



ROXBORO PEDESTRIAN TRANSPORTATION PLAN

The City of Roxboro, North Carolina | 2008



Prepared for:

The City of Roxboro, NC and
The North Carolina Department of Transportation,
Division of Bicycle and Pedestrian Transportation

Prepared By:

Greenways Incorporated

FALL 2008



ACKNOWLEDGEMENTS

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1. INTRODUCTION

1.0 OVERVIEW

The City of Roxboro has made a commitment to improve its pedestrian environment. In 2007, the City applied for and was awarded a grant from the North Carolina Department of Transportation (NCDOT) to conduct a pedestrian planning process. A Technical Steering Committee composed of City staff and local citizens was assembled to guide in the development of a Comprehensive Pedestrian Transportation Plan. Greenways Incorporated, a bicycle and pedestrian planning firm, was brought in to lead the planning process. This process included a significant public input component. This final document is a result of the dedication and efforts of the City of Roxboro and its community.

The City of Roxboro, like many North Carolina towns, has a pedestrian-friendly Downtown core with only scattered pedestrian facilities outside its core. The City has never had an ordinance requiring sidewalks with development. As a result, there is no substantial pedestrian network outside the Downtown area where there are major roadway corridors and need. This Plan focuses on pedestrian facility connectivity that will provide residents a safer, more viable transportation alternative.

This document presents the findings of a public input process along with an assessment of existing pedestrian facilities in Roxboro. From these findings, a set of phased recommendations is developed for a pedestrian system that meets the future needs of area's residents. These recommendations include an integration of both on-road and off-road pedestrian facilities along with improved roadway crossings. The recommendations include both physical changes and policy changes to help guide pedestrian-friendly growth. The Plan also provides program recommendations to promote walking and funding sources to facilitate the Plan's implementation.

1.1 BENEFITS OF WALKING

For many years, small and large communities across the United States and throughout the world have been implementing strategies for serving the pedestrian needs of their residents. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many benefits of walking. These benefits can include increased health and physical activity, reduced traffic congestion, affordable mobility, improved quality of life, reduced auto dependency, conservation of fossil fuels, increased economic vitality, and increased community connections.

1.1.1 Increased Health and Physical Activity

A growing number of studies show that the design of our communities—including neighborhoods, cities, 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). The Centers for Disease Control and Prevention (CDC) determined that creating and improving places to be active could result in a 25 percent increase in the percentage of people who exercise at least three times a week. According to the CDC, "physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic." The increased rate of disease associated with inactivity reduces overall quality of life for individuals and leads to increased medical costs for families, companies, and local governments.





1.1.2 Economic Benefits

Walking is an affordable form of transportation. According to the Pedestrian and Bicycle Information Center (PBIC), of Chapel Hill, NC, the cost of operating a car for a year is \$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." Walking becomes even more attractive from an economic standpoint when the increasing cost of fuel is also factored into the equation.

1.1.3 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. Furthermore, every car trip replaced with a pedestrian trip reduces U.S. dependency on fossil fuels, which is a national goal.



By walking for our trips that are less than 2 miles, we could eliminate 40% of local car trips.



*Environmental benefits can be further promoted through walking by offering interpretive signs that educate passers by about the local environment and environmental systems.
(Photo from americantrails.org)*

1.1.4 Transportation Benefits

In 2001, The National Household Travel Survey found that roughly 40% of all trips taken by car are less than 2 miles. By taking these short trips by foot rather than in a car, citizens can have a substantial impact on local traffic and congestion. Additionally, many people do not have access to a vehicle or are not able to drive. A pedestrian network provides greater and safer mobility for these residents.

1.1.5 Quality of Life

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



1.1.6 Summary and Additional Resources

Many private and public organizations have completed studies and surveys that show the many benefits of walking. The ideas presented above are only a small sample of the information that is available. If you would like to learn more about the benefits of walking, the Internet can be a great source of information. A good starting point is:

<http://www.walkinginfo.org/why/benefits.cfm>
This website is provided by the Pedestrian and Bicycling Information Center based in Chapel Hill, NC.

1.2 Goals and Objectives

The following goals and objectives were generated for this planning process in late 2007-early 2008 from Steering Committee representatives and public participants. These goals provided an overall guide for developing the Pedestrian Plan.

- Increase pedestrian access to schools.
- Provide a connected and safe pedestrian network.
- Provide pedestrian access to lower-income areas and people who may not have an automobile.
- Produce a prioritized sidewalk network to guide the City.
- Develop a sidewalk subdivision ordinance.
- Develop a network of off-street based multi-use trails along utility corridors.
- Create more public awareness of economic and health benefits of walking.
- Improve connectivity between residential areas and new development into Downtown.
- Improve intersection crossing for pedestrians.
- Enhance community commitment to programming (engineering, education, encouragement, enforcement) of walking.



Project Kick-Off Meeting: Steering Committee members offered valuable input regarding the current conditions for pedestrians in Roxboro.

1.3 ELEMENTS OF THIS PLAN

The main elements of this plan describe current conditions of the Roxboro area, a recommended pedestrian network, programs to make walking viable and integral to daily life, implementation strategies and next steps for developing a network of pedestrian facilities and design guidelines for making the community more pedestrian friendly.

This Plan document includes the following major components:

This **Introduction** that presents the overview, benefits of walking, goals and objectives, and guiding principles of this Plan (Chapter 1).

An assessment of **Existing Conditions** that overviews existing pedestrian conditions, land use, trip attractors, and also summarizes existing related plans of Roxboro (Chapter 2).

A recommended **Pedestrian Network** that puts forward a framework of recommended facilities (pedestrian corridors, intersection improvement projects, and greenways) (Chapter 3).

