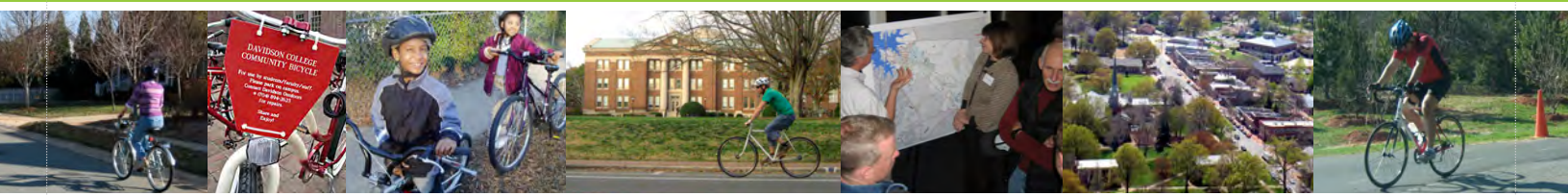




# DAVIDSON BICYCLE TRANSPORTATION PLAN

the town of davidson, north carolina | 2008



Prepared for:

**The Town of Davidson, NC and  
The North Carolina Department of Transportation,  
Division of Bicycle and Pedestrian Transportation**



Prepared By:

**Greenways Incorporated**



# ACKNOWLEDGEMENTS

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***Appendix B: State and Federal Bicycle Policy Resources***

***Appendix C: Prioritization and Project Cut Sheets***

***Appendix D: Glossary***

***Appendix E: Funding Resources***

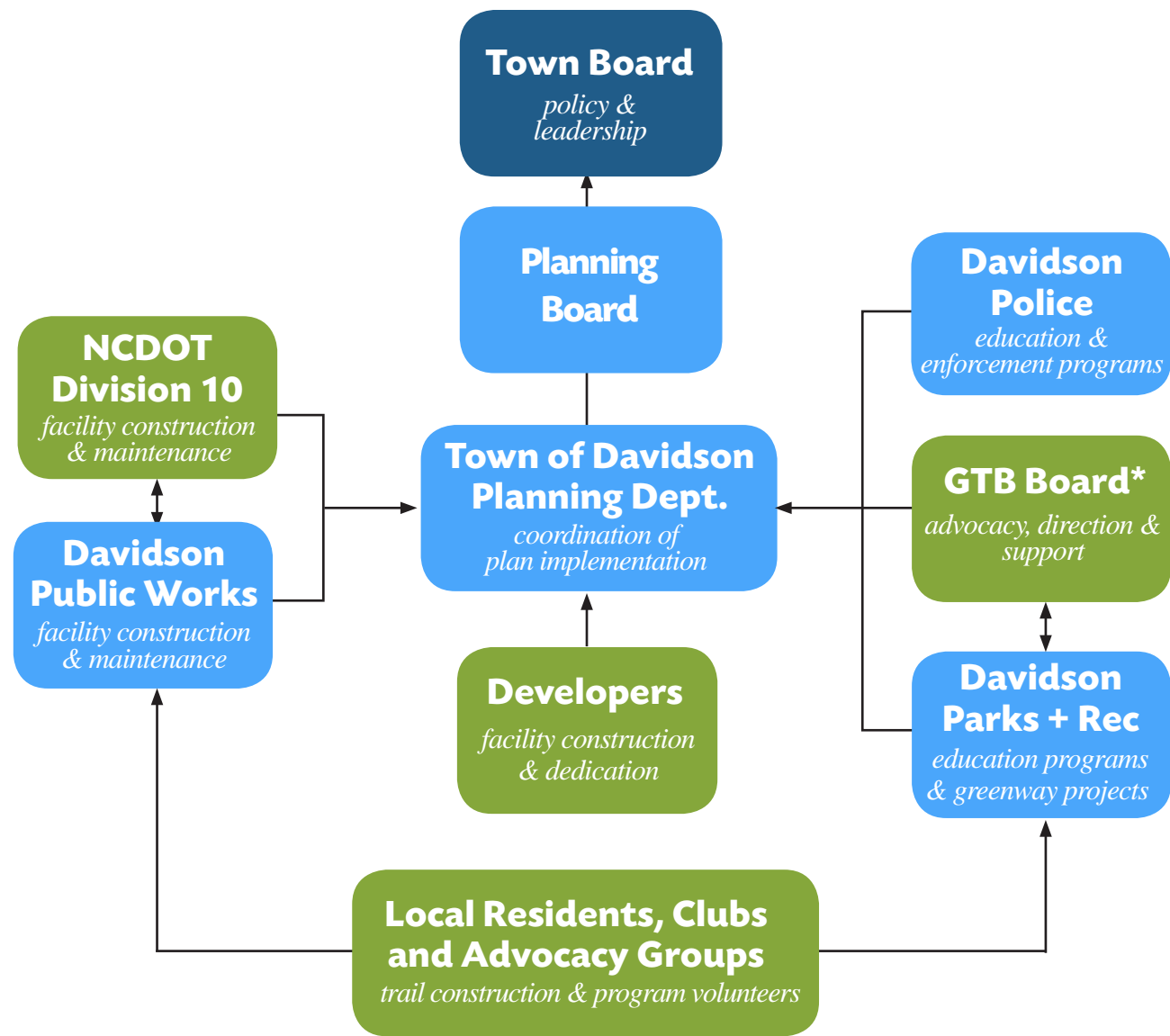


## VISION STATEMENT

*The Town of Davidson is a destination for bicycle enthusiasts and a livable community for local residents.*

- *All types of cyclists—beginners to experts—ride to work, school, for fun, shopping, and exercise.*
- *The streets of Davidson are designed, built, and maintained to accommodate the bicycle as a viable means of transportation.*
- *Bicycle facilities connect neighborhoods, parks, shopping centers, schools, employment centers, bus stops, trails, and regional destinations, thereby reducing overall motor vehicle traffic congestion and dependence on the automobile.*
- *When bicycle routes are combined with services (such as covered parking, bicycle stations, showers at employment centers, and bicycle rentals), bicycling in Davidson is as comfortable, convenient and efficient as driving.*
- *Education is creating safety and building courtesy between drivers and cyclists.*

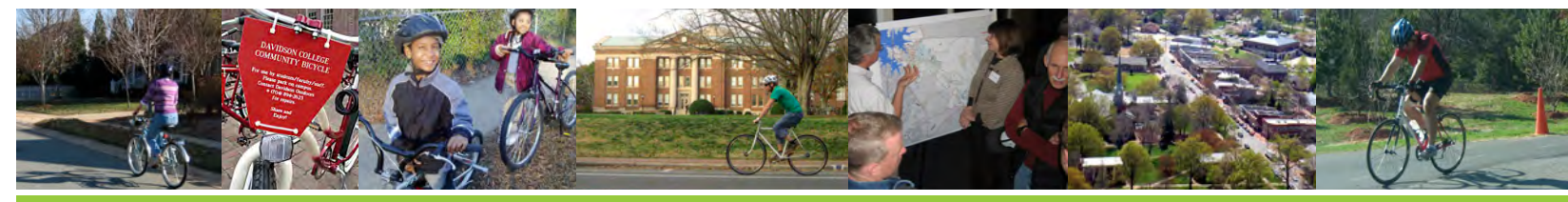
## Organizational Framework for Implementation



\*GTB = Greenways, Trails and Bikeways Advisory Board

# DAVIDSON BICYCLE TRANSPORTATION PLAN

the town of davidson, north carolina | 2008



**Purpose** - Nationally, such issues as rising gas prices, environmental concerns, and a growing interest in health and wellness are demonstrating the need for bicycle-friendly communities. On a local level, this Bicycle Plan aims to take on such issues, translating them into **affordable personal mobility, carbon-free transportation, and healthy, active lifestyles for Davidson residents.** The Town of Davidson teamed with the NCDOT Division of Bicycle and Pedestrian Transportation to create this Comprehensive Bicycle Transportation Plan, with the goal of making the Town of Davidson a destination for bicycle enthusiasts and a livable community for local residents.

**Public Support** - The planning process has included a high level of public involvement. Over 200 people participated in the online survey, which helped project planners identify roadways and intersections most in need of bicycle-related improvements. Throughout the process, approximately 70 people participated in two open house public workshops, which featured presentations, educational posters and materials, and public input maps. Additionally, local stakeholders (who volunteer on project committees) provided valuable insight and guidance as the plan developed.

Davidson's online survey showed strong support for local funding options. The survey asked, "If grants or development do not become available in the next 5 years to build additional greenways or bicycle lanes, should the Town of Davidson look for ways to fund bicycle improvements?" An overwhelming **94% responded "yes"**.

**Adoption** - The Town Board will be responsible for adopting this plan. Through adoption, the Town's leadership is recognizing the value of bicycle transportation and is putting forth a well-thought out set of recommendations for improving public safety and overall quality of life (see pages 4-8 of the plan: *The Value of Bicycle Transportation*). By adopting this Plan, the Town Board is also signifying that they are prepared to support the efforts of other key partners in the plan's implementation, including the work of its own departments and the local NCDOT, Division 10 (see back page of this executive summary).

**Action** - The action steps in Table 6.B (page 115) are integral to achieving the goals and vision of this Plan. As guiding recommendations and the clearest representation of specific items to accomplish, they should be referred to often. Chapter 5, Programs and Policies, also provides a variety of resources for assisting in carrying out tasks related to policy, education programs, encouragement programs and enforcement programs.

### Plan Contents

1. Introduction
2. Current Conditions
3. Bicycle Facility Network
4. Bicycle Facility Standards
5. Programs and Policies
6. Plan Implementation

- Appendix A: Summary of Public Input
- Appendix B: State and Federal Bicycle Policy Resources
- Appendix C: Prioritization and Project Cut Sheets
- Appendix D: Glossary
- Appendix E: Funding Resources

Prepared for:  
**The Town of Davidson, NC and**  
**The North Carolina Department of Transportation,**  
**Division of Bicycle and Pedestrian Transportation**



Prepared By:  
**Greenways Incorporated**

**Recommended Bicycle Facility Network**

This map shows the locations and types of bicycle facilities that are proposed in the Town of Davidson. The recommended facilities are broken down into individual segments, which are prioritized for strategic implementation (in Chapter 6 and Appendix C). Furthermore, some facilities, such as 'sharrows', will only require roadway pavement marking and installing signs, with little to no roadway reconstruction involved.

A variety of bicycle facilities are recommended due to 1) the range of skill and comfort levels involved in bicycling, and 2) the range of conditions for bicycling on different roadway environments. The images below are provided for a quick reference when reading the map legend.

**Signed/Shared Roadway**



**Bicycle Lane**



**Sharrow Marking**



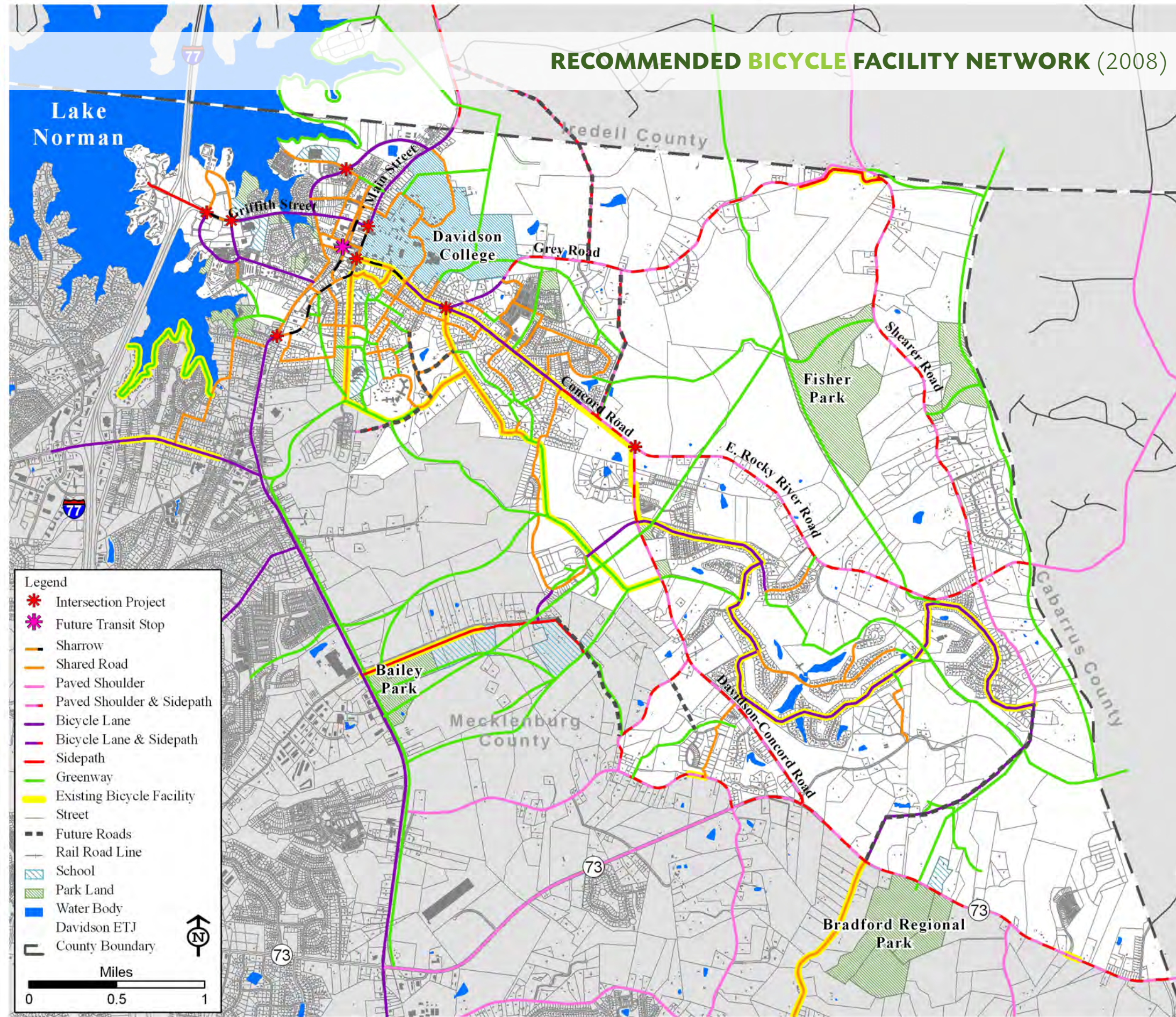
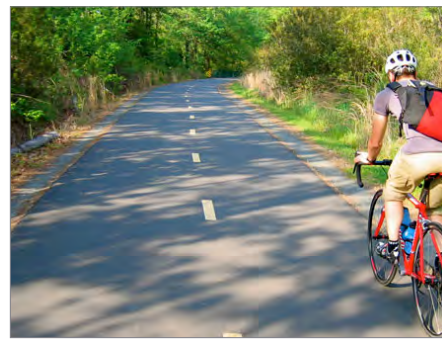
**Sidepath**



**Paved Shoulder**



**Greenway**



\* See Appendix C: Prioritization and Project Cut-Sheets for information on priority recommendations.



**CHAPTER 1 OUTLINE:**

Introduction to the Bicycle Plan  
Vision Statement  
Measurable Goals  
The Plan and The Planning Process  
The Value of Bicycle Transportation

# CHAPTER 1: INTRODUCTION

## *Introduction to the Bicycle Plan*

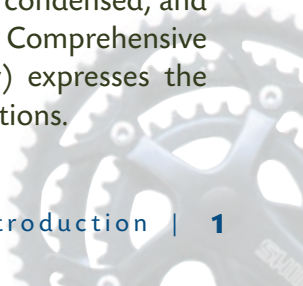
One of Davidson’s eight general principles for planning is “growth must be sustainable.” One key means of achieving sustainability is to reduce the reliance on the automobile and encourage walking, bicycling, and riding public transit. In November 2007, the Town of Davidson took an important step in achieving this goal by partnering with the North Carolina Department of Transportation (NCDOT) Division of Bicycle and Pedestrian Transportation to begin work on a Comprehensive Bicycle Transportation Plan. The Town has long been involved with making bicycle travel safe and convenient for residents and visitors. However, this will be the first comprehensive plan that unifies the bicycle-related ideas and strategies mentioned in other plans and initiatives within a single document and vision.

As a planning document, it is important to keep in mind each of Davidson’s eight general principles:

1. We must preserve Davidson’s status as a small town.
2. We must preserve and enhance Davidson’s unique downtown.
3. Growth must be sustainable.
4. We must preserve substantial amounts of open space.
5. We must re-establish our historic diversity of people.
6. Development must proceed no faster than the Town can provide public facilities.
7. In Davidson, we rely on a unique combination of private property rights and the health of the community as a whole.
8. Architecture and planning can either enhance or deteriorate the quality of life.

## *Vision Statement*

Vision statements and project goals were collected through public workshops, project steering committee meetings, input from Town staff, and an online survey of local residents. These were combined, condensed, and crafted into the vision statement for the Town of Davidson Comprehensive Bicycle Transportation Plan. The statement (on page iv) expresses the desired outcome of the plan, rather than the current conditions.



## Measurable Goals

The purpose of this Bicycle Plan is to make this vision a reality. Measurable goals, derived from this vision, are listed below. While the Town of Davidson must lead this effort, overall success will also require continued, active participation and encouragement from local residents and community organizations.

The Town should conduct an annual meeting for the evaluation of progress on each of the following goals, including an official plan update in 2012. During each evaluation, Town staff and members of the Greenways, Trails and Bikeways (GTB) Advisory Board should identify steps to be taken before the next evaluation.

1. Make bicycling an integral part of life in the Town of Davidson: Double the 2000 Census bicycle commute rate by 2012; Establish 'bike-to-school' groups and regular bicycling activities for children through the Safe Routes to School Programs through 2012.
2. Launch three new programs in three years that aim to increase bicycling among a) children, b) commuter/utilitarian cyclists, and c) recreational/fitness cyclists. Sustain such programs with a partnership between the Town, local businesses, and non-profit organizations.
3. Sponsor at least one planner *and* one engineer from the Town of Davidson to attend a bicycle planning and design training session (such as those offered by NCDOT).
4. Initiate a local bicycle safety and courtesy educational campaign by 2009 with the assistance of local, regional, state, and national bicycle advocacy groups. Petition the NC Division of Motor Vehicles and other appropriate officials to include a bike-safety question on licensing exams by 2010.
5. Connect neighborhoods, parks, shopping centers, schools, employment centers, bus stops, trails, and regional destinations with bicycle routes: Complete this plan's top five priority bicycle projects by 2012.
6. Provide bicycle services such as covered parking, bicycle stations, showers at employment centers, and bicycle rentals: Provide bicycle parking in key locations throughout Town by 2010.
7. Take the necessary steps to become designated by the *League of American Bicyclists* as a silver-level 'Bicycle Friendly Community' by 2012.





## *The Plan and the Planning Process*

This plan communicates the current conditions for bicycling in Davidson, recommends improvements, and outlines strategies to carry out those recommendations. The planning process began in November 2007 and concluded in August of 2008. This diagram illustrates the main steps taken throughout the planning process. Public participation (through workshops, steering committee meetings, and the online survey) played a key role in plan development.

*Insert 11x17  
Planning Process Diagram*



## *The Value of Bicycle Transportation*

Given the extensive commitment of time and resources needed to fulfill the goals of this plan, it is also important to assess the immense value of bicycle transportation. As stated in comments from over 200 Town of Davidson residents, bicycling will help to improve people’s health and fitness, enhance environmental conditions, decrease traffic congestion, and contribute to a greater sense of community.

Scores of studies from experts in the fields of public health, urban planning, urban ecology, real estate, transportation, sociology, and economics have supported such claims and affirm the substantial value of supporting bicycling as it relates to active living and alternative transportation. Communities across the United States and throughout the world are implementing strategies for serving the bicycle needs of their residents, and have been doing so for many years. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many benefits of bicycling.



*Images from 'Town Day' and 'Davidson Walks' events in 2008.*

### *Increased Health and Physical Activity*

A growing number of studies show that the design of our communities—including neighborhoods, towns, transportation systems, parks, trails and other public recreational facilities—affects people’s ability to reach the recommended daily 30 minutes of moderately intense physical activity (60 minutes for youth). According to the Centers for Disease Control and Prevention (CDC), “physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic.”<sup>1</sup> The increased rate of disease associated with inactivity reduces quality of life for individuals and increases medical costs for families, companies, and local governments.



The CDC determined that creating and improving places to be active could result in a 25 percent increase in the number of people who exercise at least three times a week.<sup>2</sup> This is significant considering that for people who are inactive, even small increases in physical activity can bring measurable health benefits. Establishing a safe and reliable bicycle network in Davidson will positively impact the health of local residents. The Rails-to-Trails Conservancy puts it simply: “Individuals must choose to exercise, but communities can make that choice easier.”<sup>3</sup>

### *Economic Benefits*

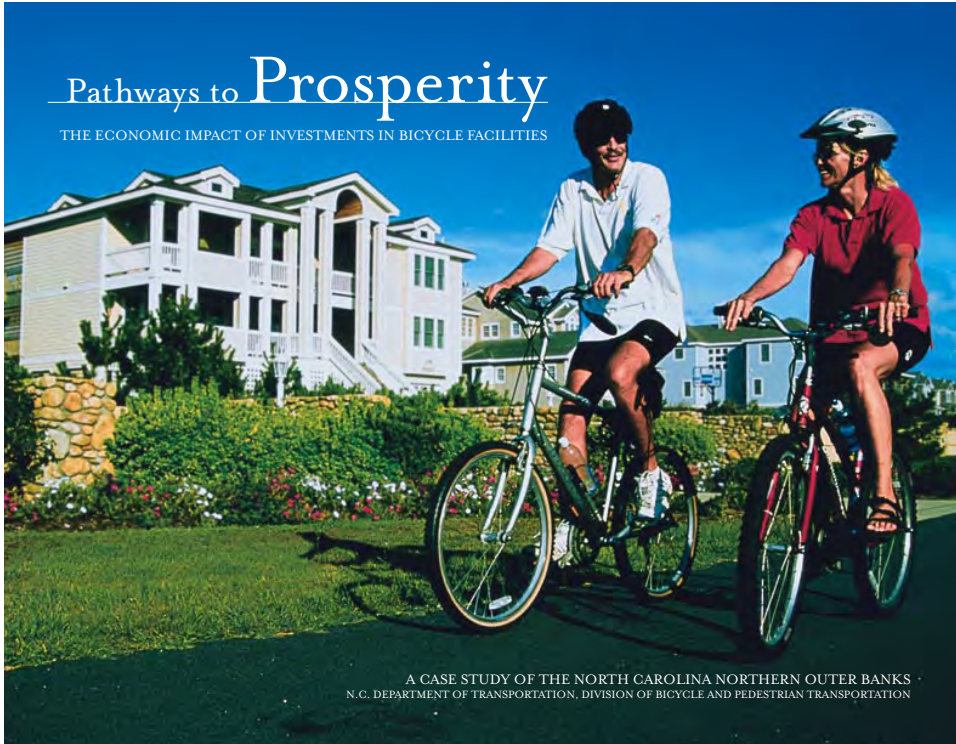
Bicycling is an affordable form of transportation. According to the Pedestrian and Bicycle Information Center (PBIC), of Chapel Hill, NC, the cost of operating a bicycle for a year is approximately \$120, compared to \$7,800 for operating a car over the same time period.<sup>4</sup> Bicycling becomes even more attractive from an economic standpoint when the rising price of oil (and decreasing availability) is factored into the equation. Since 2000, oil prices have more than quadrupled. As of summer 2008, gasoline prices have topped \$4 a gallon and are generally forecast to continue to increase.<sup>5</sup> The rising cost of fuel reinforces the idea that local communities should be built to accommodate people-powered transportation, such as walking and biking. Davidson’s current mixed-use and compact land development patterns, combined with new strategies for improving bicycle transportation, could facilitate a substantial local reduction in auto- and oil-dependency.

From a real estate standpoint, consider the positive impact of trails and greenways, which are essential components of a complete bicycle network. According to a 2002 survey of recent homebuyers by the National Association of Home Realtors and the National Association of Home Builders, trails ranked as the second most important community amenity out of a list of 18 choices.<sup>6</sup> Additionally, the study found that ‘trail availability’ outranked 16 other options including security, ball fields, golf courses, parks, and access to shopping or business centers. Findings from the American Planning Association (How Cities Use Parks for Economic Development, 2002), the Rails-to-Trails Conservancy (Economic Benefits of Trails and Greenways, 2005), and the Trust for Public Land (Economic Benefits of Parks and Open Space, 1999) further substantiate the positive connection between trails and property values across the country.

Finally, from a tourism perspective, cyclists can add real value to local economies. For example, in the Outer Banks, NC, bicycling is estimated to have an annual economic impact of \$60 million; 1,407 jobs are supported by the 40,800 visitors for whom bicycling was an important reason for choosing to vacation in the area. The annual return on bicycle facility development in the Outer Banks is approximately nine times higher than the initial investment.<sup>7</sup> Similarly, Damascus, VA, the self-proclaimed ‘Friendliest Trail Town’, features 34-miles of trail where approximately \$2.5 million is spent



Apex, NC: The Shepard’s Vineyard housing development added \$5,000 to the price of 40 homes adjacent to the regional greenway – and those homes were still the first to sell. (Rails to Trails Conservancy, 2005)



Download the full report, "Pathways to Prosperity", from: [http://ncdot.org/transit/bicycle/safety/safety\\_economicimpact.html](http://ncdot.org/transit/bicycle/safety/safety_economicimpact.html)

annually related to recreation visits. Of this amount, non-local visitors spend about \$1.2 million directly into the economies of Washington and Grayson counties.<sup>8</sup> While these examples feature beach and mountain destinations, the Town of Davidson also has key advantages, such as a popular downtown, events at Davidson College, Lake Norman, rolling Piedmont hills, and the proximity of a large population of potential riders/tourists. In fact, local tourism also experiences a boost from area cyclists, many of whom ride in Davidson and spend time and money in downtown.

### ***Environmental Improvements***

As demonstrated by the Southern Resource Center of the Federal Highway Administration, when get out of their cars and onto their bicycles, they reduce measurable volumes of pollutants.<sup>9</sup> Other environmental impacts include a reduction in overall neighborhood noise levels and improvements in local water quality as fewer automobile-related discharges wind up in the local rivers, streams, and lakes.

Trails and greenways are also part of any bicycle network, conveying unique environmental benefits. Greenways protect and link fragmented habitat and provide opportunities for protecting plant and animal species. Aside from connecting places without the use of air-polluting automobiles, trails and greenways also reduce air pollution by protecting large areas of plants that create oxygen and filter air pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metal. Finally, greenways improve water quality by creating a natural buffer zone that protects streams, rivers and lakes, preventing soil erosion and filtering pollution caused by agricultural and road runoff.



Forty drivers in their cars.

Forty drivers minus their cars.

Forty drivers riding a bus instead.

Forty drivers choosing to walk or bike instead of driving.

Source: *The Association for the Advancement of Sustainability in Higher Education, 2007.*

### Transportation Benefits

In 2001, the National Household Travel Survey found that roughly 40% of all trips taken by car are less than 2 miles. By taking these short trips on a bicycle, rather than in a car, citizens can substantially impact local traffic and congestion. Additionally, many people do not have access to a vehicle or are not able to drive. According to the National Household Travel Survey (NHTS), one in 12 U.S. households does not own an automobile and approximately 12 percent of persons 15 or older do not drive.<sup>10</sup> An improved bicycle network provides greater and safer mobility for these residents.

Traffic congestion is often a major problem in fast growing areas, such as Mecklenburg County.<sup>11</sup> Congestion reduces mobility, increases auto-operating costs, adds to air pollution, and causes stress. Bicycle users can help alleviate overall congestion because each cyclist is one less car on the road. Incidentally, cyclists take up significantly less space on the road (see images at left). While some may argue over the degree to which overall congestion is alleviated by cyclists, one aspect of the argument is particularly difficult to challenge: for the individuals who choose to ride a bike rather than drive, the negative impacts of congestion (stress, operating costs, and sometimes even mobility) are greatly reduced.

### Quality of Life

Many factors go into determining quality of life for the citizens of a community: the local education system, prevalence of quality employment opportunities, and affordability of housing are all items that are commonly cited. Increasingly though, citizens claim that access to alternative means of transportation and access to quality recreational opportunities such as parks, trails, greenways, and bicycle routes, are important factors for them in determining their overall pleasure within their community. Communities with such amenities can attract new businesses, industries, and in turn, new residents. Furthermore, quality of life is positively impacted by bicycling through the increased social connections that take place by residents being active, talking to one another and spending more time outdoors and in their communities.

According to the Brookings Institution, the number of older Americans is expected to double over the next 25 years.<sup>10</sup> All but the most fortunate seniors will confront an array of medical and other constraints on their mobility even as they continue to seek both an active community life, and the ability to age in place. Trails built as part of the bicycle transportation network generally do not allow for motor vehicles. However, they do accommodate motorized wheelchairs, which is an important asset for the growing number of senior citizens who deserve access to independent mobility.

Children under 16 are another important subset of our society who deserve access to safe mobility and a higher quality of life. According to the U.S. Environmental Protection Agency, fewer children walk or bike to school than did so a generation ago. In 1969, 48 percent of students walked or biked to school, but by 2001, less than 16 percent of students between 5 and 15 walked or biked to or from school.<sup>13</sup>

According to the National Center for Safe Routes to School, “Walking or biking to school gives children time for physical activity and a sense of responsibility and independence; allows them to enjoy being outside; and provides them with time to socialize with their parents and friends and to get to know their neighborhoods.”<sup>14</sup> In a 2004 CDC survey, 1,588 adults answered questions about barriers to walking to school for their youngest child aged 5 to 18 years.<sup>15</sup> The main reasons cited by parents included distance to school, at 62%, and traffic-related danger, at 30%. Strategic additions to Davidson’s trail system could shorten the distance from homes to schools, and overall bicycle improvements can improve the safety of our roadways.

---

Footnotes from, “*The Value of Bicycle Transportation*”:

1. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (1996). *Physical Activity and Health: A Report of the Surgeon General*.
2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2002). *Guide to Community Preventive Services*.
3. Rails-to-Trails Conservancy. (2006) *Health and Wellness Benefits*.
4. Pedestrian and Bicycle Information Center. (2008). *Economic Benefits: Money Facts*. Retrieved 8/8/2008 from [www.bicyclinginfo.org/why/benefits\\_economic.cfm](http://www.bicyclinginfo.org/why/benefits_economic.cfm)
5. King, Neil. *The Wall Street Journal: Another Peek at the Plateau*. (2/27/08): In February 2008, the *Wall Street Journal* quoted industry experts, stating, “supply constraints could push the price of oil to \$150 a barrel by 2010”.
6. National Association of Realtors and National Association of Home Builders. (2002). *Consumer’s Survey on Smart Choices for Home Buyers*.
7. NCDOT and ITRE. (2006). *Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities*.
8. Virginia Department of Conservation. (2004). *The Virginia Creeper Trail: An Assessment of User Demographics, Preferences, and Economics*.



9. Federal Highway Administration, Southern Resource Center. (1999). *Off-Mode Air Quality Analysis: A Compendium of Practice*. To calculate air quality benefits of bicycling, first calculate the Daily VMT reduction.  $VMT\ Reduction = PD * Area * L * BMS$ , where PD = Population density, persons/mile; Area = Project length \* 1 mile radius, mile; L = Round trip length, one-half of the project length times 2 daily trips, miles; BMS = Bike mode share, %. Last, calculate the Daily Emission reductions for a pollutant.  $Ed = Efx * VMT\ Reduction$ , where Ed = Daily Emissions, grams/day; Efx = Emission factor for pollutant x, grams/mile; VMT = vehicle mile/day.
10. U.S. Department of Transportation (DOT), Bureau of Transportation Statistics (BTS) and the Federal Highway Administration (FHWA). (2002). *National Household Travel Survey*.
11. WRAL. (2008) *8 N.C. Counties Among Nation's Fastest-Growing*.
12. Brookings Institution. 2003. *The Mobility Needs of Older Americans: Implications for Transportation Reauthorization*.
13. US EPA. (2003). *Travel and Environmental Implications of School Siting*.
14. National Center for Safe Routes to School. (2006). *National Center for Safe Routes to School Talking Points*.
15. Centers for Disease Control and Prevention. *The Importance of Regular Physical Activity for Children*. Accessed 9/16/05 at [http://www.cdc.gov/nccdphp/dnpa/kidswalk/health\\_benefits.htm](http://www.cdc.gov/nccdphp/dnpa/kidswalk/health_benefits.htm).









**CHAPTER 2 OUTLINE:**

- overview
- existing bicycle facilities
- town plans and initiatives
- plans from neighboring jurisdictions
- field analysis of current conditions

# CHAPTER 2: CURRENT CONDITIONS

## Overview

### *The Town of Davidson*

The Town of Davidson has its roots with the establishment of Davidson College in 1837. The Town is located north of Charlotte, in Mecklenburg County, North Carolina. It occupies roughly five square miles, bordering the eastern shore of Lake Norman, on the southern edge of the Iredell-Mecklenburg county line. The U.S. Census estimates that the population of Davidson was 9,090 in 2008.

The 2000 Census reveals several unique traits for the Town of Davidson. The overall population is highly educated, with sixty-two percent having a Bachelor’s degree or higher (compared with only twenty-four percent nationally). This higher education seems to be paying off, with the median family income more than double that of the U.S. median (\$100,961 vs. \$50,046, respectively). Similarly, the median value of single-family homes in Davidson (\$270,000) is also more than double the U.S. median (\$119,600).

### *Bicycling in Davidson*

Regarding commuting patterns, the mean travel time to work for Davidson residents is about 25 minutes, roughly the national average. Here’s how Davidson residents get to work:

#### **Means of Transportation to Work, Davidson, NC (2000)<sup>1</sup>**

Total Population, 2000 Census:	2,921	(100%)
Drove alone	2,147	(73.5%)
Carpooled	198	(6.8%)
Bus or trolley bus	9	(0.3%)
Taxi	4	(0.1%)
Walked	344	(11.8%)
Motorcycle	8	(0.3%)
<b>Bicycle</b>	<b>35</b>	<b>(1.2%)</b>
Other means	28	(1.0%)
Worked at home	148	(5.1%)

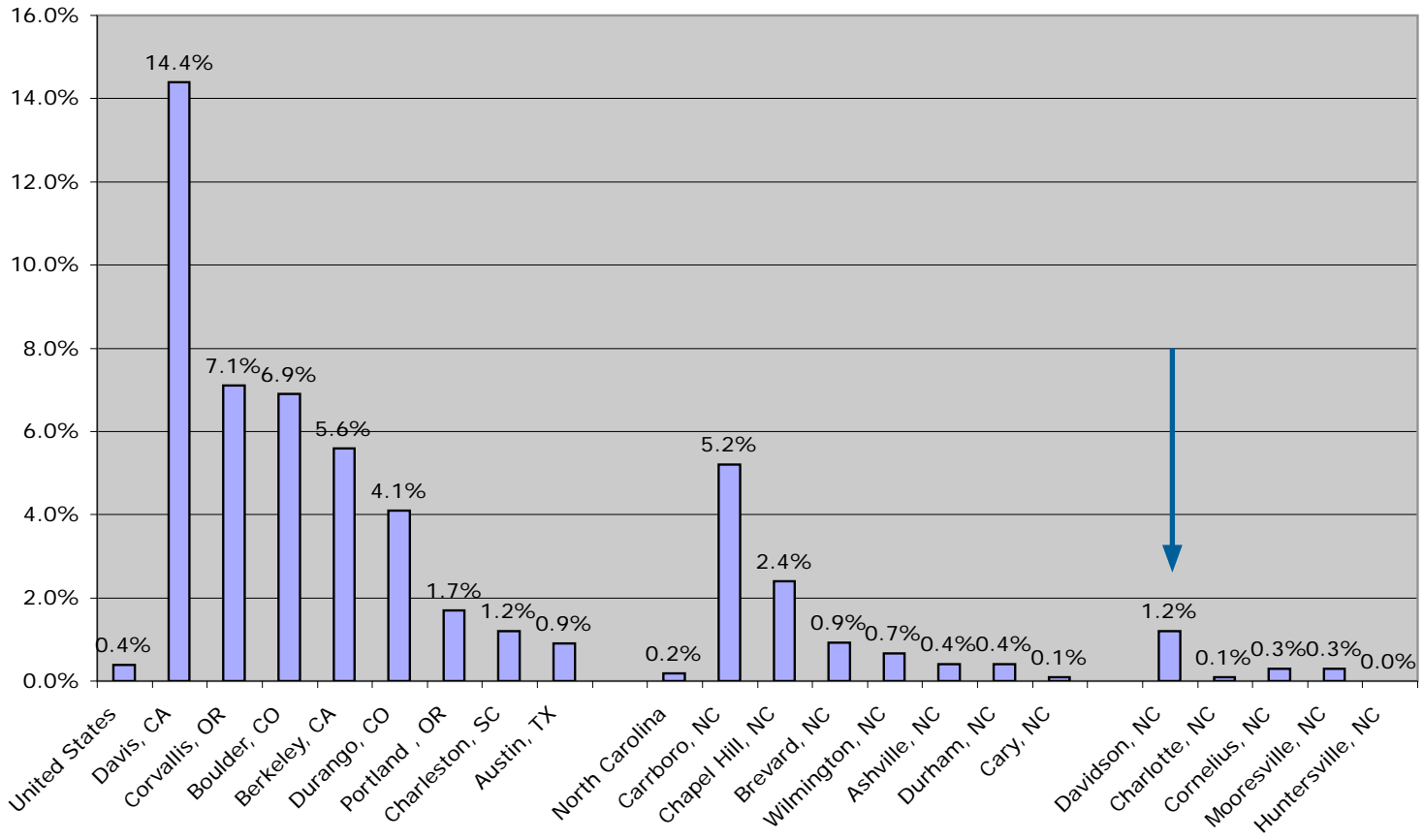
<sup>1</sup> Source: U.S. Census Bureau, Census 2000 Summary File 3, Table P30 Means of Transportation to Work.



1.2 percent seems like a small fraction of the total, but it only represents bicycle *commuting*. A 2003 national survey by the Bureau of Transportation Statistics<sup>2</sup> found that 95% of bicyclists primarily use their bikes for purposes other than commuting, such as exercise/health, recreation, and personal errands. Therefore, the number of bicycle commuters reported by the Census Bureau for Davidson (35) may represent only 5% of total bicyclists. The actual number of people who ride bikes in Davidson *could be* more like 700, or nearly a quarter of all Davidson residents (if 5% of all cyclists equals 35, then 100% of cyclists is 700).

The table below shows how Davidson stacks up locally, statewide, and nationally in terms of bicycle commuting. As demonstrated above, bicycle-commuting statistics can serve as an indicator for total number of bicyclists and provide one of the most reliable benchmarks available from which to compare between communities.

**Percentages for Bicycle Commuting:  
Comparison of National, Statewide, and Local Examples<sup>3</sup>**



<sup>2</sup> Bureau of Transportation Statistics Survey: [www.bts.gov/programs/omnibus\\_surveys/household\\_survey/2003/february/index.html](http://www.bts.gov/programs/omnibus_surveys/household_survey/2003/february/index.html)  
<sup>3</sup> Source: U.S. Census Bureau, Census 2000 Summary File 3, Table P30 Means of Transportation to Work.

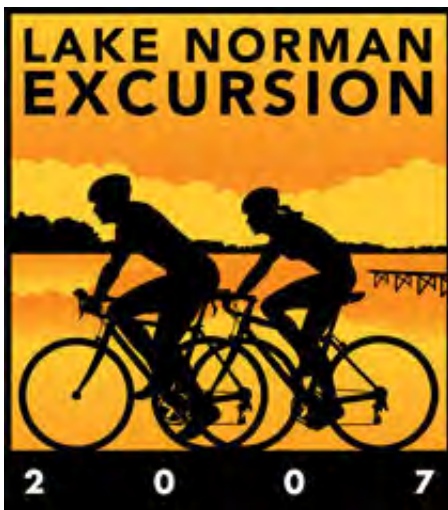


When compared to cities and towns that represent model bicycling communities, the Town of Davidson has room for improvement. Nevertheless, the Town still has three times the national average for bicycle commuting and six times the North Carolina average. Davidson is also well above its neighbors in Charlotte, Cornelius, Mooresville, and Huntersville.

This relatively high level of bicycling is evident on most days in Davidson, when middle-school students bike to school, bike racks at Davidson College are full, and recreational cyclists stream through busy downtown streets. A prominent local retirement community, The Pines, has a number of residents who depend on safe streets and greenways to walk and bike to the downtown, grocery stores, and nearby recreational facilities.

An often overlooked but important user group is the thousands of cyclist visitors Davidson receives each year. Various facilities near Davidson, including State Bike Route 6, are used annually to host at least four large community rides, consistently attracting 200+ recreational cyclists.

The Lake Norman area, which attracts many recreational cyclists, is continuing to experience tremendous growth. Consequently, state highways in the Lake Norman area are frequently operating beyond capacity. These highways and roads had been used by cyclists for weekend-rides, but now most of the roads are too dangerous for even the most experienced cyclist. The eastern half of Davidson is part of a rural landscape, formed by eastern Mecklenburg, southern Iredell, and western Rowan and Cabarrus Counties. The area's low-traffic, rural roads are ideal for long-distance cyclists. However, the Town lacks a plan for protecting these roads and view sheds for the enjoyment of cyclists while allowing for growth.



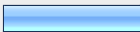

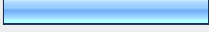
*Roads around Lake Norman—which have attracted cyclists for years—are now getting too busy for cyclists as the region grows. Lake photo courtesy of Gaver Enterprises.*



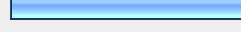
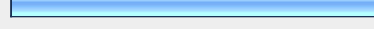


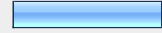

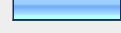
### Conditions According to Davidson Residents

Early in the planning process, an online public comment form was launched through the Town of Davidson’s website, with paper copies available at public meetings. The questions were designed to get a better understanding of how often residents currently bike; the barriers to biking in Davidson; desired future biking opportunities; and priorities for future improvements.

The charts and tables below highlight some of the responses from over 200 local residents who filled out forms. For a full summary of public input, please refer to *Appendix A: Public Input*.

<b>How do you rate present bicycling conditions in the Davidson area?</b>		<b>Response Percent</b>	<b>Response Count</b>
Desirable		19.6%	44
<b>Average</b>		<b>50.9%</b>	114
Deficient		29.5%	66

<b>How frequently do you bicycle?</b>		<b>Response Percent</b>	<b>Response Count</b>
Never		5.8%	13
Special occasions only		8.4%	19
Few times per month		33.3%	75
<b>3+ days per week</b>		<b>52.4%</b>	118

<b>How comfortable are you cycling on Davidson’s roads and streets?</b>		<b>Response Percent</b>	<b>Response Count</b>
Comfortable		21.4%	47
<b>Cautious</b>		<b>63.2%</b>	139
Intimidated		15.5%	34

*Davidson Bicycle Transportation Plan Public Comment Form, 2008*

As seen in the results above, many local residents rate Davidson’s current bicycling conditions as ‘average’. However, nearly thirty percent (29.5%) of the respondents rated Davidson’s current conditions for cyclists as ‘deficient’, with a majority (78.7%) feeling less than comfortable while riding their bike on Davidson’s roads and streets.



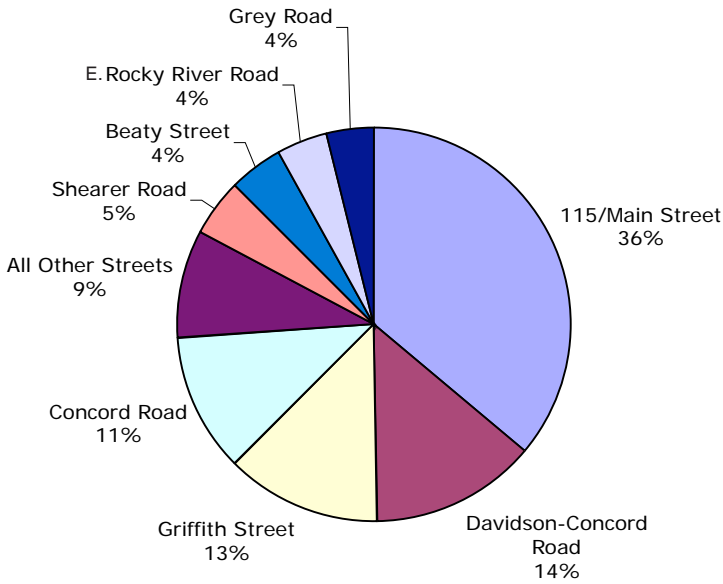
<b>Which of the following physical factors prevent you from bicycling, or from bicycling more often? (select up to 3)</b>		<b>Response Percent</b>	<b>Response Count</b>
Lack of showers and lockers at workplace		12.1%	27
Physical ability		4.0%	9
Hills		2.2%	5
Lighting		8.1%	18
Loose gravel or potholes		26.5%	59
Personal safety		39.5%	88
Crossing busy streets		35.0%	78
Travel time or distance		15.2%	34
High speed traffic		48.0%	107
Narrow or curvy roads		26.0%	58
Indirect routes		7.2%	16
Heavy traffic		43.9%	98
<b>Lack of bike lanes or paths</b>		<b>65.9%</b>	<b>147</b>
Lack of road connectivity		23.8%	53
Nothing		9.4%	21

Davidson Bicycle Transportation Plan Public Comment Form, 2008

These responses indicate that certain current conditions in Davidson are preventing local residents from bicycling more often. If the Town of Davidson were to increase the number of bike lanes and bike paths, while simultaneously enforcing or lowering speed limits, bicycling may become a more viable means of transportation. Other major factors included, traffic volume, crossing streets, and maintenance issues (loose gravel or potholes).

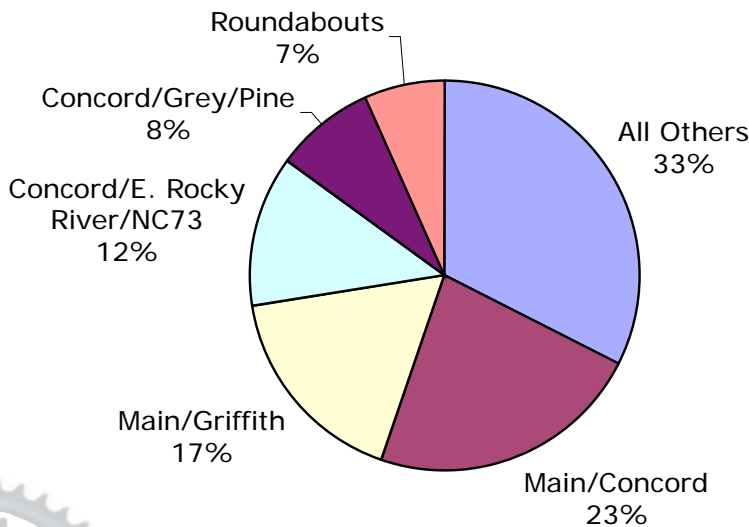


**List roads or streets that you think need the most bicycle improvements.**



Regarding current conditions on specific roadways, local residents have identified four roads in particular need of bicycle improvements: Main Street, Davidson-Concord Road, Griffith Street, and Concord Road (all of which are NCDOT roadways). The top five intersections mentioned as in need of improvement include Main/Concord., Main/Griffith, Concord/E. Rocky River/NC 73, Concord/Grey/Pine, and the roundabout intersections on Griffith Street (all of which are NCDOT intersections).

**List intersections that you think need the most bicycle improvements.**





## Existing Bicycle Facilities

### *Bicycle Facility Types*

Davidson's bicycle network currently consists of on-road bike lanes, separate bike paths, greenways and unsigned neighborhood connectors, simply called 'neighborhood streets'. *Chapter 4: Bicycle Facility Standards* expands upon and refines these network categories, and includes guidelines for each.

#### ***Bike lanes [Concord Road]***



#### ***Sidepaths [Concord Road]***



**Greenways [Southeast Greenway]**



**Neighborhood Streets [North Downing Street]**







### ***Existing Bicycle Facilities***

Since the *Town of Davidson Planning Ordinance* was passed in 2001, Davidson has seen the construction of several miles of bicycle-friendly road connections through new development in all parts of Town. There are nearly ten miles of bicycle facilities in Town (shown in the *Existing and Proposed Bicycle Facilities Map* as solid lines):

- 0.5 mile striped bike lanes \*  
(Concord Road)
- 4.9 miles of striped bike lanes  
(River Run neighborhood)
- 2.0 miles of separate bike paths  
(south side of Davidson-Concord Road)
- 2.5 miles of the greenway  
(South Prong Rocky River Greenway, plus on-road portions)

\*Some existing bike lanes are under the minimum recommended width, such as Concord Road, east of Pine Street.

### ***Proposed Facilities from Current Plans (Pre-2008 Bike Plan)***

The proposed facilities shown on this map (as dashed lines) represent bicycling improvements that were recommended in various adopted plans and initiatives from the Town of Davidson, Mecklenburg County, and neighboring municipalities. All such plans and initiatives are briefly summarized in the following pages.

*Insert 11x17 Map:  
Existing Facilities and Current Recommendations*



## Town Plans and Initiatives

### *Town of Davidson Planning Ordinance:*

#### *Section 11 - Streets and Greenways*

The strongest plan in the Town of Davidson for bicycle connectivity and safety is the *Planning Ordinance*. Adopted in 2001, this ordinance gained the Town of Davidson an award from the Environmental Protection Agency (EPA) for Overall Excellence in Smart Growth. According to the EPA's website, "*Davidson is setting the standard for creating healthy and vibrant neighborhoods in a historic setting.*" The following excerpts from Section 11 of the Planning Ordinance illustrate the commitment that Town of Davidson has already made towards accommodating bicyclists:

*"These regulations are intended to promote an environment built to human scale that accommodates pedestrians as the first priority. Streets are the primary public spaces of the town, so attractive street fronts, connecting walkways, and alternative means of transportation are encouraged while accommodating vehicular movement."* (11.0 Streets and Greenways)

*"...the ordinance encourages the development of a network of sidewalks and bicycle lanes that provide an attractive and safe mode of travel for cyclists and pedestrians."* (11.1 General Design Principles-Streets)

*"Street designs shall permit the comfortable use of the street by cars, bicyclists, and pedestrians."* (11.2 Street Engineering and Design Specifications)

*"All new developments within the existing town limits fronting on North Main Street, Griffith Street, Beaty Street, Concord Road, Davidson-Concord Road, East Rocky River Road, or Grey Road shall include bike lanes, a minimum of four feet in width, on those streets. New developments outside the town limits fronting on North Main Street, Concord Road, Davidson-Concord Road, East Rocky River Road, Grey Road, Barnhardt Road, or Mayes Road shall include bike paths a minimum of eight feet in width and separated from vehicular traffic on those streets. Bike lanes and bike paths shall be designed according to the North Carolina Bicycle Facilities Planning and Design Guidelines, published by NCDOT."* (11.2.5 Bike Paths)

*"The planning ordinance requires the development of a network of greenways that connect active and passive parks, schools, cultural sites, neighborhoods, and commuter destinations. Greenway easements are required in low-impact, farmhouse cluster, conservation easement, and rural subdivisions. All other developments shall have either a greenway or a connection to the greenway."* (11.5 General Design Principles – Greenways)



Clearly, the intention exists for providing a safe, attractive, comfortable, and well-designed network of bicycle facilities in the Town of Davidson. The following roads within the existing town limits are specifically designated for Bike Lanes in the Planning Ordinance:

- North Main Street
- Griffith Street
- Beaty Street
- Concord Road
- Davidson-Concord Road
- East Rocky River Road
- Grey Road

The following roads outside the town limits are specifically designated for Bike Paths in the Planning Ordinance:

- North Main Street,
- Concord Road,
- Davidson-Concord Road,
- East Rocky River Road,
- Grey Road,
- Barnhardt Road
- Mayes Road

### *Town of Davidson Circulation Plan (2003)*

This study provides recommendations to enhance street connections plus the concurrent goal of improving pedestrian and bicycle connections. The following recommendations relate specifically to bicycle and pedestrian connections:

- Pat Stough Lane to Patrick Johnston Lane  
– Pedestrian/ Bicycle Trail
- Lynbrook Drive to Pat Stough/ Patrick Johnston Lane  
– Pedestrian/ Bicycle Trail
- Churchill Lane to Woody Lane  
– Pedestrian/ Bicycle Trail
- Eastway Street to The Pines  
– Pedestrian/ Bicycle/ Emergency Vehicle Connection
- Greenway Street extension (to The Pines)  
– Pedestrian/ Bicycle/ Emergency Con.



### **Connectivity and Traffic Calming Report (2004)**

This Plan was adopted in 2004 to implement the Circulation Plan. It helped create a traffic calming strategy for existing and proposed connections and works to improve bicycle and pedestrian safety along busy neighborhood roads. The plan states that: "Vehicular speeds of 25-30 mph are more reasonable speeds for pedestrians and bicyclists sharing the corridor." And, regarding all "New Town-wide Connections":

*"All new town-wide connections should provide 26 feet of pavement for two travel lanes with bicycle lanes. Minimum 5-foot Sidewalks and 10-foot planting strips on both sides of the street are required. Additional 7-foot parking bays are encouraged in commercial areas."*

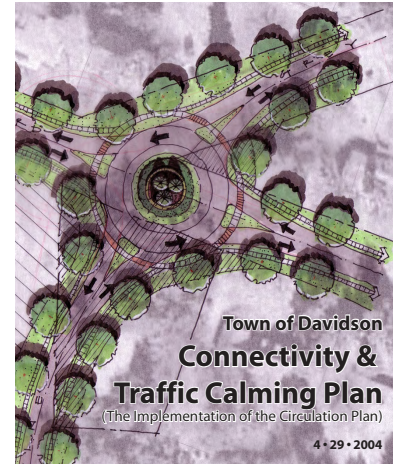
### **Griffith Street Plan**

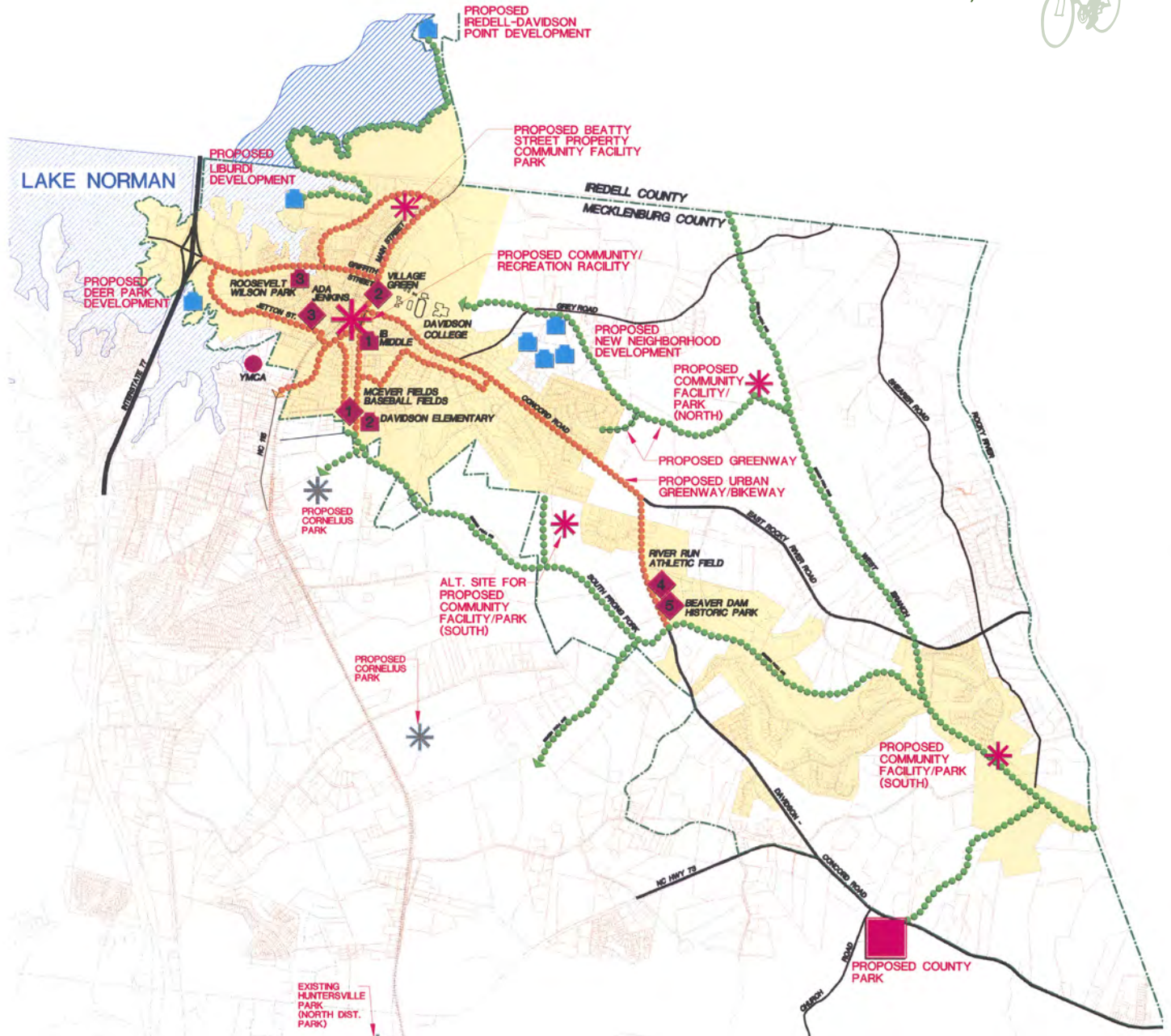
Like the Davidson Circulation Plan, the Griffith Street Corridor Plan has also specified new bike lanes in high growth areas of the Town. The Griffith Street Corridor Plan served as a guide for evaluating future development and provides recommendations for future street improvements along the Griffith Street corridor. The plan recommends a 6' bike lane in each direction on Griffith Street, from Jetton to Beaty Street.

### **West Davidson Stakeholder Committee Report**

West Davidson will add approximately 1500 more residents over the next few years. Lack of connectivity across the railroad tracks and between neighborhoods presents both physical and social barriers. The West Davidson Stakeholder committee was organized to work with planning staff to understand barriers to effective communications, improved quality of life, and well-integrated development. A product of the stakeholder discussions and workshops is the West Davidson Stakeholder Committee Report and the Potts-Sloan-Beaty Study.

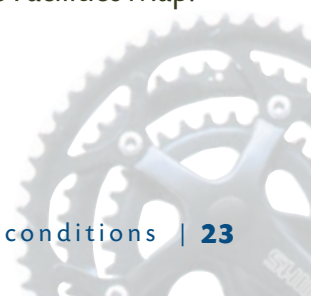
The study contains intersection and road designs for the Potts-Sloan-Beaty corridor and identifies a possible connection between Potts and Sloan Streets to improve north-south mobility. In regards to bicycling in Davidson, the plan states, "Griffith Street will be repaved and striped for bike lanes in 2007," and, "bicyclists will share the road" on Potts Street, with low traffic speeds. For Sloan Street, between Edith and Griffith, the plan calls for, "Narrow streets with shared bike facilities." For Beaty, between Griffith and 115, the plan states, "Bike lanes and landscape buffers will separate traffic from sidewalks."





### **Town of Davidson Parks and Recreation Master Plan**

The 1990 Parks and Recreation Master Plan (above) called for a number of off-road greenways and on-road bikeways to connect to regional parks and neighborhoods. The Plan fails to provide detailed designs and implementation strategies for these facilities, requires only a sparse network of bicycle facilities, and needs to be updated. This bicycle plan will add to the recommended greenway projects and specify potential funding sources. Recommendations from the Parks and Recreation Master Plan that relate to bicycling are included on the Existing and Proposed Bicycle Facilities Map.



### ***Transportation Improvement Projects***

It is important for Town planners to be aware of upcoming roadway projects, so that they can ensure the Bicycle Plan's recommendations are being incorporated into new roadway design and construction. 2009-2015 Transportation Improvement Projects (TIPs) are listed below (includes some projects in Cornelius):

I-4750 – Widen and reconstruct I-77 from NC 73 to I-40 (26 miles). Construction is unfunded.

I-4733 – Modify I-77 interchange at SR 5544 (West Catawba Avenue) in Cornelius. Planning and design is in progress. Construction is unfunded.

R-4059 – Intersection improvements for Catawba Avenue and US 21 in Cornelius. Construction is unfunded.

R-2632AB – Widen NC 73 to multi-lanes from NC 115 to Davidson-Concord Road. Construction is unfunded.

U-5113 – Construct multi-use parking deck (Joint project with CATS). Construction in FY 2015.

EB-4716 – Catawba Avenue bike lanes: Davidson College along NC 115 and west along Catawba Avenue to tie to Jetton Park, Ramsey Creek Park and Blythe Landing Park. Scheduled for feasibility study.

EB-5010 – Cornelius Greenway Trail – Cornelius open space to Bailey Road Park. Scheduled for feasibility study.

C-4956B – Intersection improvements for NC 115 and Washam Potts Road in Cornelius. Construction in FY 2011.

### ***Bicycle Parking Ordinance for New Development***

The Town has also adopted a clear bicycle parking ordinance for all new development. The plan states:

*“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”*

The ordinance includes detailed requirements for the number of bicycles to be accommodated for different types of development; rack siting and dimensions of bicycle parking, short and long term parking standards, and guidelines for covered spaces.



**Downtown Davidson  
Pedestrian and Bicycle  
Safety Plan**



Enhancement Funds Application  
Submitted by the Town of Davidson  
June 2002

***2002 Downtown Davidson Pedestrian and Bicycle Safety Plan***

At the February 2002 meeting of the Davidson Town Board, the Town Commissioners adopted a Downtown Transportation Safety Plan. This plan, created by a committee of planners, police officers, a town resident, and the mayor, identified the greatest needs for improving pedestrian and bicyclist safety in the downtown area. The following projects were developed as a result of this plan: the Concord Road bike lane between Lorimer Road and Kimberly Road; the side paths from Kimberly Road to Davidson-Concord at Robert Walker Drive; and the South Prong Rocky River Greenway. The portion of side path on Davidson-Concord Road, between Robert Walker Drive and the Beaver Dam Historic Site has yet to be completed, as well as the crosswalk connecting Beaver Dam across Davidson-Concord Road.

***Davidson Station Area Plan***

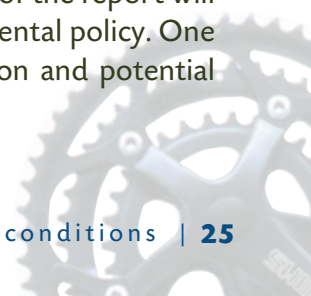
Planners, transit officials, property owners and residents are planning for the area around a future downtown commuter rail station. The proposed North Commuter Rail Line would run from Charlotte to Davidson and possibly Mount Mourne. Davidson has previously identified a site along the west side of Jackson Street, near the old mill/warehouse, as the best place for a commuter rail station.

Potential issues that may affect bicycle planning include new connections from Sloan Street to Potts Street behind the old mill, and a possible new road parallel to Jackson Street on the west side of the railroad tracks. New potential uses and increased traffic on Jackson Street are also important to monitor as the station plan develops.

***Greenprint Plan***

Davidson has experienced significant loss of open space, tree canopy, and other natural assets despite the application of a Planning Ordinance. Even with this structure and the best efforts of citizens and town officials, loss of these elements of “green infrastructure” and community character has continued and is in fact accelerating. Davidson’s Greenprint Plan locates and identifies the natural and working lands integral to the character of Davidson. The information collected will guide the protection of a sustaining network of open spaces, surface waters, and tree cover.

A report will be produced to catalogue these and other natural assets (e.g., surface waters) and will include a greenprint to guide the community in protecting and managing these assets. Recommendations of the report will be translated into ordinance revisions and other environmental policy. One issues that may affect bicycle planning is the identification and potential dedication of land for greenways.



## *Regional Plans and Initiatives*

A number of regional plans have been developed to guide and promote bicycle travel and should be considered in the development of the Davidson Bicycle Transportation Plan.

### *The Lake Norman Bike Route Plan (2006)*

The Lake Norman Bike Route (LNBR) is a regional bicycle circuit encompassing Lake Norman in the Southern Piedmont area of North Carolina. In addition to providing a continuous spine around Lake Norman, the LNBR also comprises a network of bicycling excursion routes throughout the Lake area. The purpose of the plan is to develop a bicycle route and supporting text with sufficient information for use by state, regional, and local agencies to aid in implementation of the route.

The bike route would sign and improve nearly 125 miles of roads along the lake to better connect cyclists in the five-town and four-county area. In regards to routes in and near Davidson, this plan recommends the following:

- LNBR Spine (main route): Main Street (SR 115); Langtree Road between Interstate 77 and SR115); and W. Catawba Avenue
- LNBR Excursions: Langtree Road west of Interstate 77; and a series of neighborhood streets connecting S. Main Street and W. Catawba Ave
- Other Existing Bike Routes: Griffith Street; Main Street (SR 115); and W. Catawba Avenue (these are shown as 'existing' on the LNBR map, but no facilities actually exist)
- Proposed Trails: South Prong of Rocky River

### *The Mecklenburg Union MPO Thoroughfare Plan*

According to the Mecklenburg Union MPO Thoroughfare Plan, Davidson's bicycle master plan would need to, at a minimum, provide for bike lanes along the North Corridor Commuter Rail line and wide outside lanes along Davidson-Concord Road and NC 73. The MPO plan also identifies proposed major thoroughfares, including an extension of Bailey Road to Davidson-Concord Rd, and an extension Davidson-Concord Road, in a northwestern arc, to N. Main Street and the county line.





Weaving Communities Together

### *The Carolina Thread Trail (2008)*

The Carolina Thread Trail will be a trail network that will eventually reach 15 counties in the Charlotte region, and over 2 million people. The Carolina Thread Trail will develop over time as communities build trails that will eventually link parks, green spaces and attractions throughout the region. Not all local trails and greenways will become part of the Carolina Thread Trail. Analogous to highway systems, The Thread will develop as a “green interstate” focused on linking local trails and regionally significant attractions.

Some specific destinations of the trail have already been identified within each of the 15 counties. In Mecklenburg County, two of the destinations that directly affect the Town of Davidson include Davidson College and Lake Norman. Specific routes to link these destinations to the Thread Trail have yet to be confirmed.



