University of Georgia

Bicycle Facility Study

March 8, 2012

PREPARED FOR:
The Office of Sustainability &
The Office of University Architects

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EXECUTIVE SUMMARY

INTRODUCTION

The presence of bicycles on the University of Georgia campus has increased considerably in recent years. Given the increase, it is the responsibility of university leadership to guide the use of bicycle facility development to provide a safe and efficient roadway environment for cyclists, motorists and pedestrians alike. The UGA 2020 Strategic Plan of the Strategic Direction VII clearly expresses the commitment to "provide safe and effective means for students, faculty, and visitors to travel on, to, and from the University of Georgia campus by bicycle." The intent of the UGA Bicycle Study is to serve as a preliminary step towards the creation of a comprehensive Bicycle Master Plan that will direct the improvement of existing bicycle facilities, as well as guide the development of future bicycle facilities and programs. This study addresses bicycle planning efforts to date, case studies of comparable universities' bicycle facilities, and proposed improvements that could be implemented to form practical steps toward an effective campus bicycle program and reinforce the University's bicycle friendly status.

GOALS & OBJECTIVES

In order to support and strengthen the purpose of the UGA Bicycle Study, the following series of goals and objectives were created to represent effective achievements the University could make to improve bicycling conditions on campus:

1. Enhance bicycle network connectivity on campus to promote ridership.
   - Identify and fill existing gaps in UGA's bicycle network.
   - Utilize feedback from UGA community members to identify necessary improvements.
   - Develop a standard for analyzing and evaluating roadway conditions.
2. Develop policies and programs to encourage safe bicycle use.
   - Provide and require bicycle and traffic safety education for all students, faculty and staff in order to foster a safer commuting environment on campus.
   - Develop incentive programs to encourage bicycle use on campus.
3. Obtain Bicycle Friendly Status.
   - Designation as a "Bicycle Friendly University" by the League of American Bicyclists would place the University of Georgia in an elite league of institutions that have consciously chosen to acknowledge the many benefits of cycling as a transportation option on college campuses.

CASE STUDY RECOMMENDATIONS

A series of recommendations are provided in the study based on review of established bicycle master plans at comparable universities. The recommendations outline the pivotal components of a university-led bicycle plan that promote a safe and efficient bicycle environment on campus:

1. Develop a Bicycle Master Plan, a document that will help promote and regulate bike use on campus.
2. Fund a Bicycle Program Coordinator/Director, Full-time Staff Position.
3. Form a Bicycle Committee on campus, made up of students, faculty and staff in order to guide bicycle use and bicycle facility development on campus.
4. Educate students, faculty and staff on bicycle safety and develop bike program branding (such as BIKE UGA) to increase general bicycle awareness on campus.
5. Establish a bike sharing program and other incentives to increase bicycle use on campus.

6. Provide Bicycling Amenities, such as bike specific parking locations, showers, lockers, and repair services.
7. Create a University Bike Website as a way to promote biking and provide a central resource for existing and proposed bicycling facilities and programs on campus.

EXISTING FACILITY OVERVIEW

Since the 2003 Conceptual Bike Master Plan, less than 50% of proposed bike lanes on campus have been implemented. The remaining roads operate as implied shared vehicle and bicycle lanes, many of which fall short of national standards for lane width related to shared use. Review of bicycle rider input by means of a formal survey indicated that key streets and intersections should be reviewed for bicycle-related improvements to facilitate safe riding conditions and create key links to other established bicycle lanes on campus. These streets include Sanford Drive, Baldwin Street, Cedar Street, and Carlton Street.

RECOMMENDED FACILITY IMPROVEMENTS

The primary improvement focus of this study is on streets that provide the links to the existing bike network as determined by review of the existing facilities. Recommendations for each street were developed to address short-term, low-cost improvements, as well as long-term improvements that would require capital funding. Short-term improvements will require restriping, signage and road restrictions and closures to non-university vehicles in certain areas. Long-term improvements will require similar treatment but also include significant sidewalk and road construction to meet minimum national standards. The intent of the long-term improvements is to provide ideal streetscape conditions that create a comprehensive roadway system that caters to not only cyclists on campus, but also pedestrians and motorists.

CONCLUSION

Cycling on the University of Georgia campus might be one of the most important issues that our campus leaders may possibly address in the coming year. This is a vital issue because of the environmental, social, and economic benefits associated with a well designed and well directed bicycle master plan. Environmental benefits such as a decreased dependency on fossil fuels, and a decrease in the environmental impacts associated with construction of additional roads or parking areas are easily associated with an increase in the use of bicycles. Bicycle commuting also provides health benefits such as a general increase in personal fitness, overall increase in lifespan, increased productivity at work, lower stress levels, a decrease in sick days, and, consequently, an overall decrease in healthcare costs and lost wages. The financial benefits attributable to an increase in cycling include reduced infrastructure costs, reduced operating costs, and reduced parking costs.

Taking steps toward the 2020 Strategic Plan's recommendation to promote bicycle ridership on campus will reinforce the University of Georgia's position as an elite higher education institution. By embracing bicycling as an official transportation option for students, staff, and faculty, the University of Georgia can take the lead in setting the standard for what will be the next popular movement in the domain of higher education. Similar to the Leadership in Energy and Environmental Design (LEED) program for building construction, it is predicted that the "Bicycle Friendly University" designation will be the next milestone that competitive academic institutions will seek to set themselves apart. Now is the time for the University of Georgia to lead the way in this effort and capitalize on all the benefits cycling has to offer our campus community.

SECTION 1: BICYCLE FACILITY BACKGROUND

SECTION 1.1
OVERVIEW

A cyclist approaching the iconic Arch on North Campus.
KED, inc.

INTRODUCTION

Bicycling is an effective mode of transportation on campuses across the nation, and it plays a pivotal role in the student and faculty culture at the University of Georgia. With the need to reduce our carbon footprint, relieve traffic congestion, and decrease our dependency on oil, bicycling provides both an economic and environmentally beneficial transportation option. As bicycle use on campus increases due to these factors, it is the responsibility of university leadership to guide its use and ultimately provide a safe and efficient commuting environment for cyclists, motorists and pedestrians alike.

"Provide safe and effective means for students, faculty, and visitors to travel on, to, and from the University of Georgia campus by bicycle."
- UGA 2020 Strategic Plan, Strategic Direction VII

PURPOSE

The UGA Bicycle Study is intended to lay the framework for a comprehensive Bicycle Master Plan that will direct the improvement of existing bicycle facilities, as well as guide the development of future bicycle facilities and programs. This study will provide a background for the University of Georgia's bicycle planning efforts to date, research on the Athens bicycling community, a case study of comparable universities bicycle facilities, and an outline of proposed improvements that could be implemented to create and reinforce the University's bicycle friendly status. The content of this study, along with initial recommendations for improving bicycle facilities in both the short and long term, will inform the University of practical steps toward an effective campus bicycle program and guide it towards the adoption of a comprehensive bicycle master plan.

GOALS AND OBJECTIVES

In order to support and strengthen the purpose of the UGA Bicycle Study, a series of goals and objectives were created. These broad goals represent effective achievements the University could make to improve bicycling conditions on campus, and their subsequent objectives will act as the building blocks to accomplish these goals.

- **Increase Bicycle use on Campus**
  - Enhance bicycle network connectivity on campus to promote ridership
  - Develop incentive programs to encourage bicycle use on campus

- **Identify and fill existing gaps in UGA's bicycle network**
  - Utilize feedback from UGA community members to identify necessary improvements
  - Develop a standard for analyzing and evaluating roadway conditions

- **Develop policies and programs to encourage safe bicycle use**
  - Provide and require bicycle and traffic safety education for all students, faculty and staff in order to foster a safer commuting environment on campus.

- **Obtain Bicycle Friendly Status**
  - Designation as a "Bicycle Friendly University" by the League of American Bicyclists would place the University of Georgia in an elite league of institutions that have consciously chosen to acknowledge the many benefits of cycling as a transportation option on college campuses.

Students navigating through an intersection near Stegeman Coliseum. KED, inc.

A student locking his bike before class. KED, inc.

SECTION 1.2
COMMUNITY CONTEXT

Alumnus Fred Birchmore and his bike, Bucephalus. jayssouth.com


A scene from the Twilight Criterium. flagpole.com

ATHENS-CLARKE COUNTY

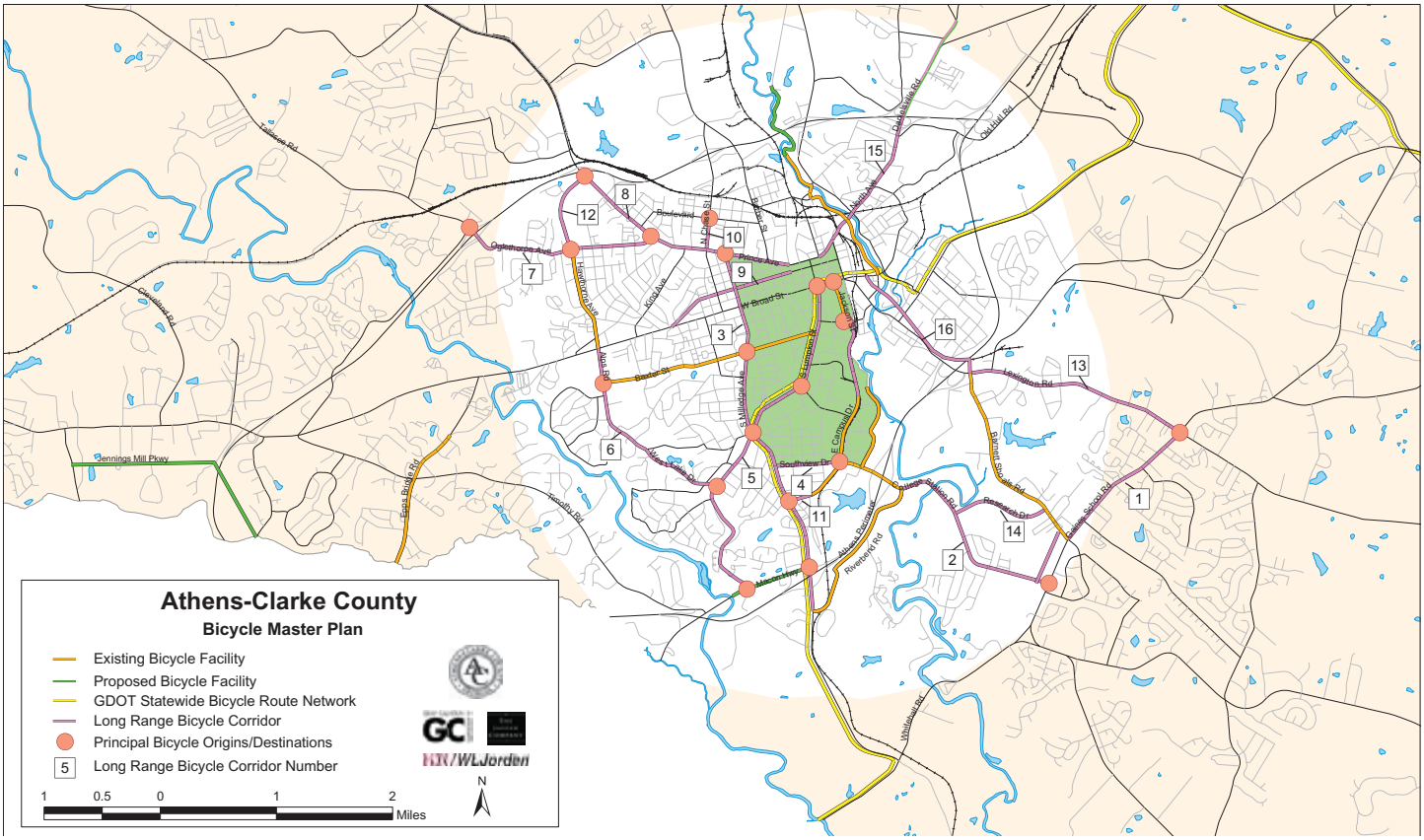
The University of Georgia and Athens historically have a strong connection to bicycling, from famous alumnus and resident Fred Birchmore, who rode his bike around the world in 1935, to the annual Twilight Criterium held in downtown Athens every spring. The community's reverence towards biking is reflected by the local government, who adopted a Bicycle Master Plan in 2001. These efforts have led to Athens-Clarke County receiving a bronze ranking as a Bike Friendly Community by the League of American Bicyclists in 2011, an award which acknowledges the county for its efforts in improving overall biking conditions.

The Athens-Clarke County Bicycle Master Plan encompasses an area within a 3 mile radius of College Avenue and Broad Street. All of the roads within that area were assessed for existing conditions and their potential for future bicycle facilities. Proposed bicycle corridors were chosen based on a survey of popular origins and destinations for bike trips. Improvements were listed for each route not meeting the required Bicycle Level of Service (BLOS) standard. In addition to roadway improvements, design and signage standards were outlined, as well as the projected cost for each improvement.

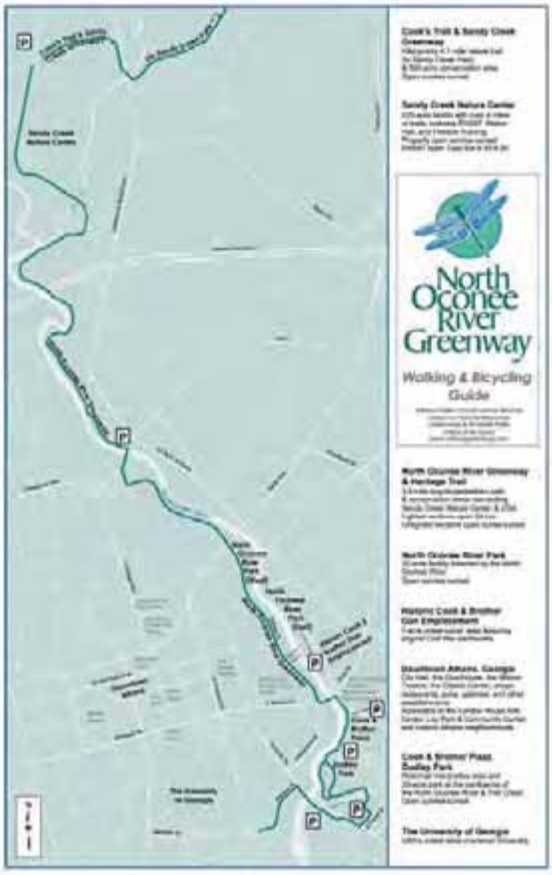
While the University of Georgia's bicycle facilities were not included in the scope of the project, the campus's existing and proposed bicycle facilities were recognized in order to promote connectivity between the two bicycle networks. The city of Athens has evolved around the University and some routes included in the Athens-Clarke County Master Plan are mutually beneficial to UGA due to the proximity of the two bicycle networks. These routes include Baxter Street, Lumpkin Street, and parts of East Campus Road. Due to the proximity of the two bicycle networks. It is important that the UGA Bicycle Study work in conjunction with to the county's Bicycle Master Plan to create a more continuous bike route system.

Members of the Athens community are stakeholders in UGA's campus development. Consequently, many non-UGA bicyclists use the campus as a thoroughfare to get to work, run errands, or for exercise due to the inter-connectivity of the two bicycle networks. The influences on cycling in Athens do not end at the campus boundary or city limits as many other local and regional user groups have an impact on cycling in our community. It has become important to anticipate the needs of all user groups in order to achieve the objectives presented in the Bicycle Master Plan.

Athens 2011 Bicycle Friendly Community Designation



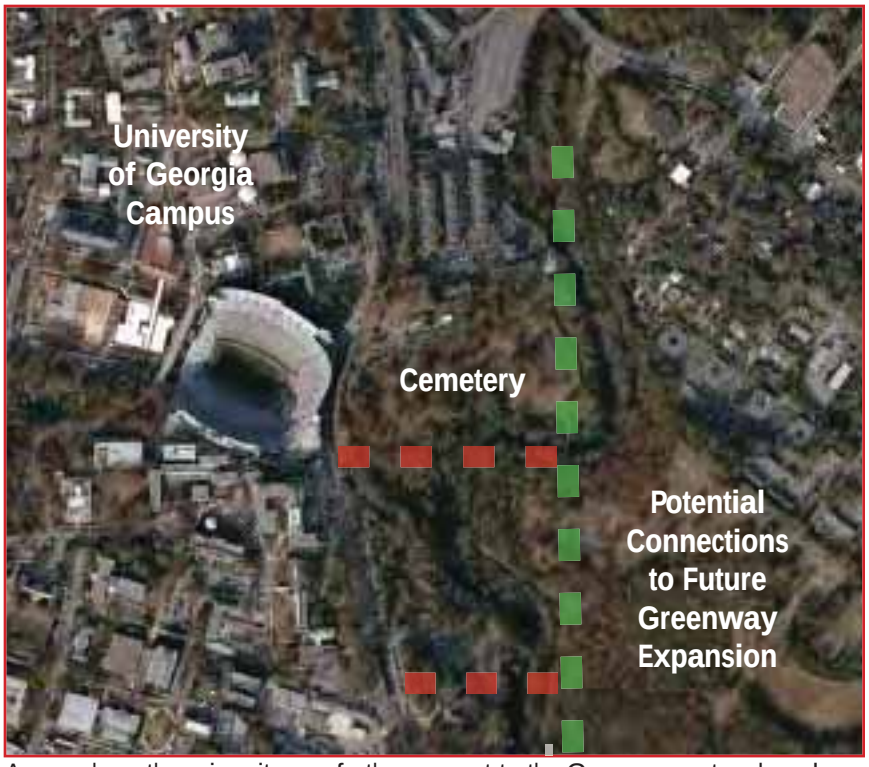
The Athens-Clarke County Bicycle Master Plan map. Note the University of Georgia's campus highlighted in green.
athensclarkecounty.com



North Oconee River Greenway & Greenway Network Plan

The Greenway is a linear park system that provides wildlife corridors, open space and a family friendly multi-use path for Athens-Clarke County residents and members of the university community. Currently, the North Oconee River Greenway provides 3.75 miles of concrete multi-use path that is designated for pedestrians and cyclists. Plans for expanding portions of the North Oconee Greenway have already been approved and some are being implemented adjacent to UGA properties. Ultimately the goal of the Greenway Network is to implement a similar multi-use pathway along the Middle Oconee River in order to create a unified Greenway system in Athens. This network is important not only for the recreational opportunities that it provides but also for its convenient bicycle network connections to and from the UGA campus. Areas where the university can further connect to the Greenway network and enhance bicycle commuting options include areas on UGA's East Campus Precinct, Hardin Properties, Horshoe Bend, South Milledge Properties and Whitehall Forest.

Aerial Photograph showing relationship between UGA campus and N. Oconee River Greenway. www.bing.com



Areas where the university can further connect to the Greenway network and enhance bicycle commuting options. www.bing.com

Corridors to UGA Campus

City and university efforts to improve bicycle facility quality ultimately are intended for the same user. Most UGA affiliates reside outside of the immediate campus area and are integrated within the Athens community. Because of this, those who choose to commute by bike use A-CC roads as part of their commute. Likewise many non-UGA community members will use UGA roads as part of their commuting routes as they go through or around campus. Both city and university involvement in the bicycle planning efforts are aimed at gathering information that will be used to make recommendations, assist leadership in the decision making process and eliminate detrimental gaps in bike connectivity for the entire community. The map on the following page shows campus in context to the immediate Athens area, highlighting primary corridors frequently traveled by cyclists to and from the University.

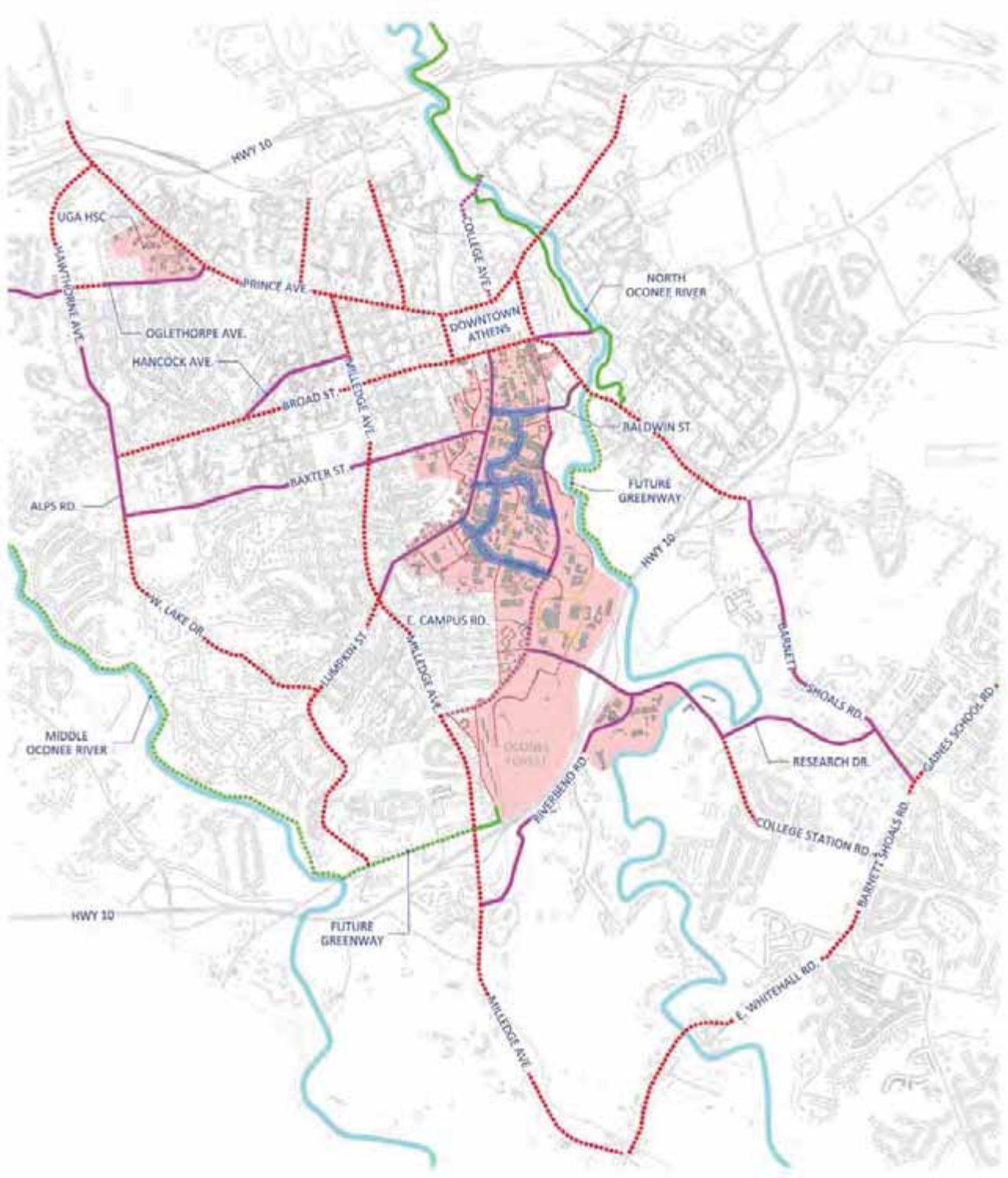
Prince Avenue Corridor: www.bing.com
4 travel lanes, 2 shared lanes

Milledge Avenue Corridor: www.bing.com
2 travel lanes, 1 center turning lane

Baxter Street Corridor: www.bing.com
2 travel lanes, 1 center turning lane, 2 bicycle lanes

College Station Road Corridor: www.bing.com
4 travel lanes, 2 shared lanes

Oconee Street Corridor: www.bing.com
4 travel lanes



COMMUNITY BICYCLE CONNECTIVITY MAP

SCALE: NTS

LEGEND:

- CONNECTORS WITH BIKE LANES
- CONNECTORS WITHOUT BIKE LANES
- ATHENS-CLARKE COUNTY GREENWAY (EXISTING)
- ATHENS-CLARKE COUNTY GREENWAY (PROPOSED)
- UNIVERSITY OF GEORGIA CAMPUS
- UNIVERSITY OF GEORGIA BIKE STUDY AREA

Bike Athens

Bike Athens is a non-profit organization that promotes alternative transportation choices with an emphasis on biking. They regularly hold cycling safety classes, group bike rides, and have a bicycle recycling program. They were designated as a silver Bicycle Friendly Business by the League of American Bicyclists and played a large role in securing Athens-Clarke County's bronze Bicycle Friendly Community designation. Bike Athens members include UGA students and faculty as well as other outside professionals.

Georgia Bikes

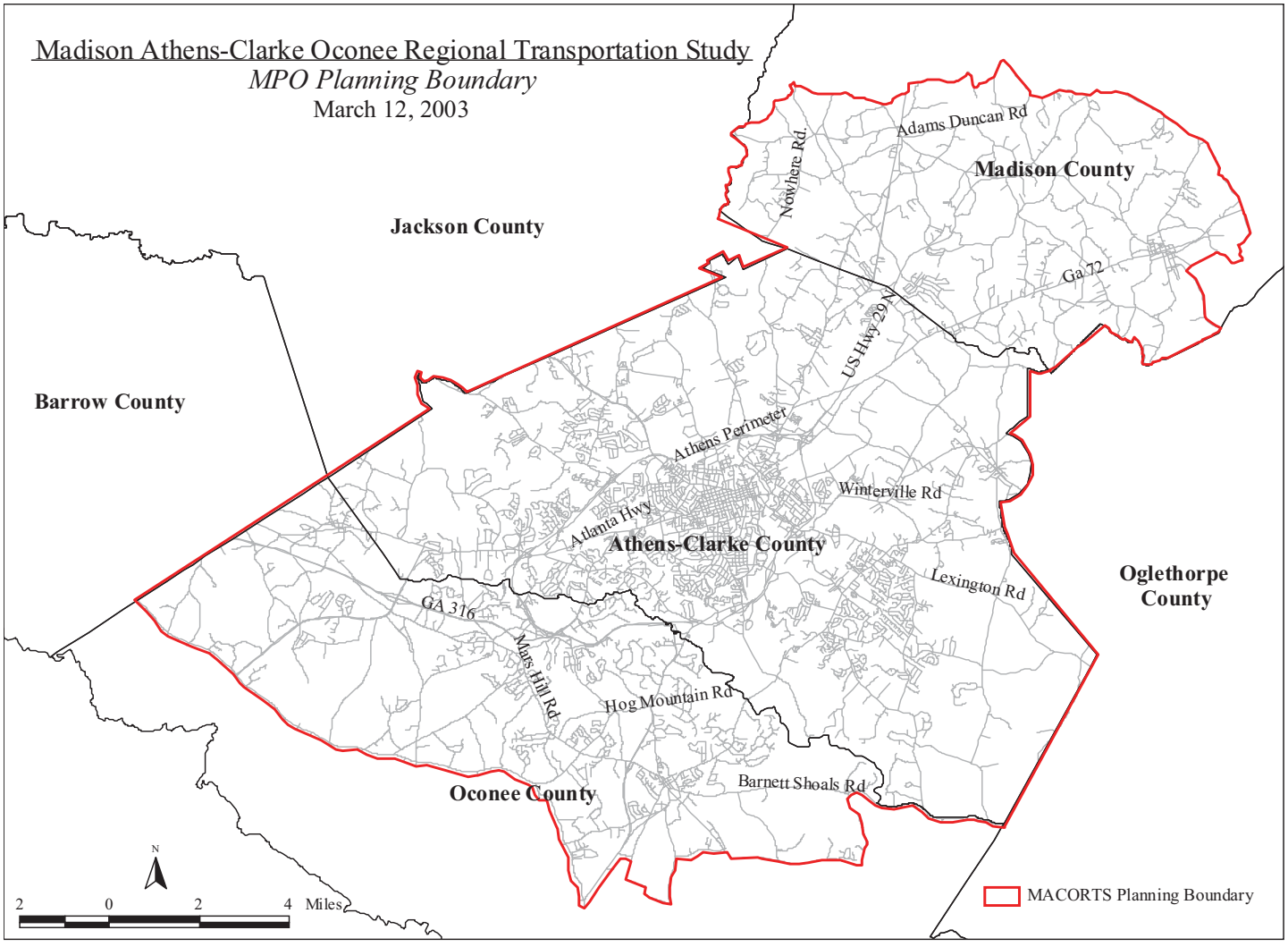
Georgia Bikes is a non-profit organization dedicated to improving bicycle conditions and promoting bicycling in Georgia. Through recent lobbying efforts, Georgia Bikes helped pass the "Better Bicycling Bill" which includes the 3 foot passing law, requiring motorists to give bicyclists a minimum of 3 feet while passing. As a statewide advocacy group, Georgia Bikes can provide extensive support for UGA's bicycle network.

Madison Athens-Clark Oconee Regional Transportation Study (MACORTS)

MACORTS is a metropolitan planning organization dedicated to transportation planning for the northern half of Oconee County, the southern portion of Madison County and all of Athens-Clarke County. The University of Georgia is mentioned in the MACORTS 2035 Transportation Plan Update, a broad transportation plan for the region that is required to be eligible for federal transportation funding. UGA representatives are on the two committees that make up the MACORTS. The MACORTS 2035 Transportation Plan Update is an important document guiding the region's future transportation network and, as a part of that network, UGA should recognize the Transportation Plan.

North East Georgia Regional Commission (NEGRC)

The NEGRC serves 12 counties in Northeast Georgia including Athens-Clarke County. They focus on regional issues concerning planning, workforce development, and aging. The Northeast Georgia Plan for Bicycling and Walking is a document that takes a broad look at bicycling and pedestrian facilities in the region and offers tools to support bike and pedestrian infrastructure.



www.negrc.org

Student riding in a bike lane on campus. KED, inc.

A map of primary (yellow dots) and secondary (green dots) bike routes from the 1998 Physical Master Plan. The dashed green line indicates a multi-use pathway. www.uga.edu

UNIVERSITY CONTEXT

The University of Georgia has recently incorporated bicycle facilities into its planning efforts. Presently, there are 4 documents at UGA that guide the use of bicycles on campus: the 1998 Physical Master Plan, the 2003 Conceptual Bike Master Plan, the 2008 Physical Master Plan Update and the 2009 Sustainability Report.

1998 Physical Master Plan

The 1998 Physical Master Plan is an extensive planning document used to guide the Universities future land and building use, circulation, open spaces, recreational facilities, and campus infrastructure. Although only a small section in the Master Plan was dedicated to bicycle circulation, the information is still pertinent. The relevant ideas of the 1998 Physical Master Plan as they relate to bicycling include:

- Relieve vehicular congestion in the campus core
- Move parking to the periphery of campus
- Connect downtown Athens and Lake Herrick via a north-south primary bike route
- Create secondary bike routes that run east-west along the primary bike route

A cyclist on Sanford Drive. KED, inc.

2003 Conceptual Bike Master Plan

The most significant document relating to bicycle use on campus is the 2003 Conceptual Bicycle Master Plan. This document details existing and proposed bicycle routes on campus and was developed by the Office of University Architects. Although it is conceptual by design it charts the course for future improvements and should by all means be incorporated into future planning efforts. The major objectives include:

- Facilitate implementation of UGA Physical Master Plan guiding principles
- Further integrate bike facilities into the UGA transportation system
- Promote safe, efficient and convenient campus travel options
- Encourage connection with the natural and social environment
- Improve local environmental quality

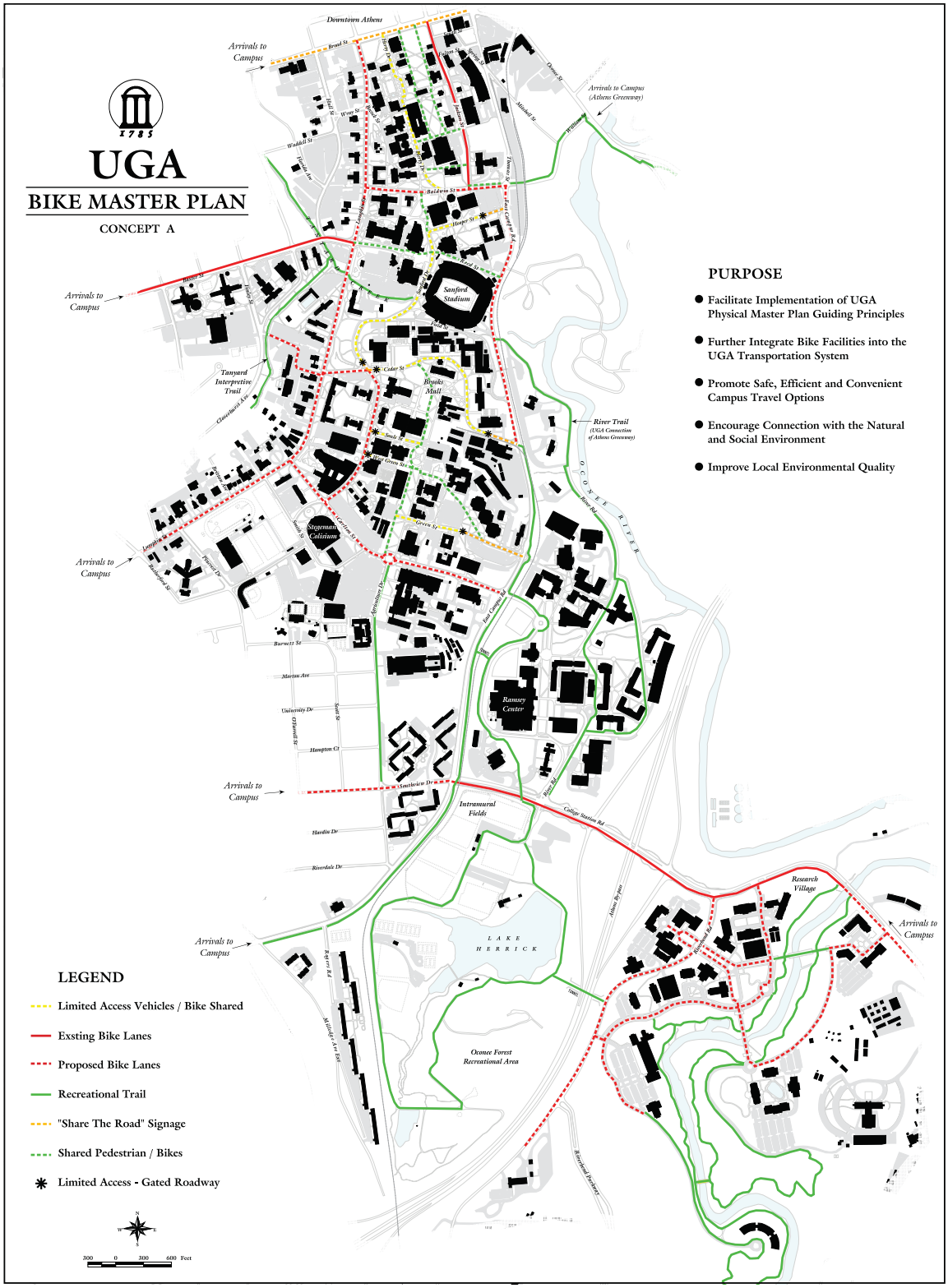
Student using bike lanes on Carlton Street. KED, inc.

