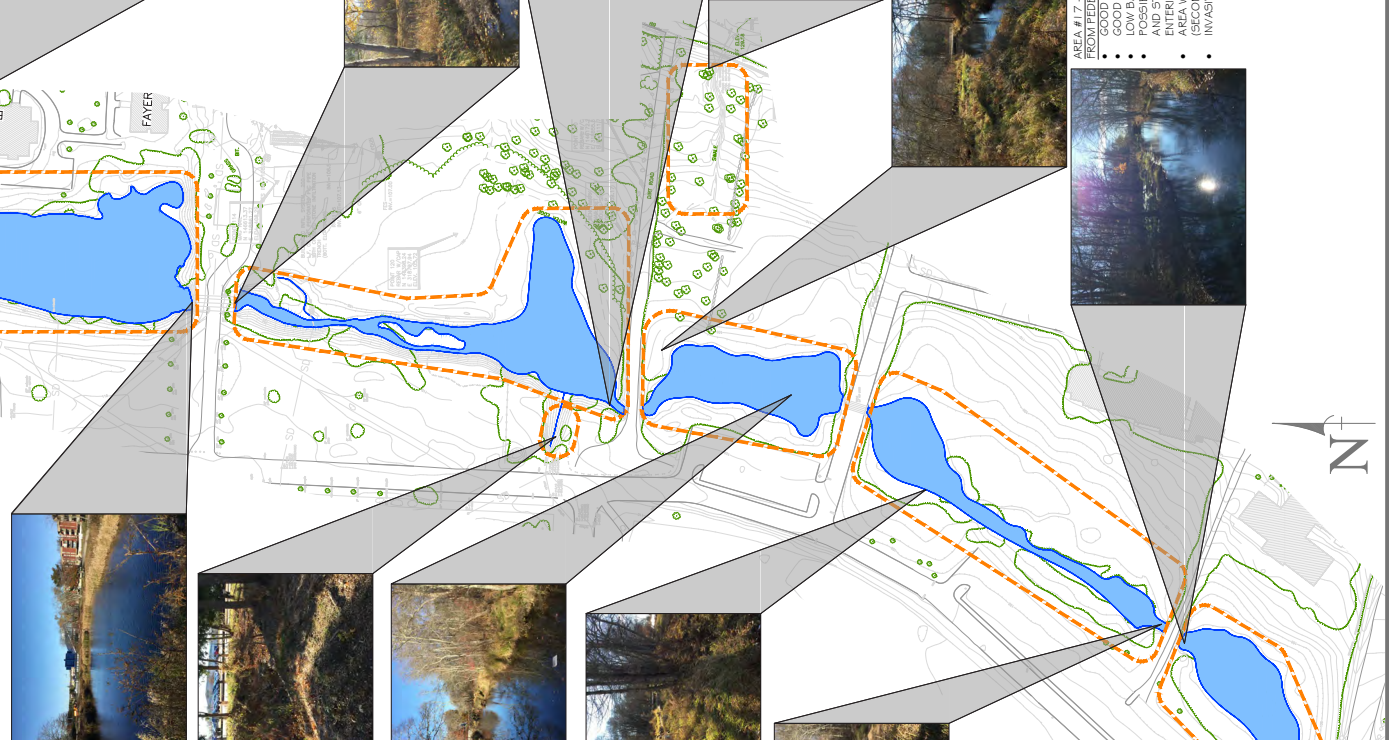
- AREA #16 - MIDDLE REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



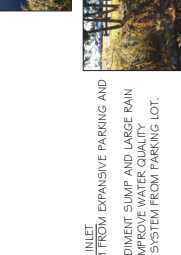
- AREA #17 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



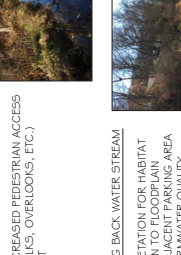
- AREA #18 - DOWNSTREAM OUTLET FROM 555' ELEVATION CANYON.**
- CROSSING CAN BE IMPROVED FOR BETTER VISUAL CONNECTION TO FLOODPLAIN.
  - POTENTIAL FOR AT LEAST ONE OF THE MAIN GATEWAYS INTO THE HEART OF THE CAMPUS.



- AREA #19 - DOWNSTREAM OUTLET FROM 555' ELEVATION CANYON.**
- CROSSING CAN BE IMPROVED FOR BETTER VISUAL CONNECTION TO FLOODPLAIN.
  - POTENTIAL FOR AT LEAST ONE OF THE MAIN GATEWAYS INTO THE HEART OF THE CAMPUS.



- AREA #20 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #21 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



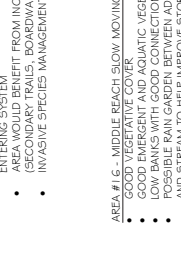
- AREA #22 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #23 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #24 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #25 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #26 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #27 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



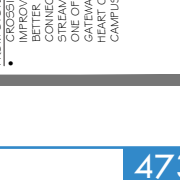
- AREA #28 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #29 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #30 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #31 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #32 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #33 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING SOUTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



- AREA #34 - LOWER REACH SLOW MOVING BACK WATER STREAM FROM PEDESTRIAN BRIDGE LOOKING NORTH.**
- GOOD VEGETATIVE COVER.
  - GOOD EMERGENT AND AQUATIC VEGETATION FOR HABITAT.
  - LOW BANKS WITH GOOD CONNECTION TO FLOODPLAIN.
  - POSSIBLE RAIN GARDEN BETWEEN ADJACENT PARKING AREA AND STREAM TO HELP IMPROVE STORMWATER QUALITY ENTERING SYSTEM.
  - AREA WOULD BENEFIT FROM INCREASED PEDESTRIAN ACCESS (SECONDARY TRAILS, BOARDWALKS, OVERLOOKS, ETC.)
  - INVASIVE SPECIES MANAGEMENT.



Presented for:



Kyle Zick, Landscape Architecture, Inc.  
36 Bromfield Street Suite 202  
Boston, MA 02108  
(961) 745-1018

Prepared by:



New England Environmental, A Division of SWCA, Environmental Consulting



15 Research Drive  
Amherst, MA 01002  
(413) 256-1000  
(413) 256-1032  
www.nieec.com

UNIVERSITY OF RHODE ISLAND  
LANDSCAPE ARCHITECTURE, INC.  
STREAM AND WETLAND ASSESSMENT  
DATE: 2/14/2017 SCALE: 1" = 100'



THIS PAGE LEFT INTENTIONALLY BLANK

# LANDSCAPE MASTER PLAN

## APPENDIX C

### **STUDENT SENATE SAFETY & LIGHTING WALK NOTES, 2016**

PREPARED BY: URI STUDENT SENATE, CAMPUS AFFAIRS

DATE: OCTOBER 2016



THIS PAGE LEFT INTENTIONALLY BLANK

Lights and other safety issues!

