East Carolina University

CAMPUS BICYCLE AND PEDESTRIAN PLAN

August 2013





VHB + Martin/Alexiou/Bryson
Joining Forces

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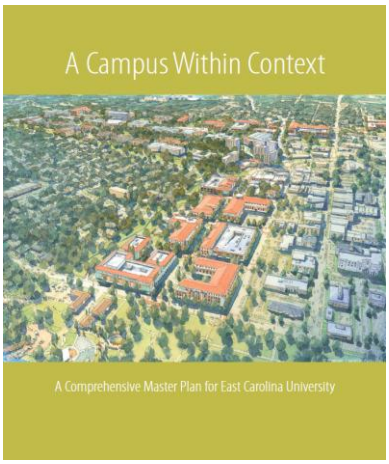
1 INTRODUCTION AND BACKGROUND

1.1 Purpose of the Plan

East Carolina University's Campus Bicycle Plan has been developed to make the campus more bikeable through a variety of facility improvement and program development recommendations. The Plan is a master plan of physical improvements and administrative programs to meet the long-term transportation needs of ECU. But it is also focused on implementation, with specific projects that have been detailed and prioritized. The Plan will be used by multiple campus organizations working together to improve the campus' transportation system and to achieve the University's commitment to effective movement for a pedestrian-friendly central campus as defined in the Physical Master Plan.

1.2 Campus History and Context

East Carolina's Physical Master Plan, *A Campus Within Context*, was completed in 2011, and describes the intent, goals, and long term values of the University and its growth. The Physical Master Plan notes that student enrollment has increased by 43% between 2001-10, with an additional 21% expected by 2017. Additional students also means additional faculty/staff traveling to/from and around campus. Additional trips, which typically means more vehicles on or near campus, reinforces the need for a pedestrian-scaled campus suitable for walking. The Plan recognizes these challenges and builds on previous efforts to create a campus that is walkable, connected, and multimodal.



ECU Physical Master Plan

1.3 Plan Vision

The project Core Advisory Group discussed and developed a Vision for the Plan to guide development of policies and recommendations for improvements. The Vision of the Campus Bicycle Plan is to:

- Promote the use of sustainable transportation modes on campus
- Establish a more bike-friendly campus environment
- Reinforce the visual character and quality of the campus infrastructure
- Provide seamless transition of facilities on/off campus
- Connect the East Carolina University Main Campus with the Health Sciences Campus

1.4 Goals and Objectives

To support the Plan's Vision, the Core Advisory Group developed these Goals and Objectives:

- **Goal 1: Focus on the long-term campus transportation system**
  - Objective 1-1: Identify and examine the existing mode share
  - Objective 1-2: Promote alternative transportation modes
- **Goal 2: Ensure consistency of design for bike amenities and facilities**
  - Objective 2-1: Build upon the Greenville Metropolitan Planning Organization (MPO) Bicycle and Pedestrian Master Plan, specifically facilities located along the campus periphery
  - Objective 2-2: Include stakeholders from the City of Greenville within the Core Advisory Group

- Objective 2-3: Include the ECU Engineering and Architectural Services to coordinate all future project design standards
- Objective 2-4: Adopt the Manual on Uniform Traffic Control Devices (MUTCD) standard designs for signage and roadway pavement markings

- **Goal 3: Involve a variety of perspectives during the creation of bike plan projects**
  - Objective 3-1: Build upon results from 2012 survey of Bicycles and Alternative Transportation
  - Objective 3-2: Present recommended bicycle plan projects to the campus community and ask for feedback
- **Goal 4: Improve safety for on campus bicyclists**
  - Objective 4-1: Remove unnecessary vehicles from the center of campus
  - Objective 4-2: Increase enforcement of the 'rules-of-the-road' for both cyclists and motorists
- **Goal 5: Develop strategies for education and encouragement**
  - Objective 5-1: Develop a culture of bicycling among the campus population
  - Objective 5-2: Foster 'leadership-by-example' among campus administration
  - Objective 5-3: Become a League of American Bicycles (LAB) Bicycle-Friendly University (BFU)
  - Objective 5-4: Coordinate with the City of Greenville and other state government agencies on community and regional bicycle and pedestrian programs

1.5 Outreach Activities

The Campus Bicycle Plan has been developed over approximately eight months with the input of many members of university community. This input was critical in developing a plan that is customized to the campus' needs, effective at meeting the needs of all transportation system users, and sustainable over the long term. The major outreach efforts are summarized below.

Campus Survey

A campus survey was distributed to a random sample of 4,500 members of the ECU campus community in the Spring of 2012 to gauge current travel patterns, determine attitudes about bicycle travel on campus, and solicit ideas for improvements. Over 700 individuals responded to the survey. Summary results are included in Appendix A.

Steering Committee

A Core Advisory Group made up of faculty, staff, and representatives of the Greenville Bike/Pedestrian Commission guided development of the Plan. The group met three times over the course of eight months to develop the vision, goals and objectives of the Plan; assist in plan outreach activities; identify needs, deficiencies, and opportunities on campus for bicycle improvements; and review Plan concepts and recommendations. Members of the steering committee provided valuable details relating to the historical development of the campus, as well as existing programs and projects that are on-going.

Display Board from Open House

Campus Events

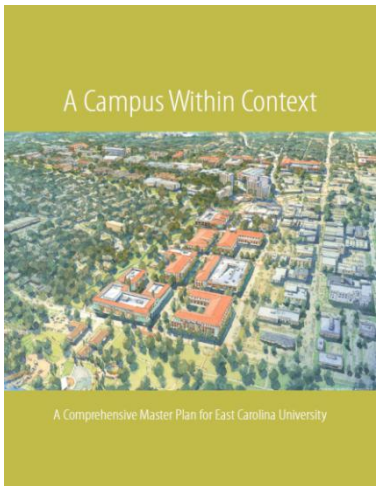
In order to receive input and feedback from the broader campus population, a Campus Open House event was held in April 2013. At this event faculty, staff, students, and visitors were able to view poster-sized maps of draft recommended bicycle amenities and facilities, make

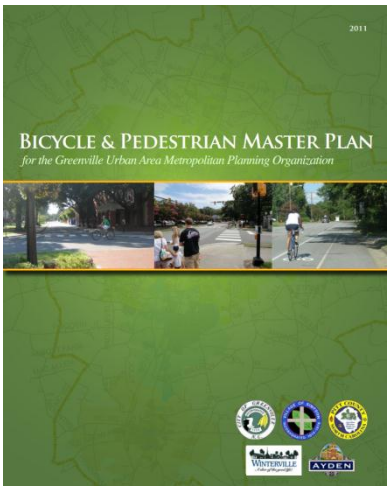
comments on needs and deficiencies, and document ideas for improvements. Discussions with staff were also incredibly informative, relating first-hand knowledge of the campus into the planning process. All of the comments received are summarized in Appendix B.

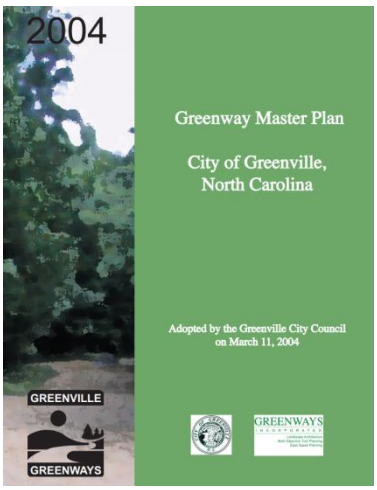
1.6 Background Resources

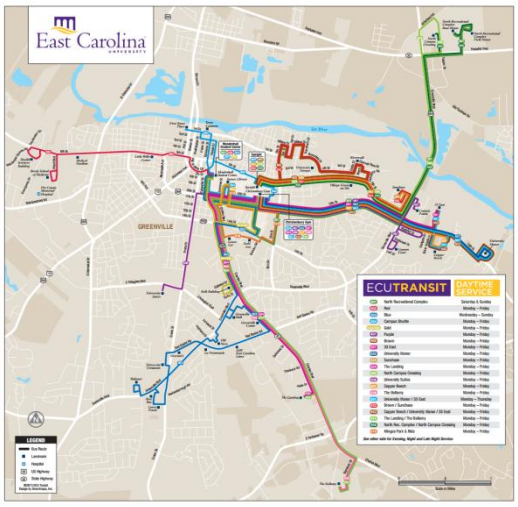
The Campus Bicycle Plan was not developed in isolation – many other plans, documents, and resources were consulted as part of the plan development process. Some of the key companion resources include:

- East Carolina University Physical Master Plan: *A Campus Within Context (2011)*
- East Carolina University Transit, *Spring 2013 System Map*
- Greenville MPO, *Bicycle and Pedestrian Master Plan* (2011)
- City of Greenville, *Greenway Master Plan* (2004)
- City of Greenville , *Greenway System* maps (through Friends of Greenville Greenways, FROGGS)
- Ongoing work of the *ECU Engineering and Architectural Services*









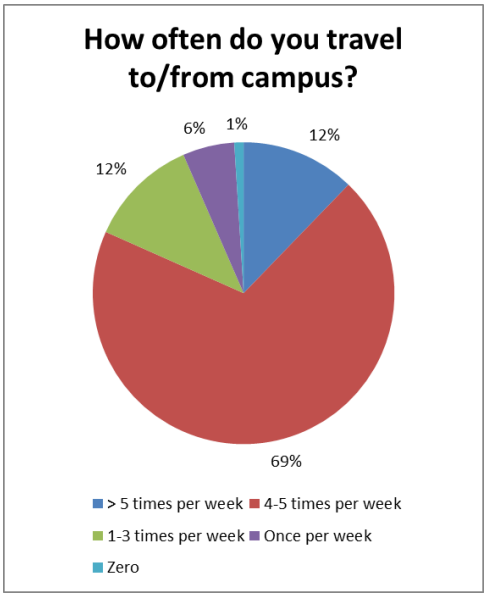
2 EXISTING CONDITIONS: *WHERE WE ARE*

2.1 Introduction

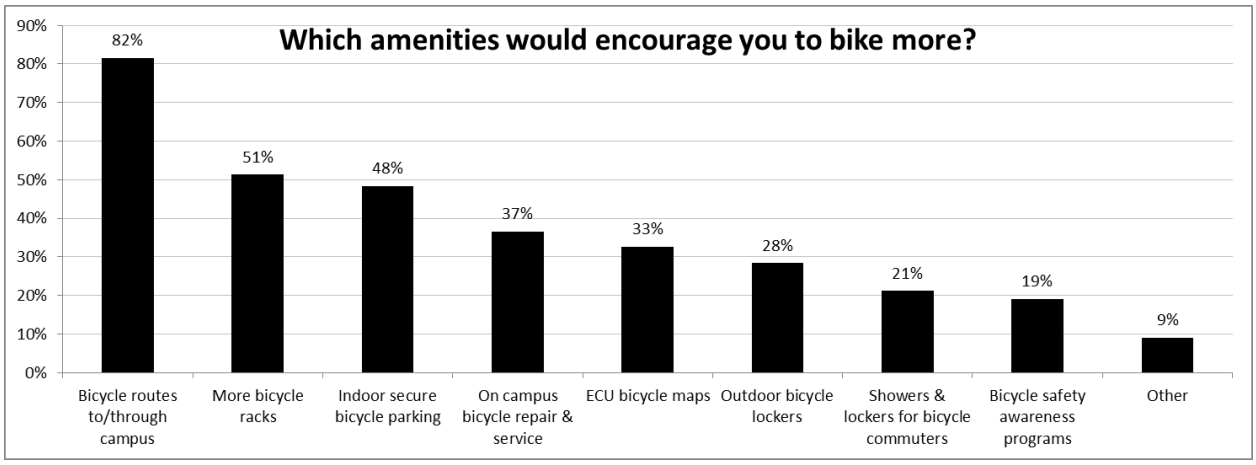
This section describes the existing bicycle facilities and programs at East Carolina. The purpose is to provide context to important social, physical, or programmatic elements of mobility and incorporate them into development of this plan.

2.2 Survey Results

An email invitation was sent to a sample of 4,500 individuals to participate in an online survey of bicycle conditions at East Carolina University. The survey remained open for approximately four weeks between March and April of 2012. Two email reminders were sent to non-respondents. A total of 703 individuals responded, representing a response rate of 15.6%. Full survey results are included in Appendix A. Key findings include:



- A majority of respondents currently drive alone to campus (56%), while a smaller percentage choose to walk (17% - which likely includes a majority of the 15% who identified themselves as resident students), bike (12%) or ride transit (9%).
- Most respondents indicated they travel to/from campus more than 4 times per week (81%), while only 6% indicated they travel less than once per week.
- A majority of respondents indicated dedicated bicycle paths through campus (82%) and more bike racks (51%) would encourage them to bicycle more frequently.
- Only 46% of respondents consider bicycling on campus for daily needs as 'somewhat' or 'very' safe.



2.3 Public Outreach Results

A Campus Open House was held to solicit public comments and identify key locations or corridors for further study. This event took place at the Mendenhall Student Center on Wednesday, April 10th, 2013. Individuals were asked to indicate locations on or off campus that needed a bicycle or pedestrian improvement (e.g. bicycle lanes or sharrows, sidewalk or multi-use path connections, bicycle racks, lockers, or commuter shower facilities). Individuals were also asked to submit general improvement comments that did not relate to specific campus locations. A full list of public comments received during these events is contained Appendix B. Some findings include:

- Need for separated bicycle paths (adjacent to pedestrian paths);
- Requests for covered bicycle racks, lockers, showers, repair stations and other amenities for specific locations;
- Bicycle racks on the front of ECU buses, especially routes connecting to the Health Sciences; and
- Specific connections to existing City of Greenville greenway trails near campus.

2.4 Campus Demographics

East Carolina University currently holds the third largest enrollment of students of the 17 University of North Carolina (UNC) system schools and has experienced reasonable growth in the past 10 years (see Table 1). The overall enrollment trend is upward (24% since 2003). The student population for the Fall 2012 semester was 26,947 according to www.northcarolina.edu. Including faculty and staff would push this figure to approaching 33,000 individuals on campus each day. East Carolina functions much like a small city during the academic year, and efficient mobility across campus is important to everyday operations.

Table 1: Recent Enrollment Trend

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Students	21,756	22,767	23,164	24,351	25,990	27,677	27,654	27,783	27,386	26,947
Employees	5,184	4,525	4,767	5,078	5,153	5,354	5,343	5,687	5,607	5,646
Total Population	**26,940**	**27,292**	**27,931**	**29,429**	**31,143**	**33,031**	**32,997**	**33,470**	**32,993**	**32,593**

Data Source: ECU Fact Book - http://www.ecu.edu/cs-acad/ipar/research/FactBook.cfm

Populations

One purpose of the Campus Bicycle Plan is to limit barriers that may discourage the use of alternative modes of transportation, whether commuting to/from campus or between campus precincts during the day. The campus population has differing commuting patterns depending on whether they are resident or commuter students, or different kinds of employees.

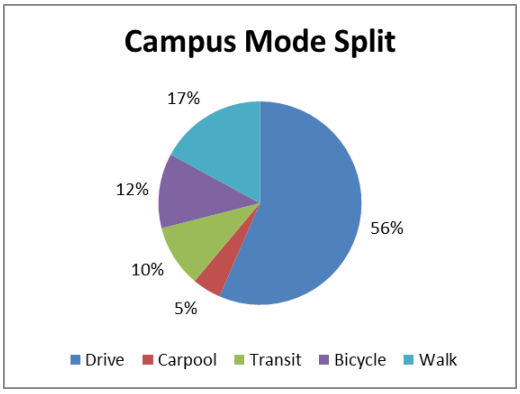
Resident students are by definition already living on campus and do not commute to campus each day. Although some are fortunate enough to store their vehicle on campus, resident students primarily walk, bike, or ride the bus as they travel around campus.

Commuter students constitute the largest population group and commute to campus during the week depending upon individual class schedules. The distance from campus combined with whether their off campus apartment is serviced by transit or shuttle are key determinants as to whether these students choose to drive.

Employees routinely commute to campus each workday, and demand the highest level of convenience and flexibility from their transportation mode. This Plan is intended to limit barriers that may discourage employees from walking or biking from their homes as well as to/from campus meetings throughout the day.

Mode split

Commuter mode split is a measure of how the campus population chooses to travel, divided among the varying modes of transportation (automobile, transit, bicycling, or walking). Urban campuses with adjacent residential neighborhoods or student apartment complexes display a higher mode split for walking and biking. A robust transit system will likewise increase the mode split for riding the bus or train. The campus mode split for a typical community college, to the contrary, would rely more heavily on their personal vehicle.



Results from the commuter survey are typical for an urban campus, with reasonable proportions of students choosing to walk (17%), bike (12%), or ride transit (10%) because it is convenient or cost-effective. A survey of campus mode split should be collected each year, and evaluated over time to track the success of varying programs and strategies.

2.5 General Roadway Conditions

East Carolina University is an urban campus surrounded (and in some instances separated) by thoroughfares. Major barriers to campus mobility include railroad tracks and an urban thoroughfare (East 10th Street). On the positive, the urban location of the University allows for a robust transit system that operates through and near the University, as well as adjacent neighborhood and apartment complex housing for students and employees. This transit system allows for multiple transportation options (transit, bicycle, or walking) rather than reliance upon a personal vehicle. Offering multiple transportation options is important because the University does not own enough parking spaces to support the campus population of greater than 32,000 individuals, nor would the roadway network support this number of vehicles per day.

Major Circulation Patterns – East to West

The unofficial front door to the East Carolina Main Campus is along East 5th Street, the historical entrance nearest to the oldest buildings. As the campus has grown over time there have been additional entrances created along East 10th Street, which serves as the unofficial southern boundary of main campus; however, the University property extends much further south.

According to the NCDOT Annual Average Daily Traffic (AADT) counts, twice as many vehicles are using 10th Street (26,000 vehicles per day (vpd)) as compared with 5th Street (13,000 vpd). Both roadways are functionally classified by the NCDOT as Minor Arterials, meaning they are used as important roadways to the City and region.

Both of these roadways connect with the ECU Health Sciences Campus approximately two miles to the west of Main Campus. Stantonsburg Road (which indirectly connects with 10th Street via Farmville Boulevard, 14th Street, and Dickenson Avenue) serves as a Primary Arterial supporting 27,000 vpd near the Vidant Medical Center and Health Sciences Campus. West 5th Street supports approximately 16,000 vpd and is functionally classified as a Minor Arterial. Refer to the NCDOT Transportation Planning Branch for more information on the functional classification system (http://www.ncdot.gov/doh/preconstruct/tpb/FCS/default.html).

For bicycling purposes 5th and 10th Streets offer the shortest and most direct pathways between the two primary campuses, however both were viewed as "unsafe for bicycling" by attendees of the Campus Open House event.

One recommendation identified by the Greenville MPO Bicycle and Pedestrian Master Plan relates to a pilot project that would convert West 3rd Street to a bicycle boulevard, and provide a third alternative to inter-campus bicycle travel. West 3rd Street is less direct route between campuses than either 5th or 10th Street. The advantage of a bicycle boulevard along West 3rd Street would be fewer vehicles on the roadway and therefore improved perception of safety for bicyclists (see Section 4.3).

A fourth option for east-west travel will be established upon extension of the South Tar River Greenway Phase III, which will be the least direct; however the most-safe alternative because this path will exclude vehicles. The Greenville Bicycle and Pedestrian Commission indicated that this greenway connection will be starting construction by 2014.

Major Circulation Patterns – North to South

Several physical barriers impede vehicular, bicycle, and pedestrian travel between portions of the East Carolina University campuses. Green Mill Run (creek) flows west to east between the Main campus and College Hill area, and supports a multi-use trail in the same direction. A railroad right-of-way that is owned by the Norfolk Southern Corporation and operated by the Carolina Coastal Railway (CLNA) company is also a major transportation barrier.

Railroad right-of-way near ECU Campus

Charles Boulevard, which travels along the western boundary of the East Carolina athletic campus is functionally classified as a Major Arterial and supports roughly the same number of vehicles per day (23,000) as 10th Street. This roadway features a landscaped median, fewer driveways/intersections and sidewalks along both sides.

Founders Drive is currently undergoing a renovation to eliminate vehicular travel through the center of main campus between East 5th and East 10th Street. During class change this roadway experiences traffic congestion due to the volume of students crossing the roadway. The master plan's long-term vision for a pedestrian-friendly center campus was the impetus for this transformation. The added benefit for bicycling will be fewer vehicles on campus and improved safety. On the Health Sciences Campus a similar situation is likely along North Emergency Drive, near its intersection with North Campus Loop. The master plan features a vehicular disconnect between Heart Drive and North Campus Loop, which will allow improved safety for bicyclists and pedestrians traveling across the Health Sciences Campus.

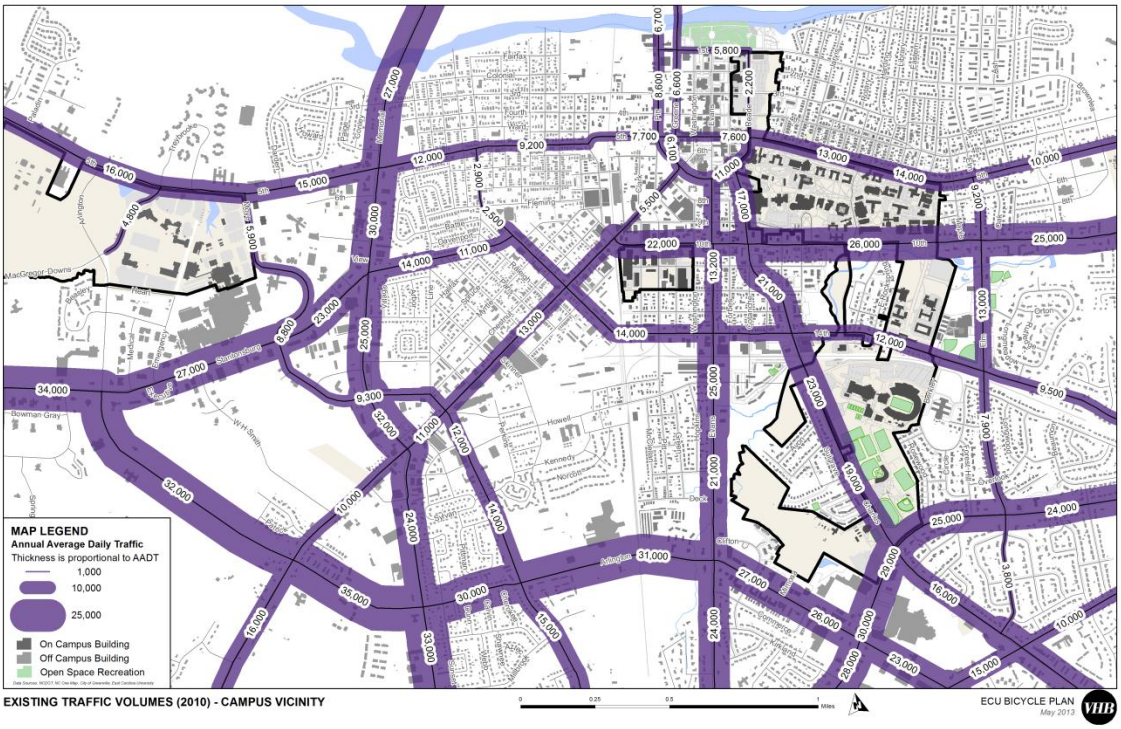
Traffic Volumes and Congestion

The North Carolina Department of Transportation (NCDOT) Traffic Survey Group collects daily traffic volume data for many state-maintained roadways (http://www.ncdot.org/doh/preconstruct/tpb/traffic_survey/). The data collected represents the Annual Average Daily Traffic (AADT) volume. Figure 1 displays the AADT values in vicinity of the University. The line thicknesses are proportional to the average daily traffic value. Roadways with higher average daily traffic will display a thicker line. Not all roadways are included within the NCDOT's traffic survey count, however it is generally assumed that these roadways support very low AADTs, and are generally used for local traffic only (residents).

Traffic congestion on City streets near the University is irregular, and brief. The high number of connected streets that create the urban grid system near Uptown Greenville supports the existing traffic flow during peak periods and allow users to travel along an alternate route. The number of traffic signals along NCDOT roadways control vehicle speeds and allow for safe pedestrian crossings at intersections.

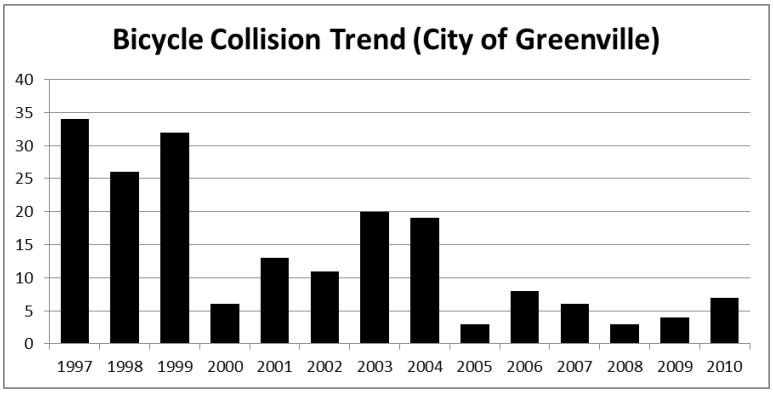
Traffic congestion on campus streets (such as Founders Drive, and Faculty Way) can be regular during class change periods, however non-existent all other times. The campus-wide speed limit is 15 miles per hour (mph), which allow for more casual bicycle riders to operate within the roadway (versus along the sidewalk).

Figure 1: Existing Traffic Volumes (2010)



Safety Issues

Collision data for bicycle and pedestrians is collected and distributed by the NCDOT Division of Bicycle and Pedestrian Transportation. This agency supports the online data tools to supply collision data for the entire state (http://www.pedbikeinfo.org/pbcat/index.cfm). Accessing information from this tool is quite simple; however these data are sums, meaning that the smallest unit of measure is for the entire City of Greenville. With these data we can make comparisons to Pitt County, the Coastal Region, or even the State of North Carolina to identify general trends (Table 2). These data do not provide locational information, whether they occurred on or near the University.



The overall trend of bicycle collisions within Greenville has been decreasing from a high of 34 in 1997. This trend mirrors the Coastal Region trend over the same period.

Table 2: Bicycle Collisions by Jurisdiction (1997-2010)

Jurisdiction	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Greenville	34	26	32	6	13	11	20	19	3	8	6	3	4	7	**192**
Pitt County	39	40	50	14	22	22	26	29	8	16	19	9	9	20	**323**
Coastal Region	432	461	469	340	382	382	388	389	370	388	392	373	303	320	**5,389**

Data Source: NCDOT Bicycle and Pedestrian Crash Data Tool

Note: Rows are cumulative; the 192 collisions within Greenville are included within Pitt County's 323 collisions.

An entirely different dataset was acquired from the Greenville Urban Area MPO to analyze the location of bicycle collisions. These data represented only reported collisions involving bicycles between January 2000 and May 2010 for the jurisdictional area of the Greenville MPO (which includes portions of adjacent municipalities). These data report a total of 13 bicycle collisions (within the 9.5 year study period) along roadways that border the East Carolina University campuses. One of these collisions was a fatality, located at the intersection of 10th Street and Lawrence Street, a non-signalized intersection. A summary of the bicycle collisions by severity is displayed in Table 3 below.

Table 3: Bicycle Collision Severity by Year (2000-2010)

Jurisdiction	Fatal	Type A	Type B	Type C	PDO	Total
Near ECU	1	0	6	1	5	**13**
Greenville MPO	4	14	55	50	8	**131**

Data Source: Greenville Urban Area MPO

Note: Type A: Disabling Injury; Type B: Evident Injury; Type C: Possible Injury; PDO: Property Damage Only.
Rows are cumulative; the 13 collisions near ECU are included within the Greenville MPO's 131 collisions.

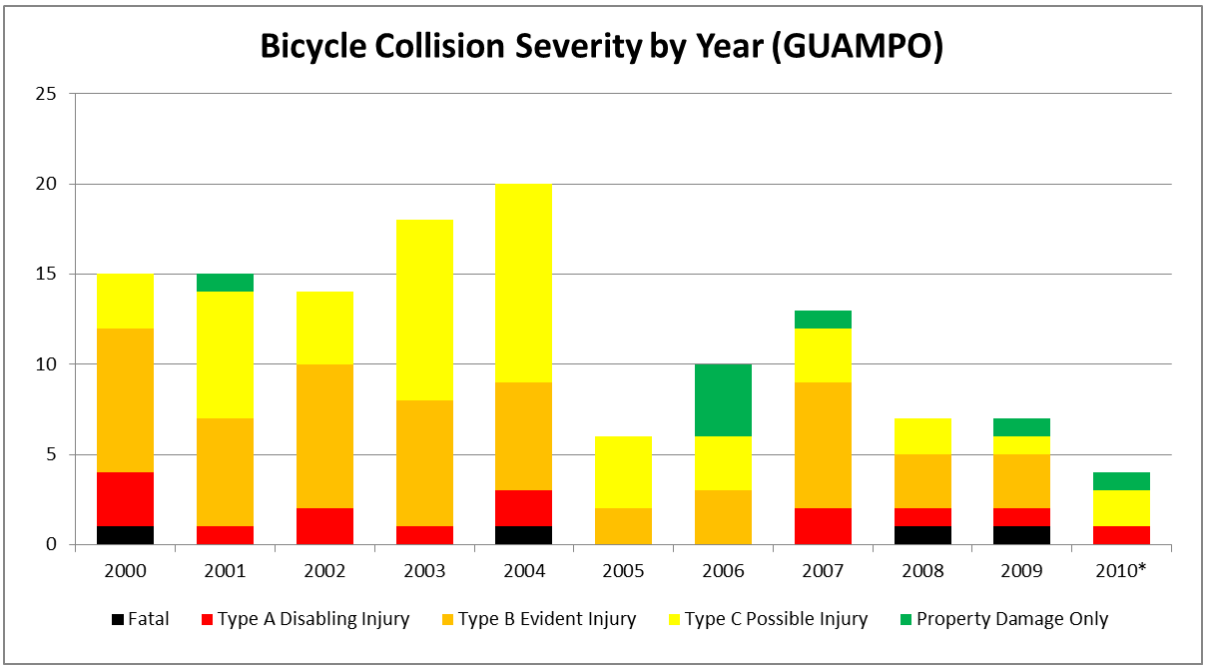


Figure 2 displays bicycle collisions from this dataset, provided by the Greenville MPO. Geographic information systems (GIS) software was used to spatially display the density of collisions. The pattern of bicycle collisions is clustered within 1-mile of Uptown Greenville. This pattern is presumably a function of an interconnected street grid system and lower posted speed limits that make it possible to ride a bicycle. Portions of the City that are further from Uptown have fewer reported bicycle collisions, the pattern of collision density is less clustered, as expected.

The same clustering analysis was performed for each of the five severity types (displayed in Table 3). The resulting patterns were only relevant for severity types B and C, due to the small sample sizes of others (4 Fatal; 12 Type A; and 8 Property Damage Only). The clustering patterns for these types are different suggesting that more-serious injuries (Type B collisions with evident injuries) have occurred near Uptown and the near West side neighborhood, while less serious injuries (Type C collisions with possible injuries) have occurred in more dispersed locations across the City (Figure 3).

Figure 2: Bicycle Collision Clustering (2000-10)

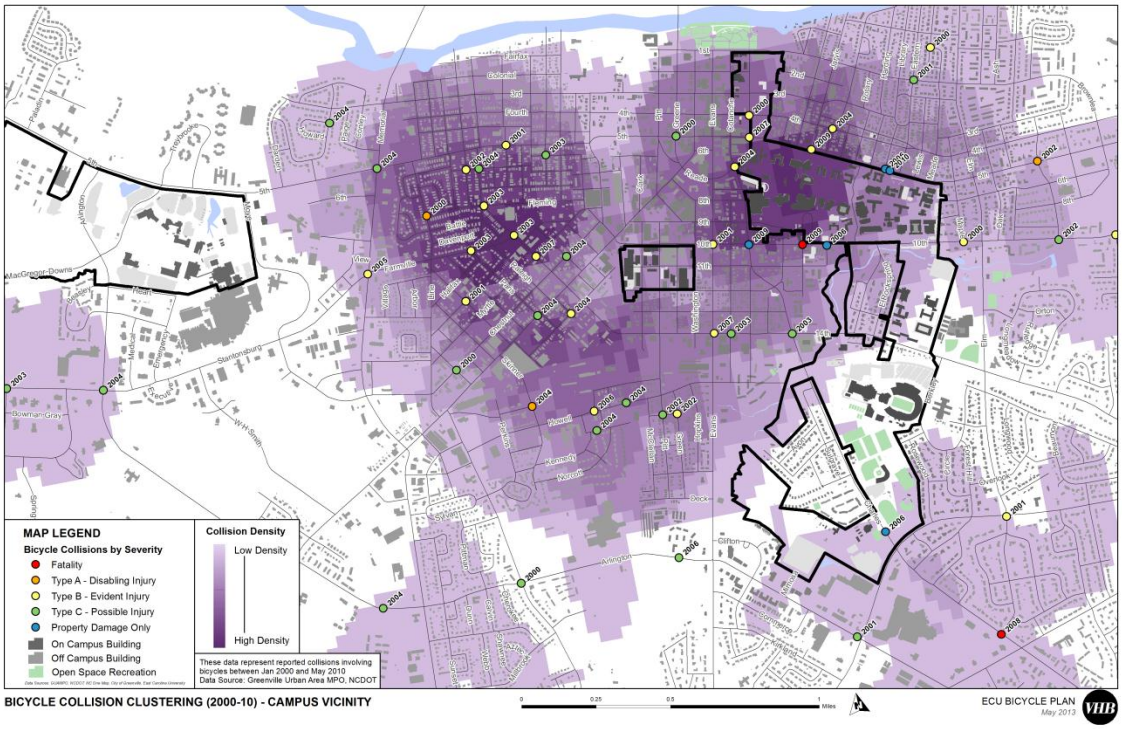


Figure 3: Comparison of Type B and Type C Bicycle Collision Clustering7 (2000-10)

Type B (Evident Injury) Collisions
Note: The pattern of higher-intensity in two locations

Type C (Possible Injury) Collisions
Note: The pattern is more evenly distributed, and less intense

2.6 Existing Bicycle Facilities

For the purpose of this Plan existing bicycle facilities may be separated into two broad categories: on-road and off-road. On-road facilities include bike lanes, share-the-road arrows ('sharrows'), wide outside lanes, or signed bicycle routes that encourage riders to travel with vehicular traffic (see Section 4.3 for descriptions). Off-road facilities include greenway and multi-use paths that encourage separation of riders from vehicles. See Figures 4 and 5 for existing bicycle facilities near the University.