2008 Physical Master Plan Update

An update to the 1998 Physical Master Plan was made in 2008. Though no new information in regards to bicycling was added, the guiding principles continue to reinforce the need for developing a comprehensive bicycle network on campus. The principles remain consistent with the 1998 Master Plan, and they include:

- Create an optimal student environment
- Develop a connected campus
- Define and provide for current and future facility needs
- Develop solutions to traffic, parking and infrastructure
- Protect and enhance natural resources

Bicyclist and motorist comfortably sharing the road on E. Campus. KED, inc.



A map of the 2003 Conceptual Bike Master Plan. To date, about 50% of the proposed routes have been completed. www.uga.edu

2009 Sustainability Report

The 2009 Sustainability Report was initiated by President Michael F. Adams to assess and synthesize sustainability efforts on campus. Bicycling was identified as a sustainable mode of transportation on campus, and it was noted that ridership was on the rise. The report called for the expansion of UGA's bicycle network, as well as an increase in creative bicycle promotion and education on campus.

2020 Strategic Plan: Strategic Direction VII

The acknowledgement of campus growth and, more importantly how to grow sustainably, sparked the Strategic Direction VII. Included in this plan are strategies aimed at reducing the University's carbon footprint and, specifically, reducing automobile usage by 20%. Subsequently, strategies for increasing alternate transportation choices have become the leading focus for achieving a decrease in the presence of vehicles on campus.

Student Plans

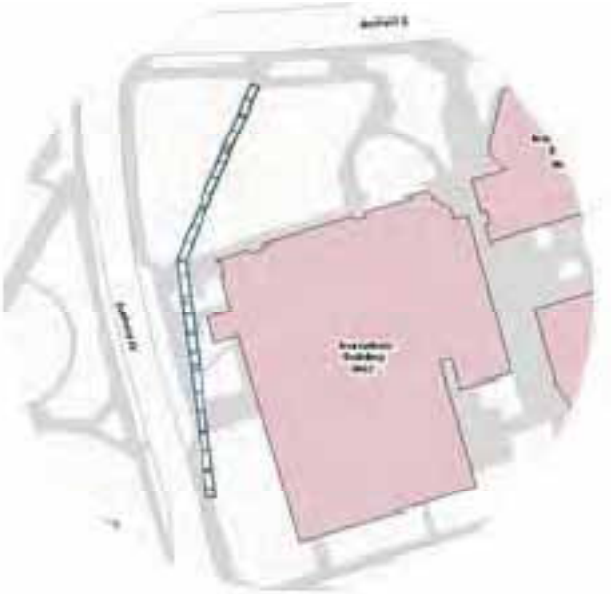
The need to address the University of Georgia's bicycle network has also been recognized by students. Student updates to the 2003 Conceptual Bike Master Plan were made in 2009 and 2011, with each effort plan building upon the principles set forth in previous plans.

Srikanth Yamala, a graduate student, provided an update to the Conceptual Bike Master Plan in 2009 by utilizing an analytical approach to classify road conditions as suited for bicyclists. This approach, known as the bicycle level of service (BLOS) analysis, utilizes roadway data to evaluate the perceived level of comfort a bicyclist has on a selected route. Suggested improvements were then made based on the evaluations, which included the addition of bike lanes and signage for shared bike lanes.

In 2011, a group of UGA Engineering students proposed a bicycle greenway system to connect different parts of campus in response to the congested campus roadways that were unsuited for bicycle travel. A key feature in their plan was a bicycle bridge that would direct bicyclists through a highly congested intersection on campus. In addition to physical infrastructure improvements, this student work also suggested policies and programs to support bicycling on campus. These suggestions included reducing through-traffic on university grounds, pushing parking to the exterior of campus, and bicycle programs aimed at encouraging ridership at UGA.

UGA Green Fee

In Fall 2010, UGA students began paying a self-imposed, $3.00 fee per semester called the "Green Fee". This fee covers the necessary funds needed to advance sustainability initiatives at UGA, including this bicycle facilities study.

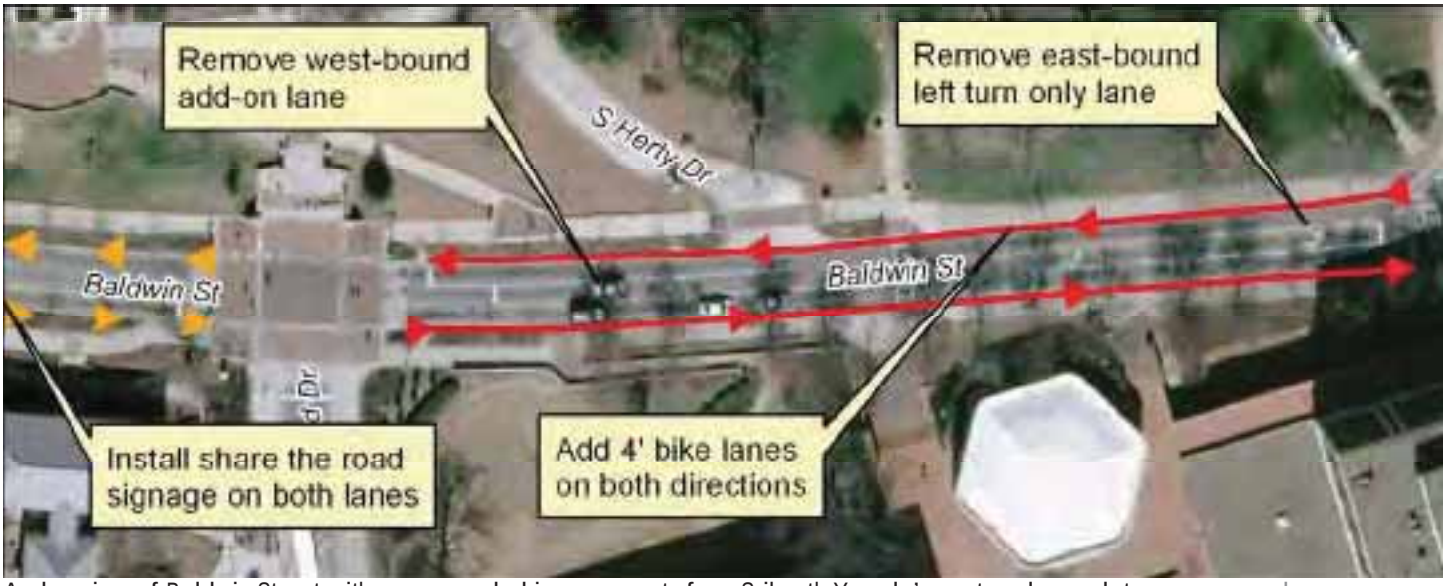


Plan view of the proposed bicycle bridge, linking Baldwin to Sanford, taken from the 2011 UGA Engineering Bicycle Plan. www.uga.edu

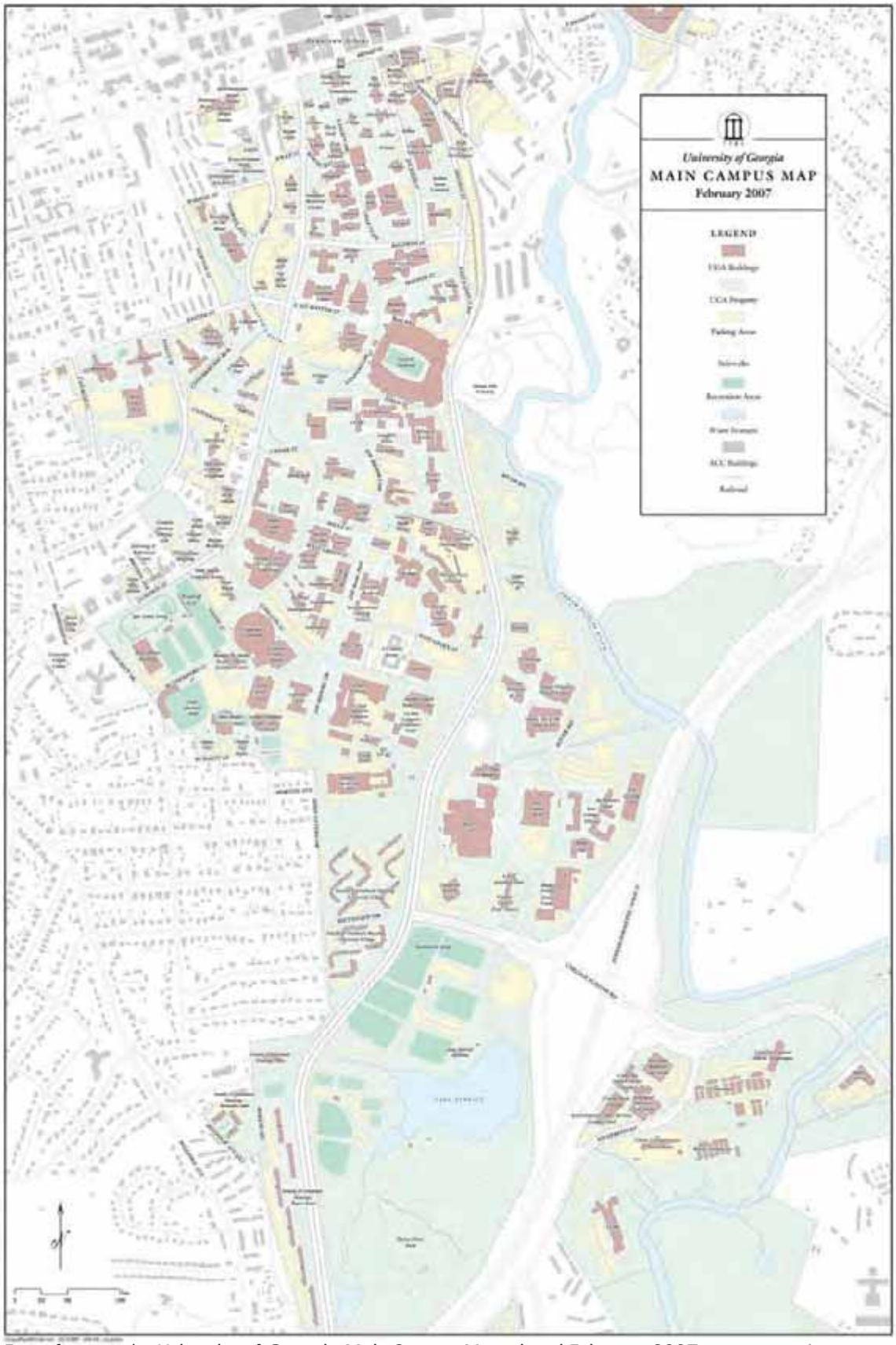
Commuter riding down Herty Drive. KED, inc.

University Context Summary

The aforementioned documents provide an excellent foundation for bicycle planning on campus. However, the plans do not fully address some of the key elements of bicycle planning needed to promote the widespread use of bicycles as an option on campus. Each update to the bicycle plan has brought to light valid bicycle planning issues that need to be addressed. While most of the plans reference bicycle infrastructure, many plans overlooked the encouragement, education, enforcement, and evaluation components of bicycle planning. However, a comprehensive Bicycle Master Plan has yet to be implemented. Both UGA and the city of Athens have grown considerably since the issue of bicycle planning was examined in 2003. Conditions since then have increased attention to the lack of bicycle guidelines and have resulted in an immediate need to re-evaluate and recommit to effective bicycle program planning and implementation



A plan view of Baldwin Street with recommended improvements from Srikanth Yamala's master plan update. www.uga.edu



For reference, the University of Georgia Main Campus Map, dated February 2007. www.uga.edu

SECTION 1.3
COMMUNITY INPUT

An important aspect of the UGA Bicycle Study was an assessment of the user and his or her needs in relation to bicycle facilities. These evaluations were achieved through student and faculty questionnaires, community meetings and other community engagement events. Feedback from this research was used to identify critical bicycle routes that need improvement in addition to what type of facilities and programs are preferred.

COMMUNITY MEETINGS & EVENTS

Several meetings and special events occurred during the analysis portion of this report, with the specific intent of engaging both students and faculty cyclists. These events provided an opportunity to field ideas and recommendations as well as receive direct feedback from the intended user groups.

With assistance from Bike Athens, a Group Ride was conducted on campus to educate students and faculty on existing campus bicycle routes as well as areas in need of improvement. Two community information meetings were subsequently held with an emphasis on presenting proposed solutions to selected areas on campus in order to receive initial user input. This input was then used to form many of the proposed improvements in this report.

The university was also host to the annual Georgia Bike Summit, which is in essence a gathering of policy makers, business owners, and a variety of professionals who advocate the economic and environmental value that bicycling can offer to communities and campuses alike. The bicycle facilities update was presented as part of the summit for review and input from attendees.

The Office of Sustainability also organized Sustainability Day and a free bike service clinic associated with the UGA Parking Service's SafeDrive Car Clinic. Both of these events served as opportunities to speak to students and faculty directly about bicycle infrastructure on campus and receive their immediate feedback.

STUDENT/FACULTY SURVEY

Additionally a questionnaire was developed to collect information from cyclists to gauge what user groups desire in campus bicycling facilities. The questionnaire was developed specifically for this study and was distributed on campus via email and to user groups at meetings. Questions include

- Trip data
  - How far do people travel to get to campus?
  - What routes do they travel?
- Facility information
  - What amenities are desired?
  - What type of infrastructure is needed?
- Open ended feedback

Survey Results

The following page shows the survey that was developed and distributed to community cyclists. Currently 260 individuals have taken the survey and general feedback shows that:

- **63% of all respondents commute to campus by bicycle**
- **54% of respondents were students while the remaining respondents were university faculty and staff**
- **72% of student respondents commute to campus by bicycle**
- **A majority of student respondents live within 2 miles of campus; 23% travel less than 1 mile by bicycle to campus and 38% travel 1-2 miles by bicycle to campus**
- **52% of faculty/staff respondents commute to campus by bicycle**
- **53% of all respondents choose not to ride to campus because of automobile traffic**
- **80% of all respondents would ride bicycles to campus more if there were more bike lanes**
- **30% of all respondents would like to see more bicycle racks & storage facilities as well as end-of-trip facilities**
- **30% are unaware or negligent when it comes to basic bicycle traffic laws and may benefit from safety outreach and education programs.**

Survey

The University of Georgia is committed to providing a safe student environment, as well as a well connected campus. With that in mind, UGA is conducting a bicycle study in order to provide new and improved bicycle facilities on campus. By completing this survey you will provide valuable insight on existing bicycle use, in addition to identifying the future needs of bicyclists on campus and in Athens.

1) I am:
(Select one)
- ☐ A UGA Student
- ☐ A UGA Faculty
- ☐ A UGA Staff
- ☐ Not affiliated with UGA

2) I commute to campus by:
(Select all that apply)
- ☐ Bicycle
- ☐ Motorcycle/Scooter
- ☐ Car
- ☐ UGA Bus
- ☐ Athens Bus
- ☐ Walking

3) My bike commute to campus is:
(Select one)
- ☐ Less than 1 mile
- ☐ 1-2 miles
- ☐ 2-3 miles
- ☐ 3-4 miles
- ☐ 4-5 miles
- ☐ 5 or more miles

4) I do not commute to campus by bike because of:
(Select all that apply)
- ☐ Lack of Bicycle Parking, Storage & Showers
- ☐ Terrain & Topography
- ☐ Weather
- ☐ Difficult Intersections
- ☐ Automobile Traffic
- ☐ Other (Please specify):

5) I would ride on campus more, if UGA:
(Select all that apply)
- ☐ Had more bike lanes
- ☐ Had more bicycle racks & storage facilities
- ☐ Had showers and changing room facilities
- ☐ Had safety outreach and education programs
- ☐ Had Bike sharing programs on campus
- ☐ Had bike maintenance facilities
- ☐ Enforced laws applying to motorists
- ☐ Enforced laws applying to bicyclists
- ☐ Enforced laws applying to pedestrians
- ☐ Other (Please specify):

6) I use the following safety equipment when commuting by bike:
(Select all that apply)
- ☐ Helmet
- ☐ Front reflective or flashing lights
- ☐ Rear reflective or flashing lights
- ☐ Reflective vest or apparel

7) At a stop light/sign on a road without bike lanes I:
(Select one)
- ☐ Wait behind the vehicle in front of me
- ☐ Advance to the front of stopped traffic

8) I ride my bike on:
(Select all that apply)
- ☐ Sidewalks
- ☐ Multi-use paths (DW Brooks Mall, North Campus)
- ☐ Streets without bike lanes
- ☐ Streets with bike lanes

9) In my opinion the 3 most dangerous roads on campus are:

10) In my opinion, the 3 most dangerous intersections on campus are:

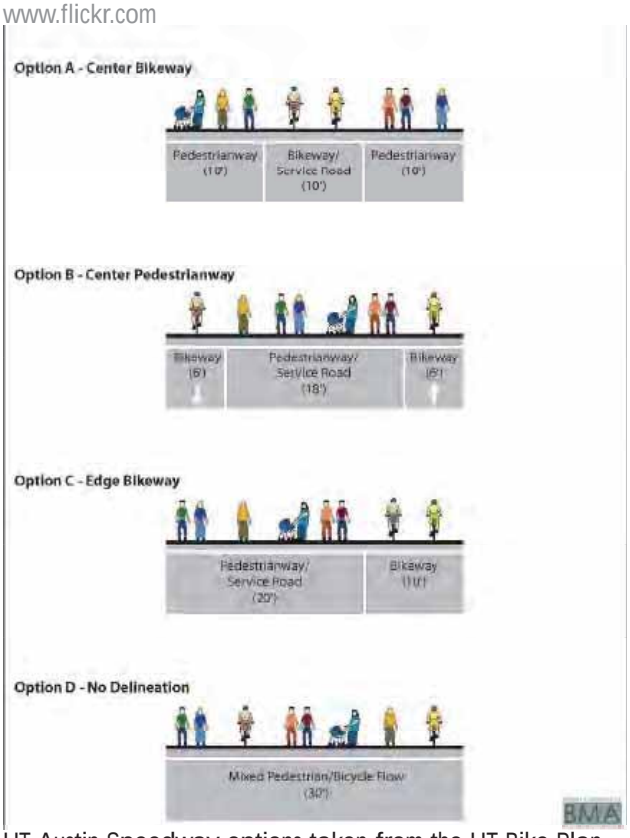
I feel safe riding my bike on campus:
(Select one)
- ☐ Always
- ☐ Sometimes
- ☐ Never

*On the reverse side of this survey please highlight the route(s) you take on campus.

Thanks for completing this bike study survey!

SECTION 1.4
CASE STUDIES

UT-Austin group ride.
www.flickr.com



UT-Austin Speedway options taken from the UT Bike Plan.
www.utexas.edu

A case study of bicycle planning efforts in four universities across the southeast United States was conducted to see how these institutions were promoting bicycling. The schools included in the case study were the University of Virginia, University of Texas-Austin, Emory University, and Georgia Tech. These Universities were chosen based on the completeness of their planning efforts, as well as having a comparable student body size, climate, and topography to UGA. These case studies' major points of interest were standards and guidelines, facilities, and programs.

STANDARDS & GUIDELINES

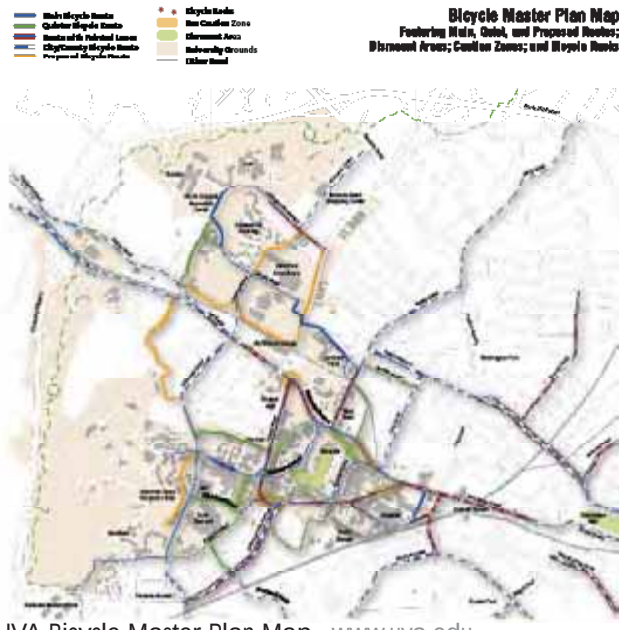
Of the four schools examined in this case study only two, the University of Virginia and the University of Texas at Austin, had established bicycle standards and guidelines in the form of a bicycle plan. Some of the guidelines found in these bicycle plans included bikeway standards, bike storage recommendations, and signage standards.

UT - Austin

The University of Texas at Austin has an extensive bicycle master plan to guide bicycle use on campus. The University utilizes a standard for analyzing roadway conditions as suited for bicyclists, known as the Bicycle Level of Service (BLOS) Analysis. The BLOS analysis, which will be discussed at length in a later section, is based upon speed limits, traffic volume, and road width, to name some of the primary factors. Using the data generated from the BLOS analysis, a set of recommendations for improvement were given for each road. The UT-Austin bicycle master plan also offers design standards for the large pedestrian mall on campus known as The Speedway. Multiple design scenarios were presented separating pedestrians and bicyclists, but ultimately an option with no delineation between pedestrians and bicyclists was recommended. Custom wayfinding signage standards were also included in the bicycle master plan to direct students through campus or to downtown.

UVA

The University of Virginia's standards and guidelines are clearly outlined in their bike master plan. UVA utilizes a standard for classifying bicycle routes on campus as either "Main Routes" or "Quiet Routes", which are based on a rider's previous knowledge of the road conditions. The Main Routes are characterized by large traffic volumes, while the Quiet Routes are usually side streets with low traffic volume. This method of classification is based on the Transport for London Bicycle Map. The university also has required bicycle dismount zones to be located in dense pedestrian areas. Custom signage for these dismount zones is located accordingly on campus.



UVA Bicycle Master Plan Map. www.uva.edu

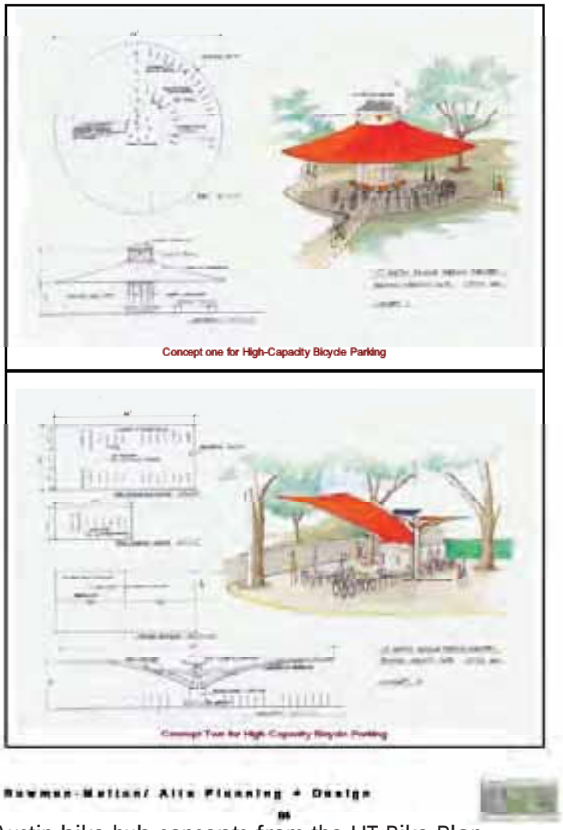
Emory University

Emory University was developing a bicycle master plan at the time of this case study. Despite Emory's absence of formally adopted guidelines, they are still recognized by the League of American Bicyclists as a bronze level Bicycle Friendly University, an award given to universities for their efforts in improving bicycle conditions around campus. This achievement is due in part to the Bike Emory program, which is responsible for promoting bicycle use at the university and includes an extensive marketing campaign to increase ridership as well as a bike share program.

Georgia Tech

Georgia Tech was also developing a bicycle master plan at the time of this case study. However, the university did form the Bicycle Infrastructures Improvement Committee (BIIC) to create bicycle guidelines for the university, as well as to promote the use of bicycles on campus. The committee, comprised of students, faculty, and staff from the University, is responsible for securing bicycle lanes on campus, as well as supplemental end-of-trip facilities. In addition to bicycle infrastructure, the Bike Georgia Tech website is an excellent forum for students and faculty to voice their opinions as the BIIC continues to work on bicycle standards and guidelines for the university.

UT-Austin student utilizing a bike locker. www.utexas.edu



UT-Austin bike hub concepts from the UT Bike Plan. www.utexas.edu

FACILITIES

All four schools included in this case study recognized the importance of "end-of-trip" facilities. These include high capacity covered bike parking, bicycle repair stations, and shower/locker facilities.

UT - Austin

UT-Austin offers two types of bicycle parking, short term and long term. Short term bicycle parking facilities are typically uncovered and have a high parking turnover rate. Long term parking is typically for students and faculty who stay on campus all day, is more secure than short term parking, and is protected from the weather. High capacity bike parking is proposed in strategic locations throughout campus. The UT Bike Hub is a proposed high capacity bike parking station that offers amenities such as a bicycle attendants, rentals, repair stations, shower and locker facilities, as well as campus bicycle maps and information.

UVA

Proposed bicycle facilities at UVA include high capacity bike corrals. These corrals may be open or covered from the elements and have the ability to provide maintenance services. The possibility of long term bike lockers was considered, but has not yet been implemented. However converting first floor parking garage spaces to covered bike storage was proposed as an alternative to bike lockers, and the Arts Ground Garage will be the first parking deck on campus to have a separate entrance for bicycles and a designated bike parking area. In addition to bike parking, UVA's bike master plan recommends that all new and renovated buildings include locker and shower facilities. Recently, the university added a D.I.Y. bike repair stand on campus complete with bike tools and pump. If the stand is well received by cyclists, the university may introduce more on campus.

Emory University

Emory University provides shower and locker facilities on campus. Bike parking can also be found throughout campus, within a short walking distance from every building. The Bike Emory website has a campus bike map that identifies all bike racks and shower and locker facility locations on university grounds.

Georgia Tech

Bike racks are located around the Georgia Tech campus, and shower facilities can be found in a few buildings, including the J.S. Coon Building and the Campus Recreation Center. Georgia Tech's Bicycle Infrastructure Improvement Committee (BIIC) has recently secured approximately 60 new bike parking spaces and is currently developing covered parking on campus. The BIIC is also looking into increasing shower and locker facilities on campus based on student demand.

PROGRAMS

All four schools included in this case study have basic bicycle programs. These programs range from bicycle registration, and student clubs, to safety classes and bicycle incentives.

UT-Austin

UT-Austin created a bicycle program coordinator position in 2006 to oversee the schools bike program. Some of the programs offered at UT include a bike safety orientation workshop and alternative transportation events such as "Bike-to-Work" Day and bike safety handbooks. Additional incentive based programs that offer students and faculty discount gym memberships or reduced prices for bike gear are recommended in the UT-Austin bike master plan.

UVA

Some of the bike programs UVA offers include basic bike safety courses and bicycle registration, as a passive way to prevent bike theft. Incentives such as meal vouchers, class credit, or bicycle accessories were proposed to those who opted to take a bicycle safety course. One interesting bicycle incentive program offered at UVA is the Nuride program. Students and faculty who take alternative means of transportation (biking, walking, carpool, transit, etc.) can record their trip mileage to earn points. Those points can then be redeemed for rewards from participating local businesses.

D.I.Y. bike repair station on UVA campus.
www.thebicyclestory.com

A viaCycle "smart" bike on the Georgia Tech Campus.
www.gt.viacycle.com

Current viaCycle locations on the Georgia Tech Campus.
www.gt.viacycle.com

Emory Bike Share bike by Fuji.
www.sustainability.emory.edu

Emory University

Emory University offers many creative bike programs to students and faculty. Through a partnership with Fuji Bikes and a local bike shop, Bicycle South, the university is able to provide students and faculty with discounted bikes and gear. The local bike shop also provides on-campus maintenance several times each week at a mobile repair center outside of the Dobbs University Center. The university also offers a bike share program with rental locations throughout campus. All of these programs are overseen by the Director of Bike Emory, and they can be found on the bike.emory.edu website, where cyclists can also find bike maps and safety information.

Georgia Tech

Georgia Tech teamed up with the Atlanta Bicycle Coalition to offer students and community members fair priced used bikes and discounts on repairs. The program, StarterBikes, is located in the lower parking deck of the Campus Recreation Center, and is run by student volunteers. The Outdoor Recreation at Georgia Tech program has a student run mountain biking organization that offers instruction and biking trips. Georgia Tech will also participate in a bike sharing program started by a group of Georgia Tech graduates, called viaCycle. The company offers a "Smart Bike" that can be tracked and monitored throughout the city, and they plan to expand its bike stations to midtown in the near future. Information on these programs and others can be found on the bike.gatech.edu website.

Emory Sustainability Wayfinding Map. www.sustainability.emory.edu

RECOMMENDATIONS BASED ON CASE STUDY REVIEW

- **Form a Bicycle Committee on campus, made up of students, faculty and staff in order to guide bicycle use and bicycle facility development on campus.**

- **Create a Bicycle Master Plan, a document that will help promote and regulate bike use on campus.**

- **Provide Bicycling Amenities, such as bike specific parking locations, showers, lockers, and repair services.**

- **Educate students, faculty and staff on bicycle safety.**

- **Establish a bike sharing program and other incentives to increase bicycle use on campus.**

- **Develop bike program branding (such as BIKE UGA) to increase general bicycle awareness on campus.**

- **Create a University Bike Website as a way to promote biking and display all existing and proposed bicycling facilities and programs on campus.**

- **Create a Bicycle Program Coordinator/Director, Full-time Staff Position.**

I thought of that while riding my bicycle.
-Albert Einstein *on the Theory of Relativity*

SECTION 2: BICYCLE FACILITY UPDATE

SECTION 2.1
EXISTING FACILITIES REVIEW

Cyclist using bike lane on Lumpkin Street. KED, inc.

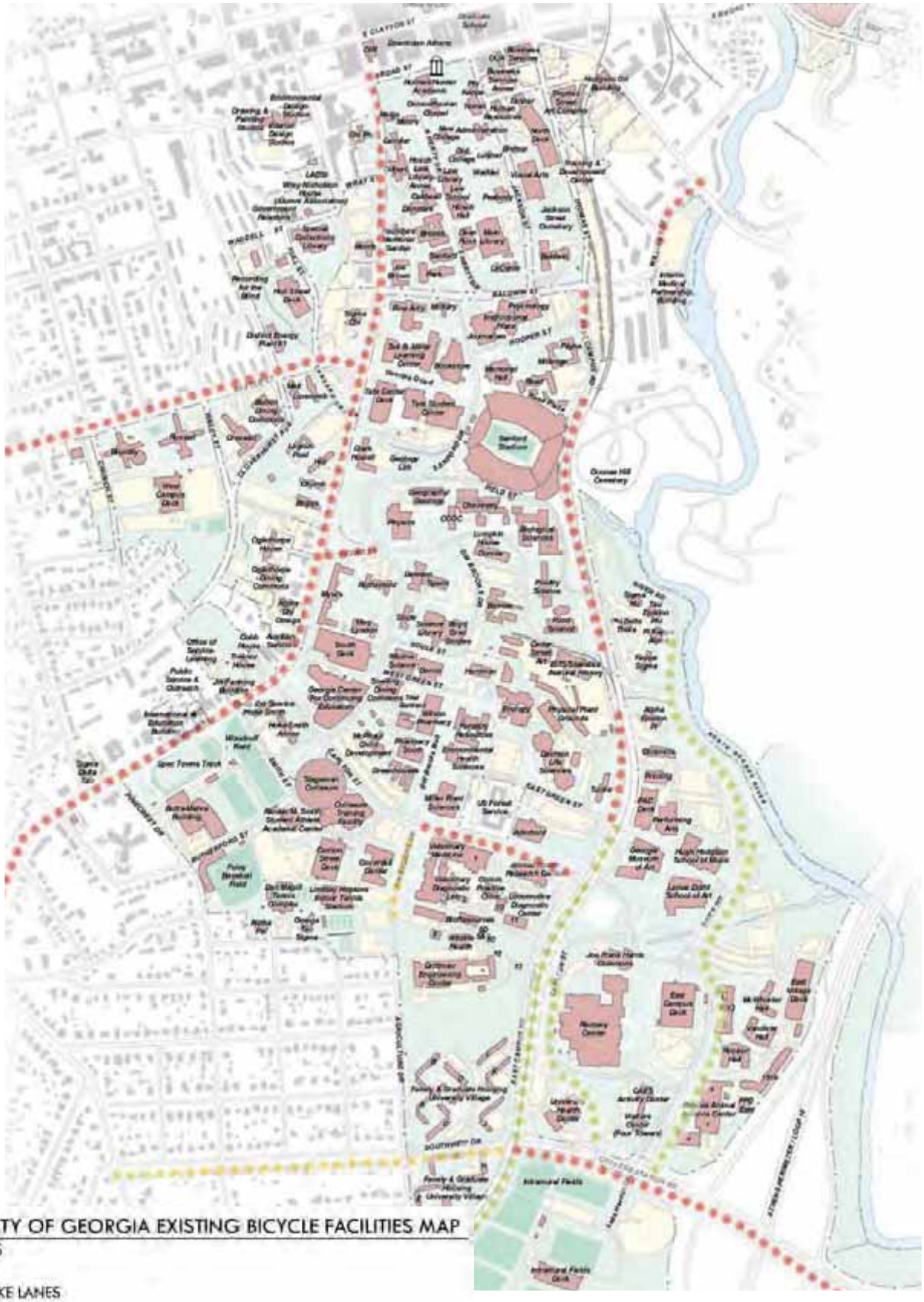
Bike lanes on East Campus Road. KED, inc.