### ***Cornelius East and Davidson-Concord Road Vision Plan (2003)***

This Plan is intended to provide a clear framework for the development of the area through a series of incremental, private and public development decisions. Most importantly, this Vision Plan represents only the conceptual build-out of the study area. Regarding bicycle facilities, the Circulation Network for the plan recommends a dense network of bicycle and pedestrian paths; no other bicycle facility types are mentioned. Specifically, the plan recommends the following related to bicycle and pedestrian paths:

- Consolidate the planning of pedestrian and bicycle facilities between the two Towns.
- Construct a multi-use path on the east side of the rail corridor from NC 73 to the Cornelius Town Center.
- Require the construction of planned multi-use paths with new development.
- Construct a multi-use path on the south side of Bailey Road.
- Develop a “green network” of multi-use paths and greenways connecting Davidson and Cornelius
- Encourage coordination between the Towns of Cornelius and Davidson to ensure multi-use path and greenway connectivity
- Advocate property dedication for multi-use paths and greenways throughout the Vision Plan study area

### *Town of Cornelius & Town of Davidson, NC*



**CORNELIUS EAST**  
& DAVIDSON-CONCORD ROAD  
*Vision Plan*

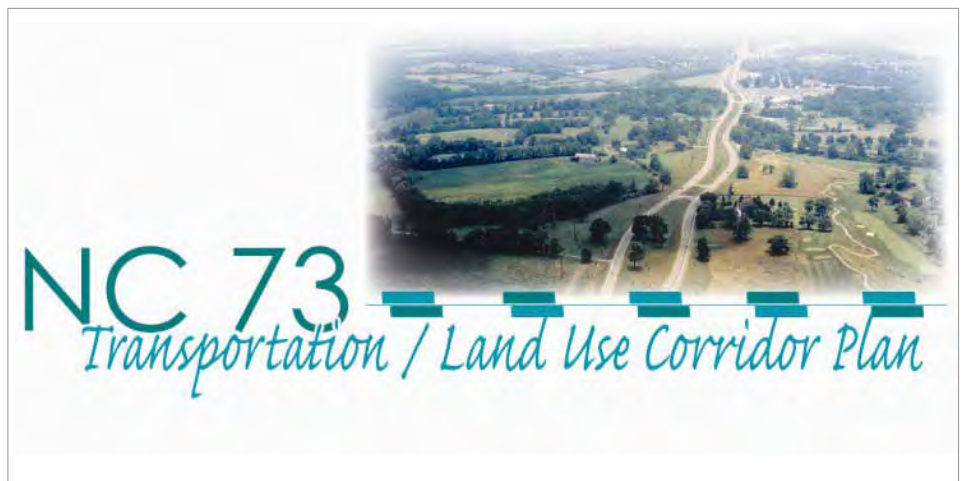


### ***The Mecklenburg County Greenway Master Plan (2008 update)***

Nearly a decade ago, Mecklenburg’s greenway plan called for two trails in Davidson. The South Prong Rocky River is a northwest-southeast trail corridor that runs from Main Street in the Town of Davidson to the Cabarrus County Line. A small portion of this trail has been built, and the rest remains proposed on several Town plans.

The second relevant trail in Mecklenburg’s plan is the West Branch Rocky River trail. This north-south trail corridor runs from the northeast corner of Mecklenburg County (and Town of Davidson Extra Territorial Jurisdiction), south along the Mecklenburg/Cabarrus county line for about four miles, ending between E. Rocky River Road and NC 73. No portion of this trail has been completed, and furthermore, it does not appear on the Town of Davidson Parks and Recreation Master Plan.

The Mecklenburg County Greenways Master Plan was recently updated and includes greenways recommendations from this Bicycle Transportation Plan.



### ***Plans Related to NC 73***

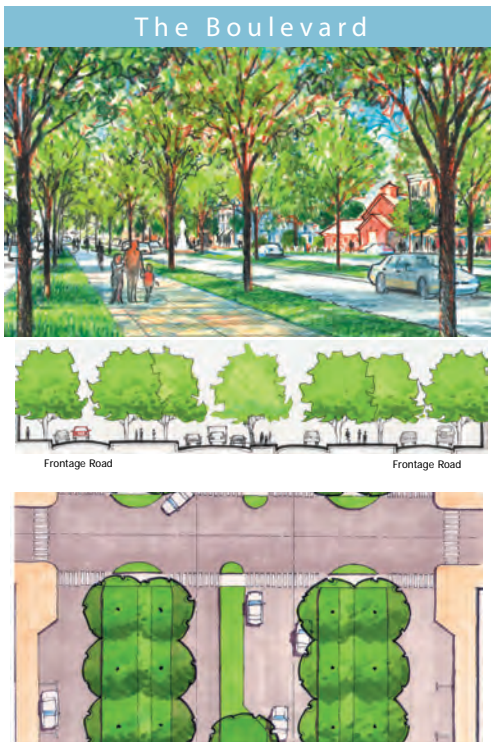
In 2004, the NC 73 Transportation and Land Use Corridor Plan examined land use and multi-modal transportation along 35 miles of NC73. The plan contains a set of various road typologies that could be used in future corridor development. The recommended typologies include accommodations for both bicycles, such as bike lanes, side paths (trail located inside the NC 73 right-of-way) and trails (outside the road right-of-way).

Building on this plan in 2005, the NC73 Small Area Land Use and Economic Development Plan, represents a coordinated approach to land use, urban design, and transportation along from the Davidson-Concord/NC73 intersection to the Cabarrus Crossing development in Cabarrus County. In Chapter 7: *The Basic Network and Access Management*, the plan states:

“NC 73 will need to be widened to 4 lanes in its entirety through the study area; within the next 20 years traffic will increase from a range of 15,000 to 16,000 cars per day (2003) to as many as 38,000 cars per day (2025)...The solution along the 3.4 miles of corridor is multi-tiered:

- 1- Provide a network of streets, trails and walking paths to move through the study area and beyond.
- 2- Provide an access management strategy through identification of key locations for intersections and access.
- 3- Create a Boulevard, a road with frontage roads, where higher density of development is expected.
- 4- Create a parkway with a parallel network of trails and streets in other locations.”

The plan’s description of *boulevard* and *parkway* design (the two recommended road types in this plan) does not mention bike lanes. Instead, to accommodate bicycles, the plan calls for trails and for medians on the boulevards (between faster moving traffic and the frontage road) to be used as bike and walking paths. The image below (from the plan) illustrates these facility types:



Cross sections from the 2005 NC73 Small Area Land Use and Economic Development Plan, Chapter 7: The Basic Network and Access Management.

The Towns of Cornelius, Davidson, and Huntersville are working together to refine their strategies for this area in the latest Davidson-Concord Road/ NC 73 Area Plan. This plan promotes multi-modal connectivity, including bicycle- and pedestrian-friendly intersection design to accommodate future needs. The Town is working closely with NCDOT on recommendations for the corridor.



## Plans from Neighboring Jurisdictions

Davidson's neighboring jurisdictions were interviewed for information regarding their current plans and initiatives for bicycle facilities.

### *The Livability Community Blueprint (Cabarrus County)*

This study defined the following related to bicycle planning in Cabarrus County:

- Close to 200 individual destinations that are desirable to link with each other and with neighborhoods by bicycle and pedestrian friendly routes.
- Over 200 miles of on-road and off-road routes were designated as pedestrian and bicycle routes.
- Another 190 miles of bicycle routes were identified along existing roads.
- Just over 56 miles of routes are identified as priority, based on existing destination locations, primarily connecting residential areas with schools and parks

As of the writing of the report, NCDOT was in the process of signing and mapping the 190 miles of on-road bicycle routes that were identified.

The following priorities were identified in the Livability Community Blueprint for the northwest portion of Cabarrus County (adjacent to the Davidson ETJ). The plan states that,

*"The main intent for listing priorities is to establish public access in these corridors within the next ten years. Public access refers to establishing easements for public use, primarily in the form of earthen or dirt trails. Portions of these routes may developed for more intensive use, but again the priority for the next ten years should be on gaining public access with minor trails in these areas of priority."*

Bike priorities for Cabarrus County that affect Davidson most directly include:

- Greenway along Rocky River
- On road bicycle route along E. Rocky River Road
- On road bicycle route along Poplar Tent Road
- Greenway along Rocky River Spur  
(Clark Creek, connecting to Mecklenburg County, south of Davidson)



Note that the 'Blueprint' shows the bike route on Poplar Tent Road connecting west onto Huntersville-Concord Road, just before it reaches Davidson-Concord Road (NC 73). There was no mention of a priority facility along NC 73 in the 'Blueprint'.

### ***Bicycle Planning in Cornelius***

An interview with planning staff from the neighboring Town of Cornelius confirmed several ongoing initiatives related to bicycle planning. The primary issues discussed included:

- Status of the proposed greenway from South Street in Davidson (near the 'Antiquity' development) to Cornelius Town Center at Catawba Avenue: *Short term, 2-3 years, possibly finished by end of 2009.*
- Future bicycle facilities planned for Main Street: *Chapter 7.3 of the Cornelius Land Development Code calls for bike lanes on Main Street (from Cornelius St. to Will Knox Rd.) as property along the road is redeveloped. The same policy applies to Westmoreland Rd. from I-77 to Main St.*
- Greenway connections parallel to Bailey Rd from Davidson to Cornelius:
  - *There is an existing 10' wide sidepath on the south side of Bailey Road, running east from Main St. for approximately 0.6 miles.*
  - *There is a proposed sidepath, continuing west of Main St.; also on the south side of Bailey Road, continuing to Statesville Rd (Route 21).*
  - *Greenways are proposed for short term-development, just south of Bailey Road. They will be completed with a new development in that area, for a total of approximately 2.25 miles.*
  - *The proposed greenways north and northeast of Bailey Road are considered long-term planned facilities at best.*

### ***The Town of Huntersville Greenway and Bikeway Master Plan***

In June of 2006, the Town of Huntersville completed their Greenway and Bikeway Master Plan. The purpose of this plan was to outline priorities and provide guidance for the Town of Huntersville Parks and Recreation Department over the next 10 years. Bicycle routes identified on this plan are divided into Tier 1 and Tier 2 recommendations, with Tier one having a higher priority for implementation. The plan does not specify bicycle facility types. Recommendations that potentially affect the Town of Davidson include the following:



- Tier 1 Bicycle Routes near Davidson: Old Statesville Road and Black Farms Road
- Tier 2 Bicycle Routs near Davidson: Mayes Road; Sam Furr Road; Davidson-Concord Road; McAuley Road; Ramah Church Road; and the future Hiawassee Road extension.
- Greenways near Davidson: Rocky River, South Prong of Rocky River, West branch Rocky River.

### ***Bicycle Planning in Mooresville***

An interview with planning staff from the neighboring Town of Mooresville confirmed several ongoing initiatives related to bicycle planning. The primary issues discussed included:

- Future bicycle Facility planned on 115 (Mecklenburg Hwy):  
*The Mooresville Greenway Plan calls for a greenway, but it will be, in effect, a sidepath. This facility is also on Mooresville's 2006 Pedestrian Plan, and Mooreseville's 2008 Bike Plan. Sections of the sidepath will be built through development along the rail corridor, although no side of the RR has been designated. This as a long-term project, with 5-10 years as an optimistic time frame.*
- Plans for bicycle facilities on Shearer Road:  
*Mooreseville's Bike Plan calls for a signed bicycle route on Shearer Road, from downtown Mooresville to Rocky River Rd. NCDOT will accommodate upon repaving and/or reconstruction, but has not specifically committed to paved shoulders.*
- Greenway possibility along fork of the Rocky River (along powerline):  
*It is possible to bring the greenway up to Presbyterian Road, then east and west along Presbyterian Road to either of their two planned greenways/sidepaths (along 115 or the Rocky River branch to the east).*



## Field Analysis of Current Conditions

### Field Research and Methodology

In December 2007, project consultants thoroughly examined Davidson’s roadway network and bicycling environment. The purpose of the field research was not only to assess current bicycling conditions, but also to determine how existing roadways could be improved to best serve bicyclists.

This on-the-ground work began with research of existing maps and Geographic Information Systems (GIS) data. A base map of the Town that shows its roadways, trails, and other features was generated and then divided into segments for field analysis. In addition, consultants used roadway inventory worksheets to record information such as the number and configuration of traffic lanes, total roadway width, speed limit, and other roadway details that will help determine possible improvements for cyclists on all major roads in Davidson.



Above: Evaluating roadways in Davidson. Below: A sample roadway inventory worksheet

**Project:** Davidson Bicycle Plan | Roadway Inventory

Roadway segment: \_\_\_\_\_ (width): \_\_\_\_\_  
(from): \_\_\_\_\_ (to): \_\_\_\_\_

# Traffic Lanes: 1 2 3 4 5 6 Config: *Divided/Median* *Undivided* *OneWay* *CenterTurning*

---

Speed Limit: 5 10 15 20 25 30 35 40 45 50 55 60 65 70 (estimate only )

Shoulder Score:  1 (clear space of 10'-12', free of obstructions, grade similar to roadway)  
 2 (somewhat buildable, narrower, more frequent obstructions, steeper grade)  
 3 (severe slopes, ditches, trees, unbuildable without major construction effort)  
curb:  both sides  north/east side  south/west side

Preliminary Rec.:  shared/signed roadway  wide outside lane  paved shoulder  bicycle lane  side path

Req'd Improvements:  none  restripe only  restripe with road-diet  expand total road width

General Notes/Existing Facilities: \_\_\_\_\_





### *The Current Bicycling Conditions Map*

The end result of the field research is a comprehensive set of data for thirty separate roadway segments (on 11x17 insert), and an evaluation of the current bicycling conditions in the form of a map (on 11x17 insert). The Current Bicycling Conditions Map identifies roadways in Davidson as good, fair, or poor based on a combination of the field research, data analysis, and interpretation by the project consultant. This map was then modified according to input from the Steering Committee, Town staff, and Davidson residents at the January 2008 Public Workshop.

All three designations refer to roadways in their present state. *Good* refers to routes that are considered suitable for most cyclists, and/or contain existing facilities. *Fair* refers to roadways considered suitable for more experienced cyclists. *Poor* refers to roadways that are considered dangerous inhospitable to cyclists.

It is important to note that the *good-fair-poor* designations are assigned based on the average conditions for each street segment only, and that the map does not take into account ratings for major intersections. Intersections noted by the public as in need of improvement are identified in the pie chart on page 16 (recommendations for intersections are included in *Chapter 6: Implementation* and *Chapter 7: Bicycle Facility Standards*).

*Insert 11x17 Map:  
Current Conditions*



*Insert 11x17:  
Roadway Inventory Table*



**CHAPTER 3 OUTLINE:**  
Overview

Methodology for Network Design  
Recommended Facility Types  
Recommended Bicycle Network

# CHAPTER 3: BICYCLE FACILITY NETWORK

## Overview

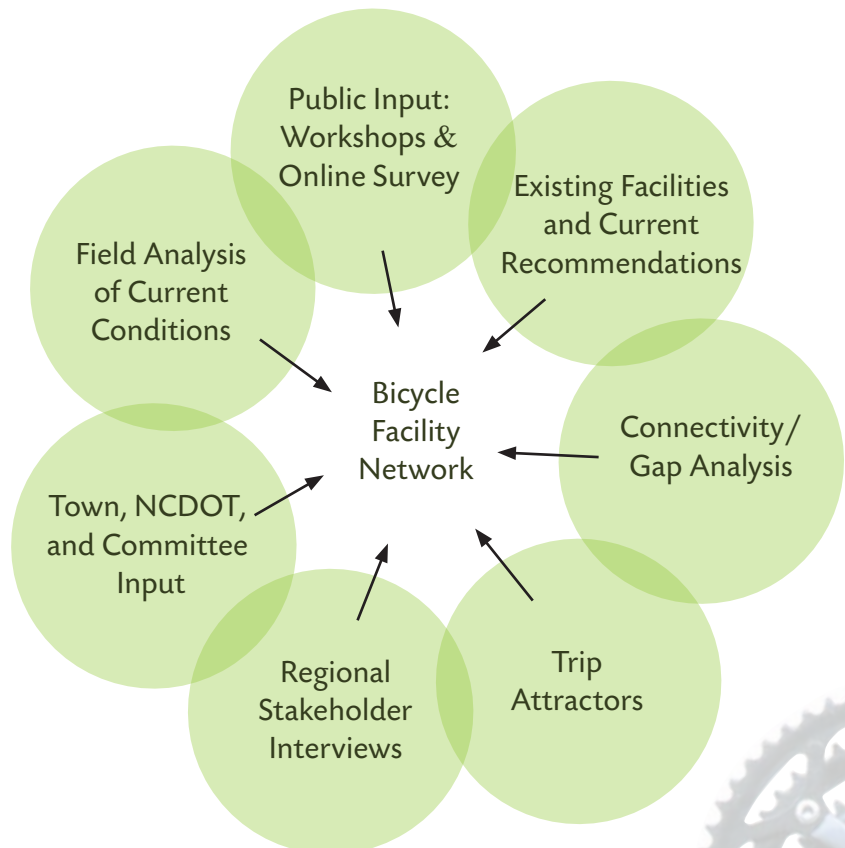
The Town of Davidson's *Bicycle Facility Network* represents a comprehensive set of existing and proposed bicycle transportation facilities. The network includes shared roads, paved shoulders, bicycle lanes, side paths and greenways. In total, there are approximately 40 miles of recommended bicycle facilities, all of which are shown on page 41, and listed in *Chapter 6: Plan Implementation*.

The following sections of this chapter include 1) how the network was designed; 2) brief descriptions of the types of facilities that make up the network; and, 3) a map of the network.

## Methodology for Network Design

The facility network was designed by first assembling all existing bicycle-related recommendations from plans adopted by the Town of Davidson (as outlined in Chapter 2). These recommendations were combined to form existing conditions maps (pages 19 and 35). The maps were presented to the public and various project stakeholders, whose input was particularly useful in identifying key factors for network design:

*This diagram illustrates the many inputs and levels of analysis used to design the Bicycle Facility Network.*



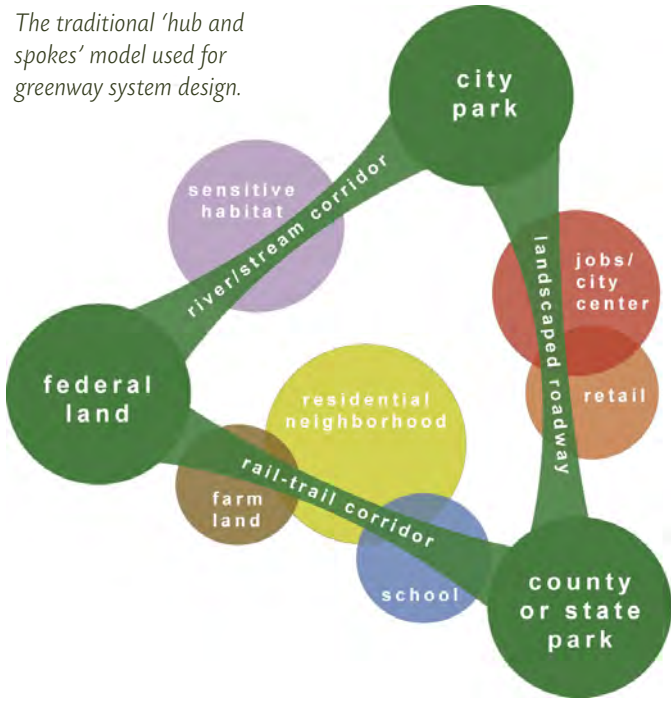
## *Key Factors for Network Design*

- *Public Input* - Locations most in need of improvements for bicyclists (intersections and high speed/high volume roadways) were identified through the online survey and were discussed during public meetings.
- *Existing Facilities and Current Recommendations* - Locations of existing facilities were verified both in the field and by Town of Davidson staff and project committee members.
- *Connectivity/Gap Analysis* - Gaps in existing facilities or deficiencies in facilities were highlighted by participants in public workshops and analyzed by project consultants.
- *Trip Attractors* - Destinations which are likely to attract bicyclists (commonly referred to as 'trip attractors') were identified and ranked through the online survey and during meetings with the public and project committees. Examples include Downtown Davidson, the exit 30/Harris Teeter area, Davidson College, etc. The draft network was analyzed to ensure that it served local and regional trip attractors.
- *Regional Stakeholder Interviews* - Connectivity of regional bicycle and greenway routes was emphasized in interviews with planners from neighboring jurisdictions.
- *Town and NCDOT Input* - Opportunities for on-road bicycle facility development, including roadway resurfacing and reconstruction, were discussed with the Town of Davidson Director of Public Works and the local office of the North Carolina Department of Transportation (NCDOT), Division 10.
- *Town and Committee Input* - Opportunities for greenway development, including open space, easements, and new developments, were discussed with Town of Davidson staff, Mecklenburg County staff, and the Greenways, Trails and Bikeways Advisory Board.
- *Field Analysis of Current Conditions* - Field analysis by project consultants was also used to assess bicycling conditions on roads and intersections throughout Davidson.

Together, these factors influenced not only the placement of bicycle facilities, but also overall conceptual design of the bicycle network.



The traditional 'hub and spokes' model used for greenway system design.

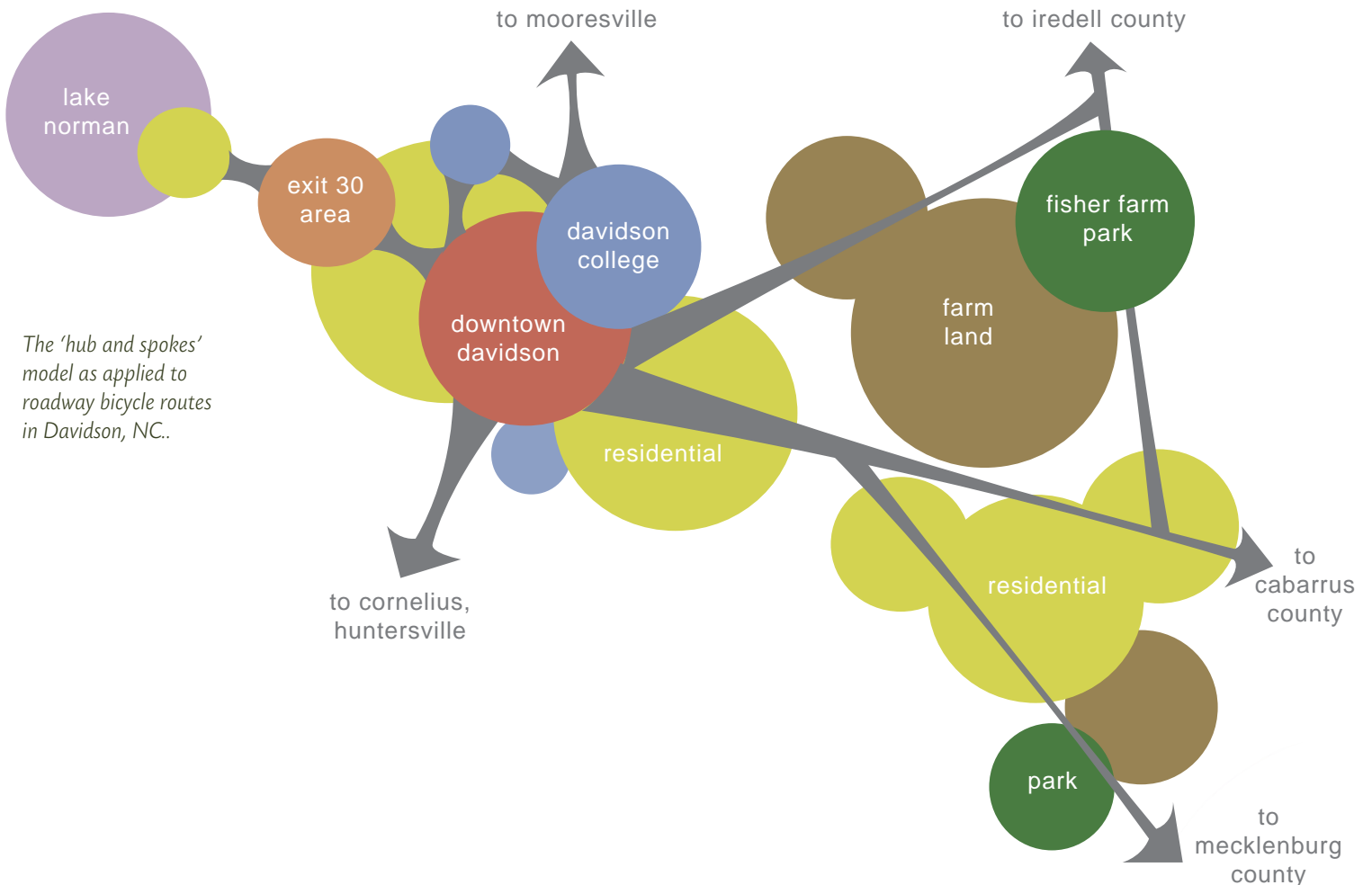


## Conceptual Network Design

The Town of Davidson's Vision Statement for this Plan (page IV) was taken into consideration in conceptualizing the overall bicycle network. The following statement in particular helped to guide the design:

*"Bicycle routes connect neighborhoods, parks, shopping centers, schools, employment centers, bus stops, trails, and regional destinations..."*

At left is an image of the 'hub and spokes' model, traditionally used for greenway development. In this model, open spaces are 'hubs' and greenways are 'spokes'. When applied to a bicycle network, the trip attractors (downtown, Davidson College, shopping areas, etc.) are the 'hubs' and the various facilities (bike lanes, paved shoulders, etc.) are the 'spokes'.



The 'hub and spokes' model as applied to roadway bicycle routes in Davidson, NC..

## Recommended Facility Types

A variety of bicycle facilities are recommended due to 1) the range of skill and comfort levels involved in bicycling, and 2) the range of conditions for bicycling on different roadway environments.

The bicycle route network is made up six core types of bicycle facilities. Descriptions and standards for each type are described in *Chapter 4: Bicycle Facility Standards*. The images below are provided for a quick reference when viewing the *Bicycle Facility Network Map* (page 41).

### Signed/Shared Roadway

See page 46 for details.



### Bicycle Lane

See page 48 and 49 for details.



### Sharrow Marking

See page 51 for details.



### Sidepath

See page 50 for details.



### Paved Shoulder

See page 47 for details.



### Greenway

See pages 53-57 for details.





**CHAPTER 4 OUTLINE:**

Design Principles  
On-Road Bicycle Facility Standards  
Greenway Facility Standards  
Bicycle-Friendly Intersections  
Ancillary Facility Standards

# CHAPTER 4: BICYCLE FACILITY STANDARDS

## *Design Principles*

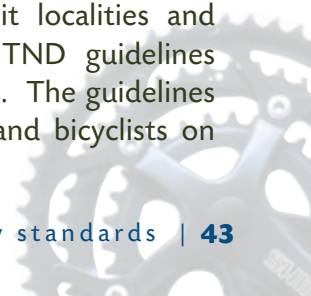
This chapter provides guidelines to both public and private entities for the future development of various types of bicycle facilities in the Town of Davidson. The guidelines noted herein are based on the best practices in use throughout the United States, as well as accepted national standards for bicycle and greenway facilities.

The guidelines should be used with the understanding that design adjustments will be necessary in certain situations in order to achieve the best results. Facility installation and improvements should be evaluated on a case-by-case basis, in consultation with local or state bicycle coordinators, and/or a qualified engineer and landscape architect. Should national standards be revised in the future and result in discrepancies with this chapter, the national standards should prevail for all design decisions.

On facilities maintained by NCDOT, the State's design guidelines will apply. The Town of Davidson has the potential to exceed minimum guidelines where conditions warrant (within its jurisdiction).

The following are key design principles:

1. Davidson will have a complete network of on-street bicycling facilities. This system will be interconnected to make it possible for all destinations in Davidson to be accessible by bicycle.
2. All streets in Davidson (except for limited access highways) are legal for the use of bicyclists. Therefore, most streets are bicycle facilities and will be designed, built (or retrofitted) and maintained accordingly. 'Complete Streets' is a term used for streets that are designed and operated to enable safe access for all users. On such streets, pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across the roadway environment. The Complete Streets concept is recommended for the design and maintenance of all Town of Davidson Streets (see *Chapter 5: Programs and Policies* for more on Complete Streets). For information on a similar program, see NCDOT's Traditional Neighborhood Development Street Design Guidelines (<http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf>). These guidelines permit localities and developers to design certain roadways according to TND guidelines rather than the conventional subdivision street standards. The guidelines encourage mixed uses, and accommodate pedestrians and bicyclists on multi-modal, shared streets.



3. Bicyclists have a range of skill levels, from *beginners* (especially children and seniors), to *intermediate* (occasional commuters and recreational cyclists), to *experienced* (regular commuters and recreational cyclists, including any adults comfortable sharing the road with motor vehicles). Bicycle facility design should take into account the needs of all levels; in areas where specific needs have been identified (for example, near schools) the needs of appropriate types of bicyclists will be accommodated.

4. Design guidelines are intended to be flexible and can be applied with professional judgment by designers. Specific national and state guidelines are identified in this document, as well as design treatments that may exceed these guidelines.

### ***Additional Design Considerations and Resources***

Facility design is a broad topic that covers many issues. Additional design considerations include the Americans with Disabilities Act, sustainable design, Context Sensitive Solutions, and many other topics that are covered in greater detail within the resources listed on the following page.

*Americans with Disabilities Act:* requires that portions of Davidson’s greenways be accessible to persons with varying motor skills and abilities. Perhaps the best way to comprehend the importance of ADA is to understand that most of us, at some time in our life, will experience a temporary disability that affects the way in which we make use of outdoor resources. ADA benefits all Americans by making the outdoor environment more accessible.

*Sustainable Design:* The use of recycled materials and products is recommended in the construction of bicycle and trail facilities whenever feasible. Recycled materials offer design versatility, often have a long life span, and require less long-term maintenance than similar products constructed from natural materials. Recycled plastic lumber and or concrete can be used for the construction of posts and poles, and recycled aluminum can be used for signs. Whenever possible, local materials should be used for construction.

*Context Sensitive Solutions:* A collaboration between the Congress for New Urbanism and the Institute of Transportation Engineers produced the report *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities: An ITE Proposed Recommended Practice*. It advances the successful use of what are often called context sensitive solutions (CSS) in the planning and design of major urban thoroughfares. It provides guidance and demonstrates for practitioners how CSS concepts and principles may be applied in roadway improvement projects that are consistent with their physical settings. Although the main focus is on walkability, the majority of concepts and principles outlined are also highly applicable for the design of bicycle-friendly communities. The design and construction of all streets in the Town of Davidson should follow CSS concepts whenever possible. Go to [www.ite.org/css](http://www.ite.org/css) for more information.





*Resources:* Information in this chapter is not a substitute for professional, site-specific design and engineering work. For more in-depth information and design development standards, the following publications should be consulted:

*Bicycle and Pedestrian Information Center (PBIC) Engineer Bicycle Facilities,* 2008. [www.bicyclinginfo.org/engineering/](http://www.bicyclinginfo.org/engineering/)

*Greenways: A Guide to Planning, Design and Development*  
Island Press, 1993. Authors: Charles A. Flink and Robert Searns

*Guide to the Development of Bicycle Facilities*  
American Association of State Highway Transportation Officials , 1999

*Manual on Uniform Traffic Control Devices (MUTCD)*  
U. S. Department of Transportation, Washington, DC, 2004.

*North Carolina Bicycle Facilities Planning and Design Guidelines*  
NCDOT Office of Bicycle and Pedestrian Transportation, Raleigh, NC, 1994

*Trails for the Twenty-First Century*  
Island Press, 2nd ed. 2001. Authors: Charles A. Flink, Robert Searns, Kristine Olka

*Universal Access to Outdoor Recreation: A Design Guide*  
PLAE, Inc., Berkeley, CA, 1993.



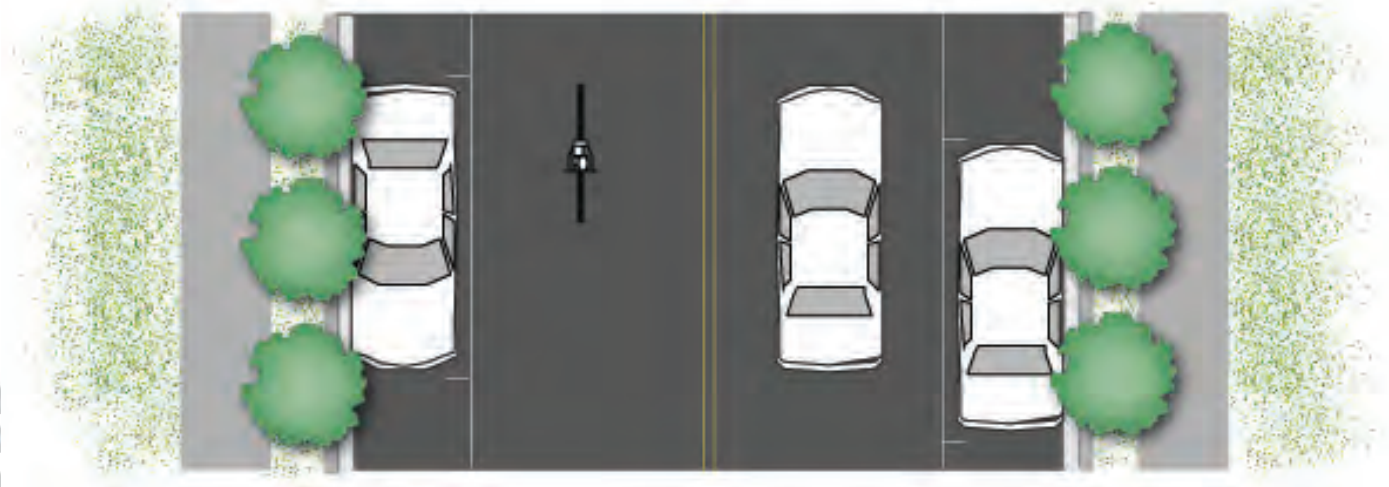
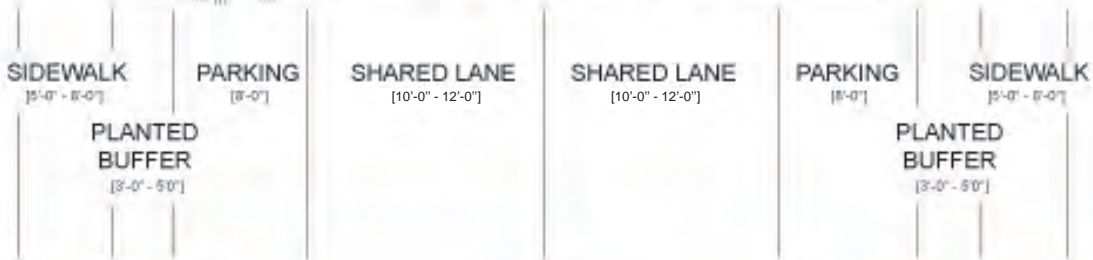
# On-Road Bicycle Facility Standards

## Signed/Shared Roadway

- May either be a low volume (less than 3000 cars per day) roadway with traffic calming and signage to create a safe shared use environment, *OR* a higher volume roadway with wide (14') outside lanes.



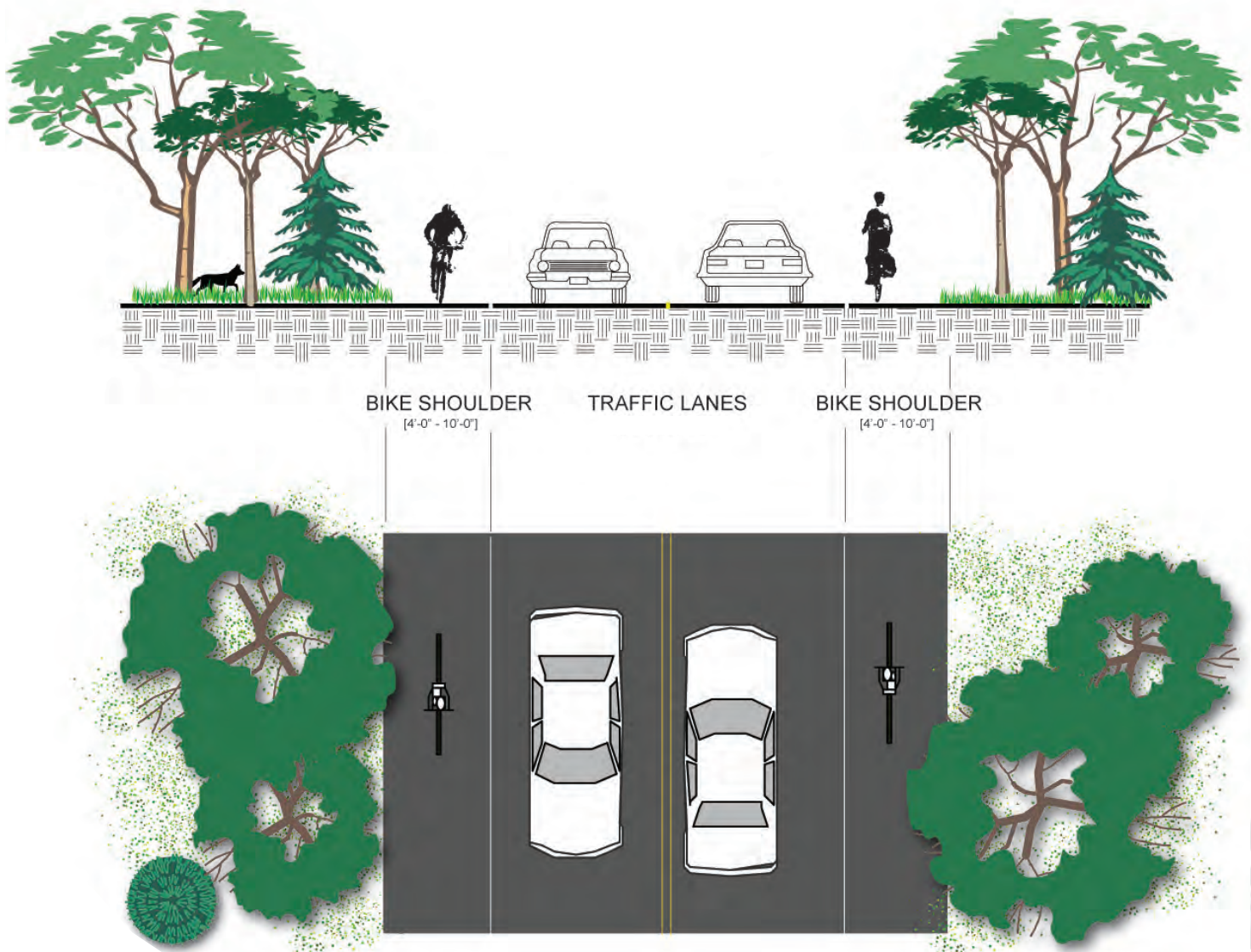
*Note:*  
 In Davidson,  
 parking is often  
 only on one side  
 of the street.





## Paved Shoulder

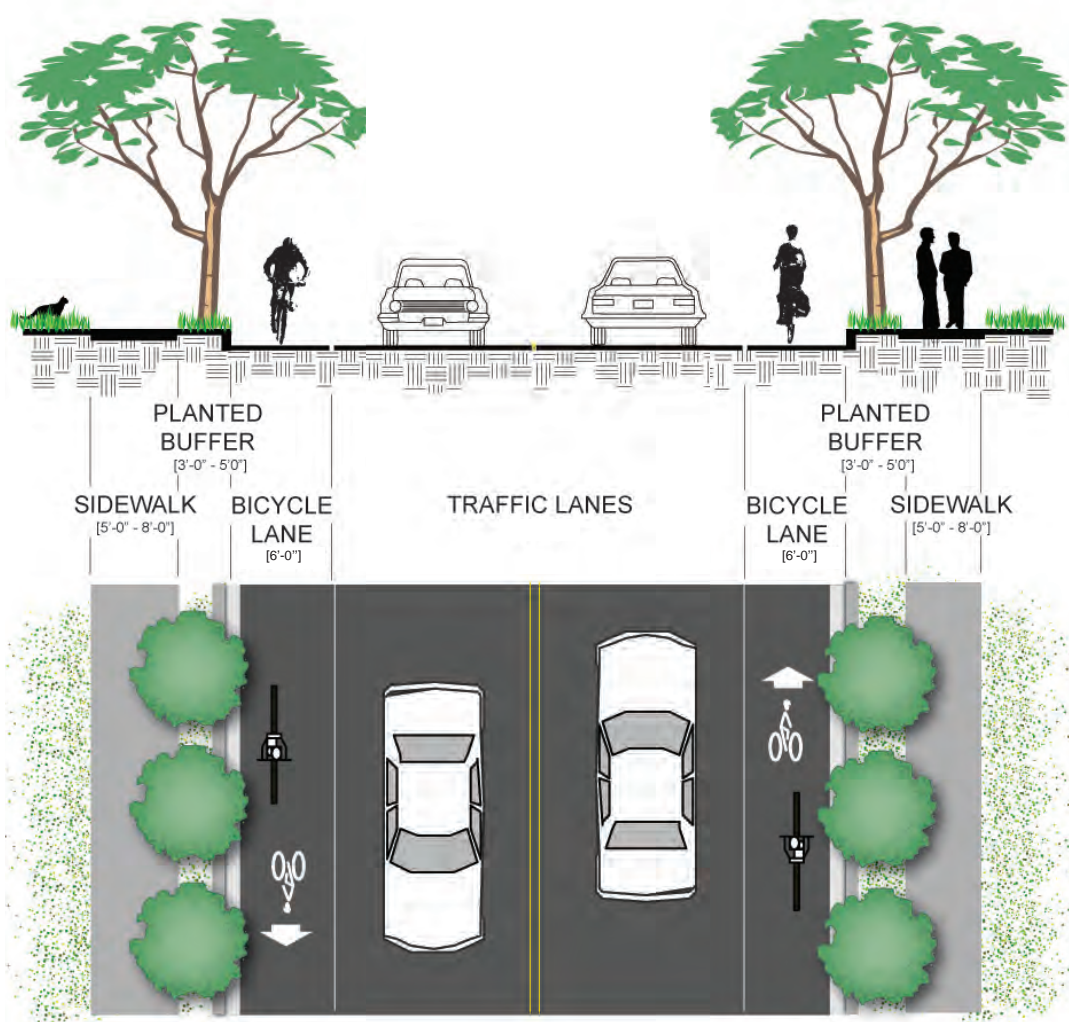
- Most often used in rural environments, although not confined to any particular setting
- Should be delineated by a solid white line, and provided on both sides of the road
- Should be contiguous and on the same level as the regularly traveled portion of the roadway
- 4' minimum width; however for speeds higher than 40 MPH with high ADT, a shoulder width of more than 4' is recommended.
- Rumble strips should be avoided, but if used, then a width of more than 4' is needed.
- Paved shoulders should not be so wide as to be confused with a full automobile travel lane



## Bicycle Lane

NCDOT recommends a bike lane width of:

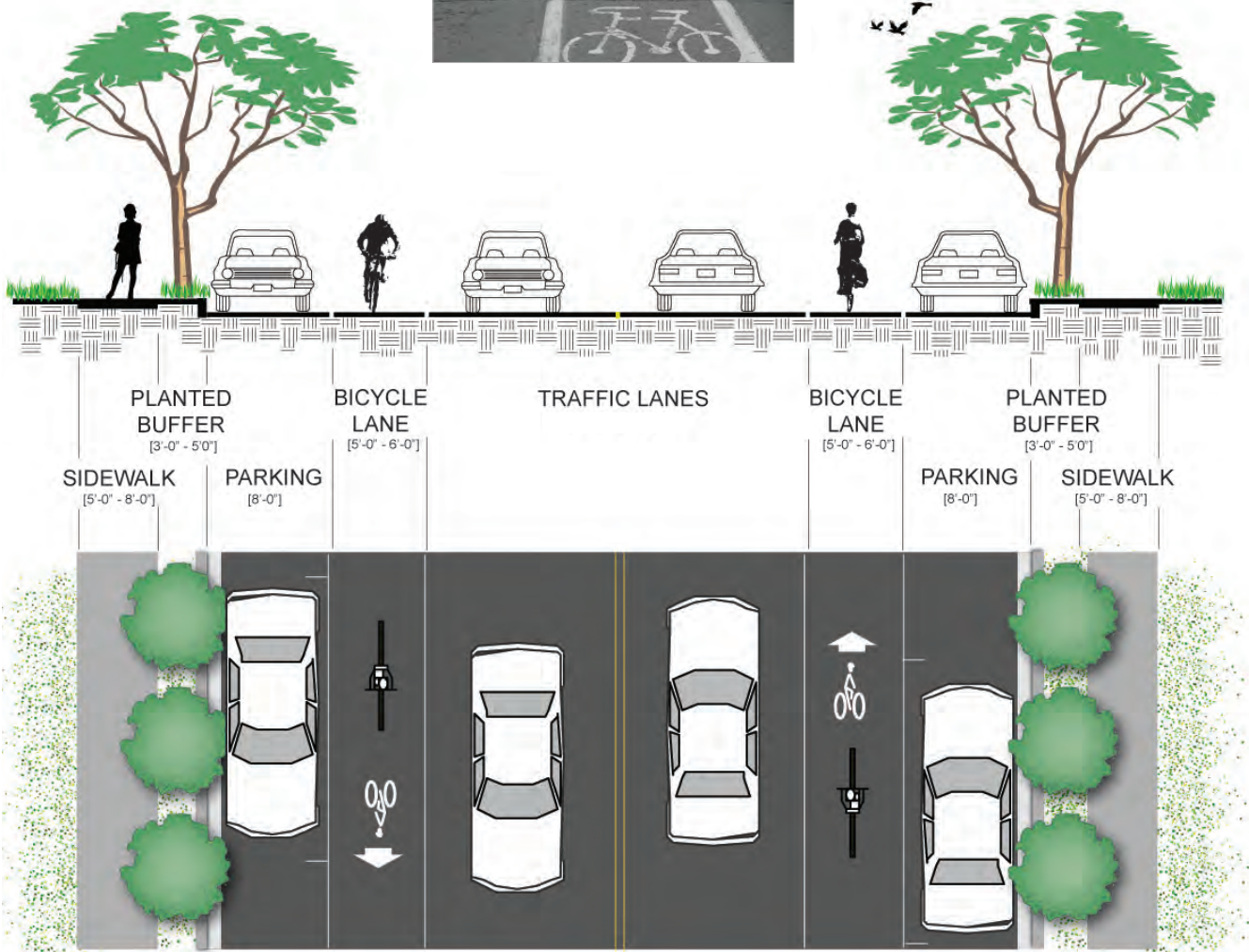
- 6' from the curb face when a gutter pan is present (or 4' from the edge of the gutter pan)
- 4' from the curb face when no gutter pan is present
- Should be used on roadways with 3,000 or more ADT
- Not suitable where there are a high number of commercial driveways
- Suitable for 2-lane facilities and 4-lane divided facilities





## Bicycle Lane + Parking

- On moderate volume roadways, such as minor collectors, where on-street parking is permitted and a bike lane is provided, the bike lane must be between parking and the travel lane.
- Appropriate space must be allocated to allow passing cyclists room to avoid open car doors.
- For lanes with combined vehicle parking and bike use, NCDOT recommends a minimum width of 12' to 13' and AASHTO recommends 11' to 13'.



## Sidepath



- This type of facility works best in corridors where there are limited driveway/intersection crossings and more desirable destinations along one side of the roadway, or where no roadway space is available to provide bike lanes.

- The trail should be at least 10' wide (preferable 12') with a 3-5' (preferable 6') vegetated buffer where possible.

- Well-designed transitions (from sidepaths to on-road facilities) will direct bicyclists to the correct side of the roadway.



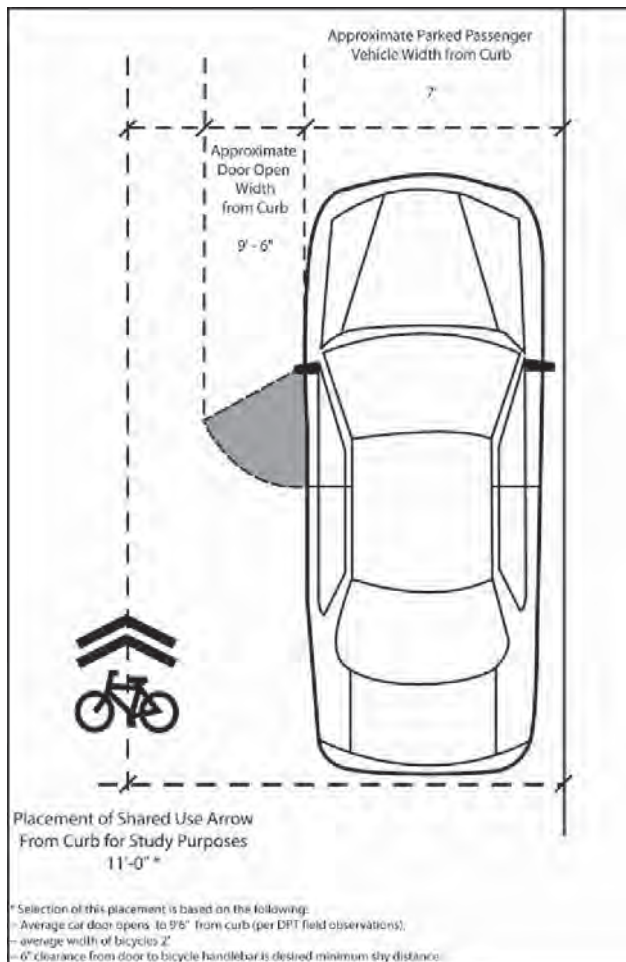
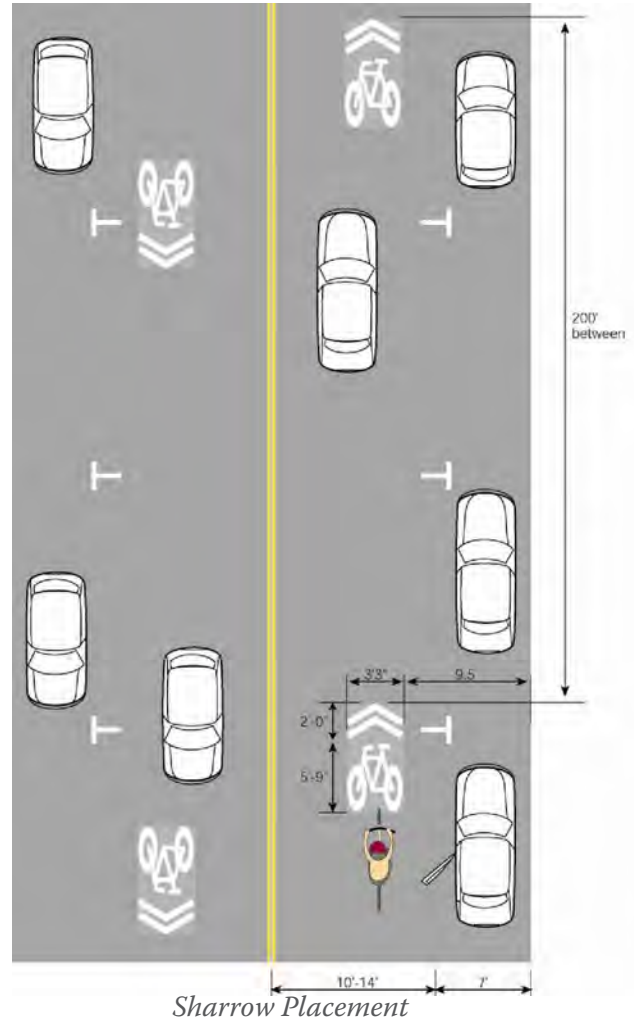


## Sharrow Marking

A bicycle shared lane arrow (or 'sharrow') can serve a number of purposes, such as making motorists aware of bicycles potentially traveling in their lane, showing bicyclists the appropriate direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent "dooring" collisions. The sharrow stencil is used:

- Where lanes are too narrow for striping bike lanes
- Where the speed limit does not exceed 35 MPH
- With or without on-street parking

Cities such as Denver, San Francisco, Portland, Los Angeles, and Gainesville have effectively used this treatment for several years. In North Carolina, cities such as Chapel Hill and Raleigh have also begun using the sharrow. As of this writing, the sharrow treatment is being considered in the 2009/2010 update of the MUTCD. However, local municipalities are encouraged to establish pilot programs on locally owned/maintained roadways.



Sharrow Dimensions



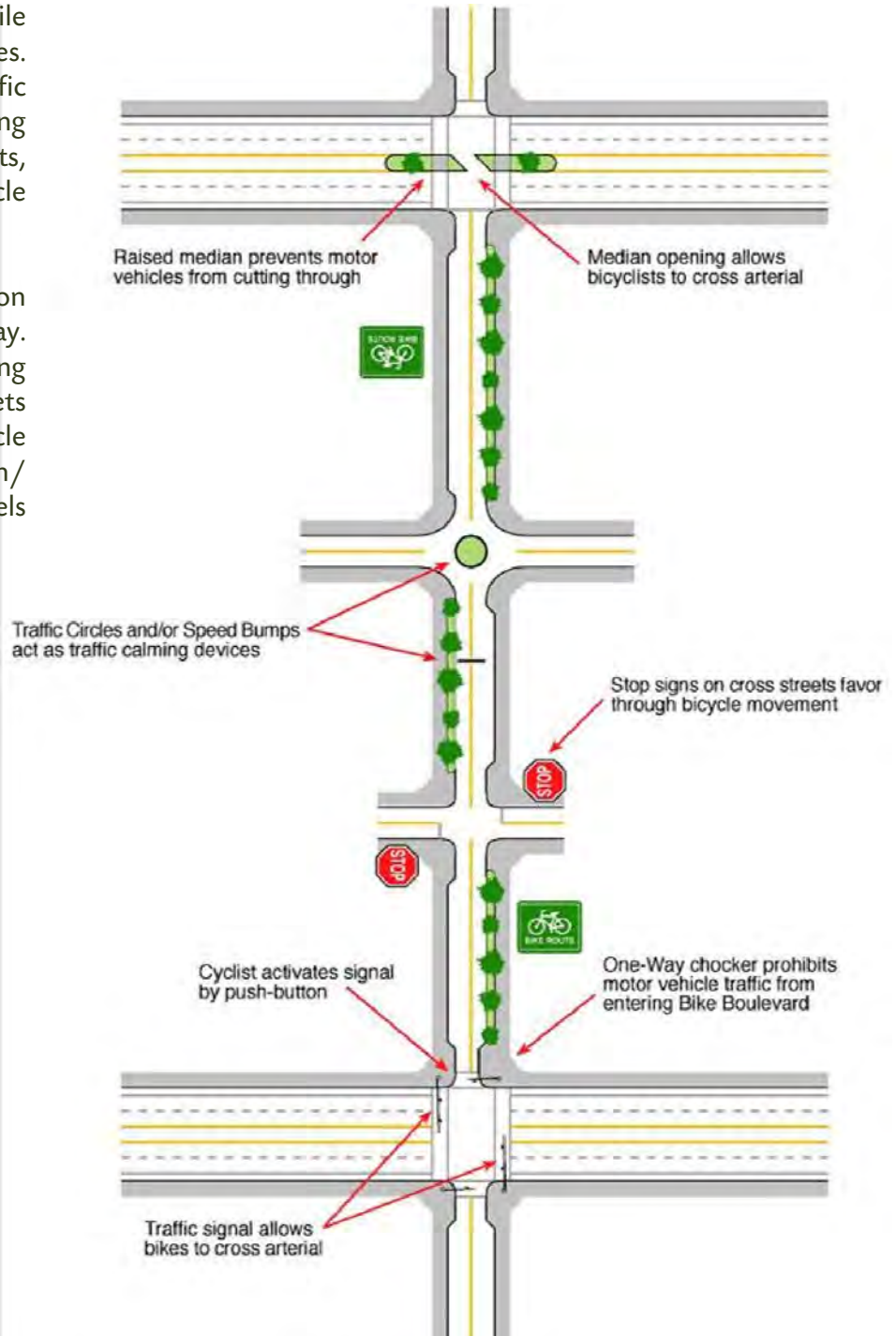
Sharrows installed on lanes that are too narrow for striping designated bike lanes.

**Bicycle Boulevards**

To further identify preferred routes for bicyclists, the operation of lower volume roadways may be modified to function as a through street for bicycles while maintaining local access for automobiles. Traffic calming devices reduce traffic speeds and through trips while limiting conflicts between motorists and bicyclists, as well as give priority to through bicycle movement.

Bike boulevards are often located on roadways that parallel a major roadway. Davidson’s Bicycle Plan Steering Committee mentioned several streets that could be candidates for bicycle boulevards, such as the Potts/Sloan/Beaty corridor, which somewhat parallels Main Street.

*Bicycle Boulevard Lane Configuration*



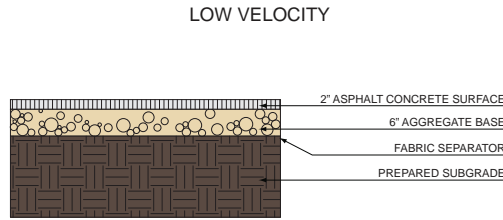
*Left: Bike boulevard route signs and/or pavement markings can be used to direct bicyclists.*



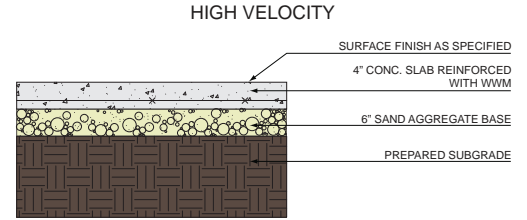


# Greenway Facility Standards

## Floodway Trail (Limited Areas)



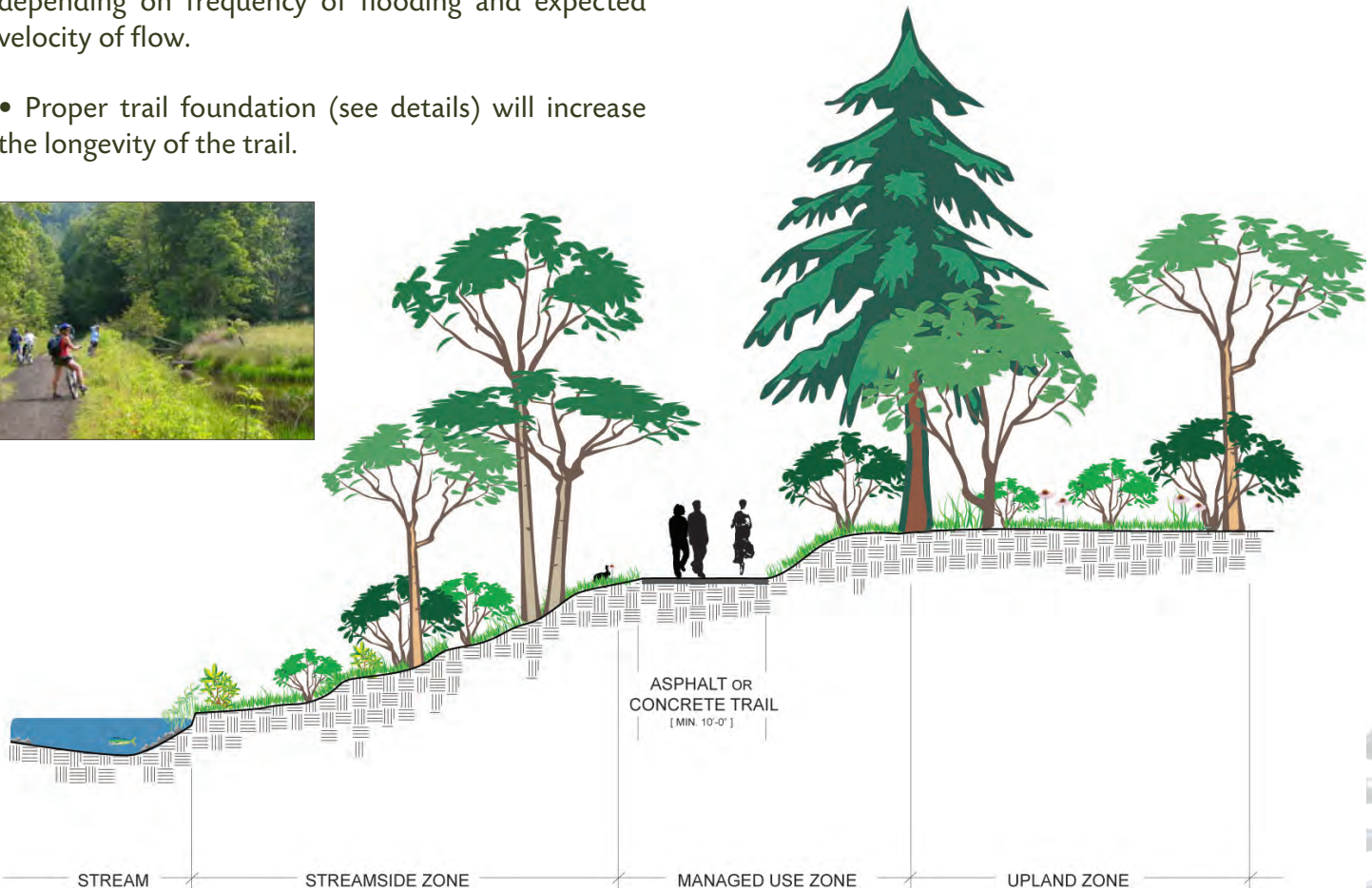
ASPHALT PAVING ON AGGREGATE BASE



CONCRETE PAVING ON AGGREGATE

- Minimum 10' wide for multi-use trails.
- Typically positioned within the floodway, but not directly adjacent to streams; some vegetative buffer between the stream and trail should be left intact. For more information on where trails can be located, refer to the Town of Davidson's Stream Buffer Ordinance.
- Subject to infrequent, periodic flooding.
- Require paved surfaces of either asphalt or concrete depending on frequency of flooding and expected velocity of flow.
- Proper trail foundation (see details) will increase the longevity of the trail.

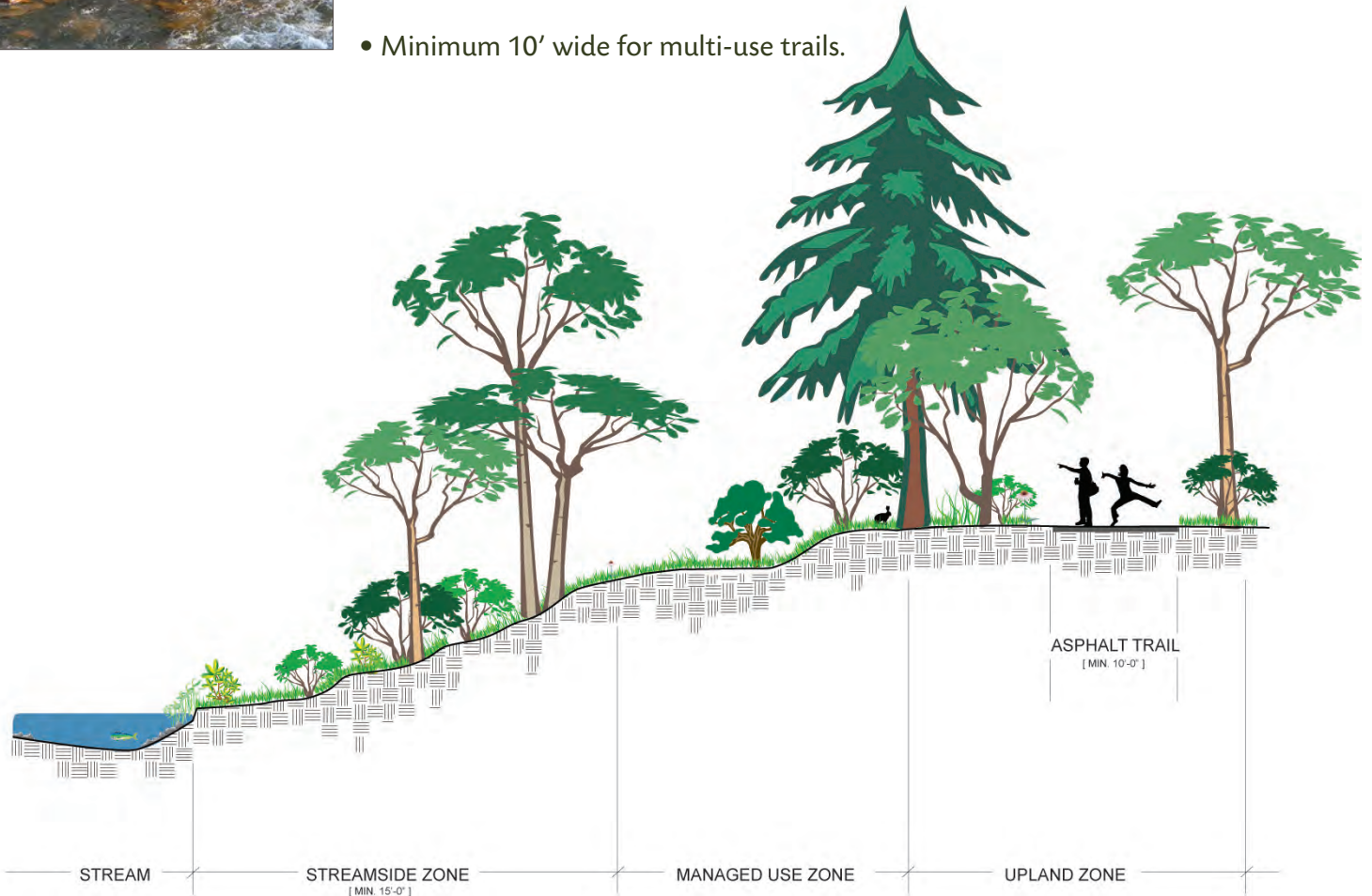
- No soft shoulder should be constructed due to flood considerations.
- All elements of the trail, including the trail tread, railings, benches, and trash receptacles, will be periodically flooded; design and materials should be carefully selected and sited accordingly.
- Special consideration should be paid to the mitigation of impacts from trail construction on the natural environment.



