



# City of Creedmoor



## BICYCLE AND PEDESTRIAN TRANSPORTATION PLAN

*Adopted by the City of Creedmoor Board of Commissioners on November 14, 2011*

Prepared for the City of Creedmoor, North Carolina  
Prepared by Alta/Greenways

# ACKNOWLEDGEMENTS

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Capital Area Metropolitan Planning Organization (CAMPO)

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# PART 1: PEDESTRIAN TRANSPORTATION PLAN

This Pedestrian Plan was prepared as part  
of the NCDOT Bicycle and Pedestrian  
Planning Grant Program



**Division of  
Bicycle &  
Pedestrian  
Transportation**

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double-sided printing]

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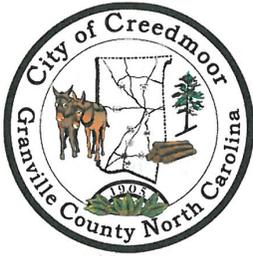
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**2011-R-20**

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## RESOLUTION TO ADOPT THE CITY OF CREEDMOOR PEDESTRIAN TRANSPORTATION PLAN

- WHEREAS, the City of Creedmoor and the North Carolina Department of Transportation - Division of Bicycle and Pedestrian Transportation (NCDOT-DBPT) have worked cooperatively with a project Steering Committee of multiple stakeholders, holding multiple planning meetings and Public Involvement opportunities to develop a Pedestrian Transportation Plan for the City of Creedmoor; and
- WHEREAS, the Steering Committee included representatives from the local community, City Government, local business, Creedmoor Schools, Capital Area MPO, Granville County Planning, Granville Greenways; and
- WHEREAS, the local NCDOT Division and District offices and City departments are prepared to work together to implement this plan over time; and
- WHEREAS, the Pedestrian Plan takes into account related recommendations from other plans, such as Creedmoor’s 2009 Strategic Plan, the NC 50 Corridor Study, the 2009 Creedmoor Bicycle, Pedestrian, and Greenway Plan, the CAMPO 2035 Long Range Transportation Plan, the 2008 Granville County Comprehensive Transportation Plan, the Granville County Greenway Master Plan, and the Capital Area MPO/Creedmoor Intersection Analysis Report; and
- WHEREAS, most major intersections within Creedmoor currently do not have crosswalks or other safety measures for pedestrians; and
- WHEREAS, Creedmoor currently has no trails and only a limited amount of sidewalk, primarily on Main Street and a small number of subdivision streets; and
- WHEREAS, the comments received during the Stakeholder and Public Involvement Process indicate support for improving conditions for walking in Creedmoor, and
- WHEREAS, this plan promotes streets that are safe and convenient for all users, including pedestrians; and
- WHEREAS, streets constitute a large portion of the public space and should be corridors for all modes of transportation, including pedestrians; and
- WHEREAS, trends in public health, energy and transportation costs, and air quality necessitate a more comprehensive approach to mobility within communities to offer a greater variety of mobility choices that are not strictly automobile based; and
- WHEREAS, the Federal Highway Administration has confirmed that designing streets with pedestrians in mind significantly reduces pedestrian risk (about one-third of Americans do not drive, including low-wealth Americans who cannot afford cars, school-age children, and an increasing number of older adults—whether they walk or bicycle directly to their destinations, these individuals require safe access to get to work, school, shops and medical visits, and to take part in social,

civic and volunteer activities); and

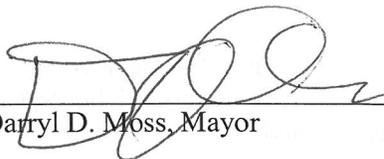
WHEREAS, the Capital Area MPO and its member communities desire a multi-modal transportation network that is compatible with expected growth, sensitive to the environment, improves quality of life and is safe and accessible for all; and

WHEREAS, it is recognized that the recommendations outlined in the Pedestrian Plan, when implemented, will help achieve multi-modal transportation in Creedmoor; and

WHEREAS, this Plan is to be used to guide decision-making and to assist the City in making the necessary improvements that support improved conditions for walking; and

WHEREAS, providers of grants and other sources of project funding look more favorably upon projects submitted as part of an adopted plan,

NOW THEREFORE, BE IT RESOLVED, that on this 14 th day of November 2011, the Creedmoor Board of Commissioners adopts the Creedmoor Pedestrian Transportation Plan.



Darryl D. Moss, Mayor

ATTEST:



Korena L. Weichel, City Clerk





Downtown Creedmoor, NC

# INTRODUCTION

**CHAPTER OUTLINE:**

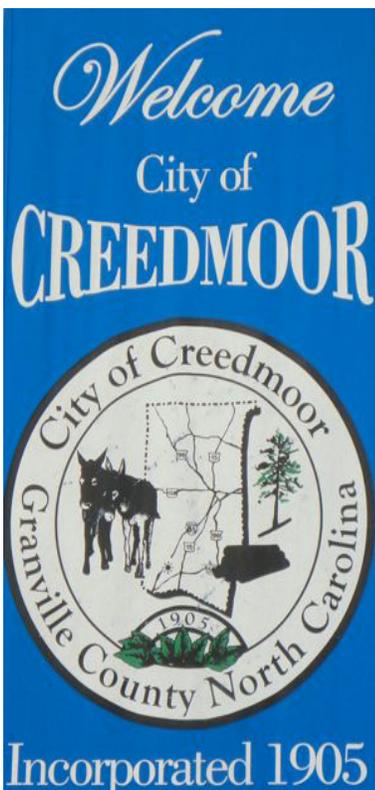
- OVERVIEW
- VISION and GOALS
- PLANNING PROCESS
- PUBLIC BENEFITS OF PEDESTRIAN TRANSPORTATION

## OVERVIEW

In 1895, Creedmoor was incorporated as Creedmore and reincorporated in 1905 as Creedmoor. The City of Creedmoor, North Carolina has been shaped by transportation from the beginning. In the late 1800's, Creedmoor served as a railroad depot between the Clarksville and Oxford Railroads and the Raleigh and Gaston Railroads.

There are four major roads in close proximity to the City, Interstate 85, NC 56, NC 50 and US 15. The North Carolina State Routes, NC 56 and NC 50, along with US 15, run straight through the center of the city and offer easy access to Interstate 85, Falls Lake and other nearby communities. There are several buildings listed on the national Register of Historic Places, two of which are farms (Cannady-Brodgen Farm, Obediah Winston Farm), one is a home (James Mangum House) and one is the First National Bank Building located downtown on Main Street. Historically, Bright Tobacco was the major contributor to the area's growth and prosperity. In more recent times, local business leaders joined together to recruit major manufacturing industries to the area.

Creedmoor possesses a special blend of urban and rural living that is just a stone's throw from Durham, Raleigh, and Research Triangle Park and is an excellent place to live, work, play and conduct business. It has been designated as a 'Playful City USA Community' five times and this designation proves the City's commitment to growing the next generation of healthy and productive adults. The population of Creedmoor has grown considerably over the past decade. An increase in population of 84.8% in one decade has a significant impact on the functionality of the transportation system, particularly the pedestrian network. The network of pedestrian infrastructure within Creedmoor should evolve and expand to serve the needs of its growing population.



In an effort to preserve and enhance the quality of life of its residents and to continue its leadership as a “Playful City USA Community”, the City of Creedmoor applied for and was awarded a North Carolina Department of Transportation 2010 Bicycle and Pedestrian Planning grant to develop this Comprehensive Pedestrian Plan. This Plan builds on the City's past efforts to become a livable community, with new research and analysis, and includes substantial participation and contributions from the citizens of Creedmoor.



The result is a complete, up-to-date framework for moving forward with the development of tangible pedestrian improvements.

- The **Introduction** of this plan presents the background, visions and goals, and the benefits of a walkable city.
- An assessment of **Existing Conditions** that overviews existing pedestrian conditions, land use, demographics, trip attractors, and also summarizes existing related plans of Creedmoor can be found in Chapter 2.
- A recommended **Pedestrian Network** that puts forward a framework of recommended facilities (pedestrian corridors, intersection improvement projects, and greenways) can be found in Chapter 3.
- Chapter 4 presents **Program Recommendations** for education, encouragement, enforcement and **Policy Recommendations** that address city policies and pedestrian needs for future development.
- **Implementation** recommendations that outline specific steps for achieving the Plan's key elements along with facility development methods can be found in Chapter 5.
- Chapter 6 offers **Design Guidelines** to guide the City of Creedmoor in current facility design and standards.
- This plan also includes **Appendices** that provide a summary of public input, funding sources, acquisition strategies, and federal and state policies.

This Plan provides guidance for enhancing conditions for pedestrians throughout the City, particularly in areas identified by the project steering committee, City staff and local residents. Beyond physical improvements, this Plan also outlines policies, programs, and opportunities to help encourage people to walk more often, drive more safely, and to grow as a City with the needs of pedestrians taken into full consideration. The Plan defines short-term and long-term strategies to address connectivity and safety with facility recommendations such as sidewalks, greenways, and crosswalks. The development of this Plan included an open, participatory process, with area residents providing input through public workshops, stakeholder meetings, the project Steering Committee, social media, and an online comment form.

## VISION and GOALS

The vision statement and goals presented in this section were developed out of the City's planning grant application and were reconfirmed early in the planning process, during the project kick-off meeting.

### **The City of Creedmoor's Vision for a Walkable Community:**

**The City of Creedmoor is an active community where bicycling and walking are safe, healthy, fun, and normal daily activities. The City's neighborhoods, parks, shopping areas, schools, and its vibrant downtown core will all be safely accessible by foot or by bicycle. Continually improving the City's conditions for walking and bicycling will positively impact the physical health of our residents and visitors, and the economic health of our local business and neighborhoods.**

### **Project Goals**

**The City will continue to:**

- **Take into consideration the needs of pedestrian and bicyclists in all decisions regarding transportation, land use, urban design, and public safety;**
- **Work effectively with NCDOT and regional partners to ensure the accommodation of pedestrians and bicyclists on state transportation projects in Creedmoor;**
- **Work with local schools to provide safe routes to school, encouraging and enabling students to walk and bike safely;**
- **Pursue regional trail development opportunities with neighboring jurisdictions.**

## PLANNING PROCESS

This planning process began with a 'kick-off' meeting in the spring of 2011, which included a visioning session and map working session with the project staff, steering committee, and consultants. This meeting was followed by the development of a series of working documents that formed a draft plan. The Plan communicates the current conditions for walking in Creedmoor, recommends improvements, and outlines strategies to carry out those recommendations. The planning process also included opportunities for public input with two public workshops and other types of outreach.

The consultant team developed numerous products to facilitate public comments that included:

- Online comment form and hardcopy companion
- Project website with links to project information
- Flyers for public workshops
- Newsletters with project updates

A series of public meetings were held in the summer and fall of 2011 to receive input into the process.

*Images from meetings throughout the planning process.*



Screen shot from the project website.

The screenshot shows a web browser window displaying the website for Greenways Inc. The URL is [www.greenways.com/creedmoor.html](http://www.greenways.com/creedmoor.html). The page has a blue header with navigation links: HOME, WHO WE ARE, WHAT WE DO, PROJECTS, and RESOURCES. A dark blue sidebar on the left lists categories: CURRENT PROJECTS, FEATURED PROJECTS, PROJECT AWARDS, UPCOMING WORKSHOPS, CONTACT US, FILE TRANSFER, and NC ASLA FIRM AWARD. The main content area has a light blue background and features two images: a street view with a crosswalk and a group of people in a meeting. The text on the page is as follows:

**City of Creedmoor, NC**

**Pedestrian Plan & Bicycle Plan**

**Project Description** > In 2011, the City of Creedmoor and NCDOT commissioned Alta/Greenways to prepare a *Pedestrian Plan*. The project Kick-Off Meeting took place in March 2011, followed by data collection and field analysis in April. The second committee meeting was in May, and first public workshop was in June.

The *Bicycle Plan* was developed by building upon work completed for the pedestrian plan, with an additional round of fieldwork and an additional Kick-off Meeting in August. The DRAFT plans were completed in July and August, followed by another round of public input in September.

**Public Input Opportunity** > 9/17/11 at the Creedmoor Music Festival (Booth on Main Street, from 9AM-2PM)

**Project Resources** > Please see the link below to download PDFs of the draft plans:

**Draft Pedestrian Plan & Draft Bicycle Plan Download Page**

For more information please contact [jasonreyes@altaplanning.com](mailto:jasonreyes@altaplanning.com)

Last updated on 8/31/2011.

## PUBLIC BENEFITS of PEDESTRIAN TRANSPORTATION

When considering the level of dedication in time and valuable resources that it takes to develop Creedmoor into a more walkable community, it is also important to assess the immense value of pedestrian transportation. Henry David Thoreau once said, “Me thinks that the moment my legs begin to move, my thoughts begin to flow.” Throughout history, physical exercise has been accepted as an effective way of managing a person’s mental, emotional and physical state. Walking, in particular, is one of the most highly recommended types of exercises to incorporate into a daily schedule. Some people enjoy the solitude of walking alone. Other people need the stimulation of interacting with others, such as joining a walking or running group. “Walking is a fundamental activity for physical and mental health, providing physical exercise and relaxation. It is a social and recreational activity. Environments that are conducive to walking are conducive to people” (VTPI 2011 walkability). Walking helps to improve people’s health and fitness, enhance environmental conditions, decrease traffic congestion, and will contribute to a greater sense of community.

In a 2011 Community Preference Survey conducted by the National Association of Realtors (NAR), 66% of respondents selected being within walking distance of stores and other community amenities as being important. When given an opportunity to select which community they would most like to live in, communities that have the characteristics below and at left were ranked higher and were found to be more desirable than communities that have the characteristics below and at right:

- *A mix of detached houses, townhouses, apartments, and condominiums on lot of various sizes*
- *Sidewalks on nearly all streets*
- *Shopping, restaurants, libraries, and schools within blocks of home*
- *Limited parking at destinations to encourage walking and biking*
- *Only single family homes on large lots*
- *Shopping, restaurants, libraries, and schools a few miles from home*
- *Automobile focused transportation*
- *Enough parking at destinations to support driving everywhere*
- *No public transportation*

**66% of respondents to a 2011 Community Preference Survey stated that “being within walking distance of stores and other community amenities” was important to them.**

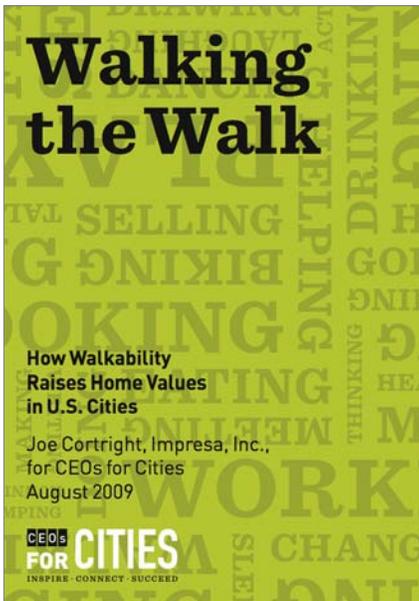
Additionally, the 2011 NAR survey reflected changes in priorities compared to 2004, the last time the survey was conducted. Interest in walkability increased, with 46% saying their community had too few shops and restaurants within easy walking distance, compared to 42% in 2004. In the 2011 survey, 40% said their community needed more sidewalks, compared to 36% in the 2004 survey.

**40% of respondents to a 2011 Community Preference Survey stated that their community “needed more sidewalks”.**

## **ECONOMIC BENEFITS**

Walking is an affordable form of transportation. A walkable community directly affects a citizen's transportation costs. According to the Pedestrian and Bicycle Information Center (PBIC), of Chapel Hill, NC, the cost of operating a car for a year is approximately \$5,170, while walking is virtually free. The PBIC explains, “When safe facilities are provided for pedestrians and bicyclists, more people are able to be productive, active members of society. Car ownership is expensive, and consumes a major portion of many Americans' income.” A study cited by the Victoria Transport Policy Institute's 2011 “Transportation

This report, one of many affirming the benefits of walkable communities, can be found online at: [www.ceosforcities.org/work/walkingthewalk](http://www.ceosforcities.org/work/walkingthewalk)



Affordability” found that households in automobile-dependent communities devote 50% more to transportation (more than \$8,500 annually) than households in communities with more accessible land use and more multi-modal transportation systems (less than \$5,500 annually). Walking becomes even more attractive from an economic standpoint when the rising price of oil (and decreasing availability) is factored into the equation. The unstable cost of fuel reinforces the idea that local communities should be built to accommodate people-powered transportation, such as walking and biking.

There are also economic benefits of a walkable community from a real estate standpoint. The study by CEO’s for Cities “Walking the Walk: How Walkability Raises Home Values in U.S. Cities” estimates how much market value homebuyers implicitly attach to houses with higher “Walk Scores”. The study looked at data for more than 90,000 recent home sales in 15 different markets around the Nation. While controlling for key characteristics that are known to influence housing value, the study showed a positive correlation between walkability and housing prices in 13 of the 15 housing markets studied. (CEOs for Cities. (2010) Walking the Walk: How Walkability Raises Home Values in U.S. Cities.)

**“Greenways and pedestrian trails have been shown to increase the value of adjacent properties by as much as 5% to 20%.”**

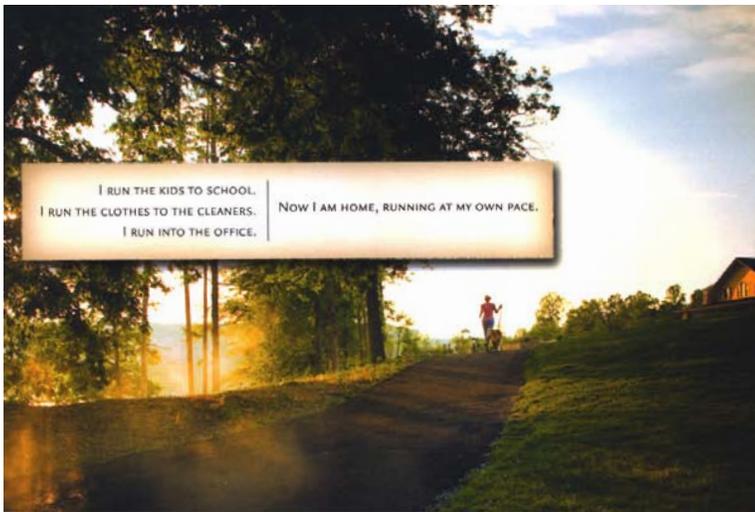
“Greenways and pedestrian trails have been shown to increase the value of adjacent properties by as much as 5 to 20%. For example, within a new development in Apex, North Carolina, new lots situated on greenways were priced \$5,000 higher than comparable lots not located along the greenway. In many cities, national builders typically charge premiums ranging from \$1000 to \$5000 for homes in the \$120,000-\$200,000 range that are bordering open space and greenways” (<http://www.charmeck.org/mecklenburg/county/ParkandRec/Greenways/Documents/1benefits.pdf>).



Trails can be designed with many surface types; natural, paved, and boardwalk trails are shown here (See page 40 for more on greenway trails)

Trails can play a part in making Creedmoor more walkable, and they too have a positive economic impact. In a survey of homebuyers by the National Association of Realtors and the National Association of Home Builders, trails ranked as the second most important community amenity out of a list of 18 choices. (National Association of Realtors and National Association of Home Builders. (2002). Consumer's Survey on Smart Choices for Home Buyers.) 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 walkability and property values across the country.

**“Trails ranked #2 out of 18 choices as an important community amenity.”**



*Developers are utilizing the positive impact of trails on property values by marketing their greenways; left and below are examples of two magazine advertisements from developers that focus their marketing on greenways.*



Transportation investments impact health directly and also indirectly through their impact on land use. According to a 2010 report from the American Public Health Association, “Investments in transit, walking and bicycling facilities support transit use, walking and bicycling directly; they also support the formation of compact, walkable, transit-oriented neighborhoods that in turn support more walking, bicycling and transit and less driving”(American Public Health Association. (2010) The Hidden Health Costs of Transportation).

**“1 mile of urban, 4-lane highway costs between \$20 million and \$80 million dollars.”**

**According to the USDOT, One mile of sidewalk costs about \$100,000.**

According to the Federal Highway Administration, the basic cost of a single mile of urban, four-lane highway is between \$20 million and \$80 million. In urban bottlenecks where congestion is the worst, common restrictions such as the high costs of right of ways and the needs to control high traffic volumes can boost that figure to \$290 million or more (Active Transportation for America: The Case for Federal Investment in Bicycling and Walking. Rails to Trails Conservancy and Bikes Belong Coalition 2008 / Sissel, S., Cost per Highway Mile, 2008). By contrast, the cost of one mile of sidewalk is about \$100,000 (USDOT, Recommended Guidelines/Priorities for Sidewalks and Walkways, 2002). Typically, the costs of bicycle and pedestrian facilities can range anywhere from a few thousand dollars per mile to rarely more than \$1 million, with great variability between types of infrastructure local circumstances (Krizek, K.e Guidelines for Analysis of Investments in Bicycle Facilities, 2006) Portland, Oregon has developed a network of bicycle infrastructure at an average per mile cost of \$300,000, with bicycle boulevards and lanes at a fraction of that cost (\$30,000 to \$40,000 per mile).

## **ENHANCED QUALITY OF LIFE**

Many factors go into determining quality of life for the citizens of Creedmoor; the local education system, prevalence of quality employment opportunities, and affordability of housing are all items that are commonly cited. Increasingly however, 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.

Walking is a fundamental social community activity. Mark Twain is quoted as saying, “the true charm of pedestrianism does not lie in the walking, or in the scenery, but in the talking... the scenery and the woodsy smells are good to bear in upon a man an unconscious and unobtrusive charm and solace to eye and soul and sense; but the supreme pleasure comes from the talk.”

Members of a community who walk to a destination are more likely meet or make friends or other social or commercial contacts than members of a community who drive to a destination. Provided there are viable alternatives to driving, “Americans are willing to change their travel habits, as the dramatic increases in gas prices in 2008 have shown. Every day, more commuters switch to public transportation, bicycling and walking in places where prior infrastructure investments have made these options safe and convenient” (Active Transportation for America: The Case for Federal Investment in Bicycling and Walking. Rails to Trails Conservancy and Bikes Belong Coalition 2008).

Other impacts include a reduction in overall neighborhood noise levels. 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” (National Center for Safe Routes to School. (2006). National Center for Safe Routes to School Talking Points).

In a 2004 Centers for Disease Control and Prevention survey, 1,588 adults answered questions about barriers to walking to school for their youngest child aged 5 to 18 years (Centers for Disease Control and Prevention. The Importance of Regular Physical Activity for Children. Accessed in 2005 from [www.cdc.gov/nccdphp/dnpao/index.html](http://www.cdc.gov/nccdphp/dnpao/index.html)). The main reasons cited by parents included distance to school, at 62%, and traffic-related danger, at 30%. Strategic additions to municipal trail systems could shorten the distance from homes to schools, and overall pedestrian and bicycle improvements can improve the safety of our roadways.

## INCREASED HEALTH AND PHYSICAL ACTIVITY

As mentioned above, many people incorporate walking into their daily routines as a way to manage their mental, emotional and physical state. In a December 2010 article published by the Mayo Clinic, it is suggested that, “walking, like other exercise, can help you achieve a number of important health benefits such as:

**The CDC determined that creating and improving places to be active could result in a 25% increase in the number of people who exercise at least three times a week (U.S. Department of Health and Human Services)**

- Lowered low-density lipoprotein (LDL) cholesterol (the “bad” cholesterol)
- Higher high-density lipoprotein (HDL) cholesterol (the “good” cholesterol)
- Lowered blood pressure
- Reduced risk of or management of type 2 diabetes
- Improved mood
- Feeling strong and fit

Research shows that regular, brisk walking can reduce the risk of heart attack by the same amount as more vigorous exercise, such as jogging.” In addition to research by the Mayo Clinic, 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). In short, a diverse trails network will create better opportunities for active lifestyles. The CDC reports that:

“30 minutes of moderately intense exercise” is equivalent to:

1.5 miles of walking; or  
5 miles of bicycling; or  
1 less slice of pizza.

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% increase in the number of people who exercise at least three times a week (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2002). Guide to Community Preventive Services). This is significant considering that for people who are inactive, even small increases in physical activity can bring measurable health benefits. The establishment of a safe and reliable network of sidewalks and trails in Creedmoor can have a positive impact on the health of residents. The Rails-to-

Trails Conservancy puts it simply: “Individuals must choose to exercise, but communities can make that choice easier” (Rails-to-Trails Conservancy. (2006) Health and Wellness Benefits).

## ENVIRONMENTAL IMPROVEMENTS

When people choose to get out of their cars and walk, they make a positive environmental impact. They reduce their use of gasoline, which then reduces the volume of pollutants in the air. Other environmental impacts can be 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 the pedestrian network, conveying their own 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.

## TRANSPORTATION BENEFITS

“The civilized man has built a coach, but has lost the use of his feet” (Ralph Waldo Emerson, “Self-Reliance,” 1841). According to the U.S. Environmental Protection Agency, fewer children walk or bike to school than did so a generation ago. In 1969, 48% of students walked or biked to school, but by 2001, less than 16% of students between 5 and 15 walked or biked to or from school (U.S. EPA 2003). Travel and Environmental Implications of School Siting).

A National Household Travel Survey found that roughly 40% of all trips taken by car are less than two miles. Nearly two-thirds of all households say they have satisfactory shopping available within walking distance of their home and 57% of parents with children 13 years or younger live within one mile of a public elementary school (U.S. Census Bureau, American Housing Survey for the United States: 2005. 2006). By replacing short car trips with bicycle trips, residents have a significant positive

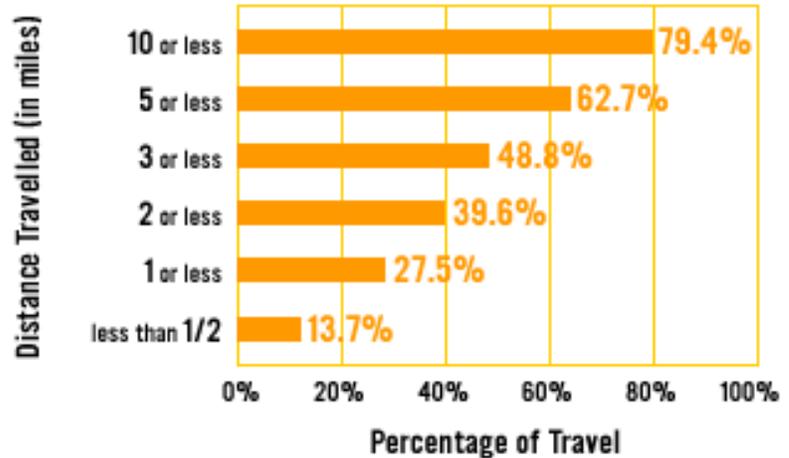
**“Individuals must choose to exercise, but communities can make that choice easier.” (Rails-to-Trails Conservancy)**

**“In 1969, 48% of students walked or biked to school, but by 2001, less than 16% of students walked or biked to or from school.”**

### Daily Trip Distances

Right: 'Daily Trip Distances' chart from the Bicycle and Pedestrian Information Center website, [www.pedbikeinfo.org](http://www.pedbikeinfo.org)

**“By walking for our trips that are less than two miles, we could eliminate 40% of local car trips. ”**



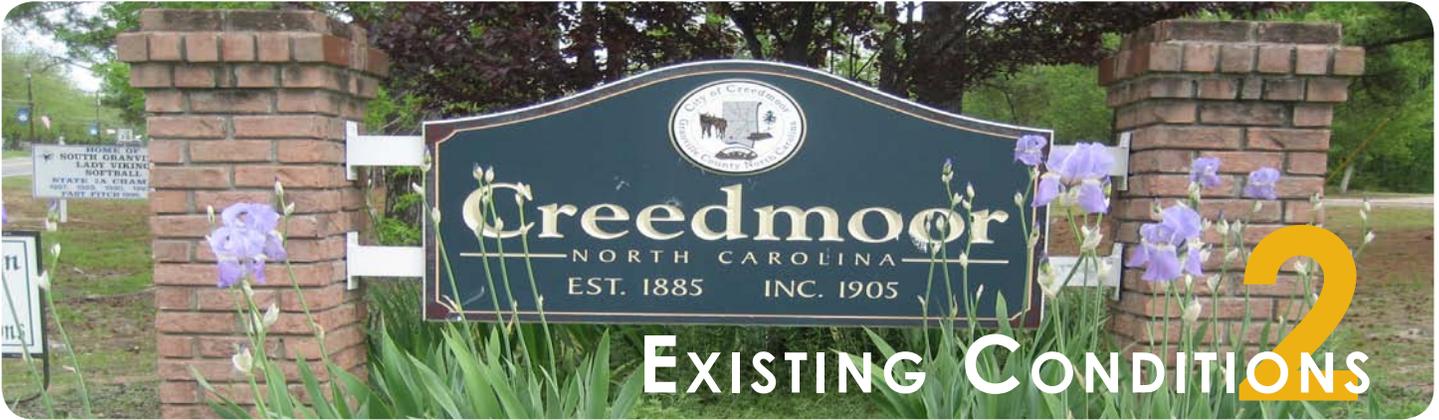
**“Currently, out of every dollar drivers spend on gasoline, at least \$0.35 flow into foreign economies.”**

impact on local traffic and congestion. Traffic congestion reduces mobility, increases auto-operating costs, adds to air pollution, and causes stress in drivers. Substituting bicycling for some of these trips relieves the congestion, benefiting all road users. Incidentally, cyclists take up significantly less space on the road. Furthermore, every car trip replaced with a pedestrian trip reduces U.S. dependency on fossil fuels, which is a national goal. Currently, out of every dollar drivers spend on gasoline, at least \$0.35 flow into foreign economies (Active Transportation for America: The Case for Federal Investment in Bicycling and Walking. Rails to Trails Conservancy and Bikes Belong Coalition 2008).

According to the Brookings Institution, the number of older Americans is expected to double [between 2000 and 2025]. (Brookings Institution. 2003. The Mobility Needs of Older Americans: Implications for Transportation Reauthorization). All but the most fortunate seniors will confront an array of medical and other constraints in 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 pedestrian 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.

In 2010, the American Public Health Association reported that, “investments in transit, walking and bicycling facilities support transit use, walking and bicycling directly; they also support the formation of compact, walkable, transit-oriented neighborhoods that in turn support more walking, bicycling and transit and less driving. These built environments have repeatedly been associated with more walking, bicycling and transit use, more overall physical activity, and lower

body weights; lower rates of traffic injuries and fatalities, particularly for pedestrians; lower rates of air pollution and greenhouse gas emissions; and better mobility for non-driving populations"(American Public Health Association. (2010) The Hidden Health Costs of Transportation).



## CHAPTER OUTLINE:

### OVERVIEW

### LAND USE AND DEVELOPMENT

### DEMOGRAPHICS

### TRIP ATTRACTORS

### PEDESTRIAN CONDITIONS

### SUMMARY OF EXISTING DOCUMENTS

## OVERVIEW

The City of Creedmoor, North Carolina is a community in central - eastern North Carolina, located about 20 minutes north of the state capital, Raleigh. For a city that is a geographical area of only 4.5 square miles, Creedmoor has a lot to offer. It is home to Lake Rogers, a large and impressive recreational facility and is within minutes of Vance-Granville Community College. Additionally, Falls Lake is south of the city, convenient for most of the citizens. The City is in Granville County and is served by the Capital Area Metropolitan Planning Organization. In the past several years the City has grown significantly, however, it has not outgrown its friendly, small town charm and appeal. The Downtown remains a very pedestrian-oriented, walkable area, and locals are often out and about on foot.

In order to propose a comprehensive pedestrian system for the City of Creedmoor, it is critical to fully examine the City's existing environment. Characteristics of the City such as demographics, land use patterns, trip attractors and current pedestrian conditions will all be described and analyzed in this Chapter. The City's geographic and population characteristics significantly affect transportation, the environment, and everyday decisions made by motorists and pedestrians. This existing conditions analysis led to the development of the recommendations for the pedestrian network that are found in Chapter 3.

## DEMOGRAPHICS

Needs and demands related to walking can be better understood through an analyses of demographic information. US Census demographic data provide geographic information such as the means of transportation to work and the percent of population not owning a vehicle. Since 2000, the population of Creedmoor has increased by 84.8%, or approximately 6% per

year, bringing the certified population of Creedmoor to 4,124. The City's median age 36.6, compared to 36.2 for Granville County, and 35.3 for North Carolina. Much of the growth that has occurred are younger or urban professionals, many of whom have active, and healthy lifestyles.

Map 2.1 on page 17 shows population density (persons per square mile) throughout the City. The most densely populated areas in Creedmoor surround the downtown core and the cluster of subdivisions east on NC 56. Incidentally, as shown on Map 2.2 on page 19, part of this more densely populated area (east of Main and south of NC 56) also has a lower median income than the rest of Creedmoor. The 2005-2009 American Community Survey (ACS) estimates show that 13.1% of individuals in Creedmoor were living below the poverty level. 15.8% of individuals under 18 were below the poverty level, compared with 20.9% of people 65 years old and over. 10.5% of all families and 34.4% of families with a female householder and no husband present had incomes below the poverty level.

Based on the 2005-2009 ACS estimates, less than 1% of the working population over age 16 walked to work. When examined in more detail by block group, there are slightly higher percentages of people walking to work (1.1%) in the general southwest portion of Creedmoor. However, rather than mapping these slight differences, another indicator was examined that may provide insight to walking trends: access to personal vehicles. Map 2.3 shows vehicle ownership in Creedmoor, with the greatest percentage without access to a vehicle in the southeast section of the City. The greater need for improved pedestrian access and mobility is in lower-income areas, higher-density areas, and areas of lower vehicle ownership. The main area of Creedmoor where these three factors overlap is generally bound by Main, NC 56 and Hawley School Road.

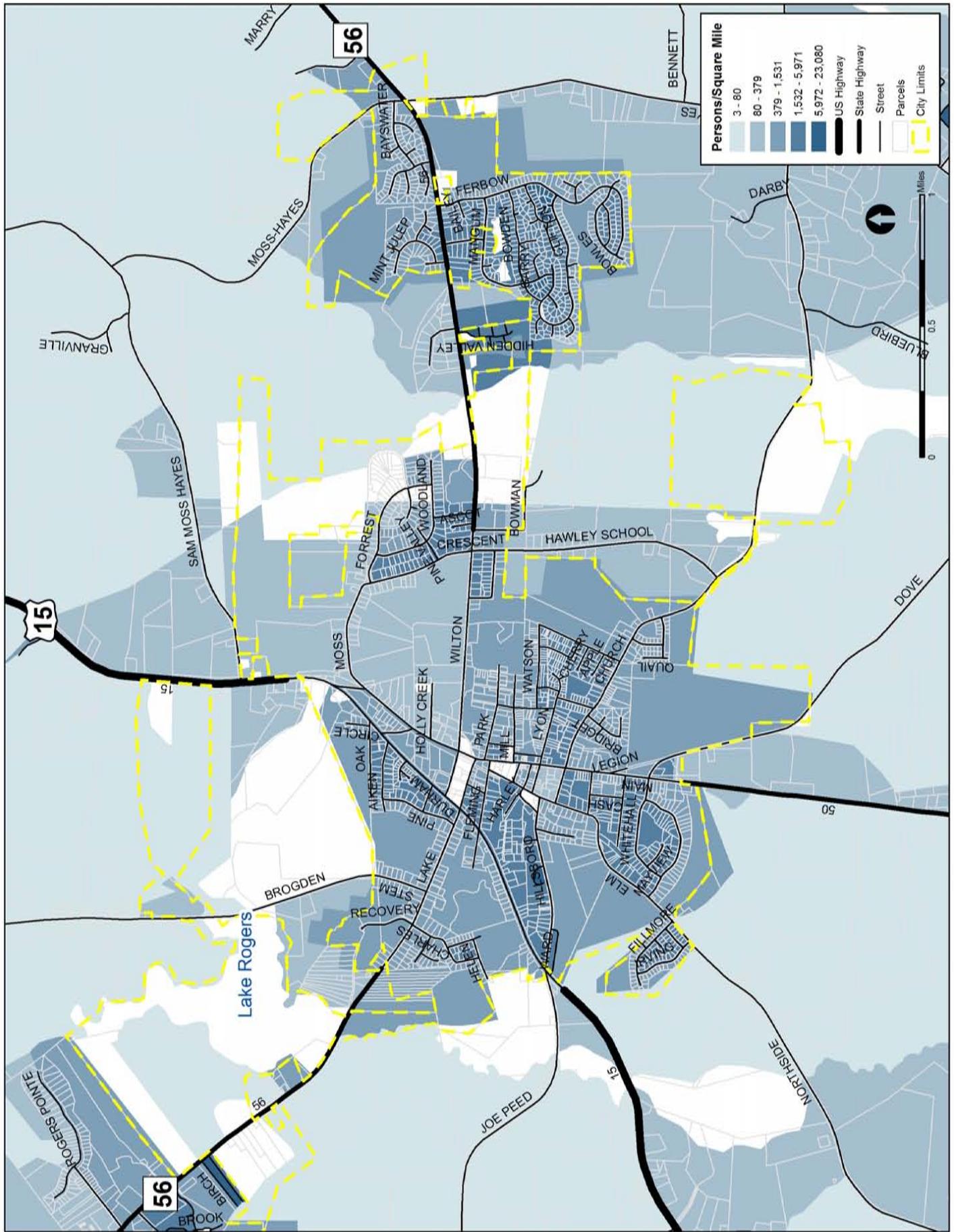
**“Since 2000, the population of Creedmoor has increased by 84.8%, or approximately 6% per year”**

**“The greater need for improved pedestrian access and mobility is in lower-income areas, higher-density areas, and areas of lower vehicle ownership. The main area of Creedmoor where these three factors overlap is generally bound by Main, NC 56 and Hawley School Road.”**

## LAND USE AND DEVELOPMENT

Creedmoor experienced growth over the past several decades in both the commercial and residential sectors. The residential growth is partly in response to the City growing as a bedroom community for the Research Triangle Park and the City of Raleigh. The land use patterns that have developed as a result of that growth are characteristic of many small North Carolina communities, with a dense historic downtown surrounded by outlying residential subdivisions. Most of the commercial growth has occurred in the form of shopping centers to the east and west of downtown, off of NC 56. Also affecting land use are three schools within the City, one of which is more than

**MAP 2.1 POPULATION DENSITY** Map based on data from 2010 US Census



two miles from downtown (Mount Energy Elementary School). This disperse migration of development creates an environment in which pedestrian travel for the majority of daily amenities is very limited. However, due to the fairly small size of the City, walking could be a very reasonable means of getting from one place to another, provided the infrastructure is there to support it.

**“Due to the fairly small size of the City, walking could be a very reasonable means of getting from one place to another, provided the infrastructure is there to support it.”**

## TRIP ATTRACTORS

The term “trip attractors” refers to places which residents of Creedmoor travel to by walking, biking or driving. The following primary trip attractors were reviewed and analyzed when determining locations for the physical pedestrian improvements recommended in Chapter 3. Map 2.4 on page 21 illustrates some of the key destinations in Creedmoor, including:

- Lake Rogers
- Post Office
- Library
- Senior Center
- Schools
- Food Lion
- Places of Worship

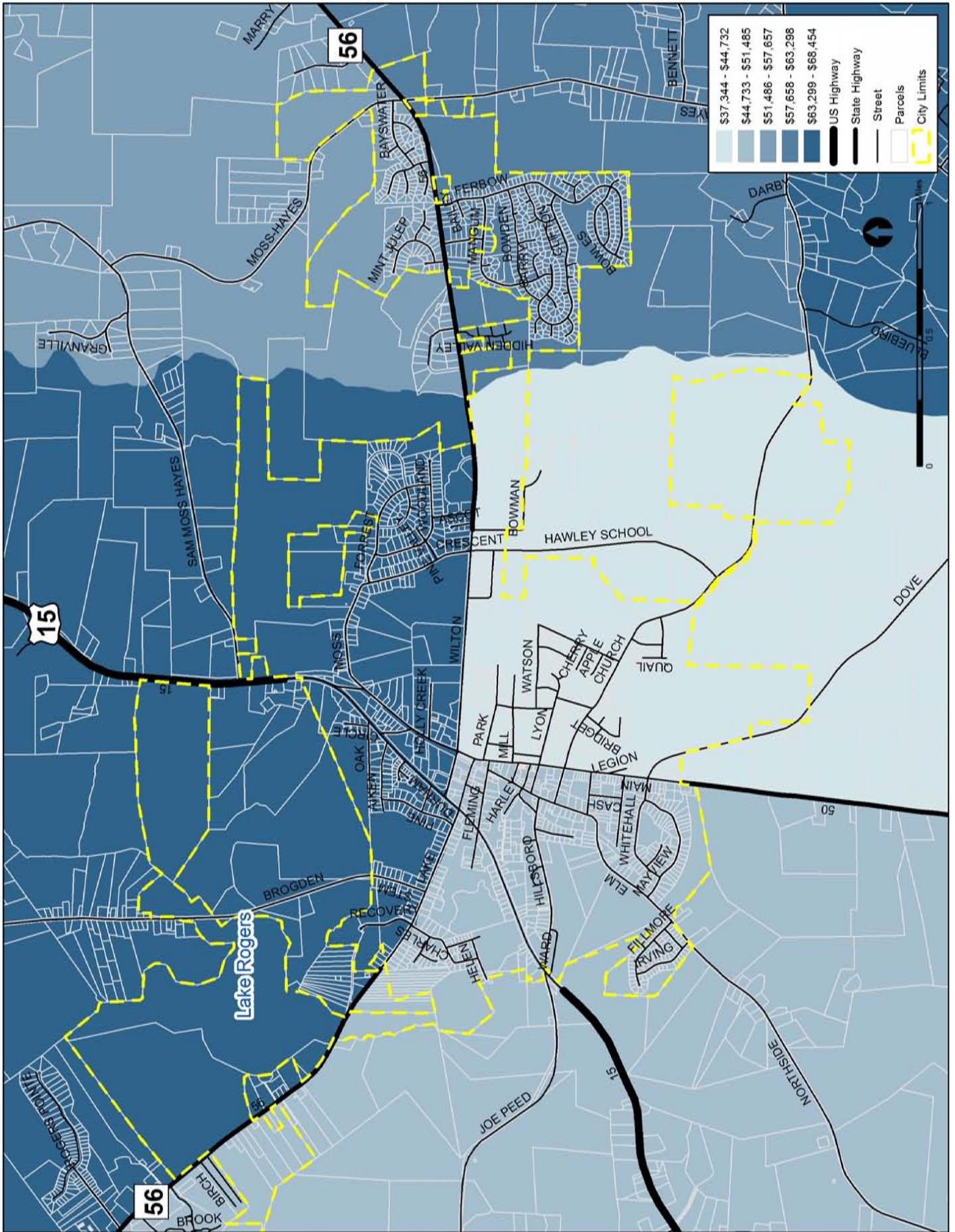


*Above Lake Rogers Park is a major potential trip attractor for pedestrians.*

## PEDESTRIAN CONDITIONS

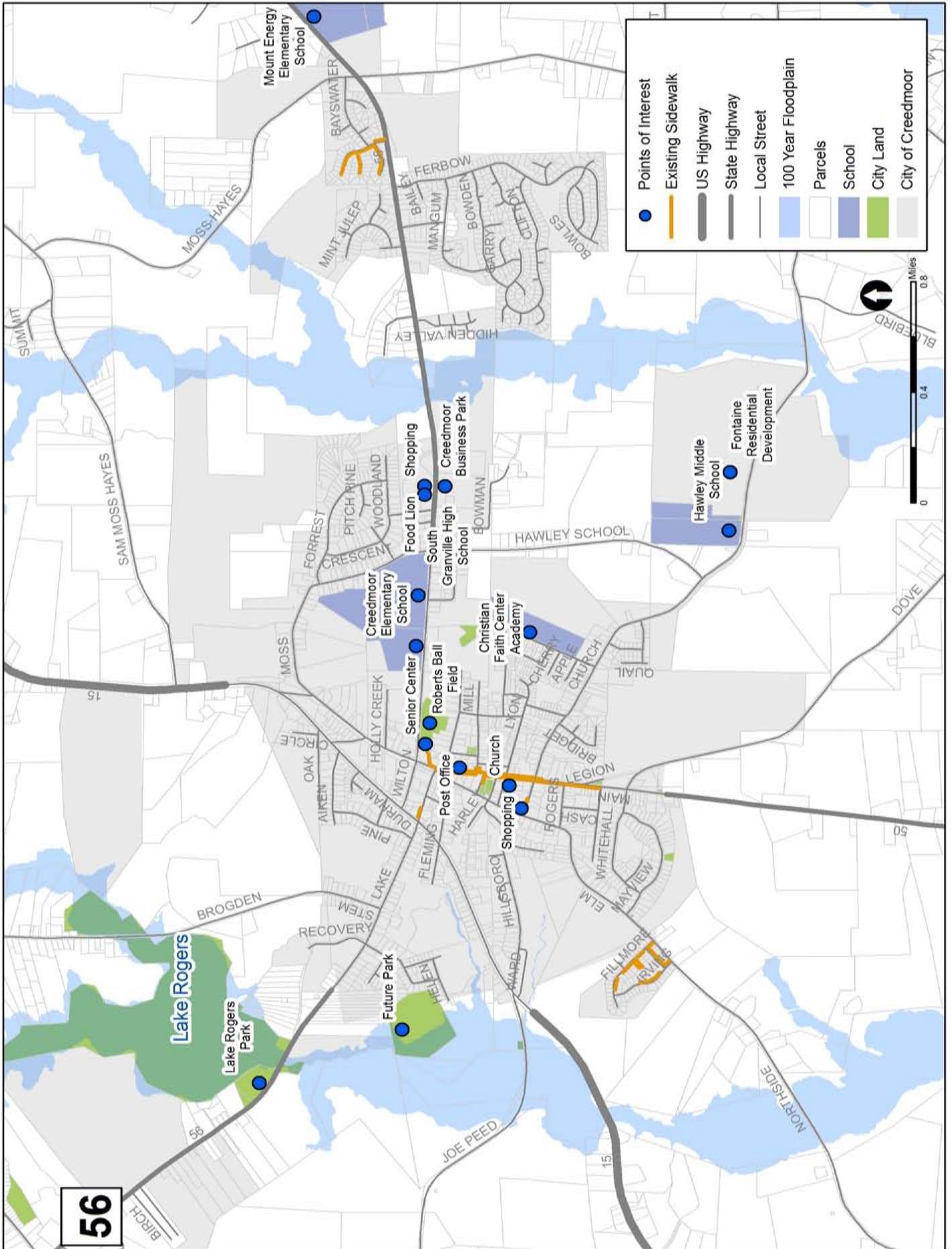
Planning consultants collected existing geographic information systems (GIS) data layers and developed new data prior to field analysis in Creedmoor. GIS tasks included an update and revision of existing pedestrian facility data, collection and analysis of demographic data, and development of base maps.