Bike lanes on Jackson Street. KED, inc.

Currently, a majority of the University of Georgia's roads operate as implied shared vehicle and bicycle lanes. In fact most bicycle travel in the United States occurs on shared lanes, and the American Association of State Highway and Transportation Officials (AASHTO) recommends that a shared roadway be a minimum of twelve feet wide to accommodate bicyclists and give motorists adequate room to pass. Since the 2003 Conceptual Bike Master Plan, approximately 50% of the proposed striped bike lanes on campus have been implemented. The major routes that have been renovated with striped bike lanes include Baxter Street, from Milledge Avenue to Lumpkin Street; Lumpkin Street, from Downtown Athens to the Five Points District; Jackson Street, from Broad Street to Baldwin Street; and portions of East Campus Road, from Thomas Street to Carlton Street. Shorter bike lane segments have also been installed on Williams Street, Cedar Street, and Carlton Street. The remaining roadways on campus remain as implied shared use. The majority of these roads run through the interior of campus.

In order to create a complete bike facility network on campus, Baldwin Street, Cedar Street, Carlton Street and Sanford Drive will be the primary focus of this study. Further study is required to address safety and wayfinding for vehicular, bicycle and pedestrian improvements in UGA's East Campus Precinct.

Shared lane on East Campus Road. KED, inc.



UNIVERSITY OF GEORGIA EXISTING BICYCLE FACILITIES MAP

SCALE: NTS

LEGEND:

- EXISTING BIKE LANES
- SHARED ROADWAYS
- SHARED PATHWAYS

Entrance to bridge on Sanford Drive. KED, inc.


Cyclist riding on Baldwin Street. KED, inc.

ROADWAY INVENTORY

As mentioned in the 1998 UGA Physical Master Plan, efficient bicycle circulation on campus should consist of primary and secondary bicycle routes. Primary routes are currently established on Lumpkin Street and East Campus Road and orient themselves North-South. These routes ultimately create a continuous link for bicyclists from Downtown Athens to Lake Herrick, the terminal hub of South Campus. Secondary routes are oriented East-West and bring cyclists to and from the perimeter and center of campus. These primary and secondary routes ultimately creates a grid of bicycle routes. For the purposes of the bicycle facility update, roadways that complete the interior bicycle network grid were selected for review. These roadways were also chosen based upon feedback received from stakeholder input. The following streets provide the necessary links required to complete the existing bicycle network on campus:

- Sanford Drive
- Baldwin Street
- Cedar Street
- Carlton Street

Sanford Drive

As a primary route on campus, Sanford Drive bisects campus from Baldwin Street to Stegeman Coliseum. For the purposes of this study, recommendations are made for this road from Baldwin Street to Carlton Street. The existing lane and sidewalk widths vary, and it is heavily trafficked by both student and university vehicles. Because Sanford Drive is consistently a two lane road, it is heavily congested during class and business hours. The section from Baldwin Street to Field Street is limited to campus vehicle access, but the remainder of the roadway is open to all traffic use. As the longest roadway on campus, Sanford Street shares intersections with all secondary routes.

Baldwin Street

Baldwin Street is the northernmost secondary route on campus that ultimately serves as a boundary between Historic North Campus and South Cam-

pus. The road connects Lumpkin Street and Oconee Street, but the portion reviewed in this study covers the section from East Campus Road to Lumpkin Street. As the northern terminus for Sanford Drive, the tabled intersection becomes a major pedestrian crossing point into North Campus. Jackson Street also terminates into Baldwin Street acting as a collector of both North Campus and city traffic. As a city-owned road, Baldwin Street serves as a connector for motorists coming from East Campus Road and East Athens. Subsequently this is an extremely congested route.

Cedar Street

As a central secondary route, Cedar Street links East Campus Road to Lumpkin Street as well as the student housing beyond the Lumpkin Street/Cedar Street intersection. As a result, the majority of vehicular traffic observed belongs to student vehicles using the street as a cut-through route to and from the dormitories and private housing areas within the Lumpkin Street corridor. During peak hours the streetscape is heavily congested with student vehicles, service vehicles, UGA Transit, motorcycles, scooters, bicyclists and pedestrians. In addition to challenging sight lines along the curving roadway, numerous student vehicles can be observed dropping off and picking up passengers at the Lumpkin House/Chemistry Building segment of Cedar Street, which further exacerbates the traffic congestion situation.

Cyclist and vehicle sharing the road on Cedar St. KED, inc.

Carlton Street

Carlton Street is the southernmost secondary route reviewed in the facility update. This route connects the primary routes of East Campus Road and Lumpkin Street. It also serves as a major connector to East Campus Village and the Performing and Visual Arts Center. This route is also heavily trafficked and utilized during school hours, as well as during events at Stegeman Coliseum and the Georgia Center. The route is also a gateway into D.W. Brooks Mall, which serves as a primary multi-use path on campus.

Beginning of Eastbound bike lane on Carlton St. KED, inc.

ROUTE ANALYSIS

There are several methods that can be utilized in analyzing routes, which include general intuition, user group feedback, observation of travel demand and use, and observation of comfort and suitability. As analysis standards, these can ensure proper use of resources by avoiding costly infrastructure improvements on routes that do not require enhancement. Route analysis can also assist in phasing projected improvements through a priority of completion, which also ensures efficient use of resources. The following methods were used to analyze the main roads of the facility study.

User Input

This intuitive method of analysis relies entirely on a user group's input. While less time consuming than other methods, the results are not always precise and can vary in relevance and objectivity. Therefore, in order to gain optimal results, a wide variety of users should be consulted. Whether the assessment is completed through a visual survey, questionnaire, or design charrette, user input can be an effectively grounded method for evaluating road conditions by providing information directly from those who will be using the bicycle network.

Bicycle Level of Service (BLOS) Analysis

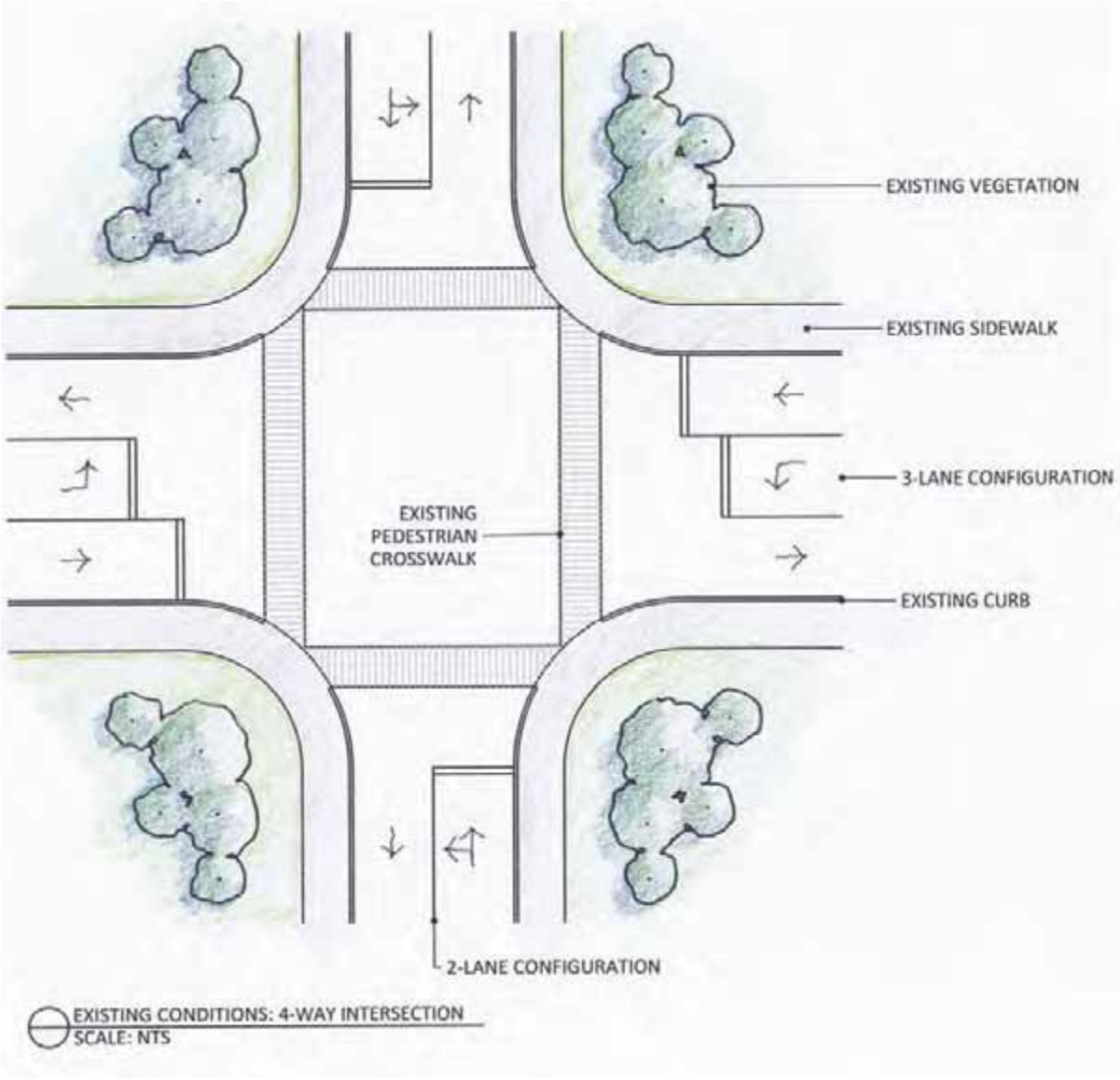
The Bicycle Level of Service (BLOS) method of analysis is an analytical approach to measuring bicyclist comfort levels on any given roadway, taking into account traffic volume, road width, and speed limit. The BLOS Analysis was developed by transportation engineer and planner, Bruce W. Landis and is recognized as an international standard throughout North America by state transportation departments. The BLOS analysis produces a numerical value which correlates to a letter grade of "A" through "F" which holds the same merit value as used in most educational systems in the United States. If adopted as a standard road grading system, it can be used as a reference and indicator for improvements. For example, a roadway with a "B" or higher would have the least priority for improvements, while a roadway with a "C" or lower would have a higher priority for improvements. In order to improve bicyclists' comfort levels on any given road, measures such as reducing speed limits or traffic volumes and including bike lane striping would then increase the letter grade of the road. Over time, as the bicycle network improves, the BLOS standard could be raised to reflect a higher quality in the campus bicycling conditions.

Existing Conditions													
Roadway Name	From (N or W)	To (S or E)	# Thru Lanes	Posted Speed	Width of Pavement			Bike Lane (yes or no)	Occupied Off-Street Parking	Pavement Condition	Traffic Volume	BLOS	
					W1	W2	Wpg					Score	Grade
Sanford Dr.	Baldwin St.	Bridge	2	30	17	N/A	N/A	No	N/A	4	7000	2.92	C
Sanford Dr.	Bridge	Field St.	2	30	13.5	N/A	N/A	No	N/A	4	7000	2.45	C-
Sanford Dr.	Field St.	Cedar St.	2	30	14	N/A	20	No	25%	4	7000	2.7	B
Sanford Dr.	Cedar St.	Soule St.	2	30	14	N/A	16	No	25%	4	7000	2.7	B
Sanford Dr.	Soule St.	Carlton St.	2	30	13.5	N/A	N/A	No	N/A	4	7000	2.45	C
Baldwin St.	Lumpkin St.	E. Campus Rd.	3	30	10	N/A	N/A	No	N/A	4	8120*	3.56	D
Cedar St.	Sanford Dr.	E. Campus Rd.	2	30	12'	N/A	N/A	No	10%	4	7000*	3.64	D
Carlton St.	Lumpkin St.	Sanford Dr.	1	30	11		N/A	No	N/A	4	9020*	3.26	C-
Carlton St.	Sanford Dr.	Agriculture Dr.	3	30	12	N/A	N/A	No	N/A	4	9020*	3.21	C

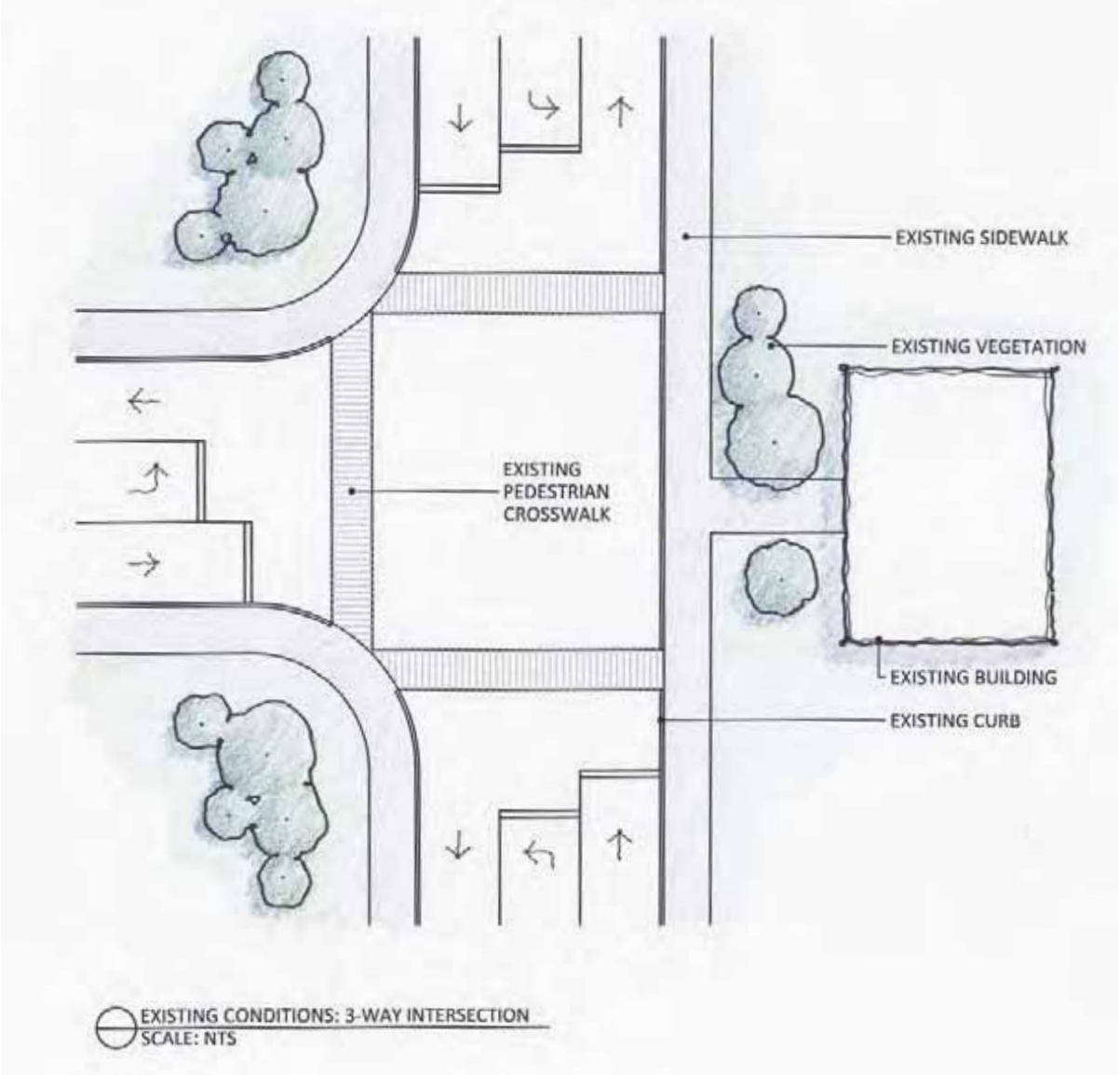
*Traffic volume data obtained from GDOT

The chart above shows the existing conditions for each route studied in this report using the Roadway Inventory Criteria from Page 38

Existing Conditions

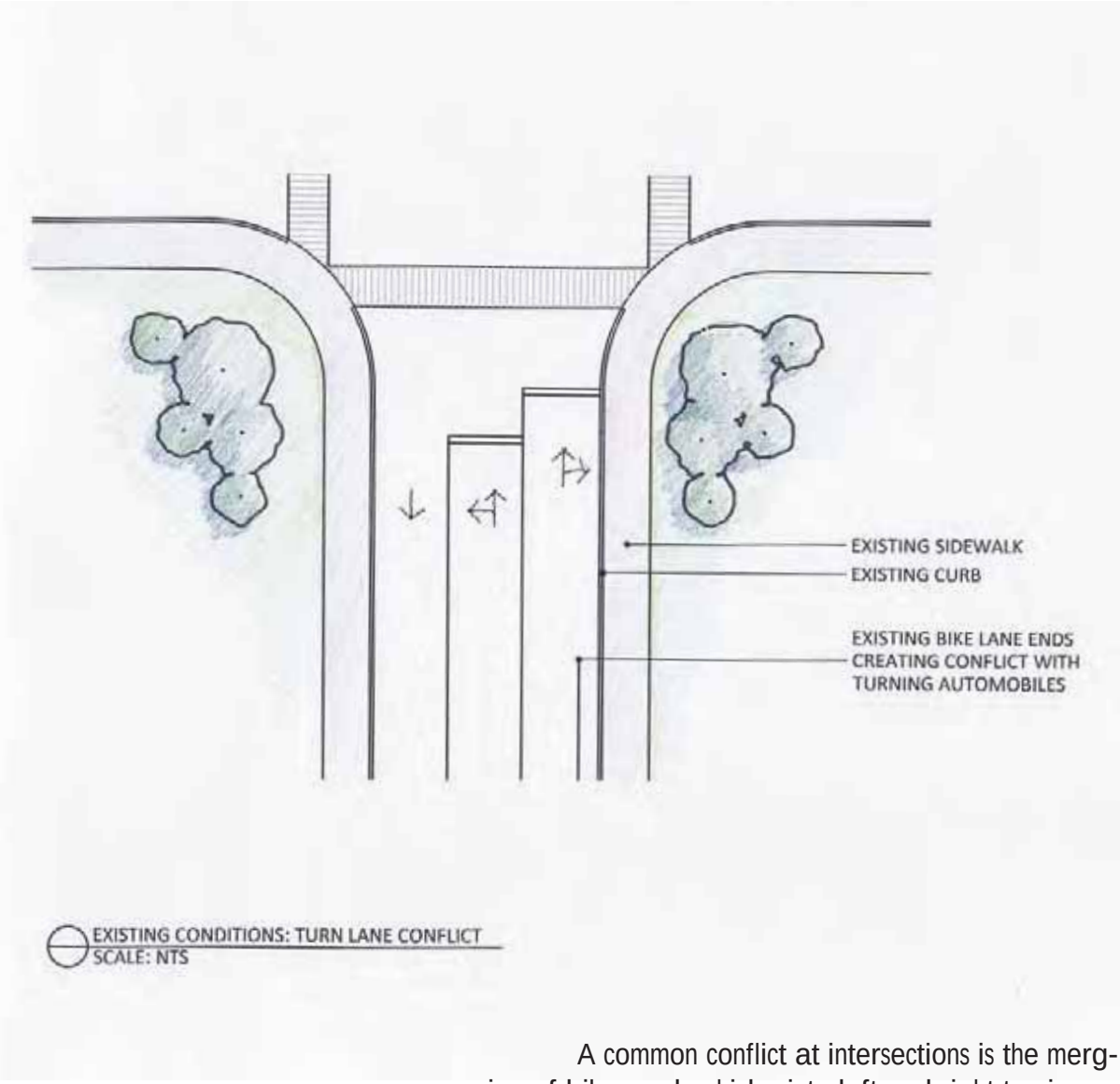


A typical intersection on campus has pedestrian crosswalks with standard sidewalks. There are no bike facilities such as ingress/egress lanes, bike boxes and detection devices at campus intersections. Intersections are considered to be the most hazardous area for bicyclists due to the high level of activity associated with vehicular and pedestrian traffic. Subsequently it is the misunderstanding of where and how a bike should be positioned or treated in an intersection that leads to conflicts and accidents.

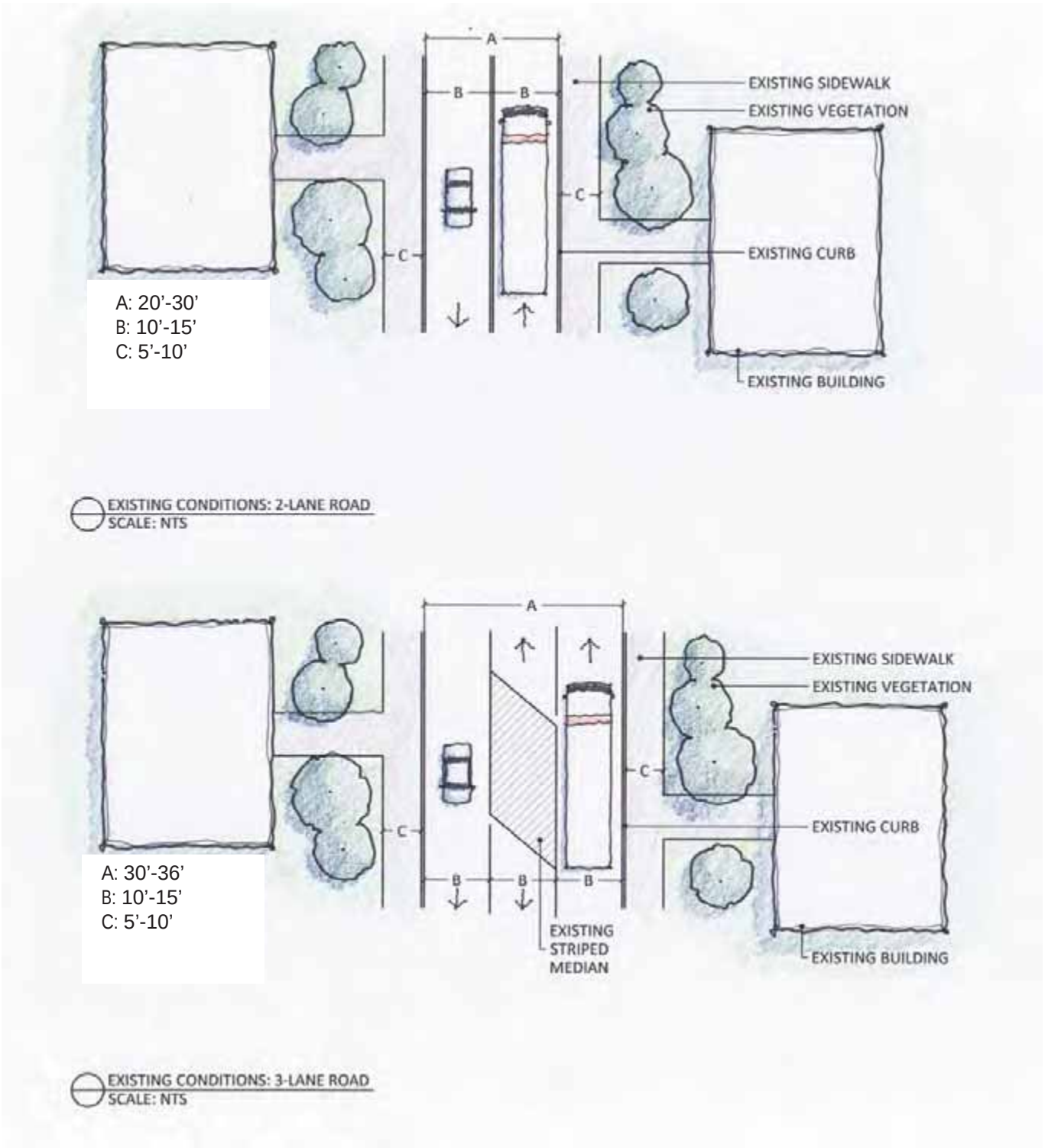


EXISTING CONDITIONS: 3-WAY INTERSECTION
SCALE: NTS

Existing Conditions



A common conflict at intersections is the merging of bikes and vehicles into left and right turning lanes. Without ingress lanes and bike boxes cyclists are forced to merge into their desired lane outside of the safety of an existing bike lane or from a shared lane situation. This is hazardous for cyclists whether they approach a green light or a red light. Attempting to turn left from a bike lane at a stop and relying on a right turning vehicle to yield to a bicyclist travelling straight are both dangerous situations for bikes. Again, as with all intersections, it is this misunderstanding of where and how a bike should be positioned or treated in an intersection that leads to conflicts and accidents.



A typical street on campus has standard sidewalks at the back of curb, and with the exception of two sections of roadway, there are no bike lanes. These roadways either act as shared lane or are designated as such. Because these roads on campus are highly trafficked the interaction between bicyclists, pedestrians and motorists is solely reliant on the understanding of applicable traffic laws.

GAPS IN CAMPUS BICYCLE FACILITIES

There are significant gaps between current campus bike facilities along the perimeter of campus. The map on the following page shows both existing bike routes and areas where gaps in bike facilities occur. These gaps create challenges for cyclists in terms of efficient and safe transportation. In addition some areas are more prone to potential motorist and cyclist conflicts. While these areas (listed below) are outside of the main study area, they should be addressed in order to create a cohesive bike route network on campus. Significant bicycle facility gaps exist in UGA's East Campus Precinct. Broad changes to vehicular, bicycle and pedestrian circulation pattens are anticipated in this area and are therefore not specifically addressed in this study.

Area 1:
At the intersection of Broad Street and Lumpkin Street the Northbound bike lane and right turn lane conflict with each other. As vehicles attempt to turn onto Broad Street, bikes continuing on Lumpkin Street are placed into an impact zone with the turning vehicles. In most cases vehicles fail to yield to the cyclists travelling in the bike lane.

Bike lane begins after E. Campus Rd. & Cedar Street intersection. KED, inc.

To alleviate this conflict the right turn lane should either be striped as a through lane with a right turn only on a green light. This would be necessary in order to implement any facilities such as ingress lanes or bike boxes.

If the right turn lane is to remain, then there should be an ingress lane for both cyclists turning right and those turning left or heading through the intersection. In this option it is necessary to segregate all bikes and cars in the directional flow in which they are travelling.

See page 47 for preliminary recommendations.

Area 2:
On Lumpkin Street, between the intersections of Baldwin Street and Baxter Street, a series of bike and travel lane conflicts occur. Beginning at Baldwin, Street the Southbound bike lane disappears at the intersection creating a conflict zone forcing bikes to merge with vehicles entering the turn lane leading to Baxter Street. In addition the Northbound bike lane is interrupted briefly by the entrance into the turn lane onto Baldwin Street. While this is marked with dashed paint, the pavement is not painted in a visible manner and creates conflict with bikes continuing on Lumpkin Street or turning onto Baldwin Street.

This conflict area should be handled much like the recommendation for Area 1. Include ingress lanes for all directions of travel or limit the right turn to green lights only. In addition the southbound lane should maintain a visible course through the intersection and continue to the Baxter Street intersection.

At the Baxter Street and Lumpkin Street intersection bikes and pedestrians are not given priority in navigation of the intersection. This is especially the case for bikes turning onto Baxter Street from Lumpkin Street. Bikes must merge with turning traffic before they enter the bike lanes on Baxter Street, which begin approximately 100 yards beyond the intersection with Hull Street. For bikes travelling north on Lumpkin Street, an additional conflict exists in which

the bike lane disappears at the entrance to the Tate Center and does not appear until after the Georgia Quad. This not only creates a very dangerous situation for cyclists as they descend the hill on Lumpkin Street, but gives them virtually no opportunity to merge into a left turn position at the intersection.

The bike lanes on Lumpkin should continue up to and through the Baxter intersection. This should also include painted ingress/egress lanes and bike boxes at a minimum. For cyclists attempting to enter Baxter Street from the Georgia Quad or Lumpkin Street, a timed pedestrian and cyclist specific crossing opportunity could allow cyclists to enter Baxter Street safely. In addition a painted egress lane on Baxter Street heading westbound, could give cyclists a visible opportunity to merge into the existing bike lane.

See pages 48-49 for preliminary recommendations.

Area 3:
The intersection of Jackson Street and Baldwin Street has historically been a high conflict intersection. The conflicts occur because the bike lanes on Jackson Street end approximately 200 feet before the actual intersection. This creates challenges for cyclists travelling into and out of the intersection and is most dangerous for bikes entering the intersection on the southbound bike lane. As the bike lane terminates, a turn lane begins, which puts cyclists in a vulnerable position where they have very little time to react or position themselves with traffic in either turning lane. The most common conflict is a vehicle maneuvering into the right turn lane and failing to yield to a cyclist that is maintaining their position in what becomes the left turn lane.

In order to mitigate and prevent future conflicts the bike lanes should begin and end at the intersection. Given existing conditions associated with road and lane widths this intersection will need to either widen to accommodate the current lane configuration with bike lanes, or it will need to remove the right turn lane completely.

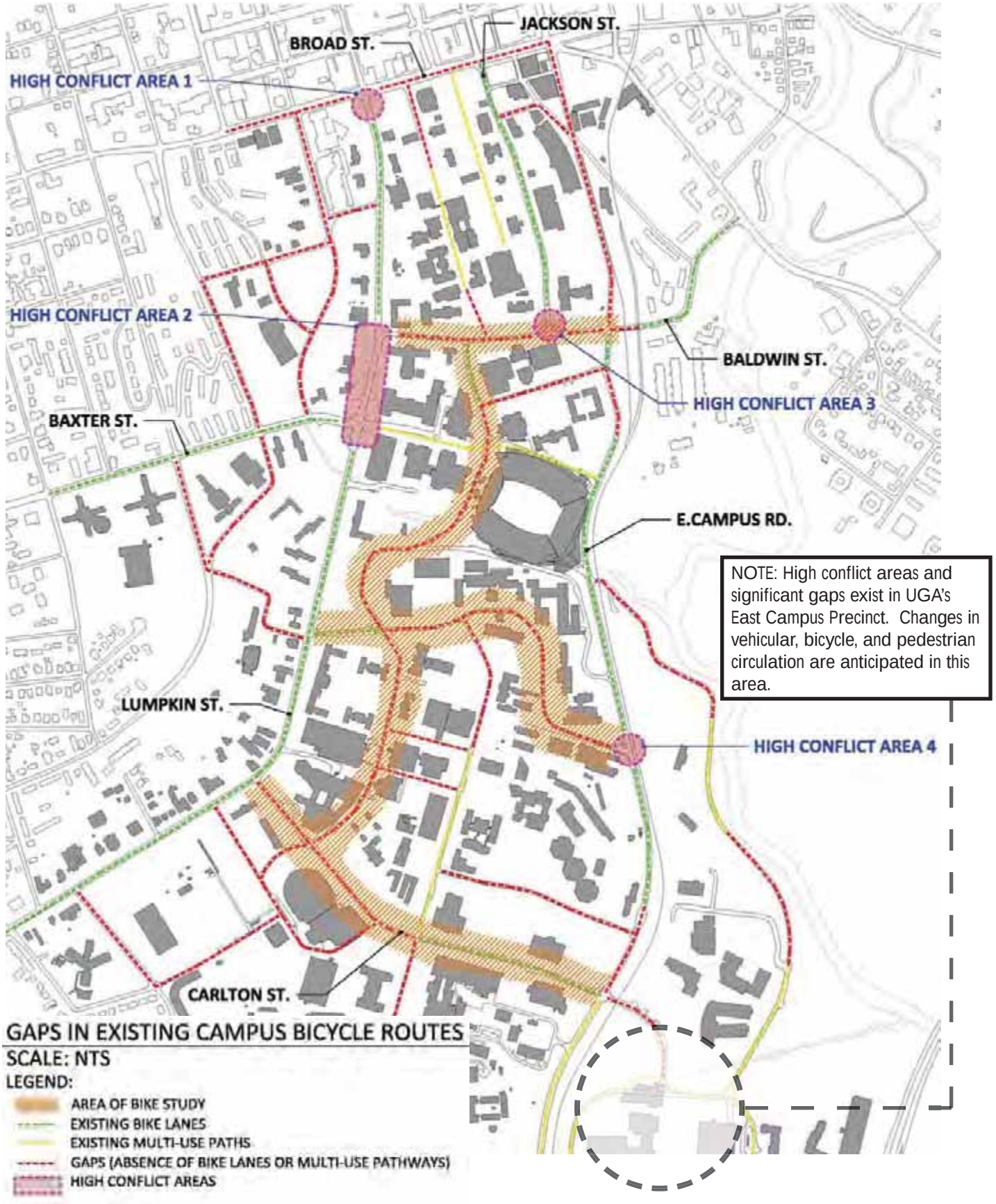
See pages 50-51for preliminary recommendations.

Area 4:
As East Campus Road intersects with Cedar Street the Northbound bike lane ends and then begins after the intersection. This is further compounded by a 45 degree rail line crossing, which is a major slip and damage hazard for a bicycle. The lack of bike lanes and general intersection treatment combined with high travel speeds along East Campus Road further complicate this conflict area.