Campus bicycle facilities are part of a larger system of bicycle facilities in the City of Greenville. Making a smooth transition between the campus and its surrounding neighborhoods will be an important element in determining the success of this plan. The University coordinates bicycle planning activities with the City of Greenville's Bicycle and Pedestrian Commission to maximize opportunities and resources. This relationship is critical for the long-term success of bicycling efforts on and around the campuses.

On-Road Bicycle Facilities

Bicycle facilities have been constructed incrementally over time. To date there are approximately four miles of bicycle lanes along portions of 1st Street, 3rd Street, and 5th Street. The pavement markings are displaying signs of wear and have not been maintained in several years. It is unknown whether these bicycle lanes once connected and have since been weathered off of the roadway, or the streets were repaved without being re-striped for bicycle lanes. The City of Greenville is planning to stripe additional bicycle lanes as repaving projects occur across the City.

Weathered bicycle lanes along 5th Street

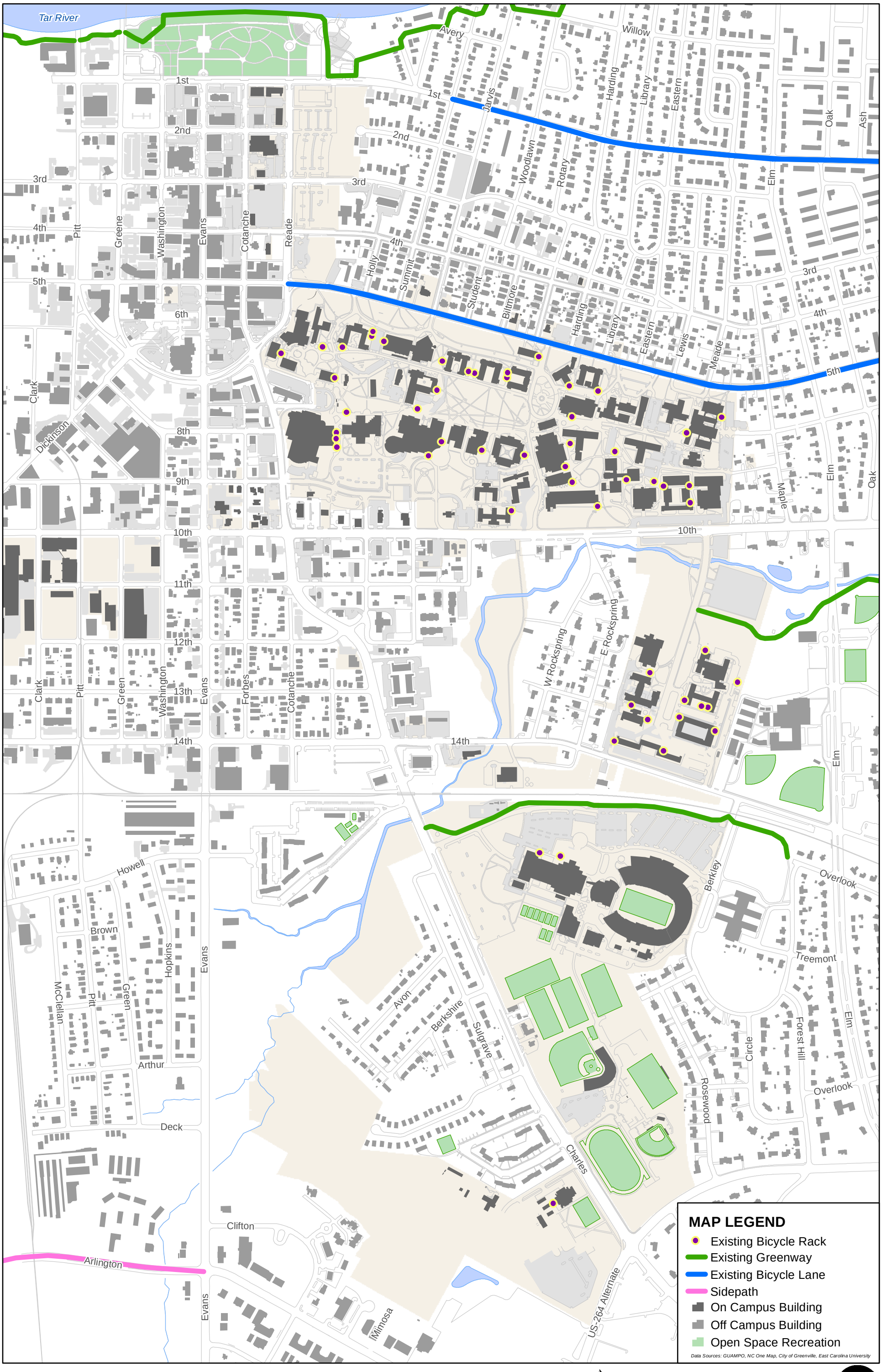
Off-Road Bicycle Facilities

The City of Greenville is continually paving additional portions of greenway trails. The South Tar River Greenway connects the Town Common Park in Uptown to Greenwood Cemetery and Green Springs Park to the east. From here the Green Mill Run Greenway runs westward along the creek, with some at-grade roadway crossings, back towards the East Carolina University campus. The entire clockwise loop is approximately six miles long, which represents nearly the entire existing paved greenway trail within the City. An additional 24 miles are planned (in the short-term) according to the 2004 Greenway Master Plan. The next portion of greenway to be constructed will run along the Tar River from Pitt Street to the west toward the Vidant Medical Center and Health Sciences Campus.

An extra wide sidewalk located along a roadway is commonly referred to as a sidepath. Sidepaths are typically paved with asphalt as opposed to concrete, and resemble greenway trails. The distinction between sidepaths and greenways are the proximity to roadways and the number of at-grade intersections. One example of a sidepath in Greenville is along the north side of Arlington Boulevard near JH Rose High School. Sidepaths are often constructed as part of a Safe-Routes-to-School initiative, which is a likely the source of this facility. The next portion of planned sidepath to be constructed will run along Moye Boulevard and connect with the South Tar River Phase III greenway.

On-Campus Amenities

There is currently only one shower facility (Student Recreation Center) available to bicycle commuters or those interested in a lunch time ride or walk. There are many more showers on campus, including those in utility plants, or various locker rooms (such as for athletes, police, etc.), however these do not meet the criteria of being open to the general campus population, and are therefore excluded.



EXISTING BICYCLE FACILITIES - MAIN CAMPUS

ECU BICYCLE PLAN

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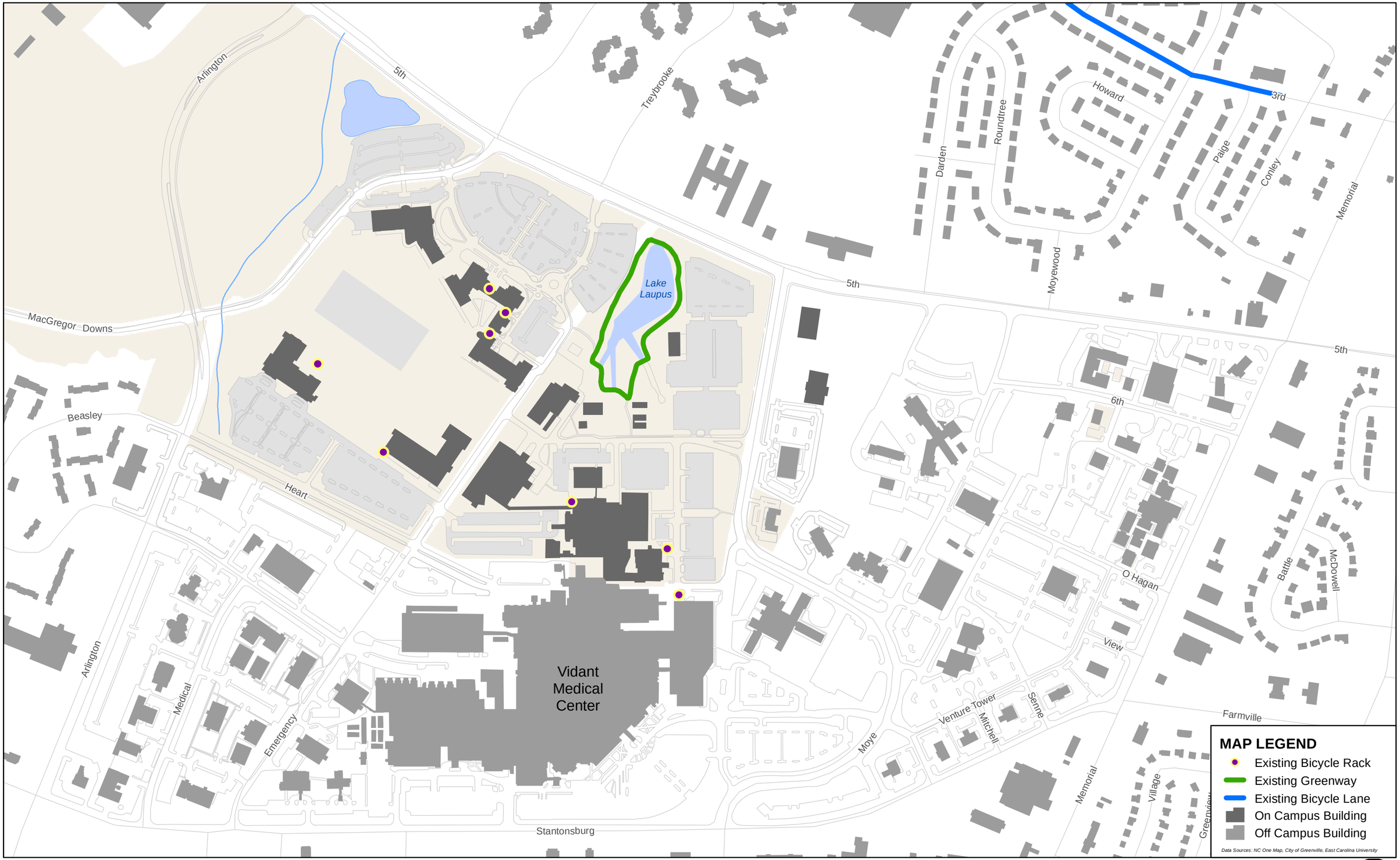


EXISTING BICYCLE FACILITIES - HEALTH SCIENCES CAMPUS

ECU BICYCLE PLAN
March 2013

VHB

2.7 Campus TDM Programs

The East Carolina University Parking and Transportation Department offers a variety of travel demand management (TDM) programs to encourage students and employees to utilize alternative modes of transportation. Several programs are summarized below. All of these programs work together to offer alternatives to driving to campus.

Pirate Bike Share

The Pirate Bike Share is a semester-long bicycle rental program through the Parking and Transportation Department. All students and employees are eligible to participate with a valid university ID. Individuals may rent a bicycle for the entire semester by visiting the office on East 10th Street. For more information or rental pricing visit http://www.ecu.edu/bikes/bikeshare.html or contact the Parking and Transportation Department 252.328.6294.

Bicycle Rental Program

For those who do not choose to rent a bicycle for the entire semester, this rental program allows for a daily, weekend, or entire week rental. The rental includes a helmet and lock, as well as front and rear lights for safe evening riding. For more information on rentals visit the Student Recreation Center Adventure Desk, or contact the Parking and Transportation Department 252.328.6294.

Bicycle Registration

All bicycles on the East Carolina campus are required to be registered with the Parking and Transportation Services department. The registration sticker is free of charge and allows the bicycle to be returned if it is ever lost or stolen. Students are encouraged to register today and receive a free gift, such as riding gloves or a sports bag (while supplies last). More information may be obtained from the Parking and Transportation Services department 252.328.6294 or visiting the bike permit page http://www.ecu.edu/bikes/bikepermits.html.

WeCar

The WeCar program allows registered members to rent a car from an on campus location and pay a flat hourly rate that includes gas and insurance. Students, faculty and staff are all eligible to become members by simply applying online, or in person (every Tuesday in Wright Plaza between 9am and 12 pm). Members may easily reserve a car online at http://www.enterprisecarshare.com/car-sharing/program/east-carolina?ctype=1.

Zimride

Zimride is an online carpooling/ride matching program that pairs commuters who make similar trips. Zimride connects individuals via Facebook who would like to either share a ride or need a ride. For more information visit http://zimride.ecu.edu/ or contact the Parking and Transportation Department 252.328.6294.

Transit Systems

There are two transit agencies operating fixed-route service on or adjacent to the University. Each agency is independently operated, however coordination over several years has improved the quality and frequency of service for all riders. Students and employees may receive discounted transit passes to ride the Greenville Area Transit (GREAT) through the Central Ticket Office located within the Mendenhall Student Center. This program provides a nice complement to students and employees who live beyond the service area of the ECU Transit system.

ECU Transit

The East Carolina University transit system operates weekday and weekend routes throughout the academic year. The system is fare-free with an ECU 1 Card, however partially funded through a student transportation fee. ECU Transit's mission is to provide safe, dependable, and cost-effective transportation services for locations on and near the East Carolina University campus.

All ECU Transit buses include ADA-compliant lift equipment for loading/unloading persons in wheelchairs, and drivers are trained in the proper operation of this equipment. Additional information on accessibility may be access on the following webpage: http://www.ecu.edu/cs-studentlife/transit/accessibility.cfm.

Route scheduling may be adjusted each semester to respond to changing needs of the University. Route and system maps are easily accessed online, and announcements are made via social media outlets (Facebook, and Twitter). For more information on ECU Transit visit http://www.ecu.edu/cs-studentlife/transit/ or contact them directly 252.328.4724.

Greenville Area Transit (GREAT)

The Greenville Area Transit (GREAT) service is the City of Greenville's public transit service, with six routes that serve the University area. Route #5 circles the Main Campus, while Route #2 circles the Health Sciences Campus. All six routes meet at the intersection of Reade Street and 4th Street, where the current transfer point is located. From this location East Carolina's main campus is less than a five-minute walk, making it possible (and even reasonable) for thousands of East Carolina affiliates to ride transit to campus. All GREAT buses include bike racks mounted to the front, making it possible to transport your bicycle to/from East Carolina each day.

A one-way fare to ride GREAT is only $1, with discounted tickets available for purchasing in larger quantities (purchase 20 and receive 22 passes). For more information on riding GREAT visit http://www.greenvillenc.gov/departments/public_works_dept/information/default.aspx?id=130 or contact them directly 252.329.4532.

Regional Transit

The Pitt Area Transit Service (PATS) is an option for Pitt County residents who reside *outside* of the City of Greenville (i.e. beyond the service area for the GREAT system). PATS is a curb-to-curb transportation system, meaning that individual trips are scheduled ahead of time by the rider, rather than a fixed-route service that

continually operates throughout the day. For more information on riding PATS visit http://www.pittcountync.gov/depts/pats or contact them directly 252.902.2010. This service is least suitable for student and employees' commuting needs as currently operated, however future changes to the system may reduce this gap.

3 FUTURE CONDITIONS: *WHERE WE ARE HEADED*

3.1 Projected Campus Population Growth

East Carolina University's total population is projected to increase at a steady rate. By 2025, student enrollment is expected to reach over 38,000. If we assume that current ratio of employees to students (0.21) hold constant, then this would mean a total campus population greater than 46,000. The campus population growth will require additional facilities and infrastructure, as detailed in the Physical Master Plan, including new and upgraded bicycle and pedestrian facilities.

Table 4: Projected Enrollment Growth

Year	Campus Population	Student Enrollment	Employees
2025	*46,290*	*38,717*	*7,573*
2017	*37,485*	*31,151*	*6,334*
2012	32,593	26,947	5,646

Note: Forecasted figures based on existing employee: student ratio and Master Plan estimate for total student enrollment by 2025.

3.2 Campus Physical Master Plan

The Physical Master Plan (2011) provides guiding principles and a framework for identifying primary and secondary bicycle and pedestrian corridors. Overlaying these corridors with existing bicycle and pedestrian facilities helped to identify gaps that represent potential future projects for this plan.

3.3 Planned Greenway Improvements

The Greenville Greenway Trail System is a key source for identifying planned pedestrian improvements in the area around campus. The system is planned and managed by the Recreation and Parks Department. Currently the greenway system is approximately 5.9 miles long, with another 24 miles planned in the short-term, and an additional 57 miles considered in the very long-term.

3.4 Planned Bicycle Improvements

The University has an ongoing program for implementing bicycle improvement projects and maintaining existing facilities. Planned on campus bicycle improvements include installing and replacing sharrows along three campus streets. These efforts are being coordinated with this Plan and are included in the final recommended projects list (see Section 4).

The City of Greenville has documented planned bicycle improvements through their Bicycle and Pedestrian Master Plan, which documents existing conditions, identifies deficiencies, and made recommendations for future bicycle facilities. Many proposed facilities are located along City streets that border the University, as displayed in Table 5 below.

The purpose of the City's plan was to identify roadways that could be striped, re-striped, or otherwise modified (in segments) according to roadway paving or re-surfacing schedules. Ultimately, an entire roadway facility could be completed, however during the interim years gaps would exist between on-road bicycle facilities. A timeline for construction (of each future project) was not included because individual projects were not identified as part of the plan.

Table 5: Proposed Future Bicycle Facilities per City of Greenville

Bike Lane	Bike Boulevard	Share-the-Road-Arrow	Wide Outside Lane
Charles Blvd	3rd St	4th St	Arlington Blvd*
East 5th St		9th St*	East 10th St*
Moye Blvd		14th St*	Memorial Dr / NC-11
West 10th St*		Charles St	Stantonsburg Rd*
Farmville Blvd		College Hill Dr	
Stantonsburg Rd		Cotanche St*	

Source: Greenville Bicycle and Pedestrian Master Plan (2011)

**Portion of roadway; may include more than one facility type proposed*

3.5 Planned Transit Improvements

Campus Transit Station

The East Carolina University Physical Master Plan includes a future transit station to be located in the vicinity of the library and student union. The Master Plan is a living document that evolves over time, as projects are individually constructed. The exact location of the transit station has not been finalized and will likely depend upon the design of the surrounding buildings. The transit station may also be incorporated into the (first floor) design of the proposed student union parking deck, or possibly as a free-standing facility that is adjacent to the parking deck. Coordination of the design should include Parking and Transportation Services regardless of the location, as parking and transit are interconnected. Bicycle amenities such as commuter bicycle storage lockers, shower facilities, maintenance and repair station, and covered bicycle racks would support the goals and objectives of this plan by promoting alternative transportation modes.

Greenville NC Downtown Intermodal Bus Transportation Center

The City is planning for the construction of the Greenville Transportation and Activity Center (GTAC), which will be an intermodal transit center to house not only the Greenville Area Transit (GREAT), but also for the Pitt Area Transit System (PATS), East Carolina University Transit, and Greyhound service. The process of site selection is complete and involved a thorough screening analysis of multiple sites near Uptown Greenville. The preferred alternative site is located in the southwest portion of Uptown, bounded on three sides by Pitt Street, Bonners Lane, and Clark Street. The project is still evolving through the process of securing federal funding before final design and construction may begin.

For additional information on the Greenville Transportation and Activity Center contact the City Manager's Office 252.329.4432.

4 RECOMMENDATIONS: *WHERE WE WANT TO BE*

4.1 Introduction

The recommendations in this Plan are divided generally into on campus bicycle projects and off campus bicycle project recommendations, recognizing that the University does not have authority to construct facilities along City streets. The recommendations were built from the Plan Framework (see Section 4.2) and include improvements to facilities, ancillary facilities and amenities, programs and policies, roadways, and transit.

4.2 Plan Framework

The Plan Framework is the skeleton around which the project recommendations were developed. The Framework identifies a network of existing and future paths that will ultimately serve the University bicycling community by creating a safe, interconnected system with the amenities expected by various users. The Framework was developed with the concepts identified in the Physical Master Plan as the starting point.

For the purposes of the Campus Bicycle Plan, these path types were separated into two major path types: Primary Paths and Secondary Paths (see Figures 6 and 7). The Primary and Secondary Paths were developed by supplementing the Physical Master Plan path system with data and observations about existing bicycle and pedestrian conditions, as well as projected conditions.

Primary Paths

Primary Paths (identified by the purple lines on the Plan Framework maps) offer a direct route between major on and off campus origins and destinations. They often follow major vehicular routes and require dedicated bicycle facilities, such as bicycle lanes, multi-use paths, and high-level amenities to ensure safe travel. Examples of Primary Paths on/near campus include:

- 5th Street (East and West)
- 10th Street
- Charles Boulevard / Cotanche Street
- Elm Street
- Faculty Way
- Founders Drive

Secondary Paths

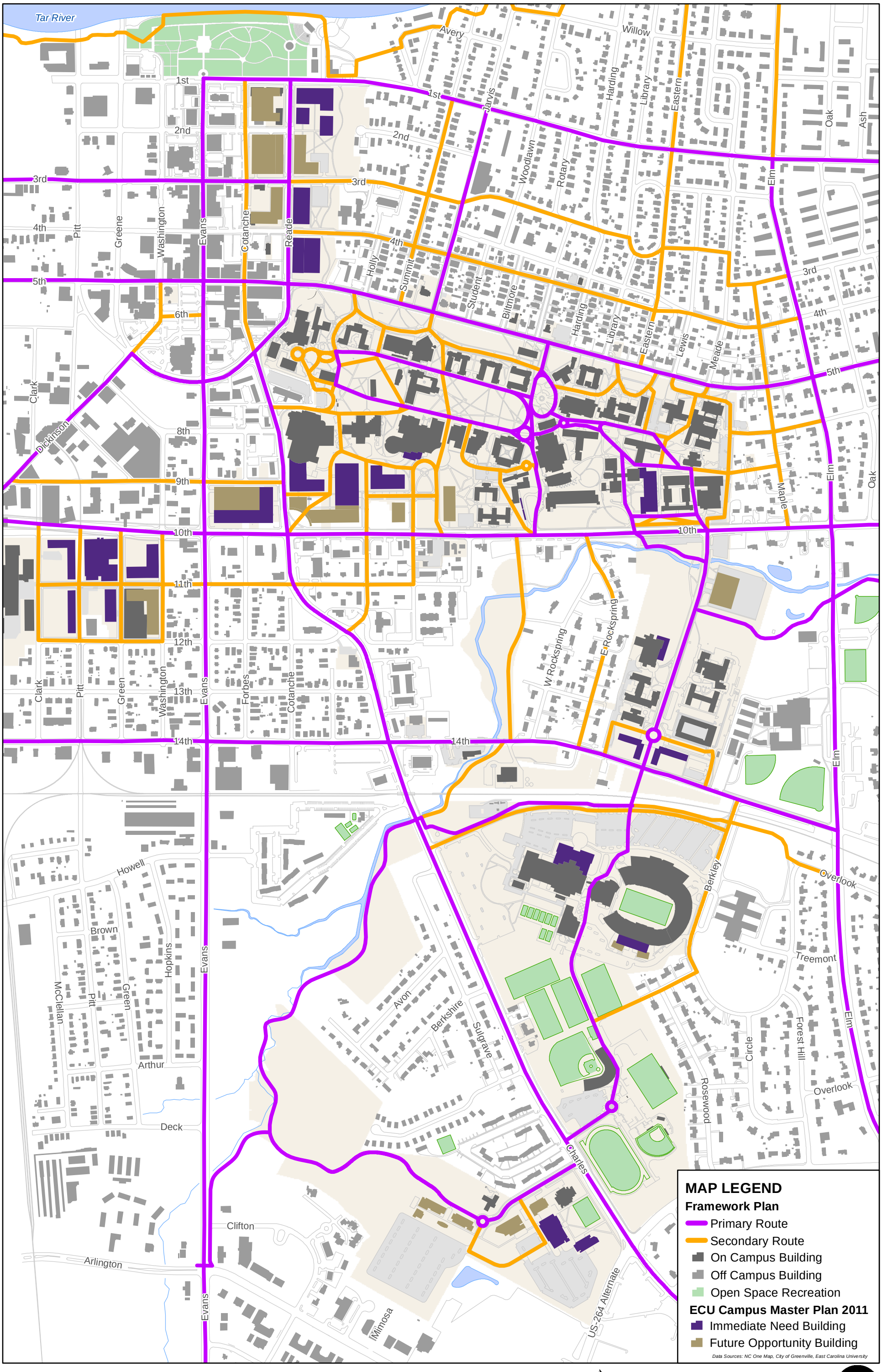
Secondary Paths (identified by the orange lines on the Plan Framework maps) serve as connectors to the Primary Paths. They also provide direct route connections to destinations not located along Primary Paths. Secondary Paths may contain dedicated bicycle facilities but could be served well by less formal facilities, such as sharrows or signed bicycle routes, depending upon the site characteristics. Examples of Secondary Paths on/near campus include:

- Chancellors Way / Trustees Way
- Library Drive
- Wendell Smiley Way
- Parking lot driveways

- 7th Street near Student Recreation Center
- Pathways/sidewalks across campus

Relationship to Pedestrian and Bicycle Plans

The Primary and Secondary Paths were used to identify specific projects in the Campus Bicycle Plan. Existing facilities were overlaid on the Plan Framework to identify deficiencies and missing links in the overall system. These deficiencies were verified through fieldwork and through comments and input from the campus community and the project Core Advisory Group.

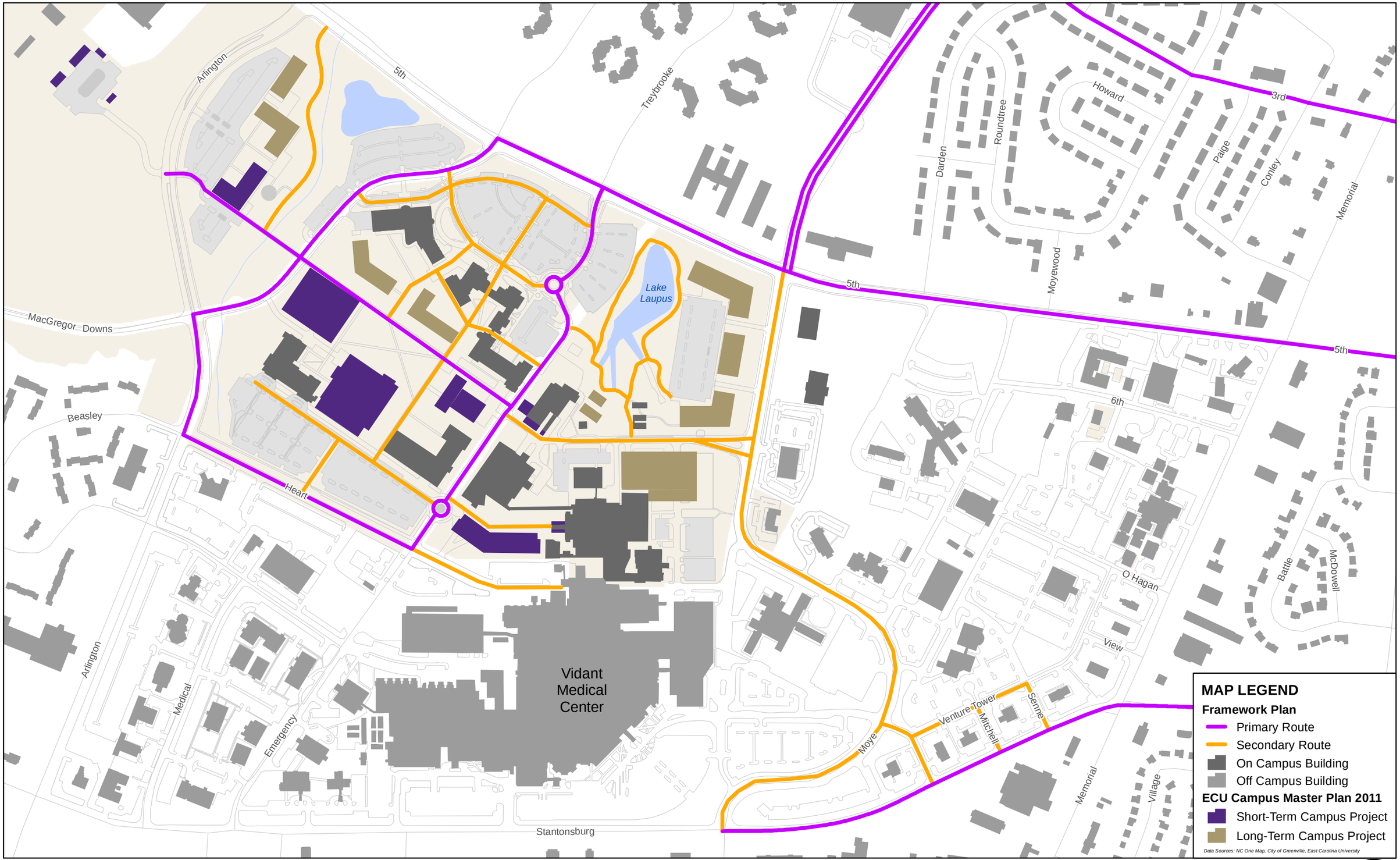


FRAMEWORK PLAN - MAIN CAMPUS

ECU BICYCLE PLAN

May 2013

VHB



FRAMEWORK PLAN - HEALTH SCIENCES CAMPUS

ECU BICYCLE PLAN
May 2013
VHB

4.3 Bicycle Project Recommendations

Facility Types

There are several possible ways to accommodate bicycles on roads, depending on conditions. The most common methods are: shared roadways (signed or unsigned), bicycle lanes, wide outside lanes, and shared use (or multi-use) paths. Although not common, some campuses, such as the University of Illinois, have dedicated bicycle paths not intended for shared use. The *Guide for the Development of Bicycle Facilities* (American Association of State Highway and Transportation Officials, 1999) defines each of these facility types and their proper application, summarized below.

Standards and design guidelines for construction, markings, and signage of these facilities are detailed in Section 4.4.

Shared Roadways

Most bicycle travel in the United States occurs on shared roadways, which have no special bicycle designations or markings. Many residential and local low-volume streets are appropriate shared roadways. If signed with bicycle route signs, shared roadways can provide continuity to other bicycle facilities (usually bicycle lanes), or designate preferred routes through high-demand corridors. All of the existing on campus streets are unsigned shared roadways. Most neighborhood roadways surrounding the University are unsigned shared roadways as well.

Bicycle Lanes

Bicycle lanes are intended to delineate the right-of-way for bicyclists and motorists and to provide for movements that are more predictable by each. Typically, bicycle lanes are no less than five feet wide, and are striped and marked with standard markings (see Section 4.4). Bicycle lanes are usually located on the curbside of the street, but can be located between the travel lane and parallel parking if adequate widths are possible. Bicycle lanes are one-way and match the direction of vehicular travel to ensure safety.

Bike lane, University of Wisconsin

Bicycle Boulevard

Roadways with generally lower traffic volume and lower posted speed limits are candidates for conversion to a bicycle boulevard. Traffic calming measures, such as speed tables, traffic circles (round-a-bouts), raised medians, and curb bulb-outs may be installed to promote the use of the roadway for bicycling. Vehicles are not prohibited from a bicycle boulevard, however the typical traveling speed is much lower, and in some instances through-movements are discouraged at certain intersections with the installation of a raised median.

Bike Boulevard, Netherlands
source: PBIC

Cycle Track

Cycle Track, Washington (DC)

Though uncommon in the United States, a cycle track is a physically-separated two-way bicycle path located between the sidewalk and roadway. The removal of on street parking and roadway restriping will usually provide adequate width for the installation of a cycle track. The physical separation between cyclists and motorists may be in the form of a narrow concrete median, or a combination of pavement markings and plastic delimiters (see photo). The separation could also be elevated and/or landscaped with street trees, where practical. These types of bicycle facilities require the appropriate site conditions to function safely, and will not be appropriate in every application. The most important consideration of a cycle track, however, are at the beginning and ending intersections, where bicycles are expected to transition back into traditional directions of travel.

Wide Outside Lanes

Unmarked and unstriped lanes, commonly known as wide outside lanes, can also be successfully implemented as bicycle facilities. Typically, wide outside lanes are travel lanes that are shared with motorists that are a minimum of 14 feet wide. The expectation is that bicycles keep to the curb side and motor vehicles can pass within the lane at a safe speed. As with shared roadways, bicyclists using bicycle lanes and wide outside lanes are expected to make the same movements and follow the same traffic rules as motorists. Education and enforcement are necessary for successful application of wide outside lanes.

Sharrows

Sharrow marking, Carrboro (NC)
source: PBIC

Shared lane markings (or "sharrows") may be used to increase motorist awareness of bicyclists and encourage safe passing, help prevent wrong-way bicycling, and aid bicyclists in positioning themselves laterally to avoid getting "doored" or where lanes are too narrow for motorists and bicyclists to travel side by side. Sharrows are common bicycle facility treatments for campus roadways with lower posted speed limits, and much more cost effective than striped bicycle lanes. For pavement marking and signage guidelines, see Section 4.4.