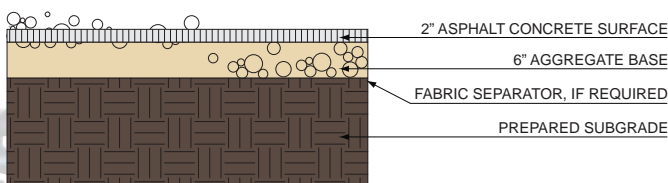
**Floodplain Trail**



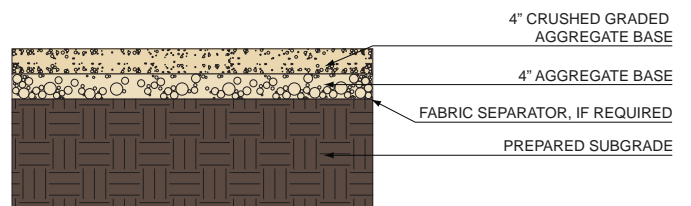
- Typically positioned outside the floodway, within the floodplain; significant vegetative buffer between the stream and trail should be left intact. For more information on where trails can be located, refer to the Town of Davidson’s Stream Buffer Ordinance.
- Subject to occasional flooding, during large storm events.
- Paved asphalt recommended, though an aggregate stone surface may be adequate in some locations.
- Proper trail foundation (see details) will increase the longevity of the trail.
- Minimum 2’ graded shoulder recommended.
- Minimum 10’ wide for multi-use trails.



TYPICAL PAVED & UNPAVED TRAIL CROSS SECTIONS



ASPHALT PAVING ON AGGREGATE BASE



GRAVEL PAVING ON AGGREGATE



## Natural Surface Trail

• Also known as footpaths, hiking trails, or neighborhood connectors



• Can be designed to accommodate pedestrians on foot and/or cyclists, especially for *Safe Routes to School* connections and other key connections.

• Preparation varies from machine-worked surfaces to those worn only by usage.

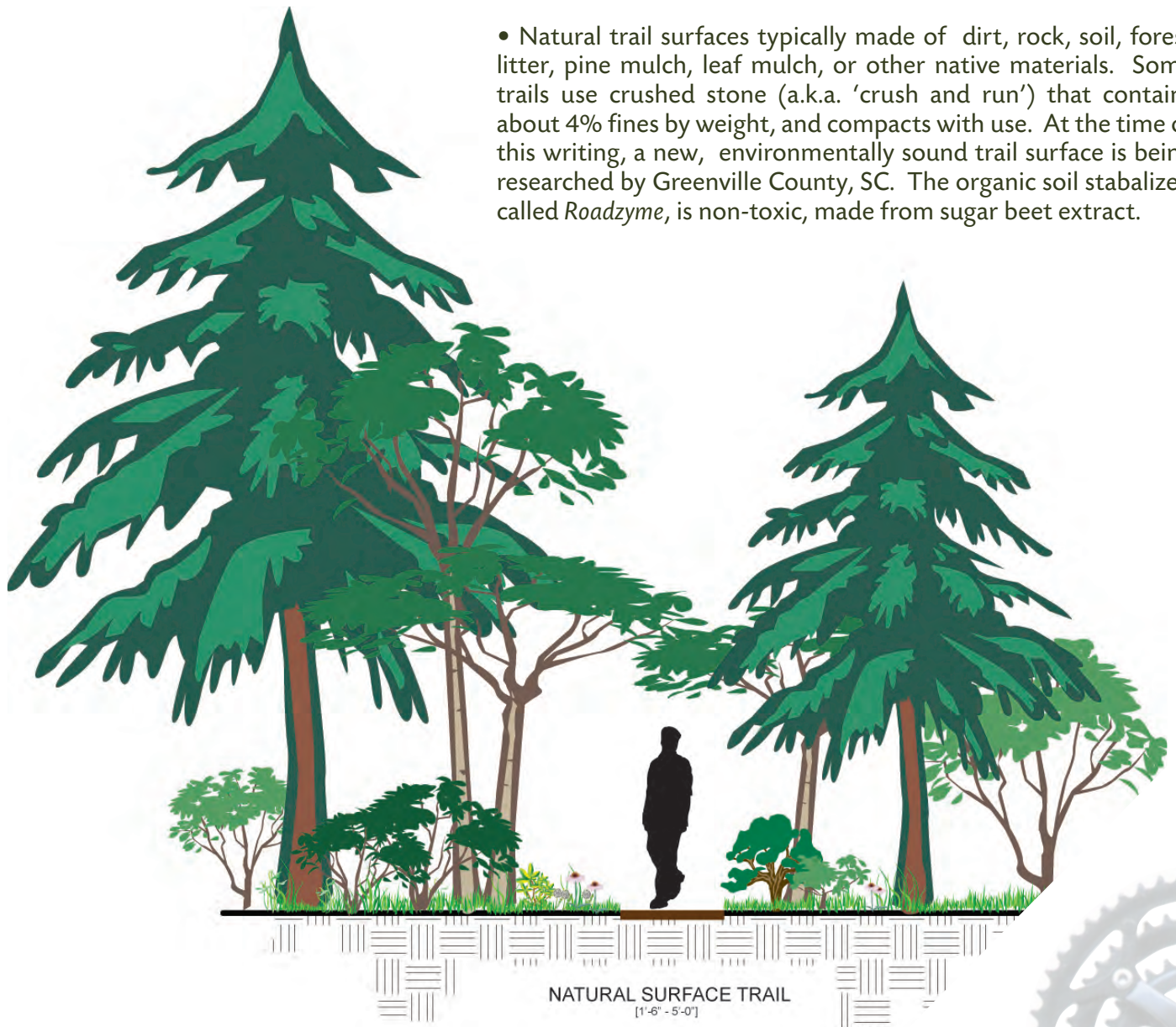
• Provide positive drainage for trail tread without extensive removal of existing vegetation.

• Varies in width from 3' to 5'.

• Vertical clearance should be maintained at 9'.

• For mountain bike trails, refer to International Mountain Bicycling Association (IMBA) standards.

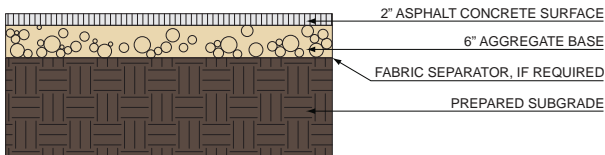
• Natural trail surfaces typically made of dirt, rock, soil, forest litter, pine mulch, leaf mulch, or other native materials. Some trails use crushed stone (a.k.a. 'crush and run') that contains about 4% fines by weight, and compacts with use. At the time of this writing, a new, environmentally sound trail surface is being researched by Greenville County, SC. The organic soil stabilizer, called *Roadzyme*, is non-toxic, made from sugar beet extract.



### *Paved Multi-use Trail (10' wide typ.)*

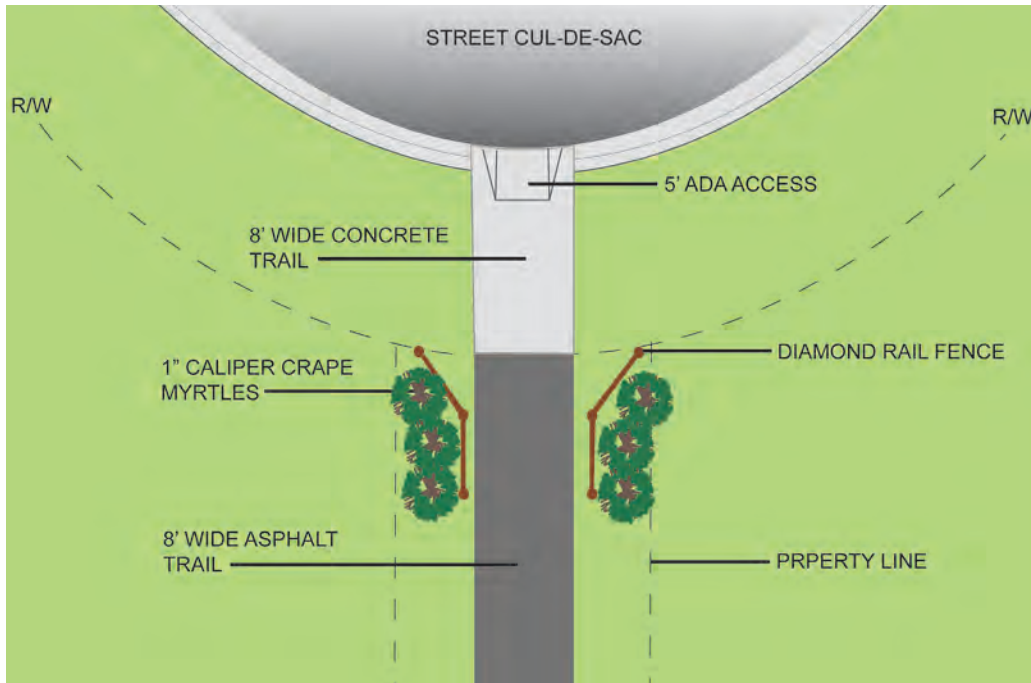
- Typically composed of asphalt or concrete, paved multi-use trails should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles.
- In areas prone to frequent flooding, it is recommended that concrete be used for its excellent durability.
- As a flexible pavement, asphalt should be considered when installing a paved multi-use trail on slopes.
- A concern for the use of asphalt is the deterioration of trail edges. Installation of geotextile fabric beneath a layer of aggregate base course (ABC) can help to maintain the edge of the trail. It is also important to provide a 2 foot wide graded shoulder to prevent edges from crumbling.
- Most often, concrete is used for intensive urban applications. It is the strongest surface type and has the lowest maintenance requirement if it is installed properly.
- Centerline stripes should be considered for trails that generate substantial amounts of traffic. Centerline stripes are particularly useful along curving sections of trail.
- Trail landscaping and maintenance should enhance conditions for wildlife by planting only native species in the trail corridor, removing invasive species when possible, and avoiding harmful pesticides and herbicides. The overall shape of protected natural landscapes along trail corridors also influences wildlife: single, large, contiguous natural areas are more beneficial to wildlife than the same acreage split into smaller segments.

ASPHALT PAVING ON AGGREGATE BASE





## Neighborhood Entrance Trail



The following “Neighborhood Entrance Trail” guidelines are adapted from Mecklenburg County. In any instance that an access trail is developed in a residential area to link to a greenway, the following standards shall be applied:

- Trail pavement shall be 8’ wide to accommodate emergency and maintenance vehicles, meet ADA requirements and be considered suitable for multi-use.
- Trail widths should be designed to be less than 8’ wide only when necessary to protect large mature native trees over 18” in caliper, wetlands or other ecologically sensitive areas.
- Access trails should meander whenever possible.
- All landscape materials shall be installed during the appropriate planting season for the particular species.
- Other ornamental landscape shall be included at the street frontage of the access trail based upon input from the residents of the cul-de-sac. If the access is not in a cul-de-sac, the adjacent property owners and property owners directly across from the access trail will be invited to provide landscape design input.
- Two sections of diamond rail fencing shall be included on each side of the trail near the street frontage. Diamond rail will not be included if the respective neighborhood deeds and covenants do not permit it.



## Bicycle-Friendly Intersections

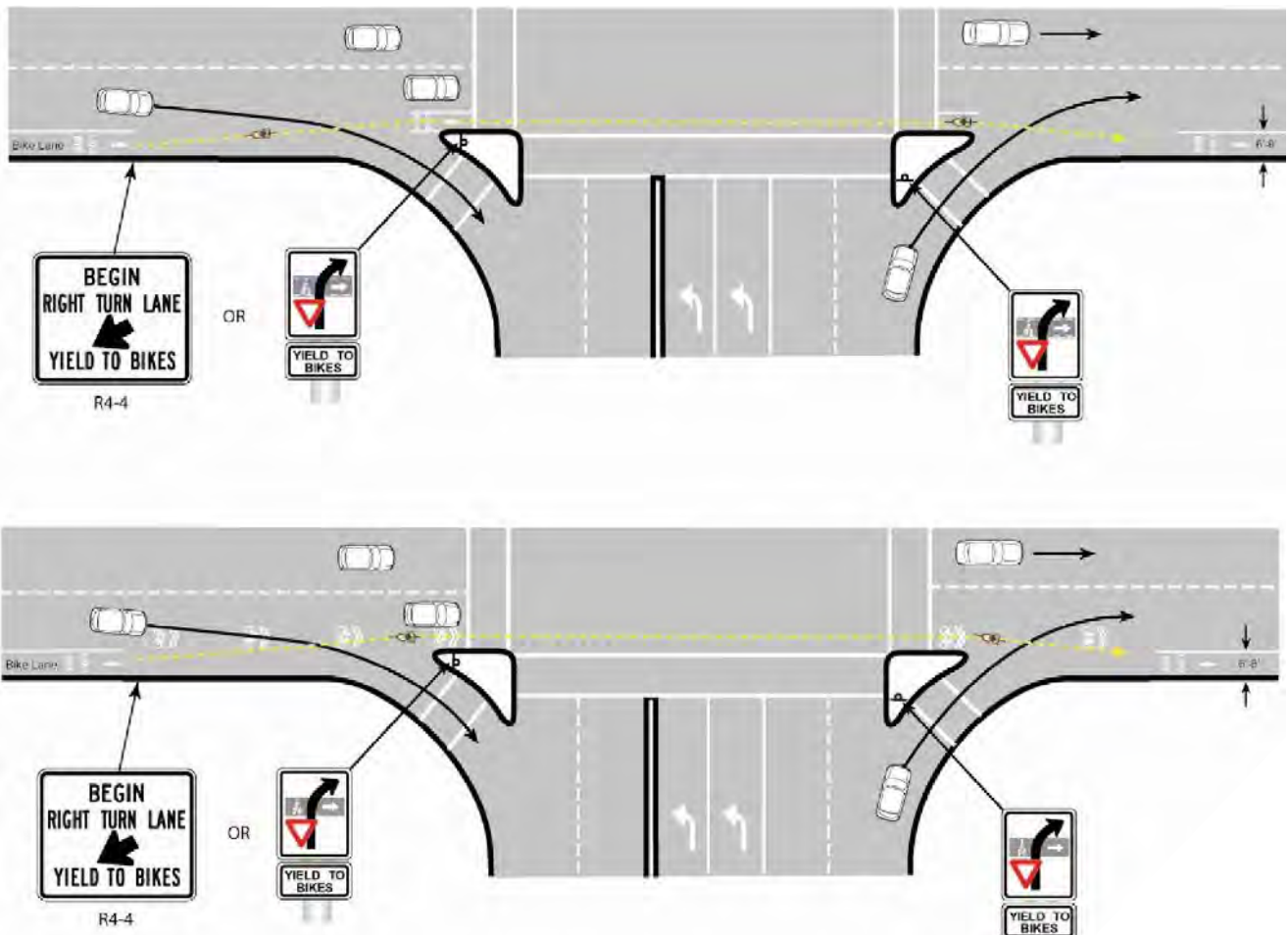
Intersections represent one of the primary collision points for bicyclists, with many factors involved:

- Larger intersections are more difficult for bicyclists to cross.
- On-coming vehicles from multiple directions and increased turning movements make it more difficult for motorists to notice non-motorized travelers.
- Most intersections do not provide a designated place for bicyclists.
- Bike lanes and pavement markings often end before intersections, causing confusion for bicyclists.
- Loop and other traffic signal detectors, such as video, often do not detect bicycles.
- Bicyclists making a left turn must either cross travel lanes to a left-turn lane, or dismount and cross as a pedestrian.
- Bicyclists traveling straight may have difficulty maneuvering from the far right lane, across a right turn lane, to a through lane of travel.

Solutions to these problems include bicycle-friendly intersection treatments. (*Note: four of the following diagrams are from Caltrans, thus there is a discrepancy with what is recommended in this Plan regarding bike lane widths.*)

- Bike Lane Through 'Right Turn Island' Intersections
- Shared Travel Lane Through 'Right Turn Island' Intersection
- Bicycle Lane Adjacent to a 'Right Turn Only' Lane

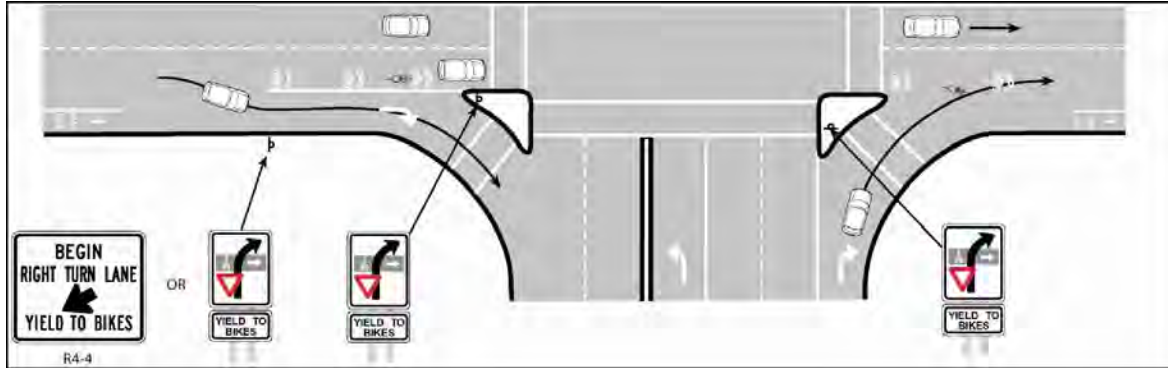
### Bike Lane Through 'Right Turn Island' Intersections (Caltrans)





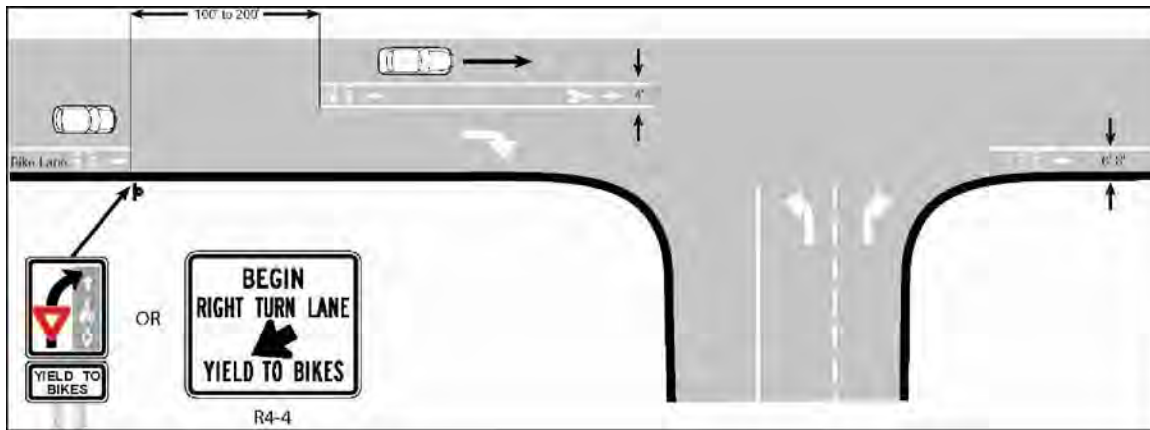
### Shared Travel Lane Through 'Right Turn Island' Intersection

(with exclusive right turn lanes) (Caltrans)

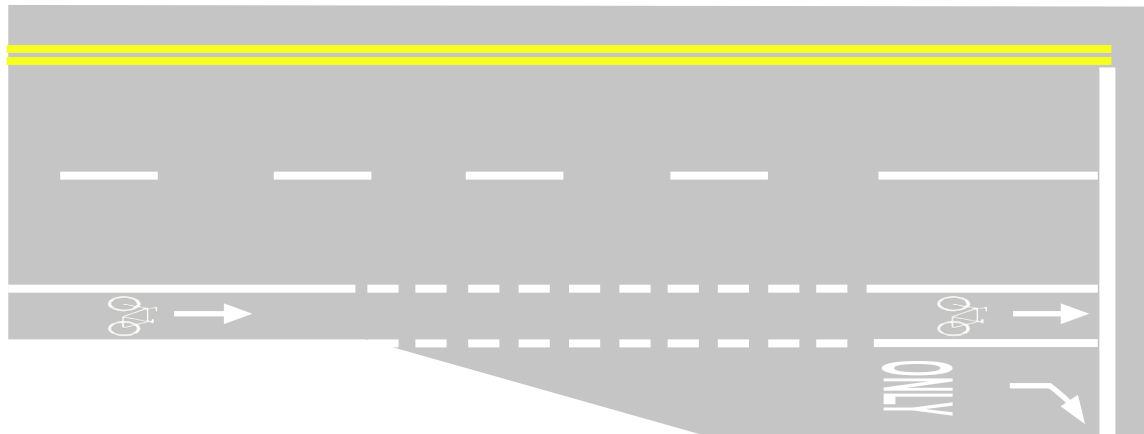


### Bicycle Lane Adjacent to a 'Right Turn Only' Lane

(Caltrans)



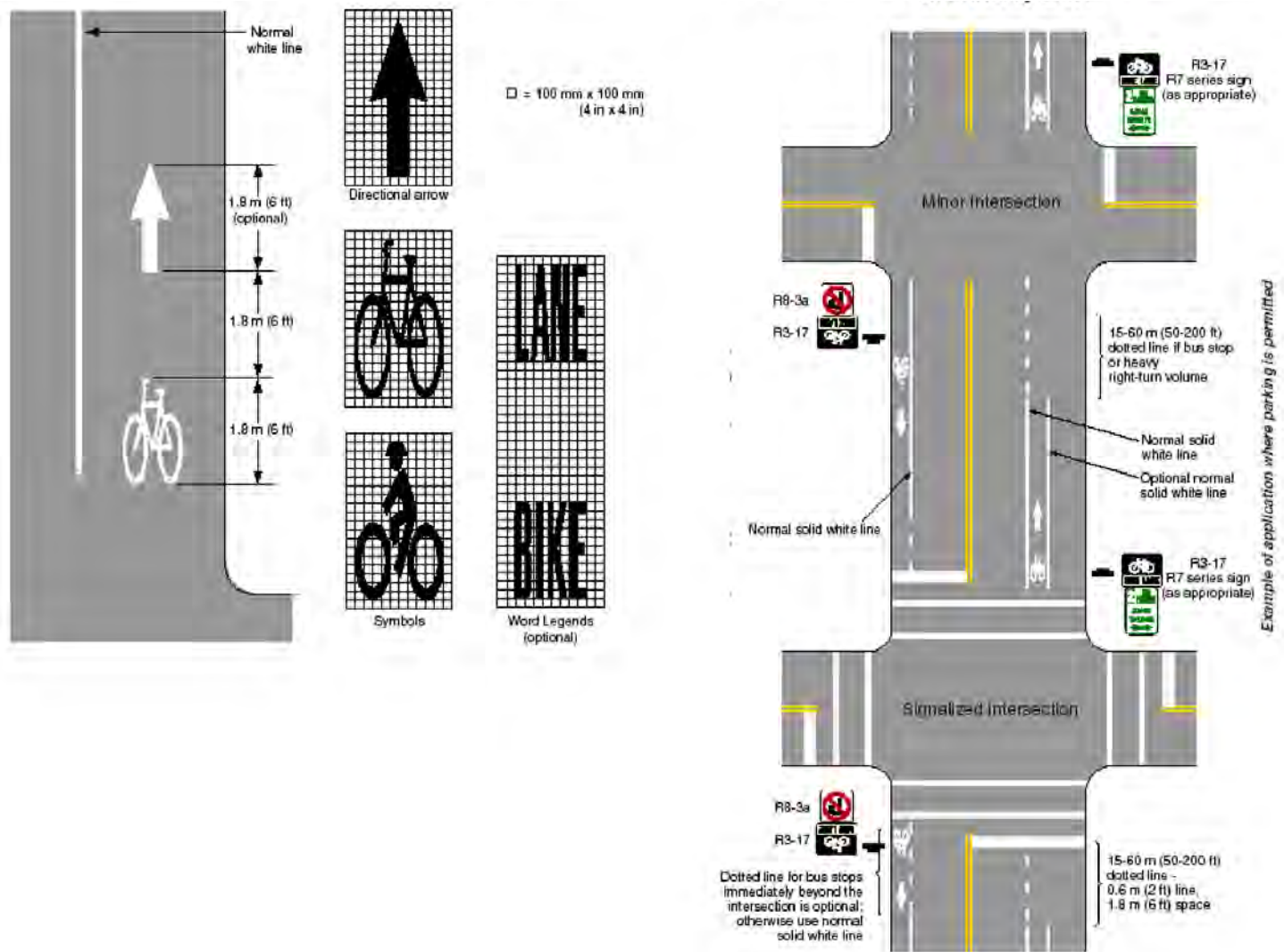
### Bicycle Lane Adjacent to a 'Right Turn Only' Lane



## Typical Pavement Markings and Intersection Configuration for Bike Lanes

The Manual on Uniform Traffic Control Devices (MUTCD) provides guidance for lane delineation, intersection treatments, and general application of pavement wording and symbols for on-road bicycle facilities and off-road paths (<http://mutcd.fhwa.dot.gov/pdfs/millennium/12.18.00/9.pdf>). 1

*Bloew: MUTCD examples of optional word and symbol pavement markings for bicycle lanes*

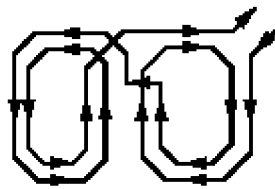






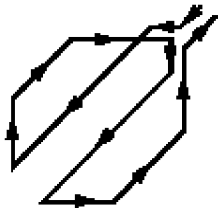
## Bicycle-Activated Detector Loop

Changing how intersections operate can help make them more “frier to bicyclists. Improved traffic signal timing for bicyclists, bicycle-activ loop detectors, and camera detection make it easier and safer for cy to cross intersections. Bicycle-activated loop detectors are installed w the roadway to allow the weight of a bicycle to trigger a change ir traffic signal. This allows the cyclist to stay within the lane of travel avoid maneuvering to the side of the road to trigger a push button, w ultimately provides extra green time before the light turns yellow to r it through the light. Current and future loops that are sensitive enoug detect bicycles should have pavement markings to instruct cyclists on to trip them. Common loop detector types shown below:



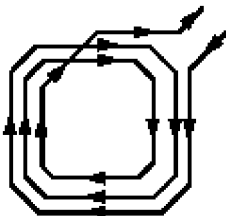
### Quadruple Loop

- Detects most strongly in center
- Sharp cut-off sensitivity
- Used in bike lanes



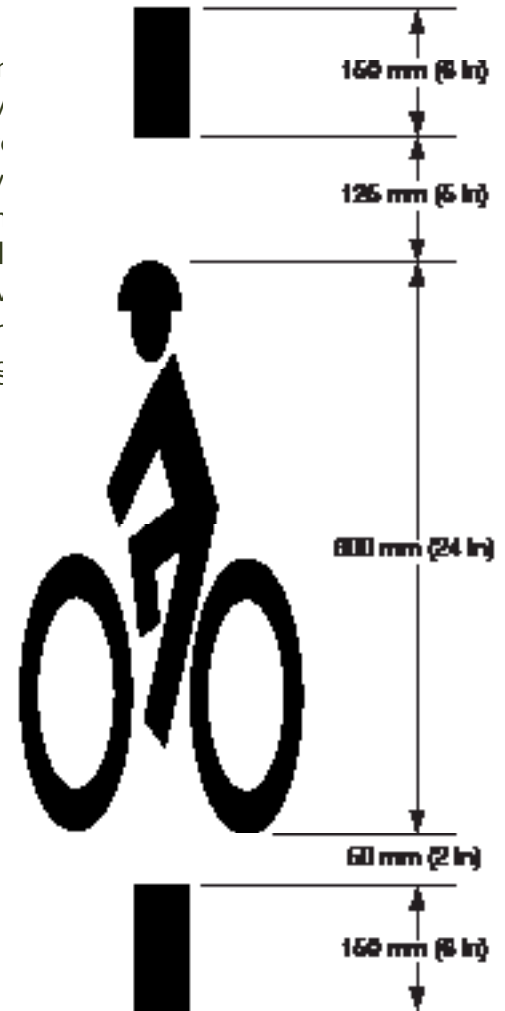
### Diagonal Quadruple Loop

- Sensitive over whole area
- Sharp cut-off sensitivity
- Used in shared lanes



### Standard Loop

- Detects most strongly over wires
- Gradual cut-off
- Used for advanced detection



Above: Use pavement marking to aid bicyclists in locating loop detectors at intersections

(See: *Implementing Bicycle Improvements at the Local Level*, FHWA, 1998, p. 70)

## Bicycle Specific Traffic Control Signals



A bicycle signal is an electrically powered traffic control device that may only be used in combination with an existing traffic signal. Bicycle signals direct bicyclists to take specific actions and may be used to address an identified safety or operational problem involving bicycles. A separate signal phase for bicycle movement will be used. Alternative means of handling conflicts between bicycles and motor vehicles shall be considered first. When bicycle traffic is controlled, green, yellow or red bicycle symbols are used to direct bicycle movement at a signalized intersection. Bicycle signals shall only be used at locations that meet Department of Transportation Bicycle Signal Warrants. A bicycle signal may be considered for use only when the volume and collision, or volume and geometric warrants have been met:

1. Volume. When  $W = B \times V$  and  $W > 50,000$  and  $B > 50$ .

Where:

W is the volume warrant.

B is the number of bicycles at the peak hour entering the intersection.

V is the number of vehicles at the peak hour entering the intersection.

B and V shall use the same peak hour.

2. Collision. When 2 or more bicycle/vehicle collisions of types susceptible to correction by a bicycle signal have occurred over a 12-month period and the responsible public works official determines that a bicycle signal will reduce the number of collisions.

3. Geometric.

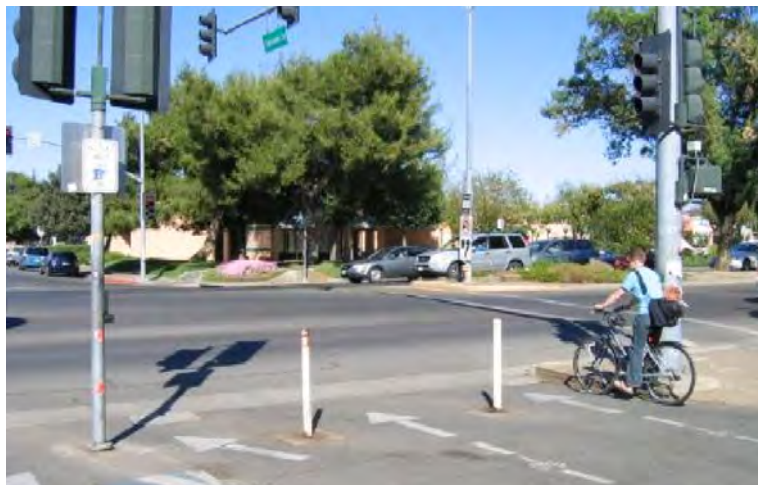
(a) Where a separate bicycle/multi use path intersects a roadway.

(b) At other locations to facilitate a bicycle movement that is not permitted for a motor vehicle.

See: *MUTCD 2003 and MUTCD 2003 California Supplement (May 20, 2004)*,  
Sections 4C.103 & 4D.104 - [www.dot.ca.gov/hq/traffopps/signtech/mutcdsupp/](http://www.dot.ca.gov/hq/traffopps/signtech/mutcdsupp/)



*Right: Bicycle traffic signal used to bring bicycles leaving the UC Davis campus back into the road network.*





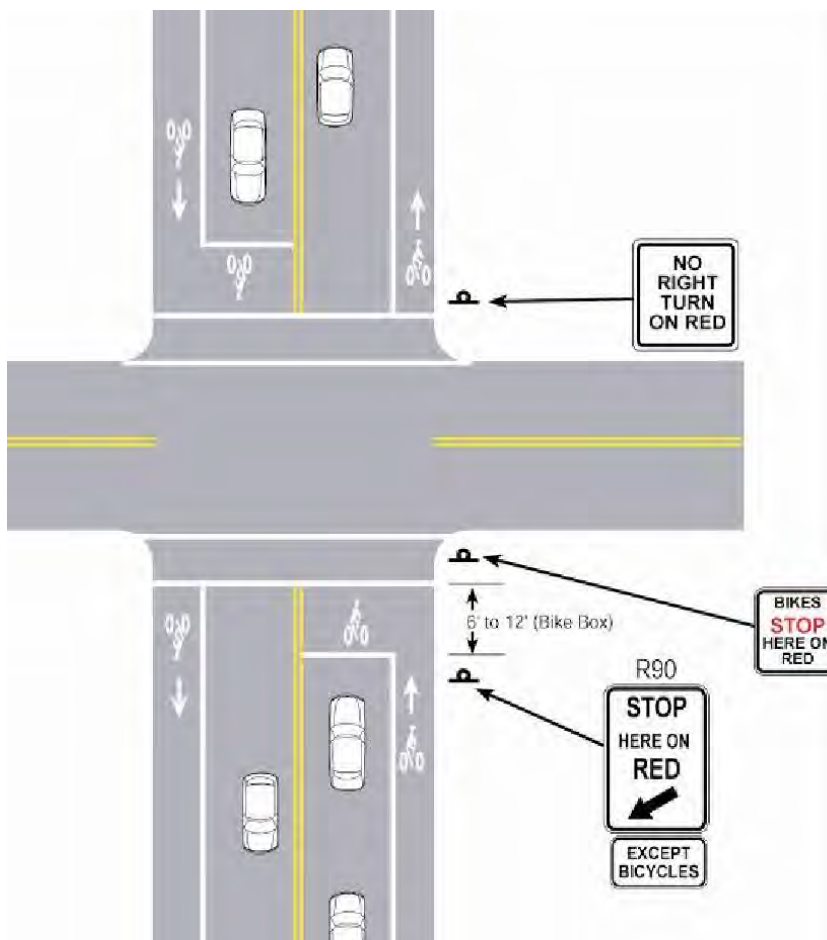
## Bike Box / Advance Stop Line

A bike box is a relatively simple innovation to improve turning movements for bicyclists without requiring cyclists to merge into traffic to reach the turn lane or use crosswalks as a pedestrian. The bike box is formed by pulling the stop line for vehicles back from the intersection, and adding a stop line for bicyclists immediately behind the crosswalk. When a traffic signal is red, bicyclists can move into this “box” ahead of the cars to make themselves more visible, or to move into a more comfortable position to make a turn. Bike boxes have been used in Cambridge, MA; Eugene, OR; and European cities.

### Potential Applications:

- At intersections with a high volume of bicycles and motor vehicles
- Where there are frequent turning conflict and/or intersections with a high percentage of turning movements by both bicyclists and motorists
- At intersections with no right turn on red (RTOR)
- At intersections with high bicycle crash rates
- On roads with bicycle lanes
- Can be combined with a bicycle signal (optional)

Below: Plan View of the Bicycle Box.



### Considerations:

- Bike boxes are not currently included in the MUTCD but there are provisions for jurisdictions to request permission to experiment with innovative treatments (and thus with successful application, future inclusion of bike boxes in the MUTCD could occur).
- If a signal turns green as a cyclist is approaching an intersection, they should not use the bike box.
- Motorists will need to be educated to not encroach into the bike box.



Above: Bike box in England filled in with color to emphasize allocation of space to bicycle traffic



## Colored Bike Lanes

In addition to markings presented in the MUTCD, the following experimental pavement markings may be considered. European countries have used colored pavement in bike lanes that tend to have a higher likelihood for vehicle conflicts. Examples of such locations are freeway on- and off-ramps and where a motorist may cross a bike lane to move into a right turn pocket. In the United States, the City of Portland and New York City have colored bike lanes and supportive signing with favorable results. Studies after implementation showed more motorists slowing or stopping at colored lanes and more motorists using their turn signals near colored lanes. Green is the recommended color (some cities that have used blue are changing to green, since blue is associated with handicapped facilities).

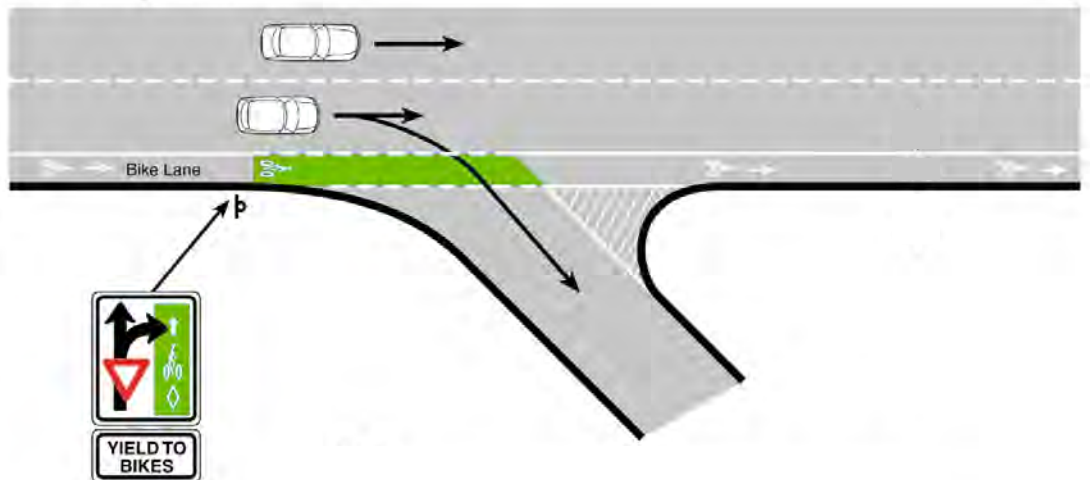


Above: Blue bicycle lane use in Denmark.

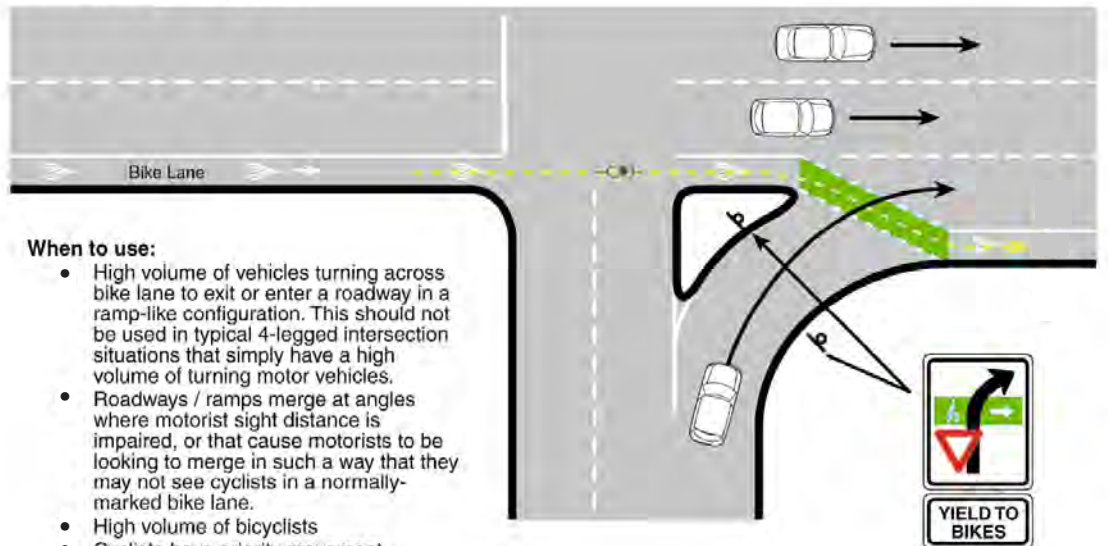


Above: Green bicycle lane use in Australia.

### Exit Ramp Zone



### Entrance Ramp Zone



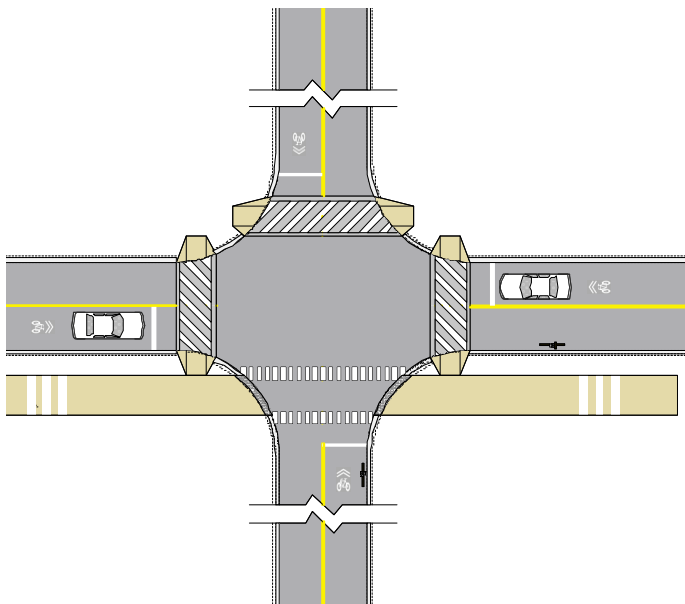
**When to use:**

- High volume of vehicles turning across bike lane to exit or enter a roadway in a ramp-like configuration. This should not be used in typical 4-legged intersection situations that simply have a high volume of turning motor vehicles.
- Roadways / ramps merge at angles where motorist sight distance is impaired, or that cause motorists to be looking to merge in such a way that they may not see cyclists in a normally-marked bike lane.
- High volume of bicyclists
- Cyclists have priority movement

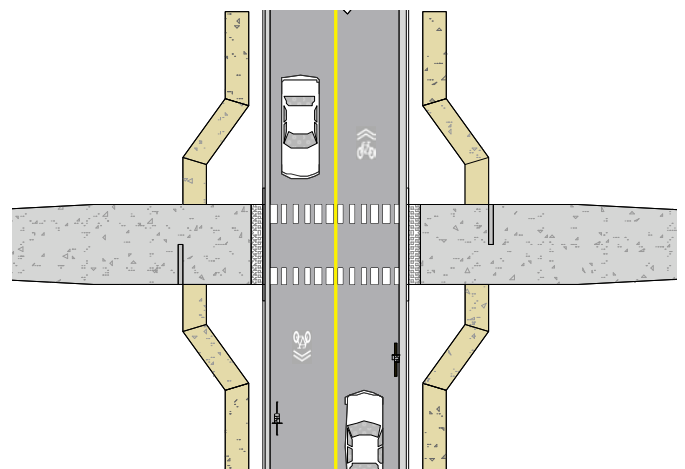


## Trail-Roadway Intersections

- Site the crossing area at a logical and visible location; the crossing should be a safe enough distance from neighboring intersections to not interfere (or be interfered) with traffic flow; crossing at a roadway with flat topography is desirable to increase motorist visibility of the path crossing; the crossing should occur as close to perpendicular (90 degrees) to the roadway as possible.
- Warn motorists of the upcoming trail crossing and trail users of the upcoming intersections; motorists and trail users can be warned with signage (including trail stop signs), changes in pavement texture, flashing beacons, raised crossings, striping, etc.
- Maintain visibility between trail users and motorists by clearing or trimming any vegetation that obstructs the view between them.
- Intersection approaches should be made at relatively flat grades so that cyclists are not riding down hill into intersections.
- If the intersection is more than 75 feet from curb to curb, it is preferable to provide a center median refuge area; a refuge is needed in conditions exhibiting high volumes/speeds and where the primary user group crossing the roadway requires additional time, such as school children and the elderly.
- If possible, it may be desirable to bring the path crossing up to a nearby signalized crossing in situations with high speeds/ADT and design and/or physical constraints.
- In 4-Way Intersection Crossing with Share Use Path (diagram below) – This is also a depiction of a ‘sidepath’ intersecting a roadway. Trail users would navigate this crossing like a common pedestrian.

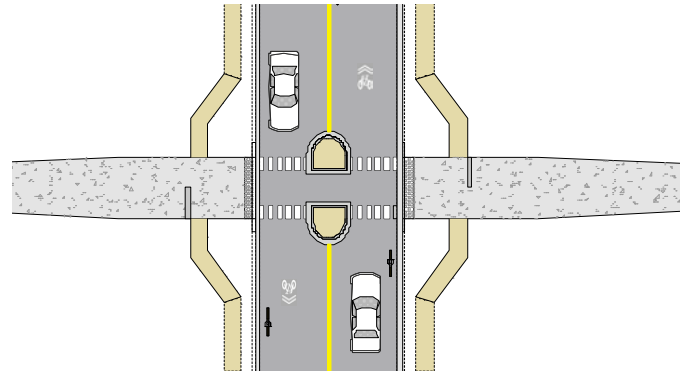


4-WAY INTERSECTION CROSSING  
Shared Use Path

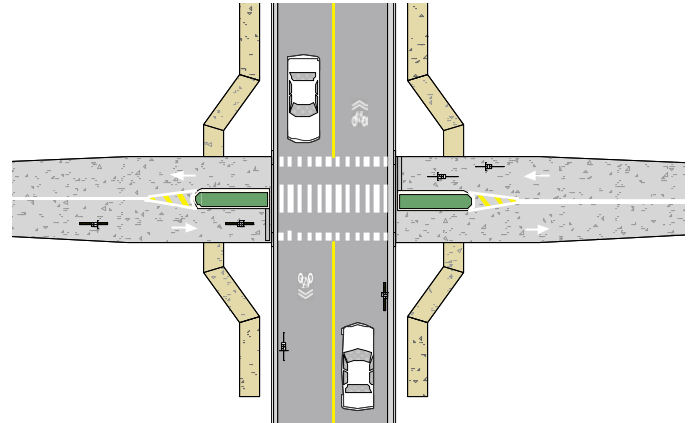


MID-BLOCK INTERSECTION  
Shared Use Path with Sidewalks

*Trail-Roadway Intersections (Continued)*



**MEDIAN REFUGE**  
Shared Use Path with Sidewalks



**MIDBLOCK CROSSING**  
Shared Use Path with Sidewalks and Medians

*Trail-Roadway Intersections (Signalized)*



- Signalized crossings may be necessary on trails with significant usage when intersecting with demanding roadways, but MUTCD warrants must be met for the installation of a signalized crossing. Consult the MUTCD or NCDOT Division of Bicycle and Pedestrian Transportation for signal, sign and light placement.

- FHWA issued an interim approval for the optional use of rectangular rapid flashing beacons (RRFBs, shown at left) as warning beacons supplementing pedestrian crossing or school crossing warning signs at crossings across uncontrolled approaches. An analysis by the Center for Education and Research in Safety found them to have much higher levels of effectiveness in making drivers yield at crosswalks than the standard over-head and side-mount round flashing beacons.



## *Trail Underpass*

- Typically utilize existing overhead roadway bridges adjacent to streams or culverts under the roadway that are large enough to accommodate trail users
- Vertical clearance of the underpass should be at least 10'; NCDOT only requires 8' minimum vertical clearance.
- Width of the underpass must be at least 12'
- Proper drainage must be established to avoid pooling of stormwater.
- Lighting is recommended for safety.



## Trail Overpass

- Safety should be the primary consideration in bridge/overpass design.
- Specific design and construction specifications will vary for each bridge and can be determined only after all site-specific criteria are known.
- Always consult a structural engineer before completing bridge design plans, before making alterations or additions to an existing bridge, and prior to installing a new bridge.
- A 'signature' bridge should be considered in areas of high visibility, such as over major roadways. While often more expensive, a more artistic overpass will draw more attention to the trail system in general, and could serve as a regional landmark.
- For shared-use facilities, a minimum width of 14' is recommended.
- Trail overpasses are prohibitively expensive and should only be placed in areas of substantial need.







## Ancillary Facility Standards

### Trailheads and Support Facilities

Major access point should be established near commercial developments and transportation nodes, making them highly accessible to the surrounding communities. Minor trailheads should be simple pedestrian and bicycle entrances at locally known spots, such as parks and residential developments.

A minor trailhead could include facilities such as parking, drinking fountains, benches, a bicycle rack, trash receptacles, and an information kiosk and/or signage. Major trailheads could include all of the above plus additional facilities, such as rest rooms, shelters, picnic areas, a fitness course, an emergency telephone, and a larger parking area.



*Example layout for a major trailhead.*



*A major trailhead with bike racks, air compressor (for bicycle tires), water fountain, rest rooms, phone, benches, etc.*



*A water fountain and pet-water fountain*



*Example layout for a minor trailhead.*



*A solar-powered rest room*



## *Bicycle Stations and Repair Stands*

Bicycle repair stands and bicycle stations are fixtures in highly successful bicycle-friendly communities. Popular locations include farmer's markets or public areas that are centers for activity, easily accessible by foot or bicycle. Local bike shops and local events in Davidson could provide similar services. The presence of smaller scale operations that primarily provide maintenance and repair functions within semi-permanent structures like the tent and tarp shown below allow for a lower cost operation, thereby passing on savings to the customer in terms of lower repair and maintenance costs.

In North Carolina communities (Durham and Carborro, for example), local, volunteer-run bicycle non-profit organizations offer maintenance training and space for local residents to work on their bikes. The City of Durham, for example, granted funding to their local bicycle coop for their provision of this important bicycle support facility.



*Left: A bicycle stand in Copenhagen, Denmark.; Below: A bicycle station in Long Beach, CA; Right: A bicycle maintenance stand at a farmer's market in Durham, NC.*





## Bicycle Parking

As more bikeways are constructed and bicycle usage grows, the need for bike parking will climb. Long-term bicycle parking at transit stations and work sites, as well as short-term parking at shopping centers and similar sites, can support bicycling. Bicyclists have a significant need for secure long-term parking because bicycles parked for longer periods are more exposed to weather and theft, although adequate long-term parking rarely meets demand. These bicycle parking standards should also be shared with Davidson College. See Chapter 6 of this plan for action steps related to bicycle parking in Davidson and refer to the Davidson Planning Ordinance, Section 10.2.2 'Bicycle Parking'; below are some key points from the ordinance:

- 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.

*Below: Recommended Guidelines for Bicycle Parking from the Association of Pedestrian and Bicycle Professionals, 2002, www.apbp.org.*

The rack element should:

- Support the bicycle upright by its frame in two places
- Prevent the wheel of the bicycle from tipping over
- Enable the frame and one or both wheels to be secured
- Support bicycles without a diamond-shaped frame with a horizontal top tube (e.g. a mixte frame)
- Allow front-in parking: a U-lock should be able to lock the front wheel and the down tube of an upright bicycle
- Allow back-in parking: a U-lock should be able to lock the rear wheel and seat tube of the bicycle



**INVERTED "U"**  
One rack element supports two bikes.



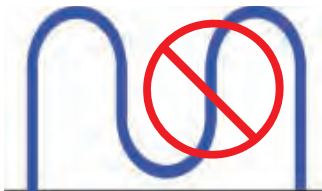
**"A"**  
One rack element supports two bikes.



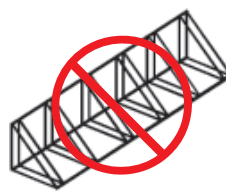
**POST AND LOOP**  
One rack element supports two bikes.



**COMB**  
One rack element is a vertical segment of the rack.



**WAVE**  
One rack element is a vertical segment of the rack. (see additional discussion on page 3)



**TOAST**  
One rack element holds one wheel of a bike.



Not recommended

*Below: Covered bicycle parking facilities, Source: APBP (www.apbp.org)*

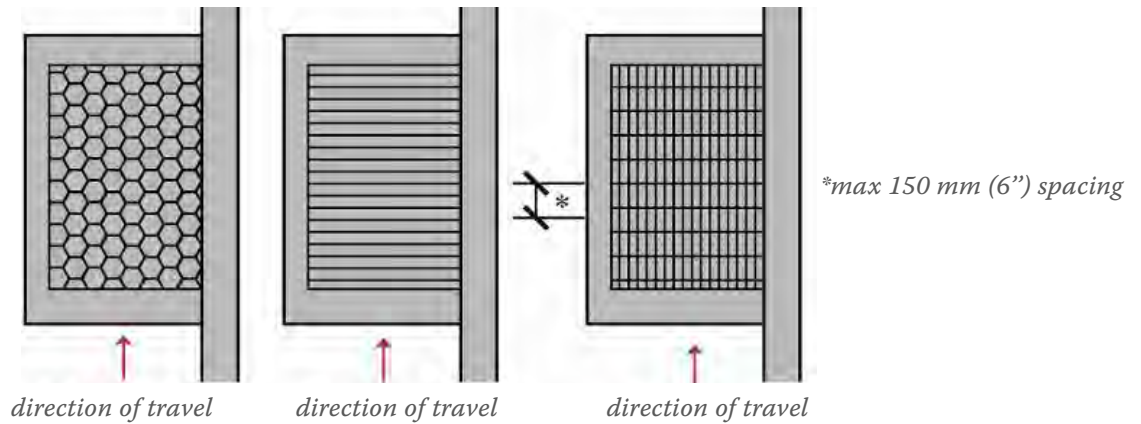


*Above: Bicycle lockers are a crucial component of the bicycle system. They offer safe and secure storage at transit centers and destinations. Parking rates are reasonable at about 3-5 cents an hour. (www.bikelink.org)*

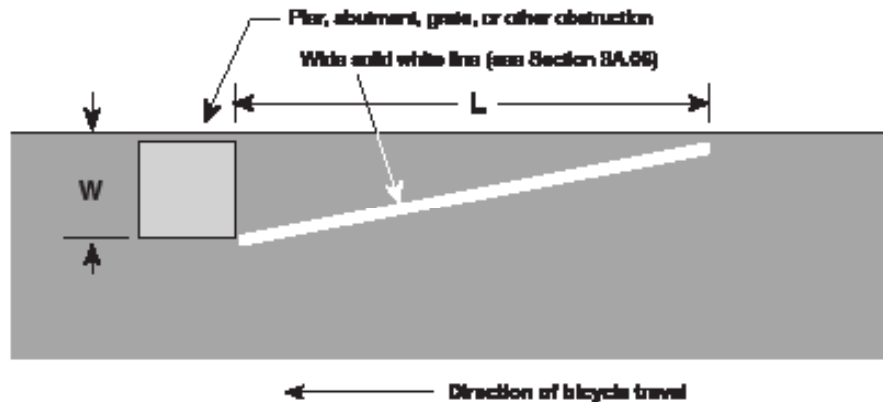
## Bicycle Friendly Drainage Grates

Drainage grates usually occupy portions of roadways, such as bicycle lanes, where bicycles frequently travel. Often drainage grates are poorly maintained or are of a design that can damage a bicycle wheel or in severe circumstances, cause a bicyclist to crash. Improper drainage grates create an unfriendly obstacle a cyclist must navigate around, often forcing entrance into a motor vehicle lane in severe cases. Bicycle friendly drainage grates should be installed in all new roadway projects and problem grates should be identified and replaced.

Right: Bicycle Friendly Drainage Grate Designs



Right: MUTCD example of obstruction pavement marking; if dangerous drainage grates (or other obstructions) are not to be fixed in the short term, then this pavement marking should direct cyclists away from the obstruction.



*Dangerous Drainage Grate Condition; this example is dangerous due to the grate running parallel to the roadway, creating a trap for bicycle tires.*



*Dangerous Drainage Grate Condition; this example is dangerous due to the surrounding paving condition (when the road was resurfaced the drainage grate remained at the same height).*



*Bicycle-Friendly Drainage Grate*



## Bicycle Facilities at Transit Stops

Integrating bicycle facilities with transit modes allows bicyclists to greatly expand their range of travel or “trip chain”. Integration of facilities with transit modes allows cyclists to use their bicycles on one or both ends of their daily commute, allowing greater flexibility. Below are examples of commuter trains and bus services with customized facilities allowing for simple and secure storage of bicycles without hindering or impeding other passengers.



- Although the current buses that serve Davidson are equipped with bicycle racks, the bus stops should incorporate bicycle racks, and local-area bicycle maps.

- Improve overall design of current and future bus and light-rail stops by providing amenities such as bicycle racks, bicycle lockers, water fountains, bicycle air compressors, local bicycle maps, transit maps, bikes-on-buses, and other amenities.

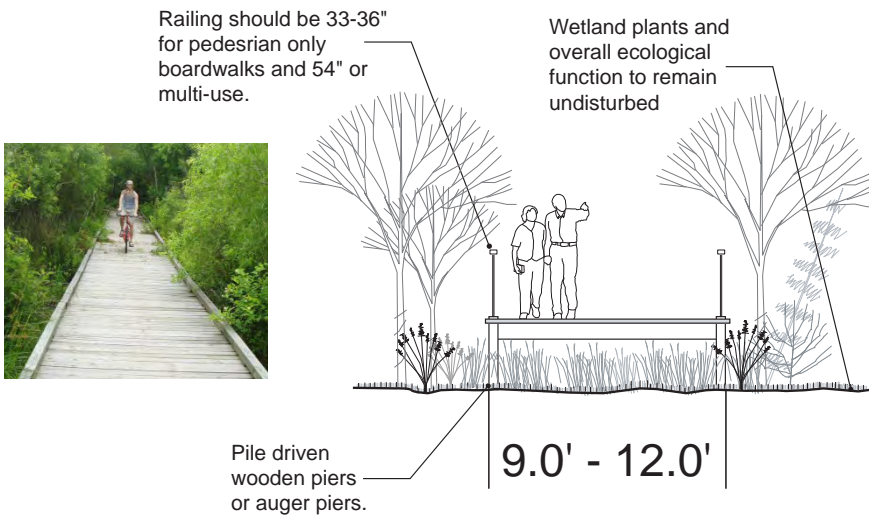
*(See page 71 for information on bicycle parking)*

*Right and below: bike racks, air compressor (for bicycle tires), maps, and water fountains should be included at bus stops and light-rail stops to encourage multi-modal transportation.*



## Boardwalk

Boardwalks are used in environmentally sensitive areas where they function as “mini-bridges”



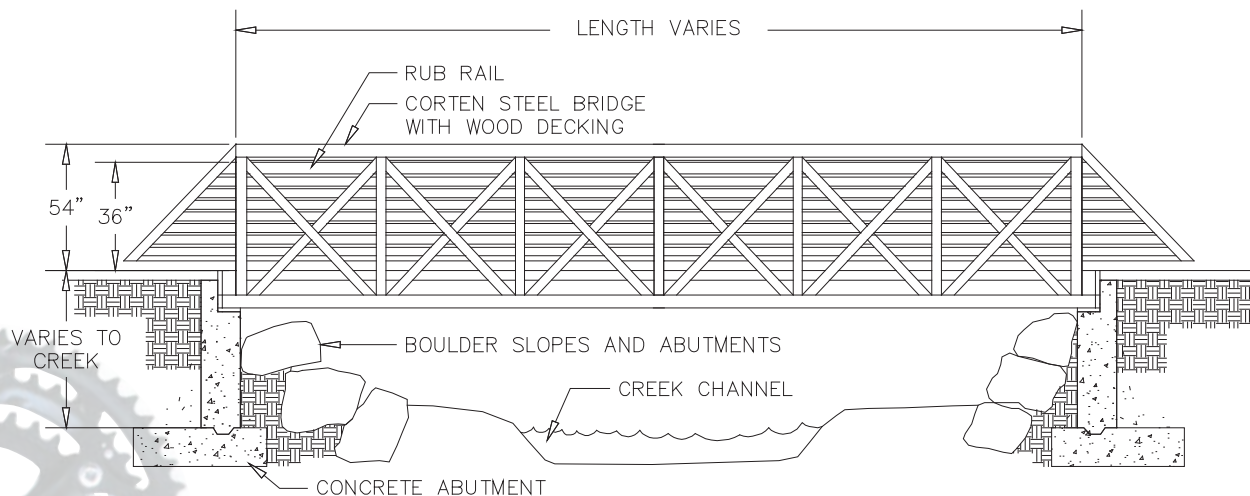
1. When the height of a boardwalk exceeds 30", railings are required
2. The thickness of the decking should be a minimum of 2"
3. Decking should be either non-toxic treated wood or recycled plastic.
3. The foundation normally consists of wooden posts or auger piers (screw anchors). Screw anchors provide greater support and last much longer.
4. Opportunities exist to build seating and signage into boardwalks.
5. In general, building in wetlands should be avoided.
6. *Note:* muddy bicycle tires may be slick on wood surfaces.

## Bicycle/Pedestrian Bridge



The function of a bridge in an off-road, multi-use trail situation is to provide access to the user over certain natural (i.e. streams) or man-made (i.e. roadways) features.

1. If a corridor already contains a bridge such as an abandoned rail bridge, an engineer should be consulted to assess the structural integrity before deciding to remove or reuse it.
2. A trail bridge should support 6.25 tons.
3. Information about the load bearing capacity of bridges can be found in the American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges.
4. There are many options in terms of high quality, prefabricated pedestrian bridges available.





## Public Art

Explore opportunities to include public art within the overall design of the trail system. These are examples of public art along trails. According to American Trails, “Art is one of the best ways to strengthen the connection between people and trails. Across America and elsewhere, artists are employing a remarkably wide range of creative strategies to support all phases of trail activities, from design and development to stewardship and interpretation. In particular, art can be an effective tool for telling a trail’s story compellingly and memorably.”

Example art programs for trails can be found at:  
[www.americantrails.org/resources/art/ArtfulWays.html](http://www.americantrails.org/resources/art/ArtfulWays.html)



## Bicycle Facilities at Rail Road Crossings

Railroad crossings are particularly hazardous to those who rely on wheeled devices for mobility (railroad crossings have flangeway gaps that allow passage of the wheels of the train, but also have the potential to catch wheelchair casters and bicycle tires). In addition, rails or ties that are not embedded in the travel surface create a tripping hazard. Recommendations:

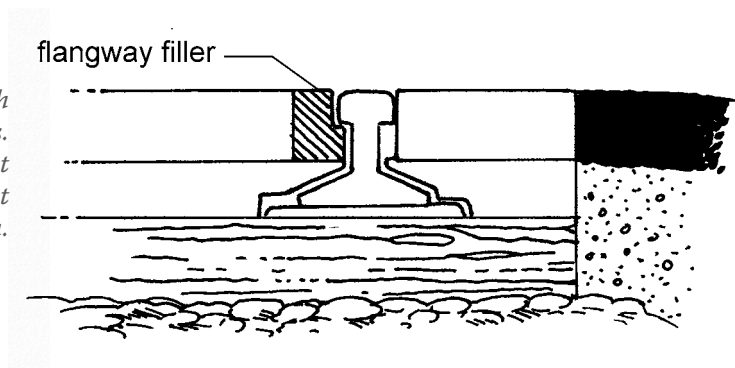
- **Make the Crossing Level:** Raise approaches to the tracks and the area between the tracks to the level of the top of the rail.



*Installing a rubber surface rather than asphalt around railroad flangeways reduces changes in level and other maintenance problems.*

- **Bikes Should Cross RR at Right Angle**
  - When bikeways or roadways cross railroad tracks at grade, the roadway should ideally be at a right angle to the rails. When the angle of the roadway to the rails is increasingly severe, the approach recommended by Caltrans (Highway Design Manual, Section 1003.6) and AASHTO (Guide for the Development of Bicycle Facilities, 1999, p.60) is to widen the approach roadway shoulder or bicycle facility, allowing bicycles to cross the tracks at a right angle without veering into the path of passing motor vehicle traffic.
  - **Use Multiple Forms of Warning:** Provide railroad crossing information in multiple formats, including signs, flashing lights, and audible sounds.
  - **Clear Debris Regularly:** Perform regular maintenance to clear debris from shoulder areas at railroad crossings.
  - **Fill Flangeway with Rubberized Material or Concrete Slab:** Normal use of rail facilities causes buckling of paved-and-timbered rail crossings. Pavement buckling can be reduced or eliminated by filling the flangeway with rubberized material, concrete slab, or other treatments. A beneficial effect of this is a decrease in long-term maintenance costs.

*The “flangeway filler” eliminates the gap in the path of travel for pedestrians crossing railroad tracks. The filler, consisting of a rubber insert, will deflect downward with the weight of a train and does not affect railway function.*







## Signage

A comprehensive system of signage ensures that information is provided regarding the safe and appropriate use of all facilities, both on-road and on greenways. The bicycle network should be signed seamlessly with other alternative transportation routes, such as bicycle routes from neighboring jurisdictions, trails, historic and/or cultural walking tours, and wherever possible, local transit systems.

Signage includes post- or pole-mounted signs and pavement striping. Signage is further divided into information signs, directional/wayfinding signs, regulatory signs and warning signs. Trail signage should conform to the (2001) Manual on Uniform Traffic Control Devices and the American Association of State Highway Transportation Official Guide for the Development of Bicycle Facilities. Bicycle signage should also be coordinated with Davidson College and the Town of Davidson's current signage standards.



Some national examples of high-quality wayfinding include those in Centre City Philadelphia (left), the City of Greenville, SC (below/left), and Grand Forks Greenway, ND (below).



## Directional Signs

Implementing a well-planned and attractive system of signing can greatly enhance bikeway facilities by signaling their presence and location to both motorists and existing or potential bicycle users. Effective signage can encourage more bicycling by leading people to town bikeways, and by creating a safe and efficient transportation option for local residents and visitors.

The signage examples at right show a number of different signs and markings, both on poles and on the roadway, that the City of Portland has adopted for their new bicycle signage program. The signs have been approved by the Oregon DOT, and will be installed around Portland in the near future. Wayfinding signs such as these improve the clarity of travel direction while illustrating that destinations are only a short ride away. The signs shown are provided only as a point of reference for the purposes of these guidelines and are not being adopted by Davidson.