**MAP 2.2 MEDIAN HOUSEHOLD INCOME**  
 Map based on 2005-2009 American Community Survey (ACS) 5-year estimates





# MAP 2.4 EXISTING PEDESTRIAN FACILITIES & TRIP ATTRACTORS



Using the base map information, consultants then conducted a field analysis in spring 2011 to examine, document, and inventory existing pedestrian conditions. Special attention was paid to school areas, downtown areas, crossings, and other destinations. Site visit accomplishments included:

- Over 30 miles of arterial, collector, and subcollector roads were analyzed for possible sidewalk facilities.
- Active pedestrians were monitored and photo-inventoried.
- Existing, exemplary facilities were noted and photo-inventoried.
- Barriers to pedestrian travel were noted.

The results of the field work and GIS analysis are summarized in the following section. Recommendations have been developed based on these conditions and are presented in Chapter 3.

## FIELD OBSERVATIONS

The majority of existing pedestrian facilities are found in the downtown core and in several nearby residential subdivisions (see Map 2.4). Certain aspects of Downtown Creedmoor provide for a high-quality pedestrian environment, such as the well-designed sidewalk along parts of Main Street (images below), and the high-visibility crosswalks on Main Street with pedestrian signage (images on following page). Elements such as benches and other street furniture further promote a pedestrian-friendly environment.



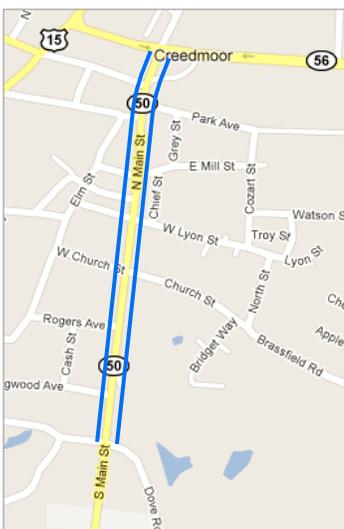
Above: Sidewalk on Main Street in Downtown Creedmoor. Note that in the far left photo, the street furniture is shown as a good example for pedestrian design, however, the double recessed curb presents challenges for accessibility.



High visibility crosswalks and pedestrian crossing sign on Main Street in Downtown Creedmoor.



However, many areas in Creedmoor (including parts of Main Street) offer opportunities for improvement. Growth that has occurred outside of downtown has not always provided for connected and safe pedestrian facilities, leaving gaps between downtown, trip attractors and residential neighborhoods. Specifically, the following observations were made during field work and are categorized by corridor.

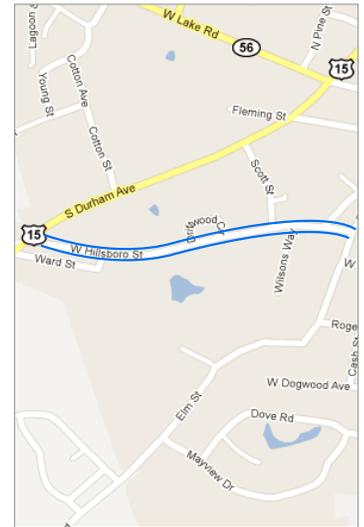


**NC 50 (Main Street) from NC 56 to Whitehall** *(images above)*

This corridor is commercial and service-oriented, and serves as the primary corridor for the City of Creedmoor. Many excellent features for pedestrians are present, including street furniture, midblock crossings, pedestrian signage, sidewalks, and curb ramps with truncated domes. The gas station on the east side of Main provides an excellent example of how to provide pedestrian access across what in many cases would be an open driveway designed for automobile use (middle picture, page 22). Opportunities for improvement along this corridor include extending the sidewalk all the way to both Whitehall and NC 56, using in-roadway pedestrian crossing signs at the midblock crossings, marking sidewalk areas through all open parking areas, and making intersection improvements at Church, Fleming and Lake (see intersection inventory in page 28). Significant backfill would be required just south of Dogwood.

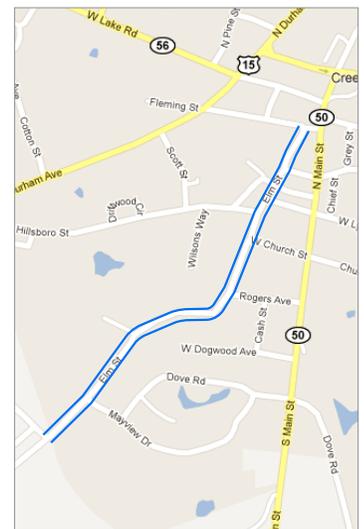
**W. Hillsboro Street from US 15 to S. Elm Street** *(image below)*

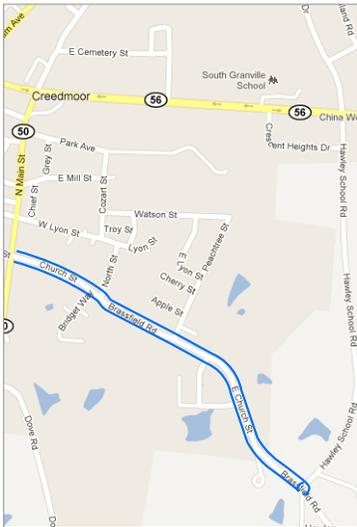
This residential corridor, west of downtown, has frequent driveways and open drainage swales. Destinations include downtown and a ‘gateway’ to the City on the west end of the corridor. Both sides of the road have utility poles that are set back from the roadway, indicating ROW may be set back from the roadway. Neither side stands out as better than the other for sidewalk construction, although due to potential connections to other proposed sidewalk on US Hwy 15, the north side may result in fewer crosswalks needed. Curb and gutter would be required for sidewalk construction.



**S. Elm Street from Fillmore to Fleming** *(image below)*

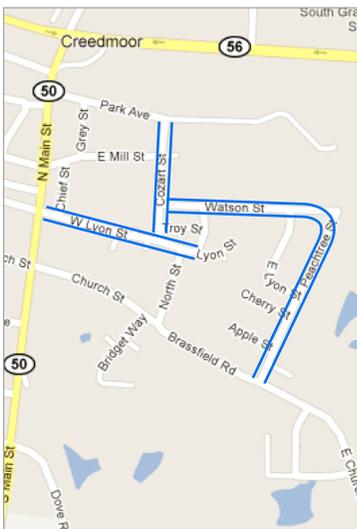
This corridor is residential in nature from the south, with some industrial land uses (auto repair and fire station) to the north. Destinations include downtown in the north and two residential subdivisions to the south (Davenport & Whitehall). Both sides have frequent driveways and open drainage swales. Utility poles are on both sides, but primarily on the west side. The east side offers greater opportunity to connect more residents, and would tie into existing sidewalk at Church Street. Some driveways near Masonic, such as at the Fire Station, a loading dock, and a gravel lot, would all need to be better defined for pedestrian access, either through painting, textured pavement, or signage. Curb and gutter would be required for sidewalk construction.





**Church Street from Elm to Hawley School Road** *(image below)*

This corridor is residential from downtown to Peachtree, then is more rural in nature east to Hawley School Rd. In the residential section of this corridor, open swale drainage, driveways, and large trees close to the roadway pose challenges for sidewalk development. In the more rural section, there is still open swale drainage, but it is set back further from the roadway in many areas. The north side would be the logical choice for sidewalk since the school, the Christian Faith Center (on Peachtree), and the majority of residents are all located on the north side. Curb and gutter would be required for the large majority of sidewalk construction, and some areas near downtown may require the sidewalk to be built without a landscape buffer, in order to avoid cutting down large trees on residential lots.



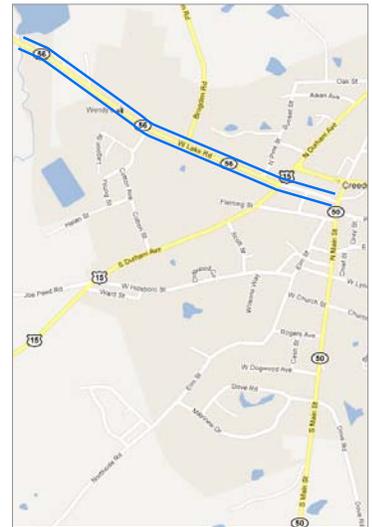
**Lyon/Cozart/Watson/Peachtree** *(image below)*

This series of residential streets would connect downtown to many of Creedmoor’s original older neighborhood residents, and to the Christian Faith Center. The roadways appear to be low in traffic volume, but are narrow. Open swale drainage is immediately adjacent to the roadway, requiring curb and gutter installation for sidewalk development. Some residential features, such as mailboxes and landscaping may need to be set back for sidewalk to be feasible. Neither side of the road stands out as particularly advantageous for sidewalk. The exception is Peachtree, where the east side offers more flexibility in terms of locating the sidewalk.



**NC 56 (W. Lake Road) from NC 50 (Main St) to Lake Rogers** *(image below)*

This corridor is primarily rural residential with some commercial and industrial land uses near downtown. Destinations along NC 56, particularly downtown and Lake Rogers, are perhaps the strongest for any corridor identified in Creedmoor. Due to the potential popularity of this route, and the recreational nature of the lake as a destination, a multi-use trail may be more suitable than a sidewalk, so as to accommodate a greater number of users and user types (i.e., pedestrians, bicyclists, and other wheeled users). Open swale drainage may require piped drainage for some or all sections. Note that the north side would be most suitable as both the Lake and some existing sidewalk (near downtown) are located on the north side. Intersection improvements would be required at Lake and US Hwy 15, as well as smaller intersecting roads along Lake. Significant backfill would be required at two locations along Lake just west of US Hwy 15, where the shoulder slopes dramatically downward.



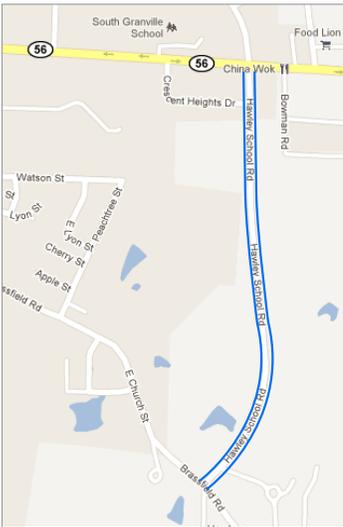
**NC 56 from NC 50 (Main Street) to Mount Energy Elementary** *(image below)*

This corridor is primarily rural with schools, subdivisions, a shopping center, and the Creedmoor Business Park site, and is one of the most heavily traveled corridors in Creedmoor. A Congestion Mitigation and Air Quality Improvement (CMAQ) grant will fund sidewalk from the northern end of downtown to Creedmoor Elementary and S. Granville High School, crossing NC Hwy 56 near west side of the school properties. From the schools heading east, sidewalk will connect to the shopping center on the north side of NC Hwy 56 and the business center on the south side. Challenges to expand east past Food Lion include the sheer distance to Mount Energy, and ROW issues along NC Hwy 56 where it crosses low wetland areas. Potential for greenway connections to subdivisions, rather than along NC Hwy 56 should be considered.



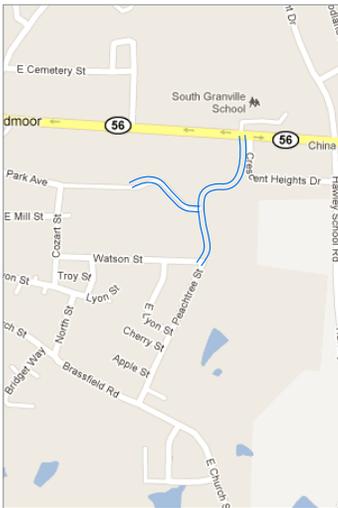
**Hawley School Road from NC 56 to Church Street** *(image below)*

This corridor is currently rural in nature, with little existing development. However, Hawley Middle School and the site of a future residential development are located on the southeast side of the road. A multi-use sidepath may serve this corridor well as a safe way for children to bike and walk along Hawley School Road, especially since the relative current lack of development along the road would not conflict with a sidepath facility.



**Greenway Corridor from Park Ave to S. Granville High School** *(image below)*

This water and sewer access road corridor connects a residential street (Park Ave) to several possible destinations. From the pump station east of Park Ave, potential trail routes are north to S. Granville High School, south to the Christian Faith Center on Peachtree, and east to Crescent Heights and Hawley School Road. Several of these corridors are already cleared and have easements, facilitating future trail development.

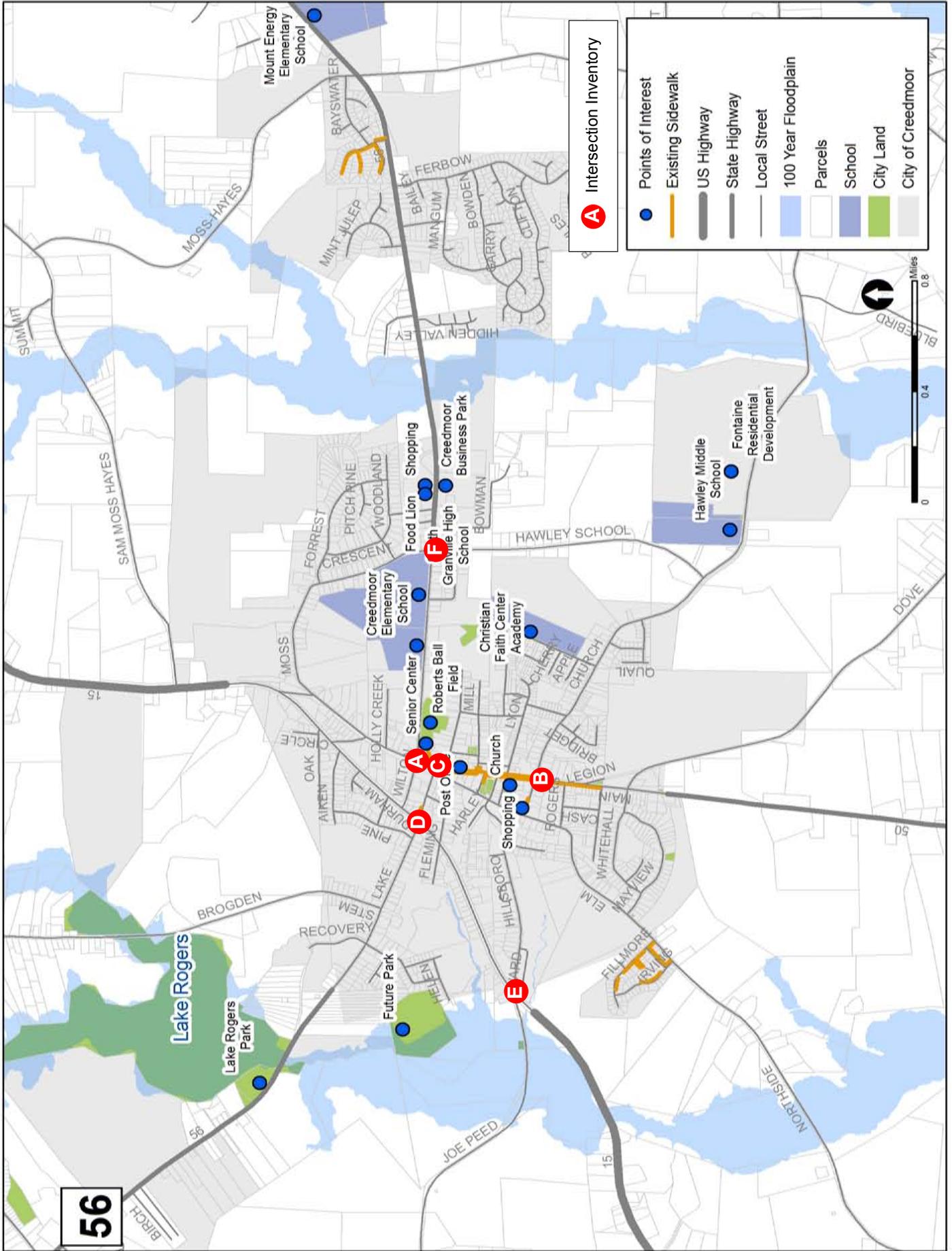


## INTERSECTION INVENTORY

The table below provides a summary of current conditions at six of Creedmoor’s intersections. The inventory concentrates on intersections where surrounding land uses suggest a higher potential for pedestrian activity, such as connections to Downtown Creedmoor, schools or neighborhoods.

<b>Intersection Project ID:</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<i>Road 1</i>	NC 50 (Main St)	NC 50 (Main St)	NC 50 (Main St)	US 15	US 15	NC 56 E
<i>Road 2</i>	NC 56	Church St	NC 56 (W. Lake Rd)	NC 56 (W. Lake Rd)	W. Hillsboro St	Hawley School Rd
<i>Destinations Served</i>	Downtown Gateway, pharmacy	Down-town Gateway, church	Down-town & Part of Lake-to-Main Corridor	Part of Lake-to-Main Corridor	Residential & Gateway Area	High School, Residential Areas, Grocery
<i>Sight Distance</i>	Fair	Good	Fair-Poor	Good	Fair	Good
<i>Signage</i>	N	Y	N	N	N	Y
<i>Stop Light or Stop Sign</i>	SL	SL	SS	SL	SS	SL
<i>Curb Ramps</i>	N	Y	Y	N	N	N
<i>Curb Ramp Condition</i>	-	Incomplete	Incomplete	-	-	-
<i>Curb Radius</i>	Wide	Not Wide	Very Wide	Very Wide	Very Wide	Wide
<i>Marked Crosswalk</i>	N	Y	N	N	N	N
<i>Adequate Number of Crosswalks</i>	-	N	-	-	-	-
<i>Highly Visible Crosswalk</i>	-	N	-	-	-	-
<i>Crosswalk Condition</i>	-	Fair	-	-	-	-
<i>Advanced Stop Line</i>	-	Y	-	-	-	-
<i>Pedestrian X-ing Signal</i>	None	None	-	None	-	None
<i>Sides of Street with Sidewalk</i>	0	4 of 8	2 of 5	2 of 8	0	0
<i>Estimated Traffic Volume</i>	High	High	High	-	Low-Med	Med-High
<i>Speed Limit</i>	35	35/20	35	35	35	35
<i>Other Observations</i>	20' high retaining wall on SE corner	Signage placed far from x-ing	Lake Rd used as short cut	High % of heavy vehicle traffic	Wide-angle intersection	Intersection directly serves High School

# MAP 2.5 INTERSECTION INVENTORY LOCATIONS



## PEDESTRIAN BEHAVIOR & PERCEPTION

Pedestrian-activity is significant along Main Street, the heart of Downtown Creedmoor, and in some of the residential neighborhoods. The areas of highest pedestrian activity include lower-income areas and near the Senior Center (where walking may be a transportation necessity), Mill, Lyon, Cherry, Apple, Church, Watson, Harley and Hillsboro.

Pedestrians were often seen crossing roads not in the designated marked crosswalk. This is due to the pedestrian's decision to take the shortest route and the pedestrian's false perception that it is safer to cross at another location. Footpaths were noticed in various locations which indicate a need for more sidewalks in many areas, especially along roads that intersect with Main Street in the Downtown area.

Another expression of existing conditions, need, and demand came from the public involvement process. Public input was gathered through several means, including a public comment form.



*A worn footpath along the retaining wall at the intersection of NC 50 (Main St.) and NC 56.*

### PEDESTRIAN PLAN PUBLIC COMMENT FORM

The following are highlights from this Plan's public comment form. The comment form was available online during spring and summer 2011, was distributed by project committee members, and was made available during public workshops. More than 70 people filled out comment forms for this plan. For the full results, please refer to Appendix A.

How do you rate present conditions for walking in Creedmoor? (select one)			
		Response Percent	Response Count
Excellent	<input type="checkbox"/>	4.2%	3
Fair	<input type="checkbox"/>	38.0%	27
Poor	<input type="checkbox"/>	57.7%	41

**How important to you is improving walking conditions in Creedmoor? (select one)**

		Response Percent	Response Count
Very important		70.0%	49
Somewhat important		22.9%	16
Not important		7.1%	5

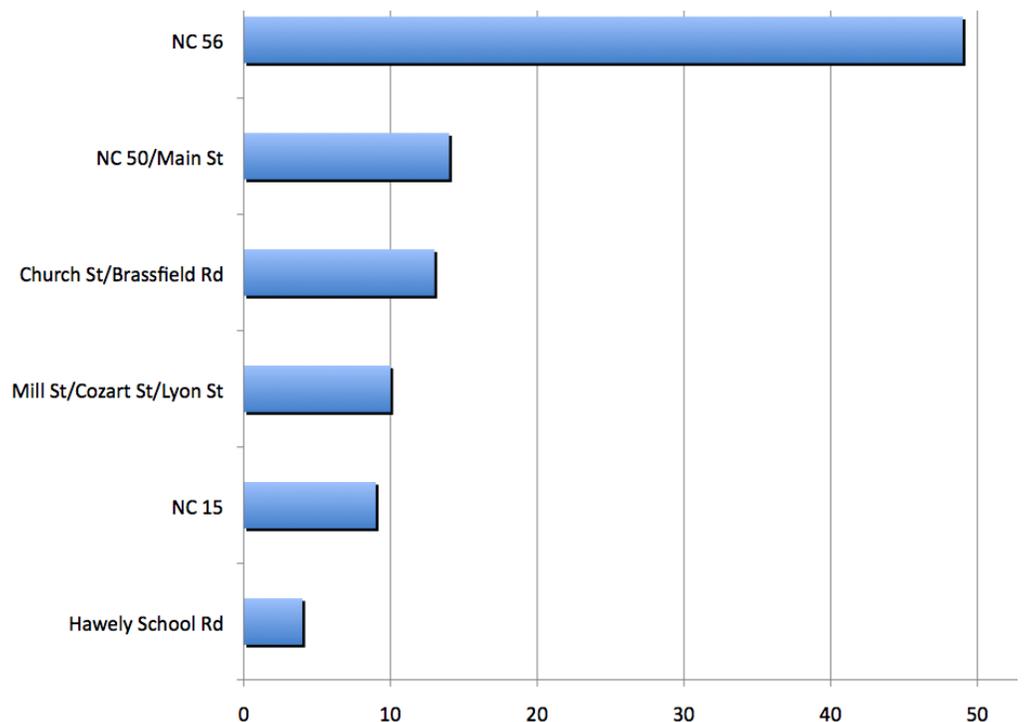
**Do you feel that the City should consider non-automobile transportation (i.e. pedestrian and bicycle) as a priority? (select one)**

		Response Percent	Response Count
Yes		70.4%	50
No		15.5%	11
Doesn't matter		14.1%	10

**Would you walk more often if more sidewalks, trails, and safe roadway crossings were provided for pedestrians?**

		Response Percent	Response Count
Yes		88.6%	62
No		11.4%	8

**What do you think are the top roadway corridors most in need of new sidewalk?**



## SUMMARY OF EXISTING DOCUMENTS

### 2009 Strategic Plan

One idea that came out of this comprehensive growth strategy was to develop a policy or plan to address bicycle and pedestrian needs for the areas near the downtown, schools, and commercial, residential and employment centers.

The following represents some goals of the Strategic Plan that relate to pedestrian planning:

- Encourage development that protects the natural and built environment, and provides for the appropriate location of land uses;
- Develop a comprehensive transportation system that will enhance the mobility of all citizens;
- Provide community facilities and public services that meet the physical, social, and cultural needs of the population and that are available to all residents;
- Develop a mechanism and process that will assure diverse recreational activities and opportunities are available for all residents through new and expanded public parks, new Trails or Greenways (Linear Parks), and within new development projects.
- Develop a long-range plan for the Lake Rogers Park areas. The plan should include a pedestrian connection between the north and south properties that is separated by the lake.
- Continue to pursue the acquisition of the Fontaine development property for a major city park and recreational area.
- Develop a comprehensive Recreation Master plan. This plan would complement the City's Greenway and Pedestrian Plan, identifying future recreational needs and ways to provide a range of recreational opportunities for Creedmoor's citizens.

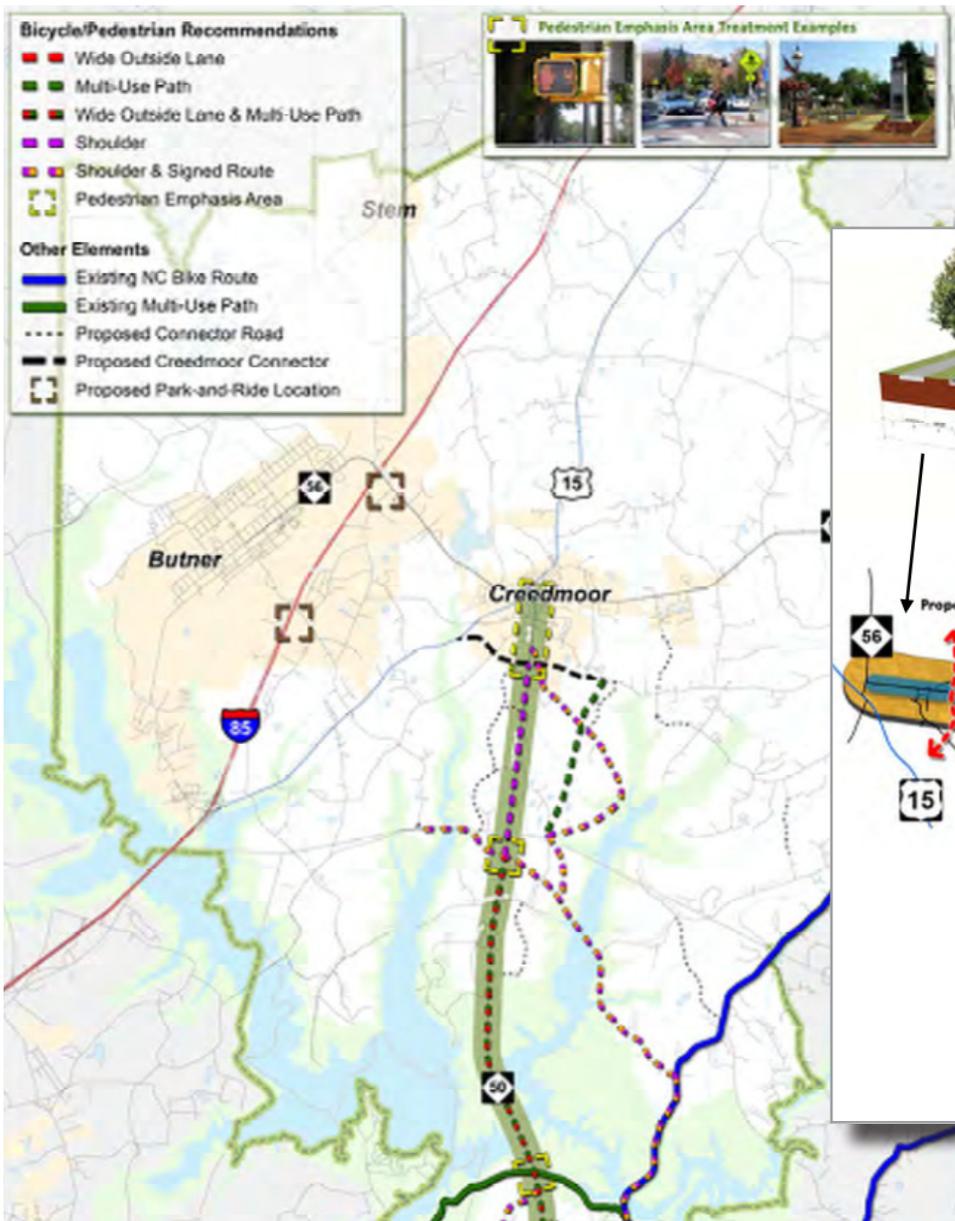
### NC 50 Corridor Study

This 2011 study by the Capital Area Metropolitan Planning Organization analyzes the 15-mile segment of NC 50 between I-540 and NC 56. The Study evaluates the efficiency and effectiveness of the existing NC 50 roadway, determines the long-term vision for the corridor, assesses the impact of the new Falls Lake Watershed requirements on future growth patterns and roadway design, investigates other transportation choices that may be available to reduce reliance on the NC 50 corridor and discusses how proposed improvements to NC 50 could enhance the overall quality of life and economic vitality of the region.

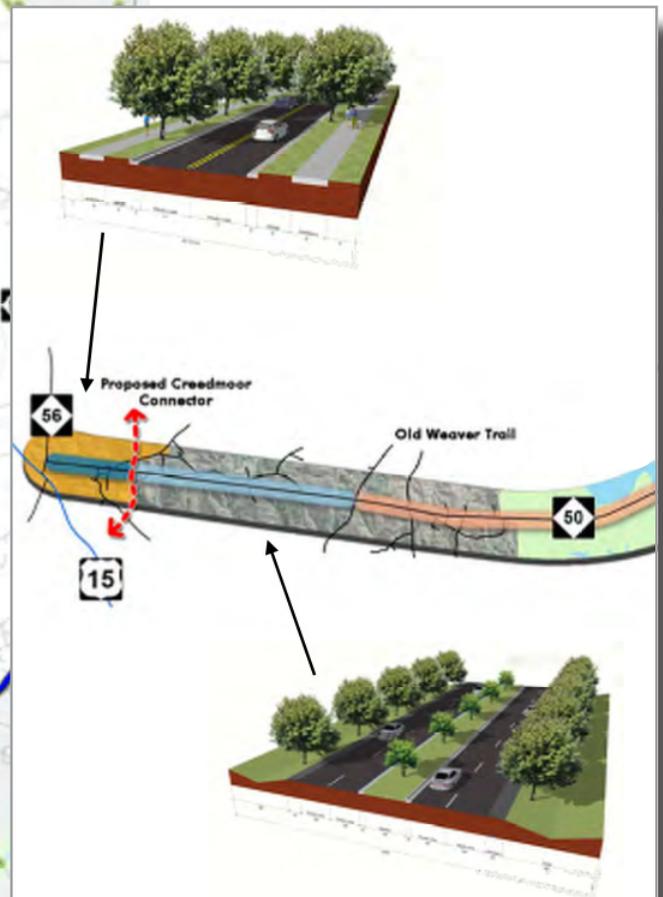
The study contains a *Pedestrian Recommendations* chapter which recommends the following (south to north along the corridor):

- A 10' wide multi-use path along the eastern side of NC 50, between NC 98 and Old Weaver Trail.
- Paved shoulders along NC 50, from Old Weaver Trail north to the future Creedmoor Connector (bottom image below).
- Multi-use path alternative to NC 50, from Old Weaver Trail north into Creedmoor (along a power line easement that roughly parallels NC 50 to the east).
- Sidewalks on both sides of the road from the future Creedmoor Connector to existing sidewalks in downtown Creedmoor (see top image below). The study states, "To enhance the pedestrian experience, these sidewalks should be buffered from traffic by a planting strip."
- Regarding the streetscape along NC 50 in Downtown Creedmoor: "Intersection level improvements, aesthetic enhancements, and sidewalk maintenance will enhance pedestrian travel in this area. Mid-block crossings and treatments should also be considered at appropriate locations."

Below: Map of bicycle and pedestrian recommendations from the NC 50 Corridor Study



Below: Cross section and plan graphics from the NC 50 Corridor Study.



### **Pedestrian–Bicycle–Green Space Plan, 2009**

This Plan was developed by six local governments and four partner organizations in the center of the Triangle Region to help them create a linked network of pedestrian, bicycle, and green space facilities. By coordinating across jurisdictional lines, the plan provides a way for the project partners and other funders to make these investments in an efficient and cost-effective manner, specifically recommending that the NCDOT make suitable accommodations for bicyclists and pedestrians whenever making improvements along the corridors considered as being CORE-wide priorities. Recommendations from the CORE plan were used as one of several starting points for identifying planned trails in this Pedestrian Plan.

### **2035 Joint Long Range Transportation Plan**

This document contains the 2035 Long-Range Transportation Plans (LRTP) for the two organizations charged with transportation decision-making in the Research Triangle Region: the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). The LRTPs are the guiding documents for future investments in roads, transit services, bicycle and pedestrian facilities and related transportation activities and services to match the growth expected in the Research Triangle Region. Projects identified for Creedmoor in the next 15-25 years include the future Creedmoor Connector (connecting US 15 with Brassfield Rd, south of Downtown) and NC 50 (see NC 50 Corridor Study). The LRTP also contains goals and objectives that directly promote pedestrian-friendly and sustainable development. Additionally, sidewalk facilities are programmatically included in the LRTP to enable local governments to access federal funding for their construction.

### **Granville County Comprehensive Transportation Plan, 2008**

The main goal was to examine present and future transportation needs of the county and develop a Comprehensive Transportation Plan to meet these needs. Recommendations were made for each mode of transportation, including these related to bicycle and pedestrian transportation in Creedmoor:

- Develop north-south rail with trail route connecting Oxford to Butner through Creedmoor along Norfolk Southern RR Line. At southwest corner of County (at Falls Lake), branch the trail to connect with planned Durham County trails.
- Develop east-west route connecting Creedmoor to central Butner accessing residential, commercial, and industrial developments.
- Widen NC 56 and provide bicycle/pedestrian accommodations as part of this project.
- Widen US 15 from 2-lane facility to a 3-lane urban section or 4-lane divided boulevard facility with raised median and Ancillary bicycle routes via on-road or off-road accommodations are recommended along US 15 to enhance the county-wide bicycle network.

- NC 50: Widening the current 2-lane facility to a 4-lane divided boulevard facility with median from the Wake County line to the proposed Creedmoor Connector. An ancillary bicycle route accommodation is recommended along NC 50 to enhance the county-wide bicycle network.
- NC 96: Widening the current 2-lane facility to a 4-lane divided boulevard facility with median from I-85 in southern Granville County to Franklin County. Ancillary bicycle routes via on-road or off-road accommodations are recommended along NC 56 to enhance the county-wide bicycle network.
- Brassfield Road: Widening the current 2-lane facility to a 4-lane divided boulevard facility with raised median and bicycle accommodations from the proposed Creedmoor Connector to NC 96. Ancillary bicycle routes via on-road or off-road accommodations are recommended along Brassfield Road to enhance the countywide bicycle network.
- Create a greenway system that connects Creedmoor's parks with other City greenways.

In addition, the Plan recommends that the city require new developments to connect to the parks and trail system. Local trails should also be connected with surrounding communities and the All American Trail.

**Granville County Greenway Master Plan, 2006**

The Granville County Board of Commissioners and the county's municipalities adopted this plan which proposes a total of 22 trails. Key greenway recommended routes that affect Creedmoor are the OxMoore Run, Creedmoor Connection, and Seaboard Trail (G15), On road (NC 50) utility easements (G16), NC 56 greenway (G17), and connection across I-85 from Creedmoor to the Town of Butner (G21).

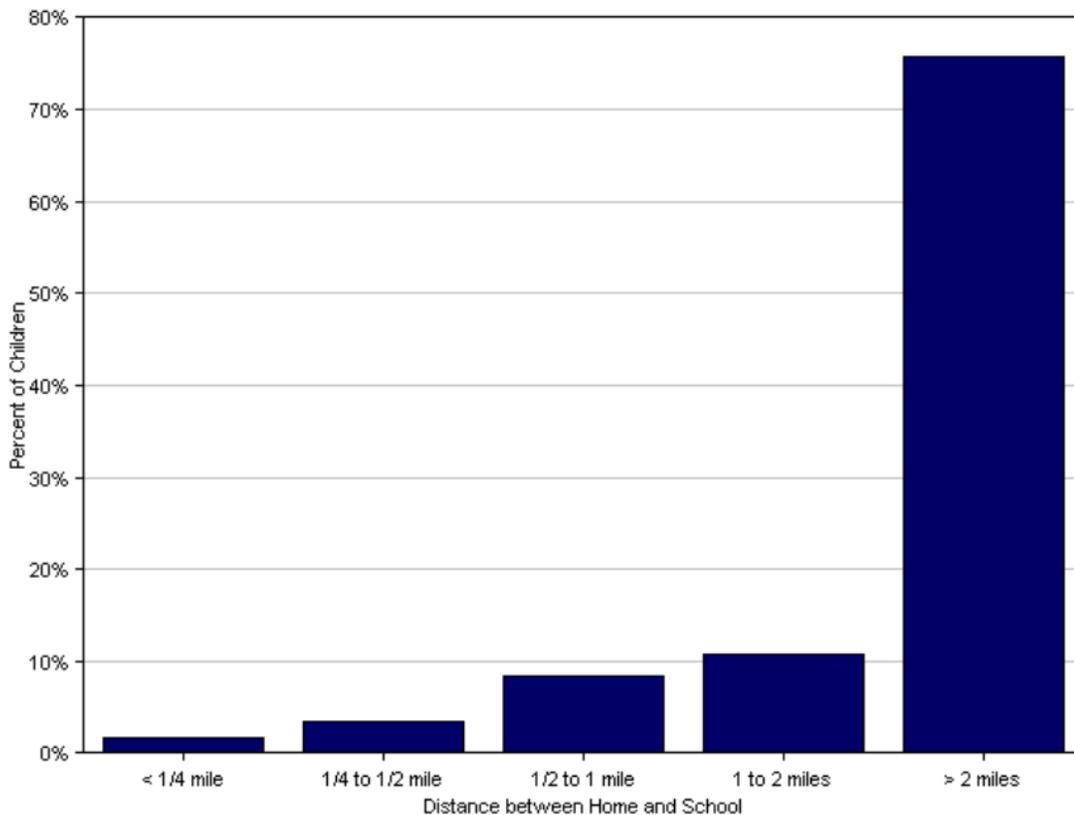
Below: Part of the Granville County Greenway Master Plan.



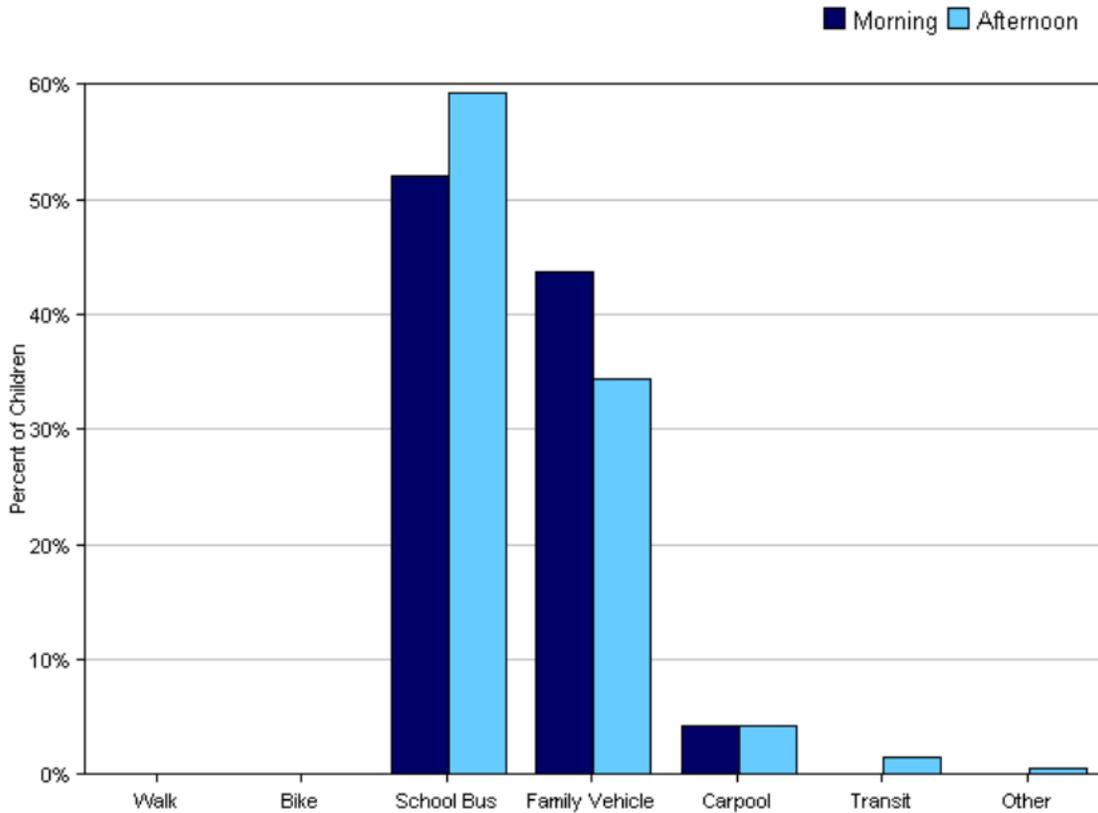
### Safe Routes to School Student Surveys

The following are results from Safe Routes to School surveys and student tallies completed at Creedmoor Elementary School in spring 2011. These survey results illustrates how most elementary school-aged children in Creedmoor live more than two miles from school, and mainly take the bus or a family vehicle to and from school. At the same time, the survey shows that parents recognize the importance of physical activity in the form of bicycling and walking to school. This may indicate a need and/or desire among parents for a program that address the problems of overall distances and routes to school that influence commuting behavior. A program example is a “walking school bus” program, where parents meet with children at a planned location that offers a safe route to walk in supervised groups to and from school. For more on program ideas, see Chapter 4 of this plan.