Multi-Use Paths

Multi-use path, Greenville (NC)

Generally, multi-use paths (also referred to as greenways) should be used on corridors not served by streets, and should offer opportunities not provided by the road system. The term multi-use refers to the number of possible modes of transportation that are allowed, walking, running, biking, skateboarding, rollerblading, etc. These paths provide recreational opportunities and can serve as direct commuter routes if cross-flow by automobiles and pedestrians is minimized. Multi-use paths are appropriate where motor vehicle speeds exceed 35 mph or along non-roadway alignments (e.g. stream corridors and water/sewer easements). Universities have successfully incorporated shared use paths and off street dedicated bicycle paths, especially in areas of limited

vehicular traffic. Greenways are the most expensive per mile to construct, however they provide the highest level of safety.

Bike Path

For the purposes of this study a bike path will refer to an off road, hard-surface path that is adjacent to a pedestrian pathway. The bike path should be a different color and/or texture compared with the pedestrian path so that it is visibly differentiated. Fences, bollards, landscaping, striping, or other materials are often used to mark the extent of the bike path. Striped bicycle markings or signage are typically added to encourage bicyclists to stay on the path rather than ride among pedestrians. The important feature of a bike path is that pedestrians are separated which allows bicycles to operate at one speed while the pedestrians operate at a slower speed.

Bike Path, Vancouver (BC)
source: PBIC

Sidepaths

The term sidepath is used to describe a path that follows a roadway, similar to an extra wide sidewalk. Sidepaths are typically paved with asphalt, rather than concrete, and the standard width is 8 feet wide. Greenways, multi-use paths and sidepaths essentially look the same to the user and are not mutually exclusive. The subtle differences between these designations relates to the path's context, whether they exist along a roadway (sidepath), along a natural (stream) corridor (greenway), or a mixture of the two (multi-use).

Sidepath, Brevard (NC)
source: PBIC

Application

Campuses across the United States have had varying success implementing each of the major bicycle facilities noted above. Bicycle travel is generally enhanced when a highly connected network of bicycle facilities is developed. On most campuses, more than one facility type is used to provide multiple options.

The *Guide for the Development of Bicycle Facilities* notes: "In selecting the proper facility, an overriding concern is to assure that the proposed facility will not encourage or require bicyclists or motorists to operate in a manner that is inconsistent with the rules of the road… An important consideration in selecting the type of facility is *continuity*. Alternating segments of shared use paths and bicycle lanes along a route are generally inappropriate and inconvenient because street crossings by bicyclists may be required when the route changes character." (p. 8)

As a rule of thumb, streets with *low speed, multiple intersections* and *driveways* should have on street bicycle lanes, sharrows, or no marked facilities at all, rather than shared use paths (also called sidepaths) along roadways. Having bicycles on the street in these situations has proven to be safe for bicyclists, and also can act as traffic calming for vehicular traffic. Off street bicycle paths should be considered in areas adjacent to *higher-speed* streets or streets with *inadequate width* for standard bicycle lanes, or in areas used for recreational purposes with *few vehicular* intersections (because drivers tend to speed up).

Facility Improvements

Bicycle Plan projects are detailed in Tables 6 and 7 and illustrated in Figures 8 and 9. The project IDs are displayed in both for quick reference. Recommended amenities are represented by circle labels because they are single-location projects. Recommended facilities are represented by dashed lines along a roadway or path and labeled with a square label. Off campus project recommendations are not shown because the University does not have jurisdictional authority over City streets. These recommendations have been conveyed to the City of Greenville Bicycle and Pedestrian Commission.

On-road Improvements

Though several off campus roadways are recommended for bicycle lanes, there are no recommended bike lane projects on campus for several reasons, including the following. The posted speed limit is low along campus roadways, which allows for bicycles to ride within the roadway for improved visibility and safety. The number of curb cuts, driveways, angled parking spaces, and parking lot entrances along campus streets would disrupt bicycle lane markings too frequently to function properly. Bicycle lanes require a specific right-of-way width for the travel lane (12') and bicycle lane (5'), and may require re-striping of the entire roadway, whereas sharrows may be applied to an existing roadway of varying width (10-15'). The unit cost (per mile) of installation, signage and maintenance of bicycle lanes is greater than that for shared lane marking (sharrow) installation, signage and maintenance.

The lone cycle track project is displayed as a dashed yellow line along the eastern side of College Hill Drive (project #71). This long-term project will require the removal of on street parking and restriping to ensure that adequate widths are provided.

Road closure projects are displayed as solid red lines. Founders Drive through the center of Main Campus is one recommended road closure (project #3), the other is located a portion of North Emergency Drive (#35) on the Health Sciences Campus. Both of these originated from concepts within the Physical Master Plan to improve pedestrian safety.

Shared roadway projects are displayed as orange dashed lines. Shared roadways are recommended on the Health Sciences Campus (project #87, 91) because the travel lanes are very wide, which may encourage drivers to unsafely pass bicyclists who follow sharrow markings. The additional signage (MUTCD signs W11-1 and W16-1P) would increase driver awareness to the presence of bicyclists sharing the roadway.

Recommended sharrow facilities are displayed as purple dashed lines. Sharrows are recommended for campus streets with low traffic volume and speed, such as Founders Drive (projects #20-21), Chancellors Way (#49), Trustees Way (#60) and several more on Main Campus. College Hill Drive (#16) is recommended for sharrows in the short-term because it is a low cost safety improvement for students living in the six residence halls nearby. The sharrows will encourage bicyclists to ride within the travel lane and away from the 'door zone' of on street parked vehicles. North Campus Loop (#17) and North Emergency Drive (#22, 50) on the Health Sciences Campus are also recommended for sharrow facilities.

Off-road Improvements

Off-road bicycle improvement projects are labeled as greenway trails are displayed as green dashed lines. Several on campus greenways are recommended in accordance with concepts from the Physical Master Plan. An extension of the Green Mill Run Greenway trail (project #15) would be a collaborative effort with the City

of Greenville, as this path crosses Charles Boulevard and follows the creek between campus property and private property towards the recreation fields near the HHP Campus. Other greenway projects (#12, 44) are recommended to provide a more direct connection to Main Campus along a university utility easement.

A single railroad overpass project (#77) is recommended to connect the Minges park-&-ride lots to the future Belk Residence Hall building. This project is directly from the Physical Master Plan, and is likely a long-term project to provide more direct pedestrian and bicycle access to College Hill Drive. Coordination with the owner and operator of the railroad right-of-way will be required prior to any project planning and design work.

Potential Off-Campus Roadway Improvements

Bike paths are displayed as turquoise dashed lines. A separated bike path through Wright Plaza (projects 32-34) has been recommended by the University Facility Engineering and Architectural Service group. Members of the Core Advisory Group similarly recommended connecting this bike path with on-road sharrows to (ultimately) form a complete bicycle loop around Main Campus. The first segments to be constructed will likely be through the center of campus because these receive the most use. A similar bike path through the center of the Health Sciences Campus (#85) is also recommended to coincide with future master plan buildings. These initial segments will serve as a pilot project to encourage more bicycling at East Carolina, which will in turn support the construction of a more robust future network of bike paths.

The East Carolina University Bicycle Plan does not have jurisdictional authority over future bicycle projects along City of Greenville streets. Therefore all off campus projects identified within this plan are merely recommendations for future coordination between the City and the University. Off campus projects are included within the Plan to ensure seamless transitions are possible from an on campus bicycle facility to the regional bicycle network.

The City is planning to convert a portion of West 3rd Street into a Bike Boulevard facility, which will encourage bicycle usage by discouraging (however not eliminating) vehicular usage. Because West 3rd Street supports fewer vehicles than parallel streets (West 5th Street / Martin Luther King Jr Boulevard), this corridor may become a preferred bicycle route between the Main Campus and Health Sciences Campus.

The North Carolina Department of Transportation (NCDOT) and Greenville Urban Area Metropolitan Planning Organization (GUAMPO) are jointly working on a 10th Street Connector project that would construct a portion of new roadway and align Farmville Boulevard with East 10th Street and provide a grade-separated intersection with the existing railroad. This funded project is listed within the NCDOT Transportation Improvement Plan (TIP U-3315) as well as the GUAMPO 2012-18 TIP. The 10th Street Connector project will include bicycle lanes as part of its Complete Streets initiative. The University should collaborate with the City to improve the connecting portion of 10th Street (east of Charles Boulevard) and provide a seamless transition upon completion of this NCDOT project.

Other notable bicycle lane recommendations along off-campus roadways include West 5th Street, Berkley Road, Charles Boulevard and Evans Street. All of these are adjacent to the East Carolina University campuses and would connect with recommended on campus bicycle facilities.

Sharrows are recommended for two short portions of East 5th Street where the existing bicycle lanes have been removed by the addition of a center turn lane. Bicyclists are unsure where to ride through these areas and sharrow markings would help safely guide them into the correct location (within the lane) and then back

to the bicycle lane. Additional locations of recommended sharrow facilities include 14th Street, College Hill Drive (#16), Reade Circle/Street, and several others near campus.

Potential Off-Campus Off-road Improvements

The existing South Tar River Greenway trail ends behind the First Street Place Apartments, near the intersection of 1st Street and Pitt Street. The City is planning on extending this greenway trail further to the west along the river, with a possible underpass of the Memorial Drive / NC-11 bridge. The trail would also include a connecting sidepath along Moye Boulevard (see Figure 9) that would end at its intersection with West 5th Street. Once completed these projects would provide a total of four east-west bicycle facilities between the East Carolina University campuses:

- 10th Street – On-road Bike Lanes;
- 5th Street – On-road Bike Lanes;
- 3rd Street – On-road Bike Boulevard; and
- South Tar River/Moye Boulevard – off road Greenway/Sidepath

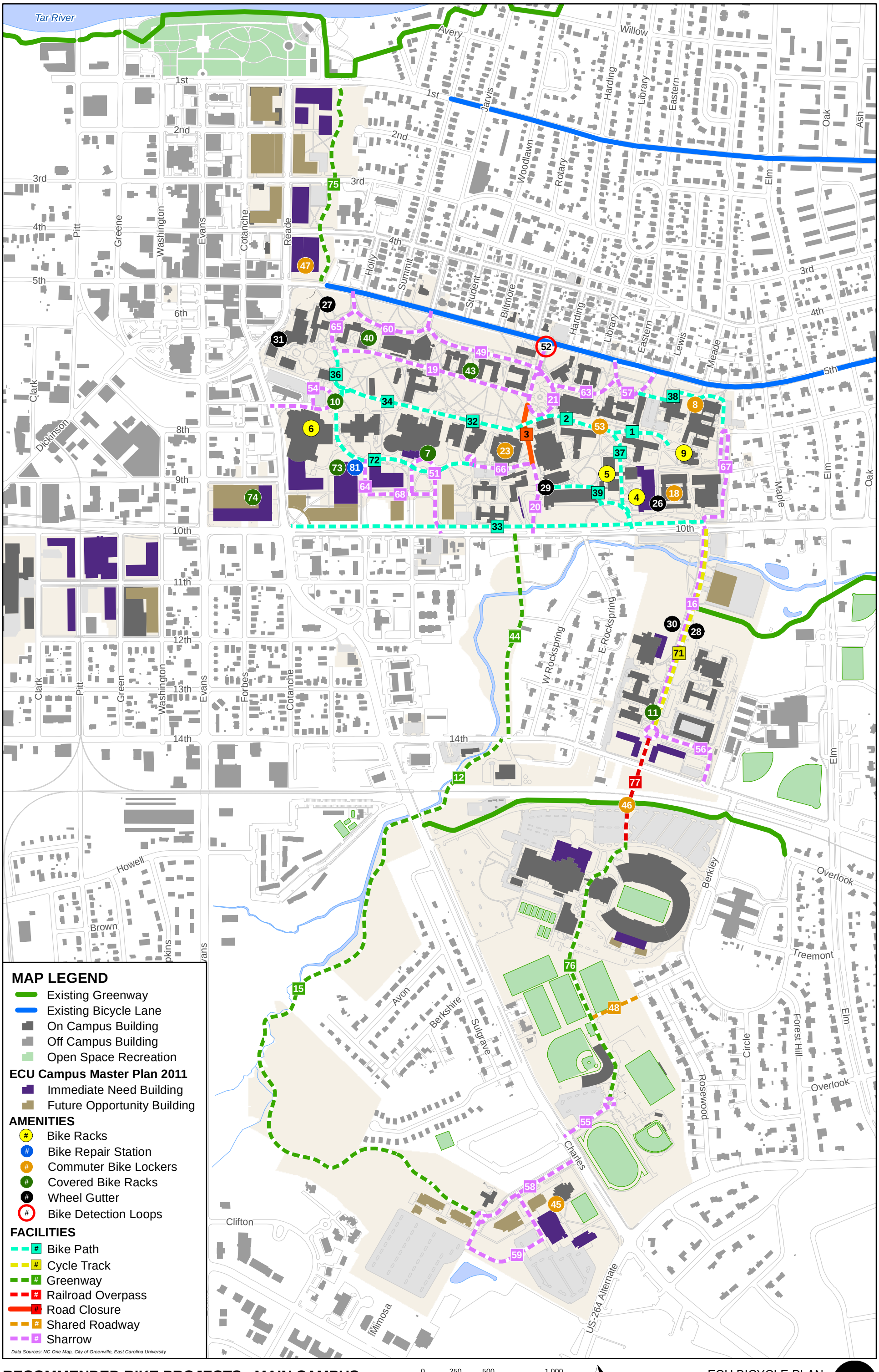
Table 6: Recommended Bicycle Projects - Main Campus

On Campus Bicycle Projects											
Map ID	Location / Intersection	Near	Also Near	Campus	Time Frame	Map Category	Amenity / Facility Type	Comment	Source	Cost Category	Cost Group
1	Campus Bike Path	Wright Plaza	Austin Hall	Main Campus	Short-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Core Advisory Group	$100k - $500k	High
2	Campus Bike Path	Wright Circle Fountain	Wright Plaza	Main Campus	Short-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Core Advisory Group	$100k - $500k	High
3	Founders Drive	Flanagan Hall (Rear)	Wright Circle Fountain	Main Campus	Short-term	Facility	Road Closure	Remove vehicular traffic through this portion of roadway to improve safety	Core Advisory Group	***Under Construction***	
4	Christenbury Gym	Brester Building		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks near Christenbury Gym	Open House	< $10k	Low
5	Howell Science Complex	Science and Technology Building		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks near Howell Science Complex	Open House	< $10k	Low
6	Student Recreation Center	Mendenhall		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks near Student Recreation Center	Open House	< $10k	Low
7	Joyner Library (east side)	Wendell Smiley Way		Main Campus	Short-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to install covered bike parking near Library	Core Advisory Group	$10k - $25k	Med
8	Rivers Building	Transit Stop		Main Campus	Short-term	Amenity	Bike Lockers	Install commuter bike lockers at Rivers Building near Transit stop	Core Advisory Group	< $10k	Low
9	Croatan Building	Rivers Biulding		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks at the Croatan Building	Core Advisory Group	< $10k	Low
10	Transit Stop near Student Center	Student Recreation Center		Main Campus	Short-term	Amenity	Covered Bike Racks	Work with ECU-STA and University Architect to locate covered bike parking at existing transit shelter	Core Advisory Group	$10k - $25k	Med
11	Tyler Hall	College Hill Drive	College Hill Suites	College Hill	Short-term	Amenity	Covered Bike Racks	Install covered bike parking near Tyler Hall	Core Advisory Group	$10k - $25k	Med
12	Green Mill Run Greenway Phase II	14th Street	Charles Boulevard	Athletic Campus	Short-term	Facility	Greenway	Coordinate with the City of Greenville to extend Green Mill Run Greenway	ECU Master Plan	$100k - $500k	High
15	Green Mill Run Greenway Phase II	Charles Boulevard	Oglesby Drive	HHP Campus	Short-term	Facility	Greenway	Coordinate with the City of Greenville to extend Green Mill Run Greenway	ECU Master Plan	> $500k	High
16	College Hill Drive	10th Street	Belk Residence Hall	College Hill	Short-term	Facility	Sharrow	Work with City of Greenville &/or NCDOT to install MUTCD Sharrows in proper location on roadway	Core Advisory Group	< $10k	Low
18	Brewster Courtyard	Christenbury Gym		Main Campus	Short-term	Amenity	Bike Lockers	Install commuter bike lockers within Brewster Courtyard	Open House	< $10k	Low
19	Faculty Way	Dowell Way	Founders Drive	Main Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	Core Advisory Group	< $10k	Low
20	Founders Drive	10th Street	Flanagan Hall (Rear)	Main Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
21	Founders Drive	5th Street	Wright Circle Fountain	Main Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	Core Advisory Group	< $10k	Low
23	Flanagan Hall	Founders Drive		Main Campus	Short-term	Amenity	Bike Lockers	Install commuter bike lockers near Founders Drive	Core Advisory Group	< $10k	Low
26	Brewster-Christenbury Stairs	Christenbury Gym		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs	Core Advisory Group	< $10k	Low
27	Fletcher Residence Hall stairs	5th Street		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs	Open House	< $10k	Low
28	Jones Residence Hall stairs	College Hill Drive		College Hill	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs	Open House	< $10k	Low
29	Science and Technology Building stairs	Founders Drive		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs	Open House	< $10k	Low
30	Todd Dining Hall stairs	College Hill Drive		College Hill	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at future stairs	Core Advisory Group	< $10k	Low
31	West End Dining stairs	Reade Street Circle		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs	Core Advisory Group	< $10k	Low
32	Campus Bike Path	Joyner Library	Wright Plaza	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Core Advisory Group	$50k - 100k	Med
33	10th Street Bike Path	Cotanche Street	College Hill Drive	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Core Advisory Group	> $500k	High
34	Campus Bike Path	Mendenhall Student Center	Joyner Library	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$100k - $500k	High
36	Campus Bike Path	Mendenhall Student Center	Faculty Way	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$50k - 100k	Med
37	Campus Bike Path	Christenbury Parking Lot	Austin Hall	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$100k - $500k	High
38	Campus Bike Path	Rivers Building (East side)	McGinnis Theater Parking	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$100k - $500k	High
39	Campus Bike Path	10th Street	Science and Technology Building	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$100k - $500k	High
40	Trustees Way	Garrett Residence Hall		Main Campus	Medium-term	Amenity	Covered Bike Racks	Install covered bike parking near residence halls	Core Advisory Group	$10k - $25k	Med
43	Chancellors Way	Jarvis Residence Hall	Fleming Residence Hall	Main Campus	Medium-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to cover existing bike parking	Core Advisory Group	$10k - $25k	Med
44	Greenway Connection	10th Street	14th Street	College Hill	Medium-term	Facility	Greenway	Construct new greenway trail along ECU utility corridor	Core Advisory Group	$100k - $500k	High
45	Belk Building	Oglesby Drive	Charles Boulevard	HHP Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near Belk Building	Open House	< $10k	Low
46	Football field near Transit Stop	Railroad Tracks		Athletic Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near transit stop	Core Advisory Group	< $10k	Low
47	Reade Street Parking Lot	5th Street		Main Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near 5th Street corner of parking lot	Core Advisory Group	< $10k	Low
48	Fieldside Street	Future Greenway	Fieldside Street	Athletic Campus	Medium-term	Facility	Shared Roadway	Connect with Fieldside Street	Core Advisory Group	< $10k	Low
49	Chancellors Way	Trustees Way	Founders Drive	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	Core Advisory Group	< $10k	Low
51	Wendell Smiley Way	10th Street	Library Drive	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
52	Founders Drive	5th Street		Main Campus	Medium-term	Amenity	Bike Detection Loops	Install bike detection loops at intersection for northbound traffic	Core Advisory Group	< $10k	Low
53	Wright Plaza near ATM	Rawl Building		Main Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near existing ATM	Core Advisory Group	< $10k	Low
54	7th Street	Cotanche Street	Student Recreation Center and Loop	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
55	Baseball Stadium	Charles Boulevard	Future Greenway	Athletic Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway, connect with future greenway trail around baseball stadium	VHB Observation	< $10k	Low
56	Haskett Way	14th Street (West of Belk Hall)	14th Street (East of Belk Hall)	College Hill	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
57	McGinnis Theater	Beckwith Drive		Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	Open House	< $10k	Low
58	Oglesby Drive	Charles Boulevard	Park-&-Ride Parking Lots	HHP Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
59	Oglesby Drive	Park-&-Ride Parking Lots	Future Roadways	HHP Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
60	Trustees Way	5th Street	Jarvis Street	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	Core Advisory Group	< $10k	Low
63	Beckwith Drive	Founders Drive	5th Street	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	Core Advisory Group	< $10k	Low
64	Charles Street	Mendenhall Student Center	Library Drive	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
65	Dowell Way	Faculty Way	Trustees Way	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
66	Flanagan Hall (Rear)	Founders Drive	Alumni Circle	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
67	Fletcher Music Hall (Rear)	6th Street	10th Street	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
68	Library Drive	Charles Street	Wendell Smiley Way	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
71	College Hill Drive	10th Street	Belk Residence Hall	College Hill	Long-term	Facility	Cycle Track	Work with City of Greenville &/or NCDOT to remove on-street parking and install separated Cycle Track along roadway	Core Advisory Group	$50k - 100k	Med
72	Campus Bike Path	Student Health (rear)	Student Recreation Center	Main Campus	Long-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$100k - $500k	High
73	Future Parking Garage	Student Center		Main Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking the within future parking garage	Core Advisory Group	$10k - $25k	Med
74	Future Parking Garage	Academic A Building		Main Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking within the future parking garage	Core Advisory Group	$10k - $25k	Med
75	Greenway Connection	1st Street	5th Street	Main Campus	Long-term	Facility	Greenway	Construct new greenway trail along ECU Master Plan pathway	Open House	$100k - $500k	High
76	Greenway Connection	Football Stadium Parking	Baseball Stadium Parking	Athletic Campus	Long-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan	ECU Master Plan	$100k - $500k	High
77	Railroad Overpass	Football Stadium Parking	College Hill Drive	College Hill	Long-term	Facility	Railroad Overpass	Study the feasibility of an elevated overpass connecting with future Belk Residence Hall per ECU Master Plan	ECU Master Plan	> $500k	High
81	Future Parking Garage	Student Center		Main Campus	Long-term	Amenity	Bike Repair Station	Work with Facilities Engineering and Architectural Services to locate a bike maintenance kiosk within the future parking garage	Core Advisory Group	< $10k	Low

Note: 1. Projects in this table have been prioritized according to the process described in Section 5.3.
2. "Map ID" corresponds with labels displayed on report Figures 7-8 (Recommended Bicycle Projects)
3. "Map Category" column refers to the legend groups within report Figures 7-8 (Recommended Bicycle Projects).
4. "Amenity/Facility Type" corresponds with legend items displayed on report Figures 7-8 Recommended Bicycle Projects).

Time Frame Categories

Short-term	**1-3 years to implement.** Refers to projects that are more-quickly constructed, and/or would cost less money to complete.
Medium-term	**3-10 years to implement.** Refers to projects that follow the short-term projects, and build upon their success.
Long-term	**10+ years to implement.** Refers to projects that are more difficult to construct, and would require coordination. These projects relate to Campus Physical Master Plan projects.



RECOMMENDED BIKE PROJECTS - MAIN CAMPUS

ECU BICYCLE PLAN

August 2013

VHB

Table 7: Recommended Bicycle Projects - Health Sciences Campus

On Campus Bicycle Projects											
Map ID	Location / Intersection	Near	Also Near	Campus	Time Frame	Map Category	Amenity / Facility Type	Comment	Source	Cost Category	Cost Group
13	Greenway Connection	5th Street	Lake Laupus Trail	Health Sciences Campus	Short-term	Facility	Greenway	Construct new greenway trail and connect with sidewalk along 5th Street	VHB Observation	$10k - $25k	Med
14	Greenway Connection	Lake Laupus Trail	Health Sciences Drive	Health Sciences Campus	Short-term	Facility	Greenway	Construct new greenway trail and connect with sidewalk	VHB Observation	$25k - $50k	Med
17	North Campus Loop	North Emergency Drive	Moye Boulevard	Health Sciences Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
22	North Emergency Drive	Roundabout	North Campus Loop	Health Sciences Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
24	Health Sciences Campus Parking Lot	MacGreggor Downs Drive	North Emergency Drive	Health Sciences Campus	Short-term	Facility	Shared Roadway	Install MUTCD Share the Roadway signs along roadway	VHB Observation	< $10k	Low
25	North Emergency Drive	5th Street	Roundabout	Health Sciences Campus	Short-term	Facility	Shared Roadway	Install MUTCD Share the Roadway signs along roadway	VHB Observation	< $10k	Low
35	North Emergency Drive	North Campus Loop	Roundabout	Health Sciences Campus	Medium-term	Facility	Road Closure	Remove vehicular traffic through this portion of roadway to improve safety	ECU Master Plan	$100k - $500k	High
41	Greenway Connection	Moye Boulevard	Lake Laupus Trail	Health Sciences Campus	Medium-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan (coordinate with #42; only one may be necessary)	Core Advisory Group	$50k - 100k	Med
42	Greenway Connection	Moye Boulevard	Lake Laupus Trail	Health Sciences Campus	Medium-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan (coordinate with #41; only one may be necessary)	Core Advisory Group	$50k - 100k	Med
50	North Emergency Drive	Roundabout	Heart Drive	Health Sciences Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway	VHB Observation	< $10k	Low
61	Transit Stop near Brody School of Med.	Moye Boulevard		Health Sciences Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near transit stop near Brody School of Medicine	Core Advisory Group	< $10k	Low
62	Transit Stop near Nursing Building	Parking Lot		Health Sciences Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near transit stop near Nursing Building	Core Advisory Group	< $10k	Low
69	Health Sciences Campus Bike Path	North Campus Loop	Future Greenway Trail	Health Sciences Campus	Long-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$100k - $500k	High
70	Health Sciences Campus Bike Path	HSC Parking Lot	HSC Bike Path	Health Sciences Campus	Long-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	Open House	$50k - 100k	Med
78	Future Parking Garage	MacGreggor Downs Road		Health Sciences Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking within the future parking garage	Core Advisory Group	$10k - $25k	Low
79	Future Student Center	North Emergency Drive		Health Sciences Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking within the future student center building	Core Advisory Group	$10k - $25k	Low
80	Future Student Center	North Emergency Drive	North Campus Loop	Health Sciences Campus	Long-term	Amenity	Bike Repair Station	Work with Facilities Engineering and Architectural Services to locate a bike maintenance station within the future student center building	Core Advisory Group	$100k - $500k	High
82	Future Parking Garage	MacGreggor Downs Road		Health Sciences Campus	Long-term	Amenity	Bike Repair Station	Work with Facilities Engineering and Architectural Services to locate a bike maintenance kiosk within the future parking garage	Core Advisory Group	< $10k	Low
83	Greenway Connection	5th Street	Future HSC Building	Health Sciences Campus	Long-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan	ECU Master Plan	$100k - $500k	High

Note: 1. Projects in this table have been prioritized according to the process described in Section 5.3.
2. "Map ID" corresponds with labels displayed on report Figures 7-8 (Recommended Bicycle Projects)
3. "Map Category" column refers to the legend groups within report Figures 7-8 (Recommended Bicycle Projects).
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Time Frame Categories

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RECOMMENDED BIKE PROJECTS - HEALTH SCIENCES CAMPUS

ECU BICYCLE PLAN
August 2013

Recommended Amenities

Bike Parking

The location, supply, and design of bicycle parking are important considerations in determining the effectiveness of this amenity. In general, bicycle parking should be provided near entrances to every major campus building. The University has adopted a uniform bike rack style for use across campus. The rack is a wave-style rack with 18" vertical spacing between pipes allowing for the bike and frame to be locked, rather than just the wheel. This is also referred to as an inverted 'U' rack, and is the most common bicycle rack style. Comments received during the Open House indicated that additional bicycle parking is needed at the Student Recreation Center (#6), Rivers/Croatan buildings (#9), Christenbury (#4), and Howell Science Complex (#5).

Bike parking near building front door East Carolina University

The University should also continue to investigate and identify opportunities for covered bicycle parking to provide weather protection and security for bicyclists. Covered bicycle parking (#7, 10-11, 40, and 43) can be incorporated into building overhangs, awnings, and breezeways. In addition, campus parking decks (#73, 76) often have suitable locations for covered bicycle parking or bike cages, providing longer term storage options and allowing people who commute by car to easily store and retrieve their bicycle for trips around campus. Bicycle lockers also provide long-term storage and excellent weather and theft protection (Projects #8, 18, 23, Figure 8).

Intersection/Signal Improvements

These projects are displayed as red (hollow) circles, and include bicycle detection loops (Project 52) and bicycle boxes (off campus recommendation) for the City of Greenville and NC Department of Transportation. Each site will have different characteristics and require an individual assessment by the City Traffic Engineer.

Bike Stations

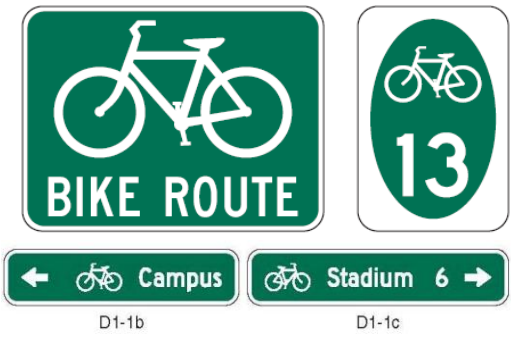
A bike station is a small building or kiosk that provides bicycle commuters with a place to make minor repairs or inflate tires, as well as provide information on bicycle programs or amenities on campus. Bike stations can be staffed by volunteers or they can be self-serve stations that are periodically maintained by staff.

Bike station, Univ. of Colorado, Boulder

Basic recommended components of a bike station are: an air pump, secure bike parking, and a campus vicinity bike map with bike route information. Optional amenities may include bike repair, a small coffee shop, or a shower and changing facility for long-distance bicycle commuters. One recommended location for future bike stations would be the Health Sciences Campus' future Student Union Building, near North Campus Loop Drive (Project #80, Figure 9). Not all recommended bike maintenance stations must have the same amenities. Others recommended by this plan (#80-82) are for future parking decks, and may only include tools and an air pump station. These lower-cost repair kiosks may also be installed at the end of existing bicycle racks near Wright Plaza or the Student Center.

Manual for Uniform Traffic Control Devices (MUTCD)

The MUTCD contains guidance for bicycle wayfinding signage and other traffic control devices. These standards could be used together with the Campus Signage Program sign types, especially for those facilities that are parts of systems that connect to the City greenway trails. Consistency of signage is the most important aspect of this recommendation.



Bicycle wayfinding signs (source: MUTCD)

Commuter Shower Facilities

As discussed in Section 2.6, the Student Recreation Center is the one campus building with shower and changing facilities that are available to the campus population. The University should include commuter shower facilities within future master plan buildings, as well as retrofit several existing campus buildings to accommodate additional bicycle commuter shower facilities. Table 8 lists buildings that are strategically located to satisfy an existing gap in coverage.

Table 8: List of Recommended Future Commuter Shower Facilities

Campus Location	Building Name	Building Status
Health Sciences Campus	Brody Medical Sciences Building	Existing
HHP Campus	Carol G. Belk Building	Existing
Main Campus (East)	Speight Building	Existing
Main Campus (East)	Howell Science Complex	Existing
Reade Street Campus	Willis Building	Existing
Health Sciences Campus	Student Services Building	Future Building
HHP Campus	HHP Research Gym	Future Building
Main Campus (East)	Bio-Sciences Building	Future Building
Main Campus (West)	Academic A Building	Future Building
Main Campus (West)	Student Center	Future Building
Reade Street Campus	Visual & Performing Arts Center	Future Building
Warehouse Campus	Millennial Campus Building	Future Building

Recommended Programs and Policies

Bicycle improvements are often discussed in terms of the "Four E's" of bicycle planning and design: Engineering, Education, Enforcement and Encouragement. Together, the "Four E's" measure the effectiveness of systems and programs and ensure that the needs of all users are met. The Engineering component of this Plan is detailed in the project recommendations in Tables 9-10. The other three E's (Education, Enforcement and Encouragement) are discussed below.

Education and Safety

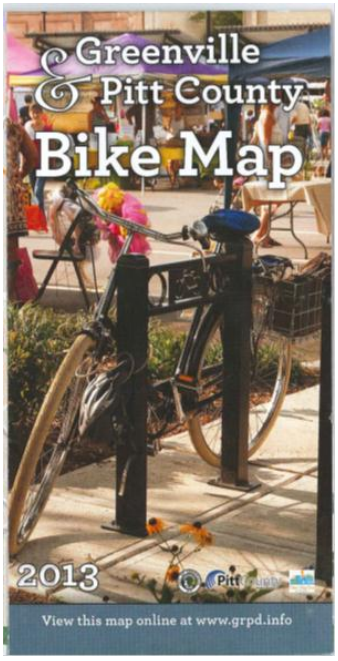
In addition to infrastructure improvements for bicycles, it is important to improve the information available for both current and potential bicyclists, and to inform the campus community and general public about bicyclists' rights, rules of the road, and general safety. In North Carolina, the NCDOT maintains information to educate bicyclists on state law and promote safety (see http://www.ncdot.org/bikeped/lawspolicies/).

The University collaborates with City and regional partners to develop education and safety programs that benefit the University community. Current outreach programs designed for campus bicyclists include Greenville bike excursions with the Adventure Program, distribution of a regional bike safety map, a voluntary bicycle registration program to prevent theft, a bicycle rental program called Pirate BikeShare, and bike repair clinics. The University might consider a Bike Ambassador Program that uses a peer education model to promote safe cycling on campus and distribute bicycling information to the campus community through coordinated events.