*Right: Innovative On-Road Facilities Signage used in Portland*

**POLE MOUNTED SIGNS (ink on reflective sign blanks)**

1'-6" TYPICAL WIDTH

1'-6" TYPICAL HEIGHT

REINFORCEMENT:

CONFIRMATION:

DIRECTION CHANGE:

3'-0" TYPICAL HEIGHT

DESTINATION VARIANT #1:

DESTINATION VARIANT #2:

DESTINATION (two directions only):

**PAVEMENT MARKING SIGNS (cut out thermoplastic shapes)**

1'-0" TYPICAL HEIGHT

REINFORCEMENT:

CONFIRMATION:

DIRECTION CHANGE:



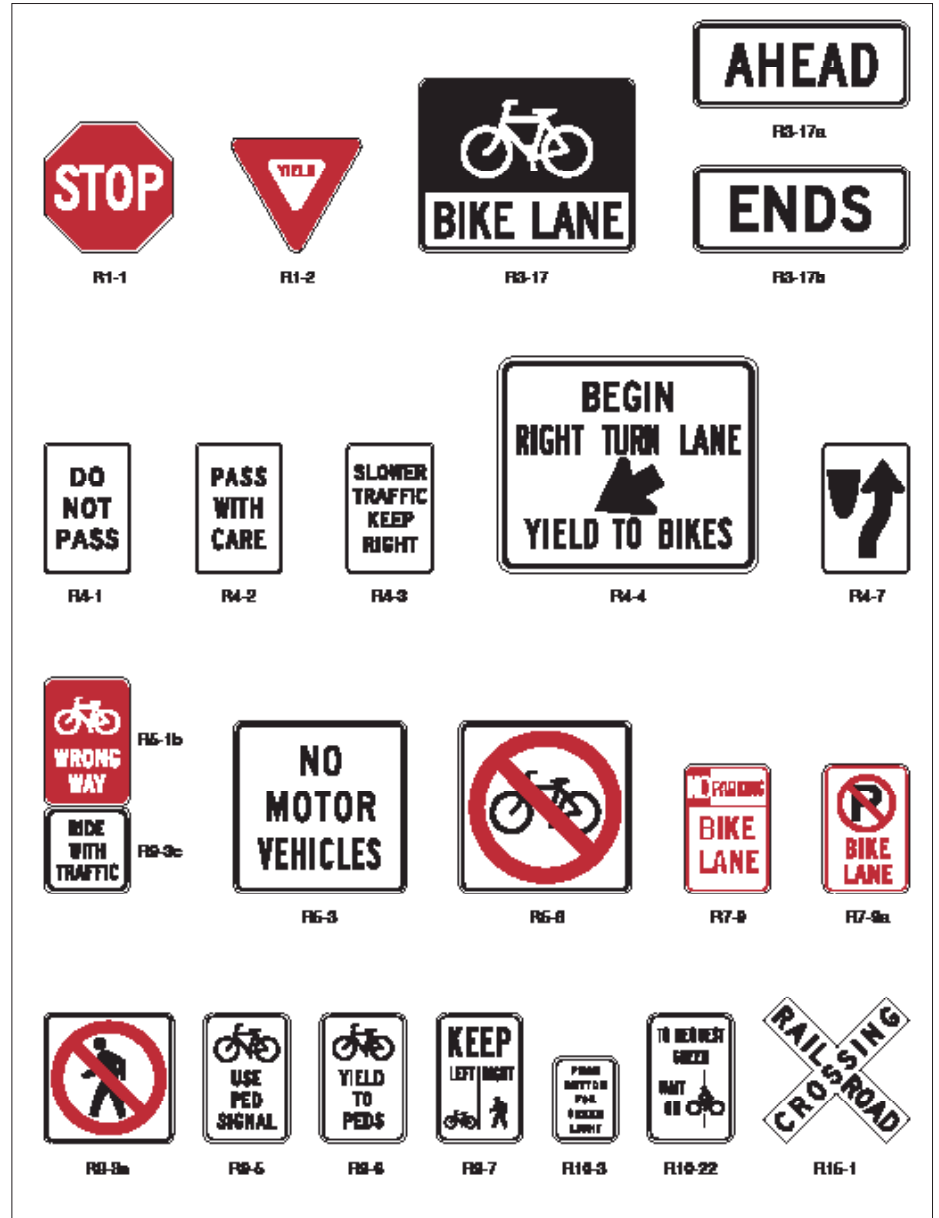
### Regulatory/Warning Signs

Regulatory and warning bicycle signage should conform to the Manual on Uniform Traffic Control Devices (MUTCD). The signs to the right are examples of regulatory signs for bicycle (their labels are sign reference numbers for the MUTCD).

### Special Purpose Signage

The “Share the Road” sign (below), is designed to advise motorists that bicyclists are allowed to share and have the right to cycle on narrow roadways with motor vehicles. For more on the “Share the Road Initiative” go to: [http://ncdot.org/transit/bicycle/safety/programs\\_initiatives/share.html](http://ncdot.org/transit/bicycle/safety/programs_initiatives/share.html)

Innovative signage is often developed to increase bicycle awareness and improve visibility (such as ‘Bikes Allowed Use of Full Lane’, bottom right). Special purpose signs to be installed on public roadways in North Carolina must be approved by NCDOT’s Traffic Control Devices Committee and/or the Town of Davidson. New designs can be utilized on an experimental basis with NCDOT approval.



*Share the Road signs remind motorists that bicyclists have the right to ride on the roadway*



*The “Bikes Allowed Use of Full Lane” sign is currently used on an experimental basis in several cities.*



## Bicycle Facility Maintenance

The regular maintenance of on-road bicycle facilities and greenway trails is critical to their overall functionality and safety for users. A cyclist who must swerve in order to miss a pothole or debris risks getting hit by passing automobiles. Several comments were received from the public regarding the maintenance of facilities during the planning process. Project steering committee members suggested that the Town of Davidson should consider taking over maintenance of bicycle lanes from NCDOT (on NCDOT roadways in Davidson).

Below is a collection of comments received regarding bicycle-related maintenance issues in Davidson, with comments in parentheses.

- Sweep the bike lanes, especially on Concord Road; Trash gets pushed into bike lanes (See image at below).
- A couple of the mail boxes on the north side of Concord Road extend too far into the bike lane. Going around them requires a cyclist to go out in traffic. (Confirm possible violations and/or see 'obstruction pavement marking' detail, page 72)
- For traffic lights, maintain signalization compatible with bicycle transportation. (See bicycle-activated detector loop, page 61)
- The pavement/gutterpan seam is uneven, especially near drainage grates, decreasing room for bicyclists (see image at below)



*Left: Bicycle lanes on Concord Road have several maintenance issues, including yard waste in bicycle lanes and uneven pavement.*



***Bicycle Facility Maintenance (continued)***

Bicycle facilities provided within the roadway right-of-way should be maintained by either the North Carolina Department of Transportation (NCDOT) or the Town of Davidson Public Works Department. A Davidson staff member should be designated as the main contact for the maintenance of pedestrian and bicycle facilities in the roadway right-of-way. This staff member should coordinate with the appropriate departments to set up a free maintenance hotline and conduct maintenance activities in the field. Funding for an ongoing maintenance program should be included in the Town’s operating budget.

Note that the schedule below is intended to provide general guidance for routine and remedial maintenance activities. The frequency of bicycle facility maintenance within the roadway right-of-way will vary. Maintenance needs will depend upon many factors, including pavement surface type, the use of paint or thermoplastic for markings, and traffic volumes. The Town of Davidson Public Works Department and NCDOT should make immediate repairs to any on-road bicycle facilities that are damaged or have hazardous conditions.

*Maintenance of Bicycle Facilities within the Roadway Rights-of-Way*

<b>Task</b>	<b>Frequency</b>	<b>Comments</b>
Regular inspection	2 times per year	Includes all on-road bikeways, identify needed repairs of pavement signs, markings, etc
Shoulder and bike lane sweeping	2 times per year	All roadways with bicycle facilities
Shoulder and bike lane repairs	As needed	Repair of road surface, including potholes, cracks, or other problems on bicycle facilities
Median island and curb extension repairs	As needed	Repair of curb and gutters, removal of debris
Shoulder and bike lane resurfacing	During regular roadway repaving	Ensure that pavement width is maintained or increased during repaving projects
Debris removal from shoulders	As needed	Remove debris from roadway shoulders and bike lanes such as limbs, silt, and broken glass
Signs and markings	As needed	Repair or replace pedestrian and bicycle warning signs, bicycle route signs, crosswalk markings, bicycle lane markings, and any other similar facilities identified during inspections
Vegetation control	During regular roadway maintenance	Mow grass and trim limbs and shrubs 2 feet back from sidewalk edge
Litter removal	6 times per year	Could be done with volunteers



**CHAPTER 5 OUTLINE:**

Overview

Program Recommendations and Resources  
Policy Recommendations

# CHAPTER 5: PROGRAMS AND POLICIES

## Overview

Meeting the goals of the Town of Davidson Bicycle Transportation Plan will require more than construction and installation of recommended bicycle facilities. It will also require the initiation and continued support of bicycle-related programs from local officials, local residents, and community organizations. In addition, the implementation of these facilities and programs will require the adoption of new bicycle-related policies. This chapter outlines recommended programs, policies, and in some cases, policy changes for the Town of Davidson to meet the needs of bicyclists that cannot be met through facility construction alone.

## Program Recommendations and Resources

Bicycle-related programs fall into three main categories: education, encouragement, and enforcement. The programs listed in this chapter are provided to demonstrate the variety of opportunities available for promoting bicycling and active lifestyles in Davidson. The Town should work closely with local volunteers and community organizations to implement events and activities, research new program ideas, and improve upon existing programs.

### Education

#### *Bicycle Advocacy*

The Town of Davidson is fortunate to have the active involvement of the Greenways, Trails and Bikeways Advisory Board. This group is a beneficial resource for promoting bicycle safety, providing feedback on opportunities and obstacles within the bicycle network, and assisting in the coordination of events and outreach campaigns (such as the 2008 Town Day Family Bike Ride). At least one Board meeting should be dedicated on an annual basis to encouraging and evaluating the progress of overall plan implementation.

Another bicycle advocacy resource for Davidson is the Charlotte Area Bicycle Alliance (CABA). CABA builds successful partnerships with business, government, and civic groups without compromising their role as the voice of local bicycle advocacy. CABA is an active member of the Thunderhead Alliance—a national bicycle coalition—and lobbies Congress each year at the League of American Bicyclists Summit in Washington, D.C. CABA meetings are open to both members and non-members, and take place on the first Monday of each month, 6:30-8:00 p.m., Plaza Midwood Library small meeting room.

### *Public Education*

Educational materials can focus on safe behaviors, rules, and responsibilities, as well as practical local information, such as local bicycle facility maps, and trip planning. Information may include important bicycle laws, bulleted keys for safe bicycle travel, safe motor vehicle operation around bicycles, and general facility rules and regulations. This safety information is often available for download from national pedestrian advocacy organizations, such as the Pedestrian and Bicycle Information Center website, [www.pedbikeinfo.org](http://www.pedbikeinfo.org). Davidson's Greenways, Trails and Bikeways Advisory Board and the Charlotte Area Bicycle Alliance are two groups that could be contacted for more information on local trip planning and networking with more experienced cyclists for advice on routes.

All of the above information could be distributed through brochures, newsletters, newspapers, bumper stickers, and other print media that can be inserted into routine mailings. It can also be posted on municipal websites and shown on local cable access television. Local events should be utilized to distribute information using a booth to display related print media. A representative from the Greenways, Trails and Bikeways Advisory Board could volunteer at the booth to answer questions related to bicycling in Davidson.

### *Internal Education*

'Internal' education refers to the training of all people who are involved in the actual implementation of the Bicycle Transportation Plan. Internal training will be essential to institutionalizing bicycle issues into the everyday operations of engineering, planning, and parks and recreation departments. In addition to relevant Town staff, members of the local planning commission, NCDOT Division 10 staff, and county staff should also be included in training sessions whenever possible. This training should cover all aspects of the transportation and development process, including planning, design, development review, construction, and maintenance. This type of 'inreach' can be in the form of brown bag lunches, professional certification programs and special sessions or conferences. Even simple meetings to go over the Bicycle Plan and communicate its strategies and objectives can prove useful for staff and newly elected officials that may not have otherwise learned about the plan. Bicycle planning and design issues are complex, and state-of-the-art research and guidelines continue to evolve. Therefore, training sessions need to be updated and repeated on a regular basis.

Local law enforcement should be trained in accurate reporting of bicycle crashes involving automobiles. In many communities, police do not always adequately understand the rights of bicyclists. Proper interpretation of individual circumstances and events is critical for proper enforcement and respect between motorists and bicyclists. Special training sessions should be instituted and occur annually for new employees within the Police Department that focus on laws relating to bicycle travel.

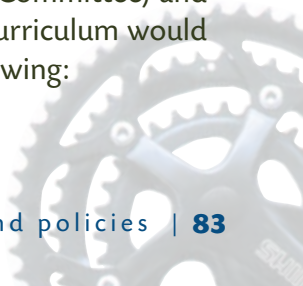


*Environmental, Cultural and Historic Education/Interpretation*

Educational programs and interpretative signage could be developed along greenways. Greenways provide opportunities for learning outside the classroom. Specific programs that focus on water quality and animal habitat are popular examples. Simple educational signage would offer interactive learning opportunities for people who use the trails. Brochures can be used to supplement signage with more detailed information and a map of the interpretive system.

*Education Actions for the Town of Davidson*

- Greenways, Trails and Bikeways Advisory Board should continue meeting on at least a bi-monthly basis, and one of their meetings should be reserved to evaluate the implementation of this Plan. The Town Board, staff and members of the Greenways, Trails and Bikeways Advisory Board should meet on an annual basis to tour bicycle facilities and discuss bicycle and pedestrian issues.
- Explore the possibility of partnering with neighboring municipalities in hiring a regional Alternate Modes/Active Modes Transportation Coordinator. The coordinator's responsibilities could include:
  - The implementation of this Plan (and, if the position is regionally funded, the plans of neighboring municipalities)
  - Coordination of the Safe Routes to School programs
  - Social marketing of bicycle, pedestrian, and transit modes
  - Bicycle and pedestrian events and education
  - Americans with Disabilities Act (ADA) issues
  - Parking management
  - Transit information and education
- Produce and distribute a user-friendly bicycle map of Davidson, and consider the advantages of doing so in conjunction with neighboring communities. Provide basic safety information, commuting information, trail etiquette, transit information, and a list of local resources on the back side of the map.
- Sponsor staff to participate in a training sessions for bicycle planning/design
- Assist in the coordination of joint adult and kids bicycle classes, to be provided in partnership between a locally certified League of American Bicyclists (LAB) instructor, the Davidson Walks and Rolls Committee, and Davidson Parks and Recreation Department. The actual curriculum would be developed by these groups, and could focus on the following:





- Offering training for people town-wide, with a focus on personal trip coaching/promotion for non-car modes;
- Focus on gaining participation from those who have not already been involved in similar programs;
- A school-focused component, with bicycle rodeos, bicycle trains, drop off and walk days, and walking/biking school buses; such activities could be lead by high school students as part of their service projects; and
- The benefits of active lifestyles, including both bicycling and walking.



Above and left: Images from 'bicycle rodeo' events.

### **Education Resources**

The following link to the *Pedestrian and Bicycle Information Center* website provides important messages for a range of different audiences that can be part of an educational campaign or program. It also offers links for finding more information related to bicycling education: <http://www.bicyclinginfo.org/education/>

*The League of American Bicyclists* has been working for better cycling in America since 1880. They do this by promoting bicycling, educating cyclists and motorists, and advocating on behalf of cyclists on Capitol Hill and with state legislators across the United States. The 'Bicycle Friendly Community' program and 'National Bike Month' are some of the programs sponsored by the League of American Bicyclists. This web page has information on some of their programs: <http://www.bikeleague.org/programs/index.php>





The mission of the *National Center for Bicycling and Walking (NCBW)* is to help create bicycle-friendly and walkable communities across North America by encouraging and supporting the efforts of individuals, organizations, and agencies. This section of the website provides information on the workshops they offer for the general public as well as for training professionals: <http://www.bikewalk.org/workshops.php>

The role of the *Active Living Resource Center (ALRC)* web site is to provide resources and tools to help make walking and bicycling part of your community's healthy lifestyle. This page of the website contains educational information related to bicycling: <http://www.activelivingresources.org/bikingandwalking.php>

Below: The cover of an informational brochure available through NCDOT that outlines the basics of bicycle commuting.



NCDOT Division of Bicycle and Pedestrian Transportation provides significant information related to bicycle programming. [http://www.ncdot.org/transit/bicycle/safety/safety\\_programs.html](http://www.ncdot.org/transit/bicycle/safety/safety_programs.html). Also, they list print material that is available for download: [http://www.ncdot.org/transit/bicycle/safety/safety\\_materials.html#posters](http://www.ncdot.org/transit/bicycle/safety/safety_materials.html#posters)

*Safe Communities* is a project of the National Highway Traffic Safety Administration (NHTSA). Nine agencies within the U.S. Department of Transportation are working together to promote and implement a safer national transportation system by combining the best injury prevention practices into the Safe Communities approach to serve as a model throughout the nation. <http://www.nhtsa.dot.gov/safecommunities>

*Safe Kids Worldwide* is a global network of organizations whose mission is to prevent accidental childhood injury, a leading killer of children 14 and under. More than 450 coalitions in 15 countries bring together health and safety experts, educators, corporations, foundations, governments and volunteers to educate and protect families. Visit their website to receive information about programs, involving media events, device distribution and hands-on educational activities for kids and their families. <http://www.usa.safekids.org/>

*Rules of the Road for Grandchildren: Safety Tips* is an information website for grandparenting. If you are a grandparent, you can play an important role in teaching your grandchildren the "rules of the road." AARP. <http://www.aarp.org/confacts/grandparents/rulesroad.html>

*Eat Smart, Move More* is a statewide movement that promotes increased opportunities for healthy eating and physical activity wherever people live, learn, earn, play and pray. <http://www.eatsmartmovemorenc.com/>



*American Trails* supports local, regional, and long-distance greenways and trails, whether in backcountry, rural, or urban areas. This page of the website contains studies and reports that can be referenced in educational materials related to trails and greenways: <http://www.americantrails.org/resources/>

*Worldcarfree.net* is a clearinghouse of information from around the world on how to revitalize towns and cities and create a sustainable future. In addition to serving the carfree movement, *Worldcarfree.net* offers resources for architects, planners, teachers/professors, students, decision-makers and engaged citizens: <http://www.worldcarfree.net/>

## **Encouragement**

### *School Programs*

Many programs exist to aid communities in developing safer pedestrian facilities around schools. Programs can be adopted by parents or the schools to provide initiatives for walking or biking. Information is available to encourage group travel, prevent bicycle- and pedestrian-related injuries, and sponsor commuter-related events.

For example, the Town of Davidson has been actively involved in the Safe Routes to School Program since 2007, and recently received a grant. Community leaders, parents and schools across the U.S. are using this program to encourage and enable more children to safely walk and bike to school. The National Center for Safe Routes to School aims to assist communities in developing successful 'Safe Routes' programs and strategies. The 'Education Resources' section provides more info on the Safe Routes to School program.

### *Trips for Kids Charlotte*

Although not school-related, the program '*Trips for Kids*' provides bicycling education to school-age children with a focus on mountain biking skills. '*Trips for Kids Charlotte*' was founded by individuals living in the Southern Piedmont of North and South Carolina with a fundamental belief that cycling is an empowering sport that can help kids achieve "breakthrough" results in their lives. They are public officials, corporate and private citizens who want to make a difference in the lives of kids and believe that cycling is a perfect medium for making that difference. Go to <http://www.tripsforkidscharlotte.org> for more information.



### *Awareness Days/Events*

A specific day of the year can be devoted to a theme to raise awareness and celebrate issues relating to that theme. A greenway and its amenities can serve as a venue for events that will put the greenway on display for the community. Major holidays, such as July 4th, and popular local events such as Davidson's Town Day serve as excellent opportunities to distribute bicycling information. The following are examples of other national events that the Town of Davidson can use to improve usage of bicycle facilities.

- *"BIKE! Charlotte" Event*

This event takes place annually on the first week of May. BIKE! Charlotte is ten days of bicycle related events and promotions used to encourage families, friends, and colleagues to breakout the bike and use it as a means of transportation and recreation. The event features an agenda of exciting activities for children and adults. Contact Ken "KT" Tippet, CDOT Transportation Bicycle Planner, for more information.



*Left: A poster from the 2008 BIKE! Charlotte Event*

- *International Car-Free Day (September 22)*

Designate one day a year for people to walk to work to help advance programs, promote active living, and raise awareness for environmental issues. Car-Free Day can be at the end of an entire week or month of alternative transportation promotional activities, including fitness expos, transit-use incentives, walking and jogging group activities, running and bicycling races and rides, etc. Go to <http://Worldcarfree.net> for more information.

- *“Strive Not to Drive Day”*

This event example, from the Town of Black Mountain, North Carolina, is an annual event to celebrate and promote the Town’s pedestrian achievements for the year throughout their region. Awards for pedestrian commuters, as well as booths, contests, and other events are organized through their local MPO Bicycle and Pedestrian Task Force and the Land-of-Sky Regional Council. A similar event, such as “Ditch the Car Day” could be held in Davidson to focus on bicycling issues, as the Bicycle Transportation Plan is implemented.

- *National Trails Day*

This event is held every year in June. Other events, competitions, races, and tours can be held simultaneously to promote trail use within Davidson. For example, in Greensboro, North Carolina, the Parks and Recreation-Trails Division sponsors events for National Trails Day, and it has become a huge event for the entire city. Go to <http://www.americanhiking.org> for more information.

- *Earth Day*

Earth Day is April 22nd every year and offers an opportunity to focus on helping the environment. Efforts can be made to encourage people to help the environment by bicycling to destinations and staying out of their automobiles. This provides an excellent opportunity to educate people of all ages in Davidson. Go to <http://www.epa.gov/earthday/> for more information.

- *Walk to School Day*

Walk to School Day can also involve bicycling to school. In 1997, the Partnership for a Walkable America sponsored the first National Walk Our Children to School Day in Chicago, modeled after the United Kingdom’s lead. Originally, it was simply a day to bring community leaders and children together to create awareness of the need for communities to be walkable. By the year 2002, children, parents, teachers and community leaders in all 50 states joined nearly 3 million walkers around the world to celebrate the second annual International Walk to School Day. For more information, go to <http://www.walktoschool.org>.



*Cycling Clubs/Bicycle-Commuting Groups*

Neighborhoods, local groups, or businesses could promote cycling clubs for local residents or employees to meet at a designated area and exercise on certain days before or after work (or even to work), during lunch breaks, or anytime that works for the group. This informal group could be advertised on local bulletin or information boards. These clubs could be specialized to attract different interest groups. For example, in the Research Triangle Park, several work places have organized their own riding groups to promote cycling and active, healthy lifestyles (see poster below).

Local examples of cycling clubs/bicycle-commuting groups include *Davidson College Outdoors* (a recreation center and club), the Charlotte Bicycle Commuter Mentor Program (described under ‘Encouragement Resources’), and the *Davidson Family Bike Ride*, which was a huge success in at Town Day in 2008.

*Right: RTI International of Research Triangle Park is an example of a private company that actively supports bicycling.*


| On Earth Day and Every Day – RTI Cares

Biking to Work

RTI International’s Bike Commuting Group

- RTI support for bike commuters**
- Provides showers, lockers, bike racks
- Participates in RTP Bike to Work week
- Has bike commuting group, founded by staff

- RTI bike commuting group**
- Supported by RTI Recreation & Wellness Committee
- Holds monthly meetings to promote ridership, discuss topics of interest
- Organized month-long Bike Challenge



- RTI Bike Challenge results**
- 1,370 miles ridden
- 57 gallons of fuel saved
- 1,107 pounds (or 0.5 metric ton) of CO<sub>2</sub> prevented from release into air

- Bike commuting group goals for 2008**
- Conduct workshops (e.g., bike safety 101, repairing a flat tire)
- Implement buddy-system, group caravans for new riders
- Create map with rider locations
- Build intranet page for bike commuting
- Consider motivational group rides (e.g., for charity)
- Establish bike rider listserv for communications

### *Use Facilities to Promote Other Causes*

Greenways could be used for events that promote other causes, such as health awareness. Not only does the event raise money/publicity for a specific cause, but it encourages and promotes healthy living and an active lifestyle, while raising awareness for bicycling activities. Non-profit organizations such as the American Cancer Society, American Heart Association, and the Red Cross sponsor events such as the *Tour de Cure*, a series of cycling events held in more than 80 cities nationwide to benefit the American Diabetes Association (go to <http://tour.diabetes.org> for more information).

### *Bicycle Activities/Promotion within Local Organizations*

The Town of Davidson has numerous organizations that could be utilized to promote bicycling activities (e.g. Davidson College, the YMCA, local bicycle store, local cycling groups, local schools/PTAs, neighborhood groups, homeowners associations, etc). Education, enforcement, and encouragement programs can be advertised and discussed in local organization newsletters, seminars, and meetings. Such organizations could even organize and cross-promote their own group rides, trail clean-ups, and other activities listed in this section.

### *Art in the Landscape*

The inclusion of art along greenway corridors and trails would encourage use of facilities and provide a place for artwork and healthy expression to occur. Artwork could be displayed in a variety of ways and through an assortment of materials. Living artwork could be “painted” through the design and planting of various plant materials. Sculpture gardens could be arranged as an outdoor museum. Art through movement and expression could be displayed during certain hours during the day or during seasonal events. Artwork can be provided by local schools, special interest clubs and organizations, or donated in honor or memory of someone. A key potential partner for art along Davidson’s trails is the Davidson Public Art Task Force, which began meeting in 2008 and is seeking opportunities for public art.

### *Adopt-A-Trail*

Local clubs and organizations provide great volunteer services for maintaining and patrolling trails. This idea could be extended to follow tour routes or specified streets/sidewalks. A sign to recognize the club or organization could be posted as an incentive to sustain high quality volunteer service. The *Boy Scouts of America* serve as a good model for participation in this type of program.

### *Revenue Generating Programs*

The Town of Davidson should be proactive in increasing revenue from programs and events that can help fund the building, management, and maintenance of future facilities. Fees could be increased in events annually or biannually to increase revenue. A local running example is Davidson’s “Get Ready, Get Set, Go Green 5K Trail Run,” which uses local sponsors



and registration fees to support the Davidson Lands Conservancy (which, in turn supports further trail development). Program and event ideas that are being used to generate revenue across the country include:

- Races/triathlons (fees and/or donations)
- Concessions
- Educational/Nature/Historic tours (fees and/or donations)
- Fund-raisers including dinners/galas
- Moonlight bike rides and walks (fees and/or donations)
- Greenway parade (fees and/or donations)
- Concerts (fees and/or donations)
- Art events along greenway (fees and/or donations)
- Events coincident with other local events such as fairs, festivals, historic/folk events, etc.
- Media events and ribbon-cuttings for new trails and bicycle facilities (donations)

#### *Encouragement Actions for the Town of Davidson*

- This Plan should be presented to other local and regional bodies and agencies. Possible groups to receive a presentation might include: Charlotte Mecklenburg Bicycle Advisory Committee, Charlotte Area Bicycle Alliance (CABA), local bike store owners, regional transportation planners, health clubs and fitness facilities, schools and youth organizations, riding clubs, major employers, and large neighborhood groups.
- Encourage children to walk and bike to school safely, through a combination of programs. Evaluate progress of current Safe Routes to School efforts, and improve effectiveness as needed.
- Parks and Recreation could lead a monthly family ride during the months of April through October as part of their regular programming schedule (similar to the 2008 Town Day family ride); citizens (or GAB members) might be willing to coordinate and lead such rides.
- Encourage the development of a local bicycle co-op in Davidson; also, see the Design Standards chapter for information on Bicycle Stations and Repair Stands
- Encourage the establishment and/or expansion of cycling clubs and bicycle-commuting groups.
- Use bicycle facilities, particularly trails, to promote causes and hold special events for causes





- Utilize greenways for the display of public art
- The Town and the Greenways, Trails and Bikeways Advisory Board should consider teaming with local bicycle shops to advertise, promote, and provide rentals to the public. Some large U.S. cities provide multiple public bicycle rental stations, however, such a large scale of rentals is not yet appropriate in the Town of Davidson. One option the Town and local partners should consider is renting bicycles from the old sewer power plant building at the trailhead of the Southeast Greenway (off of South Street).

### Encouragement Resources

Also refer to 'Education Resources' listed on pages 79-80.

The Town of Davidson is already involved in *Safe Routes to School* (Davidson Elementary School received a \$15,000 grant in 2008 for public education and programming), a national program with \$612 million dedicated from Congress from 2005 to 2009. Local Safe Routes to School programs are sustained by parents, community leaders, and citizens to improve the health and well-being of children by enabling and encouraging them to walk and bicycle to school. Recently, the state of North Carolina has started the NC Safe Routes to School Program based off of the national program. The state has \$15 million over the next 5 years for infrastructure improvements within 2 miles of elementary and middle schools (go to <http://ncdot.org/transit/bicycle/saferoutes/SafeRoutes.html> for more on the NCDOT program). This funding can also be used towards the development of school related programs to improve safety and walkability initiatives. The state requires the completion of a competitive application to apply for funding and a workshop at the school to determine what improvements are needed. Go to <http://www.saferoutesinfo.org> for more on the program in general.



The following two links are for model bicycle coops in North Carolina that encourage the use of the bicycle as a mode of transportation and recreation. They are located in Carrboro, NC and Durham, NC, respectively: <http://www.recyclery.info/> and <http://www.durhambikecoop.org/>.

This web page from the *League of American Bicyclists* has information on encouraging bicycle commuting: <http://www.bikeleague.org/resources/better/commuters.php>



*Charlotte's Bicycle Commuter Mentor Program* is a group of cycling enthusiasts who want to help other Charlotteans try out cycling to work. They are ready to suggest equipment, routes, and technique; ride with participants on their first trip to work; offer ongoing encouragement and advice; and include participants in a supportive community of like-minded bike commuters. Visit [www.bikementor.org](http://www.bikementor.org) for more information.







Active Living  
**RESOURCE CENTER**

The role of the *Active Living Resource Center (ALRC)* web site is to provide resources and tools to help make walking and bicycling part of your community's healthy lifestyle. This page of the website has encouraging success stories from other communities: [http://www.activelivingresources.org/stories\\_directory.php](http://www.activelivingresources.org/stories_directory.php)



*Bikes Belong* is sponsored by the U.S. bicycle industry with the goal of putting more people on bicycles more often. From helping create safe places to ride to promoting bicycling, they carefully select projects and partnerships that have the capacity to make a difference. Their work concentrates on four main areas: federal policy and funding, national partnerships, community grants, and promoting bicycling. In addition, they operate the Bikes Belong Foundation to focus on kids and bicycle safety. <http://www.bikesbelong.org/>

## *Enforcement*

### *Motorist Enforcement*

Based on crash data analysis and observed patterns of behavior, law enforcement can use targeted enforcement to focus on key issues such as motorists speeding, passing too closely to cyclists, parking in bicycle lanes, etc. These issues should be targeted and enforced consistently. The goal is for bicyclists and motorists to recognize and respect each other's rights on the roadway.

As traffic continues to increase on North Carolina's streets and highways, concern has grown over the safety of children as they walk or bike 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 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 GS 20-114.1. Go to [http://www.ncdot.org/transit/bicycle/safety/research\\_walkzone.html](http://www.ncdot.org/transit/bicycle/safety/research_walkzone.html) for information on a recent NCDOT school zone safety study.

### *Bicyclist Enforcement*

Observations made by local trail and bicycle facility users can be utilized to identify any conflicts or issues that require attention (see online public comment form results in Appendix A). To maintain proper use of trail facilities, volunteers could be used to patrol the trails, particularly on the

most popular trails and on days of heavy use. The volunteer patrol can report any suspicious or unlawful activity, as well as answer any questions a trail user may have. When users of the bicycle network witness unlawful activities, they should have a simple way of reporting the issue to police. A hot line should be created, which would compliment trail patrol programs. People could call in and talk to a live operator or to leave a voice mail message about the activity they witnessed. Accidents could also be reported to this hot line. Accident locations could then be mapped to prioritize and support necessary facility improvements.

Additionally, unsafe cycling (e.g. riding on the wrong side of the street, without lights at night, or children riding without helmets) should be addressed by local law enforcement through warnings, with an understanding that there may be a learning curve for new or inexperienced cyclists. Again, the goal is for bicyclists and motorists to recognize and respect each other's rights on the roadway.

### *Enforcement Actions*

- Sponsor police staff to attend in a training session for law enforcement that focuses on bicycle issues
- Establish an easy-to-use and well-publicized bicycle and pedestrian enforcement hot line and online resource. Complaints that include licence numbers should result in a letter to the owner of the vehicle that includes the complaint as well as a handout that outlines the rules of the road and rights for both cyclists and motorists. Reportable incidents include:
  - Collisions with motorists, other cyclists, or pedestrians
  - Getting "doored"
  - Being side swiped or having a close call with a vehicle
  - Road rage and harassment property damage
  - Bike lane obstructions such as parked cars, yard waste, or trash cans

At a minimum, cyclists would need to provide a description of the vehicle and driver, time of day, and location of incident.

- Target and enforce all illegal motorist and bicyclist behavior that may jeopardize public safety and the success of the Bicycle Network, particularly speeding. Base the location of targeted enforcement areas on reported incidents from the hotline.
- Consider community service options for bicycle and pedestrian violations



**Cyclists**

In North Carolina, bicyclists have the same rights and duties as motorists. For a complete list of NC bike laws, visit [www.ncdot.org/transit/bicycle](http://www.ncdot.org/transit/bicycle)

**Ride on the right**

- Always ride in the same direction as traffic
- Ride as far to the right as practicable

**Follow traffic laws**

- Obey all traffic control devices, such as stop signs
- Always use hand signals when turning

**Always wear a properly fitting helmet**

- Children below the age of 16 are required by NC law to wear a helmet
- Make sure that the helmet fits snugly on top of the head, not tipped back
- Replace your helmet after any crash or impact

**Ride predictably**

- Ride in a straight line and don't swerve between parked cars
- Check for traffic before entering any street or intersection
- Give an audible warning to pedestrians before approaching from behind on a multi-use path

**Be visible**

- Wear brightly colored clothing
- At night, the law requires cyclists to use a white front light and a red rear light or reflector
- Make eye contact with motorists

www.bikewalkdurham.org

- Provide officers with a handout to be used during bicycle-related citations and warnings (see example hand-out card at left; opposite side has rules for motorists)
- Require all crossing guards to complete an NCDOT Crossing Guard Training Program
- Establish a crossing guard program for peak school hours
- Establish a local "Trail Patrol" and coordinate with the police department to have the police patrol Town greenways periodically by bicycle.
- Use paint and stencils to mark trail pavement every 1/4 mile so that trail users will be able to effectively communicate their location when calling 911. A critical step in this process also involves communicating with the police department and 911 operators about the trail markings, so that they are able to dispatch assistance to the proper location on the trail.

*Above: An example wallet-sized plastic card that could be handed out to cyclists and motorists that explains the rules of the road.*

*Right: Police patrol a trail in bicycles.*



### **Enforcement Resources**

Town of Davidson Police Department, non-emergency phone number: 704 892-5131, <http://www.ci.davidson.nc.us/index.asp?NID=126>

The National Highway Traffic Safety Administration (NHTSA) awarded a grant to MassBike to develop a national program to educate police departments about laws relating to bicyclists. The program is intended to be taught by law enforcement officers to law enforcement officers as a stand-alone resource. The link contains downloads for presentations, videos, and other resources that are useful for police officers and everyday cyclists alike: <http://www.massbike.org/police/>

## ***Bicycle Laws of North Carolina (NCDOT, 2008)***

In North Carolina, **the bicycle has the legal status of a vehicle**. This means that bicyclists have full rights and responsibilities on the roadway and are subject to the regulations governing the operation of a motor vehicle. North Carolina traffic laws require bicyclists to:

- **Ride on the right in the same direction as other traffic**
- **Obey all traffic signs and signals**
- **Use hand signals to communicate intended movements**
- **Equip their bicycles with a front lamp visible from 300 feet and a rear reflector that is visible from a distance of 200 feet when riding at night.**

In addition, the *Child Bicycle Safety Act of 2001* requires that:

- **All bicycle operators under 16 years of age must wear a bicycle helmet on public roads, public paths and public rights-of-way**
- **All child passengers under 40 pounds or 40 inches must be seated and secured in a child seat or a bicycle trailer.**

Although the new law does not require adult bicyclists to wear helmets, they are strongly encouraged to do so. Some localities within the state have enacted ordinances requiring cyclists to wear helmets.

*Legal Issues Related to Bicycling:* Laws pertaining to the operation of a bicycle vary from state to state. Below are three areas of North Carolina law that need clarification.

- **Bicycling on Interstate or fully controlled limited access highways, such as beltlines, is prohibited by policy, unless otherwise specified by action of the Board of Transportation. Currently, the only exception to the policy is the US 17 bridge over the Chowan River between Chowan and Bertie Counties.**
- **There is no law that requires bicyclists to ride single file, nor is there a law that gives cyclists the right to ride two or more abreast. It is important to ride responsibly and courteously, so that cars may pass safely.**
- **There is no law that prohibits wearing headphones when riding a bicycle; however, it is not recommended. It is important to use all your senses to ensure your safety when riding in traffic.**

Retrieved on 9/4/2008, from [http://ncdot.org/transit/bicycle/laws/laws\\_bikelaws.html](http://ncdot.org/transit/bicycle/laws/laws_bikelaws.html)



Go to the following web sites for NCDOT's 'A Guide to NC Bicycle and Pedestrian Laws': [http://ncdot.org/transit/bicycle/laws/laws\\_bikelaws.html](http://ncdot.org/transit/bicycle/laws/laws_bikelaws.html) and <http://www.ncdot.org/transit/bicycle/laws/resources/BikePedLawsGuidebook-Full.pdf>

Also, this webpage of the *Pedestrian and Bicycle Information Center* has a wealth of resources regarding enforcement issues, ranging from training for local law enforcement to procedures for handling violators, to enforcement example case studies: <http://www.bicyclinginfo.org/enforcement/>

Finally, the *NCDOT School Crossing Guard Program* has information for training school crossing guards: [http://www.ncdot.org/transit/bicycle/safety/programs\\_initiatives/crossing.html](http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/crossing.html)

## *Policy Recommendations*

All bicycle-related policies from adopted Town plans and initiatives are summarized in Chapter 2, starting with the *Town of Davidson Planning Ordinance*, on page 18. Town of Davidson Planning staff, Town of Davidson Public Works staff, and NCDOT Division 10 staff should be familiar with both the current and recommended bicycle policies to ensure the full suite of policy tools are used and enforced. The following sections outline key bicycle-related policies for the Town of Davidson. They include overarching bicycle policy, as adopted by Federal- and State-level transportation agencies, followed by recommendations for new policies and existing policy modifications for the Town of Davidson.

### *Federal Bicycle Policy*

*United States Department of Transportation (US DOT)*

A United States Department of Transportation (US DOT) policy statement regarding the integration of bicycling and walking into transportation infrastructure recommends that, "*bicycling and walking facilities will be incorporated into all transportation projects*" unless exceptional circumstances exist. The Policy Statement was drafted by the U.S. Department of Transportation in response to Section 1202 (b) of the Transportation Equity Act for the 21st Century (TEA-21) with the input and assistance of public agencies, professional associations and advocacy groups. USDOT hopes that public agencies, professional associations, advocacy groups, and others adopt this approach as a way of committing themselves to integrating bicycling and walking into the transportation mainstream. The full statement reads as follows, with some minor adjustments for applicability in Davidson (note: some parts, like #3, are pedestrian-focused):



1. Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:

- Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.
- The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project.
- Where sparsity of population or other factors indicate an absence of need. For example, on low volume, low speed residential streets, or streets with severe topographic or natural resource constraints.

2. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate. Rumble strips are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of four feet in which a bicycle may safely operate.

3. Sidewalks, shared use paths, street crossings (including over- and undercrossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.

4. The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through the following additional steps:

- Planning projects for the long-term. Transportation facilities are long-term investments that remain in place for many years. The design and construction of new facilities that meet the criteria in item 1) above should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements. For example, a bridge that is likely to remain in place for 50 years, might be built with sufficient width for safe bicycle and pedestrian use in anticipation that facilities will be available at either end of the bridge even if that is not currently the case.



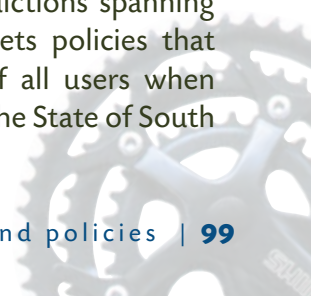
- Addressing the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular travel corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections and interchanges shall accommodate bicyclists and pedestrians in a manner that is safe, accessible and convenient.
- Getting exceptions approved at a senior level. Exceptions for the non-inclusion of bikeways and walkways shall be approved by a senior manager and be documented with supporting data that indicates the basis for the decision.
- Designing facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow design guidelines and standards that are commonly used, such as the AASHTO Guide for the Development of Bicycle Facilities, AASHTO's A Policy on Geometric Design of Highways and Streets, and the ITE Recommended Practice "Design and Safety of Pedestrian Facilities. (Many of these guidelines are summarized in Chapter 4: Bicycle Facility Standards)

(Retrieved from <http://www.fhwa.dot.gov/environment/bikeped/design.htm> on 5/6/2008)

*Complete Streets and the "Safe and Complete Streets Act of 2008"*

'Complete streets' are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street. Complete streets policies require transportation planners to take the needs of all users into account in all upcoming transportation projects so the road network can be gradually improved for everyone.

The "Safe and Complete Streets Act of 2008" was introduced into the U.S. House of Representatives in May 2008, along with the Senate version of the bill, S2686 (the passage of these bills is pending as of the adoption of this Plan). This legislation would ensure that future transportation investments made by state Departments of Transportation and Metropolitan Planning Organizations create appropriate and safe transportation facilities for all those using the road – motorists, transit vehicles and riders, bicyclists, and pedestrians of all ages and abilities. More than 50 jurisdictions spanning all regions of the country have adopted complete streets policies that direct transportation planners to consider the needs of all users when transportation investment decisions are made (including the State of South Carolina and the City of Charlotte, North Carolina).



Regardless of whether or not the Safe and Complete Streets Act of 2008 passes at the Federal level, the Town of Davidson should still enhance local ordinances to reflect a complete street policy. According correspondence with the *National Complete Streets Coalition*, Section 11 of Davidson's Town Ordinance does well in referencing the need for streets to accommodate bicyclists and pedestrians, but the ordinance also needs to accommodate transit vehicles and transit users. Most importantly, the ordinance should explicitly state that streets should accommodate people of all ages and abilities.

Below are the nine elements of a complete streets policy according to the *National Complete Streets Coalition*. Go to <http://completestreets.org> for more information.

- Specifies that 'all users' includes pedestrians, bicyclists, transit vehicles and users, and motorists, of all ages and abilities.
- Aims to create a comprehensive, integrated, connected network.
- Recognizes the need for flexibility: that all streets are different and user needs will be balanced.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards.
- Directs that complete streets solutions fit in with context of the community.
- Establishes performance standards with measurable outcomes.

### ***North Carolina Bicycle Policy***

In 1978, the North Carolina Board of Transportation adopted the nation's most comprehensive set of bicycle policies in response to the enabling legislation of 1974. These policies were unique at that time in that they detailed how the state DOT would institutionalize bicycle provisions into everyday departmental operating functions. They declared "bicycle transportation to be an integral part of the comprehensive transportation system in North Carolina" and formalized the inclusion of bicycle provisions in highway construction projects.





In 1991, the policy document was updated to clarify responsibilities regarding the provision of bicycle facilities upon and along the 77,000-mile state-maintained highway system. The newer policy details guidelines for planning, design, construction, maintenance, and operations pertaining to bicycle facilities and accommodations. All bicycle improvements undertaken by the NCDOT are based upon this policy.

Visit [www.ncdot.org/Transit/bicycle/laws/laws\\_bikepolicy2.html](http://www.ncdot.org/Transit/bicycle/laws/laws_bikepolicy2.html) for the full text of the NCDOT Bicycle Policy. Key elements of the policy are listed below:

- 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
- 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.
- The intent to include planning for bicycle facilities within new highway construction and improvement projects is to be noted in the Transportation Improvement Program.
- 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.).
- The development of bicycle demonstration projects which foster innovations in planning, design, construction, and maintenance is encouraged.
- 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
- During restriping operations, motor vehicle traffic lanes may be narrowed to allow for wider curb lanes.



- 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.
- North Carolina Bicycle Policy also contains guidelines for accommodating greenways with road improvement projects; go to [http://www.ncdot.org/transit/bicycle/laws/laws\\_greenway\\_admin.html](http://www.ncdot.org/transit/bicycle/laws/laws_greenway_admin.html) for more information.

## *Town of Davidson Bicycle Policy*

### *Revisions to the Town of Davidson Planning Ordinance*

The Planning Ordinance is clear in its commitment to encouraging bicycle transportation. The changes suggested below serve as an update to the Planning Ordinance, reflecting the findings and recommendations of this 2008 Bicycle Transportation Plan, and clarify some basic policy positions regarding future development and the provision of bicycle facilities. Some edits are also suggested for consistency in terminology. Additions are noted in brackets, [ ], and deletions are faded and noted with a strike through (example).

#### *11.2.5 Bike-Paths [Bicycle Facilities]*

~~“All new developments within the existing town limits fronting on North Main Street, Griffith Street, Beaty Street, Concord Road, Davidson-Concord Road, East Rocky River Road, or Grey Road [Town of Davidson ETJ] shall include bike lanes, a minimum of four feet in width, on those streets [the bicycle facility indicated on the Recommended Bicycle Route Network Map in Chapter 3 of the Town of Davidson Bicycle Transportation Plan]. New developments outside the town limits fronting on North Main Street, Concord Road, Davidson-Concord Road, East Rocky River Road, Grey Road, Barnhardt Road, or Mayes Road shall include bike paths a minimum of eight feet in width and separated from vehicular traffic on those streets. Bike lanes and bike paths [Bicycle Facilities] shall be designed according to the North Carolina Bicycle Facilities Planning and Design Guidelines, published by NCDOT [Bicycle Facility Standards in Chapter 4 of the Town of Davidson Bicycle Transportation Plan].”~~



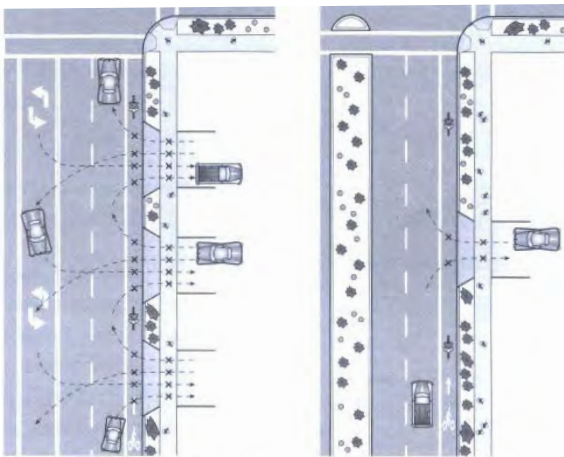
### 11.5 General Design Principles – Greenways

“The planning ordinance requires the development of a network of greenways that connect active and passive parks, schools, cultural sites, neighborhoods, and commuter destinations. [In any case in which a greenway is indicated on an adopted plan of the Town of Davidson as being located on lands proposed for development, such greenway shall be dedicated and developed.] Greenway easements are required in low-impact, farmhouse cluster, conservation easement, and rural subdivisions. All other developments shall have either a greenway or a connection to the greenway.”

#### *Additional Considerations for Bicycle Policy in Davidson*

These statements are included for further discussion as policy recommendations in Davidson, to be considered by Town planning staff:

- Encourage and/or require private owners (of residences and businesses) to keep the area in and around bicycle lanes free of debris and litter, particularly yard waste. Also, the Town of Davidson should consider the feasibility of taking over bicycle lane maintenance
- Due to recommendations for several sidepaths, it is important that the Town consider a policy of access management to limit the number of commercial and residential crossings of sidepaths (see diagrams at left).
- Bicyclists and pedestrians should be accommodated on roadway bridges, underpasses, and interchanges and on any other roadways that are impacted by a bridge, underpass, or interchange project (except on roadways where they are prohibited by law). All new bridges should be constructed with bicycle lanes, wide sidewalks, and bike and/or pedestrian safe railing.”



Uncontrolled accesses create many potential conflict points at every driveway (left). Consolidating driveways reduces conflict points (right). See the *Guide for the Planning, Design, and Operation of Pedestrian Facilities* by the American Association of State Highway and Transportation Officials (AASHTO, 2004) for details.

- Marginal roadway improvements should be considered when the opportunity arises and there is no other option—such as wider shoulders, a bike lane, or wide curb lane—because of lack of space. However, such improvements are unacceptable unless there is a documented statement that justifies why the full recommended bicycle facility was not an option. This policy reflects the idea that it is possible to marginally improve some roadways for bicyclists—particularly more experienced cyclists—by providing as little as 2 ft of usable riding surface to the right of the roadway edge stripe. While this will not meet the design specifications necessary for a designated bicycle facility, it can provide an improved operating environment for both bicyclists and motor vehicles and will reduce the impact of bicycles on highway capacity.



- *Riding bicycles on sidewalks.* Since the law in North Carolina requires bicycles to follow the same rules of the road as other vehicles, they are technically prohibited from the sidewalk. Also, riding on the sidewalk is often dangerous for both cyclists and pedestrians, particularly when cars pull out of driveways, or when bicycles hit pedestrians.

However, for children and older residents, riding on the sidewalk is generally viewed as acceptable in many communities, so long as they yield to pedestrians. There is no set age at which children should start riding on road as adults, and it is primarily at the discretion of the parents (a common age is about 13, according to information presented at a NCDOT Bicycle Planning and Design Workshop).

The following five rules were adapted from 'commutebybike.com'. These rules could help the Town of Davidson address the issue of bicycling on sidewalks, and possibly help reduce the chances of injury. Again, for children (under 15) and older residents (over 55):

1. *Ride slowly* - This is the most important rule for riding on the sidewalk. Bicyclists on the sidewalk should never ride faster than a relaxed jog.
2. *Yield to pedestrians* - If you come up behind people walking, be very polite and wait for a good time to ask them to let you pass. Never come up behind them yelling, ringing a bell or anything else that could startle or scare them. You are trespassing on their terrain so be courteous.
3. *Check every cross street and driveway* - This is the dangerous part! Drivers are used to pulling all the way up to the road before coming to a stop and turning onto the street you're following. Make sure when coming up to a driveway or cross street that you slow down and check to make sure a car is not coming. They aren't looking for fast moving vehicles to be coming off the sidewalk, so you have to be watching for them!
4. *Only cross the street at crosswalks* - A good way to get hit by a car is to come darting off the sidewalk into the street randomly. Again, remember that drivers aren't looking for people to jump off the sidewalks into traffic randomly. If you need to cross the street, wait until you get to a cross walk and do it there.
5. *Be willing to walk your bike* - If you regularly ride on the sidewalk, there are going to be lots of times where the best decision is to get off your bike and walk for a bit. This is usually due to congestion. When there are just too many people around that you risk hitting one of them, it's time to walk.



**CHAPTER 6 OUTLINE:**  
Overview  
Key Partners in Implementation  
Project Lists  
Action Steps

# CHAPTER 6: IMPLEMENTATION

## Overview

The three main ways to improve bicycling conditions in Davidson are through facility construction, program implementation and policy enforcement. This chapter outlines the primary roles for key players in plan implementation and how they relate to one another. Specific action steps and a prioritized list of projects are provided.

## Key Partners in Implementation

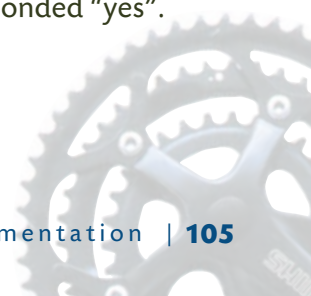
### *Role of Davidson's Town Board*

The Town Board will be responsible for adopting this plan. Through adoption, the Town's leadership is recognizing the value of bicycle transportation and is putting forth a well-thought out set of recommendations for improving public safety and overall quality of life (see pages 4-8: *The Value of Bicycle Transportation*).

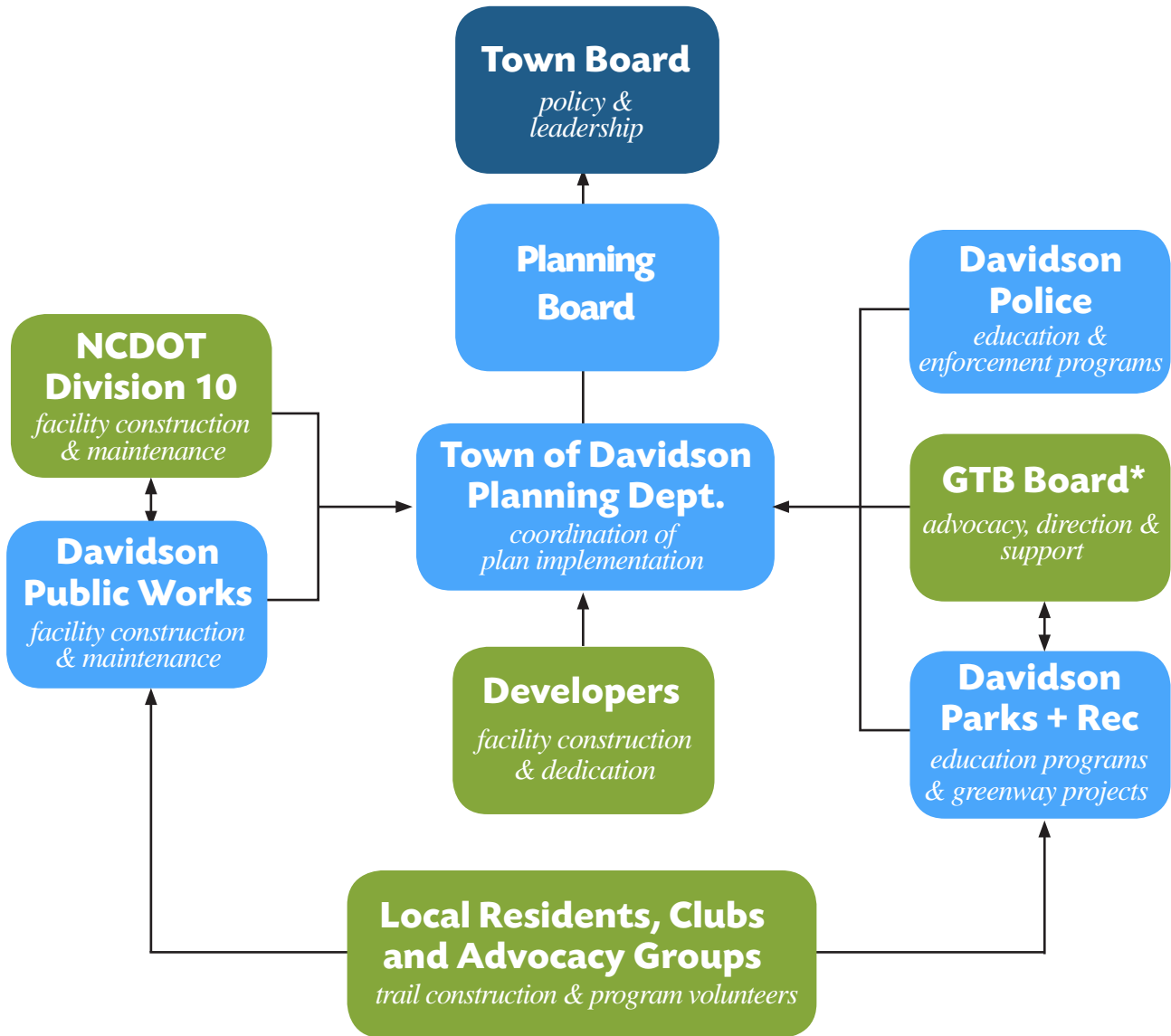
By adopting this Plan, the Town Board is also signifying that they are prepared to support the efforts of other key partners in the plan's implementation, including the work of it's own departments and the local NCDOT, Division 10. For example, if the Board adopts this plan, they should be prepared to:

- Approve ordinance updates to enhance bicycle-related policy
- Include priority bicycle projects in upcoming capital improvement plans
- Consider a bond referendum for greenways and roadway improvements for bicycle transportation

Davidson's online survey (which yielded over 200 responses) showed strong support for local funding options. The survey asked, "If grants or development do not become available in the next 5 years to build additional greenways or bicycle lanes, should the Town of Davidson look for ways to fund bicycle improvements?" An overwhelming 94% responded "yes".



*Organizational Framework for Implementation*



\*GTB = Greenways, Trails and Bikeways Advisory Board



### ***Role of the Town of Davidson Planning Board***

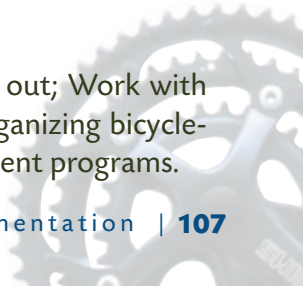
The Town of Davidson Planning Board serves as an advisory board to the Board of Commissioners on all matters of planning and zoning. The Planning Board should be prepared to:

- Learn about bicycle-related policy and potential policy revisions to the Planning Ordinance.
- Become familiar with the recommendations of this Plan, and be prepared to support its implementation.

### ***Role of the Town of Davidson Planning Department***

The Planning Department will take primary responsibility for the day-to-day operations necessary to implement the plan. For example, the department should be prepared to:

- Pursue grants for funding priority projects and priority programs.
- Communicate and coordinate with the Town of Davidson Public Works Director and the Town of Davidson Parks and Recreation Director on priority projects for town-maintained roadways and greenway corridors/easements.
- Communicate and coordinate with local developers on adopted recommendations for bicycle facilities, including greenways.
- Communicate and coordinate with the Town of Davidson Parks and Recreation Department, Mecklenburg County, and neighboring municipalities on regional greenway corridors; partner for joint-funding opportunities.
- Communicate and coordinate with NCDOT Division 10 on priority projects for NCDOT-maintained roadways.
- Ensure that when NCDOT-maintained roadways in Davidson are resurfaced or reconstructed, that this Plan's adopted recommendations for bicycle facilities are included on those streets.
- Meet with the Greenways, Trails, and Bikeways Advisory Board (GTB); provide progress updates for plan implementation and gather input regarding bicycling issues
- Ensure that recommended programs are carried out; Work with locale advocacy groups and the GTB to assist in organizing bicycle-related events, educational activities, and enforcement programs.



- Present bicycle-related policy and policy revisions to the Planning Board and Town Board for their approval; encourage the Board to approve funding for plan implementation.

### ***Role of the Town of Davidson Parks and Recreation Department***

The Town of Davidson Parks and Recreation Department operates the recreation, athletic, and special event programs for the citizens of Davidson. They also maintain a variety of community, neighborhood, greenway, and natural park areas. This department also does the majority of greenway planning, greenway land acquisition and is involved in construction of greenways. The Parks and Recreation Department should be prepared to:

- Continue working with the Greenways, Trails and Bikeways Advisory Board and the Town of Davidson Planning Department on the development of priority greenway trails.
- Communicate and coordinate with the Town of Davidson Planning Department, Mecklenburg County, and neighboring municipalities on regional greenway corridors; partner for joint-funding opportunities.

### ***Role of the Town of Davidson Public Works Department***

The Public Works Department will take primary responsibility for the construction and maintenance of bicycle facilities on town-owned and maintained roadways, as well as construction and maintenance of town greenway trails. For example, the department should be prepared to:

- Become familiar with the standards set forth in Chapter 4 of this Plan, as well as state and national standards for bicycle facility design.
- Construct and maintain bicycle facilities (on town roadways and greenways) using the standards set forth in Chapter 4 of this Plan.
- Notify the Town of Davidson Planning Department of all upcoming roadway reconstruction or resurfacing/restriping projects, no later than the design phase; Provide sufficient time for comments; Incorporate bicycle recommendations from the planning staff.





*GTB: See Chapter 5: Programs and Policies, the Funding Appendix and this chapter's Action Steps for more information.*

### ***Role of the Greenways, Trails and Bikeways Advisory Board***

This board has contributed significantly to the development of this plan, and their continued support is critical for its implementation. The board should be prepared to:

- Meet with staff from the Planning Department; evaluate progress of the plan's implementation and offer input regarding bicycling issues; assist town staff in organizing bicycle-related events and educational activities.
- Build upon current levels of local support for bicycling issues and advocate for local project funding.

### ***Role of the Local NCDOT, Division 10***

Division 10 of the NCDOT is responsible for the construction and maintenance of bicycle facilities on NCDOT-owned and maintained roadways in the Town of Davidson (among all other NCDOT roadways in their five-county Division). Division 10 should be prepared to:

- Recognize this Plan as not only an adopted plan of the Town of Davidson, but also as an adopted plan of the NCDOT.
- Become familiar with the bicycle facility recommendations for NCDOT roadways in this Plan (pp.113-114); take initiative in incorporating this plan's recommendations into the Division's schedule of improvements.
- Become familiar with the standards set forth in Chapter 4 of this Plan, as well as state and national standards for bicycle facility design; construct and maintain bicycle facilities using the highest standards allowed by the State (including the use of innovative treatments on a trial-basis).
- Notify the Town of Davidson Planning Department of all upcoming roadway reconstruction or resurfacing/restriping projects in Davidson, no later than the design phase; Provide sufficient time for comments from the planning staff.
- Seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this Plan and its implementation.



### **Role of the Town of Davidson Police Department**

The Town of Davidson Police Department is responsible for making Davidson a safe place to live, work, and raise a family. The Police Department should be prepared to:

- Become experts on bicycling-related laws in North Carolina.
- Enforce not only bicycling-related laws, but also motorist laws that affect bicycling, such as speeding, running red lights, aggressive driving, etc.
- Participate in bicycle-related education programs.
- Set up a hotline and online reporting mechanism for reporting bicycling- and pedestrian-related violations.

*Police Dept: See Chapter 5: Programs and Policies and this chapter's Action Steps for more information.*

### **Role of Developers**

Developers in Davidson play a critical role in facility development whenever a project requires the enhancement of transportation facilities or the dedication and development of greenways. Developers should be prepared to:

- Become familiar with the benefits, both financial and otherwise, of providing amenities for walking and biking (including greenways) in residential and commercial developments.
- Become familiar with the standards set forth in Chapter 4 of this Plan, as well as state and national standards for bicycle facility design.
- Become familiar with the Planning Ordinance revisions related to bicycle facilities.

*Developers: See Benefits of Bicycle Transportation in Chapter 1; Chapter 5: Programs and Policies; and the Town's recommended bicycle facilities in the Bicycle Facility Project List for more information.*

### **Role of Local Residents, Clubs and Advocacy Groups**

Local residents, clubs and advocacy groups, including, but not limited to Davidson Walks and Rolls, Charlotte Area Bicycle Alliance (CABA), and the Rocky River Road Club, etc., play a critical role in the success of this plan. They should be prepared to:

- Continue offering input regarding bicycling issues in Davidson.
- Assist town staff and GTB by volunteering for bicycle-related events and educational activities and/or participate in such activities.
- Assist town staff and GTB by speaking at Town Board meetings and advocating for local bicycle project and program funding.



## Prioritization and Phasing

The bicycle facilities listed in Table 6.A were prioritized according to process outlined in Appendix C: Prioritization + Project Cut-Sheets. The prioritization process began by making a list of all the roadways in the study area (Town of Davidson Extra Territorial Jurisdiction, or ETJ) for which bicycle recommendations were made. The roadways were then broken down into segments at logical points, such as major intersections. Most segments are under a mile long, with several that are longer in rural and/or future growth areas. The weighted criteria used to rank each segment was custom designed for Davidson, based on public input, steering committee input, and data collected pertaining to Davidson’s existing conditions. For more information on prioritization, including the prioritization table used to rank the projects, see Appendix C: Prioritization + Project Cut-Sheets.

Table 6.A contains detailed information related to each project and identifies overall project phasing. Projects were broken down into Phase 1 (2009); Phase 2 (2010-2012); Phase 3 (2013-2015); and Development- or NCDOT-based. Projects were assigned phases based on a combination of their ranking in the prioritization matrix and their relative cost estimates. The time-frame for the phases were determined by Town of Davidson staff. Projects identified as “Development- or NCDOT-based” are projects that are likely to be implemented on opportunity basis (by developer or by NCDOT with roadway resurfacing and/or road widening).

## Bicycle Facility Project List

Descriptions for other columns in Table 6.A are as follows:

*Rank/ID:* Shows the rank determined through the prioritization process, which is the same as the project identification number used in Map 6.8: Project Phasing.

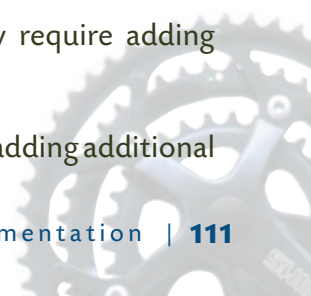
*Recommendation:* Facility types listed correspond to facility descriptions in Chapters 3 and 4; ‘Connector Trails’ are in-town greenway connections (with trail #s that correspond to the adopted Circulation Plan).

*Construction Type:* The type of construction required for different projects varies, depending on the current conditions and the type of recommendation (see the Chapter 2 Roadway Inventory for more information on current roadway conditions):

‘Roadway Restriping’ refers to projects that only require restriping and adding new markings on the roadway;

‘Pavement Marking’ refers to projects that only require adding new markings to the roadway;

‘New Construction’ refers to projects that require adding additional pavement width to the roadway;



'Bridge Retrofit' refers to adding bicycle and pedestrian accommodations to the I-77 bridge (accommodations across I-77 will require a more detailed analysis);

'Gutterpan/Pavement Seam' refers to projects that will require repaving portions of the roadway and/or reconstructing the gutterpan so that there is a level seam between the pavement and gutterpan, creating more functional space for bicycle travel (see image at right).

*Cost Estimate:* Estimates were generated based on the type of recommendation and the type of construction required. Figures used and their sources are listed below:

*Bicycle Lanes and Sharrows:* The University of North Carolina Highway Safety Research Center. (2008) [www.bicyclinginfo.org/bikecost](http://www.bicyclinginfo.org/bikecost)

*Trails:* \$120/lf (for construction of path, clearing, grading, subbase -- 14' wide, asphalt trail 10' wide): Mecklenburg County Park and Recreation's designers typically estimate \$120 per linear foot.

*Trails:* \$55/lf (for construction of path on cleared, graded corridor, asphalt trail 10' wide): The University of North Carolina Highway Safety Research Center. (2008) [www.bicyclinginfo.org/bikecost](http://www.bicyclinginfo.org/bikecost) (adjusted for Davidson connector trails)

*Paved Shoulders* (new construction): \$400,000/mile; from a model NCDOT bicycle plan

*Sidepaths:* (new construction): \$450,000/mile; from a model NCDOT bicycle plan

*Agency Responsible for Implementation:* Either the Town of Davidson Public Works, NCDOT Divison 10, the Town of Davidson Parks and Recreation Department, or a developer, depending on the owner of the roadway or corridor right-of-way.

### Intersection Project List

Intersections were prioritized based on responses from the online public survey and correspond with the top priority bicycle routes. See Appendix C: Prioritization + Project Cut-sheets for more information on intersection recommendations.

