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It is by riding a bicycle that you learn the contours of a country best, since you have to sweat up the hills and coast down them. Thus you remember them as they actually are, while in a motor car only a high hill impresses you, and you have no such accurate remembrance of country you have driven through as you gain by riding a bicycle.

-Ernest Hemingway
FOREWORD

Add text here..................
Nothing compares to the simple pleasure of a bike ride.
-John F. Kennedy
SECTION 1.1
OVERVIEW

A cyclist approaching the iconic Arch on North Campus

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 the university leadership to guide its use, and ultimately to 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 guide the improvement of existing bicycle facilities, as well as 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 a potential bicycle master plan that could be implemented. The ultimate goal of this study is to demonstrate to the University the opportunities bicycle networks can provide. The content of this study, along with initial recommendations for improving bicycle facilities, will inform the University of practical steps toward an effective campus bicycle program and hopefully 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 the simple 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.
SECTION 1.2
COMMUNITY CONTEXT

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 no doubt 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 included to in order to promote connectivity between the two bicycle networks. Given that the city of Athens has developed around the University, inevitably, some routes included in the project would be mutually beneficial to UGA as well as Athens-Clarke County. 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 adhere to the county’s Bicycle Master Plan, to create a more continuous bike route system.
The community of Athens is just as much a part of the University as are the students and faculty. Therefore, because the Athens-Clarke County bicycle network surrounds UGA, many bicyclists use the campus as a thoroughfare to get to work, run errands, or for exercise. The scope of this study does not end at the city limits though, as many other local and regional user groups have a stake in this plan. It has become important to anticipate the needs of all user groups in order to achieve the objectives presented in the Bicycle Master Plan.
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 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 act in accordance with 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 created by the NEGRC that takes a broad look at bicycling and pedestrian facilities in the region and offers support and implementation tools to support bike and pedestrian infrastructure.
North Oconee River Greenway & Greenway Network Plan

The Greenway is a linear park system that provides wildlife corridors, open spaces and a family friendly multi use path for the both Athens-Clarke County Residents and visitors. 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. Ultimately the goal of the Greenway Network is to implement a similar multi-use path-way along the Middle Oconee River which will create a unified Greenway system in Athens. This network is important not only for the recreational opportunities that it currently provides and can provide in the future, but it can also serve a role in the overall bicycle network on Campus and in Athens-Clarke County. Opportunities for UGA to assist in the connections of the two Greenways might include portions of Oconee Forest and East Campus along River Road.
North Oconee River: Northern Section
Level 2 Zone/Buildout Map
Approved June 7, 2005
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 will use ACC 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 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 with primary corridors within the surround community.
UNIVERSITY CONTEXT

The University of Georgia has always incorporated bicycle facilities in all 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 University’s 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 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.

A cyclist on Sanford Drive
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

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
A map of the 2003 Conceptual Bike Master Plan. To date, about 50% of the proposed routes have been completed.
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 decreasing footprint on campus specifically that of automobiles by 20%. Subsequently strategies for increasing alternate transportation have become the leader in achieving the decrease in the presence of vehicles on campus.

Student Plans

The apparent need to address the Universities of Georgia’s bicycle network also been undertaken by students. Updates to the 2003 Conceptual Bike Master Plan were made in 2009 and 2011, each 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 could take bicyclists past a critical intersection on campus. In addition to physical infrastructure improvements in their plan, policies and programs were suggested to support bicycling on campus. These improvements 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, which include this study.
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 a viable and respectable transportation option. While most of the plans reference bicycle infrastructure, many plans overlooked the encouragement, education, enforcement, and evaluation components of bicycle planning. Each update to the bicycle plan has brought to light valid bicycle planning issues that need to be addressed. 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. Current conditions have increased attention to the lack of bicycle guidelines and have resulted in an immediate need to reevaluate and recommit to effective bicycle program planning and implementation.