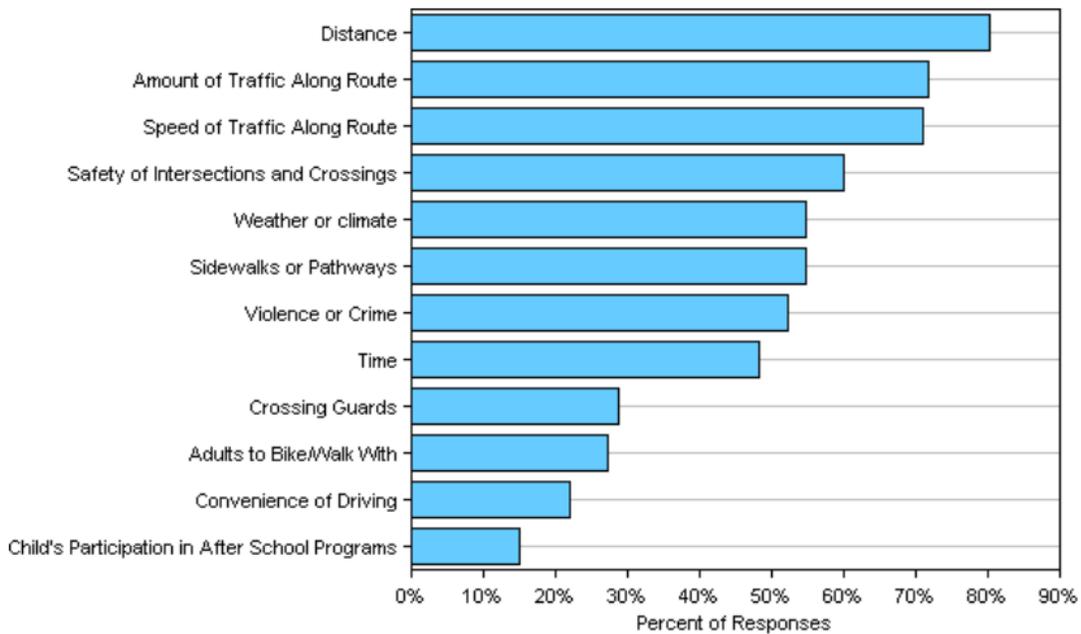
**Parent estimate of distance from child's home to school**



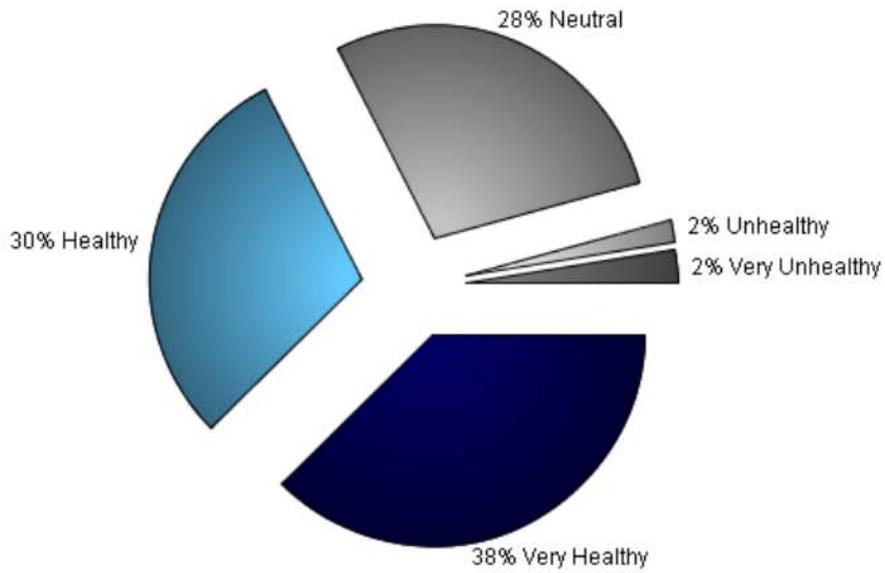
### Typical mode of arrival at and departure from school



### Issues reported to affect the decision to not allow a child to walk or bike to/from school by parents of children who do not walk or bike to/from school



### Parents' opinions about how healthy walking and biking to/from school is for their child





Greenway opportunity in Creedmoor, NC

**CHAPTER OUTLINE:**

- OVERVIEW
- METHODOLOGY
- THE PEDESTRIAN NETWORK
- PROJECT PRIORITIZATION
- INTERSECTION RECOMMENDATIONS

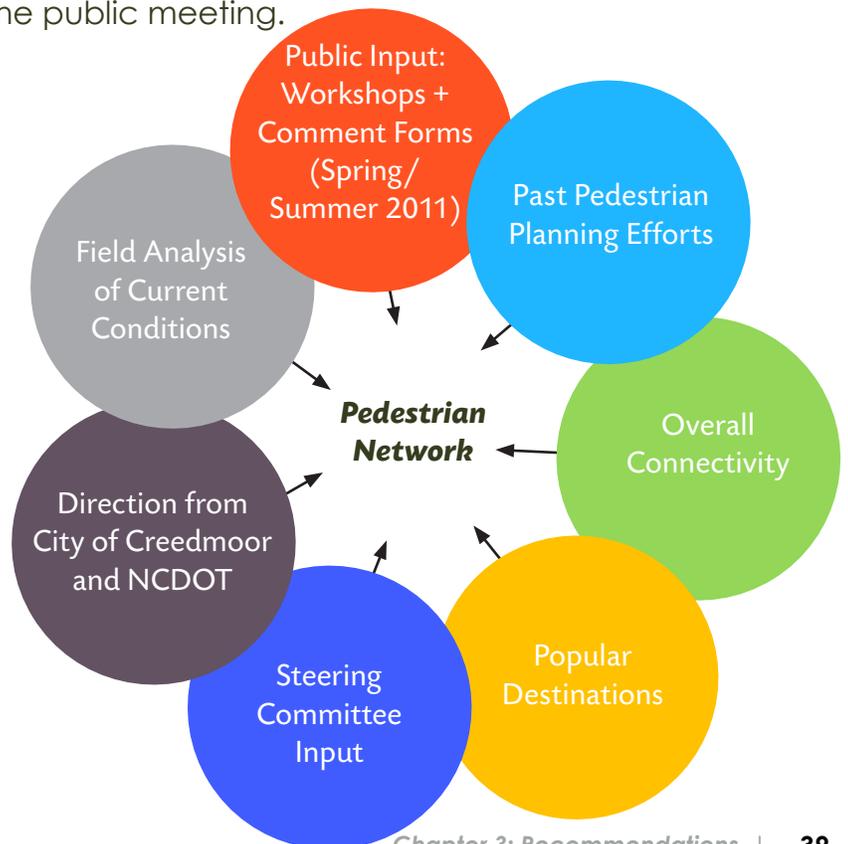
**OVERVIEW**

This chapter contains a series of recommended changes to the City of Creedmoor’s physical environment that will create a safe, accessible, and connected pedestrian network throughout Creedmoor.

**METHODOLOGY**

A variety of sources were consulted during the development of these recommendations: input from the City staff and steering committee, previous plans and studies, maps of existing pedestrian conditions, the consultant’s fieldwork inventory, public input, and noted pedestrian destinations. Fieldwork included an examination of conditions at key roadway crossings, primary roadway corridors, and a consideration of trail opportunities. Map discussion and analysis was conducted at the project steering committee meeting and during the public meeting.

Right: Inputs for Pedestrian Recommendations



## THE PEDESTRIAN NETWORK

Three main types of pedestrian projects have been identified for the City of Creedmoor and are outlined on the following pages. They include sidewalks, multi-use trails (a.k.a, greenway trails and sidepaths), and crossing improvements. Conceptually, these pedestrian recommendations can be seen as a network of 'hubs and spokes', with the core of Creedmoor being the central feature (see right). Residential areas, schools, restaurants, and other places where people might walk to and from are the 'hubs', whereas sidewalks, crosswalks, trails, and other pedestrian facilities are the 'spokes' that connect them.

The complete recommended network of sidewalks, trails, and crossing improvements can be found on Map 3.1.



*The 'hubs and spokes' model conceptually illustrates how destinations in Creedmoor could be linked through various types of pedestrian facilities.*

### SIDEWALKS

The recommended sidewalks aim to expand upon existing sidewalks and provide connectivity to destinations and neighborhoods surrounding downtown. Guidance for the design of sidewalk projects is provided in Chapter 6.

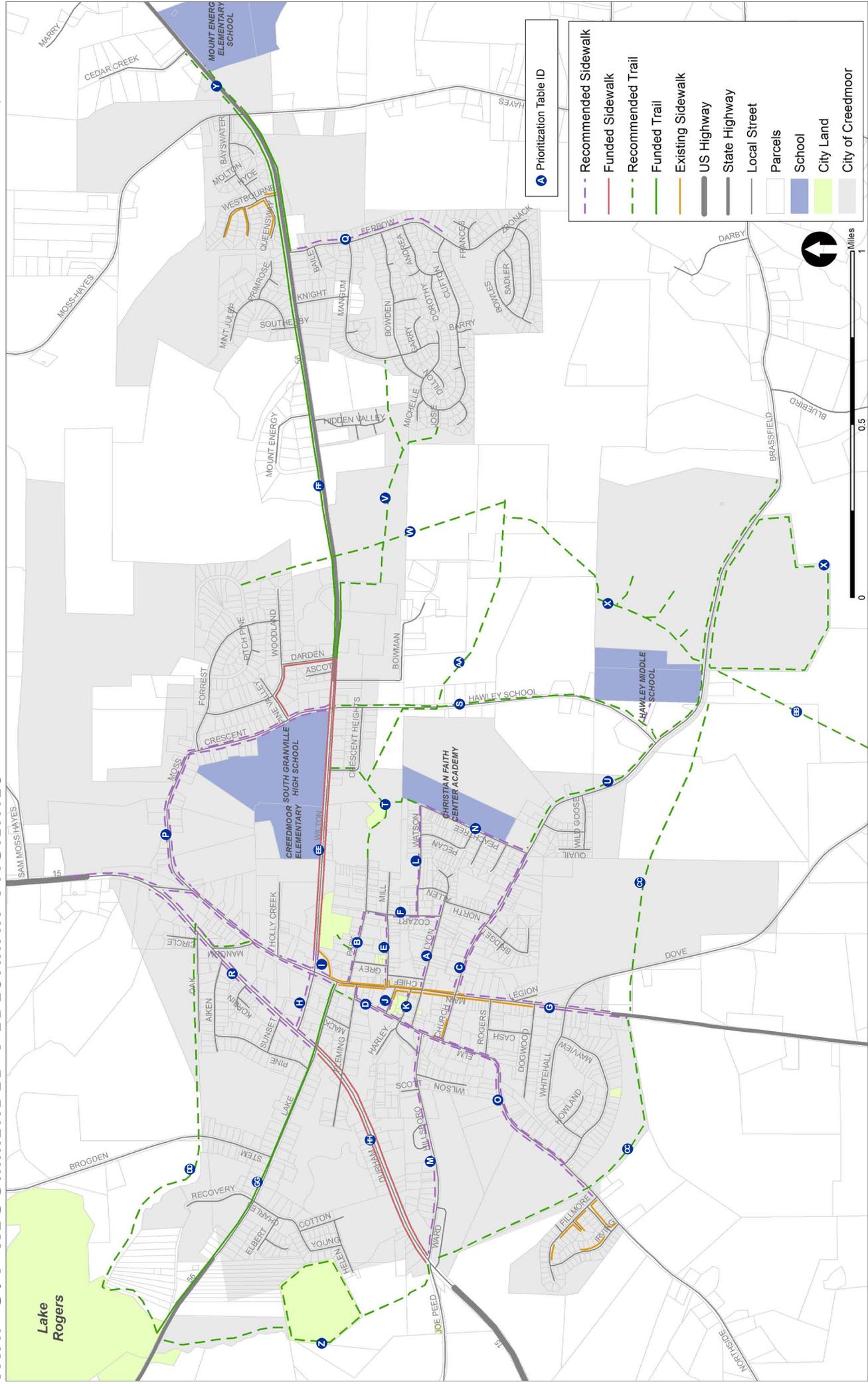
### MULTI-USE TRAILS (A.K.A GREENWAYS)

A greenway is defined as a linear corridor of land that can be either natural, such as rivers and streams, or man-made, such as utility corridors or abandoned railroad beds. Many greenways contain paved or unpaved trails that can be designed to accommodate a variety of trail users, including bicyclists, walkers, hikers, joggers, skaters, horseback riders, and those confined to wheelchairs (hence, the term 'multi-use trail'). Greenway corridors can also serve environmental purposes, protecting forests and water quality, and offering ample opportunities for environmental education. Greenway trails in Creedmoor should be integrated with and serve as an off-road extension of the on-road pedestrian network.

This is a planning level of analysis for trails. Trails can be constructed of natural materials, gravel, crushed stone, asphalt, or concrete, depending on community preference and the type of use expected. Each trail project will also require close coordination with nearby property owners. Design features such as landscaped screening, fencing, and other treatments should be considered to help ensure privacy where desired.

# MAP 3.1 RECOMMENDED PEDESTRIAN FACILITIES

PEDESTRIAN TRANSPORTATION PLAN | CREEDMOOR, NC



## PROJECT PRIORITIZATION

Prioritization requires a combination of objective and subjective inputs. This plan uses the best information available, including input from the Steering Committee, the public, various City departments, and other sources such as the US Census, Granville County schools, and field observations.

Generally speaking, the greater need for improved pedestrian access and mobility is in lower-income areas, higher-density areas, and areas of lower vehicle ownership. In most communities, including Creedmoor, these tend to be areas in which walking is a necessary form of transportation, not simply a recreational or lifestyle preference. The main area of the City where these factors overlap most is in downtown Creedmoor, east of Main Street. These and other factors used for prioritization are described in more detail below.

- *Lower Income & Lower Vehicle Access: US Census data was used to identify areas within Creedmoor with lower average incomes and lower access to vehicles, as compared with the rest of the City.*
- *Higher Density Areas: US Census data was used to identify areas within Creedmoor where a greater number of people would be served by individual projects.*
- *Higher Number of School-Age Children – Granville County Schools provided data to identify the number of school-aged children per street within Creedmoor. Streets with 10 or more students were noted as higher priorities than those with less students.*
- *High Foot Traffic/Safety Issues - Roadways with high foot traffic and/or safety issues were noted by the Creedmoor Police Department and Creedmoor's Urban Design staff.*
- *Top Recommendations from the 2011 Public Comments: After extensive outreach by the Steering Committee, the public comment form for this plan yielded about 70 responses. However, this was not a statistical survey, and is therefore only one of many factors used for prioritization.*
- *Connectivity: Segments that connect to schools, major shopping areas (e.g., downtown and Food Lion), parks, and existing sidewalks were noted as important improvements for overall connectivity.*

**PROJECT PRIORITIZATION** The prioritization of projects in the following table is for general guidance only. The actual order of construction will vary depending on factors that may change over time, such as the availability of funding, changes in site conditions, and local development opportunities.

Map ID	Street Name	From	To	Facility Type	Approximate Length (feet)	Approximate Length (Miles)**	Planning-Level Budget Estimate**	15% Contingency	20% Design Fee	Planning-Level Budget Estimate with Contingency & Design	Lower Income Area (US Census)	Higher Vehicle Access (US Census)	Higher Number of School-Age Children (Graville County Data)	High Foot Traffic/Artery Issue (Observed)	Comments	Connects to School District	Connects to Existing or Future Park	Connects to Existing or Future Shopping	Total Categories Fulfilled
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<b>Downtown Core Projects</b> (likely to be developed with Powell Bill Funds - received from NCDOT annually)																				
A	Lyon Street	NC 50 (Main St)	North Street	Sidewalk	1,390	0.26	\$43,438	\$6,516	\$8,688	\$58,641	✓	✓	✓	✓	✓	✓	✓	✓	✓	8
B	Park Ave	NC 50 (Main St)	Cozart Street	Sidewalk	1,100	0.21	\$34,375	\$5,156	\$6,875	\$46,406	✓	✓	✓	✓	✓	✓	✓	✓	✓	8
C	Church Street	Elm Street	Peachtree Street	Sidewalk	2,000	0.38	\$62,500	\$9,375	\$12,500	\$84,375	✓	✓	✓	✓	✓	✓	✓	✓	✓	7
D	Elm Street	Fleming Street	Church Street	Sidewalk	1,650	0.31	\$51,563	\$7,734	\$10,313	\$69,609	✓	✓	✓	✓	✓	✓	✓	✓	✓	6
E	Mill Street	NC 50 (Main St)	Cozart Street	Sidewalk	1,100	0.21	\$34,375	\$5,156	\$6,875	\$46,406	✓	✓	✓	✓	✓	✓	✓	✓	✓	6
F	Cozart Street	Park Ave	Lyon Street	Sidewalk	1,100	0.21	\$34,375	\$5,156	\$6,875	\$46,406	✓	✓	✓	✓	✓	✓	✓	✓	✓	5
G	NC 50 (Main St)	Dogwood Ave	Whitehall Avenue	Sidewalk	450	0.09	\$14,063	\$2,109	\$2,813	\$18,984	✓	✓	✓	✓	✓	✓	✓	✓	✓	5
H	Wilton Ave	US 15	NC 50 (Main St)	Sidewalk	750	0.14	\$23,438	\$3,516	\$4,688	\$31,641	✓	✓	✓	✓	✓	✓	✓	✓	✓	4
I	NC 50 (Main St)/NC 56 (Wilton Ave)	CVS Entrance on Main St	CVS Entrance on Wilton Ave	Sidewalk	500	0.09	\$15,625	\$2,344	\$3,125	\$21,094	✓	✓	✓	✓	✓	✓	✓	✓	✓	4
J	Masonic Street	Elm Street	NC 50 (Main St)	Sidewalk	125	0.02	\$3,906	\$586	\$781	\$5,273	✓	✓	✓	✓	✓	✓	✓	✓	✓	3
K	Sanderford Street	Elm Street	NC 50 (Main St)	Sidewalk	470	0.09	\$14,688	\$2,203	\$2,938	\$19,828	✓	✓	✓	✓	✓	✓	✓	✓	✓	3
Totals										\$332,344	\$49,852	\$66,469	\$448,664							
<b>Citywide Projects</b> (likely to be developed as part of future Transportation Improvement Program (TIP) - submitted in 3 year periods)																				
L	Watson Street	Cozart Street	Peachtree Street	Sidewalk	1,650	0.31	\$51,563	\$7,734	\$10,313	\$69,609	✓	✓	✓	✓	✓	✓	✓	✓	7	
M	Hillsboro Street	US 15	Elm Street	Sidewalk	3,500	0.66	\$109,375	\$16,406	\$21,875	\$147,656	✓	✓	✓	✓	✓	✓	✓	✓	6	
N	Peachtree Street	Wilton Street	Church Street/Bassfield Road	Sidewalk	1,750	0.33	\$54,688	\$8,203	\$10,938	\$73,828	✓	✓	✓	✓	✓	✓	✓	✓	6	
O	Elm Street	Church Street	Filmore Street	Sidewalk	3,500	0.66	\$109,375	\$16,406	\$21,875	\$147,656	✓	✓	✓	✓	✓	✓	✓	✓	6	
P	School Loop (NC 50 N/Moss/Crescent)**	NC 56 E (at Main Street)	NC 56 E (at Crescent Dr)	Sidewalk	3,700	0.70	\$115,625	\$17,344	\$23,125	\$156,094	✓	✓	✓	✓	✓	✓	✓	✓	5	
Q	Felbow Street	NC 56 E	Clifton Avenue	Sidewalk	2,500	0.47	\$78,125	\$11,719	\$15,625	\$108,469	✓	✓	✓	✓	✓	✓	✓	✓	4	
R	US 15	Northern City Limits	NC 56	Sidewalk	3,000	0.57	\$93,750	\$14,063	\$18,750	\$126,563	✓	✓	✓	✓	✓	✓	✓	✓	4	
Totals										\$612,500	\$91,875	\$122,500	\$826,875							
<b>Multi-Use Trail/Greenway Projects</b> (likely to be developed as part of future development or major roadway construction)****																				
S	Hawley School Road	NC 56 E	Bassfield Road	Multi-Use Trail	5,100	0.97	\$280,500	\$42,075	\$56,100	\$378,675	✓	✓	✓	✓	✓	✓	✓	✓	6	
T	Downtown-High School Trail	Park Ave & Watson Street	Crescent Heights & NC 56 (Wilton Ave)	Multi-Use Trail	1,700	0.32	\$93,500	\$14,025	\$18,700	\$126,225	✓	✓	✓	✓	✓	✓	✓	✓	5	
U	Food Lion-Golden Pond Trail	Peachtree Street	Hawley School Road	Multi-Use Trail	2,650	0.50	\$146,245	\$21,937	\$29,249	\$197,431	✓	✓	✓	✓	✓	✓	✓	✓	5	
V	Food Lion-Fontaine Trail (along powerline)	Darden Drive	Joe's Court & Mangum Ave	Multi-Use Trail	5,500	1.04	\$302,500	\$45,375	\$60,500	\$408,375	✓	✓	✓	✓	✓	✓	✓	✓	5	
W	Food Lion-Fontaine Trail (along powerline)	Woodland Road	Future Pump Station	Multi-Use Trail	4,500	0.85	\$247,500	\$37,125	\$49,500	\$334,125	✓	✓	✓	✓	✓	✓	✓	✓	4	
X	Fontaine Trail Loop (future development)	Future Pump Station	Future Park (south of Brassfield Rd)	Multi-Use Trail	10,000	1.89	\$550,000	\$82,500	\$110,000	\$742,500	✓	✓	✓	✓	✓	✓	✓	✓	4	
Y	NC 56 E	Mass Hayes Rd	Future Park (south of Brassfield Rd)	Multi-Use Trail	1,400	0.27	\$77,000	\$11,550	\$15,400	\$103,950	✓	✓	✓	✓	✓	✓	✓	✓	4	
Z	SW Creedmoor Lake Trail	Lake Rogers	US 15 (at Hillsboro)	Multi-Use Trail	2,000	0.39	\$85,000	\$12,750	\$17,000	\$114,750	✓	✓	✓	✓	✓	✓	✓	✓	3	
AA	Downtown to East Creedmoor Trail	Crescent Heights/Hawley School Rd	Food Lion-Fontaine Trail (along powerline)	Multi-Use Trail	6,000	1.14	\$330,000	\$49,500	\$66,000	\$445,500	✓	✓	✓	✓	✓	✓	✓	✓	2	
BB	Creedmoor Falls Lake Connector Trail	Bassfield Road	Dove Road (along NC 50 Corridor Plan to Falls Lake)	Multi-Use Trail	3,750	0.71	\$206,250	\$30,938	\$41,250	\$278,438	✓	✓	✓	✓	✓	✓	✓	✓	2	
CC	Creedmoor Connector (future hwy)	US 15	Bassfield Road	Multi-Use Trail	10,000	1.89	\$550,000	\$82,500	\$110,000	\$742,500	✓	✓	✓	✓	✓	✓	✓	✓	2	
DD	NW Creedmoor Lake Trail	Lake Rogers	US 15 (at Oak) (including spur at Mangum)	Multi-Use Trail	7,000	1.33	\$385,000	\$57,750	\$77,000	\$519,750	✓	✓	✓	✓	✓	✓	✓	✓	1	
Totals										\$3,553,495	\$533,024	\$710,699	\$4,797,218							

<b>Funded Projects</b> (Already in the Current Transportation Improvement Program (TIP))																				
EE	NC 56 E (Cross City Trail - Phase 1)*	Main Street	Darden Drive	Sidewalk	6,600	1.25	\$500,000			Concession Mitigation & Air Quality Funds										
FF	NC 56 E (Cross City Trail - Phase 2)	Darden Drive	Mass Hayes Rd	Multi-Use Trail	8,575	1.62	\$1,134,590			Concession Mitigation & Air Quality Funds										
GG	Lake Road (Cross City Trail Phase 3)	Main Street	Lake Rogers Park	Multi-Use Trail	5,400	1.02	\$956,685			Concession Mitigation & Air Quality Funds										
HH	US 15	Lake Rogers	Hillsboro St	Sidewalk	8,200	1.53	Funded in TIP			NCOS Bikes/Pedestrian Funds										

\*In order to afford a greater geographical distribution of projects, this priority list assumes sidewalk construction for one side of the street only (in the long-term many streets could be constructed on both sides, particularly if possible during major roadway reconstruction or development).  
 \*\*Planning-level budget estimates only - not including easement acquisitions. The sidewalk cost of \$31.25/LF and the multi-use trail cost of \$55/LF are from projects in North Carolina. A 15% contingency and a 20% design fee was also added into each estimate.  
 \*\*\*Includes short spur of N. Main to US 15.  
 \*\*\*\* Names of trails in this table are for descriptive purposes; actual trail names are to be determined.

\* Includes Darden Drive and parts of Woodland Rd and Pine Valley Dr

### INTERSECTION RECOMMENDATIONS

A variety of improvements are recommended at key crossings in Creedmoor. Some of these treatments have been proven to reduce crashes, as shown in the 2007 FHWA Crash Reduction Factors Study. Typical countermeasures and associated crash reduction factors from that study include installing sidewalk (a 74% crash reduction factor), pedestrian countdown signal heads (25%), pedestrian refuge islands (56%), and improving or installing pedestrian crossings (25%).

**Note: Intersections not listed below should still be improved for pedestrian crossing when sidewalks or trails are built connecting to them. At a minimum, they should include curb ramps and marked crosswalks; signalized intersections should also have pedestrian crossing signals.**

Map ID	Cross-Street 1	Cross-Street 2	Sidewalk Recommended	Advanced Stop Lines (with consideration for sight lines)	Construct (or reconstruct) Curb Ramps	Median Refuge Islands	Curb Extension/Curb Radius Reduction	Restrict Right Turn on Red	High-Visibility Pedestrian Crossing Signs	In-Roadway Pedestrian Crossing Signs	Remove Sight-Distance Obstruction	Details/Recommendation Notes
A	US 15	Hillsboro Street	>	>	>	>	>	>	>	>	>	In the long term, this intersection may be impacted by the west end of the potential future Creedmoor loop.
B	Elm Street	Mayview Drive	>	>	>	>	>	>	>	>	>	This intersection was identified by the Police Department as needing careful planning and design when sidewalks are constructed along Elm Street. Consider pedestrian-activated yellow flashing warning signs for the crossing.
C	US 15*	NC 56 (W. Lake Rd)*	>	>	>	>	>	>	>	>	>	A crosswalk on north side should accommodate the future multi-use trail to Lake Rogers
D	US 15*	NC 56 (Wilton Ave)*	>	>	>	>	>	>	>	>	>	If a roundabout is constructed at this intersection it should be designed for pedestrian safety, including sidewalks, signage, refuge islands, and high-visibility crosswalks.
E	Elm Street	Hillsboro Street	>	>	>	>	>	>	>	>	>	This intersection was identified by the Police Department as a priority for safety improvements.
F	NC 50 (Main St)*	NC 56 (Wilton Ave)*	>	>	>	>	>	>	>	>	>	Crosswalks should connect with the proposed sidewalks on south & west sides.
G	NC 50 (Main St)*	NC 56 (W. Lake Rd)*	>	>	>	>	>	>	>	>	>	This intersection was identified by the Police Department as a priority for safety improvements. A median refuge island or curb extension should be used on the west side.
H	NC 50 (Main St)	Mill Street	>	>	>	>	>	>	>	>	>	This intersection/crosswalk was identified by the Police Department as a priority for safety improvements. The nearby Post Office generates high foot traffic & crossings.
I	NC 50 (Main St)	Lyon Street	>	>	>	>	>	>	>	>	>	This intersection/crosswalk was identified by the Police Department as a priority for safety improvements. Consider curb extensions with tree plantings and landscaping.
J	NC 50 (Main St)	Church Street	>	>	>	>	>	>	>	>	>	Pedestrian signage should move closer to north side of the crosswalk.
K	Crescent Drive	Pine Valley Drive	>	>	>	>	>	>	>	>	>	This intersection was identified by the Police Department as a priority for safety improvements, especially with foot traffic from the nearby schools and shopping center.
L	NC 56 E	Hawley School Road	>	>	>	>	>	>	>	>	>	This intersection was identified by the Police Department as a priority for safety improvements. Crosswalks should connect with proposed sidewalk on west, north & south sides.

**A** Locations of Key Intersection Improvements



\*See the Capital Area MPO Intersection Feasibility & Impact Analyses for more about the short and long-term recommendations for these intersections.



Photo taken in Carrboro, NC

#### CHAPTER OUTLINE:

##### OVERVIEW

##### PROGRAM RECOMMENDATIONS AND RESOURCES

##### EDUCATION

##### ENCOURAGEMENT

##### ENFORCEMENT

##### PEDESTRIAN POLICIES

## OVERVIEW

Meeting the goals of this Plan will not only require new facilities; it also requires implementation of pedestrian-related programs and policies. A comprehensive approach is necessary to create a pedestrian-friendly community. The approach must focus on overall livability and walkability in all planning decisions involving land use, growth, and transportation. Programs that encourage walking, educate about safety, and enforce safe behavior are also key components.

## EXISTING PROGRAMS

Creedmoor has participated in pedestrian education and safety initiatives in the recent past, particularly with involvement in Safe Routes to School programs (see survey results for Safe Routes to School at Creedmoor Elementary in Chapter 2). While the City and its partners have successfully begun pedestrian programming efforts, there is still more that can be accomplished. This chapter provides a toolbox of recommendations and resources for common and effective education, encouragement, and enforcement programs.

## PROGRAM RECOMMENDATIONS AND RESOURCES

Pedestrian-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 walking and active lifestyles in Creedmoor. The City should work closely with local volunteers and community organizations to implement events and activities, research new program ideas, and improve upon existing programs.

## EDUCATION

### ***PUBLIC EDUCATION AND EDUCATIONAL DEVICES***

Creedmoor could develop a variety of safety materials and distribute them throughout the community. Educational materials focus on safe behaviors, rules, and responsibilities. Information may include bulleted keys for safe pedestrian travel and habits, safe motor vehicle operation around pedestrians, 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.walkinginfo.org](http://www.walkinginfo.org). Information can 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 programs such as walk to work day, walking school bus demonstrations, and summer camps can be organized by the City and can be utilized to distribute information using a booth to display related print media.

### ***BICYCLE AND PEDESTRIAN ADVOCACY GROUP***

The City of Creedmoor should support the creation of a local bicycle and pedestrian advocacy group. Even though this is a pedestrian plan, the needs and objectives of bicycle and pedestrian advocates are closely related, and stand to benefit mutually from their combined efforts. Local advocacy groups are beneficial resources for promoting safety, providing feedback on opportunities and obstacles within the bicycle and pedestrian system, and coordinating events and outreach campaigns (such as the programs outlined throughout this section). Advocacy groups also play a critical role in encouraging and evaluating the progress of overall plan implementation.

## INTERNAL EDUCATION

'Internal' education refers to the training of people who are involved in the actual implementation of the Pedestrian Plan. Key City staff, members of the local planning board, MPO,

NCDOT Division staff, and Granville County staffs should all be included in training sessions whenever possible. This training could cover 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 and attendance at special sessions or conferences. Even simple meetings to go over the Pedestrian 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. Guidance and materials for internal education methods is available from the NCDOT Bicycle and Pedestrian Division and the Institute for Transportation Research and Education (ITRE).

Below are several training course examples:

[www.michaelronkin.com/courses](http://www.michaelronkin.com/courses)

[www.pps.org/training/custom-tailored-training/](http://www.pps.org/training/custom-tailored-training/)

[www.fhwa.dot.gov/context/trainingguide/ExistingClasses.htm](http://www.fhwa.dot.gov/context/trainingguide/ExistingClasses.htm)

## **COORDINATED CAMPAIGNS**

Through cooperation with NCDOT, local municipalities and organizations should provide strong education, encouragement, and enforcement campaigns whenever a major bicycle and/or pedestrian improvement occurs. When a major improvement is made, the roadway environment changes and proper interaction between all users is critical for overall safety. This type of outreach could take place through the local media outlets, on-site, or at special events.

## **ADULT EDUCATION**

Education should span all age groups. Local agencies could partner and consider adding or expanding the following educational program/event offerings:

- Parent courses for Walking School Buses
- Walkability workshops
- Crossing guard programs
- Pedestrian ambassador programs
- Brown bag events and clinics
- Motorist education
- Educational devices (campaigns, billboards, postcards, local television)

## ENVIRONMENTAL AND HISTORIC EDUCATION/ INTERPRETATION

Educational programs and interpretative signage could be developed along future trails and pedestrian routes. Greenway trails provide opportunities for learning outside the classroom. Specific programs that focus on water quality and animal habitat are popular examples. Events such as learning walks about specific animals or insects, tree identification, wildflower walks, environmental issues, stewardship education, and sustainability could be led by area experts. Also, simple educational signage would offer interactive learning opportunities for people who use the trail.



These signage examples provided and designed by Cloud Gehshan Associates at [www.cloudgehshan.com](http://www.cloudgehshan.com).



## INTERPRETIVE TRAILS/GUIDED TOURS

An educational component to the pedestrian network could be added by developing historical, cultural, and environmental themes for the facilities. This idea can be adapted to create walking tours throughout City, using signage to identify the events, architecture, and culture that make Creedmoor unique, such as historic sites that are listed on the National Registry of Historic Places. These tours should be simple to navigate and should stand alone as an amenity. However, brochures can be used to supplement signage with more detailed information and a map of the tour.

## EDUCATION RESOURCES

America Walks is a national coalition of local advocacy groups dedicated to promoting walkable communities. Their mission is to foster the development of community-based pedestrian advocacy groups, to educate the public about the benefits of walking, and, when appropriate, to act as a collective voice for walking advocates. They provide a support network for local pedestrian advocacy groups. (<http://americawalks.org>)

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>)

Stepping Out is an online resource for mature adults to learn about ways to be healthy by walking more often, and walking safely. [www.nhtsa.dot.gov/people/injury/olddrive/SteppingOut/index.html](http://www.nhtsa.dot.gov/people/injury/olddrive/SteppingOut/index.html)

'Pedestrian Fatalities Related to School Travel' is a fact sheet pertaining to school age children (NHTSA). <http://www.nhtsa.gov/gtss/kit/pedestrian.html>

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.safekids.org/>



Speed Campaign Tool Kit. The intent of this National Highway Traffic Safety Administration (NHTSA) tool kit is to provide marketing materials, media tools, and marketing ideas for communities to distribute to fit local needs and objectives while at the same time partnering with other states, communities, and organizations all across the country on a speed management program. It includes messaging and templates you may choose from to support your speed management initiatives. Free TV and radio materials, posters, billboards, and other media materials can be downloaded here: <http://www.nhtsa.gov/speed/toolkit/index.cfm>.





Rules of the Road for Grandchildren: Safety Tips is an information website for grand parenting. 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>



‘Streets in America are Unsafe and Unforgiving for Kids’. Article by the Pedestrian Safety Roadshow. U.S. Department of Transportation. Federal Highway Administration.

<http://www.fhrc.gov/safety/pedbike/articles/unsafe.htm>

‘Focusing on the Child Pedestrian.’ Pedestrian information related to children from the FHWA. <http://safety.fhwa.dot.gov/roaduser/pdf/PedFacts.pdf>



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/>

## WEBLINKS & RESOURCES

The NCDOT Division of Bicycle and Pedestrian Transportation has an extensive selection of how-to manuals, informative guidebooks, and kits that provide comprehensive information on a variety of topics. These educational materials may be used by the general public, event organizers, teachers, or others. All are downloadable in PDF version. Manuals and guidebooks that are available in hard copy may be requested through the Safety Materials Order Form: [www.ncdot.gov/bikeped/safetyeducation/manuals/](http://www.ncdot.gov/bikeped/safetyeducation/manuals/) or [www.ncdot.org/transit/bicycle/](http://www.ncdot.org/transit/bicycle/)

For more information and program examples, visit the following websites:

- [www.pedbikeinfo.org](http://www.pedbikeinfo.org) (Pedestrian and Bicycle Information Center)
- [www.bicyclinginfo.org](http://www.bicyclinginfo.org) (Pedestrian and Bicycle Information Center)
- [www.bikewalk.org/workshops](http://www.bikewalk.org/workshops) (National Center for Bicycling and Walking)
- [www.saferoutesinfo.org](http://www.saferoutesinfo.org) (Safe Routes to School)
- [www.activelivingresources.org/stories\\_directory.php](http://www.activelivingresources.org/stories_directory.php) (Active Living Resource Center)
- [www.active-living.org](http://www.active-living.org) (Spartanburg, SC - Partners for Active Living).
- [www.campo-nc.us/BPSG/BPSG\\_Home.htm](http://www.campo-nc.us/BPSG/BPSG_Home.htm) (Capital Area MPO)
- [www.smartcommutechallenge.org](http://www.smartcommutechallenge.org) (Triangle Area - Smart Commute Challenge)

- [www.usa.safekids.org](http://www.usa.safekids.org) (Safe Kids Worldwide)
- [www.eatsmartmovemorenc.com](http://www.eatsmartmovemorenc.com) (Eat Smart, Move More)
- [www.worldcarfree.net](http://www.worldcarfree.net) (Worldcarfree)
- [www.nhtsa.dot.gov/people/injury/pedbimot/bike/resourceguide/index.html](http://www.nhtsa.dot.gov/people/injury/pedbimot/bike/resourceguide/index.html)
- (National Highway Traffic Safety Administration: Resource Guide on Laws Related to Pedestrian and Bicycle Safety)

## ENCOURAGEMENT

### SCHOOL PROGRAMS

Many programs focus on developing safer pedestrian facilities around schools. Programs can be adopted by parents and schools to provide initiatives for walking.

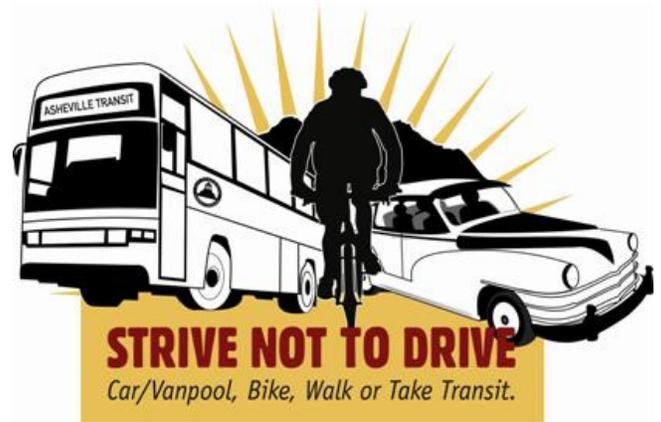
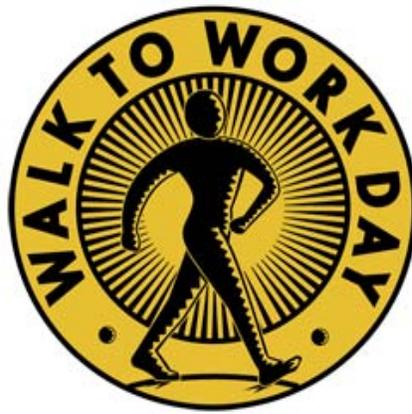
Community leaders, parents and schools across the U.S. are using Safe Routes to School programs to encourage and enable more children to safely walk and bike to school. The National Center for Safe Routes to School aims to assist these communities in developing successful Safe Routes programs and strategies. The Center offers a centralized resource of information on how to start and sustain a Safe Routes to School program, case studies of successful programs as well as many other resources for training and technical assistance. For more information on Safe Routes to School, refer to the 'Encouragement Resources' section on page 50.

### 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 serve as excellent opportunities to include pedestrian information distribution. The following are examples of other national events that can be used to increase use of pedestrian facilities:

#### **WALK TO WORK DAY/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. Walk to Work Day can be at the end of an entire week or month of pedestrian promotional activities, including fitness expos, walking and jogging group activities, running and bicycling races and rides, etc.



**“STRIVE NOT TO DRIVE DAY”**

This event example, from the Town of Black Mountain, NC, 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 could be held in Creedmoor as the Pedestrian 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 trails in Creedmoor.

**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 walking to destinations and staying out of their vehicles. This provides an excellent opportunity to educate people of all ages.

**USE FACILITIES TO PROMOTE OTHER CAUSES**



Pedestrian facilities, especially trails, 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 pedestrian activities. Non-profit organizations such as the American Cancer Society, American Heart Association, and the Red Cross sponsor events such as Breast Cancer Walk, Diabetes Walk, etc.

## **PEDESTRIAN ACTIVITIES/ PROMOTION WITHIN LOCAL ORGANIZATIONS**

The City of Creedmoor has numerous organizations that could help to promote pedestrian activities (e.g. the local Chamber of Commerce, local schools/PTAs, etc). Education, enforcement, and encouragement programs can be advertised and discussed in local organization newsletters, seminars, and meetings. Such organizations could even organize their own group walks, trail clean-ups, and other activities listed in this section.

### **WALKING/RUNNING CLUBS**

Neighborhoods, local groups, or businesses could promote walking or running clubs for local residents or employees to meet at a designated area and exercise on certain days before or after 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. Examples include:

- Relay for Life (American Cancer Society support)
- Mother's Morning Club (mom's with strollers)
- Walking Wednesdays (senior groups)
- Lunch Bunch (workers who run during their lunch hour)

### **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 EVENTS**

Creedmoor should consider holding events that can help fund future facilities. Program and event ideas that could be used to generate revenue in Creedmoor, include:

- Races/triathlons (fees and/or donations)
- Educational walks/Nature walks/Historic walks (fees and/or donations)
- Fund-raisers including dinners/galas
- Concerts (fees and/or donations)
- Events coinciding with other local events such as fairs, festivals, historic/folk events, etc.



## ENCOURAGEMENT RESOURCES



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 funding for infrastructure improvements within two miles of schools. 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. [www.saferoutesinfo.org](http://www.saferoutesinfo.org)

National Walk our Children to School Day is usually held in October with the objective to encourage adults to teach children to practice safe pedestrian behavior, to identify safe routes to school, and to remind everyone of the health benefits of walking. To register walking events, go to the main webpage, and follow the International Walk to School links: [www.walktoschool-usa.org](http://www.walktoschool-usa.org)

Walk a Child to School in North Carolina. A growing number of community groups throughout the nation, such as health professionals, 'Smart Growth' advocates, traffic safety groups, local PTAs, and elected officials, are promoting walking to school initiatives. In North Carolina, Walk a Child to School Programs have gained a foothold and are growing each year. To date more than 5,000 students in 12 communities in the state have participated. <http://www.walktoschool.org>

'Preventing Pedestrian Crashes: Preschool/Elementary School Children' provides information to parents on pedestrian risks for preschool and elementary school children. Information about the Safe and Sober Campaign is available on the NHTSA website. [www.nhtsa.dot.gov/people/outreach/safesobr/15qp/web/sbprevent.html](http://www.nhtsa.dot.gov/people/outreach/safesobr/15qp/web/sbprevent.html)

Kidswalk-to-School is a resource guide to help communities develop and implement a year-long walk-to-school initiative; sponsored by the Centers for Disease Control and Prevention. <http://www.cdc.gov/nccdphp/dnpa/kidswalk/>

## ENFORCEMENT

### MOTORIST ENFORCEMENT

Based on observed patterns of behavior, local police can use targeted enforcement to focus on key issues such as motorists speeding, not yielding to pedestrians in crosswalks, parking on sidewalks, etc. The goal is for pedestrians and motorists to recognize and respect each other's rights on the roadway.

The NCDOT Division of Bicycle and Pedestrian Transportation funded a study on pedestrian issues, including school zone safety, and decided to establish a consistent training program for law enforcement officers responsible for school crossing guards. According to the office of the North Carolina Attorney General, school crossing guards may be considered traffic control officers when proper training is provided as specified in G.S. 20-114.1.

