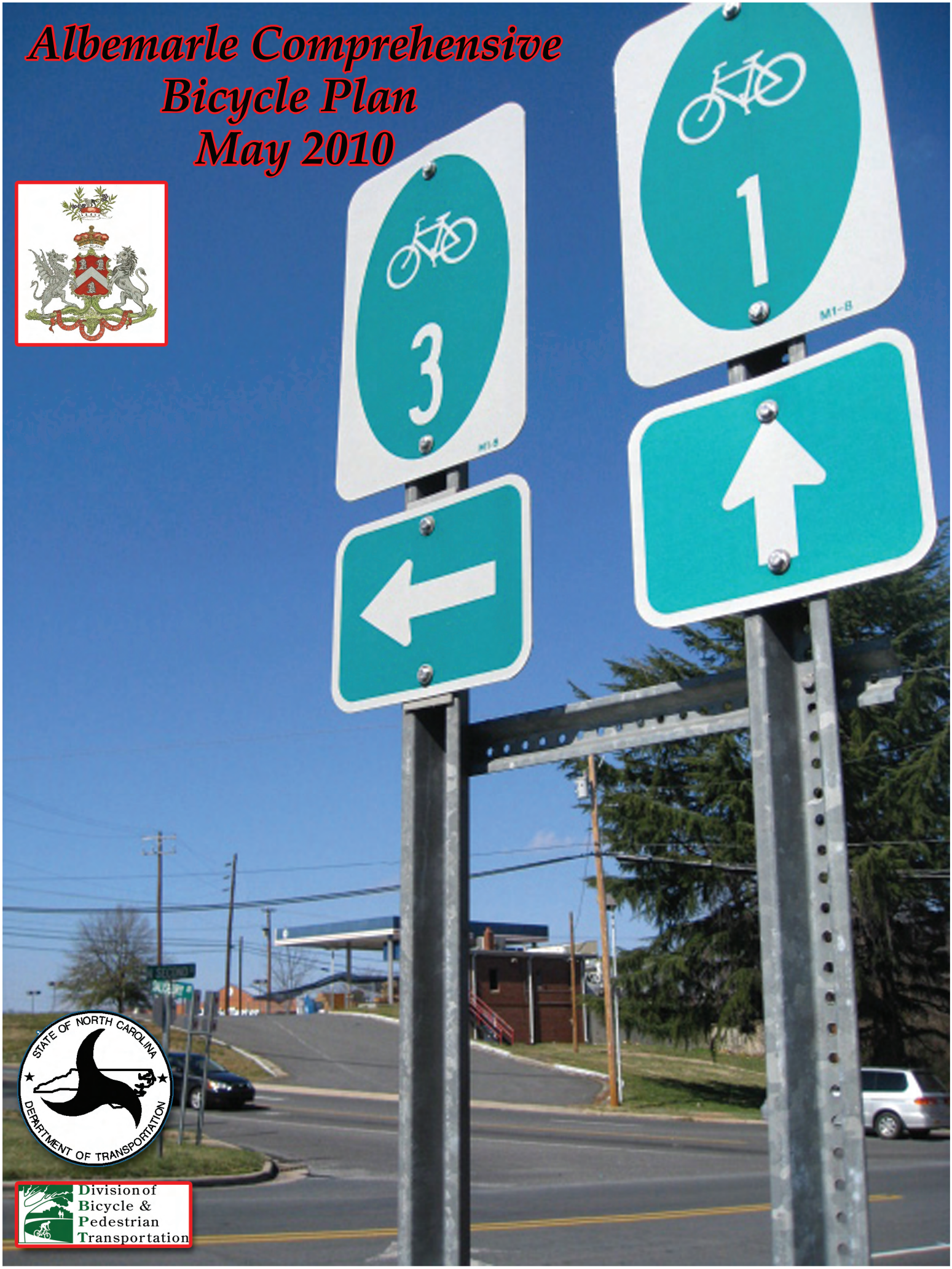
Albemarle Comprehensive Bicycle Plan
May 2010



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Division of Bicycle & Pedestrian Transportation

City of Albemarle Comprehensive Bicycle Plan EXECUTIVE SUMMARY

Albemarle's Current Cycling Environment

- Albemarle and the Uwharrie region is currently a recreational destination for many cyclists with three state bicycle routes through the City and good mountain bike opportunities.
- The existing Roger F Snyder Greenway in the City of Albemarle is expanding.
- Albemarle's downtown core and surrounding areas are reasonably connected and have wide, low speed, low volume roadways that are bicycle friendly.
- 0.19% of Albemarle's citizens commute to work by bicycle, ranking forty-fifth out of the one hundred municipalities in the state of North Carolina with a population from 5,000 to 50,000 residents.

Bicycle Plan Goals

- **Provide education and encouragement programs** for policy makers, the business community, and the general public to promote awareness of the wide-ranging benefits of bicycling.
- **Improve safety and comfort for bicyclists** with facility improvements, law enforcement, and education for motorists and cyclists.
- **Increase accessibility for bicyclists** by removing physical barriers to cycling and by creating on and off-road bikeways that connect neighborhoods to schools, parks, jobs, commercial areas, public services and to other bicycle facilities.
- **Develop sustainable policies and programs** in regards to land use, parking, development, funding, facility design and maintenance that support bicycling.
- **Include bicycling as part of the City's overall strategies to improve environmental conditions and health** by reducing air, water and noise pollution resulting from motor vehicular traffic and by increasing physical activity and the overall quality of life for Albemarle's citizens.
- **Develop facilities and programs that support and encourage on- and off-road cycling for fitness, recreation, and tourism** and support regional cycling and tourism initiatives such as the Carolina Thread Trail and area mountain biking destinations.

Bicycle Needs in Albemarle

Deficiencies in Bicycle Network

Although Albemarle has a consistent recreational cycling community, bicycle facilities for practical daily use including bicycle lanes and bicycle racks are virtually non-existent in the Albemarle area. Opportunities for safe bicycle routes and extensive off-road path networks are not yet realized. As a result, utilitarian bicycling in Albemarle is not common. Connectivity and road design around the downtown area allow for some potential bicycle routes, but connectivity barriers such as the NC 24/27 Bypass, high speed and high volume roadways such US 52, and sprawling development patterns north and south of downtown reduce agreeable bicycling opportunities City-wide.

Development designs have negative impacts on bicycling.

Congested / high speed roadways are intimidating.

Roadways have hazards to bicycles.

There is a need for more parking racks such as this one

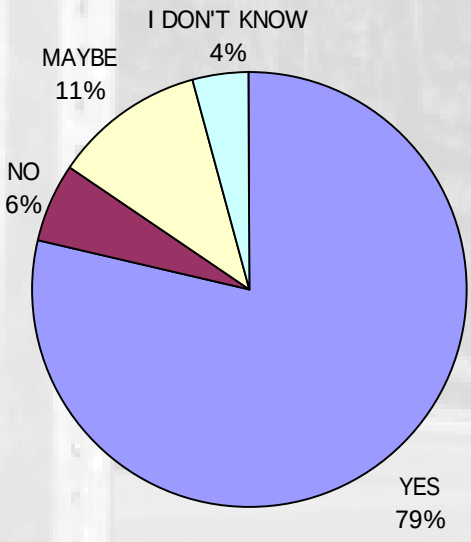
Public policy and social norms do not yet support bicycle transportation.

Summary of Public Input

A total of two public forums were held over the course of this project and an online survey was posted on Albemarle's web site. Key points raised by the public include:

- Off-road paths, on-road bike facilities, & traffic calming are desired.
- Heavy & fast traffic on roads and intersections and the lack of motorists' attention and awareness make bicycling intimidating.
- Bicycle Parking is desired, especially at schools, shopping, and public service centers.

I believe that Albemarle will benefit from having better bicycle accommodations.



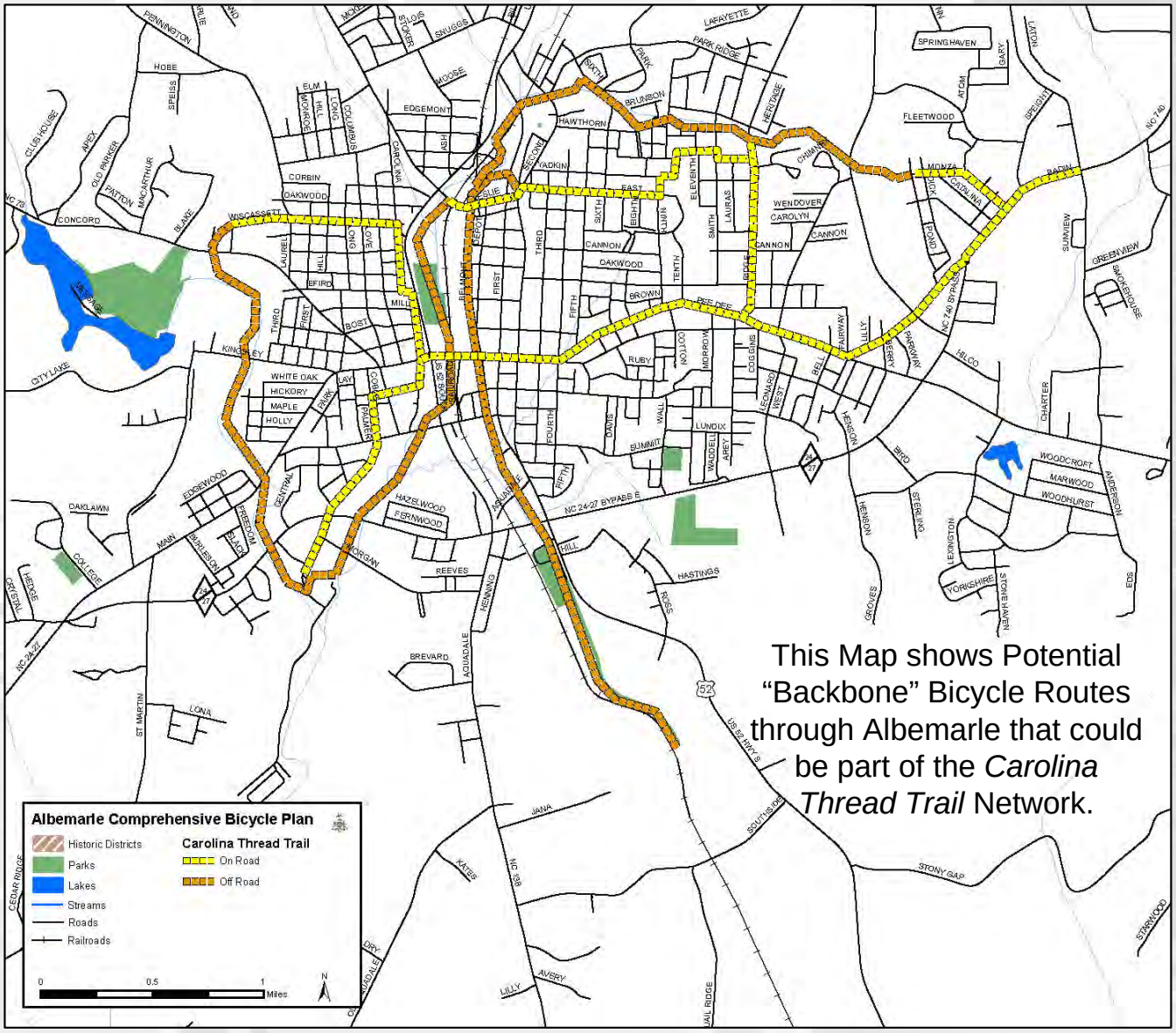
General Bicycle System Plan

A proposed regional trail known as the “Carolina Thread Trail” is envisioned to pass through Albemarle and portions of fifteen other counties in North and South Carolina. Albemarle may be the last community that users of the trail see on their way to the eastern terminus at Morrow Mountain State Park. **Preliminary studies predict a total economic gain of $1.7 billion along the trail.**

CAROLINA THREAD TRAIL
Weaving Communities Together

Tourism opportunities may be the best way to encourage multimodal transportation options such as bicycling in Albemarle. The Albemarle/Stanly County Strategic Economic Development Plan was published in December 2005 and identified tourism as one of five target industries to stimulate growth in Stanly County.

This bicycle plan recommends the creation of Albemarle’s section of the Carolina Thread Trail as the City’s top bicycling priority and as an opportunity to create tourism growth. This path can be the backbone of the cycling network in the City, while a series of on and off-road spur corridors can connect to destinations.

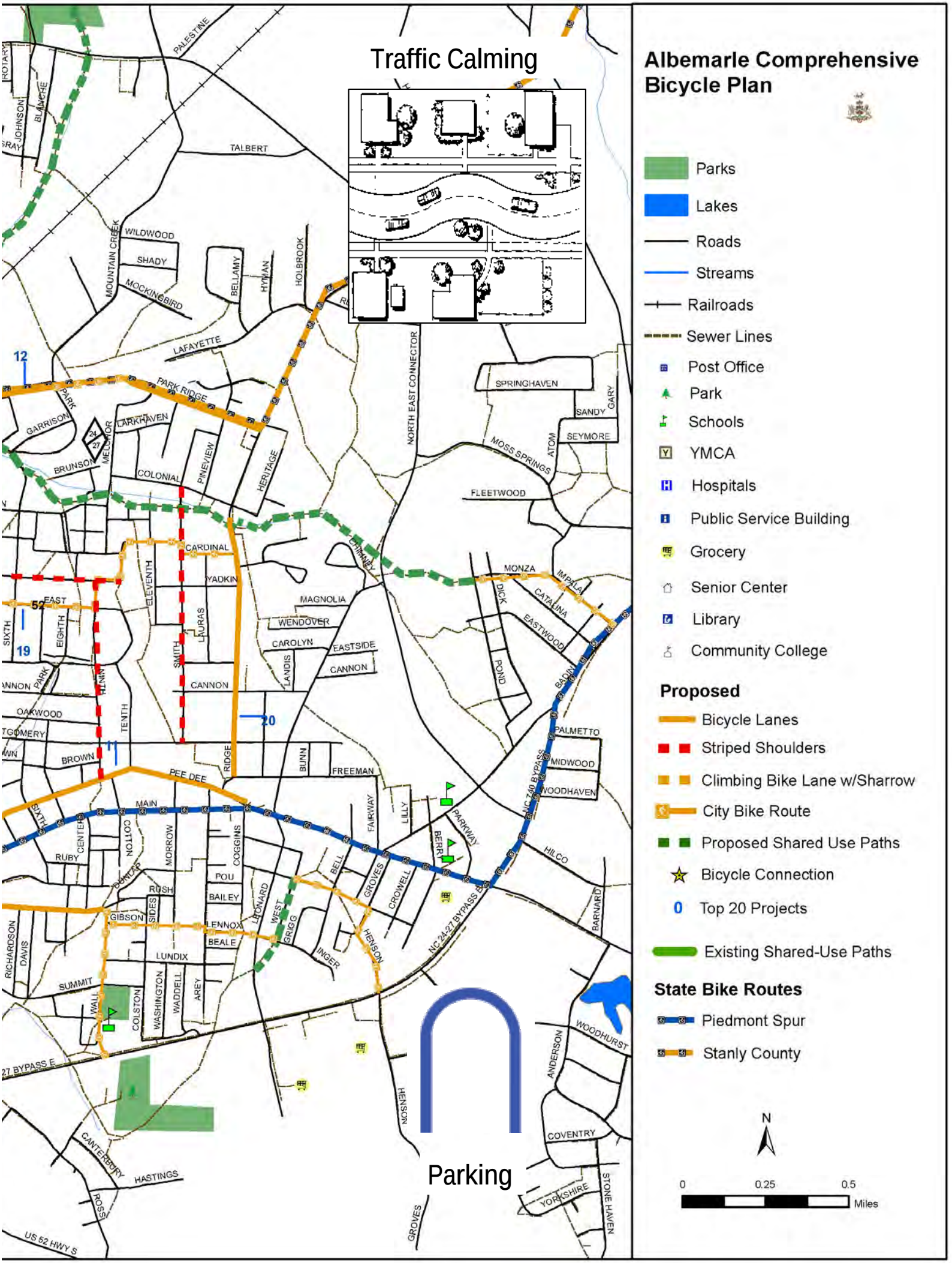


Projects

Bike Lanes

Off-Road Paths

Bicycle Routes


Traffic Calming
Parking
Albemarle Comprehensive Bicycle Plan
Parks
Lakes
Roads
Streams
Railroads
Sewer Lines
Post Office
Park
Schools
YMCA
Hospitals
Public Service Building
Grocery
Senior Center
Library
Community College
Proposed
Bicycle Lanes
Striped Shoulders
Climbing Bike Lane w/Sharrow
City Bike Route
Proposed Shared Use Paths
Bicycle Connection
0 Top 20 Projects
Existing Shared-Use Paths
State Bike Routes
Piedmont Spur
Stanly County
N
0
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Miles
PALESTINE
TALBERT
WILDWOOD
SHADY
MOCKINGBIRD
MOUNTAIN CREEK
BELLAMY
HYMAN
HOLBROOK
LAFAYETTE
NORTH EAST CONNECTOR
SPRINGHAVEN
SANDY
GARY
SEYMORE
ATOM
MOSS SPRINGS
FLEETWOOD
PARK RIDGE
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GARRISON
LARKHAVEN
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BRUNSON
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PINEVIEW
HERITAGE
CARDINAL
YADKIN
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EAST
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CANNON
LANDIS
CHIMNEY
MONZA
IMPALA
CATALINA
EASTWOOD
DICK
POND
BADIN
PALMETTO
MIDWOOD
WOODHAVEN
NC 740 BYPASS
OAKWOOD
TENTH
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PEE DEE
MAIN
CENTER
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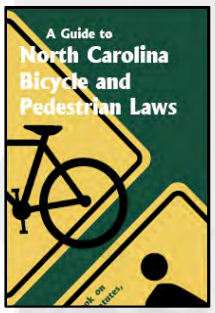
RUSH
SIDES
GIBSON
LENNOX
BEALE
LEONARD
WEST
GRIGG
BELL
GROVES
CROWELL
INGER
HENSON
BARNARD
NC 24-27 BYPASS E
RICHARDSON
DAVIS
LUNDIX
SUMMIT
WALL
COLSTON
WASHINGTON
WADDELL
AREY
27 BYPASS E
CANTERBURY
HASTINGS
ROSS
US 52 HWY S
ANDERSON
WOODHURST
COVENTRY
YORKSHIRE
STONE HAVEN

Programs

A variety of programs are recommended to enhance the overall cycling environment by educating and encouraging citizens, by enforcing laws that protect bicyclists, by increasing transportation options, and by maintaining the safety levels of the roadways to help establish a bicycling "culture" in Albemarle. Examples of beneficial programs are highlighted below:

Education Programs



Child and adult education programs, maps, wayfinding signs, positive public marketing, and other programs across the United States have been responsible for an increased awareness and an increase in safety for bicyclists. Bicycling requires a certain learned physical skill, and the mix of bicycling with automobile traffic requires essential additional knowledge.

Encouragement Programs

Safe Routes to School programs, "Bike to Work" weeks, shared bicycle programs, and recognition awards could encourage the public to bicycle. One valuable program, Safe Routes to School, can be initiated to help create a better bicycling and walking environment for school children.

Enforcement Programs

Continued police enforcement of traffic laws is always necessary. Albemarle's Police Department should be particularly encouraged to ticket motorized violators in popular pedestrian and bicycling areas, as well as cyclists who violate the law.

Transit Interface

Providing alternate forms of transportation such as transit can increase the reach of any bicycle trip. Albemarle's growth may increase the need for improved transit service in the future. Each bus in any future Albemarle fleet should have bike racks, and primary transit stops and stations should have bicycle parking and connecting roadway accommodations for bicycles.

Maintenance Programs

Just as potholes, uneven pavement, and visual obstructions irritate automobile drivers, these do the same to bicyclists. Roadway margins should be free of cracks, splits, or crumbled pavement and storm grates should be relatively level with the asphalt and have grates perpendicular to the curb. Annual funding will be set aside for spot improvement maintenance that improve bicycle accommodations and any available state or federal funding will be pursued to correct any gaps in its existing network and to retrofit ADA specific accommodations.

Policies and Ordinances

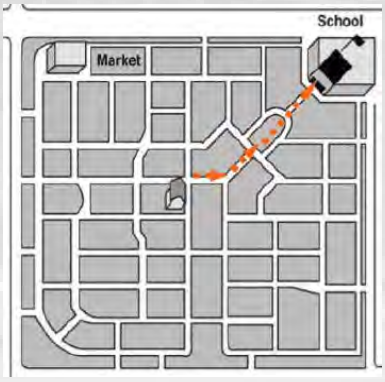
Land use policies and regulations of the last half of the 20th Century have discouraged bicycle and pedestrian-friendly roadways and development and have encouraged automobile use. The recommendations provided in this plan are intended to create more transportation options to Albemarle's residents and create a more complete street system.

"Complete" Street Design

By policy, Albemarle's streets should all be designed to completely accommodate all types of transportation users including automobiles, transit, bicycles, and pedestrians. The provision of transit, bicycle and pedestrian facilities shall be embraced by policy as a primary element in accommodating travel demand and relieving congestion on all new streets in the City of Albemarle and before street projects are undertaken.

General Policy Recommendations

- New residential development of two dwelling units per acre or greater must have a grid-like or interconnected curvilinear street pattern designed for travel speeds of no more than 25 miles per hour with block lengths preferably no more than 660 feet in distance. These block separations may be streets or 10-12 foot wide paths for pedestrian and bicycle users.
- New commercial development must be oriented to the street and include reasonable connections from the development to the external bicycle network in the public right-of-way.
- Cul-de-sacs will not be permitted unless geographic or other natural barriers exist that make connections unrealistic. A developer may create a cul-de-sac or a close if an acceptable bicycle and pedestrian connection is created with a 10-12 foot wide paved path that is built to standards set forth in this plan for multi-use paths.
- New developments must connect to neighboring developments and provide a future connection option for future developments.
- All new developments and road projects must include bicycle accommodations in street design and construction. Plans for roadway construction must not compromise projects and concepts brought forth in the Comprehensive Bicycle Plan.
- New and refurbished developments should include long term or short term bicycle parking by policy.
- Any new development where there is a bicycle project mapped from the Comprehensive Bicycle Plan must include that project to a functioning level according to guidelines.
- New developments should include public green/open space.
- All new and rehabilitative local, state, and federal road and bridge project planning and construction projects must consider and include any reasonable non-motorized accommodation for both pedestrians and bicycles.
- A policy statement should be made that the preferred method of transportation of children to Albemarle's schools is non-motorized (walking, bicycling, skating, etc.)
- The locations of post offices, health departments, Social Security offices, parks, libraries, police stations, abuse care centers, courts, DMV offices and other civic facilities should be in a location where non-motorized access is a top priority.



Implementation

Infrastructure Project Summary

To help narrow the immediate focus for the City in the implementation of bicycle projects, subsets of *Phase 1* and *Phase 2* projects were designated based on the top 20 scores tabulated as part of a prioritization process of each of the identified projects. Focusing initially on the Phase 1 projects will enable the City to implement those that will have the most benefit to cyclists in the area now, while building desire and support for additional future development of the bicycle network.

Phase 2 projects could be implemented sooner if the need, resources or opportunities become available.

The top 20 projects are ranked and tabled below and shown on the project map:

Rank	Priority	Description of Improvement	Roadway / Location
1	Phase 1	Bike Lanes with Road Diet	Salisbury Avenue from US 52 to N. 2nd St.
2	**Phase 1**	Shared-Use Path	Abandoned RR (Old Mill) from N. 2nd St. to N. 3rd St.
3	**Phase 1**	Bike Route	SRMC to MLK Dr. via. 4th and 3rd Streets
4	**Phase 1**	Shared-Use Path	Abandoned RR from Salisbury Ave. to W. Main St.
5	**Phase 1**	Shared-Use Path	Abandoned RR from existing Greenway (W. South St.) to Old Aquadale Rd.
6	**Phase 1**	Bike Lanes with Road Diet	S. 1st / S. 2nd St. from South St to Rock Creek Park
7	**Phase 1**	Bike Lanes with Road Diet	W. Main Street from US 52 to S. Depot St.
8	**Phase 1**	Sharrows	Main St. from Depot St. to Pee Dee Ave.
9	**Phase 1**	Shared-Use Path	Little Long Creek from W. Main St. to Coble Ave.
10	**Phase 1**	Bike Route	From the int. of Rogers St. & Carolina Ave. to the int. of Coble Ave. & Commerce St.
11	Phase 2	Bike Lane Striping	Pee Dee Ave. from 4th St. to Ridge St.
12	Phase 2	Bike Lane Striping (with a segment of sharrows)	Park Ridge Road from N. 6th Street to Melchor Rd.
13	Phase 2	Shared-Use Path	Melchor Branch Creek sewer line from Little Long Creek to Monza Drive
14	Phase 2	Shared-Use Path	Little Long Creek sewer line from Morehead Park to Salisbury Ave and the Abandoned RR from Salisbury Ave. to N. 2nd St.
15	Phase 2	Climbing Bike Lane with Downhill Sharrows	Wiscassett St. from Laurel St. to Carolina Ave.
16	Phase 2	Shared-Use Path	Long Creek Sewer from Rock Creek Rd. to Coble Ave.
17	Phase 2	Bike Lanes, Bike Route, and Shared Use Path	MLK Dr., Wall Street to 24/27, Inger St to Henson St. and the sewer path to Leonard St.
18	Phase 2	Bike Lane Striping	NC 73 from Rock Spring Rd. to W. Main St.
19	Phase 2	Bike Route	East St. (and others) from N. 2nd St. to Ridge St.
20	Phase 2	Bike Lane Striping	Ridge Street from Colonial Dr. to Freeman Ave.

THE CITY OF ALBEMARLE COMPREHENSIVE BICYCLE PLAN

ADOPTED MAY 17, 2010

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ACKNOWLEDGEMENTS

The North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation has funded 92 municipalities to date with the *Bicycle and Pedestrian Planning Grant Initiative* since 2004. This is a tremendous service to the citizens of Albemarle and to residents and visitors to the state of North Carolina.

The following people served on the steering committee for this plan. This plan would not have been possible without their knowledge of Albemarle's cycling issues, their outstanding attendance, and their thoughtful comments.

Eddie Baldwin, Albemarle Public Housing
Tracey Bristol, Middle Ring Cycles
Brian Bristol, Middle Ring Cycles
Scott Cole, NCDOT Division 10 Traffic Engineer
John Fields, Stanly County YMCA
David Hunt, Albemarle Police Department
Charles McComas, Uwharrie Wheelmen
Jon Mendenhall, City of Albemarle
Pokie Noland, Stanly County Schools
Alissa, Stanly County Schools
Bob Sasser, Albemarle Planning & CD
Dana Stoogenke, Rocky River RPO
Toby Thorpe, Albemarle Park & Recreation
John Vine-Hodge, NCDOT Bike & Pedestrian Division
Oliver Webster, Albemarle Park & Recreation

In particular, the City of Albemarle staff, lead by Toby Thorpe with the Park and Recreation Department, was phenomenal in respect to helping to create this plan. Their dedication to project implementation possibilities and organizing public input opportunities was impressive and The City of Albemarle should be proud to have such a staff.

In addition, Mayor Whitley, City Council, and City Manager Ray Allen deserve recognition for their initiative to help fund and adopt this plan.

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Introduction

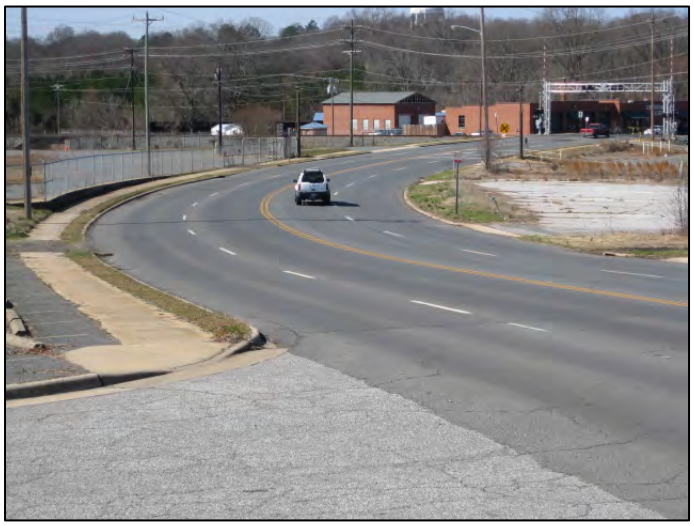
1.1. PURPOSE AND NEED

Albemarle is ready to become a bicycle-friendly community. Mild temperatures and a compact city center surrounded by nearby rural roads provide the foundation for a pleasant bicycling environment. In addition, Albemarle is well positioned to take advantage of the growing bicycle and tourism initiatives in the region that will build the local tourism industry and bring additional cycling dollars to the area. The eastern end of a proposed 15-county regional trail known as the "Carolina Thread Trail" is envisioned to pass through Albemarle and connect to Morrow Mountain State Park. This trail is expected to generate millions of dollars annually to local economies. Albemarle has put itself in a good position for these positive impacts by completing the first phases of the Roger F. Snyder Greenway. The Thread Trail effort will complement other on-going efforts to create a national mountain biking destination in the vicinity of the Uwharrie State Forest.

Albemarle is moving ahead with its greenway system

As a step in the process of becoming a more bicycle-friendly community, the City of Albemarle applied for and was awarded a North Carolina Department of Transportation (NCDOT) Pedestrian and Bicycle Planning Grant Initiative matching grant of $31,850 to create this comprehensive bicycle plan. This plan will build upon local initiatives and policies, as well as recommendations in Albemarle's 2006 Pedestrian Master Plan, and provide a framework for creating a safer and more usable bicycle network in Albemarle.

Issues and Trends for Bicycling


Albemarle's roadways are designed for the automobile, and not for pedestrians and bicyclists.

Americans have a love affair with their cars and Albemarle is no exception. The automobile has defined who we are in this region and in this nation. It has contributed to much of our growth, success, and mobility, but also to the land use patterns that make other methods of travel challenging. The bicycle offers the most efficient transportation option for short trips of one to three miles that are too far to walk. Replacing the automobile for these most-easily bicycled distances may help combat some of the air pollution, public health/obesity, and suburban sprawl issues that Albemarle and other cities are experiencing. Public input collected for this plan shows that people of Albemarle want more comfortable places to bicycle and more bicycle-friendly facilities for transportation, recreation, and fitness.

Despite our recent love affair with the car, a great deal of credit for the first paved roads in our country should be given to early bicyclists. Bicyclists, known then as "wheelmen," were challenged by rutted roads of gravel and dirt in the late 1800s. In an effort to improve riding conditions, more than 100,000 cyclists from across the United States joined the League of American Wheelmen to advocate for paved roads. Their success ultimately led to our national highway system.

Although popular culture once viewed bicycling as both stylish and as a viable transportation mode, these feelings have generally changed. Cycling for one's transportation needs is often perceived by the public as either deprived or juvenile and popular culture consequently considers the bicycle to be a toy or a fitness tool only, or in some cases even an object of ridicule. This leads to the improper impression that bicycles do not have rights to the roadways as other vehicles do. Fortunately, these attitudes are beginning to change in favor of cycling in popular perception as environmental issues and the cost of transportation and energy increase. Up to a point, adding pathways, increasing safety, and creating pleasurable routes in Albemarle will increase cycling. But societal norms in the region may determine how easily, quickly, and fully this is realized. Therefore, the City's full support of bicycling will be necessary to encourage cyclists to use the local roadways, greenways, and parks and to ensure that it becomes a socially acceptable form of transport as well as a form of recreation.

A bicyclist walking along the shoulder of W. Main Street in Albemarle

Quick Bicycling Facts

- Half of all US automobile trips are three miles or less, easy distances for walking and bicycling. *(Clarke, A. National Household Transportation Survey, 2001.)*
- 50% of American adults do not get the recommended amount of physical activity for good health and approximately 200,000 to 300,000 premature deaths occur each year in the United States because of physical inactivity. *(Center for Disease Control, 2006)*
- 52% of Americans want to bicycle more than they do now. *(America Bikes Poll, date unknown)*
- Because emission rates are high during the first few minutes of vehicle operation reductions in longer trips provide modest pollution emission reductions. Reductions in the number of short vehicle trips can provide relatively large pollution emission reductions. *(Transportation Demand Management Encyclopedia, 2007)*
- Bicycle friendly communities generally have high property values and residents rate the quality of life higher. *(League of American Bicyclists, www.bicyclefriendlycommunity.org)*
- While 70 percent of students walked or rode bicycles to school in 1977, only 22 percent of children walked or rode bicycles to school in 2002. (*www.thefutureofchildren.org*)
- Multiple nationwide studies indicate parks, greenways, and trails increase the resale value of nearby properties by 5 to 20 percent, *(Mecklenburg County Park and Recreation web site, 2006)* and 57% of home buyers rank walking and biking trails as their most desired amenity, ahead of ball parks and outdoor pools. *(National Home Builder, 2004)*
- The average American directly spends around 20% of their salary on transportation. This does not include the numerous extra shared public and commercial costs. (*AAA, 2005 & Bureau of Labor Statistics, 2003*)
- 45% of people in August of 2005 spent less on other things to pay the increase in gas prices that year (*ABC News Poll, 2005*) and the steep increase in gas prices from then to 2008 actually made Americans drive less for the first time since the 1970s and caused a decrease of more than 1,000 traffic related deaths per month because of changed driving habits according to a University of Alabama and Harvard Medical School study.
- Regions with transportation choices such as walking, biking and mass-transit are the most economically productive and competitive, while those that are limited to the automobile tend to have reduced regional economic development. (*World Bank, no date*)
- Traffic calming, mixed-use zoning and pedestrian and bicycle projects can increase private investment substantially along previously automobile-dominated roads. (*Engineering News Record, 1998*)

Benefits of Bicycling

Transportation Benefits

Bicycling can help to reduce roadway congestion. Gridlocked streets waste time and energy, increase transportation costs, and result in driver frustration. Bicycling requires less space per traveler than automobiles and roadway improvements to accommodate bicycles (such as paved shoulders) can actually enhance safety for motorists. Roadways, bridges and parking lots are constantly a primary concern for municipalities, and a reduction in vehicles on these facilities can save a tremendous amount of resources. A Surface Transportation Policy Project poll found that 55% of Americans would prefer to drive less and walk more, and 40% of U.S. adults say they would commute to work by bicycle if safe facilities were available. *(Rodale Press Survey, quoted in H.R. 1265-Bicycle Commuter Act, http://www.bikeleague.org/educenter/hr1265.htm)*

Health Benefits

According to the Center for Disease Control, 61% of adults in the U.S. are overweight or obese; 13% of kids aged 6 to 11 and 14% of kids 12 to 19 are overweight. Obesity is second behind tobacco in U.S. health risk factors, contributing to 300,000 deaths a year. A twenty-six year Harvard study involving 17,000 Harvard alumni published in 2004 by Ralph Paffenbarger, M.D showed that burning 700-2,000 calories per week is necessary to decrease early mortality chances. In fact, bicycling for 30 minutes each day should be adequate for a person to receive the proper amount of physical activity to be healthy. A round trip of 15 minutes each way (only one to two miles) would burn 1,050 calories in a 7-day week (assuming biking burns 300 calories per hour). Our time constraints make this very difficult, but incorporating physical activity into our daily commute would surely be a solution to this dilemma. Furthermore, recent studies published in the Archives of Internal Medicine and by the World Health Organization found that these health benefits outweigh any roadway risks by such a large factor, that bicycle commuters have a 40% total reduction in mortality compared with their more idle workmates (Lars Bo Andersen, et al, "All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports and Cycling to Work," June 12, 2000).

Environmental Benefits

Reductions in air pollution, water pollution (surface runoff, oil production, and disposal), noise pollution, landfill materials, litter, urban sprawl, and ecosystem habitat fragmentation can be a result of each person who chooses to bicycle instead of drive. Sixty percent of the pollution created by automobile emissions happens in the first few minutes of operation, meaning that shorter car trips (optimum bicycle trips) are more polluting on a per-mile basis than longer trips. A tremendous amount of attention has been given lately to reducing carbon dioxide emissions to decrease negative effects caused from climate change caused from this pollution. Roughly a pound of carbon dioxide per mile driven is emitted into the atmosphere of “new” carbon that was previously hidden under the earth in the form of oil. This is about 14,000 pounds of carbon dioxide per driver per year (the weight of 3½ average automobiles). The majority of a cyclists’ energy is made from ‘recycled” carbon from above ground biotic sources, but a limited amount may be from any extra cooking fuel and food transport costs it takes to power a bicycle. Nonetheless, an interesting analysis found on a popular cyclists’ web page calculated the difference between an automobile’s carbon emissions from only the exhaust vs. the cyclist’s total carbon emissions per mile. An average car in the US that gets 19.1 miles per gallon and carries the average 1.4 people contributes over 24 times more carbon dioxide per traveler than a cyclist of average American fitness level over the same distance. The car’s emissions

accounted for only the fuel that it burned to move the car. The bicyclists' emissions accounted for the total energy burned by the cyclist and the energy taken to grow, process, ship, and cook the cyclist's food. (Ken Kifer's Bike Pages, http://www.kenkifer.com/bikepages, 1999)

Economic Benefits

Direct driving costs include gasoline, insurance, taxes and registration, maintenance, accidents, fines, parking, tolls, and depreciation. In fact, the American family spends about one-fifth of its income on transportation expenses, second only to housing. There are indirect costs of driving that society subsidizes with tax dollars, product pricing, salaries, and housing costs including road infrastructure, environmental mitigation, parking, health costs, and work loss due to traffic, health, or maintenance issues. In addition, gas price increases from 2004 to 2008 showed that when people spend more money on gas, they spend less money on other things. (An ABC News Poll found that 45% of people in August of 2005 spent less on other things to pay for the increase in gas costs, and the *Charlotte Observer* reported that vacationers for the Fourth of July weekend in 2006 still packed Myrtle Beach during a summer of high fuel prices, but "spent tremendously less (money.)")

A convincing argument for using a bicycle as one's full-time transportation mode is derived after calculating the yearly costs of driving for the average American. We would realize that it requires 60 eight-hour work days to pay for these direct automobile costs (not including society-shared indirect costs such as infrastructure tax dollars, environmental, health costs, national defense and others). If we subtract the costs that it would require if that same individual rode a bicycle instead of a car, including estimated additional time requirements, driving would still require 45 work days of that person's salary. Basically, for 2007, a person who does not own a car and bicycles each day to work can spend their salary on whatever they want from the first of the year until March 7, while motorists will be spending that money on their cars.

Quality of Life Benefits

John F. Kennedy once was quoted as saying, "Nothing compares to the simple pleasure of a bike ride." A ride on a bicycle, whether for utility purposes, recreation, or simply for goofing around gives us a sense of excitement and fun that many of us can still remember from childhood. In addition, removing vehicles from the roads or creating more areas where people are free to be away from automobiles makes life less stressful. Several studies show that children who live near busy roads have higher blood pressure, faster heart beats, and higher levels of stress hormones due to the constant low level noise, and also may sustain permanent respiratory problems from the exhaust *(One source is a 2001 Cornell University study and another is a 2007 University of Southern California study*.) Designing roadways that are slower and less congested near residential areas, and reducing the number of automobiles on these roads can improve our quality of life.

1.2. RECENT HISTORY, TRENDS, AND INITIATIVES

Past Efforts and Recent Initiatives

The City of Albemarle has been actively involved in several planning efforts containing elements related to bicycle travel. The paved path along the abandoned Yadkin Railroad and the new land use plan will help to encompass all modes of transportation in Albemarle. Each of these efforts will have a significant effect on the bicycle environment in the area, and thus have a large effect on Albemarle's future.

Current Trends

In the summer of 2005, Lance Armstrong won a world record seventh consecutive Tour de France races. Road bike sales consequently increased 48% in the United States during Lance's run from 1999 to 2005, while the sale of other types of bicycles remained constant. His return to the spotlight, plus the fact that Americans drove less in 2008 than any year since the 1970s because of energy costs, is creating another increase in bicycling interests. In fact, a 2006 study by Cambridge Energy Research Associates showed that Americans drove less in 2005 than the previous year. This marked the first time in twenty five years that such a reduction occurred. In 2008, Cambridge Energy Research Associates found that high gas prices forced Americans to drive less than any year since the 1970s and gasoline demand shrank to levels last seen more than 17 years ago. As road cycling climbs in popularity, more motorists can expect to see them on the streets, more communities will try to accommodate them in roadway design, and many of these recreational cyclists will expand on their hobbies to become utilitarian cyclists as well.

This bicycle plan represents Albemarle's first comprehensive study that focuses entirely on improving cycling opportunities. Citizens will look for alternate means of transportation as energy costs fluctuate and as a growing number of studies show links of automobile use to weight gain, air pollution, and other heath risks. Albemarle can plan now for the changes that must be made to compete while our nation struggles with energy costs and supplies.

North Carolina Department of Transportation (NCDOT) Bicycle and Pedestrian Planning Grant Initiative

Through NCDOT's Pedestrian and Bicycle Planning Grant Initiative, the City of Albemarle has been awarded a matching grant to create this plan. The Initiative stipulates that plans may be developed by consultants or by a combination of both municipal staff and consultants and a full time, permanent employee of the municipality must be assigned as project manager to oversee the plan development. URS Corporation North-Carolina, based in Charlotte, was selected to develop the plan with Albemarle's Director of Parks and Recreation, Toby Thorpe, acting as Project Manager for the City. The requirements also call for a steering committee made up of relevant local staff, regional planning staff, advocates and representatives of stakeholder groups to oversee development of the Plan. NCDOT was also actively involved with the process of this plan's completion.

1.3. SCOPE AND GOALS OF BICYCLE PLAN

Scope

The scope of the Bicycle Plan is to provide a comprehensive approach to identifying bicycle needs and deficiencies, examining potential improvements, and prioritizing implementation strategies with viable funding sources. The Plan also examines existing conditions, identifies bicycle route networks, conducts needs assessments, identifies design elements, and develops a strategic implementation plan.

Steering Committee

The development of this plan was guided by a steering committee comprised of City staff and local stakeholders, including representatives of the following organizations:

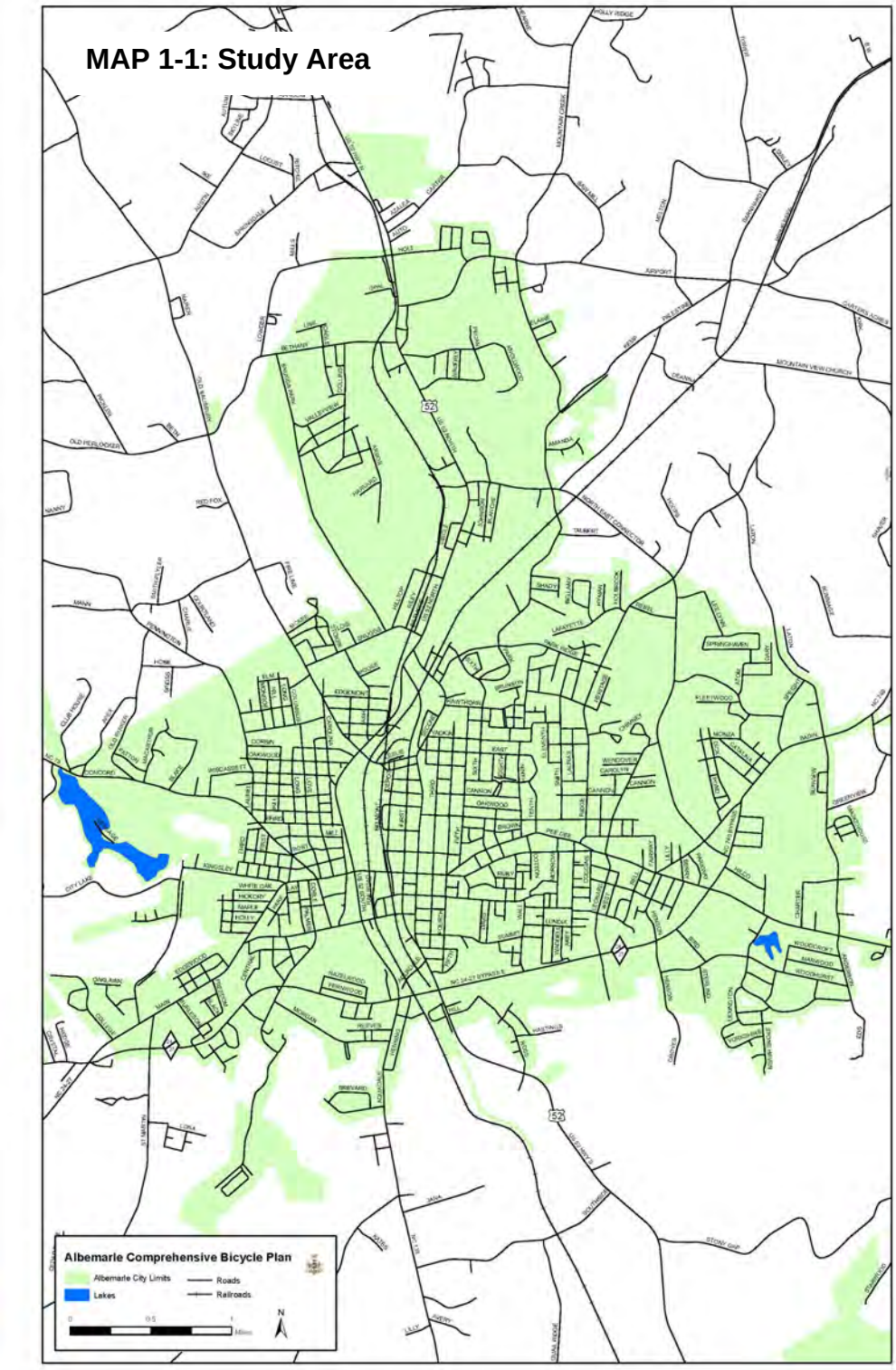
- City of Albemarle Park and Recreation Department
- City of Albemarle Planning and Zoning Department
- City of Albemarle Public Housing Department
- City of Albemarle Public Works Department
- NCDOT Bicycle and Pedestrian Division
- Stanly County YMCA
- Uwharrie Wheelmen
- Middle Ring Cycle Shop
- Local citizens

The Albemarle Comprehensive Bicycle Plan Steering Committee on a bicycle ride to discuss potential projects

The Steering Committee met four times through the planning process to review interim material and offer guidance on study direction and efforts. A group of committee members and plan consultants also bicycled potential local bicycle routes to confirm recommendations.

As discussed later in this document, it is recommended that the Steering Committee or a similar appointed committee continue (perhaps a Pedestrian/Bicycle/Trails Committee) to be active after the conclusion of this study as an advisory committee to monitor implementation of the Plan and to advocate for additional bicycle improvements.

The study area includes only the City limits of Albemarle. A map of the study area is shown on **Map 1-1**.



Overall Goals of Plan

To guide the development of the Plan itself, a series of goals were defined by the Steering Committee and public input. Goals provide the framework for the entire study, and are needed to ensure that the Plan's recommendations address the true needs of the City. These goals illustrate the most important cycling concerns to local stakeholders, based on input received from the Steering Committee, the survey, and the first public workshop (discussed later in this report). The goals developed for this plan were also used as a basis for the project prioritization criteria. Improvements that address these goals will make Albemarle a better community for bicyclists and motorists alike.

Defining the goals at the beginning of the project ensures that the recommendations are tailored to the needs of the City, and linking the project prioritization criteria to the goals provides a mechanism for ensuring that the most beneficial projects are ranked highly for implementation. The following are Albemarle's primary goals for the plan (in no particular order), based on stakeholder input:

1. Provide **education and encouragement programs** for policy makers, the business community, and the general public to **promote awareness of** the wide-ranging **benefits of bicycling**.
2. **Improve safety and comfort for bicyclists** with **facility improvements**, law **enforcement**, and **education** for motorists and cyclists.
3. Increase accessibility for bicyclists by **removing physical barriers to cycling** and by **creating on and off-road bikeways** that connect neighborhoods to schools, parks, jobs, commercial areas, public services and to other bicycle facilities.
4. Develop **sustainable policies and programs** in regards to land use, parking, development, funding, facility design and maintenance **that support bicycling**.
5. Include bicycling as part of the City's overall strategies to **improve environmental conditions** and health by reducing air, water and noise pollution resulting from motor vehicular traffic and by **increasing physical activity and the overall quality of life** for Albemarle's citizens.
6. Develop **facilities and programs that support and encourage on- and off-road cycling for fitness, recreation, and tourism** and **support regional cycling and tourism initiatives** such as the Carolina Thread Trail and area mountain biking destinations.

Benchmark Goals of Plan

A set of benchmark goals is also an important component of a bicycle plan. With these goals, planners, policy makers, and citizens can more easily determine if the cycling infrastructure is improving adequately. Local surveys and the 2020 census can be used to measure the effectiveness of actions taken (or not taken) to implement this plan.

The future Bicycle and Pedestrian Committee should soon determine appropriate benchmark goals by a set date that will guide the implementation of this plan's recommendations. Benchmark goals might include:

1. The amount of funding of bicycle facilities by the City
2. The number of miles of bicycle lanes, trails, and greenways
3. The completion of segments of shared-use paths, particularly the completion of the portion of the Carolina Thread Trail that travels through Albemarle
4. The number and miles of signed and mapped bicycle routes
5. The percentage of bicycle commuters (2 - 5% may be a reasonable goal based off of successes in similar cities)
6. The percentage of students who bicycle to school (10% is a reasonable starting goal, with goals to increase each year afterwards)
7. The percentage of new and existing businesses that have bicycle parking (by policy, 100% of new businesses should provide bicycle parking after this plan's policies are implemented, but a goal of 10% of existing businesses to offer bicycle parking is a good starting goal.)

Section 2
Existing Conditions

2.1. OVERVIEW OF CURRENT CONDITIONS IN ALBEMARLE

Limited data is currently available from the US Census about the number of residents in Albemarle that currently use a bicycle for transportation. A specific question appeared on the 2000 Census Long Form for a random sampling of the population that asks how they get to work. According to the 2000 census, 0.19% of Albemarle's citizens commute to work by bicycle, ranking forty-fifth out of the one hundred municipalities in the state of North Carolina with a population from 5,000 to 50,000 residents.

The 2000 US Census shows that over 19% of Albemarle's population is between the age of five to seventeen years old. These ages are prime childhood bicycling years, and have the potential to be prime targets for this plan. In addition, over 17% of Albemarle's population is over 65. Senior citizens in their retirement years have more time and maybe even more desire to be outside bicycling than those in the workforce, and are increasingly less likely to drive because of decreased motor and sensory abilities. The 2000 Census also found that over 15% of Albemarle's citizens are below the poverty level, making them more likely to rely on affordable transportation. More specifically, the census showed that 9.66% of the City's households did not own a car. Combine these groups, and a third to a half of the population of Albemarle cannot or do not drive due to age, income, and/or physical ability and thus are prime candidates for bicycle transportation.

The recommendations of this plan address the conclusions found in the study of existing conditions, with special consideration given to vulnerable user groups such as children and the elderly. Bicycling is an important transportation option because in many ways it is more accessible than driving. Bicycling is eminently affordable, can help children establish transportation independence before they are able to drive, and can help elderly citizens maintain their independence as they age and drive less. Efforts were made to ensure that recommended bicycle facilities help increase transportation equity in Albemarle; proximity to low income communities was one criterion bicycle projects were measured with in the project prioritization matrix.

Two Stanly County bike routes cross through Albemarle, including 1 and 3 at the intersection of 2nd Street and Salisbury Ave.

The roadways and mountain bicycle trails near Albemarle are currently the weekend destination for many cyclists. A range of conditions such as scenery, light weekend morning traffic, rural roadways near urban services, large tracks of public lands, and an active bicycling community in the Uwharrie area make Stanly County a great place for recreational road rides. One NCDOT bicycle road route (Piedmont Spur: Route 6), and two Stanly County Bike Routes (1 and 3) cross through the City of Albemarle as well.

The City's *Comprehensive Pedestrian Plan* identifies potential shared-use path corridors that will certainly add to pleasure

cycling possibilities throughout the Albemarle area. Local mountain bikers have popular nearby cycling trails at City Lake Park, Uwharrie National Forest and at Badin Lake. The first phases of the Roger F. Snyder Greenway are also complete from downtown Albemarle to Salisbury Avenue. The anticipation and eventual completion of parts of the Carolina Thread Trail should bring a heavy increase in riders to this area as well.

Albemarle's downtown core is compact, vibrant and is continuing to grow in popularity with businesses, residents, and visitors. As highlighted in Albemarle's Pedestrian Plan, compact downtown areas, which are particularly good environments for pedestrians, are also good for bicyclists. The mixture of land uses, variety of route options, and lower speed traffic make these areas well suited for walking and bicycling.

2.2. COMMUNITY CONCERNS, ISSUES, AND NEEDS

The determination of community concerns, issues, and needs is critical to a successful bicycle plan. The issues described in the following pages were used as the framework to develop strategies and recommendations to improve the cycling environment in and around Albemarle. Specific recommendations resulting from these efforts are described in subsequent sections.

Public Forums

A total of two public workshops were held over the course of this project. The first was intended to introduce the project and to seek input from the community regarding bicycling needs and issues. A second workshop was held later in the study to present draft recommendations, based on an assessment of needs through mechanisms including public and stakeholder input, a review of relevant plans and projects, policies, and field reconnaissance.

The first of two public information displays was at the Mini Medley Relay.

The introduction of the Albemarle Comprehensive Bicycle Plan was made on Saturday, March 28, 2009 at the Mini Medley Relay at Central Elementary School from 8:30 AM to 11:30 AM. An information booth was set up, and consultant team members answered questions and took comments throughout the morning from citizens.

The Draft Bicycle Plan was presented to the public on Saturday, September 19, 2009 during the SORBA Uwharrie bicycling event at City Lake Park. The presentation summarized the highlights of the draft plan, including the following elements:

- Purpose of Bicycle Plan / Benefits of Bicycling
- Bicycle Plan Goals
- Existing Cycling Conditions and Policies
- Summary of Public Input
- Deficiencies in Bicycling Network
- Bicycle-Friendly Development Patterns
- Types of Bicycle Projects
- Overall Recommendations
- Summary of Projects
- Policy and Program Recommendations
- Funding Sources, and
- The Implementation Process

The participants were invited to comment on the highlights of the draft plan to ensure that public feedback was fully incorporated into the findings and recommendations. A question-and-answer session followed the formal presentation. Detailed summaries of these public forums are included in **Appendix A.**

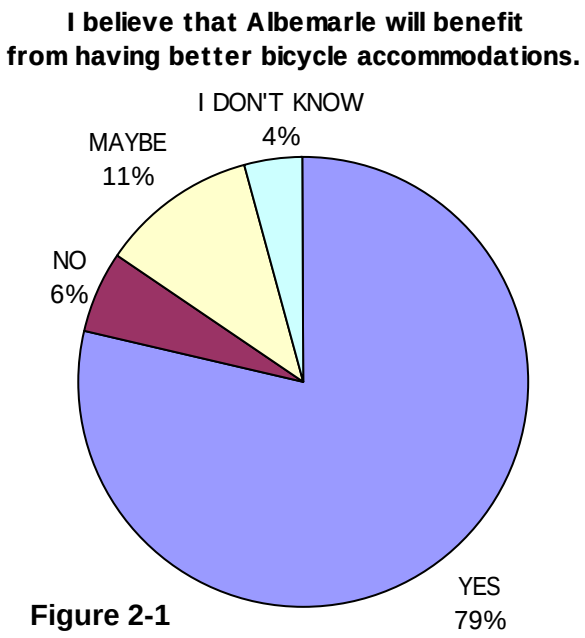


Figure 2-1

In addition, The City of Albemarle placed a link to a survey about bicycling conditions in Albemarle on its web page. Paper surveys and drop boxes were also displayed at locations around the City. Citizens also had the option of requesting a paper survey. A total of 164 surveys were completed.

In general, the survey found that 65% of the respondents claim to ride a bicycle at any locale on occasion. Of those, 58% of the respondents bicycle for transportation while 100% of those respondents occasionally or often bicycle for pleasure or recreation. Of those respondents that do bicycle for transportation, 11% do so out of necessity. Forty-seven percent have used a bicycle to travel to work. Fifty-five percent of the survey respondents were male. People from a broad range of age groups completed the survey. Sixty-three percent were over 36 years of age, with the greatest number of participants being in the 36-45 age range (28%). Ninety percent of responders said that they believed that Albemarle would or might benefit from having better bicycle accommodations (Figure 2-1).

Of the respondents that stated they do bicycle on occasion, 64% stated that they bicycle in the Albemarle area several times a month or more. The most popular bicycling destinations and routes include area parks and forests, the YMCA, neighborhood roadways, and rural roadways that lead outside of the City.

Of the respondents that stated they do bicycle on occasion, 67% stated that they bicycle outside of the Albemarle area several times a month or more.

The three **most highly preferred bicycle facilities** by survey respondents at any locale were:

1. Roadways with designated and marked bicycle lanes: 85% of respondents prefer these
2. Neighborhood streets/roads: 73% stated a preferences for cycling on these
3. Off-road paths and greenways: 66% claimed a preference for these facilities

The three **least used bicycle facilities** as stated by these bicyclists at any locale were:

1. Sidewalks: 74% claimed to not use these or use them reluctantly
2. Main urban/suburban roadways: 71.8% claimed to not use these or use them reluctantly
3. Low speed urban roads: 74% claimed to not use these or use them reluctantly

Fifty two percent of responding cyclists stated that they rarely break the laws of the roadway while cycling, while 74% stated that they have had motorists treat them with carelessness or aggression occasionally or more often while cycling in or around Albemarle (an additional 23% said that motorists rarely do this).

The ten most common obstacles that discourage respondents from cycling in Albemarle are:

1.	Lack of cycling areas separated from traffic like bicycle lanes or paved trails	66%
2.	Concern of driver's care (inattention, cell phone use, sobriety, etc)	52%
3.	Heavy or fast traffic on the roads and in the intersections	52%
4.	Roadways are too narrow or have no shoulders	50%
5.	Roadways are poorly maintained or have hazards	26%
6.	There are limited places to lock/store a bicycle	35%
7.	Concern of crime	25%
8.	It seems easier to drive	23%
9.	Travel areas are not well lit	19%
10.	Destination is too far away to bicycle	18%

84% of the respondents stated that they would or might bicycle more often if many of the above obstacles were corrected. In addition, 75% of all respondents would favor development polices that encourage bicycling and 74% would support public funding for bicycle facilities (Figures 2-2 and 2-3).

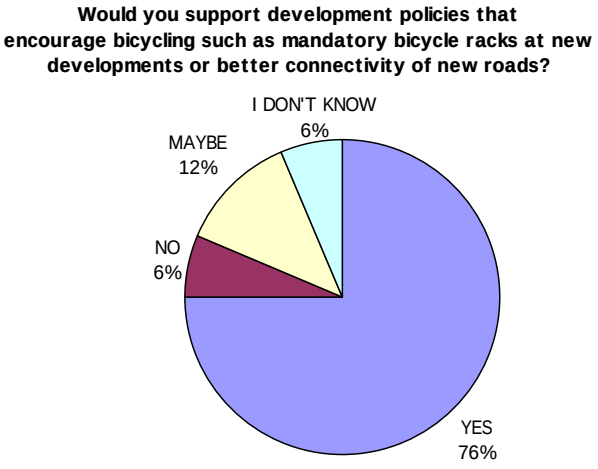


Figure 2-2

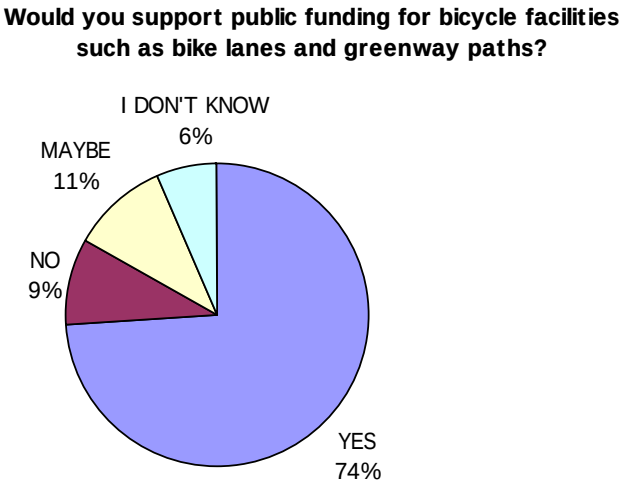


Figure 2-3

Survey respondents also had a chance to comment on bicycling conditions for their children aged 5-15 years old. Eighty-eight percent of these children rarely or never bicycle to school (Figure 2-4), while 76% of parents said children occasionally or often bicycle around Albemarle. The most highly rated reason for discomfort with children cycling to school was traffic-related concerns or the lack of bicycle paths. Fifty-nine percent of parents would feel more comfortable with their child cycling to school more often if paved pathways were available, and 52% would be more comfortable with their children cycling to school of the school was closer to their residence. While only 12% of parents would be more comfortable with their children cycling in Albemarle if traffic speeds were lower, 38% said they would be more comfortable with their child cycling in the community more often if paved pathways were nearby. **Ninety-one percent of all parents surveyed responded that they would like their children to be able to bicycle more often** (Figure 2-5).

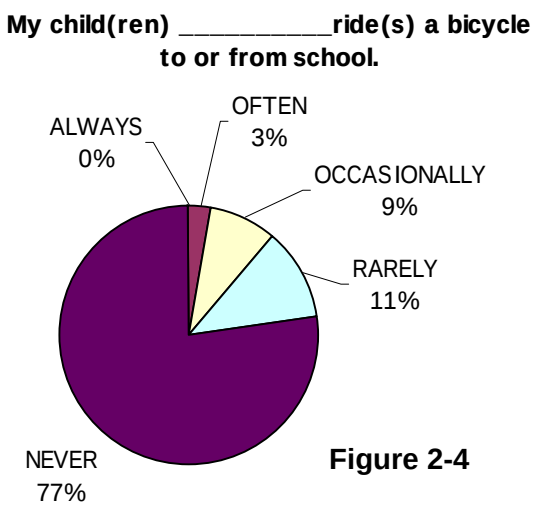


Figure 2-4

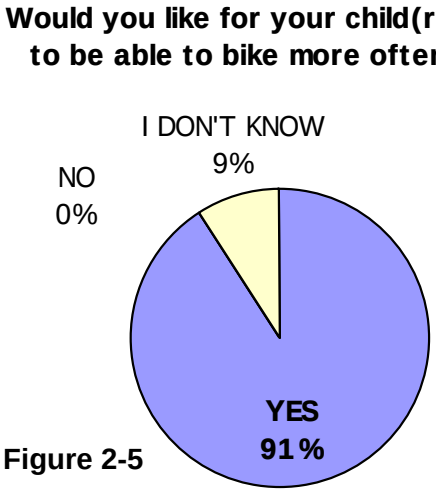


Figure 2-5

Additionally, 26 people gave further comments on this survey. These selected comments are representative of many of the comments:

> *"Please implement safe bike paths for children."*
>
> *"I believe the best bang for the dollar would involve building greenways or paths between the parks in our community. We have a good system of parks in Albemarle but I would love to be able to ride my bike with my child to our destination rather than loading up in an auto."*
>
> *"I think the city and the county need to have bike racks at their facilities."*
>
> *"I see the primary problem in Albemarle to be that drivers don't know what to do when they see someone on a bike."*
>
> *"Please do everything you can to promote safe cycling in Albemarle. It's a great family activity."*

The complete responses to these surveys and public forums are located in **Appendix B**.