![Commuter riding down Herty Drive](image)

A plan view of Baldwin Street with recommended improvements from Srikanth Yamala’s master plan update.
SECTION 1.3
COMMUNITY INPUT

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

COMMUNITY DESIGN CHARRETTES

A design charrette is defined as a collaborative meeting that brings people of various professions, positions and community groups together to work on the planning and design of a given project. As a design tool this is an excellent way to involve community members, who might otherwise be excluded in the planning process, and it can allow them to have a voice in planning and design decisions within their community. Community design charrettes can also be utilized to further survey potential user groups. Multiple charrettes might be conducted for different groups (i.e. UGA students, faculty, Bike Athens, A-CC Public Works / Planning, general public, etc.) depending on the desired endstate. Feedback from each charrette can then further develop what each user group wants. For example:

• What kind of bike facility would be the most beneficial and how could it be implemented?

STUDENT/FACULTY SURVEY

A questionnaire is also an effective way to collect information in order to gauge what user groups desire in campus bicycling facilities. The student and faculty questionnaire administered via email on the UGA list serve and located on a website allowing non-student or faculty community members to voice their opinions. 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 a sample of a survey that has been created and posted on an online website. Currently #### have taken the survey and general feedback shows that:

• ###% are students
• ###% travel ## miles by bike to campus
• ###% would ride more if roads had bike lanes
• ###% choose to not ride because of auto traffic
• ###% would ride more if there were more end of trip facilities
• ###% are unaware or negligent when it comes to basic bicycle traffic laws.
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

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 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 is based on previous knowledge of the roads 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 a modification of the Transport for London Bicycle Map. The university also has required bicycle dismount zones to be located in dense pedestrian zones. Custom signage for these dismount zones is located accordingly on campus.

Emory University

Emory University was developing a bicycle master plan at the time of this case study. Despite Emory’s absence of formal 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 guiding and promoting bicycle use at the university.

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 bike racks. 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.
FACILITIES

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

UT - Austin

UT-Austin offers two types of bicycle parking, short term and long term. Short term bicycle parking facilities are typically un-covered 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 also proposed in strategic locations throughout campus. The UT Bike Hub is a proposed high capacity bike parking station that could offer 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 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 as well as the Campus Recreation Center. Georgia Tech’s Bicycle Infrastructure Improvement Committee 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 feedback.

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 school’s 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.
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, in addition to 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.
CASE STUDY RECOMMENDATIONS

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

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

- Provide Bicycling Amenities, such as showers, lockers, and repair services.

- Provide a variety of Bike Parking.

- 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.
I thought of that while riding my bicycle.
-Albert Einstein on the Theory of Relativity
SECTION 2: BICYCLE FACILITY UPDATE
EXISTING FACILITIES REVIEW
GAPS IN EXISTING FACILITIES
ROUTE INVENTORY
ROUTE ANALYSIS

STANDARDS & GUIDELINES
5-"E"s
ROUTE STANDARDS
INTERSECTION STANDARDS
END OF TRIP FACILITIES
COMPREHENSIVE STANDARDS

RECOMMENDED IMPROVEMENTS
CAMPUS OVERVIEW
SANFORD DRIVE
BALDWIN STREET
CEDAR STREET
CARLTON STREET

FUNDING OPPORTUNITIES
SECTION 2.1 EXISTING FACILITIES REVIEW

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, and a majority of them run through the interior of campus. While several bicycle specific improvements have been made on campus, many gaps exist between them resulting in less than desirable conditions.
GAPS IN CAMPUS BICYCLE FACILITIES

There are significant gaps between current campus bike facilities along the peripheral 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 stood out as being areas prone to having a high potential for conflict. While these areas (listed below) are outside of the project area covered in this study, they should be considered and addressed in order to create a seamless bike route network on campus. Preliminary recommendations are given for each on pages 38-39.

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 observed vehicles failed to yield to the cyclists travelling in the bike lane.

Area 2:
Between the intersections of Baldwin Street and Lumpkin Street and Baxter Street and Lumpkin 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, which creates conflict with bikes continuing on Lumpkin Street or turning onto Baldwin Street.