Enforcement

Enforcement of regulations and policies can be critical to maintaining a safe bicycling and walking environment. Enforcement may include basic traffic regulations for automobiles, jaywalking for pedestrians, or bicyclists riding the wrong way on campus streets or riding on sidewalks. Enforcement is especially critical at high volume intersections with conflict points and known safety issues, such as the intersection of East 10th Street and College Hill Drive. University Police can use targeted enforcement efforts at key problem areas to raise awareness and enforce applicable laws. Issuance of citations will not be necessary as a mere presence will likely alter the behavior of bicyclists on campus to ride more safely. It is also recommended that the University Police collaborate with the City Police on enforcement programs in those areas shared by multiple jurisdictions. Targeted enforcement at the beginning of the fall semester will be more beneficial to establishing safe bicycling practices throughout the school year.

Encouragement



The University distributes a Greenville and Pitt County Bike Map featuring recreation destinations as well as bicycle route suitability. The map features the regional bicycle facilities and includes insets of adjacent towns and cities. The Greenville inset map prominently displays the East Carolina University campuses, as well as amenities such as bicycle shops, restrooms, and bicycle parking locations, among others. Also included are sections relating to the rules of the road for bicyclists, safety tips, and sharing the road graphics. These maps are available from the Parking and Transportation Services office, and could be more widely distributed on campus and at local bicycle shops, and should be incorporated into new student orientation programs in parallel with any information on car parking.

Bicycle permit registrants receive a free pair of winter riding gloves simply for participating. This is merely one example of an encouragement program that will raise awareness, promote cooperation, and create a bike culture on campus. Other such programs may include a bicycle benefits club that encourages sustainability through incentives and rewards, bike-to-work

weeks and related activities, providing bicycle commuter courses on campus, and encouraging on-campus retailers to provide bicycle apparel and equipment.

4.4 Facility Standards and Design Guidelines

As the University implements the recommendations in the Campus Bicycle Plan it will be important to do so in a consistent and predictable way. The facility standards and design guidelines in this section establish the baseline for a variety of improvements and should be referred to as improvements are implemented and constructed. These standards and guidelines are comprised of best-practices nationally and from other communities, and are referenced as such.

BICYCLE FACILITY STANDARDS

Bicycle Lanes

Striping and Markings

The bicycle lane should be striped at least five feet from the curb or parking area, with a minimum useable surface of four feet. "Useable surface" may include up to one foot of a concrete gutter pan, provided that the transition between pavement surface and concrete gutter pan is very smooth.

Wider bake lanes should be provided on streets with high motor vehicle speeds and/or traffic volumes, or where pedestrians, drains, grates or other obstacles may exist in the bicycle lane. Regular maintenance to bicycle lanes is imperative.

Bicycle lanes should be constructed to the same standards as the adjacent roadways. **(AASHTO, Guide for the Development of Bicycle Facilities)**

Bicycle lanes should be striped with a four to six inch wide longitudinal pavement marking. A dashed line should be used in intersections or taper areas to denote an extension of the lane using two foot line segments with two to six foot gaps. **(Manual on Uniform Traffic Control Devices, MUTCD, section 3A.06)** Alternately, bike lanes can be dropped at intersections to indicate that cyclists should utilize travel lanes for through and turning movements. Bike lanes should always be striped to the left of dedicated right turn lanes if utilized at intersections, in order to avoid turning movement conflicts.

Words, symbols, and/or arrow markings used to denote bicycle lanes should be placed at the beginning of the bicycle lane and at periodic intervals thereafter, based on "engineering judgment," as shown on Figure 10. **(MUTCD 9C.04)**

Whenever possible, curb opening inlets should be used for drainage. If this is not feasible, any drainage grate within a bicycle lane should be retrofitted so that it is flush with the pavement surface, contains no gap between frame and grate, and does not contain slots that are parallel to the roadway. Where grates, utility covers, or other obstructions cannot be eliminated, a solid white line should be applied to guide the bicyclist around the obstruction, as shown on Figure 12. **(MUTCD 9C.06)** Striping is a simple and effective means of improving bicycle safety, and should be utilized according to established best practices.

Intersections

The standard traffic signal loop detection system, in most installations, is not sensitive enough to detect bicycles. For the safety of bicyclists and to allow them to obey traffic laws, loop detectors at actuated signalized intersections should be designed to respond to bicycles and marked accordingly using pavement markings, such as the one shown on Figure 11. The R10-22 sign may also be installed to supplement the pavement marking, as shown on Figure 14. **(MUTCD 9C.05)** Pavement markings can be used to indicate bike-sensitive loop detector locations on the roadway.

At intersections where visibility of traffic signals is limited for a bicyclist, the signal faces should be adjusted to allow for greater visibility. If this is not possible, separate signal faces for bicyclists should be provided. **(MUTCD 9D.02)**

Signage

The bike lane sign (R3-17) and supplemental plaques (R3-17aP and R3-17bP) (see Figure 15) should be used to indicate the presence of a marked bicycle lane. They should be placed in advance of, at the end of, and at periodic intervals along marked bicycle lanes "as determined by engineering judgment based on prevailing speed of bicycle and other traffic, block length, distances from adjacent intersections, and other considerations." **(MUTCD 9B.04)**

Where bicycle lanes are not present, a W16-1P plaque may be used in conjunction with a W11-1 sign (see Figure 16) to warn or remind motorists of the presence of bicycles, which may be moving at slower speeds. These signs may also be appropriate along roadway sections where shared land markings, or "sharrows" are present (see next section). **(MUTCD 2C.60)**

Shared Lane Markings or "Sharrows"

The Shared Lane Marking, shown in Figure 13, may be used to increase motorist awareness of bicyclists and encourage their safe passing, help prevent wrong-way bicycling, and aid bicyclists in positioning themselves laterally to avoid getting "doored" or where lanes are too narrow for motorists and bicyclists to travel side by side. Shared Lane Markings should not be used on roads with a speed limit greater than 35 mph or on shoulders or bicycle lanes.

Shared Lane Markings should be placed immediately following an intersection and spaced thereafter at intervals no greater than 250 feet. If used on streets with on street parallel parking, the center of the marking should be at least 11 feet from the curb or pavement edge if there is no curb. For streets with no parking, the center of the marking should be at least 4 feet from the curb or pavement edge if there is no curb. **(MUTCD 9C.07)**

Shared lane marking
source: PBIC

Bicycle Boxes

A bike box can be installed at intersections to allow bicyclists to move to the front of the queue, which improves the visibility of bicyclists to motorists and improves the safety of left and right bicycle turning movements (see Figures 17 and 18). Bicyclists can position themselves to more easily make left turns without having to merge into traffic. The safety of right turning movements is also improved as motorists are

prohibited from turning right on red and are less likely to conflict with bicycle through traffic when turning right on green. Bicycle boxes are relatively new and not yet included within the MUTCD or AASHTO guidelines.

Bike box in Portland, OR

Bike boxes are most appropriate at intersections with high volumes of bicycles and motor vehicles, intersections where there are frequent turning movements or conflicts between turning motorists and bicyclists, and/or intersections where there are high rates of bicycle crashes.

Bike boxes should be approximately 8-10', though there are instances in the U.S. of slightly smaller and larger ones. Cities such as Portland, Minneapolis, and New York City have successfully implemented bike boxes.

Stair Channel

Stairs can be a formidable barrier for bicyclists. Stair channels (also referred to as wheel gutters, or bike troughs) can be installed on the sides or center of long stairs to allow bicyclists to place the wheels of the bicycle in a guided track and push the bicycle up or down the stairs without having to carry it or push it on the stairs. Existing stairs can be retrofitted to add this amenity with either concrete or a steel plate.

Example of a Flat-Style Stair Channel Lafayette, IN

The stair channel design is preferred by municipalities concerned over the use of a flat-style ramp by skateboarders. This bicycle amenity may be constructed as a ramp to either side of the stairs. The term channel refers to the typical installation as a concave feature that helps to guide the wheels in a straight line (Figure 19).

Figure 10 – Bicycle Lane Pavement Markings

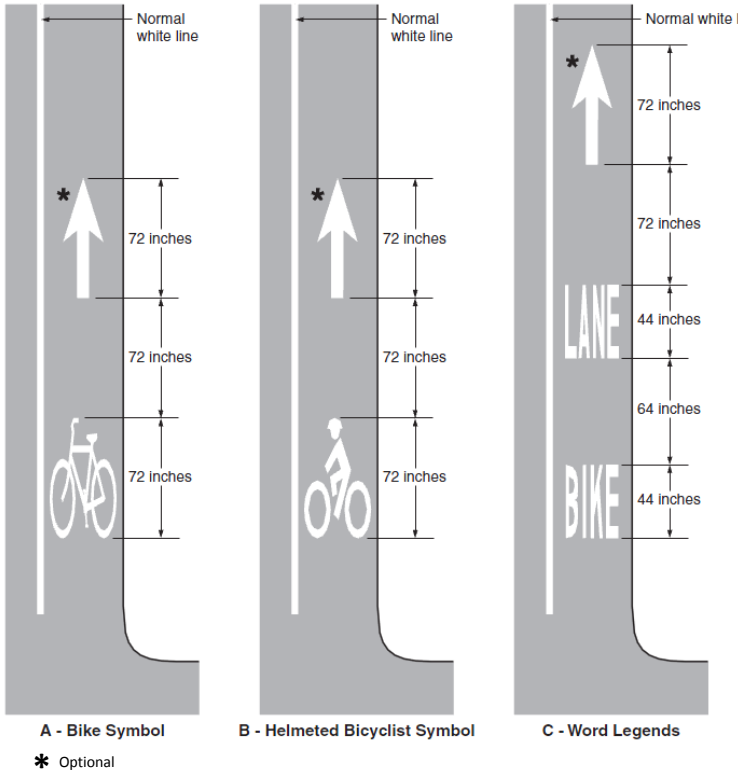


Figure 11 – Bicycle Loop Pavement Markings

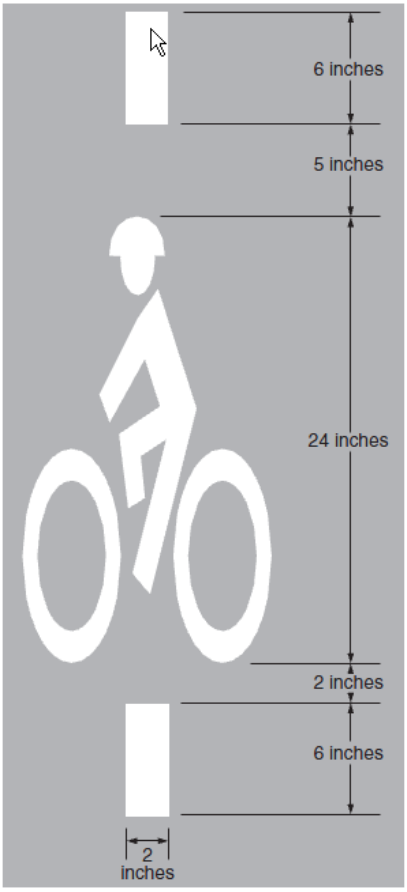
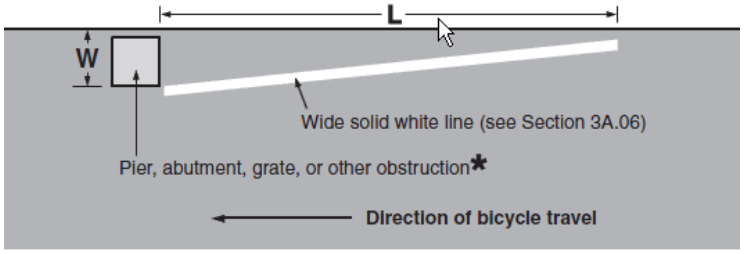


Figure 12 - Examples of Obstruction Pavement Markings

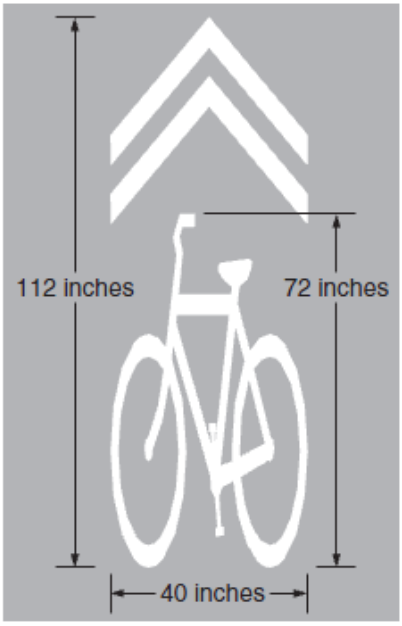


B - Obstruction at edge of path or roadway

L = WS, where W is the offset in feet and S is bicycle approach speed in mph

* Provide an additional foot of offset for a raised obstruction and use the formula L = (W+1) S for the taper length

Figure 13 – Shared Lane Pavement Markings



Source: MUTCD, 2009 Edition

Figure 14 – Bicycle Loop Signage

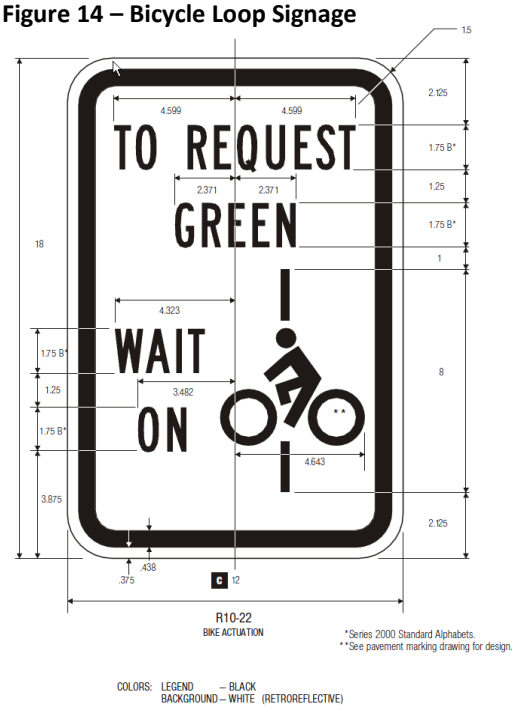


Figure 15– Bike Lane Signage

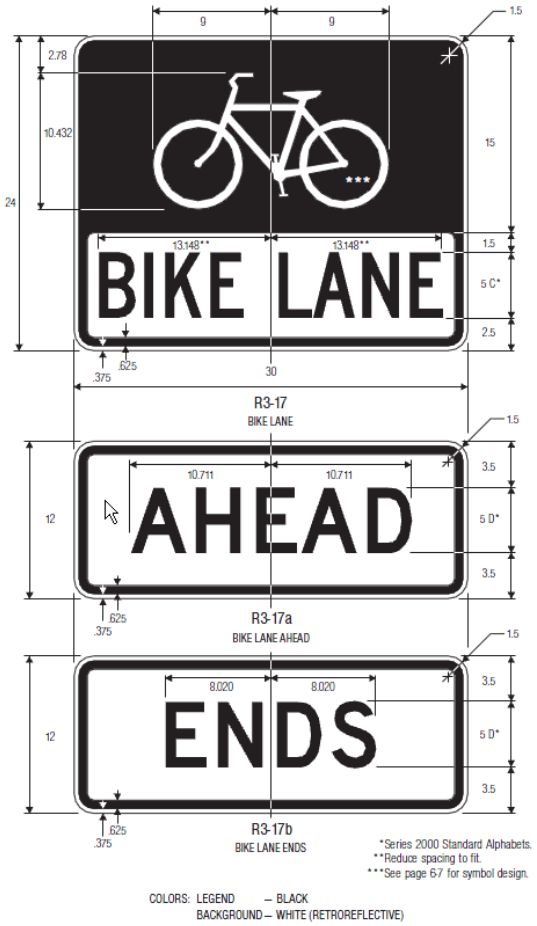
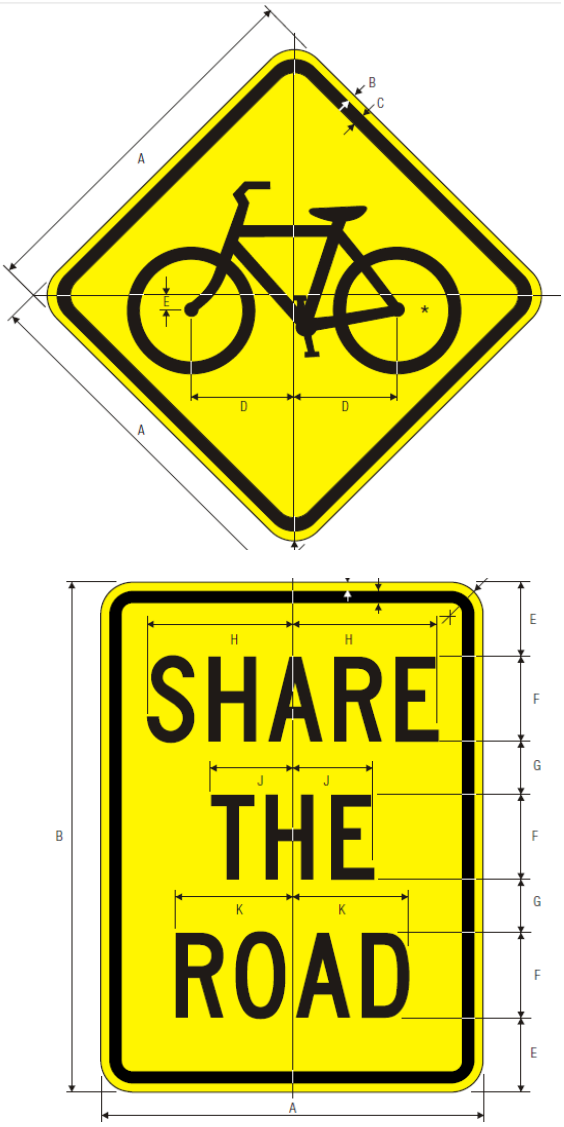


Figure 16 – Share the Road Signage



Source: MUTCD, 2009 Edition

Figure 17 – Bicycle Box Design

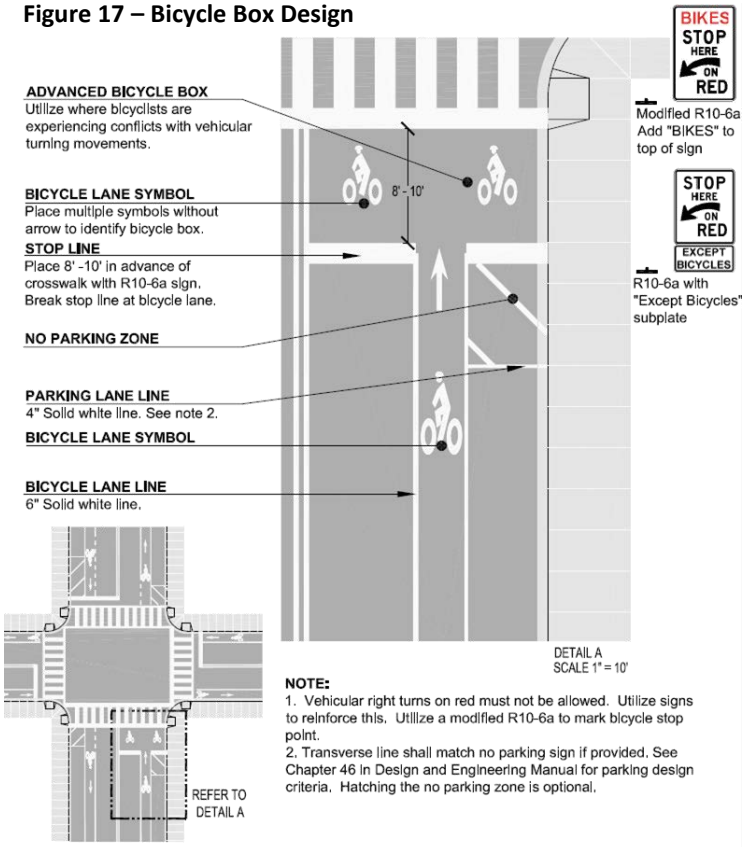
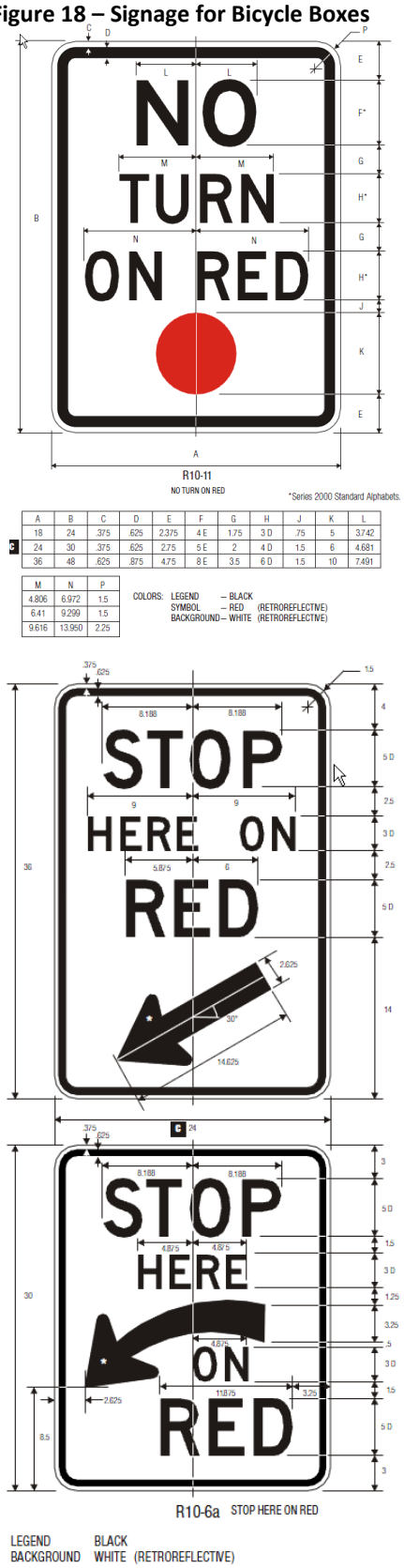


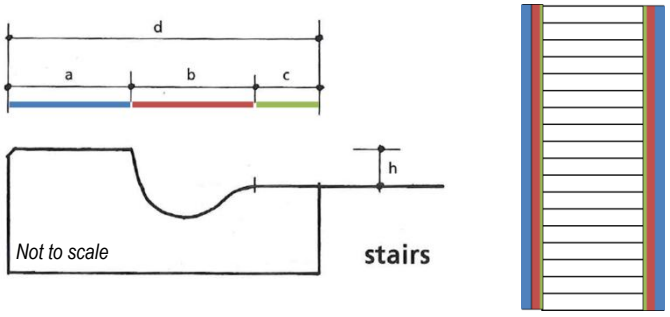
Figure 18 – Signage for Bicycle Boxes



A	B	C	D	E	F	G	H	J	K	L
18	24	.375	.625	2.375	4 E	1.75	3 D	.75	5	3.742
24	30	.375	.625	2.75	5 E	2	4 D	1.5	6	4.681
36	48	.625	.875	4.75	8 E	3.5	6 D	1.5	10	7.491

M	N	P
4.806	6.972	1.5
6.41	9.299	1.5
9.616	13.950	2.25

Figure 19 –Stair Channel Design



a. 8" a – Width to outside of stairs (blue)
b. 3" to 5" b – Width of channel (Red)
c. 1" to 2" c – Width between channel and stairs (Green)
d. 12" to 15" d – Total width of bicycle channel
h. 1 to 2" h – Height difference between stair and top of channel

Source: Design Manual for Bicycle Traffic (Netherlands)

Source: Washington D.C. DOT Bicycle Facility Design Guide

5 IMPLEMENTATION PLAN: *HOW WE ARE GOING TO GET THERE*

5.1 The Key: Implementation

While many of the recommendations in the Campus Bicycle Plan are long-term, it is critical that the Plan be useable and effective in the short- and mid-terms. Both funding and staff time are major constraints for planning and implementing improvements. Additionally, some recommendations can be started immediately but others must await particular developments or campus capital projects. It is therefore important to evaluate, plan and prioritize projects.

The implementation plan on the following pages (Tables 9-10) suggests a method for carrying out each of the recommendations. It shows, for each recommendation, the timeframe (short-, mid-, and long-term), cost category estimate, relative priority rank, and any coordination required. For most of the recommendations, East Carolina University will need to take the lead, but often coordination will be required with other local transportation partners. For some recommendations, such as off campus bike lanes or intersection improvements, another agency takes the lead but the University should have a place at the table, making its case and offering support and assistance.

5.2 Funding

Some recommendations have little cost, but others will require capital investment or ongoing funding. While the total bicycle and pedestrian investment may be substantial in the long term, when compared to investments required to fund automobile improvements (e.g., new roadways, parking decks), those bicycle and pedestrian investments are relatively small.

There are a variety of potential funding sources for campus bicycle and pedestrian improvements. Some of them are internal campus funds for capital improvement projects, others may be NC Department of Transportation (NCDOT) funds, and others may be grants or funds made available through partnerships. Some key potential funding sources are:

- Campus funding sources
  - Capital improvement projects (requires coordination with new construction projects)
  - Maintenance programs (roadways, sidewalks, greenways and multi-use paths, signage)
- City of Greenville Capital Improvement Program (CIP)
  - http://www.greenvillenc.gov/departments/financial_services_dept/information/default.aspx?id=16136
- Greenville Urban Area Metropolitan Planning Organization (GUAMPO) funding
  http://www.greenvillenc.gov/departments/public_works_dept/information/default.aspx?id=510
  - Congestion Mitigation and Air Quality (CMAQ) Improvement Program (federal funds for air quality improvement projects, allocated through the NCDOT)
  - Surface Transportation Program – Direct Allocation (STP-DA) Funds (federal discretionary funds allocated by the MPO for regionally-significant projects)
- NCDOT funding sources
  - Transportation Enhancement Program (provides State funds for wide variety of bicycle and pedestrian projects and programs)
  - State Transportation Improvement Program
  - Statewide Discretionary Funding (allocated through the NCDOT Bike/Ped Division)

- Other NCDOT programs, including Small Urban Funds, Hazard Elimination Program, Spot Improvement Program, and the Governor's Highway Safety Program (GHSP)
- Grants and funds from partnerships with local non-profits and advocacy groups

5.3 Project Prioritization

The recommended projects were developed through an iterative process involving many campus stakeholders, with significant help from university staff and the project Steering Committee. The results from the campus survey and feedback from the campus outreach events provided depth to the project recommendations.

The initial draft list of recommended projects included more than 100 individual projects. The list was further refined by the steering committee, with input from the Open House event. Prioritization factors were identified from the vision and goal statements by which projects could be ranked. Each recommended project was reviewed and assigned a value (1-3) depending upon whether or not it would satisfy the priority factor. Assigning these scores is admittedly a subjective process that produces *relative* differences in priority however there is virtually no difference between the 24th and 25th ranked projects (both are shared roadway signage projects). This prioritization process formed the backbone of the implementation plan, found in Section 5.4, helping to separate some projects ahead of others. The prioritization factors are:

- **Safety:** does the project meet an identified or perceived safety need?
- **Connectivity:** does the project connect to off campus facilities, or complete a missing link?
- **Character:** does the project promote broader Physical Master Plan vision and goals?
- **Constructability:** what is the relative ease of implementation? Does it coordinate with others?
- **Survey**: does the project directly address an issue/topic raised in the campus survey?
- **Sustainability**: does the project directly promote the use of sustainable modes of transportation?
- **Campus Priority:** is there strong support for the project from the Steering Committee and campus community?

5.4 Implementation Plan

All on campus projects were considered for prioritization. Recommended projects in Tables 9 and 10 have been ranked and ordered according to the factors described in Section 5.3. The prioritization ranking is the same as the "Map ID" column (1-83), as they were re-numbered after prioritization. Projects have been grouped into short-term (1-3 years), medium-term (3-10 years), and long-term (10+ years) projects because some project alignments may depend upon the development of (future) adjacent buildings, roadways, and/or facilities before they can be constructed. The "Total Points" column represents the priority score. Many projects have the same total point score, and had to be separated by time frame, project type or location. A good rule of thumb is to think of projects within the 'teens' as possessing a relatively higher priority for the campus population than those in the 'twenties', however project number 23 (bicycle lockers) could be implemented long before project number 12 (greenway connection).

While the prioritization system and timeframes are useful for day-to-day implementation of the many projects in this Plan, there should also be flexibility to change the order of project implementation as plans evolve, complementary roadway projects are initiated, or other opportunities for incidental improvements should arise.

Table 9: Implementation Plan - Main Campus Projects

On Campus Bicycle Projects									Prioritization Factors (High=3 Medium=2 Low=1 N/A=<blank>)								
Map ID	Location / Intersection	Near	Also Near	Campus	Time Frame	Map Category	Amenity / Facility Type	Comment	Safety	Connect-ivity	Character	Construct-ability	Survey	Sustain-ability	Campus Priority	Total Points	Priority Rank
1	Campus Bike Path	Wright Plaza	Austin Hall	Main Campus	Short-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2		2	1	3	1	1	10	1
2	Campus Bike Path	Wright Circle Fountain	Wright Plaza	Main Campus	Short-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2		2	1	3	1	1	10	2
3	Founders Drive	Flanagan Hall (Rear)	Wright Circle Fountain	Main Campus	Short-term	Facility	Road Closure	Remove vehicular traffic through this portion of roadway to improve safety	3		1	1	2	1	1	9	3
4	Christenbury Gym	Brester Building		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks near Christenbury Gym				1	2	2	1	6	4
5	Howell Science Complex	Science and Technology Building		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks near Howell Science Complex				1	2	2	1	6	5
6	Student Recreation Center	Mendenhall		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks near Student Recreation Center				1	2	2	1	6	6
7	Joyner Library (east side)	Wendell Smiley Way		Main Campus	Short-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to install covered bike parking near Library				1	2	2	1	6	7
8	Rivers Building	Transit Stop		Main Campus	Short-term	Amenity	Bike Lockers	Install commuter bike lockers at Rivers Building near Transit stop				1	1	2	1	5	8
9	Croatan Building	Rivers Biulding		Main Campus	Short-term	Amenity	Bike Racks	Install additional bike racks at the Croatan Building					2	2	1	5	9
10	Transit Stop near Student Center	Student Recreation Center		Main Campus	Short-term	Amenity	Covered Bike Racks	Work with ECU-STA and University Architect to locate covered bike parking at existing transit shelter					2	2	1	5	10
11	Tyler Hall	College Hill Drive	College Hill Suites	College Hill	Short-term	Amenity	Covered Bike Racks	Install covered bike parking near Tyler Hall					2	2	1	5	11
12	Green Mill Run Greenway Phase II	14th Street	Charles Boulevard	Athletic Campus	Short-term	Facility	Greenway	Coordinate with the City of Greenville to extend Green Mill Run Greenway		2	1			1	1	5	12
15	Green Mill Run Greenway Phase II	Charles Boulevard	Oglesby Drive	HHP Campus	Short-term	Facility	Greenway	Coordinate with the City of Greenville to extend Green Mill Run Greenway		1	1			1	1	4	15
16	College Hill Drive	10th Street	Belk Residence Hall	College Hill	Short-term	Facility	Sharrow	Work with City of Greenville &/or NCDOT to install MUTCD Sharrows in proper location on roadway		1		1		1	1	4	16
18	Brewster Courtyard	Christenbury Gym		Main Campus	Short-term	Amenity	Bike Lockers	Install commuter bike lockers within Brewster Courtyard				1		1	1	3	18
19	Faculty Way	Dowell Way	Founders Drive	Main Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway				1	1	1		3	19
20	Founders Drive	10th Street	Flanagan Hall (Rear)	Main Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1			1	1		3	20
21	Founders Drive	5th Street	Wright Circle Fountain	Main Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1			1	1		3	21
23	Flanagan Hall	Founders Drive		Main Campus	Short-term	Amenity	Bike Lockers	Install commuter bike lockers near Founders Drive						1	1	2	23
26	Brewster-Christenbury Stairs	Christenbury Gym		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs				1				1	26
27	Fletcher Residence Hall stairs	5th Street		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs				1				1	27
28	Jones Residence Hall stairs	College Hill Drive		College Hill	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs				1				1	28
29	Science and Technology Building stairs	Founders Drive		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs				1				1	29
30	Todd Dining Hall stairs	College Hill Drive		College Hill	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at future stairs				1				1	30
31	West End Dining stairs	Reade Street Circle		Main Campus	Short-term	Amenity	Wheel Gutter	Install wheel gutter / stair channel at stairs				1				1	31
32	Campus Bike Path	Joyner Library	Wright Plaza	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2		2	1	3	1	1	10	32
33	10th Street Bike Path	Cotanche Street	College Hill Drive	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2	2			2	1	1	8	33
34	Campus Bike Path	Mendenhall Student Center	Joyner Library	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2		2		3	1		8	34
36	Campus Bike Path	Mendenhall Student Center	Faculty Way	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2				3	1		6	36
37	Campus Bike Path	Christenbury Parking Lot	Austin Hall	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2				3	1		6	37
38	Campus Bike Path	Rivers Building (East side)	McGinnis Theater Parking	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2				3	1		6	38
39	Campus Bike Path	10th Street	Science and Technology Building	Main Campus	Medium-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2				3	1		6	39
40	Trustees Way	Garrett Residence Hall		Main Campus	Medium-term	Amenity	Covered Bike Racks	Install covered bike parking near residence halls				1	2	2	1	6	40
43	Chancellors Way	Jarvis Residence Hall	Fleming Residence Hall	Main Campus	Medium-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to cover existing bike parking					2	2	1	5	43
44	Greenway Connection	10th Street	14th Street	College Hill	Medium-term	Facility	Greenway	Construct new greenway trail along ECU utility corridor		2	1			1		4	44
45	Belk Building	Oglesby Drive	Charles Boulevard	HHP Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near Belk Building				1		1	1	3	45
46	Football field near Transit Stop	Railroad Tracks		Athletic Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near transit stop				1		1	1	3	46
47	Reade Street Parking Lot	5th Street		Main Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near 5th Street corner of parking lot				1		1	1	3	47
48	Fieldside Street	Future Greenway	Fieldside Street	Athletic Campus	Medium-term	Facility	Shared Roadway	Connect with Fieldside Street		2			1			3	48
49	Chancellors Way	Trustees Way	Founders Drive	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1		1		1		3	49
51	Wendell Smiley Way	10th Street	Library Drive	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1		1		1		3	51
52	Founders Drive	5th Street		Main Campus	Medium-term	Amenity	Bike Detection Loops	Install bike detection loops at intersection for northbound traffic				1		1		2	52
53	Wright Plaza near ATM	Rawl Building		Main Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near existing ATM						1	1	2	53
54	7th Street	Cotanche Street	Student Recreation Center and Loop	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1				1		2	54
55	Baseball Stadium	Charles Boulevard	Future Greenway	Athletic Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway, connect with future greenway trail around baseball stadium		1				1		2	55
56	Haskett Way	14th Street (West of Belk Hall)	14th Street (East of Belk Hall)	College Hill	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1				1		2	56
57	McGinnis Theater	Beckwith Drive		Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1				1		2	57
58	Oglesby Drive	Charles Boulevard	Park-&-Ride Parking Lots	HHP Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1				1		2	58
59	Oglesby Drive	Park-&-Ride Parking Lots	Future Roadways	HHP Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway				1		1		2	59
60	Trustees Way	5th Street	Jarvis Street	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1				1		2	60
63	Beckwith Drive	Founders Drive	5th Street	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway						1		1	63
64	Charles Street	Mendenhall Student Center	Library Drive	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway						1		1	64
65	Dowell Way	Faculty Way	Trustees Way	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway						1		1	65
66	Flanagan Hall (Rear)	Founders Drive	Alumni Circle	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway						1		1	66
67	Fletcher Music Hall (Rear)	6th Street	10th Street	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway						1		1	67
68	Library Drive	Charles Street	Wendell Smiley Way	Main Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway						1		1	68
71	College Hill Drive	10th Street	Belk Residence Hall	College Hill	Long-term	Facility	Cycle Track	Work with City of Greenville &/or NCDOT to remove on-street parking and install separated Cycle Track along roadway	2	1			1	1	1	6	71
72	Campus Bike Path	Student Health (rear)	Student Recreation Center	Main Campus	Long-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2				2	1		5	72
73	Future Parking Garage	Student Center		Main Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking the within future parking garage					2	2	1	5	73
74	Future Parking Garage	Academic A Building		Main Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking within the future parking garage					2	2	1	5	74
75	Greenway Connection	1st Street	5th Street	Main Campus	Long-term	Facility	Greenway	Construct new greenway trail along ECU Master Plan pathway		2	1			1		4	75
76	Greenway Connection	Football Stadium Parking	Baseball Stadium Parking	Athletic Campus	Long-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan		1	2			1		4	76
77	Railroad Overpass	Football Stadium Parking	College Hill Drive	College Hill	Long-term	Facility	Railroad Overpass	Study the feasibility of an elevated overpass connecting with future Belk Residence Hall per ECU Master Plan	3					1		4	77
81	Future Parking Garage	Student Center		Main Campus	Long-term	Amenity	Bike Repair Station	Work with Facilities Engineering and Architectural Services to locate a bike maintenance kiosk within the future parking garage						1		1	81

Note:
1. Projects in this table have been prioritized according to the process described in Section 5.3.
2. "Map ID" corresponds with labels displayed on report Figures 7-8 (Recommended Bicycle Projects)
3. "Map Category" column refers to the legend groups within report Figures 7-8 (Recommended Bicycle Projects).
4. "Amenity/Facility Type" corresponds with legend items displayed on report Figures 7-8 Recommended Bicycle Projects).