Steering Committee

The Steering Committee, which met four times over the course of the study, provided insight and ideas that were incorporated into the planning process. Minutes from the Steering Committee meetings are included as **Appendix C**.

Staff and Agency Concerns and Issues

City staff who participated in the plan process represented the Planning, Parks and Recreation, Public Works, and the Public Housing Departments. The minutes from the Steering Committee meetings contained in Appendix C describe the input and feedback received from these stakeholders.

Bicycle Crash Data

Recent bicycle crash data that shows locations and severity of crashes for Albemarle were analyzed using data from NCDOT's Bicycle and Pedestrian Division from 1990 through January of 2010 (Table 2-1). Some additional data sets that show specifics of the crashes during the time period between 1997 and 2006 were found at the web-based pedestrian and bicycle crash database (http://www.pedbikeinfo.org/pbcat/) to determine safety trends and identify specific areas of concern with regard to motorist / bicycle incidents. These data sources show a total of 54 bicycle crashes reported between 1990 and 2007 in Albemarle for an average of three per year plus an additional crash in the summer of 2009 during this planning process. The distribution by year of these incidents is illustrated in Figure 2-6. Over these past eighteen years for which comprehensive data are available, the number of bicycle crashes reported per year has fluctuated. Based on national trends, it is highly likely that there were crashes that were not reported or recorded. In addition, since the two different NCDOT crash data sources used show inconsistencies in the number of crashes, the charts show different periods of time.

It is not easy to determine what factors contributed to this range in the number of crashes each year. Under normal conditions, high crash rates may be the result of poor safety features in the infrastructure, or on the other hand, more crashes might mean that there were more bicycles on the road in a given year. Some research shows the opposite: that bike accidents decrease with more bicyclists on the roadways because motorists expect to see them.

It is likely that important parts of this data are missing or incomplete. It is important to remember that any number of factors can contribute to these statistics, and not to assume anything because of the data unless considerable study has been put forth. Without reliable data regarding the types, locations, and details of crashes, it is difficult to show objectively how the bicycling environment directly affects bicycling safety in Albemarle. However, feedback from the public indicates that many area stakeholders perceive Albemarle's roadways to be hostile or dangerous for cyclists.

Figure 2-6

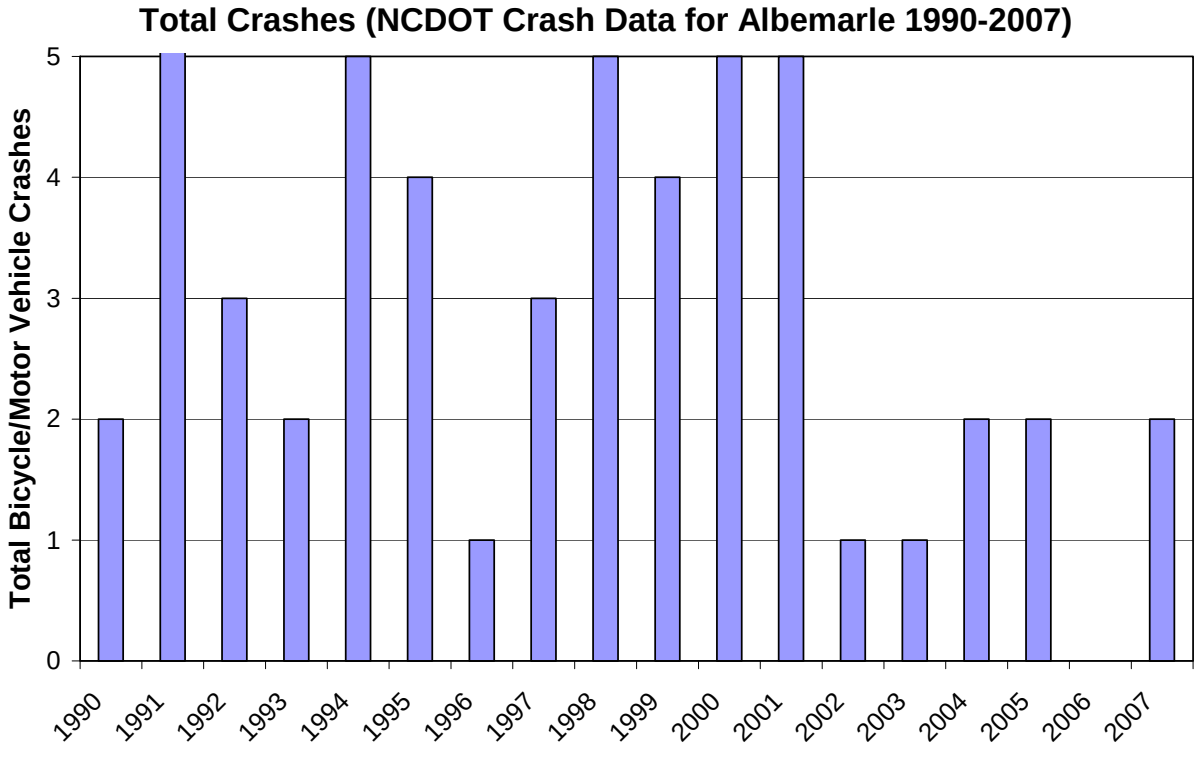


Table 2-1

Reported Bicycle Crashes in the City of Albemarle, North Carolina

For the Reporting Period of January 1, 1990 to January 31, 2010

On Road	*From Road*	*Toward Road*	*Crash Severity*	*Date of the Crash*	*Time of the Crash*
CHURCH ST	LOWDER ST	MAIN ST	Fatal (Killed)	5/12/1990	3:00 PM
US 52	SNUGGS RD	MORTON ST	Fatal (Killed)	11/23/1991	2:52 PM
US 52	MAIN ST	OLD CHARLOTTE RD	Fatal (Killed)	9/24/1994	2:30 AM
E SOUTH ST	LINCOLN ST	WALL ST	A-Injury (Disabling)	9/14/1990	8:37 PM
AREY AVE	AMHURST ST	EASTOVER AVE	A-Injury (Disabling)	8/1/1991	2:29 PM
1ST ST	WEST MAIN ST	DEPOT ST	A-Injury (Disabling)	4/21/2000	8:48 PM
YADKIN ST	LAURA LANE	RIDGE ST	A-Injury (Disabling)	11/11/2005	12:50 PM
NC 24	BYRD RD	MAIN ST	B-Injury (Evident)	3/15/1991	4:59 PM
GIBSON ST	WALL ST	LINCOLN ST	B-Injury (Evident)	10/25/1991	8:45 PM
MONROE ST	WALNUT ST	POPLAR ST	B-Injury (Evident)	7/12/1992	12:21 PM
RUSH ST	SIDES ST	EASTSOUTH ST	B-Injury (Evident)	8/20/1994	11:40 AM
MAIN ST	COGGINS AVE	ARCY AVE	B-Injury (Evident)	6/10/1995	1:30 AM
LAUREL ST	WALNUT ST	WISCASSETT ST	B-Injury (Evident)	6/12/1995	4:47 PM
2ND ST	1ST ST	ENGLEWOOD AVE	B-Injury (Evident)	6/24/1995	2:28 PM
US 52	SALISBURY AVE	ASHE ST	B-Injury (Evident)	9/3/1995	1:52 PM
FIRST ST	SOUTH ST	SECOND ST	B-Injury (Evident)	2/15/1996	4:02 PM
DEPOT ST	FRANKLIN ST	GLENN ST	B-Injury (Evident)	2/18/1997	4:36 PM
RIDGE ST	MONTGOMERY AVE	FREEMAN AVE	B-Injury (Evident)	8/10/1997	6:05 PM
MONTGOMERY AVE	5TH ST	4TH ST	B-Injury (Evident)	10/14/1997	5:13 PM
AREY AVE	GIBSON ST	MAIN ST	B-Injury (Evident)	4/12/1998	2:20 PM
BELL AVE	INGER AVE	AMHURST ST	B-Injury (Evident)	9/9/1998	8:23 PM
2ND ST	FRANKLIN ST	MONTGOMERY AVE	B-Injury (Evident)	11/1/1998	3:19 PM
US 52	MAIN ST	EFIRD ST	B-Injury (Evident)	3/28/1999	4:50 PM
MAIN ST	RAILROAD ST	DEPOT ST	B-Injury (Evident)	6/8/1999	1:01 PM
LOVE ST	WISCASSETTE ST	POPLAR ST	B-Injury (Evident)	10/11/1999	7:20 PM
LEONARD AVE	INGER ST	NC 24	B-Injury (Evident)	11/8/2000	4:09 PM
N FIFTH ST	SPRING ST	BROWN AVE	B-Injury (Evident)	1/26/2001	4:16 PM
WISCASSETT ST	LOVE ST	LONG ST	B-Injury (Evident)	6/3/2001	11:45 PM
SOUTH THIRD ST	EAST SOUTH ST	HEARNE ST	B-Injury (Evident)	12/21/2001	11:15 AM
WISCASSETT ST	MONROE ST	PENNINGTON RD	B-Injury (Evident)	9/6/2002	5:25 PM
MARTIN LUTHER KING	GIBSON	E MAINS T	B-Injury (Evident)	6/5/2004	4:15 PM
N FIFTH ST	SPRING ST	MONTGOMERY AVE	B-Injury (Evident)	3/11/2007	1:55 PM
S FOURTH ST	SUMMIT AV	HEARNE ST	B-Injury (Evident)	5/8/2009	6:00 PM
PEE DEE AV	N TENTH ST	N NINTH ST	B-Injury (Evident)	7/24/2009	10:00 PM
AMHURST ST	BELL AVE	WEST DR	C-Injury (Possible)	2/7/1991	5:22 PM
BELL AVE	AMHURST ST		C-Injury (Possible)	7/13/1991	2:50 PM
AREY AVE	RP 0		C-Injury (Possible)	5/16/1992	6:30 PM
2ND ST	MAIN ST	NORTH ST	C-Injury (Possible)	5/26/1992	2:56 PM
PEE DEE AVE	MAIN ST	RIDGE ST	C-Injury (Possible)	11/17/1993	4:42 PM
SOUTH ST	LINCOLN ST	CROSS ST	C-Injury (Possible)	12/26/1993	1:31 PM
US 52	MAIN ST	EFIRD ST	C-Injury (Possible)	6/15/1994	11:25 AM
ELIZABETH AVE	HILLSIDE LN	PENTER ST	C-Injury (Possible)	7/8/1994	6:00 PM
SALISBURY AVE	1ST ST	DEPOT ST	C-Injury (Possible)	11/17/1994	4:37 PM
MAIN ST	DEPOT ST		C-Injury (Possible)	4/20/1998	1:35 PM
MT CREEK RD	WILDWOOD DR	NECONN	C-Injury (Possible)	5/26/2001	3:14 PM
LOWDER ST	AUSTIN NST	N BROOME	C-Injury (Possible)	10/20/2003	8:00 PM
S SECOND ST	E PARK AVE		C-Injury (Possible)	1/3/2005	5:45 PM
1017 ASH ST	GRAHAM ST	EDGEMONT ST	C-Injury (Possible)	11/9/2007	4:03 PM
HILL ST	OAKWOOD ST	CORBIN ST	Property Damage Only	4/23/1991	8:21 PM

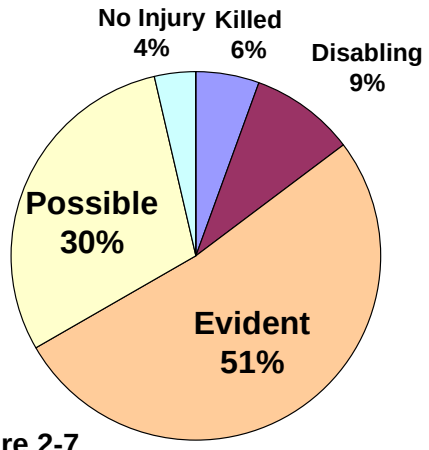


Figure 2-7
(NCDOT Crash Data for Albemarle 1990-2007)

Of these 54 reported/recorded bicycle crashes that occurred from 1990 to 2007 in Albemarle, three bicyclists were killed. In 1990, a cyclist was killed while riding on Church Street approaching Main Street, and in 1991 and 1994, cyclists were killed on US 52 near Snuggs Street and Old Charlotte Rd. respectively. Figure 2-7 shows how the victim's injury was, in just over half of the cases, evident. Five other bicyclists were seriously hurt (a disabling injury) in Albemarle since 1990, while 34% of crashes resulted in no evident injury.

Nationally, data show that bicycle crashes are most likely in low light conditions and when cyclists fail to exhibit safe riding practices. Data from NCDOT indicates some of these trends, but generally shows higher accident rates with higher motor vehicle volumes and speeds.

Cyclists in Albemarle have been most often struck by motorists at intersections. Cyclists in Albemarle have also been most likely to be involved in crashes during the higher traffic periods late in the afternoon. The data queries revealed that the majority of the injuries occurred where the speed limit was posted at 35 mph or higher.

Figure 2-8 below shows that 43% of the *reported* crashes involving cyclists in Albemarle listed on the NCDOT internet database from 1997 – 2006 involved bicyclists under the age of 16.

Figure 2-8

Age of Crash Victims
(NCDOT Crash Data for Albemarle 1997-2006)

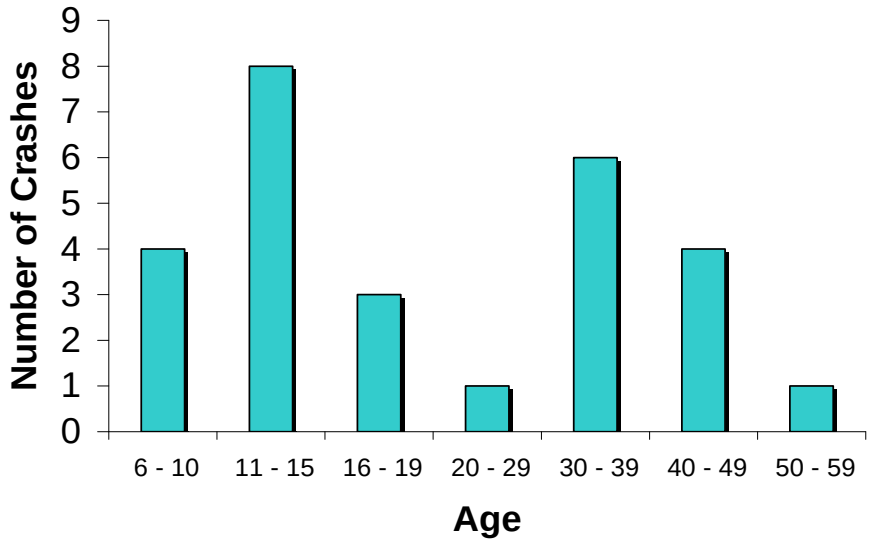
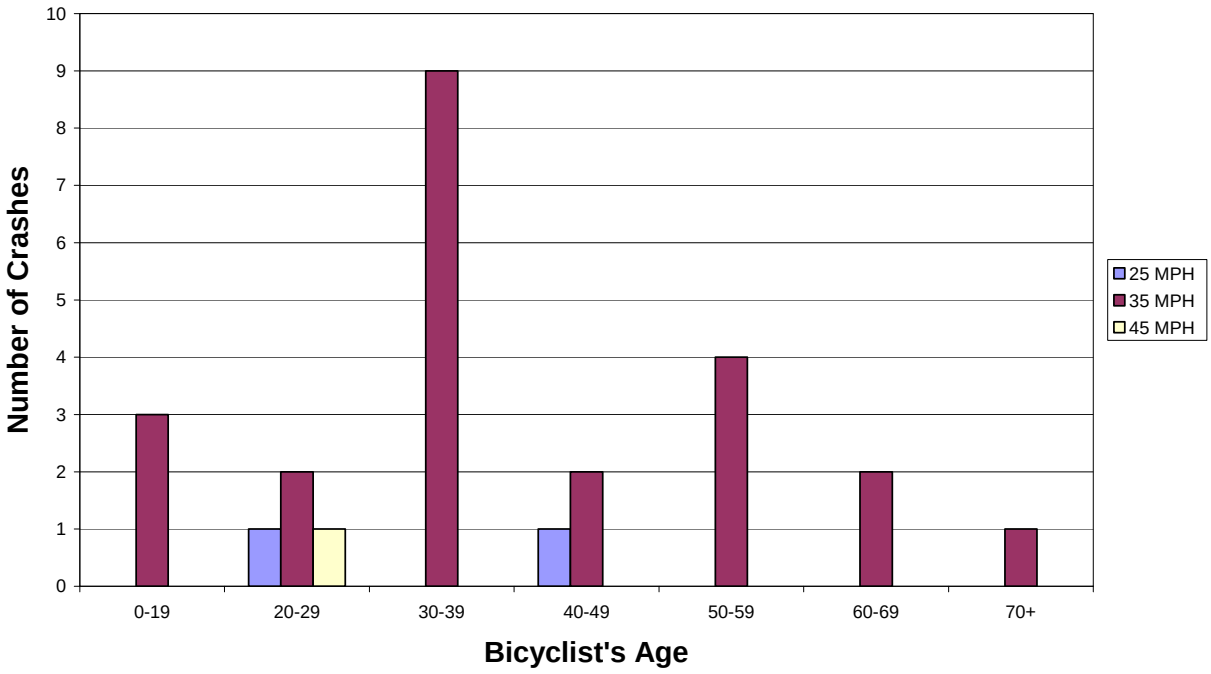


Figure 2-9 below shows that the majority of bicycle crashes for every age group have occurred on roadways that have speed limits of 35 miles per hour (MPH) or higher. Only two of these crashes occurred in 25 MPH zone (a speed where a bicyclist can comfortably share a roadway with an automobile and where automobile stopping and maneuvering abilities are increased). This graph clearly shows one of Albemarle's biggest challenges for improving on-road cycling conditions: most of the roadways in the City are designed and/or posted for motor vehicle speeds of 35 miles per hour or greater. In uncongested conditions and without concerted enforcement and engineering measures designed to limit speeds, typical motor vehicle speeds are higher than posted speeds.

Figure 2-9

Bicyclist's Age and Speed Limit
(NCDOT Crash Data for Albemarle 1997-2006)



Motor Vehicle Crash Data and Relative Risk

According to the Highway Safety Research Center at the University of North Carolina at Chapel Hill, the total number of automobile crashes in Albemarle from 2001 to 2007 was 3,230 for an average of 461 crashes per year. At least one motorist dies each year in Albemarle as a result of an automobile crash. Although studies show that the chance of being killed in a motor vehicle is lower than the chance of being killed on a bicycle per mile, it is important to consider an important difference between bicycle travel and automobile travel.

A full-time bicyclist rides considerably fewer miles per year than a motorist because of the more limited speed and range of the bicycle. A typical motorist travels 12,000 – 14,000 miles per year. A motorist's commuting distance, shopping, entertainment, and other traveled miles are naturally higher because it takes less physical effort and because the motor vehicle can travel at higher speeds. A typical cyclist's mileage is considerably reduced because of the need and desire to work and shop near their homes and to reduce and combine trips. This might place the estimated mileage for a *very* active adult commuting cyclist at a *high estimate* of 3,000 miles per year. Statistically, with the 12,000 miles per year typically driven per year by a motorist and a cyclists' 3,000 miles per year, motorists have a 1 in 87 chance of being killed in their lifetime in a crash, while these active bicyclists have a 1 in 143 chance of being killed in an accident in their life (assuming 60 years of travel).

In addition, a cyclist is apt to spend the majority of their time and mileage on low speed, safer roadways where their increased sense of awareness and better maneuverability can more easily avoid collisions. A motorist will spend significantly more time on more dangerous higher speed and volume roadways, and are restricted to less maneuverability and a decrease in awareness due to restricted visibility and hearing. Looking at the risk of bicycling per hour shows that it is safer than many other life activities, including driving and the multitude of risks that are involved with the average person's everyday lifestyle decisions (categorized below as *living in Figure 2-10*). *In fact, the British Medical Association estimated that the health benefits of cycling outweigh any risk factors by 20% (*British Medical Association. 1992. *Cycling: Towards Health and Safety*. Oxf.U.P.*).*

Figure 2-10

Fatalities per Million Exposure Hours			
Skydiving	128.71	Snowmobiling	0.88
General Flying	15.58	Driving/Motoring	0.47
Motorcycling	8.80	Water skiing	0.28
Scuba Diving	1.98	Bicycling	0.26
Living	1.53	Airline Flying	0.15
Swimming	1.07	Hunting	0.08
Data compiled by Failure Analysis Associates, Inc.			

2.3. EXISTING BICYCLE FACILITIES

Bicycle Friendliness of State and Local Transportation System

Different user-types of cyclists might have different opinions as to the friendliness of Albemarle's bicycle network. Weekend riders have several good routes leading into Albemarle from outside of the City, and some might say that Albemarle has decent cycling opportunities. However, those cyclists might never be on these same roads on a congested weekday. Those who bicycle to work might believe that Albemarle's lack of connectivity and lack of low speed/low volume streets makes for poor bicycle route choices. A parent might see motorists traveling 35 miles per hour or faster on their neighborhood street, and feel that it is simply too dangerous for their child to ever be on a bicycle in Albemarle.

It is obvious that, over the last several decades, Albemarle's streets were designed almost exclusively with the automobile in mind. The historic downtown area is compact, with a grid-like pattern of minor roads and connections to several different outlets. New developments away from downtown are separate from each other, and connected only by multilane, high speed arterial streets that do not safely accommodate vehicles other than motor vehicles.

It is important to note in this plan that North Carolina law defines a bicycle as a vehicle with all of the rights and responsibilities that are applicable [S20-4.01 (49)]. Although there are a few differences in state law dealing with bicycles versus motor vehicles (such as the fact that a bicycle and a motor vehicle can share the same lane and thus pass each other as necessary in that lane), it is generally the case that each traffic law that pertains to an automobile also pertains to a bicycle. Some notable specific laws for bicyclists in North Carolina include:

1. There is no minimum age requirement to operate a bicycle on North Carolina roads, although all children under the age of 16 must wear a helmet. All other cyclists are strongly advised to wear helmets as well [§20-171.7(b)]. Local municipalities have the freedom to apply more stringent helmet laws.
2. Bicyclists have the freedom to use the roadway or to use designated bicycle lanes, multi-use paths or sidewalks [§20-146]. Local municipalities have the freedom to address cycling on sidewalks.
3. A bicyclist can legally use the roadways in North Carolina while impaired [§20-138.1(e)]. It is unclear whether local municipalities have the freedom to address more stringent laws that address cycling while impaired.
4. Bicyclists may not ride on interstates or fully controlled limited access roadways. [North Carolina General Statute 143B-350 (f)(1)]
5. There is no law that requires bicyclists to ride single file. NCDOT recommends that riders ride responsibly and courteously when riding two or more abreast.

North Carolina laws for motorists designed for bicyclists' safety include:

1. A motorist overtaking a bicycle must pass at least two (2) feet to the left of the bicyclist and must not move back to the right side of the highway until safely past the overtaken bicycle.[§20-149(a)]
2. The driver of a vehicle emerging from or entering an alley, building entrance, private road, or driveway shall yield the right-of-way to any bicyclist approaching on a sidewalk or walkway extending across an alley, building entrance, road, or driveway. [§20-173(c)]

Other than these minor differences between roadway laws for motorized vehicles and bicyclists, there is relatively little difference between the rights and responsibilities of each of these two types of vehicles. It is very important for bicyclists and motorists to both understand that a bicycle has no special right-of-way when being operated on the road (except as indicated in state statute §20-173(c) above). When either the bicyclist or the motorist wrongly assumes that right-of-way exists, collisions can occur.

The existence or absence of particular state laws and enforcement has a big impact on the safety of local cycling. Allowing a cyclist to bicycle on roadways while impaired is certainly not in the cyclists' best interest, and may not be in motorists' best interest either if that cyclist causes an accident. Also, setting a blanket minimum passing distance of two feet might seem to be in bicyclists' best interests, when in fact this might give motorists and cyclists false comforts where higher speeds or larger vehicles may require a wider safe passing distance. The City of Albemarle's elected officials are encouraged to contact state policy makers about modifying laws that may negatively impact its local bicyclists.

Identification of Deficiencies for Cycling in Albemarle

Although there are many reasons why Albemarle residents choose not to cycle, several key deficiencies are apparent that would create a big difference if corrected. These deficiencies are categorized as follows:

- Congested and fast traffic
- Unaccommodating land uses
- Lack of connectivity, and
- Lack of pleasurable and safe cycling corridors.

Congested and Fast Traffic

Traffic speeds must be reduced and enforced to provide a safe environment for cyclists. Congested roadways need to be redesigned to accommodate other transportation modes to help reduce this congestion and to better and more safety provide for the motorized traffic.

Unaccommodating Land Uses

Albemarle is certainly joining a positive national trend towards promoting mixed-use development that is compact, functional, and walkable. Unfortunately, the City still has a great deal of auto-oriented commercial and residential development that was designed and built during the last several decades that limit practical cycling because of the distances between destinations and the lack of provisions for cyclists.

Lack of Connectivity

As a series of small creeks flow into one large river, so do streets. If water is diverted from those creeks directly into the river, the water flow can become more intense. Bicyclists are smaller and frailer than any motor vehicle, and most cyclists of any skill level would probably admit to preferring cycling where there is less volume of motor vehicle traffic, all other things being equal. With new development styles that create areas that are disconnected from the larger community, daring bicyclists are forced to ride on these congested roadways while more timid cyclists commonly choose to take their cars instead. Connecting local streets – even for pedestrians and cyclists only – would particularly increase the viability of cycling in Albemarle, especially for young or more cautious riders. The connectivity of future shared-use pathways should also be considered as new bridges and roadways are built. In addition, the inclusion of a municipal transit service creates connectivity for population groups that can increase the range of a bicycle's effectiveness.

Lack of Pleasurable and Safe Cycling Corridors

Designing a bicycle system that has a good mix of on and off-road corridors that provide the option of separation of cyclists from motor vehicles is important, as well as creating safe conditions on roadways. Numerous drainage grates were noted in the City that have designs that create dangerous conditions for cyclists. Signage for motor vehicles to watch for bicycles was sometimes misplaced or confusing,

Inventory of Notable Existing Conditions in Albemarle from Field Data

Existing shared-use paths, existing bicycle routes, and potential off road corridors are mapped in **Map 2-1**. Areas of interest such as businesses, schools, libraries, public service centers, and major shopping centers are also identified.

Although there are no bicycle lanes, roadways with wide outside lanes, or suitable paved shoulders in Albemarle, **Table 2-2** describes the characteristics of select sections of arterial roadways in the Albemarle study area that currently are or will be located on preferred bicycling corridors in the future. Traffic speeds, traffic volumes, and paved widths of each roadway are noted.

Notable exceptions to this table include the primary highways through the City such as 24/27, US 52, and the Northeast connector. Major changes to the speeds and volumes on these roadways should first be accomplished to make these roadways suitable for preferred bicycle travel routes and therefore are not included as part of recommendations to this plan. This should not preclude future changes to these state highways that accommodate safer bicycle travel. A simple example may be decreasing the inside lane widths on these roadways to ten feet allowing greater space for shared travel in the outside lane.

Most existing roadways could be easily converted to better accommodate bicyclists. Multi-laned roads can often have their lanes narrowed to provide safer driving for motorists and space for bicyclists in paved shoulders, bicycle lanes, or wider outside lanes. In some cases, speed limits and motor vehicle speeds can be decreased through installation of traffic calming measures. Roadways can be restriped with shoulders or bicycle lanes during routine repaving, or sometimes a roadway with multiple travel lanes and limited traffic volume can be restriped to reduce one motor vehicle travel lane to a bicycle lane and creating turn lanes. In other cases, no physical change to the roadway is needed, but the addition of signs can remind drivers that bicyclists will be common.

Specific Roadway Characteristics and Opportunities:

Roadways with insufficient daily traffic volumes to justify multiple lanes:

- Salisbury Avenue from US 52 to N. 2nd Street
- W. Main Street from US 52 to S. Depot Street
- S. 2nd Street (US 52 Bus.) from S. 1st Street to NC 24/27
- NC 73 from Rock Spring Road to Bluff Street (turn lane)

Roadways with wide widths:

There are no adequate "wide outside lanes" on any multiple-laned roadways in Albemarle, but several roads exist with travel widths wide enough for future bicycle accommodations.

- NC 73 from Bluff Street to W. Main Street
- S. 2nd Street from South Street to S. 1st Street
- Park Ridge Road from N. 2nd Street to Park/Mountain Creek Road
- Park Ridge Road from Melchor Road to Ridge Street
- Ridge Street from Colonial Road to Freeman Avenue
- Pee Dee Avenue from E. Main Street/4th Street to W. Main Street and Coggins Avenue
- Martin Luther King Drive from 1st Street to Wall Street
- Wiscassett Street from Laurel Street/ Pennington Road to Carolina Avenue
- Numerous residential roadways in the Forest Oaks neighborhood

Roadways with paved shoulders:

There are no roadways in the City of Albemarle with adequate paved shoulders, but the Northeast Connector has shoulders that are less than 3 feet wide.

Bicycle Parking:

The only location where there bicycle parking was observed that adheres to the standards set in the plan is Central Elementary School.

Transit:

Albemarle has no fixed-route transit service.

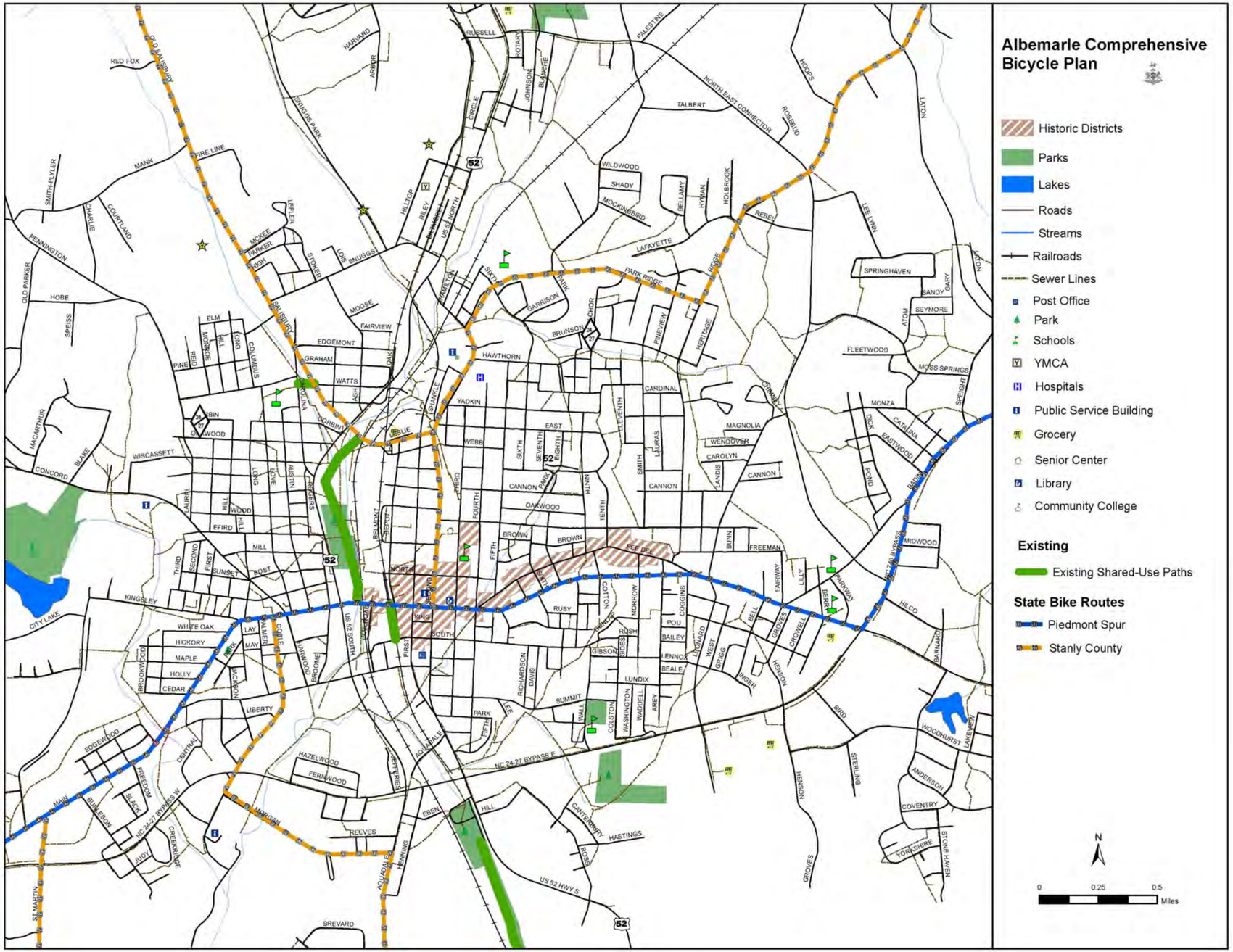
Identified Common Dangers:

- dangerous drainage grates along roadway margins
- Lack of connectivity and access to major shopping centers
- Obvious local pedestrian and cycling routes have no official infrastructure accommodations (paths, crossings, signage, etc)

Table 2-2: Select Existing Roadway Conditions on Potential Bicycle Routes

Select Existing Roadway Conditions

Roadway Name	From	To	Traffic Volumes (Vehicles per Day)	Speed Limit (MPH)	# of Travel Lanes	Center Turn Lane Width (ft)	Total Pavement Width (asphault) (ft)	Average Width Per Travel Lane (ft)	Existing Paved Shoulders (PS),Bike Lanes (BL), Wide Outside Lanes (WOL) or Curb & Gutter (CG)?	Other Notes
Salisbury Avenue	McKee St.	Carolina Ave.	2,400	35	2	NA	31	15	2' C&G	Sidewalk project identified in Pedestrian Plan
Salisbury Avenue	US 52	Depot Street	no data	35	4	NA	55-60	13-15	No Gutter Pan	Potential lane conversion opportunity
Salisbury Avenue	Depot Street	N. 2nd Street	no data	35	3	12' *	50	12	No Gutter Pan	Westbound turn lane into Depot Street
NC 73	Bluff Street	W. Main Street	7,600	35	2	NA	40	20	No Gutter Pan	Width exists for bicycle lanes
NC 73	Rock Spring Road	Bluff Street	6,700	45	2	12-14	36	10-12	No Gutter Pan	turn lane width reduction may allow for bike lanes
W. Main Street	Old Charlotte Rd	Concord Rd	7,700	35	2	NA	40	20 *	1.5' C&G	* on street parking east side from Short St. to Kingsley Dr
W. Main Street	Concord Rd (NC 73)	US 52	15,000	35	3	12-14	40+	12-13	1.5' C&G	
W. Main Street	US 52	Depot Street	8,100	20	3-4 *	NA	50 +	12 +	2' C&G	* # of lanes vary approaching Highway 52
E. Main Street	Depot Street	Pee Dee Ave	8,100	35	2	12-14	50+	10-12	2' C&G	on-street parking
E. Main Street	Pee Dee Ave. / Coggins Ave.	Badin Rd.	8,100	35	2	12-14	35-40	10-12	2' C&G	Lower speed urban road
Park Ridge Road	N. 2nd Street	Sixth Street	no data	35	2	NA	37	18	2' C&G	Current bike route. Width Exists for bike lanes
Park Ridge Road	6th Street	Mtn Creek Rd	no data	25	2	NA	40	20	2' C&G	Current bike route. Width Exists for bike lanes
Park Ridge Road	Park/Mountain Creek Rd.	Melchor Rd.	no data	35	2	NA	25	12	No C&G	Narrow section of road
Park Ridge Road	Melchor Rd.	Ridge St.	no data	35	2	NA	37	18	2' C&G	Current bike route. Width Exists for bike lanes
Ridge St.	Colonial Dr.	Freeman Ave.	no data	35	2	NA	40	20	2' C&G	Width Exists for bike lanes
Pee Dee Ave	4th Street / E. Main Street	Ridge St.	no data	35	2	NA	30 - 40	15 - 20'	No Gutter Pan	Width exists for bike lanes, rare on-street parking
South St./MLK Drive	S. 1st Street	Wall Street	no data	25	2	NA	30 - 32	15-16	2' C&G	Width exists for bike lanes
Wiscassett St.	Rock Spring Road	Carolina Ave.	no data	35	2	NA	26	13	2' C&G	Steep climb to the west
N. 2nd Street	North Street	Wilson Street	no data	25	2	NA	30	15	No Gutter Pan	On Street parking east side
N. 2nd Street	Wilson Street	Glenn Street	no data	25	2	NA	30	15	No Gutter Pan	Extra-wide roadway
N. 2nd Street	Glenn Street	Salisbury Ave	8,600	35	2	NA	30-32	15	No Gutter Pan	Extra-wide roadway
S. 2nd Street (US 52 Bus.)	S. 1st Street	NC 24/27	8,000	35	4	NA	48	12	varies	Potential lane conversion opportunity
N. 3rd St.	East St.	ML King Dr.	no data	35	2	NA	25	12	2' C&G	Extra-wide roadway, rare on-street parking
East St.	N. 3rd St.	N. 9th St.	no data	35	2	NA	24-26	13	2' C&G	Extra-wide roadway, rare on-street parking
N. 10th St.	Avondale Ave.	Yadkin St.	no data	35	2	NA	26	13	2' C&G	Extra-wide roadway, rare on-street parking
Avondale Ave.	N. 10th St.	Smith St.	no data	35	2	NA	26	13	2' C&G	Extra-wide roadway, rare on-street parking
Cardinal Dr.	Smith St.	Ridge St.	no data	35	2	NA	26	13	2' C&G	Extra-wide roadway, rare on-street parking
Yadkin St.	N. 2nd Street	N. 9th St.	no data	35	2	NA	32	12	No Gutter	Extra-wide roadway, rare on-street parking
N. 9th St.	Yadkin St.	Pee Dee Ave.	no data	35	2	NA	30	15	No Gutter	Extra-wide roadway, rare on-street parking
Smith St.	Pineview Drive/Park Ridge Road	Montgomery Avenue	no data	30	2	NA	26	13	2' C&G	Extra-wide roadway, rare on-street parking
Old Charlotte Rd	W. Main Street	S. 1st Street	no data	35	2	NA	32	16	2' C&G	Sidewalk project identified in Pedestrian Plan



Map 2-1: Existing Conditions

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Section 3
Existing Plans, Programs, and Policies

3.1. REVIEW OF RELEVANT PLANS

Several recent, relevant plans have been prepared that include findings that can be incorporated into this bicycle plan. Projects recommended in these other efforts have been integrated as recommendations in this plan, and the inclusion of projects in other relevant plans is considered in the prioritization of projects specified in this plan. Highlights of these relevant planning projects are presented below.

Other Bicycling Related Plans

A proposed regional trail known as the "Carolina Thread Trail" is envisioned to pass through fifteen counties (Anson, Cabarrus, Catawba, Cherokee, Chester, Cleveland, Gaston, Iredell, Lancaster, Lincoln, Mecklenburg, Rowan, Stanly, Union and York) in North and South Carolina. Albemarle sits near the eastern terminus of the trail at Morrow Mountain State Park. Two leading land conservation organizations are involved in advancing the project in the region in partnership with local land trusts and community partners. Catawba Lands Conservancy is the lead agency for the project, while The Trust for Public Land is serving as a key consultant. The Thread Trail will develop over time as individual trail and greenway projects grow together and will be funded by both private and public sources. Private dollars are already being provided as grants to local communities for planning, design, land acquisition, and construction of greenways. Key linkages will occur in the next few years and the network will unfold over the next ten to twenty years. The preferred alignment of the trail is a route through downtown Albemarle, which could tie into proposed bicycle improvements as part of Albemarle's bicycle plan. The map for this envisioned trail is included in **Appendix D**.

CAROLINA THREAD TRAIL
Weaving Communities Together

In addition, North Carolina State Bicycle Routes 1, 3, & 6 all travel through downtown Albemarle. The Stanly County bicycle route map for these routes is included in **Appendix E**.

Pedestrian Plans

The City of Albemarle completed the *Albemarle Comprehensive Pedestrian Plan* in October of 2007. The community and town staff worked together to build a plan that is based on pedestrian-friendly public land use and development policies, and also a plan that will be a significant part of the current planning process for future zoning, transportation, and bicycle plans. Since the Plan's adoption, components of the Pedestrian Plan have already been implemented that would also benefit bicycle access. Six high-density mixed-use Pedestrian Oriented Development Districts were identified that would create walkable districts that are ½ to 1 mile across. Paved multi-use pathways are proposed to link these districts together for pedestrians and also provide a corridor for bicycles to use in addition to the roadway network.

Greenway Plans

Bicyclists on the newest section of the Roger F. Snyder Greenway

The Comprehensive Pedestrian Plan identifies 49 miles of greenway opportunities in Albemarle and the City has received grants from NCDOT to construct the first two segments of the Roger F. Snyder Greenway System, which will connect to the City's existing bike path at Montgomery Park to NC Highway 24-27. The first segment from Montgomery Park to Main Street was completed while this bicycle plan was being written. The City has plans to extend this system in the future with a goal of eventually connecting downtown, neighborhoods, schools, and parks via a network of greenways, bike paths, and sidewalks. Recent Federal Stimulus money was also recently awarded to construct a half mile portion of the trail along the rail corridor from Main Street to Franklin Street. Several additional opportunities for potential greenways were identified in the Pedestrian Plan and are again encouraged with this bicycle plan in Sections 4 and 7.

Land Use Plan

Albemarle recently adopted a new comprehensive land-use plan. The draft version of this plan addressed several key issues and concerns related to bicycling and walking. The planning committee considered bicycle and pedestrian friendly issues to be a top priority within numerous categories of the plan, including transportation, residential development, commercial development, open space/recreation, downtown development, and community appearance. The creation of the greenway system was repeatedly mentioned as a top strength of the City, and the encouragement of mixed use land uses along with the development of safe walking and biking corridors were listed as top priorities of the plan.

Transportation Plans

This bicycle plan will ultimately serve as the bicycling component to any future comprehensive transportation plan for the City. In addition, a comprehensive transportation plan should discuss the role of pedestrian and bicycle transportation as part of a complete multimodal transportation network.

NCDOT completed a *Thoroughfare Plan* for the City in June of 2003, and a Thoroughfare Plan study for the City of Albemarle was completed in 2001. The 2003 NCDOT Thoroughfare Plan did not have any specific recommendations for bicycle facilities but did provide general guidelines for bicycle facilities on all thoroughfares on page 18 of the plan:

> *Before any roadway improvements are made, especially to roads that are part of the NC Bike Route system, the NCDOT Division of Bicycle and Pedestrian Transportation should be consulted on the most appropriate cross section.*

Illustrations of typical cross sections for shared roadways accommodating bicycles are provided in the Plan (**Appendix F**). This plan also mentioned that accommodations should be considered for bicycle improvements when widening is done on any of Stanly County's state bicycle routes. Page 19 of the document reads:

> *When considering the widening of these facilities, the NCDOT Division of Bicycle and Pedestrian Transportation should be consulted. This division can recommend the most appropriate cross section for the widening, in addition to providing assistance in identifying the need for improvements based on present and future bicycle traffic.*

State Bicycle Routes 1, 3, and 6 travel through the City of Albemarle.

Recreation Plans

The Stanly County Master Recreation Plan being currently written will have emphasis on the Carolina Thread Trail system proposed to link Albemarle with other towns and destinations in Stanly County and around the region.

Roadway Project Plans

Several roadway projects in the Albemarle area are currently being designed by NCDOT. As these plans are advanced, appropriate bicycle accommodations should be incorporated into the design. On-going roadway design projects that should account for bicycle travel include the following:

- TIP projects:
  - B-4276: Bridge # 33 over Long Creek on NC 73 near City Lake Park is being replaced and is now under construction.
  - U-3300: Ridge St. Extension on SR 1542 from the Northeast Connector to NC 740. This project is divided into three segments. The first segment is currently under construction to Airport Road. The other two segments of this project are not yet funded.
  - R-2320: US 52 from NC 24-27 south is scheduled to be a four lane-divided highway NC 24-27 road widening (R-2530 & R-967). This project is currently under construction from the intersection of US 52 and NC 73, NC 24-27 and NC 138 to the intersection of US 52 and SR 1785. Other segments of the project are not yet funded.
  - B-5137: SR 1542 over Little Mountain Creek, scheduled for construction in FY 2014.

  - B-4279: SR 1963 over Scaly Bark Creek, replace bridge #120. Construction on this project began in FY 2009.
- City repaving projects
  - Coble Avenue from NC 24/27 to Old Charlotte - Mill 1.5" and replace with 1.5" S9.5B (Spring 2010.)
  - US 52 Business (First Street) from Pavement joint at NC 24/27 to West Main Street - Mill 1.5" and replace with 1.5" of S9.5B (Spring 2010)
  - Park Ridge from Second Street to Mountain Creek Church Road - Mill 1.5" and replace with 1.5" S9.5B (Spring 2010)

Small-Area Plans

A Downtown Master Plan was prepared for the Albemarle Downtown Development Corporation (ADDC) in 2001 to aid in the planning for Albemarle's Main Street program. The projects that were identified in this report were largely complete by 2007. The ADDC is currently in the process of preparing an update to the 2001 plan.

Capital Improvement Plans

The City of Albemarle maintains a Capital Improvement Plan and routinely evaluates transportation improvements as part of the City's long-range plan.

3.2. CURRENT PROJECTS AND INITIATIVES

Programs and Initiatives

There are no formal bicycle awareness programs in Albemarle, but the City's Park and Recreation Department routinely offers a bicycle rodeo for children. As the City continues to grow, the establishment of such programs will play an important role in increasing the level of cycling activity. Safety and encouragement programs can be oriented to all segments of the population, and suggested initiatives are described in Section 6 of this document.

In addition, Albemarle has hosted portions of the annual Cycle North Carolina route in 2000, 2003, and 2005. These rides bring a thousand riders a year on a week-long tour through cities and towns across the state of North Carolina.

3.3. EXISTING POLICIES AND INSTITUTIONAL FRAMEWORK

Existing Local Ordinances

Section 8.3 details a critique of Albemarle's local ordinances that affect bicycling and provides recommendations to improve each of these ordinances so that they positively affect cycling in Albemarle.

Zoning Ordinance
A zoning ordinance greatly impacts the bicycling environment just as it impacts the walking environment because it sets rules that govern land-use types, building setbacks, and densities.

Subdivision Ordinance
The primary local ordinance guiding sidewalk additions is the City's subdivision ordinance. This ordinance applies to all new subdivisions within Albemarle's planning jurisdiction. Most of the provisions of this ordinance are conducive to bicycle travel, with a few exceptions.

Code of Ordinances
Albemarle has several local ordinances that deal specifically with bicycles. Most of these are reasonable for encouraging safe bicycling in Albemarle with a few exceptions that are discussed in Section 8.3.

Existing Funding Sources

There is currently no dedicated funding source for bicycle projects, and the City has not funded bicycle projects in the past. The currently planned Roger F. Snyder Greenway System is funded by a state grant and federal stimulus dollars.

Staffing and Committees

The City of Albemarle's Director of Parks and Recreation is responsible for the development of this bicycle plan. As described in Section 1, a Steering Committee comprised of agency representatives, local citizens, and other stakeholders was established to provide input to this planning process. The City's Director of Parks and Recreation leads this committee.

There is currently no pedestrian or bicycle advisory committee in Albemarle. After completion of this bicycle plan, a bicycle / pedestrian advisory committee should be created to work toward implementation of the plan and help continue to build momentum for bicycle projects. A similar recommendation was proposed in the *Comprehensive Pedestrian Plan*.

The City of Albemarle works closely with other local, regional, and statewide agencies as needed for all transportation projects, including pedestrian and bicycle improvements. Partnerships with Centralina Council of Governments and NCDOT will be particularly important as the City implements additional projects.

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Section 4
Opportunities

4.1. ALBEMARLE: A REGIONAL & NATIONAL BICYCLING DESTINATION?

What makes an area attractive to bicyclists? As there are many different types of cyclists with different wants and needs, it would seem helpful to look at other communities that have adopted bicycle-friendly practices, and find commonalities between Albemarle and these communities.

According to a June 2007 US Census report, the top five large cities for bicycle commuting include Portland, Minneapolis, Seattle, Tucson, and San Francisco. Nearby Charlotte ranked with the bottom ten large cities out of fifty. This list shows that extreme weather is not a huge factor in determining how many commuters choose to go by bicycle. These large cities show that **the most important factors to insuring high bicycle use include proper land use trends and a political/social environment that is willing to support and invest in bicycling**. Albemarle has relatively mild weather compared to places like Minneapolis and Tuscon, but is lacking in bicycling facilities and a strong bike culture.

There are few towns in the Carolinas that rank nationally as being bicycle friendly. Carrboro, NC is an exception and ranks number 21 nationally according to the 2000 US Census for the number of residents that commute by bicycle (5.37%). Carrboro is also one of four communities in North Carolina that are listed as Bicycle Friendly Communities by the League of American Bicyclists. Charlotte, Greensboro and Cary are also ranked as Bronze level Bicycle Friendly Communities. Other cities in the Carolinas that have significant percentages of bicycle commuters include Chapel Hill, NC, Ocracoke, NC, Mount Olive, NC, Manteo, NC, Davidson, NC, Myrtle Beach, SC, and Hilton Head SC.

These Carolinas cities with high rates of cycling have their primary economic centers in single compact areas, and/or are the home of a college campus or are a draw for tourists. University or tourist communities bring policies and markets that create high volume housing tightly clustered around an economic and social center, a certain type of social norm, limited parking, and in the case of college towns, many students without cars. Tourist communities attract visitors who enjoy being able to comfortably bicycle in an attractive place. The existing and potential dollars that these tourists bring to the area help to create and improve upon the policies and land use markets in the area. In addition, when the bicycle infrastructure of these cities are examined in detail, it is clear that the convenient bikeways and amenities that make cycling practical and enjoyable for visitors also makes it a more popular social norm for the residents.

Tourism opportunities may be the best way to encourage multimodal transportation options such as bicycling in Albemarle. The Sanford Holshouser Business Development Group, LLC, under contract with ElectriCities of North Carolina, Inc., conducted a target market study and strategic plan for Albemarle and the Stanly County Economic Development Commission. *The Albemarle/Stanly County Strategic Economic Development Plan* was published in December 2005. The Target Industry Analysis identified five **target industries to stimulate growth in Stanly County:** plastics, retirement and health care services, fabricated metals and machinery, transportation equipment, and ***tourism-hospitality***.

In the draft of the City's Land Use Plan, tourism is considered a top issue to ensure economic development. In fact, tourism was listed in three of the top six strategies for economic growth:

> *Strategy 3: Identify ways to encourage the growth of the tourism industry.*
>
> *Strategy 4: Initiate partnerships with organizations that support tourism efforts.*
>
> *Strategy 6: Develop criteria in City zoning ordinance to encourage land uses that support a tourism-based economy, such as Bed and Breakfast establishments.*

Economic Impacts of Carolina Thread Trail and Bicycle-based Tourism

The Carolina Thread Trail is envisioned to pass through Albemarle and portions of fifteen counties in North and South Carolina. Albemarle will be the last community that users of the trail pass through on their way to the eastern terminus at Morrow Mountain State Park. Numerous studies have been done that show the positive economic impacts to communities because of bicycling/walking paths. The impacts include increases in property values, tourism opportunities, business opportunities, health benefits, and quality of life benefits that attract young professionals. In fact, a February 2007 study of the proposed Carolina Thread Trail completed by Ecosult, Inc. and Greenways, Inc. showed that potential economic impacts are substantial and include:

- Total **economic gain of $1.7 billion** along the trail.
- Homes in the affected area of the Carolina Thread Trail are estimated to increase approximately 4% in value because of the trail, allowing an **aggregate incremental increase in property tax revenues of approximately $17 million per year** for local municipalities.
- The trail is expected to annually generate **$42 - $84 million in new tourism spending** for the local economy and $3 million to $6 million in additional state and local tax revenues.
- Over the 15 year period it is expected to take to build the trail, this investment is expected to generate over **$250 million in total direct, indirect, and induced economic benefits** for construction-related activities and nearly 2,800 jobs related to its construction.
- Information from industry professionals and site selection firms supports the **significance of greenspace and trails for business development and attraction**. The trail will create a strong draw for young professionals choosing to reside in or relocate to the area.
- Natural enhancements because of the trail will result in **savings from less water and air pollution environmental and health costs**, along with substantial savings due to less inactivity-related health costs.
- This increase in visitors as a result of trail development is estimated to provide increased **annual aggregate recreation value within a range of $37 million to $73 million**.

In one example of current conditions, NCDOT's Division of Bicycle and Pedestrian Transportation (DBPT) commissioned a study in 2003 with North Carolina State University to

examine the value of public investment in bicycle facilities. The full results of the study are available online at http://www.ncdot.org/bikeped/download/bikeped_research_EIAfulltechreport.pdf. The northern Outer Banks region was selected for the study because of existing high levels of bicycle activity and the presence of an extensive system of on and off road bicycle facilities in the area. Over the past ten years, an estimated $6.7 million of public funds was spent to construct off-road paths and to add paved shoulders to roads in the region. Some key conclusions were:

- Bicycling activity in the northern Outer Banks provides substantial economic benefits to the area: an estimated $60 million annually.
- The **bicycle facilities in the area are an important factor for many tourists** in deciding to visit the region.
- Investment in bicycle facilities improves the safety of the transportation system for all users and also benefits health and fitness, quality of life, and the environment.
- 53% report bicycling as a strong influence in decision to return for subsequent visit.
- 43% report bicycling as an important factor in selecting this area for vacation.
- 1,400 jobs are created or supported annually because of bicycling.
- Increased retail sales to local restaurants, lodging establishments and retail stores.
- Subsequent expenditures by local merchants to suppliers of materials and services.
- Enhancement of nearby property values along areas that feature bike paths and trails.
- Reduced healthcare costs that may result from increased opportunities for healthful exercise.
- Less damage to roads and preservation of the highway infrastructure resulting from wider paved shoulders.

The study suggests that continued investment in bicycle facilities could only be expected to increase the favorable economic impact found in the northern Outer Banks and is therefore recommended by the NCDOT. In addition, the NCDOT recommends that state and local governments:

- Create more and/or wider bicycle paths and lanes.
- Pursue opportunities to create connections between existing bicycle facilities where possible.
- Develop more bicycle lanes or paved shoulders on side streets leading to attractions.
- Upgrade existing bicycle facilities where necessary to meet national guidelines and standards and build new facilities to meet these standards.
- Increase efforts to promote the use of the bicycle facilities in the area.

This bicycle plan recommends **the creation of Albemarle's section of the Carolina Thread Trail as the City's top bicycling priority** and as an opportunity to create tourism growth. This

path can be the backbone of the cycling network in the City, while a series of spur corridors can connect to destinations.

Mountain Bike Tourism

Additionally, the Uwharrie region is becoming a top national mountain bike destination based on the efforts of local and national organizations and events such as XTerra and IMBA (International Mountain Biking Association). Specifically, IMBA has named the Uwharrie Mountains area as on one of 5 national mountain biking Ride Centers:

> *IMBA Ride Centers will be extensive trail networks, masterfully designed for mountain bikers of every skill level and built by professional trailbuilders. They will serve as social and educational hubs, where visitors can connect and learn new riding techniques.The centers will provide the full range of mountain biking experiences today's riders crave, from long single-track journeys to family-friendly loops, and areas with expertly designed technical challenges. . .to test accomplished riders. . . Ride Centers will also bring major economic benefits to their host communities.*
> *(http://www.imba.com/news/news_releases/08_07/08_30_ride_centers.html)*

In the Uwharrie area, "IMBA is working closely with regional economic development officials to plan and build an expansive Ride Center, including a 70-acre freeride park, and trails for all levels of riders on adjacent public lands [to developa] destination-quality riding facility with the capacity to host 40 miles of state-of-the-art trails."

Albemarle can and should intentionally focus on supporting these bicycling tourism opportunities and continue to provide and promote facilities (such as the mountain bike pump track at City Lake Park) through marketing and outreach to existing or future bicycle tourists in the region.

4.2. ROUTE ALTERNATIVES FOR THE CAROLINA THREAD TRAIL IN ALBEMARLE

A bicycle network, like any transportation network, requires a starting point. Just as it is best to have a frame when building a house and it is preferred to have a principal artery when developing a roadway plan, a new bicycle network can benefit from a defined main corridor. This section identifies several alternative routes for the Carolina Thread Trail to weave through Albemarle that will take users from the regional trail system south of Albemarle to Morrow Mountain State Park east of Albemarle, while Section 7 identifies priority City-wide bicycle projects that would significantly and efficiently improve Albemarle's bicycling environment.

Potential Carolina Thread Trail corridors through the City of Albemarle: (These alignments are further described in detail in section 7.2)

North-South routes:

- Existing Roger F. Snyder Greenway from West Main Street to Salisbury Avenue
- Existing greenway in Rock Creek Park
- Existing greenway from West Main Street to West South Street
- Sewer Easement along Little Long Creek from Coble Avenue to West Main Street.

- Sewer Easement along Long Creek from Rock Spring Road (near NC 73) to Coble Avenue.
- Abandoned rail corridor from Rock Creek Park to West South Street.
- Abandoned rail corridor from West Main Street to Salisbury Avenue.
- Roadway route from the intersection of Rogers Street and Carolina Avenue to the intersection of Coble Avenue and Commerce Street

East-West routes:

- Sewer Easement along Melchor Branch from Little Long Creek to Monza Drive.
- Abandoned rail corridor from Salisbury Avenue to North 2nd Street.
- Roadway Route on Wiscassett Street from Rock Spring Road to Carolina Avenue.
- Roadway Route on Salisbury Avenue from US 52 to North 2nd Street (with a potential detour onto Chestnut Street from Salisbury Avenue to North 2nd Street.)
- Roadway Route on West Main Street from US 52 to South Depot Street. Roadway Route from the intersection of East Street and North 3rd Street to the intersection of Cardinal Drive and Ridge Street and along Monza and Impala Drive to Badin Road.
- A combination of existing State Bike Routes and roadway projects mentioned in this plan for a roadway route from southwest Albemarle to Morrow Mountain Road.

It may be necessary to combine aspects of each of these alternatives together to create the final alignment, or allow for two final route alternatives; one road route for experienced cyclists, and one route primarily using off-road corridors and low volume streets for typical users. Once the trail alignment of Albemarle's section of the trail is final, project partners and Stanly County can plan for connections of the regional trail at each terminus of the Albemarle section.

Little Long Creek, and other creeks with sewer corridors, offer alignment options for the Carolina Thread Trail.

Map 4-1 illustrates possible alignments of the Carolina Thread Trail through Albemarle.

*It is important to note that the planning process for the Stanly County Park and Recreation Master Plan is expected to be completed after this plan is adopted. The preferred routes for the Carolina Thread Trail through the City of Albemarle may change.

MAP 4-1 – Potential Carolina Thread Trail Alignments

4.4. OPPORTUNITIES WITH EXISTING ROADWAYS

The existing roadways in Albemarle can be modified slightly to give them a more comfortable feel for bicyclists. It is especially important to notice the potential for mapped or signed routes along connecting neighborhood streets (such as in the Forest Oaks neighborhood), or posting signs downtown that remind motorists to watch for bicyclists sharing the roadway. In addition, streets with curb-to-curb widths of greater than 30 feet may feasibly be suited to be restriped with bicycle lanes depending on traffic volumes and the potential for turning conflicts. Section 2 identifies NC 73, S. 2nd Street, Park Ridge Road, Ridge Street, Pee Dee Avenue, Martin Luther King Drive, and Wiscassett Street specifically as having the necessary current widths to accommodate separate motor vehicle and bicycle lanes. The following sections give details of modifications that can be made on existing roadways to accommodate bicyclists.

Furthermore, existing four-laned roadways with typical 12-foot wide lanes such as US 52 can be modified to create 10-foot wide inside lanes and 14-foot wide outside lanes to give cyclists and motorists adequate space to share the road.

Albemarle also has several options for lane conversions. Typically, a four-laned roadway with no designated center turn lane and average daily traffic volumes (ADT) of less than 20,000 ADT are good candidates for road diets (see Section 5, page 5-30). Basically, because these roadways now have features such as a center turn lane, pedestrian safety islands, and bicycle lanes, safety improves without affecting the level of service. Where automobiles once pushed and jockeyed for position along these routes, a lane conversion places each neatly in better organized travel, turn, or bicycle lane, reducing the risks of incidents when motorists change lanes to avoid delays behind turning vehicles.

Case studies have shown that these conversions:

- Reduce speeding
- Reduce crashes
- Reduce severity of crashes
- Reduces noise pollution
- Increase pedestrian and bicycle usage
- Increase user satisfaction
- Increase residents' and business satisfaction
- Does not reduce the volume capacity or the travel time of the roadway
- And Increases on-street parking use where used in conjunction with this treatment.

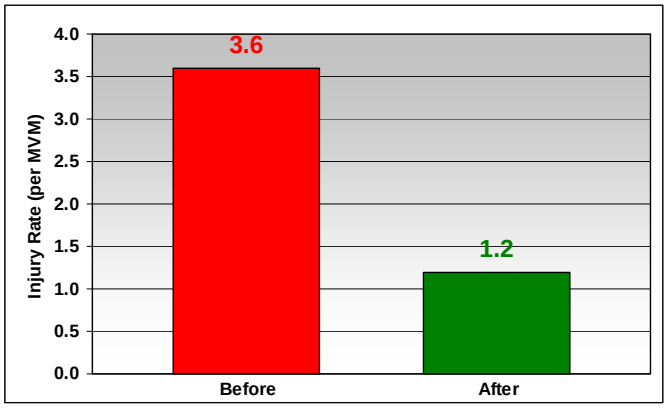
The City of Albemarle currently has the following suitable locations for lane conversions from a four lane roadway to a two lane roadway with center turn lanes and bicycle lanes:

- Salisbury Avenue,
- W. Main Street,
- S. 2nd Street

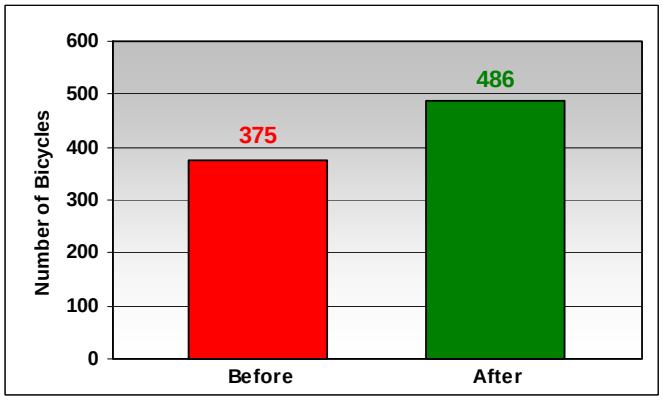
In addition, NC 73 from Rock Spring Road to Bluff Street may be candidate for the inclusion of bicycle lanes by reducing or eliminating the width of the center turn lane.