At the Baxter Street and Lumpkin Street intersection bikes and pedestrians are not given priority in navigation of the intersection. This especially the case for bikes turning onto Baxter Street from Lumpkin Street in general. Bikes must merge with turning traffic before they enter the bike lanes on Baxter Street, which begin at 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 the descend the hill on Lumpkin Street, but gives them virtually no opportunity to merge into a left turning posture.

Area 3:
The intersection of Jackson Street and Baldwin Street has been the scene of many bike and vehicle conflicts. Prior to the report a hit-and-run was observed at this intersection. The basis for the conflicts occurs because the bike lanes on Jackson Street disappear approximately 200 feet before the actual intersection. This creates challenges for bikes travelling into and out of the intersection, but is most dangerous for bikes entering the intersection on the Southbound bike lane. As the bike lane terminates a turn lane begins, which puts bikes in a vulnerable position, where cyclists have very little time to react or position themselves with traffic in either turning lane. The most common conflict (including the one observed) 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.

Area 4:
As East Campus Road intersects with Cedar Street the Northbound bike lane disappears then reappears after the intersection. This puts bikes in a very challenging situation at an intersection, which is considered to be the most dangerous aspect of any route for any type of transportation. In addition 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 along with high travel speeds along East Campus Road further complicate this conflict area.
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
ROADWAY INVENTORY

For the purposes of this bicycle study, roadways that complete the interior bicycle network grid were selected. In a comprehensive Bicycle Master Plan, this section could be subdivided into campus areas (i.e. North Campus, East Campus, etc.), and recommendations for the enhancement of each area’s routes and their priority of completion could be specified. The following streets provide the necessary links to fill the facilities gaps on campus:

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

These roadways were chosen based upon feedback we received from stakeholder input, an observed lack of bicycling infrastructure, and as an opportunity to connect existing bicycle networks on campus. As mentioned in the 1998 UGA Physical Master Plan, the desired bicycle circulation on campus should consist of primary and secondary bicycle routes. Primary routes are oriented North-South and 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 from the periphery of campus inwards to the primary routes.

Sanford Drive

Sanford Drive is a primary north-south road bisecting campus from Baldwin Street to Carlton Street. The existing road and sidewalk widths vary along the route from Baldwin Street to Carlton Street. It is heavily trafficked by both student and university vehicles. Because it is a two lane road, during business/class hours it is a heavily congested. While the section from Baldwin Street to Field Street has limited access, the remainder of the roadway is open to all traffic for daily use. Sanford Street is one of the longest roadways on campus with several intersections with east-west connectors.

Baldwin Street

Baldwin Street is comprised of (3) existing 10’ wide vehicular lanes that enable the roadway to incorporate a turning lane at each of the intersections along the route, except for the Sanford intersection that serves as an exit.
only road onto Baldwin Street. 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 on either side that vary in widths of 8’ to 10’. Beyond the sidewalk on both sides of the street there are retaining walls ranging in height from 3’ to over 6’ high. 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. 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.

Cedar Street
As an east-west connector, Cedar Street links East Campus Road to Lumpkin Street and 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. Numerous student vehicles were observed dropping off and picking up passengers at the Lumpkin House/Chemistry Building segment of the Cedar Street, which further exacerbates the traffic congestion situation.

Carlton Street
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. The intersection includes pedestrian crosswalks and the existing bike lanes on Lumpkin Street pass through the intersection without any bike boxes or ASLs. Sidewalks exist on the UGA Cooperative Extension Service building’s side of Carlton Street, but 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 in that the lanes from Lumpkin Street to Sanford Street are 9.5’ wide and the lanes from Sanford Street to DW Brooks Mall are 12’ wide. Past the DW Brooks Mall intersection the roadway transitions to travel lanes with standard 4’ bike lanes, 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 provides 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; cyclists riding on the sidewalk on the Plant Sciences side of Carlton and cyclists attempting to merge into turn lanes at intersections.
Existing Conditions

Typical 4-way intersection on campus has pedestrian crosswalks with standard sidewalks. Absence of bike facilities at intersection.
Typical 3-way intersection on campus has pedestrian crosswalks with standard sidewalks. Absence of bike facilities at intersection.
Existing Conditions

Typical turn lane intersection on campus has pedestrian crosswalks with standard sidewalks. In some cases there are bike lanes which end before the intersection. Otherwise there is an absence of bike facilities at the intersection.
Typical 2 and 3 lane street on campus with standard sidewalks. In most cases there is an absence of bike facilities along the streets. In addition many of the lanes are 11-12’ wide.
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.