Time Frame Categories

Short-term	**1-3 years to implement.** Refers to projects that are more-quickly constructed, and/or would cost less money to complete.
Medium-term	**3-10 years to implement.** Refers to projects that follow the short-term projects, and build upon their success.
Long-term	**10+ years to implement.** Refers to projects that are more difficult to construct, and would require coordination. These projects relate to Campus Physical Master Plan projects.

Table 10: Implementation Plan - Health Sciences Campus Projects

On Campus Bicycle Projects									Prioritization Factors (High=3 Medium=2 Low=1 N/A=<blank>)								
Map ID	Location / Intersection	Near	Also Near	Campus	Time Frame	Map Category	Amenity / Facility Type	Comment	Safety	Connect-ivity	Character	Construct-ability	Survey	Sustain-ability	Campus Priority	Total Points	Priority Rank
13	Greenway Connection	5th Street	Lake Laupus Trail	Health Sciences Campus	Short-term	Facility	Greenway	Construct new greenway trail and connect with sidewalk along 5th Street		1			1	1	2	5	13
14	Greenway Connection	Lake Laupus Trail	Health Sciences Drive	Health Sciences Campus	Short-term	Facility	Greenway	Construct new greenway trail and connect with sidewalk		1			1	1	2	5	14
17	North Campus Loop	North Emergency Drive	Moye Boulevard	Health Sciences Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway		1		1	1	1		4	17
22	North Emergency Drive	Roundabout	North Campus Loop	Health Sciences Campus	Short-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway				1	1	1		3	22
24	Health Sciences Campus Parking Lot	MacGreggor Downs Drive	North Emergency Drive	Health Sciences Campus	Short-term	Facility	Shared Roadway	Install MUTCD Share the Roadway signs along roadway	1	1						2	24
25	North Emergency Drive	5th Street	Roundabout	Health Sciences Campus	Short-term	Facility	Shared Roadway	Install MUTCD Share the Roadway signs along roadway	1	1						2	25
35	North Emergency Drive	North Campus Loop	Roundabout	Health Sciences Campus	Medium-term	Facility	Road Closure	Remove vehicular traffic through this portion of roadway to improve safety	3		1		2	1		7	35
41	Greenway Connection	Moye Boulevard	Lake Laupus Trail	Health Sciences Campus	Medium-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan (coordinate with #42; only one may be necessary)		2			1	1	2	6	41
42	Greenway Connection	Moye Boulevard	Lake Laupus Trail	Health Sciences Campus	Medium-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan (coordinate with #41; only one may be necessary)		2			1	1	2	6	42
50	North Emergency Drive	Roundabout	Heart Drive	Health Sciences Campus	Medium-term	Facility	Sharrow	Install MUTCD Sharrows in proper location on roadway				1	1	1		3	50
61	Transit Stop near Brody School of Med.	Moye Boulevard		Health Sciences Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near transit stop near Brody School of Medicine						1		1	61
62	Transit Stop near Nursing Building	Parking Lot		Health Sciences Campus	Medium-term	Amenity	Bike Lockers	Install commuter bike lockers near transit stop near Nursing Building						1		1	62
69	Health Sciences Campus Bike Path	North Campus Loop	Future Greenway Trail	Health Sciences Campus	Long-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2				2	1	1	6	69
70	Health Sciences Campus Bike Path	HSC Parking Lot	HSC Bike Path	Health Sciences Campus	Long-term	Facility	Bike Path	Work with Facility Engineering and Architectural Services to install separated bicycle path	2				2	1	1	6	70
78	Future Parking Garage	MacGreggor Downs Road		Health Sciences Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking within the future parking garage					1	2		3	78
79	Future Student Center	North Emergency Drive		Health Sciences Campus	Long-term	Amenity	Covered Bike Racks	Work with Facilities Engineering and Architectural Services to locate covered bike parking within the future student center building					1	2		3	79
80	Future Student Center	North Emergency Drive	North Campus Loop	Health Sciences Campus	Long-term	Amenity	Bike Repair Station	Work with Facilities Engineering and Architectural Services to locate a bike maintenance station within the future student center building					1	1		2	80
82	Future Parking Garage	MacGreggor Downs Road		Health Sciences Campus	Long-term	Amenity	Bike Repair Station	Work with Facilities Engineering and Architectural Services to locate a bike maintenance kiosk within the future parking garage						1		1	82
83	Greenway Connection	5th Street	Future HSC Building	Health Sciences Campus	Long-term	Facility	Greenway	Construct new greenway trail per ECU Master Plan		1						1	83

Note: 1. Projects in this table have been prioritized according to the process described in Section 5.3.
2. "Map ID" corresponds with labels displayed on report Figures 7-8 (Recommended Bicycle Projects)
3. "Map Category" column refers to the legend groups within report Figures 7-8 (Recommended Bicycle Projects).
4. "Amenity/Facility Type" corresponds with legend items displayed on report Figures 7-8 Recommended Bicycle Projects).

Time Frame Categories

Short-term	**1-3 years to implement.** Refers to projects that are more-quickly constructed, and/or would cost less money to complete.
Medium-term	**3-10 years to implement.** Refers to projects that follow the short-term projects, and build upon their success.
Long-term	**10+ years to implement.** Refers to projects that are more difficult to construct, and would require coordination. These projects relate to Campus Physical Master Plan projects.

APPENDIX

A

East Carolina University - Bicycle Master Plan
Summary of Campus Survey
Spring 2012

These results were summarized by East Carolina University, and are included within the Bicycle Master Plan unaltered.

Bicycles and Alternative Transportation at ECU

Institutional Planning, Assessment and Research

East Carolina University

Prepared by Kyle Chapman
East Carolina University
Spring 2012

Bicycles and Alternative Transportation at ECU

East Carolina University

Background and Survey Population

The Bicycles and Alternative Transportation at ECU survey was conducted during Spring 2012. The survey was a collaboration between ECU Parking and Transportation Services and the Office of Institutional Planning, Assessment and Research at East Carolina University. The purpose of this survey was to gain information that will assist in addressing needs and concerns relating to bicycle use and safety on campus.

Survey Distribution

The survey was administered using Qualtrics online survey software to survey a sample of 1,500 faculty and staff, as well as a random sample of 3,000 students. Included in the combined sample of 4,500 were 522 registered bike users and 104 Health and Human Performance faculty who were targeted for inclusion in the sample. The remainder of the sample was drawn at random from all faculty, staff, and students over the age of 18. A memorandum from Karen S. Mizelle, Assistant Director, Administrative Services and Transportation Demand Management, ECU Parking and Transportation Services, was sent via email to each of the participants in the sample. The memorandum contained a link to the online survey. Data collection started in late March 2012 and ended in late April 2012. Two email reminders were sent to non-respondents, one during the first week of April and another during the second week of April. The survey contained many questions regarding bicycles, such as safety, usage, amenities, racks, and dedicated routes. Participants were also asked about their frequency and method of commuting to campus. At the end of the survey, participants were asked if they would like to participate in a campus focus group discussing issues related to bicycle usage on campus.

Response Rate

Responses were received from 703 participants out of 4,500 for an overall response rate of 15.6%.

Results

Results and survey materials are presented in four appendices. *Appendix A* contains tabular summaries of the frequencies and overall percentages for each survey question. *Appendix B* contains text responses to the “Other: (please specify)” answer choices for questions 2, 6, 7, 9, 10, and 11. *Appendix C* contains the email memorandum that contained the link to the online survey. *Appendix D* contains a Microsoft Word version of the online survey form with coded values for response choices.

Appendix A

1. How far from campus do you live?

Answer	Bar	Responses	Percent
Live on campus		102	14.55%
Less than 1/2 mile		47	6.7%
1/2 to less than 1 mile		56	7.99%
1 mile to less than 2 miles		61	8.7%
2 miles to less than 5 miles		155	22.11%
5 miles to less than 10 miles		135	19.26%
10 miles to less than 25 miles		78	11.13%
More than 25 miles		67	9.56%
Total		701	100%

2. How often do you travel to/from the ECU campus?

Answer	Bar	Responses	Percent
4-5 times per week		488	69.42%
1-3 times per week		83	11.81%
Less than 1 time per week		39	5.55%
Other: (please specify)		93	13.23%
Total		703	100%

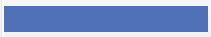
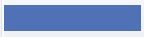
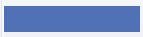
3. On a typical weekday, how do you commute to campus?

Answer	Bar	Responses	Percent
Drive alone		388	55.67%
Carpool or dropped off by someone going to campus		19	2.73%
Motorcycle/moped		6	0.86%
Dropped off by someone not going to campus		13	1.87%
Greenville Area Transit (GREAT Buses)		4	0.57%
ECU Buses		65	9.33%
Ride bicycle		83	11.91%
Walk		119	17.07%
Total		697	100%

4. What type of parking permit, if any, do you own?

Answer	Bar	Responses	Percent
Commuter Student permit		79	11.27%
Resident Student permit		56	7.99%
Faculty/Staff permit		313	44.65%
I do not have a permit		253	36.09%
Total		701	100%

5. In general, do you feel that bicycling on campus for daily needs (commuting to work or class) is:

Value	Answer	Bar	Responses	Percent
1	Very Safe		65	9.94%
2	Somewhat Safe		233	35.63%
3	Neutral		157	24.01%
4	Somewhat Dangerous		155	23.7%
5	Very Dangerous		44	6.73%
	Total		654	100%

Min Value	Max Value	Mean	Variance	Standard Deviation	Total Responses
1	5	2.82	1.23	1.11	654

6. What are the top safety issues for bicyclists on ECU's campus? (check all that apply)

Answer	Bar	Responses	Percent*
Speeding in campus areas		245	35.66%
High volume of vehicles on roadways also used by bicyclists		423	61.57%
Lack of alternatives to cycling on main streets		359	52.26%
Unsafe intersections		302	43.96%
Lack of bicycle paths and greenways separated from the roadway		471	68.56%
Bicyclists' lack of use of safety equipment (helmets, reflective gear, headlights, etc.)		184	26.78%
Motorists or bicyclists not sharing the road		256	37.26%
Other: (please specify)		74	10.77%
Total		2314	100%

*Note: Percent=number of responses out of 687 total respondents for the question. Respondents could select more than one answer choice; percentages do not add to 100%.

7. Overall, what do you feel are the best solutions to improve bicycle safety? (check all that apply)

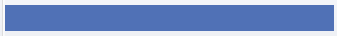
Answer	Bar	Responses	Percent*
Educate motorists on rights and responsibilities toward bicyclists		361	53.96%
Educate bicyclists on the rights and responsibilities of cycling		387	57.85%
Increase enforcement of existing traffic laws for motorists		274	40.96%
Increase enforcement of existing traffic laws for cyclists		220	32.88%
Other: (please specify)		130	19.43%

*Note: Percent=number of responses out of 669 total respondents for the question. Respondents could select more than one answer choice; percentages do not add to 100%.

8. Do you currently use a bicycle on ECU's campus?

Answer	Bar	Responses	Percent
Yes		183	27.35%
No		486	72.65%
Total		669	100%

9. Describe your bicycle use on the ECU campus (check all that apply):

Answer	Bar	Responses	Percent*
I use my bicycle to commute between home and ECU.		129	57.85%
I bicycle between ECU and other areas across campus.		128	57.4%
I store my bicycle at ECU overnight.		60	26.91%
Once I'm on ECU's campus I use my bicycle frequently between buildings.		76	34.08%
Other: (please specify)		36	16.14%

*Note: Percent=number of responses out of 223 total respondents for the question. Respondents could select more than one answer choice; percentages do not add to 100%.

10. What is your level of bicycle usage during an average week on ECU's campus?

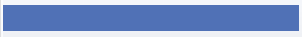
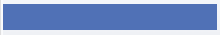
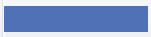
Answer	Bar	Responses	Percent
4-5 times per week		81	12.02%
1-3 times per week		53	7.86%
Less than 1 time per week		56	8.31%
None		461	68.4%
Other: (please specify)		23	3.41%
Total		674	100%

11. What bicycle amenities do you believe would increase bicycle usage on ECU's campus? (check all that apply)

Answer	Bar	Responses	Percent*
More bicycle racks		336	50.53%
Bicycle routes throughout campus		526	79.1%
Bicycle safety awareness programs		123	18.5%
Indoor secure bicycle parking		318	47.82%
Outdoor bicycle lockers		188	28.27%
Showers and lockers for bicycle commuters and walkers		140	21.05%
ECU bicycle maps		217	32.63%
On-campus bicycle repair and service		239	35.94%
Other: (please specify)		60	9.02%

*Note: Percent=number of responses out of 665 total respondents for the question. Respondents could select more than one answer choice; percentages do not add to 100%.

12. Select the areas where there are not enough bicycle racks on campus: (check all that apply)

Answer	Bar	Responses	Percent*
Main Academic Campus buildings		264	51.76%
Joyner Library		191	37.45%
Student Recreation Center		137	26.86%
Mendenhall		128	25.1%
College Hill		85	16.67%
West Campus Residence Halls		77	15.1%
Health Science Campus - Brody		96	18.82%
Health Science Campus - Nursing		62	12.16%
Health Science Campus - Allied Health		73	14.31%
Athletic Campus		94	18.43%

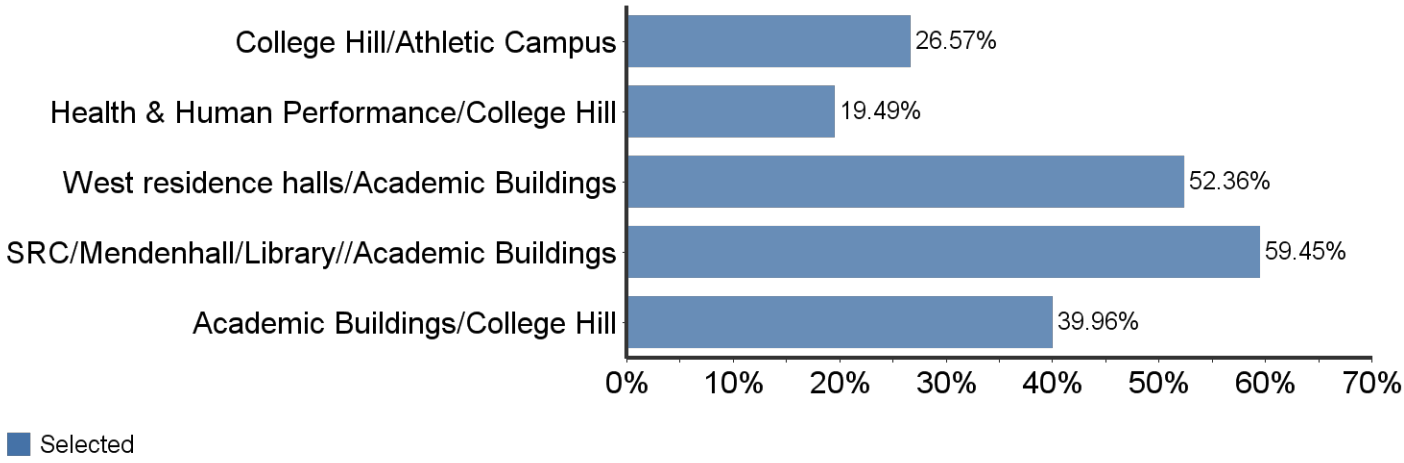
*Note: Percent=number of responses out of 510 total respondents for the question. Respondents could select more than one answer choice; percentages do not add to 100%.

13. On which campus do you spend most of your time?

Answer	Bar	Responses	Percent
Main Academic Campus		521	79.06%
Health Science Campus		143	21.7%
Total		664	100%

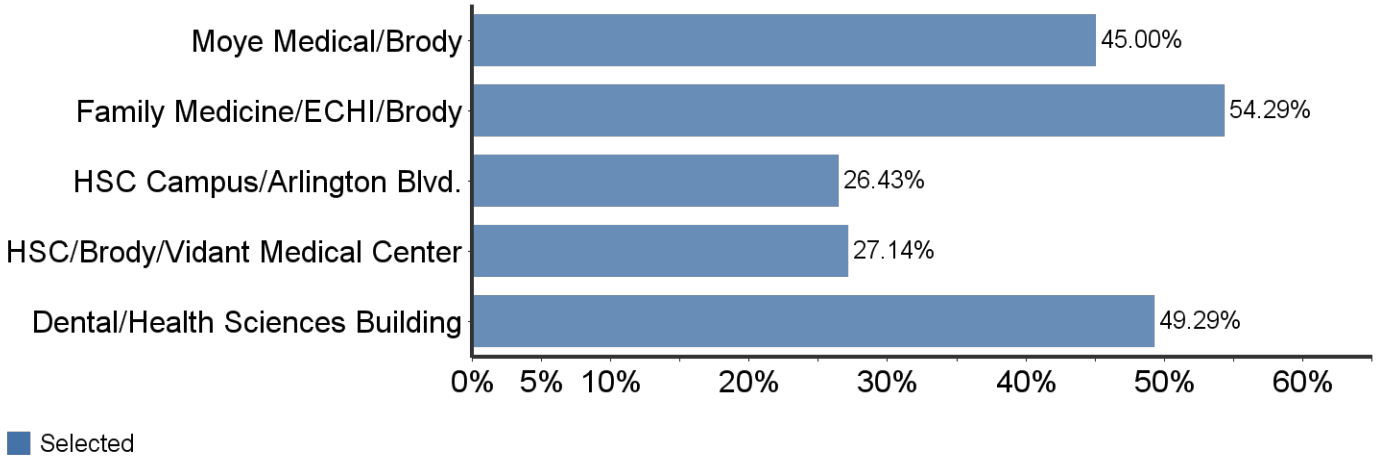
14a. Please select the areas on the Main Academic campus where you feel there need to be more dedicated bike routes.

Question	Not Selected	Selected	Responses
College Hill/Athletic Campus	373	135	508
Health & Human Performance/College Hill	409	99	508
West residence halls/Academic Buildings	242	266	508
SRC/Mendenhall/Library//Academic Buildings	206	302	508
Academic Buildings/College Hill	305	203	508

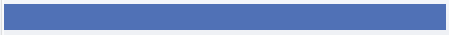


14b. Please select the areas on the Health Science campus where you feel there need to be more dedicated bike routes.

Question	Not Selected	Selected	Responses
Moye Medical/Brody	77	63	140
Family Medicine/ECHI/Brody	64	76	140
HSC Campus/Arlington Blvd.	103	37	140
HSC/Brody/Vidant Medical Center	102	38	140
Dental/Health Sciences Building	71	69	140



15. Are you willing to participate in a campus focus group discussing issues related to bicycle usage on campus?

Answer	Bar	Responses	Percent
Yes		139	22.9%
No		468	77.1%
Total		607	100%

2. How often do you travel to/from the ECU campus? (Other: please specify)
6
6
7
7
10
10
10
11
12
12
7-May
7-May
7-Jun
7-Jun
10-Jun
10-Aug
10-Sep
15-Oct
10 times a week
10 times per week
10+
10+ times per week
20-30
25-30
3 times a year
4-5 or more (depending on whether or not I eat at home)
5 daysand a week, at various times each day
5 minimum
5 times a week
5-6 times
5-6 times per week
5-7 times
5-7 times
6 days/week 3/day
6 times per week
6 times per week
6 times per week
6-7 days a week
6-7 per week
6-7 times
6-7 times a week some weeks
6-7 times per weeik
6-7 times per week
6-7 times per week
7 DAYS A WEEK

Appendix A
Comments

7 days a week to BSOM
7 or more
7 times a week
7 times per week
7 times per week
7+
7-8 times per week
8 times per week
8+ times per week
8-10x per week
8-9 times per week
About 6 per week
at least 7 times per week
At least 7-9 times a week
Currently less than 1 time/week, but should improve to 4 times per week beginning next week
daily
Distance Education
Distance Education Student
Every day
Every day including weekends
every day sometimes 2-3 times a day.
everyday!
Five or more
I am a DE student
I am a distance education student
I am away on an internship - I used to visit campus every day when I was in greenville.
I don't work on main campus
i live on campus
I live on campus so I travel a lot!
I ride the bus with another student to the Health Sciences building
I work off campus
I'm a DE Student
Live on campus
Monday - Friday
more than 5
more than 5 times
more than 5 times per week
multiple times a day.
Multiple times everyday
Once in 2 years
once or twice a semester
Over 5 times a week
seldom
to/from M-F
twice daily
work at health sciences campus
You Guys Suck

6. What are the top safety issues for bicyclists on ECU's campus? (Other: please specify)

A bicycle does not provide the same safety to its diver as a vehicle does.
anything after dark is not safe around campus
Bicycling in high traffic areas of people
Bicyclist not following traffic laws
bicyclists and pedestrians with mp3 players not paying attention to his/her surroundings
Bicyclists' lack of signaling and poor "safe riding" habits
bicyclists not following posted traffic signs
Bicyclists riding way too fast on the sidewalk, almost hitting pedestrians.
Bikes running into walking students
cyclists do not follow road rules. often ride against traffic in the street.
Dark at night around campus and surrounding neighborhoods
Distracted drivers
distracted drivers
Don't know, since I don't bike to campus
ECU Bus drivers not sharing the road or looking for cyclists
Esp on 10th street there is nowhere to ride except sharing the sidewalk with pedestrians.
everybody not paying attention, using cell phones etc.
Few Racks West Side
getting to campus is a big problem, Bicyclists rarely signal
Heavy walking traffic on campus
high traffic areas within campus grounds
high volume of pedestrians
Hitting people who are walking
if students drive bikes like skateboards they will run over you
inattentive students
inattentive walkers
It feels very safe. Some road surfaces are poor though.
lack of a light getting out of Carol Belk area and traffic around this area (which is where I work)
Lack of bicycle racks
Lack of education bot for motorists and cyclists.
Lack of environmental support
Lack of side walks where we live
Motorists don't use blinkers and suddenly turn.
No curb cuts
No opinion
None
none
Obstacles for bicycles
pedestrian and other student traffic
pedestrian traffic on campus
Pedestrians
pedestrians & skateboarders paying no attention to where they walk
pedestrians and bycycleist/skatboarders run in front of my car daily without looking they do not obey basic right of way rules

Appendix A
Comments

Pedestrians and motorists oblivious to bicycles
Pedestrians not looking out for bikes on road
pedestrians, skateboarders
Pedestrians; campus needs to be a dismount zone. See UColorado at Boulder
people not looking where they are going
People who walk block all paths
Rednecks
Shared sidewalks with pedestrians since 10th street is far too busy to ride on the street
Someone maybe stealing the bike
Speeding in other areas
student congestion
Students not respecting a pathway for bicyclists
Students walking during a busy time
Students walking hard to avoid
students walking out into the road without looking
stupid people on cell phones
The biggest safety concern for cyclists is the feeling of safety, feeling safe leads to decreased caution while riding.
The intersection at Founder's Lane and 10th St is a dangerous disaster waiting to happen (and continually happening) for cars, pedestrians, and cyclists alike. Please put a light and pedestrian cross-walk in there immediately.
The traffic lights in intersections are not designed for cyclists. The lights are short and right turn vehicles normally take up the whole opening.
There are two separate issues here - On Campus & Off Campus - How to address?
They almost hit people
They are a hazard to people walking to class. They don't slow down at all when getting around a ton of people.
too many pedestrians
too many students on campus for bikes to be riding through the crowd.
uneducated cyclists & motorist per laws of the roads
Vehicles not sharing the road
Walkers
When actually on campus, pedestrians too engrossed in reading/texting/phone conversations to pay attention to what's around them
you need to specify which campus?
You often have to ride on the street because sidewalks are congested with walkers.
You Suck

7. Overall, what do you feel are the best solutions to improve bicycle safety? (Other: please specify)
Add bicycle lanes
Add bicycle paths
add bike lanes!
All of the above
alternatives to main streets
ban cars; regulate skateboarders
better traffic flow and bike paths
Bicycle lanes on main roads
Bicycle lanes on more of the main roads
bicycle paths
bicycle paths and greenways
bicycle paths/greenways
Bicyclists should have to attend a safety class and pass to ride on campus.
bike lane
bike lanes
bike lanes
Bike Lanes
bike lanes
bike lanes
Bike lanes
Bike lanes and greenways
bike lanes on all major road
bike lanes or alternative bike paths
bike lanes!
Bike paths along each roadway
Bike signs
bike trails needed
biking to and from campus is downright dangerous because several of the major roads in Greenville either don't have sidewalks or bike lanes.
Build better bike paths
build more greenways
Build Paths and greenways
create a bike path or bigger bike space so bikers can be seperate from traffic
create a pathway that does not interfere with vehicle traffic for safety purposes
Create alternate routes to campus that don't require riding on major thoroughfares; or, alternately, adding bike lanes.
Create an area on campus for bicyclists seperate from walkers
Create better bicycle lanes/paths for to and from the health sciences campus and main campus
create bicycle paths on road with heavy traffic
Create bicyle lanes in conjunction with roadways.
create bike lanes
Create designated lanes or even beter greenways separated from the roadway.
Create more bicycle paths and greenways for bicyles and pedestrians
Create more bike lanes
create more safe cycle routes
create seperate bike lanes or broaden the ones that exist.

crossways
dedicate bike route
dedicated bike lanes...not on roadway, but as extension of sidewalks like in many european cities
dedicated bike paths
dedicated bike routes
Do not allow bicycles on roads with cars.
Don't know, since I don't bike to campus
educate cyclists about pedestrians
educate pedestrians
educate pedestrians on sidewalk etiquitte
Enhance bicycle paths.
Esp. in crosswalks!!!!
Established greenways and bicycle paths.
Fix the side walks and roads! They are so bumpy and cracked. They are awful. They need to be re-done/re-surfaced!
Get a bike path for bikes only
get bike pathways
Greenways!
have bicycle paths
have specified bike paths
I come from chapel hill that has a very good bicycle path network. When I was in Chapel Hill I would bike routinely 10 miles per day about 3-6 times weekly, which may be why I was in such great shape.

I just think that most cars do not see the bicyclists & are not careful. Unfortunately the bicyclists need to do whatever is possible to be seen by the cars. I wish that all roads had bike lanes. I do not ride unless in an event becuase I am afraid of getting killed. If I had a buddy to ride with I might would ride more often.
i live near the hospital id ride bike to campus if i didn't have to ride on a 4 lane road (5th or Stantonsburg) to get there. i dont think cyclists should be allowed to ride throiugh the middle of busy walkways on campus like the wright place and the narrow walkway between bate and that geology building someone is going to get hurt. they can ride circles around campus all day to get close to where they need but you gottta park that thing eventually. someones going to get hurt if you can bike 15mph through a crowded walkway you can walk just fine
I would say laws for cyclist except sometimes it is safer to bike on the sidewalk even though it's illegal
Imposing steeper fines.
improve bike paths and better policing of areas around campus after 5pm
Improve bikeways, greenways, and connections
Improved bicycling lanes
Improving infrastructures
Increase bicycle lanes that are wide enough for bikes to use without having to worry about cars. Have these around the city. The side of the stree from Elm and 5th to 10th is wide enough for bikes, but everywhere else is not.
Increase bike path and greenway space
Increase non-roadway routes for bicycles
increase number of alternative pathways
Increase the amount of side walks and bike paths in Greenville
increase walkways and cycle ways
invest in infrastructure

It is very dangerous to try to get from east campus to west campus on a bike.
Keeping bicyclists off the sidewalks
limit on campus motorist
lower speed limits on Charles and 10th street
make bike lanes
make bike lanes
Make bike lanes on major roads going to campus.
make it easier for bicyclists to cross 5th street
Make more bike paths
make more bike ways for people to safely bike in greenville
More bicycle lanes
More bicycle paths
more bicycle paths so motorists dont compete with each other
more bike lanes
More bike lanes in town
more bike lanes or bike paths
More bike lanes.
More bike lanes/greenways
More consistent bike lanes
more pathways
more places for bikers to ride that won't interfere with people walking
More safe bike paths/greenways
More signs
no cell phones while driving on campus
No opinion
None
none
People in stationary cars at intersections tend to look left and turn right, not seeing bikes and pedestrians coming in from the right (esp. on the sidewalk). I have almost been hit 2-3 times because of this (including at the intersection of Founder's Lane and 10th St, which is a disaster zone).
Post signs alerting pedestrians, bicyclists, and motorists to remain alert
Provide a safe place for them to ride to and from ECU campus. (Side walks, etc.)
provide bicycle lanes
Provide bicycle lanes.
Provide bike lanes and paths throughout town and campus-follow the model of Davis California-a bike campus and town since the 1970's
Provide bike lanes!
Provide dedicated bike lanes, paths, and clearly defined sharrows
Provide incentives for active commuters
Provide more bicycle paths separated from the roadway
provide more routes on campus
provide more sidewalks
Provide paths specifically meant for cyclists.
provide safe bike lanes
put bicycle crossing signs up
Put in bike lanes!!!!
Put in more bicycle paths!

reduce speed limts
Restructuring of roads
separate bike paths
Separate travel paths
Sidewalks and bike lanes
the bikers are a hazard to walkers on campus
You Suck

9. Describe your bicycle use on the ECU campus (Other: please specify)
Again, you suck
avid cyclist though not on campus
Commute to offcampus street parking, exercise on Greenway
cycling for recreation
Do not bike to school
Formerly Rode Bike to Class from off campus
Getting groceries
I bike to events and places outside of school
I commute to Health Sciences campus.
I do not bicycle because of the dangers
I do not use a bicycle
I don't use a Bike, but I do use a longboard, and therefore find myself in many similar situations to cyclists
I live on campus so I use my bike all day
I ride for fun around the grid
I use my bicycle to commute to work when I don't have lots of meetings at different parts of campus (Greenville Center, Health Sci, Main)
I use my bike for exercise and enjoyment.
I use to use it on main campus but I can't ride to the medical campus bc the roads are too dangerous.
I used my bike to occassionally commute from home (~4 mi). When I was getting my M.Sc from 2001-2004, I lived just down the street and rode my bike every day along 10th st.
i used to bike but stopped due to safety issues
I used to have my bike on campus last semester, but it was hard to get around cars and people on campus so I left it at home this semester
I used to ride my bike about 3 times a week until someone stole it.
I used to ride my bike to campus, but feel it's too dangerous to ride during sprin and fall semesters
I want to commute by Bike but my wife is afraid for my safety
I want to commute by bike, but the roads are too dangerous.
I would like to ride a bike to school. Would be nice if it were more "bike friendly"
It is rare but I do commute by bike about 10 times a year
I've used a bicycle twice on campus and then stopped. Registration is instrusive and unwarranted in my opinion.
often use to get to campus on weekends
Only ride bike on campus at night when out for a ride
Someone stole my bike from my apartment before I could use it
sometimes bring bike to campus
too dangerous to ride to work from my home
use bike for recreational use only due to lack of bike lanes
used my bike last year on campus
Using a bike will be harder for faculty/Staff than for students.
would like the opportunity to park my car & ride a bicycle to and on campus

Appendix A
Comments

10. What is your level of bicycle usage during an average week on ECU's campus? (Other: please specify)
8
10
8-Jun
10-Sep
15ish
2-4 times per week during the summer terms
25-30
6 days a week
8-10 times per week
constant use
Currently 1/week, but will increase to 4 times/week
everyday, a few times per day
I used it twice a week last semester to go to Minges
I will considering using my bicycle during the summer when there is less traffic.
If I had a bike, I would use it.
It depends on the season. I ride pretty much every day in spring/summer/early fall.
last year - 2-3 times per week in summer, 1/wk in fall, 0-1/wk in winter
less than 1 time per month
more than 5 times per week
multiple times a day, almost every day of the week
twice a day
Varies: 5 times a week or less
yup

11. What bicycle amenities do you believe would increase bicycle usage on ECU's campus? (Other: please specify)
a free air pump
A bicycle borrowing program; it has been done successfully in European countries
A lot of people just don't feel safe. There's too much trafic in town and they drive like maniacs.
Air pump at wright place, and a rain cover to park bikes for days when it just starts pouring
better routes TO campus
better/safer roads/paths to ride on
bicycle rental
bicycle route to campus
Bicycle routes around the city that lead directly into the campus
bike facks on campus busses
Bike lanes on 5th Street, 10th St, 14th St. Bike racks on buses or space inside buses for bikes. Bike lockers not necessary but racks under cover would be useful
Bike paths, trails to ride
bike routes between campuses and outlying buildings
bike routes to and from main and medical campus
Bikes get damaged way too often while parked on campus. Often the seats will be stolen or the wheels will get bent..
BSOM is not bike friendly at all.
Carports for rain protection
convenient bike share program
Covered bicycle Parking (i.e. outdoor but with a roof; sadly, Mr. Bagnell has stated he is against this
Covered Bicycle Racks
Covered Bike Racks
dedicated bicycle lanes on greenville roads
do not ride
does not apply
don't know
Don't know, since I don't bike to campus
Established greenways and bicycle routes
free bikes
I don't see it happening
i dont think on campus use should be the focus but rather the journey to campus?
Improve community safety
information about using the bus and bicycle combo schedules etc
LOCKERS
Make the city roads easier and safer to ride bike by making more bike lanes, and this way you can increase the people who bring bike to the campus. Problem is not in campus, but the city. Also encourage surrounding businesses (McDonalds, Wendy's, Starbucks, La Hacienda etc) to have bike racks.
More bicycle racks near the entrance to the library. The existing ones fill up by 6pm
More bike racks outside Dowdy Student Store
more convinent bike rack locations to classes
More effective safety programs
More lighting in surrounding areas to ride when its dark
none

Appendix A
Comments

none
Not applicable
Not feasible for handicap patrons
nothing. people riding bicycles dont obey any traffic laws and mske themselves a danger for motorist. and bicycle racks are ugly!
reduced rec center pricing for byclists
rental programs and/or pirate perks discounts at local bicycle vendors
roads to get to campus are a problem, particularly intersections
routes across town to Brody
Routes to campus from.
safe bicycle routes to get to campus
Safe routes between main campus and Brody
Safe transit *to* campus, not *on* campus
Safer intersection crossing (especially Greenville Blvd and 10th Street)
same as above
sheltered bicycle parking
Sidewalks
there are bike racks but many lock bikes to trees etc. put racks in more conv. areas.
THis does not apply to me so I probably do not know what I am talking about, but I think the issue is more about biking to campus - not once you get to campus.
We really need place to take showers!!