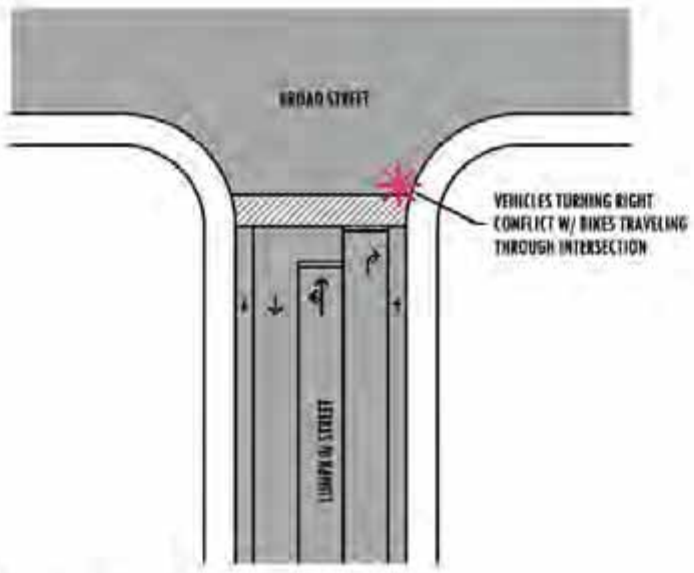
Incorporating bike lanes at the East Campus Road and Cedar Street intersection will require the road to widen to accommodate the existing lane configuration with bike lanes. This may also be accomplished with restriping effort that will result in the removal of the left turn lane on to Cedar Street. Regardless of which direction is selected there should at a minimum be ingress/egress lanes and bike boxes at the intersection. There should also be signage and striping to inform both cyclists and motorists of a rail line crossing ahead. Given the unique issues of this conflict area the speed limit may also need to be reduced to further mitigate the potential for conflict.

See page 52 for preliminary recommendations.

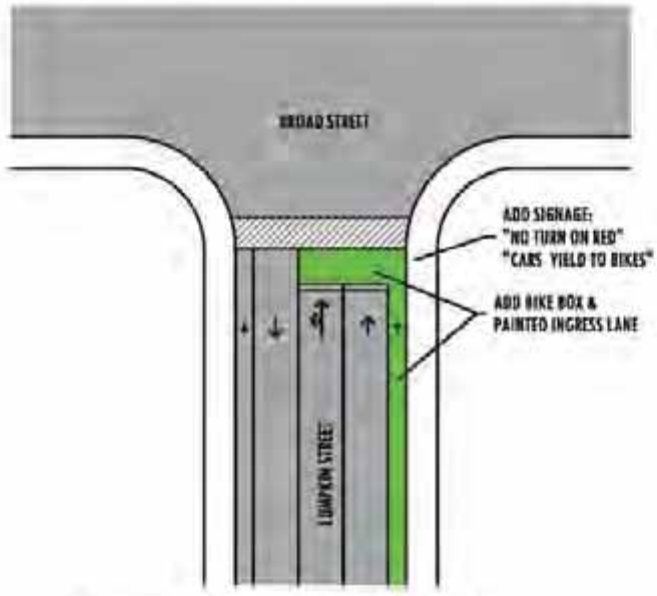
Bike lane ends abruptly on Jackson Street. KED, inc.


JACKSON ST.
BROAD ST.
HIGH CONFLICT AREA 1
HIGH CONFLICT AREA 2
BALDWIN ST.
HIGH CONFLICT AREA 3
BAXTER ST.
E.CAMPUS RD.
NOTE: High conflict areas and significant gaps exist in UGA's East Campus Precinct. Changes in vehicular, bicycle, and pedestrian circulation are anticipated in this area.
LUMPKIN ST.
HIGH CONFLICT AREA 4
CARLTON ST.
GAPS IN EXISTING CAMPUS BICYCLE ROUTES
SCALE: NTS
LEGEND:
AREA OF BIKE STUDY
EXISTING BIKE LANES
EXISTING MULTI-USE PATHS
GAPS (ABSENCE OF BIKE LANES OR MULTI-USE PATHWAYS)
HIGH CONFLICT AREAS

High Conflict Area Recommendations: Area 1

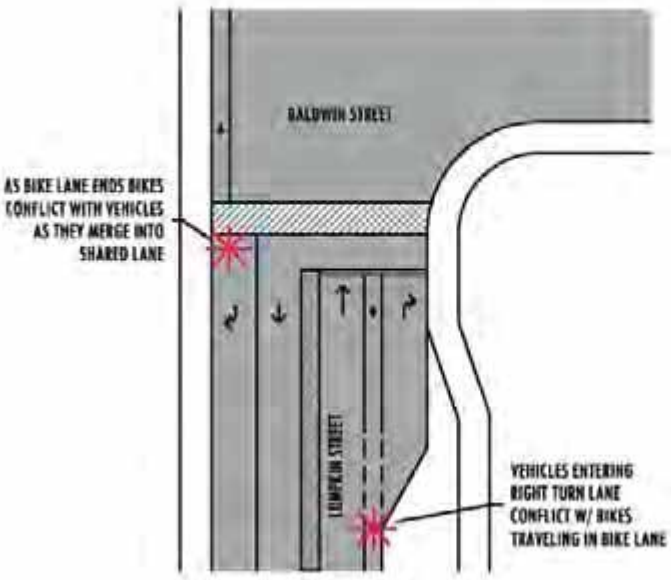


LUMPKIN STREET & BROAD STREET INTERSECTION: EXISTING

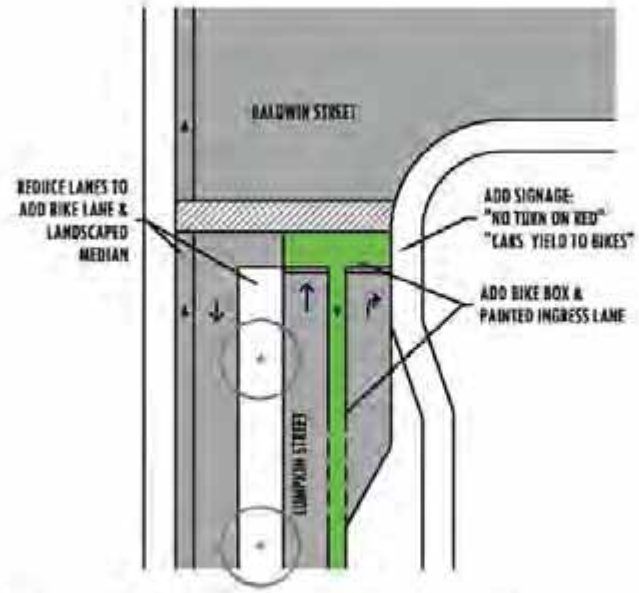


LUMPKIN STREET & BROAD STREET INTERSECTION: PROPOSED

High Conflict Area Recommendations: Area 2

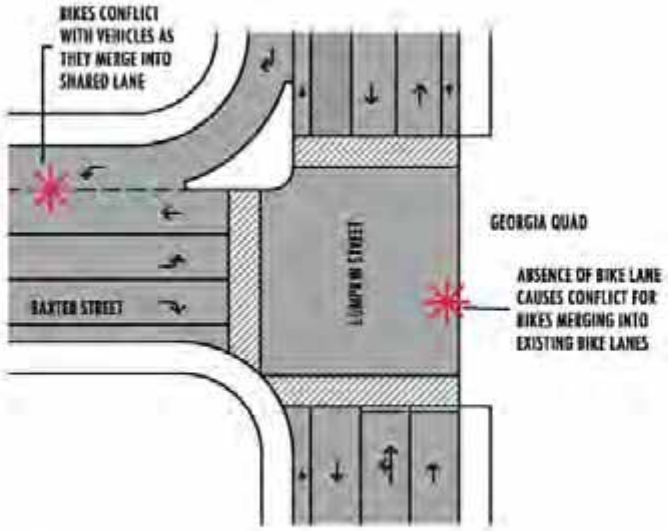


LUMPKIN STREET & BALDWIN STREET INTERSECTION: EXISTING

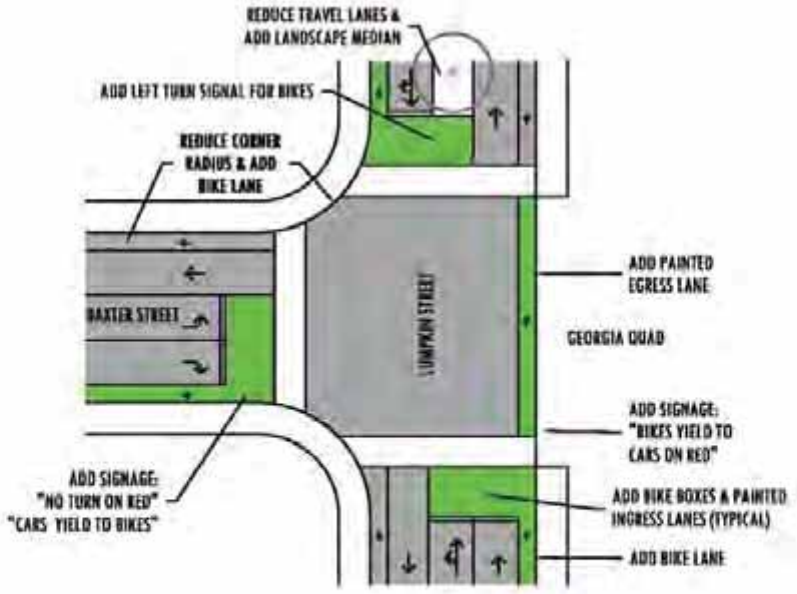


LUMPKIN STREET & BALDWIN STREET INTERSECTION: PROPOSED

High Conflict Area Recommendations: Area 2

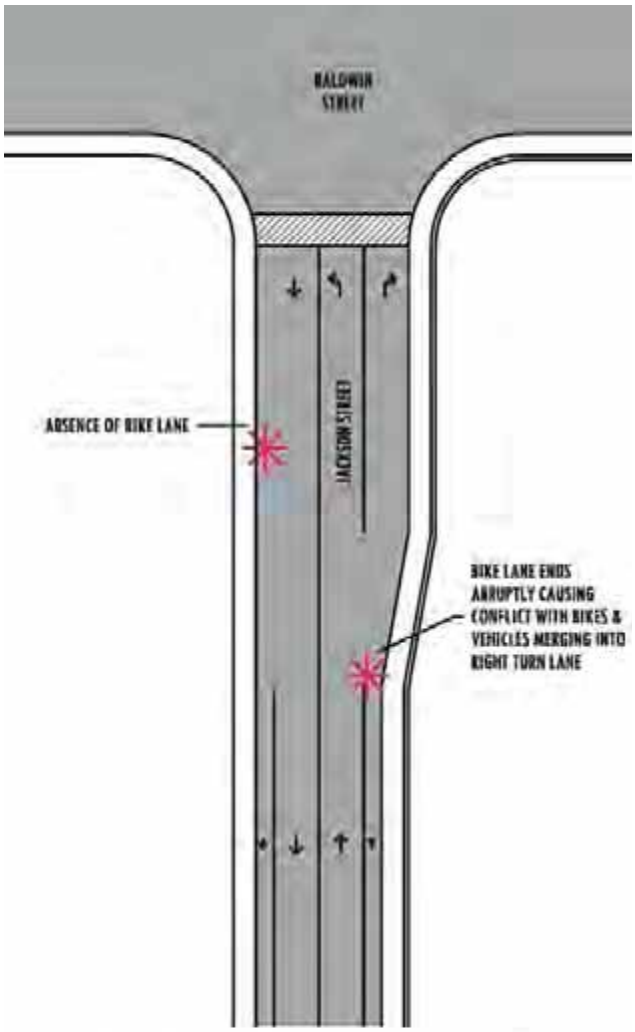


LUMPKIN STREET & BAXTER STREET INTERSECTION: EXISTING

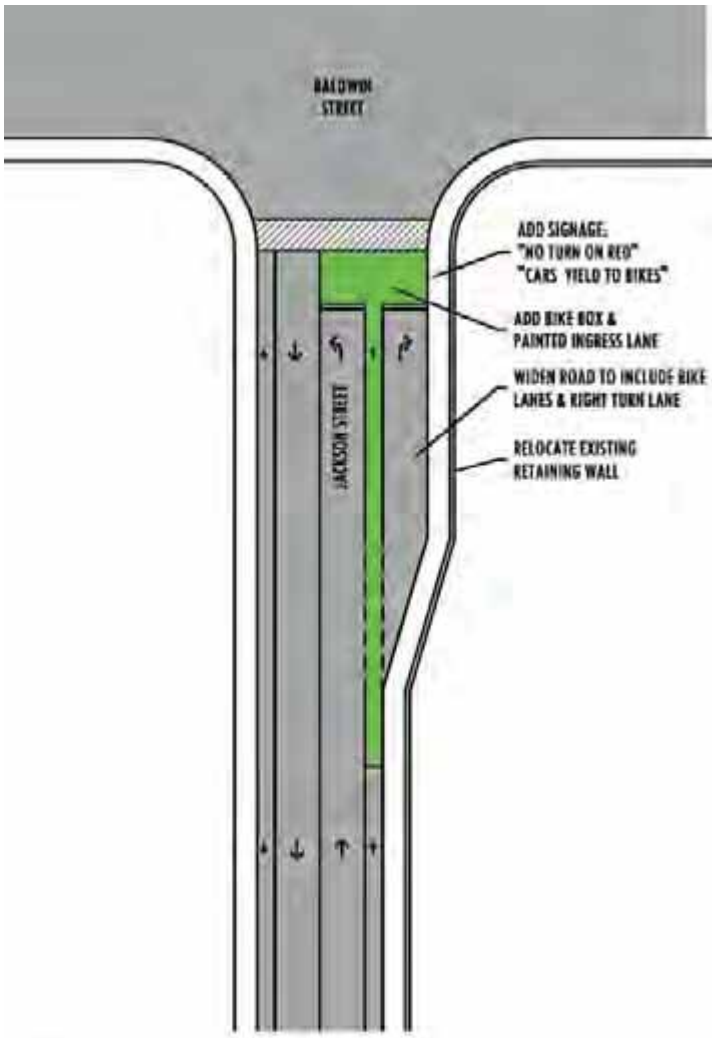


LUMPKIN STREET & BAXTER STREET INTERSECTION: PROPOSED

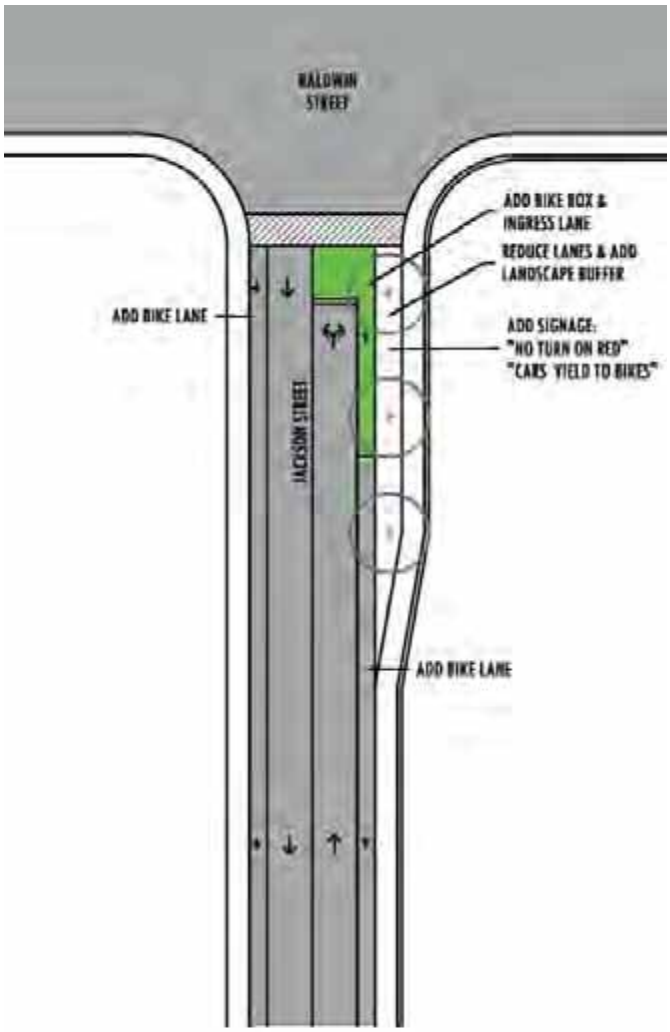
High Conflict Area Recommendations: Area 3



BALDWIN STREET & JACKSON STREET INTERSECTION: EXISTING

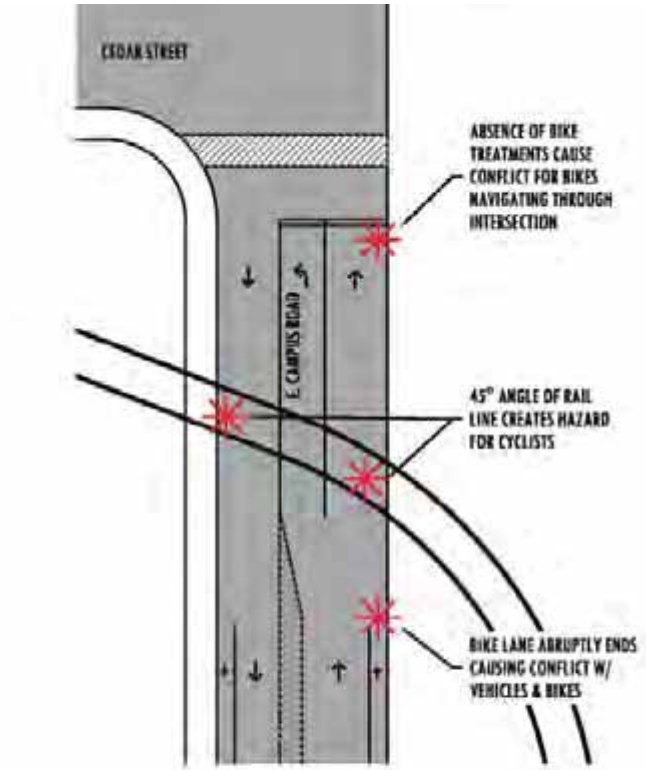


BALDWIN STREET & JACKSON STREET INTERSECTION: PROPOSED OPTION 1

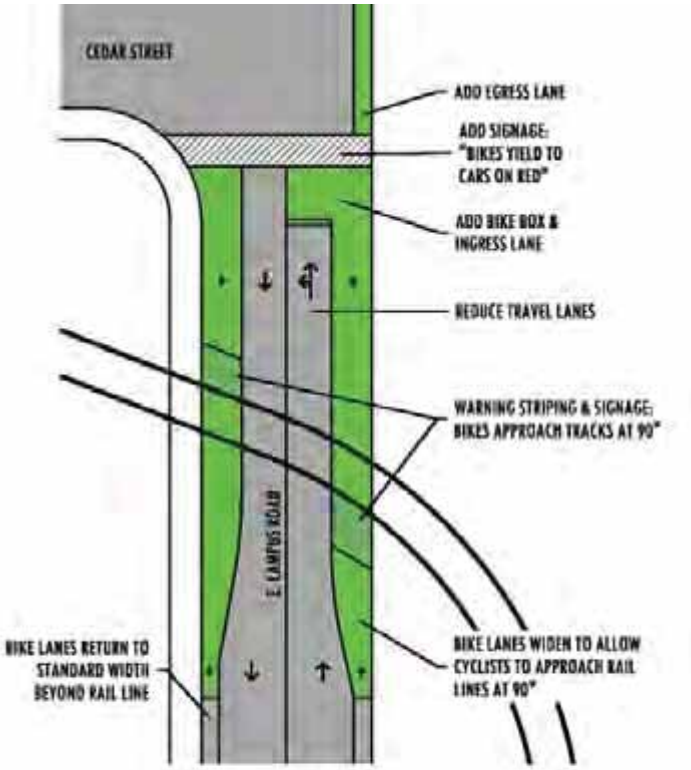


BALDWIN STREET & JACKSON STREET INTERSECTION: PROPOSED OPTION 2

High Conflict Area Recommendations: Area 4



EAST CAMPUS ROAD & CEDAR STREET INTERSECTION: EXISTING



EAST CAMPUS ROAD & CEDAR STREET INTERSECTION: PROPOSED

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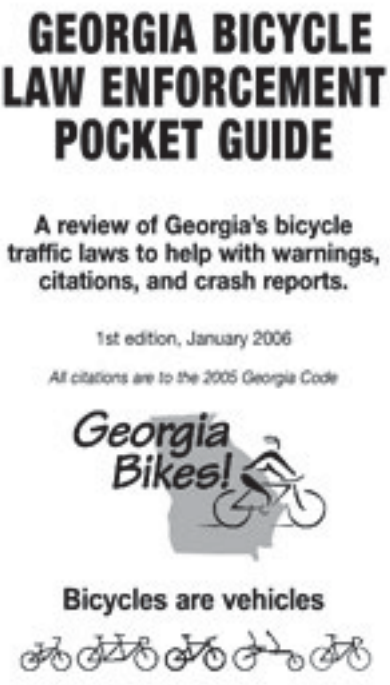
SECTION 2.2 GUIDELINES & RECOMMENDATIONS

A UGA bike patrol officer giving a bike safety demonstration.
www.onlineathens.com



Georgia Bicycle Law Enforcement Pocket Guide.
www.georgiabikes.org

THE FIVE "E"s

The basis for the bicycle facility update's guidelines and recommendations comes from The League of American Bicyclists' mission to "**promote bicycling for fun, fitness and transportation and work through advocacy and education for a bicycle-friendly America**." The League is accomplishing this by encouraging states, communities, businesses and universities to provide better bike related facilities, encouragement activities, infrastructure and education and publicly recognizing them for improvements. The Bicycle Friendly America Blueprint outlines the key elements which the university could use to improve it's cycling culture and environment. Known as the 5-E's, these elements provide guidance on bicycle infrastructure, programs, policy and planning.

Education

All efforts should be made to educate everyone on campus, whether they plan to bicycle or not, in order to provide a safe commuting environment. Providing information through maps, pamphlets or booklets or through a combination of mandatory presentations (such as those required during orientation), group rides and events, or periodic reports included in the school newspaper will promote and instill situational awareness for bicyclists on campus. Accidents and confrontations for all parties can be prevented by clearly defining the "do's" and "do not's" for bicycling on and around campus. Public Service Announcements or other official communication that promotes bicycle use and/or safety guidelines is an effective form of cycling education. Georgia Bikes has a series of professionally produced PSA's available for download from their website that are aimed at both cyclists and motorists. These PSA's are available for use free of charge. Additionally, a member of the UGA Police Department should be a contributing member on the University Bike Committee in order to interact with cyclists and assist in planning and decision making. Training offered to all officers should be expanded to include the specifics of how traffic laws relate to bicyclists. Increasing the number of police officers patrolling on bikes will assist not only in enforcement, but education and promotion as well.

Enforcement

All bicyclists are subject to Georgia traffic laws, just as the motorists they share the road with, and the University of Georgia Police Department is responsible for enforcing these laws. Compliance to these laws by bicyclists, motorists, and pedestrians will ensure the safety of everyone on the road. In addition to traffic enforcement, the UGAPD can also engage in crime prevention. Through a bicycle registration program, police can attempt to locate lost or stolen bikes by taking record of the bike's serial number and identifying characteristics. Another program the UGAPD can initiate that will benefit biking on campus is a bicycle accident database. While it is already standard practice to report any accident, further identifying the accident as bike related, pinpointing the location, and summarizing the event, will help evaluate critical areas throughout campus that could use improvement.

Evaluation & Planning

With new bicycle facilities and programs in place, regular evaluation can improve UGA's bicycle network. Yearly evaluation surveys and websites with open forums will allow bicyclists to voice their opinion. In addition to user recommendations, an annual BLOS analysis could be administered to see what conditions have been improved and what bike routes need future attention. Bike counts should be conducted throughout the year to measure ridership and end of trip facility needs. Similarly, an annual review of crash statistics should be conducted to review planning efforts and policies to reduce the number of crashes.

Encouragement

There are many ways that the university could encourage more bicycle ridership on campus. Publicity events such as Bike to Campus Month/Week/Day or bike races/challenges can increase interest and awareness on campus. Much like education maps, route finding signage, community bike rides, and commuter incentive programs all help increase interest and acceptance of bikes on campus roads. Consideration should also be given to the facilities that have can be built to promote cycling or a cycling culture such as off-road trails, BMX parks, velodromes, and the clubs that support them. Incorporating external or internal bike racks onto UGA buses would also facilitate cycling. Campus Bike Tours, or "bike valets" for major events, are great ways to promote cycling on campus as well. Also, the University could partner with a local bike shop to offer bicycles and related gear to students, faculty and staff at discounted prices in order to increase bicycle usage. Ultimately, UGA could partner with a local bicycle business to have an on-campus bike shop, which would further encourage and facilitate ridership.

Engineering

Perhaps the most important category in regard to creating physical standards, engineering acts as the nuts-and-bolts when it comes to putting all of the 5 "E' categories together. This should begin at the comprehensive level of a Bike Master Plan and should end with specifically detailed site plans. Consideration to existing site conditions should occur for more short-term solutions. However the long-term goals of the campus should be at the forefront of the decision making process. Streets should be designed comprehensively for safe use by all users, including cyclists, pedestrians, and automobiles. Adequate facilities should include not only bike routes or lanes, but also adequate signage and intersection design measures that improve efficiency and safety.

Please see Appendix 1, Feedback from the UGA Bicycle Friendly Application, for additional recommendations on efforts policies, or programs the University should adopt to further reinforce the 5-E's and become a bicycle friendly university.

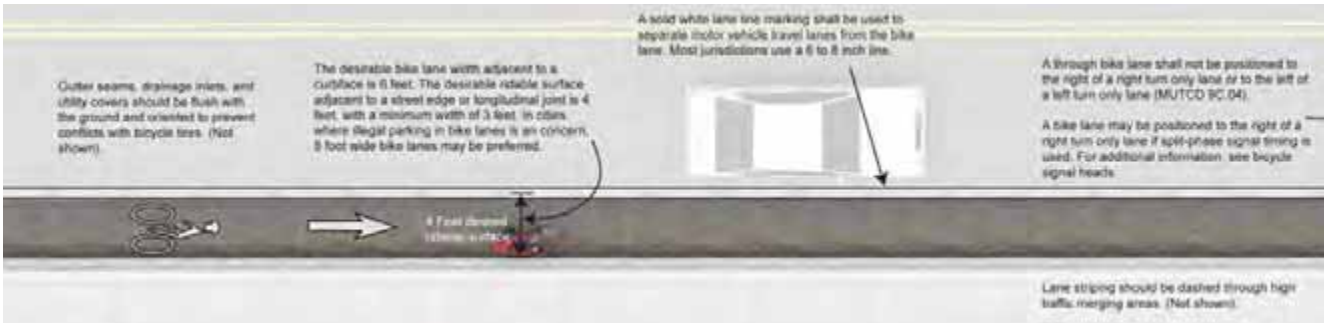
BICYCLE ROUTES

Bike routes are typically classified into 3 categories based on national standards published in the National Association of City Transportation Officials' (NACTO) Urban Bikeway Design Guide.

Shared Bicycle Lane: A roadway in which vehicular traffic and bicycle traffic share the same lane. Because there is not a separate striped lane designated for bicyclists, motorists are visually reminded of bicyclists with signage such as "Share the Road" with a graphic representation of shared vehicle and bike use. There is also signage notifying motorists and cyclists of approaching shared lane conditions as well as at intersection within a shared zone (See Bike Sign Standards). Placement of signs is at appropriate intervals in relation to the length of the shared lane conditions. These shared bicycle lanes generally occur where the option of striping for a bicycle lane is impractical due to constraints outside the roadway or level of ridership.

Bicycle Lane: A solid striped lane that occurs between the vehicular travel lane and the curb and gutter. The lane is a minimum of 4 feet wide starting from the front of a header curb or from the outer edge of the gutter (in a curb and gutter configuration). Variations on the bicycle lane width often occur when on-street parking exists. The lane should is located between the travel lane and parking stalls, and is usually a minimum of 5 feet wide. In the occurrence of a turning lane or bus bay, a dashed bike lane is used to alert bicyclists and motorists of the possibility of merging vehicles and bikes. Bike lane symbols are applied to the road surface at appropriate intervals to designate the lane as "Bike Only". When conditions allow, a bicycle lane is a preferred bicycle route method.

Multi-use Paths: Any off-street path that accommodates both pedestrians and bicyclists. While GDOT and AASHTO standards call for bike-capable multi-use paths to be within 8-10' wide, the standard for pedestrian multi-use paths often varies based on levels of use and pedestrian counts. It is important to note that bicyclists should yield to pedestrians in these areas and maintain low speeds if there is not a separate striped travel lane for bikes. If separation is desired for conflict prone areas a 4' striped lane can be incorporated to prevent pedestrian and cyclist conflicts. Signage should also be used to indicate multi-use paths but it is imperative to place the signage in a way that does not disrupt the character of interior campus grounds.



Conventional Bike Lane. nacto.org

INTERSECTIONS

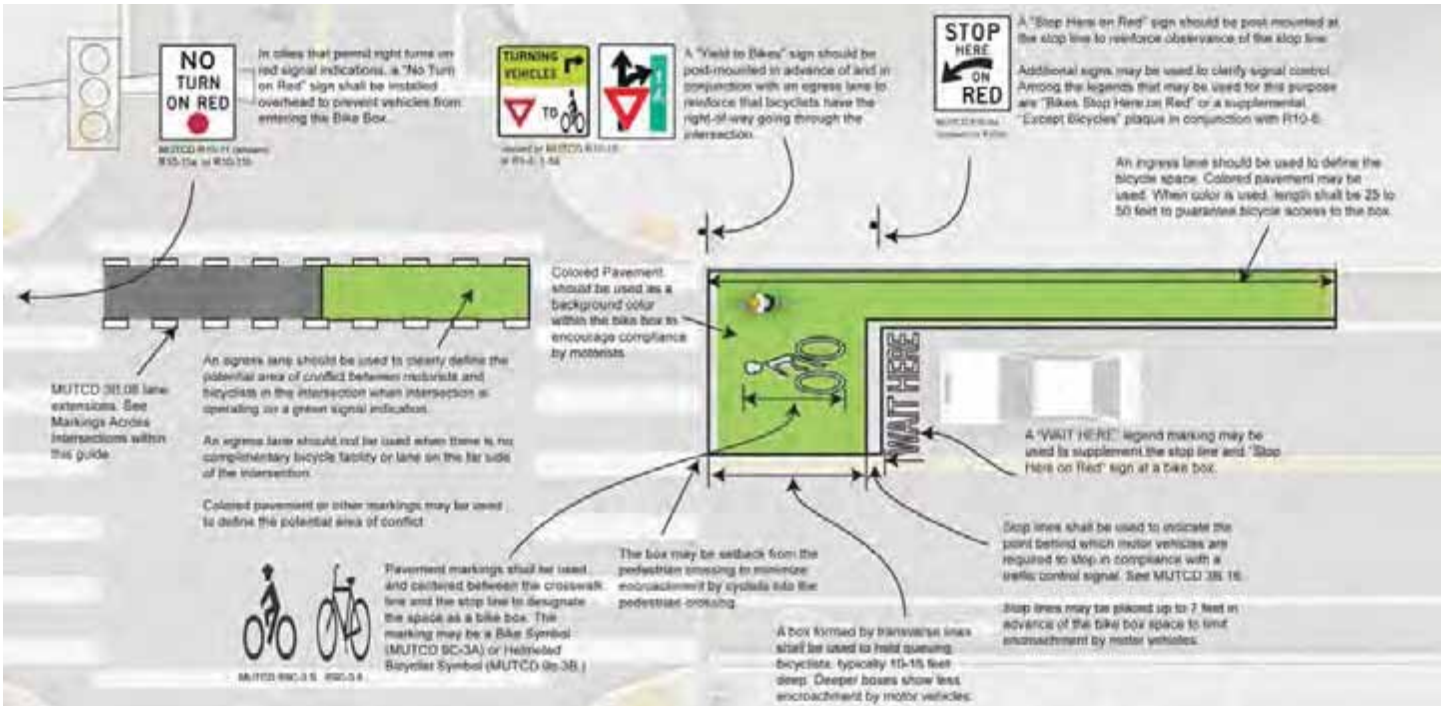
Ultimately intersections are considered to be the most dangerous aspect of any cyclists' commute. Improvements to intersections often focus on creating a safer and more efficient manner for bicycles to maneuver through traffic. The following improvements are used and endorsed by NACTO as standard intersection treatment:

- Painted Egress/Ingress Lanes (Advanced Stop Lane)
- Painted Bike Boxes
- Bicycle Detection Devices
- Signage
- Pedestrian & Bicycle Mass Crossing Opportunities

Egress & Ingress (Advanced Stop Lane): An introduction or continuation of bicycle lanes that lead into or extend no less than 8 feet before or past the vehicular stop bar or intersection. A bicycle stencil is located in the lane, with a contrasting surface color (i.e. white stencil on a red background) in order to increase visibility of the bike lane and bring awareness to cyclists using the lane. The contrasting surface color is painted on all bike lanes as they enter and exit an intersection, for a minimum distance of 16 feet. Ultimately, this form of bike lane treatment is implemented to increase the awareness of motorists and pedestrians to the presence of bicyclists at intersections on campus.