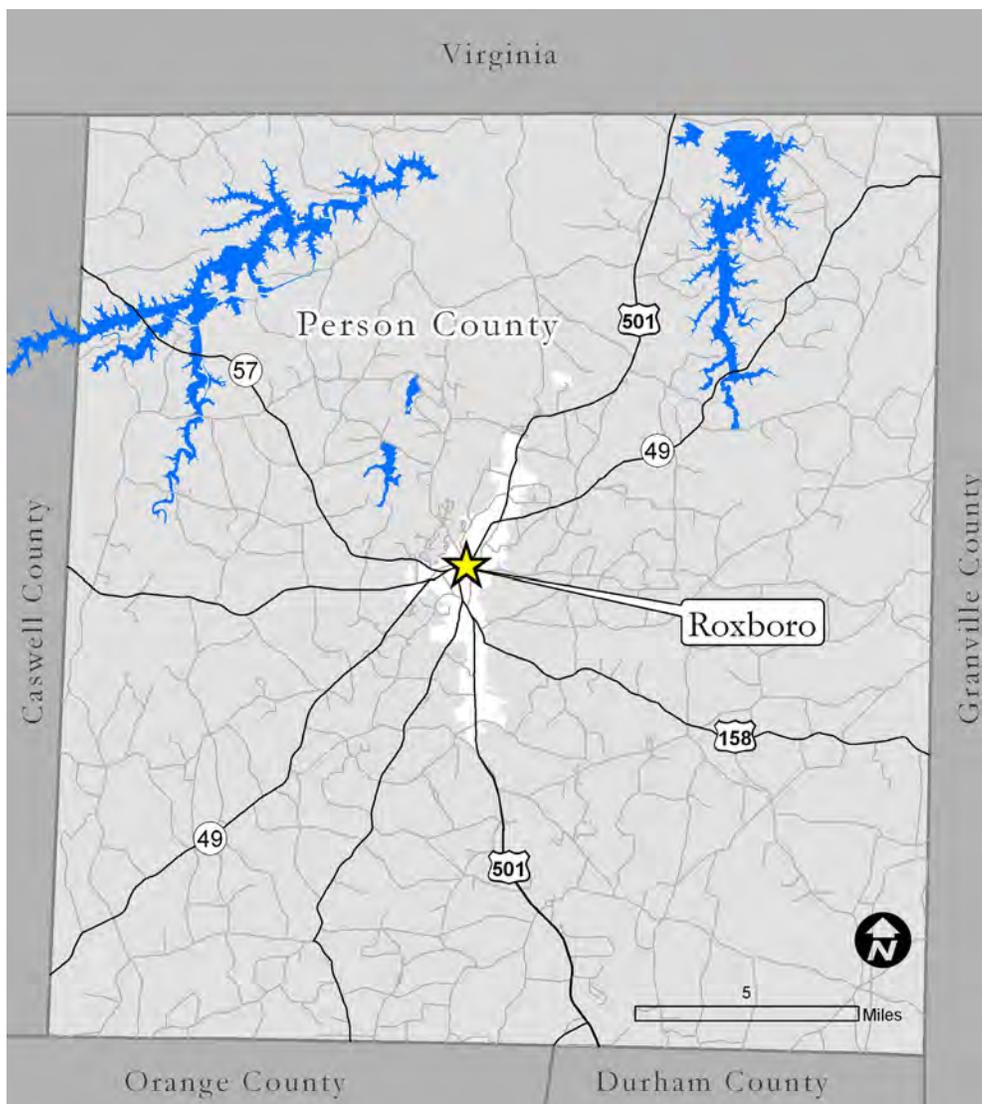


Program Recommendations for education, encouragement, and enforcement and **Policy Review and Recommendations** (Chapter 4).

Implementation recommendations that outline specific steps for achieving the plan's key elements including phasing and prioritization of the Pedestrian Network (Chapter 5).

Design Guidelines to guide the City of Roxboro in current facility design and standards (Chapter 6).

Appendices that provide a summary of public input, the prioritization matrix, funding recommendations, glossary of terms, and supporting federal and state pedestrian policies.



*Map 1.1:
Context map for the City
of Roxboro Pedestrian
Transportation Plan*



2. EXISTING CONDITIONS

2.0 OVERVIEW

The City of Roxboro is located in the center of Person County and serves as the County Seat. North of the Triangle area, the City is known for its small-town ambience. The Town has been experiencing slow growth but is primed for continued growth in the future as the Triangle region expands. Improving infrastructure such as pedestrian facilities (sidewalks, greenways, and crosswalks), will make Roxboro a more attractive, safe, and healthy place to live.

In order to propose a comprehensive pedestrian system for the City of Roxboro, the existing conditions, such as demographics, land use and development, trip attractors, and pedestrian conditions need to be examined. The City's geographic and population characteristics significantly affect transportation, the environment, and everyday decisions by motorists and pedestrians. In addition, numerous plans, guidelines, and strategies have addressed issues related to pedestrian planning in Roxboro such as transportation, development, and land use.

A comprehensive approach consisting of intensive research, analysis, fieldwork, GIS organization and analysis, and Committee meeting discussion was conducted to examine existing conditions. To understand pedestrian conditions in Roxboro, it is important to consider a number of specific factors that affect the overall character of the community. This work lays the foundation for the recommendations found later in this Plan. The findings are presented below.

2.1 DEMOGRAPHICS

To help demonstrate pedestrian needs, it is useful to understand population change and composition. The City of Roxboro has experienced slow growth over recent years with a 2000 population of 8,696 and estimated 2006 population of 8,732. This growth is well under 1%. Person County saw a 4.8% population

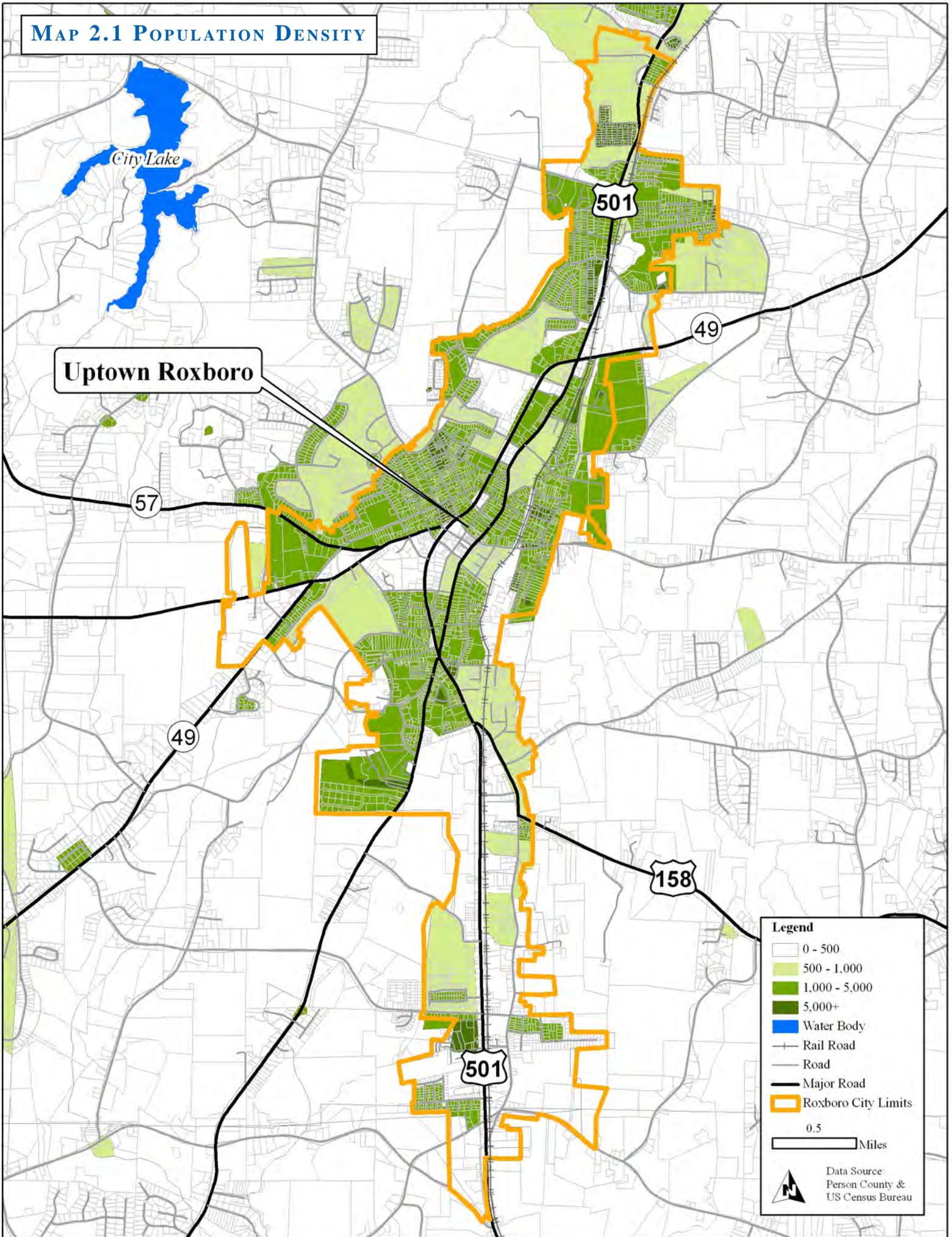
growth from 2000 to 2006 with newer development pressure closer to Durham. While growth in Roxboro has been slow, it is likely that development will occur over time with continued rapid growth in the Triangle region and its corridors.