Rank	Intersection Street 1	Intersection Street 2	Intersection Street 3	Recommendation
1	Main St	Concord Rd	n/a	Signage & Detector Loops
2	Main St	Griffith St	n/a	Signage & Detector Loops
3	Davidson-Concord Rd	Concord Rd	E. Rocky River Rd	Roundabout
4	Concord Rd	Grey Rd	Pine Rd	Roundabout
5A	Griffith St	Jetton St	n/a	Signage & Education
5B	Griffith St	Davidson Gateway Dr	Harbour Place Dr	Signage & Education
6	Davidson-Concord Rd	Robert Walker Dr	n/a	Crossing Improvements



*Above: An example of the uneven gutterpan/pavement seam on Concord Road, which essentially makes the functional portion of the bicycle lane less than two feet wide in some sections.*



*Insert Table 6.A:  
Bicycle Facility Project List*



*Insert page 2 of  
Table 6.A: Bicycle Facility Project List*



## Action Steps

The action steps in the following tables are integral to achieving the goals and vision of this Plan. As guiding recommendations and the clearest representation of specific items to accomplish, they should be referred to often. Chapter 5, Programs and Policies, provides a variety of resources for assisting in carrying out tasks related to policy, education programs, encouragement programs and enforcement programs.

*Insert Table 6.B:  
Action Steps*



*Insert page 2 of  
Table 6.B: Action Steps*





**APPX A OUTLINE:**  
Online Survey Results  
Public Workshops  
Committee Meetings  
Project Materials

# APPX A: SUMMARY OF PUBLIC INPUT

## Online Survey Results

Over 200 people participated in the online survey, which helped project planners identify bicycling trends in Davidson, perceptions related to bicycling Davidson, and roadways and intersections most in need of bicycle-related improvements. The answers to most questions have been tabulated and are shown in the form of a graph or pie chart. However, some questions were open-ended and those responses have been listed verbatim.

**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc).**

General	20%
General	- 15% of trips made by bicycle or foot - 10% of shopping trips made by bicycle or foot - 15 bicycle-and-foot-only paths and connectors opened to the public within 2 miles of the center of town (Main and Concord) - all currently unpaved and unusable rights-of-way turned into bicycle-and-foot-only paths - average distance to any destination within 2 miles of Main and Concord will be 15% shorter on bicycle or foot than in a car - all major thoroughfares have bicycle lanes and double 5 foot or greater sidewalks through the entire length within 3 miles of downtown - 30% of local elementary through high school traffic by bicycle or foot - all houses in Davidson within 1/4 mile of a greenway
General	3. Anyone who is physically able will be able to ride downtown SAFELY on a bicycle. That means not on the kind of striped area currently on Concord Road.
General	connected bike trail all over town.
General	100% of trips within town limits CAN BE (vs. ARE)made safely by bicycle or pedestrian vs. automobile; 100% sufficient bike racks and other secure bike parking facilities to serve demand/need; 100% connectivity between/among all bike links, whether provided by town, county, NCDOT, etc. etc. (no "missing links"); 100% of thoroughfares retrofitted with bike-secure accommodations in cross-sections; 100% completion of greenways in current (& future) county greenway planned facilities; 100% improvement in I-77 /Griffith Street bridge crossing for ped/bike (scary experience)
General	15-20% trips by bike
General	20 percent of trips to be made by bicycle
General	20% of all trips less than 2 miles by bike.
General	20% of all trips made by bicycle. 10% of all trips to work or to transit made by bicycle. Continuous stream of cyclists on Main Street & Davidson-Concord and the greenways. Bike rentals available in downtown (ala Paris) Bike racks at all publicly accessible destinations Road cyclists who are courteous to motorists. Motorists who are courteous to road cyclists. Police enforcement of traffic laws against cyclists. Local bike advocacy organization. Rail-with-trail path from Statesville to Charlotte. Bicycle education courses co-sponsored by Town, College, Police. 15 miles of greenway, linked into the regional greenway system. Dedicated Town funding for bicycle specific improvements.
General	20% of trips by bike,
General	to access bike pathways and greenways, clearly marked signage at all town borders advising drivers that Davidson is a bike and pedestrian friendly town, clearly marked bikeways when they are co-located on roadways, widened roads to accommodate dedicated bikepaths
General	30 to 40% of all local trips made by bicycle, trips to the bank, grocery, post office, etc.
General	40% of all trips of 2 miles or less to be taken by bicycle.
General	40% of trips made within Davidson.
General	5% of trips under 2 miles taken by bicycle
General	50% of current student car trips are made by bike (especially to places like summit, the vac, grocery store)
General	50% of local cornelius/davidson residents and workers to bike from destination to destination.
General	50% of trips by bicycle. That is to say trips to local stores and to work.
General	50% of trips made by bike,
General	50%-70% of in town trips via bike
General	75% of around town trips made by bike,

**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

General	75% of trips within Davidson made by bicycle.
General	80% trips made by bicycle
General	90% of trips within Davidson and Cornelius by bicycle
General	25% of bike usage is transportation. 75% recreation.
General	an increase of at least 100% from today!
General	every trip should be made by bicycle if possible. not only can we be more conscious of our CO2 emissions, we can also cut down on the congestion on concord and main street.
General	increase by bike travel by 20%.
General	As much bicycling as possible, and
General	Be able to bike to work, to the Greenway and around town safely, with my family.
General	Using my bicycle in conjunction with the light rail to commute to work in Charlotte.
General	85% of people and children will enjoy riding and
General	25% will shop by bike for basic food and other items.
General	By 2020, I'd like to see the majority of short trips made by bicycle and
General	Cyclist commuting to & from work if desired.
General	daily trips by both my wife and me to work by bike.
General	Davidson is such a small community, I really think cycling is a great way to commute. Right now my only fear is the traffic, but as it gets thicker, it only seems logical that more people will turn to bikes.
General	easy travel between downtown, bailey high, fisher farm, mcconnell- then an off road connection for a route to bradford park somehow as well. For Transportation, the ten foot greenway parallel to concord road works well! I know expense and ROW may preclude it, but extending down to 73 would be fabulous.
General	Every street is bike friendly, more bikes than cars on Main St, high quality bikeways linking all parks and schools, bike boulevards where paths aren't possible, free bicycles to anyone to use around town
General	Everybody living in Davidson should be able to mobilize on a Bike if one wants to go a place within 20 miles of home
General	within a 1-2 mile radius of downtown and even the new Harris Teeter that at least 50% of the people heading to those destinations do so by bicycle. Within a 2-5 mile radius at least 25% make that trip by bicycle. I would also like to see a community bike program much like the one that they have at the college.
General	75% trips in town
General	more people using bikes
General	the town is made more bike-friendly
General	more toward more biking and less driving as time goes on.
General	to be able to bike to work, (Ingersoll Rand), purchase groceries at the new Harris Teeter, and go the postoffice
General	the town work to expand their already solid reputation as a community open to the biking community.
General	nearly 100% of trips not within short walking distance but within biking distance should be on a bike.
General	50% higher than it is now.
General	largest employers (my guess is the college and ingersoll rand) have a safe bike path for people to use to get to work on a daily basis. getting Ingersoll Rand involved in possibly building or donating to this cause would be good.
General	I think that there are sections of Davidson where this is totally unrealistic. While we should be bike friendly we should not go crazy trying to force fit this on the population,
General	anyone living within a 3 mile distance from their house to work and or school would bike instead of drive.
General	30% of trips on bikes
General	That those who live in Davidson will be able to bicycle on 115 and get to the YMCA, to the new developments at Exit 30, and down Davidson/Concord Rd. to Fisher Farm Park.
General	I would love to ride a bike to the store or to downtown. I would do this at least once a week if I could.
General	a town where residents feel comfortable and safe commuting on bikes and conducting most of their travel around town--to the store, to summit, home, to friends' houses, etc--by bicycle as opposed to automobile. 20% adults using bikes instead of cars on a daily basis
General	I would ride my bike 80% around town to do shop.
General	I would like the ability to ride to work.
General	ride to Davidson to eat lunch or have dinner on the weekends.
General	To be able to get any where in Davidson, Cornelius or Huntersville safely using a bicycle as transportation.
General	increased reliance on bicycles for shopping and commerce in and around town. 25% of my shopping needs within 2 miles.
General	20% of all trips made by bike.
General	most non carpool activities via bike.



**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

General	I would love to see a majority of the population biking to work, school, shopping and activities. I would like all main activity points to have a safe bicycle route.
General	100% of local errands to be done on bike
General	more adults riding regularly to local amenities or work. our town continue to be a welcoming place for recreations road and off-road cyclists.
General	50% trips by Davidson residents made to destinations within Davidson by walking or by bicycle
General	75% of Davidson residents to use bicycles for local travel.
General	to be able to get everywhere by bike. 100% of businesses interconnected by safe biking routes.
General	I'd like to commit to any errands 10 miles or less to be on bike- if the roads were safe to do so. In pretty weather and time permitting, I'd be willing to make that 20 miles. And MORE for recreation!
General	ability to get from anywhere in greater Davidson to anywhere else in greater Davidson. 25% of all trips to be made by bicycle that originate and terminate within the greater Davidson community.
General	25% of in town trips made by bicycle,
General	50% of the people who work at the college, attend elementary school, visit local parks or other connected destinations use the trail for walking or cycling.
General	70 - 90 % of traffic for Davidson residents should be on a bicycle
General	more people used the bicycle as a form of transportation around campus and around the town, as well as a form of social exercise on the greenway.
General	5% of local trips made by bicycle, from neighborhoods to downtown, grocery shopping, the post office, etc.
General	bicycle travel as the primary (or at least half) of all in-town transport
General	all residents could bike to the new stores.
General	90% of trips on bike.
General	75% of all trips into Davidson would be either biking or walking.
General	50% of local trips on bicycle is achievable.
General	biking to the new supermarket, etc... near the exit.
General	Many will be using bikes to shop and access transit.
General	More children riding bikes to school
General	more cycling as alternative transportation - even for children/ school kids.
General	More in-town bike trips than car trips
General	Most local trips (2 miles or less) on foot or bike -
General	bike or walk for most of my needs, to work, to church, grocery store,etc.
General	25% of my trips to town are made by bike.
General	get anywhere in Davidson SAFELY on a bicycle.
General	Ride on Greenway 3 times a week for exercise Use the bike 3 times a week for transportation
General	Routine (50%) use of bicycles for minor travel. Such as minor errands, kids to school...
General	to be able to go out for an hour or 2 on the bike & feel safe.
General	That bikes would be the norm, not the anomaly That 80% of our trips into town were bike (rather than car).
General	That there are sufficient, safe, bicycle routes that enable commuters and recreational cyclists the opportunity to ride.
General	50% of trips made by bicycle (note: this also assumes 40% walking and 10% driving)
General	To be able to access all major services of life via bike paths. Grocery, library, bars, pharmacy, etc.
General	to be able to safely ride into the town of Davidson from the outskirts of town.
General	90% of all house holds accessible to downtown via greenways or bike paths.
General	one half of all trips under 4 miles on a bike.
General	Having more people on the road around town will make drivers more aware of cyclist that are on rural roads.
General	more families/kids to be able to ride in a safe environment.
General	most trips via bicycle and be on a bicycle path. I would like residents to be able to bike to stores at least 50% of the time. It would be nice to be able to get to a path within a few blocks from house.
General	would like to see bikeway less than 1/2 mile from home
General	would love to bike to Fisher Farm and woodlawn School. looking forward to biking to Hariis Teeter. I bike/ walk to work, doctor, church, dentist, eye doctor and want more!
General	50% use of bike for errands,
School	1. 35% Davidson Elem. students ride to school on their bikes.
School	80% children riding to school,

**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

School	33% kids ride to school
School	20 percent of kids riding to school
School	40% of all trips to schools by Davidson resident students made by bicycle.
School	45% of kids riding to school 50% of the time.
School	25% of kids riding to school,
School	30% of kids riding to school within a 2-3 miles
School	20% of school kids commuting by bike
School	50% of children should be riding their bikes to school, at least
School	50% of kids riding to school,
School	50% of kids should be riding bikes to school.
School	90% of students riding to school.
School	85% of kids will ride to school and after-school activities
School	40% riding to school
School	75% kids riding or walking to school,
School	Children within three miles of school able to bike a safe route from school.
School	Only high shoold age children should be allowed to ride to school (10%).
School	Daily trips by my children by bike to school;
School	60% kids riding to school
School	to be able to bike to Woodlawn School
School	The plan would be a success even if 5% of kids rode thier bikes to school but I could definitely see closer to 15% participating in the bikeway plan.
School	50 % of kids riding to school in elementary and middle school.
School	Davidson Elementary children (and their parents) will feel comfortable and safe enough to bike to school....every day
School	20% kids riding to school on bikes
School	children to have safe bike riding to/from schools 100% of the time.
School	I would like to see it safe for kids to ride bikes to school.
School	to be able to cycle from the major housing developments to the schools that they are assigned too.
School	30% of kids at the elementary schools riding to school.
School	50% of kids riding to school on their bikes (or walking).
School	all kids could safely walk or ride their bikes to school.
School	most children who cannot walk to school biking
School	my children to ride their bikes to school 75-100% of the time
School	50% of kids could ride to school in Davidson
School	School kids should be able to ride or walk most days to the elementary school and the IB school.
School	25% of the school population riding to school, another 50% walking and
School	75% of all children walking or biking to school
School	Kids riding to grade school is reasonable.
School	Most kids who live in Town should either walk or ride bikes to school daily.
School	kids never riding buses or with mom (after about 3rd grade) unless they're rural
School	100% (all 3 of my kids) cycling to school
School	ability of 50% of kids to travel safely to school would be a goal.
School	that bike trailers would be a typical way of transporting children to preschool.
School	3. 60% of kids riding to Davidson Elementary 4. 30% of kids riding to Bailey Rd. Middle 5. 30% of kids riding to future Bailey Rd. High
School	Every kid less than 3 miles from school riding a bike
School	more kids riding to DES and the IB
School	I would like to see more than 50% of the kids riding to school instead of taking a bus.
Greenway	Everyone in the town limits lives within a half mile of a greenway.
Greenway	1/4 mile to Greenway on bike path,
Greenway	1-3 mile distance to greenway
Greenway	4 miles from house to greenway,
Greenway	75% of all residents within 1/4 mile (network distance) of a bikeway (greenway, bike path, bike route, or bike lane).
Greenway	connecting greenways and bike paths connecting every neighborhood,
Greenway	1/4 mile Distance from house to greenway



**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

Greenway	1/3 mile from any house within town limits to a bikeway
Greenway	1/4 mile from a greenway,
Greenway	a greenway that goes to Fisher Farm, and more trails at Fisher Farm, including jumps and a skills area for varying skill groups.
Greenway	a greenway should be within .5 miles of my house (I shouldn't have to ride on a road without a bike lane for more than .5 miles to get to a greenway).
Greenway	1/2 mile-average distance from house to bikeway or greenway.
Greenway	All Davidson taxpayers (ETJ included) should be within easy access (<1 mile) from bike paths.
Greenway	an extensive greenway network that is within a several minute ride of any house.
Greenway	Greenway to Fisher Farm that connects to bike way on Davidson, Concord.
Greenway	greenways running alongside most residential districts by 2020
Greenway	10 miles of bike-or-jogging greenways for exercise. Needs to be able to access river run and all the new developments out there. needs to be both useful and for fun, including looping through some wooded areas
Greenway	I would like the Greenway to be under 1 mile from my home.
Greenway	be able to ride from my house to the greenway 5 times a week (greenway is 3 miles away) as well as
Greenway	the greenways would be accessible (i.e., < 2 miles) even from neighborhoods off of Griffith street (i.e., not just the neighborhoods on the 'other side of the tracks').
Greenway	a bike path from town thru McConnell to Fisher Farm and connect to the Mountain Bike trails.
Greenway	to ride 20 miles on my road bike on paved greenway (like in Wash. DC, Atlanta).
Greenway	expand the greenway system. I think we should have a goal of every citizen being within 1 mile of a greenway access point.
Greenway	to be able to bike at least 10 mi each day on greenways.
Greenway	50% increase in our current bike/pedestrian only paths. For example, with the new Antiquity development...adding paths along power line routes to Cornelius, Food Lion etc.
Greenway	adding paths on the westside would also be wonderful.
Greenway	fully interconnected system of greenways that doesn't rely on sidewalk connections, and links all the major parks in town, especially Fisher Farm.
Greenway	Pedestrian-safe access to the trail should be within 800 feet of all residences.
Greenway	Greenways will be a secondary means of bike travel, but no less important than those along roadways.
Greenway	More greenway to provide an opportunity for family's with children to get out and exercise without road hazards.
Greenway	maybe just a gravel greenway that we can use in most weather conditions with minimal damage from passing autos.
Greenway	safe greenway to encourage everyone to ride into downtown Davidson from each large subdivision and make road cyclists even more safe on the roads of Davidson
Greenway	2. No more than 1/2 mile (10 minute walk) to bikeway or greenway.
Greenway	1 mile distance from home to greenway,
Facilities	70% of major through streets with bike lanes
Facilities	100% identified bike routes throughout the Davidson area allowing for passage on a combination of bikeways, bike lanes, greenways, safer back streets.
Facilities	All Davidson controlled sections of the Circle Lake Norman bike path to be complete.
Facilities	A bike lane on Griffith street, for access to the new Harris Teeter & etc. A bike lane on Main street for riding from residences/the college into town
Facilities	Bicycle lanes on Main Street and Griffith.
Facilities	access to the bikeway running out my back door, or at the edge of my neighborhood, minimally.
Facilities	Additional bike lanes on outlying roads
Facilities	Improvement to existing bike lanes
Facilities	65% of the trails should be completed by 2015
Facilities	All residential areas will have access to safe biking lanes
Facilities	A bike path or completion of the greenway that would allow one to travel from the south end to the I-77 corridor with no more than crossing a main road.
Facilities	A network of bicycle routes connecting all areas in northern Meck/southern Iredell
Facilities	A strong connectivity component which permits cyclists to use low traffic streets and avoid high traffic roadways.
Facilities	Ability to ride in bike lanes for short trips (distances < 5 miles). Have bike lanes widely available (along with sidewalks on both sides of the street) in all streets within Davidson.
Facilities	All in town sites accessible by bike, Greenways or bikeways within 1/4 mile of all, possible for all kids to get to school by bike without riding on the street,
Facilities	All roads painted and surfaced to support biking on the roadway.
Facilities	infrastructure creates opportunities which will result in usage

**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

Facilities	Lanes in between parking and traffic is not only dangerous: it's deadly.
Facilities	cars.
Facilities	bike lanes on all major and minor thoroughfares. Space for bikes and peds at all, ALL, intersections. Bike lanes that connect to one and other. Most importantly bike/ped accommodations across restricted access roads, i.e., interstates and their interchanges. finally the outlawing and removal of parallel grates and grates that do not fit the standard safe milling limit of 1/2 inch.
Facilities	bike lanes on all major thoroughfares -- 115, Griffith Street, (already have them on Concord Road). Will need one on South Street and hopefully through Antiquity.
Facilities	bike lanes on every street. Distance to house to bike way 100m. (or at the end of the drive way.)
Facilities	; safe routes for kids to ride to school and
Facilities	Bike paths from every neighborhood to key areas of Davidson. 90% of bikepaths unbroken (without sections missing). Paths large enough to be shared with bikes, strollers, walkers (like path out Concord Rd.)
Facilities	there would be plenty places to ride
Facilities	90% will have direct access from their neighborhoods to a bikeway,
Facilities	well maintained bicycle lanes for all roads in the immediate Davidson area. Where there are no bicycle lanes, I would like to see smooth roads with an adequate shoulder to accommodate cyclists.
Facilities	Connected bike lanes allowing regional ( Mooresville, Davidson, Cornelius, Huntersville, Charlotte) travel.
Facilities	Bikeway should be available on 60-75% of non-major roads.
Facilities	house to bikeway/greenway to be less than 1/4 mile
Facilities	Huntersville, Cornelius and Davidson to link efforts so that bikers can have a safe place to ride for many miles.
Facilities	The Town need to develop more off-street bikepaths.
Facilities	a series of paths the size of the greenway (vs. bike lane)
Facilities	"good" bicycle lanes.
Facilities	bike lanes all over Davidson and connecting to other neighboring communities
Facilities	Bike lanes on the major roads. Bikeways and Greenways allow for both cycling and running, which many people I know do both.
Facilities	Davidson needs a bikeway running close to main street (maybe parallel?).
Facilities	expansion of roads accessible to bikes
Facilities	a bikeway would be available within 2-5 miles of homes in Davidson.
Facilities	That bike lanes and bike paths will not be afterthoughts but will be integrated into ALL developments as integral connections within the community.
Facilities	all main roads (not residential) have bike lanes.
Facilities	bike lanes through out all of Davidson
Facilities	more bike lanes.
Facilities	put in bike lanes when doing new road work.
Facilities	Well lighted, off road for the kids.
Facilities	bike lane on the Lake Norman Triathlon bike route (and other neighboring roads) Wider bike lanes down old statesville road would also be great.
Facilities	route from Davidson Landing to downtown Davidson to be improved. It is currently unsafe to bicycle over the interstate, especially when crossing the ramps.
Facilities	wider roads with real bicycle lanes
Facilities	bike lanes on all major roads,
Facilities	I particularly would like a safe (as in some barrier from car traffic) means to bike to the new Harris Teeter at exit 30.
Facilities	Routing bike traffic onto South Main and then onto Jetton (turning near Fuel Pizza) would be safer and have less topography).
Facilities	Through connections through neighborhood streets
Facilities	Charlotte
Facilities	workable bike paths on or paralling all the major roads into town (griffith, 115, Concord Rd)
Facilities	continuous bicycle paths with green buffers from traffic are built to connect major destinations
Facilities	The more miles of SAFE bike lanes and especially the more greenways the better.
Facilities	100% of BIKES to be using off street riding.
Facilities	all main roads in Davidson had a bike lane and (N Main, S Main, Davidson Concord, Griffeth, Beatty, etc).
Facilities	Rails to Trails from Mooresville to Huntersville.
Facilities	all areas had bike lanes
Facilities	town could be fully traversable on bike paths and safe bike ways on the roads.



**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

Facilities	Crossings need to be improved considerably--especially where children travel, including several points on Concord Rd. from Thompson Road out to McConnell and on Gray Road at Dogwood.
Facilities	bikes on the bike paths -- not on the main roads.
Facilities	biking lanes that are safely removed from auto traffic (adjacent lanes off the highway or improved barriers-not just a painted line-if the lane adjoins the highway. Lighted areas for evening hours will be needed
Facilities	Elderly, infirm, and preschool still need sidewalks more than bike lanes.
Facilities	sidewalk on North Main St. (for biking to school)
Facilities	Bike lanes need to be widened in areas over 25 MPH
Facilities	More bicycle lanes
Facilities	Safe and bike friendly lanes
Facilities	bike lanes that serious cyclists could use to exit Town.
Facilities	bike lane to the new Harris Teeter.
Facilities	more lanes added in the near future to help keep cyclists safer and make commuting more doable as fuel prices sky rocket.
Facilities	10 miles of bicycle improved roadway or
Facilities	would like to see a bikeway within 1/2 mile from home
Facilities	network of bicycle paths/lanes are available to ensure a person could travel 100% of the time in the Davidson sphere of influence in relative safety.
Facilities	non-stop route (no stop signs or lights) from the LKN YMCA to more rural riding areas like Shearers, Gray, and Davidson-Concord Rd for example. The left turn out of the Y onto Hwy 115 is busy.
Facilities	bike lanes would be more useful
Facilities	paths should be added and planned for in new construction.
Facilities	Pedestrian/bicycle zones as alternatives to busy main streets. This is possible east-west along parallel roads to Concord Rd. A separate bike lane all the way from Mooresville to North Mecklenburg High School along Highway 115. There is enormous right-of way all along this road. It is flat as well.
Facilities	Safe bicycling lanes for connectivity in Davidson by bicycle
Facilities	Safer roads for bicycling - i.e. bike lanes, bike signs.
Facilities	bike trails from woodlawn school off 115 into town to reduce the students carbon footprint and to make them more aware of our growing environmental problems.
Facilities	7. A bike/walking path along entire length of commuter rail line from Mooresville to Charlotte's multi-modal station. This could allow for safe commuting and/or pleasure riding to and from Charlotte with options to ride rail or bus as part of overall travel experience. This is an opportunity that should not be missed.
Facilities	6. Combined network of bikeways linking Fisher Farm to downtown Davidson.
Facilities	Have desinated bike lanes.
Facilities	bicycle paths off the road from Huntersville to Mooreville along 115 and the rail right of way, as well as on a secondary route to the east of 115.
Facilities	clean, smooth lanes on nearly every street with any significant amount of traffic.
Facilities	very house having safe access to roads and bikelanes and bikepaths at all times.
Facilities	bike paths off the road.
Facilities	eAbove all I think there needs to be a safe way to commute on bike from within ten miles north or south or east (and from the condos across 77 at Exit 30).
Facilities	routes that avoid motor traffic
Facilities	Wider bike lanes, a linked set of lanes on all major Davidson streets,
Facilities	Would definitely like to have safe lanes on all major roads in town.
Facilities	More bike signs on roads that Bike clubs designate as long distance rides from town.
Facilities	Concord Road is too narrow to use that as a main path to town.
Facilities	you need bike lanes !!!!!
Safety	plan that includes safety for these kids as well.
Safety	A very Bike friendly community that insures the safety of adults & children!
Safety	I want SAFE riding lanes.
Safety	much lower speed limits! It would be REALLY nice is the police would actually enforce the speed limits, and even obey the speed limits themselves!
Safety	lower speed limits and the enforcement of speeding laws should make access to cycling available to all residents (and make access to bikeways easier and safer).

**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

Safety	By 2010 I would like if cycling in Davidson would be safe and . have no fear of getting hurt.
Safety	safe conditions
Safety	safer environment to ride a bike.
Safety	I believe it will be just to dangerous to ride on the streets.
Safety	I just want a SAFE way of continuing my cycling. There is so much truck/car travel on our roads now, it is becoming a life or death hobby.
Safety	I want to insure that the routes are safe and well marked for seasoned and inexperienced riders.
Safety	I would like areas that are safe and convenient for myself and my family to use. I laugh at the signs "A bicycle friendly community".....exactly where is it friendly? Not for my family
Safety	I would like to be able to ride ANYwhere in Davidson and feel safe.
Safety	A safe way to ride is the most important thing.
Safety	I'm more and more afraid of road biking as traffic increases.
Safety	I'd like to be able to go anywhere in Davidson, including North Main into Iredell, without feeling at risk of death from cars.
Safety	no bike deaths in 2010
Safety	an environment in which bikes and cars and pedestrians co-exist in safety and mutual understanding.
Safety	The way traffic has increased in Davidson and the speed of careless drivers causes me great concern for the safety of Biker's.
Safety	auto traffic obeyed speed limits
Safety	new roundabouts are not bike friendly
Safety	speed limits (currently in place, enforced)to mitigate injury
Safety	not to have to worry about my daughters or me hitting [cyclists] coming around a curve on Presbyterian Rd.
Safety	No collisions with pedestrians or vehicles.
Safety	The number 1 reason by a large margin that people cite for not riding bikes more is safety.
Safety	Safer to ride, Fewer streets to cross, not riding next to parked cars.
Safety	Have motorists cited when they violate these lanes , whether bikes are in the area or not. In order to make it safe for the cyclist, we must make the motorist responsible and aware of the cyclists.
Safety	Shears/Rocky River intersection. There is such a large volume of cyclists in that area I am truly afraid someone is going to be killed at that intersection
Safety	Some lighting along the paths would be great for those evening trips when it is dark early in the fall/winter months.
Parking	Bicycle racks on Main Street, especially at near Summit Coffee.
Parking	not knowing exactly if there will be bike [parking] when I get to a destination often affects my decision on bumming a ride or throwing on my helmet.
Parking	be able to ride my bike to the bus stops and feel that it would be safe to leave the bike without it being stolen or having parts removed.
Parking	more bikes on the college campus with coverings over bike racks (and a decrease in stolen bikes!!)
Parking	I would ride from my Spinnaker Point condo to the train. It would be best if the area where I put my bicycle is covered and secure
Parking	Would have multiple bike racks for security throughout town destinations (parks, retail).
Parking	secured bike parking in areas of Davidson. Imagine a rack with a built in lock that you activate and secure with a resettable combination, or removable key, or???
Parking	bike racks available if the train ever comes north.
Parking	bike racks (not many of those around!)
Parking	places to lock up bike while in business district
Other	In addition: weekend recreational riding.
Other	public transport and bicycling are important [for people who don't have cars]
Other	And an increased mileage of MTB trails.
Other	more fantastic mountain bike trails in Davidson.
Other	Further integration with public transit would be a huge plus.
Other	Davidson should embrace the motto of a walking/biking community as much as possible and I would gladly pay higher taxes to make this happen!
Education	educate people on bicycle safety, mainly motorists. If we want Davidson to be a "Bicycle Community" we need to make sure that as people are driving through town they are aware of this fact.

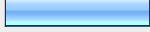
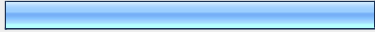
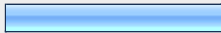




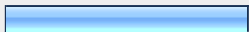
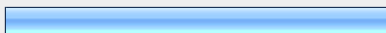


**1. What is your vision for bicycle travel in Davidson by 2020? Please provide specific and measurable goals (such as % of trips made by bicycle, distance from house to bikeway or greenway, % of kids riding to school, etc). (Continued)**

Education	more training [for cyclists] as to their responsibility in obeying traffic laws, paying attention, having insurance and sharing well - on the side of drivers more education on how to safely drive with the bikes riders and what each should expect of the other.
Education	many of the cyclists have poor riding skills
Education	awareness by automobile drivers.
Education	bicyclists no longer ride side by side taking up not only the bicycle lane but the entire motor vehicle lane as well
Education	arrogant attitudes of the cyclist in town. I think the cyclist should be fined for not riding their bikes on the paths created for them. They do not pay attention to road rules, red lights and think they have any rights they choose to have.
Education	a lot of public education to get people (30 yrs. or older) out on their bikes.
Education	In order to make it safe for the cyclist, we must make the motorest responsible and aware of the cyclists.
Education	cycling education in the schools, bike rodeos,
Education	More awareness of the rules from both bikers and drivers.
Promotion	community bike program much like the one that they have at the college.
Promotion	a bicycle campaign
Promotion	Host a bike race or have organized rides on some of the newly constructed bike paths to raise awareness about possible routes.
Promotion	Facilitate a bike rental program for people who want to use bikes but do not have the means to do so.
Promotion	fee parking [for cars] throughout the town in order to encourage biking. Fee parking is progressive and fair.
Promotion	prizes for kids who ride to school everyday, and similar public praise for little cyclists.
Maintenance	the town to take pride in that by keeping the lanes clean and tip top condition.
Maintenance	clean, smooth bike lanes on roads, not the current mess--nice stripe, but full or gravel, construction scree, poor pavement joints, metal water access covers that are not flush, potholes, etc
Maintenance	improved paving for existing lanes (ie Concord rd past 1 mile out of town, lanes are small and bumpy).



2. How do you rate present bicycling conditions in the Davidson area? (select one)			
		Response Percent	Response Count
Desirable		19.6%	44
<b>Average</b>		<b>50.9%</b>	114
Deficient		29.5%	66
		<i>answered question</i>	<b>224</b>
		<i>skipped question</i>	<b>4</b>

3. How frequently do you bicycle? (select one)			
		Response Percent	Response Count
Never		5.8%	13
Special occasions only		8.4%	19
Few times per month		33.3%	75
<b>3+ days per week</b>		<b>52.4%</b>	118
		<i>answered question</i>	<b>225</b>
		<i>skipped question</i>	<b>3</b>



**4. Which terms most describe your current level of bicycling activity? (select all that apply)**





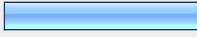
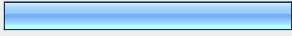
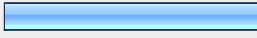
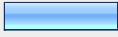
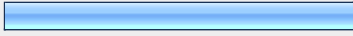
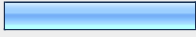

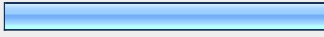
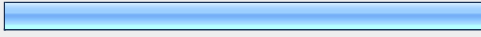


		Response Percent	Response Count
Not a cyclist		8.0%	18
Off-road cyclist		33.8%	76
<b>On-road recreational/fitness cyclist</b>		<b>65.3%</b>	147
Bike to school		12.4%	28
Bike to work		23.6%	53
Bike to other nearby destinations		50.7%	114
		<b>answered question</b>	<b>225</b>
		<b>skipped question</b>	<b>3</b>

**5. How comfortable are you cycling on Davidson's roads and streets? (select one)**

		Response Percent	Response Count
Comfortable		21.4%	47
<b>Cautious</b>		<b>63.2%</b>	139
Intimidated		15.5%	34
		<b>answered question</b>	<b>220</b>
		<b>skipped question</b>	<b>8</b>



**6. Which of the following physical factors prevent you from bicycling or from bicycling more often? (please select up to three options)**






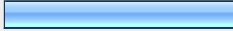
		Response Percent	Response Count
Lack of showers and lockers at workplace		12.1%	27
Physical ability		4.0%	9
Hills		2.2%	5
Lighting		8.1%	18
Loose gravel or potholes		26.5%	59
Personal safety		39.5%	88
Crossing busy streets		35.0%	78
Travel time or distance		15.2%	34
High speed traffic		48.0%	107
Narrow or curvy roads		26.0%	58
Indirect routes		7.2%	16
Heavy traffic		43.9%	98
<b>Lack of bike lanes or paths</b>		<b>65.9%</b>	<b>147</b>
Lack of road connectivity		23.8%	53
Nothing		9.4%	21
		<i>answered question</i>	<b>223</b>
		<i>skipped question</i>	<b>5</b>



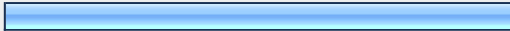
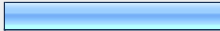
7. Which of the following changes would encourage you to bike more often? (please select up to three options)			Response Percent	Response Count
Nothing			6.3%	14
Increased enforcement on speeding			32.0%	71
Commuter programs or incentives			15.8%	35
Bike racks at destination			32.0%	71
Showers or locker rooms at workplace			11.7%	26
Safety education			12.2%	27
Less expensive bicycles			3.6%	8
Map of bicycle routes			28.4%	63
<b>More bike lanes</b>			<b>78.4%</b>	<b>174</b>
More off road bike paths or greenways			66.2%	147
Lower speed limits			24.3%	54
			<b>answered question</b>	<b>222</b>
			<b>skipped question</b>	<b>6</b>

8. Have you ever used the bicycle racks on a CATS bus? (yes/no)			Response Percent	Response Count
Yes			8.1%	18
No			91.9%	203
			<b>answered question</b>	<b>221</b>
			<b>skipped question</b>	<b>7</b>

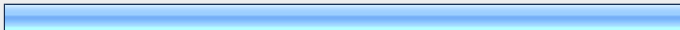

**9. How many bicycles do you have in your household? (select one)**

		Response Percent	Response Count
0		2.7%	6
1		11.7%	26
2		14.4%	32
3		16.7%	37
4		23.0%	51
5+		31.5%	70
		<i>answered question</i>	<b>222</b>
		<i>skipped question</i>	<b>6</b>

**10. Do you know where existing bicycle facilities are located in Davidson (such as the Southeast Greenway or other bicycle paths)?**

		Response Percent	Response Count
Yes		70.1%	155
No		29.9%	66
		<i>answered question</i>	<b>221</b>
		<i>skipped question</i>	<b>7</b>

**11. If grants or development do not become available in the next 5 years to build additional greenways or bicycle lanes, should the Town of Davidson look for ways to fund bicycle improvements?**

		Response Percent	Response Count
Yes		94.1%	207
No		5.9%	13
		<i>answered question</i>	<b>220</b>







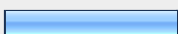
**12. Which aspect of biking is most appealing to you? (please select up to three options)**

		Response Percent	Response Count
Not sitting in traffic jams		17.1%	38
Faster commute		14.0%	31
<b>Exercise and Health</b>		<b>88.7%</b>	197
Time outdoors		61.7%	137
More convenient parking		10.8%	24
Better for the environment		62.2%	138
Example for my kids		24.3%	54
Fuel efficiency		35.6%	79
Relaxation or enjoyment		58.6%	130
		<b>answered question</b>	<b>222</b>
		<b>skipped question</b>	<b>6</b>

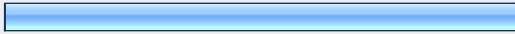


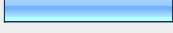
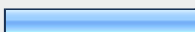
**13. Which of the following can bicycling most improve or impact? (select three)**

		Response Percent	Response Count
Traffic congestion		60.3%	132
Air quality and other pollution		65.3%	143
Public safety		9.6%	21
<b>Health and fitness</b>		<b>88.6%</b>	194
Sense of community		49.8%	109
Children's independence		31.1%	68
Noise reduction		14.2%	31
Local economy		11.4%	25
		<b>answered question</b>	<b>219</b>

**14. If you have children between the ages of 5 and 9, please identify cycling activities that they frequently participate in (select all that apply):**

		Response Percent	Response Count
I don't have any children in this age group		74.9%	146
Bike to school with adult supervision		10.3%	20
Bike to school without adult supervision		1.5%	3
Bike to local parks, events or shopping		15.9%	31
Bike with family on greenways or other off road bike facilities		23.6%	46
		<b>answered question</b>	<b>195</b>
		<b>skipped question</b>	<b>33</b>

**15. If you have children between the ages of 10 and 16, please identify cycling activities that they frequently participate in (select all that apply):**

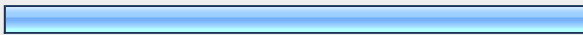
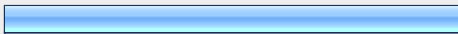
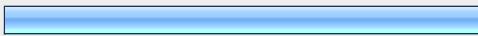
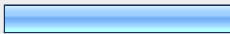
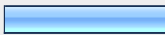
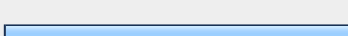


		Response Percent	Response Count
I don't have any children in this age group		70.5%	141
Bike to school with adult supervision		2.0%	4
Bike to school without adult supervision		5.0%	10
Bike to local parks, events or shopping		23.0%	46
Bike with family on greenways or other off road bike facilities		26.0%	52
		<b>answered question</b>	<b>200</b>
		<b>skipped question</b>	<b>28</b>





16. What bicycling destinations would you most like to get to? (please select up to three options)			
		Response Percent	Response Count
Downtown Davidson		61.6%	133
Harris Teeter/Exit 30 area		42.6%	92
Davidson College		32.9%	71
YMCA		31.9%	69
Ingersoll Rand		8.3%	18
Group bike rides		35.6%	77
Sadler Square		6.5%	14
Grocery Store (in general)		24.5%	53
Restaurants (in general)		14.8%	32
Post Office		15.7%	34
Entertainment (in general)		13.9%	30
School		10.2%	22
Work		20.8%	45
Parks or public events		44.4%	96
Public transportation		13.9%	30
		<b>answered question</b>	<b>216</b>
		<b>skipped question</b>	<b>12</b>



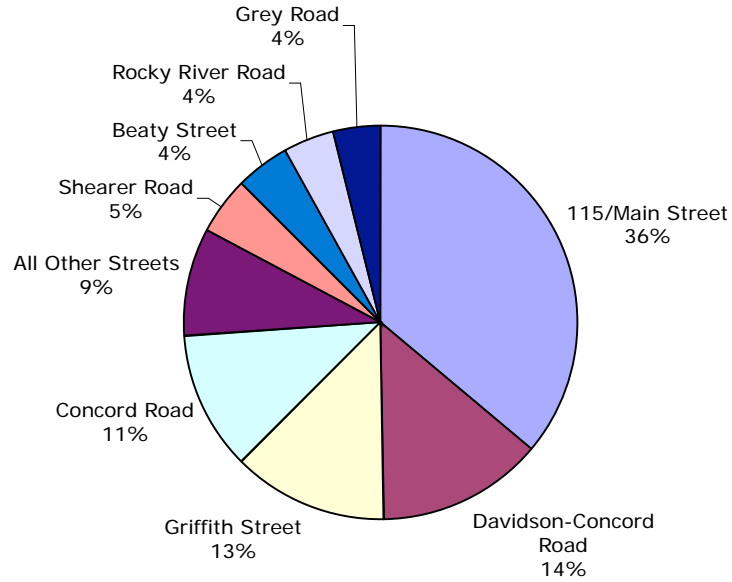
17. When you are cycling, which driver behaviors pose the greatest problems or concerns? (select all that apply)			
		Response Percent	Response Count
Pass too closely		80.2%	170
Drive too fast		62.7%	133
Lack of separate bike lanes		65.6%	139
Noncompliance with traffic laws		31.1%	66
Inexperienced drivers		22.2%	47
Rude or aggressive language or behavior		47.6%	101
Don't signal turns or stop completely		33.5%	71
Fail to yield to cyclists or pedestrians crossing road		59.0%	125
		<b>answered question</b>	<b>212</b>
		<b>skipped question</b>	<b>16</b>



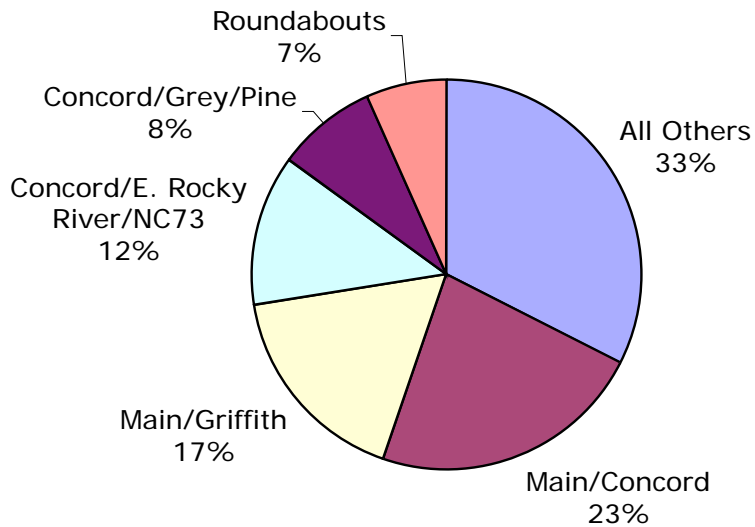
<b>18. When you are driving, which cyclist behaviors pose the greatest problems or concerns? (select all that apply)</b>			
		<b>Response Percent</b>	<b>Response Count</b>
Cycling in the roadway the opposing direction as vehicles		32.1%	69
<b>Too little road width to pass safely</b>		<b>72.1%</b>	155
Poor visibility		25.1%	54
Lack of separate bike lanes		67.9%	146
Noncompliance with traffic laws		28.4%	61
Cyclists ride too slowly		6.5%	14
Youth or inexperience		12.1%	26
Multiple cyclists riding abreast in the same travel lane		54.9%	118
Rude cyclist behavior		17.2%	37
Group or event rides		7.4%	16
Don't signal turns or stops		19.1%	41
Cyclists on sidewalks		20.5%	44
Cycling at night without lights		43.7%	94
		<b><i>answered question</i></b>	<b>215</b>
		<b><i>skipped question</i></b>	<b>13</b>



**19. List two roads or streets that you think need the most bicycle improvements.**



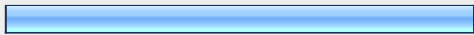
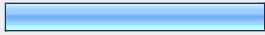
**20. List two intersections that you think need the most bicycle improvements.**







21. What other bicycle related improvements/programs do you consider priorities? (please select up to three options)			
		Response Percent	Response Count
Kids bicycle safety events		30.6%	66
More organized on-road bike rides		31.0%	67
<b>Safer routes to school for pedestrians and cyclists</b>		<b>69.0%</b>	149
Signage		31.9%	69
More police enforcement of drivers		37.0%	80
Education for cyclists (who might not be following rules of the road)		35.2%	76
Education for motorists (who might not be following rules of the road)		56.5%	122
		<b>answered question</b>	<b>216</b>
		<b>skipped question</b>	<b>12</b>

22. What is your zip code?			
		Response Percent	Response Count
<b>28036</b>		<b>64.8%</b>	142
28031		9.6%	21
28078		8.7%	19
281__		5.5%	12
282__		5.9%	13
Other		5.5%	12
		<b>answered question</b>	<b>219</b>
		<b>skipped question</b>	<b>9</b>

23. What is your gender?			Response Percent	Response Count
M			64.4%	139
F			35.6%	77
			<i>answered question</i>	<b>216</b>
			<i>skipped question</i>	<b>12</b>

24. What is your age?	
<i>average age</i>	<b>43</b>

25. Are you a college student? (yes/no)			Response Percent	Response Count
Yes			12.4%	27
No			87.6%	190
			<i>answered question</i>	<b>217</b>
			<i>skipped question</i>	<b>11</b>



## Public Workshops

The planning process has also included a high level of public involvement through public workshops. During the months of January and June 2008, a total of approximately 70 people participated in open house public workshops, which featured presentations, a 'visioning' board, educational posters and materials, and input maps where participants were invited to write and draw their comments and ideas. Additionally, Town staff held an informational booth and family bike ride to promote the plan and gather input during Town Day in May 2008.

The following pages show the input maps from the public workshops, with the public's comments transcribed from the maps.

*Below: Images from Davidson Bicycle Plan Public Workshops.*



**PUBLIC INPUT MAP and PUBLIC COMMENTS: Existing Bicycle Facilities**



These are narrow shoulders, not bike lanes [on Concord road from Grey to Kimberly]. We need actual bike lanes here.

Show exit 32/Langtree on map, with bike/ped connection over 77.

Improved bike/ped connection needed here [on Dogwood Lane].

[115, north of Davidson town limits is noted as having a speed limit of 55 MPH and existing shoulders that are dangerous]

New development [noted east of 115, north of Davidson town limits]

Show school [west of 115, north of Davidson town limits]

Show potential greenway [dashed green along powerline/gasline parallel and just east of 115 to Davidson College cross-country course]

Show Davidson Day School [on Griffith St.]

Bike Lanes needed along Griffith St.

Connection? [Across I-77 bridge and ramps; ramp intersections were noted as more dangerous than the bridge itself]

Provide diagrams for navigating traffic circles on bike [east of I-77 intersection]

Existing bike trail [solid green line along Lake Norman shore]

Show YMCA

Check safety here [at Potts/Main Intersection]

Road does not connect; this would be an excellent low-volume connector [between Vernon Drive and Walnut Street]

[Dotted green line for future connections from South Street to Catawba Avenue, and along Woodland St./Spring St./Walnut St./Vernon Dr./etc.]

Alley connection [between Meadowbrook Lane and Davidson Street]

Label Middle School and High School [on Bailey Road]

Faith to Midway to 115 [green line/arrows] connect to lake campus

[Red line demarcating existing sidepath on north end of Grey Road]

Add bike Lane [red line on portion of Rocky River Road]

4.9 Mile Trail in River Run Neighborhood

Provide a case study of places that have rail with trail [in relation to potential for trail along future commuter line]





**PUBLIC INPUT MAP and PUBLIC COMMENTS: Current Bicycling Conditions**



Put bicycle access in long term plan for I-77 expansion [n/s over Lake Norman]

Easement for avoiding heavy traffic roads [dotted blue line from Griffith to Davidson Gateway Dr.]

Ask for easement for trail [solid blue line from Potts St. to Church St.]

Community connectivity please [along Catawba Ave. in Cornelius, across I-77 to S. Main St.]; Bike lanes on Westmoreland to Cornelius [across I-77]

More small, less busy roads.

School moved [from Armour St. to Griffith St.]

Need cut-throughs and small bridges to go between neighborhoods.

Research Langtree planned cycling overpass over 1-77, nice future destination

Fair conditions noted on 115, north of town limits; on Black Farms Rd; and on Barnhardt Rd; Intersection of Black Farms/Mayers/73 noted as dangerous

Connector? [explore options between Beaty St. and Caladium Dr.; see purple dashed line north of town limits]

Proposed bike trail for Woodlawn students on power line R.O.W. [just east and parallel to 115, connecting to Davidson College]

Path around the college? [purple line northeast of Davidson campus]

Make connection to Vernon Dr. rideable [purple solid line on Vernon/Walnut]

Ask Cornelius about greenway along power line cut from elementary to Cornelius [solid light blue line from South St. to Main St.]

Ask the Pines to allow bicycles on back street [near south end of Greenway St.]

Finish the greenway [solid light blue line on south prong of the Rocky River]; plus two off-street connections noted in similar fashion from S. Thompson St. to Peters Pl., and Woodlawn St. to Momosa St.]

Signage [needed at the Robert Walker Drive intersection with the greenway; and to Fisher Farm on Rocky River Road at Shearer Rd]

Check Huntersville bike plan to see if Black Farms Rd. is included

Narrow shoulders; bike lanes drop off; really bad at intersections; clean bike lanes [ comments noted for Concord Rd. from Grey to Kimberly; intersections circled along Concord Road, at Pine Rd., Fairview Ln., and Kimberly Rd.].

Need connectivity to Mooresville planned bike routes [solid blue line along Shearer Rd. in Iredell County]



**PUBLIC INPUT MAP and PUBLIC COMMENTS: Existing and Proposed Bicycle Facilities**



- Make connection from Walnut St. to Vernon Dr.*
- Complete sidewalks from Potts Street and Catawba Ave. to YMCA.*
- Connect Cornelius to Davidson*
- Provide emergency station [on greenway between Kimberly Rd and Robert Walker Drive]*
- Formalize path [between Dogwood Ln. and Caldwell Ln.]*
- [trail drawn around northeast side of Davidson College in black dashed line]*
- Connection to exit 32/Langtree from 115*
- Use utility line [parallel to 115 ]to connect schools*
- Show future roadways (planned, etc.)*
- Most important greenway [circled proposed greenway that runs parallel and south of Grey Rd.]*
- Triathlon course noted on Shearer Rd.*
- Provide flat paths at Fisher Farm*



## *Committee Meetings*

Local stakeholders contributed to this Plan by volunteering their time on the Bicycle Plan Steering Committee and the Bicycle Plan Technical Committee (Greenways, Bikeways and Trails Advisory Board). The provided valuable insight, local perspectives and guidance as the plan developed. Four project committee meetings took place throughout the project, including meetings focused on:

- Project visions and goals
- Data collected and current conditions
- Design guidelines, and
- The recommended facility network

The Greenways, Bikeways and Trails Advisory Board will continue to meet with Town staff through the implementation of this Plan.

*Below: Images from Davidson Bicycle Plan Committee Meetings.*



## *Project Materials*

The following pages contain copies of newsletters and project display boards used throughout the planning process.

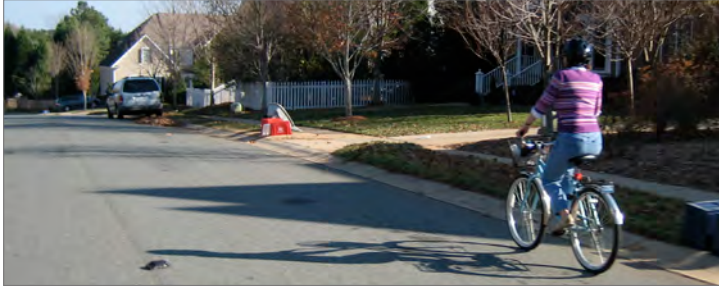


# BICYCLE PLAN NEWSLETTER

January 2008

1

Newsletter #1



*Images at left, from top to bottom: an advanced-level cyclist on Grey Road; an intermediate-level cyclist on N. Downing Street; and beginning level cyclists on South Street.*

## Conditions to Improve for Bicycling in Davidson

One of Davidson’s eight general principles for planning is “growth must be sustainable.” This principle’s goal is to reduce the reliance on the automobile and encourage walking, bicycling, and riding public transit. The Town believes that there are a number of ways to achieve this goal including well-connected streets and highways, bicycle and pedestrian-scaled architecture, integration of land uses, and construction of bicycle facilities and amenities such as bike lanes and bicycle parking.

In November of 2007, the Town of Davidson partnered with the North Carolina Department of Transportation (NCDOT) Division of Bicycle and Pedestrian Transportation to begin work on a Bicycle Transportation Plan. The Town has long been involved with making bicycle travel safe and convenient for residents and visitors. However, this will be the first comprehensive plan that brings all of the bicycle-related ideas and strategies mentioned in other plans and initiatives into a single document and vision. Town staff and project steering committee members identified some preliminary goals and guidance for what the plan could achieve; these and other guidelines for the Bicycle Plan, were combined, condensed, and crafted into a draft vision statement (at left).

The main goal of the Bicycle Plan is to make this vision a reality. More specific goals will be established as public input is gathered, and as the steering committee contributes further to the development of the plan.

## Draft Vision Statement

We see bicycling as an integral part of life in the Town of Davidson. We see all types of cyclists, from beginners to experts, out riding to work, to school, for fun and for exercise. The streets of Davidson are designed, built, and retrofitted to accommodate the bicycle as a viable means of transportation. Bicycle education is helping to increase safety and build courtesy between drivers and cyclists. Bicycle routes connect neighborhoods, parks, shopping centers, schools, employment centers, bus stops, trails, and regional destinations, thereby reducing overall traffic congestion. When bicycle routes are combined with bicycle services (such as covered bicycle parking, bicycle stations, showers at employment centers, and public bicycle rentals), bicycling in Davidson is more comfortable, convenient and efficient than driving. For these reasons, we see the Town of Davidson as a destination for bicycle enthusiasts, and a livable community for local residents.



This project was made possible with a matching grant from the North Carolina Department of Transportation (NCDOT) Division of Bicycle and Pedestrian Transportation.



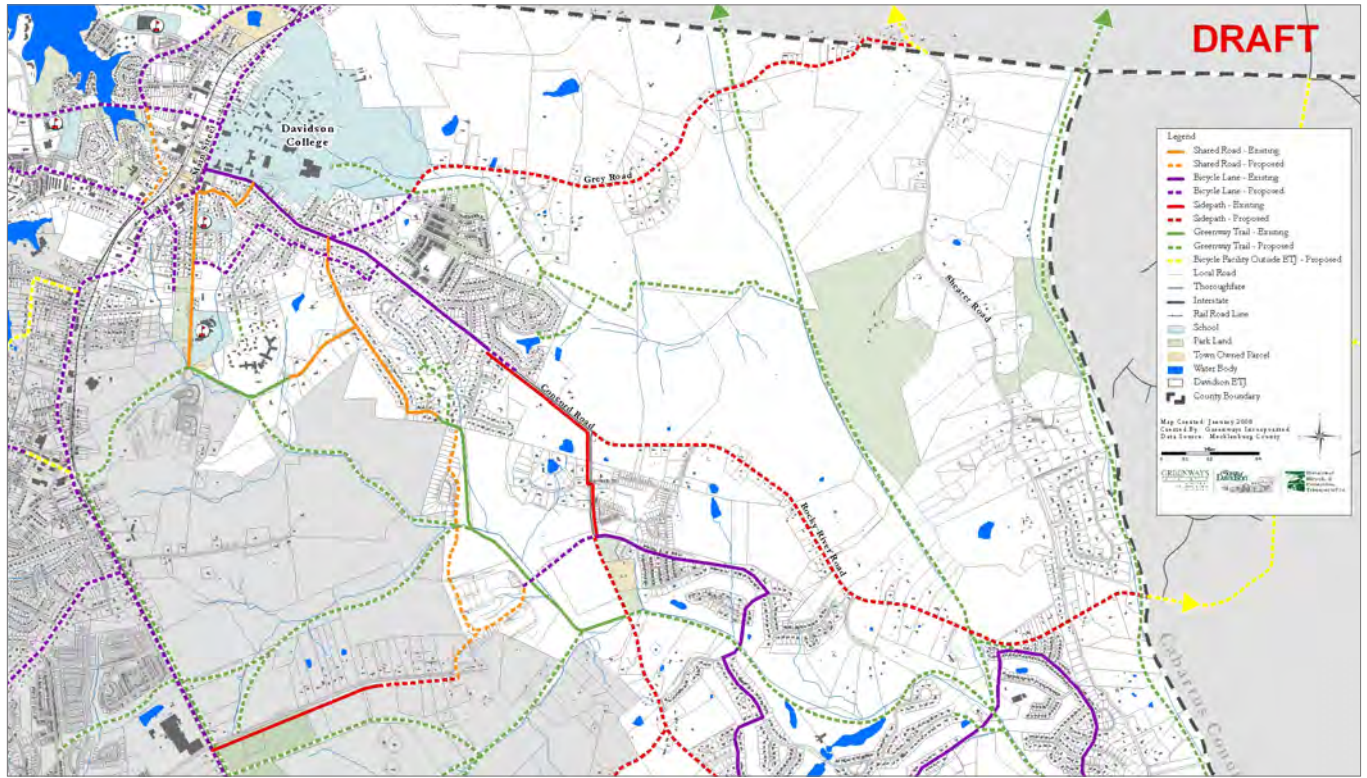
# BICYCLE PLAN NEWSLETTER

*Existing and Proposed Bicycle Facilities Map.* This draft map shows all of Davidson's bicycle facilities (bike lanes, shared roads, sidepaths, and greenways trails). Proposed facilities from existing town plans are shown as dashed lines, representing a starting point for the Bike Plan.

January 2008

2

Newsletter #1



## How to Get Involved...

There are several ways to help shape the future of Davidson in terms of bikeability and connectivity. High levels of public participation will make this plan more effective for implementation and more relevant for the particular needs of local residents:

1. **On-line Survey (Ends on Jan 31st!):** The survey will take about five minutes and can be found at:

[www.ci.davidson.nc.us/units/planning](http://www.ci.davidson.nc.us/units/planning)

The on-line survey questions are designed to get a better understanding of how often residents currently bike; the barriers to biking in Davidson; desired future biking opportunities; and priorities for future improvements.

2. **The second and third public input opportunities** are coming this spring and summer, 2008 (the first workshop was Jan. 24th). Specific dates, times and places TBD. These will be opportunities to learn more about the Draft Bicycle Transportation Plan as it develops, and to comment on the Plan's recommendations.

3. **Support the Adoption of the Final Plan.** In late summer/early fall 2008, the Final Plan will be ready for adoption by the Town of Davidson. It is critical that the Plan be officially adopted in order for its recommendations to be carried-out. Also, the adoption of the Plan will send

a clear message to outside funding sources that the Town of Davidson has a well thought-out and planned set of bicycle improvements, making them more likely to fund projects. Be sure to write a letter of support to the Town Board, or show up to support the Plan when it goes before Board this fall.

4. **Contact a Steering Committee Member.** If you are not able to provide input through the opportunities listed above, please contact Lauren Blackburn, Davidson Town Planner. She can either answer your questions or direct you to a Steering Committee Member or project consultant who can:

## Project Contact Info



For more information, please contact Lauren Blackburn, Davidson Town Planner:

Tel: (704)892-7592;  
E-mail: [lblackburn@ci.davidson.nc.us](mailto:lblackburn@ci.davidson.nc.us)

# BICYCLE PLAN NEWSLETTER

## Project Planning on Schedule

With much of the *draft* plan complete, project planners are moving forward with development of the implementation plan. Below is a time line of the project tasks:

- Dec/Jan:** Vision and Current Conditions
- February:** Systems/Ancillary Facilities
- March:** Standards and Guidelines
- April:** Programs and Policies
- May:** Implementation/Prioritization
- June:** Final Report Draft
- September:** Final Report

This plan brings all of the Town's current bicycle-related ideas and strategies into a single document and vision, and then expands upon them. The tasks listed in the time line above reflect the overall outline of the plan itself, starting with an assessment of current conditions, followed by recommendations, and concluding with a phased strategy for implementation.

The planning process has included a high level of public involvement. Over 200 people participated in the online survey, which helped project planners identify roadways and intersections most in need of bicycle-related improvements. In January 2008, approximately 50 people participated in an open house public workshop, which featured a presentation, a 'visioning' board, educational posters and materials, and three maps where participants were invited to write and draw their comments and ideas. Finally, local stakeholders (who volunteer time on project committees) are providing valuable insight and guidance as the plan develops.



*Above: Images from a project committee meeting and the first public workshop, in January 2008.*

May 2008

1

Newsletter #2



This project was made possible with a matching grant from the North Carolina Department of Transportation (NCDOT) Division of Bicycle and Pedestrian Transportation.



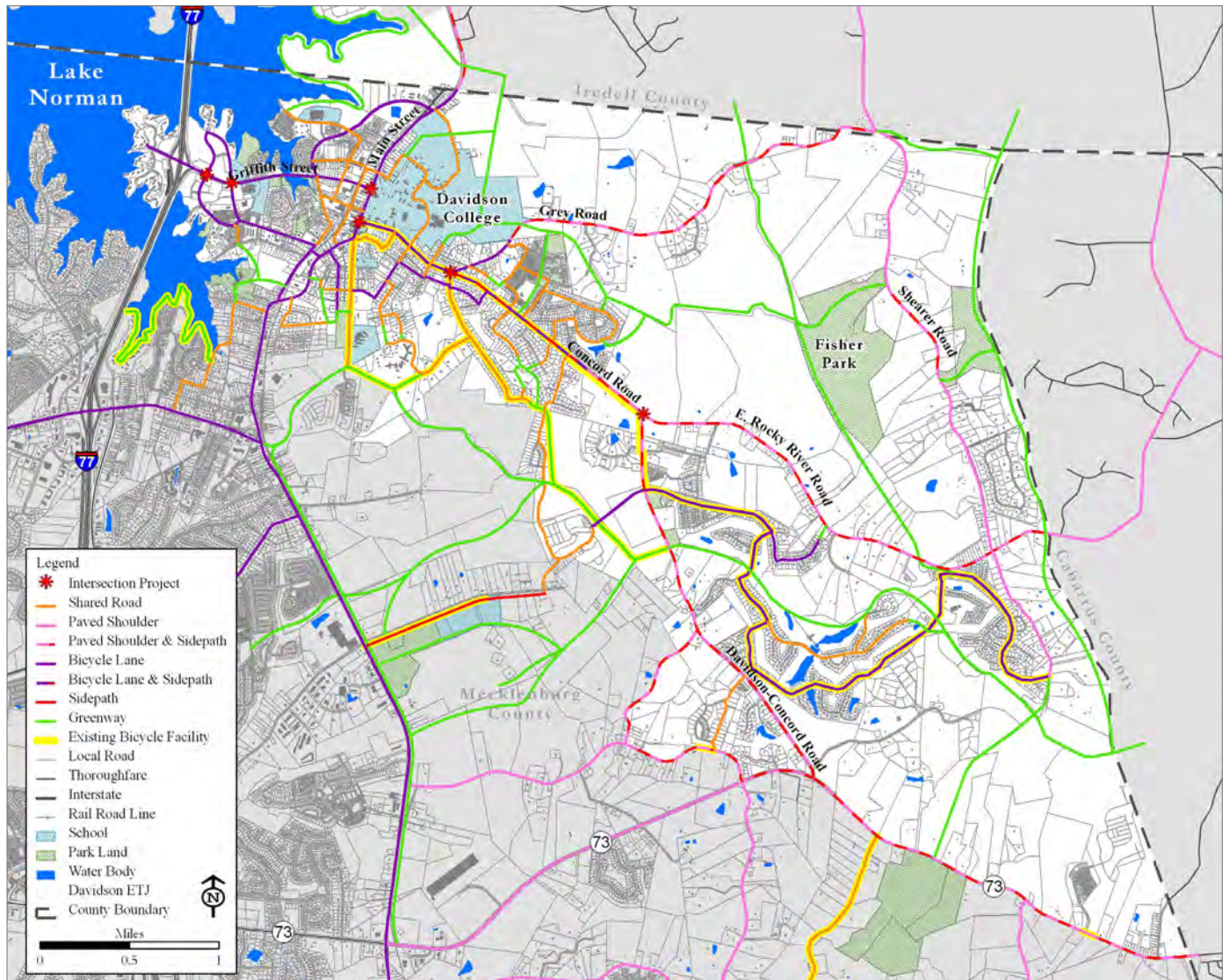
# BICYCLE PLAN NEWSLETTER

*Draft Route Network Map.* This draft map shows recommended bicycle facilities (shared roads, paved shoulders, bike lanes, sidepaths, and greenways). The phasing and prioritization of these improvements is the focus of the current work by project planners.

May 2008

2

Newsletter #2



## How to Stay Involved...

**1. The June 2008 Public Workshop.** Specific date, time and place TBD. This will be an opportunity to review the core elements the Draft Bicycle Transportation Plan, and to comment on the Plan's recommendations. For details, check with the project contact (lower right) towards the end of May 2008.

**2. Support the Adoption of the Final Plan.** In late summer/early fall 2008, the Final Plan will be ready for adoption by the Town of Davidson. It is critical that the Plan be officially adopted in order for its recommendations to be carried-out. Adoption of the Plan will send a clear message to outside agencies that the Town of Davidson has a well thought-out and planned set of bicycle improvements, making them more likely to fund and implement projects. Be sure to write a letter of support to the Town Board, or show up to support the Plan when it goes before Board this fall.

**3. Contact a Steering Committee Member.** If you are unable to provide direct input through the upcoming workshop, please contact Lauren Blackburn, Davidson Town Planner. She can either answer your questions or direct you to a Steering Committee Member or project consultant who can.

## Project Contact Info



For more information, please contact Lauren Blackburn, Davidson Town Planner:

Tel: (704)892-7592;  
E-mail: lblackburn@ci.davidson.nc.us



## Draft Plan Now Available For Review

The tasks listed in the time line at right reflect the overall outline of the plan itself, starting with a an assessment of current conditions, followed by recommendations, and concluding with a phased strategy for implementation (see back page).

The planning process has included a high level of public involvement. Over 200 people participated in the online survey, which helped project planners identify roadways and intersections most in need of bicycle-related improvements. In January 2008, approximately 50 people participated in an open house public workshop, which featured a presentation, a 'visioning' board, educational posters and materials, and three maps where participants were invited to write and draw their comments and ideas. Finally, local stakeholders (who volunteer time on project committees) are providing valuable insight and guidance as the plan develops.