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.

Latent Demand Score (LDS) Analysis

The Latent Demand Score analysis method is based on the Motor Vehicle Travel Demand theory devised by transportation engineer and planner Bruce W. Landis. The Travel Demand analysis estimates the amount of bicycle travel that would occur given ideal bicycle travel conditions. Utilizing four trip types: work, shopping, social/physical recreation, and school, the LDS can identify trip destinations and the probability that someone will bike to those locations. The LDS is a nationally recognized method of analysis, and it has been used for several metropolitan bicycle network plans throughout the United States.

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 also developed by transportation engineer and planner, Bruce W. Landis. BLOS is recognized as an international standard throughout North America by United States and Canadian state transportation departments. The BLOS analysis produces a numerical value which correlates to a letter grade of “A” through “F”, that holds the same merit value as used in most educational systems in the United States. If the University of Georgia should adopt such a standard road grading system, it could 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 UGA’s bicycle network improves, the BLOS standard could be raised to reflect a higher quality in the campus bicycling conditions.

\[
\text{LDS} = \frac{T}{\sum \left( \frac{G}{G_{\text{max}}} \right) \times \left( \frac{T_{\text{s}}}{T_{\text{max}}} \right) \times \left( \frac{P}{P_{\text{max}}} \right) \times \left( \frac{d}{d_{\text{max}}} \right)}
\]

Where:
- \( n \): bicycle trip purpose (e.g., work, personal/business, recreation, school)
- \( T \): total purpose rides of all bicycle trips (calculated from Census data)
- \( G \): number of generation or attraction per trip purpose
- \( T_{\text{s}} \): average trip generation or attraction or generator
- \( P \): effect of travel distance on bike trip interchange, expressed as a probability
- \( d \): number of generation or attraction within specified travel distance range
- \( d_{\text{max}} \): maximum travel distance from generator or attractor

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## The Latent Demand Score analysis formula

The Latent Demand Score analysis formula.

### Existing Conditions

<table>
<thead>
<tr>
<th>Roadway Name</th>
<th>From (N or W)</th>
<th>To (S or E)</th>
<th># Thru Lanes</th>
<th>Posted Speed</th>
<th>Width of Pavement</th>
<th>Bike Lane</th>
<th>Occupied Travel Lane</th>
<th>Pavement Conditions (E)</th>
<th>Traffic Volume</th>
<th>BLOS Score</th>
<th>Grade</th>
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<td>7000</td>
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<tr>
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*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.
THE FIVE “E”s

The foundation of a bike friendly community begins in 5 categories known as the 5 “E”s, and bicycle standards and guidelines are ultimately derived from each.

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.

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 ad-
ministered to see what conditions have been improved and what bike routes need future attention. As bicycle conditions at the University of Georgia improve, bicycle route standards can be raised.

**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.

**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.
BICYCLE ROUTE STANDARDS

Bike routes on campus can be classified into 3 forms:

**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 must be visually reminded of bicyclists with signage such as “Share the Road” with a graphic representation of shared vehicle and bike use. There should also be 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 should be at appropriate intervals in relation to the length of the shared lane conditions. These shared bicycle lanes should only occur where the option of striping for a bicycle lane is impossible, due to constraints outside the roadway.