Map 2.1 shows 2000 population density throughout the City of Roxboro and surrounding areas. The densest, most populated areas are found in and around the Uptown region. The most dense areas are just east of the railroad near Uptown and also in the Reams/Morehead area just northwest of Uptown. Another dense pocket can be found in multi-family housing areas across from South Elementary. It is important to provide pedestrian connections to these areas to serve larger portions of the population.

The City of Roxboro experiences an overall pattern of slightly fewer youth and more senior citizens when comparing percentage of population by age group across the State. In 2000, the median age of Roxboro was 37.5 compared to 35.3 for all of North Carolina. The 2006 percentage of population over the age of 65 in North Carolina was 12.2% while the 2000 percentage in Roxboro was near 18%. Map 2.2 shows median age across Roxboro. While it is difficult to distinguish significant patterns, it is clear that an older population can be found to the west of Uptown and just outside the Roxboro borders. Interestingly, there are scattered pockets where the average age is over 55. These areas should be considered important for pedestrian improvements that meet ADA requirements. One concentration of older population can be found on the north side of the Ridge/Carver intersection. This is the location of the Roxboro Nursing Home.

It is important to consider median-family income as well (Map 2.3). Lower-income households may not have access to an automobile and may feel even more pressure from rising gas prices. It will be critical to provide pedestrian connections in these parts of Roxboro. The 2000 median family income in Roxboro was \$34,217. This compares to \$40,863 throughout the State of North Carolina in 2004. 13.8% of individuals live under the poverty level in the State of North Carolina compared to 16.8% in the City of Roxboro. The lower income areas within Roxboro and Person County are generally centered around Uptown and areas north and east.