Appendix A

Original Memorandum Sent to Participants

Greetings from ECU Parking and Transportation!

We are actively pursuing alternative transportation options on campus and are looking to enhance your experience on campus as well as improve the environment.

Do you walk or ride a bicycle on the ECU campus or in the City of Greenville? If you do or have any interest in beginning, here is your chance to tell ECU how we can help to improve your experience. We need your feedback to assist us in addressing needs and concerns relating to bicycle use and safety on campus. **Please complete this survey before Friday, April 20th to be entered into a random drawing to win one of the four following gift certificates: $50 from Babits Bikes, $50 from Bicycle Post, $50 from Target, or $50 from Dowdy Student Stores!**

Follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

We would appreciate a few minutes of your time to make a difference. If you have any questions regarding this research project, please contact Debra Garfi, Director of Parking Services, at garfid@ecu.edu. If you have any technical problems while taking this survey, please contact Kyle Chapman, Survey Coordinator, IPAR, at chapmank@ecu.edu.

Thank you in advance for your cooperation,

Karen S. Mizelle
Assistant Director – Administrative Services and Transportation Demand Management
ECU Parking and Transportation Services

Appendix A

Survey Form

Bicycles on ECU Campus

The purpose of this survey is to gather information related to bicycle use on the ECU campus, including ways to expand and improve usage in the future. The information gathered will help to inform the Bicycle Master Plan for the University. Please complete the survey soon to be entered into a random drawing to win one of the four following gift certificates: $50 from Babits Bikes, $50 from Bicycle Post, $50 from Target, or $50 from Dowdy Student Stores! Responses to this survey are confidential. Personal information, such as names and email addresses, will not be reported with survey responses and will not be shared with any third parties. This survey will take approximately 5-10 minutes to complete. If you have any questions regarding this research project, please contact Debra Garfi, Director of Parking Services, at garfid@ecu.edu. If you have any technical problems while taking this survey, please contact Kyle Chapman, Survey Coordinator, IPAR, at chapmank@ecu.edu.

1. How far from campus do you live?

- ❍ Live on campus (1)
- ❍ Less than 1/2 mile (2)
- ❍ 1/2 to less than 1 mile (3)
- ❍ 1 mile to less than 2 miles (4)
- ❍ 2 miles to less than 5 miles (5)
- ❍ 5 miles to less than 10 miles (6)
- ❍ 10 miles to less than 25 miles (7)
- ❍ More than 25 miles (8)

2. How often do you travel to/from the ECU campus?

- ❍ 4-5 times per week (1)
- ❍ 1-3 times per week (2)
- ❍ Less than 1 time per week (3)
- ❍ Other: (please specify) (4) _____

3. On a typical weekday, how do you commute to campus?

- ❍ Drive alone (1)
- ❍ Carpool or dropped off by someone going to campus (2)
- ❍ Motorcycle/moped (3)
- ❍ Dropped off by someone not going to campus (4)
- ❍ Greenville Area Transit (GREAT Buses) (5)
- ❍ ECU Buses (6)
- ❍ Ride bicycle (7)
- ❍ Walk (8)

4. What type of parking permit, if any, do you own?

- ❍ Commuter Student permit (1)
- ❍ Resident Student permit (2)
- ❍ Faculty/Staff permit (3)
- ❍ I do not have a permit (4)

5. In general, do you feel that bicycling on campus for daily needs (commuting to work or class) is:

- ❍ Very Safe (1)
- ❍ Somewhat Safe (2)
- ❍ Neutral (3)
- ❍ Somewhat Dangerous (4)
- ❍ Very Dangerous (5)

6. What are the top safety issues for bicyclists on ECU's campus? (check all that apply)

- ☐ Speeding in campus areas (1)
- ☐ High volume of vehicles on roadways also used by bicyclists (2)
- ☐ Lack of alternatives to cycling on main streets (3)
- ☐ Unsafe intersections (4)
- ☐ Lack of bicycle paths and greenways separated from the roadway (5)
- ☐ Bicyclists' lack of use of safety equipment (helmets, reflective gear, headlights, etc.) (6)
- ☐ Motorists or bicyclists not sharing the road (7)
- ☐ Other: (please specify) (8) _____

7. Overall, what do you feel are the best solutions to improve bicycle safety? (check all that apply)

- ❑ Educate motorists on rights and responsibilities toward bicyclists (1)
- ❑ Educate bicyclists on the rights and responsibilities of cycling (2)
- ❑ Increase enforcement of existing traffic laws for motorists (3)
- ❑ Increase enforcement of existing traffic laws for cyclists (4)
- ❑ Other: (please specify) (5) _____

8. Do you currently use a bicycle on ECU's campus?

- ❍ Yes (1)
- ❍ No (2)

9. Describe your bicycle use on the ECU campus (check all that apply):

- ❑ I use my bicycle to commute between home and ECU. (1)
- ❑ I bicycle between ECU and other areas across campus. (2)
- ❑ I store my bicycle at ECU overnight. (3)
- ❑ Once I'm on ECU's campus I use my bicycle frequently between buildings. (4)
- ❑ Not applicable (5)
- ❑ Other: (please specify) (6) _____

10. What is your level of bicycle usage during an average week on ECU's campus?

- ❍ 4-5 times per week (1)
- ❍ 1-3 times per week (2)
- ❍ Less than 1 time per week (3)
- ❍ None (4)
- ❍ Other: (please specify) (5) _____

11. What bicycle amenities do you believe would increase bicycle usage on ECU's campus? (check all that apply)

- ❑ More bicycle racks (1)
- ❑ Bicycle routes throughout campus (2)
- ❑ Bicycle safety awareness programs (3)
- ❑ Indoor secure bicycle parking (4)
- ❑ Outdoor bicycle lockers (5)
- ❑ Showers and lockers for bicycle commuters and walkers (6)
- ❑ ECU bicycle maps (7)
- ❑ On-campus bicycle repair and service (8)
- ❑ Other: (please specify) (9) _____

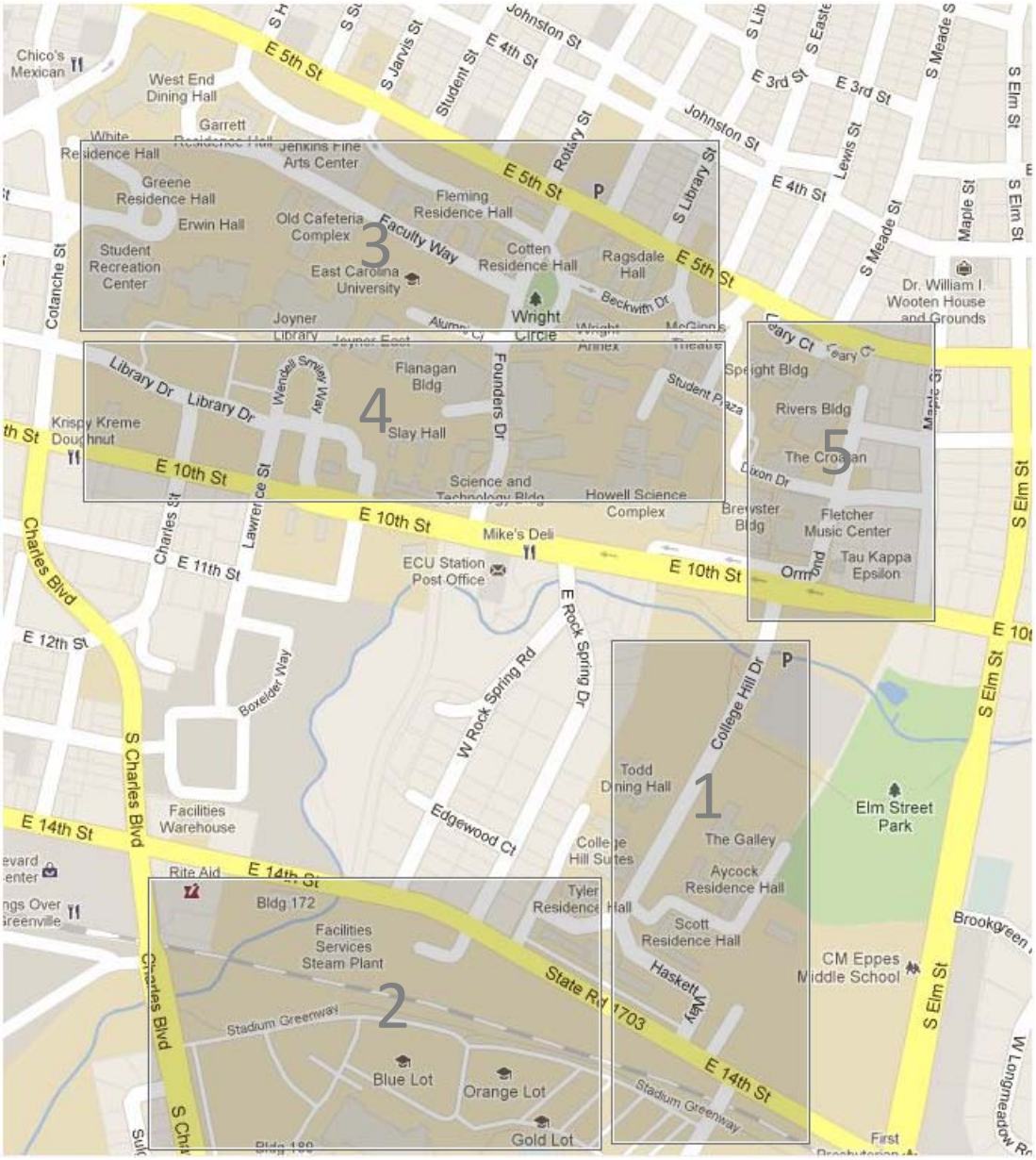
12. Select the areas where there are not enough bicycle racks on campus: (check all that apply)

- ❑ Main Academic Campus buildings (1)
- ❑ Joyner Library (2)
- ❑ Student Recreation Center (3)
- ❑ Mendenhall (4)
- ❑ College Hill (5)
- ❑ West Campus Residence Halls (6)
- ❑ Health Science Campus - Brody (7)
- ❑ Health Science Campus - Nursing (8)
- ❑ Health Science Campus - Allied Health (9)
- ❑ Athletic Campus (10)

13. On which campus do you spend most of your time?

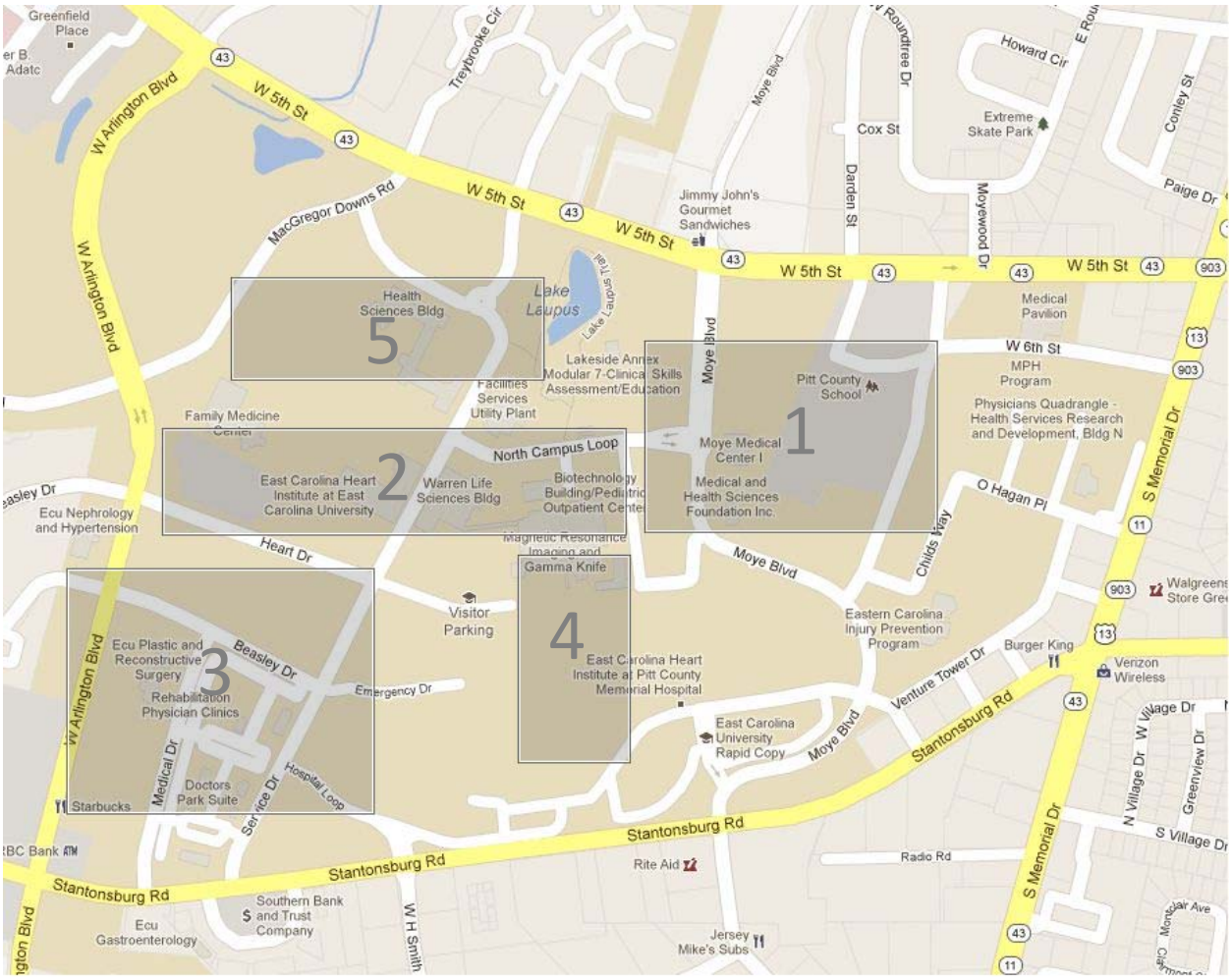
- ❑ Main Academic Campus (1)
- ❑ Health Science Campus (2)

14a. Please select the areas on the Main Academic campus where you feel there need to be more dedicated bike routes. Directions: There are five predetermined areas on the map below. As you move your mouse across the map, you will notice box outlines appear around these areas. To select an area, click once and the area will turn green. To deselect the area, click again and the green selection will disappear. You may select as few or as many of the areas as you want.



[Note: The shaded areas in the map above are numbered to correspond with the following labels: 1–College Hill/Athletic Campus, 2–Health & Human Performance/College Hill, 3–West residence halls/Academic Buildings, 4–SRC/Mendenhall/Library/Academic Buildings, 5–Academic Buildings/ College Hill. The numbers and labels are provided as a reference, and were not visible on the online survey form. In the data file, responses are coded as "Not Selected"=1 and "Selected"=2.]

14b. Please select the areas on the Health Science campus where you feel there need to be more dedicated bike routes. Directions: There are five predetermined areas on the map below. As you move your mouse across the map, you will notice box outlines appear around these areas. To select an area, click once and the area will turn green. To deselect the area, click again and the green selection will disappear. You may select as few or as many of the areas as you want.



[Note: The shaded areas in the map above are numbered to correspond with the following labels: 1–Moye Medical/Brody, 2–Family Medicine/ECHI/Brody, 3–HSC Campus/Arlington Blvd, 4–HSC/Brody/ Vidant Medical Center, 5–Dental/Health Sciences Building. The numbers and labels are provided as a reference, and were not visible on the online survey form. In the data file, responses are coded as "Not Selected"=1 and "Selected"=2.]

15. Are you willing to participate in a campus focus group discussing issues related to bicycle usage on campus?

- ❍ Yes (1)
- ❍ No (2)

Please provide the information below if you would like to be contacted to participate in the focus group.

Name: (1)
E-mail: (2)
Phone: (3)

APPENDIX

B

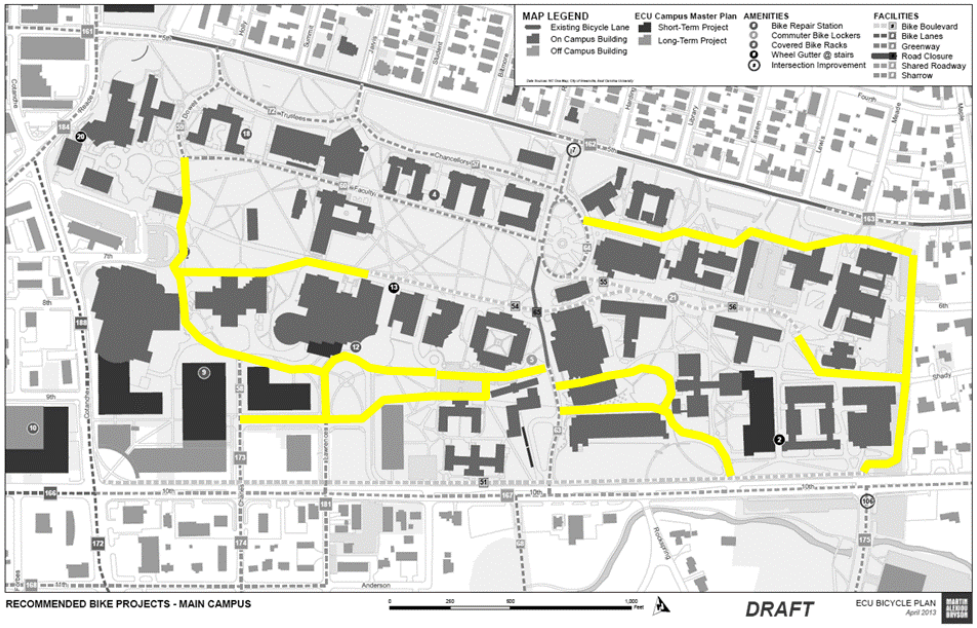
East Carolina University - Bicycle Master Plan
Summary of Open House Meeting
Wednesday April 10, 2013 – 5:00 p.m.

These lists represent discussed bike improvements from the Open House meeting. These *draft recommendations* have been refined and condensed for clarity. Recommendations are divided into four (4) groups depending upon type (**facility** versus **amenity**) and location (**on campus** versus **off campus**).

1. RECOMMENDED ON CAMPUS FACILTIES

Bike Path

- Separated bike/ped paths between Austin Hall and Wright Plaza
- Separated bike/ped paths through Wright Plaza to Founders Drive, around the north side of the Graham Building
- Separated bike/ped paths from Founders Drive to Joyner Library
- Separated bike/ped path near Howell Science Complex and Austin Building
- Bike path around the periphery of Main Campus, with no vehicle access (*see below*)
- Shared Bike/Ped path on HSC between Nursing and Dental School buildings, connecting with future east-west campus path



Suggested bike path around periphery of campus – with connections to main bike path through center of campus and utilizing existing roadway sharrows (Founders, Faculty, Trustees, Chancellors)

Share-the-Road-Arrow

- Not necessary through HSC parking lot (project #75)

Greenway Trail

- Connect South Tar Greenway southward between 1st Street/Town Common to 5th Street through campus property, near Fletcher Residence Hall stairs

- Connect Green Mill Run Greenway southward behind Aycock and Scott Residence Halls to 14th Street, across railroad tracks, and connect with Stadium Greenway trail

2. RECOMMENDED ON CAMPUS AMENITIES

Bike Parking

- Student Recreation on Main Campus
- West End of Main Campus
- Joyner Library on Main Campus
- Christenbury Gym on Main Campus
- Howell/Science & Tech Buildings on Main Campus
- Rivers Building on Main Campus

Bike Lockers

- Belk Building on HHP Campus
- Bate Building on Main Campus
- Brewster Building on Main Campus

Wheel Gutters @ Stairs

- Fletcher Residence Hall stairs leading to 5th Street / Reade Street
- Science & Technology Building stairs near Founders Drive
- Jones Hall stairs leading to College Hill Drive

Bike Repair Station

- Future location within student center parking deck?

Other Considerations

- X-treme bike park proposed for Warehouse District property, until Master Plan buildings are constructed
- Wayfinding standard signage for bike parking
- Expand Building Hope program into course curriculum (Bike Repair)
- Expand Pirate Bike Share program for no-cost bikes

3. DISCUSSED OFF CAMPUS FACILITIES

Share-the-Road-Arrow

- 5th Street @ Founders Drive intersection: transition to sharrow through intersection due to center turn lane causing the removal of bike lane markings
- 5th Street @ Meade Street intersection: transition to sharrow through intersection due to center turn lane causing the removal of bike lane markings
- North Campus Loop road extend across Moye Boulevard, and connect with 6th Street @ Pitt County Government office (work with City of Greenville)

Shared Roadway / Wide Outside Lane

- 10th Street between Charles Boulevard and Elm Street: Work with City of recommend bike lanes instead, if posted speed and widths are possible (**sidepath** along south side of 10th Street?)

Bike Lane

- 5th Street existing bike lanes should be restriped and augmented with signage
- 5th Street @ Founders Drive intersection: bike lanes disappear due to center turn lane (convert to sharrow for this intersection)
- 5th Street @ Meade Street intersection: bike lanes disappear due to center turn lane (convert to sharrow for this intersection)
- Charles Boulevard: restripe to accommodate bike lanes (too narrow as constructed)
- Cotanche Street
- 14th Street near College Hill and Stadium
- Moye Boulevard on HSC

Greenway Trail

- Extend Green Mill Run Greenway from College Hill Drive westward to connect with proposed future greenway project along ECU utility easement

Other Roadway/Facility Considerations

- Posted speed limits for University area should be reviewed for possible reductions

4. DISCUSSED OFF CAMPUS AMENITIES

Bike Detection Loops

- Charles Street @ 10th Street (City or ECU property?)
- 10th Street @ Christenbury parking lot exit (traffic signal is Greenville's jurisdiction)

Yield to Pedestrian Signs (R1-6 Series) @ crosswalk

- Jarvis Street @ 5th Street crosswalk
- Rotary/Founders @ 5th Street crosswalk
- Meade Street @ 5th Street crosswalk
- Charles Boulevard @ baseball field entrance

Other Considerations

- 5th Street @ South Tar Greenway crossing (near Greenwood Cemetery) needs mid-block crosswalk treatments
- Charles Boulevard @ Oglesby Drive/baseball field entrance intersection(s): Possible traffic signal to help facilitate ped/bike crossing at existing crosswalk
- 5th Street @ Treybrooke Circle East intersection: Possible traffic signal, or mid-block crossing for ped/bike
- 10th Street intersection near Umstead Residence Hall (utility easement – future greenway) crosswalk?
- Safety and enforcement concerns between Main and Health Sciences Campuses

APPENDIX

C

East Carolina University - Bicycle Master Plan
Summary of Core Advisory Group Meeting #2
Friday March 22, 2013 – 12:00 p.m.

These lists represent discussed bike improvements from the second Core Advisory Group meeting. These are *draft recommendations only* and will be further refined into individual projects to be reviewed at the April 2013 ECU Bike Plan Open House and revised accordingly.

Recommendations are divided into four (4) groups depending upon type (**facility** versus **amenity**) and location (**on campus** versus **off campus**). Solid-color bullet points are nearest to Main Campus, and hollow bullet points are nearest to the Health Sciences Campus.

1. RECOMMENDED ON CAMPUS FACILTIES

Bike Boulevard

- Separated bike/ped paths between Austin Hall and Wright Plaza
- Separated bike/ped paths through Wright Plaza to Founders Drive
- Separated bike/ped paths from Founders Drive to Joyner Library

Share-the-Road-Arrow

- Founders Drive through Main Campus

Greenway Trail

- Downgrade Green Mill Run connector portion through ECU utility easement to Secondary Route

Sidepath

- 10th Street between Charles Blvd and College Hill Drive (refer to Broadway @ University Hill, Boulder, CO) – ECU property side

2. RECOMMENDED ON CAMPUS AMENITIES

Bike Detection Loops

- Founders Drive @ 5th Street

Bike Parking

- Joyner Library east side; southeast entrance

Covered Bike Parking

- Football stadium @ transit stop
- College Hill near Tyler Hall
- Wright Plaza near existing ATM
- Flanagan Hall east side near existing HD spaces
- Trustees Way north of residence halls
- Chancellors Way north of residence halls

- Mendenhall Student Center north side
- Future parking garage near Mendenhall Student Center south side
- Future parking garage @ Academic A building 10th Street @ Charles Blvd
  - Transit stop @ center of Health Science Campus
  - Future parking garage along MacGregor Downs

Bike Lockers

- Football station @ transit stop
- Parking lot nearest 5th St and Reade St intersection

Wheel Gutters @ Stairs

- Between Brewster Hall and Christenbury Gym stairs
- West End Dining stairs to downtown

Bike Repair Station

- Health Science Campus near future student center building

Other Intersection Considerations

- Chancellors Way @ sidewalk visibility issues
- Football stadium overpass of RR tracks for long-term

3. DISCUSSED OFF CAMPUS FACILITIES

Share-the-Road-Arrow

- Charles Street @ 10th Street entrance to campus

Shared Roadway / Wide Outside Lane

- West 5th Street connecting Health Sciences Campus with West Research Campus

Bike Lane

- 5th Street @ Founders Drive intersection (through intersection)
- 5th Street between Maple Street and Lewis Street is too narrow – possibly convert to sharrow
- Elm Street between 5th Street and 10th Street (verify onstreet parking presence)
- 14th Street between Charles Boulevard and Elm Street (instead of sharrow)

Greenway Trail

- Moye Boulevard east side (Phase III) connecting with Tar River Greenway
- Green Mill Run future greenway connection to Arlington Blvd across Evans Street

Other Roadway/Facility Considerations

- Speed along 10th Street not to exceed 35 mph
- 10th Street improvements will divert more traffic to this roadway
- 8th Street @ Cotanche Street future apartment complex development

4. DISCUSSED OFF CAMPUS AMENITIES

Bike Box

- College Hill Drive @ 10th Street

Bike Detection Loops

- Moye Blvd @ W 5th Street

Covered Bike Parking

- Future ***private*** parking garage near 8th Street and Evans Street

Other Intersection Considerations

- Treybrooke Circle @ W 5th St intersection safety
- W 5th St near Arlington Blvd intersection safety
- 14th St @ Charles Blvd intersection safety
- 10th St @ Wendell Smiley Way safety
- 10th St @ College Hill Drive possible elevated crossing
- 10th St @ College Hill Drive signal timing for bike/ped is not sufficient
- 10th St near Founders Dr (Police Dept) safety
- Charles Blvd @ 10th Street turning movements
- Charles Blvd @ future greenway, south of 14th Street safety
- Improve W Berkley Street @ RR tracks for short-term
- Charles Blvd @ baseball stadium safety

APPENDIX

D

East Carolina University - Bicycle Master Plan
Summary of Core Advisory Group Meeting #3
Wednesday August 7, 2013 – 12:00 p.m.

The following revisions were discussed and consensus was reached at the third and final Core Advisory Group meeting.

RECOMMENDED ON CAMPUS FACILTY REVISIONS

1. Include text in report "room for expansion" for all commuter storage locker projects
2. Include text in report "campus posted speed limit 15 mph"
3. #1 Remove stair gutter project; prefer #20 instead
4. #7 Relocate to courtyard of Flanaghan Hall
5. #19 Relocate between Rivers/Croatan buildings
6. #53 and #83 Not recommended due to topography constraints; recommend safe connection with College Hill Drive instead
7. #61-64 Merge into one project and re-draw more conceptually for long-term
8. #72 Trim section between buildings; this is a service drive
9. #77-78 Move to short term (Green Mill Run Greenway Phase II)
10. #84 Trim portion West of round-a-bout; this is no longer a roadway
11. #95-96 Compare existing and future roadway alignments; revise accordingly
12. Consider commuter bike lockers near North side of Rivers building @ transit stop
13. Co-locate bicycle maintenance station with #11 future parking garage
14. Co-locate bicycle maintenance station with #12 future parking garage
15. Co-locate commuter storage locker with #14 future student center
16. College Hill Drive is ECU-maintained, move off campus project to on campus
17. Create new short-term project along College Hill Drive for Sharrows
    a. Measure existing curb-to-curb width
18. Create new long-term project along College Hill Drive for Cycle-track along East-side
19. Create new short-term stair gutter project to West side of College Hill Drive; new stairs
20. Create a new medium-term project to connect Moye Blvd with HSC

RECOMMENDED OFF CAMPUS FACILTY REVISIONS

1. Consider bicycle sidepath along 14th St, connecting to Berkley Rd
2. Consider intersection improvement @ 14th St / Berkley Rd
3. Show Moye Blvd greenway connection (South Tar River Phase III) as "Future Greenway Dec 2014"
4. Consider 9th-10th-11th St recommendations to connect campuses
5. Send all off campus projects (lists and maps) to Greenville Bicycle & Pedestrian Commission

APPENDIX

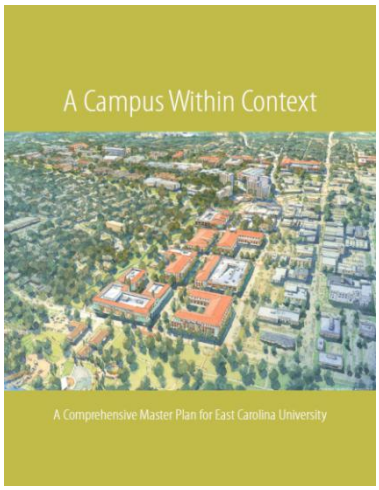
E

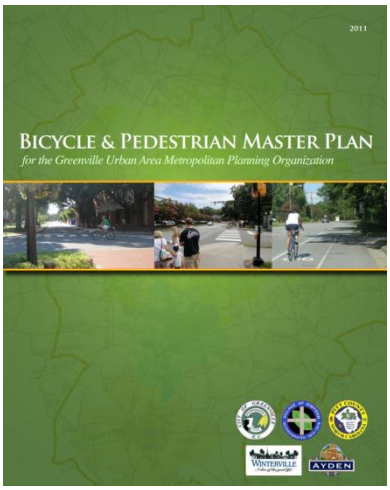
comments on needs and deficiencies, and document ideas for improvements. Discussions with staff were also incredibly informative, relating first-hand knowledge of the campus into the planning process. All of the comments received are summarized in Appendix B.