**Bicycle Lane:** A solid striped lane that occurs between the vehicular travel lane and the curb and gutter. The lane should be 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 can occur when on-street parking exists. The lane should be located between the travel lane and parking stalls, and it should be a minimum of 5 feet wide. In the occurrence of a turning lane or bus bay, a dashed bike lane should be used to alert bicyclists and motorists of the possibility of merging vehicles and bikes. Bike lane symbols should be 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 on UGA’s campus fall within 10-20’. Examples of multi-use these paths around campus include the walkways within North Campus and D.W. Brooks Mall. Because GDOT and AASHTO standard paths allow for both pedestrian and bike use within an 8-10’ wide, it is apparent that UGA could simply denote all existing multi-use paths as bike and pedestrian paths. 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.
INTERSECTION STANDARDS

Ultimately intersections are considered to be the most dangerous aspect of any cyclists' commute. Improvements to the existing intersections on campus should focus on creating a safer and more efficient manner for bicycles to maneuver through traffic. These improvements should at a minimum include:

- 10' wide travel lanes (minimum)
- 4' wide bike lanes (outside of gutter)
- Painted Ingress/Egress Lanes
- Painted Bike Boxes
- Bicycle Detection Devices
- Signage
- Pedestrian & Bicycle Mass Crossing Opportunities

**Ingress, Egress & Advanced Stop Lanes (ASL):** 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 should be 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 should be 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 should be 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 should only be used during red lights, when all vehicles are stopped allowing bicyclists to safely move in front of the stopped vehicles. Like the ASL, the Bike Box should be stenciled with a contrasting surface color to increase visibility.
Standard 4-way intersection on campus with standard bike facilities:
- 4' bike lanes
- Ingress lanes
- Bike boxes
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Standard 3-way intersection on campus with standard bike facilities:
- 4' bike lanes
- Ingress lanes
- Egress lane (intersection crossing)
- Bike boxes
Introduction of ingress turn lane with median at intersection.
Ideal roadway configuration to include a landscaped buffer and/or median. Bike lanes should be 4’ minimum and travel lanes should be 10’ minimum.
BICYCLE SIGNAGE STANDARDS

Bicycle signage can provide vital situational information to cyclists, motorists and pedestrians. Signage should be used to direct bicyclists toward bicycle facilities and preferred bike routes, as well as raising awareness of bicycle presence to vehicles. There are three categories of bike signage, which include: regulatory, warning, and wayfinding signage. The use and placement of all signage should conform to the Federal Highway Administrations Manual on Uniform Traffic Control Devices.

Regulatory Signage: Signage used to inform bicyclists, motorists, and pedestrians of the standard traffic laws and practices.

Warning Signage: Signage used to warn bicyclists, motorists and pedestrians of existing route conditions such as pedestrian crossings or hazardous road conditions.

Wayfinding Signage: Signage used to direct bicyclists to optimal travel routes. Custom wayfinding signage could also act as a way to unify the campus bicycle network and serve as an educational signage.
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 locations around campus in order to promote bicycling and prevent damage and theft. These facilities should be located within short walking distances of all front entrances to every building on campus. They could include both covered and non-covered options such as bike racks, parking shelters or 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, a future bike parking study could be conducted to assess the need for new racks as bicycle ridership increases on campus. Replacing outdated racks around campus that only support the front wheel should be considered. This style of rack, sometimes referred to as a “wheel-bender”, does not adequately support a bike. This often results in a domino effect of bicycles falling over, if one bike starts to topple. The consequence of this domino effect is usually a bent wheel, which in normally requires replacing the damaged wheel at a cost of $100 or more. Adequate racks for replacement include, the inverted U, the Post-and-Loop rack or the CORA Expo (Research racks).
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 around campus, 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 harsh weather and possible theft, but covered bike parking can protect the bikes they have invested in and possibly encourage them to ride to class or for recreation more often. 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. Similar high capacity covered bike parking stations could even be located in more strategic locations in order to serve those who commute to campus by providing lockers and shower facilities. A simpler and more cost effective way to provide covered parking on campus would be to retrofit a few select existing parking spaces on the first level of each parking deck around the university. This alone can provide bike parking on campus that would conceivably be within a 5 minute walk from any building on campus. Ideally any newly proposed or constructed building on campus should be required to 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. For many faculty and staff, this is the case, 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 noted that UGA will likely install 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.
RACK & END OF TRIP MAP
COMPREHENSIVE STANDARDS