MAP 2.1 POPULATION DENSITY



City Lake

Uptown Roxboro

57

49

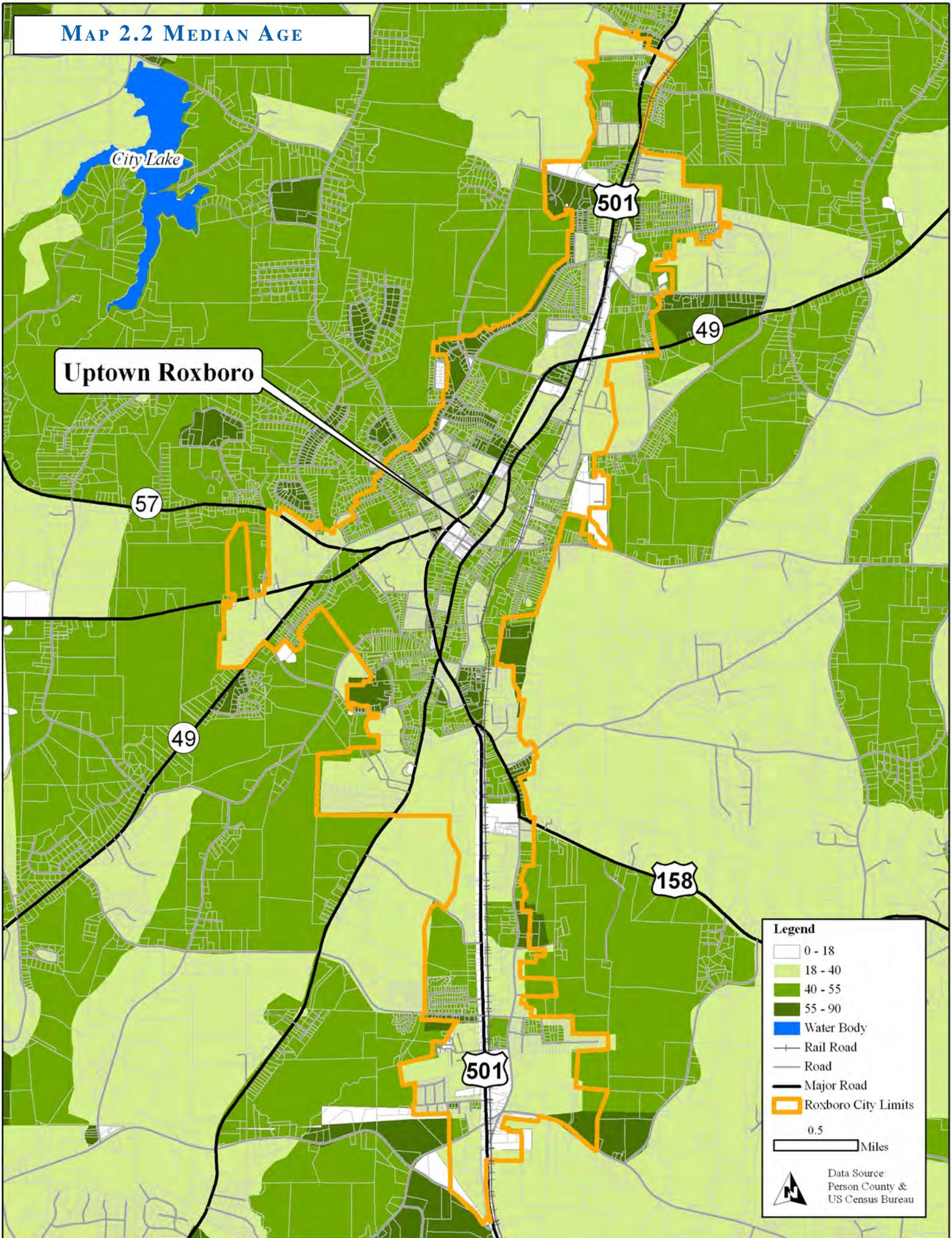
501

49

158

501

MAP 2.2 MEDIAN AGE



City Lake

Uptown Roxboro

57

49

501

49

158

501

Legend

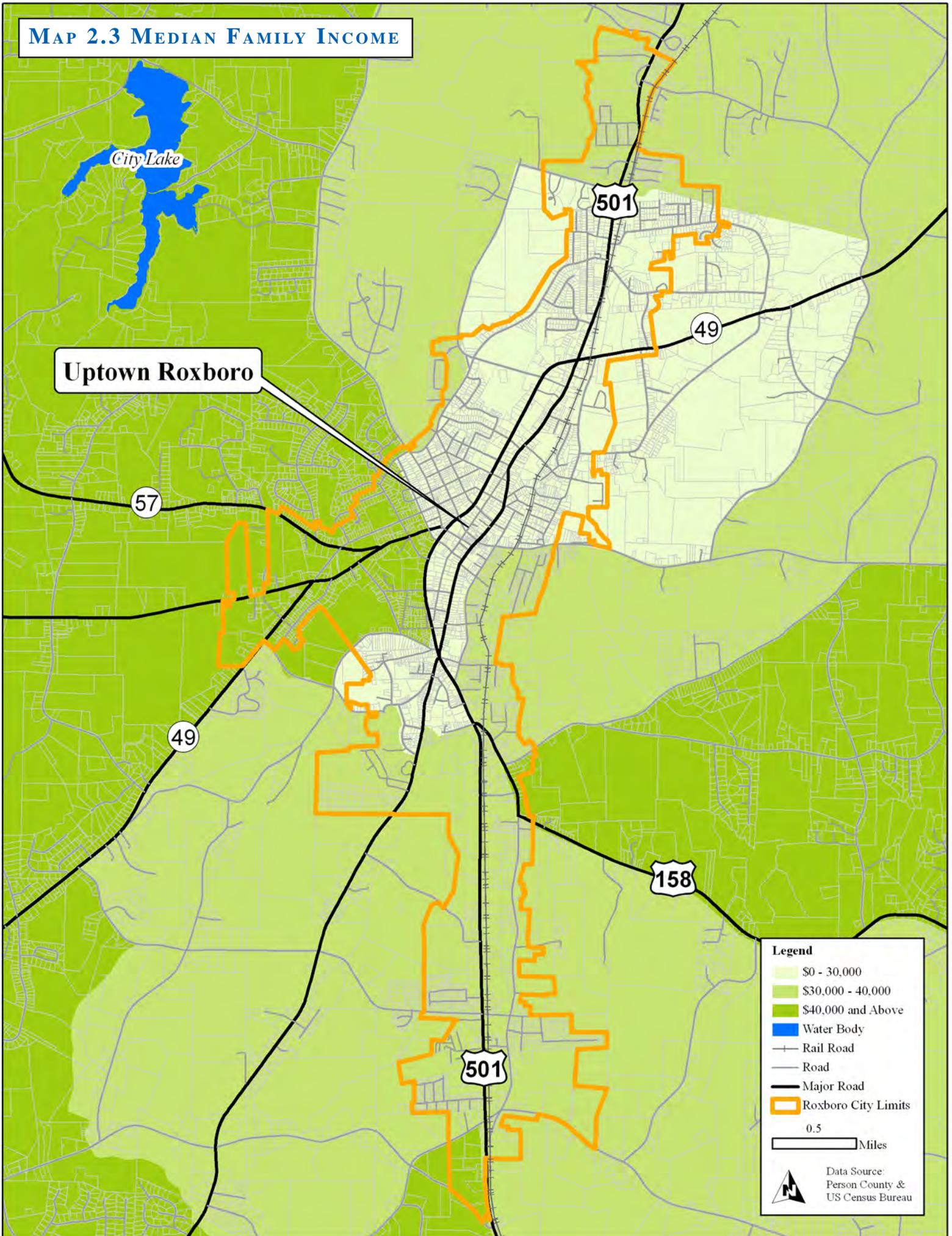
- 0 - 18
- 18 - 40
- 40 - 55
- 55 - 90
- Water Body
- Rail Road
- Road
- Major Road
- Roxboro City Limits

0.5 Miles



Data Source:
Person County &
US Census Bureau

MAP 2.3 MEDIAN FAMILY INCOME





Despite the current population structure, it is likely that a mix of population groups will move into the Roxboro area through the coming years, including young families. Development pressure from the Triangle will continue along US 501. As the Triangle continues to grow, it is quite possible that Roxboro will become even more desirable with families considering the area.

Considering the existing population totals, composition, median age distributions, and density, it is important to provide pedestrian access for current populations and future populations. Senior citizens are a large part of the community and special attention should be given to providing safe, convenient, and ADA-accessible pedestrian facilities, especially near their homes. New population centers inside future development should be connected into the City's pedestrian network with access to Uptown. Residential areas, where a large percentage of the population currently reside, should have safe, connected pedestrian facilities into the Uptown area where commercial facilities and other destinations can be found.

2.3 LAND USE AND DEVELOPMENT

Current land use (Zoning shown in Map 2.4) is a result of development activity over the past few decades. Multiple land uses can be found across the City of Roxboro with distinct patterns emerging. These patterns and characteristics have a major influence on pedestrian transportation. Proximity of uses and types of uses matter in a person's choice to walk, along with the quality of environment, ease of access, and safety.

Roxboro has an elongated north-south shape at approximately 6 miles by one mile wide. The city is largely residential, with single-family homes dominating. Multi-family housing is scattered in some parts of Town.



Huck Sansbury Park (above) is a popular destination for residents to walk for exercise. This Plan seeks to make it easier for residents to walk as a regular part of their day, rather than driving to locations such as this for walking.

The chief commercial areas are found along the roadway corridors of US 501 and inside the Uptown core. The Uptown area is walkable with boutique shopping, locally-owned restaurants, antique shops, bookstores, Artspace, and other appealing tourist stops. Businesses, fast-food restaurants, and shopping centers occur on US 501.

Existing recreational sites are found in sections of Roxboro. The Huck Sansbury Park is found in the residential center of the City. It contains a walking track, ball field, community building, tennis courts, playground, and picnic shelter. Optimist Park is found towards the southern end of the City off US 501, providing a baseball facility. The Merritt-Kane Commons area is found Uptown and contains a shelter/gazebo and resting place. Palace Pointe is also found towards the southern end of Roxboro off US 501. This large indoor complex features arcade, bowling, roller skating, and movies. Mayo Park and Hyco Lake outside of Town provide regional camping, picnicking, swimming, hiking, and fishing.

MAP 2.4 ZONING

City Lake

Uptown Roxboro

57

49

501

49

158

501

Legend

- B-1
- B-2
- B-3
- B-4
- B-5
- I-1
- I-2
- R-1
- R-2
- R-5
- Water Body
- Rail Road
- Road
- Major Road
- Roxboro City Limits
- 0.5 Miles



Data Source:
Person County



2.4 TRIP ATTRACTORS

People currently walk to a variety of destinations across Roxboro for various purposes. These destination points are referred to in this document as trip attractors. The most common categories of pedestrian trip attractors in Roxboro include:

- Uptown
- Schools (Piedmont Community College, North Elementary, South Elementary, Northern Middle School, Southern Middle School, Person High School, Roxboro Community School, Roxboro Christian Academy, Earl Bradsher Pre-School Center)
- Shopping locations (grocery stores, shopping centers, Wal-Mart, restaurants, Uptown)
- Parks (Huck Sansbury Park)
- Community and recreation centers (Huck Sansbury Park, Palace Pointe)
- Historic and other points of interest (Person County Museum, Library, Kirby Civic Auditorium, Roxboro Little Theater, Merritt-Kane Commons Pavilion, Artspace)
- Places of employment (Uptown, City offices, US 501 area)



Merritt-Kane Commons Pavilion



Existing sidewalks, like those in front of the Courthouse, could be expanded upon to improve conditions for pedestrians.

Each of these categories of pedestrian trip attractors was considered when determining locations for the physical pedestrian improvements recommended in Chapter 3. They represent important starting and ending points for pedestrian travel and provide a good basis for planning ideal walking routes. Locations such as Huck Sansbury Park feature walking tracks in which most residents access by automobile. Many citizens have expressed a desire to be able to walk to places such as Huck Sansbury Park and local schools.