# BICYCLE PLAN NEWSLETTER

Time line of the project tasks:

- Dec/Jan: Vision and Current Conditions
- February: Systems/Ancillary Facilities
- March: Standards and Guidelines
- April: Programs and Policies
- May: Implementation/Prioritization
- June: Final Report Draft**
- September: Final Report

June 2008

1

Newsletter #3



*Example Project: Sidepath across I-77 Bridge and exit ramps (see draft plan pages 39 and 101, for all project recommendations).*

*Left: Existing conditions are unsafe for bicyclists and pedestrians at the I-77 bridge and exit ramps. Below: A photo rendering of the same area with a multi-use sidepath across the bridge.*





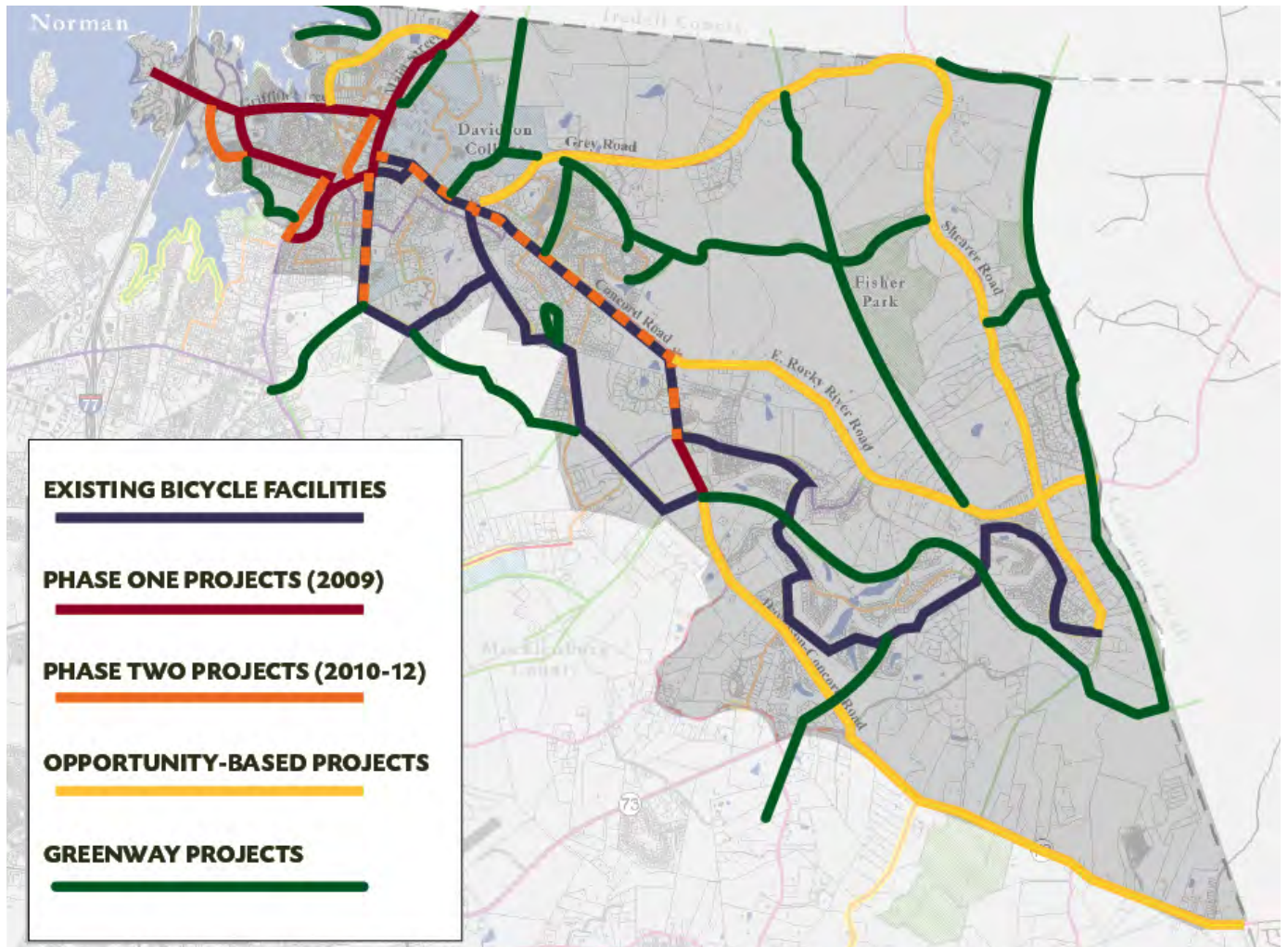
# BICYCLE PLAN NEWSLETTER

*Draft Project Phasing Map.* Phase one concentrates on downtown and key connections. Phase two makes improvements to existing facilities and expands the network. Opportunity-based projects are ongoing, and will likely be provided through development or during roadway resurfacing or reconstruction projects. Finally, greenway development will occur through careful planning by Town of Davidson and regional partners, such as Mecklenburg County.

June 2008

2

Newsletter #3



## How to Stay Involved...

1. **Review the Draft Plan Online.** Review and comment on the Plan's recommendations by going to:

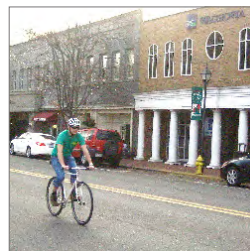
[www.greenways.com/davidsonbike\\_download](http://www.greenways.com/davidsonbike_download)

To review a hardcopy, check with the project contact person (lower right).

2. **Support the Adoption of the Final Plan.** In late summer/early fall 2008, the Final Plan will be ready for adoption by the Town of Davidson. It is critical that the Plan be officially adopted in order for its recommendations to be carried-out. Adoption of the Plan will send a clear message to outside agencies that the Town of Davidson has a well thought-out and planned set of bicycle improvements, making them more likely to fund and implement projects. Be sure to write a letter of support to the Town Board, or show up to support the Plan when it goes before Board this fall.

3. **Contact a Steering Committee Member.** If you are unable to provide direct input through the upcoming workshop, please contact Lauren Blackburn, Davidson Town Planner. She can either answer your questions or direct you to a Steering Committee Member or project consultant who can.

## Project Contact Info



For more information, please contact Lauren Blackburn, Davidson Town Planner:

Tel: (704)892-7592;  
E-mail: [lblackburn@ci.davidson.nc.us](mailto:lblackburn@ci.davidson.nc.us)

# RULES *for* BICYCLISTS



In North Carolina, bicyclists have the same rights and duties as motorists. For a complete list of NC bike laws, visit [www.ncdot.org/transit/bicycle](http://www.ncdot.org/transit/bicycle)

1

## ***Ride on the right***

- Always ride in the same direction as traffic
- Ride as far to the right as practicable

2

## ***Follow traffic laws***

- Obey all traffic control devices, such as stop signs
- Always use hand signals when turning

3

## ***Always wear a properly fitting helmet***

- Children below the age of 16 are required by NC law to wear a helmet
- Make sure that the helmet fits snugly on top of the head, not tipped back
- Replace your helmet after any crash or impact

4

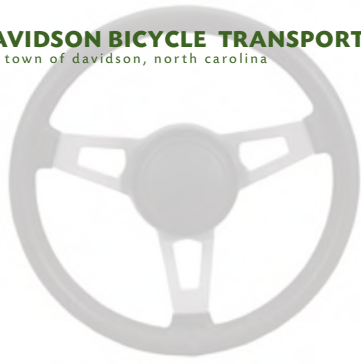
## ***Ride predictably***

- Ride in a straight line and don't swerve between parked cars
- Check traffic before entering any street or intersection
- Give an audible warning to pedestrians before approaching from behind on a multi-use path

5

## ***Be visible***

- Wear brightly colored clothing
- At night, the law requires cyclists to use a white front light and a red rear light or reflector
- Make eye contact with motorists



# RULES for MOTORISTS

In North Carolina, bicyclists have the same rights and duties as motorists. For a complete list of NC bike laws, visit [www.ncdot.org/transit/bicycl](http://www.ncdot.org/transit/bicycl)

## Drive cautiously

- Reduce speed when encountering cyclists
- Give cyclists extra trailing and passing room in potentially dangerous situations

1

## Yield to cyclists

- Cyclists are vehicles and should be given the appropriate right of way
- Cyclists may take the entire lane

2

## Be considerate

- Scan for cyclists in traffic at intersections, and watch for passing cyclists before opening a car door
- Do not blast your horn in close proximity to cyclists

3

## Pass with care

- NC law requires 2 feet of passing room when overtaking a vehicle moving in the same direction; giving at least 3 feet of passing room is courteous when passing a cyclist
- Wait until traffic conditions allow you to pass safely
- Check over your shoulder after passing a cyclist before moving back to normal position

4

## Watch for children

- Children on bicycles are often unpredictable—expect the unexpected and slow down

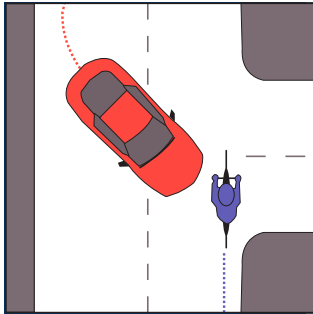
5



# RIDE SMART

How to avoid five common bike-car collisions

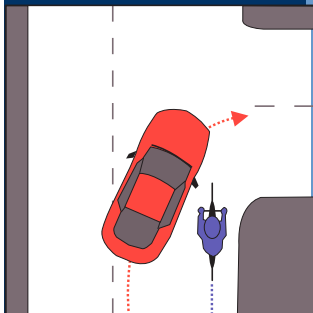
Sources: Christine Mattheis and Carlie Layton: *Bicycling Magazine*  
Laura Sandt: *Pedestrian and Bicycle Information Center*  
Preston Tyree: *Community Mobility Institute*



## Left Cross

A motorist fails to see a cyclist and makes a left turn—it accounts for almost half of all bike crashes, according to the *Pedestrian and Bicycle Information Center (PBIC)*.

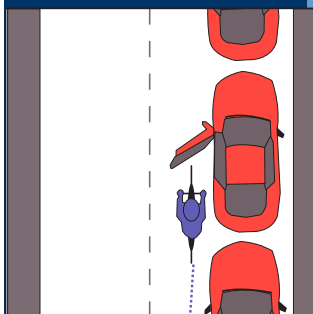
**AVOID IT:** If you see a car turning into your path, turn right into the lane with the vehicle. “Don’t creep into the intersection at red lights to get a had start,” says Laura Sandt, program specialist for the PBIC.



## Right Hook

A motorist passes a cyclist on the left and turns right into the bike’s path.

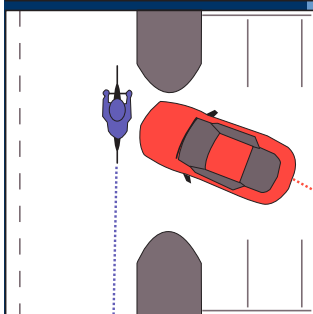
**AVOID IT:** Passing stopped or slow-moving cars on the right places you in a driver’s blind spot. Take the lane—it’s your right in all 50 states. “If you’re in the lane, the driver will slow down and stay behind you and wait to make the turn,” says Preston Tyree, who runs the *Community Mobility Institute*, in Austin, Texas.



## Doored

A cyclist traveling next to a parked car door opened by the driver.

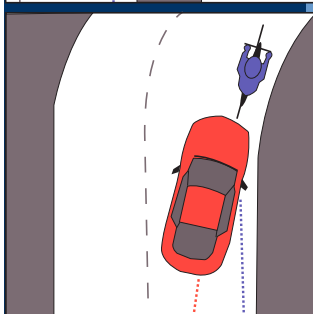
**AVOID IT:** “Always be looking several cars ahead,” Sandt says. Ride at least 3 feet from parked cars, taking the lane if necessary. Be prepared to stop suddenly. Keep your weight over your rear wheel and apply strong force to the front brake lever, with moderate force to the back.



## Parking Lotted

A motorist exits a driveway or parking lot into the path of a cyclist.

**AVOID IT:** No bike-handling tricks can overcome the danger of riding on a road with numerous parking-lot exits. Just take a less-direct route. If you don’t change routes, follow the law and ride fully in the road. Most of all: Stay off the sidewalk—motorists aren’t looking for you there, Sandt says.



## The Overtaking

A motorist hits a cyclist from behind.

**AVOID IT:** “Make yourself as visible as possible and ride predictably,” Sandt says. Use reflectors and lights on your bike at night; when moving to the left, signal with your arm; and hold a straight line while checking traffic over your shoulder, because even the most diligent driver could hit a swerving bike.



APPX B OUTLINE:

Overview

US Department of  
Transportation  
Bicycle and Pedestrian  
Policy

FHWA Memorandum on  
Mainstreaming  
Bicycle And Pedestrian  
Projects

NCDOT Board of  
Transportation Resolution

NCDOT Administrative  
Action to Include Local  
Adopted Greenways Plans  
in the NCDOT Highway  
Planning Process

Guidelines for NCDOT  
to Comply with  
Administrative Decision  
to Incorporate Local  
Greenways Into Highway  
Planning Process

# APPX B: POLICY RESOURCES

## Overview

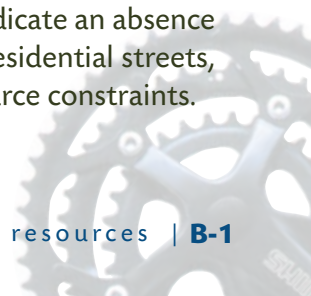
A number of federal and state bicycle and pedestrian policies have been developed in recent years. This appendix covers a number of these policies that are intended to better integrate walking and bicycling into transportation infrastructure.

## US Department of Transportation Bicycle and Pedestrian Policy

A United States Department of Transportation (US DOT) policy statement regarding the integration of bicycling and walking into transportation infrastructure recommends that, “bicycling and walking facilities will be incorporated into all transportation projects” unless exceptional circumstances exist. The Policy Statement was drafted by the U.S. Department of Transportation in response to Section 1202 (b) of the Transportation Equity Act for the 21st Century (TEA-21) with the input and assistance of public agencies, professional associations and advocacy groups. USDOT hopes that public agencies, professional associations, advocacy groups, and others adopt this approach as a way of committing themselves to integrating bicycling and walking into the transportation mainstream. The full statement reads as follows, with some minor adjustments for applicability in Pittsboro:

1. Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:

- Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.
- The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project.
- Where sparsity of population or other factors indicate an absence of need. For example, on low volume, low speed residential streets, or streets with severe topographic or natural resource constraints.



2. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate. Rumble strips are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of four feet in which a bicycle may safely operate.

3. Sidewalks, shared use paths, street crossings (including over- and undercrossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.

4. The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through the following additional steps:

- Planning projects for the long-term. Transportation facilities are long-term investments that remain in place for many years. The design and construction of new facilities that meet the criteria in item 1) above should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements. For example, a bridge that is likely to remain in place for 50 years, might be built with sufficient width for safe bicycle and pedestrian use in anticipation that facilities will be available at either end of the bridge even if that is not currently the case.
- Addressing the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular travel corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections and interchanges shall accommodate bicyclists and pedestrians in a manner that is safe, accessible and convenient.
- Getting exceptions approved at a senior level. Exceptions for the non-inclusion of bikeways and walkways shall be approved by a senior manager and be documented with supporting data that indicates the basis for the decision.



- Designing facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow design guidelines and standards that are commonly used, such as the AASHTO Guide for the Development of Bicycle Facilities, AASHTO's A Policy on Geometric Design of Highways and Streets, and the ITE Recommended Practice "Design and Safety of Pedestrian Facilities. (Many of these guidelines are summarized in Chapter 4: Bicycle Facility Standards)

(Retrieved from <http://www.fhwa.dot.gov/environment/bikeped/design.htm> on 5/6/2008)

## ***FHWA Memorandum on Mainstreaming Bicycle and Pedestrian Projects***

(See pages B-4 through B-6)





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Environment

[FHWA](#) > [HEP](#) > [Environment](#) > [Human](#) > [Bicycle & Pedestrian](#)

 **U.S. Department of  
Transportation  
Federal Highway Administration**

# Memorandum

**Subject:** ACTION: Transmittal of Guidance on Bicycle and Pedestrian Provisions of the Federal-aid Program

**Date:** February 24, 1999

**From:** Kenneth R. Wykle  
Federal Highway Administrator

**In reply, HEPH-30  
refer to:**

**To:**  
Division Administrators  
Federal Lands Highway Division Engineers

This memorandum transmits the Federal Highway Administration's (FHWA) Guidance on the Bicycle and Pedestrian Provisions of the Federal-aid Program and reaffirms our strong commitment to improving conditions for bicycling and walking. The nonmotorized modes are an integral part of the mission of FHWA and a critical element of the local, regional, and national transportation system. Bicycle and pedestrian projects and programs are eligible for but not guaranteed funding from almost all of the major Federal-aid funding programs. We expect every transportation agency to make accommodation for bicycling and walking a routine part of their planning, design, construction, operations and maintenance activities.

The Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) continues the call for the mainstreaming of bicycle and pedestrian projects into the planning, design, and operation of our Nation's transportation system. Under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Federal spending on bicycle and pedestrian improvements increased from \$4 million annually to an average of \$160 million annually. Nevertheless, the level of commitment to addressing the needs of bicyclists and pedestrians varies greatly from State to State.

The attached guidance explains how bicycle and pedestrian improvements can be routinely included in federally funded transportation projects and programs. I would ask each division office to pass along this guidance to the State DOT and to meet with them to discuss ways of expediting the implementation of bicycle and pedestrian projects. With the guidance as a basis for action, States can then decide the most appropriate ways of mainstreaming the inclusion of bicycle and pedestrian projects and programs.

Bicycling and walking contribute to many of the goals for our transportation system we have at FHWA and at the State and local levels. Increasing bicycling and walking offers the potential for cleaner air, healthier people, reduced congestion, more liveable communities, and more efficient use of precious road space and resources. That is why funds in programs such as Congestion Mitigation and Air Quality Improvement, Transportation Enhancements, and the National Highway System, are eligible to be used for bicycling and





walking improvements that will encourage use of the two modes.

We also have a responsibility to improve the safety of bicycling and walking as the two modes represent more than 14 percent of the 41,000 traffic fatalities the nation endures each year. Pedestrian and bicycle safety is one of FHWA's top priorities and this is reflected in our 1999 Safety Action Plan. As the attached guidance details, TEA-21 has opened up the Hazard Elimination Program to a broader array of bicycle, pedestrian, and traffic calming projects that will improve dangerous locations. The legislation also continues funding for critical safety education and enforcement activities under the leadership of the National Highway Traffic Safety Administration. If we are successful in improving the real and perceived safety of bicyclists and pedestrians, we will also increase use.

You will see from the attached guidance that the Federal-aid Program, as amended by TEA-21, offers an extraordinary range of opportunities to improve conditions for bicycling and walking. Initiatives such as the Transportation and Community and System Preservation Pilot Program and the Access to Jobs program offer exciting new avenues to explore.

Bicycling and walking ought to be accommodated, as an element of good planning, design, and operation, in all new transportation projects unless there are substantial safety or cost reasons for not doing so. Later this year (1999), FHWA will issue design guidance language on approaches to accommodating bicycling and pedestrian travel that will, with the cooperation of AASHTO, ITE, and other interested parties, spell out ways to build bicycle and pedestrian facilities into the fabric of our transportation infrastructure from the outset. We can no longer afford to treat the two modes as an afterthought or luxury.

The TEA-21 makes a great deal possible. However, in the area of bicycling and walking in particular, we must work hard to ensure good intentions and fine policies translate quickly and directly into better conditions for bicycling and walking. While FHWA has limited ability to mandate specific outcomes, I am committed to ensuring that we provide national leadership in three critical areas.

- The FHWA will encourage the development and implementation of bicycle and pedestrian plans as part of the overall transportation planning process. Every statewide and metropolitan transportation plan should address bicycling and walking as an integral part of the overall system, either through the development of a separate bicycle and pedestrian element or by incorporating bicycling and walking provisions throughout the plan. Further, I am instructing each FHWA division office to closely monitor the progress of projects from the long-range transportation plans to the STIPs and TIPs. In the coming months, FHWA will disseminate exemplary projects, programs, and plans, and we will conduct evaluations in selected States and MPOs to determine the effectiveness of the planning process.
- The FHWA will promote the availability and use of the full range of streamlining mechanisms to increase project delivery. The tools are in place for States and local government agencies to speed up the delivery of bicycle and pedestrian projects - it makes no sense to treat installation of a bicycle rack or curb cut the same way we treat a new Interstate highway project - and our division offices must take a lead in promoting and administering these procedures.
- The FHWA will help coordinate the efforts of Federal, State, metropolitan, and other relevant agencies to improve conditions for bicycling and walking. Once again, our division offices must ensure that those involved in implementing bicycle and pedestrian projects at the State and local level are given maximum opportunity to get their job done, unimpeded by regulations and red tape from the Federal level. I am asking each of our division offices to facilitate a dialogue among each State's bicycle and pedestrian coordinator, Transportation Enhancements program manager, Recreational Trails Program administrator, and their local and FHWA counterparts to identify and remove obstacles to the implementation of bicycle and pedestrian projects and programs.

In less than a decade, bicycling and walking have gone from being described by my predecessor Tom Larson as "the forgotten modes" to becoming a serious part of our national transportation system. The growing acceptance of bicycling and walking as modes to be included as part of the transportation mainstream started with passage of ISTEA in 1991 and was given a considerable boost by the Congressionally-mandated National Bicycling and Walking Study. That study, released in 1994, challenges the U.S. Department of Transportation to double the percentage of trips made by foot and bicycle while simultaneously reducing fatalities and injuries suffered by these modes by 10 percent - and we remain committed to achieving these goals.

The impetus of ISTEA and the National Bicycling and Walking Study is clearly reinforced by the bicycle and pedestrian provisions of the TEA-21. The legislation confirms the vital role bicycling and walking must play in creating a balanced, accessible, and safe transportation system for all Americans.

### [FHWA Guidance \(1999\)](#) - **Bicycle and Pedestrian Provisions of Federal Transportation Legislation**

To provide Feedback, Suggestions, or Comments for this page contact Gabe Rousseau at [gabe.rousseau@dot.gov](mailto:gabe.rousseau@dot.gov).



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United States Department of Transportation - **Federal Highway Administration**



## ***NCDOT Board of Transportation Resolution: Bicycling and Walking in North Carolina: A Critical Part of the Transportation System***

(ADOPTED BY THE BOARD OF TRANSPORTATION ON SEPTEMBER 8, 2000)

The North Carolina Board of Transportation strongly reaffirms its commitment to improving conditions for bicycling and walking, and recognizes nonmotorized modes of transportation as critical elements of the local, regional, and national transportation system.

WHEREAS, increasing bicycling and walking offers the potential for cleaner air, healthier people, reduced congestion, more liveable communities, and more efficient use of road space and resources; and

WHEREAS, crashes involving bicyclists and pedestrians represent more than 14 percent of the nation's traffic fatalities; and

WHEREAS, the Federal Highway Administration (FHWA) in its policy statement "Guidance on the Bicycle and Pedestrian Provisions of the Federal-Aid Program" urges states to include bicycle and pedestrian accommodations in its programmed highway projects; and

WHEREAS, bicycle and pedestrian projects and programs are eligible for funding from almost all of the major Federal-aid funding programs; and

WHEREAS, the Transportation Equity Act for the 21st Century (TEA-21) calls for the mainstreaming of bicycle and pedestrian projects into the planning, design and operation of our Nation's transportation system;

NOW, THEREFORE, BE IT RESOLVED, the North Carolina Board of Transportation concurs that bicycling and walking accommodations shall be a routine part of the North Carolina Department of Transportation's planning, design, construction, and operations activities and supports the Department's study and consideration of methods of improving the inclusion of these modes into the everyday operations of North Carolina's transportation system; and

BE IT FURTHER RESOLVED, North Carolina cities and towns are encouraged to make bicycling and pedestrian improvements an integral part of their transportation planning and programming.



## ***NCDOT Administrative Action to Include Local Adopted Greenways Plans in the NCDOT Highway Planning Process***

(ADOPTED JANUARY 1994)

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.

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.

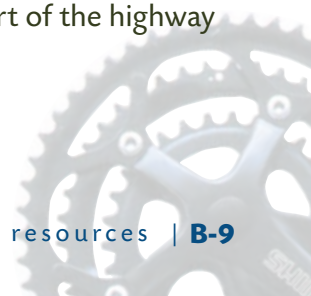
It is also the responsibility of each locality to consider the adopted transportation plan in their greenways planning and include its adopted greenways planning activities within their local transportation planning process. Localities should place in priority their greenways construction activities 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.



# APPX C: PRIORITIZATION + PROJECT CUT-SHEETS

## *Prioritization Process*

The prioritization process began by making a list of all the roadways in the study area (Town of Davidson Extra Territorial Jurisdiction, or ETJ) for which bicycle recommendations were made. The roadways were then broken down into 26 segments at logical points, such as major intersections. Most segments are under a mile long, with several that are longer in rural and/or future growth areas.

The weighted criteria used to rank each segment was custom designed for Davidson, based on public input, steering committee input, and data collected pertaining to Davidson's existing conditions. Project steering committee members were given a worksheet with example criteria and weights used in other North Carolina communities. They were then asked to adjust both the criteria and the weights assigned to each criteria, according to the bicycling-related needs and desires expressed by themselves and the public. Furthermore, public survey results were also incorporated into the prioritization process. The specific criteria and weights used are listed on the following page.



## Criteria and Weight Used to Rank Bicycle Facilities

Top 4 "Most in Need of Improvement" from Online Survey	5
Connections to Downtown or 'Village Center' area	5
Has Intersection "Most in Need of Improvement" from Online Survey	4
Direct Access to/from Harris Teeter/Exit 30 area	4
Direct Access to/from an Existing or Funded Greenway	4
Direct Access to/from Davidson College	4
Direct Access to/from a School (other than Davidson College)	4
Direct Access to/from a Park/Rec/Playground	4
Direct Access to/from YMCA	4
Elem. and Middle School Proximity (1/2 mile radius)	3
Regional Connection and/or Interstate Highway Crossing*	3
Constructability**	3
Direct Access to/from Employment Centers ***	3
Integrates with Bus Route Network	3
Direct Access to/from Proposed Rail Transit	3
Top 5-8 "Most in Need of Improvement" from Online Survey	3
Road Score: Poor Condition	3
Direct Access to/from an Existing On-Road Bicycle Facility	3
Direct Access to/from Higher Density Residential Areas	3
Direct Access to/from a Proposed Greenway	3
Direct Access to/from Sadler Square	2
Direct Access to/from Future Development	2
Direct Access to/from Ingersoll Rand	2

\* "Regional Connections" includes the Lake Norman Bike Route (115), and routes that connect to neighboring jurisdictions

\*\*Only used for routes with a clear ease (+3) or difficulty (-3) in constructing the facility, otherwise left blank

\*\*\*According to Planning Areas from the Town of Davidson Planning Ordinance:  
CBD - Central Business District;  
VCB - Village Center;  
EPC - Employment Campus;  
COL - College Campus





*INSERT PRIORITY MATRIX*

*(11x17)*

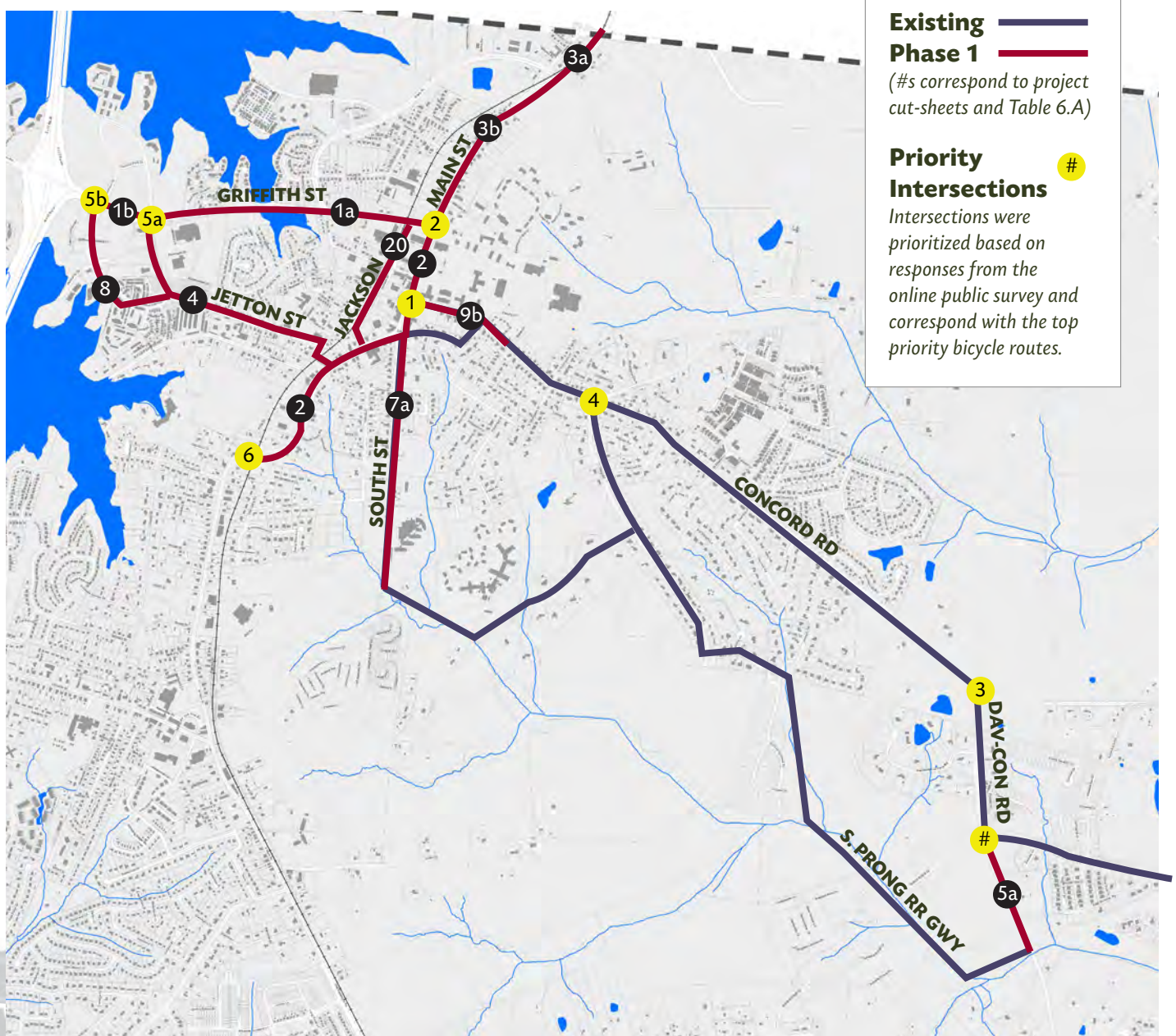


## Project Cut-Sheets

The following project cut-sheets are provided for anyone who wishes to better understand the phase one priority projects that are recommended in this plan. The cut sheets are particularly useful for town- and NC DOT-engineers as they begin developing more detailed design work for these projects. They will also help town planning staff as they explain these projects to various parties, such as the Town Board, potential funding agencies, and interested citizens. The map below shows the locations of these key projects.

*Note: Project #1a (Bike Lanes on Griffith) is not included as a cut-sheet because it is already underway and due for completion in Fall 2008.*

### PHASE ONE PROJECT CUT SHEET GUIDE





**PROJECT:**  
**GRIFFITH STREET SHARROWS**

**Rank/ID #: 1b**

**Phase 1 (2009)**

**From** Harbour Place

**To** Jetton

**Miles** 0.15

**Feet** 790

**Recommendation:**

Place sharrow markings immediately after intersections (between roundabouts), and no further than 250 ft apart thereafter.

Place signs at select locations that read "Bicyclist May Use Full Lane".

See separate cut-sheets for Griffith Street roundabout recommendations

**Construction Type:**

Pavement Marking

**Cost Estimate:**

\$4,098 for sharrow markings and signs

**Agency/Agencies:**

Davidson PW

NCDOT Div. 10



*Provide sharrow markings between the roundabouts in the outside lanes only*



*Above: Existing conditions on Griffith Street.*



**1b**

**PROJECT:**  
**MAIN STREET SHARROWS**

**Rank/ID #: 2**

**Phase 1 (2009)**

**From** Griffith St  
**To** Potts St

**Miles** 0.85  
**Feet** 4,488

**Recommendation:**

Place sharrow markings immediately after every intersection, and no further than 250 ft apart thereafter.

Place signs at select locations that read "Bicyclist May Use Full Lane".

See separate cut-sheets for intersections with Concord Road and Griffith Street.

**Construction Type:**  
Pavement Marking

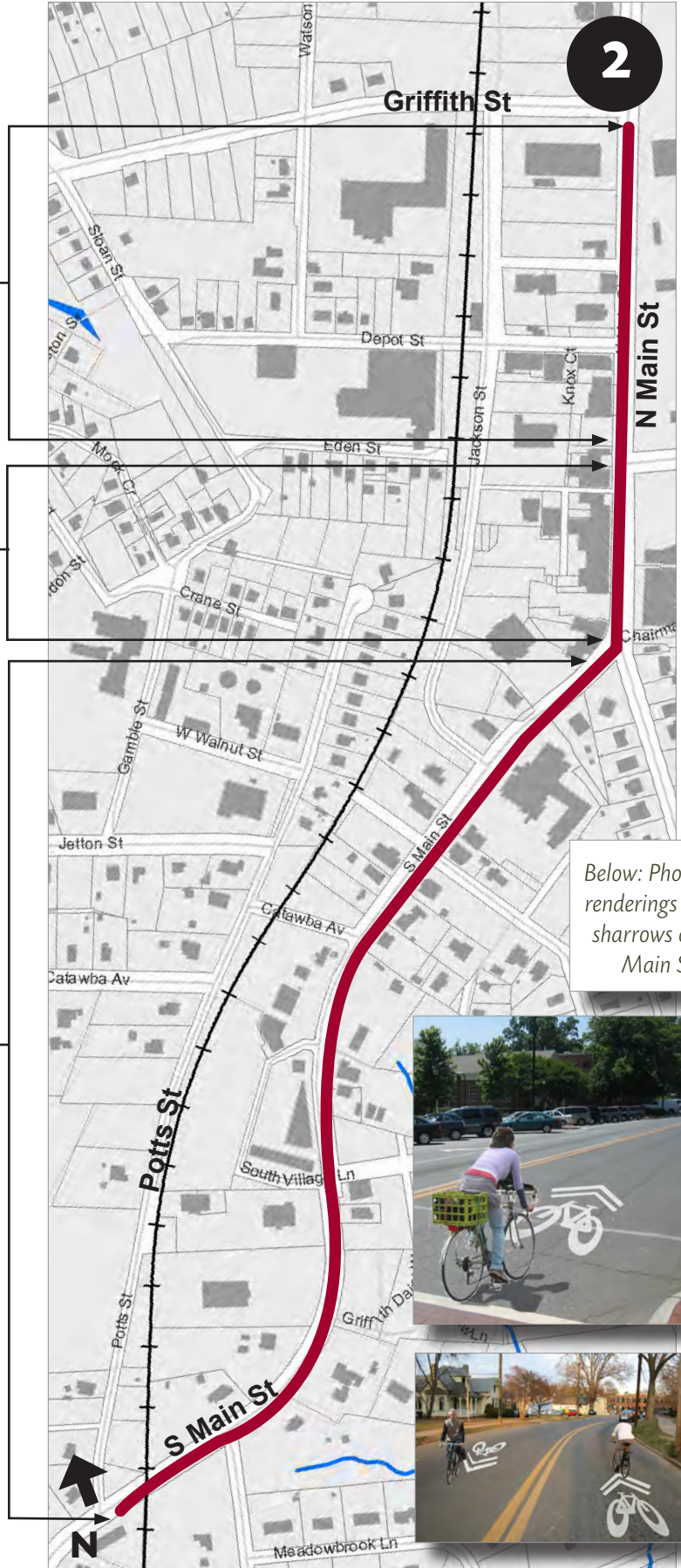
**Cost Estimate:**  
\$4,600 for sharrow markings and signs;  
cost of angle parking conversion unknown.

**Agency/Agencies:**  
Davidson PW  
NCDOT Div. 10

*Provide Sharrow markings*

*Provide Sharrow markings and Change angle parking on Main St. to back-in angle parking; convert northernmost angle parking stall into space for bicycle parking.*

*Provide Sharrow markings*



*Below: Photo renderings of sharrows on Main St.*



**PROJECT:**  
**NORTH MAIN BIKE LANES**  
Rank/ID #: 3A and 3B

**Phase 1 (2009)**

**From** Griffith St  
**To** County Line  
**Miles** 0.75  
**Feet** 3,960

**Recommendation:**  
Bike Lanes

*Note: Where there is curb and gutter, be sure that the gutterpan is flush with the pavement to allow for more functional width for cyclists to use.*

See separate cut-sheet for intersections with Griffith Street

**Construction Type:**  
Roadway Restriping

**Cost Estimate:**  
\$30,000

**Agency/Agencies:**  
Davidson PW  
NCDOT Div. 10



*Above: Existing conditions on N Main Street will allow for a simple restriping of the roadway to allow bicycle lanes.*

*Stripe bicycle lanes; Change roadway configuration to 5/11/11/5, from Iredell County line to Beaty Street.*

*Stripe bicycle lanes; Change roadway configuration to 4/10.5/10.5/4, from Beaty Street to Griffith Street;.*



**PROJECT:**

**JETTON STREET BIKE LANES**

Rank/ID #: 4

Phase 1 (2009)

**From** Griffith St

**To** Potts St

**Miles** 0.65

**Feet** 3,432

**Recommendation:**

Bike Lanes; See separate cut-sheet for intersection with Griffith.

*Note: Jetton Street at Davidson Gateway has curb extensions that may impact bike lanes through the intersection. Bike lanes will likely need to share the primary lane with vehicles while traveling through that intersection.*

**Construction Type:**

Roadway Restriping

**Cost Estimate:**

\$26,000

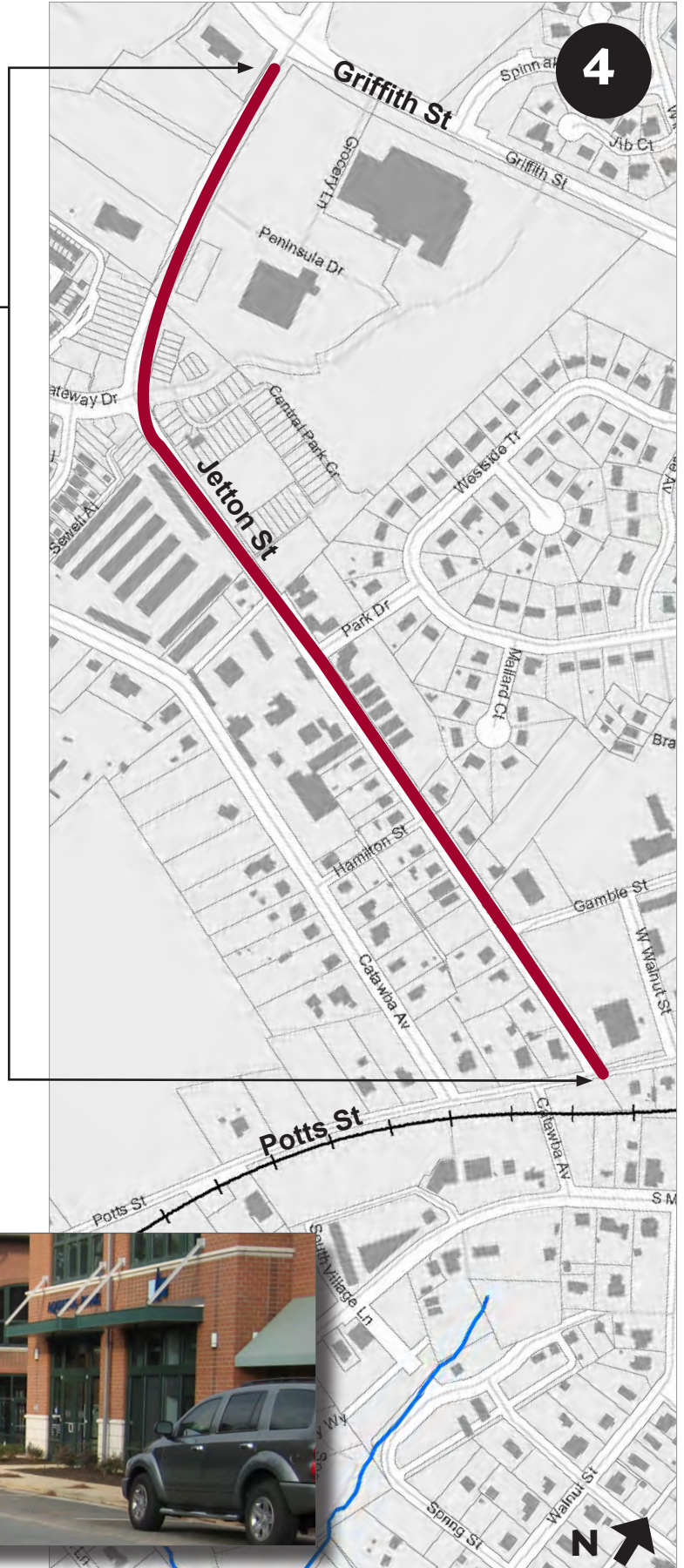
**Agency/Agencies:**

Davidson PW

NCDOT Div. 10

*Below: A cyclist on Jetton rides on the wrong side of the street; Striping bicycle lanes or providing sharrow markings will provide safer conditions for cyclists.*

*Stripe bicycle lanes; \*Note: if on-street parking makes bicycle lanes dangerous due to cyclists riding in the door-zone, then use sharrows for this segment.*





**PROJECT:**  
**DAVIDSON-CONCORD ROAD SIDEPATH**

**Rank/ID #:** 5a

**Phase 1 (2009)**

**From** Robert Walker Drive  
**To** S. Prong Rocky River Gwy

**Miles** 0.35

**Feet** 1,848

**Recommendation:**  
Sidepath on west side of Davidson-Concord Road.

See separate cut-sheet for intersection with Robert Walker Drive.

*Note: Project 5b calls for paved shoulders, on both sides of Davidson-Concord.*

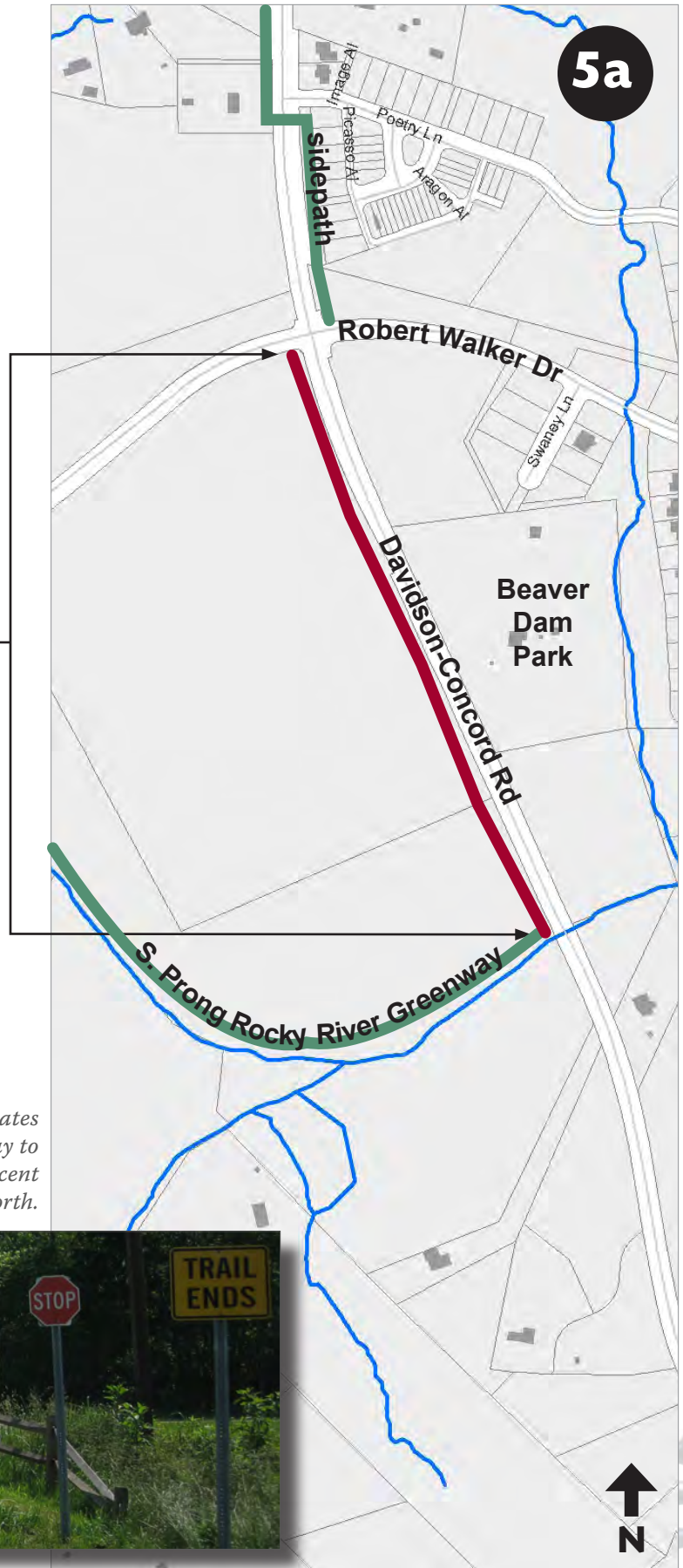
**Construction Type:**  
New Construction

**Cost Estimate:**  
\$157,500

**Agency/Agencies:**  
Davidson PW  
NCDOT Div. 10

*Provide sidepath on west side of Davidson-Concord Rd, between the powerline and roadway.*

*Below: Currently, the greenway terminates at Davidson-Concord Rd with no safe way to connect to the nearby Beaver Dam Park, adjacent neighborhoods, or the existing sidepaths to the north.*



**PROJECT:**  
**SOUTH STREET SHARROWS**

**Rank/ID #:** 7a

**Phase 1 (2009)**

**From** S. Main  
**To** Town of Cornelius

**Miles** 0.7  
**Feet** 3,696

**Recommendation:**  
 Place sharrow markings immediately after intersections, and no further than 250 ft apart thereafter.

Place signs at select locations that read "Bicyclist May Use Full Lane."

**Construction Type:**  
 Pavement Marking

**Cost Estimate:**  
 \$7,525 for sharrow markings and signs

**Agency/Agencies:**  
 Davidson PW

*Provide sharrow markings and consider a variety of pedestrian improvements for the school area, including higher-visibility crosswalks and bulb-outs at intersections.*



*Note: Project #7b recommends a sidepath along the east side of South St to allow younger children more room to ride comfortably off the roadway.*







**PROJECT:**  
**DAVIDSON GATEWAY BIKE LANES**

**Rank/ID #: 8**

**Phase 1 (2009)**

**From** Griffith  
**To** Jetton

**Miles** 0.45  
**Feet** 2,376

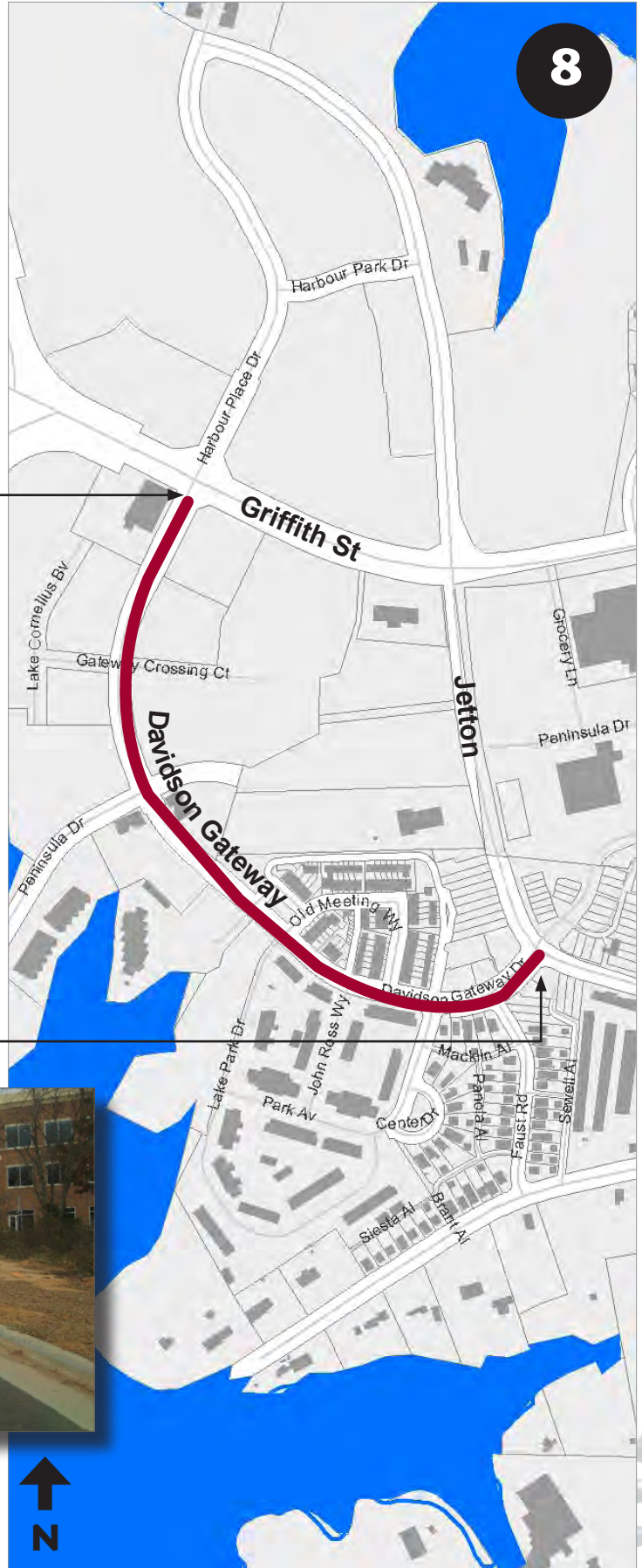
**Recommendation:**  
Bicycle Lanes

**Construction Type:**  
Roadway Restriping

**Cost Estimate:**  
\$11,329

**Agency/Agencies:**  
Davidson PW

*Stripe bicycle lanes; \*Note: if on-street parking makes bicycle lanes dangerous due to cyclists riding in the door-zone, then use sharrows for this segment.*



*Above: A small portion of Davidson Gateway approaching Griffith St. already has bicycle lanes.*

**PROJECT:**

**CONCORD ROAD SHARROWS**

Rank/ID #: 9b

**Phase 1 (2009)**

**From** Baker/Woodland

**To** Main

**Miles** 0.3

**Feet** 1,584

**Recommendation:**

Place sharrow markings immediately after intersections, and no further than 250 ft apart thereafter.

Place signs at select locations that read "Bicyclist May Use Full Lane".

See separate cut-sheets for intersection with Main St.

**Construction Type:**

Pavement Marking

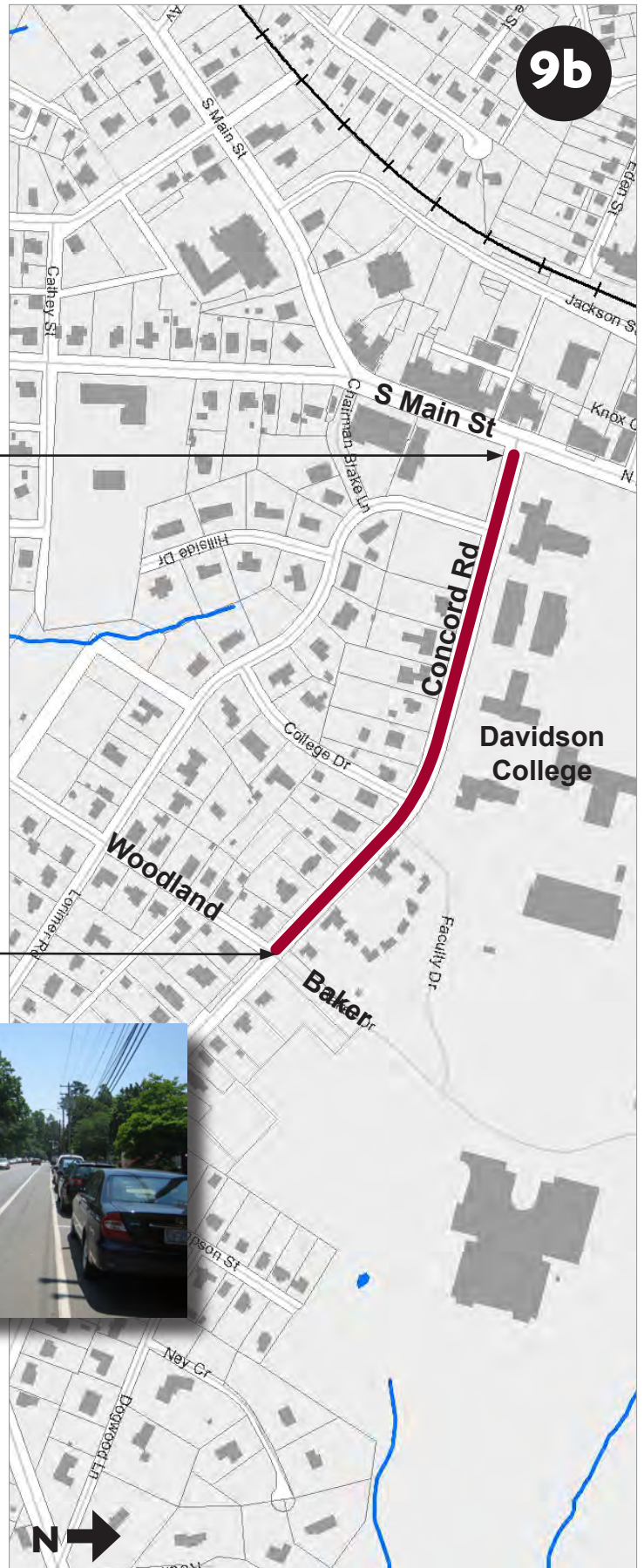
**Cost Estimate:**

\$3,766 for sharrow markings and signs

**Agency/Agencies:**

Davidson PW

NCDOT Div. 10



*Remove bicycle lane striping and replace with sharrow markings*



*Above: Existing bike lanes on Concord do not provide enough room for cyclists to avoid the 'door zone' of parked cars.*



**PROJECT:**  
**JACKSON STREET SHARROWS**  
Rank/ID #: 20 a, 20b, and 20c

**Phase 1 (2009)**

**From** Griffith  
**To** S Main

**Miles** 0.52  
**Feet** 2,730

**Recommendation:**  
Bicycle lane on southbound/  
uphill portion of Jackson;  
sharrows on all other parts of  
Jackson

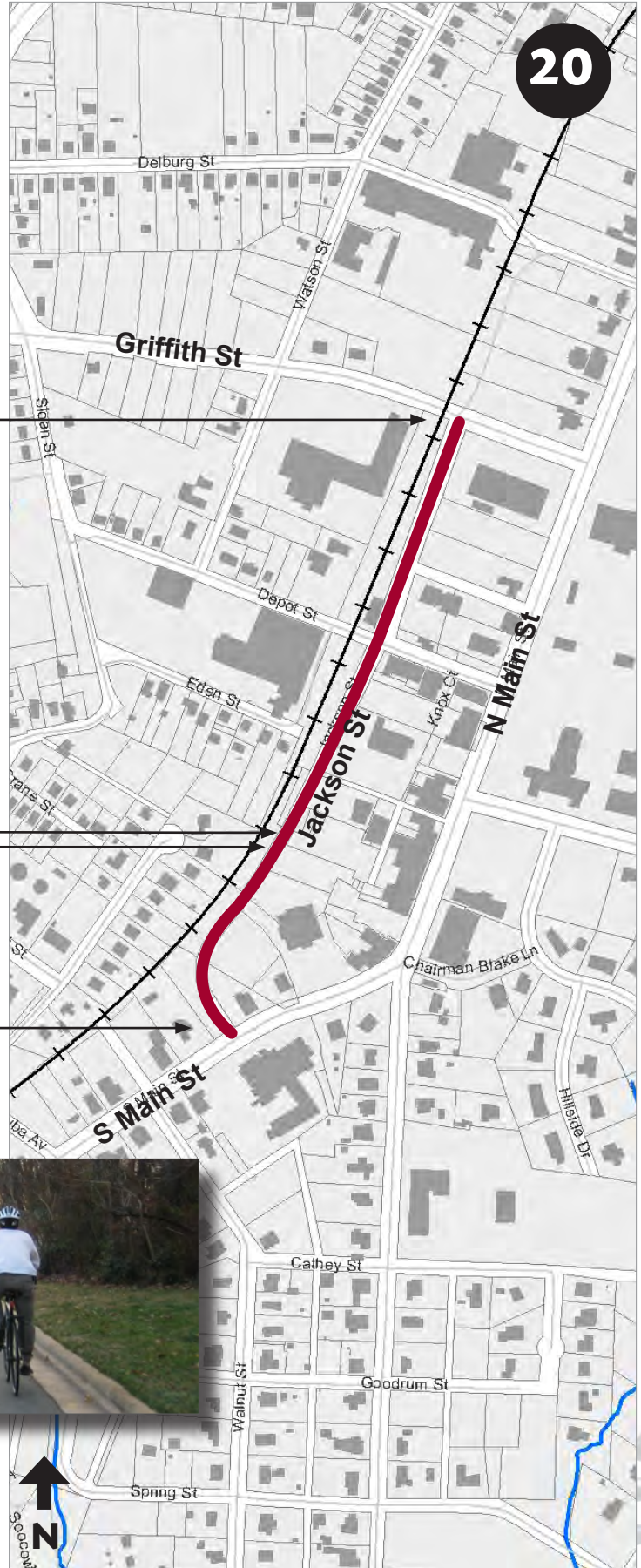
**Construction Type:**  
Roadway Striping and  
Pavement Marking

**Cost Estimate:**  
\$8,507

**Agency/Agencies:**  
Davidson PW  
NCDOT Div. 10

*This section  
should have  
parking and  
sharrows*

*This section  
should have a  
bicycle lane uphill,  
and sharrows  
downhill. Change  
configuration to  
11/11/5*



Above: Although not a huge hill, cyclists traveling on this uphill section of Jackson (which serves as an alternative to Main St.) travel much slower than vehicles, warranting their own bicycle lane.

# DAVIDSON BICYCLE TRANSPORTATION PLAN

the town of davidson, north carolina

## Priority Intersection #1:

**Cross Street 1:** Main St

**Cross Street 2:** Concord Rd

## Recommendations:

Signage and bicycle-activated detector loops

*Right: The "Bikes Allowed Use of Full Lane" sign is currently used on an experimental basis in several cities. Davidson and NCDOT Division 10 should take the lead by using it at this intersection.*

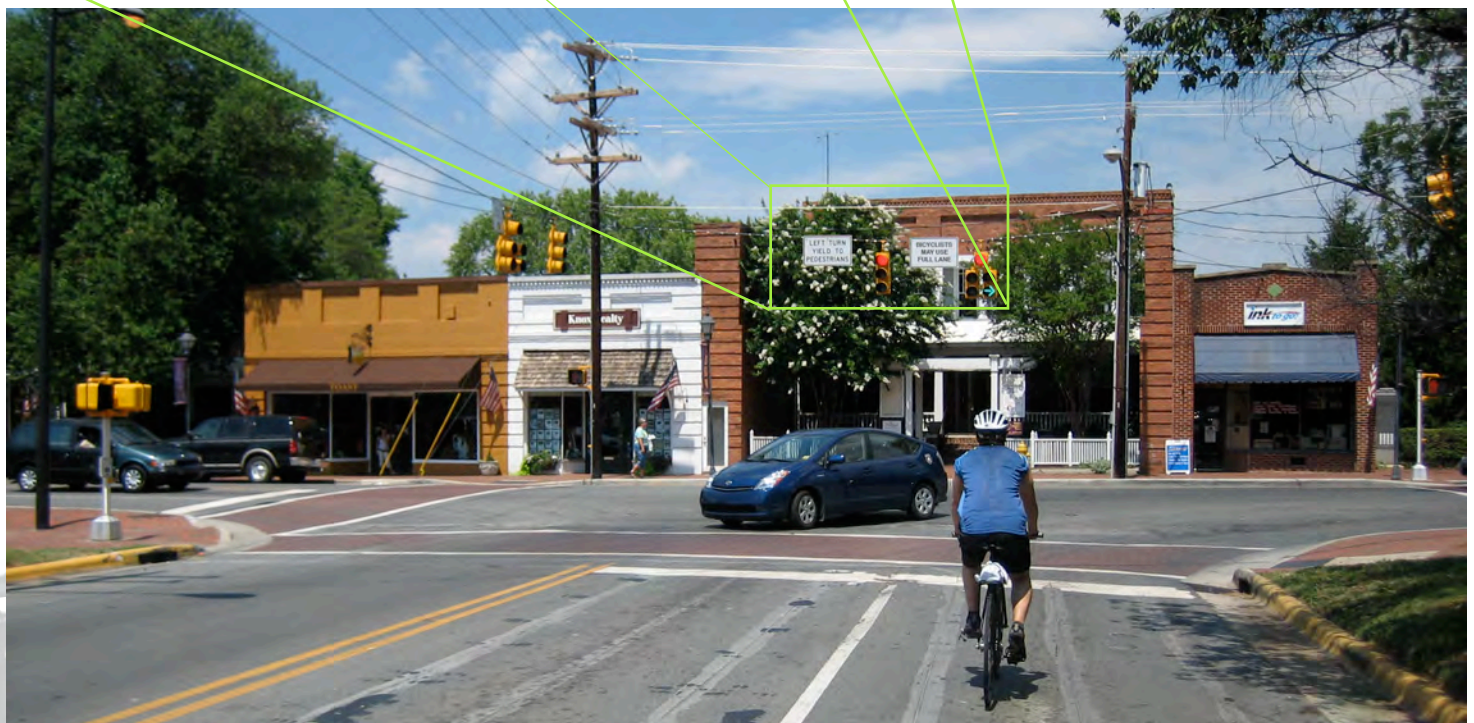
*Below: a photo rendering of the sign's application on Main Street & Concord Rd.*



*Above: Add bicycle-sensitive loop detectors and use pavement marking to aid bicyclists in locating them at intersections; see Chapter 4: Bicycle Facility Standards for more information.*

## Agency/Agencies:

NCDOT Div. 10





**Priority Intersection #2:**

**Cross Street 1:** Main St

**Cross Street 2:** Griffith St

**Recommendations:**

Signage, bicycle-activated detector loops, and a bicycle traffic signal from Davidson College.

*See notes and images on page C-14 for signage and detector loops.*

*Below: As of fall 2008, the area surrounding the intersection of Main and Griffith is being considered for renovations by Davidson College. Coordination between the College and the Town should ensure that this intersection becomes more bicycle-friendly. The college could consider bringing their interior network of pathways to the intersection, terminating with a bicycle traffic signal (see right).*

**Agency/Agencies:**

NCDOT Div. 10, Town of Davidson, and Davidson College

**Priority Intersection #3:**



*Left and above: A bicycle traffic signal could be used to bring bicycles leaving the Davidson College back into the road network (image above from the UC Davis campus); see Chapter 4: Bicycle Facility Standards for more information.*



- Cross Street 1:** Davidson-Concord Rd
- Cross Street 2:** Concord Rd
- Cross Street 3:** E. Rocky River Rd

**Recommendations:**

**Roundabout**

See roundabout notes and images on page C-18.  
 A single-lane roundabout is recommended for this intersection, as they are much safer for bicyclists to navigate than multi-lane roundabouts.

**Agency/Agencies:**

NCDOT Div. 10

**Priority Intersection #4:**

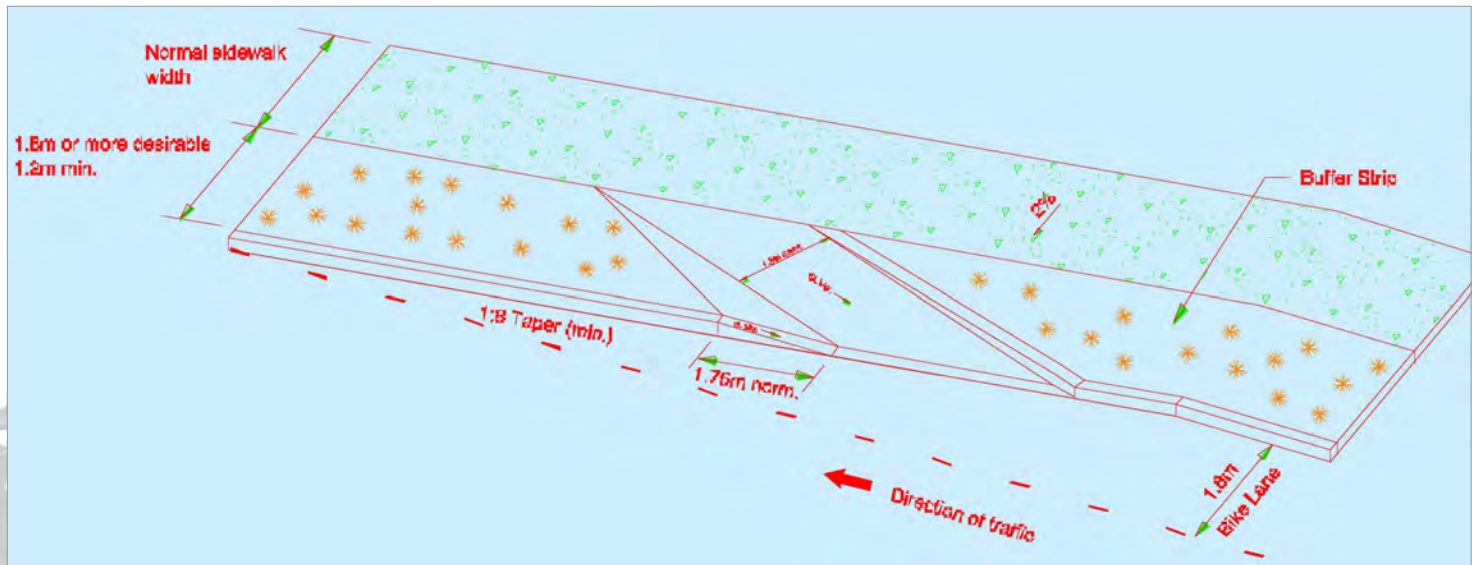


Right:  
Existing  
configuration

Right: Curb ramps should be provided on future roundabouts that allow cyclists to exit the roadway, should they feel more comfortable doing so. Image source: Michael Ronkin, NCDOT Bicycle Planning and Design Workshop.