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.” The UGA Campus should consider implementation of standards and development that promotes those methods recognized by such organizations. If implemented on campus a “Complete Street” directive might include, but is not limited too 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
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 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. These recommendations are based on the information gained from roadway inventory, analysis and participant observation studies as well as user group input. Nearly 90% of all roads covered in this study can accommodate one of the following short-term configurations:

- (2) 10' Standard Travel Lanes
- (2) 3.5' Substandard Bike Lanes
  or
- (2) 9.5' Substandard Travel Lanes
- (2) 4' Standard Bike Lanes

In addition there are several sections on each roadway that will allow for both standard travel and bike lanes. The inconsistencies in road widths along each road, however, does make the goal of seamless improvements and site conditions challenging. Therefore, long-term recommendations are provided in the following pages, which are intended to provide both cost conducive and sound site solutions in order to provide both efficient and safe bicycle and transportation facilities.
SANFORD DRIVE

Existing Conditions:

The section of 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 is a need for a southbound bike lane as 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 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 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. 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. There are no bike lanes or signage along this section of Sanford Street.

Cyclist passing on-street parking across from the Physics Bldg.
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. 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, which are related to both user error and substandard conditions.

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.
SANFORD DRIVE

Site Improvement Recommendations:

In order to provide an ideal and standard situation 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 waiver to the standard bike or travel lane width by no more than 1' total, or it will require minor street improvements to gain the 1' width needed. The latter effort will most likely require encroachment into existing sidewalks and some utility re-location. Consideration of a “Complete Street” treatment as a long-term solution should be given. Parking along the road could also be replaced by upcoming/proposed structured parking, which would also allow for the parking areas to evolve into bus stop zones. All intersections would benefit greatly to the introduction of bike boxes and ingress/egress lanes in order to provide a safer and more visible posture for cyclists.
A center-flow lane (Option A) at the Baldwin intersection will help reduce the conflict between cyclists, pedestrians, and vehicles. Speed reduction measures such as marked lanes and road signage can also help to reduce travel speeds while giving喝了 and enforcement visual indication of speed to general. While a traffic sign will be more of an expense, another option is to incorporate a bike stop sign to the intersection of Baldwin and Sanford. In addition, having a raised median in the right hand lane would help reduce the speed of vehicle traffic. A bike stop sign would also help to create a safer environment for cyclists. This could be done in collaboration with the city of North Greenbush in order to create a safer situation for cyclists traveling north towards the Baldwin Street intersection. Facilities such as bike lanes and bicycle lanes should be introduced. These facilities will provide traffic awareness and a staging area for bikers as they enter North Greenbush. As bikers cross the stop intersection the inclusion of a 2’ bike lane can occur by reducing the road to accommodate two 12’ travel lanes. On the eastbound Road North and the Takai Center, Sanford Street becomes a bridge that connects the bike path. In order to include bike lanes on the bridge there are two options (Option B), which include widening the existing bridge with or without the bridge to accommodate a landscaped median. As bikers pass the bridge the road will report back to a template with standard travel lanes, and an additional bike lane on the north side. As bikers encounter a section with 50’ street parking, which serves the Physics and Engineering/Science buildings. Within this parking area there should be a painted and striped buffer separating the parking space from the bike lane. (Option C).
The intersection of Cedar Street and Sunrise Street (Section D) should incorporate bike lanes with green lines that lead into the lanes. In addition, green bike lanes should be incorporated on the outside of the right-turn lane as to Cedar Street to allow easterly bike lane presence. Along with appropriate signage and delineation at each stop box, the intersections could be relocated to help reduce traffic. The intersection could also be relocated to work with the minimum required turning radius for buses and other longer emergency/vehicle vehicles. The intersection of Sunrise from the Cedar intersection to the Carlton intersection could be redesigned to reduce the right-turn conflict point by adding a bike lane to both sides of the intersection. The sidewalk and bike lane width should be kept the same but should be elevated due to the varying existing conditions on either side of the roadway. The existing on-street parking on Sunrise and Sunset Road should be removed to accommodate the most winding effect and create a safer situation for high-use greenways and bus stops. The stops and turns should be considered for bus stops or bus stops or intersection signals. The shift for bus stops to be accommodated for rider safety and pedestrian safety. Grill intends to reduce bus headways and street traffic. In addition, new bus stop pavement, which is a dangerous and illegal operation of several cracks and intersections, as well as other intersections the Sunset Street and Sunrise Street intersection (Section C) will need bike facilities such as bike lanes, green bike lane and appropriate signage and delineation devices.
BALDWIN STREET