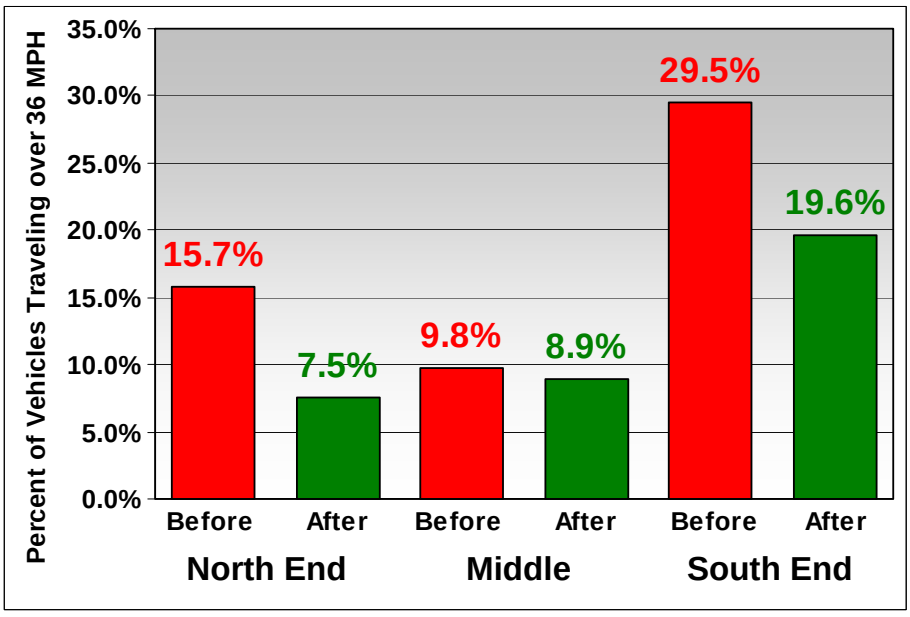
Lane Conversion Case Study, Edgewater Drive, Orlando, Florida:

Injury Rate:



Bicycle Volumes:





Speeding Analysis

4.4. CREATING BICYCLING OPPORTUNITIES FOR CHILDREN

A top priority of this plan should be to create conditions that are suitable for children to bike. Children are the "canaries in the coal mine" for walkable and bikeable communities. **If Albemarle is a place where children are comfortable cycling, then cyclists of all ages and abilities will also be comfortable.** Children under age 16 are a natural bicycling audience because they cannot legally drive. Children nationally and statewide are also showing alarmingly declining health trends due to a lack of exercise. Additionally, behavior that one exhibits as an adult is often learned as a child. Many current cyclists bicycled as children, but many children of the past few decades may never have had the opportunity to regularly bike, and maybe never will as adults. Albemarle has the opportunity and responsibility to change that trend.

Children once bicycled freely around their towns. Bill Bryson writes in his memoir from his boyhood days in the 1950's, "Kids were always outdoors - I knew kids who were pushed out the door at eight in the morning and not allowed back in until five unless they were on fire or actively bleeding - and they were always looking for something to do. If you stood on any corner with a bike - any corner anywhere - more than a hundred children, many of whom you had never seen before, would appear and ask you where you were going." The Life and Times of the Thunderbolt Kid, (p. 36)

It was once common for children to bike to school. As recently as 1969, "42 percent of children 5 to 18 years of age walked or bicycled to school. [By 2001], 16 percent of children 5 to 18 years of age walked or bicycled to school. (http://www.saferoutesinfo.org/guide/introduction/the_decline_of_walking_and_bicycling.cfm). Reports are that the numbers of children and cycling continue to decline.

Memories of a school day for many of Albemarle's residents would not be complete without the challenges, lessons and social opportunities gained from the daily journey to and from school. The decline of walking and biking among children since the 1950's has many causes. Land use patterns are mostly to blame, disconnecting communities and spreading them out so that bicycling is impractical for children. Roadways are engineered now to increase the speed of motorized vehicles while schools, parks, libraries, and other popular childhood places of interest are built not in neighborhoods but on busy roadways. Furthermore, today's world of air-conditioning, front garage doors instead of porches, and a never ending list of electronic entertainment options to keep us all indoors has also certainly restricted children and all of us from getting to know and be comfortable with our neighbors.

According to the survey used for this plan, **88% of those surveyed with children in Albemarle stated that their children never (77%) or rarely (11%) bicycle to school**. Although most of those (60%) stated that crime would be a concern, all respondents (100%) stated that a lack of safe bike routes away from traffic were a concern.

This unease with our fellow community members and the increase in media sensationalism of kidnappings and child molesters has created a state of fear among parents. In recent decades, the media has been quick to report on these stories as they certainly both interest and frighten the public. Additionally, media fails to report that the vast majority of kidnapping cases and child molesting, by far, is perpetrated by members of the child's own family and friends of the family (a study entitled *National Incidence Studies of Missing, Runaway, and Throwaway Children*, October 2002 found that 82% of abducted children were taken by family members, with an additional 11.3% taken by a friend of the family or child.) **Unfortunately, the leading cause of death for children in the US, by far, is as occupants in motor vehicle crashes**. Despite nationwide fears of the "stanger danger" the very low odds of a child being kidnapped by a stranger are miniscule compared to the very real odds of being in, and dying from injuries sustained while an occupant in an automobile accident. Additionally, the leading cause of death in the US for adults is heart disease, and as our children become more sedentary, the life expectancy of the next generation is expected to drop for the first time in US history (University of Illinois at Chicago study, 2005). In fact, because these children are now spending more time indoors, they are also spending more time on the computer. The internet's anonymity, along with its users' ability to reach any audience, makes it a danger of the like that we may have never seen before. It may be argued that parents are taking a larger risk by not letting their children get out and bike.

Regardless, it is hard for parents today not to have a great deal to be concerned about, whether or not all of these fears are justified by current data. To exacerbate the issue, new parents this decade and in the next few decades will be less likely ever to have ridden a bicycle or walked to school than in previous generations of parents. In turn, they will find it foreign to teach this skill on to their children, and prefer to chauffeur their children around as they were chauffeured by their parents in the 70s, 80s and 90s. Our children are becoming sedentary and obese, and planning proper bike accommodations for them and educating the public can do a tremendous amount of good.

Parents can all be excited to know that as more children (and adults) walk and bicycle in their community, the safer that community becomes. More citizens outside in the neighborhood bring more eyes on the street and a familiarity among neighbors that helps keep their community safer from crime. Motorists expecting to see pedestrians and bicyclists may habitually keep speeds more reasonable. Children who are outside exercising are staying mentally and physically healthy, creating good habits that can stay with them their entire lives.

Section 5
Facility Standards and Guidelines

5.1. GENERAL BICYCLE FACILITY GUIDELINES

Overall guidelines for bicycle facility development are highlighted below.

- Give transportation priority to the completion of bicycle routes to schools, and Pedestrian Oriented Development District centers.
- Ensure that the safety and convenience of cyclists are not compromised by transportation improvements aimed at motor vehicle traffic.
- Coordinate transportation planning and efforts with neighboring jurisdictions and NCDOT.
- Establish cycling links between bike lanes, greenways, bike routes, and other bike accommodations on roadways and even on some sidewalks in limited situations.
- Support changes to existing policies that would enhance bicycle travel.
- Bicycle parking areas at destinations are a critical part of the transportation system.
- Retain public access when considering private right-of-way (easement?) requests.
- The bicycle network should make it possible for cyclists to access the same places that motorists can access, particularly and especially inside the half-mile radius of each Pedestrian Oriented Development District.
- Off-site street improvements or enhanced bicycle and pedestrian facilities may be required as a condition of approval for subdivisions or other development permits.

An effective bicycle network should:

- Include corridors that are safe and free from excessive noise, motorized traffic, and hazardous objects.
- Be accessible to residents and visitors of any age or ability who is able to ride a bicycle unsupervised.
- Connect to major destinations and other places where people want to go.
- Be easy to use and convenient.
- Be designed to be attractive and appealing to users.

NCDOT Design Guidelines

NCDOT adheres to the design guidelines provided in the *American Association of State Highway and Transportation Officials' Guide for the Planning, Design, and Operation of Pedestrian Facilities* (AASHTO, 2004), the *American Association of State Highway and Transportation Officials' Guide for the Development of Bicycle Facilities* (AASHTO, 1999) and the *Manual on Uniform Traffic Control Devices* (MUTCD). These guidelines will apply to all state-maintained roads. The City of Albemarle should be familiar with these publications and design guidelines.

5.2. SPECIFIC BICYCLE NETWORK DESIGN RECOMMENDATIONS

Design considerations for a variety of types of bicycle facilities are highlighted on the following pages. These design considerations are not intended to serve as "standards," since the most appropriate design will vary from project to project. However, suggested minimums and recommended design elements are addressed for the following types of facilities:

- Sidewalks
- Shared-use paths
- Bicycle Lanes
- Paved Shoulders
- Shared Travel and Parking Lanes; and
- Bicycle Routes

A. OFF-ROAD ACCOMODATIONS

1. Sidewalks

Popular misconceptions, inhospitable roads, and cyclists' comfort level lead many to choose sidewalk riding.

Cycling on sidewalks create annoyance, inconvenience, and dangers for pedestrians, but also creates significant dangers for cyclists themselves. Studies of accident trends in the state of Oregon showed that cyclists on sidewalks were 5 times more likely to be involved in a crash with a motor vehicle than cyclists on the roadway. Vehicles approaching driveways and intersections rarely stop before approaching a sidewalk; pulling all the way up to the roadway before stopping is typical. Someone moving at the speed of a pedestrian can more easily assess and deal with approaching automobiles at these intersections, but a bicyclist can not. Moreover, a motorist is not expecting anything faster than a pedestrian to be approaching from anywhere other than the roadway. This is particularly the case when the bicyclist is traveling against the direction traffic, which is a common mistake because some bikers unfortunately feel more comfortable seeing approaching traffic rather than having it come from behind. If a bicyclist is quickly approaching an intersection on a sidewalk (or even a roadway) while riding against traffic, motorists on a perpendicular roadway stopped at the intersection or driveway ahead of them in preparation to make a right turn will rarely look to their right before making the turn, as their focus is to approaching traffic to their left. Neither the bicyclist approaching from the motorist's right nor the motorist can react in time, causing a high percentage of bicycle collisions.

Nonetheless, this plan can not ignore the fact that many people ride bicycles on sidewalks, in some cases even if a perfectly good neighborhood road or bike lane is parallel to the sidewalk. Some will never be convinced to ride on the street and, for those people, proper education on how to best avoid a collision is best. **According to the survey conducted for this plan, 55% of respondents use sidewalks for bicycling and 26% of respondents *prefer* riding on sidewalks.**

In many cases, providing alternate safe cycling corridors is part of the solution. Paved pathways, bike lanes, connecting neighborhood bike routes, even some shared roadway lanes will help some sidewalk bicyclists choose a safer path. To some extent, the road system can be designed and built to create a safer environment for most bikers, but young children, the elderly, and the timid or infrequent cyclist may very well choose never to ride on a roadway, and to

always choose the sidewalk, where present. Proper planning and education of cyclists and motorists is necessary to make sidewalk bicycling a safer option. *Nevertheless, most urban sidewalk riding is never a safe enough option for this plan to ever encourage it over other options.* The following is AASHTO's policy regarding sidewalks serving as bikeways:

> *"Sidewalk bikeways should be considered only under certain limited circumstances, such as: to provide bikeway continuity along high speed or heavily traveled roadways having inadequate space for bicyclists, and uninterrupted by driveways and intersections for long distances; and on long, narrow bridges."*

Unfortunately for sidewalk riders, sidewalks in Albemarle are not uniformly present or reliably connected. Furthermore, many of the City's sidewalks were built before ADA compliance was mandatory, so with many sidewalks lacking appropriate planting strips, there are frequent dips to street level that the bikers who choose to use a sidewalk must endure as the walkway crosses driveways and other intersections. Curb cuts are also rare, making it necessary for these bikers who choose to use sidewalks to lift the front and rear wheel after each intersection to remain on the sidewalk.


Many sidewalks lack curb cuts

Sidewalks that ramp down to driveways and roadways (or when there is no existing curb cut at all) give the false impression to the pedestrian and to the driver that this section of the sidewalk is the drivers' territory. Additionally, it makes conditions difficult for the disabled, child strollers, and walkers and runners. Sidewalk and driveway standards that require new and maintained driveways to ramp up to meet a level sidewalk make the driver more aware that they are crossing into pedestrian territory, and make the sidewalk more agreeable to users. Any sidewalk and road intersections should include proper curb cuts, ramps, and crosswalks. New and refurbished driveways should meet the sidewalk and the street at right angles to adequately slow and stop motorists and to improve their line of sight. All of these design guidelines that create safer sidewalks for walkers would also make safer sidewalks for those that are tempted to bike on sidewalks.

There are, however, roadways in town that are almost never appropriate for cyclists. These roadways are those that are primarily located in the Central Business District and the centers of each of the City's identified Pedestrian Districts. These areas are expected to be oriented first and foremost to pedestrian access and comfort, and the combination of bicycles and sidewalks together in this environment is both dangerous to the cyclist and pedestrian and damaging the public view of bicycling. In these districts, appropriate ordinances that restrict cycling on sidewalks should be considered (currently, City ordinances prohibit sidewalk riding downtown), but only if appropriate safe access is provided on adjacent streets to all levels of cyclists (See

discussion on page 8-10). This access can be one or a mix of the other bicycle facilities described in this section such as shared-use paths, bike lanes, or shared roadway lanes with traffic calming. Laws banning riding on sidewalks should never be applied before creating a suitable safe substitute for all cyclists, however. In addition, encouraging cyclists to ride on any sidewalk by not providing safe alternatives is also highly discouraged. Laws restricting bicyclists from riding on sidewalks where safe alternatives do not exist decrease the amount of cycling in those areas.

2. Shared-use paths

Shared-use paths are for a variety of users

Shared-use paths are intended to serve walkers, wheelchairs, runners, skaters, bicyclists, or any other non-motorized mode of transportation. These facilities may be referred to and include as "greenways," "multi-use paths," or "rail trails" and should not be confused with sidewalks that share the right-of-way with roads. Shared-use paths can act both as bikeways and walkways. Private motorized vehicles of any kind (besides motorized wheelchairs for legally disabled citizens) should never be allowed access to these pathways.

According to the survey conducted for this plan, 66% of respondents prefer or highly prefer bicycling on such paths. The single greatest deterrent to bicycling in Albemarle, as indicated by survey respondents, is a lack of bicycle paths and bicycle lanes separated from traffic.

Shared Use Path Design

Shared-use paths should be a minimum of 10 feet wide with minimum 2-foot wide graded shoulders on each side (AASHTO recommends 5 foot shoulders) to protect users from grade differences. Parks and urban corridors tend to be popular sections of these trails and should potentially be 12 to 14 feet wide, depending on the existing or projected level of use. If it is not possible to increase the width in these popular sections, consider including a divider line down the center for bi-directional traffic, especially around sharp curves. Shoulders can be grass, sand, finely crushed rock or gravel, natural groundcover, or other material. Sections of the path where shoulders are not feasible because of stream crossings or other elevated grade issues should have protection such as rails, fences, or hedges. Bridges along shared use pathways should have a 54-inch high railing to permit safe bicycling, whether on an independent bike/pedestrian bridge or a bridge shared with auto vehicles.

It is recommended that these paths be surfaced with a hard material that allows for easy walking and bicycling. Asphalt is cost effective and practical in most terrains, while concrete and boardwalks are best suited for flood prone (culverts and underpasses) or wet areas (wetlands

and creek borders). Finely crushed stone or granite screening (rock dust) is a cost effective alternative that may be used outside of high traffic urban areas.

Path Alignments

Abandoned rail beds, floodplains, and sewer easements or other utility corridors are frequently used in the alignment for greenways and other shared-use paths. The alignments along these corridors typically have minimal conflicts with road rights-of-way, intersections and driveway crossings.

Incorporating shared use paths into future land use and transportation plans is popular and crucial

Shared-use paths should keep the contour of the land for aesthetic and environmental reasons, but for practical reasons should not be unnecessarily curved. The minimum radii or curvature recommended by AASHTO is 30-50 feet, and the cross slope should typically be less than 2%. The grade should not be more than 5%, but could reach as high as 11% for short distances according to ADA and AASHTO guidelines. Right angles should be avoided for safety reasons, especially when considering bridge and road crossings.

Intersections of Roadways and Shared-use paths

Generally, the largest safety concern when developing a shared-use path is the conflict with roadway intersections. Motorized vehicles do not typically look for or notice bicyclists that are not on the roadway until it might be too late to react. Therefore, proper marking of intersections must be done and these intersections must offer visibility for both the bicyclist and the motorist. Proper crossings should be included in all designs for these paths and designs should be reviewed by NCDOT where paths cross State-maintained roadways.

Because shared-use paths typically do not cross roads at signalized intersections, they could include accommodations such as mid-block crossings, underpasses, converted culverts, or bridges. Vertical clearance for pathways of 8 feet is required for safety of all users, and structures and shrubbery should not extend horizontally into the corridor. A vertical clearance of 10 feet is recommended for underpasses and culverts. Whenever possible, a shared-use path should cross high volume roadways above or below grade so that conflicts with motorized vehicles are minimal. If this option is not practical, at grade mid block crossings should follow guidelines set forth later in this section regarding unsignalized crossings. For cost or safety purposes, it may be the best option to take a path's alignment to an intersection for crossing purpose, and then move it back to its original alignment. If this is done, the intersection must be modified to safely accommodate the bi-directional bicycle traffic here. Restricting turns, tightening turn radii,

Crossing under grade is an attractive alternative to crosswalks

widening the intersection to accommodate the path, creating a separate signal cycle for path users or other treatments would be necessary to limit the turning conflicts that would be inevitable without such modifications. Using existing sidewalks is discouraged unless they are widened to a minimum of 10 feet to accommodate multiple types of users.

Environmental Protection

Environmental protection should be a priority with the planning and construction of a trail. Trail design, construction type, and construction schedule should all reflect environmental considerations. For example, a trail offers some flexibility in its alignment compared to a sidewalk, offering opportunities for selective clearing of vegetation. Also, asphalt may not be considered a good surface material in wet areas because of its petroleum base, and construction during certain months of the year may disrupt wildlife nesting.

The benefits to a shared-use path may outweigh any detriments that its existence may cause on the surrounding ecology. Besides encouraging the reduction of all of the harmful environmental effects of automobile use, these trails can also stimulate the acquisition and conservation of wildlife corridors, be associated with stream improvement projects, and may give people a healthy respect for their natural surroundings by making public open space more accessible. In many cases, placing urban streamside lands into the public's view reduces the likelihood of harmful dumping of litter and pollutants and helps to create a cleaner looking and functioning waterway.

Lighting

Shared use pathways should be open at all hours so that it can serve as a reliable transportation route. Lighting is not necessary or recommended in many situations. Places where the trail has major intersections such as roadways, underpasses, culverts, railroads, creeks, and other trails are good locations for appropriate lighting. Lighting should also be considered near safety hazards such as curbs, sharp directional changes, obstacles, or ending points if ambient light is limited. High-use areas such as parks and urban locations often already have existing light sources, but may require additional lighting on some parts on the trail. A reflective stripe or markers will help to make a trail navigable in limited light. Lighting the trail itself in very low light areas can restrict the visibility of areas beyond the trail. Existing street and structure lighting in urban areas can typically effectively and adequately light the adjacent trail. For safety reasons, a requirement that states that all bicycles and skaters carry lights and all pedestrians wear reflective clothing during non-daylight hours is recommended.

Sidepaths

A sidepath is essentially a type of shared-use path that is aligned immediately parallel to a roadway. Like shared-use paths, sidepaths attract a broader range of users with different cycling capabilities. Commuters; utilitarian cyclists; children; the elderly; cyclists towing or carrying children; and recreational cyclists almost always feel comfortable on these designated and separated bike paths.

A sidepath in Durham, North Carolina

Essentially, a sidepath is a cross between a bike lane, sidewalk, and a shared-use path. It runs immediately parallel to the roadway in the Right-of-Way, it is paved (usually 10 feet wide or more), and is divided from the roadway by an unpaved buffer strip and/or curb and gutter. Some sidepaths may be designated for bicycle use only (more common in urban centers - see cycle track discussion later in this section) while many are intended for a mix of pedestrians and bicycles.

The United States has some roadway characteristics that make the implementation of sidepaths challenging with an expanding suburban road system that allows motor vehicles to move fast and to make turning movements often and quickly. Additionally, drivers in the United States and more particularly in Albemarle, are not very accustomed to seeing many bicyclists along roadways. Collisions between turning motor vehicles and bicyclists tend to be common when a cyclist is on a parallel path divided from the roadway such as a sidewalk or sidepath. The design and construction of a sidepath must be done with great care and attention given to the safety and visibility of the cyclist at driveways and intersections. Finding an ideal sidepath location can be challenging.

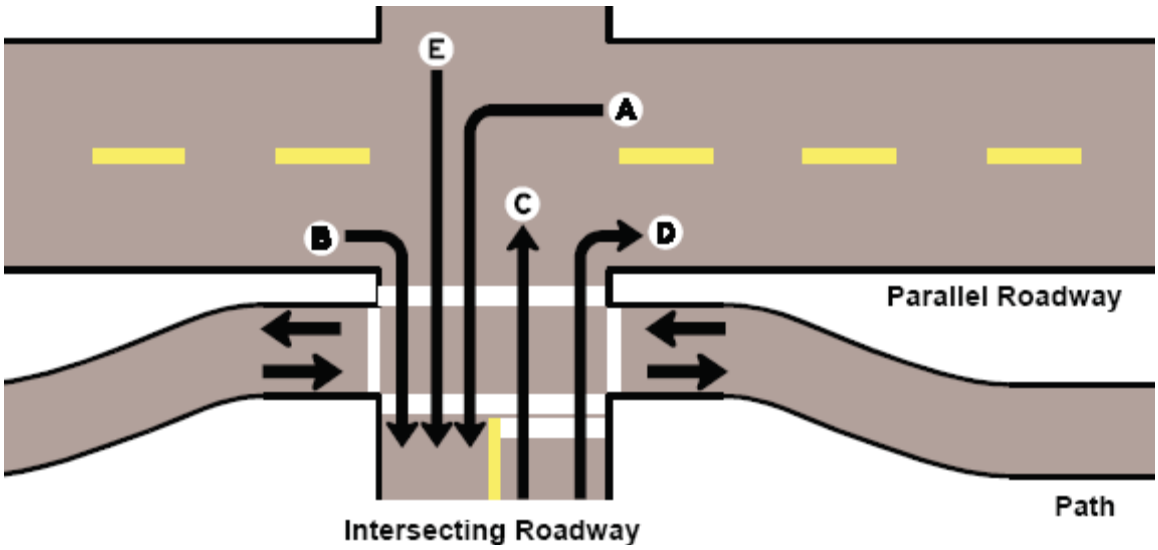
Some agencies and municipalities have chosen to remove sidepaths completely from their bicycle facility options, but ignoring the benefits of sidepaths entirely is not recommended. Our roadway system is a immense, inter-connected transportation network allowing travelers to freely move from place to place. Automobiles are large and fast, and intimidating to a majority of the population who might consider cycling. A cyclist must have a certain amount of skill, fitness, and comfort to be able to maneuver in a shared roadway with motorized traffic, even with divided bicycle lanes. Many cyclists who can consistently travel at speeds over 15 MPH are quite comfortable and very safe on most roadways. Cyclists who consistently travel from 10 – 15 MPH are fairly comfortable on many roadways, especially those equipped with bicycle lanes. However, a majority of the residents in Albemarle, if on a bicycle today, would probably consistently stay at cruising speeds of less than 10 MPH. They are less comfortable in mixed traffic at those speeds and may also not be comfortable in a bike lane. A sidepath would likely be attractive to this population if they are able to get to the same destinations by bicycle as their car could reach.

Potential Problems:

1. The intersection of a sidepath and a roadway is where the potential for collisions are apparent. A motorist, by nature, is not accustomed to seeing a fast moving vehicle on their right side as they make a right turn unless it is immediately in their field of view (as in a bike lane). A bicycle approaching on a sidepath that is just outside of the roadway may come as a surprise to a motorist.
2. When a path along a roadside has two-way bicycle traffic, one direction of bicycle traffic will be traveling opposite the adjacent motor vehicle traffic. A motorist is not likely to expect a vehicle to be facing them on their right, with vehicles turning into the cyclists' path being the biggest concern.
3. AASHTO also notes some concerns of sidepaths including the potential for bicyclists to use the wrong side of the roadway after the terminus of the trail, and that motorists would incorrectly assume that a bicyclist must use the sidepath instead of the roadway.

Several solutions exist for designing a safer intersection where the path meets the road:

1. Place the biker into the motorist's field of view. At intersections and major driveways, direct the path closer to the roadway, with the stop bars being placed behind the path. Once through the intersection, the path can again move to its original distance from the roadway, as shown in the illustration below.



An illustration of a sidepath at an intersection from the Guide for the Development of Bicycle Facilities, *Copyright 1999, by the American Association of State Highway and Transportation Officials, Washington, DC. Used by permission.*

2. Intersection should be designed to allow for safe turn movements for all users. Tightening turn radii, and placing stop bars will force right-turning vehicles to face cyclists and pedestrians before they complete their turn, and will force them to turn more slowly. A left turn arrow should be available for those turning left towards the path, but they should have a red arrow while through traffic has the green light. This will eliminate the danger of left turning vehicles colliding with a bicyclist or pedestrian crossing on the path. Right turn on red should not be permitted for the motorists that will be turning into approaching cyclists that are on the side of the path that is facing traffic.
3. Popular paths may be equipped with a video camera system that will detect cyclists and pedestrians, and give traffic priority on that side of the road to the path user(s) through the intersection (while still allowing through traffic to move on the other side of the road).
4. Proper signage will let motorists and bicyclists know that they will all be crossing together at the intersection.
5. The alignment of the sidepath should deliver and guide bicyclists to a safe facility on both ends of the path such as bike lanes, bike routes, or other safe roadways and paths.

Directing the Sidepath to a Mid Block Crossing:

The existing sidepath along US 52 through Montgomery Park is a suitable location for a sidepath in Albemarle. This route positions the path between a roadway and open space, limiting the number of intersections and driveways. A sidepath may have the option of leaving the Right-of-Way when approaching some intersections, and crossing the roadway 300 feet or more from the intersection at a midblock crossing. Three-hundred feet is considered an acceptable distance away from a signalized intersection where a driver might be expecting to stop again for another crossing. This method mitigates the dangers of turning vehicles, but puts the bicyclists in the position where they must cross an unsignalized intersection. This option might not be available at most intersections along this corridor because of the narrow width between the roadway and the railroad.

Cycle Tracks:

A discussion about sidepaths is not complete without mentioning cycle tracks. These sidepaths are common throughout Europe, especially in urban communities in the Netherlands and Denmark where utilitarian bicycling rates exceed 60%. Cycle tracks are grade-separated from the street, as a sidewalk is, but designated solely for one-way bicycle travel on each side of the road. Separate, but parallel sidewalk areas are provided for pedestrians. Extensive intersection treatments are included to increase the safety of cyclists as they cross the paths of motor vehicles.

Although bicycle facilities physically separated from roadways have been shown to attract extremely large numbers of bicyclists of all skill levels, there are conflicting studies about whether these paths are more or less safe than bicycle lanes in the roadway. Because cycle tracks are not yet a part of common bicycle planning options in the United States, because of the high costs of these pathways, and because of the safety uncertainties, these paths are not a part of this Comprehensive Bicycle Plan. This should not exclude their use in the future if the City of Albemarle decides that cycle tracks are desired on certain roadways within high density urban districts.

A summary of our recommendations for shared-use paths is below:

- Minimum 10 feet wide. (12 feet is preferred in high use areas)
- A cross slope of 2% is recommended.
- Grades of less than 5% are required, with occasional grades up to 11% for short distances.
- Minimum 2-foot graded shoulder on each side with 5 feet preferred.
- Asphalt is best surface for multiple users such as bicycles and skates. Concrete is a good alternative in flood-prone areas such as culverts, while boardwalks are best in frequently wet parts of the trails. Very fine gravel or *Granite Screenings* (rock dust) is a cost-effective substitute in rural areas and can accommodate pedestrians and most bicyclists.
- Motorized vehicles (excluding wheelchairs, maintenance staff, and emergency vehicles) should never be permitted.
- Intersection crossings must be highly visible to motorized traffic, following mid-block crosswalk guidelines or by incorporating special traffic calming methods at intersections such as restricted turn signals.

- Trail design, construction type, and construction schedule should all reflect environmental considerations.
- Lighting should only be included where necessary such as in high use areas, at intersections or at other hazardous locations.

Examples of typical shared-use path cross sections from NCDOT and Mecklenburg County Park and Recreation are in **Appendix F**.

3. Off-Road Dirt Trails

Mountain bike trails at City Lake Park are popular. The City greenway system can potentially provide access to these trails.

Although this plan focuses on bicycle facilities that serve primarily as transportation routes, bicycling is, by nature, a popular and entertaining form of recreation. Shared-use paths, bike lanes, rural roadways, neighborhood roads, and mountain bike trails are all used by residents to get outside and play. **According to the survey conducted for this plan, 60% of respondents use or highly prefer bicycling on off-road trails.** The more opportunities that cyclists have to use and become familiar with their bicycle, the easier it is for them to use their bicycling skills as a gateway to becoming comfortable on a roadway that they would need to use for transportation. Since most children and adults may not immediately feel comfortable sharing a roadway with automobiles when on a bicycle, they will first choose to become accustomed to riding a bicycle on a sidewalk, on a shared-use path, or on an off road trail.

This plan recommends that the Park and Recreation department study the feasibility of creating more "single track" and other off-road trail networks on its existing and future park lands. Creating these trails on parks located immediately on a proposed bike route, shared-use path, or a street with bike lanes would provide a transportation and recreation connection as well. Expanding existing trails at City Lake Park would give cyclists a good place to recreate within a short bicycle ride of downtown and the greenway.

Additionally, shared-use path corridors that do not yet have a paved pathway can serve as excellent off-road bicycling paths, as well as transportation links for those equipped with the correct type of bicycle. It is also recommended in this plan that easements for shared-use pathways are assembled quickly and that access is permitted for the public and advertised for bicycle and hiking use even before a permanent pathway is constructed.

B. ON-ROAD ACCOMODATIONS

A bicycle transportation network that does not fully enable bicyclists to use roadways does not encourage cycling. Unfortunately, the average person simply will not be comfortable riding alongside motor vehicles unless certain enhancements are made to the roadways. These enhancements may include obvious bicycle improvements such as designated bicycle lanes, paved shoulders, or shared parking/bike lanes. Some roadway bicycle accommodations might not be as obvious such as wide outside lanes, neighborhood bike routes, or traffic calming

methods on standard roadways. Traffic volumes and speeds primarily determine what level of accommodation is required for bicyclists on shared roadways. **Table 5-1** highlights guidelines for selecting bikeway facilities for all new or reconstructed streets, based on criteria from the City of Portland, Oregon's Comprehensive Bicycle Plan. This table should serve only as a guide, while each facility's needs should be addressed on a case-by-case basis.

TABLE 5-1

Average Daily Traffic (ADT)	**Speed Limit**	**Recommended Bikeway Facility**
< 1,000	≤ 25 MPH	Street as is, and may be designated as a *Bicycle Boulevard* if it meets additional standards on page 5-21.
≥ 1,000 – < 3,000	≤ 25 MPH	Street as is, and may be part of a *Bicycle Boulevard* if lane widths exist that can accommodate both cars and bicycles or can be designated as part of a *standard bicycle route*.
≤ 3,000	> 25 MPH	*Wide outside lanes*. Where not possible due to width constraints and parking needs, traffic calming improvements are acceptable*. This street may be designated as a standard *bicycle route*.
≥ 3,000 – <10,000	≤ 25 MPH	*Wide outside lanes or bicycle lanes*. Where not possible due to width constraints and parking needs, traffic calming improvements are acceptable*.
≥ 3,000 – <20,000	30-35 MPH	*Bicycle Lanes*. Where not possible due to width constraints and parking needs, wide outside lanes or traffic calming are acceptable*.
≥ 10,000 – <20,000	25-45 MPH	*Bicycle Lanes.* Where not possible due to width constraints and parking needs, wide outside lanes are acceptable*.
≥ 20,000	<55 MPH	*Bicycle Lanes.* Where not possible due to width constraints, a parallel alternative bikeway facility should be developed within ¼ mile. *Speed limits from 45 MPH to 55 MPH require no less than 6-7 foot-wide bicycle lanes from stripe to curb, with 7-feet being preferred on 55 MPH roadways (or paved shoulders if no curb and gutter exist) with special attention given to intersection safety.
Rural Road Volumes	All speeds	5-7 foot-wide paved shoulders should be standard on every rural roadway. Roadways with speeds greater than 55 MPH require an alternate bike corridor that is completely separated from the motorized vehicle travel lanes and intersections.

**Traffic calming or wide outside lanes are acceptable where any of the following conditions exist:*

- *It is not possible to eliminate lanes or to reduce lane widths;*
- *Topographical constraints exist;*
- *Additional pavement would disrupt the natural environment or character of the natural environment;*
- *On street parking is essential to serve adjacent land uses or to improve the character of the pedestrian environment.*
- *There are numerous commercial driveways that can create hazards when combined with bike lanes without proper access management techniques.*

1. Bicycle Lanes

On appropriate roads, bicycle lanes offer a perception of safety to bicyclists and make many drivers more comfortable with sharing the road with a cyclist. **According to the survey conducted for this plan, more than 85% of respondents prefer or highly prefer bicycling on roadways with designated/marked bicycle lanes.** Some data suggest that while motorists regularly give the bicyclist safe passing distances while in bike lanes, many do not know what is appropriate space to give when they are sharing a vehicle lane. Some cars come dangerously close to cyclists while passing, sometimes coming within inches, or simply come too close for the speed or mass of their vehicle. The air motion associated with a fast or large vehicle can cause a bicyclist to lose control. Many motorists feel that bicyclists need more room than they really do, and cause traffic to build behind the cyclist because of the fear of passing too closely. These cars may come too close to oncoming motorists in order to give the bicyclist unnecessary extra space. Striping bicycle lanes can alleviate some of these uncertainties.

Neighborhood roadways are the only urban roadways that would normally not benefit greatly from bicycle lanes. These roads have safer traffic volumes and speeds where cyclists of most skill levels feel comfortable biking in the travel lanes with other vehicles.

Because bike lanes get debris swept into them by passing vehicles, it is necessary to occasionally clean them.

Arterial roadways, or even some "neighborhood" roads that serve more as collectors because of lack of appropriate connectivity, make the best candidates for bike lanes. Speed limits on these roadways usually range from 25 to 45 miles per hour, with 35 MPH being the most common on Albemarle roads. New striped bicycle lanes should be a minimum of 5 feet from the curb to the stripe, including the gutter pan or a minimum of 4 feet from the edge of the gutter pan or edge of asphalt. An 8-inch thermoplastic fog stripe is recommended, with a 4-inch fog stripe being the minimum width. A 6-inch stripe is common. A bike stencil with a directional arrow should be placed in the bicycle lane after each intersection and then periodically as needed. Since bike lanes tend to accumulate debris blown over from the traffic lanes, a method to occasionally sweep and clean bike lanes should be determined. Unpaved roadways that intersect bicycle lanes should have paved bibs.

Bicycle lanes can be implemented on existing roadways by:

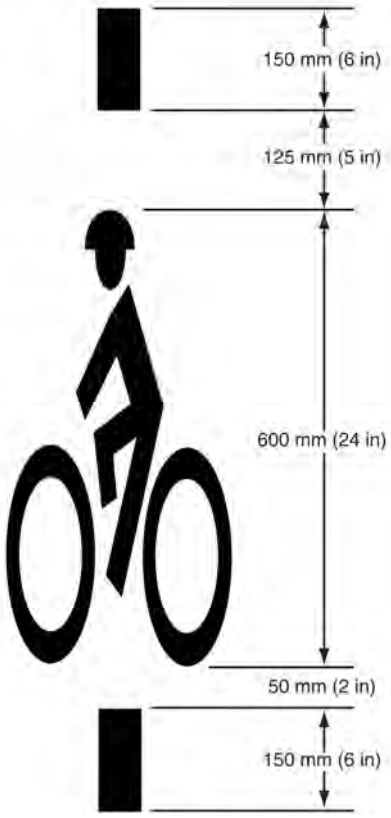
1. Narrowing existing travel and turn lanes;
2. Substituting motor-vehicle travel lanes for turn and bicycle lanes;

3. Removing or modifying on-street parking;
4. Shoulder widening.

These practices should be a standard consideration in every road resurfacing or widening project, but should also aggressively be done independently of these projects to quickly and efficiently get the recommended bikeway network completed. All options should be considered and evaluated carefully before determining the best solution for each situation. Environmental concerns or topographical constraints may restrict shoulder widening, or existing or projected traffic volumes may restrict lane removals. Posted speed limits may cause safety concerns for narrowing travel lanes, or the necessity of on-street parking may make its removal unwise. These problems can, in some cases, be avoided if it is determined that extra pavement width might protect nearby ecologic features, or if traffic congestion is minimal or reduced from lane reductions when proper turn lanes are improved or provided. The reduction of posted speed limits might make lane width reductions possible and safer, and a combination of lane width reductions and a shared biking and parking lane might allow both to be accommodated.

Bike Lane Installation:

- Thermoplastic is typically used for line markings and preformed thermoplastic is common for bike symbols and arrows. Depending on traffic volumes, thermoplastic can last 10 years or more.



A common bike lane symbol

- Applied thickness is typically 90 mm -120 mm with 100 mm being preferred.
- Properly installed, thermoplastic chemically bonds to the pavement. To remove it, you have to remove the top layer of asphalt by grinding out the markings. If the product is not heated to the appropriate temperature before application, the thermoplastic may "peel."
- One of the two bicyclist symbols approved by the MUTCD is illustrated here with its proper dimensions. This symbol should be placed in the bike lane after each intersection to remind the driver of the lane's designated use. It can be placed as needed after that, usually after main driveways.
- A through bicycle lane should never be placed to the right of a designated right-turn-only lane.
- Bicycle lanes can be accompanied by signs that inform cyclists and motorists when a bike lane begins or ends ahead.

- Bike lanes are generally not appropriate on roadways with a high number of commercial driveways, due to additional conflict points with turning automobiles.
- Bike lanes are especially suitable for roads with two travel lanes, or four lane divided roads.
- Where bike lanes are adjacent to an on-street parking lane, AASHTO recommends a minimum combined width of 11' to 13'; NCDOT recommends a 12' to 13' minimum.
- For specifics on the placement of bike lanes, reviewing the full *Manual on Uniform Traffic Control Devices* is recommended, with an emphasis on *Part 9 – Traffic Controls for Bicycle Facilities*.

A typical roadway cross section with bike lanes from NCDOT's design guidelines is shown in **Appendix F**.

2. Paved Shoulders

This photo was taken on the Northeast Connector in Albemarle. This shoulder is approximately 3 feet wide, but a minimum of 5 feet is preferred.

Non-urban roadways, which typically do not have curb and gutter, are prime locations for paved shoulders. One reason for their necessity is that rural roadways are the most likely locations for a bicyclist to be hit from the rear. The combination of narrow roads with high speeds make the inclusion of two vehicle types of two very different speeds and sizes on the same roadway more dangerous than on urban streets where traffic speeds are typically lower and the traffic patterns are more stop-and-go. Paving these roadways with shoulders a minimum of 5-7 feet on each side, divided by paint from the travel lanes, provides safer areas for bicycles to travel and also increases the safety of motor vehicles. Allowing automobiles to pass bicyclists without moving into oncoming traffic has obvious safety benefits. The extra pavement can give automobiles a safety zone in case objects or other vehicles unexpectedly appear in their lane. A paved shoulder also acts as a level place where broken down or damaged vehicles can sit or as an area that emergency vehicles can use when the roadway is congested. Paved shoulders also have been attributed to lower maintenance costs than on narrower roadways where vehicle tires more typically run along the more-fragile margins. Shoulders should *never* be less than 5 feet wide as it will force the cyclist to use a facility that is too narrow (NCDOT allows 4 foot shoulders on roadways where speeds are 40 MPH or less). If a narrow shoulder exists, motorists will assume that it is wide enough for a bicyclist, and usually not give sufficient passing distance or might be angered if a bicyclist encroaches in "their" travel lane. Rumble strips should be avoided. If a rumble strip is used, then the width of the paved shoulder should increase. **According to the survey conducted for this plan, almost 56% of respondents enjoy or highly enjoy bicycling on rural roadways with paved shoulders. Survey respondents listed the lack of shoulders as the third most important deterrent to bicycling in Albemarle.**

A typical roadway cross section with paved shoulders from NCDOT's design guidelines is shown in **Appendix F**.

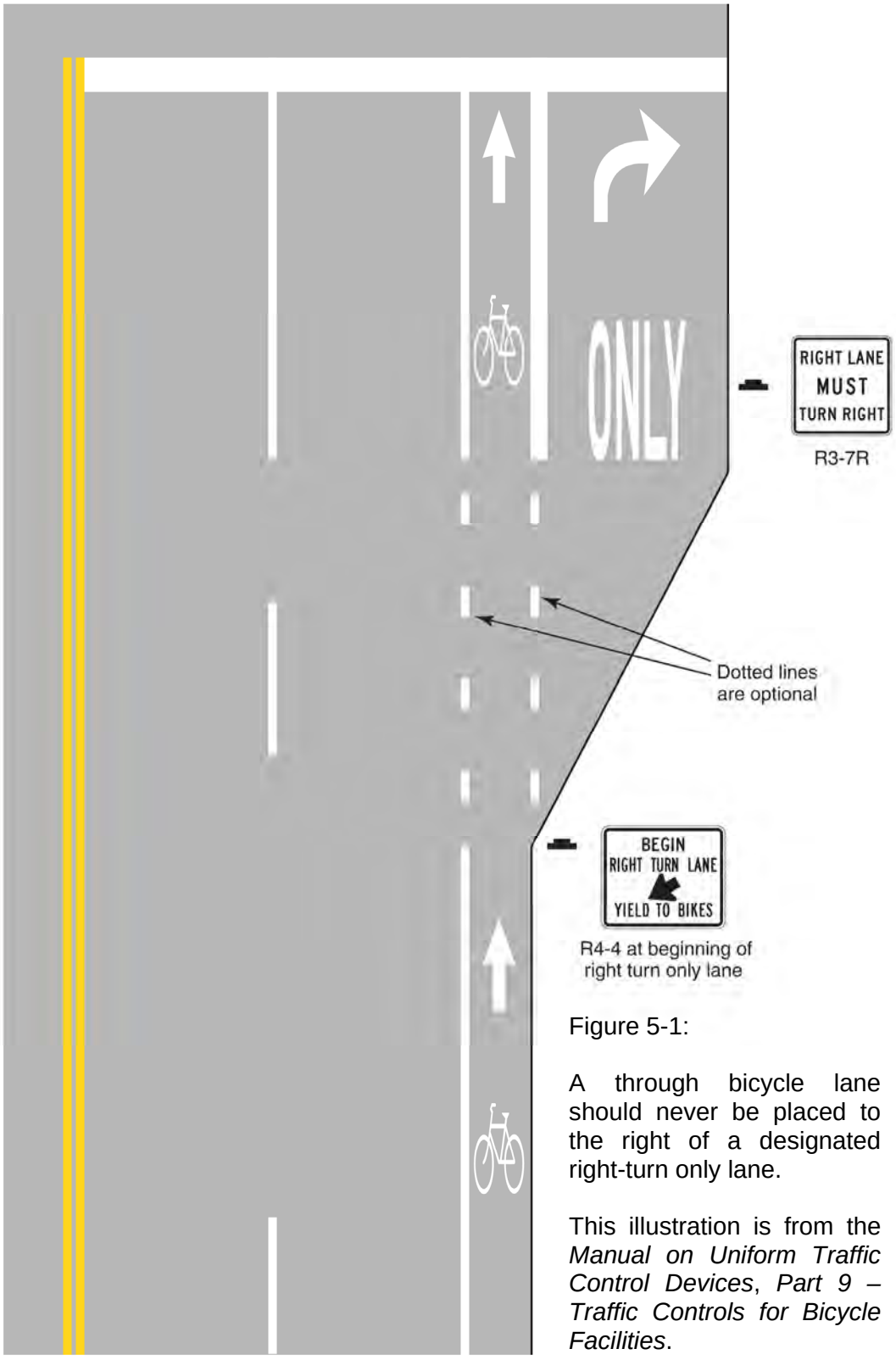


Figure 5-1:

A through bicycle lane should never be placed to the right of a designated right-turn only lane.

This illustration is from the *Manual on Uniform Traffic Control Devices*, *Part 9 – Traffic Controls for Bicycle Facilities*.

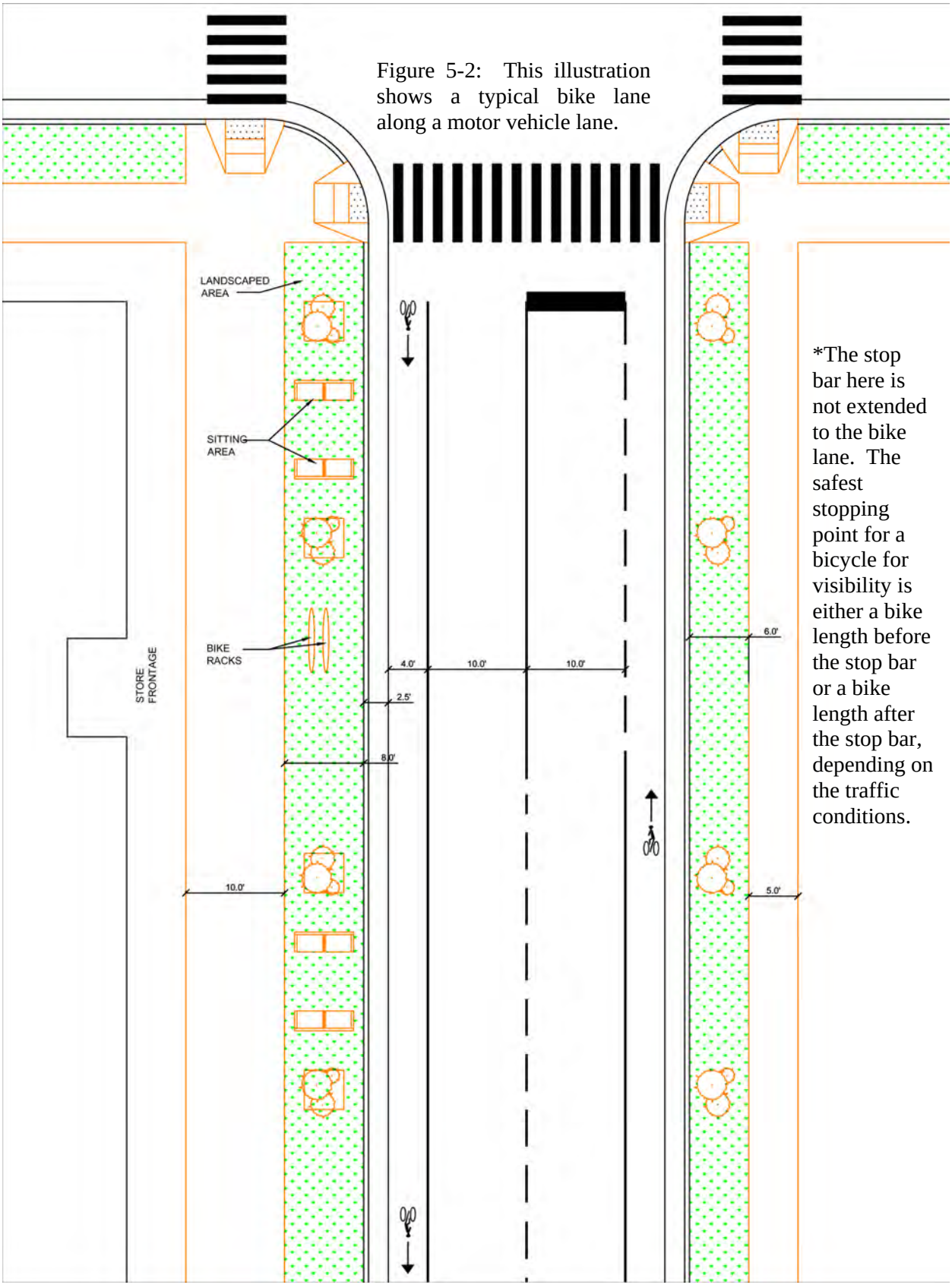


Figure 5-2: This illustration shows a typical bike lane along a motor vehicle lane.

*The stop bar here is not extended to the bike lane. The safest stopping point for a bicycle for visibility is either a bike length before the stop bar or a bike length after the stop bar, depending on the traffic conditions.

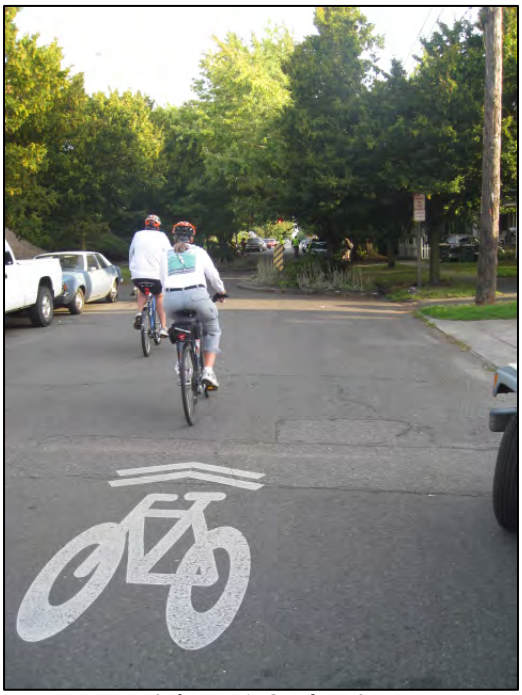
3. Shared Travel and Parking Lanes

A. Wide Outside Lanes

To keep speeds safe, residential (20-25 mph) zones should have 9.5 – 10.5-foot lanes. Bicyclists and automobiles easily share these low speed roads, while the low volume creates numerous opportunities for safe passing. Thirty to forty mph shared-use roadways could have 10 – 11-foot inside travel lanes and 14-foot outside lanes, although planning for roadways with speeds of 35 miles per hour or less with these widths should first consider bicycle lanes. Roadways that are 45 mph or greater should have 11 – 12-foot travel lanes with 14-foot wide outside lanes. Most urban collectors and arterials that have the space for a 14-foot outside lane may also consider striping 4' of it as a bicycle lane. These streets should all have "Share the Road" signs (discussed later in this section) periodically to remind drivers that bicycles could be present in the roadway.

A typical roadway cross section with wide outside lane from NCDOT's design guidelines is shown in **Appendix F**.

B. Sharrows



A sharrow in Seattle, WA

Narrow, low speed streets with low to high volumes (typical streets found in Central Business Districts or on certain neighborhood bicycle routes) might not have the width required to accommodate bicycles and cars easily in separate lanes or side by side in the same lane. Planners may wish to attract bicyclists to these streets and remind motorists to expect their presence. One technique for shared lanes that is becoming popular involves stenciling "sharrows" in the roadway that tell motorists and cyclists that they share a lane. Many roadways downtown have numerous intersections, driveways, and pedestrians. Most bicyclists can keep pace with traffic speeds on these roadways, and giving them signed information about where to position themselves in the lane makes them most visible and is sometimes the safest way for cyclists them travel in such environments. A sharrow might serve to remind both bicyclist and motorists on neighborhood roadways that the street is shared, or might position a bicyclist safely away from hazards such as car door zones.

The Shared Lane Marking ("sharrow") is intended to:

1. Help bicyclists position themselves in lanes too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane;

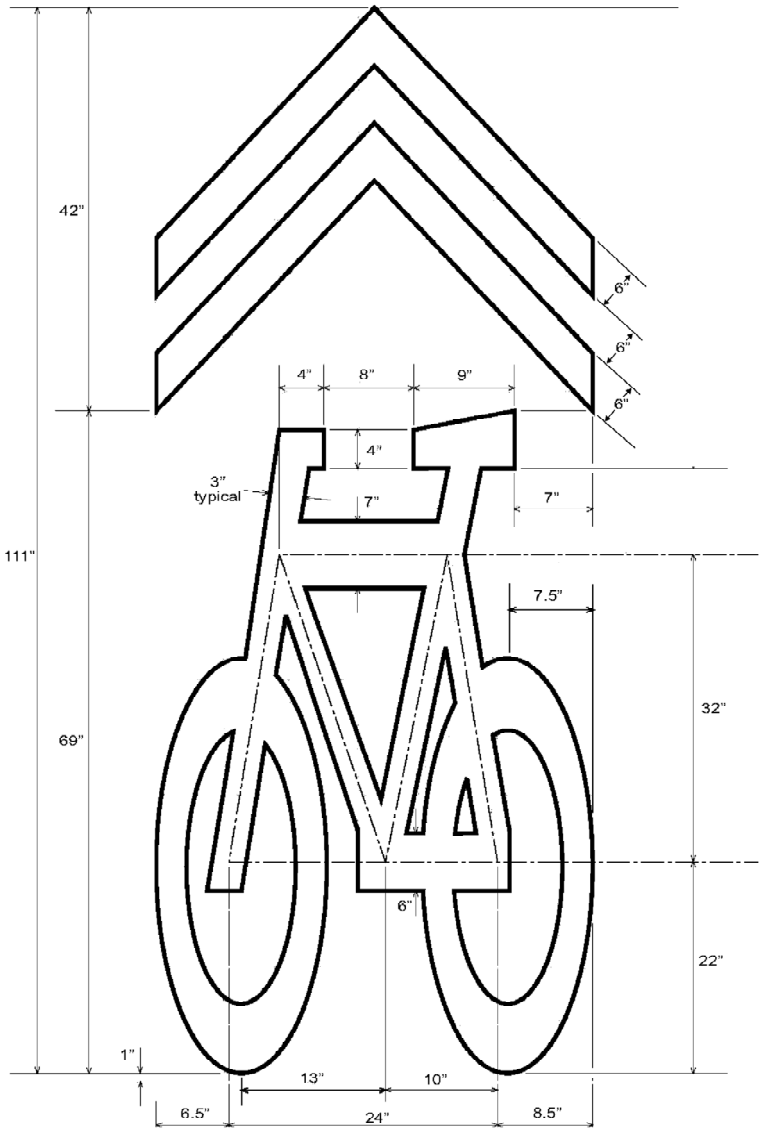
2. Encourage safe passing of bicyclists by motorists;

3. Reduce the chance of a bicyclist impacting the open door of a parked vehicle in a shared lane with on-street parallel parking;

4. Alert road users of the lateral location bicyclists may occupy; and

5. Reduce the incidence of wrong-way bicycling.

The Sharrow symbol may be used to assist bicyclists with positioning in a shared lane with on-street parallel parking and to alert road users to the location a bicyclist may occupy within the traveled way.

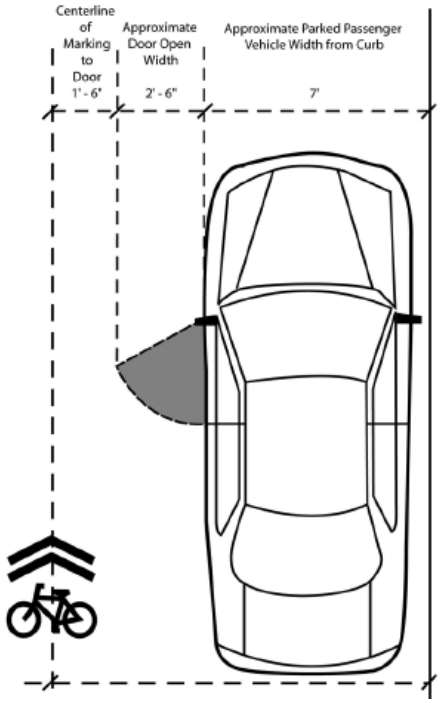


This sharrow symbol is currently being considered for adoption by the MUTCD

Standards:

- If used in a shared lane with on-street parallel parking, Shared Lane Markings shall be placed so that the centers of the markings are a minimum of 3.3 m (11 ft) from the curb face, or from the edge of pavement where there is no curb.
- Shared Lane Markings shall not be used on shoulders or in designated bicycle lanes.
- The Shared Lane Marking should not be placed on roadways with a speed limit above 55 km/h (35 mph).
- When used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 75 m (250 ft) thereafter.

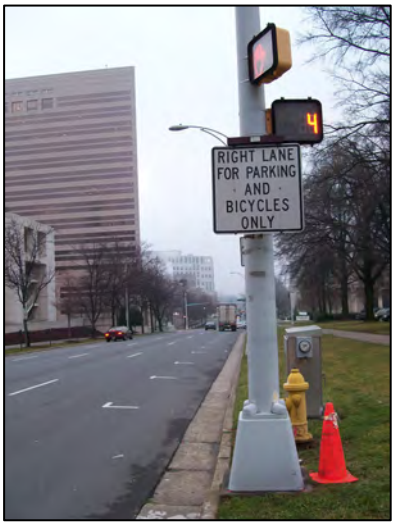
C. Shared Bicycle/Parking Lanes and "Cinderella" Bike Lanes



Proper sharrow placement with on-street parking

Many municipalities are being creative with their roadways to better accommodate bicyclists. In many instances, there simply is not the space, resources, or demand to include bike lanes on every roadway, but planners realize that the more opportunities bicyclists have to safely use our roads, the more will come. Since many of our streets are designed and constructed to accommodate the volume of traffic that will be on them at peak times, Central Business Districts have long been allowing motorists to park their vehicles in the right lane of multiple-laned streets any time other than the morning and afternoon rush hours. A 12-foot wide outside travel lane could be converted to a lane that accommodates both a parked automobile and a moving bicycle. Automobiles park to the far right 5 feet of the lane plus the 2 foot gutter pan near the curb, allowing almost 7 feet to the left of the vehicle for a bicycle lane and a door zone. Many cities designate these lanes for "parking and bicycles only" during assigned non-peak hours, but this concept can be used for permanent on-street parking lanes as well.

However, the fear of being "doored" for a bicyclist in a bike lane shared with on-street parking is real and dooring does kill bicyclists every year. Providing a minimum 2 ½ foot "door buffer" between a marked 7 foot wide parking space (including gutter pan) and a 4 foot wide bike lane is safer than placing on street parking immediately adjacent to a bicycle lane of less than 5 to 6 feet in width. For shared travel lanes, a Sharrow stencil *centered* four feet from the edge of the parking space (or 11 feet from the curb) will guide a bicyclist safely past an opening door. (See "Back-in Diagonal Parking" on Page 5-31 for safer parking options with bike lanes.)



A shared parking and bicycle lane in Charlotte, NC

The concept of Cinderella bike lanes can be expanded to other applications. A seven foot-wide parking-only lane on an urban roadway during the work day might be dedicated as a bike lane during rush hours and weekends, and at other times when the parking might not be in high demand. Future and existing multiple-laned roadways throughout Albemarle can designate their right lanes for bicyclists on weekends, or even during non-peak weekday hours, while they allow all vehicles during the peak travel times. This action can motivate many people to ride their bicycles for the first time in the streets, or to ride more frequently. These weekend lane conversions create miles of recreational bikeways at minimal to no costs, while weekday non-peak lane restrictions provide some alternatives that will otherwise not be possible. Of course, educating the public that

cyclists and motorists must share an outside lane during peak hours might be necessary to clarify that bicycles can still legally be on the roadways during these times.

4. Bicycle Routes

A neighborhood bike route in Charlotte, NC

Some of the most pleasurable roads for bicycling are low traffic and low speed neighborhood streets. Streets such as these may also be good routes to get to schools, churches, some shopping, and many homes. Children might learn to first ride a bike on streets like these, and then use them to spend the summer exploring the neighborhood. Adults might use these roads for a pleasure bike ride, a ride to the nearby store, or for a bicycle ride into a workplace. These roads usually require no or few new modifications to make them comfortable for bicycling, and most cyclists feel secure on these streets without separate pathways. The greatest factor about these roads is that, if well connected, they can take the rider places outside of their neighborhood without riding on busy streets. The curving or sometimes maze-like nature of these roads usually divert motorized through traffic to more popular arterials, and slows the speed of some of the existing traffic. This offers a more comfortable, although longer alternative for bicyclists. Similarly, since these roadways do not support high traffic volumes, they also support very few destination points. Bicycle routes should always be used in conjunction with other bicycle facilities that ensure practical connectivity to the places that the cyclists need to go.

Today, many of these routes are hard to discover as new residential developments are built with cul-de-sacs connected by a single entrance to an arterial road. This seriously restricts the number of low speed and low traffic roads that a cyclist can take to get to a destination. Many of these preferred cycling roads now dead-end into cul-de-sacs and the connecting roads may be as intimidating as thoroughfares.

Because there are different types of bicycle riders, it may be worth designating different types of bike routes. Standard bicycle routes tend to have low traffic volumes, and speed limits that may range from 20 to 55 miles per hour. Because of the low traffic volumes, these are attractive to cyclists who are fairly comfortable bicycling on roadways, but they may not be attractive to bicyclists who are not comfortable mixing with these higher traffic speeds. Designating a street as being a part of a bike route should be able to tell a timid rider or a parent that this roadway is acceptable for beginning cyclists. Neighborhood bike routes that have traffic calming measures in place to keep speeds less than 25 miles per hour are ideal for this purpose, and are becoming known as Bicycle Boulevards. Bicycle Boulevards can be created that are

intended to serve all bicyclists, including children, senior citizens, and the average beginner cyclist. (See further discussion of bicycle boulevards below.)

A. Standard Bicycle Routes:

Bicycle routes are fairly low volume streets (≤ 3,000 ADT) and low speed (≤ 25 MPH) that can serve as more comfortable alternative routes for bicyclists than higher volume and higher speed roadways. In some select instances, regional bicycle routes can be created on higher speed roadways (up to 55 MPH) that tend to have very low volumes or on streets with up to 5,000 ADT that have speed limits of 45 MPH or less or that offer traffic calming. These routes connect destinations through neighborhoods, little-used commercial streets, or low volume rural roadways.

Because these bicycle routes are already acceptable for many levels of cyclists, little needs to be done to transform it into a bicycle route. However, many current and future bicyclists will never realize the route's existence unless it is advertised. Signs along the route and route maps will show bicyclists and motorists that these routes are official bike routes. This will attract the bicyclist to the roadway, and even help them navigate through it. Speed limits can also be reduced to create a more acceptable bicycle route designation. Traffic volumes can be controlled by specific planning or zoning techniques to guide future growth or by traffic-calming measures. If speed limits and traffic volumes cannot be controlled to a comfortable level, adding paved shoulders or bicycle lanes is highly encouraged on roads designated as bicycle routes. Naming or numbering each route on an occasional sign helps give it an identity and thus makes it easier to associate these roads as ways to get around by bicycle.

B. Bicycle Boulevards:

There should be an obvious distinction between a standard bicycle route and a street that can be used by any level of bicyclist. Certain neighborhood bicycle routes can be designed, created, and designated as *Bicycle Boulevards*, to benefit the amateur cyclist without incurring a great amount of infrastructure cost. To be designated as a Bicycle Boulevard, a street must:

1. Offer acceptable connectivity and be reasonably continuous;
2. Have a speed limit of 25 MPH or less and have the street design or traffic calming measures in place to make certain that the cars consistently travel no faster than the posted speed limit;
3. Be a local street which is not a truck or transit route or has a preferred daily traffic volume of 1,000 ADT or less (traffic calming techniques can be used to limit these street volumes to local traffic only). Some Bicycle Boulevards may have up to 3,000 ADT if wider lanes exist to accommodate both bicyclists and

Pavement markers remind both bicyclists and motorists that the street is a Bicycle Boulevard

automobiles without noticeably increasing average speeds;

4. Be marked with special street signs and/or pavement markers that designate the street as a Bicycle Boulevard and directs users through the route;
5. Have very little commercial frontage, but still provides reasonable access to major destinations;
6. Be within ¼ mile of a major street or a high-traffic collector street;
7. Have few directional changes with main segments of at least ½ mile long;
8. Be on streets with priority at most of its unsignalized crossings (do not have stop signs) or these intersections are controlled by yields or roundabouts;
9. Have traffic signals at major intersections, or cross major intersections where future signals are feasible; and
10. Connect to other bicycle routes, bicycle lanes, or shared-use paths.