### ENFORCEMENT ACTIONS

- Local police should use targeted enforcement to focus on key issues such as motorists speeding, not yielding to pedestrians in crosswalks, parking on sidewalks, etc.
- Establish a crossing guard program for peak school hours and for peak pedestrian activity
- Require crossing guards to complete an NCDOT Crossing Guard Training Program.

### ENFORCEMENT RESOURCES

- NCDOT School Crossing Guard Program: [www.ncdot.org/transit/bicycle/safety/programs\\_initiatives/crossing.html](http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/crossing.html)
- NCDOT's A Guide to North Carolina Bicycle and Pedestrian Laws. For an online resource guide on laws related to pedestrian and bicycle safety (provided by the National Highway Traffic Safety Administration), visit [www.nhtsa.dot.gov/people/injury/pedbimot/bike/resourceguide/index.html](http://www.nhtsa.dot.gov/people/injury/pedbimot/bike/resourceguide/index.html)

## PEDESTRIAN POLICIES

City planning staff should become familiar with (and, in many cases, continue to support) the following policies and regulations. Walkability should be an item considered with all future development and growth decisions. More people will walk when their proximity to key destinations is reasonable. For example, a mixed use development will engage more walking

while the development of a school at the outskirts of town will promote less walking and more driving. Suggested policy statements and paragraphs by category are provided below, and notes are made where such policies are already included in the City's draft Comprehensive Development Ordinance.

## **COMPLETE STREETS**

Goal: Adopt a "Complete Streets" approach and philosophy that all streets and development on streets be designed and operated to enable safe access for all users, ages, and abilities.

- Ensure that transportation agencies, planners, engineers, and developers design and operate the entire right of way to enable safe access for all users including transit users, drivers, pedestrians, bicyclists, as well as for older people, children, and people with disabilities.
- Educate leaders, business owners, residents, and all stakeholders of the benefits of Complete Streets including: livability, safety, increased social interaction, increased economic activity, attractiveness, healthier living, less pollution, and increased access.
- Follow NCDOT's Complete Streets Policy, Implementation and Design Guideline development (under development in 2011). The City should ensure that these practices are followed and that local NCDOT Division staff are aware of these new guidelines.

## **PEDESTRIAN NETWORK AND CONNECTIVITY**

Goal: Create and maintain a pedestrian network that provides direct connections between downtown, trip attractors, schools, and residential/commercial areas. Several of the items below are already included in the City's draft Comprehensive Development Ordinance:

- To the maximum extent possible, make walkways accessible to people with physical disabilities.
- Develop a system of informational and directional signage for pedestrian facilities and greenways.
- Provide sidewalks on all roads surrounding schools with safe crosswalks.
- Provide pedestrian access through cul-de-sacs and large parking lots, which are typical obstacles to pedestrian connectivity.

- Accommodate pedestrians and bicyclists on future 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). New bridges should be constructed with bicycle lanes and wide sidewalks.

## SAFETY

Goal: Strive to maintain a complete, safe sidewalk network free of broken or missing sidewalks, curb cuts, or curb ramps and that include safety features such as traffic calming, lighting, and sidewalk repairs.

- Provide raised medians or pedestrian refuge islands where practical, at crosswalks on streets with more than three lanes, especially on streets with high volumes of traffic. They should be six- to ten-feet wide.
- Monitor and identify pedestrian facilities that are not ADA-compliant including missing, damaged, or non-compliant curb ramps, stairs, or sidewalk segments of inadequate width and create a plan for improving them.
- Develop a traffic calming program to slow traffic through downtown and on major residential corridors, making them aware that they share the corridors with pedestrians.
- Make pedestrian crossings a priority and initiate improvements recommended in Chapter 3. Consider variations in pavement texture and clear delineation of crosswalks. Also, ensure that crosswalks are properly lit at night.
- Implement pedestrian-scale lighting at regular intervals in areas of high pedestrian activity to promote pedestrian safety and discourage criminal activity (included in the City's draft Comprehensive Development Ordinance).
- Develop and expand the City's maintenance program of sidewalk repairs, debris removal, and trimming of encroaching vegetation.
- Follow design guidelines in Chapter 6 to the maximum extent possible. For example, the buffer space between the sidewalk and the curb and gutter should be maximized within the available right-of-way.

## **AESTHETICS, COMFORT AND ENJOYMENT**

Goal: Encourage the inclusion of art, historic, and nature elements along with street furniture and landscaping in pedestrian improvement projects. Most of the items below are included in the City's draft Comprehensive Development Ordinance:

- Require street trees and planting buffers between the sidewalk and the street along all new roadways and sidewalk construction. Keep all vegetation trimmed.
- Encourage and/or require private owners (of residences and businesses) to keep their area in and around the sidewalk free of debris and litter.
- Require benches, shelters, sheltered transit stops, trees, and other features to facilitate the convenience and comfort of pedestrians.

## **LAND USE AND DEVELOPMENT**

Goal: Promote land uses and site designs that make walking convenient, safe, and enjoyable. All of the items below are included in the City's draft Comprehensive Development Ordinance:

- Encourage a mix of uses through building, zoning, and development codes to connect entrances and exits to sidewalks, and eliminate "blank walls" to promote street level activity.
- Sidewalks should have a minimum width of five feet but should be wider where pedestrian traffic is higher, including near schools, senior centers, and commercial areas or where sidewalks connect or overlap with recommended on-road greenway connections.
- Require applicable buildings to build to the sidewalk. Also, prohibit parking lots from being developed in front of buildings where possible to develop pedestrian oriented areas.
- Promote parking and development policies that encourage multiple destinations within an area to be connected by pedestrian trips. Specifically, promote the connectivity of parking lots between businesses for increased safety and avoidance of roadway traffic.

- Disallow parked vehicles from blocking pedestrian walkways.

## GREENWAYS

Goal: Establish greenways as part of the City of Creedmoor's public infrastructure. All of the items below are included in the City's draft Comprehensive Development Ordinance:

- Define 'Greenways' as part of the City of Creedmoor's public infrastructure. Greenways are public infrastructure that provide important functions to not only offer transportation alternatives, but to protect public health safety and welfare. Within flood prone landscapes, greenways offer the highest and best use of floodplain land, mitigate the impacts from frequent flooding and offer public utility agencies access to floodplains for inspection, monitoring and management. Greenways filter pollutants from stormwater and provide an essential habitat for native vegetation that serves to cleanse water of sediment. Greenway trails provide viable routes of travel for cyclists and pedestrians and serve as alternative transportation corridors for urban and suburban commuters. Greenways serve the health and wellness needs of our community, providing close-to-home and close-to-work access to quality outdoor environments where residents can participate in doctor prescribed or self-initiated health and wellness programs. All of these functions make greenways a vital part of community infrastructure.
- Require subdividers to provide natural buffers along both sides of all perennial streams. Public greenway trails with limited disturbance along perennial and intermittent streams are excellent uses for these spaces and should be dedicated during the subdivision process.
- Encourage utility corridor development practices that allow for maximum compatibility with pedestrian and bikeway corridors. Land and easements purchased for the purpose of providing utilities (such as water and sewer) can serve a greater community benefit if developed to accommodate a multi-use trail.



Creedmoor, NC

# IMPLEMENTATION

**CHAPTER OUTLINE:**

**OVERVIEW**

**KEY ACTION STEPS**

- 1) *Adopt this Plan*
- 2) *Begin Top Priority Projects*
- 3) *Continue to Enforce City Regulations*
- 4) *Create a Bicycle and Pedestrian Advocacy Group*
- 5) *Take Advantage of All Opportunities*
- 6) *Seek Multiple Funding Sources and Facility Development Options*
- 7) *Develop Pedestrian Programming*
- 8) *Ensure Planning Efforts Are Integrated Regionally*

**STAFFING**

**PERFORMANCE MEASURES (EVALUATION AND MONITORING)**

**PEDESTRIAN FACILITY DEVELOPMENT**

**GREENWAY ACQUISITION**

**ACTION STEPS TABLE**

**OVERVIEW**

The primary barrier to pedestrian facilities in Creedmoor—such as sidewalks, safe intersections, and greenways—is funding. Creedmoor is a relatively small town with a small tax base. This financial barrier is precisely the rationale in identifying the wide variety of projects, programs, and policies featured in the last two chapters. The City can use these recommendations to select pedestrian improvements that match available resources and planned development at any given year going forward.

Successful implementation will require the dedication of City staff, the creation of a Bicycle and Pedestrian Committee, and the continued support of local advocates. This chapter will serve as a simple guide with key action steps, staffing recommendations, an evaluation and monitoring process, methods of pedestrian facility development and greenway acquisition.

**KEY ACTION STEPS**

These following steps 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. With the exception of the first step, there is no particular order in which these should be addressed. For additional action steps, see the table at the end of this chapter.

**ADOPT THIS PLAN.**

Through adoption, the Plan becomes an official planning document of the City. Adoption shows that the City of Creedmoor has undergone a successful, supported planning process. The City can then use this document to improve it's

chances in receiving funding through NCDOT and other outside resources. The City BOC and Planning Board should become knowledgeable of this Plan and support pedestrian-related policies. Finally, this Plan should also be integrated into future City of Creedmoor planning documents.

### ***BEGIN TOP PRIORITY PROJECTS.***

Steering Committee input, public input, and criteria such as sidewalk gap closure and proximity to schools and other trip attractors were used to develop the priority projects (see Chapter 3). These projects should be supported by a combination of grants, local funding, and state funding.

### ***CONTINUE TO ENFORCE CITY REGULATIONS.***

Enforcement of existing city regulations is at an all time high. Also, as of 2011, the City is developing a new Comprehensive Development Ordinance. Many of the suggested policies in this plan (chapter 4) are already included in the draft ordinance. To ensure future development provides pedestrian facilities and improves pedestrian friendliness, such policies should be included and adopted.

### ***CREATE A BICYCLE AND PEDESTRIAN ADVOCACY GROUP.***

Many communities across the State have committees or groups who advocate for the needs of local bicyclists and pedestrians. The City of Creedmoor should create an advocacy group committee to embrace an advocacy role for bicycle and pedestrian issues. The committee should help coordinate the implementation of this Plan, develop programs, listen to community needs, promote the pedestrian network, and keep positive momentum going. Consider planning board members, City staff, Pedestrian Plan Steering Committee members, and Granville County representatives for advocacy group members. There are a few optional structures for this group:

- A City-appointed group/committee that reports to the City transportation planner or designated staff person
- A standalone advocacy group that provides support to the City and community
- A subcommittee of the City Planning Board

The committee can also help monitor the progress of the City and NCDOT as they develop new facilities and programs. This group can assist in researching and applying for trail and pedestrian-related construction grants. Coordination with NCDOT, specifically the Division of Bicycle and Pedestrian Transportation and the local Division 5 office, will prove critical if this plan is to be implemented successfully.

**TAKE ADVANTAGE OF ALL OPPORTUNITIES.**

Some of the most cost-effective opportunities to provide pedestrian facilities are during routine roadway construction, reconstruction, and repaving projects. A new commercial development or a roadway widening project, for instance, would provide the means to stripe crosswalks, build sidewalks or trails as a component of an existing effort, saving costs.

**SEEK MULTIPLE FUNDING SOURCES AND FACILITY DEVELOPMENT OPTIONS.**

Multiple approaches should be taken to support pedestrian facility development and programming. It is important to secure the funding necessary to undertake short-term, priority projects but also to develop a long term funding strategy to allow continued development of the overall system. Capital and Powell Bill funds for sidewalk, crosswalk, and greenway 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). A variety of local, state, and federal options and sources exist and should be pursued. These funding options are described in Appendix B of this plan. Other methods of pedestrian facility development and greenway acquisition that are efficient and cost-effective are described later in this chapter.

**DEVELOP PEDESTRIAN PROGRAMMING.**

Programs such as Safe Routes to School and others described in Chapter 4 can help educate and encourage users. Safe Routes to School offers a number of school workshop opportunities and construction funding for improvements around schools. Public events and media involvement should occur when announcing new walkways and projects.

**ENSURE PLANNING EFFORTS ARE INTEGRATED REGIONALLY.**

Combining resources and efforts for pedestrian planning and trail planning with surrounding municipalities, regional entities, and stakeholders is mutually beneficial to all parties involved. Regional, long-distance trails often spark the most excitement, use, and tourism. The City should remain coordinated with Granville County and neighboring municipalities on regional trail initiatives. It is important to stay aware and communicative with other municipal, county, state, and NCDOT efforts to ensure the City takes advantage of funding opportunities and support. A Bicycle and Pedestrian Sub-Committee member, for example, could have the responsibility of staying in tune and updating the City on regional trail initiatives.

After adoption by the City, the City should ensure that this document is recognized by regional transportation planning agencies, such as NCDOT Division 5, and the MPO. The plan's recommendations should be programmed into the official work schedule and planning of these organizations.

## **STAFFING**

### **CITY OF CREEDMOOR**

The City's Transportation Projects Manager, Planning Director, and City Manager are responsible for leading the implementation of this plan. The City will continue to spearhead initiatives to manifest tangible, on the ground results, based on the recommendations of this plan.

### **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

NCDOT Division 5 maintains the state-owned roads in Creedmoor, affecting the pedestrian facilities (or lack thereof) on much of Creedmoor's roadway environment. Recommendations for pedestrian facilities on NCDOT roads will have to be carried out through a coordinated effort between the City of Creedmoor and NCDOT Division 5. Some technical assistance could also be provided through NCDOT's Division of Bicycle and Pedestrian Transportation (the City should be proactive in seeking such assistance, and should refer the departments back to this plan whenever possible).

### **POLICE DEPARTMENT**

The Creedmoor Police Department plays a vital role in pedestrian safety. All local police officers should be knowledgeable about North Carolina's pedestrian laws to promote positive interactions between pedestrians and motorists. The Guide to North Carolina Bicycle and Pedestrian Laws, written by the NCDOT Division of Bicycle and Pedestrian Transportation, should be distributed to local law enforcement. The Police Department should continue to specifically target know areas of high pedestrian traffic and speeding, such as along Main Street.

### **VOLUNTEERS**

For trail development, services from volunteers, students, and seniors, or donations of material and equipment may be provided in-kind, to offset construction and maintenance costs. Formalized maintenance agreements, such as adopt-a-trail/greenway or adopt-a-highway can be used to provide

a regulated service agreement with volunteers. Other efforts and projects can be coordinated as needed with senior class projects, scout projects, interested organizations, clubs or a neighborhood's community service to provide for many of the program ideas outlined in Chapter 4 of this Plan. Advantages of utilizing volunteers include reduced or donated planning and construction costs, community pride and personal connections to the City's greenway and pedestrian networks.

## PERFORMANCE MEASURES (EVALUATION AND MONITORING)

The City of Creedmoor should establish performance measures to benchmark progress towards achieving the vision of this Plan. These performance measures should be stated in an official report within two years after the Plan is adopted. Performance measures could address the following aspects of pedestrian transportation and recreation in Creedmoor:

- *Safety.* Measures of pedestrian crashes and injuries or speeding in the City.
- *Facilities.* Measures of how many pedestrian facilities have been funded and constructed since the Plan's adoption.
- *Maintenance.* Measures of existing sidewalk/crosswalk deficiency or maintenance needs.
- *Education, Encouragement and Enforcement.* Measures of the number of people who have participated in part of a pedestrian program since the Plan's adoption.

## PEDESTRIAN FACILITY DEVELOPMENT

This section describes various construction methods for the proposed pedestrian facilities outlined in Chapter 3. Note that many types of transportation facility construction and maintenance projects can be used to create new pedestrian facilities. It is much more cost-effective to provide pedestrian facilities during roadway construction and re-construction projects than to initiate the improvements later as "retrofit" projects.

To take advantage of upcoming opportunities and to incorporate pedestrian facilities into routine transportation and utility projects, the City should keep track of NCDOT's projects

and any other local transportation improvements. While doing this, staff should be aware of the different procedures for state and local roads and interstates.

### **NCDOT TRANSPORTATION IMPROVEMENT PROGRAM (TIP) PROCESS**

The Transportation Improvement Program (TIP) is an ongoing program at NCDOT which includes a process asking localities to present their transportation needs to state government. Pedestrian facility and safety needs are an important part of this process. Every other year, a series of TIP meetings are scheduled around the state. Following the conclusion of these meetings, all requests are evaluated. Pedestrian improvement requests, which meet project selection criteria, are then scheduled into a four-year program as part of the state's long-term transportation program.

There are two types of projects in the TIP: incidental and independent. Incidental projects are those that can be incorporated into a scheduled roadway improvement project. Independent are those that can stand alone such as a greenway, not related to a particular roadway.

The City of Creedmoor, guided by the priority projects within this Plan, should present pedestrian projects along State roads to the MPO and State. Local requests for small pedestrian projects, such as crosswalks and smaller segments of sidewalk, can be directed to the MPO or the local NCDOT Division 5 office. Further information, including the criteria evaluated can be found at: [http://www.ncdot.org/transit/bicycle/funding/funding\\_TIP.html](http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html)

### **LOCAL ROADWAY CONSTRUCTION AND RECONSTRUCTION**

Pedestrians should be accommodated any time a new road is constructed or an existing road is reconstructed. All new roads with moderate to heavy motor vehicle traffic should have sidewalks and safe intersections. The City of Creedmoor should take advantage of any upcoming construction projects, including roadway projects outlined in local comprehensive and transportation plans. Also, case law surrounding the ADA has found that roadway resurfacing constitutes an alteration, which requires the addition of curb ramps at intersections where they do not yet exist.

## **RESIDENTIAL AND COMMERCIAL DEVELOPMENT**

As detailed in Chapter 4, the construction of sidewalks and safe crosswalks should be required during development. Construction of pedestrian facilities that corresponds with site construction is more cost-effective than retro-fitting. In commercial development, emphasis should also be focused on safe pedestrian access into, within, and through large parking lots. This ensures the future growth of the pedestrian network and the development of safe communities.

## **RETROFIT ROADWAYS WITH NEW PEDESTRIAN FACILITIES**

For priority pedestrian projects, it may be necessary to add new facilities before a roadway is scheduled to be reconstructed. In some places, it may be relatively easy to add sidewalk segments to fill gaps, but other segments may require removing trees, relocating landscaping or fences, re-grading ditches or cut and fill sections.

## **NEW BRIDGE CONSTRUCTION**

If overpasses or underpasses are constructed in Creedmoor, provisions should be made to accommodate pedestrians and bicyclists. NCDOT bridge policy states that sidewalks shall be included on new NCDOT road bridges with curb and gutter approach roadways. A determination of providing sidewalks on one or both sides is made during the planning process. Sidewalks across a new bridge shall be a minimum of five to six feet wide with a minimum handrail height of 42”.

## **SIGNAGE AND WAYFINDING PROJECTS**

When more pedestrian facilities are constructed, the City should consider adding to the current wayfinding signage in Downtown Creedmoor (signage still in design-phase as of summer 2011). A comprehensive style policy and procedure, should be applied throughout the entire community, to make it easier for people to find destinations and to provide consistency for users. For a step-by-step guide to help non-professionals participate in the process of developing and designing a signage system, as well as information on the range of signage types, visit the Project for Public Places website: [www.pps.org/info/amenities\\_bb/signage\\_guide](http://www.pps.org/info/amenities_bb/signage_guide)

## **EXISTING CITY EASEMENTS**

The City may have several existing easements offering an opportunity for greenway facilities. Sewer easements are very commonly used for this purpose (the City of Raleigh greenway system, for example), as they offer cleared and graded corridors that easily accommodate trails. This approach avoids the difficulties associated with acquiring land, and it utilizes the City's existing resources. Refer to Appendix C for an example sewer-greenway trail easement that could be adapted for Creedmoor to use when pursuing updates to older easements.

## **GREENWAY ACQUISITION**

Since not all greenways can be built on existing City easements, land acquisition is an important component of greenway development. It will be necessary to work with landowners and future development projects. Land acquisition and resource protection methods should be strategic, efficient, and respectful. Non-profit land protection agencies, land trusts, and/or environmental organizations can assist when attempting to acquire or manage property. These entities often have a great deal of experience selling the greenway benefits of conservation. Because these types of organizations do not have the power to condemn land or the power to tax, they often have excellent personal and professional relations with local landowners. Many options are available to obtain different degrees of control and different ownership relationships to regulate resource use. Providing educational material to local landowners and developers about the benefits of greenways and land/easement donations is an excellent means to stimulate greenway acquisition. The following is a list of potential conservation tools, developing partnerships, development regulations, land management techniques, and acquisition/donation. A more detailed look at each of these tools is provided in Appendix C.

## **PARTNERSHIPS**

Partnerships with land trusts, local developers, economic groups, and private land managers can assist the City of Creedmoor in developing greenway facilities.

## **REGULATORY METHODS**

This type of resource protection is used to shape the use and development of the land without transferring or selling

the land. The rules for this type of tool are established and enforced by a governing body.

- Exactions (Development/Impact Fee, Mandatory Dedications, Fee in Lieu)
- Growth Management Measures (Adequate Public Facilities Ordinances/Concurrency)
- Performance Zoning
- Incentive Zoning (Dedication or Density Transfers)
- Conservation Zoning (Buffer or Transition Zones)
- Overlay Zoning
- Negotiated Dedications
- Planned Unit Development
- Cluster Development
- Shared-use agreements

### **LAND MANAGEMENT**

This type of resource protection refers to developing agreements and/or management plans for public use and greenway easements through private property. This method helps conserve the resources of an open space or greenway parcel or easement.

- Management Plans
- Conservation Easement
- Preservation Easement
- Public Use Easement

### **ACQUISITION**

Land acquisition is a method used to acquire property rights to protect resources or to allow access and free movement of users on a property. This type of method is permanent. Acquisition methods can be divided into two categories: 1) landowners retain ownership of the land and preserve a resource through an easement or other mutual agreement, or 2) land ownership and management is transferred or donated from a landowner to a conservation agency (local government, land trust, or other preservation organization.)

- Donation (Tax Incentives)
- Fee Simple Purchase
- Easement Purchase
- Lease Back Purchase
- Bargain Sale
- Installment Sale
- Right of First Refusal
- Purchase of Development Rights
- Land Banking
- Condemnation

## ACTION STEPS TABLE

Task	Lead Agency	Support	Details	Phase
Present Plan to City BOC	Project Consultants	Planning & Transportation Staff	Presentation to City BOC in Fall 2011	Fall 2011
Approve this Plan	NCDOT Bike/Ped Division	Project Consultants	Official letter of approval in Fall 2011	Fall 2011
Adopt this plan	City BOC	Planning & Transportation Staff, Project Consultants	Through adoption, the Plan becomes an official planning document of the City. Adoption shows that the City of Creedmoor has undergone a successful, supported planning process.	Fall 2011
Designate Staff	City BOC & City Manager	Leadership of City Departments	Designate staff to oversee the implementation of this plan and the proper maintenance of the facilities that are developed. It is recommended that a combination of existing Planning, Transportation, and Engineering Staff oversee the day-to-day implementation of this plan.	Fall 2011
Create a Bicycle and Pedestrian Advisory Committee (BPAC)	City BOC	Planning & Transportation Staff	The committee should help coordinate the implementation of this Plan, develop programs, listen to community needs, promote the pedestrian network, and keep positive momentum going. See page 86 for more info.	Fall 2011
Begin Semi-annual Meeting With Key Project Partners	Planning & Transportation Staff	City Departments, NCDOT, BPAC, and local & regional stakeholders	Key project partners should meet on an semi-annual basis to evaluate the implementation of this Plan. Meetings could also occasionally include on-site tours of locations where facilities are recommended. CAMPO meetings could also serve as an opportunity to coordinate.	Ongoing/ Beginning Winter 2011-2012
Seek Multiple Funding Sources and Facility Development Options	Planning & Transportation Staff	Finance Director, BPAC	Chapter 3 contains project cost estimates and Appendix B contains potential funding opportunities.	Ongoing/ Beginning Winter 2011-2012
Improve Pedestrian Policies	City BOC	Planning Staff & Planning Board	Suggested policies for the City of Creedmoor are outlined in Chapter 4. The policies suggested clarify some basic positions regarding future development and the provision of pedestrian facilities. Some changes are also suggested for terminology that is more inclusive and ‘Complete Streets’ oriented.	Winter 2011-2012
Develop Sidewalk and Trail Specifications	Engineering Staff	Planning & Transportation Staff	City staff could prepare these in-house to save resources using the design guidelines of this plan and the project cut-sheets as starting points. Specifically, the resources listed on 97 will be very useful in drafting such documents.	Ongoing/ Beginning Winter 2011-2012
Launch Programs as New Projects are Built	BPAC	Planning & Transportation Staff	Assist in the coordination of programs, such as those described in Chapter 4	Short-Term (2012)
Provide police officers with educational material to hand out with warnings	Police Department	NCDOT Bike/Ped Division	Provide officers with an informational handout to be used during bicycle and pedestrian-related citations and warnings.	Short-Term (2012)
Complete priority project 1, connecting downtown and Creedmoor Elementary	Planning & Transportation Staff & NCDOT Division 5	Safe-Routes-to-School (SRTS) Program	This project is funded and well underway as of summer 2011.	Short-Term (2012)

Task	Lead Agency	Support	Details	Phase
Present this Plan to other local and regional bodies and agencies.	Planning & Transportation Staff	BPAC	This Plan should be presented to other local and regional bodies and agencies. Possible groups to receive a presentation might include: the regional transportation and greenway planners, health clubs and fitness facilities, schools and youth organizations, environmental clubs, civic organizations, chambers of commerce, and large neighborhood groups.	Short-Term (2012)
Develop a long term funding strategy	City Manager & Finance Director	Planning & Transportation Staff & City BOC	To allow continued development of the overall system, capital and Powell Bill funds for pedestrian 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 City's operating budget.	Short-Term (2012)
Maintain pedestrian facilities	Public Works, NCDOT Division 5	BPAC + General Public (for reporting maintenance needs)	Public Works and NCDOT should continue making improvements to faded crosswalks and sidewalks in need of repair.	Ongoing
Notify City Planning & Transportation staff of all upcoming roadway reconstruction or resurfacing/restriping projects, no later than the design phase.	Public Works Director, and NCDOT Division 5	Planning & Transportation Staff, NCDOT Bike/Ped Division, NCDOT Granville County Maintenance Engineer,	Provide sufficient time for comments; Incorporate pedestrian recommendations from this Plan. If a compromise to the original recommendation is needed, then contact NCDOT Division of Bicycle and Pedestrian Transportation for guidance on appropriate alternatives. Also, coordinate with the NCDOT Granville County Maintenance Engineer, on the Annual Resurfacing Plan's 3-year project list.	Ongoing/ Beginning Fall 2011
Explore possibility of a regional multi-modal coordinator	City Manager	Planning & Transportation Staff, BPAC, regional planning organizations, and neighboring municipalities	Explore the possibility of partnership with neighboring municipalities in hiring a regional Multi-Modal Transportation Coordinator	Short-Term (2012)
Ensure planning efforts are being integrated regionally	Planning & Transportation Staff	Regional planning organizations, neighboring municipalities, BPAC	Combining resources and efforts with surrounding municipalities, regional entities, and stakeholders is mutually beneficial, especially with trail development. Communicate and coordinate with the regional partners on regional trails and pedestrian facilities; partner for joint-funding opportunities. After adoption by the City, this document should also be recognized in regional transportation plans.	Short-Term (2012)
Apply for further Safe Routes to School Grants and Infrastructure Funding	Planning & Transportation Staff	NCDOT Division 5 & BPAC	Establish 'bike-to-school' groups, 'walking school buses' or other similar activities for children through the Safe Routes to School Program. Inquire about pedestrian infrastructure funding for projects within 1.5 miles of schools through NCDOT Division 5.	Short-Term (2012)
Policy Orientation	All Stakeholders	NCDOT Bike/Ped Division	Become familiar with State and Federal bicycle and pedestrian policies, as outlined in Appendix D.	Short-Term (2012)
Design Orientation	Public Works and NCDOT Division 5	NCDOT Bike/Ped Division	Become familiar with the guidelines featured in Chapter 6 of this Plan, as well as state and national standards for pedestrian facility design.	Short-Term (2012)

Task	Lead Agency	Support	Details	Phase
Become familiar with the pedestrian facility recommendations for NCDOT roadways in this Plan (Chapter 3); take initiative in incorporating this plan’s recommendations into the Division’s schedule of improvements.	NCDOT Division 5	Planning & Transportation Staff, NCDOT Bike/ Ped Division	Construct and maintain pedestrian facilities using the highest standards allowed by the State (including the possibility of using innovative treatments on a trial-basis). Seek guidance and direction from the NCDOT Division of Pedestrian and Pedestrian Transportation on issues related to this Plan and its implementation.	Ongoing
If the City determines that there are streets where speeds need to be lowered for safety purposes, contact NCDOT to lower them.	City BOC	Planning & Transportation Staff, NCDOT Division 5, NCDOT Bike/ Ped Division, BPAC	The authority to lower speeds is set out in NC General Statute 20-141(f) - Whenever local authorities within their respective jurisdictions determine upon the basis of an engineering and traffic investigation that a higher maximum speed than those set forth in subsection (b) is reasonable and safe, or that any speed hereinbefore set forth is greater than is reasonable and safe, under the conditions found to exist upon any part of a street within the corporate limits of a municipality and which street is a part of the State highway system (except those highways designated as part of the interstate highway system or other controlled access highway) said local authorities shall determine and declare a safe and reasonable speed limit. A speed limit set pursuant to this subsection may not exceed 55 miles per hour. Limits set pursuant to this subsection shall become effective when the Department of Transportation has passed a concurring ordinance and signs are erected giving notice of the authorized speed limit.	Ongoing
Create a user-friendly walking and bicycling map for the City of Creedmoor	GIS/ Planning & Transportation Staff	BPAC, local businesses (to sponsor design & printing costs)	Once more facilities are in place, produce and distribute the user-friendly walking and bicycling map of Creedmoor. Provide basic safety information, commuting information, trail etiquette, transit information (if and when transit is available), and a list of local resources on the back side of the map.	Mid-Term (2013)
Offer Training for Enforcement	Police Department	BPAC, National Highway Traffic Safety Administration (NHTSA) or Association of Pedestrian and Bicycle Professionals (APBP)	Training for Creedmoor’s officers could be done through free online resources, such as APBP webinars. If the City is able to find and secure grants for education, they could also seek instructor-led courses offered by the NHTSA or groups such as the League of American Bicyclists (LAB).	Mid-Term (2013)
Become Designated as a Walk Friendly Community	Planning & Transportation Staff	BPAC	Creedmoor should make progress in accomplishing the goals of this Plan, and then apply for Walk Friendly Community status. See <a href="http://www.walkfriendly.org/">www.walkfriendly.org/</a> for more information.	Long-Term (2014)
Attend a pedestrian planning and design training session	Planning, Transportation, and/or Engineering Staff	BPAC	Sponsor at least one city staff member to attend a bicycle and pedestrian planning and design training session. NCDOT, in partnership with the Institute for Transportation Research and Education (ITRE), offers pedestrian planning and design workshops for practicing professionals. Free or inexpensive webinars are also available online through such groups as the Association of Pedestrian and Bicycle Professionals (APBP).	Opportunity-Based



**CHAPTER OUTLINE:**

- OVERVIEW
- SIDEWALKS AND WALKWAYS
- GREENWAY TRAILS
- MARKED CROSSWALKS
- CURB RAMPS
- RAISED OR LOWERED MEDIANS
- MID-BLOCK CROSSINGS
- ADVANCE STOP BARS
- BULB-OUTS
- TRAFFIC SIGNALS
- PEDESTRIAN SIGNALS
- LANDSCAPING
- ROADWAY LIGHTING IMPROVEMENTS
- STREET FURNITURE AND WALKING ENVIRONMENT
- PEDESTRIAN SIGNS AND WAYFINDING
- RECTANGULAR RAPID FLASH BEACON
- TRAFFIC CALMING TREATMENTS
- LAND USE AND PEDESTRIAN TRAVEL

**OVERVIEW**

These recommended guidelines originate from and adhere to national design standards as defined by the American Association of State Highway Transportation Officials (AASHTO), the Americans with Disabilities Act (ADA), the Federal Highway Administration (FHWA) Pedestrian Facilities Users Guide, the Manual on Uniform Traffic Control Devices (MUTCD), and the NCDOT. Another major source of information in this chapter is the Pedestrian and Bicycle Information Center, found online at <http://www.walkinginfo.org>. Should the national standards be revised in the future and result in discrepancies with this chapter, the national standards should prevail for all design decisions. A qualified engineer or landscape architect should be consulted for the most up to date and accurate cost estimates.

The sections below serve as an inventory of pedestrian design elements/treatments and provide guidelines for their development. These treatments and design guidelines are important because they represent minimum standards for creating a pedestrian-friendly, safe, accessible community. The guidelines are not, however, a substitute for a more thorough evaluation by a landscape architect or engineer upon implementation of facility improvements. Some improvements may also require cooperation with the NCDOT for specific design solutions.



**Pedestrian and Bicycle Information Center**



*The Pedestrian and Bicycle Information Center, AASHTO, the MUTCD, nationally recognized trail standards, and other sources have all informed the content of this chapter.*

## SIDEWALKS AND WALKWAYS

Sidewalks and walkways are extremely important public right-of-way components often times adjacent to, but separate from automobile traffic. In many ways, they act as the seam between private residences, stores, businesses, and the street.

There are a number of options for different settings, for both downtown and more rural and/or suburban areas. From a wide promenade to, in the case of a more rural environment, a simple asphalt or crushed stone path next to a secondary road, walkway form and topography can vary greatly. In general, sidewalks are constructed of concrete although there are some successful examples where other materials such as asphalt, crushed stone, or other slip resistant material have been used. The width of the walkways should correspond to the conditions present in any given location (i.e. level of pedestrian traffic, building setbacks, or other important natural or cultural features). FHWA (Federal Highway Administration) and the Institute of Transportation Engineers both suggest five feet as the minimum width for a sidewalk. This is considered ample room for two people to walk abreast or for two pedestrians to pass each other. Often downtown areas, near schools, transit stops, or other areas of high pedestrian activity call for much wider sidewalks.

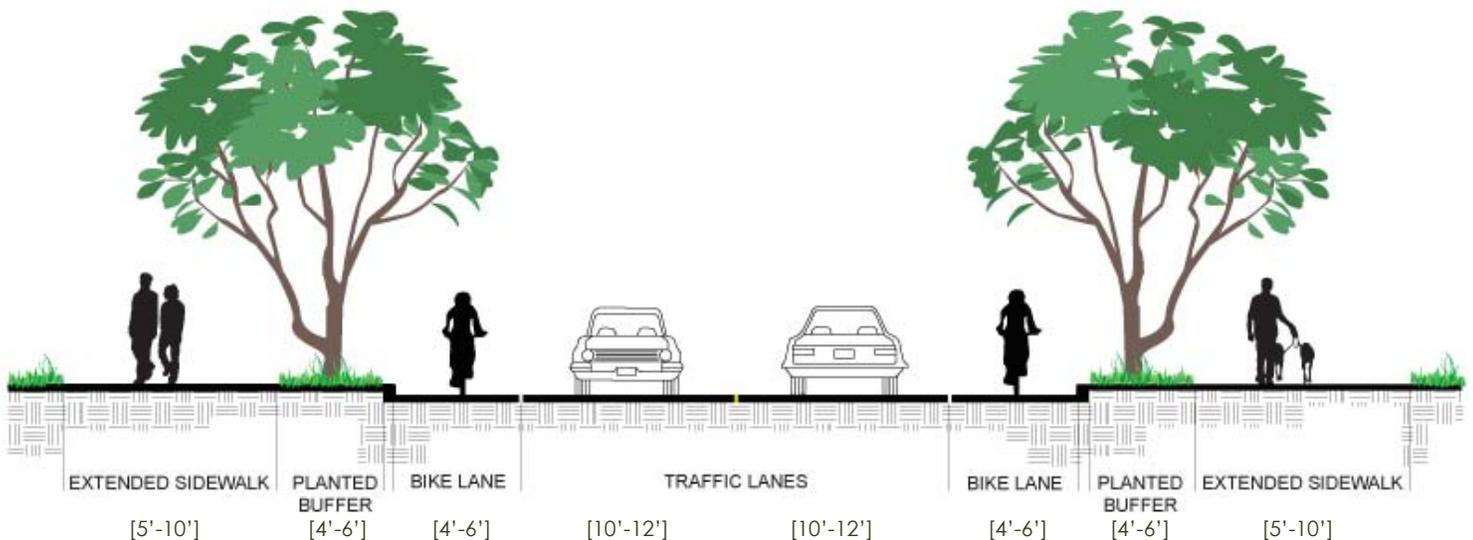


*A well designed residential sidewalk will have a width of at least five feet. (Image from <http://www.walkinginfo.org>)*



*Sidewalk with a vegetated buffer zone. Notice the sense of enclosure created by the large canopy street trees. (Image from <http://www.walkinginfo.org>)*

*Below: Typical street with bike lanes*



*Sidewalk Guideline Sources:*

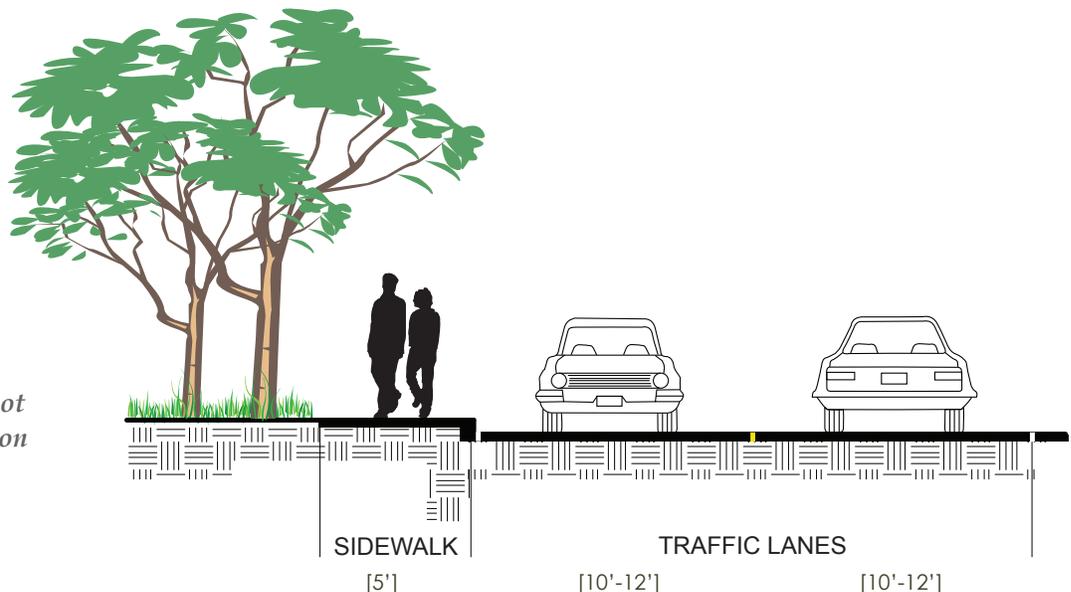
*American Association of State Highway and Transportation Officials. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.*

*Metro Regional Government. (2005). Portland, Oregon: Transportation Information Center. <http://www.oregonmetro.gov>*

**SIDEWALKS AND WALKWAY GUIDELINES:**

- Concrete is preferred surface, providing the longest service life and requiring the least maintenance. Permeable pavement such as porous concrete may be considered to improve water quality.
- Sidewalks should be built as flat as possible to accommodate all pedestrians; they should have a running grade of five percent or less; with a two percent maximum cross-slope.
- Concrete sidewalks should be built to minimum depth of four inches; six inches at driveways.
- Sidewalks should be a minimum of five feet wide; sidewalks serving mixed use and commercial areas shall be a minimum of 8 ft in width (12–15 feet is required in front of retail storefronts). The maximum cross-slope should be no more than 2 percent (1:50)\*.
- Buffer zone of two to four feet in local or collector streets; five to six feet in arterial or major streets and up to eight feet in busy streets and downtown to provide space for light poles and other street furniture. See the Landscaping section later in this chapter for shade and buffer opportunities of trees and shrubs.
- Motor vehicle access points should be kept to minimum.
- If a sidewalk with buffer on both sides is not feasible due to topography and right-of-way constraints, then a sidewalk on one side is better than no facility. Each site should be examined in detail to determine placement options.

*\* If a greater slope is anticipated because of unusual topographic or existing conditions, the designer should maintain the preferred slope of 1:50 within the sidewalk area, if possible. This can be accomplished either by raising the curb so that the cross-slope of the entire sidewalk can be 1:50, or by placing the more steeply angled slope within the area between the sidewalk and the road.*



*Right: Where space and topography are limiting and a planted buffer is not possible, this cross section may be applied.*

## GREENWAY TRAILS

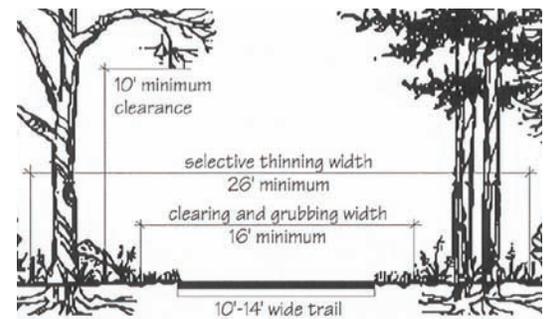
A greenway is defined as a linear corridor of land that can be either natural, such as rivers and streams, or man-made, such as abandoned railroad beds and utility corridors. Many greenways contain trails. Greenway trails can be paved or unpaved, and can be designed to accommodate a variety of trail users, including bicyclists, walkers, hikers, joggers, skaters, horseback riders, and those confined to wheelchairs. Single-tread, multi-use trails are the most common trail type in the nation. These trails vary in width and can accommodate a wide variety of users. The Granville County Greenways Design Guidelines describes five trail types ranging from no facility to multi-used paved trails. It is recommended that the Type IV trail (multi-use paved) be updated to a minimum of 10' as described below. When the City of Creedmoor develops greenway trails, the Granville County nomenclatures should be utilized for consistency.

*Note: A greenway trail located along a roadway corridor is sometimes referred to as a 'sidepath'.*

## MULTI-USE TRAIL GUIDELINES:

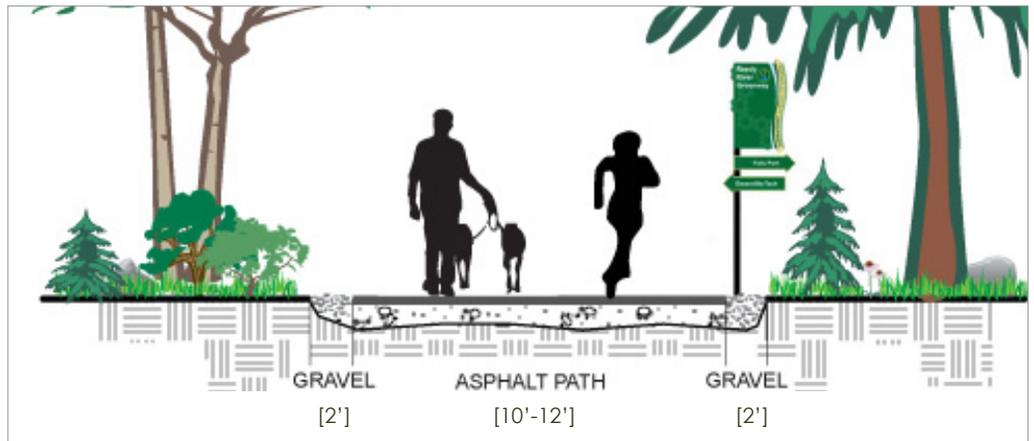
- The minimum width for two-directional multi-use trails is 10', however 12'-14' widths are preferred where heavy traffic is expected. Vertical clearance under bridges and other structures should be 8' to 10'.
- Centerline stripes should be considered for paths that generate substantial amounts of pedestrian traffic, or along curved portions of the trail, where sight-lines are limited. Radii minimums should also be considered depending on the different user groups.
- While the vegetative clearing needed for these trails varies with the width of the trail, the minimum width for clearing and grubbing a 10' wide trail is 16'. Selective thinning increases sight lines and distances and enhances the safety of the trail user. This practice includes removal of underbrush and limbs to create open pockets within a forest canopy, but does not include the removal of the forest canopy itself.
- Crossings should be a safe enough distance from neighboring intersections to not interfere (or be interfered) with traffic flow.
- A roadway with flat topography is desirable to increase motorist visibility of the path crossing.
- Motorists and trail users should be warned, such as with signage (including trail stop signs), changes in pavement texture, flashing beacons, raised crossings, striping, etc.
- A refuge is needed where crossing distance is excessive and 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.
- The crossing should occur as close to perpendicular (90 degrees) to the roadway as possible.
- 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.
- 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.
- Sidepaths should be constructed along corridors with relatively few intersections and driveways, reducing conflict points.