Existing Conditions:

Baldwin Street is comprised of (3) existing 10’ wide vehicular lanes that enable the roadway to incorporate a turning lane at each of the intersections along the route, except for the Sanford intersection that serves as an exit only road onto Baldwin Street. 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 on either side that vary in widths of 8’ to 10’. Beyond the sidewalk on both sides of the street there are retaining walls ranging in height from 3’ to over 6’ high. 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. 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.
Baldwin Street

Site Improvement Recommendations:

A long-term solution that can also allow the current configuration of (3) lanes of vehicular traffic to remain while incorporating 4' wide bike lanes will require both road construction and significant streetscape improvements. The inclusion of bike lanes will 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 will be, at a minimum, 5' wide, which will cause 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 include or lead into other streetscape improvements not directly associated with the bicycle improvements themselves. These opportunities include further 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. As with the short-term option, these improvements will connect the primary routes along Lumpkin Street and East Campus Road as well as with those on Sanford Drive. All intersections will 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 the bike lanes, ASLs, bike boxes and connections to approaching primary routes will be appropriately sited to ensure visibility to motorists, cyclists and pedestrians.
CEDAR STREET

Existing Conditions:
The segment of Lumpkin Street to Sanford Street includes two 4’ wide bike lanes and two 12’ wide travel lanes. There is a bus stop along both sides of the street, both of which incorporate dashed lines to acknowledge bus encroachment into the lanes when stopped. Other than pedestrian crosswalks, the intersection does not include any treatments such as bike boxes or advanced stop lanes. Once across the intersection there is not a 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 to the top of the hill at the DW 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 an exposed aggregate concrete at the back of curb. Past the DW 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 Bldg. At the Lumpkin House the roadway narrows again to 22’ with a wall that runs along the Lumpkin House side. 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 Conner Hall side. Beyond the bus stop there is a 200’ stretch of on-street parking on both sides of the street, which ends at the Steam Plant and Food Science Bldg. The road width from Conner Hall to East Campus widens again to 24’ with header curb and 5-7’ sidewalks on both sides.
CEDAR STREET

Site Improvement Recommendations:

Ideally the intersections along Cedar Street will 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.

The segment of Cedar Street from Lumpkin Street to Sanford Street has both an ideal and standard situation regarding bike and travel lanes. However, the inclusion of bike lanes along the remaining segment 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.

Because the average road width along the route is 24' or less, the road will not adequately allow for the spacing needed to introduce two standard bike lanes and maintain two standard, opposing travel lanes. In order to introduce bike lanes without incurring road and sidewalk construction the road will need to become a 16' one-way road. This option could also go hand in hand with a daytime limited-use for only UGA, service and fire/safety vehicles. 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.

In order maintain the existing two opposing lanes of traffic while introducing standard bike lanes; encroachment of the sidewalk would need to occur. This would most likely be more feasible on the Physics side of the road and would involve removal of the 3' exposed aggregate concrete shoulder thus creating 27'. At this point the bike lane and travel lane configuration could take one of two forms, which would result in either (2) substandard 3.5' lanes bike lanes (7’ total) w/ (2) standard 10' travel lanes (20' total) or (2) standard 4' bike lanes (8’ total) w/ (2) substandard 9.5’ travel lanes (19’ total). Either option would result in roadway, sidewalk and utility improvements on the Physics side of the street.