Below: Bicycle exit ramp to sidewalk approaching roundabout. Image source: Michael Ronkin, NCDOT Bicycle Planning and Design Workshop





- Cross Street 1:** Concord Rd
- Cross Street 2:** Grey Rd
- Cross Street 3:** Pine Rd

**Recommendations:**

**Roundabout**

See roundabout notes and images on pages C-16 and C-18.

A single-lane roundabout is recommended for this intersection, as they are much safer for bicyclists to navigate than multi-lane roundabouts.

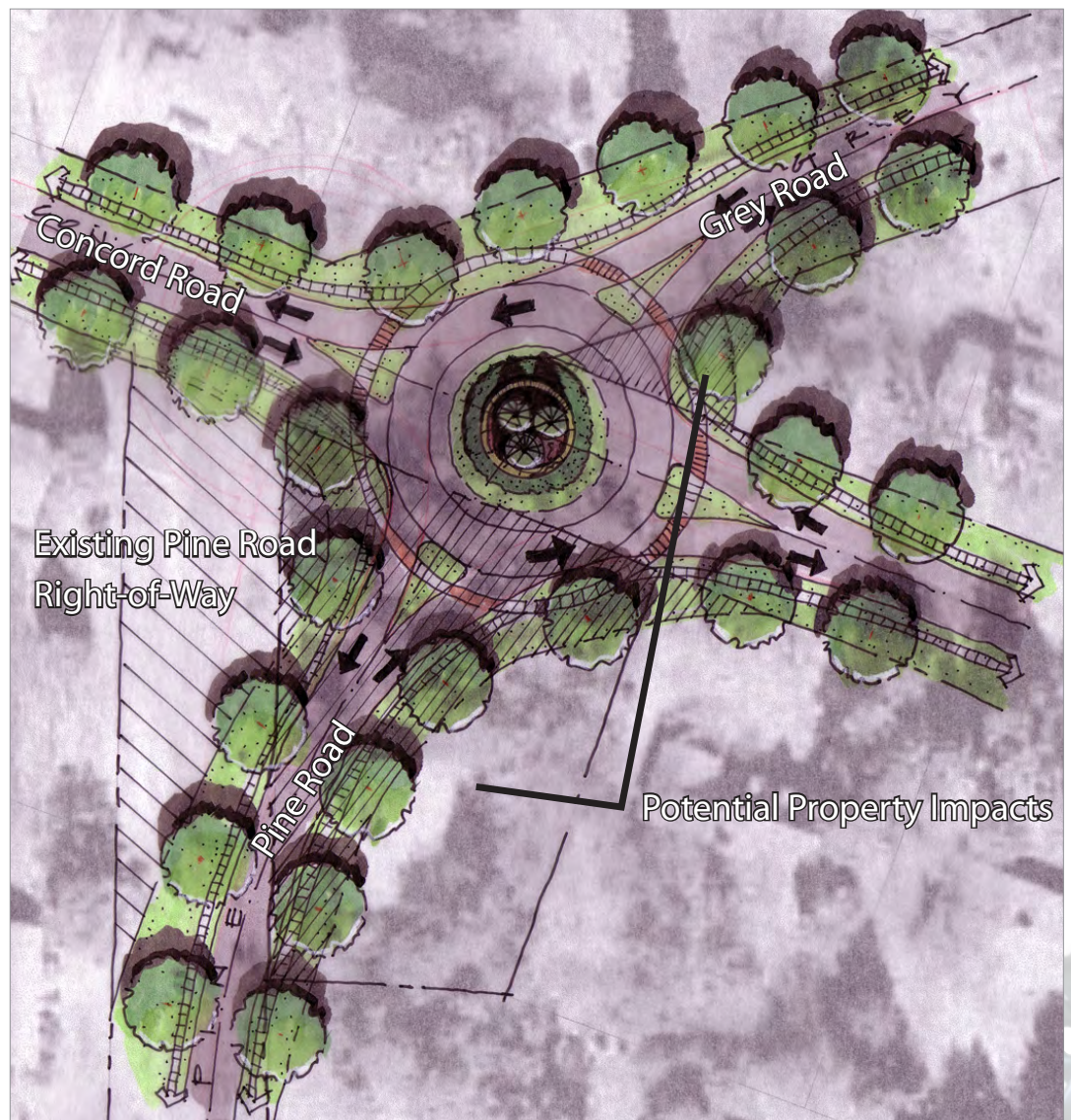
**Agency/Agencies:**

- NCDOT Div. 10
- Davidson PW



Right:  
Existing  
configuration

Right: The roundabout for Concord, Grey and Pine as proposed in the 'Davidson Connectivity and Traffic Calming Plan'. See that plan for more detailed information.



**Priority Intersection #5A and 5B:**

**Cross Street 1:** Griffith St

**Cross Street 2:** Jetton St

**Cross Street 3:** Davidson Gateway

**Recommendations:**

Education plus lower speed limits through and approaching roundabouts

*Studies and experience in Europe have shown that bicycles should not travel within the circulating roadway of multi-lane roundabouts. Instead, bicycles can use the pedestrian crossings at a properly designed roundabout (see Chapter 5: Programs and Policies for bicycle etiquette on sidewalks).*

*However, in North Carolina, bicycles are considered vehicles, and cyclists have the right to travel as vehicle through roundabouts. Below are diagrams that show how to navigate roundabouts both ways.*



Above: The roundabouts on Griffith Street are already set up with ramps where cyclists can exit the roadway, should they choose to do so.

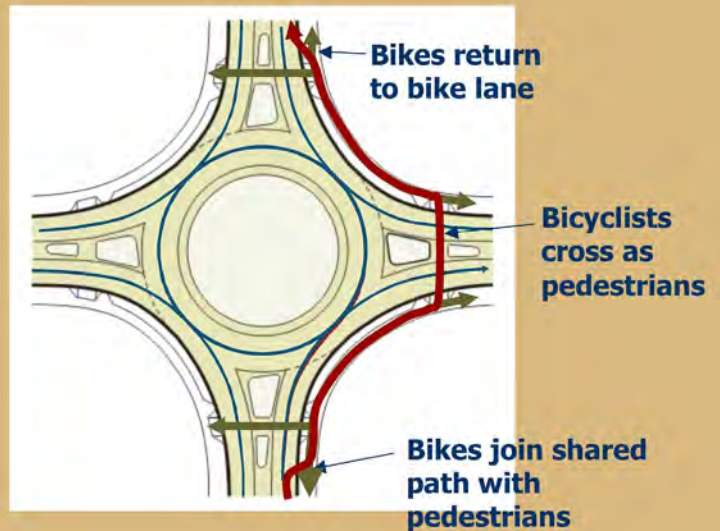
**Agency / Agencies:**

Davidson Planning Dept and Davidson Police Department

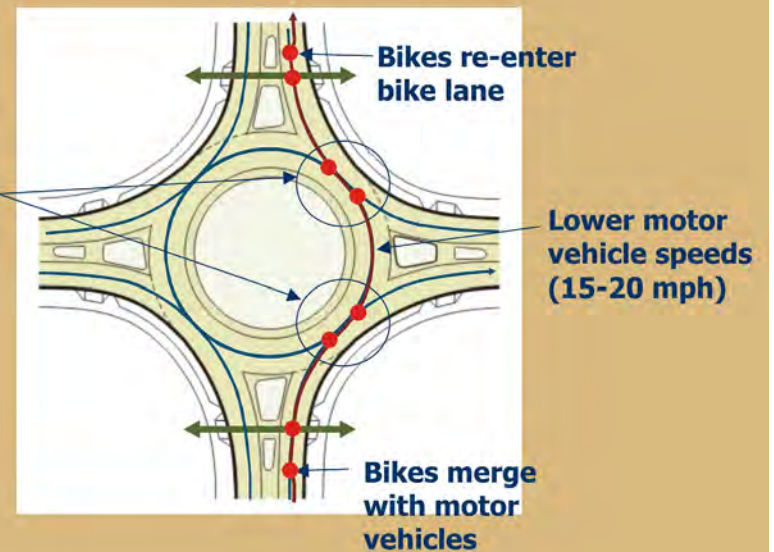
**Cyclist Movements at Roundabouts - Circulating as a Pedestrian**

If a cyclist is uncomfortable riding with traffic, a cyclist can choose to travel instead as a pedestrian.

*\* Note: On Griffith Street, sharrows (rather than bicycle lanes) are recommended between the roundabouts, in which case cyclists would be re-entering the roadway onto sharrows, rather than bike lanes as depicted in these diagrams.*



**Fewer conflict points with motor vehicles**



**Cyclist Movements at Roundabouts - Circulating as a Vehicle**

Bike lanes are not recommended within a roundabout. Instead, cyclists merge with traffic before entering the roundabout, circulate with traffic, and then re-enter the bike lane after existing.





**Priority Intersection #6:**

**Cross Street 1:** Davidson-Concord Rd

**Cross Street 2:** Robert Walker Dr

**Recommendations:**

Crossing Improvements

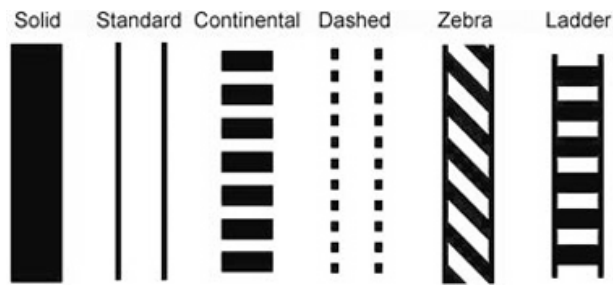
*Also consider lowering the speed limit through this section.*

**Agency/Agencies:**

NCDOT Div. 10

Davidson PW

*Below: All the crosswalks at this intersection should be stripped with a high-visibility 'continental' design, rather than the standard 4-inch stripes currently used.*



*Below: An example crossing with a median refuge island See Chapter 4: Bicycle Facility Standards for more information.*



*A sidepath is planned as a top priority along this side (west) of Davidson-Concord Road.*

*A crosswalk should be added to this leg of the intersection (west side of Robert Walker Dr)*

*A median refuge island across Davidson-Concord road should be explored as a possibility for this intersection.*



**Priority Area:**

**Cross Street 1:** I-77 Bridge

**Cross Street 2:** Exit Ramps

**Cross Street 3:** Griffith Street

**Cross Street 4:** Goodrum

**Recommendations:**

Crossing Improvements and Sidepath across south side of I-77 Bridge and exit ramps

*Also consider lowering the speed limit through this section.*

*Note: The purpose of the photo rendering below is only to convey the idea of a path over the I-77 bridge—it in no way represents a precise design recommendation.*

**Agency/Agencies:**

NCDOT Div. 10

Davidson PW

*Below: A photo rendering of the same area with a multi-use sidepath across the bridge.*



*Above and below: Existing conditions are unsafe for bicyclists and pedestrians at the I-77 bridge and exit ramps.*





## APPX D: GLOSSARY

AASHTO – American Association of State Highway and Transportation Officials: a nonprofit, nonpartisan association representing highway and transportation departments of all transportation modes in the 50 states, the District of Columbia and Puerto Rico.

“A” Cyclist – a term generally used to describe experienced or advanced bicyclists that are comfortable in all cycling environments, even busy roadways that lack bicycle facilities. “A” Cyclists will typically bicycle in any condition, whether hospitable or not.

ADA – American Disabilities Act of 1991: The Act gives civil rights protections to individuals with disabilities including equal opportunities in public accommodations, employment, transportation, state and local government services, and telecommunications.

Advance Stop lines - applies to a stop line placed prior to a crosswalk or bicycle box, to either prevent motor vehicle encroachment, or to improve visibility. It plays an important safety role especially in multi-lane roads.

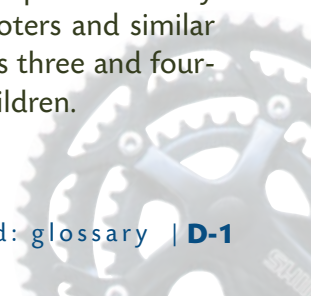
Alternative Transportation Network – a connected system for travel using transportation other than private cars, such as walking, bicycling, rollerblading, carpooling and transit

Arterial Connections – interconnected corridors designed to accommodate a large volume of through traffic

Bargain Sale – the sale of a property at less than the fair market value. The difference between a bargain sale price and fair market value often qualifies as a tax-deductible charitable contribution. Commonly used to acquire land or easements for greenways or multi-use paths.

“B” Cyclist – a term generally used to describe intermediate level cyclists, who bicycle for reasons ranging from recreation and fitness riding to commuting. “B” cyclists typically prefer on-street bicycle facilities, such as bicycle lanes and paved shoulder.

Bicycle – Every vehicle propelled solely by human power upon which any person may ride, having two tandem wheels, except scooters and similar devices. The term “bicycle” in this document also includes three and four-wheeled human-powered vehicles, but not tricycles for children.



**Bicycle Activated Detector Loop** – sensors installed in the roadway at intersections that trigger a change in a traffic signal. They allow cyclists to remain in the travel lane and avoid maneuvering to the side of the road to trigger a push button.

**Bicycle Box** – a box painted on a roadway at an intersection that allows bicyclists to move to the front of the line in traffic. Generally a bicycle lane allows cyclists to pass stopped motor vehicle traffic and enter the bicycle box. The bicycle box is located between the intersection and front of the motor vehicle stop line. Bicycle Boxes increase awareness of cyclists in the roadway environment and provide the opportunity to cross intersections before motor vehicles.

**Bicycle Facilities** – a general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling. Examples include, but are not limited to bicycle parking/storage facilities, roadways with sharrow markings, bicycle lanes, paved shoulders, sidepaths, and greenways.

**Bicycle Friendly Community** – a program established by the League of American Bicyclists that recognizes and awards municipalities who encourage bicycling and make significant strides in creating a bicycle friendly environment.

**Bicycle Lane** - a portion of a roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.

**Bridge Culvert** – a sewer or drain crossing used for the transference of surface water from a bridge

**Buffer (See also Screening)** - A strip of land with natural or planted vegetation, located between a structure or use and a side or rear property line, intended to spatially separate and visually obstruct the view of two adjacent land uses or properties from one another. A buffer area may include any required screening for the site.

**Bulb-out** - extended pavement to narrow roadway, or pinch through fare, or provide space for bus stop, bench, etc. Commonly used as a traffic calming measure.

**Centralina Council of Governments (CCOG)** - The state-designated lead regional organization for the area in and around Charlotte. Centralina COG provides local and regional planning and technical services to its local government members in the areas of: community development, land use,



zoning, water and solid waste, GIS mapping, personnel, management, and criminal justice. Centralina regularly hosts regional training meetings for local officials in law enforcement, city/county management and planning.

“C” Cyclist – a term generally used to describe beginner, juvenile or elderly cyclists who are not comfortable bicycling in an environment with significant motor vehicle traffic. Typically “C” cyclists prefer to cycle on shared-use paths, greenways, and calm neighborhood streets.

Charlotte Area Transit System (CATS) - Maintains a dual focus, managing day-to-day operations of Charlotte’s transit services while planning for a regional transit system which will include bus rapid transit, light rail, commuter rail, and expanded bus service within a six-county area.

Collector Streets – a public road designed to flow traffic from small neighborhood streets and connect to larger thoroughfares

Community Park - A park that is intended for use by all residents of the Town and is designated as a Community Park in the Parks and Greenway inventory maintained by the Planning Director and adopted by the Board of Commissioners. The Town hereby finds and determines that the designation “Community Park” does not depend exclusively upon its size, location, or function.

Concurrent Signal Timing - motorists running parallel to a crosswalk are allowed to turn into and through the crosswalk (left or right) after yielding to bicyclists or pedestrians

Condemnation - the taking of private property for public use, with adequate compensation to the owner, under the right of eminent domain

Connectivity - the logical and physical interconnection of functionally related points so that people can move among them

Conservation Easement - a legally binding agreement not to develop part of a property, but to leave it “natural” permanently or for some designated very long period of time regardless of ownership transfer

Consultant - Certified professionals such as engineers, planners, arborists, biologists, foresters and horticulturists that are approved by the Planning Director.

Corridor - a spatial link between two or more significant locations



**Crosswalk** - a designated point on a road at which some means are employed to assist pedestrians who wish to cross a roadway or intersection. They are designed to keep pedestrians together where they can be seen by motorists, and where they can cross most safely with the flow of vehicular traffic.

**Curb Cut** – interruption in the curb, as for a driveway

**Curb Extension** - a section of sidewalk at an intersection or mid-block crossing that reduces the crossing width for pedestrians and is intended to slow the speed of traffic and increase driver awareness

**Curb ramp** - a ramp leading smoothly down from a sidewalk, greenway or multi-use path to an intersecting street, rather than abruptly ending with a curb

**Development** - The carrying out of any building activity, the making of any material change in the use or appearance of any structure or land, or the subdividing of land into two or more parcels.

**Driveway Apron** – the section of a driveway between a sidewalk or greenway and the curb

**Eminent Domain** – the acquisition of property by the government which is deemed to be necessary for the completion of a public project from an owner that is unwilling to negotiate a price for its sale.

**EPA** – Environmental Protection Agency

**Fee Simple Purchase** – an outright purchase of the land by municipality

**FHWA** – Federal Highway Administration

**First Right of Refusal** - the right specified in an agreement to have the first opportunity to purchase or lease a given property before it is offered to others

**Fitness Trail** - a pathway upon which users jog or walk from station to station to perform various exercise tasks

**Greenway** - a linear path or open space, often composed of natural vegetation. Greenways can be used to create connected networks of open space that include traditional parks and natural areas specifically designed for pedestrian and bicycle use. Greenways provide an off-street component to the bicycle network.



Greenway, Trail, and Bikeway Advisory Board (GTB) - Provides direction and guidance to the Parks and Recreation Department in its efforts to make Davidson a pedestrian and bicycle-friendly town.

High Volume Artery – an important transportation corridor that is used by large traffic levels

Hydrologic Resources – stream and sewer corridors and buffer zones that can be used to facilitate the building of greenways

Incentive Zoning - a system by which zoning incentives are provided to developers on the condition that specific physical, social, or cultural benefits are provided to the community

Intersection - an area where two or more pathways or roadways join together

ISTEA – Intermodal Surface Transportation Efficiency Act of 1991

Leaseback - the process of selling a property and also entering into a lease to continue using that property

Linear Stream Corridor - generally consists of the stream channel, floodplain, and transitional upland fringe aligned linearly

LRTP – Long Range Transportation Plan

Mayor’s Transportation Task Force - The mayors of Davidson, Huntersville, Cornelius, and Mooresville created this task force to look at the transportation issues of North Mecklenburg and South Iredell

Median - a median is a barrier, constructed of concrete, asphalt, or landscaping, that separates two directions of traffic

Mixed Use Area – a term used to describe a specific area that posses a combination of different land use types, such as residential, commercial, and recreation

Mode Share - a term used to describe percentage splits in transportation options

MPO – Metropolitan Planning Organization

MUTCD – Manual of Uniform Traffic Control Devices: National standards guidebook on signage and pavement marking for roadways

Municipal Boundary – the limit of municipal jurisdiction



Nature Trail - a marked trail designed to lead people through a natural environment, which highlights and protects resources

NCDOT – North Carolina Department of Transportation

Negotiated dedications - a local government may ask a landowner to enter into negotiations for certain parcels of land that are deemed beneficial to the protection and preservation of specific parcel of land

Off-road Trail – paths or trails in areas not served by the street system, such as parks and greenbelt corridors. Off-street paths are intended to serve both recreational uses and other trips, and may accommodate other non-motorized travel modes, such as bicycles in addition to walking.

On-street Bicycle Facility – any bicycle facility that is constructed or marked on a roadway, such as a shared roadway, signed route, wide outside lane, bicycle lane, or paved shoulder

Open Space - empty or vacant land which is set aside for public or private use and will not be developed. The space may be used for passive or active recreation, or may be reserved to protect or buffer natural areas.

Overlay Zone - a zone or district created by the local legislature for the purpose of conserving natural resources or promoting certain types of development. Overlay zones are imposed over existing zoning districts and contain provisions that are applicable in addition to those contained in the zoning law.

Pedestrian - a person on foot or a person on roller skates, roller blades, child's tricycle, non-motorized wheelchair, skateboard, or other non-powered vehicles (excluding bicycles)

Planned Unit Development (PUD) - a project or subdivision that includes common property that is owned and maintained by a homeowners' association for the benefit and use of the individual PUD unit owners

Planning Board - The Town of Davidson Planning Board, established by ordinance in accordance with NCGS 160A-361 and 160A-362.

Pocket Park - a small area accessible to the general public that is often of primarily environmental, rather than recreational, importance; they can be urban, suburban or rural and often feature as part of urban regeneration plans in inner-city areas to provide areas where wild life can establish a foothold.





Preservation Easement – a voluntary legal agreement that protects historic, archaeological, or cultural resources on a property. The easement provides assurance to the property owner that intrinsic values will be preserved through subsequent ownership. In addition, the owner may obtain substantial tax benefits.

Public Access Easement – a voluntary legal agreement which grants a municipality a perpetual right-of-way and easement for public access and public benefit

Quality of Life - a measure of the standard of living which considers non-financial factors such as health, functional status and social opportunities that are influenced by disease, injury, treatment or social and political policy

Retrofit - the redesign and reconstruction of an existing facility or subsystem to incorporate new technology, to meet new requirements, or to otherwise provide performance not foreseen in the original design

Road Diet – reconfiguring or reducing the number or width of motorized vehicle lanes to provide room to integrate a bicycle facility into a roadway. Commonly used on 4 lane roads with moderate motorized traffic volumes. Generally roadways are reconfigured to include a center turn lane, two 5' bicycle lanes and two motor vehicle travel lanes on either side.

Roundabout - traffic calming device at which traffic streams circularly around a central island after first yielding to the circulating traffic

ROW (right of way) - an easement held by the local jurisdiction over land owned by the adjacent property owners that allows the jurisdiction to exercise control over the surface and above and below the ground of the right-of-way; usually designated for passage

RTOR – Right turn on red

Safe Routes to School (SRTS) – a federal program that provides funding to encourage and facilitate the planning and implementation of bicycle and pedestrian projects near schools.

SAFETEA - Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2003:

SAFETEA-LU - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users



**Sharrow** – painted roadway marking that alerts motorists that bicyclists are present and frequently use the roadway. Traditionally used in 35 MPH settings with wide curb lanes. To officially appear in the MUTCD in 2009.

**Shoulder** - The portion of the roadway contiguous with the traveled way for the accommodation of stopped vehicles, for emergency use, and for lateral support of sub-base, base, and surface courses. Paved shoulders can be used for bicycle travel as well.

**Shared Roadway** – A roadway that is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes of 14-feet to 15-feet, or road with paved shoulders. Generally lower speed roadways that are located in residential or compact urban environments.

**Shared Use Path (Multi Use Path/Sidepath)** - A paved path, typically 10-foot wide, physically separated from motorized vehicular traffic by an open space or landscaped barrier and located either within the highway right-of-way (often termed “side path”) or within an independent right-of-way (often termed “greenway” or “multi-use path”). Shared use paths may be used by bicyclists, pedestrians, skaters, motorized and non-motorized wheelchair users, joggers, and other non-motorized users. In some cases shared use paths also accommodate equestrians.

**Sidewalk** - an improved facility intended to provide for pedestrian movement; usually, but not always, located in the public right-of-way adjacent to a roadway. Typically constructed of concrete, but can be made with asphalt, bricks, stone, wood, and other materials.

**Signed/Shared Roadway (signed bike route)** – A shared roadway that has been designated by signing as a preferred route for bicycle use with either a “Share the Road” or “Bike Route” sign.

**Street, Public** - A right-of-way or fee simple tract of land which has been set aside for public travel, dedicated to the public by the recording of a subdivision plat, built to public street standards, and eligible for maintenance by either the Town of Davidson or the State of North Carolina.

**Street Right-Of-Way** - Street right-of-way shall mean any public right-of-way set aside for public travel which is accepted or eligible to be accepted for maintenance by the State of North Carolina or the Town of Davidson or Mecklenburg County, if so authorized; or has been dedicated for public travel by the recording of a plat or a subdivision which has been approved or is subsequently approved by the Town of Davidson; or has otherwise been established as a public street prior to the adoption of this ordinance.



Thoroughfare - Any street on the adopted thoroughfare plan or any street which is an extension of any street on the thoroughfare plan and which extends into the area not covered by the thoroughfare plan.

Thoroughfare Plan - The most recent map adopted by the Board of Commissioners which indicates the system of roads expected to serve major access and travel needs with regard to auto, truck, and transit transportation.

TND (traditional neighborhood development) - an area of land developed in a planned fashion for a compatible mixture of residential units for various income levels and nonresidential commercial and workplace uses, with a high priority placed on access to open spaces and alternative forms of transportation

Traffic Calming - a range of measures that reduce the impact of vehicular traffic on residents, pedestrians and cyclists - most commonly on residential streets, but also now on commercial streets

Trip Attractor - a location which, because of what it contains, generates itself as a destination for people







APPX E OUTLINE:

- Overview
- High Priority Funding Options
- State Funding Sources
- Funding Allocated by Federal Agencies
- Local Funding Sources
- Other Local Options

# APPX E: FUNDING RESOURCES

## Overview

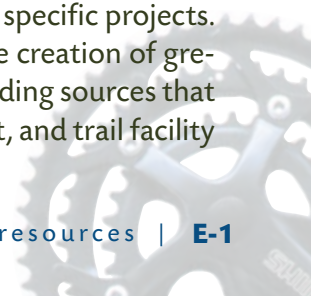
The purpose of this appendix is to define and describe possible funding sources that could be used to support the planning, design and development of bicycle improvements.

Implementing the recommendations of this plan will require a strong level of local support and commitment through a variety of local funding mechanisms. Perhaps most important is the addition of bicycle and greenway recommendations from this Plan into the Town's annual budget. These improvements should become a high priority and be supported through portions of the funding currently used for public safety, streets, parks and recreation, planning, Powell Bill funds, community development, travel and tourism, downtown, and local bonds.

The Town should also seek a combination of funding sources that include local, state, federal, and private money. Fortunately, the benefits of bicycling and protected greenways are many and varied. This allows programs in Davidson to access money earmarked for a variety of purposes including water quality, hazard mitigation, recreation, air quality, alternate transportation, wildlife protection, community health, and economic development. Competition is almost always stiff for state and federal funds, so it becomes imperative that local governments work together to create multi-jurisdictional partnerships and to develop their own local sources of funding. These sources can then be used to leverage outside assistance.

For the past two decades, a variety of funding has been used throughout North Carolina to support the planning, design and construction of urban and rural bicycle and greenway projects. The largest single source of funding for these projects has come from the Surface Transportation Act, first the Intermodal Surface Transportation Efficiency Act (ISTEA) in the early to mid 1990's; then its successor, Transportation Equity Act for the Twenty-First Century (TEA-21) through the early part of 2002; and now the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The North Carolina Department of Transportation manages and distributes the majority of federal funds that are derived from the Act to support the development of bicycle/trail development.

The majority of federal funding is distributed to states in the form of block grants and is then distributed throughout a given state for specific projects. State funding programs in North Carolina also support the creation of greenways. North Carolina has developed a broad array of funding sources that address land acquisition, green infrastructure development, and trail facility development.



Additionally, there are many things that the Town of Davidson can do to establish their own funding for bicycle and greenway initiatives. For the most part, it takes money to get money. For Davidson, it will be necessary to create a local funding program through one of the methods that is defined within this report. Financing will be needed to administer the continued planning and implementation process, acquire parcels or easements, and manage and maintain facilities.

This appendix is organized by first addressing the state sources of funding, then addresses separate federal and local government funding sources. It is by no means an exhaustive list as there are many other funding sources available that should be researched and pursued as well. Creative planning and consistent monitoring of funding options will likely turn up new opportunities not listed here.

## *High Priority Funding Options*

While there are a number of funding sources provided in the following pages, these sources should be the highest priority in order to achieve successful implementation. It is critical for local government to step up given the competitiveness and finite availability associated with most funding sources. Details about the following sources are found later in this appendix.

- Local Capital Improvements Program (CIP)
- Local Bond
- Local Fees
- State Transportation Improvement Program (TIP)
- State Powell Bill Funds
- State Safe Routes to School Program
- State Parks and Recreation Trust Fund (PARTF)
- State Health and Wellness Trust Fund (HWTF)
- Private Sources

## *State Funding Sources*

The most direct source of public-sector funding for the Town of Davidson will come from state agencies in North Carolina. Generally, these funds are made available to local governments based on grant-in-aid formulas. The single most important key to obtaining state grant funding is for local governments to have adopted plans for greenway, open space, bicycle, pedestrian or trail systems in place prior to making an application for funding. Unfortunately, there is no direct correlation between any of the programs listed and a constant stream of funding for greenway or trail projects and all projects are funded on the basis of grant applications. There is no specific set aside amount that is allocated for greenway and trail development within a given program. Funding is based solely on need and the need has to



be expressed and submitted in the form of a grant application. Finally, all of these programs are geared to address needs across the entire state, so all of the programs are competitive and must allocate funding with the needs of the entire state in mind.

*The Powell Bill Program* is an annual state allocation to municipalities for use in street system maintenance and construction activities. There is considerable local control over Powell Bill Funds (it is not a grant application process). In the past, the State allocated a considerable portion of these revenues for construction purposes. However, budgetary constraints since 2001 have led to a shift of new Powell Bill funds to cover maintenance and operations activities. Both the Powell Bill reserves and the 2000 Transportation Bond funds are limited funding sources that will eventually be depleted. In FY 2008-2009, the Town of Davidson had \$375,000 in Powell Bill Funds, representing 4.1% of the Town budget.

In North Carolina, *the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT)* has been the single largest source of funding for bicycle and greenway projects, including non-construction projects such as brochures, maps, and public safety information for more than a decade. DBPT offers several programs in support of bicycle facility development. The following information is from NCDOT's interactive web site ([www.ncdot.org](http://www.ncdot.org)). Contact the NCDOT, Division of Bicycle and Pedestrian Transportation at (919) 807-2804 for more information.

North Carolina programs are listed below. A good starting website with links to many of the following programs is [http://www.enr.state.nc.us/html/tax\\_credits.html](http://www.enr.state.nc.us/html/tax_credits.html).

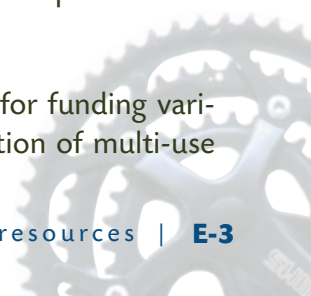
### ***Funding Opportunities Through NCDOT:***

Bicycle and Pedestrian Independent Projects Funded Through the Transportation Improvement Program (TIP):

In North Carolina, *the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT)* manages the Transportation Improvement Program (TIP) selection process for bicycle projects. Projects programmed into the TIP by the DBPT are independent projects – those which are not related to a scheduled highway project. Incidental projects – those related to a scheduled highway project – are handled through other funding sources described in this section.

DBPT has an annual budget of \$6 million. Eighty percent of these funds are from STP-Enhancement funds, while the State Highway Trust provides the remaining 20 percent of the funding.

A total of \$5.3 million dollars of TIP funding is available for funding various bicycle-independent projects, including the construction of multi-use



trails, the striping of bicycle lanes, and the construction of paved shoulders, among other facilities. Prospective applicants are encouraged to contact the DBPT regarding funding assistance for bicycle projects. For a detailed description of the TIP project selection process, visit: [http://www.ncdot.org/transit/bicycle/funding/funding\\_TIP.html](http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html). Another \$500,000 of the division's funding is available for miscellaneous projects.

*Incidental Projects* – Bicycle accommodations such as bike lanes, widened paved shoulders, and bicycle-safe bridge design are frequently included as incidental features of highway projects. In addition, bicycle-safe drainage grates are a standard feature of all highway construction. Most bicycle safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of National Highway System funds and State Highway Trust Funds.

*Governor's Highway Safety Program (GHSP)* – The mission of the GHSP is to promote highway safety awareness and reduce the number of traffic crashes in the state of North Carolina through the planning and execution of safety programs. GHSP funding is provided through an annual program, upon approval of specific project requests. Amounts of GHSP funds vary from year to year, according to the specific amounts requested. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance highway safety. Once a grant is awarded, funding is provided on a reimbursement basis. Evidence of reductions in crashes, injuries, and fatalities is required. For information on applying for GHSP funding, visit: [www.ncdot.org/programs/ghsp/](http://www.ncdot.org/programs/ghsp/).

### ***Funding Available Through North Carolina***

#### ***Metropolitan Planning Organizations (MPOs)***

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 projects. Local governments in air quality nonattainment or maintenance area should contact their MPO for information on CMAQ funding opportunities for bicycle facilities.

#### ***Transportation Enhancement Call for Projects, EU, NCDOT***

The Enhancement Unit administers a portion of the enhancement funding set-aside through the Call for Projects process. In North Carolina the Enhancement Program is a federally funded cost reimbursement program with a focus upon improving the transportation experience in and through local North Carolina communities either culturally, aesthetically, or environmentally. The program seeks to encourage diverse modes of travel, increase benefits to communities and to encourage citizen involvement. This is accomplished through the following twelve qualifying activities:





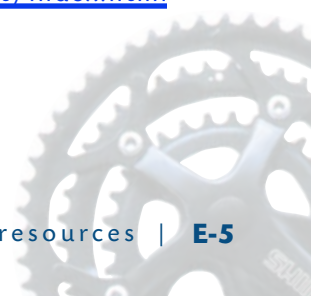
1. Bicycle and Pedestrian Facilities
2. Bicycle and Pedestrian Safety
3. Acquisition of Scenic Easements, Scenic or Historic Sites
4. Scenic or Historic Highway Programs  
(including tourist or welcome centers)
5. Landscaping and other Scenic Beautification
6. Historic Preservation
7. Rehabilitation of Historic Transportation Facilities
8. Preservation of Abandoned Rail Corridors
9. Control of Outdoor Advertising
10. Archaeological Planning and Research
11. Environmental Mitigation
12. Transportation Museums

Funds are allocated based on an equity formula approved by the Board of Transportation. The formula is applied at the county level and aggregated to the regional level. Available fund amount varies. In previous Calls, the funds available ranged from \$10 million to \$22 million.

The Call process takes place on even numbered years or as specified by the Secretary of Transportation. The next Call is anticipated to take place in 2008, barring financial constraints related to federal recisions resulting from the war on terror and Hurricane Katrina. For more information, visit: [www.ncdot.org/financial/fiscal/Enhancement/](http://www.ncdot.org/financial/fiscal/Enhancement/)

***Bicycle and Pedestrian Planning Grant Initiative,  
managed by NCDOT, DBPT***

To encourage the development of comprehensive local bicycle plans and pedestrian plans, the NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) have created a matching grant program to fund plan development. This program was initiated through a special allocation of funding approved by the North Carolina General Assembly in 2003 along with federal funds earmarked specifically for bicycle and pedestrian planning by the TPB. The planning grant program was launched in January 2004, and it is currently administered through NCDOT-DBPT and the Institute for Transportation Research and Education (ITRE) at NC State University. Over the past three grant cycles, 48 municipal plans have been selected and funded from 123 applicants. A total of \$ 1,175,718 has been allocated. Funding is secured for 2007 at \$400,000. Additional annual allocations will be sought for subsequent years. For more information, visit [www.itre.ncsu.edu/ptg/bikeped/ncdot/index.html](http://www.itre.ncsu.edu/ptg/bikeped/ncdot/index.html)



### ***Safe Routes to School Program, managed by NCDOT, DBPT***

The NCDOT Safe Routes to School Program is a federally funded program that was initiated by the passing of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005, which establishes a national SRTS program to distribute funding and institutional support to implement SRTS programs in states and communities across the country. SRTS programs facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. The Division of Bicycle and Pedestrian Transportation at NCDOT is charged with disseminating SRTS funding.

The state of North Carolina has been allocated \$15 million in Safe Routes to School funding for fiscal years 2005 through 2009 for infrastructure or non-infrastructure projects. All proposed projects must relate to increasing walking or biking to and from an elementary or middle school. An example of a non-infrastructure project is an education or encouragement program to improve rates of walking and biking to school. An example of an infrastructure project is construction of sidewalks around a school. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding. For more information, visit [www.ncdot.org/programs/safeRoutes/](http://www.ncdot.org/programs/safeRoutes/) or contact Leza Mundt at DBPT/NCDOT, (919) 807-0774.

### ***The North Carolina Conservation Tax Credit (managed by NCDENR)***

This program, managed by the North Carolina Department of Environment and Natural Resources, provides an incentive (in the form of an income tax credit) for landowners that donate interests in real property for conservation purposes. Property donations can be fee simple or in the form of conservation easements or bargain sale. The goal of this program is to manage stormwater, protect water supply watersheds, retain working farms and forests, and set-aside greenways for ecological communities, public trails, and wildlife corridors. For more information, visit: [www.enr.state.nc.us/conservationtaxcredit/](http://www.enr.state.nc.us/conservationtaxcredit/).

### ***Land and Water Conservation Fund (LWCF)***

The Land and Water Conservation Fund (LWCF) program is a reimbursable, 50/50 matching grants program to states for conservation and recreation purposes, and through the states to local governments to address “close to home” outdoor recreation needs. LWCF grants can be used by communities to build a trail within one park site, if the local government has fee-simple title to the park site. Grants for a maximum of \$250,000 in LWCF assistance are awarded yearly to county governments, incorporated municipalities, public authorities and federally recognized Indian tribes. The local match



may be provided with in-kind services or cash. The program's funding comes primarily from offshore oil and gas drilling receipts, with an authorized expenditure of \$900 million each year. However, Congress generally appropriates only a small fraction of this amount. The allotted money for the year 2007 is \$632,846.

The *Land and Water Conservation Fund* (LWCF) has historically been a primary funding source of the US Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by the Department of Environment and Natural Resources. Since 1965, the LWCF program has built a permanent park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than \$63 million in matching grants to protect land and support more than 800 state and local park projects. More than 37,000 acres have been acquired with LWCF assistance to establish a park legacy in our state. For more information, visit: <http://ils.unc.edu/parkproject/lwcf/home1.html>

### ***NC Adopt-A-Trail Grant Program***

This program, operated by the Trails Section of the NC Division of State Parks, offers annual grants to local governments to build, renovate, maintain, sign and map and create brochures for pedestrian trails. Grants are generally capped at about \$5,000 per project and do not require a match. A total of \$108,000 in Adopt-A-Trail money is awarded annually to government agencies. Applications are due during the month of February. For more information, visit : <http://ils.unc.edu/parkproject/trails/grant.html>.

### ***Recreational Trails Program***

The *Recreational Trails Program* (RTP) is a grant program funded by Congress with money from the federal gas taxes paid on fuel used by off-highway vehicles. This program's intent is to meet the trail and trail-related recreational needs identified by the Statewide Comprehensive Outdoor Recreation Plan. Grant applicants must be able contribute 20% of the project cost with cash or in-kind contributions. The program is managed by the State Trails Program, which is a section of the N.C. Division of Parks and Recreation. The grant application is available and instruction handbook is available through the State Trails Program website at <http://ils.unc.edu/parkproject/trails/home.html>. Applications are due during the month of February. For more information, call (919) 715-8699.



### ***North Carolina Parks and Recreation Trust Fund (PARTF)***

The fund was established in 1994 by the North Carolina General Assembly and is administered by the Parks and Recreation Authority. Through this program, several million dollars each year are available to local governments to fund the acquisition, development and renovation of recreational areas. Applicable projects require a 50/50 match from the local government. Grants for a maximum of \$500,000 are awarded yearly to county governments or incorporated municipalities. The fund is fueled by money from the state's portion of the real estate deed transfer tax for property sold in North Carolina.

The trust fund is allocated three ways:

- 65 percent to the state parks through the N.C. Division of Parks and Recreation.
- 30 percent as dollar-for dollar matching grants to local governments for park and recreation purposes.
- 5 percent for the Coastal and Estuarine Water Access Program.

For information on how to apply, visit: [www.partf.net/learn.html](http://www.partf.net/learn.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 town-maintained streets. For more information, visit [www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell\\_Bill/powellbill.html](http://www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell_Bill/powellbill.html).

### ***Clean Water Management Trust Fund***

This fund was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. At the end of each fiscal year, 6.5 percent of the unreserved credit balance in North Carolina's General Fund, or a minimum of \$30 million, is placed in the CW-MTF. The revenue of this fund is allocated as grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The fund has provided funding for



land acquisition of numerous greenway projects featuring trails, both paved and unpaved. For a history of awarded grants in North Carolina and more information about this fund and applications, visit [www.cwmtf.net/](http://www.cwmtf.net/).

### ***Natural Heritage Trust Fund***

This trust fund, managed by the NC Natural Heritage Program, has contributed millions of dollars to support the conservation of North Carolina's most significant natural areas and cultural heritage sites. The NHTF is used to acquire and protect land that has significant habitat value. Some large wetland areas may also qualify, depending on their biological integrity and characteristics. Only certain state agencies are eligible to apply for this fund, including the Department of Environment and Natural Resources, the Wildlife Resources Commission, the Department of Cultural Resources and the Department of Agriculture and Consumer Services. As such, municipalities must work with State level partners to access this fund. Additional information is available from the NC Natural Heritage Program. For more information and grant application information, visit [www.ncnhtf.org/](http://www.ncnhtf.org/).

### ***North Carolina Conservation Tax Credit Program***

North Carolina has a unique incentive program to assist land-owners to protect the environment and the quality of life. A credit is allowed against individual and corporate income taxes when real property is donated for conservation purposes. Interests in property that promote specific public benefits may be donated to a qualified recipient. Such conservation donations qualify for a substantial tax credit. For more information, visit: [www.enr.state.nc.us/conservationtaxcredit/](http://www.enr.state.nc.us/conservationtaxcredit/).

### ***Urban and Community Forestry Assistance Program***

This program offers small grants that can be used to plant urban trees, establish a community arboretum, or other programs that promote tree canopy in urban areas. The program operates as a cooperative partnership between the NC Division of Forest Resources and the USDA Forest Service, Southern Region. To qualify for this program, a community must pledge to develop a street-tree inventory, a municipal tree ordinance, a tree commission, and an urban forestry-management plan. All of these can be funded through the program. For more information, contact the NC Division of Forest Resources. For more information and a grant application, contact the NC Division of Forest Resources and/or visit [http://www.dfr.state.nc.us/urban/urban\\_grantprogram.htm](http://www.dfr.state.nc.us/urban/urban_grantprogram.htm).



### ***Ecosystem Enhancement Program***

Developed in 2003 as a new mechanism to facilitate improved mitigation projects for NC highways, this program offers funding for restoration projects and for protection projects that serve to enhance water quality and wildlife habitat in NC. Information on the program is available by contacting the Natural Heritage Program in the NC Department of Environment and Natural Resources (NCDENR). For more information, visit [www.nceep.net/pages/partners.html](http://www.nceep.net/pages/partners.html) or call 919-715-0476.

### ***Conservation Reserve Enhancement Program (CREP)***

This program is a joint effort of the North Carolina Division of Soil and Water Conservation, the NC Clean Water Management Trust Fund, the Ecosystem Enhancement Program (EEP), and the Farm Service Agency - United States Department of Agriculture (USDA) to address water quality problems of the Neuse, Tar-Pamlico and Chowan river basins as well as the Jordan Lake watershed area.

CREP is a voluntary program that seeks to protect land along watercourses that is currently in agricultural production. The objectives of the program include: installing 100,000 acres of forested riparian buffers, grassed filter strips and wetlands; reducing the impacts of sediment and nutrients within the targeted area; and providing substantial ecological benefits for many wildlife species that are declining in part as a result of habitat loss. Program funding will combine the Federal Conservation Reserve Program (CRP) funding with State funding from the Clean Water Management Trust Fund, Agriculture Cost Share Program, and *North Carolina Wetlands Restoration Program*.

The program is managed by the NC Division of Soil and Water Conservation. For more information, visit [www.enr.state.nc.us/dswc/pages/crep.html](http://www.enr.state.nc.us/dswc/pages/crep.html)

### ***Agriculture Cost Share Program***

Established in 1984, this program assists farmers with the cost of installing best management practices (BMPs) that benefit water quality. The program covers as much as 75 percent of the costs to implement BMPs. The NC Division of Soil and Water Conservation within the NC Department of Environment and Natural Resources administers this program through local Soil and Water Conservation Districts (SWCD). For more information, visit [www.enr.state.nc.us/DSWC/pages/agcostshareprogram.html](http://www.enr.state.nc.us/DSWC/pages/agcostshareprogram.html) or call 919-733-2302.



### ***Water Resources Development Grant Program***

The NC Division of Water Resources offers cost-sharing grants to local governments on projects related to water resources. Of the seven project application categories available, the category which relates to the establishment of greenways is “Land Acquisition and Facility Development for Water-Based Recreation Projects.” Applicants may apply for funding for a greenway as long as the greenway is in close proximity to a water body. For more information, see: [www.ncwater.org/Financial\\_Assistance](http://www.ncwater.org/Financial_Assistance) or call 919-733-4064.

### ***Small Cities Community Development Block Grants***

State level funds are allocated through the NC Department of Commerce, Division of Community Assistance to be used to promote economic development and to serve low-income and moderate-income neighborhoods. Greenways that are part of a community’s economic development plans may qualify for assistance under this program. Recreational areas that serve to improve the quality of life in lower income areas may also qualify. Approximately \$50 million is available statewide to fund a variety of projects. For more information, visit [www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/](http://www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/) or call 919-733-2853.

### ***North Carolina Health and Wellness Trust Fund***

The NC Health and Wellness Trust Fund was created by the General Assembly as one of 3 entities to invest North Carolina’s portion of the Tobacco Master Settlement Agreement. HWTF receives one-fourth of the state’s tobacco settlement funds, which are paid in annual installments over a 25-year period.

*Fit Together*, a partnership of the NC Health and Wellness Trust Fund (HWTF) and Blue Cross and Blue Shield of North Carolina (BCBSNC) announces the establishment of *Fit Community*, a designation and grant program that recognizes and rewards North Carolina communities’ efforts to support physical activity and healthy eating initiatives, as well as tobacco-free school environments. *Fit Community* is one component of the jointly sponsored *Fit Together* initiative, a statewide prevention campaign designed to raise awareness about obesity and to equip individuals, families and communities with the tools they need to address this important issue.

All North Carolina municipalities and counties are eligible to apply for a *Fit Community* designation, which will be awarded to those that have excelled in supporting the following:

- physical activity in the community, schools, and workplaces
- healthy eating in the community, schools, workplaces
- tobacco use prevention efforts in schools



Designations will be valid for two years, and designated communities may have the opportunity to reapply for subsequent two-year extensions. The benefits of being a *Fit Community* include:

- Heightened statewide attention that can help bolster local community development and/or economic investment initiatives (highway signage and a plaque for the Mayor's or County Commission Chair's office will be provided)
- Reinvigoration of a community's sense of civic pride (each *Fit Community* will serve as a model for other communities that are trying to achieve similar goals)
- Use of the *Fit Community* designation logo for promotional and communication purposes. The application for *Fit Community* designation is available on the Fit Together Web site: [www.FitTogetherNC.org/FitCommunity.aspx](http://www.FitTogetherNC.org/FitCommunity.aspx).

*Fit Community* grants are designed to support innovative strategies that help a community meet its goal to becoming a *Fit Community*. Eight to nine, two-year grants of up to \$30,000 annually will be awarded to applicants that have a demonstrated need, proven capacity, and opportunity for positive change in addressing physical activity and/or healthy eating. For more information, visit: [www.healthwellinc.com/](http://www.healthwellinc.com/)

### ***Eat Smart, Move More NC Community Grants***

The Eat Smart, Move More (ESMM) NC Community Grants program provides funding to local communities to implement strategies that advance the goals and objectives of the ESMM NC Plan. These goals include increasing physical activity opportunities and increasing the number of citizens who get the recommended amount of physical activity. Administered by the Physical Activity and Nutrition branch of the Division of Public Health, the program awards \$10,000 - 20,000 to local communities each year. Interested applicants must submit a letter of intent in late June and an application in mid-July. For more information, visit: <http://www.eatsmartmovemorenc.com/funding/index.html>.

### ***The North Carolina Division of Forest Resources***

Urban and Community Forestry Grant can provide funding for a variety of projects that will help toward planning and establishing street trees as well as trees for urban open space. See: [http://www.dfr.state.nc.us/urban/urban\\_ideas.htm](http://www.dfr.state.nc.us/urban/urban_ideas.htm)





## *Funding Allocated by Federal Agencies*

### *Wetlands Reserve Program*

This federal funding source is a voluntary program offering technical and financial assistance to landowners who want to restore and protect wetland areas for water quality and wildlife habitat. The US Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) administers the program and provides direct payments to private landowners who agree to place sensitive wetlands under permanent easements. This program can be used to fund the protection of open space and greenways within riparian corridors. For more information, visit <http://www.nrcs.usda.gov/PRO-GRAMS/wrp/>.

### *The Community Development Block Grant (HUD-CDBG)*

The U.S. Department of Housing and Urban Development (HUD) offers financial grants to communities for neighborhood revitalization, economic development, and improvements to community facilities and services, especially in low and moderate income areas. Several communities have used HUD funds to develop greenways, including the Boulding Branch Greenway in High Point, North Carolina. Grants from this program range from \$50,000 to \$200,000 and are either made to municipalities or non-profits. There is no formal application process. For more information, visit: [www.hud.gov/offices/cpd/communitydevelopment/programs/](http://www.hud.gov/offices/cpd/communitydevelopment/programs/).

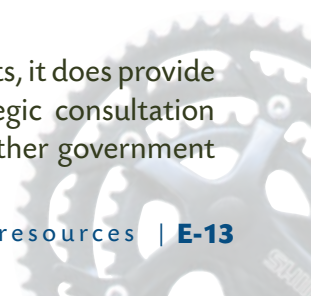
### *USDA Rural Business Enterprise Grants*

Public and private nonprofit groups in communities with populations under 50,000 are eligible to apply for grant assistance to help their local small business environment. \$1 million is available for North Carolina on an annual basis and may be used for sidewalk and other community facilities. For more information from the local USDA Service Center, visit: <http://www.rurdev.usda.gov/rbs/busp/rbeg.htm>

### *Rivers Trails and Conservation Assistance Program (RTCA)*

The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is the community assistance arm of the National Park Service. RTCA staff provide technical assistance to community groups and local, State, and federal government agencies so they can conserve rivers, preserve open space, and develop trails and greenways. The RTCA program implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America.

Although the program does not provide funding for projects, it does provide valuable on-the-ground technical assistance, from strategic consultation and partnership development to serving as liaison with other government



agencies. Communities must apply for assistance. For more information, visit: [www.nps.gov/ncrc/programs/rtca/](http://www.nps.gov/ncrc/programs/rtca/) or call Chris Abbett, Program Leader, at 404-562-3175 ext. 522.

### ***Public Lands Highways Discretionary Fund***

The Federal Highway Administration administers discretionary funding for projects that will reduce congestion and improve air quality. The FHWA issues a call for projects to disseminate this funding. The FHWA estimates that the PLHD funding for the 2007 call will be \$85 million. In the past, Congress has earmarked a portion of the total available funding for projects. For information on how to apply, visit: <http://www.fhwa.dot.gov/discretionary/>

## ***Local Funding Sources***

Municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs (CIP). In Raleigh, for example, the greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Recreation and Parks Department. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each of these categories are described below.

### ***Capital Reserve Fund***

Municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants and donations for the specified use.

### ***Capital Project Ordinances***

Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

### ***Municipal Service District***

Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the citywide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts.



### ***Tax Increment Financing***

Tax increment financing is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project, such as the construction of a greenway, is carried out, there is an increase in the value of surrounding real estate. Oftentimes, new investment in the area follows such a project. This increase in value and investment creates more taxable property, which increases tax revenues. These increased revenues can be referred to as the “tax increment.” Tax Increment Financing dedicates that increased revenue to finance debt issued to pay for the project. TIF is designed to channel funding toward improvements in distressed or underdeveloped areas where development would not otherwise occur. TIF creates funding for public projects that may otherwise be unaffordable to localities. The large majority of states have enabling legislation for tax increment financing.

### ***Installment Purchase Financing***

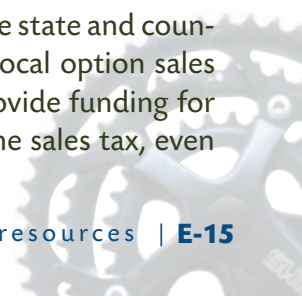
As an alternative to debt financing of capital improvements, communities can execute installment/ lease purchase contracts for improvements. This type of financing is typically used for relatively small projects that the seller or a financial institution is willing to finance or when up-front funds are unavailable. In a lease purchase contract the community leases the property or improvement from the seller or financial institution. The lease is paid in installments that include principal, interest, and associated costs. Upon completion of the lease period, the community owns the property or improvement. While lease purchase contracts are similar to a bond, this arrangement allows the community to acquire the property or improvement without issuing debt. These instruments, however, are more costly than issuing debt.

### ***Taxes***

Many communities have raised money through self-imposed increases in taxes and bonds. For example, Pinellas County residents in Florida voted to adopt a one-cent sales tax increase, which provided an additional \$5 million for the development of the overwhelmingly popular Pinellas Trail. Sales taxes have also been used in Allegheny County, Pennsylvania, and in Boulder, Colorado to fund open space projects. A gas tax is another method used by some municipalities to fund public improvements. A number of taxes provide direct or indirect funding for the operations of local governments. Some of them are:

### ***Sales Tax***

In North Carolina, the state has authorized a sales tax at the state and county levels. Local governments that choose to exercise the local option sales tax (all counties currently do), use the tax revenues to provide funding for a wide variety of projects and activities. Any increase in the sales tax, even



if applying to a single county, must gain approval of the state legislature. In 1998, Mecklenburg County was granted authority to institute a one-half cent sales tax increase for mass transit.

### *Property Tax*

Property taxes generally support a significant portion of a municipality's activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance greenway system acquisitions. Because of limits imposed on tax rates, use of property taxes to fund greenways could limit the municipality's ability to raise funds for other activities. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. In other parts of the country, this mechanism has been popular with voters as long as the increase is restricted to parks and open space. Note, other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

### *Excise Taxes*

Excise taxes are taxes on specific goods and services. These taxes require special legislation and the use of the funds generated through the tax are limited to specific uses. Examples include lodging, food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation related activities.

### *Occupancy Tax*

The NC General Assembly may grant towns the authority to levy occupancy tax on hotel and motel rooms. The act granting the taxing authority limits the use of the proceeds, usually for tourism-promotion purposes.

### *Fees*

Three fee options that have been used by local governments to assist in funding pedestrian and bicycle facilities are listed here:

### *Stormwater Utility Fees*

Greenway sections may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants.

Stormwater charges are typically based on an estimate of the amount of impervious surface on a user's property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharge into public storm drainage facilities and creates a need for stormwater management services. Thus, users with more impervi-



ous surface are charged more for stormwater service than users with less impervious surface. The rates, fees, and charges collected for stormwater management services may not exceed the costs incurred to provide these services. The costs that may be recovered through the stormwater rates, fees, and charges includes any costs necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and state laws, regulations, and rules.

### *Streetscape Utility Fees*

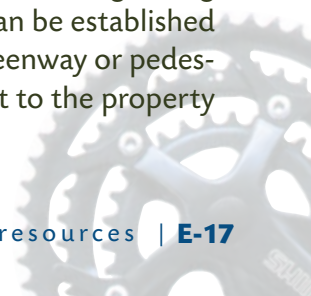
Streetscape Utility Fees could help support streetscape maintenance of the area between the curb and the property line through a flat monthly fee per residential dwelling unit. Discounts would be available for senior and disabled citizens. Non-residential customers would be charged a per foot fee based on the length of frontage on streetscape improvements. This amount could be capped for non-residential customers with extremely large amounts of street frontage. The revenues raised from Streetscape Utility fees would be limited by ordinance to maintenance (or construction and maintenance) activities in support of the streetscape.

### *Impact Fees*

Developers can be required to provide greenway impact fees through local enabling legislation. Impact fees, which are also known as capital contributions, facilities fees, or system development charges, are typically collected from developers or property owners at the time of building permit issuance to pay for capital improvements that provide capacity to serve new growth. The intent of these fees is to avoid burdening existing customers with the costs of providing capacity to serve new growth (“growth pays its own way”). Greenway impact fees are designed to reflect the costs incurred to provide sufficient capacity in the system to meet the additional needs of a growing community. These charges are set in a fee schedule applied uniformly to all new development. Communities that institute impact fees must develop a sound financial model that enables policy makers to justify fee levels for different user groups, and to ensure that revenues generated meet (but do not exceed) the needs of development. Factors used to determine an appropriate impact fee amount can include: lot size, number of occupants, and types of subdivision improvements. If Davidson is interested in pursuing open space impact fees, it will require enabling legislation to authorize the collection of the fees.

### *Exactions*

Exactions are similar to impact fees in that they provide facilities to growing communities. The difference is that through exactions it can be established that it is the responsibility of the developer to build the greenway or pedestrian facility that crosses through the property, or adjacent to the property being developed.



### *In-Lieu-Of Fees*

As an alternative to requiring developers to dedicate on-site greenway sections that would serve their development, some communities provide a choice of paying a front-end charge for off-site protection of pieces of the larger system. Payment is generally a condition of development approval and recovers the cost of the off-site land acquisition or the development's proportionate share of the cost of a regional facility serving a larger area. Some communities prefer in-lieu-of fees. This alternative allows community staff to purchase land worthy of protection rather than accept marginal land that meets the quantitative requirements of a developer dedication but falls a bit short of qualitative interests.

### *Bonds and Loans*

Bonds have been a very popular way for communities across the country to finance their pedestrian and greenway projects. A number of bond options are listed below. Contracting with a private consultant to assist with this program may be advisable. Since bonds rely on the support of the voting population, an education and awareness program should be implemented prior to any vote. Billings, Montana used the issuance of a bond in the amount of \$599,000 to provide the matching funds for several of their TEA-21 enhancement dollars. Austin, Texas has also used bond issues to fund a portion of their bicycle and trail system.

### *Revenue Bonds*

Revenue bonds are bonds that are secured by a pledge of the revenues from a certain local government activity. The entity issuing bonds, pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payment). Revenue bonds are not constrained by the debt ceilings of general obligation bonds, but they are generally more expensive than general obligation bonds.

### *General Obligation Bonds*

Cities, counties, and service districts generally are able to issue general obligation (G.O.) bonds that are secured by the full faith and credit of the entity. In this case, the local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. Frequently, when local governments issue G.O. bonds for public enterprise improvements, the public enterprise will make the debt service payments on the G.O. bonds with revenues generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use other sources of revenue to make the pay-



ments. G.O. bonds distribute the costs of land acquisition and greenway development and make funds available for immediate purchases and projects. Voter approval is required.

### *Special Assessment Bonds*

Special assessment bonds are secured by a lien on the property that benefits by the improvements funded with the special assessment bond proceeds. Debt service payments on these bonds are funded through annual assessments to the property owners in the assessment area.

### *State Revolving Fund (SRF) Loans*

Initially funded with federal and state money, and continued by funds generated by repayment of earlier loans, State Revolving Funds (SRFs) provide low interest loans for local governments to fund water pollution control and water supply related projects including many watershed management activities. These loans typically require a revenue pledge, like a revenue bond, but carry a below market interest rate and limited term for debt repayment (20 years).

## *Other Local Options*

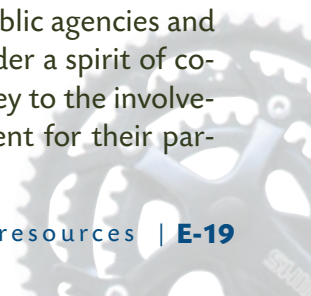
### *Facility Maintenance Districts*

Facility Maintenance Districts (FMDs) can be created to pay for the costs of on-going maintenance of public facilities and landscaping within the areas of the Town where improvements have been concentrated and where their benefits most directly benefit business and institutional property owners. An FMD is needed in order to assure a sustainable maintenance program. Fees may be based upon the length of lot frontage along streets where improvements have been installed, or upon other factors such as the size of the parcel. The program supported by the FMD should include regular maintenance of streetscape of off road trail improvements. The municipality can initiate public outreach efforts to merchants, the Chamber of Commerce, and property owners. In these meetings, Town staff will discuss the proposed apportionment and allocation methodology and will explore implementation strategies.

The municipality can manage maintenance responsibilities either through its own staff or through private contractors.

### *Partnerships*

Another method of funding facilities is to partner with public agencies and private companies and organizations. Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their par-



ticipation. Very specific routes that make critical connections to place of business would be targeted for private partners' monetary support following a successful master planning effort. Potential partners include major employers which are located along or accessible to pedestrian facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trail heads or interpretive signage along greenway systems. Utilities often make good partners and many trails now share corridors with them. Money raised from providing an easement to utilities can help defray the costs of maintenance. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement.

### *Local Trail Sponsors*

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

### *Volunteer Work*

It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community work days. Volunteers can also be used for fund-raising, maintenance, and programming needs.

## *Private Foundations and Organizations*

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are a few examples of private funding opportunities available in North Carolina.

### *Land for Tomorrow Campaign*

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign is asking the North Carolina General Assembly to support issuance of a bond for \$200 million a year for five years to preserve and protect its special land and water resources. Land for Tomorrow will enable North Carolina to reach a goal of ensur-





ing that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; historic downtowns and neighborhoods; and more, will be there to enhance the quality of life for generations to come. For more information, visit <http://www.landfortomorrow.org/>

### *The Trust for Public Land*

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national non-profit working exclusively to protect land for human enjoyment and well being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL's legal and real estate specialists work with landowners, government agencies, and community groups to:

- Create urban parks, gardens, greenways, riverways
- Build livable communities by setting aside open space in the path of growth
- Conserve land for watershed protection, scenic beauty, and close-to home recreation safeguard the character of communities by preserving historic landmarks and landscapes.

The following are TPL's Conservation Services:

- Conservation Vision: TPL helps agencies and communities define conservation priorities, identify lands to be protected, and plan networks of conserved land that meet public need.
- Conservation Finance: TPL helps agencies and communities identify and raise funds for conservation from federal, state, local, and philanthropic sources.
- Conservation Transactions: TPL helps structure, negotiate, and complete land transactions that create parks, playgrounds, and protected natural areas.
- Research and Education: TPL acquires and shares knowledge of conservation issues and techniques to improve the practice of conservation and promote its public benefits.

Since 1972, TPL has worked with willing landowners, community groups, and national, state, and local agencies to complete more than 3,000 land conservation projects in 46 states, protecting more than 2 million acres. Since 1994, TPL has helped states and communities craft and pass over 330

ballot measures, generating almost \$25 billion in new conservation-related funding. For more information, visit <http://www.tpl.org/>.

### ***Z. Smith Reynolds Foundation***

This Winston-Salem based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The foundation has two grant cycles per year and generally does not fund land acquisition. However, the foundation may be able to support municipalities in other areas of greenways development. More information is available at [www.zsr.org](http://www.zsr.org).

### ***North Carolina Community Foundation***

The North Carolina Community Foundation, established in 1988, is a state-wide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for non-profit organizations and institutions throughout the state. Based in Raleigh, North Carolina, the foundation also manages a number of community affiliates throughout North Carolina that make grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. In addition, the foundation manages various scholarship programs statewide. Web site: <http://nccommunityfoundation.org/>

### ***National Trails Fund***

In 1998, the American Hiking Society created the National Trails Fund, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. Each year, 73 million people enjoy foot trails, yet many of our favorite trails need major repairs due to a \$200 million in badly needed maintenance. National Trails Fund grants give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. For 2005, American Hiking distributed over \$40,000 in grants thanks to the generous support of Cascade Designs and L.L.Bean, the program's Charter Sponsors. To date, American Hiking has granted more than \$240,000 to 56 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project.

What types of projects will American Hiking Society consider? Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements. Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage. Constituency building surrounding specific trail projects - including volunteer recruitment and support. Web site: [www.americanhiking.org/alliance/fund.html](http://www.americanhiking.org/alliance/fund.html).



### *Annual Azalea Celebration*

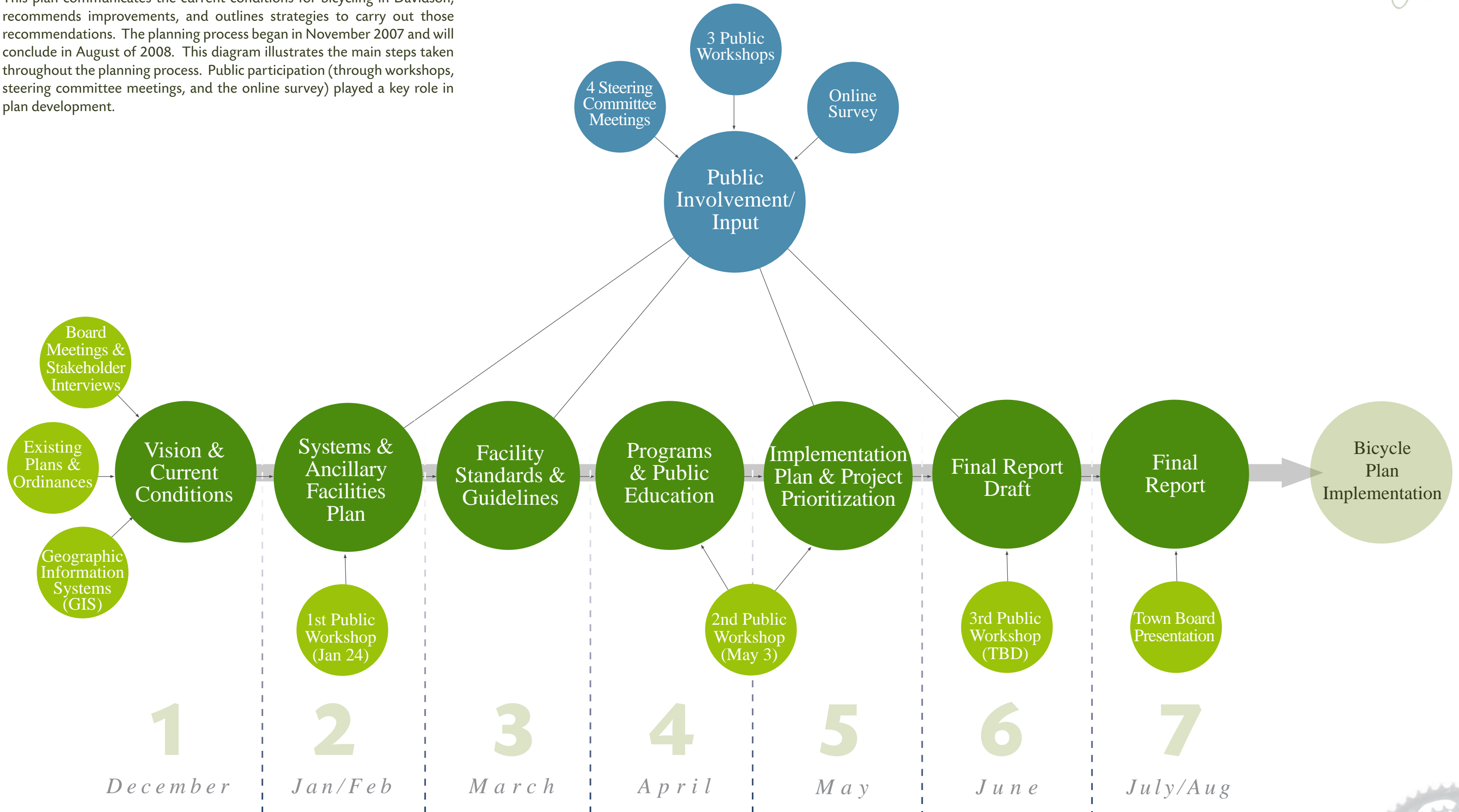
NC Beautiful has promoted environmental education, beautification, and stewardship in North Carolina for 40 years and holds the Annual Azalea Celebration to help non-profit organizations enhance their community spaces. Winning applicants receive 100 azalea plants free of charge to beautify school- and churchgrounds, parks, greenways, public rights-of-way, and community and senior centers. In addition, recipients who sustain their projects and keep their azaleas healthy for a 3-year period are eligible to receive cash awards and additional plants through the A.J. Fletcher Award. For more information, visit: <http://www.ncbeautiful.org/programs/annual-azalea-celebration.html>.