### **Frat Circle/Gateway**

1. The lights behind the Visitor's Center flicker.
2. Hillel is very dark.
3. Gateway is really dark.

### **Parking near Keaney/upperclassmen dorms**

4. 863 light out near the camera in the Dairy Barn Lot.
5. Four lights out in Dairy Barn Lot near dump last row north.
6. Lands and grounds building - corner light and all exterior lights
7. All the lights out at the Automotive building
8. South west, 3858 Pole Dairy Barn Lot light out
9. Two interior lights poles - one perimeter West Side Ryan Center
10. Needs lighting from East to West Alumni Ave.
11. Whole western side of Plains Road is out
12. Dining services distribution center has 10 lights out
13. Intersection of Plains and EMS building, needs light

### **Residential Living**

14. Merrow side building light
15. No light on lamp post in between Merrow/Tucker
16. Light out by Union Bookstore
17. Light out south entrance Tucker
18. Lights out in front of Hutchinson
19. Light out on the right side of Hutchinson near Tucker
20. All lights out in front of Heathman entrance
21. Light out near MSSC, pathway near Union
22. Light out on the MSSC
23. Lights out on Coddington on Tower C, D, and E
24. Dark by Fascitelli Wellness - pathway leading to Roger Williams Complex
25. Coddington by car stopper is really dark
26. Coddington tower A side is dark
27. Burnside all lights out back
28. Light on Adam's out
29. 2 lights out by Eddy near Adams
30. Light out on Telephone on Faye
31. Potter building lights out
32. Blue light needed near Fascitelli Wellness
33. Light out behind Gorham
34. Blue light needed behind Ellery
35. Blue light needed between Ellery & Dorr
36. No lights on pathway behind Dorr
37. Lights out front of Dorr A
38. Walkway behind Weldin and Barlow - dark
39. Weldin - no lights



### **Academic/Quad .**

1. Side-walk across from Union dark
2. East Alumni North of library streetlights are out
3. West of Woodward, east of Chaffee - poles out of ground
4. ALL lights above CBLs out
5. Walkway West to North of quad DARK - near road
6. East of coastal needs walkway along building
7. Lights out by Greenhouse parking lot - DARK
8. Lack of walkway on Flagg
9. East side of fine arts lot, lights out (timer malfunction)
10. Tucker lot - pretty dark
11. Should put lights on both sides of polls in fine arts lot
12. South of Fine Arts is dark
13. Need blue light on corner of Ranger/Upper college

### **Grad Village/Sports Complex**

14. Grad village
  - a. has no street lines down 138 to cut through by Frat Circle Stone Wall
  - b. Lands and grounds said DOT need to take care of hanging tree limb just pass the stone wall going to Grad Village
  - c. 3 light posts near community garden are out (whole parking lot)
  - d. Light near building 5 is out (street light)
  - e. Street light next to blue light 50 is blinking
15. Keane
  - a. Lower behind #20 blue lights is out
  - b. No paved road behind athletic building leading to soccer fields

<b>Yellow</b>	Broken
<b>Red</b>	Still broken from last year

Number of the lights	Location	Light work	Call work	Do you see another light?	Any additional problems?
#1	Fine Arts	Y	Y	Y	<b>**Not handicapped accessible</b>
#2	Fine Arts	N	Y	Y	<b>**Not handicapped accessible</b>
#3	Upper		Y	Y	
#5	Chaffee	Y	Y	Y	
#8	Across the street from Garrahy	Y	Y	Y	
#9		Y	N	Y	
#10		Y	Y	Y	
#11	Plains	Y	Y	Y	
#12	Plains	Y	Y	Y	
#13	Tootell Road	Y	Y	Y	
#14	Tootell Road	Y	Y	Y	
#15	North Dairy Barn Lot	Y	N	Y	
#16		Y	Y	Y	
#17	Behind the Ryan Center	Y	Y	N	<b>**No number</b>
#18		Y	Y	Y	
#19	Boss Ice Arena	Y	Y	N	<b>** Number location change from 2015</b>
#20	Bus Lot	Y	Y	Y	
#21	Bus lot (bus stop)	Y	Y	N	
#22	Chi Omega	Y	Y	Y	
#23	Sigma Chi/Alph Xi Delta/Sigma Kappa	Y	<b>N - call button does not work well</b>	Y	No # sticker



#24	Sigma Pi/Phi Sigma Sigma	Y	Y	Y	
#25	Kappa Delta	Y	Y	Y	
#27	Barlow	Y	Y	Y	
#28	Weldin Lot	Y	Y	Y	Light is high and hard to see
#29	Bressler Hall	Y	Y	Y	Stays activated
#30	EMS/Dairy Barn	Y	Y	Y	
#31	Near Butt	Y	Y	Y	No flash, activation light no off (telephone line is bad)
#32		Y	Y	Y	
#33	MSSC	Y	Y	Y	
#34	Quinn	Y	N	Y	
#35	Green-Swan	Y	Y	Y	
#36	Upper	Y	Y	N	**Needs a closer blue light
#38	Kirk	Y	Y	Y	
#39	Mackal	Y	N	Y	**Bench is in the way
#40	Library	Y	Y	Y	
#41	Library	Y/N - No flash	Y	Y	
#42	Outside the library	Y	Y	N	
#43	Heathman	Y	Y	Y	** Call button worked but was weird
#44		Y	Y	Y	
#45		Y/N - No flash	Y	N	
#46	Ellery	Y/N - No light but flash worked	Y	Y	
#47	Faye	Y	Y	N	
#48	Adams Hall	Y	Y	N	
#50	Grad Village	Y	Y	Y	
#51	Grad Village	Y	Y	Y	
#52	Butterfield Light	Y/N - No flash	Y	Y	Light works but no Flashing
#65	Upper	Y	Y	Y	
#68	Flagg	Y	Y	Y	
#69	Flagg	Y	Y	N	

#70	Flagg	Y	Y	N	
#71		Y	Y	Y	
#72	Plains	Y	Y	Y	
#73	Plains	Y	Y	Y	
#75	Parking Services	Y	Y	Y	
#76	Eddy	Yes but not bright enough	Y	Y	
#77	Heathman	N	N	N	***Never Fixed*** Red light is out
#78	Hope	Y	Y	Y	
#79	Fogarty	Y/N	Y	Y	Light works but no Flashing
#80	Independence Square	Y/N - does not flash	Y	N	**No number on it
#81	CBLS	Y	Y	Y	
#82	Gateway	Y	Y	N	
#88	Athletic building (soccer)	N	Y	N	
#89	Mackal	Y	Y	N	
#90	Front of Hillside	Y	Y	Y	
#91	ADП/Hillside	Y	Y	Y	
#92	Hillside walkway	Y	Y	Y	
#99	White Hall	Y	Y	Y	
#100	Greenhouse	Y	Y	N	
#101	Plains	Y	Y	Y	
#102	Plains	Y	Y		
#103	Upper College	Y	Y	N	
#No Number	Burnside	Y	N	N	
# No number	Butterfield	N	Y	Y	