*Below: Vegetation clearing guidelines*

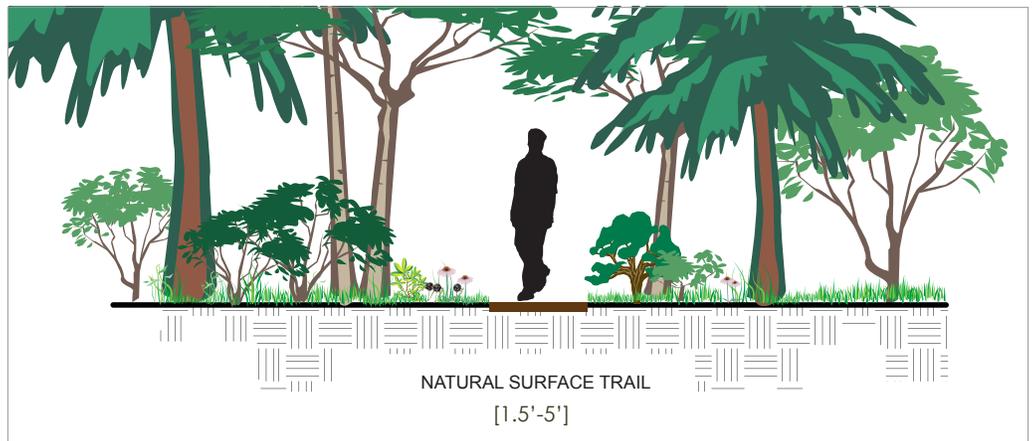


- Typical pavement design for a paved, off-road, multi-use trail should be based upon the specific loading and soil conditions for each project. Asphalt or concrete trails should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles.

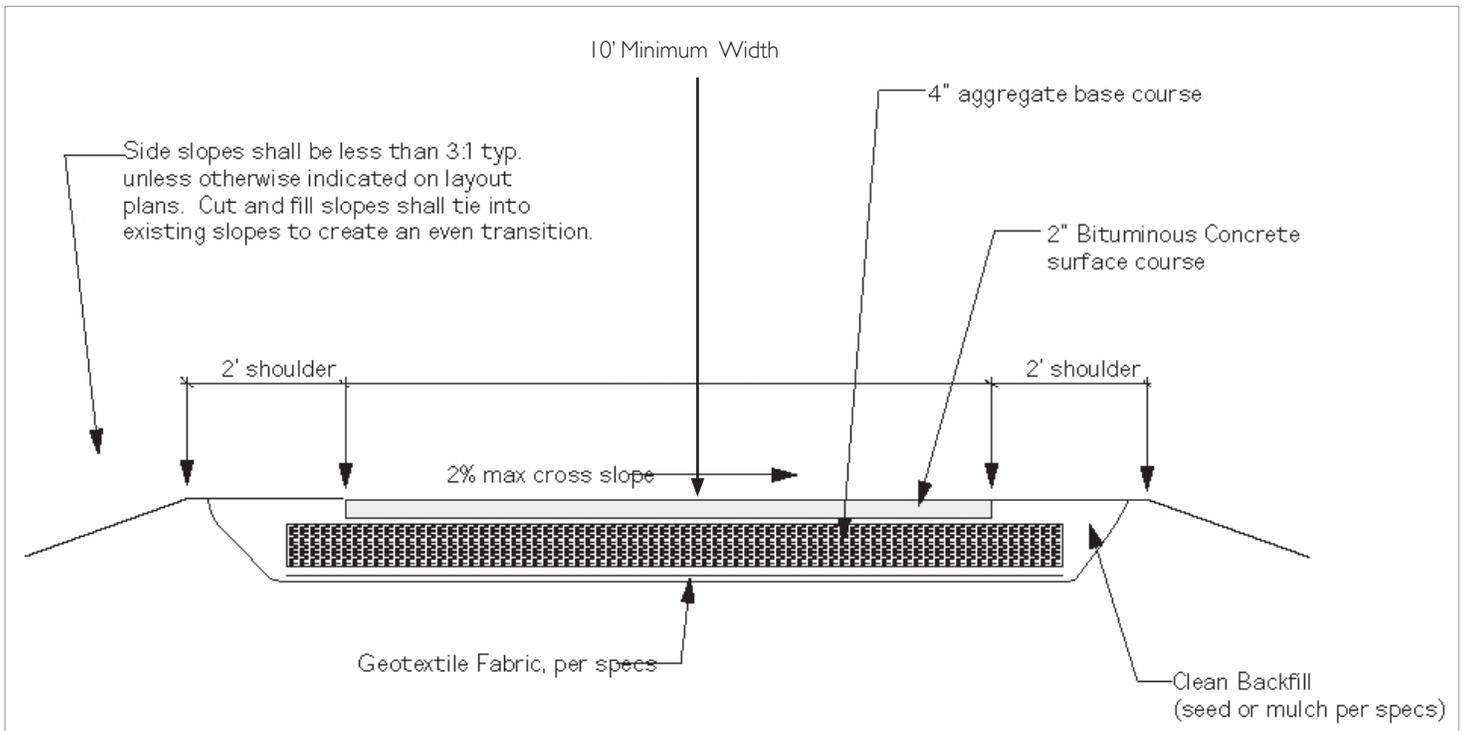
Right: Typical asphalt path section



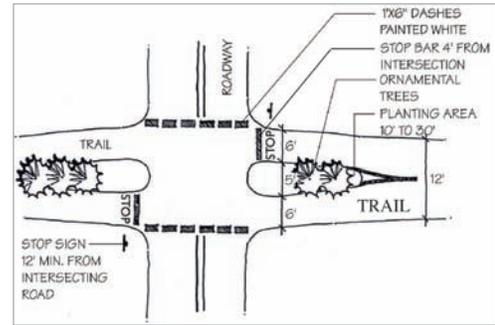
Right: Typical natural surface trail section



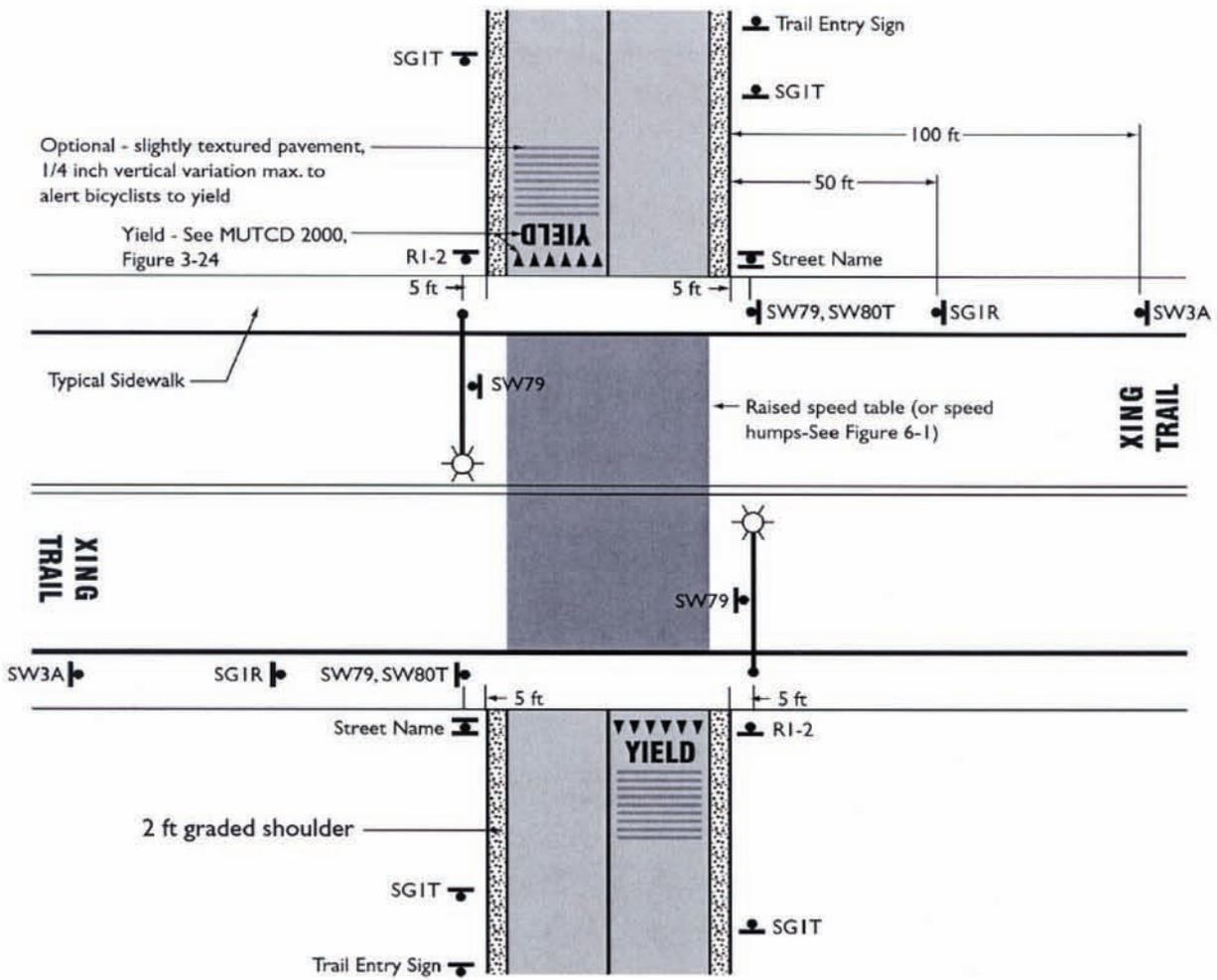
Below: Asphalt pavement construction detail



- Concrete Trail:** In areas prone to frequent flooding, it is recommended that concrete be used because of its excellent durability. Concrete surfaces are capable of withstanding the most powerful environmental forces. They hold up well against the erosive action of water, root intrusion and subgrade deficiencies such as soft soils. Most often, concrete is used for intensive urban applications. Of all surface types, it is the strongest and has the lowest maintenance requirement, if it is properly installed.
- Asphalt Trail:** Asphalt is a flexible pavement and can be installed on virtually any slope. One important concern for asphalt trails is the deterioration of trail edges. Installation of a geotextile fabric beneath a layer of aggregate base course (ABC) can help to maintain the edge of a trail. It is important to provide a 2' wide graded shoulder to prevent trail edges from crumbling.
- Trail and Roadway Intersections:** The images below and at right present detailed specifications for the layout of intersections between trail corridors and roadways. Signage rules for such intersections are available in the Manual for Urban Traffic Control Devices (MUTCD).

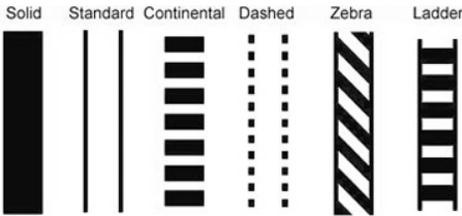


Above and below: Typical greenway trail approaches to a roadway



## MARKED CROSSWALKS

A marked crosswalk designates a pedestrian right-of-way across a street. It is often installed at controlled intersections or at key locations along the street (a.k.a. mid-block crossings). Every attempt should be made to install crossings at the specific point at which pedestrians are most likely to cross: a well-designed traffic calming location is not effective if pedestrians are instead using more seemingly convenient and potentially dangerous location to cross the street. Marked pedestrian crosswalks may be used under the following conditions: 1) At locations with stop signs or traffic signals, 2) At non-signalized street crossing locations in designated school zones, and 3) At non-signalized locations where engineering judgment dictates that the use of specifically designated crosswalks are desirable.



*A variety of patterns are possible in designating a crosswalk; an example of a 'continental' design is shown above.*

There is a variety of form, pattern, and materials to choose from when creating a marked crosswalk. It is important however to provide crosswalks that are not slippery, are free of tripping hazards, or are otherwise difficult to maneuver by any person including those with physical mobility or vision impairments. Although attractive materials such as inlaid stone or certain types of brick may provide character and aesthetic value, the crosswalk can become slippery. Potential materials can be vetted by requesting case studies from suppliers regarding where the materials have been successfully applied. Also, as some materials degrade from use or if they are improperly installed, they may become a hazard for the mobility or vision impaired.

## CROSSWALK GUIDELINES:

### *Crosswalk Guideline Sources:*

*American Association of State Highway and Transportation Officials. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.*

*Metro Regional Government. (2005). Portland, Oregon: Transportation Information Center. [www.oregonmetro.gov](http://www.oregonmetro.gov)*

- Should not be installed in an uncontrolled environment [at intersections without traffic signals] where speeds exceed 40 mph. (AASHTO, 2004)
- Crosswalks alone may not be enough and should be used in conjunction with other measures to improve pedestrian crossing safety, particularly on roads with average daily traffic (ADT) above 10,000
- Width of marked crosswalk should be at least six feet; ideally ten feet or wider in downtown areas.
- Curb ramps and other sloped areas should be fully contained within the markings.
- Crosswalk markings should extend the full length of the crossings.
- Crosswalk markings should be white per MUTCD.
- Either the 'continental' or 'ladder' patterns are recommended for intersection improvements for aesthetic and visibility purposes. Lines should be one to two feet wide and spaced one to five feet apart.
- NCDOT typically requires pedestrian facilities (sidewalks) on both sides of a roadway when placing crosswalks.

## CURB RAMPS

Curb ramps are critical features that provide access between the sidewalk and roadway for wheelchair users, people using walkers, crutches, or handcarts, people pushing bicycles or strollers, and pedestrians with mobility or other physical impairments. In accordance with the 1973 Federal Rehabilitation Act and to comply with the 1990 Federal ADA requirements, curb ramps must be installed at all intersections and mid-block locations where pedestrian crossings exist (Pedestrian and Bicycle Information Center: <http://www.walkinginfo.org/engineering/roadway-ramps.cfm>). In addition, these federal regulations require that all new constructed or altered roadways include curb ramps.

Two separate curb ramps should be provided at each intersection (see image below). With only one large curb ramp serving the entire corner, there is not safe connectivity for the pedestrian. Dangerous conditions exist when the single, large curb ramp inadvertently directs a pedestrian into the center of the intersection, or in front of an unsuspecting, turning vehicle.

### CURB RAMP GUIDELINES:

- Two separate curb ramps, one for each crosswalk, should be provided at corner of an intersection.
- Curb ramp should have a slope no greater than 1:12 (8.33%). Side flares should not exceed 1:10 (10%); it is recommended that much less steep slopes be used whenever possible.

#### *Curb Ramp Guideline Sources:*

*Metro Regional Government. (2005). Portland, Oregon: Transportation Information Center. <http://www.oregonmetro.gov>*



*Left: The curb ramps shown have two separate ramps at the intersection (visible across the street) (Image from <http://www.walkinginfo.org>).*

*For additional information on curb ramps see *Accessible Rights-of-Way: A Design Guide*, by the U.S. Access Board and the Federal Highway Administration, and *Designing Sidewalks and Trails for Access, Parts I and II*, by the Federal Highway Administration. Visit: [www.access-board.gov](http://www.access-board.gov) for the Access board's right-of-way report.*

## RAISED OR LOWERED MEDIANS

Medians are barriers in the center portion of a street or roadway. When used in conjunction with mid-block or intersection crossings, they can be used as a crossing island to provide a place of refuge for pedestrians. They also provide opportunities for landscaping that in turn can help to slow traffic. A center turn lane can be converted into a raised or lowered median thus increasing motorist safety.

A continuous median can present several problems when used inappropriately. If all left-turn opportunities are removed, there runs a possibility for increased traffic speeds and unsafe U-turns at intersections. Additionally, the space occupied may be taking up room that could be used for bike lanes or other treatments. An alternative to the continuous median is to create a segmented median with left turn opportunities.

Raised or lowered medians are best suited for high-volume, high-speed roads, and they should provide ample cues for people with visual impairments to identify the boundary between the crossing island and the roadway.

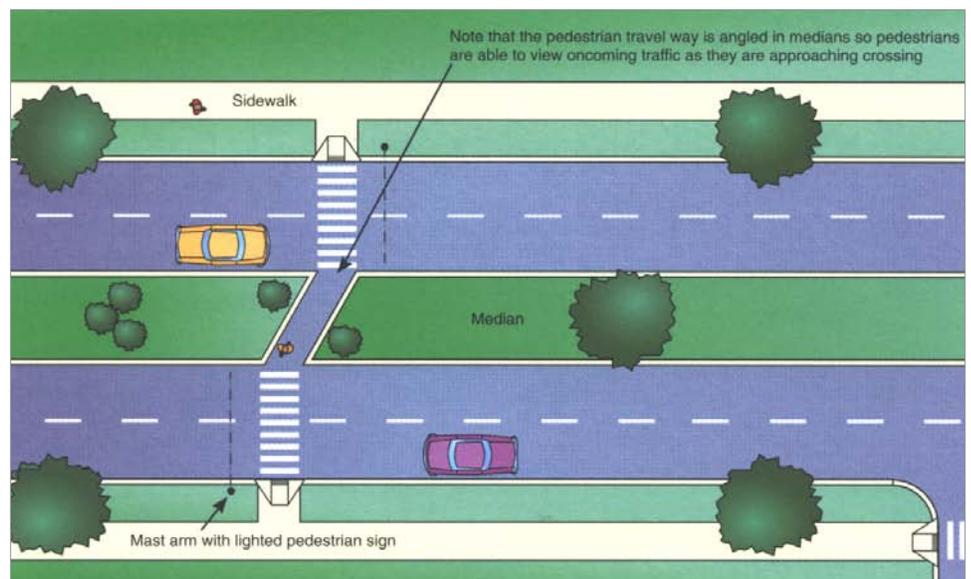
### MEDIAN GUIDELINES:

- Median pedestrian refuge islands should be provided as a place of refuge for pedestrians crossing busy or wide roadways at either mid-block locations or intersections. They should be utilized on high speed and high volume roadways.
- Medians should incorporate trees and plantings to change the character of the street and reduce motor vehicle speed.
- Landscaping should not obstruct the visibility between motorists and pedestrians.
- Median crossings should provide ramps or cut-throughs for ease of accessibility for all pedestrians.
- Median crossings should be at least 6 feet wide in order to accommodate more than one pedestrian, while a width of 10 feet (where feasible) should be provided for bicycles, wheelchairs, and groups of pedestrians.
- Median crossings should possess a minimum of a 4 foot square level landing to provide a rest point for wheelchair users.
- Pedestrian push-buttons should be located in the median of all signalized mid-block crossings, where the roadway width is in excess of 60 feet.

#### Median Guideline Sources:

American Association of State Highway and Transportation Officials. (2004). *Guide for the Planning, Design, and Operation of Pedestrian Facilities*.

Metro Regional Government. (2005). *Portland, Oregon: Transportation Information Center*. <http://www.oregonmetro.gov>



Above: A median used in conjunction with mid-block crossing, serving as a refuge for pedestrians. (Image from AASHTO).

## MID-BLOCK CROSSINGS

A Mid-Block Crosswalk is any crosswalk that is not located within an intersection. Midblock crossings are often installed in areas with heavy pedestrian traffic to provide more frequent crossing opportunities. They may also be added near major pedestrian destinations, such as schools or busy commercial areas, where people might otherwise cross at unmarked locations.

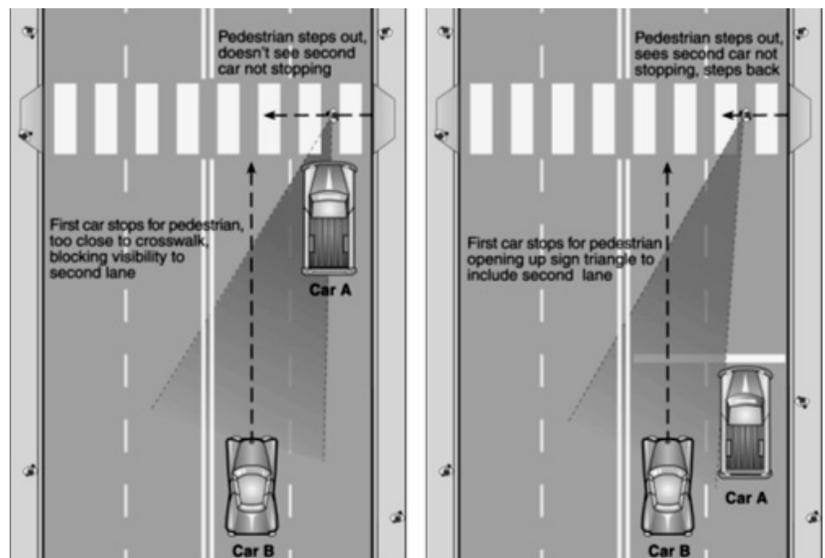
### MID-BLOCK CROSSING GUIDELINES:

- Crosswalks at mid-block should not be installed within 300 ft. of another signalized crossing point.
- Utilize advance warning signs when mid-block crossings are present.
- Raised crosswalks are typically used on two-lane streets with less than 35 MPH speed limit.
- It will be the standard practice of NCDOT to install Mid-Block Crosswalks based on an engineering study. All Mid-Block Crosswalks shall be signed and marked in compliance with the Manual on Uniform Traffic Control Devices (MUTCD), the North Carolina Supplement to the MUTCD, the current NCDOT Roadway Standard Drawings, and the standards the NCDOT Policy on Mid-Block Crossings.
- The NCDOT Policy on Mid-Block Crossings can be found at [www.ncdot.gov/doh/preconstruct/traffic/tepl/topics/C-36/C-36\\_pr.pdf](http://www.ncdot.gov/doh/preconstruct/traffic/tepl/topics/C-36/C-36_pr.pdf)

## ADVANCE STOP BARS

Moving the vehicle stop bar 15–30 feet back from the pedestrian crosswalk at signalized crossings and mid-block crossings increases vehicle and pedestrian visibility. Advance stop bars are 1–2 feet wide and they extend across all approach lanes at intersections. The time and distance created allows a buffer in which the pedestrian and motorist can interpret each other's intentions. Studies have shown that this distance translates directly into increased safety for both motorist and pedestrian. One study in particular claims that by simply adding a "Stop Here for Pedestrians" sign reduced pedestrian motorist conflict by 67%. When this was used in conjunction with advance stop lines, it increased to 90% (Pedestrian and Bicycle Information Center: <http://www.walkinginfo.org/engineering/crossings-enhancements.cfm>).

*Below: Advance stop bars enhance visibility for pedestrians (Image from [www.walkinginfo.org](http://www.walkinginfo.org)).*



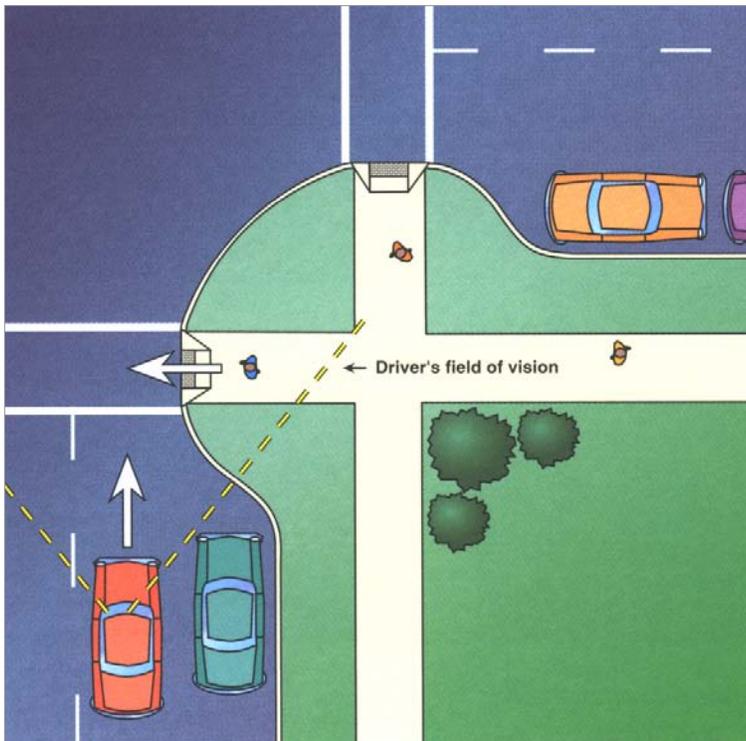
## BULB-OUTS

A bulb-out, or curb extension, is a place where the sidewalk extends into the parking lane of a street. Because these curb extensions physically narrow the roadway, a pedestrian's crossing distance—and consequently the time spent in the street—is reduced. They can be placed either at mid-block crossings or at intersections.

*\*The curb radius of a street corner affects traffic speed and crosswalk length. In general, a smaller (narrow) curb radius is better for pedestrians. A larger (wide) curb radius creates a greater crosswalk length and allows vehicles to move faster around the turn. Reducing the curb radius, especially across busy multi-lane arterials, can increase pedestrian safety by slowing vehicles and minimizing pedestrian crossing distances.*

Sightlines and pedestrian visibility are reduced when motor vehicle parking encroaches too close to corners creating a dangerous situation for pedestrians. When placed at an intersection, bulb-outs preclude vehicle parking too close to a crosswalk. Also, bulb-outs at intersections can greatly reduce turning speed, especially if curb radii are set as tight as possible\* (Pedestrian and Bicycle Information Center: [www.walkinginfo.org/engineering/crossings-curb.cfm](http://www.walkinginfo.org/engineering/crossings-curb.cfm)). Finally, bulb-outs also reduce travel speeds when used in mid-block crossings because of the reduced street width.

Bulb-outs should only be used where there is an existing on-street parking lane and should never encroach into travel lanes, bike lanes, or shoulders (Pedestrian and Bicycle Information Center).



*Above: By reducing a pedestrian's crossing distance, less time is spent in the roadway, and pedestrian vehicle conflicts are reduced (Image from AASHTO).*

### BULB-OUT GUIDELINES:

- Bulb-outs should be used on crosswalks in heavy pedestrian areas where parking may limit the driver's view of the pedestrian.
- Where used, sidewalk bulb-outs should extend into the street for the width of a parking lane (a minimum five feet) in order to provide for a shorter crossing width, increased pedestrian visibility, more space for pedestrian queuing, and a place for sidewalk amenities and planting.
- Curb extensions should be used on mid-block crossing where feasible.
- Curb extensions may be inappropriate for use on corners where frequent right turns are made by trucks or buses.

## TRAFFIC SIGNALS

Traffic signals assign the right of way to motorists and pedestrians and produce openings in traffic flow, allowing pedestrians time to cross the street. When used in conjunction with pedestrian friendly design, proper signalization should allow for an adequate amount of time for an individual to cross the street. The suggested amount of pedestrian travel speed recommended in the Manual on Uniform Traffic Control Devices (MUTCD) is 4ft/sec; however, this does not address the walking speed of the elderly or children. Therefore, it is suggested that a lower speed of 3.5ft/sec be used whenever there are adequate numbers of elderly and children using an area.

Engineering, as well as urban design judgment, must be used when determining the location of traffic signals and the accompanying timing intervals. Although warrants for pedestrian signal timing have been produced by the MUTCD, each site must be analyzed for factors including new facility and amenity construction (i.e. a popular new park or museum) to allow for potential future pedestrian traffic volume. In addition, creating better access to existing places may in fact generate a higher pedestrian volume.

Fixed timed sequencing is often used in high traffic volume commercial or downtown areas to allow for a greater efficiency of traffic flow. In such instances, the pedestrian speed must be carefully checked to ensure safety.

## RIGHT TURN ON RED RESTRICTIONS

Introduced in the 1970's as a fuel saving technique, the Right Turn on Red (RTOR) law is thought to have had a detrimental effect on pedestrians. The issue is not the law itself but rather the relaxed enforcement of certain caveats within the law such as coming to a complete stop and yielding to pedestrians. Often motorists will either nudge into a crosswalk to check for oncoming traffic without looking for pedestrians or slow, but not stop, for the red-light while making the turn.

There is legitimate concern that eliminating an RTOR will only increase the number of right-turn-on-green conflicts where all of the drivers who would normally have turned on red, now are anxious to turn on green. As discussed in the prior section, LPI or exclusive pedestrian intervals may help to alleviate this problem. Eliminating RTOR should be considered on a case-by-case basis and only where there are high pedestrian volumes. This can be done by simple sign postings as illustrated at right.



*A low cost sign that restricts right-hand turns at a red light (Image from <http://www.walkinginfo.org>).*



*Typical Pedestrian Signal Indicators (with countdown display).*

## PEDESTRIAN SIGNALS

There are a host of traffic signal features and enhancements that can greatly improve the safety and flow of pedestrian traffic. Some include countdown signals, the size of traffic signals, positioning of traffic signals, audible cues, and timing intervals which are discussed below (Pedestrian and Bicycle Information Center: <http://www.walkinginfo.org/engineering/crossings-signals.cfm>).

***As of 2008, new federal policy requires all new pedestrian signals to be of the countdown variety. In addition, all existing signals must be updated to countdown within 10 years (updated in MUTCD). Countdown signals have proven to be an effective measure of crash reduction (25% crash reduction in 2007 FHWA study).***

Countdown signals are pedestrian signals that show how many seconds the pedestrian has remaining to cross the street. The countdown can begin at the beginning of the WALK phase, perhaps flashing white or yellow, or at the beginning of the clearance, or DON'T WALK phase, flashing yellow as it counts down. Audible cues can also be used to pulse along with a countdown signal.



*Audible cues can also be used to pulse along with a countdown signal.*

Signals should be of adequate size, clearly visible, and, in some circumstances, accompanied by an audible pulse or other messages to make crossing safe for all pedestrians. Consideration should be paid to the noise impact on the surrounding neighborhoods when deciding to use audible signals.

The timing of these or other pedestrian signals needs to be adapted to a given situation. In general, shorter cycle lengths and longer walk intervals provide better service to pedestrians and encourage better signal compliance. For optimal pedestrian service, fixed-time signal operation usually works best. Pedestrian pushbuttons may be installed at locations where pedestrians are expected intermittently. Quick response to the pushbutton or feedback to the pedestrian (e.g.- indicator light comes on) should be programmed into the system. When used, pushbuttons should be well-signed and within reach and operable from a flat surface for pedestrians in wheelchairs and with visual disabilities. They should be conveniently placed in the area where pedestrians wait to cross. Section 4E.09 within the MUTCD provides detailed guidance for the placement of pushbuttons to ensure accessibility (Pedestrian and Bicycle Information Center: <http://www.walkinginfo.org/engineering/crossings-signals.cfm>).

There are three types of signal timing generally used: concurrent, exclusive, and leading pedestrian interval (LPI). The strengths and weaknesses of each will be discussed with an emphasis on when they are best employed.

When high-volume turning situations conflict with pedestrian movements, the exclusive pedestrian interval is the preferred solution. The exclusive pedestrian intervals stop traffic in all directions. In order to keep traffic flowing regularly, there is often a greater pedestrian wait time associated with this system. Although it has been shown that pedestrian crashes have been reduced by 50% in some areas by using these intervals, the long wait times can encourage some to cross when there is a lull in traffic (Pedestrian and Bicycle Information Center: <http://www.walkinginfo.org/engineering/crossings-signals.cfm>).

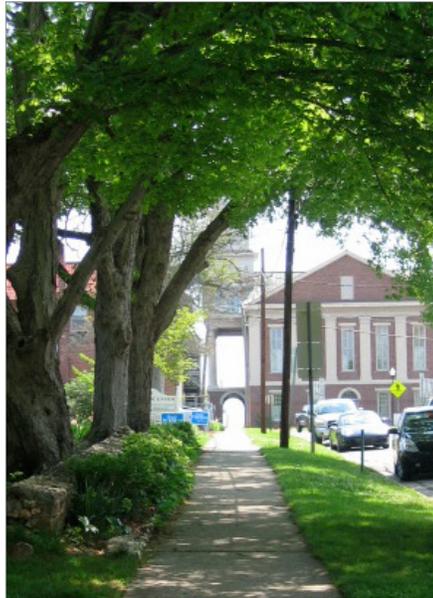
An LPI gives pedestrians an advance walk signal before the motorists get a green light, giving the pedestrian several seconds to start in the crosswalk where there is a concurrent signal. This makes pedestrians more visible to motorists and motorists more likely to yield to them. This advance crossing phase approach has been used successfully in several places, such as New York City, for two decades and studies have demonstrated reduced conflicts for pedestrians. The advance pedestrian phase is particularly effective where there is a two-lane turning movement. There are some situations where an exclusive pedestrian phase may be preferable to an LPI, such as where there are high-volume turning movements that conflict with the pedestrians crossing.

The use of infrared or microwave pedestrian detectors has increased in many cities worldwide. These devices replace the traditional push-button system. They appear to be improving pedestrian signal compliance as well as reducing the number of pedestrian and vehicle conflicts. The best use of these devices is when they are employed to extend crossing time for slower moving pedestrians.

#### PEDESTRIAN SIGNAL GUIDELINES:

- Pedestrian signals should be placed in locations that are clearly visible to all pedestrians.
- Larger pedestrian signals should be utilized on wider roadways, to ensure readability.
- Pedestrian signal pushbuttons should be well-signed and visible.
- Pedestrian signal pushbuttons should clearly indicate which crossing direction they control.
- Pedestrian signal pushbuttons should be reachable from a flat surface, at a maximum height of 3.5 feet and be located on a level landing to ensure ease of operation by pedestrians in wheelchairs.
- Walk intervals should be provided during every cycle, especially in high pedestrian traffic areas.

*Landscaping used on the Sea Street in Seattle, Washington shows how stormwater treatment can be tied to aesthetically pleasing plantings. (Image from Seattle, WA, Public Utilities: Seattle.gov)*



*Street trees buffer and soften often urban environments in a number of psychological, physical, and ecological ways; their shade is particularly helpful to pedestrians in North Carolina during summer months.*

## LANDSCAPING

The introduction of vegetation in an urban environment can provide a welcomed intervention of nature into a place that is otherwise hardened from buildings, concrete, and asphalt. It can be used to provide a separation buffer between pedestrians and motorists, reduce the width of a roadway, calm traffic by creating a visual narrowing of the roadway, enhance the street environment, and help to generate a desired aesthetic.

Street trees and other plantings provide comfort, a sense of place, and a more natural and inviting setting for pedestrians. Landscaping and the aforementioned street furniture make people feel welcome.

There are also some instances where islands of vegetation are created to collect and filter stormwater from nearby streets and buildings. These islands are referred to as constructed wetlands, rain gardens, and/or bioswales. When these devices are employed, the benefits listed above are coupled with economic and ecologic benefits of treating stormwater at its source. There are many examples of this in Oregon and Washington, particularly Seattle's Green Streets Program. Using thoughtful design to treat stormwater as an amenity rather than waste to be disposed of in an environmentally harmful manner is gaining popularity nationwide.

An issue with this or any landscaping treatment is that of ongoing maintenance. The responsibility often falls on local municipalities although there are instances where local community groups have provided funding and volunteers for maintenance. The best way to address the maintenance issue is to design using native plant material that is already adapted to the local soil and climate. Growth pattern and space for maturation, particularly with larger tree plantings, are important to avoid cracking sidewalks and other pedestrian obstructions.

## ROADWAY LIGHTING IMPROVEMENTS

Proper lighting in terms of quality, placement, and sufficiency can greatly enhance a nighttime urban experience as well as create a safe environment for motorists and pedestrians. Two-thirds of all pedestrian fatalities occur during low-light conditions (AASHTO, 2004: Guide for the Planning, Design, and Operation of Pedestrian Facilities). Attention should be paid to crossings so that there is sufficient ambience for motorists to see pedestrians. To be most effective, lighting should be consistent, adequately spaced, and distinguished, providing adequate light.

In most cases, roadway street lighting can be designed to illuminate the sidewalk area as well. The visibility needs of both pedestrian and motorist should be considered. In commercial or downtown areas and other areas of high pedestrian volumes, the addition of lower level, pedestrian-scale lighting to streetlights with emphasis on crossings and intersections may be employed to generate a desired ambience. A variety of lighting choices include mercury vapor, incandescent, or less expensive high-pressure sodium lighting for pedestrian level lighting. Roadway streetlights can range from 20-40 feet in height while pedestrian-scale lighting is typically 10-15 feet.

It is important to note that every effort should be made to address and prevent light pollution. Also known as photo pollution, light pollution is 'excess or obtrusive light created by humans'.

### GUIDELINES:

- Ensure pedestrian walkways and crossways are sufficiently lit.
- Consider adding pedestrian-level lighting in areas of higher pedestrian volumes, downtown, and at key intersections.
- Install lighting on both sides of streets in commercial districts.
- Use uniform lighting levels
- Use full cut-off light fixtures to avoid excess light pollution



*Above: An example of pedestrian-scale lighting.*

## STREET FURNITURE AND WALKING ENVIRONMENT

As part of a comprehensive sidewalk and walkway design, all street furniture should be placed in a manner that allows for a safe, pleasurable, and accessible walking environment. Good-quality street furniture will show that the community values its public spaces and is more cost-effective in the long run. Street furniture includes benches, trash bins, signposts, newspaper racks, water fountains, bike racks, restaurant seating, light posts, and other ornaments that are found within an urban street environment. Street furniture should mostly be considered in the downtown area and other important pedestrian-active areas.

In addition to keeping areas free of obstruction from furniture, a walking environment should be clean and well maintained. Attention to removing debris, trimming vegetation, allowing for proper stormwater drainage, providing proper lighting and sight angles, and repairing or replacing broken or damaged paving material can make an enormous difference in pedestrian perception of safety and aesthetics. Special attention should be paid to the needs of the visually impaired so that tripping hazards and low hanging obstructions are removed.

### GUIDELINES:

- Ensure proper placement of furniture; do not block pedestrian walkway or curb ramps or create sightline problems.
- Wall mounted Objects = not to protrude more than 4" from a wall between 27" and 7' from the ground
- Single post mounted Objects = not to protrude more than 4" from each side of the post between 27" and 7' from the ground
- Multiple Post Mounted Objects = lowest edge should be no higher than 27" and no lower than 7'
- Place street furniture at the end of on-street parking spaces rather than in middle to avoid vehicle-exiting conflict.



*The street furniture shown here is placed in such a manner so as to create a safe, pleasurable, and accessible walking environment*

## PEDESTRIAN SIGNS AND WAYFINDING

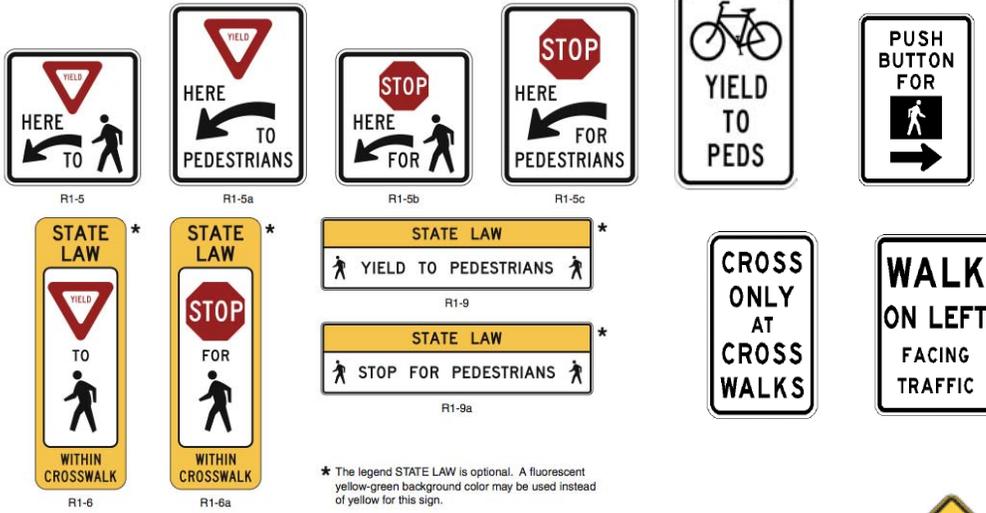
Signage provides important safety and wayfinding information to motorist and pedestrian residents and tourists. From a safety standpoint, motorists should be given advance warning of upcoming pedestrian crossings or of traffic calming areas. Signage of any type should be used and regulated judiciously. An inordinate amount of signs creates visual clutter. Under such a condition, important safety or wayfinding information may be ignored resulting in confusion and possible pedestrian vehicle conflict. Regulations should also address the orientation, height, size, and sometimes even style of signage to comply with a desired local aesthetic.

*For a step-by-step guide to help non-professionals participate in the process of developing and designing a signage system, as well as information on the range of signage types, visit the Project for Public Places website: [http://www.pps.org/info/amenities\\_bb/signage\\_guide](http://www.pps.org/info/amenities_bb/signage_guide)*

Regulatory signage is used to inform motorists or pedestrians of a legal requirement and should only be used when a legal requirement is not otherwise apparent (AASHTO, 2004: Guide for the Planning, Design, and Operation of Pedestrian Facilities).

*Below: Typical traffic signs found around pedestrian friendly places.*

Sign	MUTCD Code	MUTCD Section	Conventional Road	
Yield here to Peds	R1-5	2B.11	450x450 (18x18)	Regulatory
Yield here to Peds	R1-5a	2B.11	450x600 (18x24)	
In-Street Ped Crossing	R1-6, R1-6a	2B.12	300x900 (12x36)	
Peds and Bikes Prohibited	R5-10b	2B.36	750x450 (30x18)	
Peds Prohibited	R5-10c	2B.36	600x300 (24x12)	
Walk on Left Facing Traffic	R9-1	2B.43	450x600 (18x24)	
Cross only at Crosswalks	R9-2	2B.44	300x450 (12x18)	
No Ped Crossing	R9-3a	2B.44	450x450 (18x18)	
No Hitch Hiking	R9-4	2B.43	450x600 (18x24)	
No Hitch Hiking (symbol)	R9-4a	2B.43	450x450 (18x18)	
Bikes Yield to Peds	R9-6	9B.10	300x450 (12x18)	
Ped Traffic Symbol	R10-4b	2B.45	225x300 (9x12)	
School Advance Warning	S1-1	7B.08	900x900 (36x36)	School, Warning, informational
School Bus Stop Ahead	S3-1	7B.10	750x750 (30x30)	
Pedestrian Traffic	W11-2	2C.41	750x750 (30x30)	
Playground	W15-1	2C.42	750x750 (30x30)	
Hiking Trail	I-4	--	600x600 (24x24)	
1. Larger signs may be used when appropriate. 2. Dimensions are shown in millimeters followed by inches in parentheses and are shown as width x height. 3. First dimension in millimeters; dimensions in parentheses are in inches. 4. All information in table taken directly from MUTCD.				



School, Warning, and Informational Signs



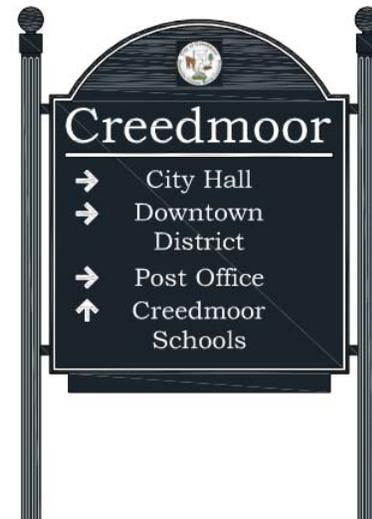
Warning signage is used to inform motorists and pedestrians of unexpected or unusual conditions. When used, they should be placed to provide adequate response times. These include school warning signs and pedestrian crossing signs.