A Bicycle Boulevard can be the result of a standard bike route that has evolved over time to become a Bicycle Boulevard that is inviting to all levels of bicyclists. It is very important, however, to reserve designation of a bicycle route as a Bicycle Boulevard until it reasonably adheres to the criteria listed above. A Bicycle Boulevard that has consistently high speed or high volumes of motorized traffic will not create the association of bicycle friendliness that the name Bicycle Boulevard is intended to generate. Techniques to implement a Bicycle Boulevard include:

A special street sign on a Bicycle Boulevard

A. Some traffic calming may be warranted on many roadways to ensure a low speed limit, and in some cases, to help divert some unwanted non-local motorized traffic volumes to other roads. On-street parking and/or chicanes are very affective for this, along with roundabouts, traffic chokers, or even motorized vehicle diverters at select intersections (These treatments are discussed later in this section).
B. Some devices may need to be installed to help bicyclists cross main intersections. Remove all possible stop signs on the Bike Boulevard street, as stop and go motions can quickly wear down a cyclists' energy just as it requires more fuel for an automobile. Any cross streets with high volumes should be considered for a roundabout. Removing stop signs on these streets may encourage higher speeds and volumes, so an occasional traffic choker or traffic diverters for automobiles are recommended to ensure that the traffic on these roads continues to attract mostly local traffic.
C. The street should be well marked as a Bicycle Boulevard with pavement markings (sharrows or another unique marker), special street-name signs with a particular color, wayfinding signs, and possibly with a unique pavement material when repaving is done. These Bicycle Boulevard routes should be named and mapped on a bicycle facility map.
D. Adding connectivity for pedestrians and bicycles can help to create or link Bicycle Boulevards to other bicycle facilities. Retrofitting connections between existing cul-de-sacs or dead end roads can make a bicycle trip possible that was otherwise too long.

5.3. TRAFFIC CALMING FOR SAFE STREETS

A. INTERSECTION TREATMENTS

1. Signalization

Countdown signals allow bicyclists to cross with more certainty

- Countdown style pedestrian signals should eventually be incorporated into each signalized intersection in Albemarle. Because of the different rates of speeds of cyclists and motorists, these countdowns are helpful for cyclists to determine how much time they have to get through a large or distant intersection. Many bicyclists, once past the stop bar, cannot safely cross many large intersections in the time that it takes for the light to change from yellow to red. To check the clearance interval, a bicyclist's speed of 10 mph and a perception/reaction/braking time of 2.5 seconds should be used. Besides allowing cyclists to determine if they have time to cross before entering the intersection, countdown signals also tell riders the time they have while stopped to adjust their helmet, remove or add clothing, or to take a drink of water. While traffic engineers are occasionally hesitant to install countdown signals because of the fear that they will perpetuate red-light running by motorists, this fear has been found to be unnecessary. Motorists usually cannot read the countdown's numbers from long range, and some early studies show that those that can read the signals tend to maintain a consistent flow through intersections or tend to more readily stop for a yellow light when they know the exact time remaining on the cycle.
- Countdown signals can be installed 7 – 10 feet high at intersections with a timed signal change or at intersections that are controlled by loop detectors, video detectors, or push-buttons. imed signals should display the entire countdown phase until it reaches zero, when all pedestrian and vehicle traffic should get a red light together in that direction. Signals should display a walk symbol at all times when the pedestrian has the right of way, and include the countdown as soon as the signal is scheduled to change.
- A displayed automatic *Walk* signal with a countdown is recommended at all intersections when pedestrians have the right-of-way to cross, whether or not the button was activated. This helps pedestrians as well as bicyclists because in many cases, pedestrians will not take the time to push the button if there is already a green light for the traffic, and might find themselves dashing across the remaining width of the street as the light turns to red. Bicyclists may find themselves in a yellow light situation in the middle of a wide intersection, being too late to stop and not having the speed to make it through safely before it turns red. The countdown allows bicyclists, pedestrians, and some motorists to better determine if they can safely cross through an intersection before the light turns yellow.
- Bicycles should have a way to trip loop detectors at intersections that are not phased on a timer. The distance to the pedestrian activation button and the impracticality of crossing over a traffic lane, curb cut, planting strip and sidewalk to press the button seriously decreases the chances of a cyclist ever making this effort. This lack of signal recognition is one reason why even normally law-abiding cyclists choose to run red lights. Special bicycle loop

detectors in a marked bike box on popular bike routes are becoming common solutions in this country. Some currently installed loop detectors for automobiles can be adjusted to pick up the existence of some types of bicycles, but this requires some knowledge on the biker's part to know how to place their bike within this loop and also loop detectors cannot detect many of the modern bicycles that are not made of conductive metal frames. Some roads are designed adequately for a special bike-activation button to be placed on a pole over the curb that is accessible to waiting bicyclists, and some detectors are triggered by a video camera which can be set to detect a bicycle. It is important that countdowns be installed at each of these loop detected and timed intersections to let the bicyclist know that they were detected.

Detection of a cyclist at an intersection is a complicated but important matter that usually gets ignored by traffic engineers. Loop detectors primarily for automobiles present many problems for the cyclist:

1. The small metal frame of an upright bicycle is not large enough to be detected by the loop.
2. The location of the bicyclist (the far right side of the travel lane) is usually not within the loop's perimeter.
3. In order to be detected by the loop, the bicyclist needs to be within the loop (in the center of the lane) and typically needs to lay their bike down on its side, sometimes even needing first to align their bicycle perpendicular to the lane.
4. Loop detectors are often set to detect automobile-sized metal objects, and will often not recognize a bike, even one laid down in the middle of the loop.
5. Many modern bicycles are no longer made of steel but made with light weight materials such as aluminum or carbon fiber. Aluminum does not conduct metal well and will therefore be harder to detect, while carbon fiber contains no metal and will never be detected by a loop.
6. Most bicyclists have no idea how to be detected by a loop, or the difference between lights activated by timers or activated by loop detectors. They do know that they can sit at most lights for a very long time and never receive a green signal, and thus are likely to simply ride through signalized intersections.

Shared-use paths can have loop detectors at intersections

Some solutions may be:

1. Many communities are beginning to install bicycle loop detectors that are located on the right side of travel lanes or in bicycle lanes. This is certainly an option, but the technology of carbon fiber bicycle frames is becoming so specialized that metal frames might completely disappear within the next few decades.
2. Create timed signalization at intersections on popular bike routes or intersections that have consistent vehicular traffic of any type. Timed signals ensure that bicyclists will not have to trip a sensor to receive crossing permission. Install countdown style signals at

these intersections as cyclists are not accustomed to being detected at most lights and would often assume that they will not receive a green light. The countdown shows cyclists that the green light is triggered and they need to only patiently wait.

3. For loop-detected signals, special bicycle push buttons could be installed that are raised over the curb at the bicycle stop bar. Standard pedestrian push-buttons are usually not within reach of a cyclist in the roadway and if intended for bicyclists, should be placed in a location specifically intended for a bicycle in the roadway.
4. Infrared detectors and video detection devices are becoming more common and affordable. This method of detection may be a wiser detection mechanism than loop detectors as steel bicycles become rarer.
5. For all methods of detection, a means of alerting the bicyclist that they have been detected should discourage most red-light running. Countdown signals work well, and some push button signals are equipped with lights that notify the user that they have activated the signal.
6. The sensitivity of existing loop detectors should be adjusted to detect a bicycle without sensing passing vehicles in adjacent lanes. This can be facilitated by using a short length (under 15 m or 50') quadrapole loop. This minimizes sensitivity outside the loop while increasing it within.

2. Bike Box

A bicycle box allows bicyclists to position themselves for turns (image: livable streets.org)

Bicyclists, because of their slower speeds, may be negatively impacted by street features that require them to queue with automobiles at stop lights in the far right lane and in left turn lanes. A bike box a bicycle length ahead of the motor vehicle stop bar in the left turn lane gives bicycles a defined waiting location for the light. A bike box in right lanes where right turns are not permitted on red positions the bicyclist ahead of the traffic while waiting for the light to turn green and place them in view of other vehicles, reducing the likelihood of being clipped once the signal changes. Bike boxes should be positioned between the automobile stop bar and the crosswalk.

Bike boxes are not currently included in the Manual on Uniform Traffic Control Devices (MUTCD), but the MUTCD contains provisions for jurisdictions to experiment with innovative treatments. The application of bike boxes (and colored pavement) will require state and federal approval for permission to experiment with this type of innovative treatment of NCDOT roads. The City, while urged to follow MUTCD guidelines, is not necessarily bound by MUTCD guidelines on locally owned and/or maintained roadways, and may be able to experiment with these types of treatments at the decision of City engineers.

3. Non-Signalized Crossings

Not every intersection can have a signal, and it is important that the motorized vehicle have appropriate warning to be able to react to a bicyclist or a pedestrian crossing a roadway. In

addition, although some cyclists feel comfortable crossing roadways as a vehicle would by moving to the left in a lane and making turns, many bicyclists do not feel comfortable doing this as it requires moving and accelerating into traffic. Therefore, marked crosswalks at these intersections or midblock crossings are important for all cyclists to safely cross roadways and also for many beginner-level cyclists who prefer not to merge into traffic. In addition, crosswalks also increase the visibility of bicyclists who choose to ride on sidewalks as they cross intersections, where collisions are most probable. Guidelines for non-signalized crosswalks include:

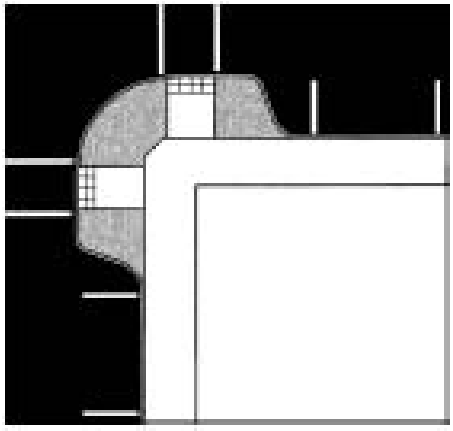
This rail-trail intersection is more noticeable to motorists with this crosswalk

- Install marked crosswalks at any non-signalized intersection, particularly those frequented by pedestrians.
- Install midblock crosswalks 300 feet or more from another marked crossing point or signalized intersection. These crossings are especially recommended near schools, retail areas, recreation, and residential areas.
- Provide where a shared-use path crosses roadways with a speed limit of 45 MPH or less.
- Require advance auto-warning signs and good visibility for both the driver and the bicyclist. Placing a stop bar with signage ahead of the crosswalk will ensure better visibility.
- Include a refuge island on wide streets where:
  - There are fast vehicle speeds or large vehicle or pedestrian traffic volumes.
  - There is more than one travel lane in any direction.
  - Children, people with disabilities, or elderly people would cross.
  - There are complex vehicle movements.
  - There may be insufficient time to cross the entire road because of traffic demands.

4. Curb Modifications

Tightening turns at intersections will force motorists to come to a complete stop, give drivers a better angle-view on approaching vehicle and pedestrian traffic, and decrease the length of the crosswalk for pedestrians. This design will benefit bicyclists as they approach an intersection alongside or approaching a motor vehicle that intends to make a right turn. A high speed right turn can seriously endanger a bicyclist before they have time to react. Designing tight turns or adding curb extensions to existing intersections would provide some safety for bicyclists at intersections.

- The tighter turn will force the automobile to slow considerably before turning.



With curb extensions, cars are forced to slow down to make right turns.

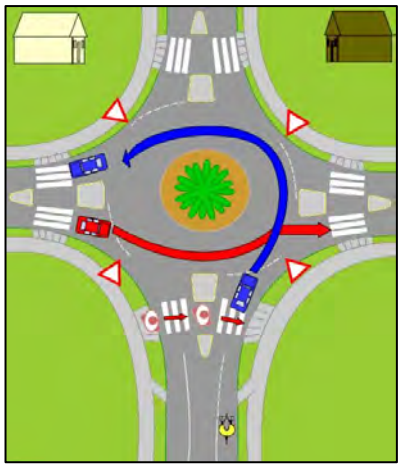
- Bicycles alongside turning vehicles will be able to advance ahead of the intersection before the car moves into the turn.
- Bicycles approaching a turning vehicle will have more time to react.

5. All-Way Stops and Yields

Neighborhood street intersections that currently have a stop in one direction can be modified to have a stop or a yield in all directions, if other speed controls are already in place. However, stop signs at too many intersections on a bicycle route can leave a cyclist exhausted from accelerating and decelerating and may instigate law-breaking on the part of the cyclist. Four-way yields are a solution to this, but NCDOT is not typically comfortable with recommending these unless they are made safer for bicyclists and pedestrians by including a mini-roundabout.

Four-way yield intersections save energy for vehicles traveling on low-speed streets.

6. Roundabouts and Mini-circles



This roundabout image from Yorkton, Canada shows crosswalks, safety islands, and optional bike exits for inexperienced cyclists who prefer not to take the lane.

Roundabouts are effective for pedestrians, bicycles, and motorists, despite the fears from those who are unfamiliar with these traffic control devices, which are popular worldwide. Roundabouts limit potential conflict points because the automobiles and bicyclists are unable to make left turns. Instead, the vehicle moves in a counter-clockwise direction around the circle, and exiting right at their chosen road. Vehicles get through the intersection more quickly, even though their speed is lower. Since these traffic speeds are slow, bicyclists can move into the travel lanes as if they were a larger vehicle. Pedestrians and novice bicyclists use sidewalks and crosswalks (sometimes with pedestrian refuge islands) on the outside of the roundabout. It has been shown that roundabouts have far fewer collisions than conventional intersections.

A mini-circle on a Bike Boulevard in Berkeley, CA

Seattle, Washington has installed over 700 neighborhood mini traffic circles, which have shown to be responsible for an 80% reduction in all types of crashes. This includes a 30% reduction in bicycle crashes as well. Universally, bicyclists need not stop, since they can see the vehicle in their conflict path, and simply increase or lower their entry speed.

7. Traffic Diverters

It may be necessary to divert non-local traffic from a roadway specifically meant for low volumes to a roadway that better supports regional traffic. This is particularly useful when designing Bicycle Boulevards because some features about these streets might attract unwanted motorized traffic.

A traffic diverter on a Bike Boulevard in Berkeley, CA

Select intersections on neighborhood streets with other access points may have barriers put in place that allow only bicycles to move forward, or that may allow access to motorized traffic from intersections from one direction only. Incorporating a barrier at one exit in a roundabout would be an affective traffic diverter on a roadway where slower speeds and lower volumes are desired.

B. STREET TREATMENTS

1. Road Diets (Lane Conversions)

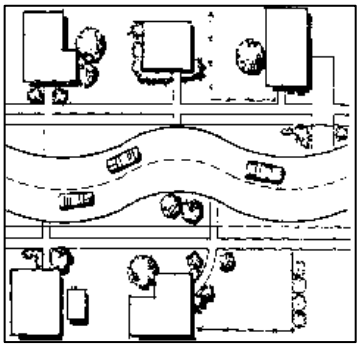
A road diet created bike lanes and a new center turn lane on a former 4-lane undivided roadway in Charlotte.

Roads with two or more travel lanes in each direction (or one very wide travel lane) and no or limited designated left turn lanes may be evaluated for the possibility of applying a "road diet". This lane conversion typically reduces the widths of or the number of motor vehicle travel lanes in each direction, includes designated center left turn lanes with occasional median strips for pedestrian crosswalks, and can include bicycle lanes and/or on-street parking, depending on the amount of right-of-way available.

This configuration will allow through traffic to keep a constant pace without stopping for turning vehicles, supports alternate forms of transportation, provides buffers for pedestrians on the sidewalks, slows traffic to the posted speed limit, and may give bicyclists and pedestrians safer crossing opportunities. According to Dan Burden of Walkable Communities, Inc., this configuration can be safer and can be more efficient as a traffic mover than some other roadway configurations. The ideal roadway for this conversion is often a four-lane road carrying 8,000 - 18,000 auto trips per day, but upper limits of 20,000 - 25,000 ADT are also achievable on some roadways without decreasing their carrying capacity. Although portions of Salisbury Avenue and W. Main Street are considered in this plan, no study has been conducted using traffic models. It may be a conceivable alternative in the future for conversion plans that meet specific objectives.

2. Alternate On-Street Parking and Chicanes

High traffic speeds are a deterrent to cycling as it makes many bicyclists feel unsafe. Where there is space for on-street parking on only one side of the street on roads intended for lower speeds, consider striping the travel lanes so that the parking spaces alternate from one side of the street to the next with each block or half block. This will give the road a serpentine shape and naturally reduce the speed of traffic. Chicanes can also be artificially created by adding landscaping, changing lane striping, or by creating pedestrian refuges with crosswalks. (This picture and other traffic calming techniques can be found on the Federal Highway Administration's Web Site at http://www.ite.org/traffic/tcdevices.htm)



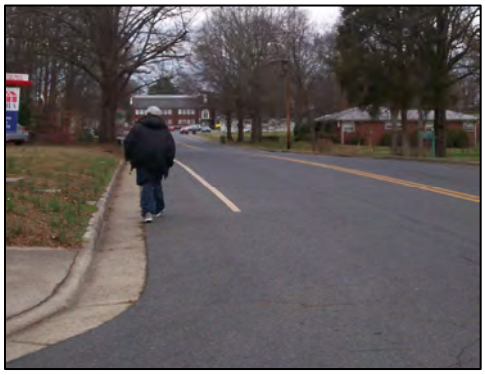
Chicanes can be developed on wide streets to help maintain a desired traffic speed

3. Chokers

A choker placed mid block on a residential roadway of a speed limit of 25 MH or less can be an effective addition to a chicane and further reduce traffic speeds. A planter or other permanent fixture can be constructed in the roadway that is wide enough to let only one vehicle and one bicycle through at a time. A designated waiting spot is created at either end of the choker for cars to wait to pass. This photo (courtesy of *pedbikeimages.org*) shows a traffic choker.

4. Narrowing Residential Streets with Striping

Wide neighborhood roadways can be striped to both calm traffic and to accommodate non-motorized users if sidewalks are not realistic in the foreseeable future because of budget issues. Standard 9½ to 10½-foot lanes can be established on residential streets by installing outside boundary lines with either paint or thermoplastic striping. While thermoplastic striping costs more, it will last significantly longer than will lines of standard paint, although standard paint will likely last for years on lower-volume streets. This practice should reduce traffic speeds on these neighborhood roads so that the streets are more usable for walkers and bicyclists and is best on roadways with speed limits of 25 miles per hour or less, and with an ADT of 3,000 or less.



A striped shoulder in Albemarle

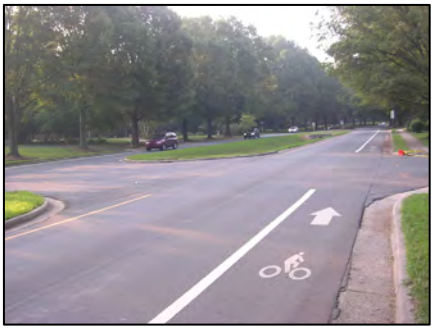
Experienced bicyclists could use the vehicle lanes in these conditions. Young and inexperienced bicyclists may wish to use the shoulder with the pedestrians, but should ride in

the same direction as traffic and must be prepared to avoid walkers or parked cars by merging into the vehicle lane.

Pedestrians who choose to use the areas outside the painted lanes must still comply with local and state law. North Carolina General Statute § 20-174 specifically states that pedestrians must use sidewalks where they are provided. When no sidewalks are provided, pedestrians should walk facing traffic and must yield right of way to vehicular traffic, while vehicles must use due care to avoid pedestrians on the roadway. The presence or the expectation of pedestrians on a street may also slow traffic on these neighborhood roadways. In spite of this option, narrowing the roadways for the accommodation of sidewalks is the preferred treatment on these streets whenever possible.

5. Bicycle Lanes

The previous paragraph describes lane striping specifically for traffic calming, but bicycle lanes are functional lanes for bicycles that also serve to slow traffic and buffer pedestrians on the sidewalk from roadway traffic. Although neighborhood roads typically have low enough automobile speeds and volumes for cyclists to ride in the vehicle lanes, bicycle lanes on arterial roads can slow traffic and offer a separated riding area for cyclists. NCDOT guidelines require designated bicycle lanes to be a minimum of 4 feet from the edge of the gutter pan to the stripe.



A bike lane in Charlotte, NC

Careful placement of bike lanes away from the door zone adjacent to on-street parking is required

6. Narrow Vehicular Lanes

Roadways in the core of the Pedestrian Districts and in residential areas should keep traffic speeds at a maximum of 20-25 mph. Keeping motor vehicle lanes at a width of 9.5' – 10.5' with other traffic calming features can naturally keep speeds limited. Thirty-five MPH roadway lanes can be as narrow as 10 feet. Urban roadways that are 45 mph or greater require wider lane widths for safety, but these should be kept to 11 or 12 foot wide and should include separated bicycle lanes or paved shoulders.

Designing "Complete Streets" that provide complete accommodations for pedestrians, bicycles, and motor vehicles on every street provides the optimal means for motor vehicle traffic, bicycles, and pedestrian traffic to coexist. The Federal Highway Administration states that, "Bicycling and walking facilities will be incorporated into all transportation projects unless

exceptional circumstances exist."[1] Albemarle needs to adopt a *Complete Streets* policy as well. NCDOT has adopted a *Complete Streets* policy and is currently developing guidelines for its proper application. This agenda item is available on-line at: https://apps.dot.state.nc.us/pio/releases/Image.ashx?id=475. A good resource that should be obtained from the North Carolina Department of Transportation Operations Department is their *Traditional Neighborhood Development (TND) Street Design Guidelines* from July 2000. These guidelines are available for proposed TND developments and permits localities and developers to design certain roadways according to TND guidelines rather than the conventional subdivision street standards. The guidelines recognize that in TND developments, mixed uses are encouraged and pedestrians and bicyclists are accommodated on multi-mode/shared streets. This manual goes into further detail on design speeds, street widths, on-street parking, sidewalks and other street features and can be found on-line at: http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf.

7. Back-in Diagonal Parking

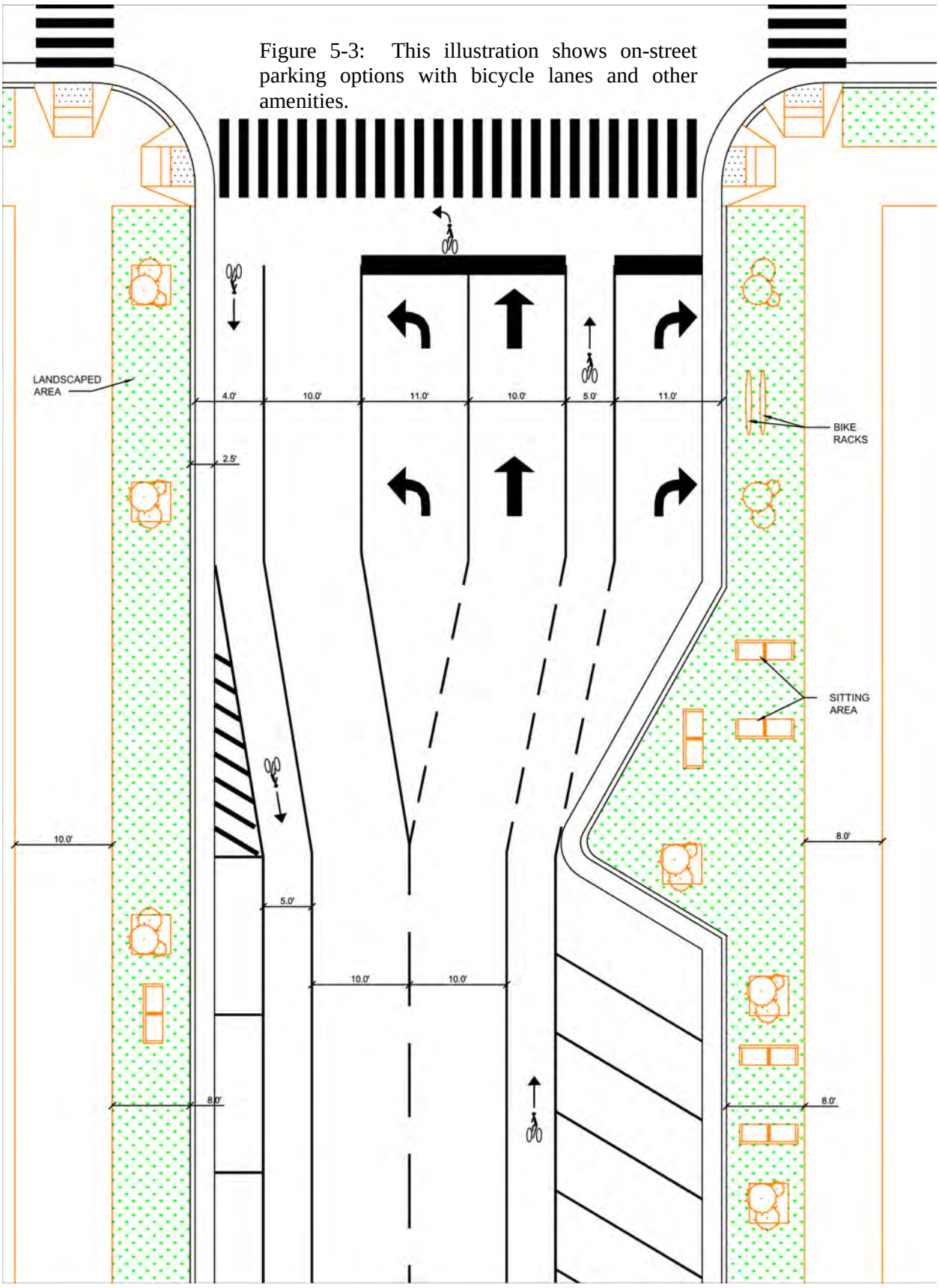
On-street parking can be hazardous to cyclists. A bicyclist has little chance avoiding a collision with a suddenly opened car door and a bicyclist is naturally less visible to a motorist backing out of a diagonal parking space. A new method of on-street diagonal parking has some benefits to bicyclists. By reversing the angle of the parking slots, motorists must pull forward of the parking space and then reverse into it. When they leave the spot, they have a clear view of approaching cars and bicycles approaching on their left and can easily maneuver into traffic.

Back-in diagonal parking has benefits for bicyclists (Photo by Michael Ronkin)

This also benefits the pedestrian by giving easy access for the driver, the passengers, and the car's payload to the sidewalk without having to first shut the door. The open door also acts as a buffer to keep small children from moving towards the roadway when they exit the car. In addition, blind and fast turns into parking spaces that may have pedestrians blocked from view are eliminated.

[1] FHWA Design Guidance - Accommodating Bicycle and Pedestrian Travel: A Recommended Approach. A US DOT Policy Statement - Integrating Bicycling and Walking into Transportation Infrastructure; http://www.fhwa.dot.gov/environment/bikeped/design.htm

Figure 5-3: This illustration shows on-street parking options with bicycle lanes and other amenities.



5.4. BICYCLE PARKING, SIGNAGE, LIGHTING, AND LANDSCAPING

A. Bicycle Parking

Signs and poles sometimes offer the only reliable bicycle parking. These are inadequate for most preferred locking systems

One of the biggest deterrents for people who want to bike is the lack of places to lock or store a bike securely at the destination or even at their residence (in general and also according to the survey completed for this plan). Just as we have accommodated motorists by providing ample parking at all destinations, we should encourage more bicycle use by providing more bicycle parking.

A single motor-vehicle parking space can cost thousands of dollars in construction and land costs, as well as add to annual property taxes and maintenance costs. Ten or twelve bicycles can be parked in the space that it requires for only one motorized vehicle.

Existing bike racks are sometimes both difficult to find and of inadequate quality

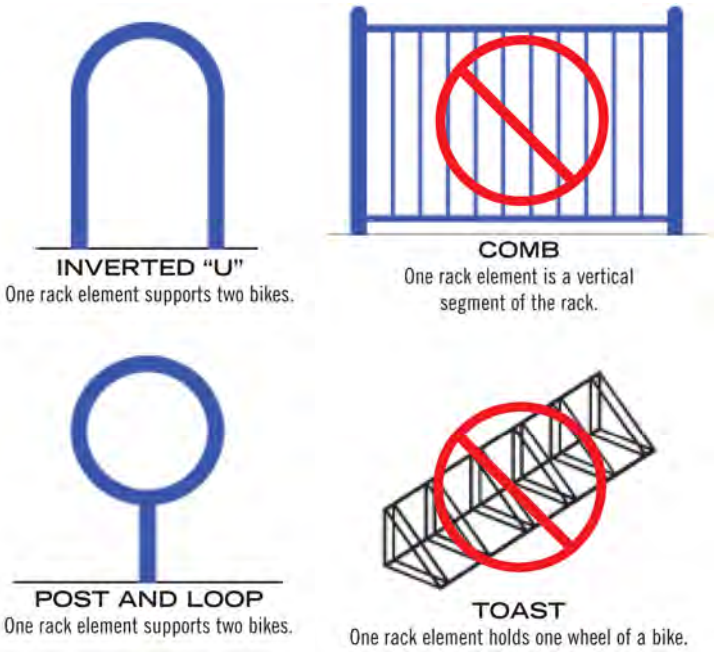
Placing bike racks under a building's roof overhang, in a covered parking deck, or under a special structure make bicycle parking racks more practical and appealing to bicyclists. Unfortunately, precipitation and sun exposure can have drastic effects on a bicycle over time. A bicycle can usually stand the drenching powers of the rain longer than its rider, but several hours or more left parked in a downpour can create the need for the owner to spend more time on maintenance. Rain can be forced into sealed bicycle components, remove protective lubrications, and rust parts. It can also destroy accessories on bicycles that many bicyclists have now such as odometers, lights, and the extras inside of attached handlebar bags or panniers. If immediate or practical shelter is not available, some bike rack styles are even equipped with a removable hard shell that can be placed over the bicycle.

These racks at Central Elementary School are of the right type and placed in a good location.

A bicycle parking ordinance should be adopted requiring the provision of off-street bicycle parking for new developments, expansion of existing developments, and changes in use that would require additional parking.

- The number of bicycle spaces required may vary according to use, but generally is 1 or 2 bicycle accommodations for any residence or business that requires less than 20 parking spaces or one bicycle accommodation for every 20 motor-vehicle parking spaces.

- These bicycle parking requirements can be fulfilled by lockers, racks or an agreed upon location designated for securely storing bicycles.
- The ideal rack is one that accommodates U-shaped locks, which are designed to allow the user to lock one or both wheels (if the front wheel is removed) and the bicycle frame to the rack. Many common bicycle parking racks do not work with this type of lock and result in bicycle damages and thefts, however, so should be considered unacceptable.
- Short term bicycle parking should be located within close proximity to the entrance to the destination and in a safe and secure location. Long term parking can be further away from the business or residence, but should be secure and well marked.
- Businesses that require mostly short term parking should offer some covered parking for employees. Residential structures and businesses that expect more long-term parking should have all of their bicycle parking sheltered from precipitation and sun.



This illustration, provided by the Association of Pedestrian and Bicycle Professionals, shows the acceptable rack shapes to the left and unacceptable rack types to the right.

Samples of the Town of Davidson's bicycle parking ordinance is located in **Appendix G**.

There are many opportunities to create better bike parking with creative and practical ideas such as:

Bad bicycle racks can complicate locking the bicycle, make theft easy or cause a wheel to be bent.

- Make it policy to purchase and install special parking meters that are specially adapted with a metal loop designed for a bicycle lock. This will save space and money and show that bicycles are a welcome addition to the transportation network.
- The City and existing businesses can share the costs of purchasing and installation of bicycle racks. Many municipalities have a plan where they purchase the racks for any existing business that would install it. The rack may have advertising on it for the sponsoring business.
- Bicycle parking facilities that are covered and strategically placed are becoming popular and may encourage bicycling. These are commonly located near a popular destination

and provide covered, short-term, secure bicycle racks. Larger facilities, known as "Bike Stations" may include long term bike lockers and/or shower and locker facilities.

In addition to the adoption of a bicycle parking ordinance for new or renovated development, the following minimum bicycle parking facilities should be implemented by the City and local institutions and businesses:

- Covered, short term bicycle parking to accommodate approximately 8 - 20 bicycles at each of the following locations:
  - City Hall
  - At each of the 5 public schools in the City
  - Stanly Regional Medical Center
  - Stanly Community College
- At least 24 individual inverted "U"-shaped bicycle racks to be purchased and installed throughout the City at locations such as:
  - The downtown library (2)
  - Stanley Commons (2)
  - Waddell Center (2)
  - YMCA (2-4)
  - Wal-Mart Shopping Center (2-4)
  - Harris Teeter (2)
  - City Lake Park (2-4)
  - Rock Creek Park (2)
  - Morehead Park (2)
  - Downtown Post Office (2)

Long-term covered parking may be a good option for some locations.

Good bicycle parking attracts users as shown to the right in Tampa, Florida.

This bicycle parking rack in Charlotte can accommodate up to 8 bicycles comfortably and out of the weather.

B. Signage

The Manual on Uniform Traffic Control Devices (MUTCD), which provides specifications on the design and placement of traffic control signs installed within public rights-of- way. The MUTCD encourages a conservative use of signs (Sections 2A-1, 2A-6, 2B-1, and 2C-1). Signs should only be installed when they fulfill a need based on an engineering study or engineering judgment. In general, signs are often ineffective in modifying driver behavior and overuse of signs breeds disrespect. Used judiciously and located with consistency, signs and markings can be effective.

- Signage is typically used for regulatory, warning, or wayfinding purposes. (Wayfinding signage is discussed in Section 6.)
- Signage should be minimal.
- Signage should be aesthetically appealing.
- Signage should be maintained to be readable.

Reflective pavement markings can serve as signage

The MUTCD outlines guidelines governing signs and pavement markings. At the same time, it does not prohibit creative regulatory design. Colors for signs and markings should conform to the color schedule recommended by the MUTCD to promote uniformity and understanding from jurisdiction to jurisdiction. For the background color of signs, use:

YELLOW - General warning.
RED - Stop or prohibition.
BLUE - Service guidance.
GREEN - Indicates movements permitted, directional guidance.
BROWN - Public recreation and scenic guidance.
ORANGE - Construction and maintenance warning.
BLACK - Regulation.
WHITE - Regulation.

Creative Sign Design

Warning signs are used to inform about unusual or unexpected conditions. When used, they should be placed to provide adequate response times. Warning signs are generally diamond-shaped with black letters or drawings on a yellow background and should be reflective or illuminated. Warning signs can provide helpful information, especially to motorists and pedestrians unfamiliar with an area.

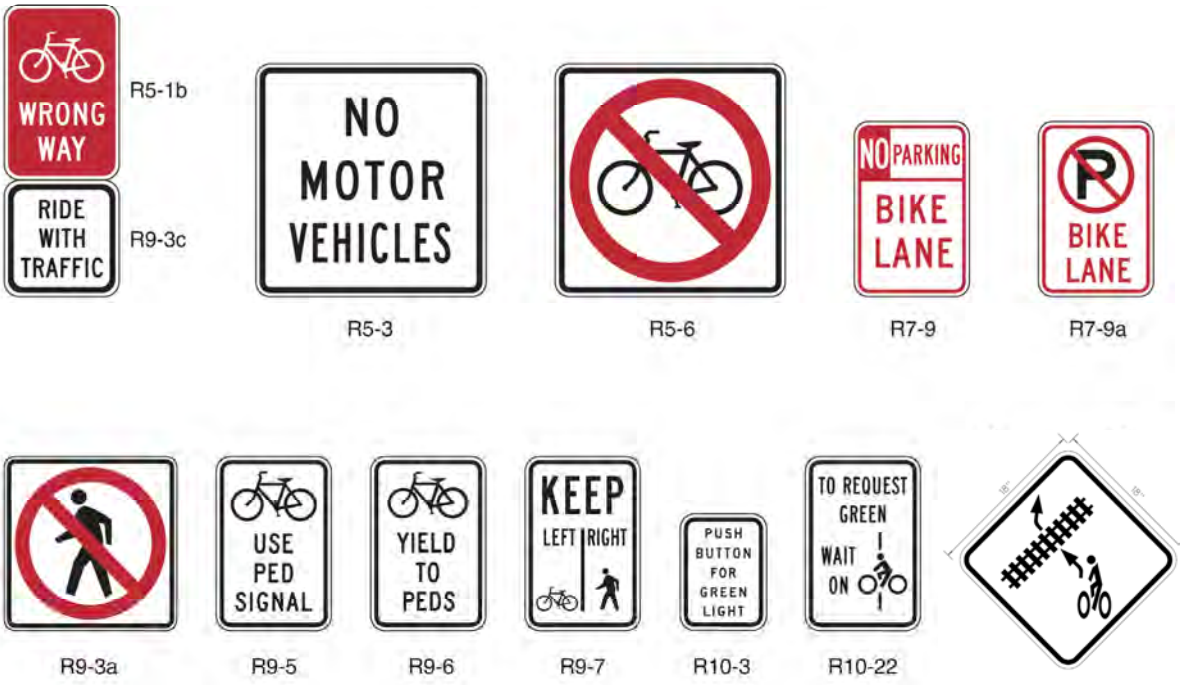
Regulatory signs, such as STOP, YIELD, or turn restrictions require certain driver actions and can be enforced. Some examples of signs that affect bicyclists include Share the Road signs, motorist warning signs, NO TURN ON RED signs, and guide signs.

Share the Road signs are posted to remind motorists and bicyclists that these vehicle types may be sharing the same lane. A new fluorescent yellow/green color is approved for pedestrian,

bicycle, and school warning signs (Section 2A.11 of the MUTCD). A Share the Road internet site is located at: http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/share.html

The signs above portray the bicycle as a toy and may discourage lawful bicycling.

Figure 5-4: Common MUTCD-Approved Signs that Pertain to Bicycling



C. Lighting

Lighting on paths may be smaller scale than street lighting

Typically, street lighting that is adequate for automobiles is also adequate for bicyclists, except on designated bicycle paths, where pedestrian-scale lighting is more appropriate. Areas of concern such as wide grates, drop offs, steep slopes, and other hazards should be considered for lighting. Although it is required by law that bicyclists carry a front headlight, most of these headlights are only bright enough for other vehicles to see the cyclist. Bicyclists rarely carry (particularly because of the cost) headlights that are bright enough to illuminate hazards in the roadway, and many bicyclists unfortunately, carry no light at all.

Well used cycling areas such as Central Business Districts, Neighborhood Business Districts, and shared-use paths inside of parks should have appropriate lighting. In many cases, lights can make visibility poorer in areas beyond an off road path or decrease a bicyclists natural vision in low-light situations. Lighting should be standard in underpasses and bridges, or when a path has obstacles such as roadway crossings, low limbs, or abrupt directional changes.

Lighting standards:

- Major arterials: illumination level (Average initial lux) = 16, Uniformity ratio: avg./min. 4:1 or less, max./min. 10:1 or less

- For all other roadways: illumination level (Average initial lux) = 11, Uniformity ratio: avg./min. 4:1 or less, max./min. 10:1 or less

D. Landscaping

Summer bicycle rides or bicycle routes to the workplace may be chosen based on available shade. Just as shade trees are valuable to pedestrians, they can make a bicycle trip more appealing and comfortable during warm, southern days or even during inclement weather. Scenery is also important to a bicyclist. Shrubs and flowers along planting strips and yards create more attractive routes, and landscaping with trees and shrubs has been shown to slow traffic speeds of motor vehicles.

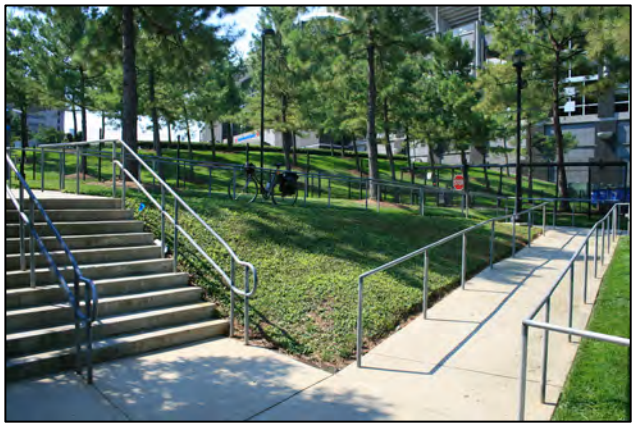
- Native vegetation should be used to minimize maintenance and long term costs.
- Use low-height shrubs (less than 3 feet) near intersections or transit stops.
- The limbs of large canopy trees should not encroach within the bicycling area.
- Planting strips should be wide enough to accommodate the vegetation planted. Large canopy trees need 5 – 8 feet, with 8 feet being preferred.
- Space large canopy trees evenly to provide adequate shade (25-50 feet apart). Small canopy trees might be spaced 20-25 feet apart.

- Utilize smaller canopy trees when conflicting overhead utilities are present.
- Consider trees that are low maintenance. Evergreen or deciduous trees that continually drop leaves or acorns throughout the year may require constant attention. Deciduous trees that only drop leaves once in the year are easier to maintain.

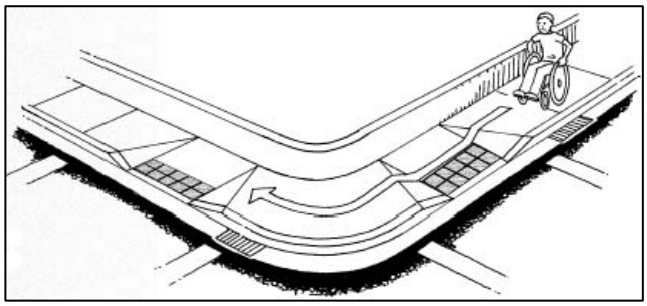
Sample costs for these items in Section 5 are given in **Appendix H**.

5.5. AMERICANS WITH DISIBILITIES ACT (ADA) ACCOMODATIONS

This plan recommends that the City of Albemarle takes special care to make certain that each and every right-of-way project done in the City incorporates upgrades to its existing features that will satisfy ADA guidelines. Features that benefit disabled pedestrians often benefit bicyclists as well such as sidewalk/shared-use path intersection cross slopes, sidewalk and path widths, surface grades, curb cuts, ramps, obstacles, and signals.



This wheelchair ramp at the Carolina Panther's stadium also benefits other users like bicyclists and parents with baby strollers.



Curb cuts and ramps without a minimum 6 foot buffer from the curb create dips that result in hazards for wheelchairs, bicyclists, and strollers.

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Section 6
Programs

6.1. EDUCATION PROGRAMS

A. Child Cyclist Education

A child learning safe bicycling. (Photo by John Ciccarelli of Bicycle Solutions)

Beginner Cyclists

Children should be taught the basics of cycling techniques early. Knowing which side of the street to ride or what to do at intersections are vital skills that will make them safe and independent cyclists throughout their childhood and into adulthood. **Children younger than nine-years old do not have the cognitive skills that could help them make the right decisions when biking unsupervised in traffic.** This creates a greater need for traffic calming for neighborhood bicycle routes and off-road bicycle paths. Organized bicycle training programs known as "Bicycle Rodeos" are popular and educational activities. Elementary school Physical Education classes can play a role in bicycle education for young bicyclists in primary school.

Pre-Teen and Teen Cyclists

A young cyclist biking to school. (Photo by John Ciccarelli of Bicycle Solutions)

Children in their pre-teen and teen years are developing the cognitive abilities to understand how to safely bicycle on the road, but still lack the ability to completely understand the full consequences of a collision with an automobile. Nonetheless, this is the period of their lives where the bicycle can offer a child some independence, and this time on the bicycle will give them the practice that will provide skills that last a lifetime. Neighborhood routes and off-road paths and trails offer fantastic opportunities for children to improve these skills with relatively little conflict points with high speed or high volume traffic.

Teenagers may be more apt to explore road racing, touring, or mountain biking to further hone their bicycling skills. High school or community teams or clubs that offer teens the opportunity to be involved and learn how to ride a bicycle in this way can be valuable. Additionally, focusing the creation of bicycle routes and shared-use paths near home and schools will make it possible for independent transportation for teens due to the availability of safe biking areas.

B. Adult Cyclist Education Programs

Many bicycle accidents occur because of cyclists disobeying traffic laws. Riding on the wrong side of the road, at night without lights, or through red traffic lights are not only dangerous, they are illegal. In addition, a common complaint against bicyclists is that they habitually run red lights and stop signs. **Forty-eight percent of the citizens surveyed for this plan admit to**

breaking standard roadway laws when on a bicycle. Bicyclists may not win over the respect of motorists until bicyclists learn to respect traffic laws. Many bicyclists who follow traffic laws actually receive complements from motorists, while the majority of scorn against bicyclists is because they commonly break the law.

Some cyclists may break the law where it is necessary to reasonably ride a bicycle where the streets and intersections are designed specifically for automobiles, but not designed for bicycle needs. But unfortunately, bicyclists do break traffic laws. Sometimes, they may not know that traffic laws apply to them, but it is also probable that many bicyclists decide that they wish not to follow the law. If cyclists were to dependably ride without breaking traffic laws, bicycle crash rates would most likely plummet and much of the dislike that many motorists have towards bicyclists would likely diminish.

The NCDOT laws for pedestrians and bicyclists can be found at http://www.ncdot.org/transit/bicycle/laws/laws_bikelaws.html and the guide can be found at http://www.ncdot.org/transit/bicycle/laws/resources/BikePedLawsGuidebook-Full.pdf. It is important that local law enforcement agencies as well as residents become familiar with the state bicycle laws.

Learning the Laws

The community workshops that teach adults how cycle effectively and safely and to follow the laws of the roadway while on a bicycle are a potential education program. Despite any rationale for choosing to ignore traffic laws, it is essential that cyclists educate themselves on how they can follow the laws and efficiently travel by bicycle. Some common topics of an education course geared toward adults are:

1. *Lean for the Green*: Bicyclists will not typically be detected by loop detectors at signalized intersections unless they know to position their bicycle at an angle at a certain location within this loop. Cyclists can be educated on how to lean for the green instead of hastily running stop lights. In addition, many traffic lights are detected by video monitors or change phases according to a timer. Learning how to differentiate these intersections will give the cyclist a sense of control at red lights.
2. *Stop Means Stop*: Too many stop signs can make a bicycle trip very tiring, but it is essential that a cyclist knows that is their responsibility to give proper right of way to other vehicles at stop signs. Motorists are likely to learn that bicycles share all of the rights and responsibilities of using a roadway if they notice bicyclists following the rules.
3. *Light up the Night:* Riding at night without a light or with dark clothing is dangerous. Lessons in choosing and using a front white light and a rear red light while riding would be useful. Additionally, bright-colored clothing is the difference between being seen and being invisible. The brighter the better.
4. *Ride like you're Invisible:* At all times, a cyclist on the streets should ride as if they are not seen by anyone. Because of all of the distractions on the roadways, the tendency

for a motorist to ignore the presence of a bicycle, or the natural fact that a smaller object is more difficult to notice, it is prudent for a vehicle operator as frail as a bicyclist to be cautious for their own safety.

5. *Take the Lane:* Although cyclists need to be courteous and ride in a way that does not impede traffic flow, it is also important for them to ride with the same assertiveness as any other vehicle. Some examples of riding assertively but safely include:
    - Riding on the right side of the road;
    - Maintaining a decent pace while in traffic;
    - Using turn signals; and
    - Taking the lane where there is not enough space to share the lane side-by-side with a motor vehicle, or preparing to make turns, or to avoid turning vehicles.

Testing the sensitivity of a loop detector

Bicycle Maintenance Workshops

The City of Albemarle could offer and/or support some basic bicycle maintenance workshop classes through a civic agency such as the library, the community college, or in partnership with the YMCA, a bicycle store, or another business. Simple bicycle repairs such as changing a flat tire, removing wheels or other parts, adjusting breaks, and greasing or fixing a chain are crucial to the lifespan of a bicycle. A new bicycle may be used frequently until it has a punctured tube, then it can stay unused for years. A chain in need of grease may make riding a bicycle uncomfortable enough to quit, and a bicycle with poor brakes may be dangerous. A growing percentage of bicycles purchased are discount bikes bought at big box stores. These bicycles may have inexpensive components that may need constant repair while these stores do not offer the same services that traditional bicycle shops do.

Shared-use paths or other family bicycle destinations can offer good opportunities for such programs to be offered or for private vendors to be encouraged to set up temporary stands.

Bike Mentoring

BCMP Bicycle Commuter Mentor Program

For adults learning to take up cycling again, especially as a utilitarian cyclist, it is not always “like riding a bicycle.” Bicycle technology and options have changed considerably in the past few decades, traffic is more complicated, social norms are different, and many adults’ physical fitness may have diminished. Many new cyclists may have questions about the type of bicycle to purchase how to pack clothes and gear, how to cope with weather, how to ride with traffic, or where to ride safely. These new cyclists may need to ride with more experienced cyclists until they feel comfortable. They can share equipment ideas and riding strategies such as finding routes, choosing gear packs, or proper lighting. The greater Charlotte area has such a group, known as *Bicycle Commuter Mentor Program* (www.bikementor.org). This group is expanding and bicycle commuters involved from the

municipalities around Charlotte are common. The City, the YMCA, and/or local bike clubs and shops can offer such programs for new cyclists.

Maps & Brochures

Once a small network of bicycle routes and paths are created, they should be advertised to the public with maps, brochures, and on-line documents. A person might be more likely to bicycle in Albemarle if they know that they could expect to find the paths, bike lanes, and bike routes that they saw printed on a map. A brochure-map combination that clearly and plainly states some of the basic bicycle laws and safe riding tips would also be helpful. **Appendix I** shows The Town of Cary, North Carolina Bicycle Map and the Bicycle Facilities Map for towns of Chapel Hill and Carrboro, North Carolina.

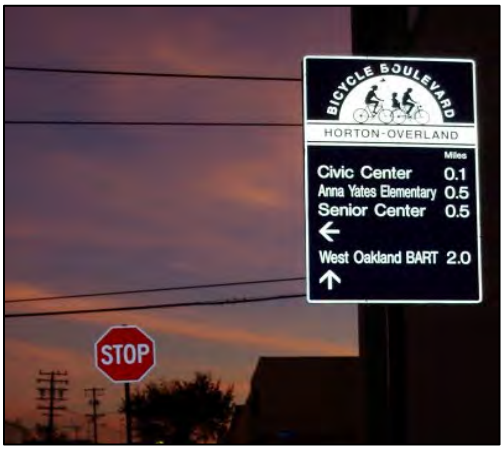
Wayfinding

Wayfinding signs are very important for any bicycle network. Cyclists should not have to make special efforts to find safe routes. Any level bicyclist will feel more comfortable on a bicycle trip if they have a good idea of where they are at various points on their trip. People are more likely to attempt cycling trips to new destinations if there is a clearly signed route.

Unlike most motorized vehicle trips, adding a small amount of distance to a bicycle trip can be a major problem. Maps help the cyclist determine the shortest route.

- Signage should be minimal. Use existing signs, pavement, benches, or evaluate the needs for the sign at all.
- Signage should be aesthetically appealing.
- Signage should be maintained to be readable.
- The use of graphics such as maps, directional arrows, or illustrations are useful.

Bicycle Boulevard signs navigate users on the Boulevard



Bicyclists can be guided toward popular destinations

Shared-use paths should be named and signed as part of the City's transportation network

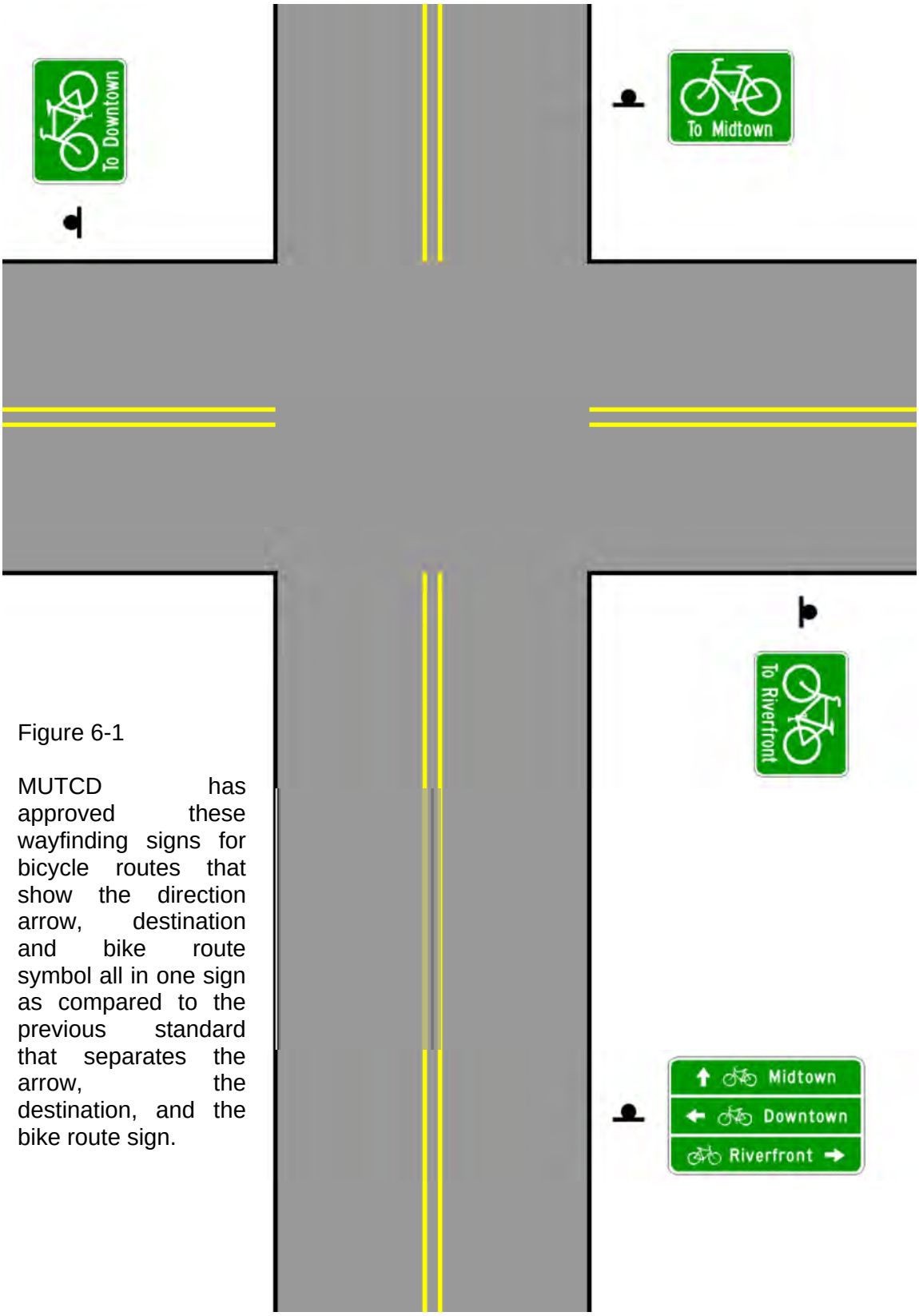


Figure 6-1

MUTCD has approved these wayfinding signs for bicycle routes that show the direction arrow, destination and bike route symbol all in one sign as compared to the previous standard that separates the arrow, the destination, and the bike route sign.

Safety and Informational Signage

Bicycle safety and informational messages can be placed in locations where cyclists can clearly read them, and quite possibly abide by their messages. Using riddles, rhymes, or stories to make the safety points increases the public's interest. Local businesses, organizations, or families could sponsor each message and its corresponding safety sign.

The most effective safety and informational topics may include:

- Stopping at stop signs and stop lights;
- Riding on the right side of the street;
- Using a front and rear light at night;
- Signal turns by pointing or by using the standard hand signals;
- Carrying a tube patch kit and pump;
- The importance of hydration and/or nutrition; and
- The importance of locking bicycles and other crime reducing efforts.

Although many bike safety programs focus on wearing helmets, it may be more effective to consider greater attention to common causes of collisions such as failure to yield at intersections or wrong-way travel.

Helmet use has been shown to protect both adult and child cyclists in collisions, preventing 60% of deaths and 85% of head injuries. This, along with the fact that 75% of North Carolina bicyclists currently use helmets when riding and that one out of every three bicycle deaths in North Carolina are children under the age of 16 make helmet use a common topic for these safety signs and programs. However, some concerns exist that mandatory or socially-enforced helmet-use can negatively affect cycling by:

- Associating cycling with an exaggerated image of danger;
- Causing the cyclist to take more risks while cycling (some illegal) because of the increased sense of security;
- Decreasing the number of cyclists because of the perceived dangers and the inconvenience or lack of comfort of acquiring or wearing a helmet.

This bicycle plan does acknowledge the value and safety of wearing a helmet while cycling (especially for children), but does not discuss large scale education programs for helmet use based on previously noted concerns and current unknowns about the total effects of such programs on bicycling in the state. However, **under North Carolina law, bicyclists and passengers on a bicycle that are under the age of sixteen are required to wear a helmet and are encouraged to do so.** More information is available at:

http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/helmets_helmet.html.

C. General Public Education

Driver Education

Targeting the young generation with implementation of this plan will be very important. Children aged 5-15 are the perfect age for bicycling because they are not yet old enough to drive, but are young enough to have the energy and ability to learn new skills and habits. Once these children turn sixteen, many of these youth will be drawn to the automobile. The car is a status symbol, a mode of independence, and a sign that they are becoming an adult. The bicycle would not fare well in competition with the car for those experiencing their Sweet Sixteen, but many cyclists would be first to say that these young drivers are some of the most intimidating motorists on the road. **Almost 74% of respondents to the survey conducted for this plan stated that motorists in and around Albemarle have treated them with carelessness or aggression while on a bicycle. Concern for drivers' care is the second greatest factor that discourages survey respondents from bicycling in Albemarle.**

While young drivers may appear to be a danger to themselves and other roadway users, young drivers are also very impressionable and provide excellent targets for educating the driving population. Students in driver education classes can be trained initially in traffic laws and appropriate movements by using a bicycle. A bicycle follows all the same rules of the road, and most students are physically able to ride a bike. Training to drive by using a bicycle offers other useful skills as well. Biking quickly for long periods, stop and go biking, riding the brake, quick acceleration, biking with low air pressure, and biking with a heavy load uses more energy than casual biking. Uneven pavement, slick or dark conditions, and congested traffic demands care while on a bicycle as well as in a car. The importance of learning good habits such as making eye contact and avoiding distractions such as radios, GPS units, MP3 players and cell phones are easier points to make while on a bike in the roadway. Learning these skills on a bike and appreciating how a motorized vehicle is similar can create safer drivers and possibly help curb some future emission and energy consumption concerns. This method of instruction may even help to educate these students both on proper use of a bicycle on a roadway and proper respect as a motorist for a cyclist.

North Carolina School Crossing Guard Training Program

As traffic continues to increase on North Carolina's streets and highways, concern has grown over the safety of our children as they bike or walk to and from school. At the same time, health agencies, alarmed at the increase in obesity and inactivity among children, are encouraging parents and communities to get their children walking and biking to school. In response, the Division of Bicycle and Pedestrian Transportation funded a study on pedestrian issues, including school zone safety, and decided to establish a consistent training program for law enforcement officers responsible for school crossing guards. According to the office of the North Carolina Attorney General, school crossing guards may be considered traffic control officers when proper training is provided as specified in General Statute 20-114.1.

Law enforcement agencies interested in participating in the School Crossing Guard Training Program should contact the Division of Bicycle and Pedestrian Transportation by phone at (919) 807-0777 or visit http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/crossing.html

Public Perception Marketing

Greenway corridors are showing to be popular neighbors

Although an increase in bicycle facilities may be more popular than many transportation projects, a positive marketing campaign for bicycle improvements may be required to sell the public on such local expenditures. Multiple-use paths, bike lanes, and intersection improvements cost tax dollars, require right-of-way, and may upset some motorists. In addition, recent political events concerning the acquisition of right-of-way have created some public uneasiness with shared-use paths and other projects that may require land easements. The City should first act to create a positive image for future greenways, traffic calming, intersection improvements, and other bicycle expenditures before any opposition occurs. Circulate the facts concerning these facilities and show the positive benefits.

In reality, shared-use paths such as greenways have been shown through studies, such as one conducted by Mecklenburg County Park and Recreation, to occasionally increase property re-sale values; to cause no increase in and potentially decrease neighborhood crime; and to result in more positive ecological effects than negative. Once such paths are successfully on the ground in communities, the residents know first hand of their benefits and welcome more. However, communities are sometimes wary as to how these paths might negatively affect them, and false information and negative perceptions may allow for a public relations issue before the walkways are in place.

Designing a community where transportation choices exist has been shown to place communities at an economic advantage over communities that rely solely on the automobile. Tax dollars spent to improve or create bicycle facilities are tax dollars that place a return on the investment for the community.

6.2. ENCOURAGEMENT & PROMOTION PROGRAMS

Safe Routes to Schools

The national Safe Routes to School Program was established in August 2005 as part of the most recent federal transportation re-authorization legislation, SAFETEA-LU. This law provides multi-year funding for the surface transportation programs that guide spending of federal gas tax revenue. Section 1404 of this legislation provides funding (for the first time) for State Departments of Transportation to create and administer these programs which allow communities to compete for funding for local projects. Visit the Federal Highway Administration's web address for Safe Routes to School at http://safety.fhwa.dot.gov/saferoutes/ and see Appendix O for funding opportunities related to it.

The steps below provide a framework for a Safe Routes to School (SRTS) program based on what has worked in other communities according to the website http://www.saferoutesinfo.org.

- **Identify and contact the people** who want to make walking and bicycling to school safe and appealing for children.
- **Hold a kick-off meeting and set a vision**: A goal of the first meeting is to create a vision and generate next steps for the group members.
- **Gather information and identify issues**: Collecting information can help to identify needed program elements and provide a means to measure the impact of the program later.
- **Identify solutions**: Solutions to identified issues will include a combination of education, encouragement, engineering and enforcement strategies. Safety is the first consideration.
- **Make a plan**: It does not need to be lengthy. Include encouragement, enforcement, education and engineering strategies. Create a time schedule for the plan.
- **Get the plan and people moving**: Hold a kick off event starting with a fun activity. Participate in International Walk and Bike to School Day or organize a bike train.
- **Evaluate, adjust and keep moving**: To sustain the program, consider building additional program champions and letting people know about your successes.

The North Carolina phone number for the Safe Routes to School program is as (919)807-0777 and the web address is:
http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/Safe_Routes.html.

Walk (or Bike) a Child to School in North Carolina

Thanks to the national initiative and support from the NC Governor's Highway Safety Program, Walk a Child to School Programs have gained a foothold in North Carolina and are growing each year. To date more than 5,000 students in 12 communities in the state have participated.