Number of the lights	Location	Light work	Call work	Do you see another light?	Any additional problems?
#1	Fine Arts	Y	Y	Y	<b>**Not handicapped accessible</b>
#2	Fine Arts	N	Y	Y	<b>**Not handicapped accessible</b>
#3	Upper		Y	Y	
#5	Chaffee	Y	Y	Y	
#8	Across the street from Garrahy	Y	Y	Y	I
#9		Y	N	Y	
#10		Y	Y	Y	
#11	Plains	Y	Y	Y	
#12	Plains	Y	Y	Y	
#13	Tootell Road	Y	Y	Y	
#14	Tootell Road	Y	Y	Y	
#15	North Dairy Barn Lot	Y	N	Y	
#16		Y	Y	Y	
#17	Behind the Ryan Center	Y	Y	N	<b>**No number</b>
#18		Y	Y	Y	
#19	Boss Ice Arena	Y	Y	N	<b>** Number location change from 2015</b>
#20	Bus Lot	Y	Y	Y	
#21	Bus lot (bus stop)	Y	Y	N	
#22	Chi Omega	Y	Y	Y	
#23	Sigma Chi/Alph Xi Delta/Sigma Kappa	Y	<b>N - call button does not work well</b>	Y	No # sticker
#24	Sigma Pi/Phi Sigma Sigma	Y	Y	Y	
#25	Kappa Delta	Y	Y	Y	
#26					
#27	Barlow	Y	Y	Y	
#28					<b>** Used to be in weldin lot but no longer there</b>
#29	Bressler Hall	Y	Y	Y	<b>Stays activated</b>

#30	EMS/Dairy Barn	Y	Y	Y	
#31	Near Butterfield	Y	Y	Y	No flash, activation light no off (telephone line is bad)
#32		Y	Y	Y	
#33	MSSC	Y	Y	Y	
#34	Quinn	Y	N	Y	
#35	Green-Swan	Y	Y	Y	
#36	Upper	Y	Y	N	**Needs a closer blue light
#38	Kirk	Y	Y	Y	
#39	Mackal	Y	N	Y	**Bench is in the way
#40	Library	Y	Y	Y	
#41	Library	Y/N - No flash	Y	Y	
#42	Outside the library	Y	Y	N	
#43	Heathman	Y	Y	Y	** Call button worked but was weird
#44		Y	Y	Y	
#45		Y/N - No flash	Y	N	
#46	Ellery	Y/N - No light but flash worked	Y	Y	
#47	Faye	Y	Y	N	
#48	Adams Hall	Y	Y	N	
#50	Grad Village	Y	Y	Y	
#51	Grad Village	Y	Y	Y	
#65	Upper	Y	Y	Y	
#68	Flagg	Y	Y	Y	
#69	Flagg	Y	Y	N	
#70	Flagg	Y	Y	N	
#71		Y	Y	Y	
#72	Plains	Y	Y	Y	
#73	Plains	Y	Y	Y	
#75	Parking Services	Y	Y	Y	
#76	Eddy	Yes but not bright enough	Y	Y	
#77	Heathman	N	N	N	***Never Fixed*** Red light is out



#78	Hope	Y	Y	Y	
#79	Fogarty	Y/N	Y	Y	Light works but no Flashing
#80	Independence Square	Y/N - does not flash	Y	N	**No number on it
#81	CBLS	Y	Y	Y	
#82	Gateway	Y	Y	N	
#88	Athletic building (soccer)	N	Y	N	
#89	Mackal	Y	Y	N	
#90	Front of Hillside	Y	Y	Y	
#91	ADП/Hillside	Y	Y	Y	
#92	Hillside walkway	Y	Y	Y	
#99	White Hall	Y	Y	Y	
#100	Greenhouse	Y	Y	N	
#101	Plains	Y	Y	Y	
#102	Plains	Y	Y	Y	
#103	Upper College	Y	Y	N	
#No Number	Burnside	Y	N	N	
# No number	Butterfield	N	Y	Y	