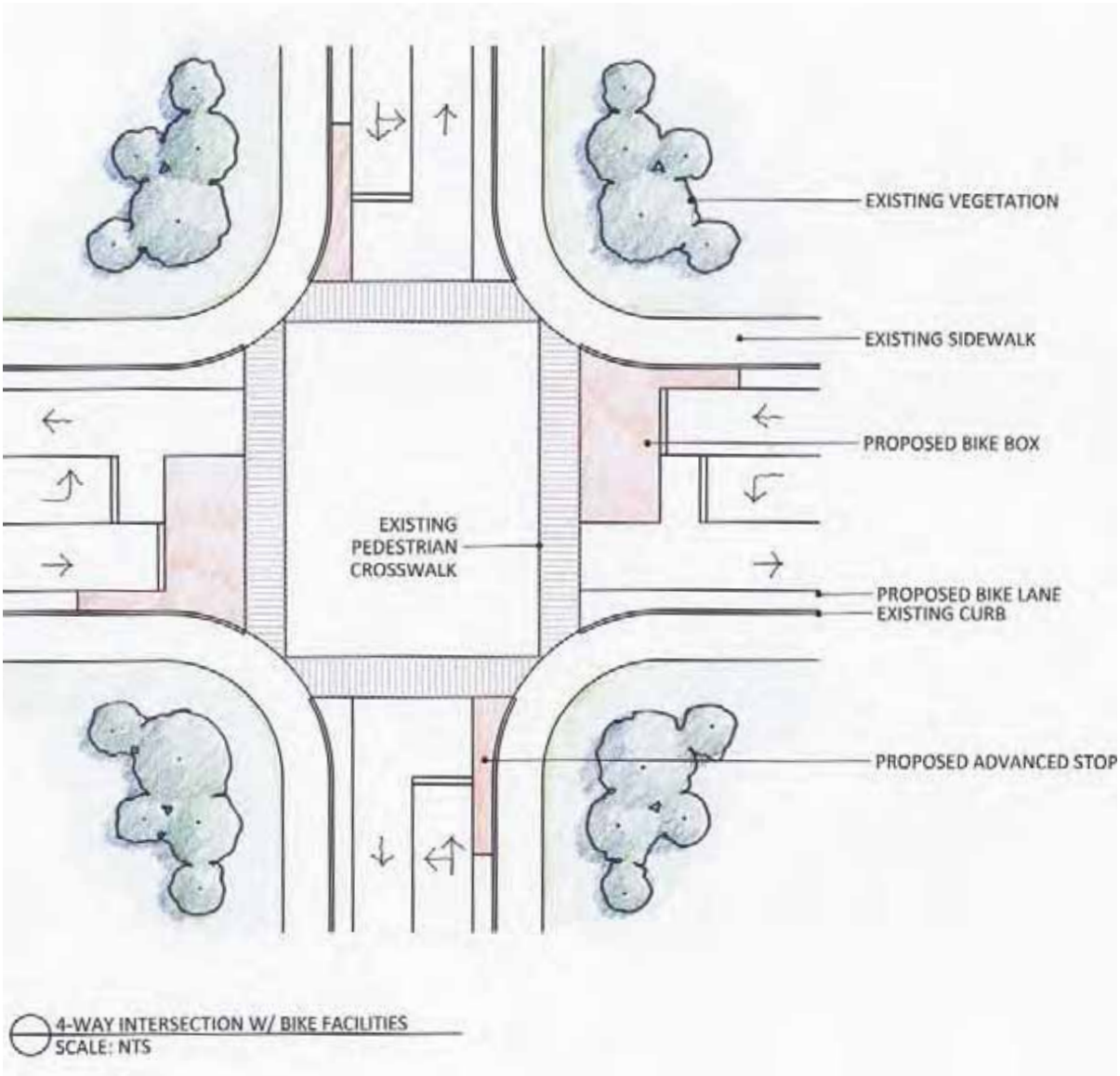
Bike Box: An intersection treatment that is used to supplement the ingress/egress lanes. A Bike Box is an area extending a minimum of 8 feet in front of the vehicular stop bar and is as wide as the vehicular lane. Bicyclists approaching an intersection during a red light are then able to advance into the Bike Box, in front of cars waiting at the light, giving them priority in traffic. This allows bicyclists to be highly visible, and gives a turning bicyclist a designated area in which to merge lanes. The Bike Box is only used during red lights, when all vehicles are stopped allowing bicyclists to safely move in front of the stopped vehicles. Like the egress and ingress lanes, the Bike Box is stenciled with a contrasting surface color to increase visibility.

Detection: Bicycle detection is accomplished through the use of push-buttons or by automated means such as in-pavement loops and video. Detection must accurately detect bicyclists; and provide clear guidance to bicyclists on how to activate detection.



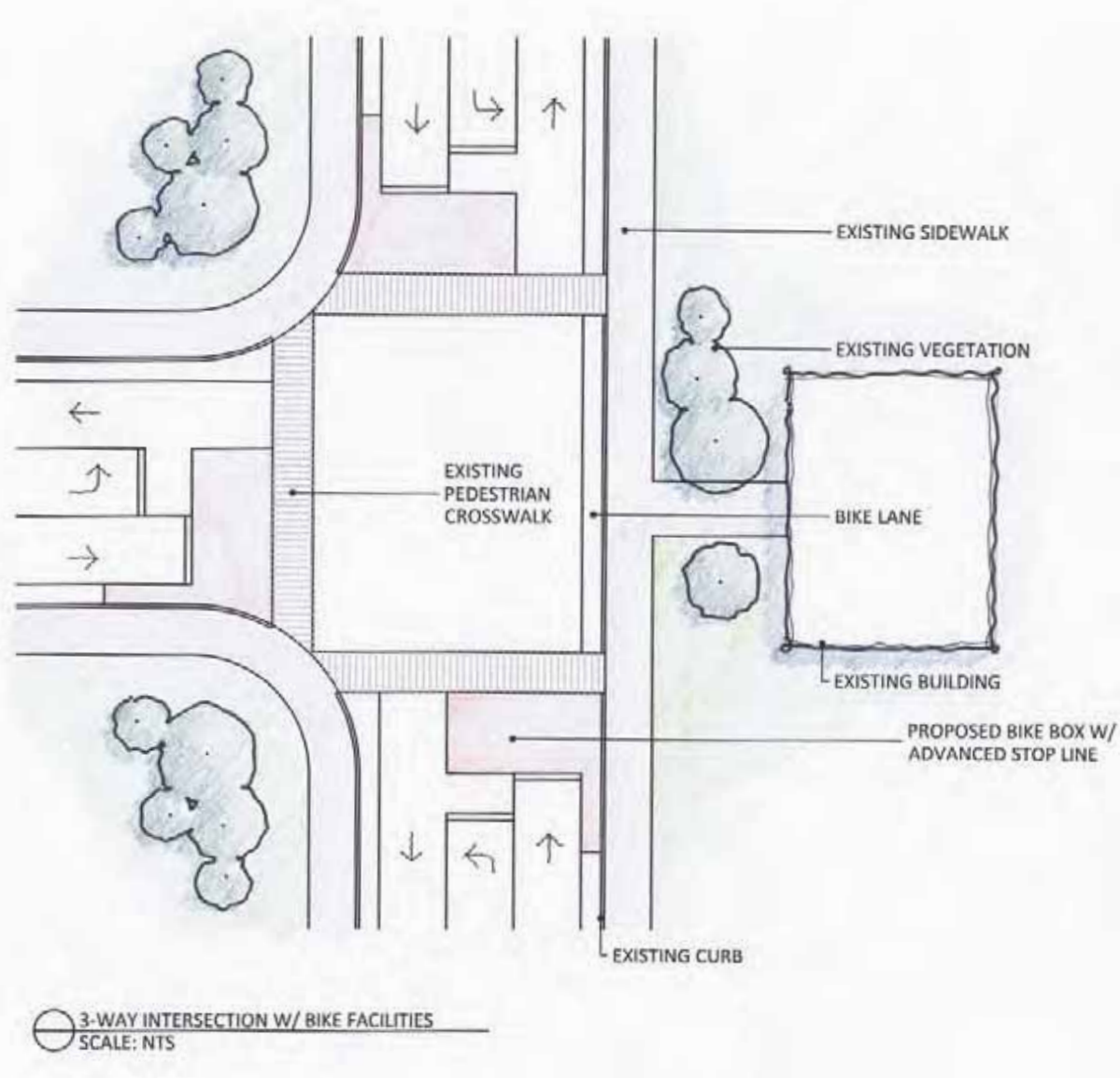
Intersection with Bike Box, Ingress/Egress Lanes, Detection & Signage. nacto.org

Intersection Guidelines



Typical 4-way intersection with standard bike facilities:

- 4’ bike lanes
- Ingress lanes
- Bike boxes



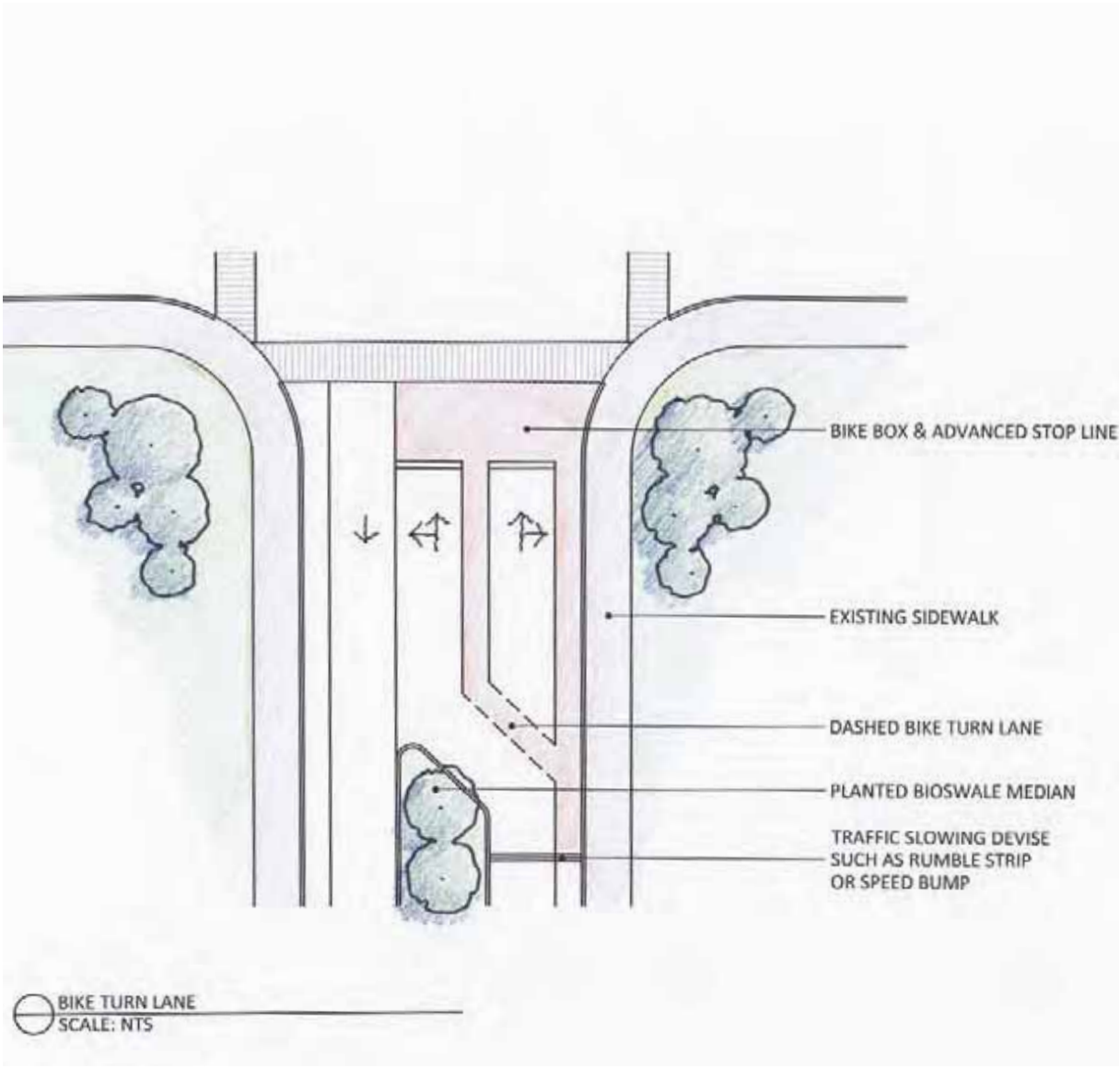
Typical 3-way intersection with standard bike facilities:

- 4' bike lanes
- Bike boxes
- Ingress lanes
- Egress lane (intersection crossing)*
- Bike boxes

* An intersection crossing lane has two purposes:

(1) It maintains visible continuity of the bike lane through the intersection in order to prevent turning vehicles from encroaching into the bike lane.

(2) It allows bikes to yield to turning traffic at a stop and continue through the lane to maintain efficiency of travel.



Introduction of ingress turn lane with median at intersection.

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Multimodal Intersection. www.completestreets.org

Main Street. www.completestreets.org

Streetscape improvements along Lumpkin Street on UGA Campus create a "Complete Street". www.bing.com

COMPREHENSIVE STREETS

Improvements to the existing corridors and roadways on campus should be viewed as a comprehensive approach to resolving all of the problems associated with traffic circulation and safety for pedestrians, cyclists and motorists alike. The inclusion of bike lanes and facilities are merely one aspect of what is known as a "Complete Street." This term was coined by former America Bikes and League of American Cyclist members, who initiated a nationally recognized coalition charged with implementing policy change. As defined by the National Complete Street Coalition "The streets of our cities and towns are an important part of the livability of our communities. They ought to be for everyone, whether young or old, motorist or bicyclist, walker or wheelchair user, bus rider or shopkeeper."

Benefits of Complete Streets

"Complete Streets" provide many benefits within all communities, whether they are universities, neighborhoods or municipalities. These benefits include:

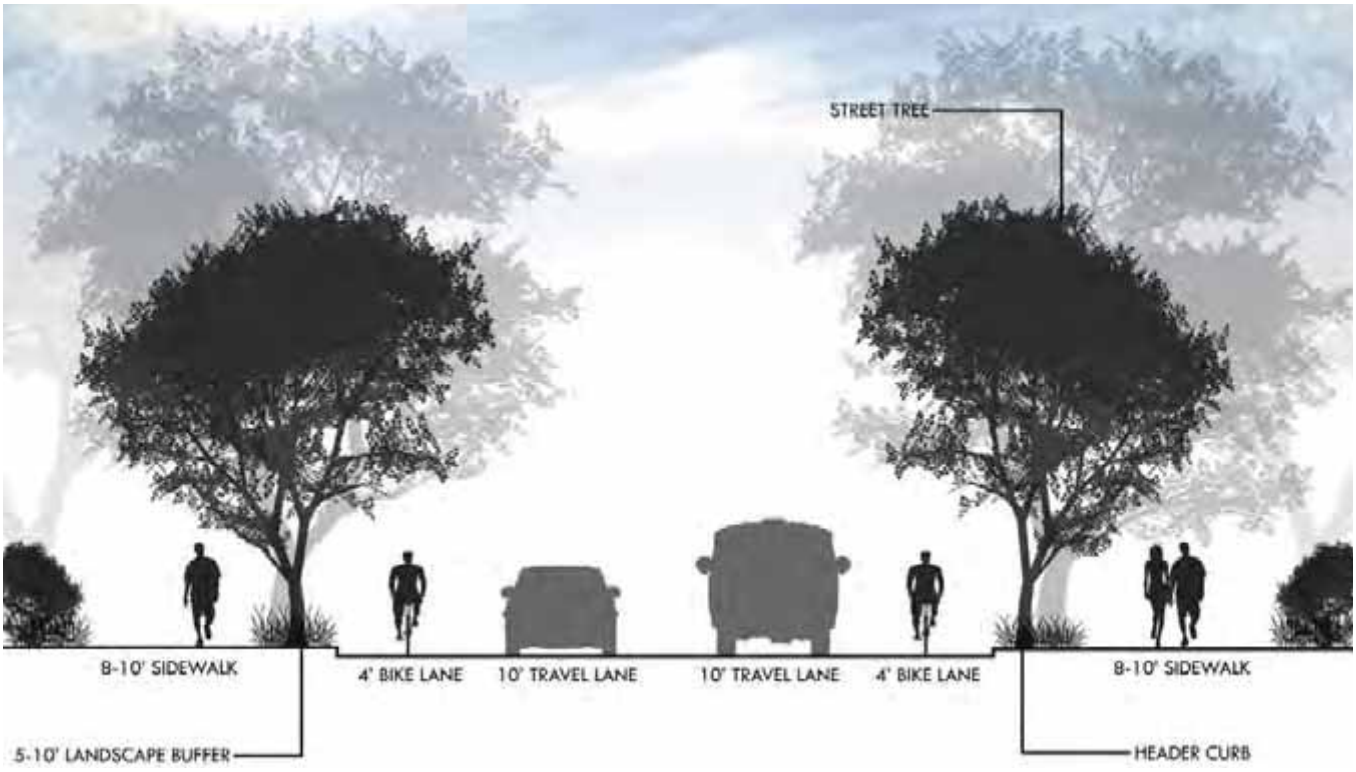
- Increased economic growth and stability through accessible and efficient connections between home, work and recreational destinations.
- Reduction of traffic accidents with safety improvements.
- Promotion of physical and mental health through facilities allowing more walking and bicycling.
- Efficiently maximizes the potential transportation network by providing alternative transportation options.
- Less consumption of fossil fuels increases air quality, and decreases illnesses related to poor air quality.
- Integration of sidewalks, bike lanes, transit facilities, and crosswalks into the initial design of a street decreases the high costs associated with retrofits.

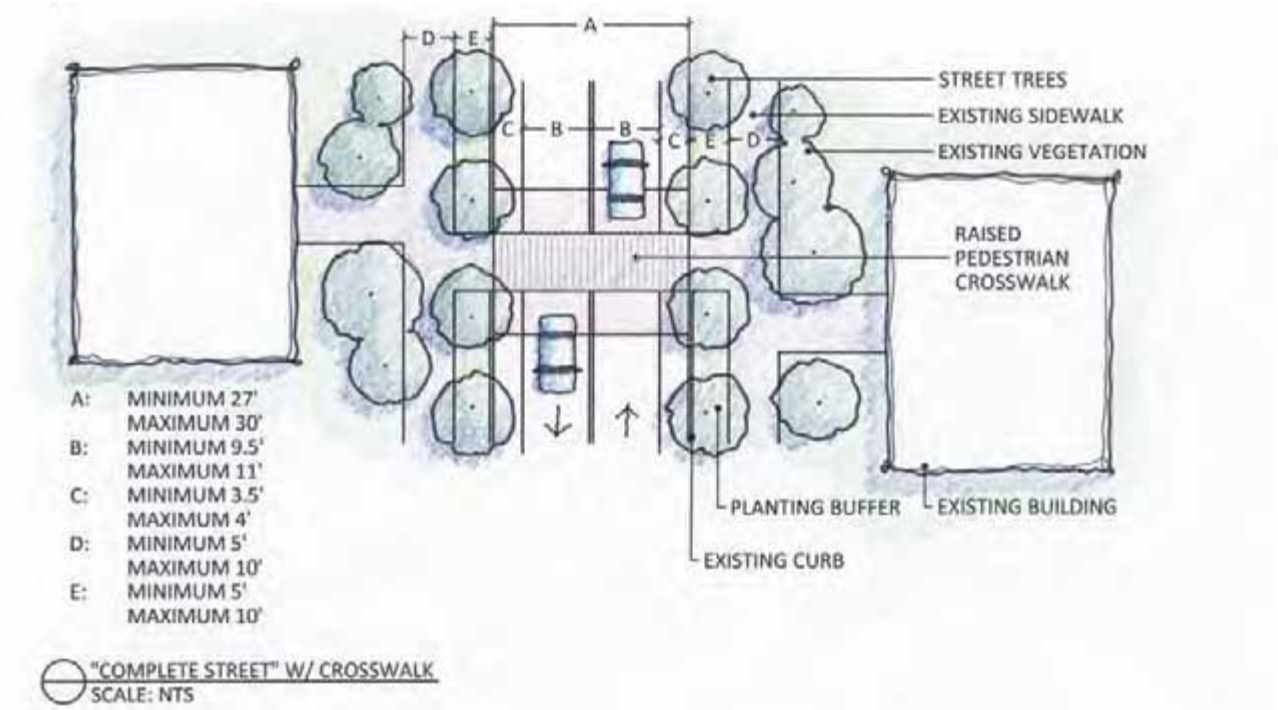
More information regarding "Complete Streets" is available at The National Complete Streets Coalition website: www.completestreets.org.

The UGA Campus should consider implementation of standards and development that promotes those methods recognized by such organizations. A typical "Complete Street" directive would include, but is not limited to the following improvements on the UGA campus:

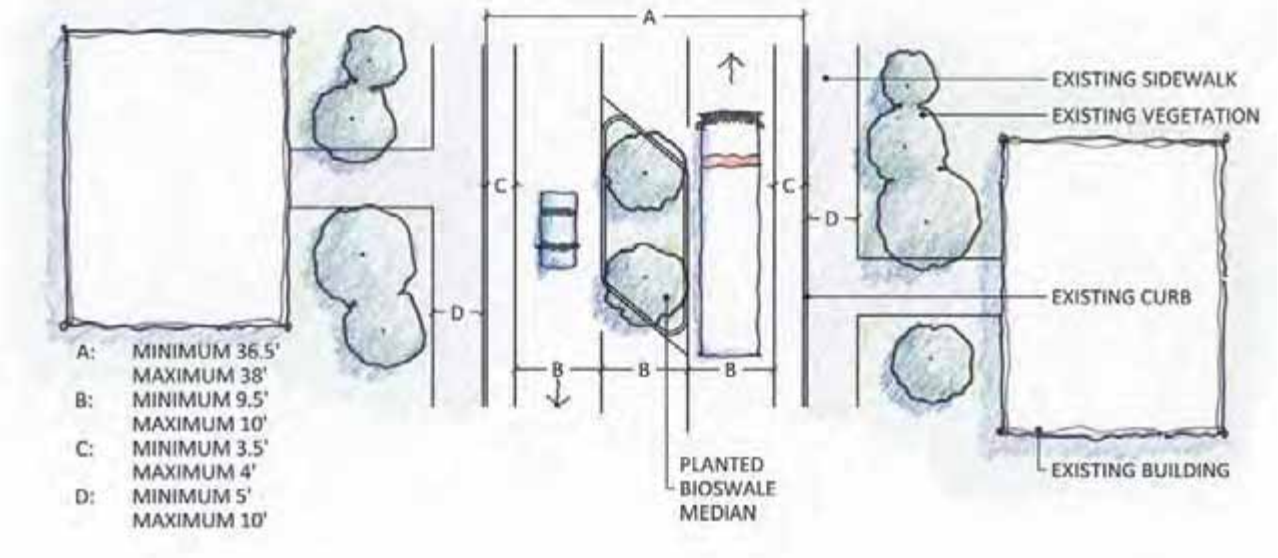
- 10' wide travel lanes (minimum)
- 4' wide bike lanes (outside of gutter)
- Header curb instead of curb and gutter
- 5-10' Landscape buffer with street trees and plantings
- 8-10' sidewalks with crosswalks that respond to all major pedestrian circulation routes, intersections and junctions and are marked appropriately for both vehicle and bicycle awareness.
- Speed Tables at all major intersections.
- Bus bays with covered shelters for pedestrians and bikes

One-way with bike lane. www.completestreets.org





"COMPLETE STREET" W/ CROSSWALK
SCALE: NTS



"COMPLETE STREET" W/ PLANTED MEDIAN
SCALE: NTS

Ideal roadway configuration to include a landscaped buffer and/or median. Bike lanes should be 4' minimum and travel lanes should be 10' minimum.

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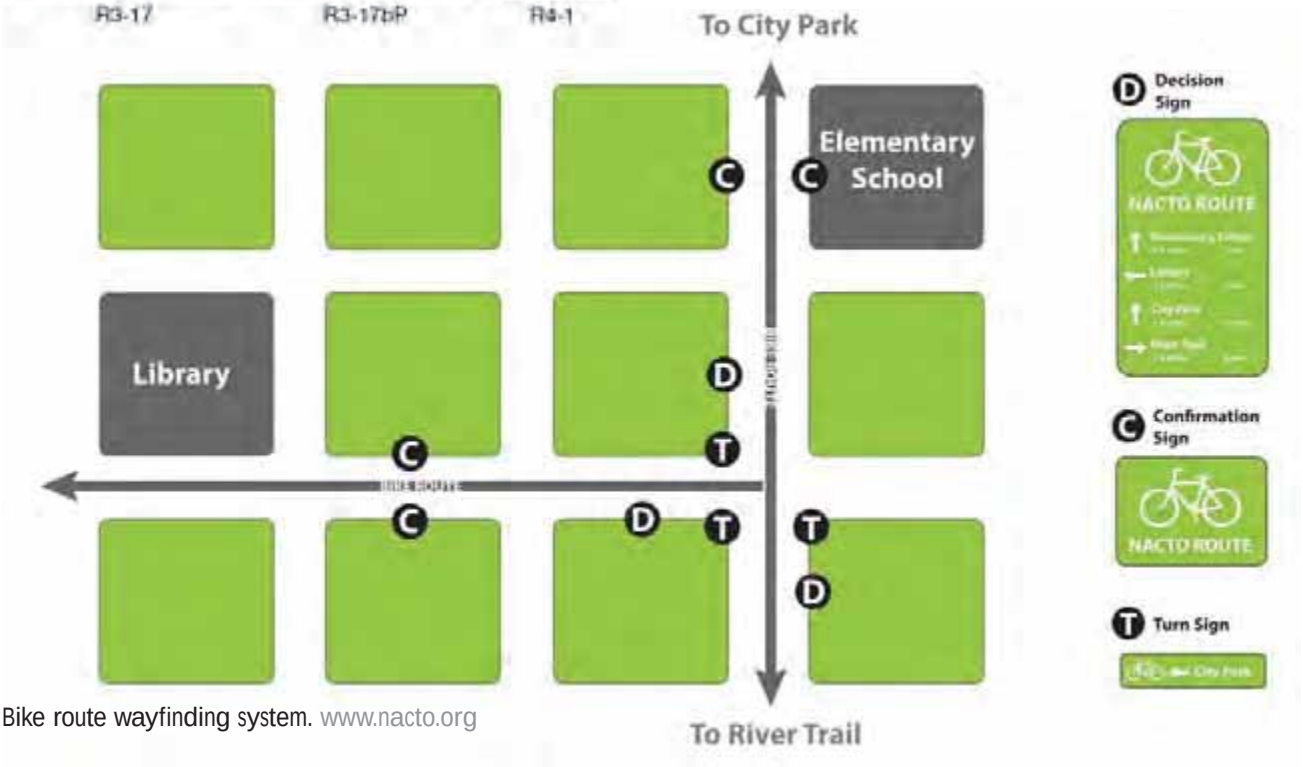
Signage on a multi-use path provides clear guidance to pedestrians & cyclists. KED, inc.

BICYCLE SIGNAGE

Bicycle signage provides vital situational information to cyclists, motorists and pedestrians. Signage directs bicyclists toward bicycle facilities and preferred bike routes, as well as raises awareness of bicycle presence to vehicles. There are three categories of bike signage, which include regulatory, warning, and wayfinding signage. Regulatory signage is used to inform bicyclists, motorists, and pedestrians of the standard traffic laws and practices. Warning signage provides warnings to bicyclists, motorists and pedestrians of existing route conditions such as pedestrian crossings or hazardous road conditions. Wayfinding signage directs bicyclists to optimal travel routes.

In many situations custom signage acts as a way to unify the campus bicycle network and addresses specific conditions unique to the location. The university could benefit from both standard and custom signage. Standard sinage delineating bike lanes, intersections and shared lane conditons should occur along all routes. Custom signage for situations such as dismount zones at high pedstrian traffic areas or no pass zones at bus stops could alleviate many potential conflicts and accidents.



Bike route wayfinding system. www.nacto.org

END OF TRIP FACILITIES

Besides the route a bicyclist chooses, bicycle parking facilities are considered to be the next most important component of the bicyclist's journey. The purpose of parking facilities should be to provide safe and convenient parking and storage locations. Racks are typically located within close proximity of all front entrances to every building on campus. They often include both covered and non-covered options such as stand-alone bike racks, clustered parking shelters or designated areas within parking decks.

Bike Racks

The University of Georgia has a variety of existing bike racks in use around campus. According to recent bicycle studies, an adequate bike rack should allow the user to lock his or her bike frame and at least one wheel to the rack using a standard "U-Lock" locking device, while supporting the bike in two places. Although the university's current design standard, the ribbon rack, does not support the bike frame in two places, it does allow the bike frame and wheel to be locked together. Replacing outdated racks that only support the front wheel is often recommended. This style of rack is sometimes referred to as a "wheel-bender" because they do not adequately support a bike. A common result is a domino effect of bicycles falling over when one bike falls down. The consequence of this domino effect is usually a bent wheel and can cost a cyclist $100 to repair. Aside from damage prevention there are bike racks that are more efficient in regard to capacity and associated space requirements. Adequate racks for replacement include, the inverted U, the Post-and-Loop rack or the CORA Expo.

Standard campus ribbon rack. KED, inc.

Bike locked to railing on a campus sidewalk. KED, inc.

"Wheel-bender" bike rack. KED, inc.

CORA Expo bike rack. www.cora.com

Covered bike parking in Portland, OR.
www.flickr.com

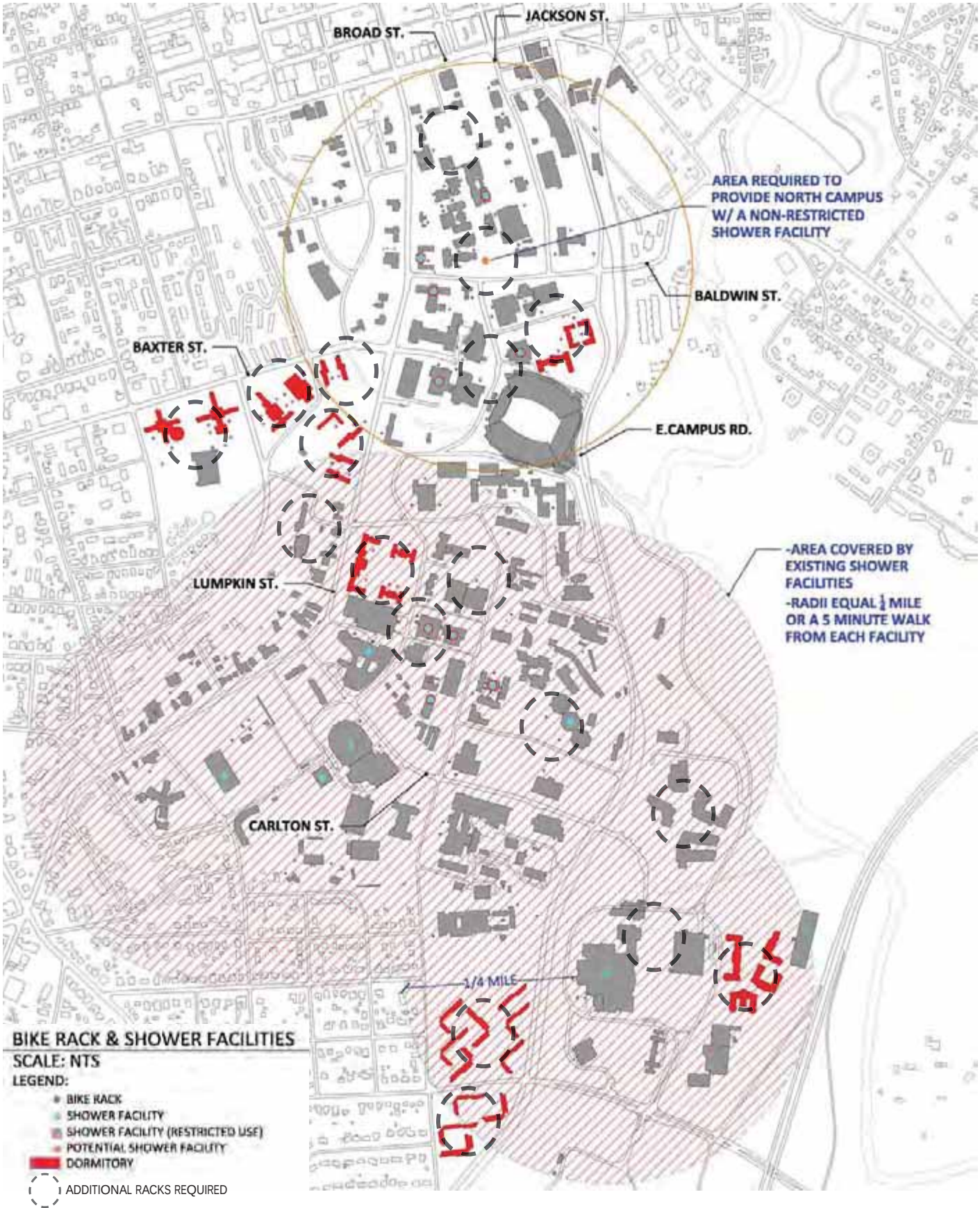
Ramsey Center, UGA. www.uga.edu

Covered Bicycle Parking

Non-covered bike parking can discourage many would-be bicyclists, especially in urban environments or areas prone to temperate weather. Covered bike parking not only provides shelter for bikes, but also exposes biking as a viable and respectable means of alternative transportation within the community. Dormitories on campuses, which typically have a large number of bikes parked outside, are great candidates for high capacity covered bike parking facilities. Student residents are normally forced to leave their bikes exposed to the weather and possible theft. Covered bike parking not only protects the bikes students have invested in, but also encourage ridership. A bike shelter itself can also offer maintenance services such as air pumps and bike tools or act as storage for campus bike rental programs. High capacity covered bike parking stations located in strategic commuter locations often provide lockers and shower facilities. A simple and cost effective way to provide covered parking on campus is to retrofit existing parking spaces or vacant corners on the first level of a parking deck. This alone can provide bike parking on campus that would conceivably be within a 5 minute walk from any building. New buildings on existing campuses often incorporate covered bike parking and supplemental facilities.

Shower Facilities

Shower and changing facilities are crucial for some commuters, especially if they are required to dress to a certain occupational standard. This is the case for many faculty and staff, and bicycling to work without the ability to shower and/or change is a deterrent. Because LEED certification gives credit for providing shower and changing facilities in new construction, it is likely that UGA will install more showers in all new construction. However, there should be consideration given to the inclusion of such facilities in any future renovation projects. As bicycling on campus increases, a subsequent need for shower facilities will likely increase as well. A series of strategically located shower facilities with a high capacity bike parking station could accommodate this need and serve as an alternative to costly building renovations.