Call NCDOT's Division of Bicycle and Pedestrian Transportation to let them know about what the City of Albemarle is doing to encourage children to walk (or bike) to school at (919) 807-0777 or email them with that information at bikeped_transportation@dot.state.nc.us.

Bike to Work, Shop, School and Play Days

Designate a day, or preferably even a week or month where people walk or bike to their destinations. This can coincide with *International Walk/Bike to School Week*, or with Bike to Work Week, or with another common "Hike, Bike, and Bus" week that some municipalities sponsor. Advertise these events, have some fun events along common bicycle routes, and offer prizes and recognition for shining participants. *International Walk and Bike to School Week* typically falls on the first week of October, and their web site with good information could be found at http://www.walktoschool.org/.

Bike to School events can be as simple as a few kids and parents meeting to walk or bike to school or very elaborate celebrations. Event logistics range from a central meeting location to a designated route where a group of bicyclists forming a chain or train that grows as it adds students on its way to school – similar to the Walking School Bus program (http://www.walkingschoolbus.org/). Successful events have the support and participation of the principal, police, and parents. Programs such as this give public agencies and representatives the opportunity to publicly support health, environment and safety initiatives.

City of Albemarle Bicycle Week

Many towns have a particular week each year where its citizens are encouraged to use alternate forms of transportation such as bikes, transit, or walking. This week reminds occasional bikers to dust their bike off in the spring, or starts children off with good biking habits to school in the fall. Bicycle weeks show the community that Albemarle supports bicycling as a form of transportation.

Loaner Bike Programs

A "Blue Bike" loan program in Madison, Wisconsin

Some cities have tried loaner bike programs where bicycles are left at transit stops, downtown, or other popular pedestrian areas for those who need to use them. A problem with this program is theft, but this can be mitigated by issuing any interested person a "Bicycle Loan Card" from the public library or Park and Recreation Department for a small fee or no fee. With this card, the user could check out the bicycle from transit stations, parks, or from the library or other public institution where a combination is given to a lock that can be used with the bicycle. The user must return the bicycle at the end of an appropriate time, or the combination could be given out to card holders to use at any time. Cell phone technology also allows cell phone users to make reservations for these fleet bicycles. The reality of Albemarle's growth patterns, consistently available parking, and present lack of bicycle routes and facilities places this program into the distant future for transportation purposes. The City's Park and Recreation Department may wish to consider a prototype program like this for use with their more popular future greenways on weekends and during the summer. Encouraging private bicycle rental enterprises at these locations and along shared-use paths will also benefit citizens, the City of Albemarle, and small business owners.

Compensate Bicycle Commuters

Although it is well known that gasoline tax is a usage tax that helps pay for some roadway construction and maintenance, cyclists also pay for road infrastructure and public services related to roadways through sales, property, and income taxes, along with portions of retail purchases. Workplaces spend a certain percentage of their profits on transportation infrastructure to attract employees and customers. Some businesses and municipalities have encouraged utilitarian bicycling with pay benefits, tax-write offs or discounts. Starting in tax year 2009, bicycle commuters can be reimbursed $20 per month from employers who take part in this program. A partnership may be created between Albemarle and local businesses that would identify regular bicycle commuters and compensate them through pay or tax benefits.

League of American Bicyclists Bicycle Friendly Community

It should be a goal for Albemarle to join Carrboro, Cary, Greensboro, and Charlotte, North Carolina as designated Bicycle Friendly Communities. To achieve this designation, the following items would need to be addressed while implementing this plan:

1. A policy to accommodate bicycles on all new/resurfaced roads
2. A bicycle coordinator of some sort

3. A bicycle committee
4. Training for the City's engineers
5. A bicycle parking ordinance
6. Maintenance for bike facilities
7. National Bike Month events in May
8. Bike to Work/School Days
9. A bicycle facilities map
10. Determination of the number of people who bicycle in Albemarle for transportation

More information can be found on this program at: www.bicyclefriendlycommunity.org.

6.3. ENFORCEMENT PROGRAMS

Enforce the Laws

Continued police enforcement of traffic laws is always necessary to protect bicyclists and pedestrians. Albemarle's Police Department should be particularly encouraged to ticket violators in residential, high density commercial, and other popular pedestrian and bicycling areas. Cyclists must also be encouraged to follow the law for their own safety, with violators also being educated and properly cited to correct behaviors.

Areas of focus for enforcement for cyclists:

- Driving at night without lights or required reflectors
- Riding the wrong way in a one-way traffic lane or on the wrong side of the road
- Running a stop sign or red light
- Failing to yield the right-of-way
- Failing to signal an abrupt turn

Areas of focus for enforcement for motorists:

- Driving while impaired by drugs or alcohol
- Failing to yield the right-of-way
    - When turning left at intersections or at driveways
    - When turning right at intersections or at driveways
    - When entering roadway
- Speeding, particularly in neighborhoods and near schools
- Overtaking bicycles in areas where it cannot be done safely

Bicycle Patrol Officers

The Albemarle Police Department should assign bicycle officers to be a visible and personal presence, particularly in downtown neighborhoods and other pedestrian and bicycle-friendly areas. These officers will get to know business owners, residents, and frequent visitors well, as

they would be more accessible to the people of these communities. It is, however, very important that these officers follow the rules of the roadway as a positive example to other bicyclists (except when en-route to an emergency call).

Greenville, NC has a bicycle patrol with 14 officers.

Law enforcement officers are in a unique position to assist with and add credibility to community efforts to encourage bicycling and improve bicycle safety. However, many officers do not possess the bicycle safety knowledge or the community assessment skills necessary to do this job correctly.

The National Highway Safety Administration offers classes for bicycle officers to learn the issues of bicycle safety.

Contact:
National Highway Safety Administration (NHTSA)
Safety Countermeasures Division (NTI-121)
Bicycle Safety Program
400 7th St. S.W.
Washington, D.C. 20590
Website: www.nhtsa.dot.gov

6.4. TRANSIT

Bicycle Racks on Buses

Albemarle's growth shows the need for a local bus service in the future, both express buses to and from Charlotte and a local circulator. Each and every bus in any Albemarle future fleet should have bike racks, and primary transit stops and stations should have bicycle parking and connecting roadway accommodations for bicycles.

Each of Charlotte's CATS buses is equipped with bicycle racks


Long-term bike parking at a CATS transit station in Huntersville, NC (photo by Ken Tippette)

6.5. SPOT IMPROVEMENT, MAINTENANCE, AND ROAD DEBRIS PROGRAMS

Pavement

Potholes, uneven pavement, and visual obstructions irritate cyclists as much as they do automobile drivers. In fact, **the survey completed for this plan found poorly maintained roadways and hazards to be the fourth biggest deterrent to bicycling in Albemarle.** Roadway edges should be free of cracks, splits, or crumbled pavement and storm grates should be relatively level with the asphalt and have grates perpendicular to the curb. Currently, no inventory exists of street pavement cracks, uneven manhole covers, potholes, or dangerous storm grates for Albemarle roads. It is recommended that the City conduct such an inventory, also including notes on where sidewalks need maintenance or ADA upgrades. A means should also be established by which the City can annually determine where new maintenance issues occur, and continually receive alerts from the public on roadway or sidewalk maintenance concerns. Once an initial list of necessary repairs and upgrades is complied, each particular maintenance project can be ranked according to the criteria set in Table 7.2 (page 7-20). These maintenance projects should be ranked separately from the projects outlined in Section 7, and be continuously updated as additional maintenance needs arise.

An inventory of necessary repairs to the bicycle network should be completed. This grate is on Salisbury Road.

Dangerous grates, cracks, or holes should be fixed, while some hazards can be marked so that bicyclists can avoid them.

Additionally, small gaps in the bicycle network may occur when separate public or private projects do not completely connect. A serious effort should be made to connect these pieces of bicycle lanes, wide lanes, paved shoulders, shared-use paths, and even sidewalks. A policy should be created and enforced that ensures that these connections are always created in future projects (see Section 8).

Funding should be set aside for spot improvement maintenance that improve bicycle accommodations. An annual budget of $100,000 should be set aside for small spot improvement projects. The City should also apply for any available state or federal funding to correct any gaps in its existing sidewalk network and to retrofit ADA specific accommodations.

Roadway Debris and Litter

Litter can negatively impact the quality of a bicycle ride, and may cause an injury or tire puncture. A flat tire can deter someone from riding a bicycle to run an errand or from commuting to work in the future. It can place a recreational cyclist's bicycle in the garage for months, or it could lead to an injury to the cyclist. Four programs would help control the numbers of flat tires considerably, and make Albemarle a cleaner place to live:

1. **Encourage glass bottle deposit programs.** Glass is certainly one of the most feared roadway debris to the cyclist. The biking community would be positively influenced if the state of North Carolina adopted a program where deposits are returned for glass bottles, and the City would be behooved to encourage such a program.

2. **Enforce litter laws.**

3. **Implement adopt-a-bike-lane or adopt-a-road programs.** Bike lanes will need special attention once they are developed because they are not kept naturally swept by large and fast automobiles. Tree limbs, glass, nails, gravel, and other debris is commonly washed into bike lanes. The City should be responsible for occasional sweeping, while community members can help patrol bike lanes for large objects like tree limbs that might pose a hazard to bikers in low-light conditions.

A system should be in place to sweep bike lanes and other bicycle routes and paths

4. **Initiate a tire cost sharing program.** A tire equipped with Kevlar protection or other protection from punctures can cost twice as much as a standard rubber tire, but can save the owner that cost difference from punctured tubes within the first months, and save them invaluable time and efforts spent in repairing punctured tubes. Residents who describe their transportation as being financially dependent on a bicycle could be eligible for a cost sharing program with the City where the cyclist purchases a Kevlar-lined tire but pays the cost of a discount tire while the City pays the difference for a tire with adequate protection for road usage. Road debris is inevitable, cleaning is costly, and frequent punctured tubes are inconvenient. A better tire can place a bike on a road instead of in a garage. All bicycle owners should be educated on the benefits of a better tire for urban road conditions.

6.6. MORE INFORMATION

The programs described in this section can be implemented in Albemarle to help encourage bicycling as a recreational and utilitarian activity throughout the City. This is not a comprehensive list of every feasible program, but is a sampling of the types of programs that Albemarle might consider implementing locally. Further information and ideas can be found at the following organizations' internet sites:

- **The North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation** has a wealth of information on their web site: http://www.ncdot.org/transit/bicycle/safety/safety_programs.html

  This web site includes information on programs such as the *Basics of Bicycling Curriculum*, *Bicycle Helmet Initiatives*, *Bike Repair*, the *North Carolina School Crossing Guard Training Program*, the *Share the Road Initiative*, the *Safe Routes to School Program* and the *Walk a Child to School Initiative.* The web site is also a good source of resources and materials.

- **The Pedestrian and Bicycle Information Center's** website (http://www.bicyclinginfo.org) also has a great amount of information and program ideas, including design and engineering guidelines, programs, facts, news, outreach and solutions to problems.

- **The Federal Highway Administration's** website (http://safety.fhwa.dot.gov/) offers ideas for a variety of bicycle-safety focused curricula.

Section 7
Recommended Bicycle Projects

7.1. PROPOSED BICYCLE NETWORK

This section identifies a City-wide bicycle network that would significantly and efficiently improve Albemarle's bicycling environment. **Table 7-1** and **Map 7-1** provide overall views of all of the proposed corridor projects in this plan, while more detailed information including the purpose and known constraints of each project is presented in conjunction with the description of ranked projects.

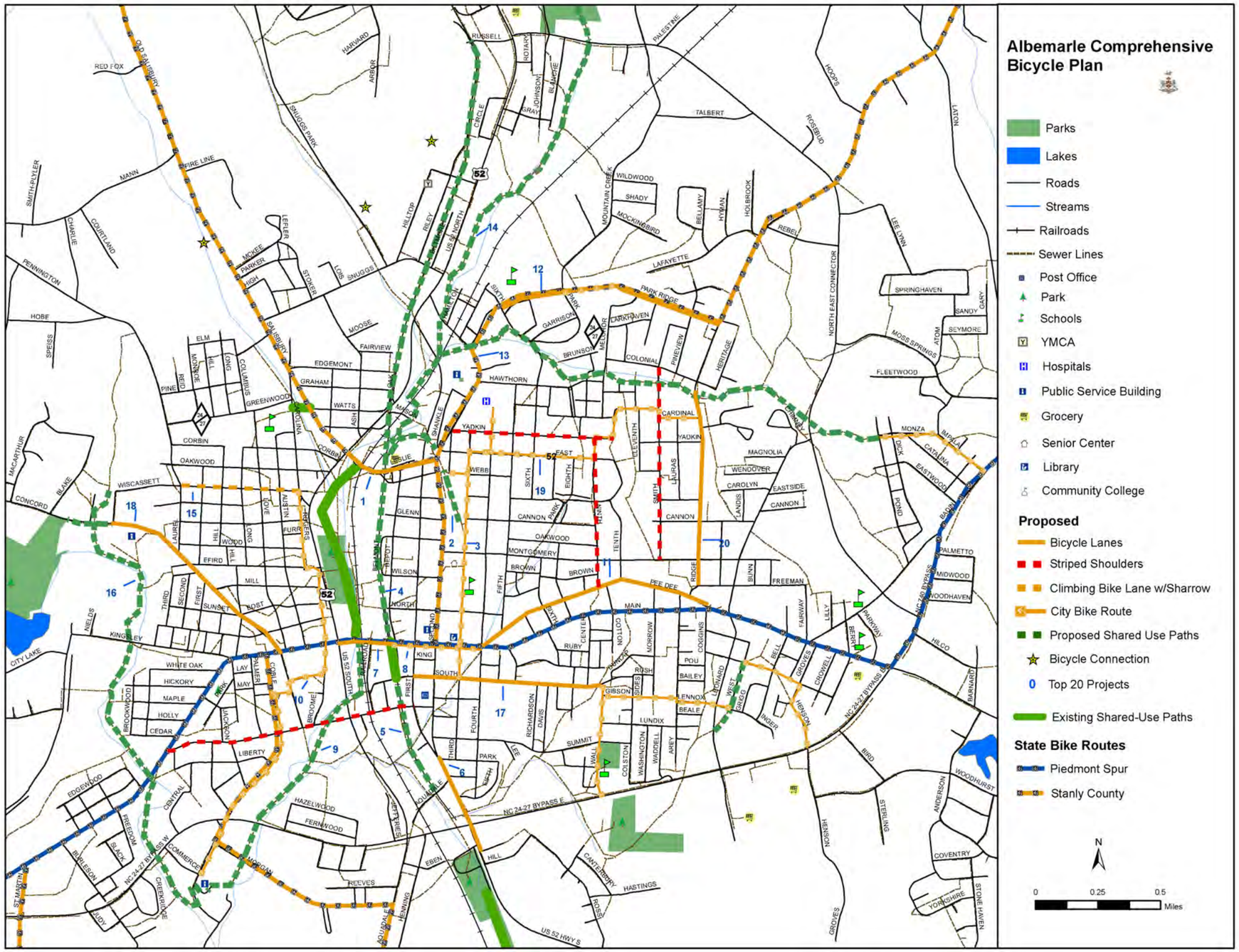
The recently adopted *Albemarle Comprehensive Pedestrian Plan* focuses on a series of six **Pedestrian Oriented Development Districts** of one quarter mile to one half mile in radius that should be developed in a fashion that encourages walking. Providing walking paths, compact residential and commercial centers, and pleasant environments are expected to increase the viability of walking in these areas. The Pedestrian Plan identifies 45 potential projects and recommends fifteen of those as its top priorities for pedestrian traffic. When these 45 projects are completed, not only will the walking environment in Albemarle be greatly improved, but the cycling environment would be greatly enhanced as well. Rather than duplicate large portions of the Pedestrian Plan in the bicycle plan, this plan will attempt to simply expand on the Pedestrian Plan with an expansive description of facility guidelines, program descriptions, and policy recommendations in the following sections. Important bicycle projects that help to make up the City's basic cycling network are identified, described and ranked in this plan. Future City policy and implementation will provide connections from this base network to the rest of the City.

The best opportunities to develop bicycle facilities exist with future infrastructure. Road repaving, intersection improvements, bridge replacements, sewer/utility work, and new private developments offer the easiest means to retrofit and add bicycle facilities. Acquiring abandoned railway and utility corridors and redefining easements and right-of-way are also steps toward the development of future bicycle routes. Facilities defined in the *Comprehensive Pedestrian Plan* can be utilized for bicycle travel as well.

The following 51 items of the proposed bicycle network are intended to serve as guidance toward the development of bicycle facilities in Albemarle. In the future, certain physical, political, social, economical, or other practical barriers may require these facilities deviate from their mapped routes. For these circumstances, alignment along alternative corridors is recommended to uphold the connectivity of these routes. More detail is given on the length, estimated costs, and ranking of each of these items in **Appendix J**. In addition, the purpose and known constraints of each recommendation are included in Section 7, along with a priority ranking of the top 20 projects.

Table 7-1 Bicycle Network Item Summary:

Item #	Project Type	Roadway / Location	From (North or West)	To (South or East)
1	Bike Lanes w/ Road Diet	Salisbury Avenue	US Highway 52	N. 2nd Street
2	Bike Lanes w/ Road Diet	W. Main Street	US Highway 52	S. Depot St.
3	Bike Lanes w/ Road Diet	S. 2nd St. (US 52 Business)	S. 1st St.	NC 24/27 / Rock Creek Park
4	Grinding, Bike Lane Striping	NC 73	Rock Spring Road	Bluff Street
5	Bike Lane Striping	NC 73	Bluff Street	W. Main Street
6	Bike Lane Striping	S. 2nd St. (US 52 Business)	South St.	S. 1st St.
7	Bike Lane Striping	Park Ridge Road	N. 2nd Street	Park Rd./Mountain Creek Rd.
8	Bike Lane Striping	Park Ridge Road	Melchor Rd.	Ridge St.
9	Bike Lane Striping	Ridge St.	Colonial Dr.	Freeman Ave.
10	Bike Lane Striping	Pee Dee Ave.	E. Main St. & 4th St.	W. Main St. & Coggins Ave.
11	Bike Lane Striping	ML King Dr.	1st St.	Wall St.
12	Climbing Bike Lane w/ Sharrows	Wiscassett St.	Laurel St./Pennington Rd.	Carolina Ave.
13	Bike Route with Sharrows	Main St.	Depot St.	Pee Dee Ave.
14	Bike Route with Sharrows	Park Ridge Road	Park/Mountain Creek Rd.	Melchor Rd.
15	City Bike Route	Rogers St.	Wiscassett St./Carolina Ave.	Efird St.
16	City Bike Route	Efird St.	Rogers St.	US 52/Brome St.
17	City Bike Route	Brome St.	New Connection @ Efird St.	Woodland St.
18	City Bike Route	Woodland St.	S. Brome St.	Harwood St.
19	City Bike Route	Harwood St.	Woodland St.	Meadow St.
20	City Bike Route	Meadow St.	Harwood St.	Coble Ave.
21	City Bike Route	Coble Ave.	Meadow St.	Commere St.
22	City Bike Route	N. 3rd St.	East St.	ML King Dr.
23	City Bike Route	N. 4th St.	Stanly Regional Medical Center	East St.
24	City Bike Route	East St.	N. 3rd St.	N. 9th St.
25	City Bike Route	N. 9th St.	Yadkin St.	East St.
26	City Bike Route	Yadkin St.	N. 9th St.	N. 10th St.
27	City Bike Route	N. 10th St.	Avondale Ave.	Yadkin St.
28	City Bike Route	Avondale Ave.	N. 10th St.	Smith St.
29	City Bike Route	Smith St.	Avondale Ave.	Cardinal Dr.
30	City Bike Route	Cardinal Dr.	Smith St.	Ridge St.
31	City Bike Route	Wall St.	MLK Dr.	NC 24/27 Bypass
32	City Bike Route	Gibson St.	Wall St.	Arey Ave.
33	City Bike Route	Lennox St./Inger Ave.	Arey Ave.	West Dr.
34	City Bike Route	West Drive	Inger Ave.	Amhurst St.
35	City Bike Route	Amhurst St.	West Dr.	Groves Ave.
36	City Bike Route	Groves Ave.	Amhurst St.	Henson St.
37	City Bike Route	Henson St.	Groves Ave.	NC 24/27 Bypass
38	Lowland Shared-use Path	Little Long Creek (south)	W. Main St.	Coble Ave.
39	Lowland Shared-use Path	Little Long Creek (north)	Chuck Morehead Park (NE Connector)	Abandoned RR (Salisbury Ave.)
40	Lowland Shared-use Path	Melchor Branch Creek sewer line	Little Long Creek	Monza Drive
41	Lowland Shared-use Path	Sewer Line Social Path	Inger St. & West Drive	Leonard Street
42	Lowland Shared-use Path	Long Creek Sewer Line	Rock Spring Rd. (near NC 73)	Coble Ave. (Little Long Creek)
43	Upland Shared-use Path	Abandoned RR (south)	Existing Greenway (W. South St.)	NC 24/27 Bypass
44	Upland Shared-use Path	Abandoned RR (center)	Salisbury Ave.	W. Main St.
45	Upland Shared-use Path	Abandoned RR (Salisbury)	Abandoned RR (north)	N. 2nd Street
46	Upland Shared-use Path	Abandoned RR (Old Mill)	N. 2nd Street	N. 3rd Street
47	Upland Shared-use Path	Abandoned RR (north)	Russell Road	Salisbury Ave.
48	Striped Shoulders	Yadkin St.	N. 2nd Street	N. 9th St.
49	Striped Shoulders	N. 9th St.	Yadkin St.	Pee Dee Ave.
50	Striped Shoulders	Smith St.	Pineview Drive/Park Ridge Road	Montgomery Avenue
51	Striped Shoulders	Old Charlotte Road	W. Main St.	S. 1st Street



Map 7-1: Proposed Bicycle Network

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7.2. PRIORITIZATION OF PROJECTS

The survey completed for this plan showed that over **78% of the respondents believed that Albemarle will benefit from better bicycling facilities**, while an additional 11% thought that Albemarle might benefit from such facilities. Sixty-one percent of respondents would bicycle more often with better bicycling conditions, and another 23% might bike more often.

The preceding sections of this plan identify opportunities and specify guidelines and standards for the implementation of projects. Section 4 describes the bicycling opportunities, including the *Carolina Thread Trail* and how it may serve as the backbone project of this plan. Section 5 summarizes the guidelines and standards that would be recommended to complete the projects outlined in this section. NCDOT adheres to the design guidelines provided in the American Association of State Highway and Transportation Officials' *Guide for the Planning, Design, and Operation of Pedestrian Facilities* (AASHTO, 2004), the American Association of State Highway and Transportation Officials' *Guide for the Development of Bicycle Facilities* (AASHTO, 1999) and the *Manual on Uniform Traffic Control Devices* (MUTCD).

Prioritization Methodology

A project prioritization methodology is an important tool through which that the City can use to determine where to focus its efforts on the development of bicycle facilities. The project team, in consultation with the Advisory Committee, developed a methodology to objectively compare the attributes of proposed projects. This methodology is used to prioritize projects as part of this plan, and in the future, the City can use the same methodology to reassess its priorities and consider new projects.

To compare the merits of each corridor project, a scoring system is used to assign "points" to each proposed project. Points are assigned according to ten specific criteria, as described below. Projects are assigned points in each category based on how well the project meets each criterion. A higher number of points indicate a "better" project.

The total number of points across all criteria indicates each project's final score. The maximum score for a project is 100 points, based on a scale of 0-10 points for each of the ten criteria. All criteria are weighted equally. Suggested **criteria are based on three major elements: connectivity, safety, and ease of implementation.** Specific criteria are defined for each of these three areas and shown in **Table 7-2**:

Connectivity

1. The project improves bicycle **access to major destinations** such as shopping/business, schools/community centers, homes, public/social services, or recreation/entertainment (10 points maximum)
2. The project improves bicycle **access for children, low-income residents, and seniors** (10 points maximum)
3. The project **connects to one of the Carolina Thread Trail routes** proposed in this plan (**Section 4.2,** 10 points maximum)
4. The project **closes bicycle access gaps** or connects to other existing bike corridors (10 points maximum)

Safety

5. The project **improves bicycle safety near schools** or for low income residents (10 points maximum)
6. The project **calms motorized traffic or provides alternate bicycle routes** (10 points maximum)
7. The project **improves a known bicycle safety issue** (10 points maximum)

Ease of Implementation

8. The project is most likely **already in consideration and has significant amount of work completed** such as easement acquisition or availability, private or public funding options available, a completed design, or completed application or environmental documents (10 points maximum)
9. The project is **supported by officials or by the public** (10 points maximum)
10. The project can be **implemented at a reasonable cost** compared to its assumed value to the community (10 points maximum)

After the scores of all the projects have been tallied, some projects may have identical scores. In this case, the City of Albemarle can determine which project should be ranked ahead of the other based on its knowledge of what project will best fit the needs and cost considerations of Albemarle. Based on the objectives of this plan, the project that best serves the recreational/tourism/economic stimulus needs of the City would usually be the top priority.

Application of Methodology

Each corridor project was judged by the consultant and the City based on the criteria described above. Raw scores for individual items involved within projects are assigned and detailed in **Appendix J**. In many cases, several items listed in this table may be grouped together and ranked as a complete project. Although this methodology is intended to objectively compare the qualities of individual projects, there is some inherent subjectivity in assigning the number of points in each category. The methodology used in scoring for each of the categories is described below in **Table 7-2**.

Table 7-2
Ranking Criteria for Projects
100 points Total

Bold conditions are tallied for a sum across the category
Italicized condition is recorded as the highest possible score in a given category

Improves Bicycle Access to Major Destinations (10 pts.)	**Shopping / Business (2)**	**Schools / Community Centers (2)**	**Residential (2)**	**Public / Social Services (2)**	**Recreation / Entertainment (2)**
Provides Obvious Access for Children, Low Income, or Seniors (10 pts.)	**Elementary School Aged Children (2)**	**Middle School Aged Children (2)**	**High School Aged Children (2)**	**Low Income Residents (2)**	**Senior Residents (2)**
Connects to Proposed Carolina Thread Trail Route (10 pts.)	*To Existing Route (10)*	*To Proposed Route (8)*	*To Alternate Route (5)*	*Unknown (2)*	*No (0)*
Connects to Other Existing Bike Corridors (10 pts.)	*Directly (10)*	*Nearly (8)*	*Potentially (5)*	*Unknown (2)*	*No (0)*
Improves Safety near Schools or for Low Income Residents (10 pts.)	**Elementary Schools (2)**	**Middle Schools (2)**	**High Schools (2)**	**Low Income Housing (2)**	**Public / Social Services (2)**
Calms Motorized Traffic or Provides Alternate Bike Routes (10 pts.)	*Definitely (10)*	*Significantly (8)*	*Modestly (5)*	*Unknown (2)*	*No (0)*
Improves General Bicycle Safety (10 pts.)	*Definitely (10)*	*Significantly (8)*	*Modestly (5)*	*Unknown (2)*	*No (0)*
Readiness (10 pts.)	**Right of Way/Easement Available (3)**	**Funding Source(s) Available (3)**	**Design Completed (2)**	**Permit Application Submitted (1)**	**Environmental Documents Completed (1)**
Potential or Existing Political or Public Support for Project (10 pts.)	*Support from <u>both</u> Public & City (10)*	*Support from Public <u>or</u> City (8)*	*Assumed Modest Support (5)*	*Unknown (2)*	*No (0)*
Cost vs. Assumed Benefit (10 pts.)	*Desirable (10)*	*Standard (8)*	*Acceptable (5)*	*High (2)*	*Excessive (0)*

Grouping of Corridor Projects

All projects presented in this plan have merit and should be pursued. However, the identification of a subset of Phase 1, Phase 2, and incidental projects will enable City officials to focus their efforts on the early implementation of a few infrastructure projects that will make significant improvements to the bicycle transportation system. This prioritization methodology will help to identify the most beneficial projects to further create a bicycling network through Albemarle.

Phase 1 projects are all of those receiving a score greater than 60 (out of 100 possible points). Many of these projects are potential corridors for the Carolina Thread Trail. If plans for these projects are finalized and approved quickly, Albemarle can soon take advantage of possible funding associated with this new trail for implementation of these projects. Completion of these top projects within this decade will give Albemarle a very practical bicycling network.

Projects that received a score of 60 or less were considered to be *Phase 2* projects. Phase 2 projects could be considered for faster implementation if reasonable opportunities present themselves, but did not rank high enough in value to be aggressively pursued until the majority of Phase 1 projects are functional. Therefore, some of these projects may not complete until after the year 2020, but opportunities exist for simple implementation of many of these projects, such as the ones that require limited costs.

Incidental Projects and Complete Streets

Incidental projects are bicycle enhancements that are implemented in conjunction with roadway, sewer, park, rail, environmental and new development projects. Because the list of upcoming City improvements is long and subject to change, all of these possible projects are not mentioned specifically in this plan or illustrated individually on a map. However, the City of Albemarle staff and future Bicycle/Pedestrian Advisory Committee members should review all plans for upcoming improvements to ensure that bicycle accommodations are included to the full extent possible as part of new projects. In many cases, bicycle accommodations can be constructed as part of the overall roadway project cost, avoiding the need for a separate project later to retrofit the roadway facility. Besides on and off-road bicycle routes; bicycle parking, appropriate intersection treatments, bridges, underpasses, and signage are all incidental bicycle projects that should be included with corridor or development projects as necessary to create safe and complete bicycle accommodations. For example, a shared-use path may require a bridge over a creek and a mid-block crosswalk or underpass to function correctly while the installation of bicycle racks would complement the creation of bicycle routes through downtown. Descriptions and costs for these projects are shown in Section 5 and Appendix I.

To ensure that no opportunities "fall through the cracks," the City should establish a policy to ensure that bicycle and pedestrian considerations and associated traffic calming (as described in Section 5) are made as part of all pending roadway expansion and maintenance projects, as well as all new development and park projects.

This plan recommends that as new roadways are planned and as existing roadways are improved in Albemarle, that they **include future bicycle facilities as a result of a "Complete Streets" policy**. According to the *completestreets.org* website, *Complete Streets* are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street. When, in the future, plans to improve any roadways begin that are not specifically targeted in this plan to include bicycle accommodations, policy should require the inclusion facilities to support cycling, walking and transit. Section 8, Recommended Policies and Ordinances, discusses this policy concept further.

Map 4 of the *Albemarle Comprehensive Pedestrian Plan* (and shown in **Appendix K** of this plan) shows how a "Complete Streets" policy on most NCDOT arterials in Albemarle would require all new road and road improvement projects to include accommodations for non-motorized travel (pedestrian and bicycle) as well as motorized traffic.

In particular, The City of Albemarle and NCDOT need to work together to insure that **primary roadways though the City such as US Highway 52, NC 24/27, NC 138, NC 73, Old Salisbury Road, Ridge Street, NC 740, and all existing state bicycle routes are studied and considered for possible accommodations for bicycle travel.** Restriping these roadways with narrower travel lanes to provide for wide outside lanes or bicycle lanes, adding paved shoulders, reducing speed limits, and/or constructing sidepaths are all actions that should be studied and implemented where possible.

Reconsideration of Priorities

The projects included in this plan have been prioritized based on current conditions. However, conditions affecting these proposed projects are constantly changing. As time passes, opportunities may appear that allow for easy implementation of lower ranked projects, new projects may be proposed, currently proposed projects may no longer be feasible, and completion of some projects may impact the viability of other projects. For these reasons, it is suggested that the City of Albemarle, through a proposed bicycle / pedestrian advisory committee, **update the prioritized project list every two years based on changing conditions**. Projects may be added to or deleted from the overall list, and the prioritization of specific projects may change based on new developments, a change in public support, construction of connecting facilities or new destinations, or other factors potentially affecting project implementation. In short, the identification of higher priority projects should change every few years to reflect Albemarle's changing needs and conditions. Funding opportunities for these projects are listed in **Appendix L**.

7.3. PROPOSED HIGH PRIORITY PROJECTS

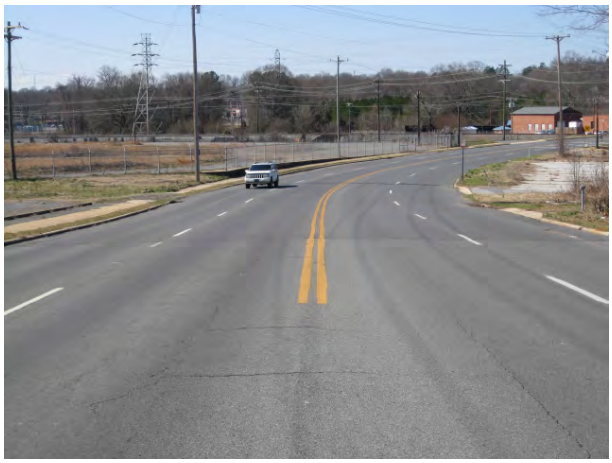
Table 7-3 illustrates summary information for the high priority projects, based on the ranking that each project received. This table represents a compilation of the individual project information contained in Appendix J. There are 46 total project items are shown that join for a total of 20 rankings.

Table 7-3: Phase 1 Corridor Project Summary Information

Rank	Item #	Description of Improvement	Roadway / Location
1	1	Bike Lanes with Road Diet	Salisbury Avenue from US 52 to N. 2nd St.
2	46	Shared-Use Path	Abandoned RR (Old Mill) from N. 2nd St. to N. 3rd St.
3	22&23	Bike Route	SRMC to MLK Dr. via. 4th and 3rd Streets
4	44	Shared-Use Path	Abandoned RR from Salisbury Ave. to W. Main St.
5	43	Shared-Use Path	Abandoned RR from existing Greenway (W. South St.) to Old Aquadale Rd.
6	3&6	Bike Lanes with Road Diet	S. 1st / S. 2nd St. from South St to Rock Creek Park
7	2	Bike Lanes with Road Diet	W. Main Street from US 52 to S. Depot St.
8	13	Sharrows	Main St. from Depot St. to Pee Dee Ave.
9	38	Shared-Use Path	Little Long Creek from W. Main St. to Coble Ave.
10	15-21	Bike Route	From the int. of Rogers St. & Carolina Ave. to the int. of Coble Ave. & Commerce St.
11	10	Bike Lane Striping	Pee Dee Ave. from 4th St. to Ridge St.
12	7,8,14	Bike Lane Striping (with a segment of sharrows)	Park Ridge Road from N. 6th Street to Melchor Rd.
13	40	Shared-Use Path	Melchor Branch Creek sewer line from Little Long Creek to Monza Drive
14	39&45	Shared-Use Path	Little Long Creek sewer line from Morehead Park to Salisbury Ave and the Abandoned RR from Salisbury Ave. to N. 2nd St.
15	12	Climbing Bike Lane with Downhill Sharrows	Wiscassett St. from Laurel St. to Carolina Ave.
16	42	Shared-Use Path	Long Creek Sewer from Rock Creek Rd. to Coble Ave.
17	11, 31-37, 41	Bike Lanes, Bike Route, and Shared Use Path	MLK Dr., Wall Street to 24/27, Inger St to Henson St. and the sewer path to Leonard St.
18	4&5	Bike Lane Striping	NC 73 from Rock Spring Rd. to W. Main St.
19	24-30	Bike Route	East St. (and others) from N. 2nd St. to Ridge St.
20	9	Bike Lane Striping	Ridge Street from Colonial Dr. to Freeman Ave.

Rank 1. Convert Salisbury Avenue from a four-lane roadway into a two-lane roadway with bicycle lanes and center turn lanes/landscaped median between US 52 and N. 2nd Street (Item Number 1 in Appendix J)

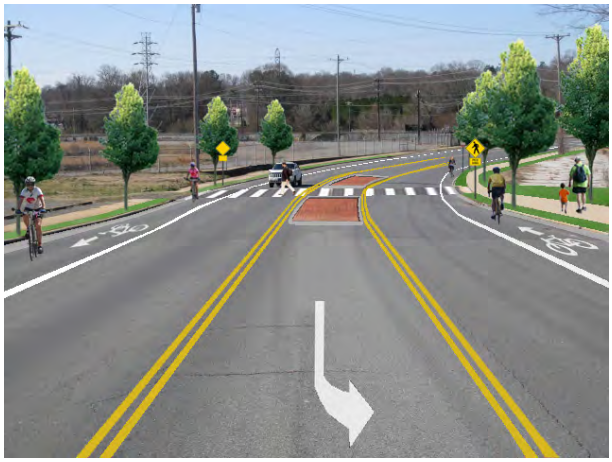
The width of Salisbury Avenue is currently from 50-60 feet wide and has an approximate average daily traffic count of 3,000 – 5,000 vehicles. This roadway was built to accommodate traffic from a long-extinct mill located on the roadway. The City of Albemarle has expressed interest in creating roadways with landscaped medians to create safer traffic flows and to create a more appealing appearance for the City. Salisbury Avenue can be given a lane conversion by removing two underutilized traffic lanes in each direction and replacing that space with a center turn lane (which would increase roadway safety over current conditions) and bicycle lanes. Portions of the roadway where there are no intersections can have a landscaped median strip with pedestrian refuge islands.



Salisbury Avenue: Existing Conditions

Approximate widths of the cross-section would be:

- Two foot-wide gutter pans with curb on each side of the roadway (four total feet)
- Four foot-wide bicycle lanes on each side of the roadway (eight total feet)
- A 12 foot-wide motor vehicle travel lane in each direction (24 total feet)
- A 12-14 foot-wide center turn lane or landscaped median
- Possible sections of this roadway have additional space for improvements on the existing sidewalk and planting strip width.



Salisbury Avenue: Road diet with turn lane and bike lanes

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Constraints: The public is usually skeptical until the project is fully implemented.

Salisbury Avenue: Road diet with median and bike lanes

Rank 2. Create a paved shared use path from N. 2nd Street to N. 3rd Street along the abandoned rail corridor from the old mill site (Item Number 46 in Appendix J)

This abandoned rail corridor can connect the heart of Albemarle with existing and future bicycle routes. A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. In fact, the location of this rail line and the width of this area creates an opportunity for not only a greenway path, but a greenbelt park that can lead students or downtown residents, visitors, and workers to the Carolina Thread Trail and also create a destination where users can recreate, relax, or participate in organized outdoor events or learning programs close to the center of the City. Crossing North 2nd Street will be a challenge to connect this path with projects east of 2nd Street such as the bicycle lanes on Salisbury Avenue (project rank # 1) and the continuation of this railroad path across 2nd Street (project rank # 9B). The City does not own right of way for many of the necessary access points to this proposed path.

This abandoned rail corridor can link the downtown neighborhoods with the potential Carolina Thread Trail route.

Rank 3. Sign a bicycle route from the Stanly Regional Medical Center to Martin Luther King Drive along N. 4th Street and N. 3rd Street (Item Numbers 22 & 23 in Appendix J)

This neighborhood route would provide alternative way to bike from the Medical Center to the elementary school, library, and to the proposed bicycle lanes on Martin Luther King Drive. The route would give cyclists an alternative route to the higher volumes and speeds of traffic on 2nd Street. Creating bicycle routes in Albemarle can be done in gradual increments from a basic signed route to a full bicycle boulevard (see page 5-22). Simple bicycle route signs can first be installed along the length of this corridor, with future plans to add sharrow stencils on the pavement or to add special informational signage. Traffic calming techniques along the route should be studied and included, such as reduced speed limits and enforcement, mini traffic circles, chicanes, or even traffic diverters or chokers. Improvements on this roadway for cycling may justify re-routing the current Stanly County Bike Routes 1 and 3 onto N. 3rd Street instead of the higher speed/more congested N. 2nd Street. An additional slight detour using East Street, N. 6th Street, and possibly Park Road can safely steer the cyclist onto the bicycle lanes proposed on Park Ridge Road.

N. 3rd Street

Rank 4. Create a paved shared use path on the abandoned Railroad from Salisbury Avenue to W. Main Street. (Item Number 44 in Appendix J)

A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. A pathway along this abandoned rail corridor can help connect downtown Albemarle and portions of the northern parts of the City with a rail trail. When combined with the other top ten projects in this plan, this can provide an outstanding backbone path for the Carolina Thread Trail. At the time of printing this plan, the City had received federal stimulus funds to construct part of this path.

These photos show where the existing pathway ends at Main Street and where the corridor continues north to Salisbury Avenue.

Rank 5. Create a paved shared use path from the existing pathway at West South Street to Old Aquadale Road. (Item Number 43 in Appendix J)

A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. A pathway along this abandoned rail corridor can connect downtown Albemarle and Rock Creek Park Greenway with a rail trail. When combined with the other top ten projects in this plan (particularly the bike lanes on S. 2nd Street described in project rank number 6), this can complete a pathway network through Albemarle that connects each of its major parks and provides an outstanding backbone path for the Carolina Thread Trail. An obstacle exists at NC 24/27 Bypass that would require this path to be routed either along an existing rail line or along S. 2nd Street to be able to cross under the bypass. Full right-of-way access is still needed to extend this path to Rock Creek Park.

The existing rail trail can be extended

Rank 6. Provide Bicycle Lanes on the entire stretch of S. 2nd Street from South Street to NC 24/27 (Item Numbers 3 and 6 in Appendix J)

There is width needed to provide bicycle lanes on S. 2nd Street from South Street to S. 1st Street. Also, the portion of S. 2nd Street between the 1st Street and 2nd Street merge point and the NC 24/27 Bypass is currently a four lane roadway. The current ADT of less than 8,000 vehicles per day does not justify a four lane roadway, and a conversion to one travel lane in each direction, a center turn lane, and bicycle lanes may be a safer roadway configuration for both automobiles and bicyclists. These bicycle lanes also offer a means to connect the proposed rail trail summarized in Project Rank # 5 with the existing path at Rock Creek Park.

S. 2nd Street approaching NC 24/27 as it exists today

Rank 7. Convert W. Main Street from a three and four-lane roadway into a two-lane roadway with bicycle lanes from just east of US 52 to South Depot Street to connect the existing portions of the Roger F. Snyder Greenway (Item Number 2 in Appendix J)

West Main Street has an average daily traffic count of 8,100 vehicles. For a brief distance from US 52 to Depot Street the street has three to four travel lanes before narrowing to two travel lanes with turn lanes and on-street parking. The wider portion of the roadway can be given a minor "road diet" by decreasing the four traffic lanes into two from Little Long Creek Bridge and the Roger F. Snyder Greenway to the older portion of this greenway near Depot Street. These bicycle lanes, plus appropriate signage, crossings and curb cuts, can create a viable pathway connection. The 48 foot-wide roadway (plus the two foot-wide gutter pans at the curbs) can allow for 11½ foot-wide motor vehicle travel lanes, five foot-wide bicycle lanes, and on-street parking spaces on each side of the roadway with widths 9½ feet wide extending from the curb. This width allows for a typical seven foot-wide vehicle to be parked alongside the curb with the recommended two and-a-half foot door clearance for passing bicyclists. At the intersection with Railroad Street, the on-street parking can be replaced with a 14 foot-wide center turn lane.

This new portion will have one travel lane and one bicycle lane in each direction, keeping the existing on-street parking on the south side of Main Street (no parking in the bike lanes needs to be enforced). At Depot Street, the bicycle lanes would end and the roadway lanes would continue as they are currently leading through downtown. Project rank number 8 (next) describes bicycle accommodations on Main Street once the bicycle lanes stop. A similar lane conversion project should be considered, if traffic studies allow, for suitable portions of W. Main Street from US 52 to St. Martin Road to better accommodate State Bicycle Route 1. Travel lanes can be narrowed or eliminated for traffic calming, wide outside lanes, or for designated bicycle lanes on much of this state bicycle route.

Top left photo: Rail trail terminus at W. Main Street
Top right photo: W. Main Street near the greenway terminus at Depot Street facing west
Bottom left photo: W. Main Street near the new greenway terminus
Bottom right photo: Phillip Snyder Greenway terminus at W. Main Street

Rank 8. Improve the visibility of bicycles on Main Street by adding sharrow stencils to the roadway in between the proposed bicycle lanes on Main Street (described in project # 7) to the proposed bicycle lanes on Pee Dee Avenue (described in project number 11). (Item Number 13 in Appendix J)

Main Street, from Depot Street to Pee Dee Avenue, does not have the width required to create bicycle facilities separated from traffic, but is a major gap between proposed facilities. This roadway should be stenciled with sharrows (see page 5-17) to connect bicyclists from the bicycle lanes proposed on adjoining ends of this portion of Main Street/Pee Dee Avenue. Sharrows will serve both to:

- Help bicyclists position themselves in lanes too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane;
- Encourage safe passing of bicyclists by motorists;
- Reduce the chance of a bicyclist impacting the open door of a parked vehicle in a shared lane with on-street parallel parking;
- Alert road users of the lateral location bicyclists may occupy; and
- Reduce the incidence of wrong-way bicycling.

In addition, signage for the existing state Bicycle Route 6 can serve to direct bicyclists through this portion of the route to the bicycle lanes proposed on each end. State Bicycle Route 6 can possibly be rerouted to Pee Dee Avenue instead of East Main Street to utilize the proposed bicycle lanes, lower speeds, and lower traffic volumes. Any project completed on the downtown roadways face the possibility of public or business opposition or skepticism unless education is a key component of the implementation process.

Rank 9. Create a shared use path along Little Long Creek from W. Main Street to Coble Avenue (Item Number 38 in Appendix J)

A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. The City of Albemarle has easement access to much of this corridor already, and a pathway here would be the most direct access from the gateway to the assumed Carolina Thread Trail route into Albemarle. The main constraint to this project's implementation is the acquisition of easement south of Old Charlotte Road.

The existing easement along Little Long Creek

Rank 10. Sign a bike route and make improvements from the intersection of Rogers Street and Carolina Avenue to the intersection of Coble Avenue and Commerce Street. (Item Numbers 15-21 in Appendix J)

This neighborhood route is a good north-south corridor from the old mill community to one of the proposed gateways for the Carolina Thread Trail. Using an opportunity to create a bicycle-pedestrian connection at the corner of Efird Street and Broome Street, this community can be linked with the greenway system, as well as the existing County Bicycle Route 1.

Parts of State Bicycle Route 1 can be incorporated into a City bike route to the existing greenway.

Creating bicycle routes in Albemarle can be done in gradual increments from a basic signed route to a full bicycle boulevard (see page 5-21). Simple bicycle route signs can first be installed along the length of this corridor, with future plans to add sharrow stencils on the pavement or to add special informational signage. Traffic calming techniques should be studied and included as possible such as mini traffic circles, chicanes, or

even traffic diverters or chokers. The final goal of this bicycle route would be to meet the criteria set on page 5-21 for a bicycle boulevard.

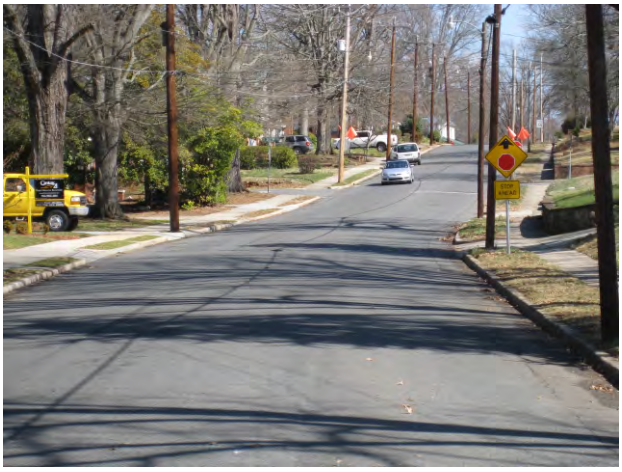
An option, once these top ten projects are implemented, would be to re-route County Bicycle Route 3 to its own alignment along the route proposed in this project and then connecting to the greenways and bicycle lanes proposed in this plan before leaving the City of Albemarle. This new route may possibly serve as a Carolina Thread Trail alignment option that mixes on and off-road bicycle accommodations. An existing barrier to this route may be the intersection of Brome Street and W. Main Street, where there is a non signalized crossing across W. Main Street close to the signalized crossing at W. Main Street at US 52. Project rank number four recommends a road diet on W. Main Street east of US 52. The portion of W. Main Street from NC 73 to US 52 can be restriped to better utilize the lane widths and to create a safer pedestrian and bicycle crossing at both the intersections of Brome Street and W. Main Street and W. Main Street and US 52.

Rank 11. Stripe bicycle lanes on Pee Dee Avenue from 4th Street to Ridge Street. (Item Number 10 in Appendix J)

Pee Dee Avenue has a 30 to 40 foot-wide roadway currently, allowing the narrowest portions of the road to have ten foot-wide travel lanes and five foot-wide bike lanes width portions of the road supporting 11 to 12 foot-wide travel lanes and five and-a-half to six foot-wide bicycle lanes. If on-street parking is preferred, bicycle lanes in conjunction with designated on-street parking on one side of the road are possible where the roadway with is 37 to 40 feet wide. Other possibilities for this roadway include:

- An unmarked seven foot-wide stripe on the roadway margins to support both on-street parking and bicyclists where the width of the roadway is 34 feet-wide and greater. More narrow sections of the roadway may have striped margins on alternative sides of the roadway to provide designated on-street parking areas and a chicane effect to calm traffic.
- Sharrows for bicyclists. On-street parking will not be affected.

This project connects to the bicycle network to the west with the sharrows on Main Street (project rank # 7), to the striped shoulders on 9th Street proposed in item # 49 in Appendix J, and connects to the bicycle lanes proposed on Ridge Street (project rank # 20) to their east. Improvements on this roadway for cycling may justify re-routing the current state Bike Route 6 onto Pee Dee Avenue instead of the higher speed/more congested Main Street.




These images show what Pee Dee Avenue looks like now (left) and what it may be like with bicycle lanes (right).

Rank 12. Stripe Park Ridge Road with bicycle lanes from N. 6th Street to Melchor Road. (Item Numbers 7, 8, and 14 in Appendix J)

This portion of Park Ridge Road is currently part of County Bicycle Route 1. The width on this roadway is 37 to 40 feet wide (plus two foot wide curb and gutter) for the majority of the length, but decreases to 25 feet between Park Road and Melchor Road with no curb or gutter. The portions of this roadway with 37 to 40 foot-wide widths are suitable for a cross section that includes both bicycle lanes and motor vehicle travel lanes. The 25 foot-wide portions in between those wider portions should have sharrows stenciled on the far right of the roadway to connect the bicycle lanes, to remind motorists of their presence and to be inviting to bicyclists.

This portion of Park Ridge Road is over 40 feet wide from curb to curb, suitable for striped bicycle lanes.

Rank 13. Create a shared use path from Little Long Creek Sewer Line to Monza Drive along Melchor Branch Creek Sewer Line (Item Number 40 in Appendix J)

This sewer line gives the best obvious east-west off-road corridor through Albemarle. However, it does pass closely to residential units and may need to be combined with the on-road route through the Forest Oaks neighborhood described in Appendix J for items number 24-30 (ranked as Project # 19).

The Melchor Branch sewer line through Forest Oaks neighborhood

Rank 14. Create a shared use path from Morehead Park to Salisbury Avenue along Little Long Creek Sewer Line and from Salisbury Avenue to N 2nd Street along abandoned rail line (Item Numbers 39 & 45 in Appendix J)

A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. This sewer line and creek corridor is one of the best options for moving bicyclists from the south Albemarle to north Albemarle. A fair number of residences and businesses along US Highway 52 corridor could be accessed from this pathway alignment, along with the possibility for connections to the high school and Chuck Morehead Park.

The abandoned railroad line crosses under N. 1st Street.

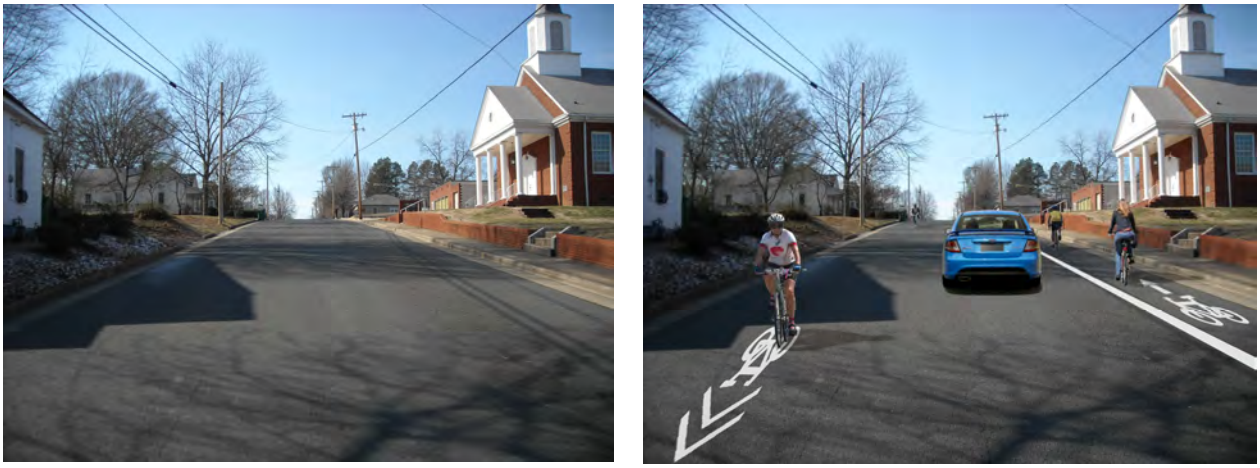
A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. This rail-trail can be an important part of the Carolina Thread Trail to connect the north-south portion of the trail west of N. 2nd Street to the east-west portion on the east side of N. 2nd Street.

Rank 15. Stripe a climbing bicycle lane with sharrows on Wiscassett from Laurel Street/Pennington Road to Carolina Avenue (Item Number 12 in Appendix J)

Wiscassett Road offers the chance for unique bicycle facilities. The 26 foot-wide roadway from gutter pan to gutter pan does not offer the width for both travel lanes and bicycle lanes. The steep incline creates a slow uphill climb for cyclists, and thus an uncomfortable experience for the bicyclist because they have to share the roadway with much faster moving motorized traffic.

A good option would be to stripe a bicycle lane four feet out from the gutter pan on the north side of the roadway and include frequent bike lane symbols and directional arrows. This way, cyclists climbing up hill can do so at their leisure in their own lane, while faster automobile traffic passes them freely in their own lane. Bicyclists going downhill on the south side of the street do so in a shared lane with automobiles, but are able to maintain a much faster speed, a speed that is more comparable to that of the motorized traffic so the cyclist and the motorists feel more comfortable. A sharrow (Page 5-17 & 5-18) should be placed on the right side of the downhill lane according to guidelines set in Section 5.2. Placing the outer edge of the sharrow stencil at least one to one and-a-half feet away from the gutter pan would leave adequate space for both a bicycle and an automobile, and the widths and volumes of the roadway would allow for adequate width for an automobile to pass a cyclist riding downhill. The arrows that make up both the bicycle lane symbol and the sharrows are important to show the bicyclist on which side of the street they should ride. Signs that inform the cyclist to ride on the right side of the roadway would also be helpful so that cyclists do not choose to use the bicycle lane to ride downhill.

This project nearly connects to the bicycle lanes/striped shoulders recommended on NC 73 and to the shared use path recommended along the Long Creek sewer line.



These images show what Wiscassett Road looks like now (left) and what it may be like with bicycle lanes and sharrows (right).

Rank 16. Create a shared use path from Rock Spring Road along Long Creek Sewer Line (Item Number 36 in Appendix J)

A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. This path can link residences, parks and schools on the west side of Albemarle together and connect to Albemarle's main bicycle network. Spur paths from this greenway can connect to City Lake Park, neighborhoods, and to the community college. Large constraints of easement acquisition and connectivity access exist with this project.

The cleared sewer line and roadway underpasses along Long Creek provide a great opportunity for a shared-use path that can access the nearby City Lake Park, neighborhoods, and potentially the Community College Area.

Rank 17. Create a bicycle corridor from the corner of Martin Luther King Drive and First Street to the Wadell Center and to the retail on 24/27 with a mixture of bike lane, bike routes, and shared-use paths. (Item Numbers 11, 31-37, & 41 in Appendix J)

A ten foot-wide asphalt pathway should be constructed according to guidelines set forth in Section 5.2. This path can link residences, parks and schools on the west side of Albemarle together and connect to Albemarle's main bicycle network. Spur paths from this greenway can connect to City Lake Park, neighborhoods, and to the community college. Public participation would be recommended here to ease issues and concerns of the neighborhood pertaining to the individual parts to this proposed route.

Portions of this corridor are on existing social pathways already used

Rank 18. Stripe bicycle lanes on NC 73 from Rock Spring Road to W. Main Street (Item Numbers 4 & 5 in Appendix J)

Portions of NC 73 are currently wide enough for retrofitted bicycle lanes

NC 73 currently has 40 feet of width in between the curbs from Bluff Street to W. Main Street, which is adequate space to retrofit bicycle lanes. An additional segment of this road, from Rock Spring Road to Bluff Street, should be studied to see if portions of the roadway can be suitable for shoulders or other bicycle accommodations using the space otherwise unused or underutilized from a center turn lane. There are few driveways or intersections northwest of Bluff Street, creating some question as to whether a center turn lane is warranted.

Portions of NC 73 are currently wide enough for retrofitted bicycle lanes

Rank 19. Sign an east/west bike route through the Oak Forest Neighborhood from N. 2nd Street to Ridge Street. (Item Numbers 24-30 in Appendix J)

Two bicyclists on East Street

The neighborhood roadways through Forest Oaks neighborhood have minimal traffic and provide an east west connection from N. 2nd Street to the bicycle lanes proposed on Ridge Street (Project Rank # 20) by way of portions of East Street, N. 9th Street, Yadkin, N. 10th Street, Avondale Avenue, Smith Street, and Cardinal Drive. Additional improvements besides signing this route could include mini traffic circles at the intersections and sharrows on the pavement. With appropriate connections to the proposed Carolina Thread Trail alignments at each end of this route, it can serve as an on road corridor for this multi-county pathway.

Safe connections of this route on its east side to proposed bicycle accommodations across N. 2nd Street will require additional study once these facilities near fruition.

Rank 20. Stripe bicycle lanes on Ridge Street from Colonial Drive to Freeman Avenue (Item Number 9 in Appendix J)

Ridge Street between Colonial Drive and Freeman Avenue has a width of 40 feet on asphalt and an additional two feet on each side for the gutter for a total width of 44 feet between curbs. This can easily provide the width to stripe bicycle lanes according to guidelines shown in Section 5.2.

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Section 8
Recommended Policies and Ordinances

8.1. POLICY RECOMMENDATIONS

Land use policies and regulations of the last half of the 20th century have discouraged bicycle and pedestrian-friendly roadways and development and have encouraged automobile use. The recommendations provided in this section are intended to create more transportation options for Albemarle's residents and create a more complete transportation system.

Emphasis on Complete Street Design

By policy, Albemarle streets should all be designed to accommodate automobiles, transit, bicycles, and pedestrians. This concept is known as "Complete Streets" because each street completely accommodates all types of transportation users. The provision of transit, bicycle and pedestrian facilities shall be embraced by policy as a primary element in accommodating travel demand and relieving congestion on all new roadways in Albemarle and before any street widening projects are undertaken.

Access Management

The concepts of access management also apply to bicycle facilities in Albemarle, especially for bike lanes along arterials and multi-lane streets. Basic access management techniques such as consolidating driveways and creating raised medians reduce potential conflict points with turning automobiles, where bicycles are especially vulnerable. Access management can sometimes negatively impact bicycle use, such as in the case of frontage roads and cul-de-sacs that reduce connectivity. However, this can usually be overcome by creating short bicycle and pedestrian pathways. Proper access management increases safety for other road users, including pedestrians and motorists. Consideration on bicycling imacts should be incorporated with existing access management policies, and access management should be used as a tool to increase the safety and conveniences of new bicycle facilities as they are installed.

Locations of Public Facilities

By policy, locations of public facilities should promote access by pedestrians and cyclists.

- The City should work with the School District to ensure that the preferred methods of transportation of children to Albemarle's schools are the active modes (walking, bicycling, skating, etc.) For the development of new schools, finding a school location inside of a developed or future residential development is preferred. If this is not feasible, design the school so that its main entrance faces away from thoroughfares or collectors and toward future or existing residential areas. Schools should encourage children to get themselves to school without the use of cars or buses. New developments that add to the need for new school construction should provide acceptable off-road access from the residences to the schools.

- The locations of post offices, health departments, Social Security offices, parks, libraries, police stations, abuse care centers, courts, DMV offices and other civic facilities should be in a location where non-motorized access is top priority. Simply placing these facilities near a sidewalk or a bike lane is not adequate, but placing these facilities within a short walk or bike to neighboring residents is ideal. Many of the users of these facilities are not able to or cannot afford to drive. In cases such as Social Security offices where there is typically one branch office, a central location is best. The City will need to work closely with the county, the state, and the federal governments to make this possible.

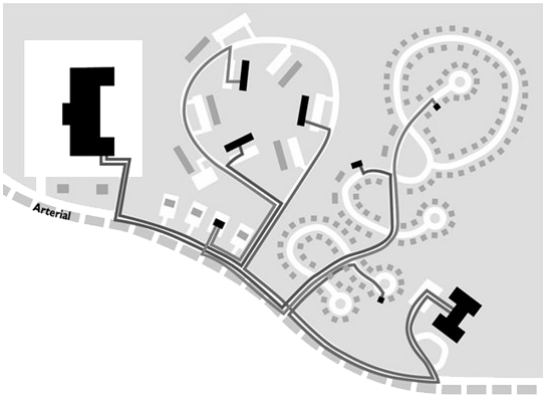
- Plans for roadway construction must not compromise projects and concepts brought forth in the Comprehensive Bicycle Plan. A new roadway should never compromise a planned multi-use path corridor and a road widening projects must always leave room for bicycle facilities and sidewalks. A copy of NCDOT's policy that provides protection for local municipalities' greenway plans regarding new state road construction is found in **Appendix M** and can be found at:

  http://www.ncdot.org/transit/bicycle/laws/laws_greenway_admin.html

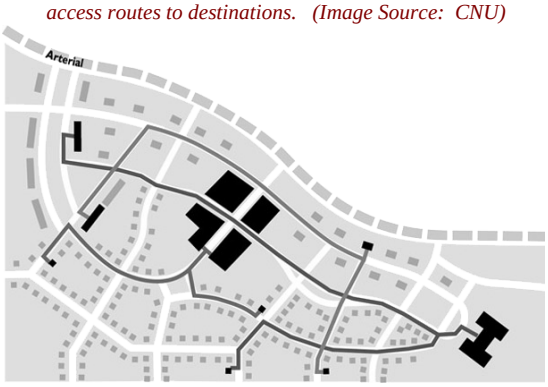
8.2. GENERAL POLICY RECOMMENDATIONS

Requirements for Infrastructure Associated with New Developments and New or Improved Roads

Requirements for new bicycle infrastructure should be consistent throughout the City's planning jurisdiction. It is important to consider that 76% of the citizens surveyed for this plan would support development policies that would encourage bicycling and only 6.4% said they would not. Suggested guidelines for new development are as follows:



The development style above has a complete lack of connectivity and forces all trips onto the arterial road versus the development style below, which allows multiple access routes to destinations. (Image Source: CNU)



- New commercial development shall be oriented to the street and include reasonable connections from the development to the external bicycle network in the public right-of-way.

- New residential development of two dwelling units per acre or greater shall have a grid-like or interconnected curvilinear street pattern designed for travel speeds of no more than 25 miles per hour with block lengths preferably no more than 660 feet in distance. These block separations may be streets or 10-12 foot-wide paths for pedestrian and bicycle users.