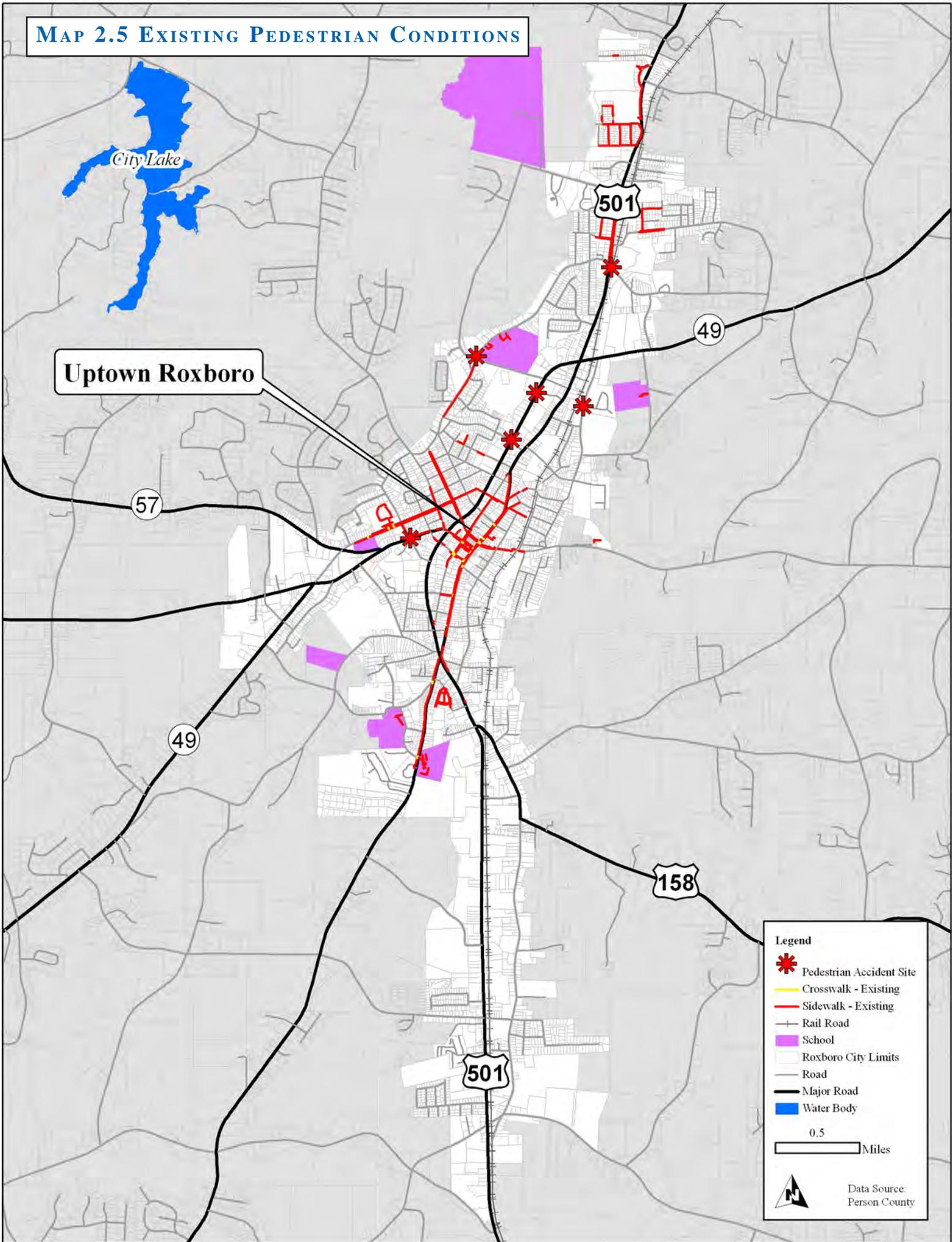
2.5 PEDESTRIAN CONDITIONS

The City of Roxboro takes great pride in its small-town feel. The Uptown is lined with sidewalks, street furniture, plantings, and windowed storefronts. Many smaller residential roads leading to Uptown provide relatively safe places to walk despite not always having sidewalks. Still there is room for improvement to connect significant gaps and barriers in the system. Map 2.5 shows locations of existing sidewalks, greenways, and trip attractors.

2.5.1 Sidewalks

Throughout Roxboro, there is a lack of connectivity in its sidewalk network. The immediate Uptown and areas radiating out from Uptown mostly have adequate sidewalk connectivity. However, sidewalk gaps or missing sidewalks can be found in several areas of

MAP 2.5 EXISTING PEDESTRIAN CONDITIONS



Uptown Roxboro

City Lake

Legend

- Pedestrian Accident Site
- Crosswalk - Existing
- Sidewalk - Existing
- Rail Road
- School
- Roxboro City Limits
- Road
- Major Road
- Water Body

0.5 Miles

Data Source: Person County



Town. Growth that has occurred outside of Uptown has not typically provided connected, safe, pedestrian facilities leaving gaps between Uptown, trip attractors, and residences. This happened because adequate ordinances were not in place.

Significant corridor deficiencies include:

US 501-Madison Boulevard (NCDOT road): This roadway is the main artery running north-south through the center of the City. While some sidewalk is planned for a small section of the west side of 501 from South Main Street to Garret Street, there are no sidewalk or crosswalk facilities present at all. Old relict curb ramps can be found from NCDOT construction of this roadway. Today, crossing this roadway is a necessity for pedestrians to access locations on foot but is a hazard.

Main Street (from Madison Blvd to Madison Blvd): While large segments of sidewalk do exist along both South and North Main Street, there are still gaps. This roadway provides a more scenic, calmer north-south route for pedestrians through older residential areas and Uptown Roxboro. Where sidewalk is not present, worn foot paths are common.



Existing sidewalk on Main Street provides important access to places such as South Elementary and Southern Middle Schools.



Worn foot paths (evidence of current pedestrian use) are common along Main Street.

South Main Street (south of Madison Blvd): This roadway provides important access to South Elementary and Southern Middle Schools. An important sidewalk can be found on its western side, receiving significant pedestrian use. A sidewalk on its eastern side would provide increased accessibility.

Chub Lake Street: An important residential corridor comes into Uptown from the northwest. Currently, there are no pedestrian facilities found along this roadway.

Leasburg Road: Entering into Uptown from the West, this roadway provides access from residential areas into Uptown. Currently, there is only one short sidewalk segment near the Uptown area.



Morgan Street: Perhaps the most pedestrian-accommodated road in Roxboro, this street features sidewalks along both sides for a significant portion of its length. It connects many residential areas to Earl Bradsher Elementary School and Huck Sansbury Park. Still, there are some gaps where worn foot paths can be found. Numerous mid-block crossings can be found but some do not have curb ramps present, including those at the Person County building.



Example of deficiencies: Curb ramps missing on Morgan Street

Concord Road: Entering Roxboro from the West, this roadway connects with Leasburg Road, at the back side of Earl Bradsher Elementary School. There are no sidewalks present.

Ridge Road: Providing service to Person High School and the hospital, Ridge Road has very little sidewalk present. Sidewalk along its southeastern side can be found, west of Carver Drive.

Depot Street: Providing access to Uptown from the east side of Roxboro, Depot Street is another corridor with

sidewalk gaps coming into Uptown. This roadway serves some lower-income portions of the community. Worn foot paths can be found here as well.

2.5.2 Greenways

Currently, there are no off-road greenway facilities in the City of Roxboro. There are walking tracks in the area that are used for exercise. The most heavily used facility is at Huck Sansbury Park. Off-road greenway opportunities exist throughout the City ranging from short connector pathways to longer greenway trails along sewer corridors. These will be discussed in more detail in Chapter 3.

Greenway opportunities include:

Creek corridor/easement: A sewer easement follows the creek running north-south at the northern end of Roxboro. This corridor could provide a connection from the north side of town, including Northern Middle School and Piedmont Technical College southward towards the Uptown area. It would also connect the Old Cotton Mill which may be redeveloped.

Wal-Mart (US 501) - South Elementary School connector: Currently, a worn foot path exists from the back of the elementary school to the Wal-Mart shopping center. This is clearly an opportunity for a more designated facility that would make a short, effective connection.

2.5.3 Intersections

Most significant, signalized intersections in Roxboro need some form of improvement. Safe crosswalks are important because there is much greater risk for a pedestrian when entering the roadway environment. Safe crossing conditions are a necessity at intersections and in high pedestrian activity zones such as Uptown, schools, US 501, and shopping centers. Many intersection crosswalks in Roxboro have no markings and those that do are simple and not as noticeable with only two solid parallel lines. In some cases, sight distance is inadequate, curb radii are too wide, and curb ramps are not found. Crossing signals could only be found in the Uptown area.

A complete inventory and description of each intersection can be found in Table 2.1.