BROAD ST.
JACKSON ST.
AREA REQUIRED TO PROVIDE NORTH CAMPUS W/ A NON-RESTRICTED SHOWER FACILITY
BALDWIN ST.
BAXTER ST.
E.CAMPUS RD.
-AREA COVERED BY EXISTING SHOWER FACILITIES
-RADII EQUAL ¼ MILE OR A 5 MINUTE WALK FROM EACH FACILITY
LUMPKIN ST.
CARLTON ST.
1/4 MILE
BIKE RACK & SHOWER FACILITIES
SCALE: NTS
LEGEND:
BIKE RACK
SHOWER FACILITY
SHOWER FACILITY (RESTRICTED USE)
POTENTIAL SHOWER FACILITY
DORMITORY
ADDITIONAL RACKS REQUIRED

Existing Bike Rack Inventory

The charts below show the existing number of legitimate bike parking opportunities on North and South Campus. The numbers reflect the capacity provided by each locations' standard campus bike racks. A shortage of bicycle parking was observed at many locations on campus. Most locations require **5-10 additional spaces** per location. However some of the student dormitories, dining facilities and hubs on campus require up to **10-20 additional spaces**. Overflow bikes were seen locked to railings, light fixtures, utility poles, signs, benches and trees.

NORTH CAMPUS BIKE RACKS

BUILDING	BIKE CAPACITY
Baldwin	25
Caldwell	20
Candler	14
Denmark	21
Gilbert	12
Joe Brown	5
LeConte	9
Main Library	35
Park	30
Peabody	15
Terrell	5

SOUTH CAMPUS BIKE RACKS

BUILDING	BIKE CAPACITY
Fine Arts	15
Aderhold	10
Barrow	5
Biological Sciences	40
Boggs	28
Bookstore	15
Boyd Graduate Studies	40
Brumby	65
Chemistry	15
Church	30
Clark Howell	5
Clark Howell	5
Coliseum Training Center	10
Conner	15
Coverdell Center	5
Creswell	40
Dance	10
Ecology	10
EITS/Statistics/Natural Hist	10
Food Science	10
Forestry Resources	10

BUILDING	BIKE CAPACITY
Georgia Center For Contin	10
Hill	28
Lipscomb	30
Marine Sciences	7
Mary Lyndon	10
Meli	30
Miller Plant Sciences	22
Myers	30
Pharmacy South	10
Physics	30
Poultry Science	10
Russell	35
Rutherford	20
Science Library	20
Soule	10
Stegeman Coliseum	3
Tate II	10
Tate Student Center	21
Veterinary Medicine	35
Zell B. Miller Learning Cent	70

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SECTION 2.3 RECOMMENDED IMPROVEMENTS

OVERVIEW

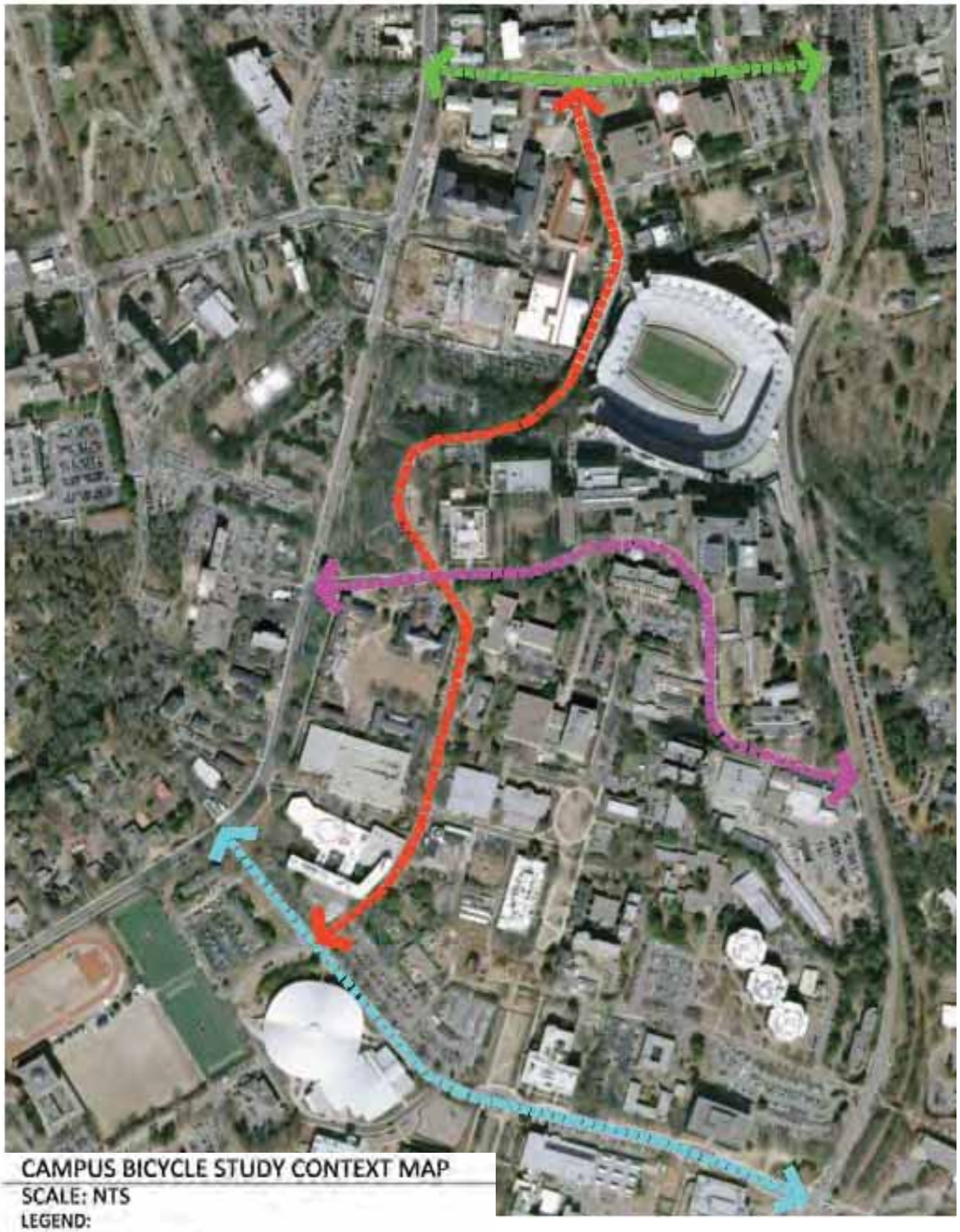
The following section includes detailed site observations for existing conditions and improvement recommendations for facilities along Sanford Drive, Baldwin Street, Cedar Street and Carlton Street. The intent of the recommendations provided in the subsequent pages is to create a dialogue and aide the decision making process that will ultimately provide safer and more efficient conditions for bicyclists, motorists and pedestrians. Within the core of campus, these recommendations are based on the information gained from roadway inventory, analysis and participant observation studies as well as user group input. Of the roads covered in this study the majority are able to accommodate bike lanes through restriping. Unfortunately as a short-term solution simply restriping will not produce a complete standard in regard to travel and bike lane widths. A compromise will be required in the form of one of two concepts:

- (2) 10' Standard Travel Lanes
- (2) 3.5' Substandard Bike Lanes

or

- (2) 9.5' Substandard Travel Lanes
- (2) 4' Standard Bike Lane

In order to provide a complete standard for both travel and bike lanes, long-term recommendations are included in the following pages. These recommendations are intended to provide both cost conducive and realistic site solutions in order to provide both efficient and safe bicycle and transportation facilities that adhere to the campus master plan and strategic plan goals.


CAMPUS BICYCLE STUDY CONTEXT MAP
SCALE: NTS
LEGEND:
SANFORD DRIVE
BALDWIN STREET
CEDAR STREET
CARLTON STREET

SANFORD DRIVE

Existing Conditions:

The section from Baldwin Street to Hooper Street is the only one-way portion of roadway along Sanford Street. Heading towards the Baldwin Street intersection from the Hooper Street intersection the road becomes one 20' wide lane and then widens to accommodate two turn lanes which total 24'. In addition there is a 4' wide bike lane on the Journalism side of the street, which passes by four on-street parking spaces with a mid-block pedestrian crosswalk. There no southbound bike lane, and cyclists traveling from Baldwin Street consistently use the sidewalk and gutter on the Army ROTC side of the road to access the Tate Center and the remainder of the Sanford Street route to South Campus. This particular issue has created a significant cause for concern from both pedestrians, UGAPD and UGA Transit. The risk of injury or death is especially greater as the cyclists who choose to use the sidewalk and road are able reach high speeds as they descend the hill from the intersection.

The Hooper Street to Tate Center/Reed Alley section of Sanford Street (Photo 1) has sidewalks that range from 5-10' on both sides of the street. The Average road width is 33' with two 16.5' travel lanes (North/South) and limited access during the day. Curb and gutter exists on both sides of the street with the exception of the entrance to Reed Alley. Across from the Reed Alley intersection there is a bus bay at the Tate Center entrance. The lack of bike lanes and the speeds of cyclists as they enter this area are a significant issue due to the congested nature of this segment of road.

Once beyond Reed Alley and the Tate Center, Sanford Street becomes a bridge that connects just below Field Street. 8' sidewalks run along either side of the bridge. The average road width is 27' with two 13.5' travel lanes (North/South), which are limited access up to Field Street. This segment of the road transitions to a header curb on both sides. Bike lanes do not exist and the sidewalk on the stadium side of the road has a railing to retain pedestrian traffic.

Once past the bridge on Sanford Street the road climbs to an intersection with Field Street. While there are 7' sidewalks on both sides, the road pinches at the Geography parking lot where it is at its narrowest width of 24' with two 12' travel lanes and header curb on both sides (Photo 2). The pinch point occurs approximately at the location of a mid-block pedestrian crosswalk. No bike lanes or signage indicating the change in road conditions exist on this segment.

The Geography parking lot to Cedar Street section of Sanford Street also has 7' sidewalks on both sides. However, the average road width is 30' with two 15' travel lanes and header curb on both sides. There are bus stops on both sides; one at the Cedar Street intersection and one at the Physics Building. A mid-block pedestrian crosswalk connects both. In addition there is also a stretch of on-street parking along the Lumpkin Woods side of road (Photo 3). There are no bike lanes or signage along this section of Sanford Street.

(1) Bike lane on one-way section of Sanford Dr. KED, inc.

The intersection of Cedar Street and Sanford Street is significant in that there are existing standard bike lanes on Cedar Street from Lumpkin Street to Sanford Street. As the road continues towards Soule Street there are existing 7' sidewalks on the Soule Hall side of the road and 10' sidewalks on the Rutherford Hall side of the road. The average road width is 27' with two 13.5' travel lanes and header curb on both sides. At Rutherford Hall there are 24 existing on-street parking spaces located on the Rutherford Hall side of the street (Photo 4). In addition at the edge of the road and parking spaces there is an existing drainage grate that runs the extents of the parking area. Crosswalks connect bus stops on both sides at Rutherford Hall and Soule Hall. The most significant issues observed along this section of Sanford were cyclists passing UGA Transit with oncoming traffic and cyclists being forced to ride in or along the drainage grate. Both issues pose obvious hazards.

From Soule Street to Snelling Dining Hall and the Georgia Center Sanford Street is consistent with 8' sidewalks on both sides and a road width of 27' with two 13.5' travel lanes and header curb on both sides. Pedestrian crosswalks connect two bus stops at the dining hall and GA Center. There are no existing bike lanes along this section of Sanford Street.

As Sanford Street continues past the Snelling Dining Hall and Georgia Center the sidewalks remain 8' wide on both sides. However, the road widens to 28'-30' with two 14'-15' travel lanes and header curb on both sides. Pedestrian crosswalks connect two bus stops at the dining hall and GA Center. There are no existing bike lanes along this section of Sanford Street. From Carlton Street there is a shared lane sign, which is in a state of disrepair.

(2) Cyclist entering narrowest section of Sanford Drive. KED, inc.

(3) Cyclist passing on-street parking at Physics. KED, inc.

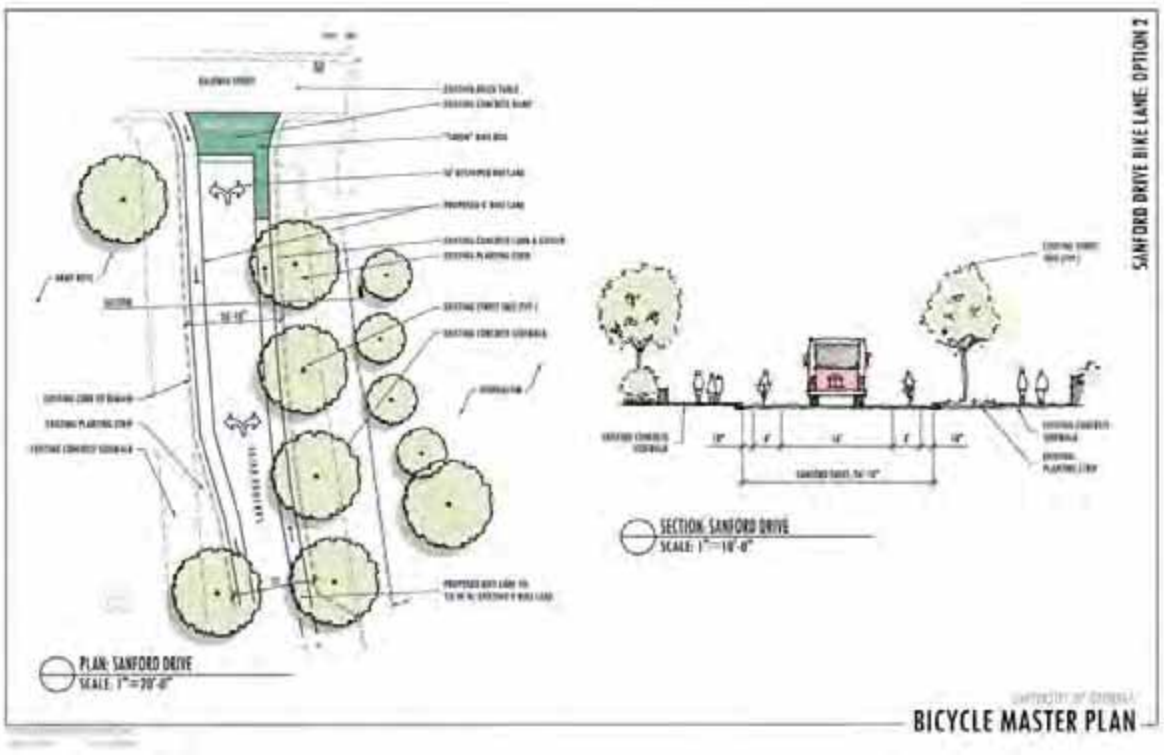
(4) Cyclist passing on-street parking at Rutherford. KED, inc.

SANFORD DRIVE

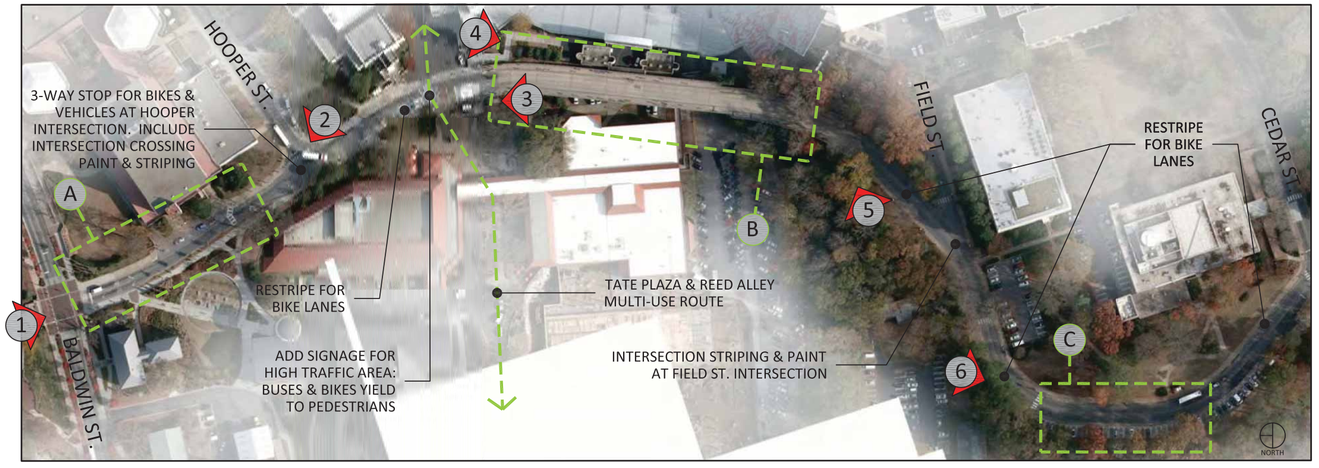
Site Improvement Recommendations:

In order to provide a standard situation meeting minimum requirements for both UGA transit and cyclists a minimum of (2) 4' bike lanes and (2) 10' travel lanes would need to occur along the route. The majority of the roadway as it currently exists does provide enough width to achieve this standard through re-striping. There are a few areas that do not provide enough width, which will require either a deviation from the standard bike or travel lane width by 6" - 1', or it will require minor street improvements to gain the 1' width needed. The latter effort will result in potential street or sidewalk reconstruction. Parking along the road could be relocated to proposed parking decks, which would allow the parking areas to evolve into bus stop zones. All intersections should be retrofitted with bike boxes and ingress/egress lanes in order to provide a safer and more visible posture for cyclists.

A probable cost for the road improvements proposed on Sanford Drive would be an average of $1068.50 per linear foot. This estimate represents a Master Plan Level of Cost and includes allowances and contingencies for unforeseen costs that may arise during plan refinement. The costs for bicycle facility installation or upgrades include street reconstruction such as complete removal and re-installation of road surfaces and sidewalks, utility adjustments or allowances for infrastructure upgrades, street lighting, signage, and adequate landscaping.



Proposed improvements to the Baldwin & Sanford intersection will reduce illegal contra-flow by reducing the existing number of travel lanes in order to incorporate a contra-flow bike lane.



SANFORD DRIVE LONG-TERM IMPROVEMENTS: BALDWIN TO CEDAR
SCALE: NTS

1 BIKES OFTEN RIDE ILLEGALLY ON THE SIDEWALK OR AGAINST TRAFFIC

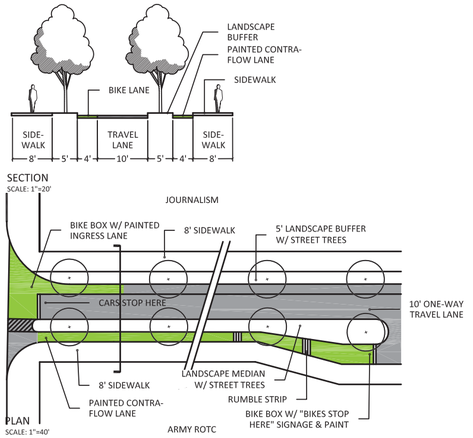
2 AS BIKES ACCELERATE THEY CREATE UNSAFE CONDITIONS FOR ALL

3 BUS STOPS/BAYS SHOULD HAVE PAINTED & DASHED BIKE LANES

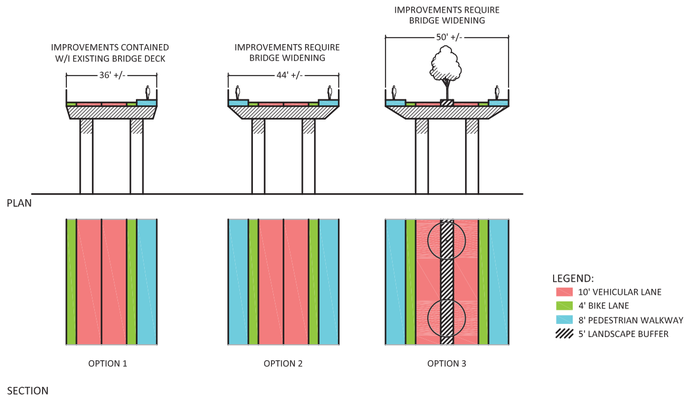
4 BIKES SHARE THE ROAD W/ BUSES OR RIDE ON THE SIDEWALKS

5 PINCHPOINT IN ROADWAY NARROWS BY 4'

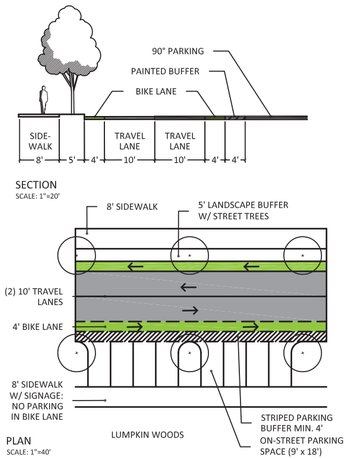
6 PEDESTRIANS IN THE ROAD & ABSENCE OF BIKE LANES W/ BUFFER



A CONTRA-FLOW LANE
SCALE: AS NOTED

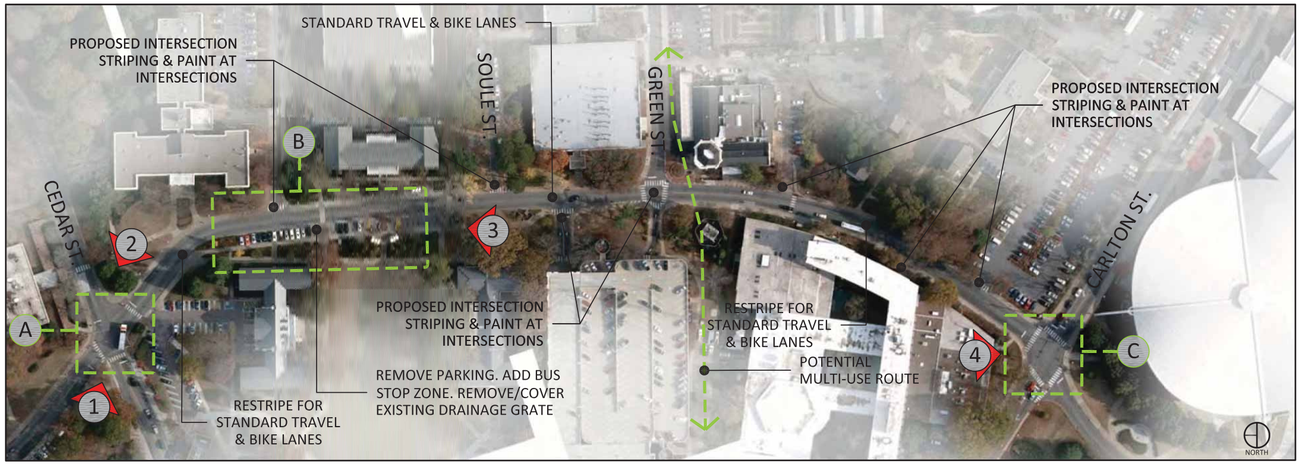


B BRIDGE CONCEPTS
SCALE: NOT TO SCALE



C ON-STREET PARKING (90°)
SCALE: AS NOTED

A contra-flow lane (Detail A) at the Baldwin Intersection will help reduce the conflict between cyclists, pedestrians and vehicles by providing a southbound lane and slowing cyclists down. Speed reduction measures such as rumble strips and radar signage can also help to reduce bike speeds while giving cyclists and enforcement visual indication of speed in general. While a radar sign will be more of an expense, another option is to incorporate a bike stop sign at the intersection of Hooper and Sanford. In addition, having a raised and planted median will help control and protect bikes in the contra-flow lane. In order to create a safer situation for cyclists traveling uphill towards the Baldwin Street, intersection facilities such as bike boxes and ingress lanes should be installed. These facilities will provide traffic awareness and a staging area for bicyclists as they enter North Campus. As bikes cross the Hooper Intersection the inclusion of two 4' bike lanes can occur by re-striping the road to accommodate two 11' travel lanes. Once beyond Reed Alley and the Tate Center, Sanford Street becomes a bridge that connects just below Field Street. In order to include bike lanes there are a few options (Detail B), which include working within the existing bridge width or widening the bridge to accommodate a landscaped median. As bikes exit the bridge the road will revert back to a template with standard travel and bike lanes and a landscaped buffer between the sidewalks and bike lanes. Bikes encounter a section with 90° on-street parking, which serves the Physics and Geology/Geography Buildings. While this parking remains there should be a painted and striped buffer separating the parking spaces from the bike lanes (Detail C).



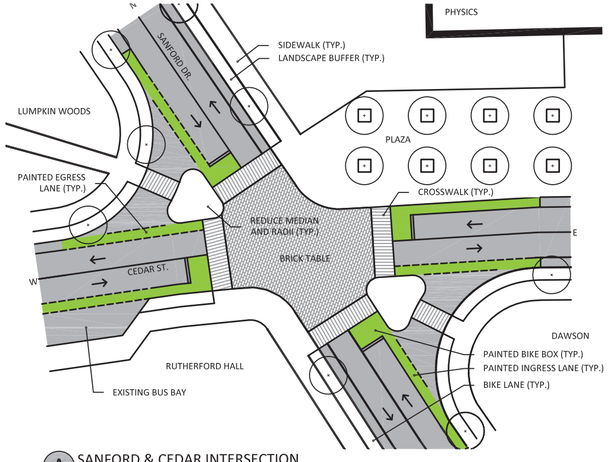
SANFORD DRIVE LONG-TERM IMPROVEMENTS: CEDAR TO CARLTON
SCALE: NTS

1 ABSENCE OF BIKE TREATMENT AT SANFORD & CEDAR INTERSECTION

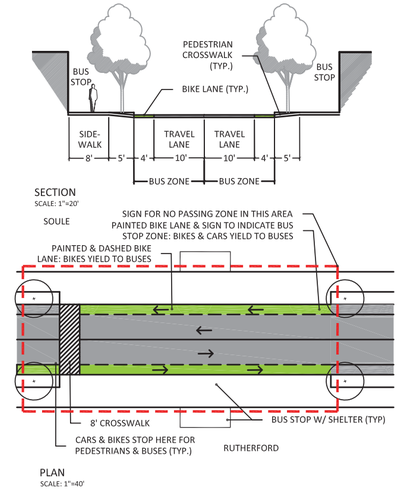
3 DRAINAGE GRATE & GUTTER CREATE A HAZARD FOR CYCLISTS. BIKES & VEHICLES OFTEN PASS BUSES AT STOPS

2 AERIAL VIEW OF SANFORD DRIVE & CEDAR STREET INTERSECTION

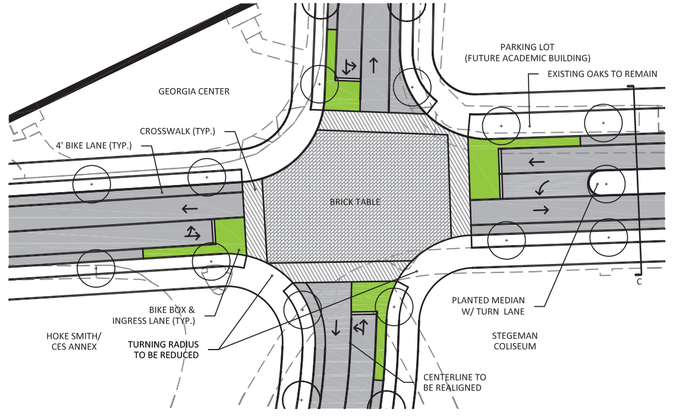
4 ABSENCE OF BIKE TREATMENTS AT THE SANFORD & CARLTON INTERSECTION



A SANFORD & CEDAR INTERSECTION
SCALE: 1"=40'



B BUS STOP ZONE
SCALE: AS NOTED



C SANFORD & CARLTON INTERSECTION
SCALE: 1" = 40'

The intersection of Cedar Street and Sanford Street (Detail A) should incorporate bike boxes with ingress lanes that lead into the boxes. In addition egress lanes should be incorporated at the outside of the right-turn lanes on to Cedar Street to alert motorists of bike lane presence. Along with appropriate signage and detection at each stop bar the intersection could be tabled to help calm traffic. The intersection could also be reduced in scale with the minimum required turning radii for buses and other larger emergency/service vehicles. The remainder of Sanford from the Cedar intersection to the Carlton intersection should be constructed to allow for the standard travel and bike lane widths with a tree buffer on both sides. This widening will require centerline realignment due to the varying existing conditions on either side of the roadway. The existing on-street parking at Rutherford and Soule Halls should be removed to accommodate the road widening effort and create a safer situation for the high-use greenspace and bus stops. Bus stops and bays should be consolidated into bus stop zones (Detail B) to reduce the amount of conflict with cars, bikes and pedestrians. The preferred situation for bus stops is to eliminate bus bays which require buses to pull out of traffic and merge back into traffic. In addition bus bays promote passing, which is a dangerous and illegal practice of many cyclists and motorists. As with other intersections the Carlton Street and Sanford Street intersection (Detail C) will need bike facilities such as bike boxes, ingress lanes and appropriate signage and detection devices.

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BALDWIN STREET

Existing Conditions:

Baldwin Street is comprised of three 10' wide vehicular lanes. The center lane acts as both a left turn lane and a second westbound lane after Sanford Drive (Photos 1 & 2). The streetscape includes an 18" concrete curb and gutter, planting strips with street trees on both sides that range from 5'-8' wide, and sidewalks that vary in width between 8' and 10'. Beyond the sidewalk on both sides of the street there are retaining walls in many places ranging in height from 3' to over 6'. The landscape beyond incorporates both ornamental and woody plants and large deciduous trees. There is a bus stop at Brown Hall that, when in use, forces traffic to stop in the right lane. Pedestrians can utilize crosswalks at all intersections including a decorative brick table at the Sanford Drive intersection (Photo 3). There are also two mid-block crosswalks located at the bus stop and at the Herty Drive entrance/exit. As the road nears the Thomas Street/East Campus Road and Baldwin Street intersection, there is signage denoting an approaching bike route, which is the bike lane along East Campus Road.

(1) Three westbound lanes towards Lumpkin Street. KED, inc.

(2) Three westbound lanes towards Lumpkin Street. KED, inc.

(3) Brick table at the Sanford intersection. KED, inc.

(4) Bike route at intersection with East Campus Road. KED, inc.

BALDWIN STREET

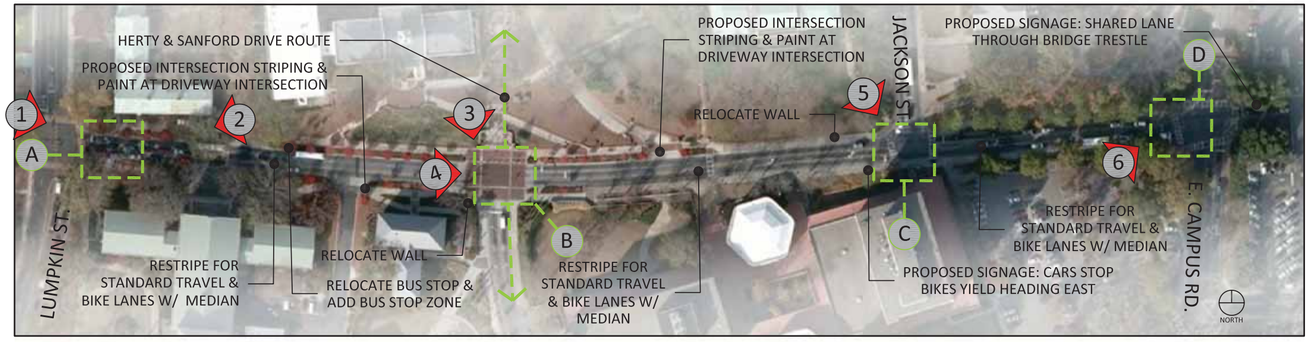
Site Improvement Recommendations:

A long-term solution that maintains the current configuration of traffic lanes while incorporating 4' wide bike lanes will require both road construction and significant streetscape improvements. The inclusion of bike lanes would require the road to be widened in order to facilitate the 8' needed for the two bike lanes. A header curb will mitigate some of the expense associated with the road construction and will be more conducive to a safer riding experience in the bike lanes. Many of the existing street trees will require relocation or removal and replacement with new trees. Planting strips for street trees should be, at a minimum, 5' wide, which will require sidewalk realignment along the entire length of the street. The implications of sidewalk realignment will include relocating or constructing retaining walls along both sides of the street. There will also be utilities such as light-poles that will need to be relocated. While extensive, this option may also be an opportunity to perform other streetscape improvements not directly associated with the bicycle improvements themselves such as opening the existing threshold into North Campus located at the Sanford Drive intersection and the closure and rerouting of vehicular access on Herty Drive. This in particular will lend itself to improvements for an accessible multi-use path into North Campus associated with the Herty Mall corridor. All intersections along Baldwin should have a standard treatment of colored advanced stop lines (ASL) and bike boxes that will allow cyclists to be in a more visible posture on the road. Signage for the proposed bike lanes, ASLs, bike boxes and connections to approaching primary routes should be appropriately sited to ensure visibility to motorists, cyclists and pedestrians. The intent of these improvements is to connect primary cycling routes along Lumpkin Street and East Campus Road to Jackson Street and Sanford Drive.

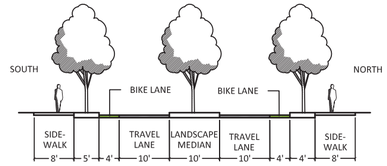
A probable cost for the long-term road improvements proposed on Baldwin Street would be an average of $1193.35 per linear foot. This estimate represents a Master Plan Level of Cost and includes allowances and contingencies for unforeseen costs that may arise during plan refinement. The costs for bicycle facility installation or upgrades include street reconstruction such as complete removal and re-installation of road surfaces and sidewalks, utility adjustments or allowances for infrastructure upgrades, street lighting, signage, and adequate landscaping.

A more cost effective solution in the short-term for consideration would be the removal of the middle lane where it is not specifically required for left-hand turns. Removing this lane would decrease the overall construction scope within the Baldwin Street Corridor.

Short-term improvements such as restriping and signage could bring the overall cost of development down significantly to a probable cost of $50 per linear foot.