# LANDSCAPE MASTER PLAN

## APPENDIX D

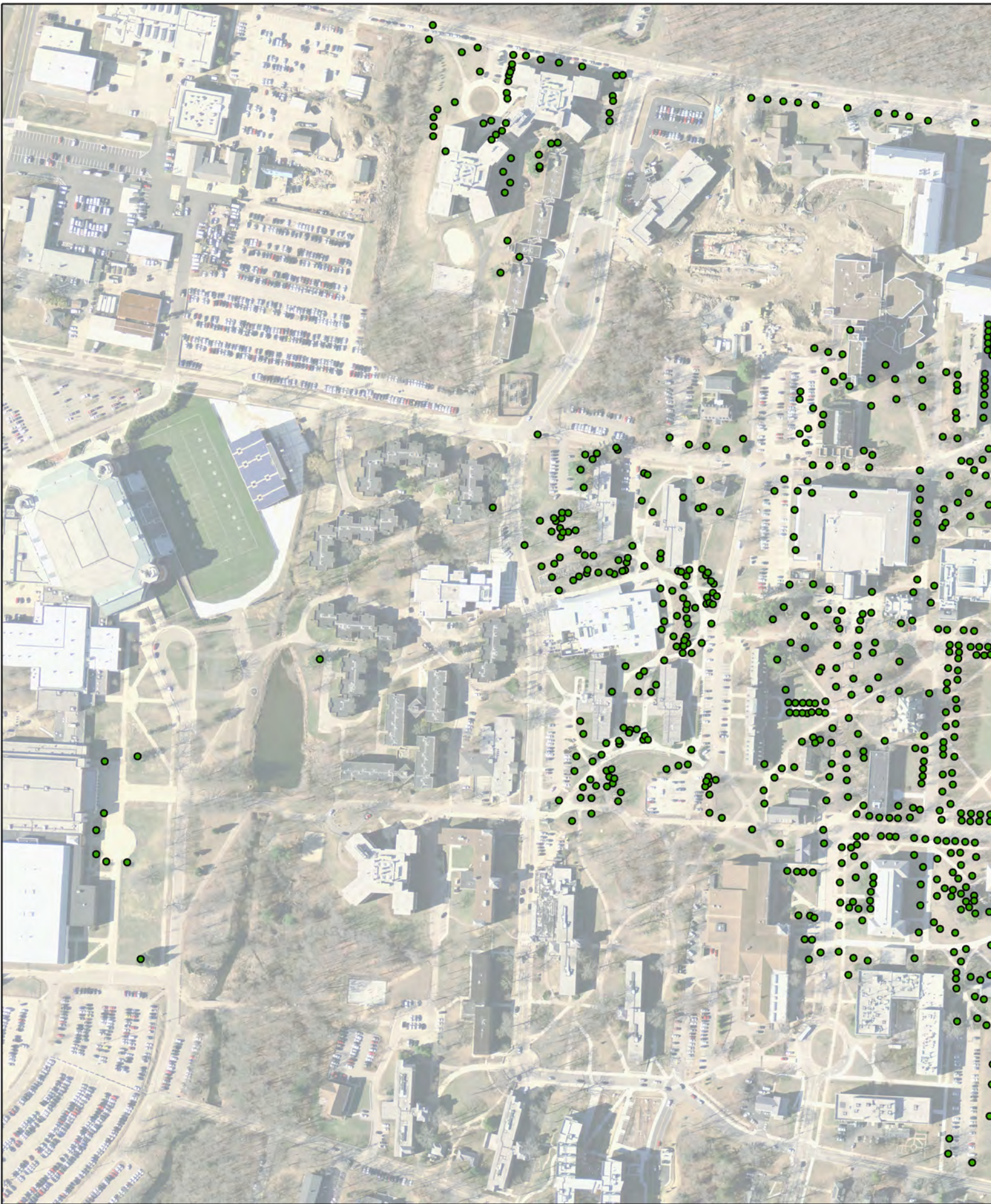
### **TREE INVENTORY MAP, 2017**

PREPARED BY: KYLE ZICK LANDSCAPE ARCHITECTURE, INC.  
WITH ASSISTANCE FROM URI LANDSCAPE & GROUNDS ARBORISTS &  
LANDSCAPE MANAGEMENT AND ARBORICULTURE (PLS 306) STUDENTS  
DATE: SEPTEMBER - OCTOBER 2016

Note:

A full size plan (48"x36") has been provided to the Campus Planning & Design office with numbered points. The spreadsheet with associated information was also provided in digital format.





**URI Tree Inventory**  
University of Rhode Island Master Plan





0 150 300 600 Feet



kzla



THIS PAGE LEFT INTENTIONALLY BLANK

# LANDSCAPE MASTER PLAN

## APPENDIX D

### **LANDSCAPE ARCHITECTURE/PLANT SCIENCES PROFESSOR TREE SPECIES REQUEST LISTS**

PREPARED BY: ANGELO SIMEONI, DR. SUSAN GORDON

DATE: VARIOUS



THIS PAGE LEFT INTENTIONALLY BLANK

## Lost & Threatened Plants of the URI Main Campus as of 16 December 2009

The following is a partial list of **Lost Plants** –both trees and shrubs which have been removed from the URI Campus. As far as I know they do not exist on campus at this time. This list has been compiled since 1990.

<u>Abies balsamea</u>	Balsam Fir	Ballantine north field
<u>Alnus rugosa</u>	Speckled Alder	URI Hort Gardens
<u>Alnus serrulata</u>	Smooth Alder	URI Hort Gardens
<u>Amelanchier laevis</u>	Allegheny Serviceberry	Tucker House south
<u>Berberis mentorensis</u>	Mentor Barberry	Quinn Hall west
<u>Betula pendula 'pendula'</u>	Weeping European Birch	President's Residence north
<u>Carya ovata</u>	Shag-bark Hickory	Coastal Institute site
<u>Caryopteris x clandonensis</u>	Bluemist Spirea	URI Hort Gardens
<u>Chamaecyparis pisifera 'Plumosa'</u>		Quinn Hall west
<u>Chamaecyparis 'Squarrosa'</u>		URI Club south of entrance walkway
<u>Crataegus crusgalli</u>	Cockspur Hawthorne	Library Plaza
<u>Crataegus laevigata</u>	English Hawthorne	URI Club north of entrance walkway
<u>Euonymus fortunei</u>	Wintercreeper Euonymus	Carlotti west
<u>Euonymus fortunei 'Emerald Gaiety'</u>		Butler Bldg south
<u>Forsythia suspensa</u>	Weeping Forsythia	Lippit south-east corner
<u>Fraxinus oxycarpa</u>	Narrow Leaf Ash	Human Resource Admin. Bldg south-west
<u>Hypericum calycinum</u>	St. Johnwort	CE Center Parking Lot south
<u>Juniperus communis</u>	Common Juniper	Tucker House south
<u>Kalopanax pictus</u>	Castor-aralia	Woodward Hall north
<u>Larix laricina</u>	American Larch	Library Parking Lot east
<u>Ligustrum amurense</u>	Amur Privet	Rodman Hall east
<u>Mahonia aquifolium</u>	Oregon Grape Holly	Quinn Hall north-west corner
<u>Morus alba</u>	White Mulberry	BISC south-west
<u>Myrica pensylvanica</u>	Bayberry	Engineering Robotics Bldg entrance
<u>Picea orientalis</u>	Oriental Spruce	Edwards Auditorium Entrance
<u>Picea glauca</u>	White Spruce	Cancer Research Center south
<u>Pinus aristata</u>	Bristlecone Pine	Chaffee north slope
<u>Pinus cembra</u>	Swiss Stone Pine	Woodward Parking Lot
<u>Pinus bungeana</u>	Lacebark Pine	Chaffee north slope
<u>Pinus parviflora 'glauca'</u>	Japanese White Pine	Chaffee north slope
<u>Pinus wallichiana</u>	Himalayan Pine	Chaffee north slope
<u>Platanus occidentalis</u>	Sycamore	???
<u>Poncirus trifoliata</u>	Hardy Orange	Fine Arts Pkg Lot Entrance south
<u>Rhus coppalina</u>	Winged Sumac	CE Center Parking Lot south
<u>Rosa rugosa</u>	Shore Rose	Coastal Institute south-west corner
<u>Sorbus aucuparia</u>	European Mountain Ash	Morrow Hall Pkg Lot west



<u>Stephanandra incisa</u>	Cutleaf Stephanandra	Engineering quad north-east
<u>Viburnum opulus 'nanum'</u>	Dwarf Euro. Cranberrybush Vib.	Library Plaza south-east

The following is a partial list of **Threatened Plants** of the URI Main Campus as of 16 December 2009. These plants are noted as threatened plants as they currently exist as mature specimens and in most cases the only species on campus.