TABLE 2.1 INTERSECTION INVENTORY

Intersection Improvement Projects	Road 1	Road 2	Reason (Major intersection, school, connectivity, etc)	Sight Distance (Good/Fair/Poor)	Sign-age (Y/N)	Controlled/Uncontrolled	Curb Ramp (Y/N)	Curb Radius	Marked Cross-walk (Y/N)	Cross-walk Condition	Ped Xing Signal (Y/N)	Curb Ext. (Y/N)	Side-walk	Median island
1	US 501	Somerset Church/Patterson	Major Corridor; Food Lion; Residential Area;	Good	N	C, light	N, no curb	Wide	N	n/a	N	N	N	N
2	US 501	Flat River Church	Some residential; major roadway corridor	Good	N	C, stop sign	N	Wide	N	n/a	N	N	N	N
3	US 501	Industrial	Some residential; major roadway corridor	Good	N	C, stop sign	N	Wide	N	n/a	N	N	N	N
4	US 501	Wal-Mart	Significant shopping center; Wide crossing over Wal-Mart entrance	Good	N	C, light	N	Wide	N	n/a	N	N	N	Y, crossing Old Durham
5	US 501	Old Durham / Garrett	Commercial area - Major roadway corridor	Poor (road angle)	N	C, stop sign	partial	Good	N	n/a	N	N	N	Y, crossing Hurdle Mills
6	US 501	Hurdle Mills	Major roadway corridor; Entrance into Downtown area; Residential both sides; Some commercial	Poor (road angle)	N	C, light	partial	Wide	N	n/a	N	N	Some	Y, Uptown side
7	US 501	Main	Major roadway corridors; Main Street entrance towards Downtown; Residential and commercial	Poor (road angle)	N	C, light	partial	Wide	N	n/a	N	N	N	N
8	US 501	Help	Major roadway corridor; median islands	Fair	N	C, stop sign	partial	Wide	N	n/a	N	N	N	Y, crossing Help
9	US 501	Court/Leasburg	Major roadway corridor; Commercial areas	Poor (vegetation and topography)	N	C, light	partial	Wide	N	n/a	N	N	Some; north side	N
10	US 501	Reams	Major roadway corridor; Commercial areas	Fair	N	C, light	partial	Wide	N	n/a	N	N	Some	N
11	US 501	Morehead	Major roadway corridor; Commercial areas	Fair	N	C, light	partial	Wide	N	n/a	N	N	N	N
12	US 501	Oak	Major roadway corridor; Commercial areas	Fair	N	C, stop sign	partial	Wide	N	n/a	N	N	Some	N
13	US 501	Ivey	Major roadway corridor; Commercial areas	Fair	N	C, stop sign	partial	Wide	N	n/a	N	N	N	N
14	US 501	Walker	Major roadway corridor; Commercial areas	Fair	N	C, stop sign	partial	Wide	N	n/a	N	N	N	N



EXISTING CONDITIONS

TABLE 2.1 INTERSECTION INVENTORY (CONTINUED)

Intersection Improvement Projects	Road 1	Road 2	Reason (Major intersection, school, connectivity, etc)	Sight Distance (Good/Fair/Poor)	Sign-age (Y/N)	Controlled/Uncontrolled	Curb Ramp (Y/N)	Curb Radius	Marked Cross-walk (Y/N)	Cross-walk Condition	Ped Xing Signal (Y/N)	Curb Ext. (Y/N)	Side-walk	Median island
15	US 501	Clayton	Major roadway corridor; Commercial areas	Fair	N	C, stop sign	partial	Wide	N	n/a	N	N	N	N
16	US 501	Carver	Heavy commercial areas; Food Lion; Major roadway corridor; Near Person High School and Uptown	Fair	N	C, light	partial	Wide	N	n/a	N	N	N	N
17	US 501	Main/Virgilia	Multiple major roadways intersecting; Wide, dangerous crossings; Uptown connection	Fair (strange road angles)	N	C, light	partial	Wide	N	n/a	N	N	N	N
18	US 501	Providence	Major roadway corridor; Residential areas	Good	N	C, stop sign	N	Wide	N	n/a	N	N	N	N
19	US 501	Foushee	Major roadway corridor; Commercial areas; Median islands with long traverse	Fair	N	C, stop sign	N	Wide	N	n/a	N	N	N	Y, across Foushee
20	US 501	Barden	Commercial and residential areas; Major roadway corridor; Library nearby	Good	N	C, light	partial	Wide	N	n/a	N	N	N	N
21	US 501	Lamar	Major roadway corridor; Commercial areas; Median islands with long traverse	Fair	N	C, stop sign	N	Wide	N	n/a	N	N	N	Y, across Lamar
22	US 501	Gordon	Commercial and residential areas; Major roadway corridor	Poor (topography and curvy road)	N	C, light	partial	Wide	N	n/a	N	N	N	N
23	Ridge	Carver	Person High School; Residential areas; Near hospital	Poor (topography and curvy road)	N	C, light	partial	Wide	N	n/a	N	N	Some on east side	N
24	Leasburg	Help	Residential areas; some commercial	Fair	N	C, light	N	Wide	N	n/a	N	N	N	N
25	Morgan	Long	Residential areas; some commercial; near Huck Sansbury Park	Fair	N	C, light	N	Wide	N	n/a	N	N	N	N
26	Concord	Morgan	Near Earl Bradsher Elementary; Very wide curb radius	Poor (vegetation and angled road)	N	C, light	N	Very wide	N	n/a	N	N	N	N
27	Reams	Main	Uptown	Fair (on street parking)	N	C, light	Y	Good	Y	faded	N	Y	Y	N
28	Court	Main	Uptown	Fair	N	C, stop sign	Y	Good	Y	faded	N	Y	Y	N
29	Abbitt	Main	Uptown	Fair	N	C, stop sign	Y	Good	Y	faded	N	Y	Y	N



Pedestrian movement is evident along US 501, particularly where worn foot paths are found.

Traffic congestion and pedestrian movement is most significant in Uptown and along US 501. Crossing features are non-existent along US 501 and fair to adequate in the Uptown area. Some intersections along US 501 feature wide curb radii which allow automobile traffic to move too quickly around a turn. Sidewalks and marked crosswalks are not present along US 501.

Intersections outside of Uptown and US 501 are also very deficient in pedestrian crossing features. In most cases, there are not marked crosswalks, even near schools. Curb radii are wide and visibility is often poor.



Example of deficiencies: A wide curb radius at Semora Road and Morgan. Wide curb radii increase the distance that pedestrians have to cross, thereby extending the time they are exposed to potential conflict with automobiles.

Intersections of particular significance and need for improvement are:

- US 501 / Old Durham Road
- US 501 / South Main Street
- US 501 / Leasburg Road
- US 501 / Reams Avenue
- US 501 / Morgan Street
- US 501 / Clayton Avenue
- US 501 / Carver Drive
- US 501 / North Main Street
- Concord / Morgan
- Morgan / Long
- Leasburg / Long
- Chub Lake / Ridge

Recommendations for improvement may be found in Chapter 3.