Informational and wayfinding signage can provide information providing guidance to a location along a trail or other pedestrian facility. Wayfinding signage should orient and communicate in a clear, concise and functional manner. It should enhance pedestrian circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity.

Maintenance of signage is as important as walkway maintenance. Clean, graffiti free, and relevant signage enhances guidance, recognition, and safety for pedestrians.



Examples from the Town of Creedmoor's new downtown signs.



## RECTANGULAR RAPID FLASH BEACON (RRFB)

Also known as “Light Emitting Diode (LED) Rapid-Flash System”, “Stutter Flash” or “LED Beacons”, RRFBs are user-actuated amber LEDs that supplement warning signs at unsignalized intersections or mid-block crosswalks. They can be activated by pedestrians manually by a push button or passively by a pedestrian detection system. RRFBs use an irregular flash pattern that is similar to emergency flashers on police vehicles and may be installed on either two-lane or multi-lane roadways.

An official FHWA-sponsored experimental implementation and evaluation conducted in St. Petersburg, Florida found that RRFBs at pedestrian crosswalks are dramatically more effective at increasing driver yielding rates to pedestrians than traditional overhead beacons. The addition of RRFB may also increase the safety effectiveness of other treatments, such as the use of advance yield markings with YIELD (or STOP) HERE FOR PEDESTRIANS signs.

### RRFB GUIDELINES:

- Currently, state and federal approval is required for use.
- Flashers should only flash during the times when crossings occur (e.g., such as during Creedmoor’s school drop-off and pickup hours). This can be done with a time clock, pedestrian push button to activate the flasher, or through automatic pedestrian detection devices.
- RRFBs can also use use automated passive (e.g., video or infrared) pedestrian detection, and should be unlit when not activated.
- RRFBs typically receive power by standalone solar panel units, but may also be wired to a traditional power source.
- Warning flashers can be mounted over the road or along the side of the road, and when used should be used in conjunction with advance warning signs.



*Activated, solar-powered, roadside RRFB at a mid-block crosswalk.*

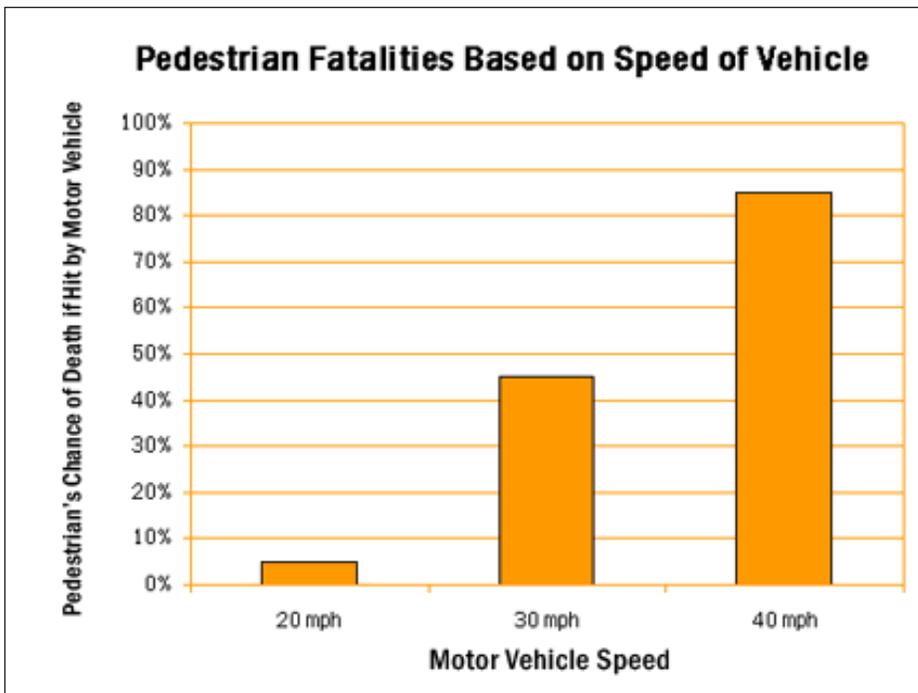
*The MUTCD gave interim approval to RRFBs for optional use in limited circumstances in July 2008. The interim approval allows for usage as a warning beacon to supplement standard pedestrian crossing warning signs and markings at either a pedestrian or school crossing; where the crosswalk approach is not controlled by a yield sign, stop sign, or traffic-control signal; or at a crosswalk at a roundabout.*

*The MUTCD interim approval memo also contains other provisions for the implementation of the device and should be reviewed. For more details, see the see 2009 MUTCD, page 523, Section 4L.03*

## TRAFFIC CALMING TREATMENTS

Traffic calming is a procedure in which the arrangement of the street and its elements encourages slower traffic to ensure safe speeds. Typically, compliance with traffic control devices are optional but with the use of physical and visual cues that traffic calming introduces, drivers are forced to respond to the calming procedures.

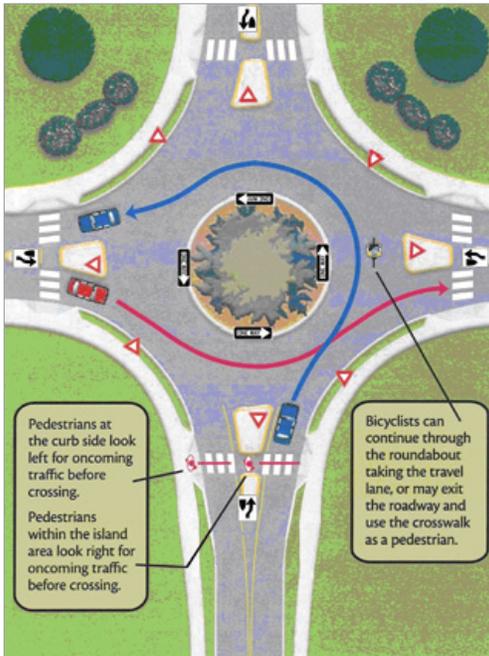
Research on effective traffic calming in the U.S. suggests that traffic calming can effectively reduce the speed of vehicular traffic, decrease the number of automobile accidents, and contribute to noise reduction. Research also supports that the use of multiple traffic calming procedures will exponentially reduce the number of crashes.



Above: Graph from *Killing Speed and Saving Lives*, U.K. Department of Transportation, London, 1987.

Right: Example of multi-modal intersection with traffic calming elements.





*Movement within a roundabout.*



*A traffic mini-circle helps reduce vehicle speeds, but still allows cars and emergency vehicles to pass through the intersection with little difficulty.*



*Roundabouts (and other circular intersection types) allow for landscaping, monuments, and other aesthetic uses within the central island.*

## MINI CIRCLES AND ROUNDABOUTS

Mini-circles are traffic islands raised to curb height, located at the center of an intersection. The design of a mini-circle is intended to force motorists to reduce speed in order to turn in a circular motion. Drivers making left turns are directed to go on the far side of the circle prior to making the turn. Drivers going straight must go around the circle before proceeding. And drivers going right must yield to traffic that is in the mini-circle.

The center portion of the mini-circle is usually landscaped with various plant materials that allow motorists and pedestrians clear sights to all sides of the intersection. In locations where landscaping is not feasible, traffic circles can be enhanced through specific pavement materials.

Mini-circles are designed to slow traffic but because they do not have the capability of controlling right turns at the intersection, pedestrians and cyclists do encounter potential risk. In order to compensate for this risk, right curb radii should complement this treatment to discourage high speed right turn maneuvers. Large vehicles (i.e. delivery and fire trucks) can be accommodated with a roll-curb on the mini-circle.

Cyclist and pedestrian needs can also be accommodated by moving crosswalks away from the mini-circle to a mid-block crossing or next intersection.



*Vehicles entering the roundabout give way to vehicles in the roundabout.*

## CHICANE

A chicane is a traffic method used to narrow and/or turn the roadway with the use of divergent paths and shifting parking lanes. When motorists are prevented from driving in a direct linear fashion, their speeds are normally reduced. Using chicanes is a successful way to force motorist to shift travel lanes and restrict direct forward movement. Shifts can be created by moving street parking from one side to the other or by building landscaped islands that gradually cause the motorist to maneuver the obstacles in order to continue progression.



*This chicane narrows the street to fewer lanes and requires traffic to move slowly.*

## CHOKERS

Chokers are a design tool used to widen sidewalks or planting beds along vehicular corridors to decrease the width of the travel lane. By narrowing the street, effectively reducing the travel lanes by half of a lane wide, the choker forces motorist to yield to each other and slow down. In order for this to function effectively, the width of the travel lane cannot be wide enough for two cars to pass. Sixteen feet is typically effective (and will permit emergency vehicles to pass unimpeded).

Chokers can be created by bringing both curbs in, or they can be done by more dramatically widening one side at a midblock location. They can also be used at intersections, creating a gateway effect when entering a street.



*The choker produces a narrow passage for vehicular traffic.*

## SPEED HUMPS

Speed humps are 3"-4" raised mounds that extend the width of the street to deter motorists from excessive speeds. Speed humps should not be confused with the speed "bump" that is often found in mall parking lots. Generally, speed humps are 12' to 14' in length and span the width of the road. The length and height of the speed humps determine the speed at which traffic will travel over the devices. Shorter lengths and greater heights slow cars most drastically.

The traditional 12' hump has a design speed of 15 to 20 mph, a 14' hump a few miles per hour higher, and a 22' table has a design speed of 25 to 30 mph. The longer humps are much gentler for larger vehicles.

*A warning sign notifies motorists before humps. Humps generally have pavement markings to enhance visibility and a taper edge near the curb to allow a gap for drainage.*



*Speed humps are used on streets to reduce speed, causing motorists to slow down.*

## RAISED INTERSECTION

A raised intersection is a speed table that spans the area of the entire intersection. Each side of the intersection has a ramp for the vehicle approach, which elevates the entire intersection to the level of the sidewalk. They can be built with a variety of materials, including asphalt, concrete, stamped concrete, or pavers. The crosswalks on each approach are also elevated as part of the treatment to enable pedestrians to cross the road at the same level as the sidewalk, eliminating the need for curb ramps. Use detectable warnings to mark the boundary between the sidewalk and the street.



*A raised intersection slows all vehicular movements through the intersection and improves pedestrian crossings in all directions.*



*The raised intersection above enhances the pedestrian environment at the urban crossings.*



*Raised intersections, like the one above, reduce vehicle speeds at busy intersections.*

## RAISED PEDESTRIAN CROSSING

A raised pedestrian crossing is also a speed table, with a flat portion the width of a crosswalk, usually 10' to 15'. Raised intersections and crosswalks encourage motorists to yield to the vehicular ramp and elevated pedestrians.



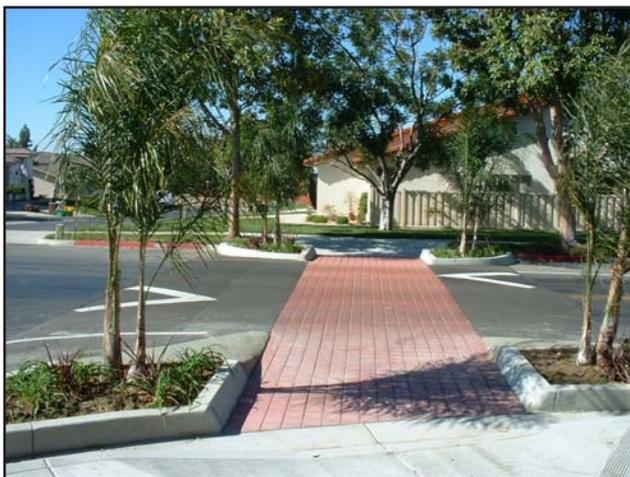
*A raised pedestrian crossing provides a continuous route for the pedestrian at the same level as the sidewalk. Pavement markings may be used on the slope to make the crossing visible to motorists.*



*The raised crosswalk helps reduce vehicle speeds and the measures tend to have a predictable speed reduction solution.*

## SPEED TABLE

A speed table is a broad portion of a speed hump, used as a pedestrian crossing. The speed table can either be parabolic, making it more like a speed hump, or trapezoidal, which creates the flat table like surface. Speed tables can be used in combination with curb extensions where street parking exists.



*The speed table (above) causes less of a delay than humps and are typically preferred by fire departments over speed humps.*



*The speed table design (above) allows cars to pass without slowing as significantly as with speed humps.*

## GATEWAYS

A gateway is a physical landmark that indicates a change in environment from a higher speed major roadway to a minor road (lower speed district). Gateways can include different traffic calming techniques such as of street narrowing, medians, signing, archways, roundabouts, or other identifiable features. Gateways reveal to motorist that an area of slower speeds has been reached. This can help achieve the goal of meeting expectations and preparing motorists for a different driving environment. Gateways are only an introduction and slower speeds are not likely to be maintained unless the entire area has been redesigned or other traffic-calming features are used.



*Gateways produce an expectation for motorists to drive more slowly and watch for pedestrians when entering a commercial, business, or residential district from a higher speed roadway.*



*Creative gateways help establish a unique image for an area.*

## PAVING MATERIALS

Paving materials are important to the function and look of a street, both in the road and on the sidewalk. Paving materials can also increase crosswalk visibility and act as a physical traffic calming device when using paved brick or cobblestone. Textured crosswalks should be marked with reflective lines since these types of crosswalks are not as visible, especially at night or on rainy days.

Smooth travel surfaces are best for all pedestrians. The pedestrian path material should be firm, planar, and slip-resistant. Concrete is the preferred walking surface. A different look can be achieved by using stamped concrete or concrete pavers, which are available in a variety of colors and shapes. Colored paving can often enhance the function of portions of the roadway, such as a colored bicycle lane. This can create the perception of street narrowing, in addition to enhancing the travel facility for bicyclists.



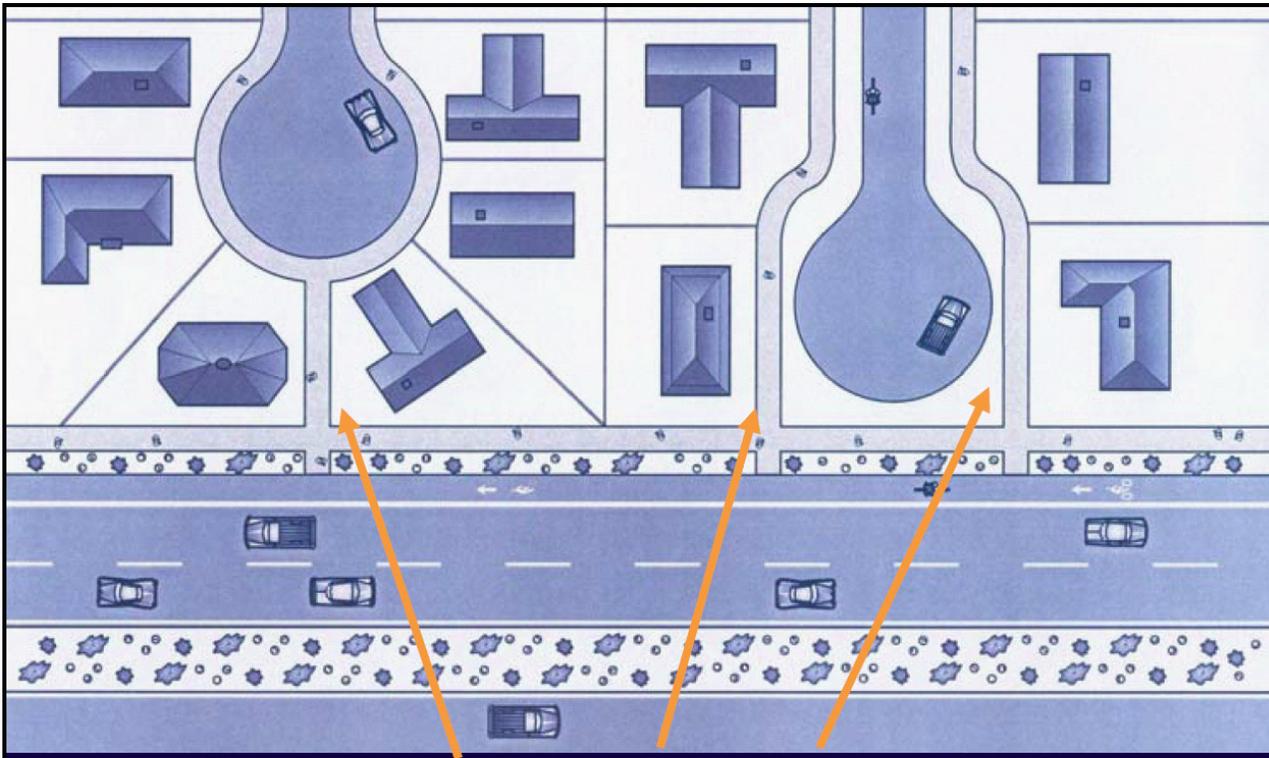
*Brick or cobblestone streets help slow traffic and create a feeling that the street is not a highway or fast-moving arterial.*



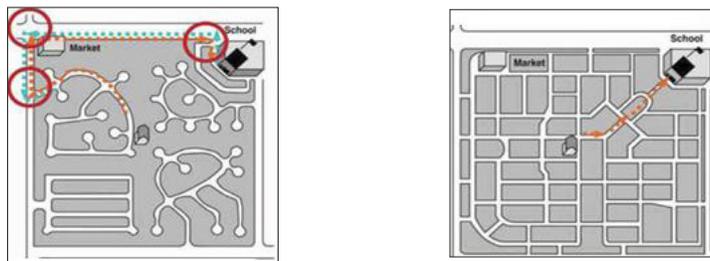
*This paving creates an aesthetic enhancement to the street.*

## LAND USE AND PEDESTRIAN TRAVEL

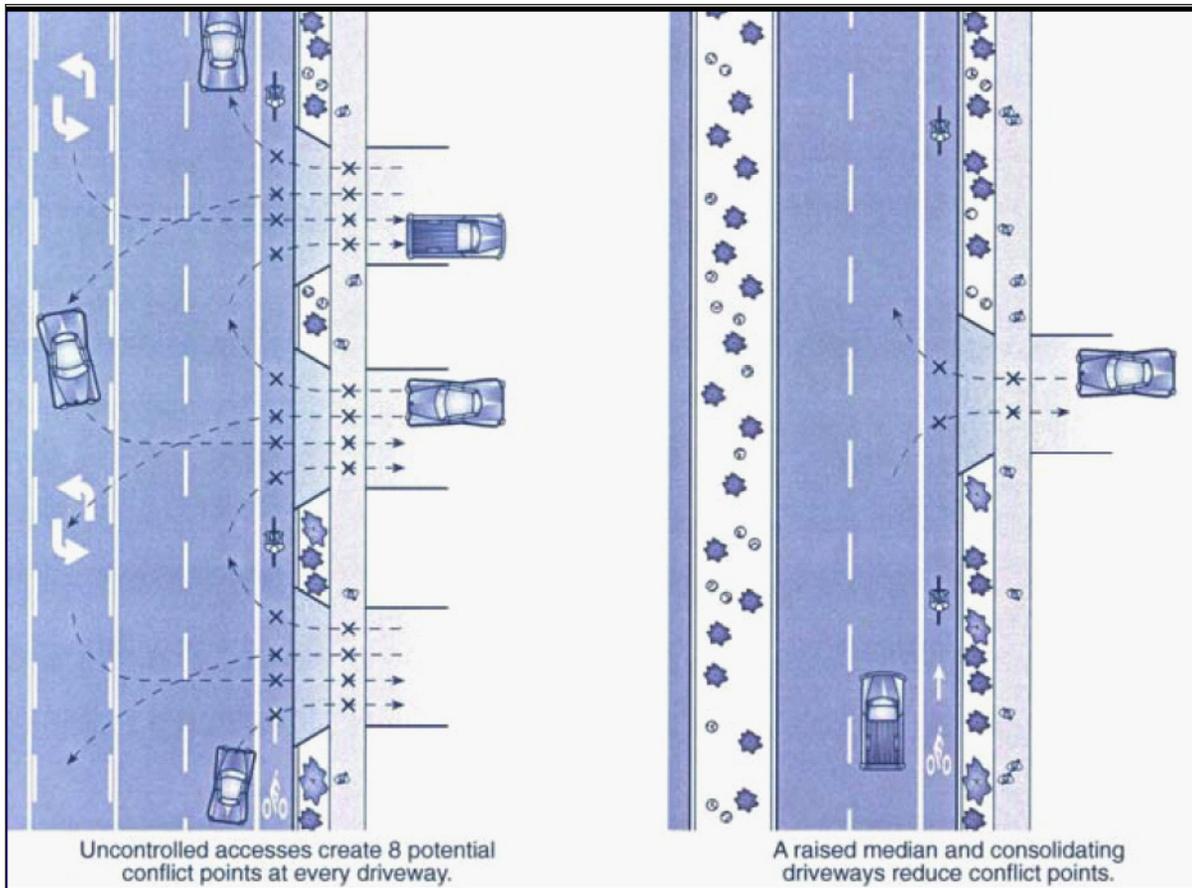
The land use and development environment plays a major role in the walkability of an area. The following are brief examples of the importance of connectivity, not only along corridors and across roadways, but also between neighborhoods and into commercial sites.



The above example shows the effectiveness of connecting a traditional cul-de-sac neighborhood to a collector or arterial road.



The above example communicates the difference between a connected street and pedestrian network (on right) versus separated cul-de-sac neighborhoods. A person living in the scenario to the right will have a longer trip to school and will likely be forced to travel by automobile. A person living in the scenario could walk to school safely and easily. This scenario, used consistently, would significantly reduce traffic.



*Driveway access management is a key issue throughout the United States. A high number of driveway accesses and/or wide driveway accesses create more conflict points between motorists, bicyclists, and pedestrians. The City of Creedmoor should attempt to retrofit and build new development with the goal of achieving the scenario to the right.*



*Pedestrian connectivity is critical not only between destinations but within destinations. The example shown above shows an excellent commercial area with clear pedestrian pathways of travel.*



#### APPENDIX OUTLINE:

#### OVERVIEW OF PUBLIC INVOLVEMENT

#### PUBLIC COMMENT FORM RESULTS

## OVERVIEW

In order to gain local knowledge and input, a public outreach component was included as an integral part of planning efforts for the Creedmoor Pedestrian Transportation Plan. Public input was gathered through several different means including online and hardcopy public comment forms, a public meeting at City Hall, and a public outreach session at the Creedmoor Music Festival in September 2011. This offered the representatives and citizens of Creedmoor opportunity to contribute to the Plan's development.

Additionally, this Plan's Steering Committee, composed of citizens, City staff and other representatives, met several times during the planning process. The group established visions and goals for the Plan, identified areas of need, and reviewed the Plan. Members of the Committee marked up maps and identified pedestrian problem areas and possible solutions. Input from the Committee is reflected throughout the recommendations of this planning document.

## PUBLIC COMMENT FORM RESULTS

A comment form was developed for Creedmoor during this process and made available in both hardcopy and online form. The comment form was available online for three months, from June through August 2011. To maximize the responses to the online form, the web address was distributed at the public meeting, through committee members, in newsletters, and on flyers.

More than seventy people completed the comment form. The comment form results shown on the following pages have been tabulated to provide insight into local residents' opinions and values.

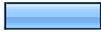
**1. How do you rate present conditions for walking in Creedmoor? (select one)**

		Response Percent	Response Count
Excellent		4.2%	3
Fair		38.0%	27
Poor		57.7%	41

**2. How important to you is improving walking conditions in Creedmoor? (select one)**

		Response Percent	Response Count
Very important		70.0%	49
Somewhat important		22.9%	16
Not important		7.1%	5

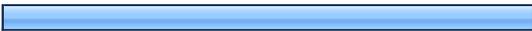
**3. Do you feel that the City should consider non-automobile transportation (i.e. pedestrian and bicycle) as a priority? (select one)**

		Response Percent	Response Count
Yes		70.4%	50
No		15.5%	11
Doesn't matter		14.1%	10

**4. How often do you walk now? (select one)**

		Response Percent	Response Count
never		20.3%	14
few times per month		26.1%	18
few times per week		40.6%	28
5+ times per week		13.0%	9

**6. Should public funds be used to improve pedestrian options and facilities?**

		Response Percent	Response Count
Yes		87.9%	58
No		12.1%	8

**7. If you had \$100 to spend on improvements to the transportation system in Creedmoor, how would you spend it? You can spend it on one thing or spread it around. (Be sure your total equals \$100 and do not include the "\$" sign.)**

	Response Average	Response Total	Response Count
Greenways (off-street paved trails)	36.45	1,385	38
Road widening projects	26.46	635	24
Road repaving projects	21.25	510	24
Maintenance of existing sidewalks	19.07	515	27
Intersection upgrades (new traffic lights, stop signs, etc)	24.38	585	24
<b>New sidewalks and crosswalks</b>	<b>48.64</b>	<b>2,140</b>	<b>44</b>

**8. What types of funds should be used? (Choose all that apply)**

		Response Percent	Response Count
Capital improvements bond or other financing strategy		57.1%	36
Existing local taxes		52.4%	33
New local taxes		12.7%	8
<b>State and federal grants</b>		<b>76.2%</b>	<b>48</b>
Other (please specify)		11.1%	7

**9. For what purposes do you walk most now and/or would you want to walk for in the future? Select all that apply.**

		Response Percent	Response Count
<b>Fitness or recreation</b>		87.5%	56
Transportation to some destination		48.4%	31
Social visits		39.1%	25
Spending time outdoors		48.4%	31

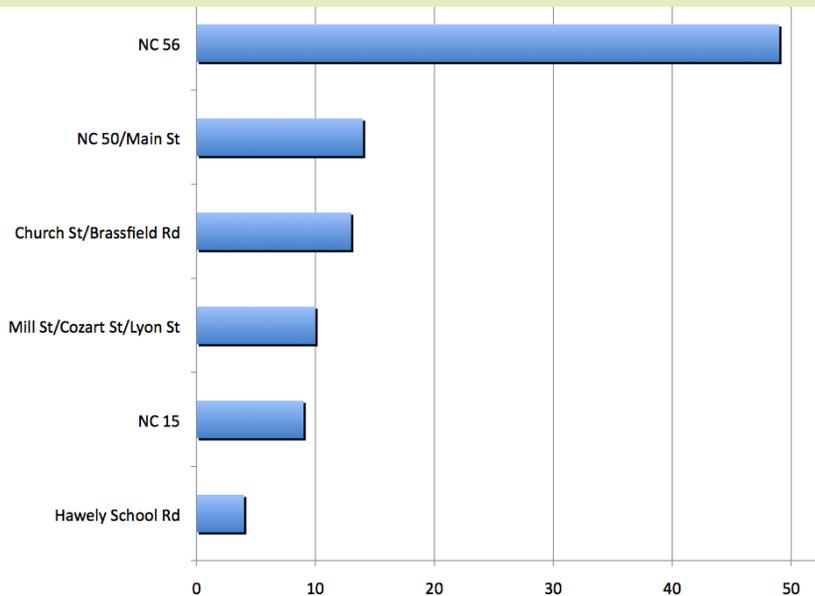
**10. What walking destinations would you most like to get to? Select all that apply.**

		Response Percent	Response Count
Downtown		60.3%	38
Lake Rogers Recreation Area		36.5%	23
Place of work		11.1%	7
School		39.7%	25
Restaurants		57.1%	36
Shopping		33.3%	21
Parks		52.4%	33
Entertainment		25.4%	16
<b>Trails and greenways</b>		66.7%	42
Libraries or recreation centers		39.7%	25
Essential services (post office, grocery stores, etc)		39.7%	25

### 11. What factors discourage walking? Select all that apply.

		Response Percent	Response Count
Lack of sidewalks and trails		80.0%	52
Lack of crosswalks at traffic signals		38.5%	25
Lack of pedestrian signals at intersections		27.7%	18
Automobile traffic and speed		55.4%	36
Lack of interest		13.8%	9
Lack of time		15.4%	10
Aggressive motorist behavior		41.5%	27
Sidewalks in need of repair		12.3%	8
Lack of nearby destinations		44.6%	29
Criminal activity		10.8%	7
Level of street lighting		23.1%	15
Lack of landscaping and/or buffer between sidewalks and road		26.2%	17

### 12. What do you think are the top roadway corridors most needing new sidewalk?



### 13. What do you think are the top roadway intersections needing pedestrian crossing improvements?

15 / Joe Peed	Hwy 56
15 and 56	Hwy 56
15 and Joe Peed	Hwy 56
15-56-50	hwy 56 - Schools to Food Lion
50 / 56	Hwy 56 & Main St
50 and 56	Hwy 56 E
56 & Hawley School Rd	Hwy 56/50 intersection at CVS
56 & Hawley School Road	Hwy. 50 (Main Street) & Hwy. 56
56 & Main St	Hwy. 50 & Church Street
56 & Main Street	Hwy. 56 & Lake Road
56 + Hayes	Hwy15
56 + Moss Hayes	Intersection near CVS drugstore
56 and 50	lake and main
56 at schools	Lake Rd & Main
by the high school	Lake Rd.
BY THE HIGHSCHOOL	LAKE ROAD \HWY 15
Cazart St	Lyon St
Church St.	Lyon St
Church Street	main & *****
Church Street at Bridget Way	Main & Lyon
Cozart St	Main and Church
Creedmoor	Main St & Lyon
Creedmoor Elementary	Main St.
Creedmoor Elm	Main St. & Church St
CVS corner	Main Street
Downtown crossing	Main Street
Food Lion	Main Street
Hawley Brassfield, Hwy 56	Main Street
Hawley School Road and NC 56	Main Street
High School Intersection	Main to Food Lion
highway 56 and food lion	Main to Hawley School
Hwy 15	Main to Rogers Lake
Hwy 15	MAIN/56
Hwy 15	MAIN/CHURCH ST
Hwy 15 & Hwy 56	Mill St
Hwy 15 & Lake Rd	Mill St
Hwy 50	Moss Hayes/ Hayes
hwy 50 and hwy 56	Mt. Energy Elementary
Hwy 50 at First Baptist Church	NC 50 and NC 56
Hwy 50 S	NC 56 and US 15
Hwy 56	post office area
	SGHS (Hwy 56 & Hawley Rd)
	W. Dogwood Dr.

### 14. What is your zip code?

	Response Count
Large Majority in 27522	63

### 15. What is your gender?

		Response Percent	Response Count
M		39.7%	25
F		60.3%	38

### 16. What is your age?

		Response Percent	Response Count
0-18		6.3%	4
19-25		4.7%	3
26-35		6.3%	4
36-45		23.4%	15
46-55		32.8%	21
56-65		15.6%	10
65 and older		10.9%	7

### 17. Where do you live?

		Response Percent	Response Count
City of Creedmoor		70.3%	45
Granville County		20.3%	13
Other		9.4%	6



## CHAPTER OUTLINE:

### OVERVIEW

### STATE AND FEDERAL

### LOCAL GOVERNMENT

### PRIVATE SECTOR

## OVERVIEW

When considering possible funding sources for the City of Creedmoor's pedestrian projects, it is important to consider that it is highly unlikely that all construction activities will be accomplished from a single funding source since these projects are expected to be in the millions of dollars. It will be necessary to consider several sources of funding, that when combined, would support full project construction. This paper outlines the most likely sources of funding for the projects at the federal, state, local government level and from the private sector.

## STATE AND FEDERAL

Federal funding is typically directed through State agencies to local governments either in the form of grants or direct appropriations. These projects do not qualify for the recently passed federal stimulus funding (2009 American Recovery and Reinvestment Act) since they are not "shovel ready." Also, State budget shortfalls may make it extremely difficult to accurately forecast available funding for future project development. The following is a list of possible Federal and State funding sources that could be used to support construction of the many pedestrian projects. Some types of federal funding requires a 20% local match, however the recent stimulus money does not require a match. Since these funding categories are difficult to forecast, it is recommended that the City continue to work with the MPO on getting pedestrian projects listed in the TIP (Transportation Improvement Program), as discussed below.

### **DEPARTMENT OF ENERGY (DOE)**

The Department of Energy's Energy Efficiency and Conservation Block Grants (EECBG) grants may be used to reduce energy use and fossil fuel emissions and for improvements in energy efficiency. Section 7 of the funding announcement states that these grants provide opportunities for the development and implementation of transportation programs to conserve energy

used in transportation including development of infrastructure such as bike lanes and pathways and pedestrian walkways. Although, this grant period has passed, more opportunities may arise. More information can be found at <http://www.eecbg.energy.gov/>

### **NC DEPARTMENT OF TRANSPORTATION AND SAFETEA-LU**

The most likely source of funding for the pedestrian projects would come from the North Carolina Department of Transportation and the federal funding program SAFETEA-LU. Some of the sub-programs within SAFETEA-LU and within NCDOT are listed below:

- **State Transportation Improvement Program (STIP):** The STIP contains funding for various transportation divisions of NCDOT including: highways, aviation, enhancements, public transportation, rail, bicycle and pedestrians, and the Governor's Highway Safety Program. STIP is the largest single source of funding within SAFETEA-LU and NCDOT.
- **NCDOT Discretionary Funds:** The Statewide Discretionary Fund consists of \$10 million and is administered by the Secretary of the Department of Transportation. This fund can be used on any project at any location within the State. Primary, urban, secondary, industrial access, and spot safety projects are eligible for this funding. The City would have to make a direct appeal to the Secretary of NCDOT to access these funds.
- **NCDOT Contingency Fund:** The Statewide Contingency Fund is a \$10 million fund administered by the Secretary of Transportation. Again, the City would have to appeal directly to the Secretary, ideally using legislative contacts.
- **NCDOT Enhancement Funding:** Federal Transportation Enhancement funding is administered by NCDOT and serves to strengthen the cultural, aesthetic, and environmental aspects of the State's intermodal transportation system. Transportation Enhancement (TE) funding is awarded through NCDOT. The State typically will make a Call for Projects, and each project must benefit the traveling public and help communities increase transportation choices and access, enhance the built or natural environment and create a sense of place.
- **NCDOT Bicycle and Pedestrian Project:** Funds for bicycle and pedestrian projects come from several different sources. Allocation of funds depends on the type of project/program and other criteria. Projects can include independent and incidental projects.

### **NC DEPARTMENT OF ENVIRONMENT – RECREATIONAL TRAILS AND ADOPT-A-TRAIL GRANTS**

The State Trails Program is a section of the N.C. Division of Parks and Recreation. The program originated in 1973 with the North Carolina Trails System Act and is dedicated to helping citizens, organizations and agencies plan, develop and manage all types of trails ranging from greenways and trails for hiking,

biking and horseback riding to river trails and off-highway vehicle trails. The Recreation Trails Program awards grants up to \$75,000 per project. The Adopt-A-Trail Program awards grants up to \$5,000 per project.

### **POWELL BILL FUNDS**

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by G.S. 136-41.1 through 136-41.4. Powell Bill funds shall be expended only 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.

### **COMMUNITY DEVELOPMENT BLOCK GRANT FUNDS**

Community Development Block Grant (CDBG) funds are available to local municipal or county governments for projects that enhance the viability of communities by providing decent housing and suitable living environments and by expanding economic opportunities, principally for persons of low- and moderate-income. State CDBG funds are provided by the U.S. Department of Housing and Urban Development (HUD) to the state of North Carolina. Some urban counties and cities in North Carolina receive CDBG funding directly from HUD. Each year, CDBG provides funding to local governments for hundreds of critically-needed community improvement projects throughout the state. These community improvement projects are administered by the Division of Community Assistance and the Commerce Finance Center under eight grant categories. Two categories might be of support to the City of Creedmoor Pedestrian Projects: infrastructure and community revitalization.

### **LAND AND WATER CONSERVATION TRUST FUND**

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.

### **N.C. PARKS AND RECREATION TRUST FUND (PARTF)**

The Parks and Recreation Trust Fund (PARTF) provide dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities and public authorities, as defined by G.S. 159-7, are eligible applicants.

A local government can request a maximum of \$500,000 with each application. An applicant must match the grant dollar-for-dollar, 50% of the total cost of the project, and may contribute more than 50%. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match. [http://www.ncparks.gov/About/grants/partf\\_main.php](http://www.ncparks.gov/About/grants/partf_main.php)

## **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 was allocated \$15 million in Safe Routes to School funding for fiscal years 2005 through 2009 for infrastructure or non-infrastructure projects. In 2009, more than \$3.6 million went to 22 municipalities and local agencies for infrastructure and 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 DBPT/NCDOT, (919) 807-0774.

## **LOCAL GOVERNMENT**

Local funding sources that would support sidewalk and pedestrian project construction will most likely be limited but should be explored.

## **CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION**

The Capital Area Metropolitan Planning Organization (MPO) manages the transportation planning process required by Federal law. The MPO plans for the area's surface transportation needs, including highways, transit, bicycle, and pedestrian facilities. There are two subcommittees of the MPO: the Technical Advisory Committee and the Technical Coordinating Committee. An important part of the transportation planning process is to identify transportation needs and to explore feasible alternatives to meet those needs. Plans and programs are often conducted in partnership with the NC Department of Transportation to identify needs and projects to enhance Creedmoor's transportation infrastructure.

It is suggested that the City work closely with the MPO on getting these projects listed in the TIP since this may be the primary source of funding for the project.

## **CITY OF CREEDMOOR CAPITAL IMPROVEMENT PROGRAMMING AND RESERVE FUNDS**

The City of Creedmoor may have funding available to support some elements of construction or repair. It will be important to meet with City BOC representatives and the City Manager to judge the availability of this funding.

### **OTHER LOCAL FUNDING OPTIONS**

- Bonds/Loans
- Taxes
- Impact fees
- Exactions
- Partnerships

### **PRIVATE SECTOR**

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are several examples of private funding opportunities available.

#### **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 ensuring 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. Website: <http://www.landfortomorrow.org/>

#### **THE ROBERT WOOD JOHNSON FOUNDATION**

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972 and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To assure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles

- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

For more specific information about what types of projects are funded and how to apply, visit <http://www.rwjf.org/applications/>.

### **NORTH CAROLINA COMMUNITY FOUNDATION**

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for nonprofit 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. The foundation also manages various scholarship programs statewide. Visit: <http://nccommunityfoundation.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. They have two grant cycles per year and generally do not fund land acquisition. However, they may be able to offer support in other areas of open space and greenways development. More information is available at [www.zsr.org](http://www.zsr.org).

### **BANK OF AMERICA CHARITABLE FOUNDATION, INC.**

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grants program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community Development Programs, and specifically the Program Related Investments. This program targets low and moderate income communities and serves to encourage entrepreneurial business development. Visit the web site for more information: [www.bankofamerica.com/foundation](http://www.bankofamerica.com/foundation).

### **DUKE ENERGY FOUNDATION**

Funded by Duke Energy shareholders, this non-profit organization makes charitable grants to selected non-profits or governmental subdivisions. Each annual grant must have:

- An internal Duke Energy business “sponsor”
- A clear business reason for making the contribution

The grant program has three focus areas: Environment and Energy Efficiency, Economic Development, and Community Vitality. Related to this project, the Foundation would support programs that support conservation, training and research around environmental and energy efficiency initiatives. Web site: <http://www.duke-energy.com/community/foundation.asp>.

## **AMERICAN GREENWAYS EASTMAN KODAK AWARDS**

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$250 to \$2,000) to stimulate the planning, design and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying or political activities. For more information visit The Conservation Fund's website at: [www.conservationfund.org](http://www.conservationfund.org).

## **NATIONAL TRAILS FUND**

American Hiking Society created the National Trails Fund in 1998, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. 73 million people enjoy foot trails annually, yet many of our favorite trails need major repairs due to a \$200 million backlog of badly needed maintenance. National Trails Fund grants help give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. 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.

Projects the American Hiking Society will consider include:

- 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).

## **THE CONSERVATION ALLIANCE**

The Conservation Alliance is a non-profit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. One hundred percent of its member companies' dues go directly to diverse, local community groups across the nation - groups like Southern Utah Wilderness Alliance, Alliance for the Wild Rockies, The Greater Yellowstone Coalition, the South Yuba River Citizens' League, RESTORE: The North Woods and the Sinkyone Wilderness Council (a Native American-owned/operated wilderness park). For these groups, who seek to protect the last great wild lands and waterways from resource extraction and commercial development, the Alliance's grants are substantial in size (about \$35,000 each), and have often made the difference

between success and defeat. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to grassroots environmental groups across the nation, and its member companies are proud of the results: To date the groups funded have saved over 34 million acres of wild lands and 14 dams have been either prevented or removed-all through grassroots community efforts.

The Conservation Alliance is a unique funding source for grassroots environmental groups. It is the only environmental grant maker whose funds come from a potent yet largely untapped constituency for protection of ecosystems - the non-motorized outdoor recreation industry and its customers. This industry has great incentive to protect the places in which people use the clothing, hiking boots, tents and backpacks it sells. The industry is also uniquely positioned to educate outdoor enthusiasts about threats to wild places, and engage them to take action. Finally, when it comes to decision-makers - especially those in the Forest Service, National Park Service, and Bureau of Land Management, this industry has clout - an important tool that small advocacy groups can wield.

The Conservation Alliance Funding Criteria: The Project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation. We're not looking for mainstream education or scientific research projects, but rather for active campaigns. All projects should be quantifiable, with specific goals, objectives and action plans and should include a measure for evaluating success. The project should have a good chance for closure or significant measurable results over a fairly short term (one to two years). Funding emphasis may not be on general operating expenses or staff payroll.

Web site: [www.conservationalliance.com/index.m](http://www.conservationalliance.com/index.m).

E-mail: [john@conservationalliance.com](mailto:john@conservationalliance.com).

### ***NATIONAL FISH AND WILDLIFE FOUNDATION (NFWF)***

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation awards matching grants under its Keystone Initiatives to achieve measurable outcomes in the conservation of fish, wildlife, plants and the habitats on which they depend. Awards are made on a competitive basis to eligible grant recipients, including federal, tribal, state, and local governments, educational institutions, and non-profit conservation organizations. Project proposals are received on a year-round, revolving basis with two decision cycles per year. Grants generally range from \$50,000-\$300,000 and typically require a minimum 2:1 non-federal match.

Funding priorities include bird, fish, marine/coastal, and wildlife and habitat conservation. Other projects that are considered include controlling invasive species, enhancing delivery of ecosystem services in agricultural systems, minimizing the impact on wildlife of emerging energy sources, and developing future conservation leaders and professionals. Website: <http://www.nfwf.org/AM/Template.cfm?Section=Grants> where additional grant programs are described.

### **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 nonprofit 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, and 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/>.

### **BLUECROSS BLUESHIELD OF NORTH CAROLINA FOUNDATION**

Blue Cross Blue Shield (BCBS) focuses on programs that use an outcome approach to improve the health and well-being of residents. The Health of Vulnerable Populations grants program focuses on improving health outcomes for at-risk populations. The Healthy Active Communities grant concentrates on increased physical activity and healthy eating habits. Eligible grant applicants must be located in North Carolina, be able to provide recent tax forms and, depending on the size of the nonprofit, provide an audit.

BlueCross BlueShield of NC Foundation  
P.O Box 2291  
Durham, NC 27702  
919-765-7347  
<http://www.bcbsncfoundation.org/>

### **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 workdays. Volunteers can also be used for fund-raising, maintenance, and programming needs.



*Sewer corridor near  
Park St. Pump Station*

# ACQUISITION STRATEGIES

## CHAPTER OUTLINE:

OVERVIEW

PARTNERSHIPS

GREENWAY  
ACQUISITION  
TOOLS

EXAMPLE SEWER/  
GREENWAY EASEMENT

## OVERVIEW

There are many different ways to secure trail right-of-way for greenway systems. It will be necessary to work with some landowners to secure trail right-of-way when it does not exist. The following text provides a list of options that should be considered. Funding sources for acquiring right-of-way and trail development are described and provided in Appendix B.

The following sections detail a list of specific strategies including the formation of partnerships and a toolbox of acquisition options.