## The Plan and the Planning Process

This plan communicates the current conditions for bicycling in Davidson, recommends improvements, and outlines strategies to carry out those recommendations. The planning process began in November 2007 and will conclude in August of 2008. This diagram illustrates the main steps taken throughout the planning process. Public participation (through workshops, steering committee meetings, and the online survey) played a key role in plan development.



## *The Value of Bicycle Transportation*

Given the extensive commitment of time and resources needed to fulfill the goals of this plan, it is also important to assess the immense value of bicycle transportation. As stated in comments from over 200 Town of Davidson residents, bicycling will help to improve people's health and fitness, enhance environmental conditions, decrease traffic congestion, and contribute to a greater sense of community.

Scores of studies from experts in the fields of public health, urban planning, urban ecology, real estate, transportation, sociology, and economics have supported such claims and affirm the substantial value of supporting bicycling as it relates to active living and alternative transportation. Communities across the United States and throughout the world are implementing strategies for serving the bicycle needs of their residents, and have been doing so for many years. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many benefits of bicycling.



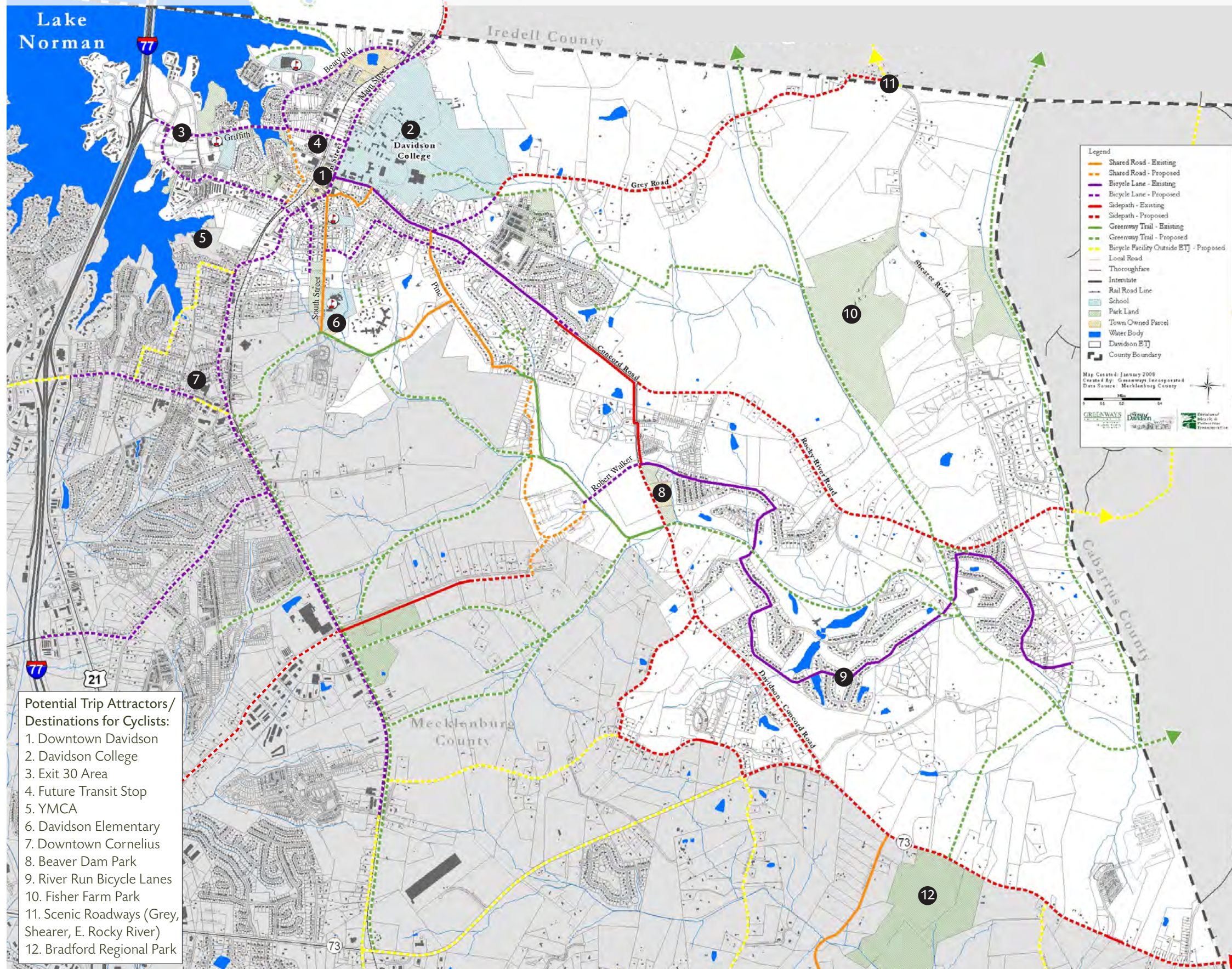
*Images from 'Town Day' and 'Davidson Walks' events in 2008.*

### *Increased Health and Physical Activity*

A growing number of studies show that the design of our communities—including neighborhoods, towns, transportation systems, parks, trails and other public recreational facilities—affects people's ability to reach the recommended daily 30 minutes of moderately intense physical activity (60 minutes for youth). According to the Centers for Disease Control and Prevention (CDC), "physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic." <sup>1</sup> The increased rate of disease associated with inactivity reduces quality of life for individuals and increases medical costs for families, companies, and local governments.



## EXISTING BICYCLE FACILITIES AND PROPOSED FACILITIES FROM CURRENT PLANS (PRE-2008 BIKE PLAN)



- Potential Trip Attractors/  
Destinations for Cyclists:
1. Downtown Davidson
  2. Davidson College
  3. Exit 30 Area
  4. Future Transit Stop
  5. YMCA
  6. Davidson Elementary
  7. Downtown Cornelius
  8. Beaver Dam Park
  9. River Run Bicycle Lanes
  10. Fisher Farm Park
  11. Scenic Roadways (Grey, Shearer, E. Rocky River)
  12. Bradford Regional Park

### Existing Bicycle Facilities

Since the *Town of Davidson Planning Ordinance* was passed in 2001, Davidson has seen the construction of several miles of bicycle-friendly road connections through new development in all parts of Town. There are nearly eight miles of bicycle facilities in Town (shown in the *Existing and Proposed Bicycle Facilities Map* as solid lines):

- 0.5 mile striped bike lanes \*  
(Concord Road)
- 4.9 miles of striped bike lanes  
(River Run neighborhood)
- 2.0 miles of separate bike paths  
(south side of Davidson-Concord Road)
- 2.5 miles of the greenway  
(Southeast Greenway, plus on-road portions)

\*Some existing bike lanes are under the minimum recommended width, such as Concord Road, east of Pine Street.

### Proposed Facilities from Current Plans (Pre-2008 Bike Plan)

The proposed facilities shown on this map (as dashed lines) represent bicycling improvements that were recommended in various adopted plans and initiatives from the Town of Davidson, Mecklenburg County, and neighboring municipalities. All such plans and initiatives are briefly summarized in the following pages.

## Town Plans and Initiatives

### **Town of Davidson Planning Ordinance: Section 11 - Streets and Greenways**

The strongest plan in the Town of Davidson for bicycle connectivity and safety is the *Planning Ordinance*. Adopted in 2001, this ordinance gained the Town of Davidson an award from the Environmental Protection Agency (EPA) for Overall Excellence in Smart Growth. According to the EPA's website, "Davidson is setting the standard for creating healthy and vibrant neighborhoods in a historic setting." The following excerpts from Section 11 of the Planning Ordinance illustrate the commitment that Town of Davidson has already made towards accommodating bicyclists:

*"These regulations are intended to promote an environment built to human scale that accommodates pedestrians as the first priority. Streets are the primary public spaces of the town, so attractive street fronts, connecting walkways, and alternative means of transportation are encouraged while accommodating vehicular movement."*  
(11.0 Streets and Greenways)

*"...the ordinance encourages the development of a network of sidewalks and bicycle lanes that provide an attractive and safe mode of travel for cyclists and pedestrians."*  
(11.1 General Design Principles-Streets)

*"Street designs shall permit the comfortable use of the street by cars, bicyclists, and pedestrians."* (11.2 Street Engineering and Design Specifications)

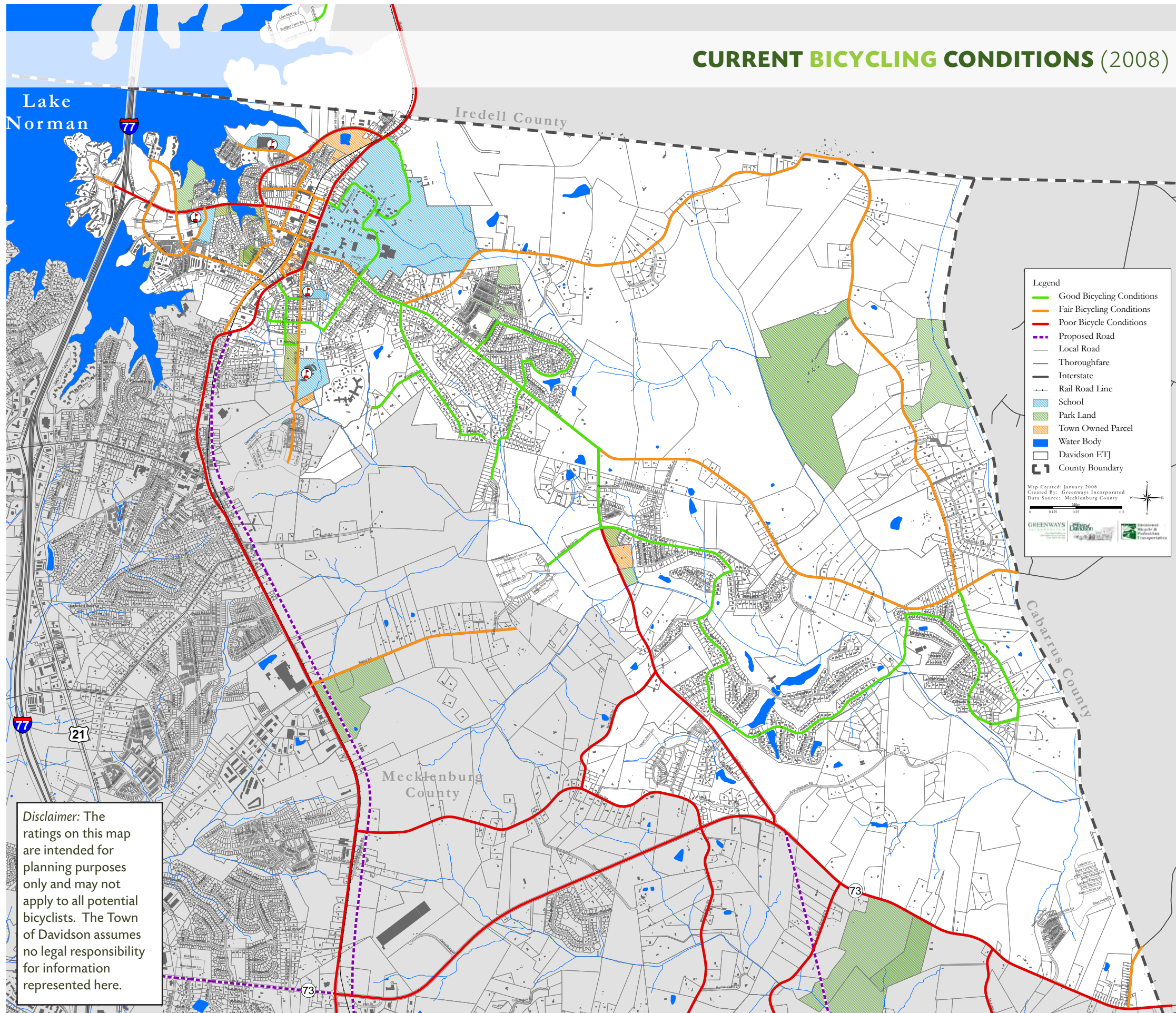
*"All new developments within the existing town limits fronting on North Main Street, Griffith Street, Beaty Street, Concord Road, Davidson-Concord Road, East Rocky River Road, or Grey Road shall include bike lanes, a minimum of four feet in width, on those streets. New developments outside the town limits fronting on North Main Street, Concord Road, Davidson-Concord Road, East Rocky River Road, Grey Road, Barnhardt Road, or Mayes Road shall include bike paths a minimum of eight feet in width and separated from vehicular traffic on those streets. Bike lanes and bike paths shall be designed according to the North Carolina Bicycle Facilities Planning and Design Guidelines, published by NCDOT."* (11.2.5 Bike Paths)

*"The planning ordinance requires the development of a network of greenways that connect active and passive parks, schools, cultural sites, neighborhoods, and commuter destinations. Greenway easements are required in low-impact, farmhouse cluster, conservation easement, and rural subdivisions. All other developments shall have either a greenway or a connection to the greenway."* (11.5 General Design Principles – Greenways)





## CURRENT BICYCLING CONDITIONS (2008)



*Disclaimer:* The ratings on this map are intended for planning purposes only and may not apply to all potential bicyclists. The Town of Davidson assumes no legal responsibility for information represented here.

### The Current Bicycling Conditions Map

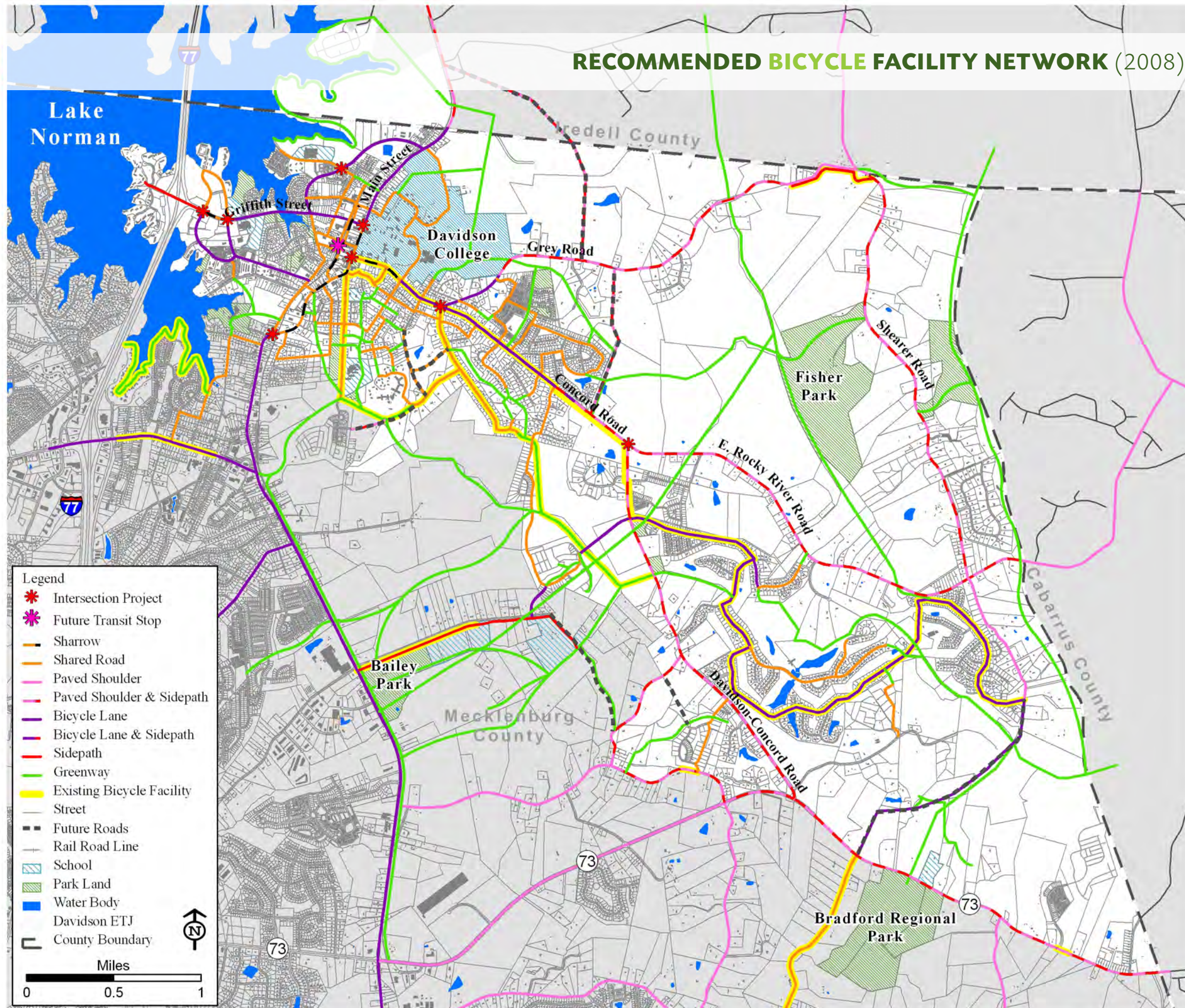
The end result of the field research is a comprehensive set of data for thirty separate roadway segments (following page), and an evaluation of the current bicycling conditions in the form of a map (left). The Current Bicycling Conditions Map identifies roadways in Davidson as good, fair, or poor based on a combination of the field research, data analysis, and interpretation by the project consultant. This map was then modified according to input from the Steering Committee, Town staff, and Davidson residents at the January 2008 Public Workshop.

All three designations refer to roadways in their present state. *Good* refers to routes that are considered suitable for most cyclists, and/or contain existing facilities. *Fair* refers to roadways considered suitable for more experienced cyclists. *Poor* refers to roadways that are considered dangerous inhospitable to cyclists.

It is important to note that the *good-fair-poor* designations are assigned based on the average conditions for each street segment only, and that the map does not take into account ratings for major intersections. Intersections noted by the public as in need of improvement are identified in the pie chart on page 16 (recommendations for intersections are included in *Chapter 6: Implementation* and *Chapter 7: Bicycle Facility Standards*).

# ROADWAY INVENTORY: COLLECTED DATA (2008)

Roadway Segment	From	To	Width*	Traffic Lanes	Configuration	Speed Limit	ADTs	Ownership/Maintenance	Shoulder Score <sup>1</sup>	General Notes
Highway 73	Cabarrus County	Davidson Concord Rd.	25'	2	Undivided	55	22,000	NCDOT	n/a	Fast moving traffic with many heavy vehicles observed. Refer to Hwy 73 corridor plans.
Davidson/Concord	Hwy 73	Parting Oaks	23'	2	Undivided	55	7,900	NCDOT	2	Good easement/shoulder on north side, but on road is still fast moving traffic with narrow road width.
Davidson/Concord	Parting Oaks	Robert Walker	22.5'	2	Undivided	45	6,500	NCDOT	3	Continued narrow road width with no shoulder; S. Prong of Rocky River Gwy stubs out on this segment of Davidson Concord. There is no safe access to the nearby park or sidepath to the north.
Davidson/Concord	Robert Walker	E. Rocky River	23'	2	Undivided	45	6,500	NCDOT	n/a	Existing sidepath switches sides; A vegetative buffer could be planted in unused pavement between the road and the sidepath near Robert Walker Drive.
E. Rocky River	Davidson/Concord	Shearer	21.5'	2	Undivided	45	3,400	NCDOT	2	Scenic, rural road; very narrow with no shoulder. Intermittent drainage ditches on the side of the road caused a lower shoulder score.
E. Rocky River	Shearer	Cabarrus County	21.5'	2	Undivided	45	2,200	NCDOT	3	Rural connection to Cabarrus County; very narrow with no shoulder.
Shearer	E. Rocky River	Lecheval	22'	2	Undivided	45	1,100	NCDOT	2	Popular, designated bicycle route; very narrow with no shoulder; room for shoulder exists in some places.
Shearer	Lecheval	Grey	18'	2	Undivided	45	1,100	NCDOT	2	Abersham development is on this segment; Extremely narrow road widths, even for automobiles.
Grey	Shearer	Davis	20'	2	Undivided	45	1,700	NCDOT	3	Sidepath exists on south side (Abersham sidepath); very narrow with no shoulder.
Grey	Davis	Concord	20'	2	Undivided	45	1,700	partial NCDOT	2/CBS	Curbs on both sides near Concord Road will make it difficult to expand width. Intersection with Concord does not line up with Pine St (across Concord Rd.).
Concord	Davidson/Concord	Kimberly	30'	2	Undivided	35	10,000	partial NCDOT	2	Sidepath exists on south side; Drainage ditch on north side will make it challenging to expand roadway width.
Concord	Kimberly	Grey	30'	2	Undivided	35	10,000	NCDOT	CBS	Existing bike lanes are narrower than the minimum width recommended in this Plan; Certain techniques (lower speeds, enhanced signage and pavement markings) should be maintained or utilized to ensure safe use of the bike lanes. Gutterpan is not level with roadway in some areas.
Concord	Grey	Main	44'	2	Undivided	25	13,000	NCDOT	CBS	No door zone for bike lanes from Baker to Concord; Yard waste observed in bike lanes. Gutterpan is not level with roadway in some areas.
Goodrum	SW/NW Drive	Griffith	32'	2	Divided/Median	25	n/a	Davidson	CBS	Includes bridge over I-77 to private development/town homes. Bridge is wide enough to better accommodate bicycles and pedestrians. Bridge approaches and exit ramps should also be improved.
Griffith	I-77	Jetton	49'	4	Divided/Median	25	21,000	NCDOT	CBS	Fast moving traffic observed at ramps. Many heavy vehicles also observed. New curbs on both sides will prevent road widening in the near future.
Griffith	Jetton	Beaty	39.5'	2	Undivided/Cntr Turning	25**	21,000	NCDOT	CBS	Multi-lane roundabouts are difficult to navigate by bicycle. Traffic observed going fast through roundabouts. Roadway is wide enough to stripe bike lanes.
Griffith	Beaty	Main	44'	2	Undivided	25	11,000	NCDOT	CBS	Roadway could be wide enough to stripe bike lanes with a reduction in parking.
Beaty	Griffith	Armour	24.5'	2	Undivided	35	n/a	NCDOT	3, CW	Roadway is too narrow for comfort on bicycle with short sight lines, curving road, and changes in elevation. Curb on one side and steep drop in elevation on the other makes widening difficult.
Beaty	Armour	Main	23'	2	Undivided	35	n/a	NCDOT	1	Roadway is too narrow for comfort on bicycle with short sight lines, curving road, and changes in elevation. Grade on shoulder is similar to roadway in most places.
North Main	Iredell County	Beaty	22'	2	Undivided	55**	10,000	NCDOT	1	Fast moving traffic with many heavy vehicles observed. Grade on shoulder is similar to roadway in most places.
North Main	Beaty	Griffith	29.5'	2	Undivided	25	10,000	NCDOT	CBS	Traffic observed as slowing towards downtown; width will allow for restriping bike lanes, so long as parking is not required.
North Main	Griffith	Town Hall/South St.	36'	2	Undivided/Parking	25	10,000	NCDOT	CBS	Granite curb, sidewalk, and buildings leave no chance of expanding roadway width; lanes are narrow with parking on both sides; Downtown Davidson needs this parking for business.
South Main	Town Hall/South St.	Town of Cornelius	29.5'	2	Undivided	25	10,000	NCDOT	CBS	Parking in some areas makes the travel lanes too narrow for striping bicycle lanes. Heavy traffic volume observed.
Potts	South Main	Jetton	21'	2	Undivided	25	n/a	Davidson	3	Low traffic volume observed. Narrow roadway with trees and ditches make the shoulders difficult for expanding roadway width.
Jetton	Potts	Griffith	30'	2	Undivided	25	n/a	Davidson	CBS	Lower speeds observed in this segment. Parking may make this stretch tight for bicycle lanes; new curbs and sidewalks will prevent expanding the roadway width.
Davidson/Gateway	Griffith	Jetton	40'	2	Undivided	35	n/a	Davidson	CBS	Lower speeds observed in this segment. Parking may make this stretch tight for bicycle lanes; new curbs and sidewalks will prevent expanding the roadway width.
Jackson	Griffith	Depot	28'	2	Undivided	25	n/a	NCDOT	CBS	Parking in some areas makes the travel lanes too narrow for striping bicycle lanes. Lower speeds and pedestrian traffic observed.
Jackson	Depot	Main	27'	2	Undivided	25	n/a	NCDOT	CBS	Parking in some areas makes the travel lanes too narrow for striping bicycle lanes. Good alternative route for Main Street; future transit nearby.
South Street	South Main	Town of Cornelius	32'	2	Undivided	25	n/a	Davidson	CBS	Two schools on this segment, plus access to the greenway and future access to the Downtown Cornelius. Lanes are narrow, but traffic was observed as calm; Speed tables in several areas.
*Width measured from edge of pavement and, where curbs exist, from curb face to curb face.										
**Estimate Only										
<sup>1</sup> 1 = clear space of 10-12' free of obstructions, grade similar to roadway; 2 = somewhat buildable, narrower, more frequent obstructions, steeper grade; 3 = severe slopes, ditches, trees, unbuildable w/o major const. effort;										
CBS = curb both sides; CN = curb north; CE = curb east; CS = curb south; CW = curb west side										



## Recommended Bicycle Facility Network

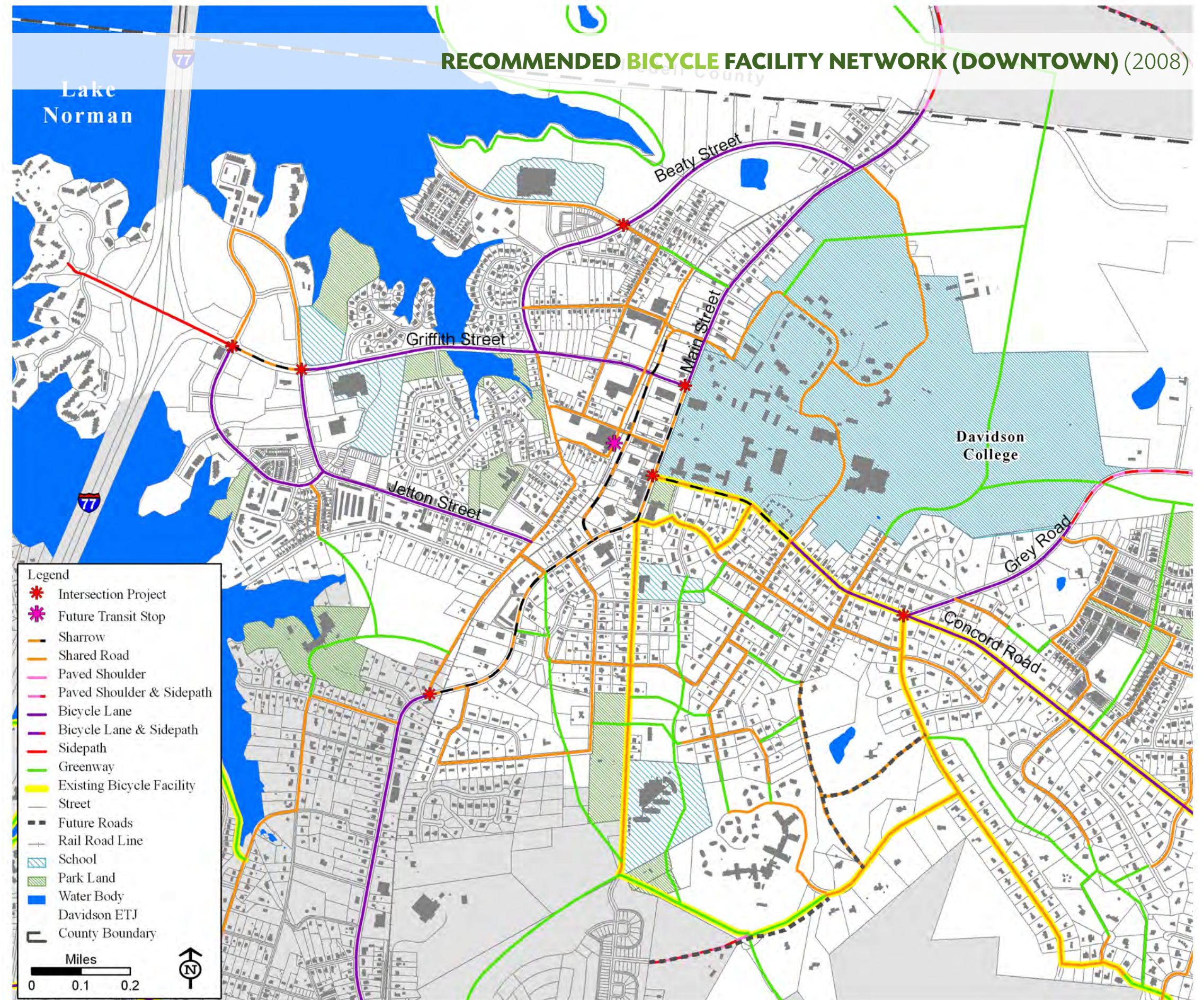
This map shows the locations and types of bicycle facilities that are proposed in the Town of Davidson. The bicycle network is intended to provide a flexible guide for the community that can be responsive to changing conditions and community priorities. It is important to note that these recommendations are based on current knowledge, conditions, and projects, and are intended to be updated on an ongoing basis. As the area continues to change and grow, with modification of transportation corridors and development, new priorities may arise.

Extensive resources will be required to fully develop the Bicycle Facility Network. Therefore, it is broken down into individual segments, which are prioritized for strategic implementation (in *Chapter 6: Plan Implementation*). Furthermore, some facilities, such as signed/shared roadways, will only require roadway re-striping and/or installing signs, with little to no roadway reconstruction involved.

See Appendix C: Prioritization and Project Cut-Sheets for more information on intersection project recommendations.

## Recommended Bicycle Facility Network (Downtown)

This map shows the locations and types of bicycle facilities that are proposed in Downtown Davidson.



**TABLE 6.A BICYCLE FACILITY PROJECT LIST**

Rank/ID	Bicycle Facility	From	To	Miles	Feet	Recommendation	Construction Type	Cost Estimate	Agency Responsible for Implementation	Phase
1A	Griffith	Jetton	Main	0.95	5,016	Bike Lanes	Roadway Restriping	\$14,391	NCDOT Div. 10	Currently Underway (Fall 2008)
1B	Griffith	Harbour Place	Jetton	0.15	790	Sharrow	Pavement Marking	\$4,098	NCDOT Div. 10	Phase 1 (2009)
2	N/S Main St	Griffith St	Potts St	0.85	4,488	Sharrow	Pavement Marking	\$10,998	Davidson PW + NCDOT Div. 10	Phase 1 (2009)
3A	North Main	Iredell County	Beaty	0.23	1,200	Bike Lanes	New Construction	\$9,200	Davidson PW + NCDOT Div. 10	Phase 1 (2009)
3B	North Main	Beaty	Griffith St	0.53	2,800	Bike Lanes	Roadway Restriping	\$6,922	Davidson PW + NCDOT Div. 10	Phase 1 (2009)
4	Jetton	Potts	Griffith	0.65	3,432	Bike Lanes	Roadway Restriping	\$12,554	Davidson PW	Currently Funded
5A	Davidson/Concord	S. Prong RR Gwy	Robert Walker	0.35	1,848	Sidepath (west side)	New Construction	\$157,500	Davidson PW + NCDOT Div. 10	Phase 1 (2009)
5B	Davidson/Concord	S. Prong RR Gwy	Robert Walker	0.35	1,848	Paved Shoulders	New Construction	\$140,000	Davidson PW + NCDOT Div. 10	Development- or NCDOT-based
6A	Goodrum/Griffith	SW/NW Drive	Harbour Place Dr	0.35	1,848	Sidepath (north side)	New Construction	\$157,500	NCDOT Div. 10	Phase 2 (2010-2012)
6B	Goodrum/Griffith	(Bridge Deck)	(Bridge Deck)	0.04	235	Sidepath (north side)	Bridge Retrofit	n/a	NCDOT Div. 10	Phase 2 (2010-2012)
7A	South Street	S. Main	Town of Cornelius	0.7	3,696	Sharrow	Roadway Restriping	\$7,525	Davidson PW	Phase 1 (2009)
7B	South Street	S. Main	Town of Cornelius	0.7	3,696	Sidepath (east side)	New Construction	\$315,000	Davidson PW	Phase 2 (2010-2012)
8	Davidson Gateway	Griffith	Jetton	0.45	2,376	Bike Lanes	Roadway Restriping	\$11,329	Davidson PW	Phase 1 (2009)
9A	Concord	Grey	Baker/Woodland	0.3	1,584	Bike Lane Improvements	Gutterpan/Pavement Seam	n/a	Davidson PW + NCDOT Div. 10	Phase 2 (2010-2012)
9B	Concord	Baker/Woodland	Main	0.3	1,584	Sharrow	Pavement Marking	\$3,766	Davidson PW + NCDOT Div. 10	Phase 1 (2009)
10	Trail 40	Potts Street	Catawba/YMCA	0.64	3,380	Connector Trail	New Construction	\$405,600	Davidson PW/Parks & Rec	Phase 2 (2010-2012)
11A	Davidson/Concord	Sam Furr Rd	S. Prong RR Gwy	1.6	8,448	Paved Shoulders	New Construction	\$640,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
11B	Davidson/Concord	Sam Furr Rd	S. Prong RR Gwy	1.6	8,448	Side Path (one side)	New Construction	\$720,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
12A	Highway 73	Cabarrus County	Sam Furr Rd	2.35	12,408	Paved Shoulders	New Construction	\$940,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
12B	Highway 73	Cabarrus County	Sam Furr Rd	2.35	12,408	Side Path (north side)	New Construction	\$1,057,500	NCDOT Div. 10 or Developer	Development- or NCDOT-based
13	Beaty	Griffith	Armour	0.4	2,112	Bike Lanes	New Construction	\$176,000	NCDOT Div. 10	Phase 2 (2010-2012)
14	Beaty	Armour	Main	0.55	2,904	Bike Lanes	New Construction	\$242,000	NCDOT Div. 10	Development- or NCDOT-based
15	Barnhardt Road	Mayes Road	Davidson/Concord	0.833	4,400	Paved Shoulders	New Construction	\$333,333	Davidson PW	Phase 2 (2010-2012)
15	Barnhardt Road	Mayes Road	Davidson/Concord	0.833	4,400	Sidepath (one side)	New Construction	\$375,000	Davidson PW	Phase 2 (2010-2012)
16	Davidson/Concord	Robert Walker	E. Rocky River	0.4	2,112	Paved Shoulders	New Construction	\$160,000	Davidson PW + NCDOT Div. 10	Phase 2 (2010-2012)
17A	Shearer	Lecheval	Grey	2.25	11,880	Paved Shoulders	New Construction	\$900,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
17B	Shearer	Lecheval	Grey	2.25	11,880	Side Path (one side)	New Construction	\$1,012,500	NCDOT Div. 10 or Developer	Development- or NCDOT-based
18	Trail 19	Eastway Street	South Street	0.344	1,815	Connector Trail	New Construction	\$99,825	Davidson PW/Parks & Rec	Phase 2 (2010-2012)
19	Trails 31/32	S. Main Street	Goodrum Street	0.18	950	Connector Trail	New Construction	\$52,250	Davidson PW/Parks & Rec	Phase 2 (2010-2012)
20A	Jackson	Griffith	Depot	0.13	690	Sharrow	Pavement Marking	\$1,515	Davidson PW + NCDOT Div. 10	Phase 1 (2009)
20B	Jackson	Depot	Main	0.14	720	Bike Lane (one side, uphill)	Roadway Restriping	\$3,897	Davidson PW + NCDOT Div. 10	Phase 1 (2009)
20C	Jackson	Depot	Main	0.25	1,320	Sharrow (both sides, except uphill)	Pavement Marking	\$3,095	Davidson PW + NCDOT Div. 10	Phase 1 (2009)

Blue: These phase one projects were selected because of their ranking in the priority matrix and because of their relative cost estimates.

Grey: Likely to be implemented on opportunity basis (by developer or by NCDOT with resurfacing/road widening)

Trail #s correspond to the adopted Circulation Plan)

**TABLE 6.A BICYCLE FACILITY PROJECT LIST (continued)**

Rank/ID	Bicycle Facility	From	To	Miles	Feet	Recommendation	Construction Type	Cost Estimate	Agency Responsible for Implementation	Phase
19A	E. Rocky River	Davidson/Concord	Shearer	2.35	12,408	Paved Shoulders	New Construction	\$940,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
19B	E. Rocky River	Davidson/Concord	Shearer	2.35	12,408	Side Path (south side)	New Construction	\$1,057,500	NCDOT Div. 10 or Developer	Development- or NCDOT-based
20	Trail 16/17/18	Lynbrook/Woody	Pat Stough/Patrick	0.578	3,050	Connector Trail	New Construction	\$167,750	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
21	Trail 24/33/34	Hillside Drive	Trail 19	0.33	1,740	Connector Trail	New Construction	\$95,700	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
22	Trail 37	Lorimer	Trail 36	0.117	620	Connector Trail	New Construction	\$34,100	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
23	Trail 36	Trail 33	Pinecrest Street	0.182	960	Connector Trail	New Construction	\$33,600	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
24	Grey	Wolfe St	Concord	0.35	1,848	Bike Lanes	New Construction	\$154,000	Davidson PW + NCDOT Div. 10	Phase 3 (2013-2015)
25	Trail 27	Greenway Street ext	The Pines	0.095	500	Connector Trail	New Construction	\$27,500	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
26	Shearer	E. Rocky River	Dembridge	0.8	4,224	Paved Shoulders	New Construction	\$320,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
27	Concord	Kimberly	Grey	0.8	4,224	Bike Lane Improvements	Gutterpan/Pavement Seam	n/a	Davidson PW + NCDOT Div. 10	Phase 3 (2013-2015)
28A	Grey	Shearer	Wolfe St	2.4	12,672	Paved Shoulders	New Construction	\$960,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
28B	Grey	Shearer	Wolfe St	2.4	12,672	Side Path (one side)	New Construction	\$1,080,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
29	Concord	Davidson/Concord	Kimberly	0.55	2,904	Paved Shoulders	New Construction	\$220,000	Davidson PW + NCDOT Div. 10	Phase 3 (2013-2015)
30	Trail 26	Eastway Street	The Pines	0.033	175	Connector Trail	New Construction	\$9,625	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
31	Trail 21	Ridgewood	S. Thompson	0.123	650	Connector Trail	New Construction	\$35,750	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
32	Trail 20	S. Thompson ext.	Peter's Place	0.091	480	Connector Trail	New Construction	\$26,400	Davidson PW/Parks & Rec	Phase 3 (2013-2015)
33A	Mayes Road	Barnhardt Road	Sam Furr Rd	0.788	4,160	Paved Shoulders	New Construction	\$315,152	Davidson PW	Development- or NCDOT-based
33B	Mayes Road	Barnhardt Road	Sam Furr Rd	0.788	4,160	Side Path (one side)	New Construction	\$354,545	Davidson PW	Development- or NCDOT-based
34A	E. Rocky River	Shearer	Cabarrus County	0.4	2,112	Paved Shoulders	New Construction	\$160,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
34B	E. Rocky River	Shearer	Cabarrus County	0.4	2,112	Side Path (one side)	New Construction	\$180,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
35A	Shearer	E. Rocky River	Lecheval	0.4	2,112	Paved Shoulders	New Construction	\$160,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
35B	Shearer	E. Rocky River	Lecheval	0.4	2,112	Side Path (one side)	New Construction	\$180,000	NCDOT Div. 10 or Developer	Development- or NCDOT-based
36	Trail 14	Dogwood Lane	Conroy Ave	0.114	600	Connector Trail	New Construction	\$33,000	Davidson PW/Parks & Rec	Phase 3 (2013-2015)

Grey: Likely to be implemented on opportunity basis (by developer or by NCDOT with resurfacing/road widening)

Trail #s correspond to the adopted Circulation Plan)



**TABLE 6.B ACTION STEPS**

The action steps in the following tables are integral to achieving the goals and vision of this Plan. As guiding recommendations and the clearest representation of specific items to accomplish, they should be referred to often. Chapter 5, Programs and Policies, provides a variety of resources for assisting in carrying out tasks related to education, encouragement and enforcement programs.

Task	Lead Agency	Support	Details	Phase	Page Reference	Completed
Present Plan to Town Board.	Davidson Planning Department	Project Consultant	Presentation to Town Board on August 12, 2008	Short Term (2008)	n/a	X
Approve this Plan.	NCDOT Bike/Ped Division	Project Consultant	Official letter of approval expected no later than mid-October, 2008	Short Term (2008)	n/a	
Adopt this plan.	Davidson Town Board	Davidson Planning Department	Through adoption, the Plan becomes a legitimate planning document of the Town. Adoption shows that the Town of Davidson has undergone a successful, supported planning process.	Short Term (2008)	n/a	
Policy Action #1	Davidson Town Board, Town Planning Board	Davidson Planning Department	Revisions to the Town of Davidson Planning Ordinance: The changes suggested on pp.102-103 serve as an update to the Planning Ordinance, reflecting the findings and recommendations of this 2008 Bicycle Transportation Plan, and clarify some basic policy positions regarding future development and the provision of bicycle facilities. Some edits are also suggested for consistency in terminology.	Short Term (2008)	pp.102-103	
Identify and secure specific funding sources for phase 1 implementation.	Davidson Planning Department	Town Manager, other Town departments, GTB Advisory Board	Chapter 6 contains a table with project cost estimates and appendix E contains over 50 potential funding opportunities.	Short Term (2008)	pp. 113-114, Appendix E	
Complete top priority, phase 1 projects.	Davidson Public Works + NCDOT Division 10	Davidson Planning Department, NCDOT Bike/Ped Division	The prioritization of bicycle facility development provides a list of the most important projects to improve connectivity and safety. Immediate attention to the high priorities will instantly have a large impact on bicycling conditions in Davidson. Consider a bond referendum for greenways and roadway improvements for bicycle transportation. At a minimum, complete this plan's top five priority bicycle projects by 2010.	Short Term (2008-2009)	pp. 113-114, Appendix C	
Continually support and evaluate implementation of this plan.	GTB Advisory Board	Davidson Planning Department, Town Board	Greenways, Trails and Bikeways Advisory Board should continue meeting on at least a bi-monthly basis, and one of their meetings should be reserved to evaluate the implementation of this Plan. The Town Board, staff and members of the Greenways, Trails and Bikeways Advisory Board should meet on an annual basis to tour bicycle facilities and discuss bicycle and pedestrian issues.	Continuous/Ongoing	pp.81-86	
Education Action #1	Davidson Parks and Recreation Department	League of American Bicyclists, Davidson Walks and Rolls Committee, and Davidson Planning Department	Assist in the coordination of joint adult and kids bicycle classes, to be provided in partnership between a locally certified League of American Bicyclists (LAB) instructor, the Davidson Walks and Rolls Committee, and Davidson Parks and Recreation Department. The actual curriculum would be developed by these groups, and could focus on personal trip coaching/promotion for non-car modes; See page 84 for other focus topics.	Continuous/Ongoing	pp.81-86	

**TABLE 6.B ACTION STEPS (continued)**

Task	Lead Agency	Support	Details	Phase	Page Reference	Completed
Encouragement Action #1	Davidson Planning Department	GTB Advisory Board	This Plan should be presented to other local and regional bodies and agencies. Possible groups to receive a presentation might include: Charlotte Mecklenburg Bicycle Advisory Committee, Charlotte Area Bicycle Alliance (CABA), local bike store owners, regional transportation planners, health clubs and fitness facilities, schools and youth organizations, riding clubs, major employers, and large neighborhood groups.	Short Term (2008-2009)	pp.86-92	
Enforcement Action #1	Davidson Police Department	General Public (for reporting enforcement issues/violation incidents)	Establish an easy-to-use and well-publicized bicycle and pedestrian enforcement hot line and online resource. Complaints that include licence numbers should result in a letter to the owner of the vehicle that includes the complaint as well as a handout that outlines the rules of the road and rights for both cyclists and motorists. See page 94 for details.	Short Term (2008-2009)	pp.93-97	
Develop a long term funding strategy.	Davidson Planning Department	Davidson Town Board, Town Manager, other Town departments, GTB Advisory Board	To allow continued development of the overall system, capital and Powell Bill funds for bicycle facility construction should be set aside every year, even if only for a small amount (small amounts of local funding can be matched to outside funding sources). Funding for an ongoing maintenance program should also be included in the Town's operating budget.	Short Term (2008-2009)	Appendix E	
Maintain bicycle facilities.	Davidson Public Works + Davidson Parks and Recreation Department+ NCDOT Division 10	GTB Advisory Board + General Public (for reporting maintenance needs)	Pay special attention to Concord Rd, where yard waste is often placed in the bike lanes; consider taking over maintenance of bicycle lanes from NCDOT. The Town of Davidson Public Works Department and NCDOT should make immediate repairs to any on-road bicycle facilities that are damaged or have hazardous conditions.	Continuous/Ongoing	pp. 79-80	
Provide bicycle parking in key locations throughout Town by 2010.	Davidson Planning Department and Public Works Department	GTB Advisory Board	Provide bicycle services such as covered parking, bicycle stations, showers at employment centers, and bicycle rentals. Work with the GTB to determine the key locations.	Short Term (2008-2009)	pp.69-71, p.73, p.75	
Communicate and coordinate with NCDOT Division 10 on priority projects for NCDOT-maintained roadways.	Davidson Planning Department	NCDOT Division 10, NCDOT Bike/Ped Division	Ensure that when NCDOT-maintained roadways in Davidson are resurfaced or reconstructed, that this Plan's adopted recommendations for bicycle facilities are included on those streets.	Continuous/Ongoing	p.105-110	
Notify the Town of Davidson Planning Department of all upcoming roadway reconstruction or resurfacing/restriping projects, no later than the design phase.	Public Works Director, and NCDOT Division 10	Davidson Planning Department	Provide sufficient time for comments; Incorporate bicycle recommendations from the planning staff.	Continuous/Ongoing	pp. 113-114 and Appendix C	
Education Action #2	Davidson Planning Department	Mayors Transportation Task-force	Explore the possibility of partnering with neighboring municipalities in hiring a regional Alternate Modes/Active Modes Transportation Coordinator (see p.83 for potential roles and responsibilities).	Short Term (2008-2009)	pp.81-86	



**TABLE 6.B ACTION STEPS (continued)**

Task	Lead Agency	Support	Details	Phase	Page Reference	Completed
Ensure planning efforts are integrated regionally.	Davidson Planning Department	Mayors Transportation Taskforce, NCDOT Bike/Ped Division	Combining resources and efforts with surrounding municipalities, regional entities, and stakeholders is mutually beneficial. Communicate and coordinate with the Town of Davidson Parks and Recreation Department, Mecklenburg County, and neighboring municipalities on regional greenway corridors; partner for joint-funding opportunities. After adoption by the Town, this document should also be recognized in regional transportation plans.	Short Term (2008-2009)	pp.26-33	
Encouragement Action #2	Davidson Planning Department	Local schools, GTB Advisory Board, SRTS Program	Establish 'bike-to-school' groups and regular bicycling activities for children through the Safe Routes to School Programs through 2012. Evaluate progress of current Safe Routes to School efforts, and improve effectiveness as needed.	Continuous/Ongoing	pp.86-92	
Encouragement Action #3	Davidson Parks and Recreation Department	GTB Advisory Board	Parks and Recreation could lead a monthly family ride during the months of April through October as part of their regular programming schedule (similar to the 2008 Town Day family ride); citizens (or GTB Advisory Board members) might be willing to coordinate and lead such rides.	Continuous/Ongoing	pp.86-92	
Encouragement Action #6	Davidson Parks and Recreation Department	Davidson Planning Department, GTB Advisory Board	Use bicycle facilities, particularly trails, to promote causes and hold special events for causes.	Continuous/Ongoing	pp.86-92	
Encouragement Action #7	Davidson Parks and Recreation Department	Local Arts Organizations	Utilize greenways for the display of public art.	Continuous/Ongoing	pp.86-92	
Enforcement Action #2	Davidson Police Department	General Public (for reporting enforcement issues/violation incidents)	Target and enforce all illegal motorist and bicyclist behavior that may jeopardize public safety and the success of the Bicycle Network, particularly speeding. Base the location of targeted enforcement areas on reported incidents from the hotline.	Continuous/Ongoing	pp.93-97	
Initiate a local bicycle safety and courtesy educational campaign by 2009.	Davidson Planning Department, Parks and Recreation Department, and Police Department	Local, regional, state, and national bicycle advocacy groups	Chapter 5 contains several lists of resources for more information.	Short Term (2008-2009)	Chapter 5, pp. 84, 92, 95	
Petition the NC Division of Motor Vehicles and other appropriate officials to include a bike-safety question on licensing exams by 2010.	GTB Advisory Board	Local, regional, state, and national bicycle advocacy groups	Also consider challenging the current state law that requires only 2 feet of clearance when passing cyclists in a motor vehicle. Advocate for 3, or even 4 feet, as required in some other states.	Short Term (2008-2009)	Chapter 5	
Strengthen overall maintenance program.	Davidson Public Works + Davidson Parks and Recreation Department	GTB Advisory Board + General Public (for reporting maintenance needs)	A Davidson staff member should be designated as the main contact for the maintenance of pedestrian and bicycle facilities in the roadway right-of-way. This staff member should coordinate with the appropriate departments to set up a free maintenance hotline and conduct maintenance activities in the field.	Short Term (2008-2009)	pp. 79-80	

**TABLE 6.B ACTION STEPS (continued)**

Task	Lead Agency	Support	Details	Phase	Page Reference	Completed
Education Action #3	Davidson Planning Department	NCDOT Bike/Ped Division	Produce and distribute a user-friendly bicycle map of Davidson, and consider the advantages of doing so in conjunction with neighboring communities. Provide basic safety information, commuting information, trail etiquette, transit information, and a list of local resources on the back side of the map.	Short Term (2008-2009)	pp.81-86	
Education Action #4	Davidson Planning Department and Public Works Department	NCDOT Bike/Ped Division	Sponsor at least one planner and one engineer from the Town of Davidson to attend a bicycle planning and design training session. NCDOT, in partnership with the Institute for Transportation Research and Education (ITRE), offers bicycle planning and design workshops for practicing professionals.	Short Term (2008-2009)	pp.81-86	
Encouragement Action #5	GTB Advisory Board	Davidson Planning Department	Encourage the establishment and/or expansion of cycling clubs and bicycle-commuting groups.	Short Term (2008-2009)	pp.86-92	
Enforcement Action #3	Davidson Police Department	NCDOT Bike/Ped Division	Sponsor police staff to attend in a training session for law enforcement that focuses on bicycle issues.	Short Term (2008-2009)	pp.93-97	
Enforcement Action #5	Davidson Police Department	NCDOT Bike/Ped Division	Provide officers with a handout to be used during bicycle-related citations and warnings (see example on page 95).	Short Term (2008-2009)	pp.93-97	
Enforcement Action #7	Davidson Town Board	NCDOT Bike/Ped Division, Davidson Police Department, local schools	Establish a crossing guard program for peak school hours.	Short Term (2008-2009)	pp.93-97	
Policy Action #2	Davidson Town Board, Town Planning Board, Planning Department Staff, Public Works Director, and NCDOT Division 10	NCDOT Bike/Ped Division	Become familiar with State and Federal bicycle policy, as outlined in this plan.	Short Term (2008-2009)	pp. 97-101 and Appendix B.	
Policy Action #3	Davidson Planning Department	GTB Advisory Board	Consider encouraging and/or requiring private owners (of residences and businesses) to keep the area in and around bicycle lanes free of debris and litter, particularly yard waste. Work with yard waste collection services to establish the proper placement of yard waste.	Short Term (2008-2009)	p.103	
Policy Action #4	Davidson Planning Department	Town of Davidson Planning Board, Davidson Public Works	Due to recommendations for several sidepaths, it is important that the Town consider a policy of access management to limit the number of commercial and residential crossings of sidepaths (see diagrams on p. 103).	Short Term (2008-2009)	p.103	
Policy Action #5	Davidson Town Board, Town Planning Board	Davidson Planning Department	Adopt a policy that states that all new bridges be constructed with accommodations for bicyclists and pedestrians (such as bicycle lanes, wide sidewalks, and bike and/or pedestrian safe railings).	Short Term (2008-2009)	p.103	

**TABLE 6.B ACTION STEPS (continued)**

Task	Lead Agency	Support	Details	Phase	Page Reference	Completed
Policy Action #6	Davidson Planning Department	Town of Davidson Planning Board, Davidson Public Works	Consider a policy that addresses marginal roadway improvements. Such improvements should be considered when the opportunity arises and there is no other option—such as wider shoulders, a bike lane, or wide curb lane—because of lack of space. However, such improvements are unacceptable unless there is a documented statement that justifies why the full recommended bicycle facility was not an option. See p. 103 for more information.	Short Term (2008-2009)	p.103	
Policy Action #7	Davidson Planning Department	GTB Advisory Board	Consider a policy that addresses riding bicycles on sidewalks in Davidson. See discussion on p. 104 regarding this topic.	Short Term (2008-2009)	p.104	
Become familiar with the standards set forth in Chapter 4 of this Plan, as well as state and national standards for bicycle facility design.	Town Planning Board, Public Works Director, and NCDOT Division 10	NCDOT Bike/Ped Division	Information in Chapter 4 is not a substitute for professional, site-specific design and engineering work. For more in-depth information and design development standards, the publications on page 45 should also be consulted.	Short Term (2008-2009)	Chapter 4	
Become familiar with the bicycle facility recommendations for NCDOT roadways in this Plan (pp.113-114); take initiative in incorporating this plan's recommendations into the Division's schedule of improvements.	NCDOT Division 10	Davidson Planning Department, Davidson Public Works, NCDOT Bike/Ped Division	Construct and maintain bicycle facilities using the highest standards allowed by the State (including the use of innovative treatments on a trial-basis). Seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this Plan and its implementation.	Short Term (2008-2009)	pp. 113-114 and Appendix C	
Double the 2000 Census bicycle commute rate by 2012	Davidson Planning Department	GTB Advisory Board	All action steps contribute to this goal. Refine this goal in 2010, based on the results of the 2010 census. Be prepared to set up a survey of residents in 2012 to evaluate success. Pages 11-13 have information on current (2000) rates.	Short- to Mid-Term (2008-2012)	pp.11-13	
Launch three new programs in three years that aim to increase bicycling among a) children, b) commuter/utilitarian cyclists, and c) recreational/fitness cyclists.	Davidson Planning Department, Parks and Recreation Department, and Police Department	GTB Advisory Board	Sustain such programs with a partnership between the Town, local businesses, and non-profit organizations. See education, encouragement, and enforcement action steps for example programs.	Short- to Mid-Term (2008-2012)	Chapter 5	
Take the necessary steps to become designated by the League of American Bicyclists as a silver-level.	Davidson Planning Department	GTB Advisory Board	Download and review the application for a Bicycle Friendly Community designation. Determine which action steps of this plan would be the most strategic in terms of applying for the desired designation. Place emphasis on completing those steps, then apply.	Short- to Mid-Term (2008-2012)	Chapter 5, Page 84	
Complete phase 2 projects.	Davidson Public Works + NCDOT Division 10	Davidson Planning Department, NCDOT Bike/Ped Division	In 2010, reassess projects and reevaluate priorities and phases. Consider updating key sections of the plan such as design standards and programs/policies.	Mid Term (2010-2012)	pp. 113-114, Appendix C	
Encouragement Action #4	Davidson Planning Department	GTB Advisory Board	Encourage the development of a local bicycle co-op in Davidson; also, see the Design Standards chapter for information on Bicycle Stations and Repair Stands.	Mid Term (2010-2012)	p.70, pp.86-92	

**TABLE 6.B ACTION STEPS (continued)**

Task	Lead Agency	Support	Details	Phase	Page Reference	Completed
Encouragement Action #8	Davidson Planning Department	GTB Advisory Board, Local Businesses	The Town and the GTB Advisory Board should consider teaming with local bicycle shops to advertise, promote, and provide rentals to the public. Some large U.S. cities provide multiple public bicycle rental stations, however, such a large scale of rentals is not yet appropriate in the Town of Davidson. One option the Town and local partners should consider is renting bicycles from the old sewer power plant building at the trailhead of the Southeast Greenway (off of South Street).	Mid Term (2010-2012)	pp.86-92	
Enforcement Action #4	Davidson Police Department	N/A	Consider community service options for bicycle and pedestrian violations.	Mid Term (2010-2012)	pp.93-97	
Enforcement Action #6	Davidson Town Board	NCDOT Bike/Ped Division, Davidson Police Department, local schools	Require all crossing guards to complete an NCDOT Crossing Guard Training Program.	Mid Term (2010-2012)	pp.93-97	
Enforcement Action #8	Davidson Police Department	GTB Advisory Board	Establish a local "Trail Patrol" and coordinate with the police department to have the police patrol Town greenways periodically by bicycle.	Mid Term (2010-2012)	pp.93-97	
Enforcement Action #9	GTB Advisory Board, Volunteers	Davidson Police Department	Use paint and stencils to mark trail pavement every 1/4 mile so that trail users will be able to effectively communicate their location when calling 911. A critical step in this process also involves communicating with the police department and 911 operators about the trail markings, so that they are able to dispatch assistance to the proper location on the trail.	Mid Term (2010-2012)	pp.93-97	
Complete phase 3 projects	Davidson Public Works + NCDOT Division 10	Davidson Planning Department, NCDOT Bike/Ped Division	In 2013, reassess projects and reevaluate priorities and phases. Consider updating the entire plan.	Long Term (2013-2015)	pp. 113-114, Appendix C	

## FACILITY SEGMENT PRIORITIZATION

Recommended bicycle facilities (below) are prioritized according to weighted criteria (right).

Bicycle Routes	From	To	Criteria																								Totals
			5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	2	2	2	
Griffith	Harbour	Main	5	5	4	4	0	4	4	4	0	3	0	3	3	3	3	0	3	0	3	0	2	0	0	53	
N/S Main St	Griffith St	Potts St	5	5	4	0	0	4	0	4	4	3	3	3	3	3	3	0	3	3	0	3	0	0	0	53	
North Main	Iredell County Line	Griffith	5	5	4	0	0	4	0	0	0	3	3	3	3	3	3	0	3	0	0	0	0	0	0	39	
Jetton	Potts	Griffith	0	5	4	4	0	0	4	4	0	3	0	3	3	0	3	0	0	0	3	0	0	0	0	36	
Davidson/Concord	S. Prong RR Gwy	Robert Walker	5	0	0	0	4	0	0	8	0	0	0	3	0	0	0	0	3	6	0	3	0	2	0	34	
Goodrum/Griffith	SW/NW Drive	Harbour	5	5	4	4	0	0	0	0	0	3	3	-3	3	3	0	0	3	0	3	0	0	0	0	33	
South Street	S. Main	Cornelius Town Limits	0	5	0	0	4	0	8	4	0	3	3	0	0	0	0	0	3	0	3	0	0	0	0	33	
Davidson/Gateway	Griffith	Jetton	0	5	4	4	0	0	0	4	0	3	0	3	3	0	0	0	0	3	3	0	0	0	0	32	
Concord	Grey	Main	5	5	4	0	0	4	0	4	0	3	0	3	3	0	0	0	0	0	0	0	0	0	0	31	
Trail 40 (Circulation Plan)	Potts Street	Catawba Ave & YMCA	0	5	0	4	0	0	0	4	4	3	3	0	3	0	0	0	0	3	0	0	0	0	0	29	
Davidson/Concord	Sam Furr Rd	S. Prong RR Gwy	5	0	0	0	4	0	0	0	0	0	3	-3	0	0	0	0	3	6	3	3	0	2	0	26	
Highway 73	Cabaruss Co. Line	Sam Furr Rd	0	0	0	0	4	0	0	4	0	0	3	0	0	0	0	0	3	3	3	3	0	2	0	25	
Beaty	Griffith	Armour	0	5	0	4	0	0	4	4	0	3	0	-3	0	0	0	3	0	0	3	0	0	0	2	25	
Beaty	Armour	Main	0	5	0	0	0	0	4	0	0	3	0	3	0	0	0	3	0	0	3	0	0	2	23		
Barnhardt Road	Mayes Road	Davidson/Concord	0	0	0	0	4	0	4	0	0	3	3	0	0	0	0	0	3	0	0	3	0	2	0	22	
Davidson/Concord	Robert Walker	E. Rocky River	5	0	4	0	4	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	2	0	0	21	
Shearer	Lecheval	Grey	0	0	0	0	4	0	0	4	0	0	3	0	0	0	0	3	0	3	0	3	0	0	0	20	
Trail 19 (Circulation Plan)	Eastway Street	South Street	0	0	0	0	0	0	4	4	0	3	0	3	0	0	0	0	0	3	3	0	0	0	0	20	
Trails 31/32 (Circulation Plan)	S. Main Street	Goodrum Street	0	5	0	0	0	0	0	0	0	3	0	3	3	0	0	0	0	3	0	0	0	0	0	17	
Jackson	Griffith	Main	0	5	0	0	0	0	0	0	0	3	0	3	3	0	0	0	0	0	0	0	2	0	0	16	
E. Rocky River	Davidson/Concord	Shearer	0	0	4	0	0	0	0	0	0	0	3	0	0	0	0	3	0	3	0	3	0	0	0	16	
Trail 16/17/18 (Circulation Plan)	Lynbrook/Woody	Pat Stough/Patrick Johnson Lane	0	0	0	0	4	0	0	0	0	3	0	3	0	0	0	0	0	3	3	0	0	0	0	16	
Trail 24/33/34 (Circulation Plan)	Hillside Drive	Trail 19	0	0	0	0	0	0	4	0	0	3	0	3	0	0	0	0	0	3	3	0	0	0	0	16	
Trail 37 (Circulation Plan)	Lorimer	Trail 36	0	0	0	0	0	0	4	0	0	3	0	3	0	0	0	0	0	3	3	0	0	0	0	16	
Trail 36 (Circulation Plan)	Trail 33	Pinecrest Street	0	0	0	0	0	0	4	0	0	3	0	3	0	0	0	0	0	3	3	0	0	0	0	16	
Grey	Davis	Concord	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	0	0	13	
Trail 27 (Circulation Plan)	Greenway Street ext.	The Pines	0	0	0	0	0	0	4	0	0	3	0	3	0	0	0	0	0	3	0	0	0	0	0	13	
Shearer	E. Rocky River	Dembridge	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	2	0	11	
Concord	Kimberly	Grey	5	0	4	0	0	0	0	0	0	0	0	-3	0	0	0	0	0	3	0	0	0	0	0	9	
Grey	Shearer	Davis	0	0	0	0	0	0	0	0	0	0	3	-3	0	0	0	3	0	3	0	3	0	0	0	9	
Concord	Davidson/Concord	Kimberly	5	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
Trail 26 (Circulation Plan)	Eastway Street	The Pines	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	0	0	0	0	9	
Trail 21 (Circulation Plan)	Ridgewood	S. Thompson	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	0	0	0	0	9	
Trail 20 (Circulation Plan)	S. Thompson ext.	Peter's Place	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	0	0	0	0	9	
Mayes Road	Barnhardt Road	Sam Furr Rd	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0	0	0	2	0	0	8	
E. Rocky River	Shearer	Cabbarus County Line	0	0	0	0	0	0	0	0	0	0	3	-3	0	0	0	3	0	0	3	0	0	0	0	6	
Trail 14 (Circulation Plan)	Dogwood Lane	Conroy Ave	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0	0	0	0	0	6	

\* "Regional Connections" includes the Lake Norman Bike Route (115), and routes that connect to neighboring jurisdictions

\*\*Only used for routes with a clear ease (+3) or difficulty (-3) in constructing the facility, otherwise left blank

\*\*\*According to Planning Areas from the Town of Davidson Planning Ordinance: CBD - Central Business District; VCB - Village Center; EPC - Employment Campus; COL - College Campus

Grey: Likely to be implemented on opportunity basis (by developer or by NCDOT with resurfacing/road widening)

Green: In-town trail connections (Trail # corresponds to the adopted Circulation Plan)

## Project Cut-Sheets

The following project cut-sheets are provided for anyone who wishes to better understand the phase one priority projects that are recommended in this plan. The cut sheets are particularly useful for town- and NC DOT-engineers as they begin developing more detailed design work for these projects. They will also help town planning staff as they explain these projects to various parties, such as the Town Board, potential funding agencies, and interested citizens. The map below shows the locations of these key projects.

*Note: Project #1a (Bike Lanes on Griffith) is not included as a cut-sheet because it is already underway and due for completion in Fall 2008.*

### PHASE ONE PROJECT CUT SHEET GUIDE