- Cul-de-sacs shall not be permitted unless geographic or other natural barriers exist that make connections unrealistic. A developer may create a cul-de-sac or a *close* if an acceptable bicycle and pedestrian connection is created with a 10-12 foot-wide paved path that is built to standards set forth in this plan for multi-use paths.

- New developments shall connect to neighboring developments. Commercial areas shall create a motor-vehicular, bicycle and/or pedestrian connection to adjacent residential communities and provide a future connection option for future developments. New

residential communities shall connect to existing residential and commercial developments, as well as provide connection possibilities to future adjacent developments. Exemptions may apply if there is a substantial natural or geographical barrier, or if there is an environmental concern with such a connection. New developments should be required to provide connections across natural barriers if they are listed as projects in this plan.

- All new developments and road projects shall include bicycle accommodations in street design and construction related to the project according to Table 5-1.

- New and refurbished developments should include long term and/or short term bicycle, as necessary, parking. (See Page 5-33 for bicycle parking guidelines and Appendix H for examples of bicycle parking ordinances)

- Any new development that includes a bicycle project mapped in the Comprehensive Bicycle Plan shall include that project according to guidelines in this plan. In most cases, exact alignment of the projects is not definitive and will require more detailed study.

- New developments should include public green/open space with public facilities such as rest rooms, public water fountains, and public seating areas. These features add vital necessities and aesthetics to Albemarle that will make bicycle trips enjoyable and practical. Multi-use paths that serve to connect key destinations may be developed as part of the City's open space requirement.

- When an existing multi-use path or bicycle lane is closed for construction or maintenance reasons, an adequate detour route should be established that does not cause undue inconvenience to or compromise safety of cyclists.

- All new and rehabilitative local, state, and federal road and bridge project planning and construction projects must consider and include non-motorized accommodation for both pedestrians and cyclists. In most cases, this should include bicycle lanes, but could include wide outside lanes, paved shoulders or multi-use paths. Sidewalks should not be considered bicycle projects unless they are of a sufficient width (eight to ten feet minimum) to comfortably accommodate both modes. According to NCDOT policy, five to six foot sidewalks shall be included on new bridges where a pedestrian need is identified, and a determination on providing sidewalks on one or both sides of new bridges will be made during the planning process according to the NCDOT Pedestrian Policy Guidelines. Bicycle lanes may be considered with local support, and are highly recommended on new bridges. NCDOT should fund all or part of the cost of bicycle or pedestrian projects when they are mapped and recommended as part of a transportation plan. **Appendix M** includes NCDOT's Pedestrian Policy Guidelines and Bicycle Policy Guidelines. The Pedestrian Policy can be found at http://www.ncdot.org/transit/bicycle/laws/ped_guide.pdf, while the NCDOT Bicycle Policy can be found at http://www.ncdot.org/transit/bicycle/laws/laws_bikepolicy2.html.

- All multi-use paths must be ADA accessible. See Section 5.5 for more information.

8.3. SPECIFIC LOCAL ORDINANCE CRITIQUE AND RECOMMENDATIONS

A. Zoning Ordinance

Albemarle's zoning ordinance was critiqued in the Comprehensive Pedestrian Plan, and many of the land-use policies that influence pedestrians have the same influence on bicyclists. The Land Use Plan and Zoning Ordinance is being revised at the same time as this Bicycle Plan is being written, and is expected to address many of these issues.

There are three primary issues in the Zoning Ordinance that directly and negatively impact non-motorized transportation. First is the ability to mix residential uses with neighborhood-serving commercial uses. The second major issue is that the Area, Yard, and Height Requirements need to allow for development at the pedestrian scale rather than at the automobile scale. The revised ordinance is expected to improve on these deficiencies. The third major issue is parking requirements.

1. Allow for Mixed-Uses

In order to promote active living and non-motorized transportation, more people need to live within walking or comfortable biking distance of shopping, employment, recreation, and/or civic destinations. The normal order of density progression is to concentrate people and activities closer together at the core and in mixed-use nodes to provide efficient service and encourage healthy, vibrant, human-scaled environments. The most efficient way for the City to provide for residents – including but not limited to youth under the driving age, those of limited means, and the elderly and those of limited physical capacities (people in all of the categories above typically make up 30% or more of a local population) – to access goods and services is to allow for housing, especially multi-family housing (apartments and condos) and townhouses to be developed in conjunction with or adjacent to businesses that provide for residents' needs: grocery stores and other convenience services. Albemarle's new zoning ordinance should consistently allow the mix of residential and commercial uses.

2. Use Human-Scale Development Standards

Use Density-based Requirements versus Lot Size:

Albemarle's residential zoning districts are all based on minimum lot dimensions that limit the ability to cluster lots and ensure, if not require, that most lots in new development will be of an identical nature. For example, in the R-10 District all single family lots must be at least 10,000 square feet in area (approximately 4.4 dwelling units per acre) and at least 75 feet in width.

There are two problems with this practice. First, it limits creativity in neighborhood design and creates "cookie cutter" subdivisions based on the minimum lot size. Second, it limits the preservation of open space by encouraging developers to plat every possible portion of a site.

A more flexible tool than lot size or acreage requirements is the application of base density requirements for new development. These can aid in neighborhood design by allowing (but not necessarily requiring) a variety of lot sizes within close proximity while regulating the actual number of units that impact surrounding infrastructure. Such a requirement also helps to protect natural features and open space by allowing flexibility in developing sites that are not flat. Detached single family homes can actually be developed to a density of 12-16 units per acre before a fire-rated wall, such as those used in town homes, is required.

Reduce Setback Requirements:

Building setbacks, especially front setbacks, are appropriately related to the type of street, the use of the building, and the surrounding development context. For example, buildings on large, busy thoroughfares could rightfully be set back. However, buildings on pedestrian and bicycle friendly streets, especially neighborhood, mixed-use and neighborhood business streets can easily and appropriately be built close to the street to promote bicycle and pedestrian appeal and safety.

More importantly, this approach to setbacks preserves natural features within the prescribed building envelope, eliminates the opportunity for staggered facades, and organizes the garage on the site in close proximity to the front facade. In truth, the front yard is the least used portion of a typical single family house lot. Deep setbacks also tend to be less attractive for bicyclists and pedestrians since they remove the feeling of enclosure and proximity to human activity that people desire for interest and feeling of security.

Front and rear setbacks from zero to 10 or 15 feet can increase the private, usable space of the rear yard as well as the building envelope. This improves the human dimensions of the street by bringing front doors closer to the sidewalk, where people bicycling by can interact somewhat with people in the semi-public spaces of front porches and front yards.

Currently, most of Albemarle's residential zoning districts have building setbacks of 35 to 40 feet from the property line, which yields an effective setback of 50 to 65 feet from the road when the width of the right-of-way between the property line and the street is included. This may be an appropriate width on busy thoroughfares, but a setback of 10-20 feet (10 feet is allowed in the R-4 zoning district) is more desired.

The setback requirements in the CBD (no building setbacks required, meaning that buildings can be built up to the right-of-way line) allow for the continuation of pedestrian friendly development that was the early pattern of the downtown's development. However, nowhere else in the City could such development be replicated under the current development standards.The Zoning Ordinance includes extensive language on the preservation of historic buildings in historic districts within the City. Unfortunately, the replication of the very pedestrian-oriented urban design standards of the City's historic neighborhoods would hardly be allowed in new development in the City.

3. Revise Parking Standards

To further reduce the impact of automobile parking on bicycle transportation, the City should consider including the following measures in its development regulations:

Establish Parking Maximums
Consider parking maximum thresholds. This will limit the overbuilding of parking lots. Parking maximums can encourage additional development or preservation of natural features since more land can be used for building and open space instead of parking. Furthermore, existing buildings with little existing parking can be reused more easily.

Encourage Shared Parking
Shared parking for uses that have different operating hours (such as night clubs and offices) makes efficient use of space, reduces the size of parking lots, and increases the amount of land on a parcel that may be devoted to buildings versus parking. In certain districts, such as the CBD, offer developers an in-lieu fee option to contribute to public parking instead of building their own parking on-site.

Encourage On-Street Parking
On-street parking should be allowed to count towards parking requirements. On-street parking is one of the most efficient ways to provide and share parking. It also benefits bicyclists by slowing the speed of cars on the roadway.

Require Bicycle Parking
Just as the provision of motor vehicle parking has been shown to induce driving, the provision of safe and convenient parking for bicycles can have the same effect on bicycling. Bicycle parking can be provided at a fraction of the cost of automobile parking and in a fraction of the space – 10 to 12 bicycles can be parked in the area of one car parking space at a cost of tens of dollars per bicycle space versus hundreds or thousands of dollars per motor vehicle space.

The City should consider requiring bicycle parking for multifamily and all non-residential development. Different standards of bicycle parking are needed for short term visitors and customers and for longer term users like employees, residents and students. Typically, 1 bicycle space per 20 motor vehicle spaces is sufficient to provide for visitor parking demand. See Appendix H for examples.

B. Subdivision Ordinance

There are a number of development standards in the City's current Subdivision regulations that should be modified to allow for more comfortable neighborhood bicycling:

1. Section 91.09(A) should be revised to **reduce the minimum pavement width requirements**.

   The current required pavement widths for local streets, marginal access streets, and cul-de-sacs (26 to 32 feet, back-of-curb to back-of-curb), are too wide for low-speed, neighborhood streets. These dimensions are excessive for most low-density, residential neighborhoods.

Not only is it more expensive to build (a cost that is passed on to the home buyers), but the additional width encourages speeding, which makes the environment less appealing and safe for pedestrians and cyclists.

The minimum widths should be reduced and a greater range of street widths based on density and projected on-street parking demand should be allowed. For single family neighborhoods, the minimum roadway width may be decreased up to a minimum 18 feet in pavement width (or 20 to 22 feet face-of-curb to face-of-curb) with no perceptible impact on service delivery. This dimension permits occasional on-street parking. Where on-street parking is expected with higher frequency, a minimum width of 22-24 feet of pavement width is recommended.

Collector street widths can be reduced as well and should be based on projected traffic and development context. A 32 to 34-foot (face-of-curb to face-of-curb) street will accommodate full-time on-street parking on both sides of the street and two travel lanes. However, "where houses do not front on the residential collector street and [/or] parking is not normally needed, two moving lanes of pavement are adequate" (National Association of Home Builders, 2001). Thus, based on design speed, and expected volume, collector streets could be as narrow as 20 to 22 feet.

Other factors to consider in defining minimum widths for collector streets is the need for on-street bicycle accommodations such as bike lanes (minimum 4 feet of pavement in each direction) or wider shared travel lanes (typically 13-14 feet). All of these factors – the need for on-street parking, design speed, projected motor vehicle volumes, and the need for bicycle accommodations – should be considered in defining the widths for collector streets.

2. Section 91.09(A)(8) should be revised to **modify cul-de-sac requirements**.

   Cul-de-sacs create a very safe environment within their confines, but create inhospitable pedestrian environments because they result in fewer route choices and thus longer distances from destinations. The current maximum length for cul-de-sacs, 400 feet, is good – better than many communities' requirements in the region. However, it could be reduced to as little as 250 feet.

   Furthermore, the City should specify conditions for when cul-de-sacs are allowed. They should be allowed to be used only as a condition of last resort when street connections are not possible due to topographic, environmental, or lack of street stubs on adjacent properties. When cul-de-sacs are used, they should be required to provide pedestrian connections through the end of the cul-de-sac to other near by streets or destinations.

3. Section 91.08(C) should be revised to **reduce block lengths**.

   The current maximum allowed block length of 1500 feet is too long to promote non-motorized travel. Longer blocks force pedestrians and cyclists to go further out of their way to reach destinations. Ideally sized blocks are 200-400 feet wide. The block length should be based on a variety of factors, including the density of the development and the zoning district and the development context of the development (urban versus rural) up to a maximum of 800 to 1,000 feet. Consider requiring blocks longer than 800 feet to provide a

non-motorized path crossing through the block. Consider requiring 15-20 feet easements and pedestrian paths to be at least 10 feet wide and of pavement or a crushed gravel surface.

4. Section 91.08(D) should be revised to **reduce minimum lot widths or to use density-based standards.**

   As noted above, this plan recommends the use of density versus lot size in all residential developments. This approach is already allowed for in the Cluster Residential Development regulations (Section 91.21). The current minimum lot width of 70 feet makes for relatively wide lots. Smaller, more compact lots put more residents within walking or biking distance of destinations such as parks, schools, and commerce. If lot size is to be used, consider allowing single-family lots as narrow as 35 to 45 feet on streets that are served by public water and sewer.

5. Section 91.08(E) should be revised to **reduce building setback lines.**

   The minimum building setback of 35 feet from the front property line yields an effective setback of nearly 50 feet from the street when the right-of-way width is included. As noted above, this dimension may be appropriate on higher speed, higher volume collector and arterial streets, but is not appropriate for human scale neighborhood and commercial streets. Consider reducing front setbacks to as little as 10-15 feet on local and collector streets.

6. Section 91.08(I) should be amended for **better access**.

   - Establish Connectivity Requirements. Improving connectivity and limiting cul-de-sacs result in improved mobility for pedestrians, motorists, and cyclists; decreased response time for emergency services and delivery costs for services such as garbage collection through improved routing options; and, improved water pressure and maintenance from the ability to loop lines through a development rather than have to rely on less efficient dead-end pipe runs. Traffic studies have shown that highly connected street networks provide much greater traffic capacity and mobility for a community, at less cost. A high degree of connectivity should occur not only at the level of thoroughfares, but also on collector or local roads. Such connectivity vastly improves a street network's performance. The street pattern should not force short trips of one or two miles onto arterials; it should be possible to make trips of this sort by using collector or other local streets, which are also more favorable to pedestrians and cyclists. With a highly-connected street network, cross-town trips should be possible using fairly direct residential roads.

   - Enhance Sidewalk and Planting Strip Requirements: The addition of the requirement of an 8 – 10 foot-wide shared use paths on arterials to developments of over 4 dwelling units per acre should give cycling access to residents on these more intimidating travel corridors.

     The planting strip requirement is necessary since it provides a buffer between the pedestrian zone and the vehicle zone of the street, and provides the width necessary for

adequate ADA ramp slopes from the street to the sidewalk. An 8 foot-wide planting strip, however, would better provide space for most street tree varieties to be planted, which provide shade for both pedestrians and bicyclists. The City should consider requiring that shade trees be planted in these planting strips in all new developments since street trees also help reduce stormwater runoff, increase the life of pavement, and increase property values, among many other benefits. Unfortunately, Albemarle requires street trees to be planted on private property rather than in the planting strip in the right-of-way. This plan recommends that street trees be required to be planted in the planting strip.

7. Section 91.11 should be revised to **enhance "Improvements with the City Limits" requirements.**

   The City should establish objective standards for when sidewalks and shared-use paths should be required. Objectives such as the context-based standards suggested above should be provided.

C. General Codes and Ordinances

A municipality's codes and ordinances can help or hinder proper bicycle use and education. A complete list of codes and ordinances in Albemarle that are related to bicycling are listed in **Appendix N.** There is no reason to modify most of these with the following exceptions:

- *§ 76.05 RIDING ON ROADWAYS AND BICYCLE PATHS. Every person operating a bicycle on a roadway shall ride as near to the right-hand side of the roadway as practicable, exercising due care when passing a stnding vehicle or one proceeding in the same direction. Persons riding bicycles on a roadway shall not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles. Whenever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use the path and shall not use the roadway.*

  Recommended Changes:

  This section should be modified to make further exceptions for bicycles riding near the right-hand side of the roadway including:

  - safety reasons such as roadway debris;
  - when preparing to make a left turn;
  - instances where the bicycle is, or is intended to, keep a speed that is comparable to motor vehicles (such as in Central Business Districts or neighborhoods, in roundabouts, or on a steep downhill slope);
  - while traveling on one-way streets;
  - or other exceptions listed under North Carolina law [*§20-146]*.

  The last sentence of this section should be deleted. A bicycle is a vehicle according to North Carolina State Law [*§20-4.01 (49)]* and should have access to local roadways as other vehicles do. A bicycle path alongside a roadway has design features that often make them undesirable to bicyclists capable of achieving higher travel speeds. Any off-road pathway is

intended to be a multi-use path, shared by bicyclists and pedestrians of various skill levels. There are many times and circumstances where experienced cyclists should take the roadway instead of a parallel path to avoid potential conflicts with pedestrians and intersection crossings. A code should never force a bicyclist to use a facility that they might feel is not the safest alternative. In addition, this code as written may be wrongly interpreted to say that any adjacent path may serve as an appropriate bike path such as a sidewalk or a future multi-use path that may not bring the cyclist to the same destination that the roadway would. Recent state laws have been adopted outside of North Carolina that makes local laws of this type illegal for safety reasons. North Carolina State Law does not require that bicyclists use paths adjacent to roadways.

- *§ 76.10 RIDING ON SIDEWALKS. (A) No person shall ride a bicycle on a sidewalk within the central business district. (B) The Chief of Police is authorized to erect signs on any roadway prohibiting the riding of bicycles thereon by any person and when the signs are in place no person shall disobey them. (C) Whenever any person is riding a bicycle on a sidewalk, that person shall yield the right-of-way to any pedestrian and shall give audible signal before overtaking and passing the pedestrian.*

  Recommended Changes:

  (A) While this code may be warranted, the City of Albemarle needs to immediately take the steps necessary to make the central business district roadways attractive to all skill levels of bicyclists, since a law prohibits them from using the sidewalk. This requires the immediate addition of signs, sharrows, bike lanes, education, and speed enforcement.

  (B) The temporary closure of any roadway to any vehicle is understandable because of a safety concern. Any permanent prohibition of bicycles on a roadway contradicts the North Carolina Department of Transportation's Guide to Bicycle and Pedestrian Laws statement that, "Under North Carolina law, bicycles are considered vehicles and should be treated just like any other vehicle." [§ 20-4.01 (49)], [§20-171.1], and [§20-171.8].

  (C) No changes recommended to part (C).

- *§ 76.08 CARRYING ARTICLES. No person operating a bicycle shall carry any package, bundle, or article which prevents the rider from keeping at least one hand on the handlebars.*

  Recommended Changes:

  This section should be modified and applied to all operators of all vehicle types, and be expanded to prevent all distractions that require the use of both hands such as cell phones.

- *§ 76.12 REGISTRATION.*
  (A) It shall be unlawful for any person to operate or use a bicycle propelled wholly or in part by muscular power on any of the streets, alleys, or public highways of the city without first obtaining a certificate of registration from the Chief of Police and having attached to the bicycle a registration number.

(B) The city shall provide registration seals together with registration cards, the registration seals and registration cards to be numbered in numerical order beginning with number one, the design and identification lettering thereon to be approved by the Chief of Police. It shall be the duty of the Chief of Police to attach one of the registration seals to the frame of each bicycle and to issue the corresponding registration card to the owner of the bicycle on the payment of the registration fee required. The registration seal shall remain attached to the bicycle for which it was issued during the period for which it is registered. The Chief of Police shall keep a permanent register in which shall be entered the name, address, and age of the owner of each registered bicycle, the date of registration, and sufficient information to identify the bicycle.

(C) It shall be unlawful for any person to sell or transfer ownership of any bicycle without reporting to the Chief of Police within 48 hours from the time thereof, full and complete information relative to the transfer so that the bicycle may be registered in the name of the transferee. The purchaser or transferee of any bicycle shall apply for a transfer of registration therefore within five days from the time the bicycle is acquired by him.

(D) All persons engaged in the business of buying secondhand bicycles are hereby required to report to the Chief of Police within 48 hours after acquiring any secondhand bicycle or parts thereof, the report to include the registration number of the bicycle, a description of each bicycle acquired, the frame number thereof, together with the name and address of the person from whom it was acquired. In the case of the purchase of any part of a bicycle, the report shall describe each part and give the name and address of the person from whom it was acquired. All dealers in new bicycles in the city shall report their sales to the Chief of Police on blanks furnished for that purpose, within 48 hours thereafter, giving all the information required herein for secondhand bicycles.

(E) It shall be unlawful for any person to willfully or maliciously remove, destroy, mutilate, or alter the number of any bicycle frame registered pursuant to this section. It shall also be unlawful for any person to willfully or maliciously remove, destroy, mutilate, or alter any registration plate or registration card. (F) Any bicycle operated by the owner or other person lawfully having custody thereof, in violation of this section, may be impounded by the Chief of Police for a period not exceeding 30 days.

Recommended Changes:

The commitment from the City of Albemarle to attract more bicyclists with this bicycle plan reinforces the economic, health, and environmental values of bicycling to the City. As written, this code may actually deter law abiding citizens in Albemarle from owning and operating a bicycle. An optional registration program may be helpful with tracking stolen bicycles in the City, but a required registration and fee may do little or nothing to boost City funds or to lower criminal activity and may cost the City more in negative effects. It is recommended that this entire section be deleted.

- *§ 75.10 DRIVERS TO EXERCISE DUE CARE. Notwithstanding the foregoing provisions of this chapter, every driver of a vehicle shall exercise due care to avoid colliding with any pedestrian on any roadway, shall give warning by sounding the horn when necessary, and*

shall exercise proper precaution upon observing any child or any confused or incapacitated person on a roadway.

Recommended Changes:

This section from the chapter concerning pedestrians might be a model for a similar code in the bicycle chapter that may state that "*every driver of a motor vehicle shall exercise due care to avoid colliding with any cyclist on a roadway*."

8.4. OTHER POLICY RECOMMENDATIONS AND SUGGESTIONS

Speed Limit on Residential Streets

The speed limit should be reduced to 20 mph on all residential and mixed-use commercial streets. Five times as many people die when hit by a car going 30 miles per hour than a car going 20 miles per hour. Speed limits in school zones during arrival and dismissal times should be no more than 15 mph. If possible, avoid placing main entrances to schools along North Carolina state roads as a 15 mph speed limit may not be permitted.

Streets are designed for a specific speed, and simply changing the speed limit does not alter driving habits unless there is significant enforcement. As new streets are rebuilt, or existing streets are improved, the opportunity exists to create an environment where the driver would rather drive at a speed that is safer near pedestrian activity areas. Consider creating a policy that includes incorporating low speed design into residential and high density commercial street design. As Albemarle develops the proposed Pedestrian Oriented Development Zones from the *Comprehensive Pedestrian Plan*, streets should change to accommodate both pedestrians and bicyclists. Narrow lane widths, curvy alignments, alternating on-street parking, landscaping, short building setbacks, bicycle lanes, sidewalks, and other added features could eventually naturally decrease the comfortable driving speed. Lower posted speed limits on roads with higher design speeds, some traffic calming measures, and increased law enforcement would be necessary to deter speeding, particularly where bicyclists must share roadway lanes with automobiles.

Acquisition of Easements for Bicycle Projects

As the City seeks to create non-motorized connections in areas that are already developed, the availability of right-of-way inevitably will be an obstacle. The City should take steps to formalize a policy regarding the construction of multi-use paths or connections outside of the public right-of-way. Ideally, the City should identify opportunities to reach agreements with property owners to provide a multi-use path easement as necessary for new projects without acquiring property. Easements for public access should be a standard addition for any new or re-contracted utility easements. For example, standard 10 foot-wide utility rights of way should be modified to a minimum width of 30 foot utility and public access shared right of way. Some multi-use paths need up to 100 feet of right-of-way width to accommodate substandard soil conditions. In addition, an effort should be made to ensure that conservation easements purchased by developers should not restrict environmentally mindful construction of a multi-use path or public access for such a path.

There are several means by which the City of Albemarle can acquire the financial and land resources needed to develop bicycle networks. These include *Reservations*, *Dedications*, *Payment-in-Lieu*, *Impact Fees*, and the *Transfer of Development Rights*. These methods are defined below. It is important to note that if Federal Highway funds are sought or used, the land owner must be offered fair market value for any land acquired.

Reservation:
Residential developments impacting a public facility (school, park, multi-use path, or roadway) are required to set aside land for a certain period of time so public agencies can purchase a specified area.

Dedication:
These are usually found in zoning or subdivision ordinances, whereby a piece of land from a development is given fee-simple to the public for a particular use, such as a park or multi-use path, or roadway with bike facilities. Dedication requirements are almost always attached to residential development, but can be extended to commercial development as well. Local governments can require a dedication based on the need to provide more public recreation facilities due to the needs of the new residents coming with the development. If a planned residential or commercial development is located on a planned bicycle project, an easement must be dedicated for the future multi-use path. The regulation should also clearly state the standards for size, topography, and accessibility. This information helps with consistency and legality of the dedication process. If the new development is not on a planned route, the developer shall make a payment-in-lieu of a dedication.

Payment-in-Lieu:
These payments are tied to dedication regulation. The developer pays a fee that represents the value of the site or the improvement that would have been dedicated or provided. Donations are required when affected by a planned park or multi-use path route, but those developments not affected still bear similar expenses. Payment-in-lieu fees are typically earmarked by its purpose, geographic area, and have a specific time limit. These fees can be used to pay the development costs of nearby multi-use paths.

Impact Fees:
This is a one time fee imposed on new development. The intent of an impact fee is to shift the cost of providing public facilities (roads, sewers, parks, etc.) needed to serve new growth from the general tax base to the new development generating the demand for the new facilities. Tied to numbers of people (dwelling units, bedrooms) rather than land use, impact fees require state-granted enabling legislation to enact.

Transfer of Development Rights:
This is an arrangement that allows landowners to sell/transfer potential density of development of their property (sending area) to another location better suited to accommodate additional development (receiving area). Sending areas are typically those areas preferred to be protected and conserved such as open space, forests, watersheds, wetlands, and historic landmarks. Receiving areas are places that have capacity to accommodate new development, such as pedestrian and transit oriented development, infill, etc.

Incentives:
There are a range of incentives that can be used to acquire and protect open spaces, like Density Bonuses, tax incentives, Conservation Subdivision Ordinances, Cluster Development, etc.

An example ordinance that uses some of these tactics is found in Appendix I of the 2006 Pedestrian Plan, and an example of an easement agreement is in **Appendix O** of this plan.

Section 9
Implementation

9.1. IMPLEMENTATION OF PROPOSED INFRASTRUCTURE PROJECTS

The implementation of new and expanded bicycle infrastructure projects is an important component of Albemarle's Bicycle Plan. It is imperative that the City of Albemarle not miss any future opportunity to design safe and convenient transportation for all modes. **The best implementation strategy would include considering bicycle accommodation in all standard maintenance, improvements, and resurfacing of existing roads.** Existing roads when repaved or redesigned should include appropriate bicycle accommodations according to Table 5-1. Additionally, as intersections are modified to add or improve signalization, consideration should be given to bicycle detection and safety. Incorporating bicycle projects into municipal projects should not end with roadways. Sewer lines or parking lots may need occasional major maintenance. Properly grading a sewer route for a potential future greenway after replacing pipes or installing bike racks in a newly resurfaced parking lot will reduce project costs compared to retrofitting these improvements later.

In addition, **any future arterial and collector roads in Albemarle should include bicycle lanes in the roadway design and construction**. Future residential secondary roads and streets within Pedestrian Oriented Development Districts should be designed for low speed traffic.

The projects that are identified in this plan, if completed, would create a basic network of cycling routes across Albemarle. A considerable portion of Albemarle's bicycle network will have to be built as discrete projects, separate from other roadway or infrastructure initiatives. However, it is important to remember that **roadway bicycle projects can benefit motorists and pedestrians as well.** Completing the short segments of bicycle lanes that are mapped in this plan, or constructing the few shared-use paths that are illustrated would be the minimal network needed to provide bicycle access. Completing the network so that bicycling is an option for all of Albemarle's citizens would depend on focused City policy and on-going effort by elected officials, staff, and the public.

Development of Albemarle's off-road bicycle infrastructure in the form of shared-use paths and soft surface trails will improve recreational opportunities in the area in addition to bicycle transportation. This plan recommends that the Park and Recreation department study the feasibility of creating more "single track" and other off-road trail networks on its existing and future park lands. Expanding existing trails at City Lake Park would give cyclists a good place to recreate within a short bicycle ride of downtown and the greenway.

The implementation of bicycle infrastructure projects in Albemarle should be guided by benchmark goals set forth in Section 1 on page 1-10. Sample benchmark goals to be developed could include:

1. The amount of funding of bicycle facilities by the City
2. The number of miles of bicycle lanes, trails, and greenways
3. The completion of segments of shared-use paths, particularly the completion of the portion of the Carolina Thread Trail that travels through Albemarle
4. The number and miles of signed and mapped bicycle routes
5. The percentage of bicycle commuters (2 - 5% may be a reasonable goal based off of successes in similar cities)

6. The percentage of students who bicycle to school (10% is a reasonable starting goal, with goals to increase each year afterwards)
7. The percentage of new and existing businesses that have bicycle parking (by policy, 100% of new businesses should provide bicycle parking after this plan's policies are implemented, but a goal of 10% of existing businesses to offer bicycle parking is a good starting goal.)

These goals will provide a metric for measuring Albemarle's progress in creating a more bicycle friendly environment. During implementation of the plan, these benchmark goals should be revisited on a periodic basis to assess which areas are being implemented successfully and which areas might be in need of additional focus. This will help Albemarle continue balanced progress toward the implementation of this plan.

Implementation of Phase 1 Projects

To help narrow the immediate focus for the City in the implementation of bicycle projects, a subset of "Phase 1 projects" was defined based on the scores received by each project as part of the prioritization process described in Section 7. The twenty projects receiving a score greater than 60 out of 100 points were designated as Phase 1 projects. Focusing initially on this more limited list of infrastructure projects will enable the City to implement the projects that will have the most benefit to cyclists in the area, while building support for additional development of the bicycle network. The other projects listed could still be implemented with or before these higher priority projects if the resources become available and the need or opportunity is apparent.

Bicycle Parking

Bicycle parking is a necessary ingredient to the overall transportation system. As providing roadways for automobiles would be incomplete without some place for them to be parked once they reach the destination, the same is true for bicycles. Bicycle parking projects range in complexity from purchasing single racks for broad installation to bike stations complete with lockers and showers and bicycle rental and repair. Individual inverted "U" style bicycle racks can be purchased inexpensively and installed at select locations around the City. This is a high priority project. The City can work with businesses who wish to receive a rack by purchasing the rack and allowing the business to install it (or pay to have the City install it) according to guidelines set in Section 5. In addition, several bicycle parking racks should immediately be installed at each public school in the City, at City Hall, and at other City facilities such as parks. Most bicycle parking projects should be considered once basic bicycle networks are beginning to take root. Creating and adopting a Bicycle Parking Ordinance is a top priority for getting bicycle parking installed with new development.

As described in Section 5, the following minimum bicycle parking facilities should be implemented by the City and local institutions and businesses:

- Covered, short term bicycle parking to accommodate approximately 8 - 20 bicycles at each of the following locations:
  - City Hall
  - At each of the 5 public schools in the City
  - Stanly Regional Medical Center
  - Stanly Community College
- At least 24 individual inverted "U"-shaped bicycle racks to be purchased and installed throughout the City at locations such as:
  - The downtown library (2)
  - Stanly Commons (2)
  - Waddell Center (2)
  - YMCA (2-4)
  - Wal-Mart Shopping Center (2-4)
  - Harris Teeter (2)
  - City Lake Park (2-4)
  - Rock Creek Park (2)
  - Morehead Park (2)
  - Downtown Post Office (2)

Long-term covered parking may be a good option for some locations.

Listings of all proposed items are included in Appendix J. Table 9.1 Summarizes Albemarle's Phase 1 Projects with their approximate costs.

Good bicycle parking attracts users as shown to the right in Tampa, Florida.

Table 9.1: High Priority Corridor Projects

Rank	Item #	Description of Improvement	Roadway / Location	Approx. Cost
1	1	Bike Lanes with Road Diet	Salisbury Avenue from US 52 to N. 2nd St.	$258,640
2	46	Shared-Use Path	Abandoned RR (Old Mill) from N. 2nd St. to N. 3rd St.	$171,720
3	22&23	Bike Route	SRMC to MLK Dr. via. 4th and 3rd Streets	$630
4	44	Shared-Use Path	Abandoned RR from Salisbury Ave. to W. Main St.	$364,640
5	43	Shared-Use Path	Abandoned RR from existing Greenway (W. South St.) to Old Aquadale Rd.	$420,820
6	3&6	Bike Lanes with Road Diet	S. 1st / S. 2nd St. from South St to Rock Creek Park	$11,360
7	2	Bike Lanes with Road Diet	W. Main Street from US 52 to S. Depot St.	$201,300
8	13	Sharrows	Main St. from Depot St. to Pee Dee Ave.	$2,000
9	38	Shared-Use Path	Little Long Creek from W. Main St. to Coble Ave.	$887,000
10	15-21	Bike Route	From the int. of Rogers St. & Carolina Ave. to the int. of Coble Ave. & Commerce St.	$3,700
11	10	Bike Lane Striping	Pee Dee Ave. from 4th St. to Ridge St.	$15,000
12	7,8,14	Bike Lane Striping (with a segment of sharrows)	Park Ridge Road from N. 6th Street to Melchor Rd.	$11,000
13	40	Shared-Use Path	Melchor Branch Creek sewer line from Little Long Creek to Monza Drive	$1,366,200
14	39&45	Shared-Use Path	Little Long Creek sewer line from Morehead Park to Salisbury Ave and the Abandoned RR from Salisbury Ave. to N. 2nd St.	$1,557,160
15	12	Climbing Bike Lane with Downhill Sharrows	Wiscassett St. from Laurel St. to Carolina Ave.	$9,500
16	42	Shared-Use Path	Long Creek Sewer from Rock Creek Rd. to Coble Ave.	$1,346,400
17	11, 31-37, 41	Bike Lanes, Bike Route, and Shared Use Path	MLK Dr., Wall Street to 24/27, Inger St to Henson St. and a path from Leonard St to.	$252,500
18	4&5	Bike Lane Striping	NC 73 from Rock Spring Rd. to W. Main St.	$17,680
19	24-30	Bike Route	East St. (and others) from N. 2nd St. to Ridge St.	$2,300
20	9	Bike Lane Striping	Ridge Street from Colonial Dr. to Freeman Ave.	$12,000

Funding Opportunities

A combination of funding sources will be needed to construct the infrastructure projects summarized in Section 7. The City of Albemarle should seek all viable funding opportunities for project implementation, including federal and state monies where available (i.e. inclusion on the state Transportation Improvement Plan). Special funding programs for specific types of projects (e.g. Safe Routes to School) should also be pursued. Private foundations should be thoroughly researched to identify possible funding options. The “Readiness” row in Table 7.2 and in Appendix J provides a good ranking method for determining what projects are “shovel ready” if last minute funding comes available for projects that can be implemented quickly.

Although many funding sources potentially can provide revenues for project implementation, it is likely that local government funding will be a primary component (for matching federal / state funds and for implementation where other revenue streams are not available). Therefore, it is recommended that the City establish a set aside amount in the annual Public Works budget for bicycle infrastructure project implementation. Other departments should consider setting aside funding for bicycle-related projects as well including the Park and Recreation Department for off-road paved greenways and dirt trails. An annual set aside would ensure that progress is made every year on constructing the specified projects, and would illustrate a commitment from the City to improve the bicycle network. It is important to consider that **almost 85% of the citizens surveyed for this plan would definitely (73.8%) or potentially (10.6%) support public funding for bicycle facilities** such as bike lanes and greenway paths**.** Voter approved bonds and dedicated capital improvement funds may therefore be a feasible option for local funding. Local prioritization and allocation of funding for transportation projects should reflect the fact that more than 30% of the City's population cannot or does not drive due to age, income, and/or physical abilities. Appendix L shows more detail on potential funding sources.

Another feasible funding option may be to give citizens a choice as to how their tax dollars are spent. Property owners could have an option to designate part of their taxes specifically to bicycle facilities, or vehicle tax renewals could ask the payer to include an additional donation to improve Albemarle's bicycle accommodations.

Project Completion

A gradual and phased approach is the most realistic possibility for the completion of most of the recommended projects. As new segments of roadway are widened or repaved, bicycle facilities can be added, or as new developments arrive, new bicycle connections can be created. The segments will not be completely connected immediately, but eventually come together to form an intercity network.

Some projects may be done in phases. For example, a greenway section may require two separate phases of work. Completing the initial section of pathway will serve a large part of the community very well while funding and land becomes available for the final section.

A bicycle boulevard is another example of a project that may be best completed in phases. The route should first have each of its immediate hazards mitigated such as dangerous grates or unsafe intersections. Signs can then be installed on this route as the City begins the process of further calming non-local traffic flows and installing the way finding necessary to be a Bicycle Boulevard. As with any neighborhood bicycle project, public involvement is necessary. As the residents agree to the type of traffic calming they prefer, plans are made to complete the Bicycle Boulevard. Once the traffic calming measures are complete, through stop signs on the route can be replaced with other intersection treatments and pavement markers and signs can be installed.

9.2. ADOPTION OF POLICY AND ORDINANCE REVISIONS

The recommended policy and ordinance revisions discussed in Section 8 should be fully considered when the City of Albemarle updates its existing zoning ordinances. The new Land Use Plan includes pedestrian and bicycle-oriented provisions. Incorporating the policy recommendations described in Section 8 in the City's updated planning and zoning tool kit will play a major role in defining the future cycling environment of Albemarle.

9.3. PRIORITIZATION AND IMPLEMENTATION OF PROGRAMS

A variety of possible ancillary programs are described in Section 6. Some of these programs should be implemented as high priority programs in the near-term, while others could not be efficiently implemented without a more developed bicycle facility network. Specific comments for each of the types of programs discussed in Section 6 are offered below.

Education Programs

Education programs should be pursued in the near-term, working especially with the Albemarle school system and the Police Department to identify opportunities for new programs. Safety programs for adults and children are beneficial regardless of the extent of the bicycle infrastructure network. Adult education through community workshops, bicycle maintenance education, mentoring, driver's education, and public perception marketing are considered high priority and can all be initiated immediately. Local bicycle clubs can assist in implementing such programs as well. Some education programs, such as bike facility maps/brochures will not be practical to pursue until more projects are on the ground.

Encouragement and Promotion Programs

Various encouragement and promotion programs are described in Section 6. These programs should be phased in over time. It is important that encouragement and promotion activities are on-going, rather than one-time efforts. Planning for these programs can begin immediately, but the implementation of some programs may not take effect until after a significant distance of bicycle routes connect the City as these programs are partly to promote and show off Albemarle's bicycling opportunities.

Enforcement Programs

The City should strongly consider immediate implementation of new traffic law enforcement programs that will benefit cyclists and motorists. This is a high priority.

Transit Interface and Transportation Options

Many of the policies and projects recommended in this plan are intended to create a strong framework for a viable multimodal transit system that includes any potential future mass transit in the City. Transportation options help to create more choices for bicycles and a stronger bicycle system, while land use development that encourages connected bicycle networks also create stronger mass transit systems.

Spot Improvement, Maintenance and Debris Programs

Pavement cracks, storm grates, and debris can deter bicycling, cause injury or puncture tires. A Spot Improvement Program to identify and mitigate these hazards should be implemented as

soon as possible, and should be considered as a high priority program. Many municipalities set aside a set level of funding for a Spot Improvement Program every year. It is suggested that Albemarle adopt a similar approach, including a set amount of funding in the Public Works budget every year for street cleaning and roadway improvements. Once an initial list of necessary repairs and upgrades is compiled, each particular maintenance project can be ranked according to the criteria set in Section 7.2. These maintenance projects should be ranked separately from the projects outlined in Section 7, and be continuously updated as additional maintenance needs arise. An annual budget of $100,000 for spot improvements would provide a starting point for enabling minor improvements around the City. Additional programs can be created later to supplement the initial improvements to combat roadside debris accumulation such as glass recycling encouragement, the enforcement of litter laws, Adopt-A-Road programs, or bicycle tire replacement programs.

9.4. ORGANIZATION OF A BICYCLE COMMITTEE

A committee should be created by a joint effort between Albemarle's planning staff and the City Council that will oversee the implementation of this plan. The committee should be made up of stakeholders that will have the interest, knowledge, and ability to ensure that the proper steps are taken to find funding, change or create public policy, re-rank projects as necessary, and encourage the community to embrace bicycling. This committee may be combined with a pedestrian and greenway committee if necessary. Albemarle's Planning Department, Utilities Department, Police Department, Parks and Recreation Department and schools should all make an effort to become familiar with and make decisions based on the recommendations in this plan.

It is important for this committee to take the steps necessary to make sure that projects in this plan are considered when other City, County, State, and Federal projects or programs are planned. Delay because of any of these agencies' lack of information about potential impacts on these bicycle projects may result in a more costly project or no bicycle project at all. Citizen groups, organizations, and businesses are also encouraged to get involved with the implementation of this plan.

Until such a committee is formed, Albemarle's Park and Recreation Department and the City's Public Works Department should be primarily responsible for carrying out the recommendations of this plan.

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Appendices

City of Albemarle Bicycle Planning Process Underway!

Public Input is Needed:

The City of Albemarle is in the initial planning stages of a Comprehensive Bicycle Plan.

Through the North Carolina Department of Transportation's Pedestrian and Bicycle Planning Grant Initiative, the City of Albemarle has been awarded a $31,850 matching grant to create a comprehensive bicycle plan.

This plan will build upon projects and policies recommended in Albemarle's recent Pedestrian Plan and provide a framework for creating a safer and more usable bicycle network in Albemarle. The plan is intended to help to give Albemarle's citizens more transportation choices while creating a more livable city.

An on-line survey is posted at www.ci.albemarle.nc.us and there will be a public comment booth at this year's Mini Medley Relay to enable residents to voice their opinions on needed bicycle improvements for adults and children.

A follow-up meeting will be held this summer to present the draft plan for resident feedback. Input from each of these workshops will be incorporated into the final plan.

Potential Elements to be Included in the Plan:

- Off-road paths / greenways
- Bicycle routes on roadways
- Traffic calming
- New policies and standards
- Recreational cycling
- Cycling for transportation
- Benefits of bicycling to Albemarle
- Programs to encourage safe, practical, and enjoyable cycling
- Safe Routes to Schools and addressing bicycling concerns for parents

How to Give Input:

Visit the comment booth for the Comprehensive Bicycle Plan on Saturday, March 28, 2009 at the Mini Medley Relay at Central Elementary School from 8:30 AM to 11:30 AM.

In addition, please consider taking a few minutes to complete a bicycle survey online, posted on Albemarle's home page at www.ci.albemarle.nc.us .

For more information please contact:
Toby Thorpe, City of Albemarle Parks and Recreation
at 704-984-9564 or parks@ci.albemarle.nc.us

City of Albemarle Bicycle Planning Process is Nearing Completion!

Final Public Input is Needed:

The City of Albemarle is in the final planning stages of a Comprehensive Bicycle Plan.

Through the North Carolina Department of Transportation's Pedestrian and Bicycle Planning Grant Initiative, the City of Albemarle has been awarded a $31,850 matching grant to create a comprehensive bicycle plan.

This draft plan builds upon projects and policies recommended in Albemarle's recent Pedestrian Plan and provide a framework for creating a safer and more usable bicycle network in Albemarle. The plan is intended to help to give Albemarle's citizens more transportation choices while creating a more livable city.

A workshop will be held to enable residents to give feedback on the draft plan that was developed based on citizen comments from a previous public forum and from the results to a survey conducted in the spring.

This forum will be the final formal opportunity for residents to review the draft plan and to present new ideas to be incorporated into the final plan.

Elements Included in the Plan:

- Off-road paths / greenways
- Bicycle routes on roadways
- Traffic calming
- New policies and standards
- Recreational cycling
- Cycling for transportation
- Benefits of bicycling to Albemarle
- Programs to encourage safe, practical, and enjoyable cycling
- Enrichment of child bicycling options

How to Give Input:

7:00 – 8:00PM on September 19th at City Lake Park

SORBA Uwharrie will have several cycling-related events that entire evening from 5:00 to 9:00 PM including bicycle rides for children, bike checks, vendors, and an evening movie for the family. There will be a table set up for comments and questions on the draft bicycle plan and a brief presentation from 7:45 – 8:00 PM.

In addition, please consider reviewing and commenting on the Executive Summary of the Draft Plan online on Albemarle's home page at www.ci.albemarle.nc.us .

For more information or to give feedback please contact:
Toby Thorpe, City of Albemarle Parks and Recreation
at 704-984-9564 or parks@ci.albemarle.nc.us

On-Street Bicycle Facilities

Signed Bike Routes

Recommended on:
- **Low speed, low volume roads**
- **Scenic and direct routes**

Best for: Cyclists of all skill and comfort levels

Wide Outside Lanes

Recommended on:
- **Low to medium volume local collector roads**
- **Wide roadways with curb and gutter, but too narrow for bike lanes**

Best for: Cyclists of higher skill and comfort levels

Bike Lanes

Recommended on:
- **Urban roads with curb and gutter**
- **Medium to high volume collector and arterial urban roads**

Best for: Cyclists of intermediate skill and comfort levels

Paved Shoulders

Recommended on:
- **Rural roadways**
- **Secondary roadways without curb and gutter and with limited driveways and intersections**

Best for: Cyclists of varying skill levels, usually for recreation

Other Bicycle Considerations

Albemarle Bike Survey

1. Select the desription below that best matches where you live:

	Response Percent	Response Count
In North Albemarle	15.9%	26
In South Albemarle	6.1%	10
In East Albemarle	23.2%	38
In West Albemarle	7.3%	12
I do not live within the Albemarle City Limits	**47.6%**	**78**
answered question		**164**
skipped question		**0**

2. Do you work in Albemarle, go to school in Albemarle or regularly travel to or pass through Albemarle, NC?

	Response Percent	Response Count
Yes	**90.9%**	**70**
No	9.1%	7
answered question		**77**
skipped question		**87**

3. During some time in my childhood, I occasionally rode a bicycle to school AND/OR frequently rode a bicycle in my neighborhood without parental supervision.

	Response Percent	Response Count
YES	**86.9%**	**133**
NO	13.1%	20
answered question		**153**
skipped question		**11**

4. I now ride a bicycle on occasion. (at any locale)

	Response Percent	Response Count
YES	**64.7%**	**99**
NO	35.3%	54
answered question		**153**
skipped question		**11**

5. I _____ bike for pleasure or recreation. (check one)

	Response Percent	Response Count
OFTEN	**59.6%**	**59**
OCCASIONALLY	40.4%	40
NEVER	0.0%	0
answered question		**99**
skipped question		**65**

6. I _____ use a bicycle for TRANSPORTATION around my community. (check one)

	Response Percent	Response Count
ALWAYS	2.0%	2
OFTEN	20.2%	20
OCCASIONALLY	**35.4%**	**35**
RARELY	28.3%	28
NEVER	14.1%	14
answered question		**99**
skipped question		**65**

7. I bicycle for TRANSPORTATION (check one)

	Response Percent	Response Count
BY CHOICE	**89.4%**	**76**
OUT OF NECESSITY	10.6%	9
answered question		**85**
skipped question		**79**

8. I have used a bicycle to get to work.

	Response Percent	Response Count
YES	47.1%	40
NO	**52.9%**	**45**
answered question		**85**
skipped question		**79**

9. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
NEIGHBORHOOD ROADS	4.2% (4)	22.9% (22)	**55.2% (53)**	17.7% (17)	2.86	96
answered question						**96**
skipped question						**68**

10. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
LOW SPEED URBAN ROADS SUCH AS DOWNTOWNS	16.5% (16)	**57.7% (56)**	21.6% (21)	4.1% (4)	2.13	97
answered question						**97**
skipped question						**67**

11. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
ROADWAYS WITH DESIGNATED AND MARKED BIKE LANES	8.4% (8)	6.3% (6)	**46.3% (44)**	38.9% (37)	3.16	95
					answered question	**95**
					skipped question	**69**

12. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
MOST OTHER MAIN URBAN OR SUBURBAN ROADWAYS.	18.5% (17)	**53.3% (49)**	25.0% (23)	3.3% (3)	2.13	92
					answered question	**92**
					skipped question	**72**

13. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
OFF ROAD MULTIPLE-USE PAVED PATHS SUCH AS RAIL TRAILS AND GREENWAYS (NOT SIDEWALKS)	24.7% (24)	9.3% (9)	28.9% (28)	**37.1% (36)**	2.78	97
					answered question	**97**
					skipped question	**67**

14. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
PAVED WALKING PATHS ALONG ROADS (SIDEWALKS)	**44.8% (43)**	29.2% (28)	18.8% (18)	7.3% (7)	1.89	96
					answered question	**96**
					skipped question	**68**

15. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
RURAL ROADS WITH PAVED SHOULDERS	17.5% (17)	27.8% (27)	**37.1% (36)**	17.5% (17)	2.55	97
					answered question	**97**
					skipped question	**67**

16. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
MOST OTHER RURAL ROADS	13.5% (13)	**40.6% (39)**	30.2% (29)	15.6% (15)	2.48	96
					answered question	**96**
					skipped question	**68**

17. When you bike at ANY locale, check the box under the best description as to whether you DO NOT USE, USE RELUCTANTLY, PREFER USING or HIGHLY PREFER USING that type of facility.

	Do Not Use	Use Reluctantly	Prefer Using	Highly Prefer Using	Rating Average	Response Count
OFF-ROAD, NON-PAVED TRAILS SUCH AS MOUNTAIN BIKE TRAILS	**40.4% (38)**	5.3% (5)	26.6% (25)	27.7% (26)	2.41	94
					answered question	**94**
					skipped question	**70**

18. How often do you ride your bicycle WITHIN the Albemarle area? (check one)

	Response Percent	Response Count
EVERY DAY	2.1%	2
SEVERAL TIMES A WEEK	**36.1%**	**35**
SEVERAL TIMES A MONTH	25.8%	25
INFREQUENTLY	28.9%	28
NEVER	7.2%	7
answered question		97
skipped question		67

19. Do you occasionally commit any of the following offenses when riding a bicycle in or around Albemarle? (check all that apply)

	Response Percent	Response Count
RUN A STOP LIGHT	23.1%	15
RUN A STOP SIGN	36.9%	24
RIDE ON THE LEFT SIDE OF THE ROAD (FACING TRAFFIC)	10.8%	7
RIDE AT NIGHT WITHOUT LIGHTS	6.2%	4
RIDE WHILE LISTENING WITH EAR BUDS OR TALKING ON A CELL PHONE	18.5%	12
I HAVE RARELY OR HAVE NEVER COMMITTED ANY OF THESE OFFENSES	**52.3%**	**34**
answered question		65
skipped question		99

20. When biking in or around Albemarle, do motor vehicle drivers ever treat you with carelessness or aggression? (check one if this applies to you)

	Response Percent	Response Count
ALWAYS	3.0%	2
OFTEN	21.2%	14
OCCASIONALLY	**50.0%**	**33**
RARELY	22.7%	15
NEVER	3.0%	2
answered question		**66**
skipped question		**98**

21. When biking in or around Albemarle, do automobile drivers sometimes yield to you unnecessarily at intersections OR use too much caution and allow more than enough space while passing you on roadways?

	Response Percent	Response Count
YES	36.9%	24
NO	**43.1%**	**28**
I DON'T KNOW	20.0%	13
answered question		**65**
skipped question		**99**

22. What are the most common destinations that you may bicycle to or routes that you may bicycle on while in Albemarle? (If any)

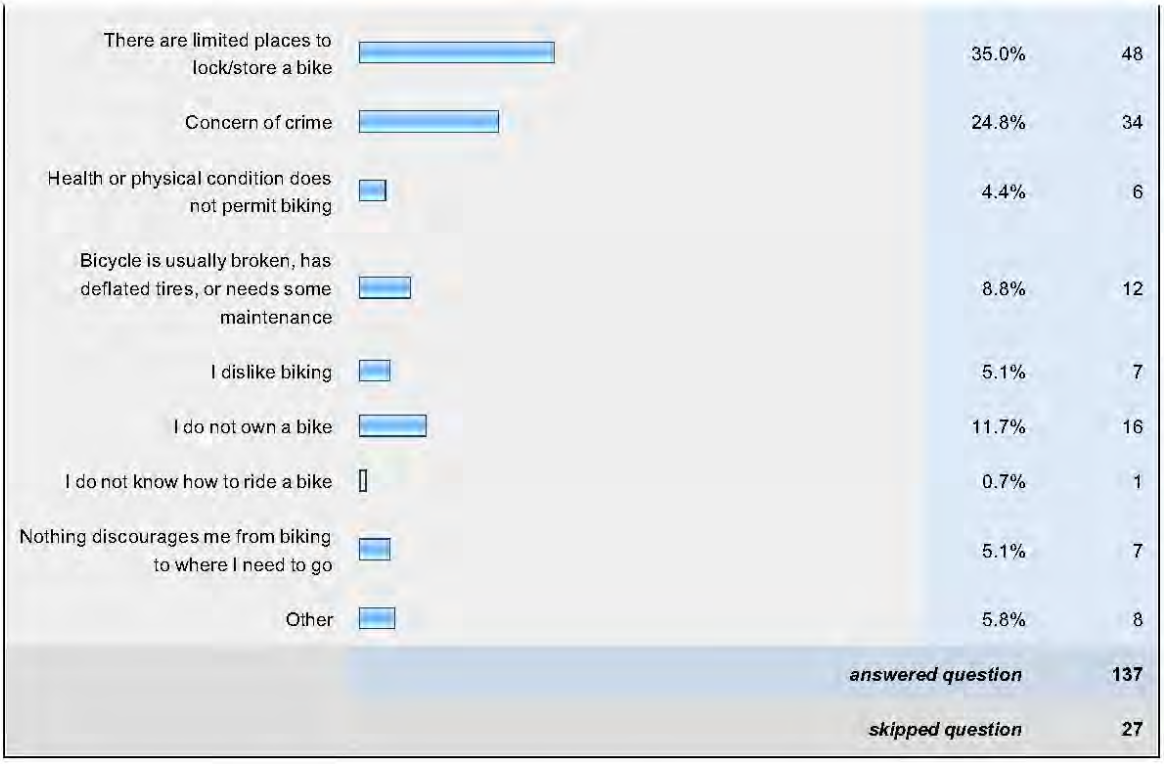
	Response Percent	Response Count
1.	**100.0%**	**43**
2.	90.7%	39
3.	62.8%	27
answered question		**43**
skipped question		**121**

23. How often do you ride your bicycle OUTSIDE of the Albemarle area. (check one)

	Response Percent	Response Count
EVERY DAY	3.2%	3
SEVERAL TIMES A WEEK	30.5%	29
SEVERAL TIMES A MONTH	**33.7%**	**32**
INFREQUENTLY	25.3%	24
NEVER	7.4%	7
answered question		**95**
skipped question		**69**

24. The following obstacle(s) have MOST discouraged me from biking in Albemarle: (check those that MOST apply)

	Response Percent	Response Count
Lack of biking areas separated from traffic like bike lanes or paved trails	**65.7%**	**90**
Roadways are too narrow or have no shoulders	50.4%	69
Roadways are poorly maintained or have hazards	26.3%	36
Heavy or fast traffic on the roads and in the intersections	51.8%	71
Travel areas are not well lit	19.0%	26
Destination is too far away to bike	18.2%	25
Concern of drivers' care (inattention, cell phone use, sobriety, etc)	51.8%	71
It seems easier to drive	23.4%	32
Weather (too hot, cold, rainy, icy, etc.)	17.5%	24
I have too much stuff to carry	16.8%	23
There is no way to shower or to keep a clean appearance where I would bike	8.0%	11



There are limited places to lock/store a bike	35.0%	48
Concern of crime	24.8%	34
Health or physical condition does not permit biking	4.4%	6
Bicycle is usually broken, has deflated tires, or needs some maintenance	8.8%	12
I dislike biking	5.1%	7
I do not own a bike	11.7%	16
I do not know how to ride a bike	0.7%	1
Nothing discourages me from biking to where I need to go	5.1%	7
Other	5.8%	8
answered question		**137**
skipped question		**27**

25. Would you bicycle more if many of the obstacles you checked above were corrected? (check one)

	Response Percent	Response Count
YES	**61.0%**	**86**
NO	10.6%	15
MAYBE	23.4%	33
N.A.	5.0%	7
answered question		**141**
skipped question		**23**

26. I believe that Albemarle has adequate bicycle accommodations. (check one)

	Response Percent	Response Count
YES	8.5%	12
NO	**67.4%**	**95**
MAYBE	13.5%	19
I DON'T KNOW	10.6%	15
answered question		**141**
skipped question		**23**

27. I believe that Albemarle will benefit from having better bicycle accommodations. (check one)

	Response Percent	Response Count
YES	**78.7%**	**111**
NO	5.7%	8
MAYBE	11.3%	16
I DON'T KNOW	4.3%	6
answered question		**141**
skipped question		**23**

28. Would you support development policies that encourage bicycling such as mandatory bicycle racks at new developments or better connectivity of new roads? (check one)

	Response Percent	Response Count
YES	**75.2%**	**106**
NO	6.4%	9
MAYBE	12.1%	17
I DON'T KNOW	6.4%	9
answered question		**141**
skipped question		**23**

29. Would you support public funding for bicycle facilities such as bike lanes and greenway paths? (check one)

	Response Percent	Response Count
YES	73.8%	104
NO	9.2%	13
MAYBE	10.6%	15
I DON'T KNOW	6.4%	9
answered question		141
skipped question		23

30. Please list your top roadways or corridors where you would most like to see bicycle improvements created within Albemarle or destinations that you would like to someday access better by bicycle. (If any)

	Response Percent	Response Count
1.	100.0%	64
2.	78.1%	50
3.	48.4%	31
answered question		64
skipped question		100

31. What is your sex?

	Response Percent	Response Count
MALE	55.2%	79
FEMALE	44.8%	64
answered question		143
skipped question		21

32. What is your age?

	Response Percent	Response Count
16-25	15.4%	22
26-35	21.7%	31
36-45	**28.0%**	**40**
46-55	21.0%	30
56-65	10.5%	15
OVER 65	3.5%	5
answered question		**143**
skipped question		**21**

33. What is your family's annual income?

	Response Percent	Response Count
$0 - $40,000	30.2%	42
>$40,000 - $100,000	**53.2%**	**74**
Over $100,000	16.5%	23
answered question		**139**
skipped question		**25**

34. Do you have any children from the ages of 5-15 years old living in Albemarle?

	Response Percent	Response Count
YES	24.3%	35
NO	**75.7%**	**109**
answered question		**144**
skipped question		**20**

35. What is (are) your child(ren)'s age(s)?

	Response Percent	Response Count
5	20.6%	7
6	23.5%	8
7	8.8%	3
8	**26.5%**	**9**
9	8.8%	3
10	2.9%	1
11	14.7%	5
12	14.7%	5
13	11.8%	4
14	11.8%	4
15	11.8%	4
	answered question	**34**
	skipped question	**130**

36. My child(ren) _____ride(s) a bicycle to or from school. (check one)

	Response Percent	Response Count
ALWAYS	0.0%	0
OFTEN	2.9%	1
OCCASIONALLY	8.6%	3
RARELY	11.4%	4
NEVER	**77.1%**	**27**
	answered question	**35**
	skipped question	**129**

37. Please describe how each of the following reasons why parents may not be comfortable with their children biking to school pertains to YOUR concerns.

	I STRONGLY AGREE	I AGREE	I SOMEWHAT AGREE	I DISAGREE	Rating Average	Response Count
I have traffic related concerns or believe there are a lack of bike paths	**82.8% (24)**	17.2% (5)	0.0% (0)	0.0% (0)	1.17	29
I have crime related concerns	28.6% (8)	**32.1% (9)**	25.0% (7)	14.3% (4)	2.25	28
Distance would be too far for my child	**39.3% (11)**	14.3% (4)	21.4% (6)	25.0% (7)	2.32	28
Bad weather or heavy loads make biking impractical	**32.1% (9)**	25.0% (7)	**32.1% (9)**	10.7% (3)	2.21	28
There is inadequate bicycle parking at school	11.1% (3)	29.6% (8)	18.5% (5)	**40.7% (11)**	2.89	27
My child does not own a bike or it is usually in disrepair	0.0% (0)	7.7% (2)	7.7% (2)	**84.6% (22)**	3.77	26
				answered question		**29**
				skipped question		**135**

38. Would you be comfortable with your child(ren) biking to school more often if traffic speeds were lower in your community? (check one)

	Response Percent	Response Count
YES	17.2%	5
NO	**55.2%**	**16**
I DON'T KNOW	27.6%	8
answered question		**29**
skipped question		**135**

39. Would you be comfortable with your child(ren) biking to school more often if paved pathways were available? (check one)

	Response Percent	Response Count
YES	**58.6%**	**17**
NO	31.0%	9
I DON'T KNOW	10.3%	3
answered question		**29**
skipped question		**135**

40. Would you be comfortable with your child(ren) biking to school more often if the school was closer to or in your community? (check one)

	Response Percent	Response Count
YES	**51.7%**	**15**
NO	20.7%	6
I DON'T KNOW	27.6%	8
answered question		**29**
skipped question		**135**

41. My child(ren) _____bicycle(s) elsewhere around our community. (check one)

	Response Percent	Response Count
OFTEN	30.3%	10
OCCASIONALLY	**45.5%**	**15**
RARELY	6.1%	2
NEVER	18.2%	6
answered question		**33**
skipped question		**131**

42. Describe how each of the following reasons why some children might not bicycle in their community pertains to reasons why YOUR child(ren) may not bicycle occasionally or often in your community by checking the appropriate box.

	I STRONGLY AGREE	I AGREE	I SOMEWHAT AGREE	I DISAGREE	Rating Average	Response Count
I have traffic related concerns or believe there are a lack of bike paths	**75.0% (6)**	25.0% (2)	0.0% (0)	0.0% (0)	1.25	8
I have crime related concerns	25.0% (2)	**37.5% (3)**	12.5% (1)	25.0% (2)	2.38	8
My child is involved in other structured activities/sports	25.0% (2)	**62.5% (5)**	0.0% (0)	12.5% (1)	2.00	8
My child is often busy with homework or other lessons	14.3% (1)	28.6% (2)	**42.9% (3)**	14.3% (1)	2.57	7
My child has little or no interest in bicycling	0.0% (0)	0.0% (0)	**75.0% (6)**	25.0% (2)	3.25	8
My child does not own a bike or it is often in disrepair	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (8)**	4.00	8
				answered question		**8**
				skipped question		**156**

43. Would you be comfortable with your child(ren) biking more often if traffic speeds were lower in your community? (check one)

	Response Percent	Response Count
YES	12.5%	1
NO	**75.0%**	**6**
I DON'T KNOW	12.5%	1
answered question		**8**
skipped question		**156**

44. Would you be comfortable with your child(ren) biking more often if paved pathways were nearby? (check one)

	Response Percent	Response Count
YES	37.5%	3
NO	50.0%	4
I DON'T KNOW	12.5%	1
answered question		8
skipped question		156

45. Would you like for your child(ren) to be able to bike more often? (check one)

	Response Percent	Response Count
YES	90.9%	30
NO	0.0%	0
I DON'T KNOW	9.1%	3
answered question		33
skipped question		131

46. If you have any comments, suggestions, or concerns, please write them here.

	Response Count
	22
answered question	22
skipped question	142

Open Ended Comments:

1 CYCLING PROMOTES HEALTH AND DECREASES EMISSIONS THAT FOUL AIR. NON CYCLISTS BENEFIT FROM INCREASED BIKE USE.
2 Need more bike racks that fit good locks. Child had 3 bikes stolen.
3 Please implement safe bike paths for children
4 I would support the funding of greenways for sure. I would support the funding of bike lanes if they were swept regularly.
5 We mostly need driver awareness and etiquette.
6 Thanks for allowing my input!
7 Thank you for the survey!
8 More bike lanes please.
9 Forest Oaks Neighborhood needs safe biking routes.
10 Not adequate parking at middle school.
11 9th st - too fast, no sidewalks. It is a popular route with kids
12 Pee Dee - speeding issue, neighbors want traffic calming but city is hesitant.
13 NE Corridor - posted speed is too fast.
14 The new part of morrow Mtn St Park should be considered for off road trails. Children need more/safer areas to ride their bikes.
15 I see the primary problem in Albemarle to be that drivers don't know what to do when they see someone on a bike. Many drivers have the perception that we are not supposed to ride in a designated lane. Particularly older drivers don't know what to do when they see a bike. Many members of our older population live off of the more rural roads where cyclists often ride for safety, but it is not necessarily safer. I have wondered if a series of articles in the paper would be helpful for drivers who do not know what the traffic laws are.
16 Also, think the city and the county need to have bike racks at their facilities. Concord has bike racks and benches in the heart of their downtown area, Union Street, which encourages members of their community to cycle downtown for dinner or other activities. We have lots of work to do to be a more bike friendly community, but if we make these changes, Albemarle will be a more attractive place to live and work. It will improve the environment and also make our city a more social and friendly place as people gather and enjoy being with one another.
17 I am a bicycle enthusiast and would love to see any improvements in pedestrian or bike traffic. I believe the best bang for the dollar would involve building greenways or paths between the parks in our community. We have a good system of parks in Albemarle but I

would love to be able to ride my bike with my child to our destination rather than loading up in an auto.