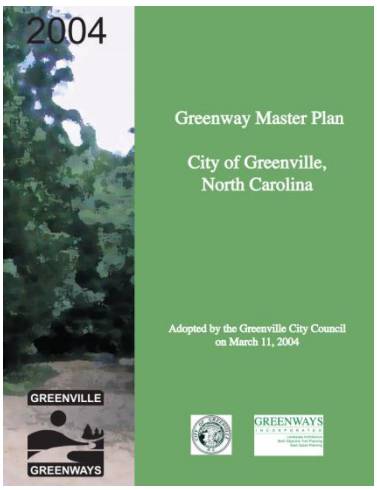
1.6 Background Resources

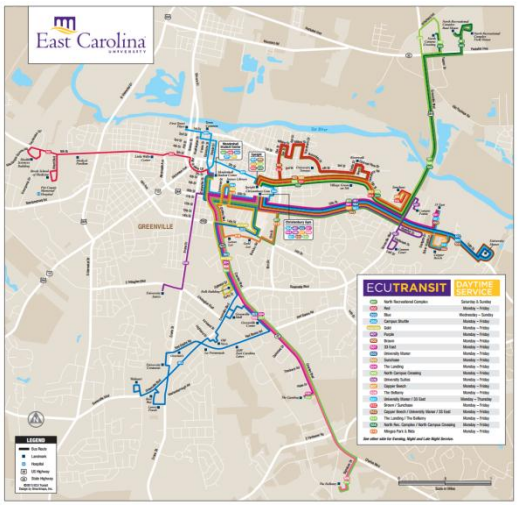
The Campus Bicycle Plan was not developed in isolation – many other plans, documents, and resources were consulted as part of the plan development process. Some of the key companion resources include:

- East Carolina University Physical Master Plan: *A Campus Within Context (2011)*
- East Carolina University Transit, *Spring 2013 System Map*
- Greenville MPO, *Bicycle and Pedestrian Master Plan* (2011)
- City of Greenville, *Greenway Master Plan* (2004)
- City of Greenville , *Greenway System* maps (through Friends of Greenville Greenways, FROGGS)
- Ongoing work of the *ECU Engineering and Architectural Services*









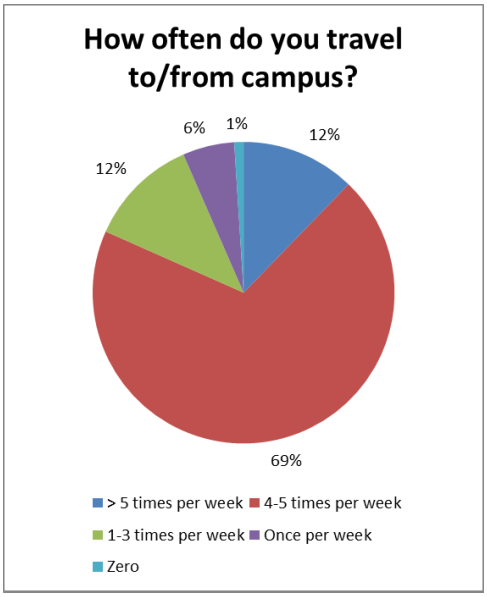
2 EXISTING CONDITIONS: *WHERE WE ARE*

2.1 Introduction

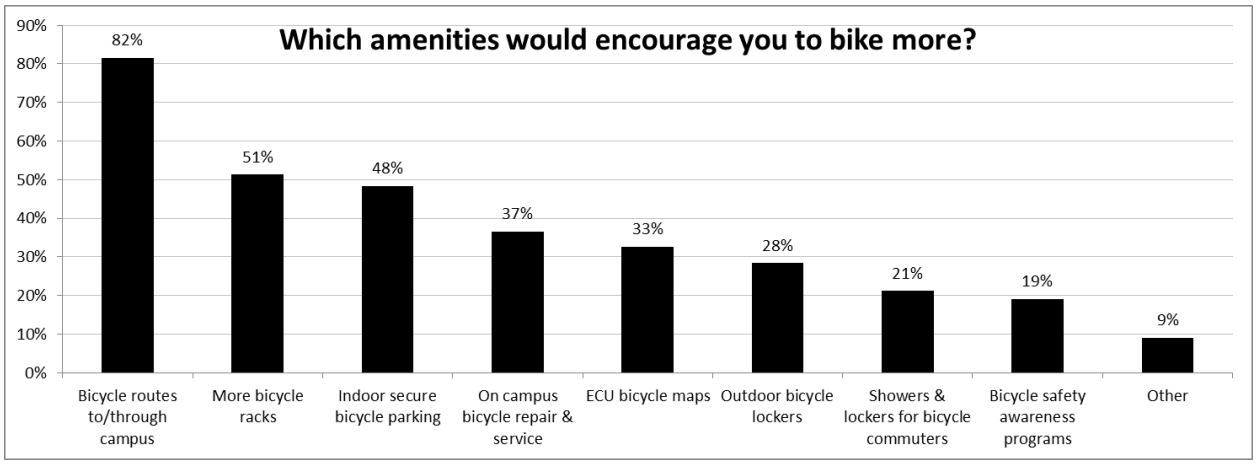
This section describes the existing bicycle facilities and programs at East Carolina. The purpose is to provide context to important social, physical, or programmatic elements of mobility and incorporate them into development of this plan.

2.2 Survey Results

An email invitation was sent to a sample of 4,500 individuals to participate in an online survey of bicycle conditions at East Carolina University. The survey remained open for approximately four weeks between March and April of 2012. Two email reminders were sent to non-respondents. A total of 703 individuals responded, representing a response rate of 15.6%. Full survey results are included in Appendix A. Key findings include:



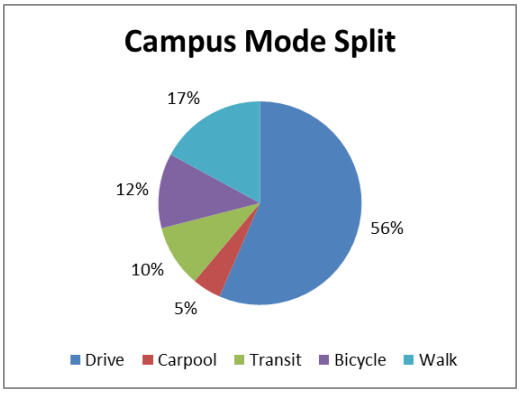
- A majority of respondents currently drive alone to campus (56%), while a smaller percentage choose to walk (17% - which likely includes a majority of the 15% who identified themselves as resident students), bike (12%) or ride transit (9%).
- Most respondents indicated they travel to/from campus more than 4 times per week (81%), while only 6% indicated they travel less than once per week.
- A majority of respondents indicated dedicated bicycle paths through campus (82%) and more bike racks (51%) would encourage them to bicycle more frequently.
- Only 46% of respondents consider bicycling on campus for daily needs as 'somewhat' or 'very' safe.



Employees routinely commute to campus each workday, and demand the highest level of convenience and flexibility from their transportation mode. This Plan is intended to limit barriers that may discourage employees from walking or biking from their homes as well as to/from campus meetings throughout the day.

Mode split

Commuter mode split is a measure of how the campus population chooses to travel, divided among the varying modes of transportation (automobile, transit, bicycling, or walking). Urban campuses with adjacent residential neighborhoods or student apartment complexes display a higher mode split for walking and biking. A robust transit system will likewise increase the mode split for riding the bus or train. The campus mode split for a typical community college, to the contrary, would rely more heavily on their personal vehicle.



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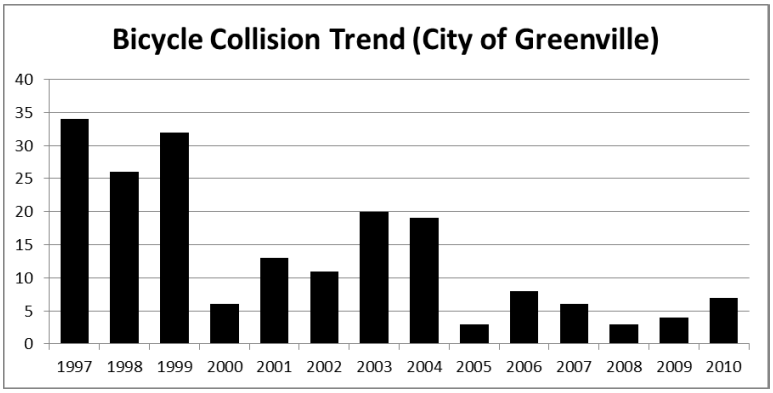

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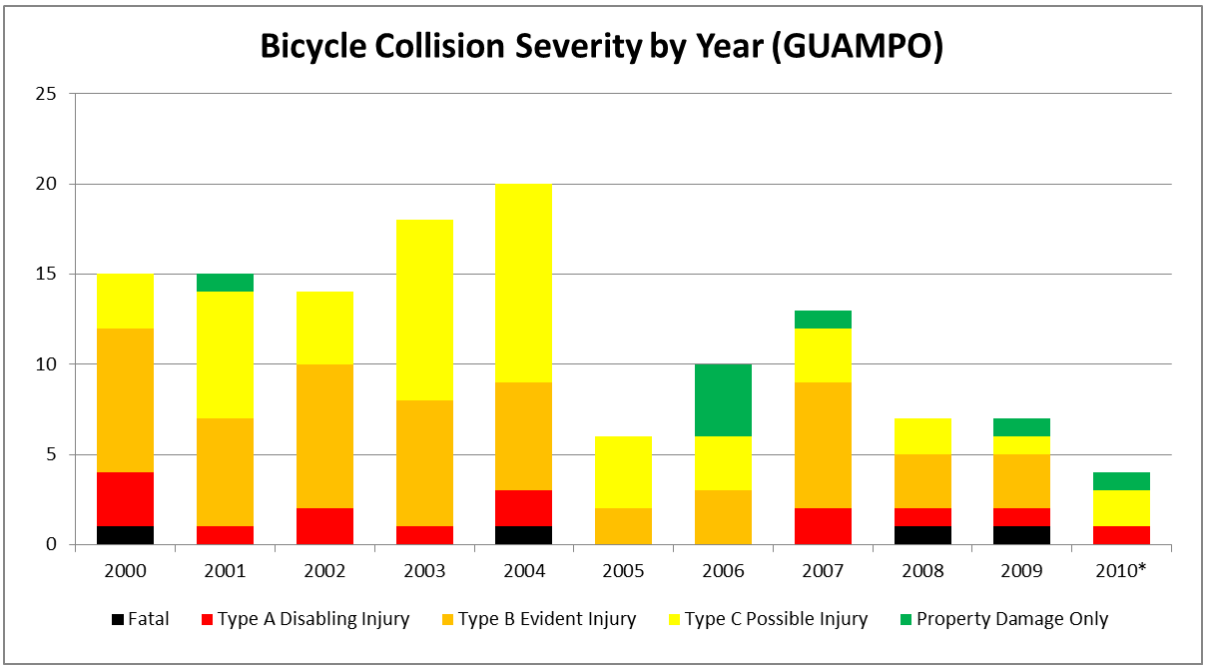

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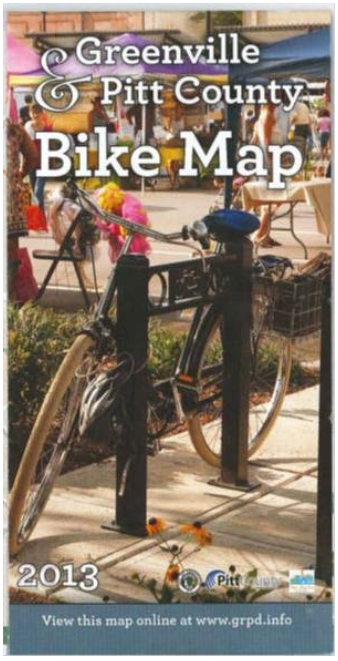
Enforcement

Enforcement of regulations and policies can be critical to maintaining a safe bicycling and walking environment. Enforcement may include basic traffic regulations for automobiles, jaywalking for pedestrians, or bicyclists riding the wrong way on campus streets or riding on sidewalks. Enforcement is especially critical at high volume intersections with conflict points and known safety issues, such as the intersection of East 10th Street and College Hill Drive. University Police can use targeted enforcement efforts at key problem areas to raise awareness and enforce applicable laws. Issuance of citations will not be necessary as a mere presence will likely alter the behavior of bicyclists on campus to ride more safely. It is also recommended that the University Police collaborate with the City Police on enforcement programs in those areas shared by multiple jurisdictions. Targeted enforcement at the beginning of the fall semester will be more beneficial to establishing safe bicycling practices throughout the school year.

Encouragement

The University distributes a Greenville and Pitt County Bike Map featuring recreation destinations as well as bicycle route suitability. The map features the regional bicycle facilities and includes insets of adjacent towns and cities. The Greenville inset map prominently displays the East Carolina University campuses, as well as amenities such as bicycle shops, restrooms, and bicycle parking locations, among others. Also included are sections relating to the rules of the road for bicyclists, safety tips, and sharing the road graphics. These maps are available from the Parking and Transportation Services office, and could be more widely distributed on campus and at local bicycle shops, and should be incorporated into new student orientation programs in parallel with any information on car parking.



Bicycle permit registrants receive a free pair of winter riding gloves simply for participating. This is merely one example of an encouragement program that will raise awareness, promote cooperation, and create a bike culture on campus. Other such programs may include a bicycle benefits club that encourages sustainability through incentives and rewards, bike-to-work

Figure 14 – Bicycle Loop Signage

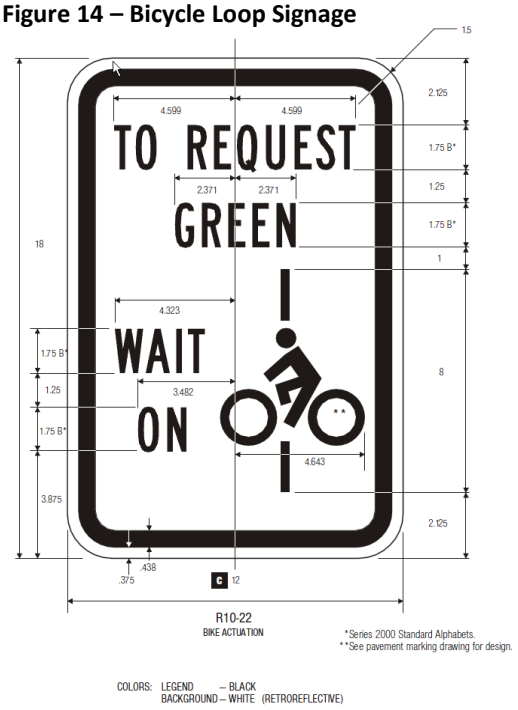


Figure 15– Bike Lane Signage

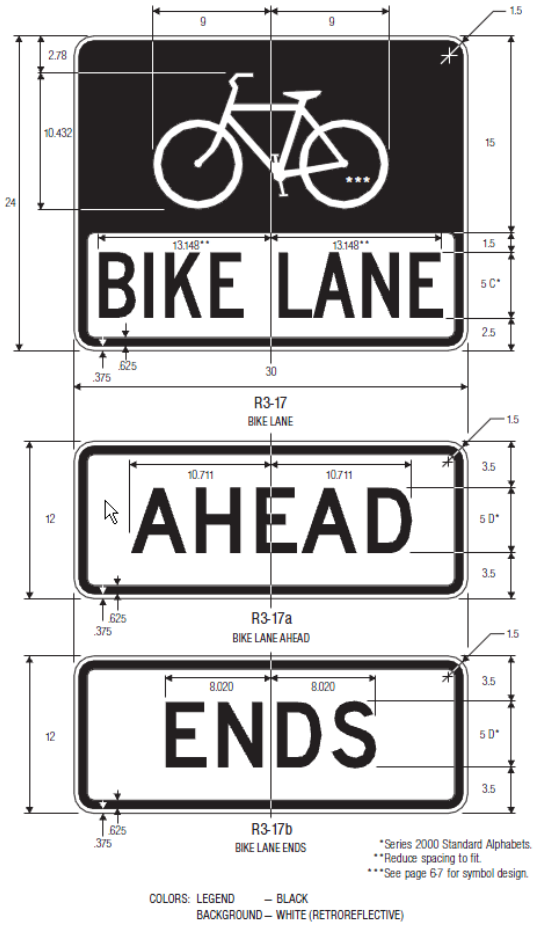
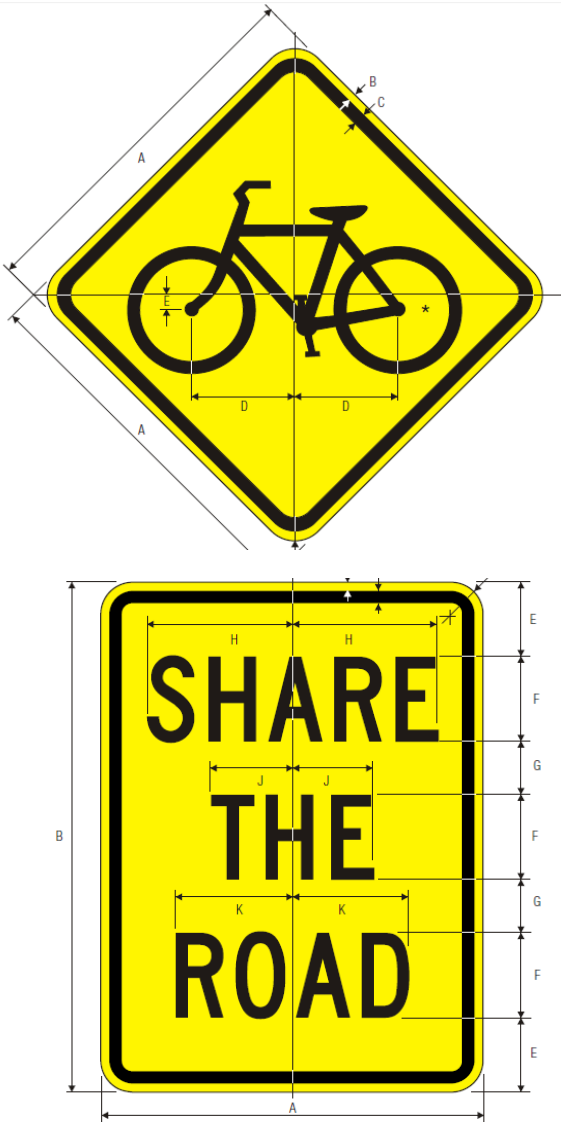


Figure 16 – Share the Road Signage



Source: MUTCD, 2009 Edition

Figure 17 – Bicycle Box Design

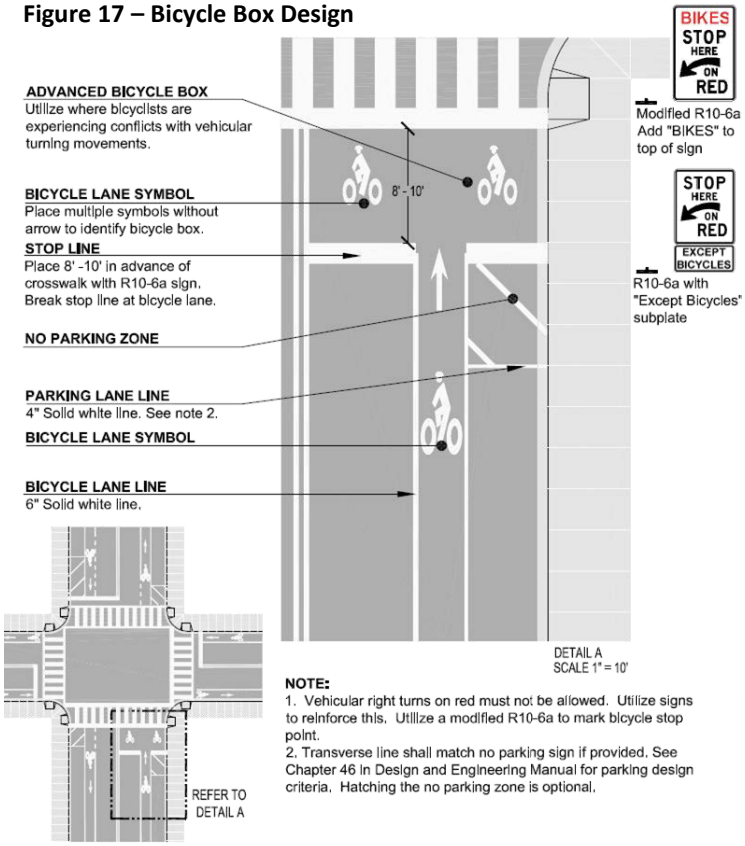
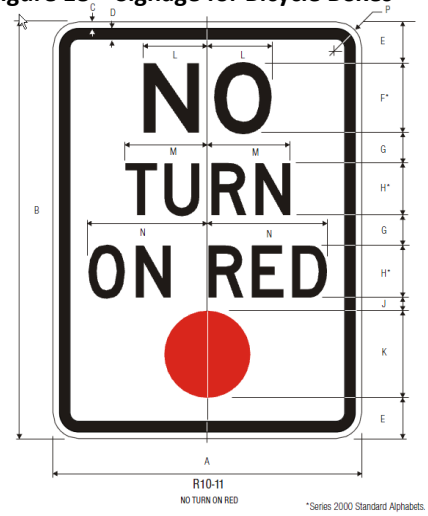


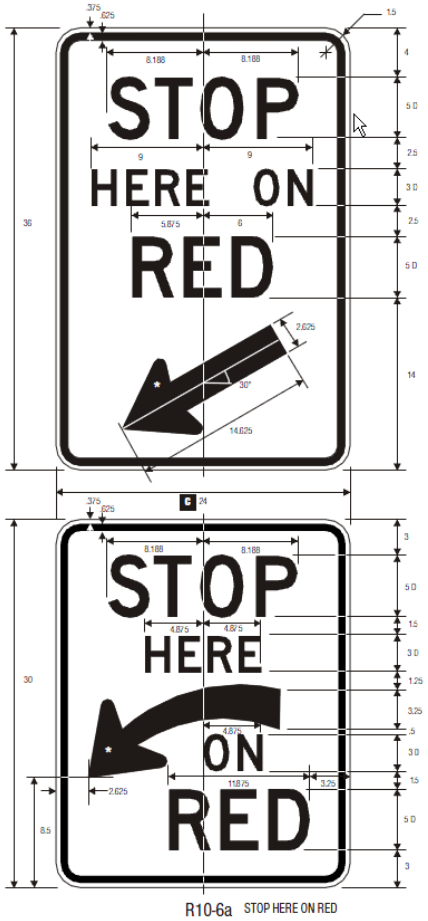
Figure 18 – Signage for Bicycle Boxes



	A	B	C	D	E	F	G	H	J	K	L
	18	24	.375	.625	2.375	4 E	1.75	3 D	.75	5	3.742
C	24	30	.375	.625	2.75	5 E	2	4 D	1.5	6	4.681
	36	48	.625	.875	4.75	8 E	3.5	6 D	1.5	10	7.491

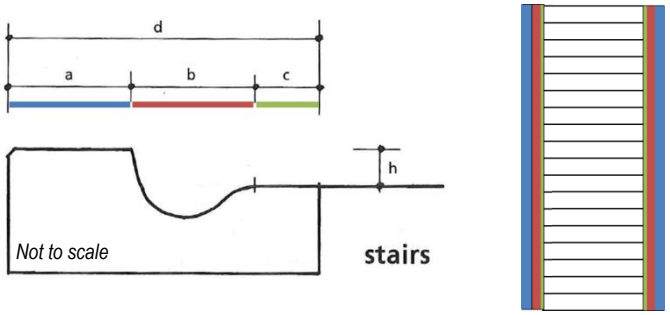
M	N	P
4.806	6.972	1.5
6.41	9.299	1.5
9.616	13.960	2.25

COLORS: LEGEND – BLACK
SYMBOL – RED (RETROREFLECTIVE)
BACKGROUND – WHITE (RETROREFLECTIVE)



COLORS: LEGEND BLACK
BACKGROUND WHITE (RETROREFLECTIVE)

Figure 19 –Stair Channel Design



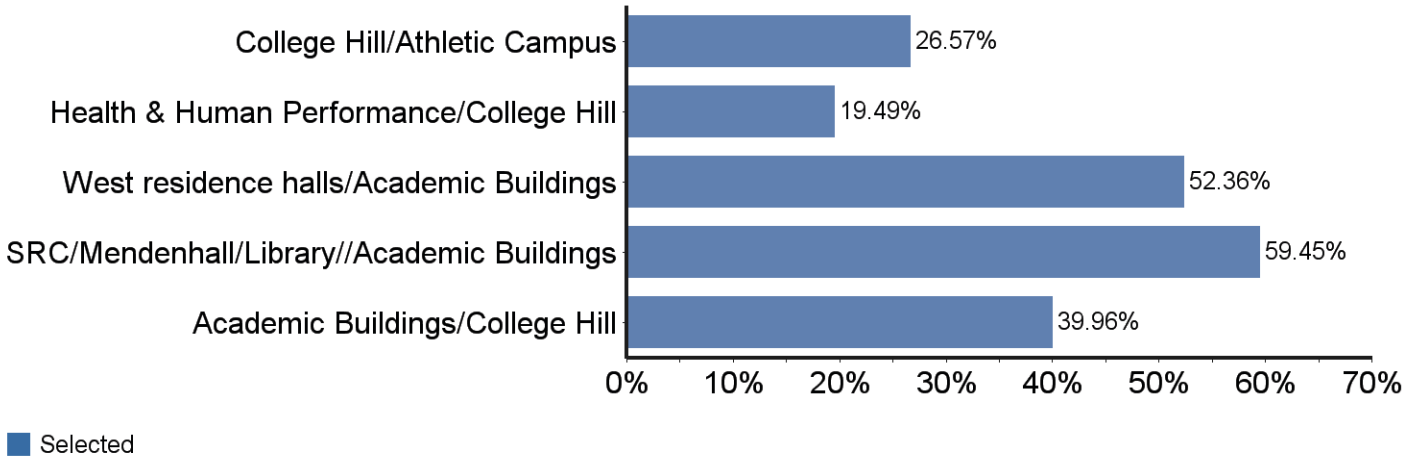
a. 8" a – Width to outside of stairs **(blue)**
b. 3" to 5" b – Width of channel **(Red)**
c. 1" to 2" c – Width between channel and stairs **(Green)**
d. 12" to 15" d – Total width of bicycle channel
h. 1 to 2" h – Height difference between stair and top of channel

Source: Design Manual for Bicycle Traffic (Netherlands)

Source: Washington D.C. DOT Bicycle Facility Design Guide

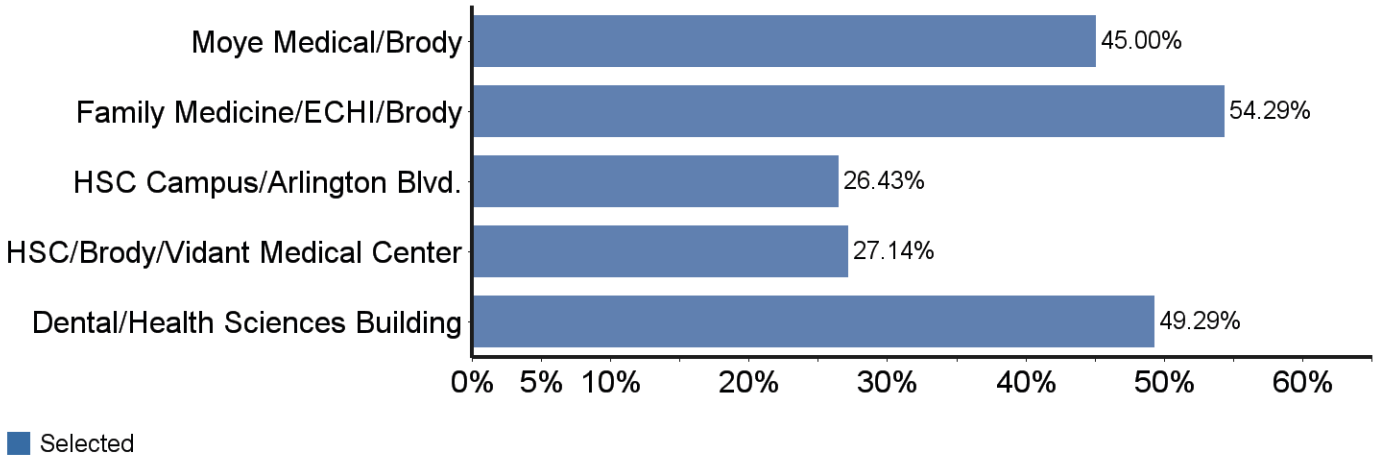
14a. Please select the areas on the Main Academic campus where you feel there need to be more dedicated bike routes.

Question	Not Selected	Selected	Responses
College Hill/Athletic Campus	373	135	508
Health & Human Performance/College Hill	409	99	508
West residence halls/Academic Buildings	242	266	508
SRC/Mendenhall/Library//Academic Buildings	206	302	508
Academic Buildings/College Hill	305	203	508



14b. Please select the areas on the Health Science campus where you feel there need to be more dedicated bike routes.

Question	Not Selected	Selected	Responses
Moye Medical/Brody	77	63	140
Family Medicine/ECHI/Brody	64	76	140
HSC Campus/Arlington Blvd.	103	37	140
HSC/Brody/Vidant Medical Center	102	38	140
Dental/Health Sciences Building	71	69	140



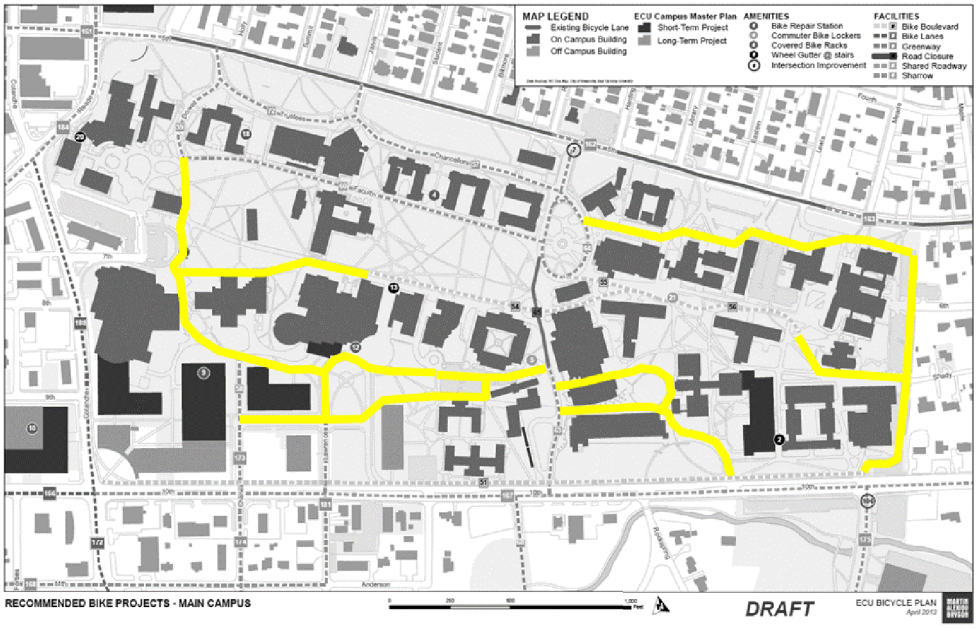
East Carolina University - Bicycle Master Plan
Summary of Open House Meeting
Wednesday April 10, 2013 – 5:00 p.m.

These lists represent discussed bike improvements from the Open House meeting. These *draft recommendations* have been refined and condensed for clarity. Recommendations are divided into four (4) groups depending upon type (**facility** versus **amenity**) and location (**on campus** versus **off campus**).

1. RECOMMENDED ON CAMPUS FACILTIES

Bike Path

- Separated bike/ped paths between Austin Hall and Wright Plaza
- Separated bike/ped paths through Wright Plaza to Founders Drive, around the north side of the Graham Building
- Separated bike/ped paths from Founders Drive to Joyner Library
- Separated bike/ped path near Howell Science Complex and Austin Building
- Bike path around the periphery of Main Campus, with no vehicle access (*see below*)
- Shared Bike/Ped path on HSC between Nursing and Dental School buildings, connecting with future east-west campus path



Suggested bike path around periphery of campus – with connections to main bike path through center of campus and utilizing existing roadway sharrows (Founders, Faculty, Trustees, Chancellors)

Share-the-Road-Arrow

- Not necessary through HSC parking lot (project #75)

Greenway Trail

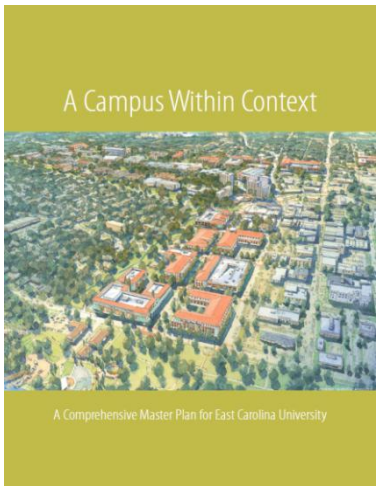
- Connect South Tar Greenway southward between 1st Street/Town Common to 5th Street through campus property, near Fletcher Residence Hall stairs

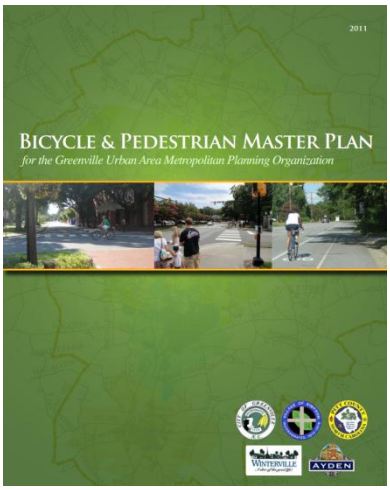
comments on needs and deficiencies, and document ideas for improvements. Discussions with staff were also incredibly informative, relating first-hand knowledge of the campus into the planning process. All of the comments received are summarized in Appendix B.