2.5.4 Uptown Walking Tour

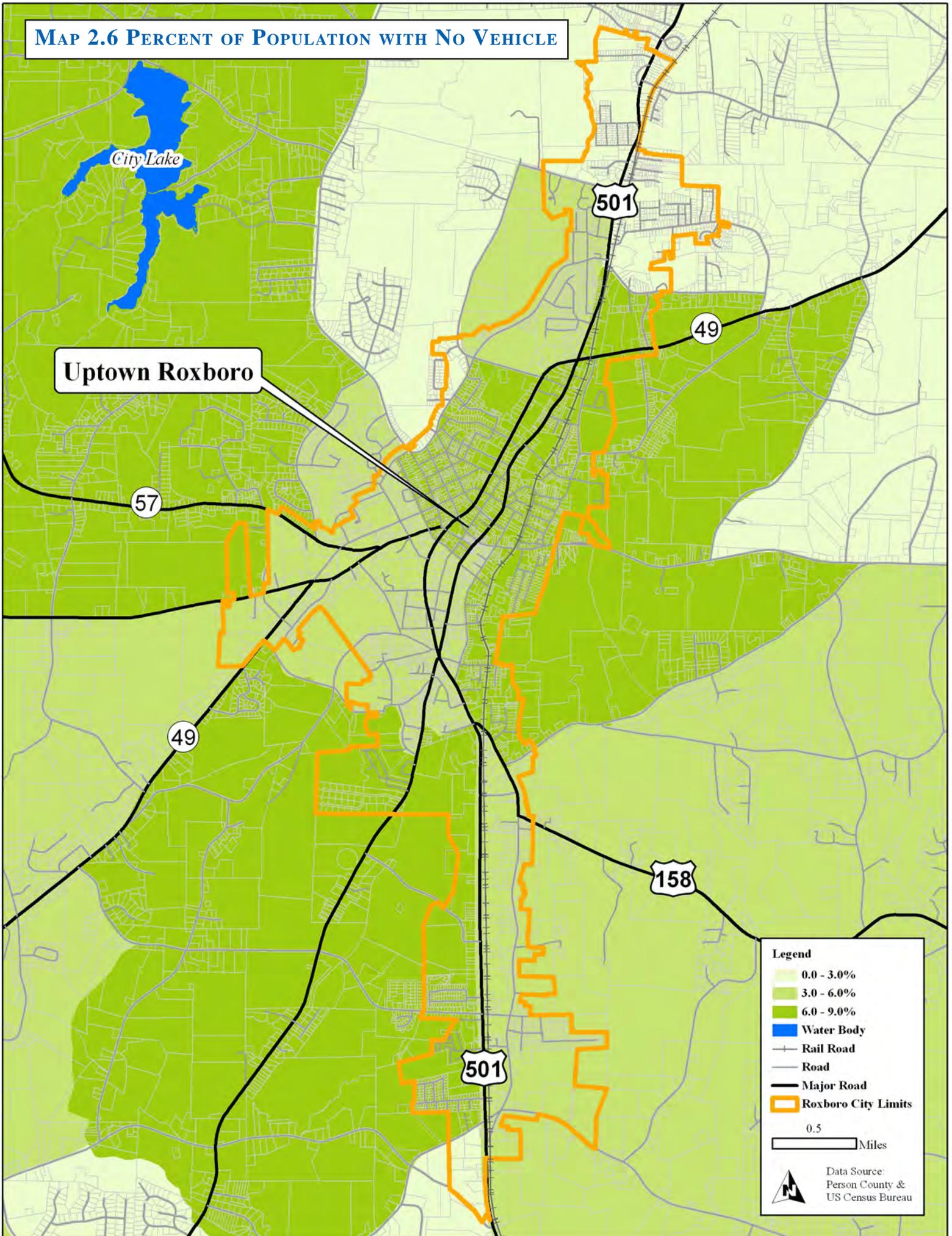
Although not formalized and containing no signage, a Historic Uptown Walking Tour has been established with a brochure. The majority of the Tour is along Main Street through the Uptown area. A number of old residences, churches, schools, stores, and the Kirby Theater are identified on the brochure map. This could be further enhanced and advertised.

2.6 CURRENT PEDESTRIAN USE AND NEEDS

Regardless of the availability or condition of existing pedestrian facilities, a number of residents walk and throughout Roxboro to destinations such as work, shopping centers, parks, and neighbors' homes. Pedestrians were observed very commonly around all schools, Huck Sansbury Park, Uptown, and sections of US 501. Census data provides information regarding the means of transportation to work and an important starting point to understanding current use.

A further investigation of 2000 census data provides a glimpse of workers that do not own a vehicle along with the number of pedestrian commuters by block group (seen in Maps 2.6 and 2.7). This presents another set of data that highlights areas in need of pedestrian accommodations. Map 2.6 shows the higher percentage of workers that do not own an automobile

MAP 2.6 PERCENT OF POPULATION WITH NO VEHICLE



Uptown Roxboro

City Lake

57

49

501

49

158

501

Legend

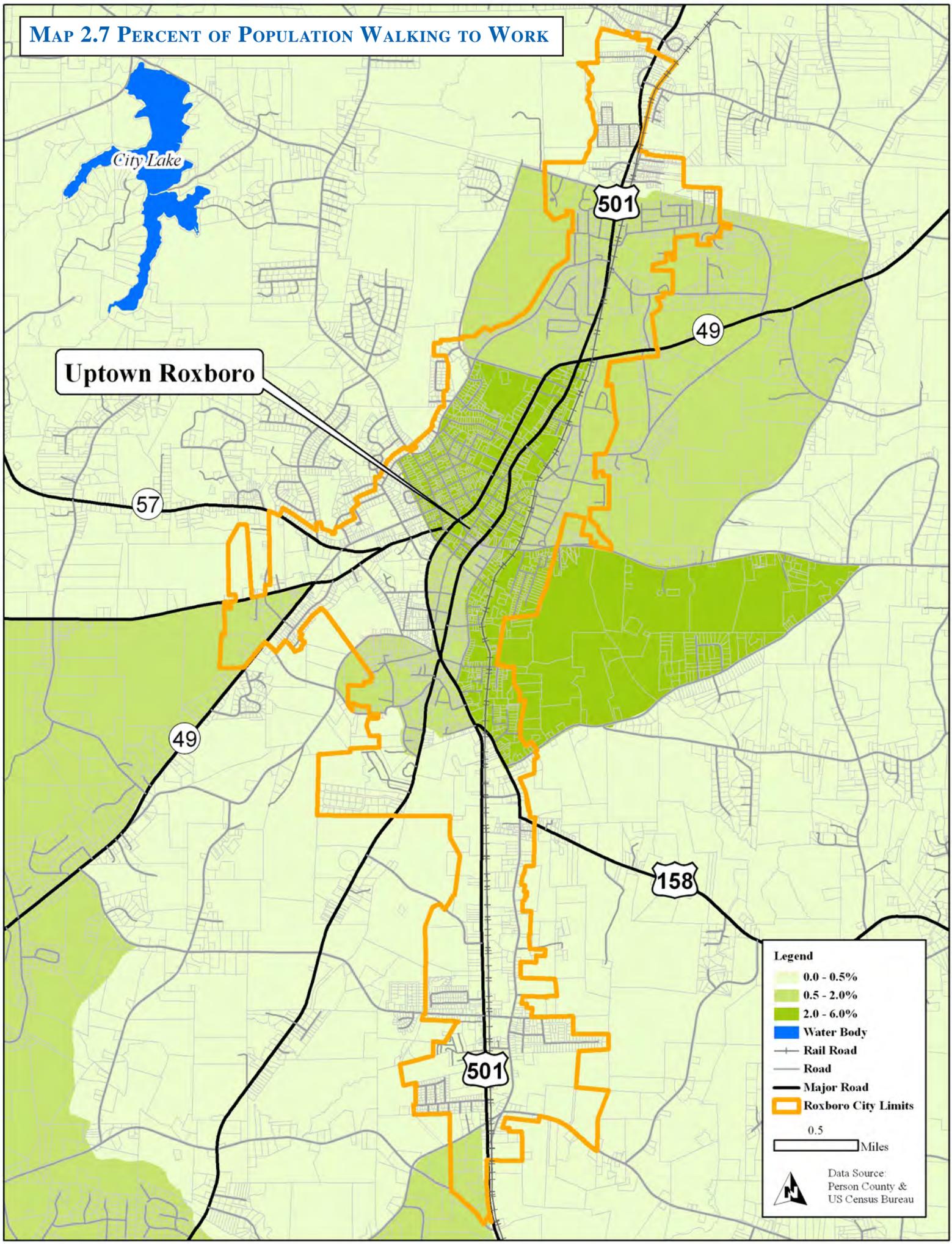
- 0.0 - 3.0%
- 3.0 - 6.0%
- 6.0 - 9.0%
- Water Body
- Rail Road
- Road
- Major Road
- Roxboro City Limits