As suggested in the aforementioned recommendations, in order to allow bike lanes, the road will need to be widened. If the objective is to introduce standard bike lanes and maintain standard travel lanes, while adhering to the goals laid forth in the Campus Master Plan, a conversion to a “Complete Street” should be considered. 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 should 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 would 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. In keeping with the Campus Master Plan an alternative bike route and connection could occur at the future entrance to the DW 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 DW Brooks Mall.
The section of Cedar Street from the Lumpkin Intersection to the Sanford intersection is narrow and in need of basic bike facilities. In order to create a contiguous network with standard sidewalks, landscape buffers, bike lanes and travel lanes Cedar Street, a "Complete Street," will require modifications to the existing network of streets. The improvements included in the plan are: 1) Modifications to the road from the Sanford Drive intersection to the East Campus Road intersection. 2) The sections of road between Lumpkin Street and Sanford Drive were the priority for bike lanes and travel lanes. It should incorporate bike lanes and high-visibility lanes at the intersections. The network beyond Sanford Drive will need to widen in order to accommodate standard travel lanes, bike lanes and 6" landscape buffer with 10' setback. The priority of the Lumpkin to Cedar Drive will require new road on the Chemistry building side of the road (in yellow).

While this will encroach into the existing hardspace in front of the Chemistry building, it creates an opportunity to establish a bus stop. In order to change the bus stop, it should be relocated to create consolidated bus stop zones. This will help pedestrians and prevent traffic flow. In addition, the green painting should be removed as it causes excessive conflicts with trash service vehicle, pedestrians and cyclists (marked B). The Intersection at East Campus and should be relocated during the widening effort (route C) in order to create a more accommodating and efficient roadway configuration for Cedar Street. Sidewalk of the priority of the route to the red line the widening of the road in front of the Chemistry building side of the street, with an opportunity for a landscaped green space to the Natural Science and Statistics side of the street as well as allow for more pedestrian and greenway movement opportunities at the intersection.
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. The intersection includes pedestrian crosswalks and the existing bike lanes on Lumpkin Street pass through the intersection without any bike boxes or ASLs. Sidewalks exist on the UGA Cooperative Extension Service building’s side of Carlton Street, but 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 in that the lanes from Lumpkin Street to Sanford Street are 9.5’ wide and the lanes from Sanford Street to DW Brooks Mall are 12’ wide. Past the DW Brooks Mall intersection the roadway transitions to travel lanes with standard 4’ bike lanes, 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 provides 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; cyclists riding on the sidewalk on the Plant Sciences side of Carlton and cyclists attempting to merge into turn lanes at intersections.
CARLTON STREET

Site Improvement Recommendations:

At the intersection of Carlton Street and Lumpkin Street there standard bike facilities such as bike boxes, ingress lanes, signage and detection devices should be implemented. Because there is an existing bike lane network along Lumpkin Street and this particular intersection is 3-way, bike traffic traveling southbound should have the opportunity to yield to turning traffic and continue moving with the inclusion of an intersection lane. 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 DW 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 (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 an area with numerous events and attractions.

There are many cyclist related issues between Brooks Mall and East Campus Road. These include conflicts with bikes and cars at the Brooks Mall intersection where the bike lanes begin and end; cyclists riding on the sidewalk on the Plant Sciences side of Carlton; and cyclists and pedestrians being stranded on the intersection islands at the East Campus Intersection. The DW Brooks 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 Science side of the road to allow for the standard travel and bike lanes with landscaped medians and buffers. All bus stops should consolidate to form bus stop zones. The East Campus Intersection should 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 to the minimum required for buses, service and emergency vehicles in order to relinquish the need for crossing islands. Standard bike facilities such as bike boxes, ingress lanes, signage and detection devices should be incorporated. Bike facilities should continue across East Campus towards the Museum, Performing & Visual Arts Center and East Campus Village. The existing bike path should be consolidated with the sidewalk to create an 8’ standard walkway in which bikes will use the 4’ bike lane provided.
SECTION 2.4
FUNDING OPPORTUNITIES

ADD TEXT
REFERENCES

Last Name, First Name. Book/Magazine/Article Title. Publisher, City. XXXX.

Last Name, First Name. Book/Magazine/Article Title. Publisher, City. XXXX.
ACKNOWLEDGEMENTS

Last Name, First Name, Title/Position

Last Name, First Name, Title/Position
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