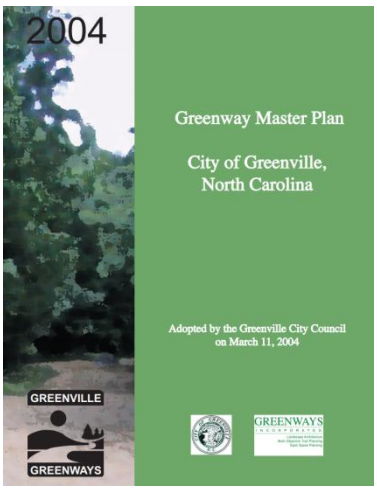
1.6 Background Resources

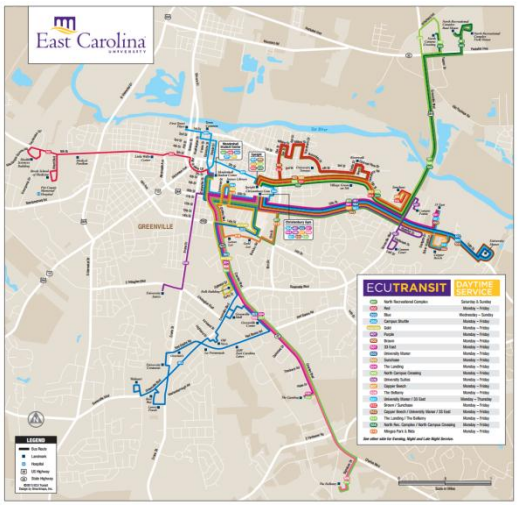
The Campus Bicycle Plan was not developed in isolation – many other plans, documents, and resources were consulted as part of the plan development process. Some of the key companion resources include:

- East Carolina University Physical Master Plan: *A Campus Within Context (2011)*
- East Carolina University Transit, *Spring 2013 System Map*
- Greenville MPO, *Bicycle and Pedestrian Master Plan* (2011)
- City of Greenville, *Greenway Master Plan* (2004)
- City of Greenville , *Greenway System* maps (through Friends of Greenville Greenways, FROGGS)
- Ongoing work of the *ECU Engineering and Architectural Services*









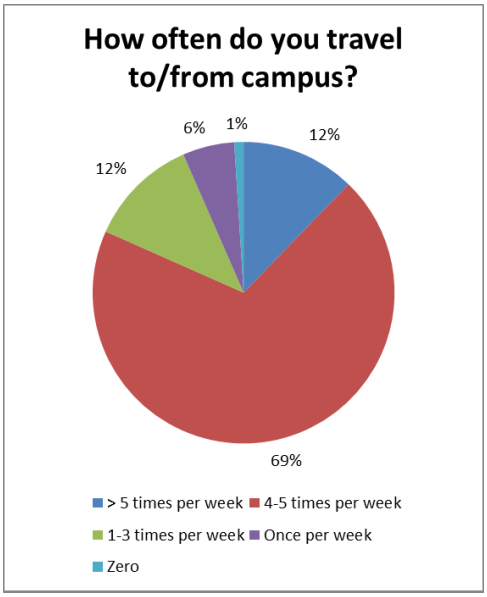
2 EXISTING CONDITIONS: *WHERE WE ARE*

2.1 Introduction

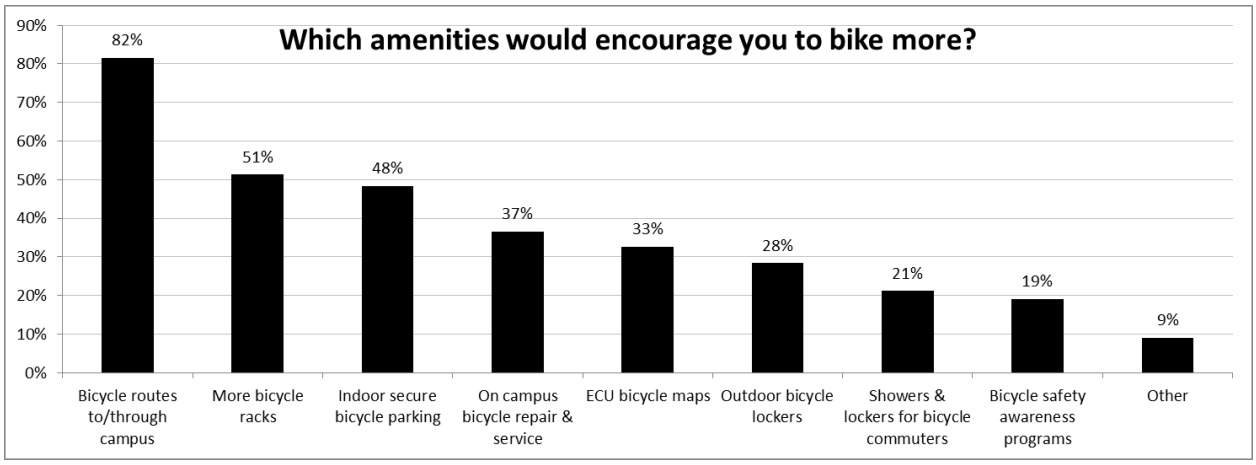
This section describes the existing bicycle facilities and programs at East Carolina. The purpose is to provide context to important social, physical, or programmatic elements of mobility and incorporate them into development of this plan.

2.2 Survey Results

An email invitation was sent to a sample of 4,500 individuals to participate in an online survey of bicycle conditions at East Carolina University. The survey remained open for approximately four weeks between March and April of 2012. Two email reminders were sent to non-respondents. A total of 703 individuals responded, representing a response rate of 15.6%. Full survey results are included in Appendix A. Key findings include:



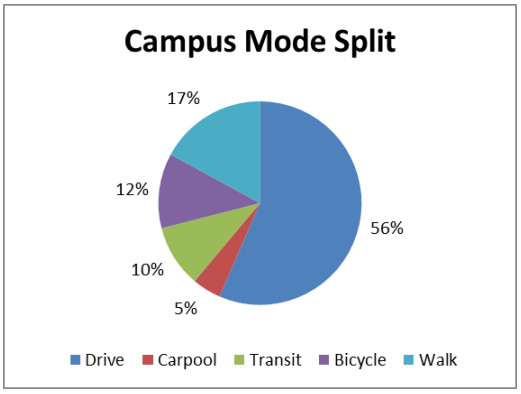
- A majority of respondents currently drive alone to campus (56%), while a smaller percentage choose to walk (17% - which likely includes a majority of the 15% who identified themselves as resident students), bike (12%) or ride transit (9%).
- Most respondents indicated they travel to/from campus more than 4 times per week (81%), while only 6% indicated they travel less than once per week.
- A majority of respondents indicated dedicated bicycle paths through campus (82%) and more bike racks (51%) would encourage them to bicycle more frequently.
- Only 46% of respondents consider bicycling on campus for daily needs as 'somewhat' or 'very' safe.



Employees routinely commute to campus each workday, and demand the highest level of convenience and flexibility from their transportation mode. This Plan is intended to limit barriers that may discourage employees from walking or biking from their homes as well as to/from campus meetings throughout the day.

Mode split

Commuter mode split is a measure of how the campus population chooses to travel, divided among the varying modes of transportation (automobile, transit, bicycling, or walking). Urban campuses with adjacent residential neighborhoods or student apartment complexes display a higher mode split for walking and biking. A robust transit system will likewise increase the mode split for riding the bus or train. The campus mode split for a typical community college, to the contrary, would rely more heavily on their personal vehicle.



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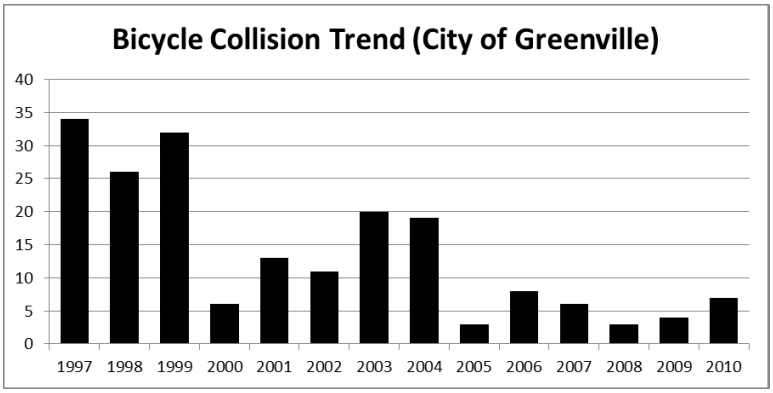

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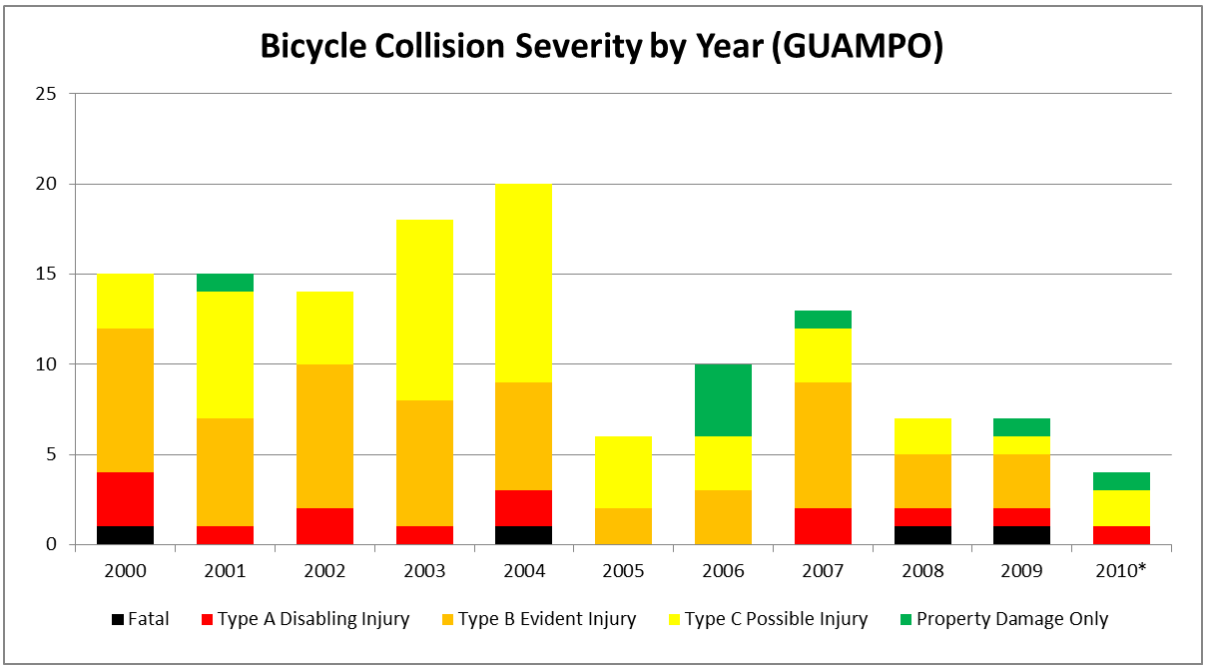

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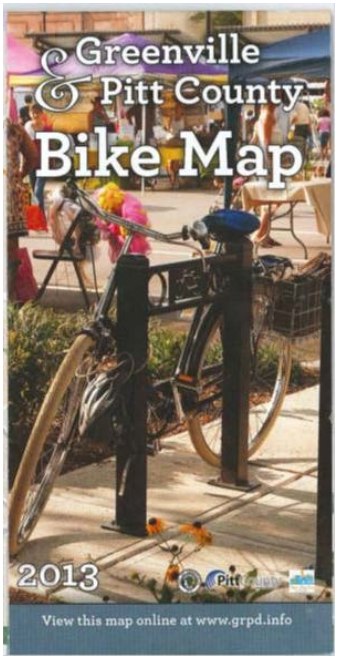
The University collaborates with City and regional partners to develop education and safety programs that benefit the University community. Current outreach programs designed for campus bicyclists include Greenville bike excursions with the Adventure Program, distribution of a regional bike safety map, a voluntary bicycle registration program to prevent theft, a bicycle rental program called Pirate BikeShare, and bike repair clinics. The University might consider a Bike Ambassador Program that uses a peer education model to promote safe cycling on campus and distribute bicycling information to the campus community through coordinated events.

Enforcement

Enforcement of regulations and policies can be critical to maintaining a safe bicycling and walking environment. Enforcement may include basic traffic regulations for automobiles, jaywalking for pedestrians, or bicyclists riding the wrong way on campus streets or riding on sidewalks. Enforcement is especially critical at high volume intersections with conflict points and known safety issues, such as the intersection of East 10th Street and College Hill Drive. University Police can use targeted enforcement efforts at key problem areas to raise awareness and enforce applicable laws. Issuance of citations will not be necessary as a mere presence will likely alter the behavior of bicyclists on campus to ride more safely. It is also recommended that the University Police collaborate with the City Police on enforcement programs in those areas shared by multiple jurisdictions. Targeted enforcement at the beginning of the fall semester will be more beneficial to establishing safe bicycling practices throughout the school year.

Encouragement

The University distributes a Greenville and Pitt County Bike Map featuring recreation destinations as well as bicycle route suitability. The map features the regional bicycle facilities and includes insets of adjacent towns and cities. The Greenville inset map prominently displays the East Carolina University campuses, as well as amenities such as bicycle shops, restrooms, and bicycle parking locations, among others. Also included are sections relating to the rules of the road for bicyclists, safety tips, and sharing the road graphics. These maps are available from the Parking and Transportation Services office, and could be more widely distributed on campus and at local bicycle shops, and should be incorporated into new student orientation programs in parallel with any information on car parking.



Bicycle permit registrants receive a free pair of winter riding gloves simply for participating. This is merely one example of an encouragement program that will raise awareness, promote cooperation, and create a bike culture on campus. Other such programs may include a bicycle benefits club that encourages sustainability through incentives and rewards, bike-to-work

Figure 14 – Bicycle Loop Signage

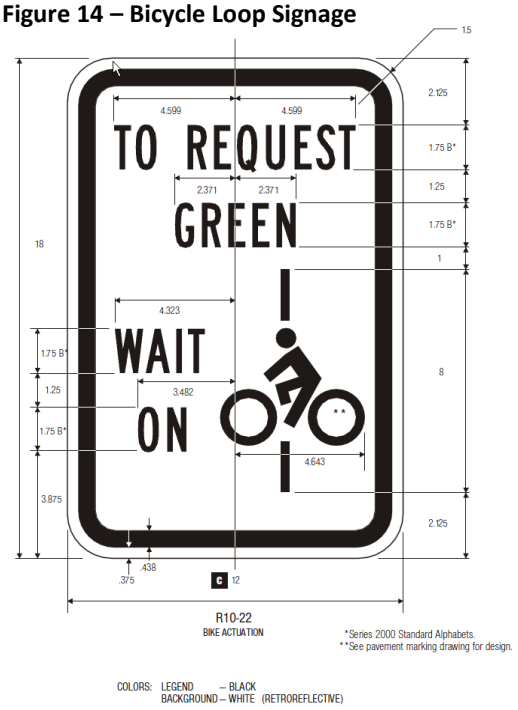


Figure 15– Bike Lane Signage

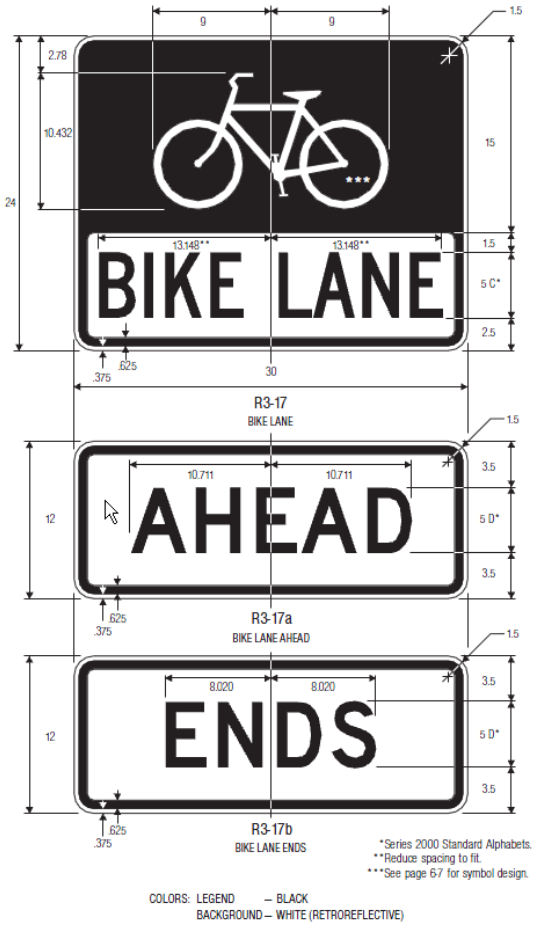
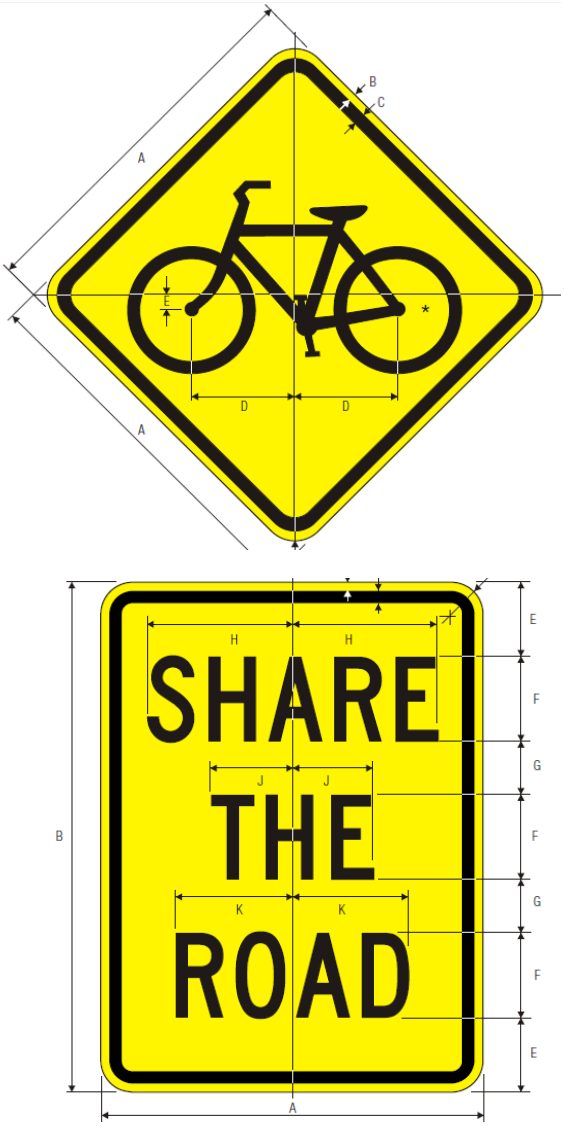


Figure 16 – Share the Road Signage



Source: MUTCD, 2009 Edition

Figure 17 – Bicycle Box Design

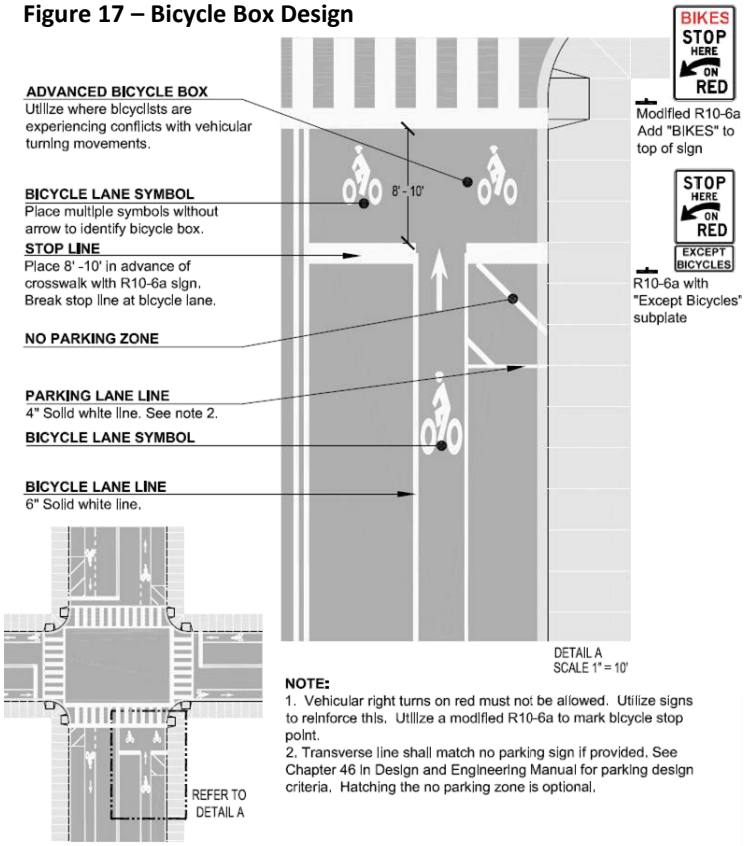
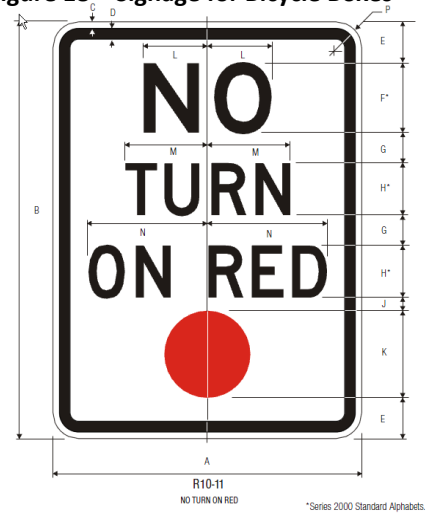


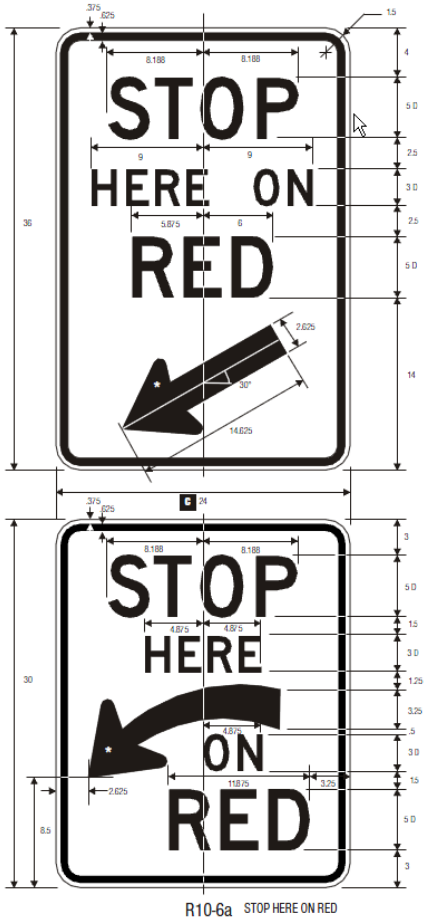
Figure 18 – Signage for Bicycle Boxes



	A	B	C	D	E	F	G	H	J	K	L
	18	24	.375	.625	2.375	4 E	1.75	3 D	.75	5	3.742
C	24	30	.375	.625	2.75	5 E	2	4 D	1.5	6	4.681
	36	48	.625	.875	4.75	8 E	3.5	6 D	1.5	10	7.491

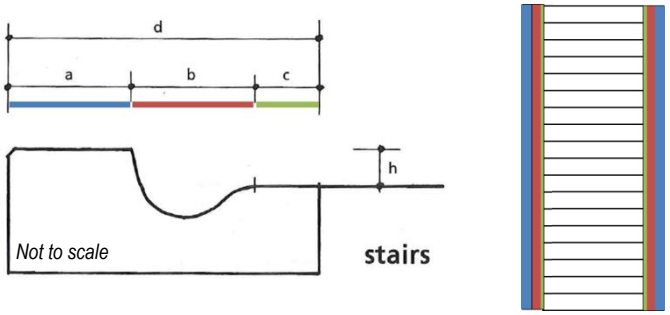
M	N	P
4.806	6.972	1.5
6.41	9.299	1.5
9.616	13.960	2.25

COLORS: LEGEND – BLACK
SYMBOL – RED (RETROREFLECTIVE)
BACKGROUND – WHITE (RETROREFLECTIVE)



COLORS: LEGEND BLACK
BACKGROUND WHITE (RETROREFLECTIVE)

Figure 19 –Stair Channel Design



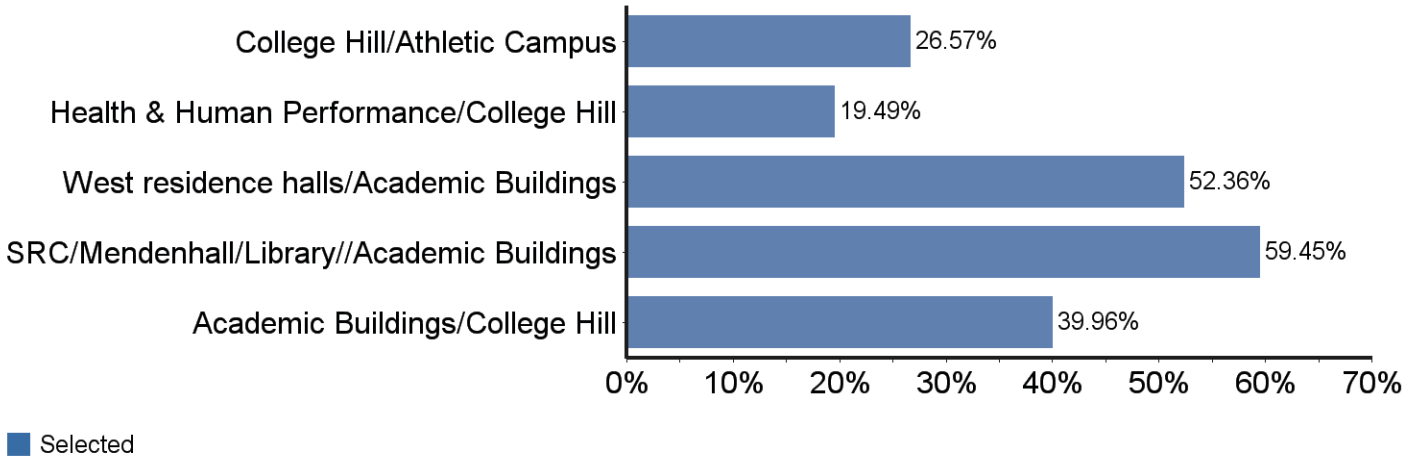
a. 8" a – Width to outside of stairs **(blue)**
b. 3" to 5" b – Width of channel **(Red)**
c. 1" to 2" c – Width between channel and stairs **(Green)**
d. 12" to 15" d – Total width of bicycle channel
h. 1 to 2" h – Height difference between stair and top of channel

Source: Design Manual for Bicycle Traffic (Netherlands)

Source: Washington D.C. DOT Bicycle Facility Design Guide

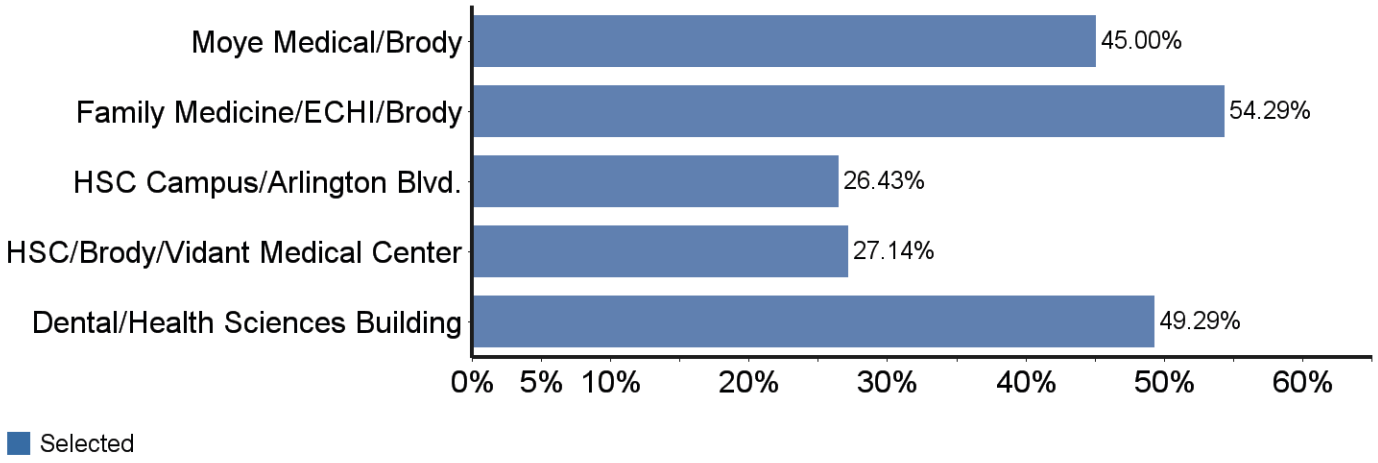
14a. Please select the areas on the Main Academic campus where you feel there need to be more dedicated bike routes.

Question	Not Selected	Selected	Responses
College Hill/Athletic Campus	373	135	508
Health & Human Performance/College Hill	409	99	508
West residence halls/Academic Buildings	242	266	508
SRC/Mendenhall/Library//Academic Buildings	206	302	508
Academic Buildings/College Hill	305	203	508



14b. Please select the areas on the Health Science campus where you feel there need to be more dedicated bike routes.

Question	Not Selected	Selected	Responses
Moye Medical/Brody	77	63	140
Family Medicine/ECHI/Brody	64	76	140
HSC Campus/Arlington Blvd.	103	37	140
HSC/Brody/Vidant Medical Center	102	38	140
Dental/Health Sciences Building	71	69	140



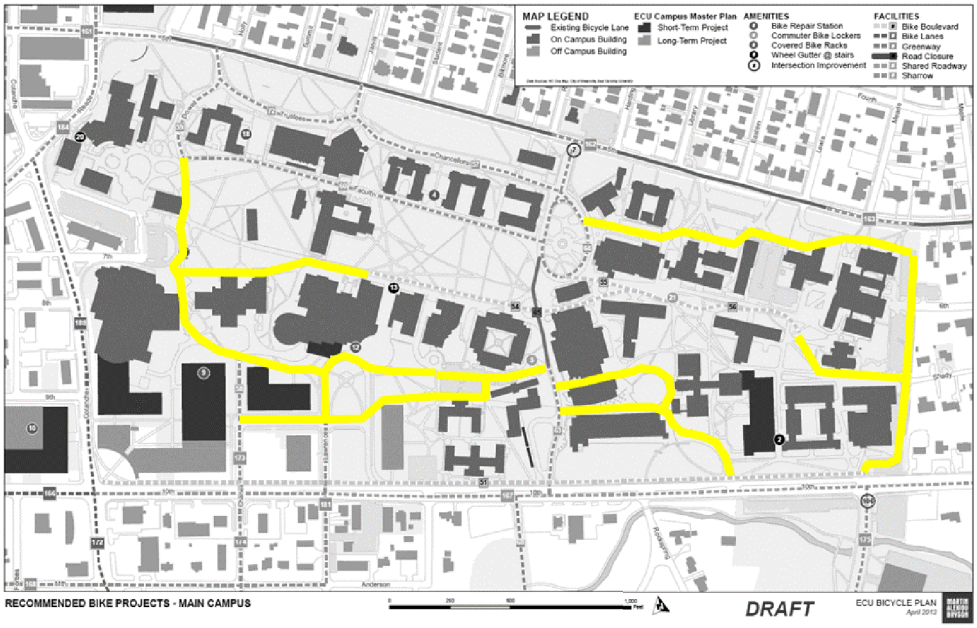
East Carolina University - Bicycle Master Plan
Summary of Open House Meeting
Wednesday April 10, 2013 – 5:00 p.m.

These lists represent discussed bike improvements from the Open House meeting. These *draft recommendations* have been refined and condensed for clarity. Recommendations are divided into four (4) groups depending upon type (**facility** versus **amenity**) and location (**on campus** versus **off campus**).

1. RECOMMENDED ON CAMPUS FACILTIES

Bike Path

- Separated bike/ped paths between Austin Hall and Wright Plaza
- Separated bike/ped paths through Wright Plaza to Founders Drive, around the north side of the Graham Building
- Separated bike/ped paths from Founders Drive to Joyner Library
- Separated bike/ped path near Howell Science Complex and Austin Building
- Bike path around the periphery of Main Campus, with no vehicle access (*see below*)
- Shared Bike/Ped path on HSC between Nursing and Dental School buildings, connecting with future east-west campus path



Suggested bike path around periphery of campus – with connections to main bike path through center of campus and utilizing existing roadway sharrows (Founders, Faculty, Trustees, Chancellors)

Share-the-Road-Arrow

- Not necessary through HSC parking lot (project #75)

Greenway Trail

- Connect South Tar Greenway southward between 1st Street/Town Common to 5th Street through campus property, near Fletcher Residence Hall stairs