## PARTNERSHIPS

The City of Creedmoor should pursue partnerships with land trusts and land managers to make more effective use of their land acquisition funds and strategies. The following offers recommendations on how these partnerships could be strengthened

### LAND TRUSTS

Land trust organizations are valuable partners when it comes to acquiring land and rights-of-way for greenways. These groups can work directly with landowners and conduct their business in private so that sensitive land transactions are handled in an appropriate manner. Once the transaction has occurred, the land trust will usually convey the acquired land or easement to a public agency, such as a town or county for permanent stewardship and ownership.

### PRIVATE LAND MANAGERS

Another possible partnership that could be strengthened would be with the utility companies that manage land throughout

the region. Trails and greenways can be built on rights-of-ways that are either owned or leased by electric and natural gas companies. Electric utility companies have long recognized the value of partnering with local communities, non-profit trail organizations, and private land owners to permit their rights-of-ways to be used for trail development. This has occurred all over the United States and throughout North Carolina.

The City of Creedmoor should actively update and maintain relationships with private utility and land managers to ensure that community wide bicycle, pedestrian and greenway system can be accommodated within these rights-of-way. The respective municipalities will need to demonstrate to these companies that maintenance will be addressed, liability will be reduced and minimized and access to utility needs will be provided.

## GREENWAY ACQUISITION TOOLS

The following menu of tools describe various methods of acquisition that can be used by landowners, land conservation organizations, the City of Creedmoor, Granville County, and other surrounding municipalities to acquire greenway lands.

## GOVERNMENT REGULATION

Regulation is defined as the government's ability to control the use and development of land through legislative powers. Regulatory methods help shape the use of land without transferring or selling the land. The following types of development ordinances are regulatory tools that can meet the challenges of projected suburban growth and development as well as conserve and protect greenway resources.

**GROWTH MANAGEMENT MEASURES (CONCURRENCY):** Concurrency-based development approaches to growth management simply limit development to areas with adequate public infrastructure. This helps regulate urban sprawl, provides for quality of life in new development, and can help protect open space. In the famous case with the Town of Ramapo (1972), the Town initiated a zoning ordinance making the issue of a development permit contingent on the presence of public facilities such as utilities and parks. This was upheld in Court and initiated a wave of slow-growth management programs nationwide. This type of growth management can take the form of an adequate public facilities ordinance.

**PERFORMANCE ZONING:** Performance zoning is zoning based on standards that establish minimum requirements or maximum limits on the effects or characteristics of a use. This is often used for the mixing of different uses to minimize incompatibility and improve the quality of development.

For example, how a commercial use is designed and functions determines whether it could be allowed next to a residential area or connected to a greenway.

**INCENTIVE ZONING (DEDICATION/DENSITY TRANSFERS):** Also known as incentive zoning, this mechanism allows greenways to be dedicated for density transfers on development of a property. The potential for improving or subdividing part or all of a parcel can be expressed in dwelling unit equivalents or other measures of development density or intensity. Known as density transfers, these dwelling unit equivalents may be relocated to other portions of the same parcel or to contiguous land that is part of a common development plan. Dedicated density transfers can also be conveyed to subsequent holders if properly noted as transfer deeds.

**CONSERVATION ZONING:** This mechanism recognizes the problem of reconciling different, potentially incompatible land uses by preserving natural areas, open spaces, waterways, and/or greenways that function as buffers or transition zones. It can also be called buffer or transition zoning. This type of zoning, for example, can protect waterways by creating buffer zones where no development can take place. Care must be taken to ensure that the use of this mechanism is reasonable and will not destroy the value of a property.

**OVERLAY ZONING:** An overlay zone and its regulations are established in addition to the zoning classification and regulations already in place. These are commonly used to protect natural or cultural features such as historic areas, unique terrain features, scenic vistas, agricultural areas, wetlands, stream corridors, and wildlife areas.

**NEGOTIATED DEDICATIONS:** This type of mechanism allows municipalities to negotiate with landowners for certain parcels of land that are deemed beneficial to the protection and preservation of specific stream corridors. This type of mechanism can also be exercised through dedication of greenway lands when a parcel is subdivided. Such dedications would be proportionate to the relationship between the impact of the subdivision on community services and the percentage of land required for dedication—as defined by the US Supreme Court in *Dolan v Tigar*d.

**RESERVATION OF LAND:** This type of mechanism does not involve any transfer of property rights but simply constitutes an obligation to keep property free from development for a stated period of time. Reservations are normally subject to a specified period of time, such as 6 or 12 months. At the end of this period, if an agreement has not already been reached to transfer certain property rights, the reservation expires.

**PLANNED UNIT DEVELOPMENT:** A planned unit development allows a mixture of uses. It also allows for flexibility in density and dimensional

requirements, making clustered housing and common open space along with addressing environmental conditions a possibility. It emphasizes more planning and can allow for open space and greenway development and connectivity.

**CLUSTER DEVELOPMENT:** Cluster development refers to a type of development with generally smaller lots and homes close to one another. Clustering can allow for more units on smaller acreages of land, allowing for larger percentages of the property to be used for open space and greenways.

## LAND MANAGEMENT

Management is a method of conserving the resources of a specific greenway parcel by an established set of policies called management plans for publicly owned greenway land or through easements with private property owners. Property owners who grant easements retain all rights to the property except those which have been described in the terms of the easement. The property owner is responsible for all taxes associated with the property, less the value of the easement granted. Easements are generally restricted to certain portions of the property, although in certain cases an easement can be applied to an entire parcel of land. Easements are transferable through title transactions, thus the easement remains in effect perpetually.

**MANAGEMENT PLANS:** The purpose of a management plan is to establish legally binding contracts which define the specific use, treatment, and protection for publicly owned greenway lands. Management plans should identify valuable resources; determine compatible uses for the parcel; determine administrative needs of the parcel, such as maintenance, security, and funding requirements; and recommend short-term and long-term action plans for the treatment and protection of greenway lands.

**CONSERVATION EASEMENT:** This type of easement generally establishes permanent limits on the use and development of land to protect the natural resources of that land. When public access to the easement is desired, a clause defining the conditions of public access can be added to the terms of the easement. Dedicated conservation easements can qualify for both federal income tax deductions and state tax credits. Tax deductions are allowed by the Federal government for donations of certain conservation easements. The donation may reduce the donor's taxable income.

**PRESERVATION EASEMENT:** This type of easement is intended to protect the historical integrity of a structure or important elements in the landscape by sound management practices. When public access to the easement is

desired, a clause defining the conditions of public access can be added to the terms of the easement. Preservation easements may qualify for the same federal income tax deductions and state tax credits as conservation easements.

**PUBLIC ACCESS EASEMENTS:** This type of easement grants public access to a specific parcel of property when a conservation or preservation easement is not necessary. The conditions of use are defined in the terms of the public access easement.

## ACQUISITION

Acquisition requires land to be donated or purchased by a government body, public agency, greenway manager, or qualified conservation organization.

**DONATION OR TAX INCENTIVES:** In this type of acquisition, a government body, public agency, or qualified conservation organization agrees to receive the full title or a conservation easement to a parcel of land at no cost or at a “bargain sale” rate. The donor is then eligible to receive a federal tax deduction of up to 30 to 50 percent of their adjusted gross income. Additionally, North Carolina offers a tax credit of up to 25 percent of the property’s fair market value (up to \$5000). Any portion of the fair market value not used for tax credits may be deducted as a charitable contribution. Also, property owners may be able to avoid any inheritance taxes, capital gains taxes, and recurring property taxes.

**FEE SIMPLE PURCHASE:** This is a common method of acquisition where a local government agency or private greenway manager purchases property outright. Fee simple ownership conveys full title to the land and the entire “bundle” of property rights including the right to possess land, to exclude others, to use land, and to alienate or sell land.

**EASEMENT PURCHASE:** This type of acquisition is the fee simple purchase of an easement. Full title to the land is not purchased, only those rights granted in the easement agreement. Therefore the easement purchase price is less than the full title value.

**PURCHASE / LEASE BACK:** A local government agency or private greenway organization can purchase a piece of land and then lease it back to the seller for a specified period of time. This lease may contain restrictions regarding the development and use of the property.

**BARGAIN SALE:** A property owner can sell property at a price less than the appraised fair market value of the land. Sometimes the seller can

derive the same benefits as if the property were donated. Bargain Sale is attractive to sellers when the seller wants cash for the property, the seller paid a low cash price and thus is not liable for high capital gains tax, and/or the seller has a fairly high current income and could benefit from the donation of the property as an income tax deduction.

**INSTALLMENT SALE:** An installment sale is a sale of property at a gain where at least one payment is to be received after the tax year in which the sale occurs. These are valuable tools to help sellers defer capital gains tax. This provides a potentially attractive option when purchasing land for open space from a possible seller.

**OPTION / FIRST RIGHT OF REFUSAL:** A local government agency or private organization establishes an agreement with a public agency or private property owner to provide the right of first refusal on a parcel of land that is scheduled to be sold. This form of agreement can be used in conjunction with other techniques, such as an easement to protect the land in the short-term. An option would provide the agency with sufficient time to obtain capital to purchase the property or successfully negotiate some other means of conserving the greenway resource.

**PURCHASE OF DEVELOPMENT RIGHTS:** A voluntary purchase of development rights involves purchasing the development rights from a private property owner at a fair market value. The landowner retains all ownership rights under current use, but exchanges the rights to develop the property for cash payment.

**LAND BANKING:** Land banking involves land acquisition in advance of expanding urbanization. The price of an open space parcel prior to development pressures is more affordable to a jurisdiction seeking to preserve open space. A municipality or county might use this technique to develop a greenbelt or preserve key open space or agricultural tracts. The jurisdiction should have a definite public purpose for a land banking project.

**CONDEMNATION:** The practice of condemning private land for use as a greenway is viewed as a last resort policy. Using condemnation to acquire property or property rights can be avoided if private and public support for the greenway program is present. Condemnation is seldom used for the purpose of dealing with an unwilling property owner. In most cases, condemnation has been exercised when there has been an absentee property ownership, when the title of the property is not clear, or when it becomes apparent that obtaining the consent for purchase would be difficult because there are numerous heirs located in other parts of the United States or different countries.

**EMINENT DOMAIN:** The right of exercising eminent domain should be done so with caution by the community and only if the following conditions exist: 1) the property is valued by the community as an environmentally sensitive parcel of land, significant natural resource, or critical parcel of land, and as such has been defined by the community as irreplaceable property; 2) written scientific justification for the community's claim about the property's value has been prepared and offered to the property owner; 3) all efforts to negotiate with the property owner for the management, regulation, and acquisition of the property have been exhausted and that the property owner has been given reasonable and fair offers of compensation and has rejected all offers; and 4) due to the ownership of the property, the timeframe for negotiating the acquisition of the property will be unreasonable, and in the interest of pursuing a cost effective method for acquiring the property, the community has deemed it necessary to exercise eminent domain.



**EXAMPLE SEWER/GREENWAY EASEMENT (CONTINUED)**

TO HAVE AND TO HOLD the aforesaid easement interest and all privileges and rights thereunto belonging to the City of Raleigh, its successors and assigns forever.

THE FURTHER TERMS AND CONDITIONS of the easement interest herein conveyed are as follows:

1. The City is authorized hereunder to remove and keep removed from the easement all trees, shrubs, underbrush, and part thereof, or other obstructions as necessary to maintain, repair or protect said greenway and sanitary sewer lines and appurtenances or as necessary for the prevention or treatment of disease and for other good husbandry practices. Except as hereinabove allowed there shall be no other removal, destruction or cutting of trees, shrubs or other vegetation from the easement interest herein described and conveyed by any person or entity.

2. Nothing herein shall be construed to grant to the City of Raleigh or the general public any right of access through or over any property of the Grantors except that lying within the easement interest herein described and conveyed.

3. Following the installation of a sanitary sewer main and appurtenant facilities within the permanent easement hereinabove referenced and described, any and all temporary construction easement interest conveyed herein to the City shall terminate; and further, the City shall regrade, mulch, and reseed all damaged lands lying with the permanent and temporary easements, to the end that the same shall be restored to a condition as good as or better than that before construction.

4. Except as herein authorized, no building, fence, sign, or other structure nor any vehicular surface area shall be erected within the easement interest herein described and conveyed.

5. There shall be no dumping of ashes, garbage, waste, or other unsightly or offensive material on the easement interest herein described and conveyed.

6. There shall be no excavation, dredging, removal of loam, rock, sand, gravel or other material, nor any building of roads or other change in the natural topography of the easement interest herein described and conveyed, excepting for the construction and maintenance of the greenway and the sanitary sewer system undertaken by the City of Raleigh or its agents.

7. The City of Raleigh shall have the right and duty to maintain this Greenway Easement in a clean, natural, and undisturbed state, consistent with the City's master Greenway Plan.

### EXAMPLE SEWER/GREENWAY EASEMENT (CONTINUED)

8. The City agrees to hold Grantors harmless from liability for personal injury or property damage arising out of the use of the easement for greenway purposes; provided Grantors shall not be held harmless from liability caused by the active conduct or instrumentalities of the Grantors, their agents, invitees, or contractors; or by acts of Grantors, their agents, invitees or contractors which violate the terms and conditions of this Deed of Easement.

The City does not waive or forfeit the right to take action to insure compliance with the terms, conditions and purposes of this easement by a prior failure to act.

The City reserves the right to enter the subject property at reasonable times in order to monitor compliance with the terms, conditions, restrictions, and purposes of this easement.

The Grantors expressly reserve the right to continue the use of the property for all purposes not inconsistent with this easement.

The Grantors agree that the terms, conditions and restrictions of this easement will be inserted by them in any subsequent deed or other legal instrument by which they divest themselves of either the fee simple title to, or of their possessory interest in, the subject property.

TO HAVE AND TO HOLD the said right, privilege and easement herein granted to the City of Raleigh, its successors and assigns forever. The covenants agreed to and the terms, conditions and restrictions imposed herein shall be binding upon the said Grantors and their agents, personal representatives, heirs and assigns, and all other successors to them in interest and shall continue as a servitude running in perpetuity with the above described land.

AND the said Grantors covenant that they are vested of the premises in fee and have the right to convey the same in fee simple; that the same are free from encumbrances except as hereinafter stated; and that they will warrant and defend title to the same against the claims of all persons whomsoever, subject only to the following exceptions:

IN WITNESS WHEREOF, the said Grantors have hereunto set their hand and seals the day and year first above written.

WITNESS:

_____	_____ (SEAL)
	_____ (SEAL)
Approved as to Form:	_____ (SEAL)
_____	_____ (SEAL)
(Deputy) City Attorney	_____ (SEAL)

EXAMPLE SEWER/GREENWAY EASEMENT (CONTINUED)

STATE OF NORTH CAROLINA

INDIVIDUAL

COUNTY OF \_\_\_\_\_

I, \_\_\_\_\_, a Notary Public do hereby certify that \_\_\_\_\_, personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

This the \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

(SEAL)

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

STATE OF NORTH CAROLINA

PARTNERSHIP  
(INDIVIDUAL)

COUNTY OF \_\_\_\_\_

I, \_\_\_\_\_, a Notary Public do hereby certify that \_\_\_\_\_, general partner of \_\_\_\_\_, personally appeared before me this day and acknowledged the execution, with proper authorization, of the foregoing instrument, all in accordance with partnership instruments recorded in Book \_\_\_\_\_ Page \_\_\_\_\_ in the \_\_\_\_\_ County Registry and that the instrument is the act and deed of the partnership.

This the \_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_.

(SEAL)

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

NORTH CAROLINA

CORPORATE

COUNTY OF \_\_\_\_\_

This is to certify that on the \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, before me personally came \_\_\_\_\_, with whom I am personally acquainted, who, being by me duly sworn, says that (s)he is the (assistant) secretary, and \_\_\_\_\_ is the (vice) president of \_\_\_\_\_, the corporation described in and which executed the foregoing instrument; that (s)he knows the common seal of said corporation; that the seal affixed to the foregoing instrument is said common seal, and the name of the corporation was subscribed thereto by the said (assistant) secretary, and that the said (assistant) secretary and (vice) president subscribed their names thereto, and said common seal was affixed, all by order of the Board of Directors of said corporation, and that the said instrument is the act and deed of said corporation.

WITNESS my hand and official seal this the \_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_.

(SEAL)

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

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City Hall

**CHAPTER OUTLINE:****OVERVIEW****US DEPARTMENT OF  
TRANSPORTATION  
BICYCLE AND PEDESTRIAN  
POLICY****UNITED STATES DEPARTMENT  
OF TRANSPORTATION  
POLICY STATEMENT ON  
BICYCLE AND PEDESTRIAN  
ACCOMMODATION  
REGULATIONS AND  
RECOMMENDATIONS (2010)****NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION  
COMPETE STREETS 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****NCDOT PEDESTRIAN POLICY  
GUIDELINES****NCDOT ONLINE PEDESTRIAN  
PLANNING AND  
DESIGN RESOURCES LIST****OVERVIEW**

A number of federal and state 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.

**UNITED STATES 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 Creedmoor:

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)

## **UNITED STATES DEPARTMENT OF TRANSPORTATION POLICY STATEMENT ON BICYCLE AND PEDESTRIAN ACCOMMODATION REGULATIONS AND RECOMMENDATIONS (MARCH 2010)**

### Purpose

The United States Department of Transportation (DOT) is providing this Policy Statement to reflect the Department's support for the development of fully integrated active transportation networks. The establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments. Walking and bicycling foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use. Legislation and regulations exist that require inclusion of bicycle and pedestrian policies and projects into transportation plans and project development. Accordingly, transportation agencies should plan, fund, and implement improvements to their walking and bicycling networks, including linkages to transit. In addition, DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics when

appropriate. Transportation programs and facilities should accommodate people of all ages and abilities, including people too young to drive, people who cannot drive, and people who choose not to drive.

### Policy Statement

The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.

### Authority

This policy is based on various sections in the United States Code (U.S.C.) and the Code of Federal Regulations (CFR) in Title 23—Highways, Title 49—Transportation, and Title 42—The Public Health and Welfare. These sections, provided in the Appendix, describe how bicyclists and pedestrians of all abilities should be involved throughout the planning process, should not be adversely affected by other transportation projects, and should be able to track annual obligations and expenditures on nonmotorized transportation facilities.

### Recommended Actions

The DOT encourages States, local governments, professional associations, community organizations, public transportation agencies, and other government agencies, to adopt similar policy statements on bicycle and pedestrian accommodation as an indication of their commitment to accommodating bicyclists and pedestrians as an integral element of the transportation system. In support of this commitment, transportation agencies and local communities should go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks. Such actions should include:

- Considering walking and bicycling as equals with other transportation modes: The primary goal of a transportation system is to safely and efficiently move people and goods. Walking and bicycling are efficient transportation modes for most short trips and, where convenient intermodal systems exist, these nonmotorized trips can easily be linked with transit to significantly increase trip distance. Because of the

benefits they provide, transportation agencies should give the same priority to walking and bicycling as is given to other transportation modes. Walking and bicycling should not be an afterthought in roadway design.

- Ensuring that there are transportation choices for people of all ages and abilities, especially children: Pedestrian and bicycle facilities should meet accessibility requirements and provide safe, convenient, and interconnected transportation networks. For example, children should have safe and convenient options for walking or bicycling to school and parks. People who cannot or prefer not to drive should have safe and efficient transportation choices.

- Going beyond minimum design standards: Transportation agencies are encouraged, when possible, to avoid designing walking and bicycling facilities to the minimum standards. For example, shared-use paths that have been designed to minimum width requirements will need retrofits as more people use them. It is more effective to plan for increased usage than to retrofit an older facility. Planning projects for the long-term should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.

- Integrating bicycle and pedestrian accommodation on new, rehabilitated, and limited-access bridges: DOT encourages bicycle and pedestrian accommodation on bridge projects including facilities on limited-access bridges with connections to streets or paths.

- Collecting data on walking and biking trips: The best way to improve transportation networks for any mode is to collect and analyze trip data to optimize investments. Walking and bicycling trip data for many communities are lacking. This data gap can be overcome by establishing routine collection of nonmotorized trip information. Communities that routinely collect walking and bicycling data are able to track trends and prioritize investments to ensure the success of new facilities. These data are also valuable in linking walking and bicycling with transit.

- Setting mode share targets for walking and bicycling and tracking them over time: A byproduct of improved data collection is that communities can establish targets for increasing the percentage of trips made by walking and bicycling.

Removing snow from sidewalks and shared-use paths: Current maintenance provisions require pedestrian facilities built with

Federal funds to be maintained in the same manner as other roadway assets. State Agencies have generally established levels of service on various routes especially as related to snow and ice events.

Improving nonmotorized facilities during maintenance projects: Many transportation agencies spend most of their transportation funding on maintenance rather than on constructing new facilities. Transportation agencies should find ways to make facility improvements for pedestrians and bicyclists during resurfacing and other maintenance projects.

### Conclusion

Increased commitment to and investment in bicycle facilities and walking networks can help meet goals for cleaner, healthier air; less congested roadways; and more livable, safe, cost-efficient communities. Walking and bicycling provide low-cost mobility options that place fewer demands on local roads and highways. DOT recognizes that safe and convenient walking and bicycling facilities may look different depending on the context — appropriate facilities in a rural community may be different from a dense, urban area. However, regardless of regional, climate, and population density differences, it is important that pedestrian and bicycle facilities be integrated into transportation systems. While DOT leads the effort to provide safe and convenient accommodations for pedestrians and bicyclists, success will ultimately depend on transportation agencies across the country embracing and implementing this policy.

Ray LaHood, United States Secretary of Transportation

## **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION COMPLETE STREETS POLICY**

In 2009, NCDOT unveiled its efforts to routinely provide for all users of the roads - pedestrians, bicyclists, public transportation users, and motorists of all ages and abilities. The new document:

- Explains the scope and applicability of the policy ("all transportation facilities within a growth area of a town or city funded by or through NCDOT, and planned, designed, or constructed on state maintained facilities, must adhere to this policy");
- Asserts the Department's role as a partner to local communities in transportation projects;
- Addresses the need for context-sensitivity;

- Sets exceptions (where specific travelers are prohibited and where there is a lack of current or future need) and a clear process for granting them (approval by the Chief Deputy Secretary); and
- Establishes a stakeholders group, including transportation professionals and interest groups, tasked to create comprehensive planning and design guidelines in support of the policy.

Visit [www.ncdot.gov](http://www.ncdot.gov) for the full document.

### **FHWA MEMORANDUM ON MAINSTREAMING BICYCLE AND PEDESTRIAN PROJECTS**

(See pages D-8 through D-10)


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Environment

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**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.

## **NCDOT PEDESTRIAN POLICY GUIDELINES**

(See pages D-15 through D-16)

## **NCDOT ONLINE PEDESTRIAN PLANNING AND DESIGN RESOURCES LIST**

(See pages D-17 through D-18)

## DEPARTMENT OF TRANSPORTATION PEDESTRIAN POLICY GUIDELINES EFFECTIVE OCTOBER 1, 2000

These guidelines provide an updated procedure for implementing the Pedestrian Policy adopted by the Board of Transportation August 1993 and the Board of Transportation Resolution September 8, 2000. The resolution reaffirms the Department's commitment to improving conditions for bicycling and walking, and recognizes non-motorized modes of transportation as critical elements of the local, regional, and national transportation system. The resolution encourages North Carolina cities and towns to make bicycling and pedestrian improvements an integral part of their transportation planning and programming.

### **REQUIREMENTS FOR DOT FUNDING:**

#### **REPLACEMENT OF EXISTING SIDEWALKS:**

The Department will pay 100% of the cost to replace an existing sidewalk that is removed to facilitate the widening of a road.

#### **TIP INCIDENTAL PROJECTS:**

DEFINED: Incidental pedestrian projects are defined as TIP projects where pedestrian facilities are included as part of the roadway project.

#### **REQUIREMENTS:**

1. The municipality and/or county notifies the Department in writing of its desire for the Department to incorporate pedestrian facilities into project planning and design. Notification states the party's commitment to participate in the cost of the facility as well as being responsible for all maintenance and liability. Responsibilities are defined by agreement. Execution is required prior to contract let.

The municipality is responsible for evaluating the need for the facility (ie: generators, safety, continuity, integration, existing or projected traffic) and public involvement.

2. Written notification must be received by the **Project Final Field Inspection (FFI) date**. Notification should be sent to the Deputy Highway Administrator - Preconstruction with a copy to the Project Engineer and the Agreements Section of the Program Development Branch. Requests received after the project FFI date will be incorporated into the TIP project, if feasible, and only if the requesting party commits by agreement to pay 100% of the cost of the facility.
3. The Department will review the feasibility of including the facility in our project and will try to accommodate all requests where the Department has acquired appropriate right of way on curb and gutter sections and the facility can be installed in the current project berm width. The standard project section is a 10-ft berm (3.0-meter) that accommodates a 5-ft sidewalk. In accordance with

AASHTO standards, the Department will construct 5-ft sidewalks with wheelchair ramps. Betterment cost (ie: decorative pavers) will be a Municipal responsibility.

4. If the facility is not contained within the project berm width, the Municipality is responsible for providing the right of way and/or construction easements as well as utility relocations, at no cost to the Department. This provision is applicable to all pedestrian facilities including multi-use trails and greenways.
5. A cost sharing approach is used to demonstrate the Department’s and the municipality’s/county’s commitment to pedestrian transportation (sidewalks, multi-use trails and greenways). The matching share is a sliding scale based on population as follows:

MUNICIPAL POPULATION	DOT PARTICIPATION	LOCAL PARTICIPATION
> 100,000	50%	50%
50,000 to 100,000	60%	40%
10,000 to 50,000	70%	30%
< 10,000	80%	20%

Note: The cost of bridges will not be included in the shared cost of the pedestrian installation if the Department is funding the installation under provision 6 - pedestrian facilities on bridges.

6. For bridges on streets with curb and gutter approaches, the Department will fund and construct sidewalks on both sides of the bridge facility if the bridge is less than 200 feet in length. If the bridge is greater than 200 feet in length, the Department will fund and construct a sidewalk on one side of the bridge structure. The bridge will also be studied to determine the costs and benefits of constructing sidewalks on both sides of the structure. If in the judgement of the Department sidewalks are justified, funding will be provided for installation. The above provision is also applicable to dual bridge structures. For dual bridges greater than 200 ft in length, a sidewalk will be constructed on the outside of one bridge structure. The bridges will also be studied to determine if sidewalks on the outside of both structures are justified.
7. FUNDING CAPS are no longer applicable.
8. This policy does not commit the Department to the installation of facilities in the Department’s TIP projects where the pedestrian facility causes an unpractical design modification, is not in accordance with AASHTO standards, creates an unsafe situation, or in the judgement of the Department is not practical to program.

INDEPENDENT PROJECTS

DEFINED: The DOT has a separate category of funds for all independent pedestrian facility projects in North Carolina where installation is unrelated to a TIP roadway project. An independent pedestrian facility project will be administered in accordance with Enhancement Program Guidelines.

## Useful On-Line Pedestrian Planning and Design Resources

<b>NCDOT Division of Bicycle &amp; Pedestrian Transportation</b>	<a href="http://www.ncdot.org/transit/bicycle/">http://www.ncdot.org/transit/bicycle/</a>
Board of Transportation Resolution on Mainstreaming	<a href="http://www.ncdot.org/transit/bicycle/laws/laws_resolution.html">http://www.ncdot.org/transit/bicycle/laws/laws_resolution.html</a>
NCDOT Pedestrian Policy Guidelines	<a href="http://www.ncdot.org/transit/bicycle/laws/ped_guide.pdf">http://www.ncdot.org/transit/bicycle/laws/ped_guide.pdf</a>
NCDOT Greenways - Administrative Process	<a href="http://www.ncdot.org/transit/bicycle/laws/laws_greenway_admin.html">http://www.ncdot.org/transit/bicycle/laws/laws_greenway_admin.html</a>
Funding	<a href="http://www.ncdot.org/transit/bicycle/funding/funding_intro.html">http://www.ncdot.org/transit/bicycle/funding/funding_intro.html</a>
Project Types	<a href="http://www.ncdot.org/transit/bicycle/projects/project_types/bpt_intro.html">http://www.ncdot.org/transit/bicycle/projects/project_types/bpt_intro.html</a>
Crash Data	<a href="http://www.ncdot.org/transit/bicycle/safety/safety_crashdata.html">http://www.ncdot.org/transit/bicycle/safety/safety_crashdata.html</a>
DBPT Long Range Plan	<a href="http://www.ncdot.org/transit/bicycle/projects/intro/projects_long_range.html">http://www.ncdot.org/transit/bicycle/projects/intro/projects_long_range.html</a>
Safe Routes to School Program	<a href="http://www.ncdot.org/transit/bicycle/saferoutes/SafeRoutes.html">http://www.ncdot.org/transit/bicycle/saferoutes/SafeRoutes.html</a>
<hr/>	
<b>NCDOT Division of Highways</b>	<a href="http://www.ncdot.org/doh/">http://www.ncdot.org/doh/</a>
<b>Alternative Delivery Unit – Publications for Download</b>	<a href="http://www.ncdot.org/doh/preconstruct/altern/value/manuals/">http://www.ncdot.org/doh/preconstruct/altern/value/manuals/</a>
Bridge Policy 2000	<a href="http://www.ncdot.org/doh/preconstruct/altern/value/manuals/bpe2000.doc">http://www.ncdot.org/doh/preconstruct/altern/value/manuals/bpe2000.doc</a>
Curb Cuts & Ramps for Disabled Persons	<a href="http://www.ncdot.org/doh/preconstruct/altern/value/manuals/handi.pdf">http://www.ncdot.org/doh/preconstruct/altern/value/manuals/handi.pdf</a>
Traditional Neighborhood Development Manual	<a href="http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf">http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf</a>
ADA – Detectable Warnings	<a href="http://www.ncdot.org/doh/preconstruct/ps/std_draw/06english/08/default.html">http://www.ncdot.org/doh/preconstruct/ps/std_draw/06english/08/default.html</a>
Highway Design Branch – Design Manual	<a href="http://www.ncdot.org/doh/preconstruct/altern/value/manuals/designmanual.html">http://www.ncdot.org/doh/preconstruct/altern/value/manuals/designmanual.html</a>
Policy and Procedure Manual (See Section 28)	<a href="http://www.ncdot.org/doh/preconstruct/altern/value/manuals/ppm/">http://www.ncdot.org/doh/preconstruct/altern/value/manuals/ppm/</a>
Policy on Street & Driveway Access	<a href="http://www.ncdot.org/doh/preconstruct/altern/value/manuals/pos.pdf">http://www.ncdot.org/doh/preconstruct/altern/value/manuals/pos.pdf</a>
<b>Traffic Engineering and Safety Systems Branch</b>	<a href="http://www.ncdot.org/doh/preconstruct/traffic/">http://www.ncdot.org/doh/preconstruct/traffic/</a>
NC Supplement to the Manual on Uniform Traffic Control Devices	<a href="http://www.ncdot.org/doh/preconstruct/traffic/MUTCD/">http://www.ncdot.org/doh/preconstruct/traffic/MUTCD/</a>
Crosswalks/Mid-Block Signing and Pavement Markings	<a href="http://www.ncdot.org/doh/preconstruct/traffic/tepl/Topics/C-36/C-36.html">http://www.ncdot.org/doh/preconstruct/traffic/tepl/Topics/C-36/C-36.html</a>

**UNC Highway Safety Research Center** <http://www.hsrc.unc.edu>

**Pedestrian & Bicycle Information Center** <http://www.pedbikeinfo.org/index.htm>

Walking <http://www.walkinginfo.org/>

Engineer Pedestrian Facilities <http://www.walkinginfo.org/engineering>

Pedestrian Safety Guide & Countermeasure Selection System (PEDSAFE) <http://www.walkinginfo.org/pedsafe/>

Develop Plans and Policies <http://www.walkinginfo.org/develop>

National Center for Safe Routes to School <http://www.saferoutesinfo.org>

**Federal Highway Administration Bicycle & Pedestrian Program** <http://www.fhwa.dot.gov/environment/bikeped/>

Bicycle and Pedestrian Provisions of Federal Transportation Legislation <http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm>

Bicycle & Pedestrian Programs <http://www.fhwa.dot.gov/environment/bikeped/overview.htm>

Program & Design Guidance <http://www.fhwa.dot.gov/environment/bikeped/guidance.htm>

Links to Other Resources <http://www.fhwa.dot.gov/environment/bikeped/bipedlnk.htm>

Publications <http://www.fhwa.dot.gov/environment/bikeped/publications.htm>

Pedestrian Safety [http://safety.fhwa.dot.gov/ped\\_bike/ped/index.htm](http://safety.fhwa.dot.gov/ped_bike/ped/index.htm)

Pedestrian & Bicycle Safety Research Page <http://www.tfsrc.gov/safety/pedbike/index.htm>

**National Highway Traffic Safety Administration – Traffic Safety: Pedestrians** <http://www.nhtsa.gov/portal/site/nhtsa/menuitem.dfedd570f698cabbf30811060008a0c/>

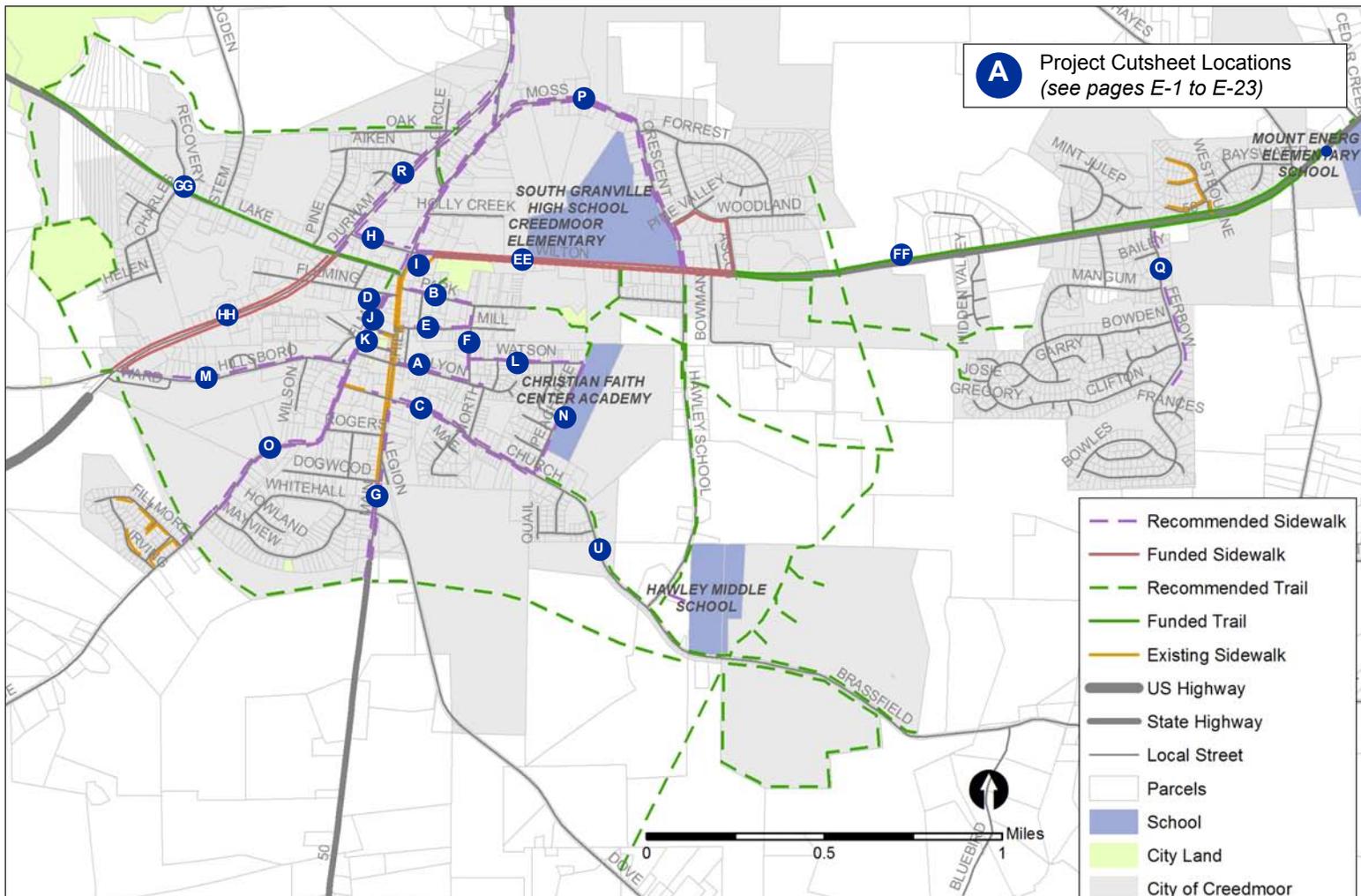
**National Center for Bicycling & Walking** <http://www.bikewalk.org/>



## DRAFT PROJECT CUTSHEETS

The following project cutsheets were created during the draft plan development stage of the planning process to offer a detailed look at some of the potential projects. They are included as an appendix for **reference purposes only**.

BELOW: DRAFT PROJECT CUT-SHEET LOCATIONS



## CUT-SHEET I.D. P & EE: DOWNTOWN SCHOOL LOOP

Creedmoor Elementary and South Granville High School are located in close proximity to Creedmoor's Downtown core. Both schools are within walking distance to Downtown, (the distance from the schools to the intersection of Main Street and Wilton Avenue is approximately 1/2 mile). This project will create an opportunity for pedestrians to walk from the existing sidewalk on Main Street to the schools, and it also allows pedestrians to safely walk on Moss Road, and Crescent Drive. An important component to this project is the construction of a safe pedestrian crossing facility in front of Creedmoor Elementary to connect pedestrians with sidewalk leading to Downtown. A safe pedestrian network is critical for linking the schools with Downtown Creedmoor and nearby neighborhoods.

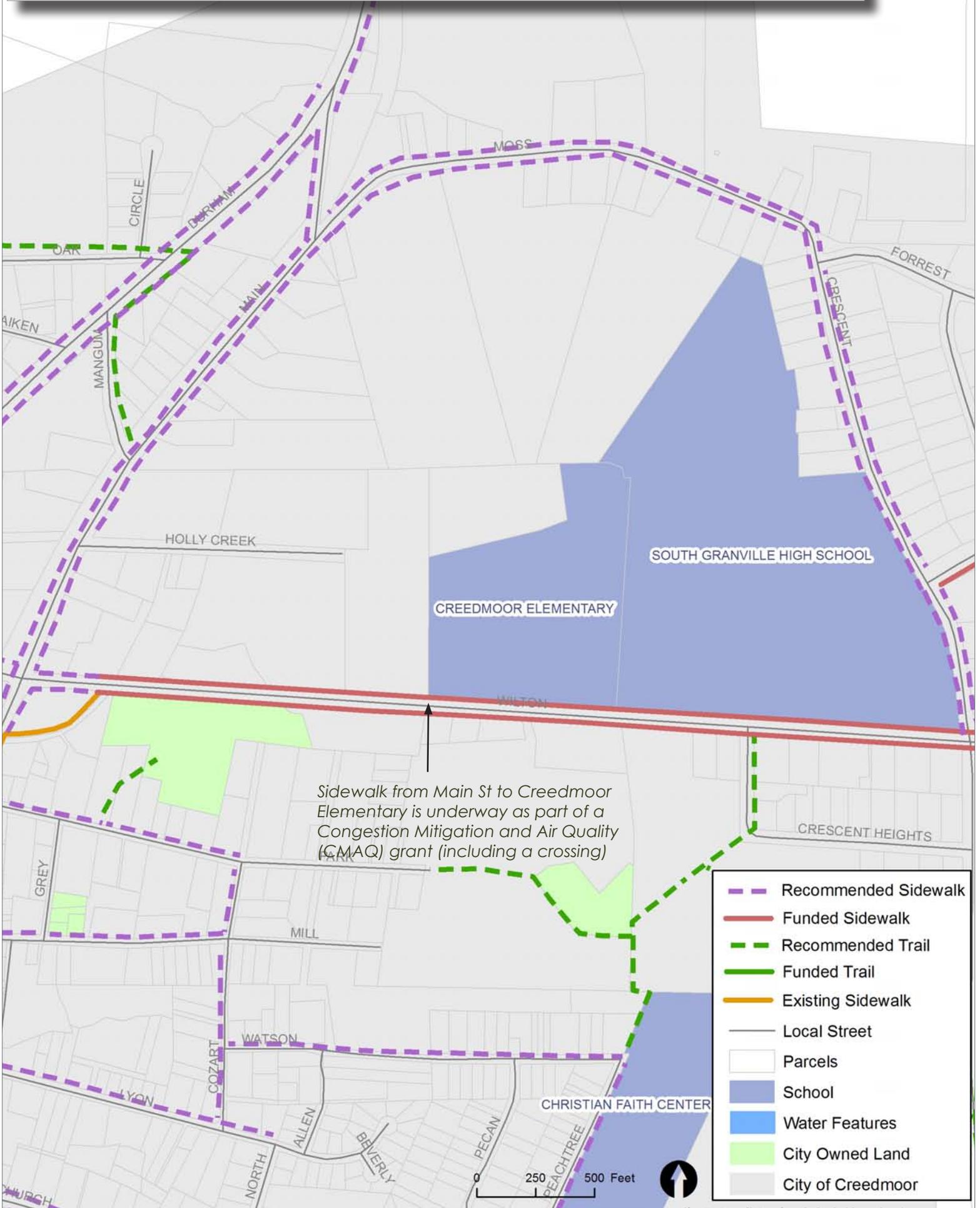
### **Key Recommendations**

- Construct approximately 2 miles of new sidewalk
- Provide pedestrian crossing facilities including marked crosswalks, advanced stop lines, curb ramps, and countdown signals at intersections of NC 56 (Wilton Ave) and NC 50 (Main St) and also at NC 56 (Wilton Ave) and Crescent Drive
- Slow traffic by reducing speed limits and adding distinct Downtown gateway and wayfinding signage to inform motorists.

### **Implementation Guidance**

- Planning and design is underway as of summer 2011 for sidewalk on NC 56, as part of a Congestion Mitigation and Air Quality (CMAQ) grant (including the crossing)
- Begin design and engineering work for proposed sidewalk on the Main/Moss/Crescent loop.

# CUT-SHEET I.D. P & EE: Downtown School Loop



Sidewalk from Main St to Creedmoor Elementary is underway as part of a Congestion Mitigation and Air Quality (CMAQ) grant (including a crossing)

- Recommended Sidewalk
- Funded Sidewalk
- Recommended Trail
- Funded Trail
- Existing Sidewalk
- Local Street
- ▭ Parcels
- ▭ School
- ▭ Water Features
- ▭ City Owned Land
- ▭ City of Creedmoor

## CUT-SHEET I.D. C & U - DOWNTOWN TO HAWLEY SCHOOL & FONTAINE

Church Street serves as a significant link between the existing sidewalk on NC 50 (Main Street), the Christian Faith Center Academy and Hawley Middle School. The walk from Main Street to Christian Faith Center is approximately 0.2 miles and the walk from Main Street to Hawley Middle School is slightly more than 1 mile. The sidewalk would expand upon the City's existing sidewalk network and would provide an important pedestrian transportation option from the middle school area and neighborhoods to residential areas, and Downtown. The sidewalk would also serve as a vital link to the proposed greenway trail and Fontaine Development, just east of the middle school, which would extend recreational opportunities for Creedmoor residents.