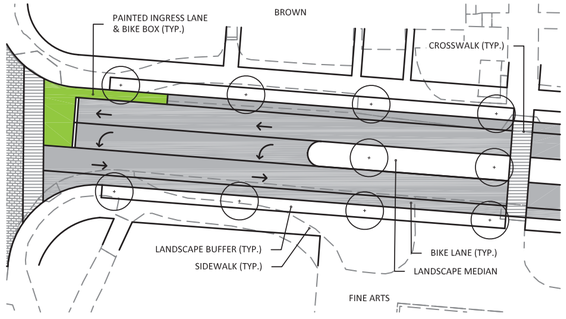
BALDWIN STREET LONG-TERM IMPROVEMENTS: LUMPKIN TO EAST CAMPUS
SCALE: NTS



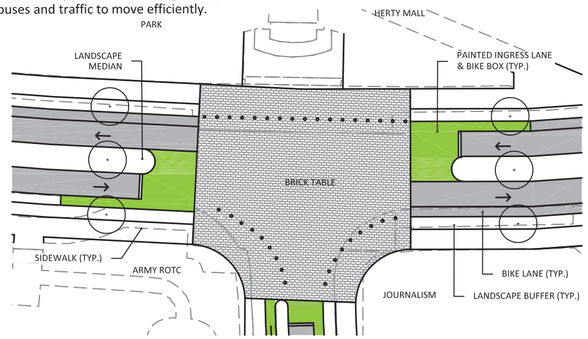
BALDWIN STREET: TYPICAL SECTION
SCALE: 1" = 20'

As a "Complete Street" Baldwin Street will require modifications to the existing 3 lanes of vehicular traffic in order to create a roadway with standard walkways, landscape buffers, bike lanes, travel lanes and a landscaped median buffer. In order to accommodate the minimum 5' landscape buffer and 8' sidewalk, some areas along the street will need to be widened. This is more challenging at the wall along the Sanford intersection of the Army ROTC building and the wall at the Jackson intersection of Leconte Hall. In these areas the walls will need to be relocated in order to accommodate the 8' walkway. The inclusion of a raised and planted buffer will reduce and prevent bike, pedestrian & vehicle conflicts related to speed and illicit crossing by bikes and pedestrians. At each of the intersections the landscaped medians shall give way to a left turn lane to allow buses and traffic to move efficiently.

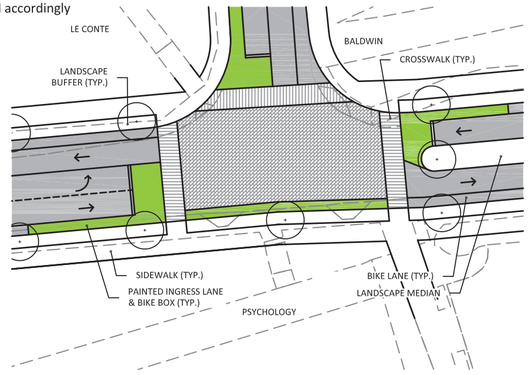
Incorporation of bike boxes and ingress lanes at each intersection will give cyclists the visibility necessary to indicate their place on the roadway and will prevent unnecessary conflicts. All intersections should incorporate bike boxes, ingress lanes and signage and detection devices. Tabling at each intersection will also help to reduce traffic speeds through the intersections while maintaining efficient and safe circulation for pedestrians, bikes and vehicles. The intersection at Jackson Street (Detail C) will include a yield for bikes to traffic turning onto Baldwin heading towards East Campus. Conceivably at a red light, bikes heading towards East Campus should be able to continue through the intersection, a standard practice in high traffic areas. The intersection should be marked accordingly with signage and visible paint.



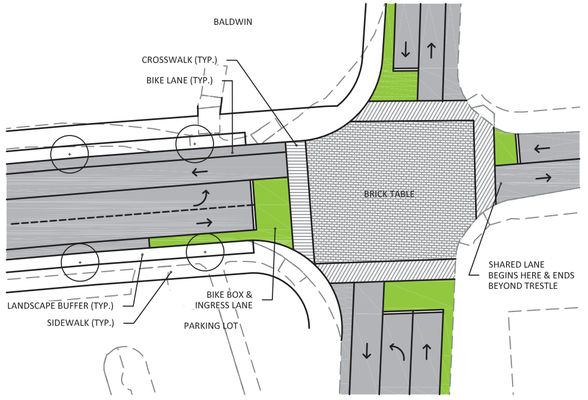
A BALDWIN & LUMPKIN INTERSECTION
SCALE: 1"=40'



B BALDWIN & SANFORD INTERSECTION
SCALE: 1"= 40'



C BALDWIN & JACKSON INTERSECTION
SCALE: 1"= 40'



D BALDWIN & EAST CAMPUS INTERSECTION
SCALE: 1"= 40'


1 ABSENCE OF BIKE TREATMENT IN BALDWIN & LUMPKIN INTERSECTION

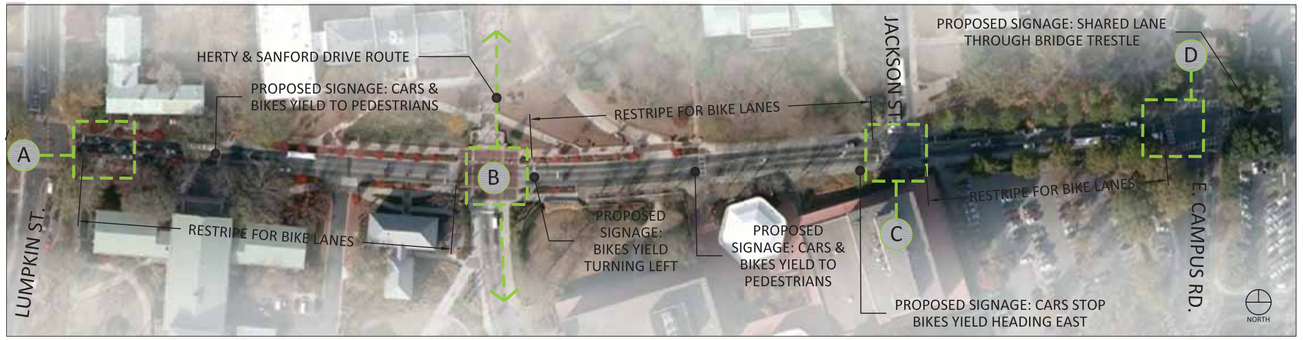

2 REDUCE CONFLICTS W/ BIKE LANES & LANE REDUCTION


3 BIKES OFTEN RIDE ILLEGALLY ON THE SIDEWALK OR AGAINST TRAFFIC

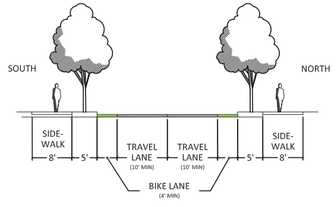

4 BIKE TREATMENT W/ MEDIAN AT BALDWIN & SANFORD INTERSECTION


5 AERIAL VIEW OF BALDWIN & JACKSON INTERSECTION


6 AERIAL VIEW OF BALDWIN & E. CAMPUS INTERSECTION



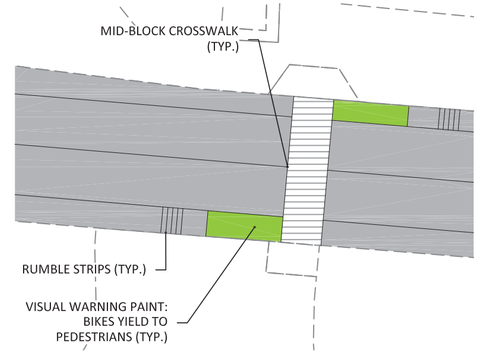
BALDWIN STREET SHORT-TERM IMPROVEMENTS: LUMPKIN TO EAST CAMPUS
SCALE: NTS



BALDWIN STREET: TYPICAL SECTION
SCALE: 1" = 20'

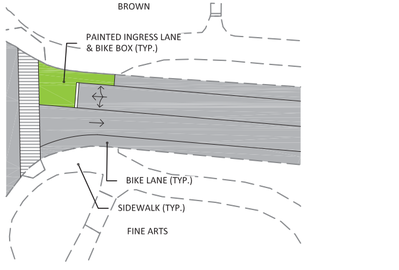
Through the elimination of the existing center turn-lane, the existing conditions along Baldwin Street will accommodate both standard 10' travel lanes and 4' bike lanes. This option will only require restriping and signage, therefore making it the most cost effective solution. As with all options the incorporation of bike boxes and ingress lanes at each intersection will give cyclists the visibility necessary to indicate their place on the roadway and will prevent unnecessary conflicts with motorists and pedestrians. In addition all intersections should include appropriate signage and detection devices.

The Jackson Street intersection (Detail C) should include a yield for bikes to traffic turning onto Baldwin heading towards East Campus. Conceivably at a red light, bikes heading towards East Campus Road should be able to continue through the intersection, a standard practice in high traffic areas. The intersection should be marked accordingly with signage and visible paint.

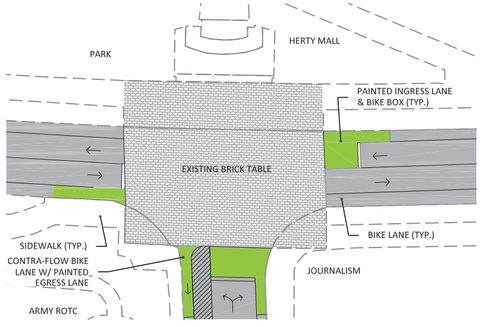


All crosswalks should include at a minimum appropriate signage indicating that bikes should yield to pedestrians, just as motorists do. At mid-block crosswalks signage should also be supplemented with visibly painted ingress lanes and rumble strips to indicate an approaching yield to pedestrians.

BALDWIN STREET: MID-BLOCK CROSSWALKS
SCALE: 1" = 20'

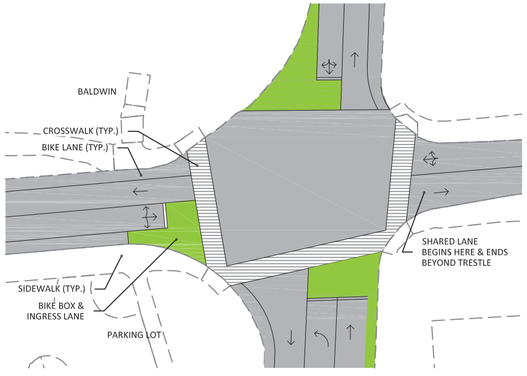


A BALDWIN & LUMPKIN INTERSECTION
SCALE: 1"=40'



B BALDWIN & SANFORD INTERSECTION
SCALE: 1"= 40'

C BALDWIN & JACKSON INTERSECTION
SCALE: 1"= 40'



D BALDWIN & EAST CAMPUS INTERSECTION
SCALE: 1"= 40'

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(1) Existing bicycle lanes on Cedar Street. KED, inc.

(2) Sidewalk with stormwater inlets on Cedar St. KED, inc.

CEDAR STREET

Existing Conditions:

The segment of Cedar Street from Lumpkin Street to Sanford Street includes two 4' wide bike lanes, two 12' wide travel lanes, sidewalks, and tree strips which serve as a good example of the complete street profile (Photo 1). There is a bus stop along both sides of the street, both of which incorporate dashed lines to acknowledge bus encroachment into the bike lanes when stopped. Other than pedestrian crosswalks, the intersection does not include any markings specifically for cyclists. Once across the intersection there is no pedestrian crosswalk, and the roadway narrows from 32' to 24' wide with header curbs. There is a consistent 5' sidewalk on both sides of the street up the hill to the D.W. Brooks Drive intersection, with a mid-block crossing from Meyers to Physics. Along the Physics side of the road there is an additional 3' of paving in the form of exposed aggregate concrete at the back of curb (Photo 2). Past the D.W. Brooks Drive intersection the sidewalk on the Conner Hall side of the street terminates at the Lumpkin House forcing pedestrians to cross to the other side of the road along the Chemistry Building. At the Lumpkin House the roadway narrows again to 22' with a wall that runs behind the Lumpkin House (Photo 3). On the opposite side of the road there is a bus bay. Beyond the Lumpkin house there is another mid-block crosswalk, where the sidewalk returns on both sides. As the road continues downhill towards East Campus Road there is a bus stop on the Connor Hall side. Beyond the bus stop there is a 200' stretch of on-street parking on both sides of the street (Photo 4), which ends at the Steam Plant and Food Science Building. The road width from Conner Hall to East Campus widens again to 24' with header curb and 5-7' sidewalks on both sides. A rail line follows the sidewalk from the Steam Plant to the intersection with East Campus Road (Photo 5).

(3) Traffic in front of the Lumpkin House. KED, inc.

(4) On-street parking along Cedar St. KED, inc.

(5) Rail line along Cedar St. KED, inc.

CEDAR STREET

Site Improvement Recommendations:

The segment of Cedar Street from Lumpkin Street to Sanford Drive has an ideal profile regarding bike and travel lanes and should be used as a model for improvements along the remainder of the route. However, the inclusion of bike lanes along the remaining portion of Cedar Street from Sanford Street to East Campus Road must be handled in a manner that responds to the significant decrease in road width.

In order to introduce bike lanes onto Cedar Street one option would be to eliminate a vehicular travel lane and provide a single, one-way travel lane. This would require a traffic study to determine the best direction of flow to maintain. UGA Transit would also need to determine the best way to reroute bus traffic and identify any impacts on their collective route system.

An alternative to adding bike lanes could include maintaining both travel lanes, but closing Cedar Street to general daytime through-traffic from Sanford Drive to the Conner Hall parking area entrances. This concept would be congruent with the existing limited use of Sanford Drive along Sanford Stadium and the Tate Student Center during daytime hours. While this approach would not provide ideal dedicated bicycle facilities, it would enhance bike level of service and increase pedestrian safety by significantly reducing the number of vehicles on the roadway.

In order to maintain the existing two opposing lanes of traffic while introducing standard bike lanes the street would need to be widened. This would be more feasible on the Physics side of the road and would involve removal and reconstruction of the sidewalk thus creating an 8' road profile that would include two 10' travel lanes and two 4' bike lanes. This would result in roadway, sidewalk and utility improvements on the Physics side of the street.

The intersections along Cedar Street should incorporate measures such as "Shared Lane" and "Bike Lane Ahead/Ends" signage as well as colored Bike Boxes and Advanced Stop Lines. The success of these treatments at the intersections will rely heavily on the conditions of the roadway itself as it leads to the intersections.

As suggested, in order to allow bike lanes, the road will need to be widened. If the objective is to introduce standard bike lanes, maintain standard travel lanes, and adhere to the goals laid forth in the Campus Master Plan, conversion to a complete street profile should be considered in the long-term. This option would involve not only road widening, but it would create an ideal situation from a comprehensive streetscape point of view. At the Lumpkin House and Chemistry segment of Cedar Street the roadway would encroach into the existing landscape and hardscape in front of the Chemistry Building. This will allow the road to widen, which in turn will also allow for a standard sidewalk to occur next to the Lumpkin House. Retaining walls should be removed on the Physics side of the street while retaining walls would be required along the Myers and Conner Hall side of the street. As noted in the Campus Master Plan an alternative bike route connection could occur at the future entrance to the D.W. Brooks Mall extension as it begins at Connor Hall and connects at the Air Force ROTC Building. Bus bays could also be relocated to the existing on-street parking at Food Science Building and Connor Hall. Ultimately, while this option would be the most costly, it would provide an opportunity for Cedar Street to evolve into a sense-of-place destination on campus and serve as host to the northern terminus to D.W. Brooks Mall.

A probable cost for the long-term road improvements proposed on Cedar Street would be an average of $1160.77 per linear foot. This estimate represents a Master Plan Level of Cost and includes allowances and contingencies for unforeseen costs that may arise during plan refinement. The costs for bicycle facility installation or upgrades include street reconstruction such as complete removal and re-installation of road surfaces and sidewalks, utility adjustments or allowances for infrastructure upgrades, street lighting, signage, and adequate landscaping.

1 PROPOSED AREA FOR BUS STOP ZONE

2 CYCLISTS STOPPED IN VEHICULAR TRAFFIC

3 PEDESTRIANS OFTEN NEGLECT TO USE CROSSWALKS

4 ON-STREET PARKING IS A POTENTIAL HAZARD FOR CYCLISTS

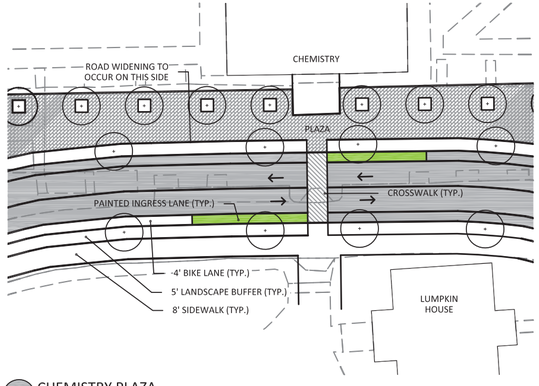
5 RAIL LINE CREATES LIMITATIONS IN STREETSCAPE IMPROVEMENTS

6 AERIAL VIEW OF CEDAR & E. CAMPUS INTERSECTION

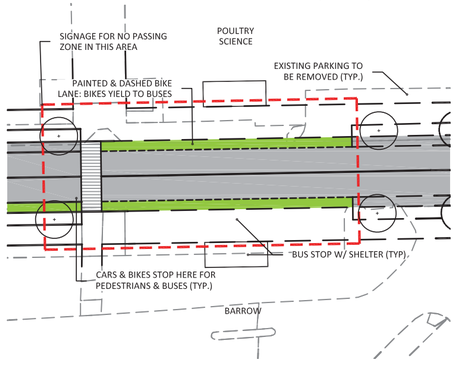
CEDAR STREET LONG-TERM IMPROVEMENTS: LUMPKIN TO EAST CAMPUS
SCALE: NTS

The section of Cedar Street from the Lumpkin Intersection to the Sanford Intersection is exemplary in regard to minimum standards required for basic bike facilities. In order to create a contiguous roadway with standard walkways, landscape buffers, bike lanes & travel lanes, Cedar Street, as a "Complete Street", will require modifications to the existing two lanes of vehicular traffic and sidewalks. This will occur on both sides of the road from the Sanford Drive intersection to the East Campus Road intersection. While the section of road between Lumpkin Street and Sanford Drive sets the precedent for bike lanes and travel lanes, it should incorporate bike boxes and ingress/egress lanes at the intersections. The roadway beyond Sanford Drive will need to widen in order to accommodate standard travel lanes, bike lanes and 5' landscape buffers with 8' sidewalks .
The proximity of the Lumpkin House to Cedar Street will require widening to occur on the Chemistry Building side of the road (Detail A).

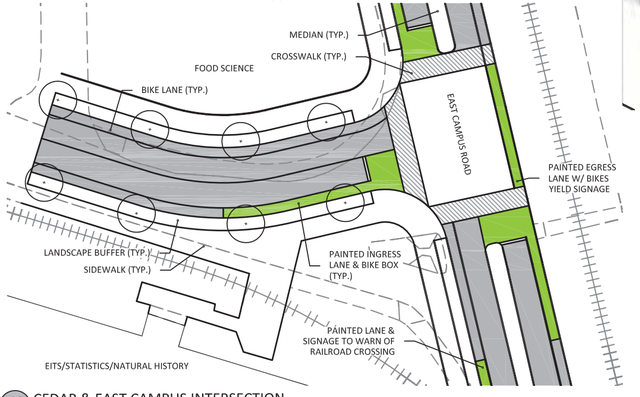
While this will encroach into the existing hardscape in front of the Chemistry Building, it creates an opportunity to establish a more updated plaza presence along the road way. All existing bus stops should be relocated to create consolidated bus stop zones. This will help consolidate and control traffic stops. In addition, all on-street parking should be relocated as it creates numerous conflicts with buses, service vehicles, pedestrians and cyclists (Detail B). The intersection at East Campus should be realigned during the road widening effort (Detal C) in order to create a more accommodating and efficient ingress/egress situation for Cedar Street. Because of the proximity of the road to the rail line the widening effort along this portion of Cedar Street will need to occur on the Food Science Building side of the street. This will also provide more of an opportunity for a landscaped frontage to the Natural History & Statistics side of the street as well as allow for more entrance and gateway treatment opportunities at the intersection.



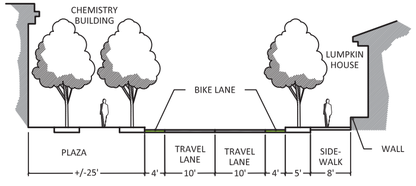
A CHEMISTRY PLAZA
SCALE: 1"=40'



B BUS STOP ZONE
SCALE: 1"=40'



C CEDAR & EAST CAMPUS INTERSECTION
SCALE: 1"=40'



CEDAR: PLAZA SECTION
SCALE: 1"= 20'

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(1) Intersection of Carlton St. & Lumpkin St. www.bing.com

(2) Stegeman Coliseum on Carlton Street. KED, inc.

(3) Bikes waiting for signal at D.W. Brooks & Carlton Intersection. KED, inc.

CARLTON STREET

Existing Conditions:

Carlton Street is the southernmost roadway on campus to connect the corridors of East Campus Road and Lumpkin Street. In addition it serves as a major connector to East Campus Village and the Performing and Visual Arts Center. Traveling from Lumpkin Street towards East Campus Road, the roadway begins at the 3-way intersection of Carlton Street and Lumpkin Street (Photo 1). The intersection includes pedestrian crosswalks and the existing bike lanes on Lumpkin Street pass through the intersection without any bike-specific markings. Sidewalks exist on the UGA Cooperative Extension Service building's side of Carlton Street, but they do not begin on the GA Center side until the entrance driveway to the center. Pedestrian access to and from the intersection is accommodated with a crosswalk.

The majority of Carlton Street is 3 lanes with two opposing travel lanes and one turn lane at each intersection. The road widths vary between 9.5' travel lanes from Lumpkin Street to Sanford Street and 12' wide lanes from Sanford Street to D.W. Brooks Mall (Photo 2). Past the D.W. Brooks Mall intersection the roadway transitions to travel lanes with standard 4' bike lanes (Photos 4-5), which terminate at the East Campus Road and Carlton Street intersection. Along the roadway there are five bus stops, two of which are bus bays. Two opposing bus bays at the Veterinary School and Plant Sciences have a pedestrian cross walk that provide a mid-block crossing. The issues observed along Carlton Street include cyclist and vehicle confrontations at the Brooks Mall intersection where the bike lanes begin and end (Photo 4), cyclists riding on the sidewalk on the Plant Sciences side of Carlton and cyclists attempting to merge into turn lanes at intersections (Photo 6).

(4) Bike lanes begin after D.W. Brooks. KED, inc.


(5) Bikes lanes on Carlton Street. KED, inc.


(6) Cyclist on pedestrian island at E. Campus & Carlton Intersection. KED, inc.

CARLTON STREET

Site Improvement Recommendations:

At the intersection of Carlton Street and Lumpkin Street, standard bike facilities such as bike boxes, ingress lanes, signage and detection devices should be implemented. Because this is a 3-way intersection and there is an existing bike lane network along Lumpkin Street, bike traffic traveling west on Lumpkin Street should have the opportunity to yield to turning traffic and continue moving by including a painted intersection lane and appropriate signage. Due to confinements on both sides of the road, the widening effort at the Lumpkin Intersection should be limited to standard travel and bike lanes and 8' sidewalk. Once past the mid-block crosswalk at the Georgia Center the road should widen on the Hoke Smith side of the street to accommodate landscape buffers on both sides. The Sanford intersection should incorporate standard intersection facilities for bikes.

The section of roadway from Stegeman Coliseum to D.W. Brooks Mall should widen on the parking lot side of the road opposite from the Coliseum and Training Facility. A bus stop zone will provide a consolidated and safer situation for all traffic and should be used as a model for all bus stops along the corridor (Detail C). A landscaped median offers a "Complete Street" treatment that benefits users from a functional standpoint by separating traffic uses as well as creating aesthetically pleasing streetscape for a area with numerous events and attractions.

There are many cyclist related issues between D.W. Brooks Mall and East Campus Road. These include conflicts with bikes and cars at the D.W. Brooks Mall intersection, specifically where the bike lanes begin and end. The D.W. Brooks Mall intersection should incorporate bike boxes, ingress lanes, signage and detection devices as well as an intersection crossing for northbound bike traffic. Bikes traveling southbound and turning into the Mall should have a crossing opportunity at the crosswalk in order to have safe and efficient circulation into the Mall.

The road should widen on the Veterinary Medicine side of the road to allow for the standard travel and bike lanes with landscaped medians and buffers and prevent cycle traffic on the sidewalk at Plant Science.

The East Campus Intersection should be reconfigured to reduce the number of travel lanes to three. The planted median will give way to accommodate a left turn lane at the intersection to provide efficient travel for buses and vehicles. The turning radii should be reduced at all corners to the minimum required for buses, service and emergency vehicles in order to eliminate the need for crossing islands, which will prevent pedestrians from being stranded. Standard bike facilities such as bike boxes, ingress lanes, signage and detection devices should be incorporated into the intersection.

A probable cost for the road improvements proposed on Carlton Street would be an average of $1118.53 per linear foot. This estimate represents a Master Plan Level of Cost and includes allowances and contingencies for unforeseen costs that may arise during plan refinement. The costs for bicycle facility installation or upgrades include street reconstruction such as complete removal and re-installation of road surfaces and sidewalks, utility adjustments or allowances for infrastructure upgrades, street lighting, signage, and adequate landscaping.

A short-term and cost-effective solution for Carlton Street could include the aforementioned improvements at all intersections, but would require the roadway to be restriped for 2 travel lanes and 2 bike lanes from Lumpkin Street to East Campus Road. The existing conditions of the roadway currently support this option and a portion of the street currently has standard bike lanes. This approach would require restriping, signage and standard intersection treatment without any significant roadway or sidewalk construction.

Short-term improvements such as striping and signage could bring the overall cost of development down significantly to a probable cost of $50 per linear foot.

Further Carlton Street roadway improvements and modifications are anticipated to occur in UGA's East Campus Precinct to improve vehicular circulation. This area is not included in this study.

1 AERIAL VIEW OF CARLTON & LUMPKIN INTERSECTION

2 A CYCLIST NAVIGATES THROUGH THE SANFORD INTERSECTION

3 BIKE LANES AND MEDIANS CREATE CONTIGUOUS BIKE FACILITIES

The Lumpkin Intersection (Detail A) should include standard bike facilities treatments. The widening effort at the Lumpkin Intersection should be limited to standard travel and bike lanes and 8' sidewalk. Once past the mid-block crosswalk at the Georgia Center the road should widen on the Hoke Smith side of the street to accommodate landscape buffers on both sides. The Sanford intersection should introduce standard intersection facilities for bikes (Detail B), and the intersection should also realign and reduce radii at all corners. The section of roadway from Stegeman Coliseum to DW Brooks Mall should widen on the parking lot side of the road opposite from the Coliseum and Training Facility. A bus stop zone can provide a consolidated and safer situation for all traffic (Detail C). A landscaped median offers a "Complete Street" treatment that benefits users from a functional standpoint by separating traffic uses as well as creating aesthetically pleasing streetscape for a area with numerous events and attractions.

CARLTON STREET LONG-TERM IMPROVEMENTS: LUMPKIN TO DW BROOKS
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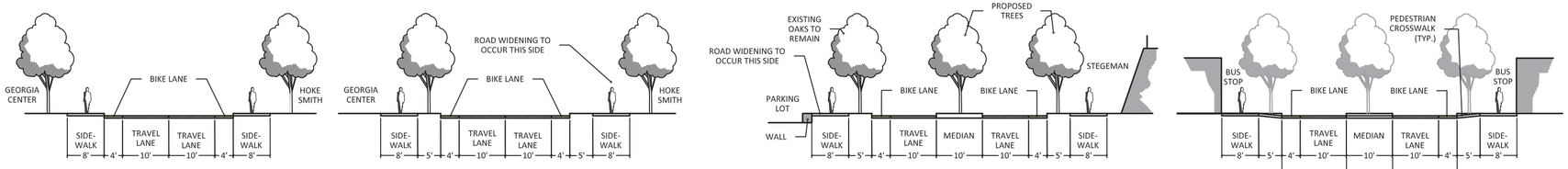
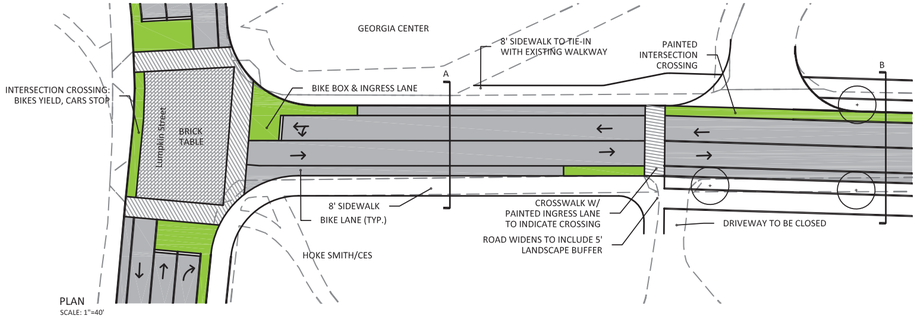
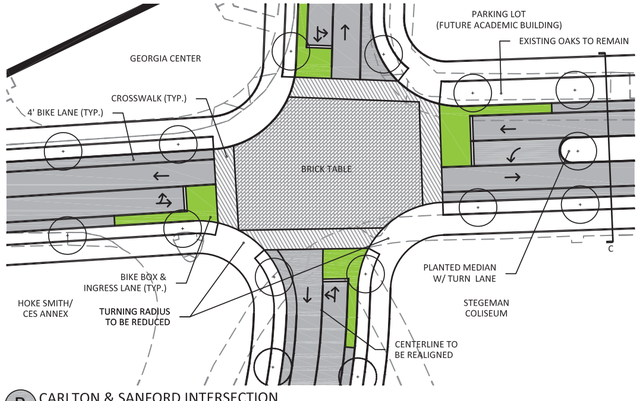


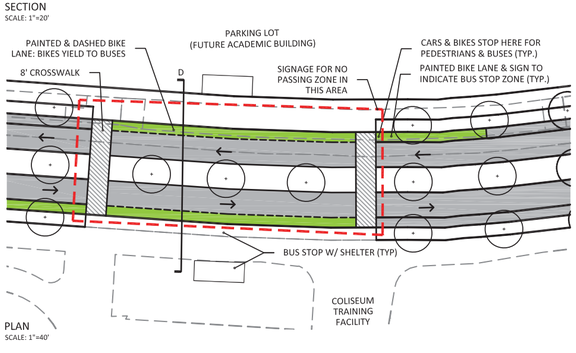
CARLTON STREET SECTIONS
SCALE: 1" = 20'



A CARLTON & LUMPKIN INTERSECTION
SCALE: AS NOTED

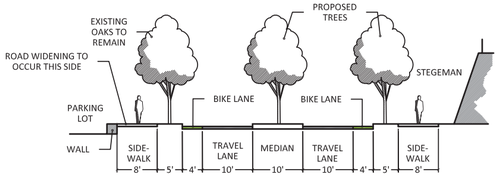


B CARLTON & SANFORD INTERSECTION
SCALE: 1"=40'

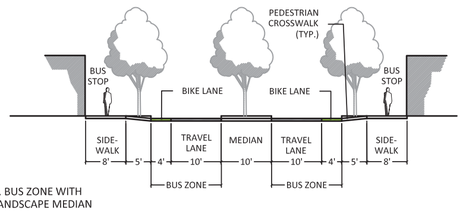


C BUS STOP ZONE
SCALE: 1" = 40'

CARLTON STREET LONG-TERM IMPROVEMENTS: LUMPKIN TO DW BROOKS
SCALE: NTS

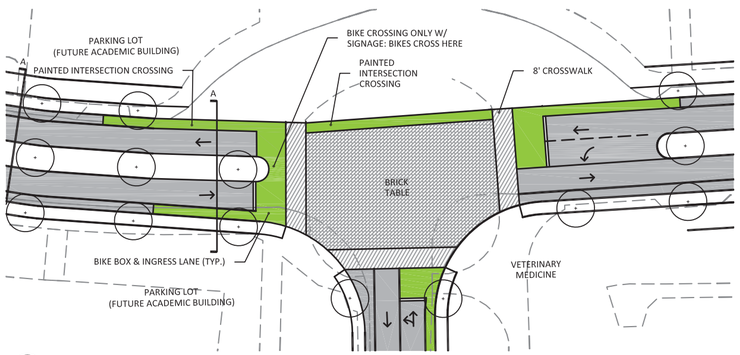


A. LANDSCAPE MEDIAN

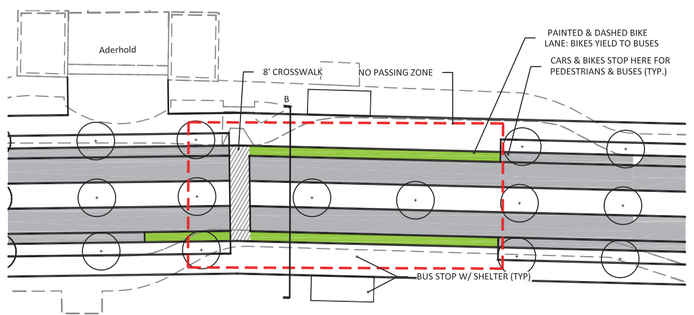


B. BUS ZONE WITH
LANDSCAPE MEDIAN

CARLTON STREET SECTIONS
SCALE: 1" = 20'



A CARLTON & DW BROOKS INTERSECTION
SCALE: 1" = 40'



B BUS STOP ZONE
SCALE: 1"=40'

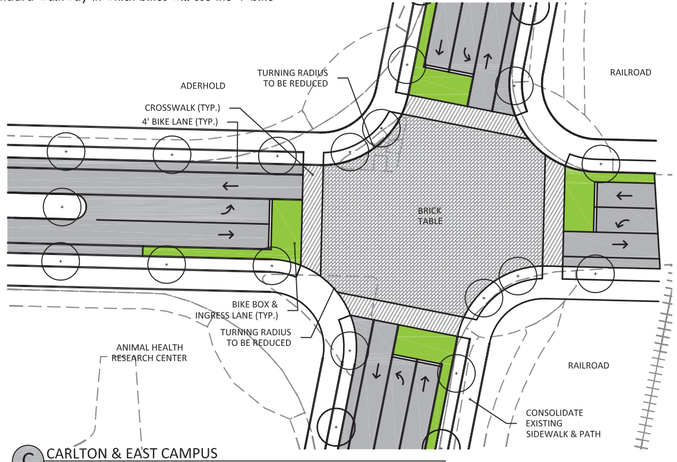
1 PROPOSED FACILITIES TIE-IN W/ EXISTING BIKE LANES

2 EXISTING BIKE LANES ON CARLTON

3 CYCLISTS OFTEN USE THE E. CAMPUS CROSSWALK

Common issues observed along this section of Carlton Street include cyclist and vehicle confrontations where existing bike lanes begin at DW Brooks Mall, cyclists riding on the Plant Science sidewalk, and cyclists and pedestrians using the pedestrian crosswalks at the East Campus Road intersection. The DW Brooks Intersection (Detail A) should include bike treatments as well as an intersection crossing lane for northbound bike traffic. Bikes traveling southbound and turning into the Mall should have a crossing opportunity at the crosswalk in order to have safe and efficient circulation into the Mall. The road should widen on the Veterinary Science side of the road to allow for the standard travel and bike lanes with landscaped medians and buffers. Bus stops should consolidate to form bus stop zones (Detail B). The East Campus Intersection should reduce the number of travel lanes to three to include a planted median that will accommodate a left turn lane at the intersection. The turning radii at all corners should be reduced to the minimum required for buses, service and emergency vehicles in order to eliminate the need for crossing islands. Like the other intersection bike facilities should be introduced. These bike facilities should continue across East Campus towards the Museum, Performing & Visual Arts Center and East Campus Village. The existing bike path along East Campus Road should be consolidated with the side walk to create an 8' standard walkway in which bikes will use the 4' bike lane provided.