<u>Acer ginnala</u>	Amur Maple	Swan Hall central west
<u>Acer pseudoplatanus</u>	Sycamore Maple	Rodman Hall south-east
<u>Acer saccharum 'Sweet Meadow'</u>	Cutleaf Sugar Maple	Chaffee Hall south
<u>Castanea mollissima</u>	Chinese Chestnut	Woodward Hall Pkg Lot
<u>Cedrus atlantica 'glauca'</u>	Blue Atlas Cedar	Washburn Hall north
<u>Celtis occidentalis</u>	Hackberry	Library south-east
<u>Cryptomeria japonica</u>	Japanese Cryptomeria	Edwards Aud. south-west
<u>Fagus grandifolia</u>	American Beech	Davis Hall west
<u>Fagus sylvatica</u>	European Beech	Davis Hall west
<u>Fagus sylvatica 'asplenifolia'</u>	Fernleaf European Beech	Davis Hall west
<u>Gleditsia tricanthos inermis 'Moraine'</u>	Moraine Honeylocust	Woodward Parking Lot
<u>Hamamelis mollis</u>	Chinese Witchhazel	Library south west corner
<u>Magnolia kobus</u>	Kobus Magnolia	Green Hall south
<u>Malus arnoldiana</u>	Arnold's Crabapple	Roosevelt Hall east
<u>Quercus robur 'fastigiata'</u>	Upright English Oak	Ballentine Hall west
<u>Syringa reticulata</u>	Japanese Tree Lilac	Library south
<u>Taxodium distichum</u>	Bald Cypress	Swan Hall south-west
<u>Ulmus Americana</u>	American Elm	several locations
<u>Ulmus glabra 'Camperdownii'</u>	Camperdown Elm	Carlotti west

## Tree Request List from Sue Gordon

Received by URI Lands & Grounds, March 16, 2011

A starter list of stuff I'd like to see on campus. Planting in groups (and communities?) vs. specimens:

- *Cryptomeria japonica* 'Yoshino'
- *Juniperus horizontalis* – cultivars other than *Wiltonii*
- *Thuja orientalis*
- *Thujopsis dolabrata*
- *Larix decidua*
- *Picea mariana*
- *Pinus rigida*
- *Pinus bankasiana*
- *Pinus echinata*
- *Pinus virginiana*
- *Platanus occidentalis*
- *Ptelea trifoliata*
- *Quercus muehlenbergii*
- *Quercus ilicifolia*
- *Quercus lyrata*
- *Robinia pseudoacacia*
- *Salix nigra*
- *Amelanchier arborea*
- *Spiraea tomentosa*: Kinney can donate
- *Spiraea latifolia*
- *Rhus glabra*
- *Rhus copallinum*
- *Rhus typhina*
- *Juniperus communis* \*
- *Juniperus virginiana* 'Grey owl' & other cultivars
- *Ceanothus americana*
- *Aronia melanocarpa*
- *Aronia arbutifolia*
- *Corylus americana*
- *Chamaecyparis lawsoniana* \*
- *Chamaecyparis (Cupressus) nootkatensis*



## Desired trees for Campus, Sue Gordon

- *Acer saccharinum*, Silver maples – We have one on Upper College, but to teach it we should have one in a different location.
- *Chionanthus virginicus* (we have 2 *C. retusus*)
- *Crataegus crus-galli*
- *Crataegus mollis*
- *Crataegus viridis*
- *Diospyros virginiana* –The Arnold arboretum has a mixed grove of Quercus & Betula nigra that's great.
- *Ostrya virginiana*
- *Carpinus caroliniana*
- *Carya* – any spp.
- *Celtis occidentalis*
- *Prunus Americana*
- *Malus coronaria*
- *Sorbus Americana*
- *Viburnum lnetago*
- *Viburnum prunifolium* (Kinney would donate)
- *Viburnum rufidulum*
- *Viburnum cassinoides*
- *Viburnum alnifolium*
- *Eubotrys racemosa*
- *Morella (Myrica) pensylvanica*

# LANDSCAPE MASTER PLAN

## APPENDIX F

### **PRIORITY PROJECT COST ESTIMATES**

PREPARED BY: TALEVI AND HAESCHE, LLC OF WEST BROOKFIELD, MA

DATE: JULY 2017



UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

SUMMARY

			<b>As if Separate Jobs</b>	
HISTORIC QUADRANGLE	304,800 SF	\$20.34	\$6,200,000	
ELEPHANT WALK	250,000 SF	\$9.60	\$2,400,000	
HAMMERSCHLAG MALL - PHASE 1	192,800 SF	\$3.11	\$600,000	
HAMMERSCHLAG MALL - PHASE 2	196,300 SF	\$8.15	\$1,600,000	
CHAFEE GREEN	117,200 SF	\$10.24	<u>\$1,200,000</u>	
			<b>\$12,000,000</b>	
				<b>\$12,000,000</b>

**PROBABLE CONSTRUCTION COST RANGE BETWEEN  
\$11,000,000 AND \$14,000,000**

UNIVERSITY OF RHODE ISLAND  
 LANDSCAPE MASTER PLAN  
 NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

**SUMMARY**

	As If One Job
HISTORIC QUADRANGLE	\$3,910,000
ELEPHANT WALK	\$1,490,000
HAMMERSCHLAG MALL - PHASE 1	\$400,000
HAMMERSCHLAG MALL - PHASE 2	\$1,020,000
CHAFEE GREEN	<u>\$770,000</u>
SUBTOTAL	\$7,590,000
GENERAL CONDITIONS AND GENERAL CONTRACTOR'S OH & P	15% <u>\$1,139,000</u>
SUBTOTAL	\$8,729,000
DESIGN CONTINGENCY	20% <u>\$1,746,000</u>
SUBTOTAL	\$10,475,000
CONSTRUCTION/OWNER CONTINGENCY	10% <u>\$1,048,000</u>
SUBTOTAL - TODAY'S DOLLARS	\$11,523,000
ESCALATION TO MIDPOINT OF CONSTRUCTION	<u>Not Included</u>
	\$11,523,000
SAY	\$12,000,000

**PROBABLE CONSTRUCTION COST RANGE BETWEEN  
 \$11,000,000 AND \$14,000,000**

Note: Estimates are priced as if Bid Today.

Note: Estimates Exclude Hazardous Waste and Contaminated Soils Removals and Abatement.



UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

<b>HISTORIC QUADRANGLE</b>	<b>304,800 SF</b>
----------------------------	-------------------

AREA'S		
Existing Walks	11,170	sf
Brick Paving	3,580	sf
Concrete Walks	48,340	sf
Nodes	6,750	sf
Landscaped	234,960	sf
	<u>304,800</u>	sf

**Temporary Works**

Temporary Works	1	ls	\$23,000	\$23,000
- Site Fence				Included Above
- Barricades & Lights				Included Above
- Signage				Included Above
- Erosion Control				Included Above
- Stabilized Entrance Pad				Included Above

**Selective Site Demolition**

Remove Trees	114	ea	\$750	\$85,500
Remove Site Furnishings / Miscellaneous	1	ls	\$3,500	\$3,500
Demo Roads	39,885	sf	\$3	\$119,655
- Ranger Road [ 23' wide ]	17,135	sf		Included Above
- Lower College Rd [ 30' wide ]	15,000	sf		Included Above
- Lippet Road [ 19' wide ]	7,750	sf		Included Above
Protect/Repair Surfaces to Remain	6,500	sf	\$0.25	\$1,625
Remove & Store Brick Pavers	3,580	sf	\$4.50	\$16,110
- Xc mapping of engraved pavers	1	ls	\$2,500	\$2,500
Demo Concrete Walks	17,425	sf	\$2	\$34,850
Demo Concrete Plaza / Nodes	4,250	sf	\$2	\$8,500
- Xc Demo Cannon Mounts	1	ls	\$1,000	\$1,000
- Xc Remove & Store Flagpole	1	ls	\$650	\$650

**Site Preparation**

Removal & Disposal Of Contaminated Soils				Not Included
Strip Topsoil & Stockpile	4,111	cy	\$2	\$8,222

**Site Improvements / Hardscape**

Re-Set Brick Pavers	3,580	sf	\$12	\$42,960
Pavers @ Nodes	6,750	sf	\$25	\$168,750
- Existing	4,250	sf		Included Above
- New [ Lower College/Lippet ]	2,500	sf		Included Above
Concrete Walks				
- 15' Wide 9"th	10,640	sf	\$14	\$148,960
- 8" Wide 5"th	37,700	sf	\$11	\$414,700
New Concrete Walks @ Periphery [ remove / replace ]	4,100	sf	\$14	\$57,400

**Site Furnishings**

	ALLOWANCE			\$25,000
- Signage				Included Above
Re-Install Flagpole	1	ls	\$1,000	\$1,000
Site Furniture				Included Above

**Landscaping**

Spread Topsoil	4,352	cy	\$5	\$21,759
- Xc Purchase Topsoil	241	cy	\$22	\$5,302
Re-sod / Seeding	234,960	sf	\$0.75	\$176,220
Landscaping				
- Trees	70	ea	\$1,500.00	\$105,000

UNIVERSITY OF RHODE ISLAND  
 LANDSCAPE MASTER PLAN  
 NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

HISTORIC QUADRANGLE continued:		304,800 SF			
<b>Storm Water Management [ Tank 300' x 350' ]</b>		105,000	sf		
Excavation		17,500	cy	\$12	\$210,000
Backfill		7,780	cy	\$10	\$77,800
Haul Off Site		9,720	cy	\$15	\$145,800
CULTEC or Similar Water Retention System		105,000	sf	\$18	\$1,890,000
- Low Profile Chambers		2,950	ea		Included Above
- Geotextile Scour Protection / Wrap		124,000	sf		Included Above
- Polyethylene Liner		121,000	sf		Included Above
- Washed Crushed Stone		6,610	cy		Included Above
Inlet Chambers / MH		1	ls		Included Above
Connect To Existing System [ upper College Rd ]	ALLOWANCE				\$50,000
Underground Utilities [ Re-Locate / Remove / Protect ]	ALLOWANCE				\$25,000
<b>Site Electrical</b>					
Site Lighting	ALLOWANCE				\$35,000
					<b>\$3,905,763</b>
					<b>\$3,905,763</b>
				<b>SAY</b>	<b>\$3,910,000</b>



UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

**ELEPHANT WALK 250,000 SF**

AREA'S		
Buildings [ within LOD ]	28,500	sf
Existing Road	1,700	sf
Bio-Retention	3,200	sf
Meadow Plantings	9,850	sf
Concrete Walks - including stairs	37,700	sf
Pavers	8,000	sf
Terrace	42,500	sf
Amphitheatre Seating	5,200	sf
Landscaped	113,350	sf
	<u>250,000</u>	sf

**Temporary Works**

Temporary Works	1	ls	\$20,000	\$20,000
- Site Fence				Included Above
- Barricades & Lights				Included Above
- Signage				Included Above
- Erosion Control				Included Above
- Stabilized Entrance Pad				Included Above

**Selective Site Demolition**

Clear & Grub [ includes tree removal ]	1.50	acre	\$12,000	\$18,000
Remove Site Furnishings / Miscellaneous	1	ls	\$3,500	\$3,500
Demo Paved Roads/Walks/Parking	31,000	sf	\$3.00	\$93,000
Demo Concrete Stairs	2	loc	\$2,700	\$5,400

**Site Preparation**

Removal & Disposal Of Contaminated Soils				Not Included
Strip Topsoil & Stockpile	2,870	cy	\$2	\$5,740
Rough Grade Site	155,000	sf	\$0.30	\$46,500
- Xc Establish Plaza	8,000	sf	\$0.40	\$3,200
- Xc Establish Terraces	42,500	sf	\$0.60	\$25,500
- Xc Sloped Walkway / Site Stairs	20,000	sf	\$0.65	\$13,000
Imported Fill				Not Included

**Site Improvements / Hardscape**

Pavers @ Plaza	8,000	sf	\$25	\$200,000
Concrete Walks				
- 15' Wide 9"th	12,000	sf	\$14	\$168,000
- 8" Wide 5"th	25,700	sf	\$11	\$282,700
Concrete Site Stairs	4	loc	\$5,000	\$20,000
Fieldstone Walls [ West Of Oval ]	160	lf	\$440	\$70,400
Amphitheatre Steps [concrete]	5,200	sf	\$35	\$182,000

**Site Furnishings**

	ALLOWANCE			\$30,000
- Moveable Furniture @ Plaza				Included Above
- Concrete Seating w/Wood Inserts @ Terrace				Included Above
- Miscellaneous Site Furnishings				Included Above
- Signage				Included Above

**Landscaping**

Spread Topsoil	2,870	cy	\$5	\$14,350
Seeding	108,150	sf	\$0.35	\$37,853
Sod @ Terrace	42,500	sf	\$0.75	\$31,875
Meadow Planting	9,850	sf	\$1.50	\$14,775
Landscaping [ trees / shrubs ]			ALLOWANCE	\$35,000