18 I would really like to be able to ride my bike on hwy 740 but just too dangerous, not enough room and people are careless and fly down that road all the time, probably the worst road I've tried to ride on besides the NE Connector which is almost as bad.

19 I think that overall Albemarle has a pretty good bike program but there's always room for improvement!

20 I would love to see some greenways and/or paved bike trails throughout the city (and a county-wide non-paved bike trail, similar to the popular "rails-to-trails").

21 Please do everything you can to promote safe cycling in Albemarle. It's a great family activity.

22 It would be great if the drivers understood that pedestrians/cyclist/runners have the right of way.

23 Many of the improvements that would make Albemarle more pedestrian friendly would also help make it more bike friendly.

24 Thanks!

25 I have a vacation home in Montgomery Co. I am very excited to see this endeavor in the Albemarle area. Would really love to see a widening of the state bike route on hwy 24-27.again Thanks!!

26 I have a problem when, as a driver, you are to share the road but when the speed limit is 45 or 55 and a single bike rider or a group of bike riders are doing 15 to 25 and they will not move over to let vehicles pass. There have been many instances when bike riders ride down the middle of the lane and will not move over. They also need to learn to share the road. There needs to be stricter laws for them to follow and classes to teach bike riders also.

27 Need to try to get the old railroad corridor (C&NW) so multi-use path can be completed from American Fiber & Finishing through Liberty Gardens and southward all the way to Rock Creek Park. Is "rail banking" a possibility along this area? Tracks are already abandoned to the north on the former Wiscassett Mills property.

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Meeting: Steering Committee Meeting # 1
February 4, 2009
3:00 PM – 5:00 PM
City Hall Annex

Attendees:

Eddie Baldwin, Albemarle Public Housing
Tracey Bristol, Middle Ring Cycles
Bill Clark, URS
John Cock, The Lawrence Group
Kathy Dennis, URS
John Fields, Stanly County YMCA
Charles McComas, Uwharrie Wheelmen
Jon Mendenhall, City of Albemarle
Bob Sasser, Albemarle Planning & CD
Toby Thorpe, Albemarle Park & Recreation
John Vine-Hodge, NCDOT Bike & Pedestrian Division
Oliver Webster, Albemarle Park & Recreation

The meeting began with introductions from Toby Thorpe with the City of Albemarle Park and Recreation Department, John-Vine-Hodge with NCDOT's Bicycle and Pedestrian Division, Bill Clark with URS and also from each of the Steering Committee members.

John Cock with The Lawrence Group then led the committee to brainstorm some ideas for goals for the bicycle plan. The group agreed on the importance of almost twenty topics in five different categories. These categories are:

1. Education/Outreach
2. Safety
3. Facilities, Access, and Connectivity
4. Policies, Funding, and Maintenance
5. Health, Promotion, Attitude, and Environment

The ideas presented at this meeting will be next incorporated into a draft goal list, which the committee can edit and approve via email communication before our next meeting.

The next steps in the planning process are for the planning team to prepare for public comment on a survey and at a public meeting. The committee reviewed draft versions of both an internet survey and paper surveys for distribution around the city. There were no major revisions requested, but minor comments that will be incorporated into the final surveys will include:

- Include a question that shows where the user lives in relation to Albemarle; "North, South, East, West Albemarle, or outside of Albemarle's City Limits."
- Revise the wording of question 3 to clarify "riding for transportation."
- Revise the choices in question 5 to retain similar descriptive words, rather than both "enjoy" and "use."
- As in the on-line survey, make certain that there is a separate space for the user to write down their top requests for bicycle improvements.
- Add an income question.

- Include a question about the number of children in the household on the paper survey to increase the chances that the users with children will complete the child survey as well.

Toby Thorpe said that the link to the on-line survey should be able to be placed on the City's home web site. This link should be distributed as widely as possible to get maximum participation. Ideas include; email group lists for those interested in City affairs, the PTO, the Bike Central newsletter, Girl Scout/Boy Scout group lists, and the local newspaper/website.

Paper surveys can also be available at places where the general public can easily see them. Options include; schools, Middle Ring Cycle shop and other sports stores, YMCA, Waddell Center, the Library, Stanly Commons, and City Hall. Steering Committee members can help with distributing and collecting surveys from these locations.

Some date and location ideas for the first public meeting included:

- Saturday morning, March 28th – the Mini Medley Relay will have over 300 child participants plus their parents and observers. A stand can be set up for participants to drop by and give feedback and a short presentation can be later in the morning for those who choose to stay after the relay.
- A Tuesday evening at the City Hall Annex. This might attract some interested citizens before heading home for dinner, but rarely more than a dozen or so will show up for this type of meeting unless there is a hot issue that residents are against.

Bill and Toby will talk about these options for the survey and the meeting next week.

Finally, the committee commented on specific issues that the planning team can begin to look at while gathering information for the plan. This first month of the planning process is crucial for discovering what the ground conditions are in Albemarle, and the steering committee is encouraged to send along any thoughts or recommendations to Bill at william_clark@urscorp.com. Photos are also appreciated.

Comments included:

- A signed route through the neighborhoods north of Central Elementary would be helpful.
- Montgomery has narrow lane widths and higher speeds of traffic.
- Moss Spring roads are wide with high speeds, high density, and some low income.
- Leonard Avenue is a planned sidewalk route, but might need some bicycle accommodations.
- There is no easy access to the Middle School.
- Each school has a plan for bike access and a plan for bike rack location. Funds needed for racks.
- NCDOT Safe Routes to School Action Plan money may be in jeopardy.
- Fundraisers might be an option for less costly projects like bike racks and routes.
- Park Ridge is a good candidate for bike lanes.
- The old mill neighborhood near North Albemarle could use bike lanes/routes.
- Old Salisbury Road is a good rural route that extends out of the city.
- Walk to School Day has been successful in the past.
- 2ns Street near Hospital needs traffic improvements and maintenance (such as the grates.)
- Cyclists use the center turn lane on US Highway 52.

An email will be sent to the group soon with the minutes to this meeting, and then another email will follow with a draft list of goals, a revised survey, and public meeting time and location information. The meeting ended at approximately 5:00 PM.

Meeting: Steering Committee Meeting # 2
May 5, 2009
3:00 PM – 5:00 PM
City Hall Annex

Attendees:

Tracey Bristol, Middle Ring Cycles
Bill Clark, URS
John Cock, Alta Planning and Design
John Fields, YMCA
David Hunt, Albemarle Police Department
Charles McComas, Uwharrie Wheelmen
Jon Mendenhall, Albemarle Planning & CD
Bob Sasser, Albemarle Planning & CD
Alissa for Kim Scott, Stanly County Schools
Toby Thorpe, Albemarle Park & Recreation
Oliver Webster, Albemarle Park & Recreation

This meeting briefly reviewed the draft goals, summarized the public input, and introduced the proposed overall system plan. The goals recommended at the previous meeting were discussed again, with a request from the committee to include an additional goal that pertains to the recreational element of cycling, particularly off-road mountain biking and road cycling. The committee also reviewed the survey results, with little comment. Those survey results are on-line for the committee to review at any time at:

http://www.surveymonkey.com/sr.aspx?sm=HBxrqTMf1xu3KfW0yhq2nkk9ZeRtxg9RhkfJXxao0pU_3d

The committee was also introduced to the idea of creating a backbone bicycle route through the City of Albemarle that should be accessible to most riding skill levels. This route can be tied into the regional Carolina Thread Trail and create great recreational and economic opportunities for Albemarle. City-wide connections to this path/route can provide a basic bicycle transportation network. For instance, bike lanes on Wiscassett Street and a paved trail on a sewer easement near City Lake Park can connect this backbone path to the mountain bike trails in the park. A signed bike route may connect the Carolina Thread Trail with the elementary school and the hospital. A greenway may extend from the main path to connect the high school and the US 52 corridor up to the Morehead Park area. The committee discussed both on and off-road corridors for this backbone route, with the off-road route being comprised mostly of the Roger F. Snyder greenway system and an on-road portion principally including roads in the Forest Oaks Neighborhood. Albemarle's existing state bike routes also present opportunities for cyclists using the Carolina Thread Trail to have options as to whether they choose a more direct way through the City by using Albemarle's main roadways or to use a route designed for more casual bicycling. Committee members then commented on some segments of the current state bike route, such as the need to detour certain legs of the route to roadways more suitable for bicycling. For instance, using Badin Road instead of NC 24/27 Bypass was one suggestion. This plan can address other recommendations from this committee concerning the state bike routes.

Before adjourning the indoor portion of the meeting for the bicycle tour, the committee discussed the next two meetings scheduled for this plan. The next meeting will be held in early summer to show all of the projects and to discuss the draft plan. The committee is comfortable with meeting in person for these last meetings and can expect to receive an email containing significant material in the weeks before the next meeting to review for discussion. This portion of the meeting adjourned at 4:00 PM.

The bike tour followed portions of the proposed Carolina Thread Trail route through the City and stopped several times to discuss the conditions and opportunities.

- The first stops were on the existing portion of the greenway. Here we discussed how the City got to this point in the greenway development and we discussed different connectivity options for the route to connect to the regional trail. The Stanly County portion of the Carolina Thread Trail may proceed northward into Albemarle by way of Little Long Creek. Unfortunately, this portion of the route through Albemarle faces hurdles at Highway 52, NC 24/27 and with an easement issue. The rail corridor from Rock Creek Park may be preferred if the portion of Main Street that connects the two greenways can be improved. We also discussed crossing opportunities and challenges on Main Street, and across US 52, as well as the positioning of safety signs and route signage.
- Another stop was on Old Salisbury Road in front of the old mill. The wide (50' +) four lane roadway there can easily be converted into a roadway that can accommodate the needed volume of automobiles, and also include bicycle lanes, a landscaped median with occasional center turn lanes, and even sidewalk/planting strip improvements. From Old Salisbury Road across 2nd Street and into Forest Oaks Neighborhood is a challenge. A first option may include a short side path on 2nd Street to reach East Street, but this roadway is steep and may be a hazard in the downhill direction. A second option may be continuing the side path to Yadkin, but Yadkin is a higher speed and higher volume roadway, the right of way might not exist for that side path extension, and business driveways exist along that route that may not be safe with the side path. Another option may be using the old rail bed from 2nd Street that leads to the Mill near 3rd Street and Montgomery. This may connect the cyclist to Webb Street or Fulton Street and avoiding the obstacles in the first two options, but would need to be routed around an existing business.
- We discussed many ideas while riding through the Forest Oaks Neighborhood. We discussed traffic circles at some intersections to create a better traffic flow and safer crossing for cyclists. We also discussed spur opportunities from this route to take the cyclist to numerous destinations including the hospital, YMCA, and the Elementary School. The tour terminated at Ridge Street, where an off road path possibility may exist along a sewer easement that will connect the cyclist to Badin Road and then eastbound on the Carolina Thread Trail to Morrow Mountain State Park.

The bike tour portion of this meeting adjourned at approximately 5:00 PM, just as the sky opened up with a drenching storm. URS will work with The City of Albemarle for the next several weeks to develop and rank a list of projects. Once that is completed, the steering committee will have the opportunity to review this for discussion at the next meeting.

Meeting: Steering Committee Meeting # 3
August 4, 2009
3:00 PM – 5:00 PM
City Hall Annex

Attendees:

Brian Bristol, Middle Ring Cycles
Bill Clark, URS
John Cock, Alta Planning and Design
Scott Cole, NCDOT Division 10 Traffic Engineer
Charles McComas, Uwharrie Wheelmen
Jon Mendenhall , Albemarle Engineering Services
Pokie Noland, Stanly County Schools
Bob Sasser, Albemarle Planning & CD
Dana Stoogenke, Rocky River RPO
Toby Thorpe, Albemarle Park & Recreation
John Vine-Hodge, NCDOT Bike and Pedestrian Division
Oliver Webster, Albemarle Park & Recreation

This meeting summarized sections four and seven in the draft plan for the members of the steering committee. Copies of these sections were emailed to each member of the committee prior to this meeting. These sections describe the general bicycle system plan recommended in the report and the mythology used to rank the top projects for implementation. The consultants and the City of Albemarle staff are currently making edits to the entire draft plan. The Table of Contents was distributed as a handout at this meeting as a guide to the materials that will be included in the final plan. Any member of the steering committee is invited to request a link to a copy of this plan or to individual sections of interest. We will use comments from the steering committee, NCDOT and from City staff to create a draft plan and an Executive Summary to show the public in September and to place on the City website. Possibilities for this public meeting include a booth at the County Fair in conjunction with the Stanly County CTP public input in the fall or at an informational bicycling event held at City Lake Park on Saturday September 19th from 5:30 – 7:30 PM that includes an evening movie for children. Details will follow.

The following table shows the top 15 projects in the plan that were discussed in detail at this meeting:

Rank	Item #	Description of Improvement	Roadway / Location
1	1	Bike Lanes with Road Diet	Salisbury Avenue from US 52 to N. 2nd St.
2	41	Shared-Use Path	Abandoned RR (Old Mill) from N. 2nd St. to N. 3rd St.
3	19&20	Bike Route	SRMC to MLK Dr. via. 4th and 3rd Streets
4	2	Bike Lanes with Road Diet	W. Main Street from US 52 to S. Depot St.
5A	9	Sharrows	Main St. from Depot St. to Pee Dee Ave.
5B	37	Shared-Use Path	Abandoned RR from existing Greenway (W. South St.) to Rock Creek Park Greenway
6A	11-17	Bike Route	From the int. of Rogers St. & Carolina Ave. to the int. of Coble Ave. & Commerce St.
6B	33	Shared-Use Path	Little Long Creek from W. Main St. to Coble Ave.
7	6	Bike Lane Striping	Pee Dee Ave. from 4th St. to Coggins Ave.
8A	3,4,10	Bike Lane Striping (with a segment of sharrows)	Park Ridge Road from N. 6th Street to Melchor Rd.
8B	35	Shared-Use Path	Melchor Branch Creek sewer line from Little Long Creek to Monza Drive
9A	34	Shared-Use Path	Little Long Creek sewer line from Morehead Park to Salisbury Ave. (Project #40)
9B	40	Shared-Use Path	Abandoned RR from Salisbury Ave. to N. 2nd St.
10A	36	Shared-Use Path	Long Creek Sewer from Rock Spring Rd.to Coble Ave.
10B	8	Climbing Bike Lane with Downhill Sharrows	Wiscassett St. from Rock Spring Rd. to Carolina Ave.

General comments on suggested projects included:

The question of whether or not future development or planned projects near the proposed road diet on Salisbury Avenue would make the idea of removing travel lanes difficult was asked. Past projects of this type have shown that this roadway can possibly support four or five times the current traffic volumes (including truck traffic) with two travel lanes, center turn lanes, and bicycle lanes instead of four travel lanes and can do so more safely and as efficiently.

A question was asked concerning whether children currently bicycle to school using the roadway or the sidewalks on 3rd Street. Pokie Noland from Stanly County Schools believes that they use both. The bike route suggested on 3rd Street should include some traffic calming techniques as well as signage. A concern was also expressed that the middle school needs bicycle accommodations because of the wide roadway and heavy and fast traffic on Badin. Roadway width reduction to accommodate sidewalks on both sides of Badin Road was recommended in the pedestrian plan, and is expected to be constructed in the near future as funding is secured.

Bicycle lanes on Pee Dee Avenue look plausible. Current limited on-street parking might be an obstacle and the City Council may not support further traffic calming on that roadway in the near future. Alternatives for bicycle lanes might be possible such as striped parking spaces or sharrows. Pee Dee Avenue and other roadways in Albemarle have the gutter pans paved over with asphalt. John Vine Hodge with NCDOT asked if this was acknowledged for these projects. Bicycle lanes in this plan are recommended to extend a minimum of 4 feet from the edge of any concrete gutter pan. If no gutter pan exists, or was paved over, the bike lanes are to be a minimum of 5 feet from the curb, with 6 feet preferred.

Stimulus funding might be available for the rail trail extension from Main Street to Salisbury Avenue. This shared-use path did not make the top 15 project list because of the existing greenway just on the other side of the creek. However, developing this greenway could help to provide a more direct off-road path from Rock Creek Park to Morehead Park without any on-street connectors. This potential funding source, plus new staff and political support may move this project into the higher priority column. In addition, the Park and Recreation Department is moving from their current office location at the northern end of Rock Creek Greenway. It was suggested to redevelop the existing parking lot for those offices into the extension of the greenway when the offices are relocated.

There was a concern for connections to the strip development along the 24/27 bypass. For the pedestrian plan, few viable new connections were found across this roadway, with the existing stop light with pedestrian signals at Leonard being the best option. The sidewalk recommended on Leonard in the pedestrian plan, plus encouragement of on-street parking would somewhat help to calm traffic on this road and give an alternative space to ride for novice bicyclists. Unfortunately, roadway widths on the entire stretch of Leonard do not allow for on-road accommodations such as wide shoulders or bicycle lanes. A short greenway connection recommended in the pedestrian plan from this neighborhood onto Leonard may be worth duplicating for this bicycle plan. Toby will contact the Concerned Citizens of Albemarle group about other connections that will serve this area. In general, it is highly advised that the City of Albemarle restrict the type of development that occurred along the bypass in favor of the type of development patterns that are described in the pedestrian plan.

In closing, Scott Cole from NCDOT Division 10 thought that bicycle facilities were possible in curbed sections of NC 73, but that likely accommodations on US 52 were not obvious, but that the shared use path would offer an alternative.

The meeting ended at approximately 5:00 PM.


C·O·N·C·E·P·T
MAP
CAROLINA THREAD TRAIL
IREDELL
CATAWBA
ROWAN
LINCOLN
CABARRUS
CLEVELAND
STANLY
GASTON
MECKLENBURG
UNION
ANSON
CHEROKEE
YORK
CHESTER
LANCASTER
Murray's Mill and Bunker Hill Covered Bridge
Lake Norman State Park
Catawba College Ecological Preserve
South Mountains State Park
Overmountain Victory National Historic Trail
Marcia H. Cloninger Rail Trail
Lake Norman
NC Research Campus
Mountain Island State Education Forest
Concord Mills Mall
Lowe's Motor Speedway
Morrow Mountain State Park
Broad River Greenway
Spencer Mountain
U.S. National Whitewater Center
UNC Charlotte
Reed Goldmine
Crowders Mountain State Park
Bank of America Stadium
Daniel Stowe Botanical Garden
Little Sugar Creek Greenway
Rocky River
Kings Mountain National Military Park
Kings Mountain State Park
Carowinds
Anne Springs Close Greenway
Pee Dee National Wildlife Refuge
Historic Brattonsville
Catawba Cultural Center
Andrew Jackson State Park
Cane Creek Park
Landsford Canal State Park
40 Acre Rock Heritage Preserve
Sumter National Forest
Chester State Park
Flat Creek Natural Area
Deerhorn Island State Park
LEGEND
MAJOR REGIONAL DESTINATIONS
TRAIL ROUTES
BLUEWAYS
TRAIL SCALE
0 10 20 30
Miles
WEAVING COMMUNITIES TOGETHER

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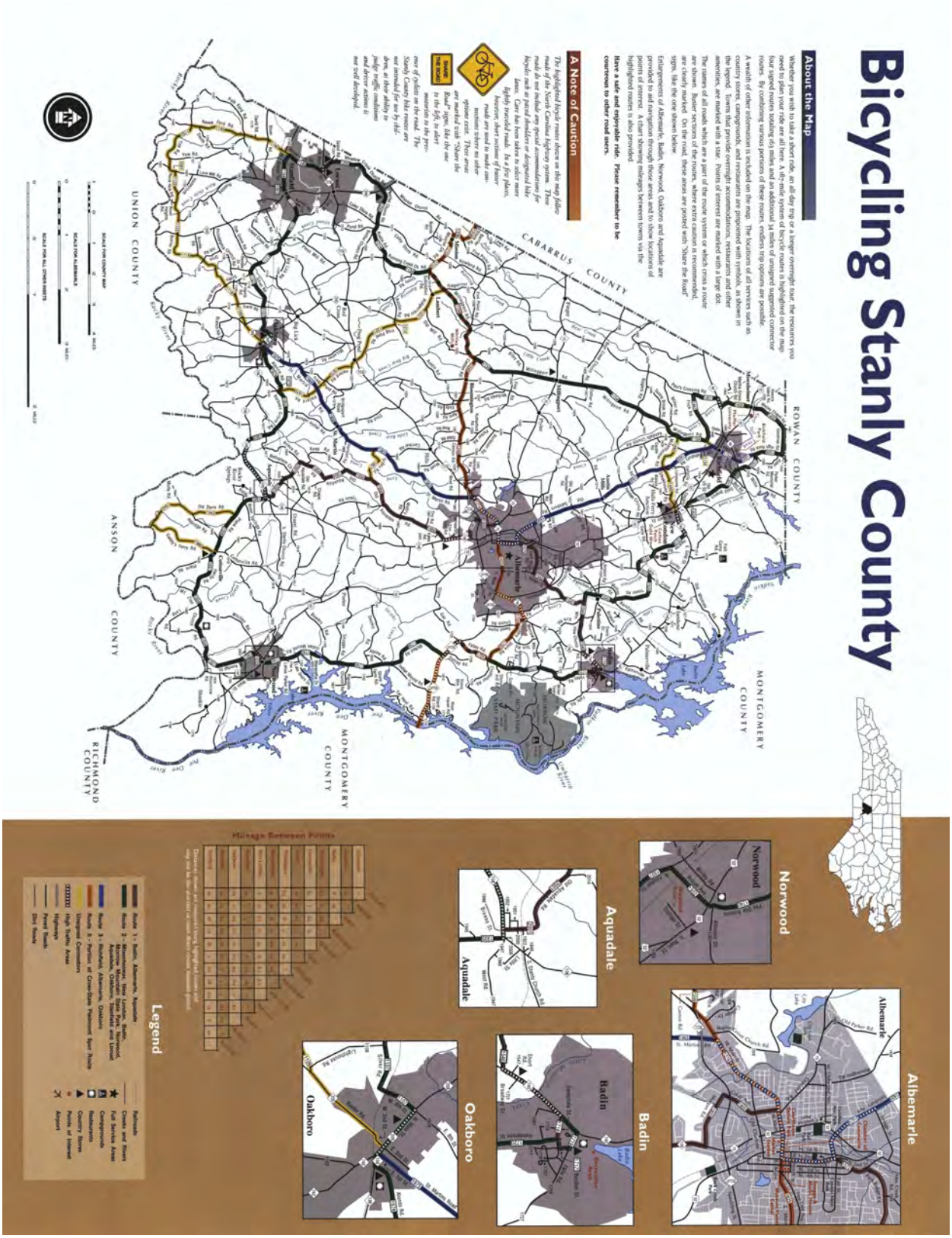
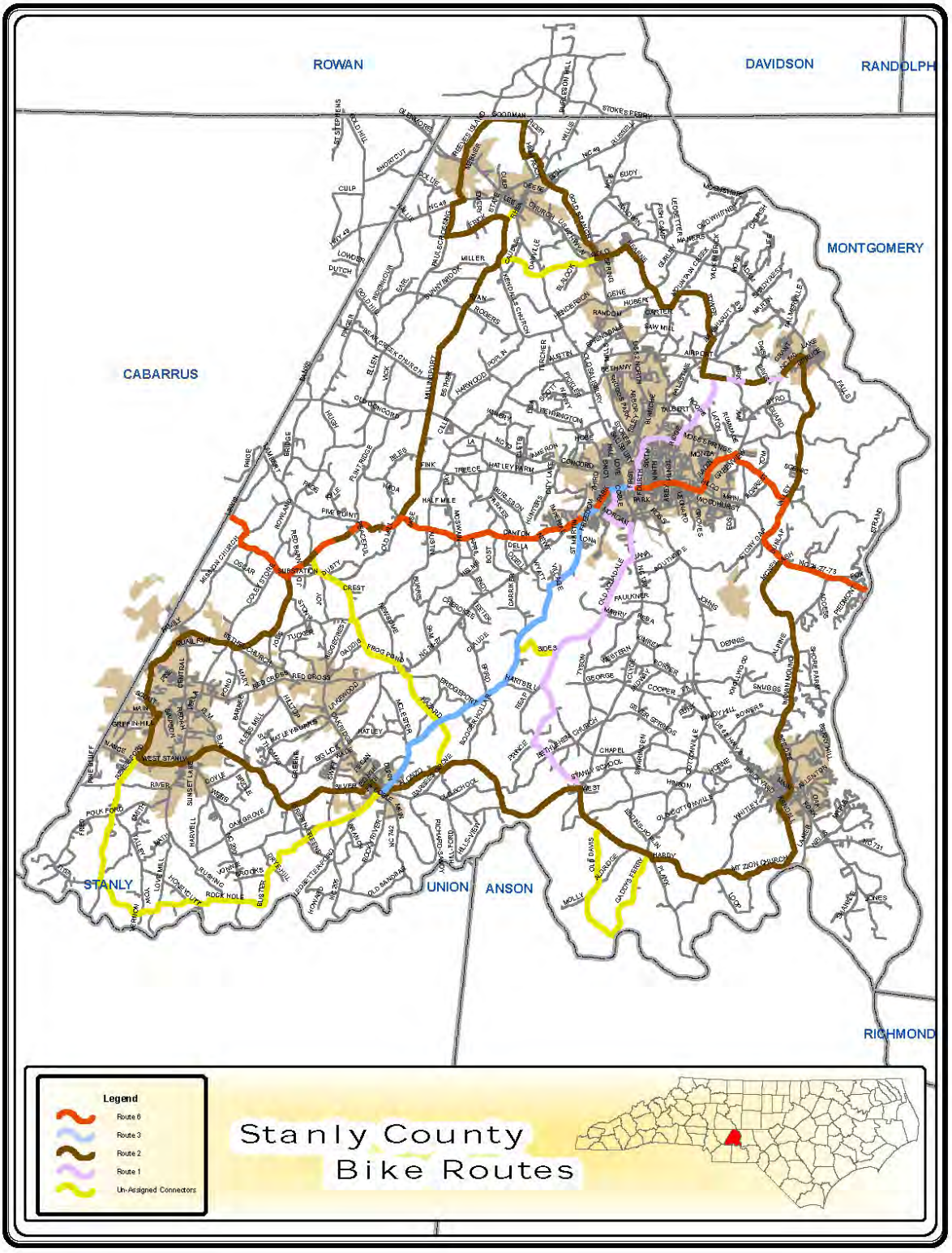
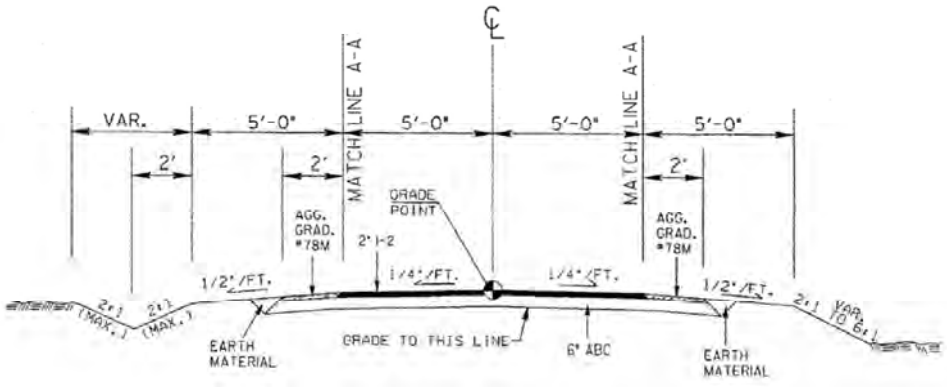

Bicycling Stanly County
About the Map
A Note of Caution
Albemarle
Norwood
Aquadale
Badin
Oakboro
Legend
Mileage Between Points
UNION COUNTY
ANSON COUNTY
CABARRUS COUNTY
ROWAN COUNTY
MONTGOMERY COUNTY
RICHMOND COUNTY


ROWAN
DAVIDSON
RANDOLPH
MONTGOMERY
CABARRUS
STANLY
UNION
ANSON
RICHMOND
Legend
Route 6
Route 3
Route 2
Route 1
Un-Assigned Connectors
Stanly County
Bike Routes

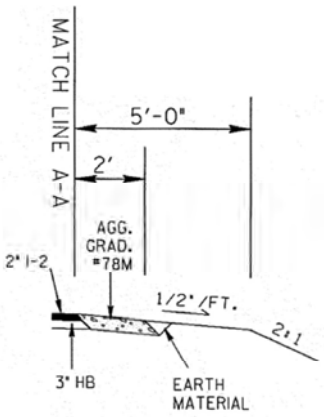
RECOMMENDED TYPICAL SECTION OF 10-FT ASPHALT PATHWAY

With 2-Ft Crushed Stone Shoulder

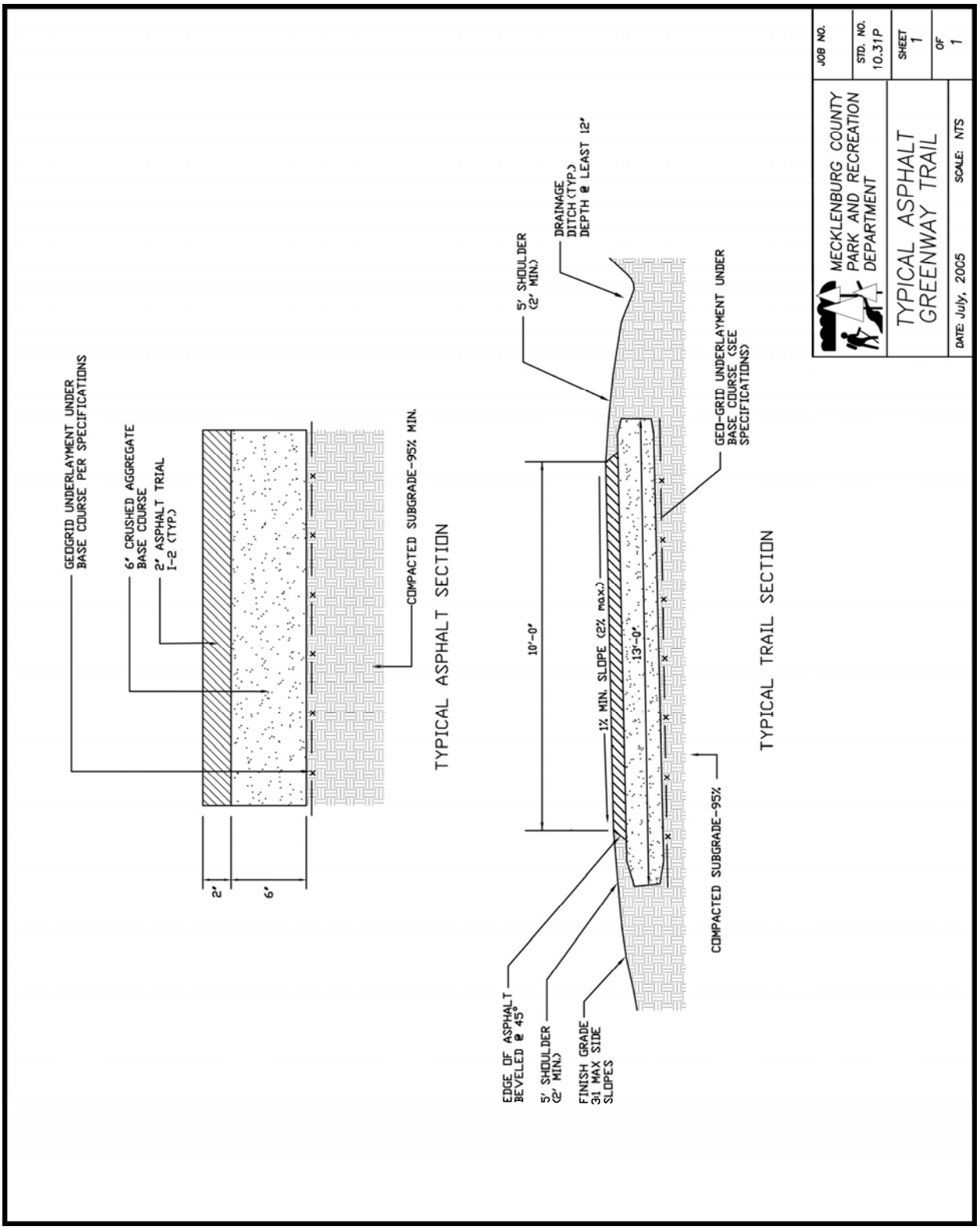


RECOMMENDED PAVEMENT DESIGN

NOTE : PROJECTS WITH POOR SOILS MAY SUBSTITUTE 6" OF ABC WITH 3" OF HB.

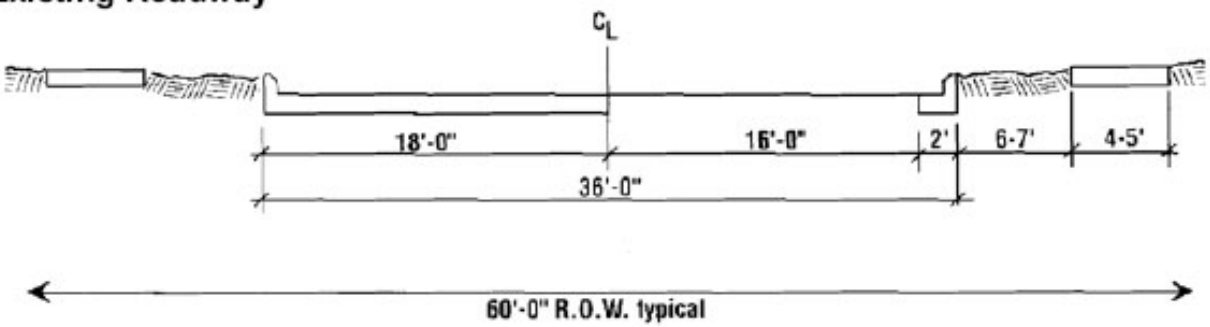


NCDOT – Bicycle Facilities Guide: Types of Bicycle Accommodations

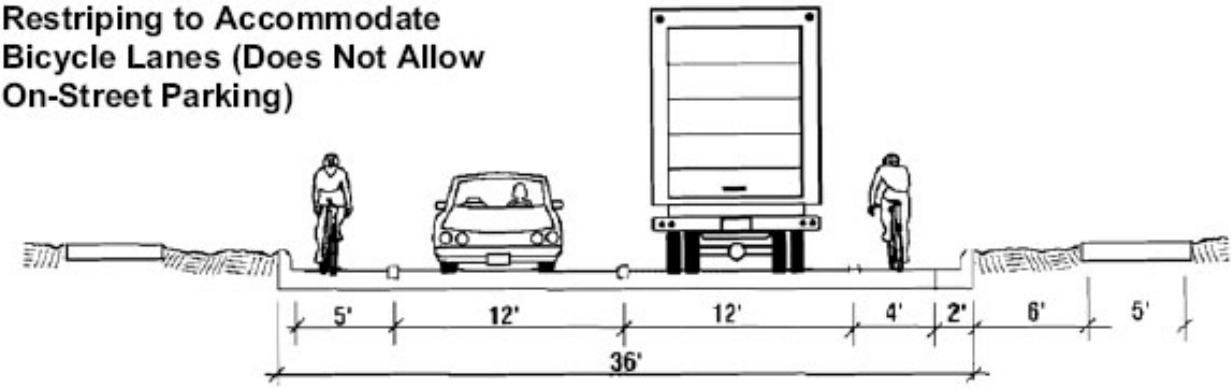

GEOGRID UNDERLAYMENT UNDER BASE COURSE PER SPECIFICATIONS
6' CRUSHED AGGREGATE BASE COURSE
2' ASPHALT TRIAL I-2 (TYP.)
COMPACTED SUBGRADE-95% MIN.
2'
6'
TYPICAL ASPHALT SECTION
5' SHOULDER (2' MIN.)
DRAINAGE DITCH (TYP.) DEPTH @ LEAST 12'
GEO-GRID UNDERLAYMENT UNDER BASE COURSE (SEE SPECIFICATIONS)
10'-0"
1% MIN. SLOPE (2% max.)
13'-0"
COMPACTED SUBGRADE-95%
EDGE OF ASPHALT BEVELED @ 45°
5' SHOULDER (2' MIN.)
FINISH GRADE 3:1 MAX SIDE SLOPES
TYPICAL TRAIL SECTION
MECKLENBURG COUNTY PARK AND RECREATION DEPARTMENT
TYPICAL ASPHALT GREENWAY TRAIL
JOB NO.
STD. NO. 10.31P
SHEET 1
OF 1
DATE: July, 2005
SCALE: NTS

Bicycle Lane Retrofitting Alternatives:

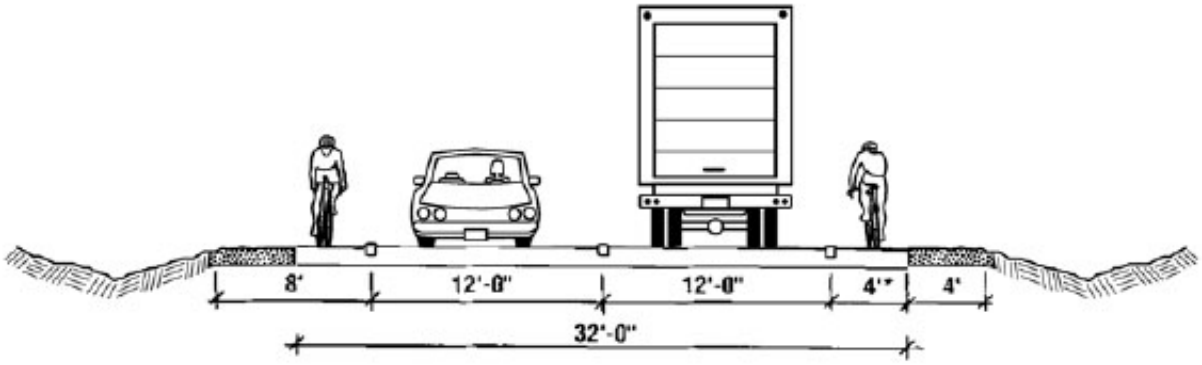
Existing Roadway



Restriping to Accommodate Bicycle Lanes (Does Not Allow On-Street Parking)



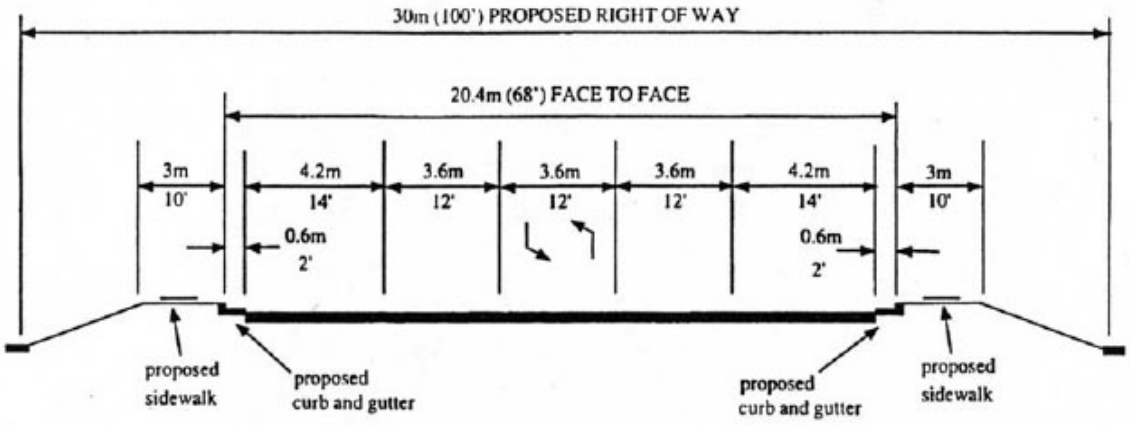
Roadway Retrofitted with 4-Ft Paved Shoulders



* If speeds are higher than 40 mph, shoulder widths greater than 4' are recommended.

5-LANE TYPICAL SECTION

With Wide Outside Lanes



TOWN OF DAVIDSON, NC BICYCLE PARKING ORDINANCE

Section 10: Parking

Motor Vehicle Parking Exceptions

A. Parking requirements for motor vehicles do not apply to the Village Center Planning Area, defined as the blocks bounded by, and any pedestrian courts within, Main Street, Jackson Street, and Griffith Street. Bicycle parking is still required.

B. In the Village Center Planning Area, existing buildings which were legally constructed without the provision of on-site motor vehicle parking and infill housing on existing lots of record may meet requirements with on-street motor vehicle parking and will be construed as conforming as to parking. Such buildings are eligible for change of use permits for building up fits and expansion. Bicycle parking will not be required unless the existing site is redeveloped.

C. Residential buildings may meet or contribute to meeting motor vehicle parking requirements with on-street parking if individual driveways are minimized and the fronting street is specifically designed to meet the parking needs of the residential buildings. Existing residential buildings will not have to add bicycle parking unless the site is redeveloped.

D. Where motor vehicular access is provided between adjoining non-residential sites and the operating hours of adjoining uses do not overlap, the uses may share up to 50% of required parking spaces. Shared use of motor vehicle parking shall be guaranteed by a contract or other legally binding document. Bicycle parking may be provided in a common area for adjacent properties as long as the parking facility is no further than 50 feet from any main entrance.

10.2.2 Bicycle Parking

All non-residential and multi-family residential buildings shall include an area for parking bicycles. Bicycle parking standards are based on the number of vehicular parking spaces and the expected time needed to park the bicycle. All bicycle parking requirements (short and long-term) should be demonstrated on site plans or final plats for the development. See Table 10.2.2 for numbers of spaces per type of use.

Short Term Bicycle Parking

A short term bicycle parking space is defined as a rack to which the frame and at least one wheel can be secured using varying types of bike locks (U-lock, wire cable, etc). This type of parking is appropriate for short-term parking such as shopping areas, libraries, other places where the typical parking duration is less than two hours.

Long Term Bicycle Parking

A long term bicycle parking space is defined as protecting the entire bicycle and its components from inclement weather. It is to be located where it will serve the needs of cyclists who need to leave their bicycles unattended for extended periods of time, such as employees, tenants or residents. Examples of long term parking may include indoor parking, racks in covered loading dock areas, racks in garage structures, bicycle lockers or other means which provide coverage to bicycles. Such parking may be restricted to use only by employees, tenants, residents or others at the discretion of the property owner or management.

Examples of long term bicycle parking include bike lockers, covered and fenced bicycle racks, or interior rooms with secure access where bicycles may be stored. It is recommended that buildings designed for 50 or more employees build a shower/locker room for those employees who may commute from long distances. See

http://www.bikeparking.com for examples of secure bike lockers and other long-term bicycle storage devices.

Required Racks

Where bicycle racks are used, "Inverted U" type racks or other racks that support the bicycle at two points on the bicycle frame are required. Developers and site designers may choose to be creative in the design of bike racks as long as they meet functional requirements.

"Inverted U" bicycle rack

Rack Siting and Dimensions of Bicycle Parking

a. Racks shall be secured to the ground on a hard surface such as concrete, asphalt or unit pavers.

b. Each bicycle parking space shall provide six feet by two feet (6' x 2') in area per bicycle plus the area needed for access.

c. Bicycle parking shall be located no closer than three (3) feet from any wall to provide adequate space for access and maneuvering.

d. At least four (4) feet between parallel racks shall be provided for access.

e. Bicycle racks installed on sidewalks should provide for a clear, unobstructed width of at least five (5) feet for pedestrians and should be installed at least three (3) feet from the face of curb.

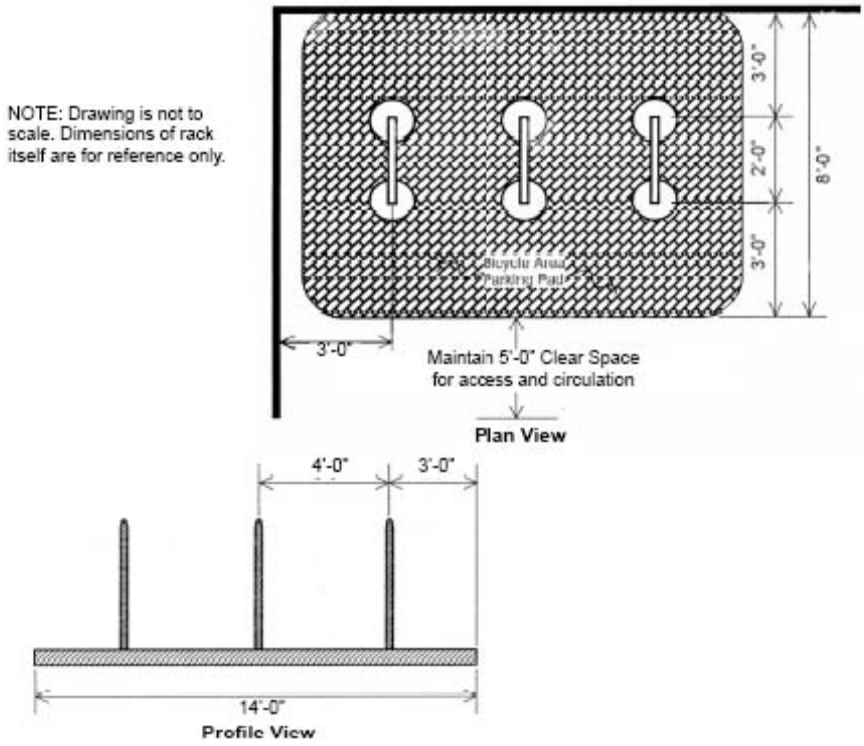
f. Bicycle racks must be placed a minimum of four (4) feet from existing street furniture (i.e. mailboxes, light poles, benches) and be no closer than twelve (12) feet from the edge of fire hydrants.

g. Short term parking racks should be placed along a major building approach line and clearly visible from the approach and no more than 50 feet from building entrances or no further than the closest motor vehicle parking space, whichever is less. Rack placement should allow for visual monitoring by people within the building and/or people entering the building

h. In multi-family residential developments, bike racks may be provided in a communal area, as long as it is accessible to all tenants/residents and in a safe, open public space. Staff will work with the developer to select an appropriate location for collective bicycle parking in a multi-family development.

i. If required bicycle parking is not visible from the street or main building entrance, a sign must be posted at the main entrance indicating the location of the parking.

j. Facilities with multiple entrances shall locate a portion of the required bicycle parking at each entrance.



Covered Spaces

a. If 10 or more bicycle spaces are required, at least 50 percent of the bicycle spaces must be covered by an awning or placement under an arcade or other means. The cover for bicycle parking shall be a minimum of seven (7) feet above finished grade. This protects bicycles and provides shelter from inclement weather for cyclists while securing the bicycle and loading purchases.

b. When motor vehicle parking is provided in a covered space (such as under a building or in a parking deck), all short term bicycle parking may be located in the structure or other areas protected from weather. If short term bicycle parking is provided in a parking deck, the bike racks must be located on ground level at the nearest point to the building entrance.

c. Motorcycles, mopeds, and other one-person occupancy motorized vehicles may park under covered bicycle parking shelters. Motorized vehicles shall not obstruct or limit access to bicycle parking under covered shelters.

Bicycle Parking Requirements

The minimum number of bicycle parking spaces per any multi family or non-residential use, when required, is two (2) or one rack. A single "inverted U" bicycle parking rack will count as two (2) bicycle parking spaces. The maximum required short-term bicycle spaces shall be 20 or 10 racks for any single development.

Table 10.2.2

Use Type	Auto Parking Min	Auto Parking Max	Short Term Bicycle Parking Spaces	Long Term Bicycle Parking Spaces
Single Family Residential	1 space per Dwelling Unit	2 space per Dwelling Unit	None	None
Attached Residential or Multi-Family	1 space per Dwelling Unit	2 space per Dwelling Unit	10%[1] of max auto parking	5%[1 2] of max auto parking
Commercial (excl retail)	2 spaces per 1000 square feet of commercial use	3.5 spaces per 1000 square feet	10% of max auto parking	5% of max auto parking
Retail	2 spaces per 1000 square feet of commercial use	5 spaces per 1000 square feet for retail uses	10% of max auto parking	5% of max auto parking
Warehouse & Industrial	.25 spaces per 1000 square feet	2 spaces per 1000 square feet	5% of max auto parking	2% of max auto parking
Civic/Institutional	N/A	N/A	As required by Planning Director	

[1] Bicycle parking is only required for multi-family dwellings of more than 4 units/building.

[2] If the number of required long-term bicycle parking spaces for residential uses is less than 1 for a development, then it is not required.

SAMPLE COST ESTIMATES

Below are approximate unit costs for the types of bicycle projects proposed in this plan, based on some example project costs that have been recently implemented, along with costs of other bicycle projects. Project cost estimations in Appendix J are based off of these figures, and do not necessarily include extra costs involved in the project such as advanced grading issues, land acquisition, land clearing, etc. All cost estimates are from projects constructed or budgeted between or during 2006 and 2007 unless stated otherwise.

Shared-use Paths

- Floodplain paths, such as creek or sewer paths may require more site preparation that pathways on higher ground. Floodplain costs usually involve drainage issues (i.e., need for culverts and bridges, or geotextiles), permitting issues, and boardwalk. Mecklenburg County Park and Recreation's greenways are typically constructed on creek corridors or sewer easements, and whose greenways therefore provide good cost examples for many of Albemarle's recommended shared-use paths.
- Rail Trails and sidepaths that have the advantage of being on a relatively cleared alignment with some existing grading and base work already complete can be constructed more economically.

Typical Costs Associated with Floodplain Shared - Use Paths on Waterways or Sewer Lines

- $120 per linear asphalt foot (installation including grading, clearing, construction, and a subbase with 18" on either side of asphalt for shoulder stabilization) 633,600 per mile + 10% administration and design = approximately $700,000 per mile = $132 per linear foot
- 10' Concrete walkway: $300,000 - $500,000 per mile (with design and administration – add 10%)
- 10' wide prefabricated "Steadfast" type Pedestrian Bridge: $1,200 per linear foot with design, engineering, installation and administration costs. An 8' wide clearance can reduce this cost.
- 10' paved asphalt path (with two-foot margins and associated improvements): $100 - $125 per foot ($528,000 - $660,000 per mile.) Add 10% for design and administration.
- Boardwalk: Historically $200 / linear foot ($1,056,000 / mile), lately has increased to $225 - $250 per linear foot. Unit prices on bids can see boardwalks come in anywhere from $150 - 350/LF. Boardwalk is 8' clear.
- Converted Culverts and Underpasses: $60,000 - $100,000. Varies according to width, lighting needs, if stream restoration is involved, and other circumstances.
- Mecklenburg County Park and Recreation's designers typically estimate $120 per linear foot for construction of path (clearing, grading, subbase -- 14' wide, asphalt trail 10' wide).
- Mecklenburg County Park and Recreation routinely estimates $1,000,000/mile for the design and construction of greenway paths in Mecklenburg County (10' wide asphalt trail). This cost takes into account various factors including need for culverts, drainage and flood studies.
- Mecklenburg County Parks and Recreation recently spent $615,000 for 1.6 miles of a new portion of Mallard Creek Greenway. Other recent construction costs: 1.9 miles (Four Mile Creek Greenway) Design: $241,102 Construction: $1,663,255. Irwin Creek Greenway (1.0 miles) Design: $107,000, Construction: $428,088. These costs do not

include any funds for contingency (typically around 5% for construction and 10-15% for FFE -- i.e., signage, benches, trashcans, bike racks, water fountains, etc.)

- Mecklenburg County Park and Recreation recently paid $128,000 for an 80' span on Briar Creek (included concrete approaches) and $142,000 for an 80' span on Little Sugar Creek (approaches and railing included in costs) both bridges are 10' clear. Cost includes design, engineering and installation.
- Mecklenburg County Park and Recreation recently paid $60,000 for a simple bridge underpass conversion for a greenway under Remount Road along Irwin Creek, $150,000 for an underpass conversion on Toby Creek with a major stream restoration project included in the cost, and $170,000 for NCDOT to design and install a Con-Span under a pre-existing bridge to build a greenway path.

Other Costs More Typical with Upland Shared-use Paths on Rail Beds, Road Corridors, Gas, or Electric Lines. (Upland and Lowland Shared-use Path Projects May Share a Number of these Common Construction Costs Depending on Site-Specific Factors)

- Construction is less expensive in upland areas, especially where grading is already complete or where a sub-base is not needed.
- Rail Trail construction can be estimated at $510,000 per mile, based on other North Carolina Rail Trail projects plus an additional 10% for design and administration. This plan uses $106 per linear foot to calculate all costs estimations for paths built on roadway and other upland corridors.
- The American Tobacco Trail (a rail trail in the Raleigh-Durham area) cost $330,000 per mile for construction costs in 2002. The City of Durham notes that they have seen a 10 – 11% increase in construction costs in later years, with a more moderate climb earlier. This cost included hauling away ballast and ties (not rails), filling in areas of bad soil, upfitting 12” and 18” drain pipes to 24” and 36” to meet new code requirements, grading, and paving.
- 10' Crushed Rock walkway: $80,000 - $120,000 per mile (with design and administration – add 10%). These greenways have high maintenance costs.
- Mecklenburg County Park and Recreation’s most recent construction cost for a stand alone asphalt parking lot (34 spaces) at Four Mile Creek/Johnston Rd was $173,000.
- Parking lot: $18 per square yard. (Parking lots for greenways can typically be shared with shopping areas, parks, or other public destinations and more typically are not needed at all because they are neighborhood access points.)

Intersections

- Crosswalk/Countdown signal: $5,000 per intersection (this includes installation and an additional installed post). This cost can be up to $15,000 per intersection if a retrofit is done with APS devices.
- Neighborhood Crosswalk: $1,000
- Midblock Crosswalk: $5,000
- Pedestrian Island: $5,000 - $10,000
- Curb extensions: $5,000 - $25,000
- Mini-roundabout: $4,000

Bicycle Lane Marking

- Bicycle lane striping (thermoplastic):
    - Simply striping a wide roadway: $15,000/mile with design and administration for both sides of the road.

- $1.20 per linear foot of 6" wide thermoplastic for line striping (installed)
- $350.00 for each set of performed thermoplastic bike symbols with arrows (installed)

o Grinding out existing travel lanes and restriping:
o $1 per foot for grinding existing lane stripes per stripe plus vehicle and bicycle lane marking costs

Mill and Resurface Roadways

To repave an existing roadway (Prices are per mile, source is Florida DOT because their policies provide for bicycle accommodations):

Mill and Resurface, 2 Lane Rural Road with 5' Paved Shoulders	**$469,756.98**
Mill and Resurface, 3 Lane Rural Road with 5' paved shoulders, Center Turn Lane	**$653,688.54**
Mill & Resurface 2 Lane Urban Road	**$454,275.13**
Mill & Resurface 3 Lane Urban Road with Center Turn Lane	**$622,349.75**
Mill & Resurface 4 Lane Undivided Urban Road	**$908,262.41**
Mill & Resurface 5 Lane Urban Road with Center Turn Lane	**$1,089,384.12**
Mill & Resurface, Divided, 4 Lane Urban Roadway	**$914,169.10**

New Roadway Construction

To repave an existing roadway (Prices are per mile, source is Florida DOT because their policies provide for bicycle accommodations):

New Construction, Undivided, 2 Lane Rural Road with 5' Shoulders	**$2,654,542.74**
New Construction, Undivided, 3 Lane Rural Road with 5' Shoulders, Center Turn Lane	**$3,167,118.23**
New Construction, Undivided, 3 Lane Urban Arterial with Center Turn Lane & 4' Bike Lanes	**$6,143,701.01**
New Construction, Divided, 6 Lane Urban Road with 5' Sidewalk, 4' Bike Lanes	**$9,160,842.04**

Bicycle Racks, Signage, Lighting, and Landscaping

- Bicycle Parking Racks
  - o The City of Charlotte pays $120.00 (installed in-house) for a standard "U" shaped bicycle rack from Geo Specs on Davidson Street in Charlotte.
  - o Bicycle Lockers: installed are $1,000.00 according to www.bicyclinginfo.org
    - A Bicyclinginfo.org survey of local bicycle program managers in 2000 revealed the following range of costs that agencies charge people to rent bicycle lockers.
      - University of California, Davis: $20 per quarter (10-12 weeks), $20 key deposit, $10 per quarter for those commuting 10 miles or more (one way).

- Portland, Oregon: $10/month, $25/3 months, $45/6 months, $25 key deposit. Rate structure assumed to cover locker costs over 10-year period.
- Albuquerque, NM: Free lockers for downtown employees.
- Madison: $75/1 year.
- Cincinnati: Has 10 lockers in downtown. $40/6 months. Recent increase in key deposit to cover lock replacements.
- Maryland Mass Transit Admin: $25/3 months, $70/ year, $25 refundable key deposit.
- Washington DC Metro: $45/6 months, $70/year, $10 key deposit
- Tucson: 54 lockers(108 spaces) in downtown, 54 lockers (108 spaces) at select transit stops, $2/month, $7.50 refundable key deposit.

  - The City of Portland, Oregon very recently (2006) paid $24,400 (with design and construction) for several covered bicycle parking decks known as bike oases. They fit 20 bicycles, and the price does not include the price for the 10 individual "U" racks that fit inside or the cost of and sidewalk, curb and gutter, or drainage work.
  - Several California cities, along with Seattle have installed central "Bike Stations", complete with short and long term covered bicycle storage, restrooms, showers, and lockers. These cost from a few hundred thousands dollars to a couple million dollars. Any similar central bicycle parking facility in the City of Albemarle will likely be far less intricate and expensive than these Bike Stations located in larger, more bicycle friendly cities. For the purpose of this study, a very hypothetical cost of $500,000 is estimated, but can be very different based on size and partnerships involved in such a facility.

- Lighting: Varies widely depending on type of light and location. Lighting an underpass could be $2,000 - $5,000 for 3 to 4 lights. Mecklenburg County Park and Recreation recently paid approximately $11,000 for the wiring and installation of 2 underpasses (8-12 lights under each).
- Landscaping: Contractor installed foliage costs around $400 - $500 per tree and $25 - $50 per shrub.
- Marking a route with signs:
  - $2,000 per mile with design and administration
    - Signs: $250 – $350 each
      - A standard bike route is assumed to be $0.38 per linear foot, if no traffic calming or lane width expansion is expected
      - A downtown Bicycle Boulevard is assumed to cost $5.04 per linear foot to include:
        - Signage at $0.38 per linear foot
        - An intersection every 1/5 of a mile to include:
          - 5 thermoplastic sharrow symbols per mile on each side of the road after each intersection at $0.66 per linear foot
          - 5 mini-roundabouts per mile at $4,000 each and one with a traffic diverter (+$1,000) for $4 per linear foot

The table below summarizes the costs for the project types specifically named in Appendix J. These costs are only general costs. Actual project costs will vary from project to project depending on multiple factors.