4 AERIAL VIEW OF CARLTON & E. CAMPUS INTERSECTION

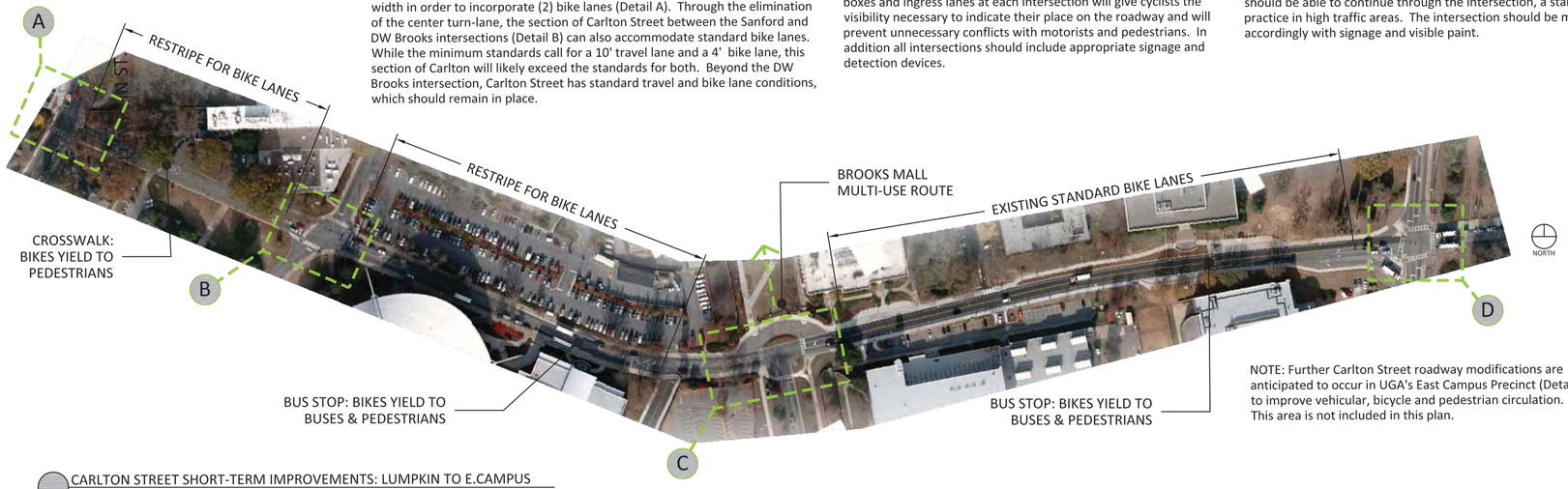


C CARLTON & EAST CAMPUS
SCALE: 1" = 40'

The existing conditions along Carlton Street will accommodate bike lanes through restriping. From the Lumpkin Street intersection to the Sanford Drive intersection the existing conditions are (2) travel lanes, which can be reduced in width in order to incorporate (2) bike lanes (Detail A). Through the elimination of the center turn-lane, the section of Carlton Street between the Sanford and DW Brooks intersections (Detail B) can also accommodate standard bike lanes. While the minimum standards call for a 10' travel lane and a 4' bike lane, this section of Carlton will likely exceed the standards for both. Beyond the DW Brooks intersection, Carlton Street has standard travel and bike lane conditions, which should remain in place.

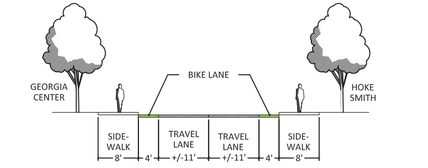
Restriping will be the most cost effective solution to accommodate both standard 10' travel lanes and 4' bike lanes without road and sidewalk construction. As with all options the incorporation of bike boxes and ingress lanes at each intersection will give cyclists the visibility necessary to indicate their place on the roadway and will prevent unnecessary conflicts with motorists and pedestrians. In addition all intersections should include appropriate signage and detection devices.

The DW Brooks intersection (Detail C) should include a yield for bikes to traffic turning onto Carlton heading towards Lumpkin Street. Conceivably at a red light, bikes heading towards East Campus Road should be able to continue through the intersection, a standard practice in high traffic areas. The intersection should be marked accordingly with signage and visible paint.

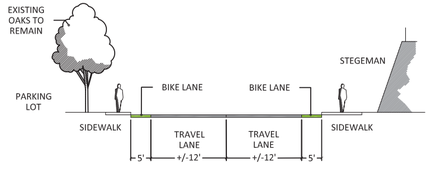


NOTE: Further Carlton Street roadway modifications are anticipated to occur in UGA's East Campus Precinct (Detail D) to improve vehicular, bicycle and pedestrian circulation. This area is not included in this plan.

CARLTON STREET SHORT-TERM IMPROVEMENTS: LUMPKIN TO E.CAMPUS
SCALE: NTS

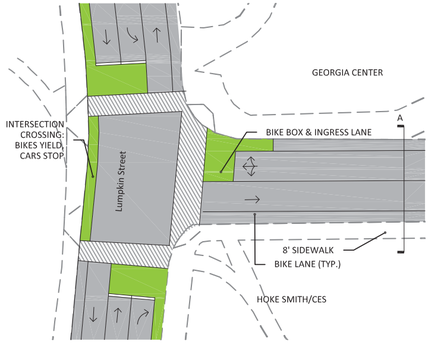


A. LUMPKIN INTERSECTION TO SANFORD INTERSECTION

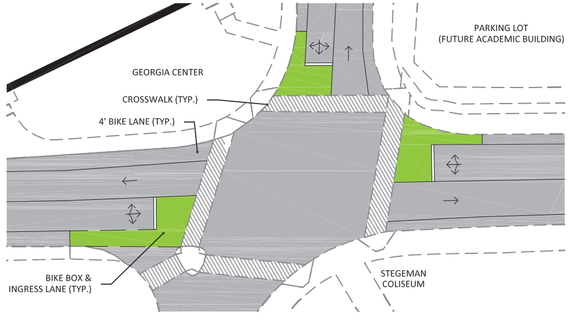


B. SANFORD INTERSECTION TO E. CAMPUS INTERSECTION

CARLTON STREET SECTIONS
SCALE: 1" = 20'



A CARLTON & LUMPKIN INTERSECTION
SCALE: 1" = 40'



B CARLTON & SANFORD INTERSECTION
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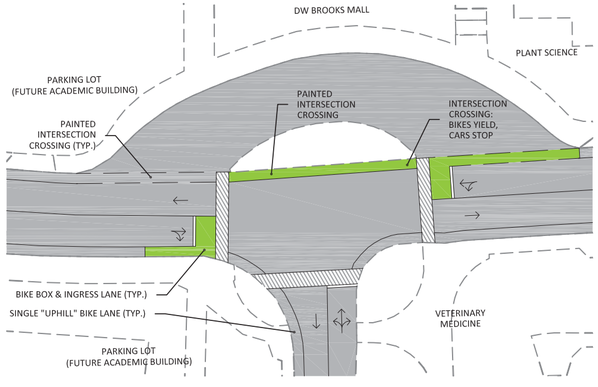
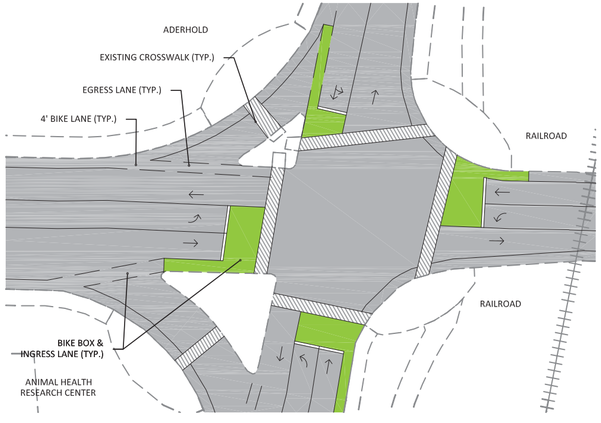


C CARLTON & D.W. BROOKS INTERSECTION
SCALE: 1" = 40'



D CARLTON & EAST CAMPUS INTERSECTION
SCALE: 1" = 40'

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SECTION 2.4
PHASING RECOMMENDATIONS

Phase 1: Address High Conflict Areas

1. Restripe Sanford Drive from Baldwin Street to Hooper Street

2. Apply standard design guidelines, including signage, intersection marking, and visibility paint, to intersections within Primary Routes including:
   - Baxter Street & Lumpkin Street
   - East Campus Road & Carlton Street
   - Lumkpin Street & Tate Student Center/Legion Pool
   - Green Street & East Campus Road
   - Cedar Street & East Campus Road
   - East Campus Road & Baldwin Street
   - Broad Steet & Lumpkin Street
   - Broad Street & East Campus Road
   - Lumpkin Street & Carlton Street
   - Lumpkin Street & Cedar Street
   - East Campus & Hooper Street
   - Lumpkin Street & Wray/Bocock Street
   - Jackson Street & Broad Street

3. Apply standard design guidelines, including signage, intersection marking, and visibility paint, to intersections within Secondary Routes including:
   - Sanford Drive & Baldwin Street
   - Sanford Drive & Carlton Street
   - Jackson Street & Baldwin Street
   - Carlton Street & D.W. Brooks Drive
   - Sanford Drive & Cedar Street
   - Hooper Street & Sanford Drive

4. Complete gaps in bike lanes along Primary Routes including:
   - East Campus Road: Carlton Street to Green Street
   - East Campus Road: Hooper Street to Baldwin Street
   - East Campus Road: Baldwin Street to Broad Street
   - Carlton Street: East Campus Road to River Road Loop
   - River Road
   - River Road Loop

Phase 2: Incorporate Short-term improvements to Secondary Routes

1. Designate daytime limited-use regulations to Cedar Street from Sanford Drive to the Conner Hall Parking Lot Entrance.

2. Restripe Carlton Street from Lumpkin Street to Agriculture Drive to connect with existing bicycle lanes on the south portion of Carlton Street.

3. Restripe Baldwin Street from Lumpkin Street to East Campus Road to incorporate bike lanes into the existing road width by removing dedicated turn lanes and adjusting traffic lights accordingly.

Phase 3: Incorporate Long-term streetscape improvements to Secondary Routes

Actual order of street reconstruction should be tied to long-term Master Plan recommendations and installed in whole or in part in conjunction with facility improvements.

1. Sanford Drive could be installed as components of the Tate Student Learning Center, Sanford Bridge improvements, on-street parking removal and student housing renovations or improvements.

2. Carlton Street could be installed as components of the DW Brooks Pedestrian Mall, future academic building construction, or East Campus Precinct improvements.

3. Baldwin Street could be installed during renovation of the Journalism Plaza Streetscape or Herty Mall Fire Improvement Plan.

4. Cedar Street recommendations could be installed as components of the DW Brooks Pedestrian Mall, Chemistry Plaza Update, or on-street parking removal.

Amount of space required to transport the same number of passengers by car, bus or bicycle.
www.eoearth.org

REFERENCES AND RESOURCES

AASHTO Guide for the Development of Bicycle Facilities
http://www.transportation.org/

National Association of City Transportation Officials (NACTO). Urban Bikeway Design Guide.
http://www.nacto.org/

League of American Bicyclists. Bicycle Friendly America: The Blue Print.
http://www.bikeleague.org/

Manual for Uniform Traffic Control Devices (MUTCD)
http://mutcd.fhwa.dot.gov/

University of California Davis Bicycle Master Plan
http://www.taps.ucdavis.edu/bicycle/resources/BikePlanUCDCampus2011.pdf

University of California Santa Cruz Bicycle Master Plan
http://www.taps.ucsc.edu/pdf/bikeplanfinal08.pdf

Boise State University Bicycle/Pedestrian Safety Master Plan
htttp://www.transportation.boisestate.edu/.../BicyclePedestrianMasterPlan2010.pdf

University of Virginia Bicycle Master Plan
http://www.virginia.edu/architectoffice/pdf/Bicycle_Master_Plan.pdf

University of Texas Austin Bicycle Master Plan
ftp://ftp.cs.utexas.edu/pub/novak/bike/master_plan.pdf

Michigan State University Bicycle Facilities Plan
http://www.greenwaycollab.com/images/MSUBFP/MSU%20Bike%20Facilities%20Plan%2012%2021%2007.pdf

Oregon State University Draft Bicycle Plan
http://www.oregonstate.edu/sustainability/sites/default/files/.../osubikeplan11-10-10.pdf

Knoxville Regional Bicycle Plan
http://www.knoxtrans.org/plans/bikeplan2009.pdf

City of Portland Bicycle Master Plan
http://www.portlandonline.com/transportation/index.cfm?a=71843&c=34816

Atlanta Regional Bicycle Transportation & Pedestrian Walkways Plan
http://www.dot.state.ga.us/travelingingeorgia/bikepedestrian/Documents/Plans/ARC_BikePed_Plan_2007.pdf

City of Asheville, NC Comprehensive Bicycle Plan
ftp://www.ashevillenc.gov/Web/TransportationEngineering/Transportation/Asheville_Plan_Final_Adopted_022608.pdf

ACKNOWLEDGEMENTS

We would like to thank the following individuals and organizations for their assistance and support with the UGA Bicycle Facility Update:

UGA Office of Sustainability

UGA Office of University Architects

Brent Buice, Georgia Bikes!

David Clark, Athens-Clarke County Transportation Department

Anna Gore, Masters of Environmental Planning Candidate

Jason Perry, Amy Johnson, Mike Ely & Board Members, Bike Athens

Bicycling is a big part of the future. It has to be. There is something wrong with a society that drives a car to work out in a gym.

- Bill Nye

APPENDIX I

Bicycle Friendly University Application Feedback

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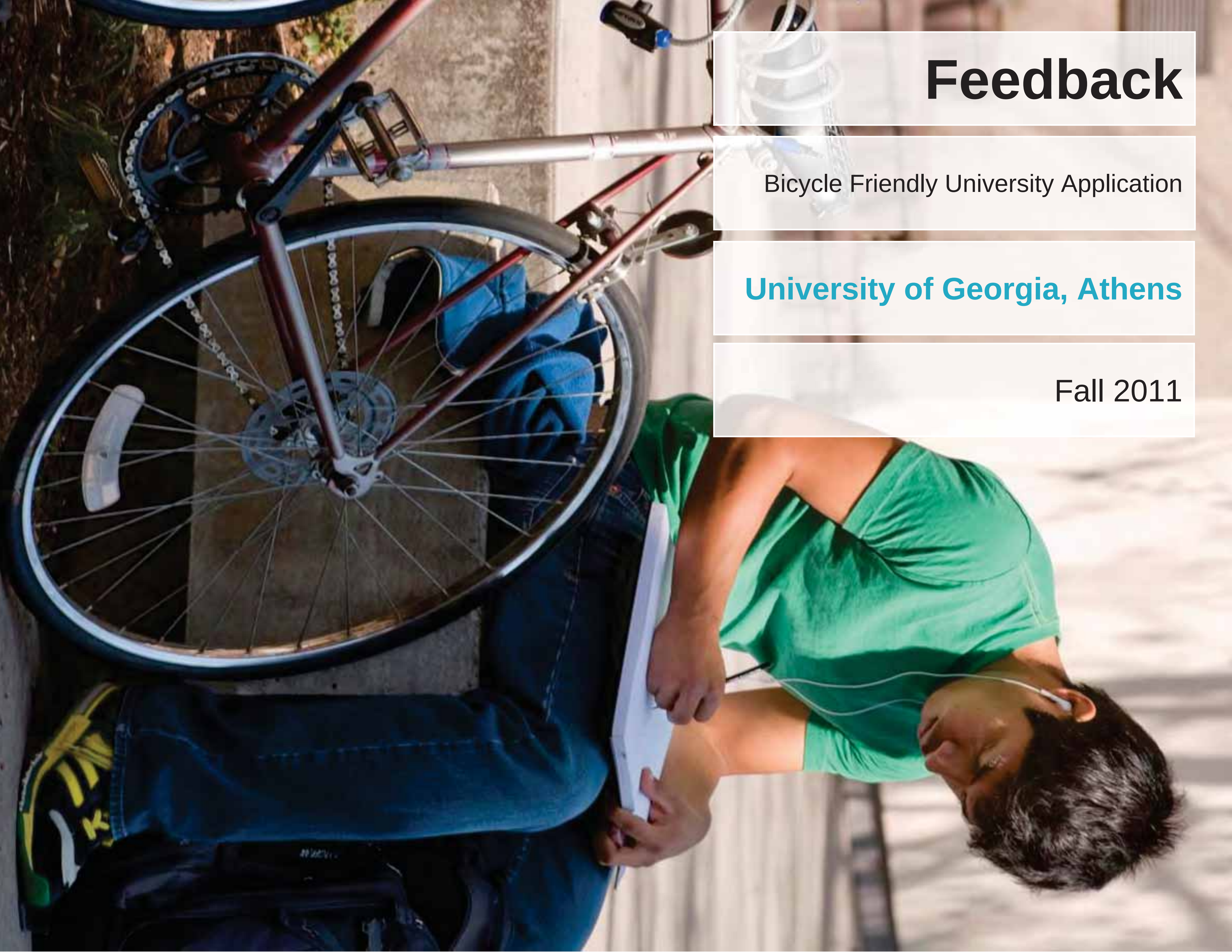
Feedback

Bicycle Friendly University Application

University of Georgia, Athens

Fall 2011



The Bicycle Friendly University review committee was impressed with the potential and growing commitment to make the **University of Georgia, Athens** a great place for bicyclists. The **Honorable Mention** given by the reviewers reflects their view that some of the key building blocks of creating a bicycle friendly university are in place, but that some measures remain to be done.

Some of the **highlights** of the application are the bicycle parking ordinance for new developments, the contra-flow bike lanes, the bike sharing pilot program, Share the Road signs, the Georgia Bike Summit held on campus, the mountain bike park, non-mandatory bike registration, the bicycle study and the bicycle master plan.

The University of Georgia, Athens is on the road to being a Bicycle Friendly University, and these efforts show the ambition to make the university into a world-class cycling campus.

Below, reviewers provided recommendations to promote bicycling at the University of Georgia, Athens in the short and long term. Increasing bicycle use can **improve the environment** by reducing the impact on the community of pollution and noise, limiting greenhouse gases, and improving the quality of public spaces; **Reduce congestion** by shifting short trips (the majority of trips in cities) out of cars. This will also make campuses more accessible for public transport, walking, essential car travel, and emergency services; **Save lives** by creating safer conditions for bicyclists and as a direct consequence improve the safety of all other road users. **Research shows** that increasing the number of bicyclists on the street improves bicycle safety; **Increase opportunities** for students, faculty and staff to participate socially and economically in campus and community activities, regardless of income or ability. Greater choice of travel modes also increases independence; **Boost the economy** by creating a campus environment and community that is an attractive destination for new students, residents, tourists and businesses; **Enhance recreational opportunities** and further contribute to the quality of life on campus; **Save university funds** by increasing the efficient use of public space, reducing the need for costly new road infrastructure, preventing crashes, improving the health of the campus community, and increasing the use of public transport; **Enhance campus safety and security** by increasing the number of "eyes on the street" and providing more options for movement in the event of emergencies, natural disasters, and major campus events; **Improve the health and well being** of the campus population by promoting routine physical activity.

The *most significant measures* the University of Georgia, Athens should take to improve cycling on campus are:

- Having an effective Bicycle Advisory Committee is critical to building support for bicycle improvements. An effective committee ensures that the program will be accountable to the campus population and surrounding communities. It creates a systematic method for ongoing staff, faculty and student input into development of important policies, plans, and projects. BACs should be involved in developing relevant policy and planning documents, setting priorities, reviewing annual bicycle program work plans, and reviewing major public and private projects.

- Expanding the bicycle program coordinator's time devoted to bicycle issues would help in scaling up your BFU efforts. Dedication to this full-time position demonstrates your institution's efforts towards bicycling and provides the resources necessary to move projects forward.

- Encourage the development of a student bicycle advocacy group that could be directly linked to BikeAthens to better marry the efforts of the community and university.

- Start a bike program. See what other universities are doing and what resources are available for higher ed institutions- http://www.universitybikeprograms.org/

- Expand your incentive program for those who bike commute by including such benefits as cash incentives, Guaranteed Ride Home, zip car discounts and coupons at local bike shops. Check out what's involved in Stanford's Commute Club membership: http://transportation.stanford.edu/alt_transportation/Commute_Club.shtml

- Provide a bicycling skills class, Traffic Skills 101 class and Commuter class to students, employees and the wider community on a *frequent* basis. Ideally the instruction would incorporate a classroom portion as well as on-road training. Contact your local advocacy group to see if there are classes in your area. Or invite a League Cycling Instructor (LCI) to your campus to conduct the class. For examples of educational materials visit: http://www.bikeleague.org/programs/education/

Reviewers provided the following menu of recommendations to further promote bicycling:

Engineering
Low hanging fruit and fast results

- Ensure that new and improved bicycle facilities conform to current best practices and guidelines – such as the *NACTO Urban Bikeway Design Guide*, *AASHTO Guide for the Development of Bicycle Facilities* and your DOT's own guidelines. Consider innovative bicycle infrastructure such as bicycle tracks, contra-flow bike lanes or colorful bike lanes.

- Adopt a formal Complete Streets policy to direct transportation planners and engineers to routinely design and operate the entire right of way to enable safe access for all users, regardless of age, ability, or mode of transportation. This means that every transportation project will make the street network better and safer for drivers, transit users, pedestrians, and bicyclists – making your campus a better place to live, work and play.

- Provide opportunities for ongoing training on accommodating bicyclists for engineering, planning staff, and law enforcement, such as an FHWA course. Consider hosting a *Smart Cycling* course for engineers and planners to better understand cyclists' needs, behavior, and their right to use streets as well as multi-use paths for transportation.

- Consider a membership to the Association of Pedestrian and Bicycle Professionals www.apbp.org for staff working on bicycle issues. Training opportunities and the listserv provided by this organization are excellent resources.

- Place way-finding signage at strategic locations around campus. Here are some best practices from the Washington, DC area council of governments: http://www.mwcog.org/uploads/committee-documents/t1dZW1k20070516090831.pdf

- Transit vehicles such as campus shuttles should accommodate bicycles with bike racks or with access to the vehicle

- Use road diets to calm traffic and lead to a better use of roadway space http://cost.kittelson.com/system/datas/9/original/Road_Diet_Presentation_COST_July_2010.pdf?1285955514

Long Term Goals

- Continue to expand the bike network and increase network connectivity through the use of bike lanes, bike tracks, shared lane arrows, signed routes and bicycle cut-throughs. Work with the town to help extend the bike lanes into the community to improve bicycle access to campus. On-street improvements coupled with the expansion of the off-street system will continue to increase use and improve safety. These improvements will also increase the effectiveness of encouragement efforts by providing a broader range of facility choices for users of various abilities and comfort levels.

- Increase the amount of secure bicycle parking at popular destinations such as transit stops, class room/lab buildings, dorms, recreation and entertainment facilities, and retail and office locations on campus. Regulations that require bike parking, e.g. as part of new developments, can secure private funding for bike parking. More and more institutions also ensure that off-campus student housing provide secure and covered bike parking. Ensure that bicycle parking adheres to APBP standards.

- Ensure that there are end of trip facilities. Consider a policy requiring showers and locker rooms in non-residential buildings. One of the most common excuses people use to not commute by bike is that they don't have a shower at work. Also make sure to provide showers and lockers as a benefit not as an additional cost to students and employees.

- Add bicycle accommodations at intersections to improve efficiency and discourage cyclists from running red lights. These include timing lights for bicycle speeds, incorporating bike boxes, loop detectors, or bicycle signal heads. Also, timing at stop lights should regularly be tested for sensitivity to bicycles at all intersections.

- Consider constructing a bike station to provide secure and covered parking for commuters. Similar to the Bike Center at University of Minneapolis, the bike station can serve as a hub for commuters including repair services, shower and locker facilities, and bike route and event information. Check out other cities and universities that have already implemented a facility http://home.bikestation.com/

- Develop a system of bicycle boulevards that creates an attractive, convenient, and comfortable cycling environment welcoming to cyclists of all skill levels. See more on how to do it at http://www.ibpi.usp.pdx.edu/guidebook.php

Education
Low hanging fruit and fast results

- Incorporate bicycling into the new student orientation program in order to reach all incoming students, faculty and staff. This can include distribution of bike maps, bike registration, reviews of bike laws and helmet and bike light promotions. This should include information for cyclists and motorists on their rights and responsibilities as users. Everyone should know that this campus wants to be truly bicycle-friendly.

- Start a bicyclist and motorist ticket diversion program. Students given citation are offered an opportunity to waive fees for violations by attending a bicycling education course. This should include a classroom and on-road component. See what Stanford University has done http://www.stanford.edu/group/SUDPS/bicycle.shtml#diversion

- Expand share the road educational outreach through public service announcements, campus newsletters and other official communication with students, faculty and staff. Check out some of the promotion that Emory has done to support their Why Not? Campaign: http://www.bikeleague.org/programs/bicyclefriendlyamerica/bicyclefriendlyuniversity/pdfs/bike_emory_marketing_items.pdf Consider taking advantage of your local bicycle advocates for content and strategy development and manpower.

- Promote bike safety creatively to the student body by informing about local bike laws, promoting helmet use and proper locking. Consider Stanford's multi-pronged approach to Bike Safety through events and programs such as a Dorm Challenge, a bike ambassador program led by Sprocket man, and a bike safety pledge.

- Improve the reach of the campus' bicycle safety campaigns. Use valuable information from the League's Ride Better Tips in your outreach education and encouragement efforts. See the Ride Better Tips pages at http://www.bikeleague.org/resources/better/index.php , PSA's http://www.bikeleague.org/programs/bikemonth/psas.php and the downloadable

Bicycle Safety Tips for Adults video at
http://www.bikeleague.org/programs/education/shortversion.wmv

- The college should work to increase bicycling education opportunities for students and staff. Host an LCI seminar to train League Cycling Instructors. Contact the League offices or visit http://www.bikeleague.org/programs/education/ for information on upcoming seminars. Having local instructors will enable the campus to expand cycling education, to be cycling ambassadors, to deliver education to motorists, provide cycling education and have an expert to assist in encouragement programs.
http://members.bikeleague.org/members_online/members/calendar_of_events.asp

- Team with a local advocacy group, bicycle shop, or a League Cycling Instructor in your area to offer a maintenance class to students and employees. A short tutorial on how to change a flat can empower a person to ride their bike more often.
https://members.bikeleague.org/members_online/members/findit.asp

Long Term Goals

- Education on bicycling is not only important for bicyclists but for all road users - including motorists. Since you have a vehicle fleet, include information on how to share the road with bicyclists in your vehicle safety guidelines. This will help bring awareness to all employees, cyclists and non-cyclists, on how to properly share the road. If there is a class or waiver required to operate a company vehicle, consider including the information here too. See what the city of San Francisco has done http://www.sfbike.org/?drivertraining

- Consider course offerings in bicycle transportation planning, policy, and engineering. Here are materials and information on implementing a graduate level course in Bicycle and Pedestrian Planning: http://www.walkinginfo.org/training/university-courses/masters-course.cfm

- Bicycling should be offered within physical education course offerings.

Encouragement

Low hanging fruit and fast results

- Promote the People for Bikes Pledge to students, faculty and staff. You can help this campaign make a statement through our sheer numbers by raising public awareness and demonstrating our passion to our leaders in Congress and in cities and states throughout the country. http://www.peopleforbikes.org/

- Expand encouragement efforts, especially during Bike Month. Promote bicycling through events such as a bicycle-themed film festival, a commuter challenge, car-free days and

campus bike tours. Promote these events widely to the whole campus population in order to establish a strong bicycling community. Read about what UC Santa Barbara does during CycleMAYnia http://cyclemaynia.ning.com/events/ucsb-bike-to-workschool-day.

- Consider offering bike valets at events throughout the year to solve parking issues for well-attended events. For example, Boise State University offers bike valet service at football games. See what the University of Arizona is also doing to encourage bicycling through a year round bike valet http://parking.arizona.edu/bikevalet/

- Set up campus celebrations and/or rides each time a new bicycling related project is completed. This is a great way to show off the institution's good efforts and introduce new users to the improvement.

- Consider offering a 'Ciclovia' or 'Summer Streets' type event, closing off a major corridor to auto traffic and offering the space to cyclists, pedestrians and group exercise events. http://cicloviarecreativa.uniandes.edu.co/english/index.html

- Launch a bike buddy or bicyclist mentorship program for inexperienced riders. A bike mentorship program that teams experienced cyclists with new-comers is a great way to encourage and educate novice commuters. Mentors can help educate on bike routes, gear, safe riding and much more. It also gives new commuters a support group to rely on and often makes them feel more secure and excited about their first few rides. For more information on mentorship programs see: http://www.bicyclinginfo.org/bikemore/support.cfm#mentoring

Long Term Goals

- Establish an on-campus bike shop that students can easily access for bicycle accessory purchases and repairs. The shop can also function as a coop, with members and volunteers helping to maintain the shop. Check out the services and membership at Davis' student-run bike shop http://bikebarn.ucdavis.edu/

- Create a printed bike map that gives bicyclists and potential bicyclists a wide variety of choices for transportation and recreation at the various cyclist comfort levels. See how University of Arizona has incorporated bike routes, bike-share and bike parking into their campus map. http://parking.arizona.edu/pdf/maps/bike_routes.pdf

Enforcement

Low hanging fruit and fast results

- Invite a police officer to become an active member of the bicycle advisory committee. Appoint a law-enforcement point person to interact with cyclists.

- Increase the number of police officers patrolling on bike. This increased interaction between enforcement and the bicycling community should also include targeting bicycle infractions and positive enforcement ticketing. Provide the proper training such as through the International Police Mountain Biking Association: http://www.ipmba.org/instructors.htm

- Improve and expand the training offered to police officers regarding traffic law as it applies to bicyclists. See the video put out by the National Highway Traffic Safety Administration (NHTSA)http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.810acaee50c651189ca8e410dba046a0/ Here are some Law Enforcement Products
  Law Enforcement's Roll Call Video: "Enforcing Law for Bicyclists" and
  Enhancing Bicycle Safety: Law Enforcement's Role (CD-ROM Training)

- Enact policies to support safe cycling. Post these ordinances in an easily accessible location so students and faculty are aware of such policies. Ensure that they are enforced. See the bicycle ordinances that Michigan State University has made public http://trustees.msu.edu/ordinances/ordinances_sec33.html

- Have police officers distribute helmets and bike lights (or coupons for each to the local bike shop) to encourage cyclists to ride more safely and remove the barriers to attaining these essential bike accessories. See the helmet and light promotions at Stanford: http://transportation.stanford.edu/alt_transportation/BikeSafetyEd.shtml#helmet

- Pass campus laws or ordinances that protect cyclists, e.g. make it illegal to park or drive in a bike lane (intersections excepted), implement penalties for motor vehicle users that 'door' cyclists and ban cell phone use while driving.

Evaluation/Planning
Low hanging fruit and fast results

- Expand efforts to evaluate crash statistics to produce a specific plan to reduce the number of crashes on campus. There are tools available including *Intersection Magic:* http://www.pdmagic.com/im/and PBCAT. See the report *Bicyclist Fatalities and Serious Injuries in New York City 1996-2005*

- Conduct research on bicycle usage beyond the U.S. Census' Journey to Work report and consider implementing a trip reduction program/ordinance. Consider performing multiple bike counts a year, to gauge seasonal changes and parking needs at maximum capacity. See good examples at http://bikepeddocumentation.org/ and http://www.portlandonline.com/transportation/index.cfm?c=43801

- Consider conducting an economic impact study on bicycling within your college/ university http://www.altaplanning.com/App_Content/files/fp_docs/2008%20Portland%20Bicycle-Related%20Economy%20Report.pdf

- Distribute a satisfaction survey to students and faculty. Analyze responses to direct resources according to demand and the needs of the commuter. http://www.chem.uky.edu/bikes/PDFs/TooleSurvey.pdf

Long Term Goals

- Fully implement the comprehensive bike plan and continue to close gaps in the cycling network. Also, expand the encouragement, education, and enforcement programs to increase bicycle usage. Set an ambitious, attainable target to increase the percentage of trips made by bike on campus.

- Ensure that there is dedicated funding for the implementation of the bicycle master plan.

- Integrate the implementation of the bike plan into the campus master plan and/or land use plans, and larger development projects.

- Allow and encourage a mix of uses, a well connected street network and compact development patterns throughout campus to shorten the distances cyclists need to travel.

For more ideas and best practices please visit the Bicycle Friendly University Resource Page.