UNIVERSITY OF RHODE ISLAND  
 LANDSCAPE MASTER PLAN  
 NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

**ELEPHANT WALK continued:**

**Work @ Butterfield Road**

Curb Cut / Sidewalk Restoration @ Areas Affected By Work Not Required

**Storm Water Management**

Storm Water Basin [ Bio-Retention Area ]	3,200	sf	\$30	\$96,000
Field Stone Headwall	1	ls	\$2,500	\$2,500
Piped Connections To Existing Storm System			ALLOWANCE	\$20,000

**Site Electrical**

Site Lighting			ALLOWANCE	\$50,000
				<b>\$1,489,293</b>
				<b>\$1,489,293</b>
			<b>SAY</b>	<b>\$1,490,000</b>



UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

**HAMMERSCHLAG MALL - PHASE 1** **192,800 SF**

AREA'S		
Buildings [ within LOD ]	18,200	sf
Existing Sidewalks	1,600	sf
Brick		
- Existing	4,870	sf
- New [ 25% of Existing ]	1,630	sf
- Nodes	1,800	sf
Plaza Paving	250	
New Parking	2,000	sf
Concrete Walks	400	sf
Landscape	162,050	sf
	<u>192,800</u>	

**Temporary Works**

Temporary Works	1	ls	\$16,000	\$16,000
- Site Fence				Included Above
- Barricades & Lights				Included Above
- Signage				Included Above
- Erosion Control				Included Above
- Stabilized Entrance Pad				Included Above
- Protect Trees To Remain				Included Above

**Selective Site Demolition**

Remove Trees	24	ea	\$750	\$18,000
Remove Site Furnishings / Miscellaneous	1	ls	\$5,000	\$5,000
Demo Roads				
- Ranger Road [ 24' wide ]	5,900	sf		See Phase 2
- Lower College Rd [ 30' wide ]	0	sf		See Phase 2
Demo Parking	4,000	sf	\$2	\$8,000
Protect/Repair Surfaces to Remain	1,750	sf	\$0.25	\$438
Demo Brick Paving @ Hammerschlag Mall	1,630	sf	\$3.50	\$5,705
Demo Precast Curbs	100	lf	\$2	\$200
Demo Concrete Sidewalks	600	sf	\$2	\$1,200
Protect/Repair Surfaces to Remain	21,600	sf	\$0.25	\$5,400

**Site Preparation**

Strip Topsoil & Stockpile [ say 50% of area ]	1,228	cy	\$2	\$2,456.48
Rough Grade Site	100,250	sf	\$0.30	\$30,075

**Site Improvements / Hardscape**

Concrete Walks				
- 15' Wide 9"th	400	sf	\$14	\$5,600
- 8" Wide 5"th	0	sf	\$11	\$0
Parking	2,000	sf	\$30	\$60,000
Brick Pavers				
- Remove/Reset Brick Pavers	3,240	sf	\$15	\$48,600
- New Brick Pavers	1,630	sf	\$25	\$40,750
- New Brick Paving	1,630	sf		Included Above
- Nodes	1,800	sf		Included Above
Plaza Paving	250	sf	\$25	\$6,250
Seating / Feature @ Mall +/- 22'-0"	ALLOWANCE			\$15,000

**Site Furnishings**

	ALLOWANCE			\$20,000
Signage				Included Above
Benches				Included Above
Relocated Structures				Included Above

UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

HAMMERSCHLAG MALL - PHASE 1 continued:

**Landscaping**

Spread Topsoil	1,228	cy	\$5	\$6,140
Seeding	18,000	sf	\$0.35	\$6,300
Landscaping [ trees ]	ALLOWANCE			\$40,000

**Storm Water Management**

Re-Work Storm Drainage @ Roads Included with Phase 2

**Site Electrical**

ALLOWANCE		\$60,000	
		<u>\$401,114</u>	<u>\$401,114</u>
		SAY	\$400,000



UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

**HAMMERSCHLAG MALL - PHASE 2** **196,300 SF**

AREA'S		
Buildings [ within LOD ]	48,200	sf
Existing Sidewalks	4,000	sf
Existing Roads	2,000	sf
Plaza Paving	16,500	sf
Concrete Walks	18,760	sf
Landscape	106,840	sf
	<u>196,300</u>	

**Temporary Works**

Temporary Works	1	ls	\$16,000	\$16,000
- Site Fence				Included Above
- Barricades & Lights				Included Above
- Signage				Included Above
- Erosion Control				Included Above
- Stabilized Entrance Pad				Included Above
- Protect Trees To Remain				Included Above

**Selective Site Demolition**

Remove Trees	25	ea	\$750	\$18,750
Remove Site Furnishings / Miscellaneous	1	ls	\$3,500	\$3,500
Demo Roads	20,400	sf	\$3	\$61,200
- Ranger Road [ 24' wide ]	5,900	sf		Included Above
- Lower College Rd [ 30' wide ]	14,500	sf		Included Above
Demo Concrete Sidewalks	32,000	sf	\$2	\$64,000

**Site Preparation**

Strip Topsoil & Stockpile	1,389	cy	\$2	\$2,778
Rough Grade Site	75,000	sf	\$0.30	\$22,500

**Site Improvements / Hardscape**

Concrete Walks				
- 15' Wide 9"th	14,960	sf	\$14	\$209,440
- 8" Wide 5"th	3,800	sf	\$11	\$41,800
Plaza Paving	16,500	sf	\$25	\$412,500

**Site Furnishings**

	ALLOWANCE			\$35,000
Signage				Included Above
Benches				Included Above
Relocated Structures				Included Above

**Landscaping**

Spread Topsoil	1,389	cy	\$5	\$6,944
Seeding [ 50% of landscape area ]	53,420	sf	\$0.35	\$18,697
Landscaping [ trees / shrubs ]	ALLOWANCE			\$40,000

**Storm Water Management**

Re-Work Storm Drainage @ Roads	ALLOWANCE			\$20,000
--------------------------------	-----------	--	--	----------

**Site Electrical**

ALLOWANCE				\$50,000
-----------	--	--	--	----------

**\$1,023,109      \$1,023,109**

**SAY      \$1,020,000**

UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

<b>CHAFEE GREEN</b>	<b>117,200 SF</b>
---------------------	-------------------

AREA'S		
Buildings [ within LOD ]	24,500	sf
Existing Sidewalks	5,400	sf
Bus Stop	3,500	sf
Courtyard	3,400	sf
New Entry	5,000	sf
Concrete Walks	4,500	sf
Stone dust Plaza	5,300	sf
Landscape	65,600	sf
	<u>117,200</u>	

**Temporary Works**

Temporary Works	1	ls	\$16,000	\$16,000
- Site Fence				Included Above
- Barricades & Lights				Included Above
- Signage				Included Above
- Erosion Control				Included Above
- Stabilized Entrance Pad				Included Above