Project Type	Costs Per Linear Foot
Bike Route	$0.38
Total Bike Boulevard Costs	$5.04
Lane Striping (Per Stripe)	$1.20
Lane Stripe Grinding (Per Stripe)	$1.00
Shared-use Path (Lowland)	$132.00
Shared-use Path (Upland)	$106.00
Repaving with Shoulders/Bike Lanes	$89.00
Repaving with Shoulders/Bike Lanes (with center turn lane)	$122.00

Project Type	Costs Per Item
Individual Bike Racks	$120.00
Covered Bicycle Parking	$25,600
Bike Station	$500,000
Neighborhood Crossing	$1,000
Mid-Block Crosswalk	$5,000
Underpass or Culvert	$100,000
Pedestrian Bridge	$120,000
Bike Lane Symbols	$350.00

Some general cost estimates (not necessarily used to determine project costs for this plan) and other notes are included below from the United States Department of Transportation for traffic calming facilities: (USDOT-FHWA, 2002, http://www.fhwa.dot.gov/environment/tcalm/index.htm)

Measure	Reduces Traffic	Noise	Loss of Parking	Restrict Access	Emergency Entrance	Maintenance	Cost
Traffic Education Campaign	Maybe	No change	None	None	None	No	Varies
Speed Display	Yes	No change	None	None	None	No	$250/day
Neighborhood Sign	Maybe	No change	None	None	None	No	$200/sign
High Visibility Crosswalks	Maybe	No change	None	None	None	Yes	$1K-$5K
Police Enforcement	Yes	No change	None	None	None	No	$75/hour
Narrowing Lanes	Yes	No change	None	None	None	Yes	$1K-$3K
Speed Limit Signing	Maybe	No change	None	None	None	No	$200/sign
Stop Signs	Maybe	Increase	None	None	None	No	$200/sign
Signing Restrictions	No	No change	None	Yes	None	No	$200/sign
Bike Lane	Maybe	No change	Maybe	No	None	Yes	$25K-$75K/mile
Sidewalk	No	No change	Maybe	No	None	Yes	$20-$30/foot
Median Island	Maybe	Decrease	Maybe	Yes	Yes	No	$10K-$75K
Gateway	Yes	Decrease	Maybe	Yes	None	No	$10K-$20K

Measure	Reduces Traffic	Noise	Loss of Parking	Restrict Access	Emergency Entrance	Maintenance	Cost
Curb Extension	Maybe	No change	Yes	None	Some	Yes	$10K-$20K
Choker	Yes	No change	Yes	None	Some	No	$15K
Speed Hump	Yes	Increase	Maybe	None	Yes	Yes	$5K
Raised Crosswalk	Yes	Increase	Yes	None	Some	Yes	$5-$10K
Raised Intersection	Yes	Increase	Yes	None	Yes	Yes	$25K-$50K
Traffic Circle	Yes	No change	Maybe	None	Some	Maybe	$15-$25K
Intersection Channelizing	Yes	No change	Yes	None	None	Maybe	$15-$20K
Chicane	Yes	Maybe	Yes	None	Yes	Maybe	$20K-$40K
Entrance Barrier	Maybe	No change	Maybe	Yes	Maybe	No	$15-$20K
One-way Streets	No	No change	None	Yes	Yes	No	$5K

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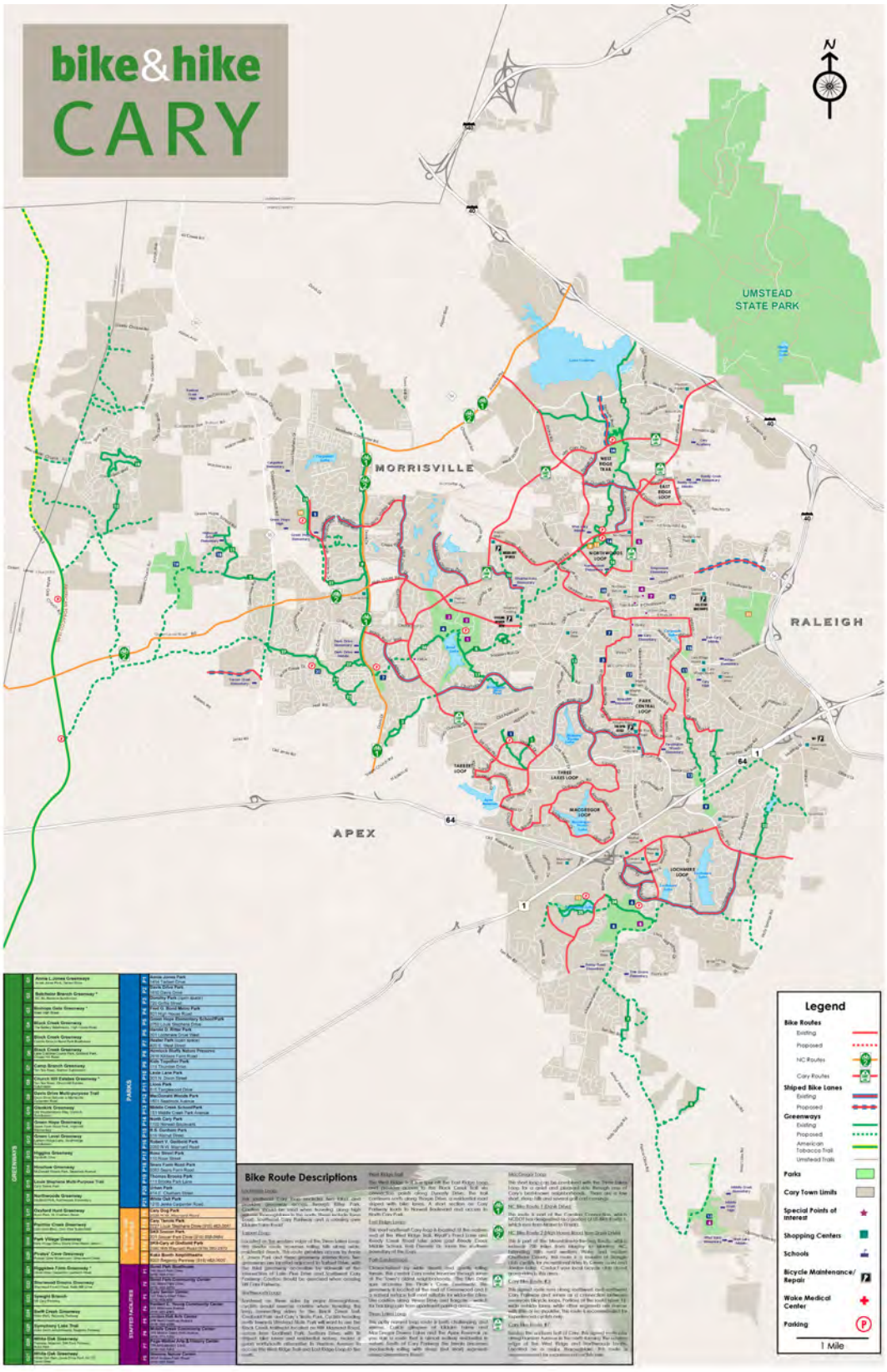
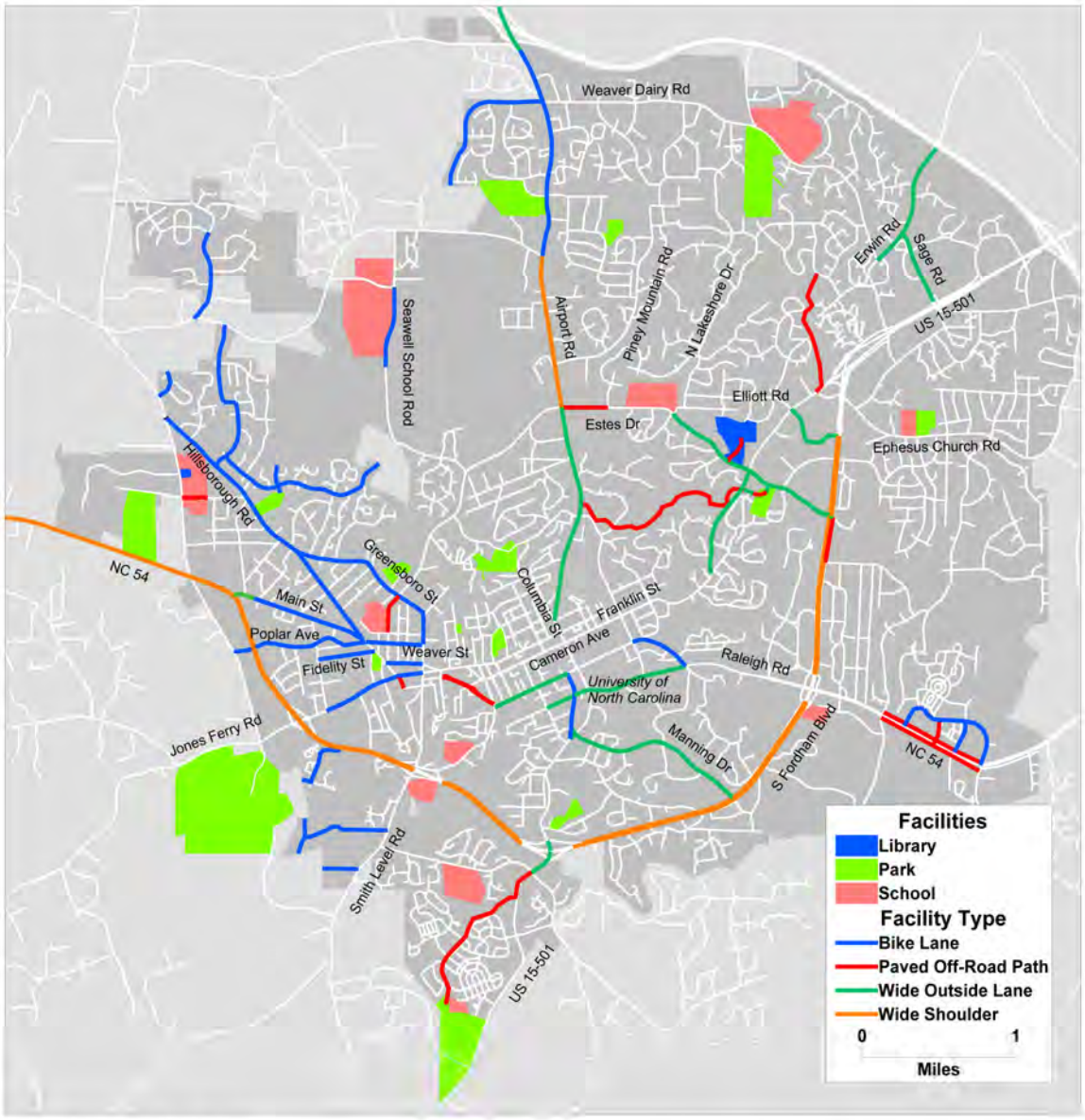

bike&hike
CARY
N
UMSTEAD
STATE PARK
MORRISVILLE
RALEIGH
APEX
64
1
Legend
Bike Routes
Existing
Proposed
NC Routes
Cary Routes
Shiped Bike Lanes
Existing
Proposed
Greenways
Existing
Proposed
Amerycan Tobacco Trail
Umstead Trails
Parks
Cary Town Limits
Special Points of Interest
Shopping Centers
Schools
Bicycle Maintenance/ Repair
Wake Medical Center
Parking
1 Mile
Bike Route Descriptions

Chapel Hill and Carrboro Bicycle Facilities

Note: Most road in Chapel Hill and Carrboro are suitable for bicycle travel Facilities on this map are explicitly designated for bicycle use.

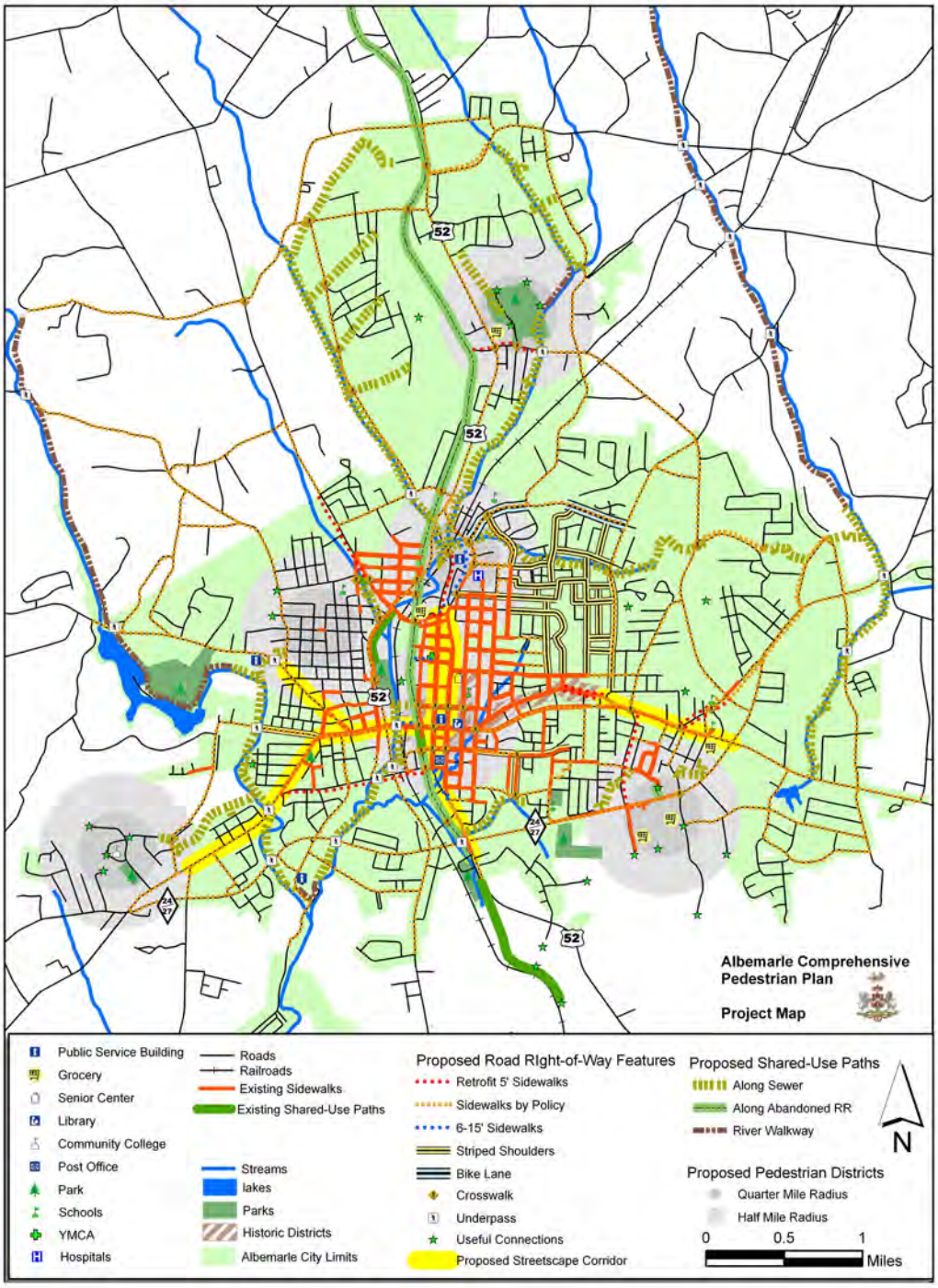


Bike Lane - Striped and signed, curb
Wide Shoulder - Striped, no signs, varying width, no curb
Wide Outside Lane - Extra width in outer lane, no stripe
Paved Off-Road Path - Mixed-use trail, no motor vehicles

Prepared by: Chapel Hill Planning Department
Data Source: Chapel Hill Planning Department, September 2003

Proposed Corridor Projects

								Project Evaluation (Total of 100 Points)													
								Connectivity					Safety		Ability to Implement					
Item #	Project Type	Roadway / Location	From (North or West)	To (South or East)	Length (ft)	Unit Cost	Estimated Project Cost	Improves Bicycle Access to Major Destinations (10 pts.)	Provides Obvious Access to Children, Low Income, or Seniors (10 pts.)	Connects to Proposed Carolina Thread Trail Route (10 pts.)	Connects to Other Existing Bike Corridors (10 pts.)	Improves Safety near Schools or for Low Income Residents (10 pts.)	Calms Motorized Traffic or Provides Alternate Bike Routes (10 pts.)	Improves General Bicycle Safety (10 pts.)	Readiness (10 pts.)	Potential or Exisiting Political or Public Support for Project (10 pts.)	Cost vs. Assumed Benefit (10 pts.)	Total Points	Ranking	Priority Level
1	Bike Lanes w/ Road Diet	Salisbury Avenue	US Highway 52	N. 2nd Street	2,120	$122.00	$258,640	8	4	10	10	2	10	10	3	10	10	77	**1**	**Phase 1**
2	Bike Lanes w/ Road Diet	W. Main Street	US Highway 52	S. Depot St.	1,650	$122.00	$201,300	8	2	10	10	2	10	10	3	5	10	70	**7**	**Phase 1**
3	Bike Lanes w/ Road Diet	S. 2nd St. (US 52 Business)	S. 1st St.	NC 24/27 / Rock Creek Park	1,500	$2.84	$4,260	6	4	10	10	2	10	8	3	8	10	71	**6**	**Phase 1**
4	Grinding, Bike Lane Striping	NC 73	Rock Spring Road	Bluff Street	2,400	$5.00	$12,000	8	4	5	5	4	8	5	3	5	8	55	18	Phase 2
5	Bike Lane Striping	NC 73	Bluff Street	W. Main Street	2,000	$2.84	$5,680	6	4	5	5	4	8	5	3	5	10	55	18	Phase 2
6	Bike Lane Striping	S. 2nd St. (US 52 Business)	South St.	S. 1st St.	2,500	$2.84	$7,100	6	4	10	10	2	10	8	3	8	10	71	**6**	**Phase 1**
7	Bike Lane Striping	Park Ridge Road	N. 2nd Street	Park Rd./Mountain Creek Rd.	1,360	$2.84	$3,862	6	6	5	10	2	8	8	4	5	10	64	12	Phase 2
8	Bike Lane Striping	Park Ridge Road	Melchor Rd.	Ridge St.	2,210	$2.84	$6,276	6	6	5	10	2	8	8	4	5	10	64	12	Phase 2
9	Bike Lane Striping	Ridge St.	Colonial Dr.	Freeman Ave.	4,180	$2.84	$11,871	2	2	8	8	2	8	5	4	5	8	52	20	Phase 2
10	Bike Lane Striping	Pee Dee Ave.	E. Main St. & 4th St.	W. Main St. & Coggins Ave.	5,300	$2.84	$15,052	10	8	5	10	2	5	5	4	8	8	65	11	Phase 2
11	Bike Lane Striping	ML King Dr.	1st St.	Wall St.	4,010	$2.84	$11,388	10	4	10	5	4	5	5	4	5	8	60	17	Phase 2
12	Climbing Bike Lane w/ Sharrows	Wiscassett St.	Laurel St./Pennington Rd.	Carolina Ave.	3,340	$2.84	$9,486	8	6	5	5	4	8	5	4	8	8	61	15	Phase 2
13	Bike Route with Sharrows	Main St.	Depot St.	Pee Dee Ave.	1,910	$1.04	$1,986	10	4	10	10	4	5	5	4	5	10	67	**8**	**Phase 1**
14	Bike Route with Sharrows	Park Ridge Road	Park/Mountain Creek Rd.	Melchor Rd.	970	$1.04	$1,009	6	6	5	10	2	8	8	4	5	10	64	12	Phase 2
15	City Bike Route	Rogers St.	Wiscassett St./Carolina Ave.	Efird St.	1,610	$0.38	$612	8	4	10	5	6	5	8	4	8	8	66	**10**	**Phase 1**
16	City Bike Route	Efird St.	Rogers St.	US 52/Brome St.	720	$0.38	$274	8	4	10	5	6	5	8	4	8	8	66	**10**	**Phase 1**
17	City Bike Route	Brome St.	New Connection @ Efird St.	Woodland St.	2,220	$0.38	$844	8	6	10	10	4	8	5	2	5	8	66	**10**	**Phase 1**
18	City Bike Route	Woodland St.	S. Brome St.	Harwood St.	170	$0.38	$65	8	4	10	10	4	8	5	4	5	8	66	**10**	**Phase 1**
19	City Bike Route	Harwood St.	Woodland St.	Meadow St.	170	$0.38	$65	8	4	10	10	4	8	5	4	5	8	66	**10**	**Phase 1**
20	City Bike Route	Meadow St.	Harwood St.	Coble Ave.	410	$0.38	$156	8	4	10	10	4	8	5	4	5	8	66	**10**	**Phase 1**
21	City Bike Route	Coble Ave.	Meadow St.	Commere St.	4,400	$0.38	$1,672	8	4	10	10	4	8	5	4	5	8	66	**10**	**Phase 1**
22	City Bike Route	N. 3rd St.	East St.	ML King Dr.	700	$0.38	$266	10	6	8	10	6	8	5	4	8	10	75	**3**	**Phase 1**
23	City Bike Route	N. 4th St.	Stanly Regional Medical Center	East St.	950	$0.38	$361	10	6	8	10	6	8	5	4	8	10	75	**3**	**Phase 1**
24	City Bike Route	East St.	N. 3rd St.	N. 9th St.	2,290	$0.38	$870	4	2	8	10	2	5	5	4	5	10	55	19	Phase 2
25	City Bike Route	N. 9th St.	Yadkin St.	East St.	480	$0.38	$182	4	2	8	10	2	5	5	4	5	10	55	19	Phase 2
26	City Bike Route	Yadkin St.	N. 9th St.	N. 10th St.	330	$0.38	$125	4	2	8	10	2	5	5	4	5	10	55	19	Phase 2
27	City Bike Route	N. 10th St.	Avondale Ave.	Yadkin St.	640	$0.38	$243	4	2	8	10	2	5	5	4	5	10	55	19	Phase 2
28	City Bike Route	Avondale Ave.	N. 10th St.	Smith St.	870	$0.38	$331	4	2	8	10	2	5	5	4	5	10	55	19	Phase 2
29	City Bike Route	Smith St.	Avondale Ave.	Cardinal Dr.	180	$0.38	$68	4	2	8	10	2	5	5	4	5	10	55	19	Phase 2
30	City Bike Route	Cardinal Dr.	Smith St.	Ridge St.	1,110	$0.38	$422	4	2	8	10	2	5	5	4	5	10	55	19	Phase 2
31	City Bike Route	Wall St.	MLK Dr.	NC 24/27 Bypass	2,310	$0.38	$878	10	4	2	5	4	8	5	4	8	10	60	17	Phase 2
32	City Bike Route	Gibson St.	Wall St.	Arey Ave.	1,500	$0.38	$570	10	4	2	5	4	8	5	4	8	10	60	17	Phase 2
33	City Bike Route	Lennox St./Inger Ave.	Arey Ave.	West Dr.	1,200	$0.38	$456	10	4	2	5	4	8	5	4	8	10	60	17	Phase 2
34	City Bike Route	Arey Ave.	Gibson St.	Inger Ave.	100	$0.38	$38	10	4	2	5	4	8	5	4	8	10	60	17	Phase 2
35	City Bike Route	Amhurst St.	West Dr.	Groves Ave.	1,780	$0.38	$676	10	4	2	5	4	8	5	4	8	10	60	17	Phase 2
36	City Bike Route	Groves Ave.	Amhurst St.	Henson St.	1,190	$0.38	$452	10	4	2	5	4	8	5	4	8	10	60	17	Phase 2
37	City Bike Route	Henson St.	Groves Ave.	NC 24/27 Bypass	1,000	$0.38	$380	10	4	2	5	4	8	5	4	8	10	60	17	Phase 2
38	Lowland Shared-use Path	Little Long Creek (south)	W. Main St.	Coble Ave.	6,720	$132.00	$887,040	8	4	10	10	2	10	10	2	2	8	66	**9**	**Phase 1**
39	Lowland Shared-use Path	Little Long Creek (north)	Chuck Morehead Park (NE Connector)	Abandoned RR (Salisbury Ave.)	10,560	$132.00	$1,393,920	8	4	8	8	2	10	10	0	5	8	63	14	Phase 2
40	Lowland Shared-use Path	Melchor Branch Creek sewer line	Little Long Creek	Monza Drive	10,350	$132.00	$1,366,200	8	4	8	10	2	10	10	0	2	10	64	13	Phase 2
41	Lowland Shared-use Path	Sewer Line Social Path	Amhurst St.	Leonard Street	1,800	$132.00	$237,600	10	4	2	2	4	10	8	4	8	8	60	17	Phase 2
42	Lowland Shared-use Path	Long Creek Sewer Line	Rock Spring Rd. (near NC 73)	Coble Ave. (Little Long Creek)	10,200	$132.00	$1,346,400	6	2	8	10	2	10	10	0	5	8	61	16	Phase 2
43	Upland Shared-use Path	Abandoned RR (south)	Existing Greenway (W. South St.)	NC 24/27 Bypass	3,970	$106.00	$420,820	6	4	10	8	2	10	10	3	8	10	71	**5**	**Phase 1**
44	Upland Shared-use Path	Abandoned RR (center)	Salisbury Ave.	W. Main St.	3,440	$106.00	$364,640	4	2	10	10	2	10	10	6	10	8	72	**4**	**Phase 1**
45	Upland Shared-use Path	Abandoned RR (Salisbury)	Abandoned RR (north)	N. 2nd Street	1,540	$106.00	$163,240	6	2	8	10	2	10	10	2	5	8	63	14	Phase 2
46	Upland Shared-use Path	Abandoned RR (Old Mill)	N. 2nd Street	N. 3rd Street	1,620	$106.00	$171,720	10	6	8	10	4	10	10	0	8	10	76	**2**	**Phase 1**
47	Upland Shared-use Path	Abandoned RR (north)	Russell Road	Salisbury Ave.	9,330	$106.00	$988,980											0	alt	Ped Plan
48	Striped Shoulders	Yadkin St.	N. 2nd Street	N. 9th St.	3,380	$3.00	$10,140											0	alt	Ped Plan
49	Striped Shoulders	N. 9th St.	Yadkin St.	Pee Dee Ave.	3,100	$3.00	$9,300											0	alt	Ped Plan
50	Striped Shoulders	Smith St.	Pineview Drive/Park Ridge Road	Montgomery Avenue	4,020	$3.00	$12,060											0	alt	Ped Plan
51	Striped Shoulders	Old Charlotte Road	W. Main St.	S. 1st Street	5,040	$3.00	$15,120											0	alt	Ped Plan


Albemarle Comprehensive Pedestrian Plan
Project Map
Public Service Building
Grocery
Senior Center
Library
Community College
Post Office
Park
Schools
YMCA
Hospitals
Roads
Railroads
Existing Sidewalks
Existing Shared-Use Paths
Streams
lakes
Parks
Historic Districts
Albemarle City Limits
Proposed Road RIght-of-Way Features
Retrofit 5' Sidewalks
Sidewalks by Policy
6-15' Sidewalks
Striped Shoulders
Bike Lane
Crosswalk
Underpass
Useful Connections
Proposed Streetscape Corridor
Proposed Shared-Use Paths
Along Sewer
Along Abandoned RR
River Walkway
Proposed Pedestrian Districts
Quarter Mile Radius
Half Mile Radius
0
0.5
1
Miles
N

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FUNDING OPPORTUNITIES

A variety of funding sources are available for implementing the projects and programs recommended as part of this plan. Many sources have eligibility restrictions that limit their use to specific types of projects, but other sources can be used for a variety of projects. Brief descriptions of potential funding sources, along with the types of projects that are applicable, are provided below. Funding opportunities are categorized as follows:

- Federal Government Sources;
- State Government Sources;
- Local Government Sources;
- Private Sector Sources;
- Local Fundraising; and
- Foundations.

Federal Government Sources

Although most federal / state governmental funding sources are competitive in nature, these sources represent an important opportunity for funding large-scale projects. For more information on these funding programs as enabled under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), please refer to the SAFETEA-LU website at *http://www.fhwa.dot.gov/safetealu*.

- Federal Aid Construction Funds – Several categories of federal aid construction funds — National Highway System (NHS) and Surface Transportation Program (STP) — or Congestion Mitigation and Air Quality (CMAQ) funds provide for the construction of bicycle and pedestrian transportation facilities. The primary source of funding for bicycle and pedestrian projects is STP Enhancement Funding (source: NCDOT Division of Bicycle and Pedestrian Transportation). These Federal funds typically require a 20% local match.

  Appropriate Projects: Bike lane and paved shoulder construction, shared-use path construction

- Recreational Trails Program – The Recreational Trails Program provides funds to States to develop and maintain trails, including trails for non-motorized uses as well as motorized uses. These Federal funds typically require a 20% local match.

  Appropriate Projects: Shared-use path / greenway development (easement acquisition, construction, and maintenance); trail safety and environmental protection programs

- Safe Routes to School Program (SRTS) – This program is intended to enable and encourage children, including those with disabilities, to bicycle and walk to school; to make bicycling and walking to school safe and more appealing; and to facilitate the planning, development and implementation of projects that will improve safety, and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

Funds are to be administered by State departments of transportation to provide financial assistance to State, local, and regional agencies, including non-profit organizations, that demonstrate the ability to meet the requirements of the program. North Carolina received an apportionment of approximately $2.4 million in FY 2006, and this figure is projected to increase over the course of the current Federal authorization bill until FY 2009 to up to $15 over a five year period.

Appropriate Projects: Eligible activities include the planning, design, and construction of projects that will substantially improve the ability of students to bicycle and walk to school. These include sidewalk improvements, traffic calming and speed reduction improvements, bicycle and pedestrian crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bike parking, and traffic diversion improvements in the vicinity of schools (within approximately 2 miles). Such projects may be carried out on any public road or any bicycle or pedestrian pathway or trail in the vicinity of schools.

Each state must set aside from its Safe Routes to School apportionment not less than 10 percent and not more than 30 percent of the funds for non-infrastructure-related activities to encourage walking and bicycling to school. These include public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, student sessions on bicycle and pedestrian safety, health, and environment, and training, volunteers, and managers of safe routes to school programs (source: *http://www.fhwa.dot.gov/safetealu/factsheets/saferoutes.htm*).

Innovative funding approaches in Wisconsin for Safe Routes to School include:

- City of La Crosse, Wisconsin planning department used $60,000 in Community Development Block Grant (CDGB) funds for their city-wide SRTS plan, which included a SRTS National Course.
- Some other communities in Wisconsin are using small grants ($1,000) from the state public health chronic disease work groups on diabetes, physical activity and nutrition, etc. toward funding local initiatives like offering the SRTS National Course. The source of this money is often the CDC.

The North Carolina Safe Routes to Schools Program will include a grant reimbursement program to fund infrastructure and non-infrastructure projects, a program to award consultant services to develop Action Plans, spot improvement project funds administered by the NCDOT Highway Divisions and facilitator support for presenting community-based SRTS workshops. The North Carolina contact for the Safe Routes to School program is as follows:

Safe Routes to Schools
NC Dept of Transportation, Division of Bicycle and Pedestrian Transportation
1552 Mail Service Center
Raleigh, NC 27699-1552
Phone: 919-807-0777
http://www.ncdot.org/transit/bicycle/saferoutes/SafeRoutes.html

State Government Sources

- State Construction Funds – State roadway construction funds (not including the Highway Trust Fund for Urban Loops and Interchanges) may be used for the construction of bicycle accommodations that are a part of roadway improvement projects (source: NCDOT Division of Bicycle and Pedestrian Transportation).

  Appropriate Projects: Bicycle lane, paved shoulder, intersection, or sidepath construction.

- Governor's Highway Safety Program (GHSP) – GHSP funding is provided through an annual program, upon approval of specific project requests, to undertake a variety of bicycle and pedestrian safety initiatives. Amounts of GHSP funds vary from year to year, according to the specific amounts requested (source: NCDOT Division of Bicycle and Pedestrian Transportation). http://www.ncdot.org/programs/ghsp

  Appropriate Projects: Bike lane and shared-use path construction; safety programs

- NCDOT Transportation Improvement Program (TIP) – Six million dollars are annually set aside for the construction of bicycle improvements that are independent of scheduled highway projects in communities throughout the state. For independent bicycle and shared-use path projects to be added to the TIP, they will follow essentially the same TIP process as do highway projects. Independent projects may involve the construction of shared-use trail, the striping of bicycle lanes, and the construction of paved shoulders among other facilities. See the DBPT web site for more information on the TIP process -

http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html

  Incidental projects are those funded through a scheduled highway project. Bicycle and pedestrian accommodations such as bike lanes, widened paved shoulders, sidewalks, and bicycle-safe bridge design are frequently included as incidental features of highway projects. NCDOT commonly provides full funding to incidental bicycle facilities. See the DBPT web site for NCDOT's Bicycle Policy Guidelines –

http://www.ncdot.org/transit/bicycle/laws/laws_bikepolicy2.html

- Powell Bill Program - Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by statute. This program is a state grant to municipalities for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public streets and highways. Funding for this program is collected from fuel taxes. Amount of funds are based on population and mileage of city-maintained streets. For more information, visit www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell_Bill/powellbill.html.

For more information on how to receive these state funds, contact the regional NCDOT office.

Contact info:

North Carolina Department of Transportation
Division 12
1710 East Marion Street
Shelby, NC 28152
(704) 480-9020

http://www.ncdot.org/doh/operations/division12/

Local Government Sources

Local governments participate in funding pedestrian projects through dedicated funding sources as well as annual set-asides of departmental budgets. In the future, Albemarle should strive to identify a set amount of funding every year for bicycle infrastructure improvements. This amount can be included as a line item in the City's budget to be applied toward projects identified in this plan. Additionally, communities are generally supportive of local bond options for bicycle and pedestrian improvements and for recreational paths. Bonds could be Albemarle's most crucial local funding source. Taxes levied on utilities, gas, vehicle registrations, or retail goods can also apply toward bicycle infrastructure. Powell Bill funds and impact fees may also be used.

Metropolitan Planning Organizations (MPOs) in North Carolina which are located in air quality nonattainment or maintenance areas have the authority to program Congestion Mitigation Air Quality (CMAQ) funds. CMAQ funding is intended for projects that reduce transportation related emissions. Some NC MPOs have chosen to use the CMAQ funding for bicycle and pedestrian projects. Local governments in air quality nonattainment or maintenance area should contact their MPO for information on CMAQ funding opportunities for bicycle and pedestrian facilities.

Private Sector Sources

Perhaps the most important funding source for improvements to Albemarle's bicycle infrastructure is private sector sources. Ensuring that bicycle facilities are implemented in conjunction with future developments is important so that the City does not have to go back and retrofit facilities later using government funding.

In addition, local companies may be interested in financially supporting bicycle projects and programs. Major local employers may support projects as part of their community giving programs or employee health programs. Recognition for contributions could be prominently displayed on signage along the sidewalk or path that was supported by private funds. Paris, France, recently began a massive commuter bike rental program that is completely funded by a mix of private sponsorship and the usage fees for the bicycles.

Local Fundraising

Local matching monies could be raised for projects by seeking private donations for specific projects. Several examples of these efforts are given below (information taken from the Pedestrian and Bicycle Information Center at http://www.walkinginfo.org).

- *In Ashtabula, Ohio the local trail organization raised one-third of the money they needed to buy the land for the trail, by forming a "300 Club." Three hundred acres were needed for the trail and they set a goal of finding 300 folks who would finance one acre each. The land price was $400 an acre and they found just over 100 people to buy an honorary acre, raising over $40,000.*

- *In Jackson County, Oregon a "Yard Sale" was held. The Bear Creek Greenway Foundation sold symbolic "yards" of the trail and placed donor's names on permanent markers that are located at each trailhead. At $40 a yard, they raised enough in private cash donations to help match their $690,000 Transportation Enhancements program award for the 18-mile Bear Creek trail linking Medford, Talent, Phoenix and Ashland.*

- *Selling bricks for local sidewalk projects, especially those in historic areas or on downtown Main Streets is increasingly common. Donor names are engraved in each brick, and a tremendous amount of publicity and community support is purchased along with basic construction materials. Portland, Oregon's downtown Pioneer Square is a good example of such a project. This can be adjusted to fund bike lanes. $3 - $5 per foot should fund most bike lane striping projects. Donators' names can be included on adjacent sidewalks.*

- *In Colorado Springs, the Rock Island Rail-Trail is being partly funded by the Rustic Hills Improvement Association, a group of local home-owners living adjacent to the trail. Also, ten miles of the trail was cleared of railroad ties by a local Boy Scout troop.*

- *A pivotal 40-acre section of the Ice Age Trail between the cities of Madison and Verona, Wisconsin, was acquired with the help of the Madison Area Youth Soccer Association. The soccer association agreed to a fifty year lease of 30 acres of the parcel for a soccer complex, providing a substantial part of the $600,000 acquisition price.*

Foundations

A number of charitable foundations have provided funds for bicycle projects, including infrastructure projects as well as safety programs. One of the largest of these foundations is the Robert Wood Johnson Foundation, which has a strong focus on projects that have a positive benefit on public health, such as bicycling. The Foundation Center (www.fdncenter.org) is an online resource that catalogs numerous foundations.

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NCDOT Greenway Administrative Process

In 1994 the NCDOT adopted administrative guidelines to consider greenways and greenway crossings during the highway planning process. This policy was incorporated so that critical corridors which have been adopted by localities for future greenways will not be severed by highway construction. Following are the text for the Greenway Policy and Guidelines for implementing it.

Administrative Action to Include Local Adopted Greenways Plans in the NCDOT Highway Planning Process

January, 1994
In concurrence with the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and the Board of Transportation's Bicycle Policy of 1978 (updated in 1991) and Pedestrian Policy of 1993, the North Carolina Department of Transportation recognizes the importance of incorporating local greenways plans into its planning process for the development and improvement of highways throughout North Carolina.

NCDOT Responsibilities:
The Department will incorporate locally adopted plans for greenways into the ongoing planning processes within the Statewide Planning (thoroughfare plans) and the Planning and Environmental (project plans) Branches of the Division of Highways. This incorporation of greenway plans will be consistent throughout the department. Consideration will be given to including the greenway access as a part of the highway improvement.

Where possible, within the policies of the Department, within the guidelines set forth in provisions for greenway crossings, or other greenway elements, will be made as a part of the highway project or undertaken as an allowable local expenditure.

Local Responsibilities:
Localities must show the same commitment to building their adopted greenway plans as they are requesting when they ask the state to commit to providing for a certain segment of that plan. It is the responsibility of each locality to notify the Department of greenway planning activity and adopted greenway plans and to update the Department with all adopted additions and changes in existing plans.

It is also the responsibility of each locality to consider the adopted transportation plan in their greenways planning and include its adopted greenways planning activities within their local transportation planning process. Localities should place in priority their greenways construction activities and justify the transportation nature of each greenway segment. When there are several planned greenway crossings of a proposed highway improvement, the locality must provide justification of each and place the list of crossings in priority order. Where crossings are planned, transportation rights of way should be designated or acquired separately to avoid jeopardizing the future transportation improvements.

Guidelines for NCDOT to Comply With Administrative Decision to Incorporate Local Greenways into Highway Planning Process

Thoroughfare plans will address the existence of greenways planning activity, which has been submitted by local areas. Documentation of mutually agreed upon interface points between the thoroughfare plan and a greenway plan will be kept, and this information will become a part of project files.

Project Planning Reports will address the existence of locally adopted greenways segment plans, which may affect the corridor being planned for a highway improvement. It is, however, the responsibility of the locality to notify the Department of the adopted greenways plans (or changes to its previous plans) through its current local transportation plan, as well as its implementation programs.

Where local greenways plans have not been formally adopted or certain portions of the greenways plans have not been adopted, the Department may note this greenway planning activity but is not required to incorporate this information into its planning reports.

Where the locality has included adopted greenways plans as a part of its local transportation plan and a segment (or segments) of these greenways fall within the corridor of new highway construction or a highway improvement project, the feasibility study and/or project planning report for this highway improvement will consider the effects of the proposed highway improvement upon the greenway in the same manner as it considers other planning characteristics of the project corridor, such as archeological features or land use.

Where the locality has justified the transportation versus the leisure use importance of a greenway segment and there is no greenway alternative of equal importance nearby, the project planning report will suggest inclusion of the greenway crossing, or appropriate greenway element, as an incidental part of the highway expenditure.

Where the locality has not justified the transportation importance of a greenway segment, the greenway crossing, or appropriate greenway element, may be included as a part of the highway improvement plan if the local government covers the cost.

A locality may add any appropriate/acceptable greenway crossing or greenway element at their own expense to any highway improvement project as long as it meets the design standards of the NCDOT.

The NCDOT will consider funding for greenway crossings, and other appropriate greenway elements only if the localities guarantee the construction of and/or connection with other greenway segments. This guarantee should be in the form of inclusion in the local capital improvements program or NCDOT/municipal agreement.

If the state pays for the construction of a greenway incidental to a highway improvement and the locality either removes the connecting greenway segments from its adopted greenways plans or decides not to construct its agreed upon greenway segment, the locality will reimburse the state for the cost of the greenway incidental feature. These details will be handled through a municipal agreement. Locality must accept maintenance responsibilities for state-built greenways, or portions thereof.

Details will be handled through a municipal agreement. 06/01/05

DEPARTMENT OF TRANSPORTATION
PEDESTRIAN POLICY GUIDELINES
EFFECTIVE OCTOBER 1, 2000

These guidelines provide an updated procedure for implementing the Pedestrian Policy adopted by the Board of Transportation August 1993 and the Board of Transportation Resolution September 8, 2000. The resolution reaffirms the Department's commitment to improving conditions for bicycling and walking, and recognizes non-motorized modes of transportation as critical elements of the local, regional, and national transportation system. The resolution encourages North Carolina cities and towns to make bicycling and pedestrian improvements an integral part of their transportation planning and programming.

REQUIREMENTS FOR DOT FUNDING:

REPLACEMENT OF EXISTING SIDEWALKS:
The Department will pay 100% of the cost to replace an existing sidewalk that is removed to facilitate the widening of a road.

TIP INCIDENTAL PROJECTS:
DEFINED: Incidental pedestrian projects are defined as TIP projects where pedestrian facilities are included as part of the roadway project.

REQUIREMENTS:
1. The municipality and/or county notifies the Department in writing of its desire for the Department to incorporate pedestrian facilities into project planning and design. Notification states the party's commitment to participate in the cost of the facility as well as being responsible for all maintenance and liability. Responsibilities are defined by agreement. Execution is required prior to contract let. The municipality is responsible for evaluating the need for the facility (ie: generators, safety, continuity, integration, existing or projected traffic) and public involvement.

2. Written notification must be received by the Project Final Field Inspection (FFI) date.
Notification should be sent to the Deputy Highway Administrator - Preconstruction with a copy to the Project Engineer and the Agreements Section of the Program Development Branch. Requests received after the project FFI date will be incorporated into the TIP project, if feasible, and only if the requesting party commits by agreement to pay 100% of the cost of the facility.

3. The Department will review the feasibility of including the facility in our project and will try to accommodate all requests where the Department has acquired appropriate right of way on curb and gutter sections and the facility can be installed in the current project berm width. The standard project section is a 10-ft berm (3.0-meter) that accommodates a 5-ft sidewalk. In accordance with AASHTO standards, the Department will construct 5-ft sidewalks with wheelchair ramps. Betterment cost (ie: decorative pavers) will be a Municipal responsibility.

4. If the facility is not contained within the project berm width, the Municipality is responsible for providing the right of way and/or construction easements as well as utility relocations, at no cost to the Department. This provision is applicable to all pedestrian facilities including multi-use trails and greenways.

5. A cost sharing approach is used to demonstrate the Department's and the municipality's/county's commitment to pedestrian transportation (sidewalks, multi-use trails and greenways). The matching share is a sliding scale based on population as follows:

MUNICIPAL POPULATION	DOT PARTICIPATION	LOCAL PARTICIPATION
> 100,000	50%	50%
50,000 to 100,000	60%	40%
10,000 to 50,000	70%	30%
< 10,000	80%	20%

Note: The cost of bridges will not be included in the shared cost of the pedestrian installation if the Department is funding the installation under provision 6 - pedestrian facilities on bridges.

6. For bridges on streets with curb and gutter approaches, the Department will fund and construct sidewalks on both sides of the bridge facility if the bridge is less than 200 feet in length. If the bridge is greater than 200 feet in length, the Department will fund and construct a sidewalk on one side of the bridge structure. The bridge will also be studied to determine the costs and benefits of constructing sidewalks on both sides of the structure. If in the judgment of the Department sidewalks are justified, funding will be provided for installation. The above provision is also applicable to dual bridge structures. For dual bridges greater than 200 ft in length, a sidewalk will be constructed on the outside of one bridge structure. The bridges will also be studied to determine if sidewalks on the outside of both structures are justified.

7. FUNDING CAPS are no longer applicable.

8. This policy does not commit the Department to the installation of facilities in the Department's TIP projects where the pedestrian facility causes an unpractical design modification, is not in accordance with AASHTO standards, creates an unsafe situation, or in the judgment of the Department is not practical to program.

INDEPENDENT PROJECTS

DEFINED: The DOT has a separate category of funds for all independent pedestrian facility projects in North Carolina where installation is unrelated to a TIP roadway project. An independent pedestrian facility project will be administered in accordance with Enhancement Program Guidelines.

NCDOT Bicycle Policy

Pursuant to the Bicycle and Bikeways Act of 1974, the Board of Transportation finds that bicycling is a bonafide highway purpose subject to the same rights and responsibilities and eligible for the same considerations as other highway purposes, as elaborated below.

1. The Board of Transportation endorses the concept that bicycle transportation is an integral part of the comprehensive transportation system in North Carolina.
2. The Board of Transportation endorses the concept of providing bicycle transportation facilities within the rights-of-way of highways deemed appropriated by the Board.
3. The Board of Transportation will adopt Design Guidelines for Bicycle Facilities. These guidelines will include criteria for selecting cost-effective and safety-effective bicycle facility types and a procedure for prioritizing bicycle facility improvements.
4. Bicycle compatibility shall be a goal for state highways, except on fully controlled access highways where bicycles are prohibited, in order to provide reasonably safe bicycle use.
5. All bicycle transportation facilities approved by the Board of Transportation shall conform with the adopted "Design Guidelines for Bicycle Facilities" on state-funded projects, and also with guidelines published by the American Association of State Highway and Transportation Officials (AASHTO) on federal aid projects.

Planning and Design

It is the policy of the Board of Transportation that bicycle facility planning be included in the state thoroughfare and project planning process.

1. The intent to include planning for bicycle facilities within new highway construction and improvement projects is to be noted in the Transportation Improvement Program.
2. During the thoroughfare planning process, bicycle usage shall be presumed to exist along certain corridors (e.g., between residential developments, schools, businesses and recreational areas). Within the project planning process, each project shall have a documented finding with regard to existing or future bicycling needs. In order to use available funds efficiently, each finding shall include measures of cost-effectiveness and safety-effectiveness of any proposed bicycle facility.
3. If bicycle usage is shown likely to be significant, and it is not prohibited, and there are positive cost-effective and safety-effective findings; then, plans for and designs of highway construction projects along new corridors, and for improvement projects along existing highways, shall include provisions for bicycle facilities (e.g., bike routes, bike lanes, bike paths, paved shoulders, wide outside lanes, bike trails) and secondary bicycle facilities (traffic control, parking, information devices, etc.).

4. Federally funded new bridges, grade separated interchanges, tunnels, and viaducts, and their improvements, shall be designed to provide safe access to bicycles, pursuant to the policies of the Federal Highway Administration.
5. Barriers to existing bicycling shall be avoided in the planning and design of highway projects.
6. Although separate bicycle facilities (e.g., bike paths, bike trails) are useful under some conditions and can have great value for exclusively recreational purposes, incorporation of on road bicycle facilities (e.g., bicycle lanes, paved shoulders) in highway projects are preferred for safety reasons over separate bicycle facilities parallel to major roadways. Secondary complementary bicycle facilities (e.g., traffic control, parking, information devices, etc.) should be designed to be within highway rights-of-way.
7. Technical assistance shall be provided in the planning and design of alternative transportation uses, including bicycling, for abandoned railroad rights-of way. This assistance would be pursuant to the National Trails act Amendment of 1983, and the resultant national Rails to Trails program, as will the Railway Revitalization Act of 1975.
8. Wherever appropriate, bicycle facilities shall be integrated into the study, planning, design, and implementation of state funded transportation projects involving air, rail, and marine transportation, and public parking facilities.
9. The development of new and improved bicycle control and information signs is encouraged for the increased safety of all highway users.
10. The development of bicycle demonstration projects which foster innovations in planning, design, construction, and maintenance is encouraged.
11. Paved shoulders shall be encouraged as appropriate along highways for the safety of all highway users, and should be designed to accommodate bicycle traffic.
12. Environmental Documents/Planning Studies for transportation projects shall evaluate the potential use of the facility by bicyclists and determine whether special bicycle facility design is appropriate.
13. Local input and advice shall be sought, to the degree practicable, during the planning stage and in advance of the final design of roadway improvements to ensure appropriate consideration of bicycling needs, if significant.
14. On highways where bicycle facilities exist, (bike paths, bike lanes, bike routes, paved shoulders, wide curb lanes, etc.), new highway improvements shall be planned and implemented to maintain the level of existing safety for bicyclists.
15. Any new or improved highway project designed and constructed within a public-use transportation corridor with private funding shall include the same bicycle facility considerations as if the project had been funded with public funds. In private transportation projects (including parking facilities), where state funding or Department

approval is not involved, the same guidelines and standards for providing bicycle facilities should be encouraged.

Construction

It is the policy of the Board of Transportation that all state and federally funded highway projects incorporating bicycle facility improvements shall be constructed in accordance with approved state and federal guidelines and standards.

1. Bicycle facilities shall be constructed, and bicycle compatibility shall be provided for, in accordance with adopted Design Guidelines for Bicycle Facilities and with guidelines of the American Association of State Highway and Transportation Officials.
2. Rumble strips (raised traffic bars), asphalt concrete dikes, reflectors, and other such surface alterations, where installed, shall be placed in a manner as not to present hazards to bicyclists where bicycle use exists or is likely to exist. Rumble strips shall not be extended across shoulder or other areas intended for bicycle travel.
3. During restriping operations, motor vehicle traffic lanes may be narrowed to allow for wider curb lanes.

Maintenance

It is the policy of the Board of Transportation that the state highway system, including state-funded bicycle facilities, shall be maintained in a manner conducive to bicycle safety.

1. State and federally funded and built bicycle facilities within the state right-of-way are to be maintained to the same degree as the state highway system.
2. In the maintenance, repair, and resurfacing of highways, bridges, and other transportation facilities, and in the installation of utilities or other structures, nothing shall be done to diminish existing bicycle compatibility.
3. Rough road surfaces which are acceptable to motor vehicle traffic may be unsuitable for bicycle traffic, and special consideration may be necessary for highways with significant bicycle usage.
4. For any state-funded bicycle project not constructed on state right-of-way, a maintenance agreement stating that maintenance shall be the total responsibility of the local government sponsor shall be negotiated between the Department and the local government sponsor.
5. Pot-holes, edge erosion, debris, etc., are special problems for bicyclists, and their elimination should be a part of each Division's maintenance program. On identified

bicycle facilities, the bike lanes and paths should be routinely swept and cleared of grass intrusion, undertaken within the discretion and capabilities of Division forces.

Operations

It is the policy of the Board of Transportation that operations and activities on the state highway system and bicycle facilities shall be conducted in a manner conducive to bicycle safety.

1. A bicyclist has the right to travel at a speed less than that of the normal motor vehicle traffic. In exercising this right, the bicyclist shall also be responsible to drive his/her vehicle safely, with due consideration to the rights of the other motor vehicle operators and bicyclists and in compliance with the motor vehicle laws of North Carolina.
2. On a case by case basis, the paved shoulders of those portions of the state's fully controlled access highways may be studied and considered as an exception for usage by bicyclists where adjacent highways do not exist or are more dangerous for bicycling. Pursuant to federal highway policy, usage by bicyclists must receive prior approval by the Board of Transportation for each specific segment for which such usage is deemed appropriate, and those segments shall be appropriately signed for that usage.
3. State, county, and local law enforcement agencies are encouraged to provide specific training for law enforcement personnel with regard to bicycling.
4. The use of approved safety helmets by all bicyclists is encouraged.

Education

It is the policy of the Board of Transportation that education of both motorists and bicyclists, regarding the rights and responsibilities of bicycle riders, shall be an integral part of the Department's Bicycle Program.

School systems are encouraged to conduct bicycle safety education programs as a part of and in addition to the driver's education program, to the maximum extent practicable, and in conjunction with safety efforts through the Governor's Highway Safety Program. The Division of Motor Vehicles is also urged to include bicycle safety and user information in its motor vehicle safety publications.

Parking

It is the policy of the Board of Transportation that secure and adequate bicycle parking facilities shall be provided wherever practicable and warranted in the design and construction of all state-funded buildings, parks, and recreational facilities.

FHWA Policies

Beginning with the passage of TEA-21 in 1998, FHWA has established policy for the mainstreaming of nonmotorized transportation. Detailed guidance on FHWA policies relating to bicycling and walking is available at http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm. This guidance includes the following advisement:

> SAFETEA-LU confirms and continues the principle that the safe accommodation of nonmotorized users shall be considered during the planning, development, and construction of all Federal-aid transportation projects and programs. To varying extents, bicyclists and pedestrians will be present on all highways and transportation facilities where they are permitted and it is clearly the intent of SAFETEA-LU that all new and improved transportation facilities be planned, designed, and constructed with this fact in mind.
>
> While these sections stop short of requiring specific bicycle and pedestrian accommodation in every transportation project, Congress clearly intends for bicyclists and pedestrians to have safe, convenient access to the transportation system and sees every transportation improvement as an opportunity to enhance the safety and convenience of the two modes. "Due consideration" of bicycle and pedestrian needs should include, at a minimum, a presumption that bicyclists and pedestrians will be accommodated in the design of new and improved transportation facilities. In the planning, design, and operation of transportation facilities, bicyclists and pedestrians should be included as a matter of routine, and the decision to not accommodate them should be the exception rather than the rule. There must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling.

NCDOT Affirmation

In 2000, after the passage of TEA-21, the Board of Transportation passed resolution supporting the mainstreaming of nonmotorized transportation and reiterating North Carolina's dedication to improving facilities for bicycle and pedestrian transportation. The resolution is available online at http://www.ncdot.gov/bikeped/download/bikeped_laws_BOT_Mainstreaming_Resolution.pdf.

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BICYCLE CHAPTER IN THE CITY OF ALBEMARLE CODE OF ORDINANCES

Chapter 76 Bicycles

§ 76.01 EFFECT OF REGULATIONS.

The parent of any child and the guardian of any ward shall not authorize or knowingly permit any child or ward to violate any of the provisions of this chapter. These regulations applicable to bicycles shall apply whenever a bicycle is operated on any street or on any public path set aside for the exclusive use of bicycles, subject to those exceptions stated in this chapter.

§ 76.02 TRAFFIC LAWS APPLICABLE.

Every person riding a bicycle on a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle by the laws of this state declaring rules of the road applicable to vehicles or by this title applicable to the driver of a vehicle, except as to special regulations in this chapter, and except as to those provisions of laws and ordinances which by their nature can have no application.

§ 76.03 OBEDIENCE TO TRAFFIC-CONTROL DEVICES.

Any person operating a bicycle shall obey the instructions of official traffic-control signals, signs, and other control devices applicable to vehicles, unless otherwise directed by a police officer. Whenever authorized signs are erected indicating that no right, left, or U-turn is permitted, no person operating a bicycle shall disobey the direction of the sign, except where the person dismounts from the bicycle to make the turn, in which event the person shall then obey the regulations applicable to pedestrians.

Penalty, see § 10.99

§ 76.04 RIDING ON BICYCLES.

A person propelling a bicycle shall not ride other than astride a permanent and regular seat attached thereto. No bicycle shall be used to carry more persons at one time than the number for which it is designed and equipped. It shall be unlawful for the operator of a bicycle, when on any street, to carry any person on the handlebars or frame of the bicycle; and it shall be unlawful for any person to ride on any bicycle in this manner.

('58 Code, §§ 16-39 and 16-40) Penalty, see § 10.99

§ 76.05 RIDING ON ROADWAYS AND BICYCLE PATHS.

Every person operating a bicycle on a roadway shall ride as near to the right-hand side of the roadway as practicable, exercising due care when passing a standing vehicle or one proceeding

in the same direction. Persons riding bicycles on a roadway shall not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles. Whenever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use the path and shall not use the roadway.

Penalty, see § 10.99

§ 76.06 SPEED.

No person shall operate a bicycle at a speed greater than is reasonable and prudent under the conditions then existing.

('58 Code, § 16-85) Penalty, see § 10.99

§ 76.07 EMERGING FROM ALLEY OR DRIVEWAY.

The operator of a bicycle emerging from an alley, driveway, or building shall, on approaching a sidewalk or the sidewalk area extending across any alleyway, yield the right-of-way to all pedestrians approaching on the sidewalk or sidewalk area; and on entering the and roadway, shall yield the right-of-way to all vehicles approaching on the roadway.

Penalty, see § 10.99

§ 76.08 CARRYING ARTICLES.

No person operating a bicycle shall carry any package, bundle, or article which prevents the rider from keeping at least one hand on the handlebars.

Penalty, see § 10.99

§ 76.09 PARKING.

No person shall park a bicycle on a street other than on the roadway against the curb, or on the sidewalk in a rack to support the bicycle, or against a building, or at the curb, in such a manner as to afford the least obstruction to pedestrian traffic.

Penalty, see § 10.99

§ 76.10 RIDING ON SIDEWALKS.

(A) No person shall ride a bicycle on a sidewalk within the central business district.

(B) The Chief of Police is authorized to erect signs on any roadway prohibiting the riding of bicycles thereon by any person and when the signs are in place no person shall disobey them.

(C) Whenever any person is riding a bicycle on a sidewalk, that person shall yield the right-of-way to any pedestrian and shall give audible signal before overtaking and passing the pedestrian.

Penalty, see § 10.99

§ 76.11 LAMPS AND OTHER EQUIPMENT.

(A) Every bicycle when in use at nighttime shall be equipped with a lamp on the front which shall emit a white light -,visible from a distance of at least 500 feet to the front, and with a red reflector on the rear of a type which shall be visible from all distances from 50 feet to 300 feet to the rear when directly in front of lawful upper beams of headlamps on a motor vehicle. A lamp emitting a red light visible from a distance of 500 feet to the rear may be used in addition to the red reflector.

(B) No person shall operate a bicycle unless it is equipped with a bell or other device capable of giving a signal audible for a distance of at least 100 feet, except that a bicycle shall not be equipped with, nor shall any person use on a bicycle, any siren or whistle.

(C) Every bicycle shall be equipped with a brake which will enable the operator to make the braked wheel skid on dry, level, clean pavement.

Penalty, see § 10.99

§ 76.12 REGISTRATION.

(A) It shall be unlawful for any person to operate or use a bicycle propelled wholly or in part by muscular power on any of the streets, alleys, or public highways of the city without first obtaining a certificate of registration from the Chief of Police and having attached to the bicycle a registration number.

(B) The city shall provide registration seals together with registration cards, the registration seals and registration cards to be numbered in numerical order beginning with number one, the design and identification lettering thereon to be approved by the Chief of Police. It shall be the duty of the Chief of Police to attach one of the registration seals to the frame of each bicycle and to issue the corresponding registration card to the owner of the bicycle on the payment of the registration fee required. The registration seal shall remain attached to the bicycle for which it was issued during the period for which it is registered. The Chief of Police shall keep a permanent register in which shall be entered the name, address, and age of the owner of each registered bicycle, the date of registration, and sufficient information to identify the bicycle.

(C) It shall be unlawful for any person to sell or transfer ownership of any bicycle without reporting to the Chief of Police within 48 hours from the time thereof, full and complete information relative to the transfer so that the bicycle may be registered in the name of the

transferee. The purchaser or transferee of any bicycle shall apply for a transfer of registration therefor within five days from the time the bicycle is acquired by him.

(D) All persons engaged in the business of buying secondhand bicycles are hereby required to report to the Chief of Police within 48 hours after acquiring any secondhand bicycle or parts thereof, the report to include the registration number of the bicycle, a description of each bicycle acquired, the frame number thereof, together with the name and address of the person from whom it was acquired. In the case of the purchase of any part of a bicycle, the report shall describe each part and give the name and address of the person from whom it was acquired. All dealers in new bicycles in the city shall report their sales to the Chief of Police on blanks furnished for that purpose, within 48 hours thereafter, giving all the information required herein for secondhand bicycles.

(E) It shall be unlawful for any person to wilfully or maliciously remove, destroy, mutilate, or alter the number of any bicycle frame registered pursuant to this section. It shall also be unlawful for any person to wilfully or maliciously remove, destroy, mutilate, or alter any registration plate or registration card is

(F) Any bicycle operated by the owner or other person lawfully having custody thereof, in violation of this section, may be impounded by the Chief of Police for a period not exceeding 30 days.

('58 Code, §) Penalty, see § 10.99

THE FOLLOWING IS AN EXAMPLE EASEMENT AGREEMENT USED BY MECKLENBURG COUNTY AND CHANGED TO BE STANLY COUNTY

STATE OF NORTH CAROLINA

COUNTY OF STANLY

THIS EASEMENT AGREEMENT is made and entered into as of the _____ day of _____, 200__, by and among _____, "Grantor(s)"; and **THE CITY OF ALBEMARLE, a political subdivision of the State of North Carolina,** "Grantee";

WITNESSETH:

WHEREAS, Grantors are the owners of certain property located in STANLY County, North Carolina, which property is more particularly described on Exhibit A attached hereto (the **"Easement Area"**); and

WHEREAS, The CITY OF ALBEMARLE is developing a City-wide plan for greenway, recreational, park and land preservation purposes along the various creeks, floodplains, and other areas in the City, including the property which is described on Exhibit A; and

WHEREAS, Grantors desire to grant to Grantee a perpetual easement over said property for the uses set forth herein;

NOW, THEREFORE, for and in consideration of the premises and the sum of One Dollar ($1.00) to it in hand paid, the receipt of which is hereby acknowledged, Grantors hereby give and grant unto Grantee a perpetual right and easement over the property described on Exhibit A attached hereto for public active or passive green space, greenway, park, recreational, watershed or land preservation purposes, including the right to maintain and make improvements to the bank and bed of _____ Creek. Grantee shall have the right to grant easements or rights-of-way across the Easement Area for underground utilities, roadways incident to the use of the Easement Area, or other public purposes consistent with the primary purposes set forth above. Grantee shall have the sole right to promulgate rules and regulations for the reasonable use of the property by the public, provided the property is used for the purposes stated herein. If reasonable access to the greenway property is otherwise unavailable, Grantors further grant unto the Grantee reasonable access from time to time to the Easement Area over any remaining

contiguous property owned by Grantors for the purpose of developing and maintaining the property (but not for public access) for the purposes set forth herein; provided, Grantee shall (a) to the extent possible, utilize existing roads for such purposes, (b) repair any damage resulting from such access, and (c) upon request of Grantors execute a supplemental instrument delineating an appropriate access route to provide the agreed access.

GRANTORS AND GRANTEE, for themselves and their heirs, successors and assigns, further agree as follows:

1. Grantee shall be responsible, at its expense, for maintaining the Easement Area in accordance with the purposes set forth herein, including construction and maintenance of a trail, removal of trash, waste and litter, and efforts to control vandalism and other crimes within the Easement Area. Grantors shall have the right, but not the obligation, to enter the Easement Area to plant flowers, remove litter, and beautify same in the event Grantee fails to perform such functions in a reasonable manner, subject to approval by Grantee, which approval will not be unreasonably withheld.

2. Grantors, for themselves and their successors and assigns, reserve the right to grant easements or rights-of-way for underground utilities within the Easement Area for the benefit of the Grantors' adjacent land, at such locations and in such manner as may be approved by Grantee in the exercise of its reasonable discretion, provided such easements do not interfere with the use of the Easement area as set forth herein and provided Grantors repair any damage to the Easement Area resulting from the implantation of such utilities.

3. To the full extent permitted by law, Grantee shall defend, indemnify and hold harmless Grantors, and their successors and assigns, from and against all claims, demands, loss and damage by third parties arising out of or relating to use of the property by the public, provided such claims do not result from the acts, negligence or willful misconduct of Grantors or their heirs, successors or assigns.

4. Grantors retain fee simple ownership of the title to the Easement Area, subject to the rights granted to Grantee herein, for the specific purpose of allowing the land burdened by the Easement Area to be included in the calculation of zoning density for building improvements permitted on Grantors' land abutting the Easement Area, as such density may be allowed under current or future zoning ordinances.

5. Grantors make no representations or warranties whatsoever, whether express or implied, with respect to the condition of or title to the property that is the subject of this Agreement, which property Grantee agrees to accept, AS IS, in its present legal and physical condition.

TO HAVE AND TO HOLD the aforesaid rights, privileges, and easement unto the Grantee, its successors and assigns, for so long as said property is utilized by Grantee, its successors and assigns, for the purposes set forth herein, and no longer.

IN WITNESS WHEREOF, the parties have executed this Easement Agreement the day and year first above written.

_____
(Name of Grantor)

_____
(Name of Grantor)

STATE OF NORTH CAROLINA
CITY OF ALBEMARLE

I, _____, a Notary Public for THE CITY OF ALBEMARLE, North Carolina, certify that _____**and (Spouse),** _____personally appeared before me this day and acknowledged the execution of the foregoing instrument.

Witness my hand and official stamp or seal this _____ day of _____, 200__.

[Stamp/Seal]

_____
Notary Public
My Commission Expires: _____

IN WITNESS WHEREOF, the parties have executed this Easement Agreement the day and year first above written.

CITY OF ALBEMARLE

By: _____
_____, Chairman
ALBEMARLE CITY COUNCIL

STATE OF NORTH CAROLINA
CITY OF ALBEMARLE

This ____ day of _____, 200__, personally came before me _____**,** who, being first duly sworn, says that (s)he is the Chairman of the ALBEMARLE City Council, and that said writing was signed by him on behalf of the CITY OF ALBEMARLE by its authority duly given. And the said _____ acknowledged the said writing to be the act and deed of the CITY OF ALBEMARLE.

[Stamp/Seal]

Notary Public
My Commission Expires:

EXHIBIT A

Lying and being in STANLY County, North Carolina, and being more particularly described as follows:


URS