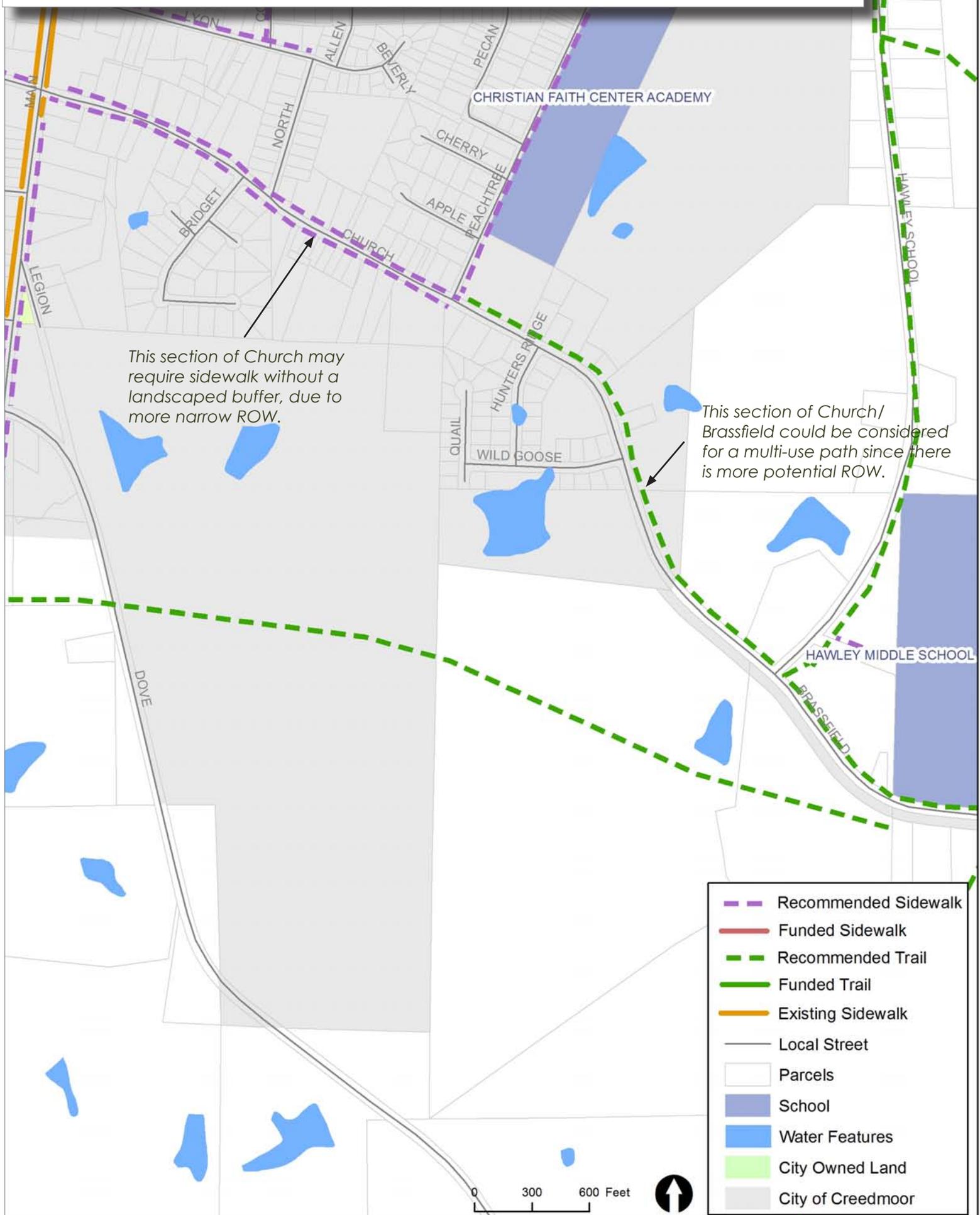
### **Key Recommendations**

- Construct approximately 1.2 miles of new sidewalk from Main Street eastward to Christian Faith Center Academy and to Hawley Middle School.
- Connect new sidewalk to the proposed greenway trails
- Provide pedestrian crossing facilities include marked crosswalks, advanced stop lines, curb ramps, and countdown signal at Brassfield Road and Hawley School Road intersection

### **Implementation Guidance**

- Conduct further engineering study/analysis
- Coordinate with school system to promote walking to school
- Seek Safe Routes to School funding for project development

# CUT-SHEET I.D. C & U: Downtown to Hawley School & Fontaine



## CUT-SHEET I.D. #3 - WATSON AND PEACHTREE SIDEWALK

Watson Street and Peachtree Street provide important access to the neighborhoods located in close proximity to the Christian Faith Center and to the neighborhoods east of Cozart Street. Adding sidewalk on the north side of Watson Street and the east side of Peachtree Street would connect residents to the Downtown via Church Street. The new sidewalks would intersect with the greenway trails that are proposed to connect from Watson and Peachtree to Wilton Avenue. This project, combined with the proposed greenway trails would create easy access for residents to walk from Church Street area neighborhoods to Creedmoor Elementary and South Granville High School.

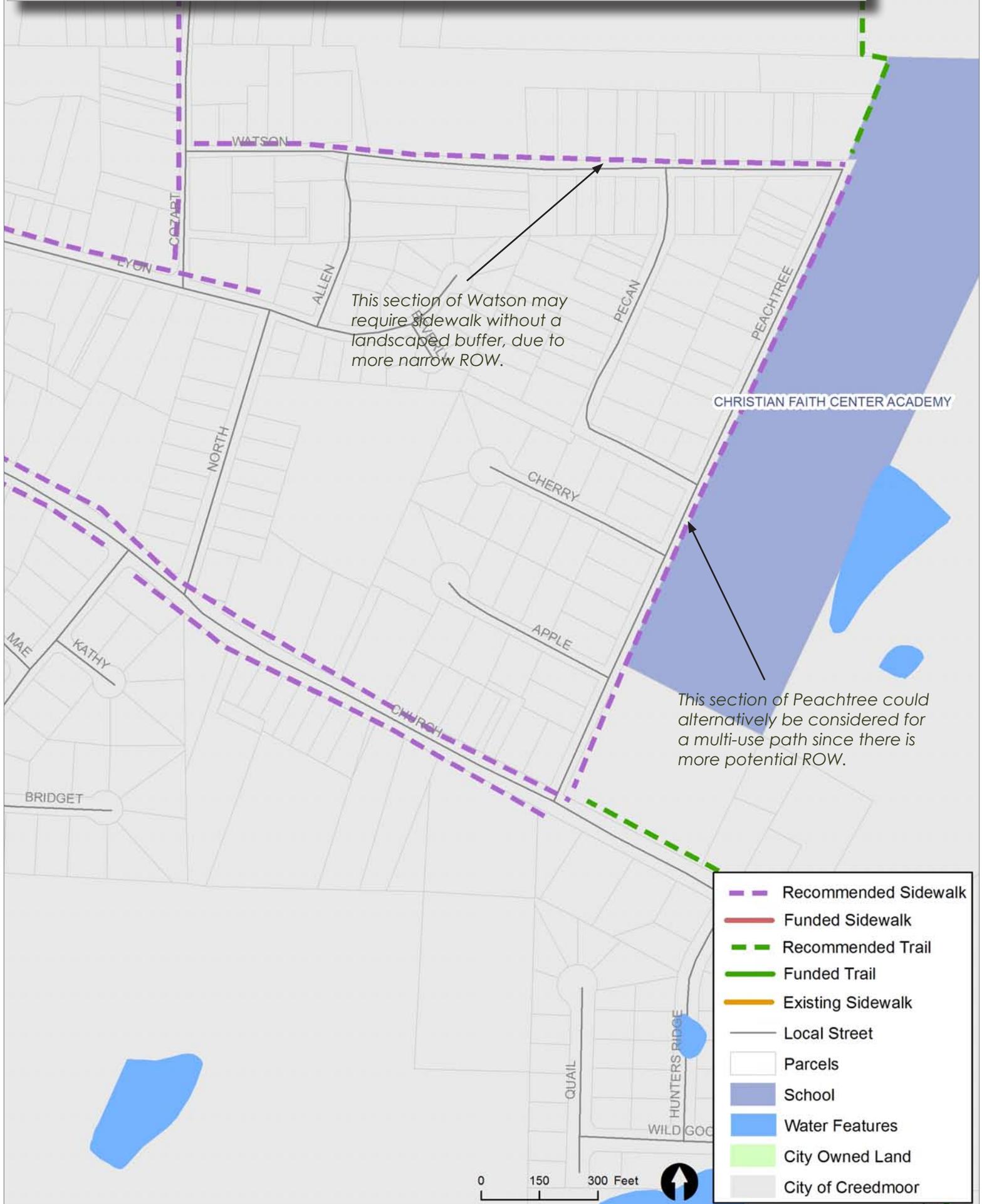
### **Key Recommendations**

- Construct approximately 0.6 miles of new sidewalk
- Sidewalk added along north side of Watson Street
- Sidewalk added along east side of Peachtree Street
- Provide pedestrian crossing facilities include marked crosswalks, advanced stop lines, and curb ramps (primary focus: Church Street, Cozart Street)

### **Implementation Guidance**

- Conduct further engineering study/analysis

# CUT-SHEET I.D. #3: Watson Street & Peachtree Sidewalks



## **CUT-SHEET I.D. O: ELM STREET SIDEWALK**

Elm Street is a significant corridor that links the southwest portion of Creedmoor with Downtown. Constructing sidewalk on the east side of Elm Street, adding a pedestrian crossing near Mayview Drive, and continuing the sidewalk on the western side of Elm Street to Fillmore Drive would safely connect many neighborhoods with Downtown and destinations located along Main Street. There are existing sidewalks along Fillmore Drive and are residents in the neighborhood would greatly benefit from new sidewalk along Elm Street. Additionally, the new sidewalk along Elm Street would connect to the proposed greenway trail along the Creedmoor Connector, and would offer residents of Creedmoor easy and safe access to Lake Rogers once other trails are completed.

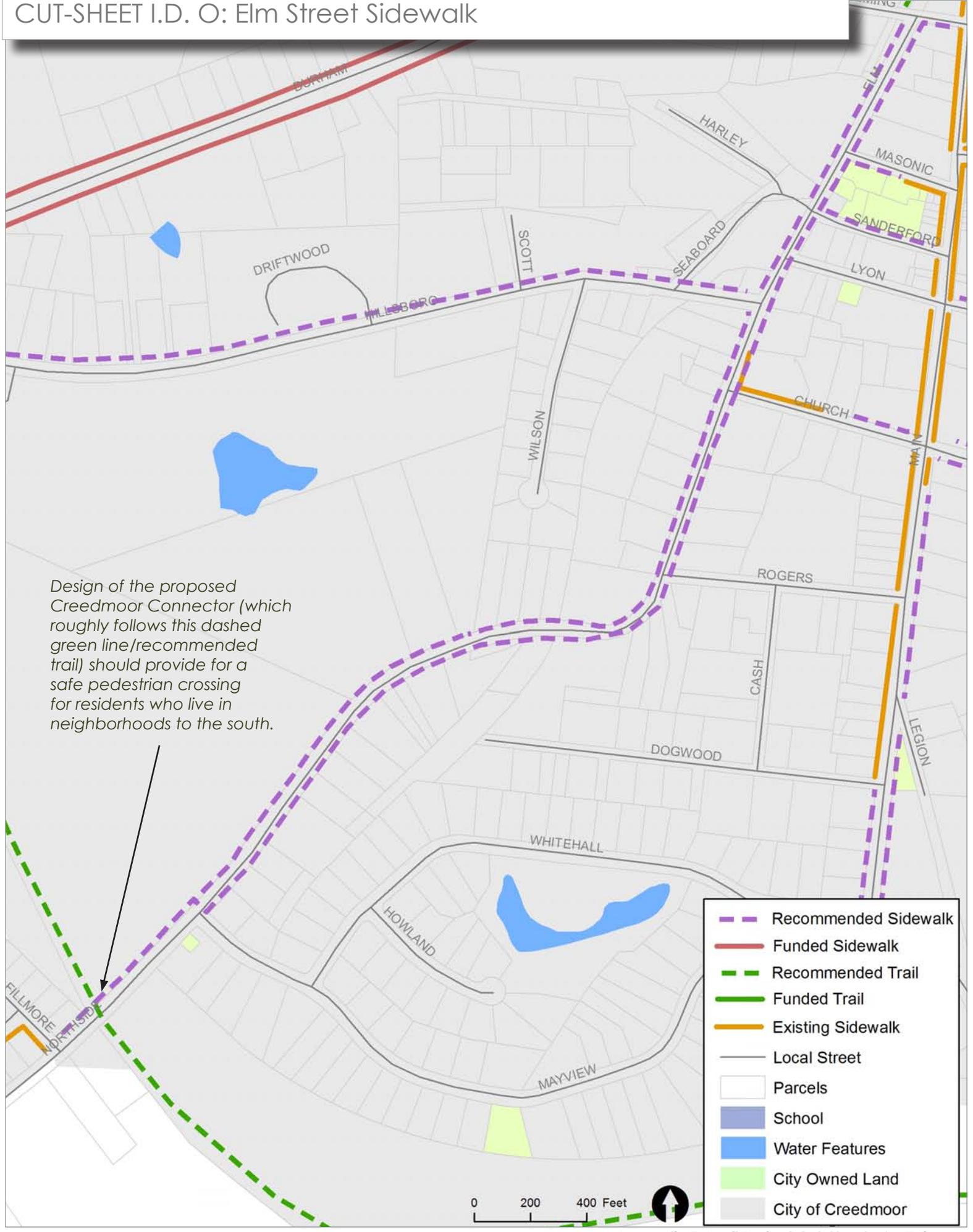
### **Key Recommendations**

- Construct approximately 1 mile of new sidewalk
- Add sidewalk along east side of Elm Street from Mayview Drive to Fleming Street
- Add sidewalk along west side of Elm Street from Mayview Drive to Fillmore Drive
- Provide marked crosswalk for pedestrian crossing Elm Street at Mayview Drive
- Provide marked crosswalks for sidewalk intersecting roadways and major driveway entrances.

### **Implementation Guidance**

- Coordinate with NCDOT, especially on the need for a safe pedestrian connection along Elm Street when the proposed Creedmoor Connector is designed and built.
- Conduct further engineering study/analysis

# CUT-SHEET I.D. O: Elm Street Sidewalk



*Design of the proposed Creedmoor Connector (which roughly follows this dashed green line/recommended trail) should provide for a safe pedestrian crossing for residents who live in neighborhoods to the south.*



0 200 400 Feet



## **CUT-SHEET I.D. M: HILLSBORO STREET SIDEWALK**

Hillsboro Street is a major east - west corridor that connects Elm Street to US 15 (Durham Avenue). This project proposes new sidewalk on the northern side of Hillsboro Street. The new sidewalk offers vital connections to the proposed new sidewalks on Elm Street and Durham Avenue, and the proposed greenway trails that lead north to Lake Rogers and south to Hawley Middle School and the Fontaine Residential Development.

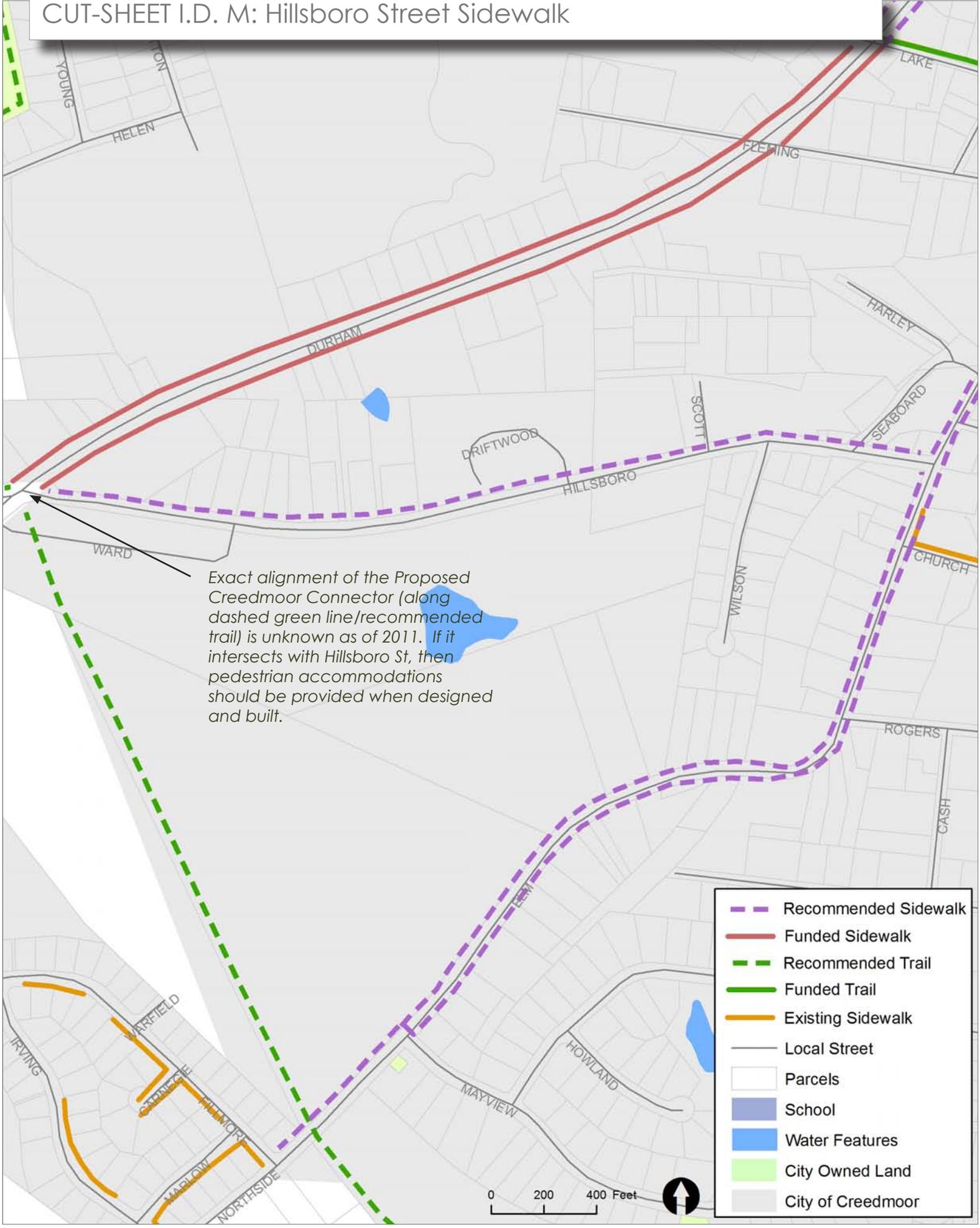
### **Key Recommendations**

- Construct approximately 0.6 miles of new sidewalk
- Add sidewalk along north side of Hillsboro Street between Durham Avenue and Elm Street
- Provide marked crosswalk for pedestrian crossing over Durham Avenue at Hillsboro Street
- Provide marked crosswalk for pedestrian crossing over Elm Street at Hillsboro Street

### **Implementation Guidance**

- Conduct further engineering study/analysis

# CUT-SHEET I.D. M: Hillsboro Street Sidewalk



Exact alignment of the Proposed Creedmoor Connector (along dashed green line/recommended trail) is unknown as of 2011. If it intersects with Hillsboro St, then pedestrian accommodations should be provided when designed and built.

	Recommended Sidewalk
	Funded Sidewalk
	Recommended Trail
	Funded Trail
	Existing Sidewalk
	Local Street
	Parcels
	School
	Water Features
	City Owned Land
	City of Creedmoor



## CUT-SHEET I.D. HH & R: US 15 (DURHAM AVE) SIDEWALKS

Durham Avenue is a primary north - south corridor in Creedmoor. This plan recommends sidewalks along both the east and west side of Durham Avenue from Hillsboro Street to Main Street, and along the east side of Durham Avenue from Main Street to the northern boundary of Creedmoor. New sidewalks along Durham Avenue would connect numerous residential neighborhoods in west Creedmoor and would offer safe access for residents to walk downtown and to nearby destinations. Additionally, the Durham Avenue sidewalks would connect to the new proposed sidewalks on Main Street, and enable school-aged children to walk to Creedmoor Elementary and Granville County High School on NC 56 (Wilton Ave). Important connections would be created to the new proposed greenway trail along Lake Road and in southwestern Creedmoor near the intersection of Durham Avenue and Hillsboro Street, providing citizens with opportunities to travel north to Lake Rogers or south to Hawley Middle School and the Fontaine Residential Development.

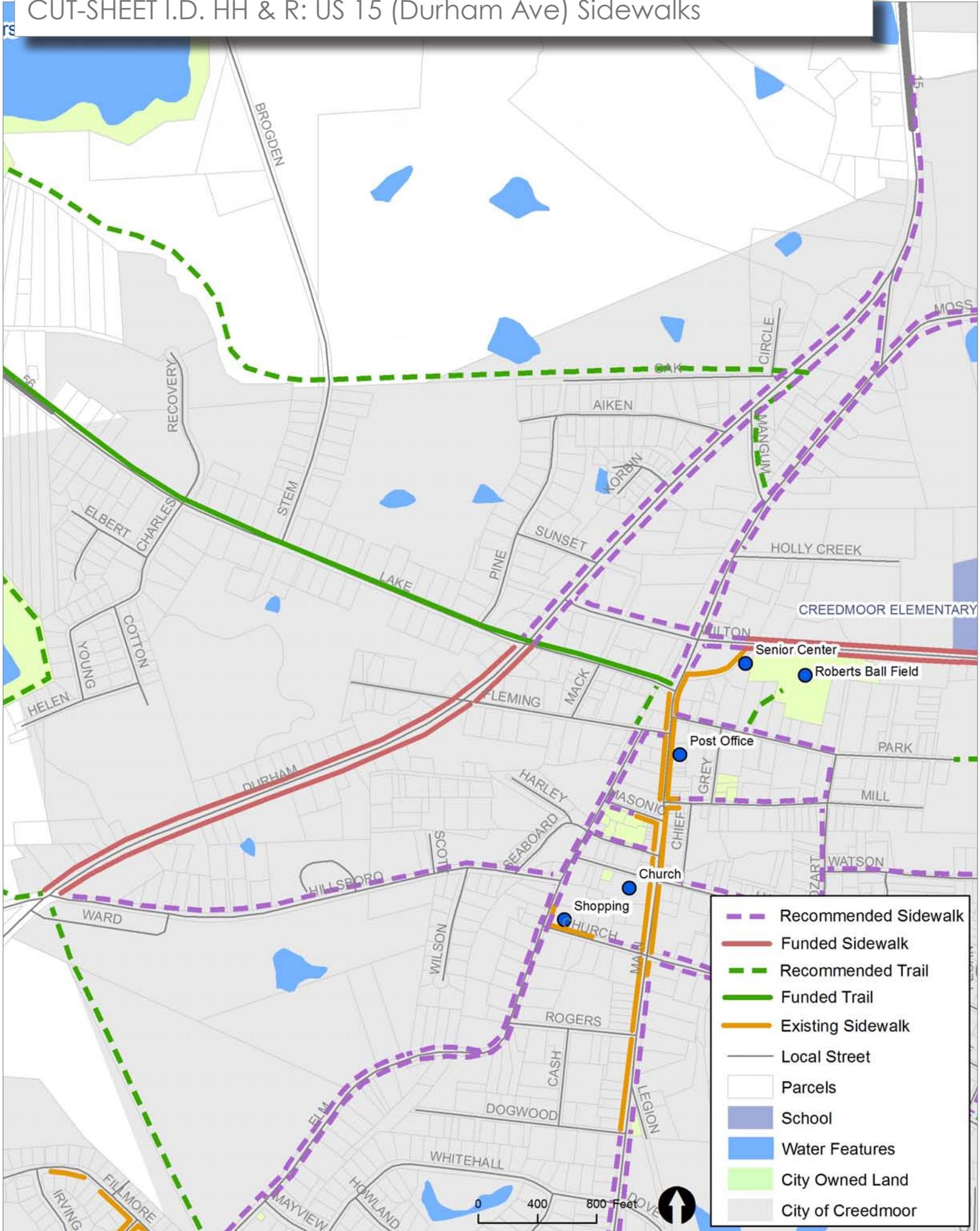
### **Key recommendations**

- Construct approximately 3.25 miles of new sidewalk
- Add sidewalk along east and west sides of Durham Avenue
- Provide marked crosswalk for pedestrian crossing over Lake Road at intersection of Durham Avenue and Lake Road
- Provide marked crosswalk for pedestrian crossing over Fleming Street at intersection of Durham Avenue and Fleming Street
- Provide marked crosswalks for sidewalk intersecting roadways and major driveway entrances.

### **Implementation Guidance**

- Sidewalk development in this corridor is recommended for implementation as part of a larger redevelopment strategy for US 15. This corridor is proposed to eventually become a four-line highway. If and when such redesign occurs, the City of Creedmoor should work closely with NCDOT to be sure that it is designed in a way that safely accommodates pedestrians (and bicyclists).
- Another way in which this corridor may be redeveloped is through private development. If and when development occurs, it should accommodate pedestrian travel.
- Conduct further engineering study/analysis

# CUT-SHEET I.D. HH & R: US 15 (Durham Ave) Sidewalks



## **CUT-SHEET I.D. GG: LAKE ROGERS GREENWAY**

A greenway connection to Lake Rogers would provide access to one of Creedmoor's best destinations. The project proposes the development of a multi-use trail (a.k.a greenway or sidepath) that follows NC 56 W (Lake Road) on the northern side of the road. The multi-use trail would connect to the new proposed sidewalk on US 15 (Durham Ave) and the existing sidewalk on Lake Road. This connection is also featured in the adopted Granville County Greenway Plan.

### ***Key recommendations***

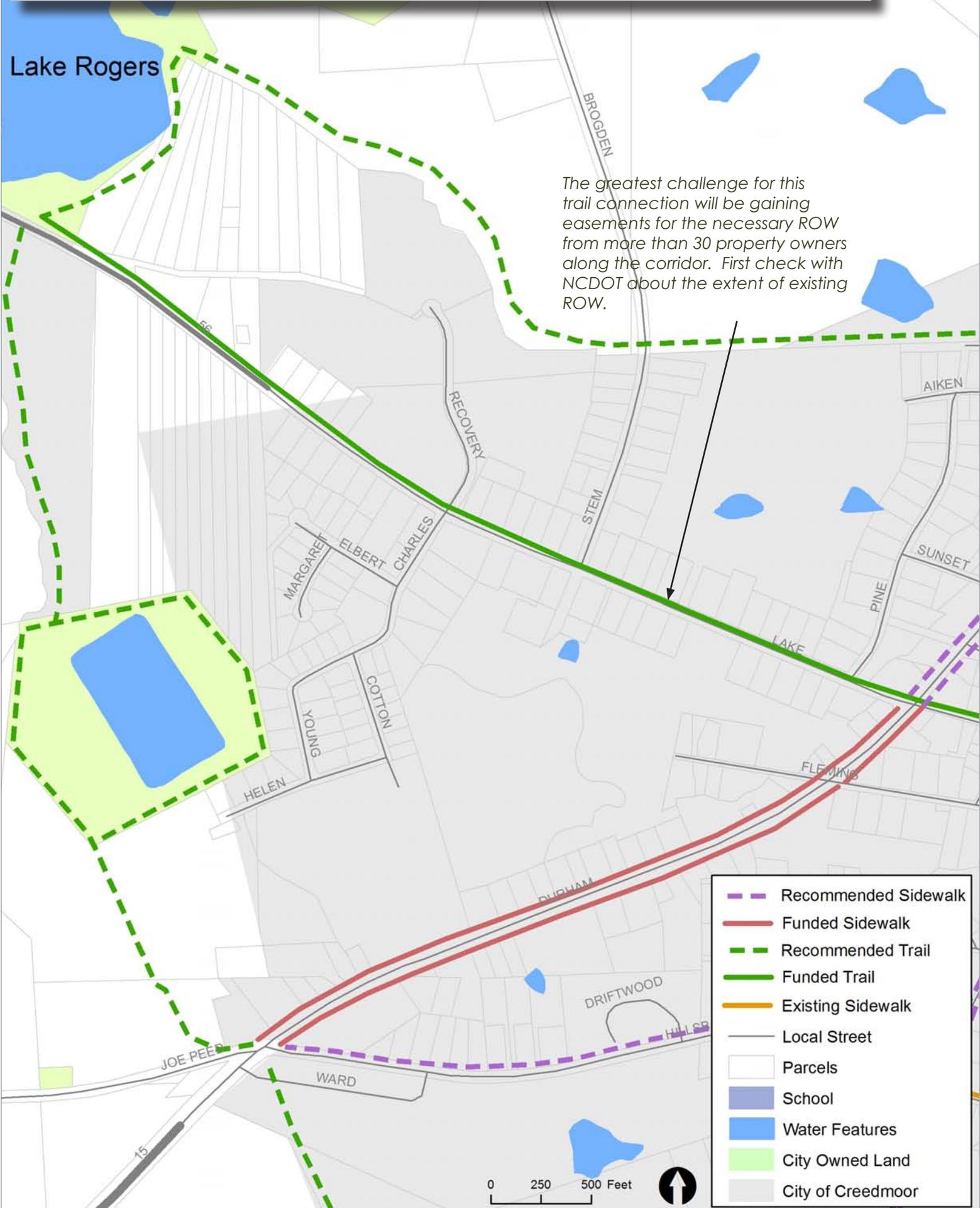
- Construct approximately 1 mile of new multi-use trail (greenway)
- Provide marked pedestrian crossing facilities for trails intersecting roadways and major driveway entrances.

### ***Implementation Guidance***

- Check with NCDOT about the extent of existing ROW along NC 56 W (Lake Rd)
- Coordinate with landowners, NCDOT, and Granville County Greenways
- Conduct a trail feasibility study for this route that also contains alternatives if this option is not feasible.

Lake Rogers

The greatest challenge for this trail connection will be gaining easements for the necessary ROW from more than 30 property owners along the corridor. First check with NCDOT about the extent of existing ROW.



- Recommended Sidewalk
- Funded Sidewalk
- Recommended Trail
- Funded Trail
- Existing Sidewalk
- Local Street
- Parcels
- School
- Water Features
- City Owned Land
- City of Creedmoor

## **CUT-SHEET I.D. FF - EAST CREEDMOOR CONNECTION**

A sidewalk and trail are proposed to connect the Food Lion Shopping Center (and future development across the street) to Mount Energy Elementary School and eastern Creedmoor neighborhoods. The sidewalk portion would run from Darden St to Mt. Energy, on the north side of NC 56. The trail portion of the connection would be along the south side of NC 56 from Ferbow Street east to the school. The trail would also connect through residential streets to the proposed greenway trails near the Creedmoor Business Park, creating a linked network of greenway trails thorough eastern Creedmoor.

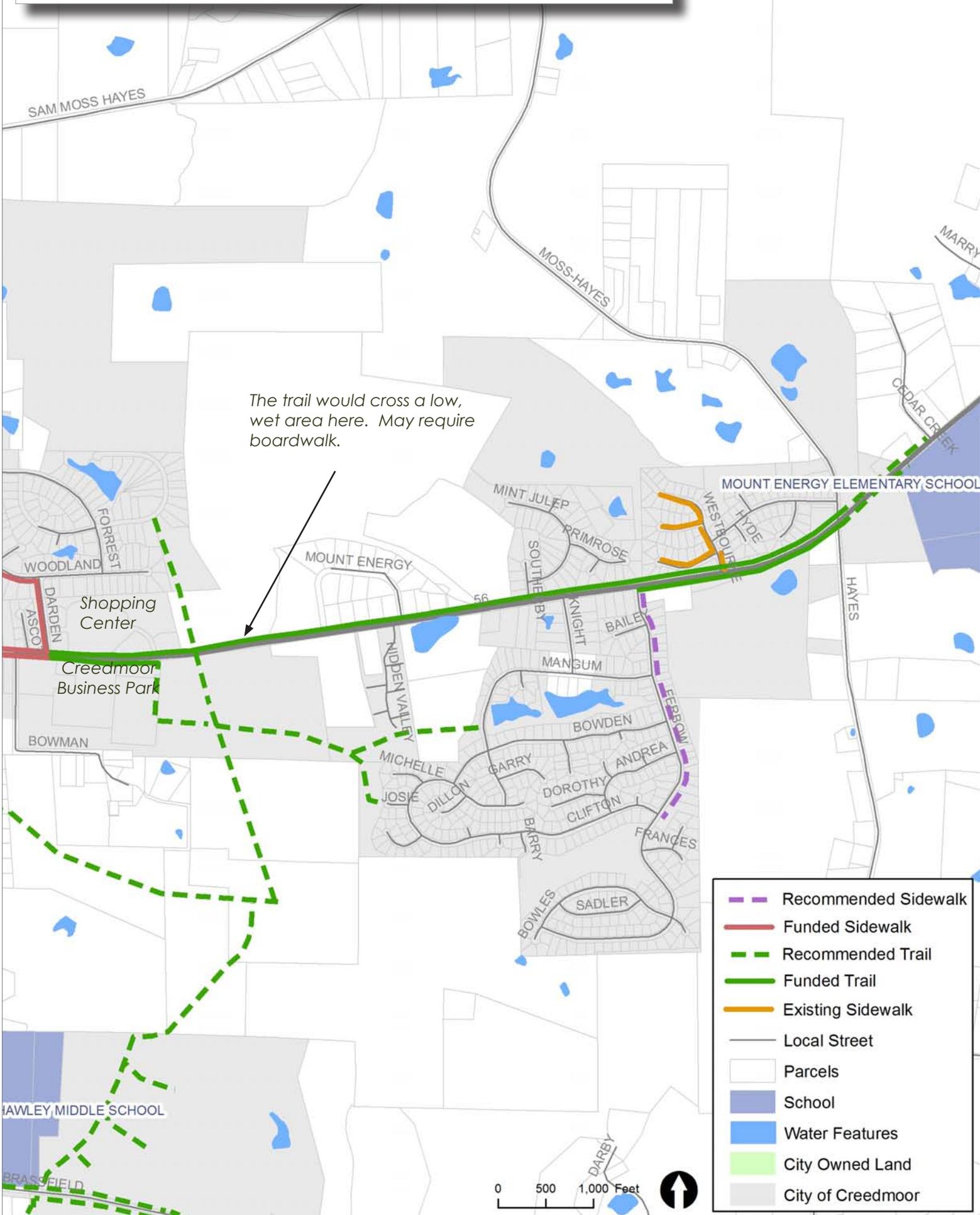
### ***Key recommendations***

- Construct approximately 1.8 miles of new trail (Food Lion to Mount Energy Elementary)
- Provide marked pedestrian crossing facilities for trails and sidewalks intersecting roadways and major driveway entrances.

### ***Implementation Guidance***

- Coordinate with landowners
- Coordinate with Mount Energy Elementary and School Board
- Coordinate with NCDOT for NC 56

# CUT-SHEET I.D. FF: East Creedmoor Connection



- Recommended Sidewalk
- Funded Sidewalk
- - - Recommended Trail
- Funded Trail
- Existing Sidewalk
- Local Street
- Parcels
- School
- Water Features
- City Owned Land
- City of Creedmoor



**CUT-SHEET I.D. A, B, D, E, F, G, H, I, J & K: DOWNTOWN CONNECTIONS**

There are existing sidewalks with significant pedestrian activity throughout the Downtown Core. This project proposes the construction of new sidewalks that would provide key connections between already existing sidewalks. New sidewalk on the western side of Main Street in southern Creedmoor would provide access to residents in the Whitehall Drive neighborhood, and would connect to the proposed new greenway at the southern end of the city (along the future Creedmoor Connector). All of the recommended new sidewalks on Milton Ave, Lake Ave, Masonic Street, Sanderford Street, Church Street, Park Avenue, Mill Street and Lyon Street would complete the downtown network, and would connect to other cut-sheet numbers #1, #2, #3 and #4.

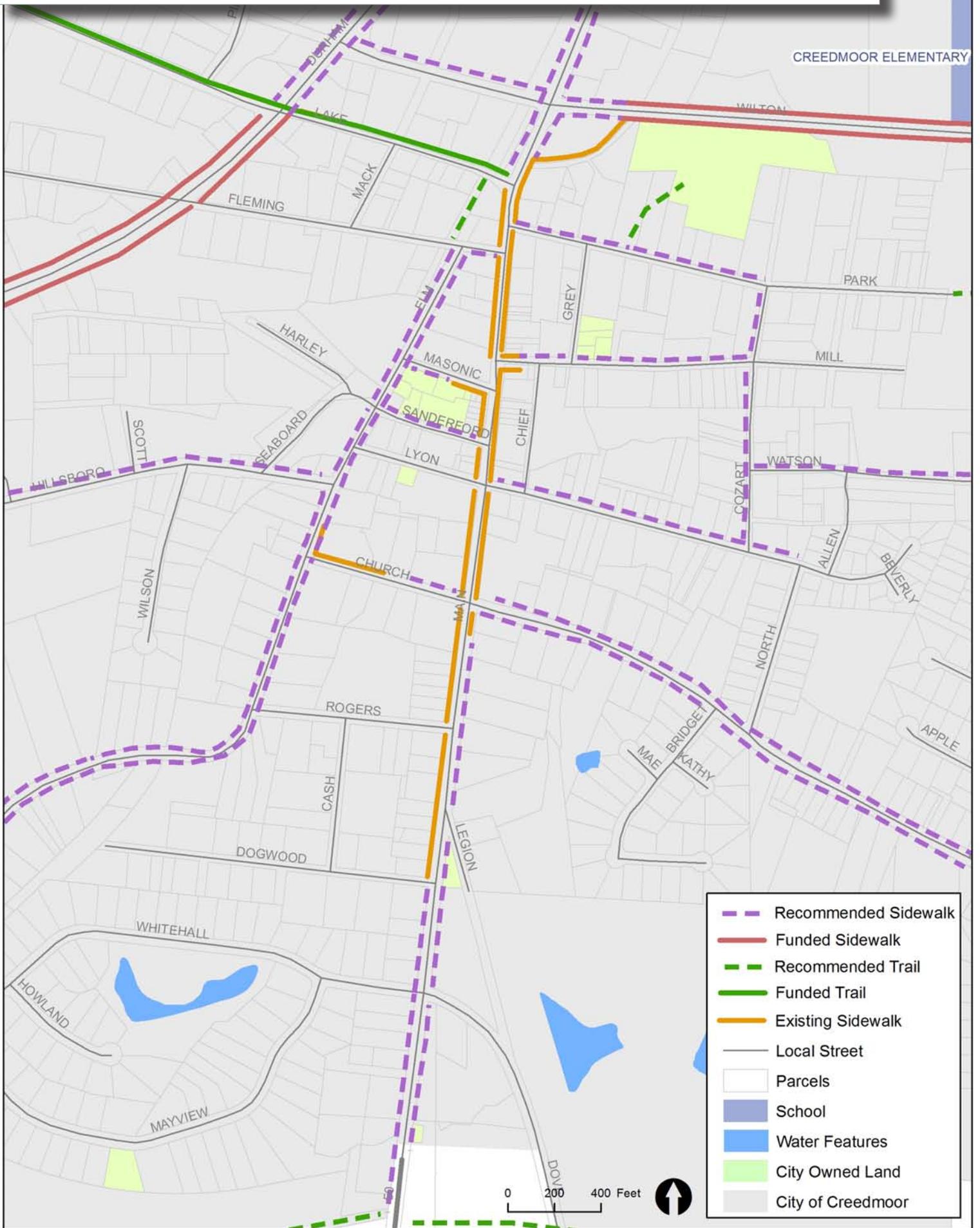
**Key Recommendations**

- Sidewalks added at key locations around the Downtown Core
- Provide pedestrian crossing facilities include marked crosswalks, advanced stop lines, curb ramps, and countdown signals at signalized intersections.

**Implementation Guidance**

- Construct these connections steadily over time, starting by closing small gaps (like the one on Church Street)
- As a priority, focus on at least one of the three proposed sidewalk connections into the residential areas east of Main Street, on either Park, Mill, or Lyon (with the selection perhaps depending on ease and cost of construction).

# CUT-SHEET I.D. A, B, D, E, F, G, H, I, J & K: Downtown



## **CUT-SHEET I.D. Q: FERBOW SIDEWALK**

This project proposes the construction of new sidewalk on the east side of Ferbow, from NC 56 to Clifton. This sidewalk would provide access to proposed multi-use paths on NC 56. This recommendation developed out of public input gathered at public workshops, specifically from neighborhood association leadership.

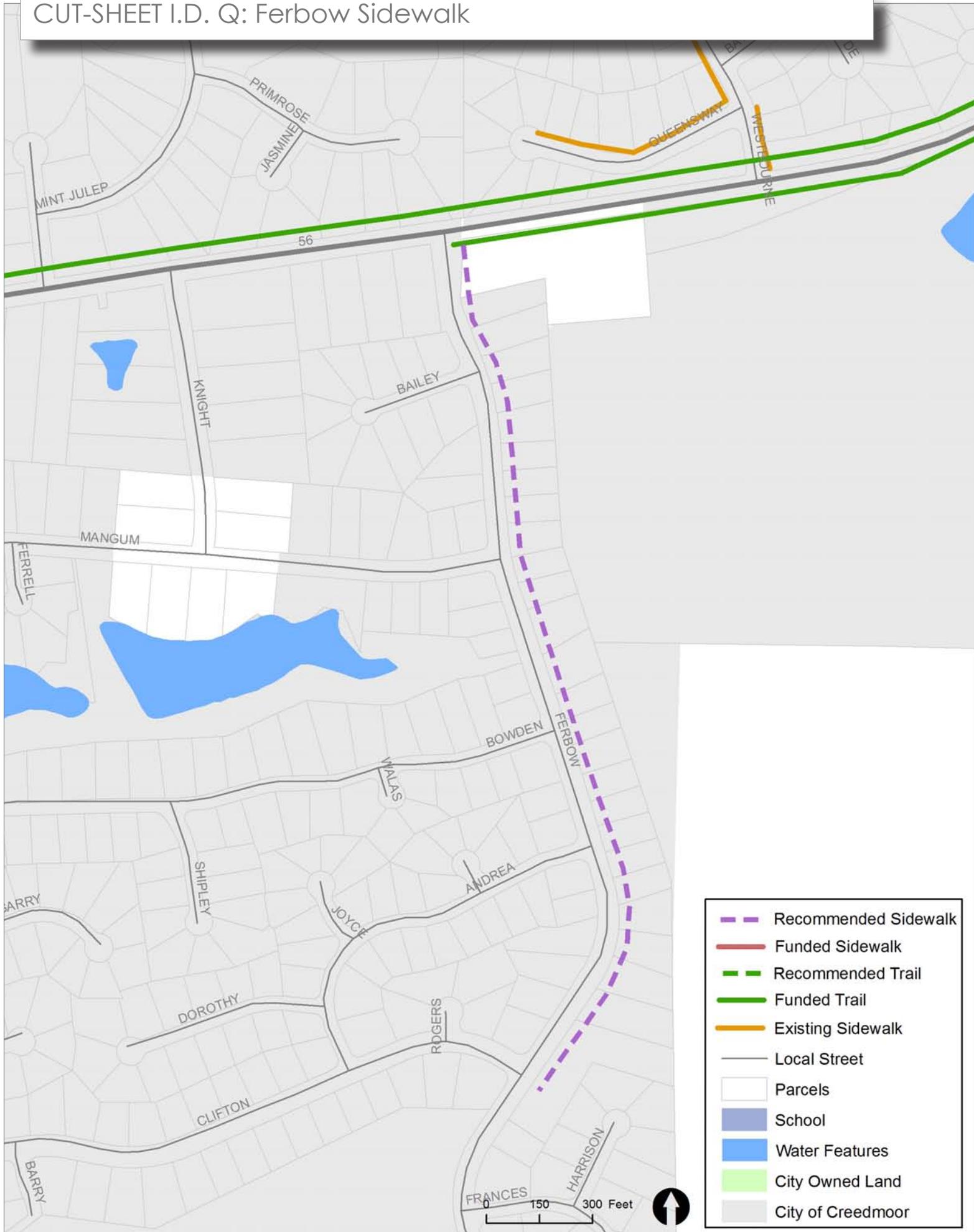
### ***Key Recommendations***

- Sidewalk added on Ferbow

### ***Implementation Guidance***

- Considering using some of the existing roadway width to construct the sidewalk
- Conduct further engineering study/analysis

# CUT-SHEET I.D. Q: Ferbow Sidewalk



- Recommended Sidewalk
- Funded Sidewalk
- Recommended Trail
- Funded Trail
- Existing Sidewalk
- Local Street
- ▭ Parcels
- ▭ School
- ▭ Water Features
- ▭ City Owned Land
- ▭ City of Creedmoor