**Selective Site Demolition**

Remove Trees	5	ea	\$750	\$3,750
Tree Protection	5	ea	\$200	\$1,000
Remove Site Furnishings / Miscellaneous	1	ls	\$2,000	\$2,000
Demo Bituminous Walkway / Paving	12,000	sf	\$1.60	\$19,200
Protect/Repair Surfaces to Remain	7,500	sf	\$0.25	\$1,875
Demo Concrete Sidewalks	1,000	sf	\$2	\$2,000
Demo Road	7,500	sf	\$3	\$22,500
Demo Elevated Plaza / Entry	1,500	sf	\$10	\$15,000
Demo Stone Dust Plaza	5,000	sf	\$1	\$5,000

**Site Preparation**

Strip Topsoil & Stockpile	1,070	cy	\$2	\$2,141
Rough Grade Site	82,000	sf	\$0.30	\$24,600

**Site Improvements / Hardscape**

Concrete Walks				
- 15' Wide 9"th	4,500	sf	\$14	\$63,000
- 8" Wide 5"th	0	sf	\$11	\$0
Stone Dust Plaza	5,300	sf	\$4.50	\$23,850
- Benches	120	lf	\$100	\$12,000
Concrete @ Bus Stop	3,500	sf	\$11	\$38,500
Courtyard Concrete	3,400	sf	\$14	\$47,600
Bus Shelter	1	ls	\$7,500	\$7,500
Stone Retaining Walls - 30"h w/Wood Cantilevered Benches				
- Wall	450	lf	\$360	\$162,000
- Benches	220	lf	\$150	\$33,000
Field Stone Retaining Wall [ 42" high ]	130	lf	\$440	\$57,200
Site Furnishings	ALLOWANCE			\$10,000
- Moveable Furniture				Included Above
- Miscellaneous Site Furnishings				Included Above
New Building Entrance	ALLOWANCE			\$100,000

**Landscaping**

Spread Topsoil	1,215	cy	\$5	\$6,074
Seeding	65,600	sf	\$0.35	\$22,960
New Trees / Vegetation	ALLOWANCE			\$12,000



UNIVERSITY OF RHODE ISLAND  
LANDSCAPE MASTER PLAN  
NORTH KINGSTOWN, RI

14-Jul-17

DRAFT for Internal Review

kzla - Design Concept Estimate

CHAFFEE GREEN

*Storm Water Management*

Storm Water Handling

ALLOWANCE

\$20,000

*Site Electrical*

ALLOWANCE

\$35,000

\$765,750

**\$765,750**

**\$765,750**

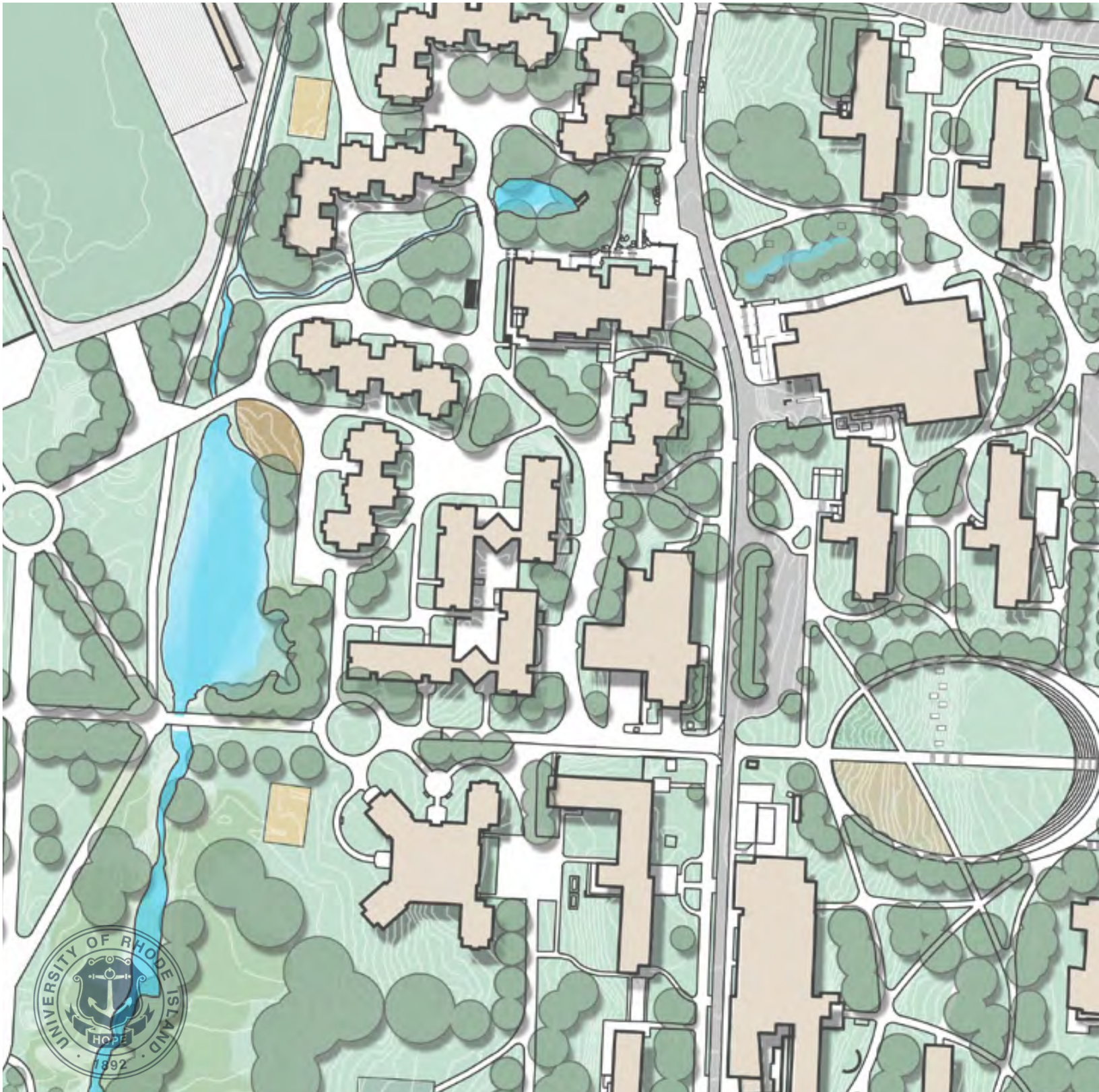
**\$765,750**

SAY

**\$770,000**







Kyle Zick Landscape Architecture, Inc.

36 Bromfield Street, Suite 202, Boston, MA 02108  
t: 617-451-1018 e: kzick@kylezick.com www.kylezick.com