0.5 Miles



Data Source:
Person County &
US Census Bureau

MAP 2.7 PERCENT OF POPULATION WALKING TO WORK



Uptown Roxboro

City Lake

57

49

501

49

158

501

Legend

- 0.0 - 0.5%
- 0.5 - 2.0%
- 2.0 - 6.0%
- Water Body
- Rail Road
- Road
- Major Road
- Roxboro City Limits

0.5 Miles

Data Source:
Person County &
US Census Bureau



in the darker shades of green. This is most common in the Uptown area and in areas north and east of Uptown. Another significant region is along South Main Street/ Hurdle Mills Road. Map 2.7 presents pedestrian commuter percentages per block group. The darker regions can be found again around Uptown and also in areas near and east of the railroad.

2.7 SUMMARY OF EXISTING DOCUMENTS

The following documents represent important efforts, provide valuable insight and background, and have influenced the development of this plan. The current plans are reviewed and summarized below only as they relate to pedestrian planning in Roxboro. Zoning, land use, and subdivision ordinances are discussed and analyzed in Chapter 4. For further information on each plan, please consult the specific document in its entirety.

2.7.1 Person County Recreation Arts & Parks Facilities Master Plan (2005) *MHAWorks and Coulter Jewell Thames*

This document serves as the update to the last Parks and Recreation Master Plan developed in 1992. An inventory of facilities was conducted along with a series of public meetings around the County. When compiling a public “wish list,” it was found that biking trails and hiking trails were requested the fourth and fifth most. Huck Sansbury Park was the most visited park. When asked the type of activity preferred at parks, walking tracks received the most response. Walking, jogging, and hiking trails also ranked very high.

With continued growth expected, this Plan provides recommendations for facilities to accommodate that growth and also accommodate public desires learned from the workshops. Several action items related to this plan include:

- Develop bike trails
- Acquire old rail corridor right-of-way
- Develop greenways, trails, and bicycle master plan

2.7.2 Re-Visioning Roxboro, Strategic Planning Report (2006) *UNC School of Government*

This document provides a vision and establishes goals for the City of Roxboro. The vision is for a community that is safe, healthy, scenic, quaint, vibrant, family-oriented, and well-educated, where citizens have opportunities for recreation and everyone is involved in community. Goals include increasing the tax base, economic development, planning for growth, enhance housing stock and mix, undertake city beautification efforts, provide support for City work force, and ensure responsiveness throughout City Services.

While none of these visions and goals specifically mention pedestrian activity, it can be implied that improvements would help to achieve many of these goals including safety, healthy living, community growth, beautification, and recreational opportunities. An improvement to the overall aesthetic and walking environment would make Roxboro more appealing for potential newcomers.



3. PEDESTRIAN NETWORK

3.0 OVERVIEW

The proposed pedestrian network for the City of Roxboro is a series of pedestrian improvements that creates a more connected, comprehensive system. It has been developed from project visioning, field analysis, GIS mapping, and public input. This chapter presents the methodology, recommended pedestrian network facilities, and overall pedestrian network map. It also provides detailed recommendations for important network corridors and intersection improvements.

The guiding philosophy in devising this network is the hubs and spokes model. Pedestrian corridors should connect trip attractors such as parks, schools, Downtown, shopping centers, and other pedestrian corridors. The network then becomes a practical solution for pedestrian connectivity.

3.1 METHODOLOGY

A variety of sources were consulted during the development of the Pedestrian Network: previous plans and studies, maps of existing pedestrian conditions, the consultants' fieldwork, public input, and noted pedestrian trip attractors. Detailed fieldwork included an examination of intersection conditions, school areas, greenway feasibility, areas of higher pedestrian activity such as the Downtown and US 501 corridor, and a consideration of gap connectivity. Map discussion and analysis was conducted at Steering Committee meetings and public meetings to pinpoint areas that need pedestrian improvements. Specific consideration was given to the following:

- Locations of existing facilities
- Observed gaps in existing facilities or deficiencies in facilities
- Locations of the existing arterial and collector roads

- Locations of existing and future trip attractors, including schools, parks, shopping areas, downtown historic district, high density residential areas, etc.
- Locations of major street intersections and crossings
- Locations of safety concern (high pedestrian and auto traffic and inadequate facilities)
- Connectivity of regional pedestrian and greenway networks
- Opportunities for greenway development including open space, available land, easements, and new developments
- Public comments collected from area residents via an online survey and during public workshops.
- Recommendations from representatives of the Steering Committee
- Field observations made by the consultant
- Projects and recommendations from previous planning efforts



A project consultant takes notes on pedestrian network recommendations in Roxboro.



3.2 THE PEDESTRIAN NETWORK

The Proposed Pedestrian Network for Roxboro consists of sidewalk projects, crossing improvements, and off-road greenways. Together these proposed facilities should be developed or improved to create a safe and connected pedestrian network throughout the City. On-road and off-road components should be integrated to provide a connected pedestrian transportation and recreation network.

The network should be completed in phases as prioritized in Chapter 5, Implementation. However, network segments should be developed when there is opportunity, regardless of the order. New ordinances should be developed (discussed in Chapter 4) in order to make sidewalks a mandatory part of any commercial or residential development, especially along this recommended pedestrian network map.

Successful development of the pedestrian network will require a long-term, cooperative effort between the City, the North Carolina Department of Transportation, and other local and state agencies. Regional connectivity should also be considered during future development of the sidewalk and greenway network.

All pedestrian corridor projects undertaken by the City of Roxboro should aim to meet the highest standards possible when topography and right-of-way allows. At a minimum, each pedestrian corridor should possess curb cuts with ramps at all driveways and intersections and be paved to increase accessibility and decrease maintenance costs. Within each identified corridor, roadway intersections should have marked crosswalks, and major intersections should have pedestrian crossing signals. Wider sidewalks, with curb cuts and improved surface conditions will correct sidewalks that currently do not satisfy the standards set forth by the American Disability Act of 1991.

Traffic calming measures, such as curb extensions, medians, and pedestrian refuge islands should be used to create a more hospitable environment for pedestrians in neighborhoods and commercial districts. See Chapter 6, Design Guidelines for specific descriptions on recommended facilities. Finally, opportunities should be taken to incorporate pedestrian facilities into all municipal and state roadway improvement and widening projects.

Three main types of pedestrian projects have been identified for the City of Roxboro and are outlined below. They include sidewalks, crossing improvements, and off-road greenway corridors. Ancillary improvements to create a more hospitable pedestrian environment are also detailed. Design guidelines in Chapter 6 provide detailed information regarding proper placement and facility treatments.

3.2.1 Sidewalk Projects

Sidewalk projects are the major component of the proposed pedestrian network in Roxboro. Sidewalks are located along road segments. In the long term, sidewalks should be constructed on both sides of arterial and collector roads wherever possible to provide adequate pedestrian connections throughout the City of Roxboro. The sidewalk network is focused on significant roadways that provide service to major destinations within Roxboro and link multiple land uses, such as residential, recreational, institutional, and commercial. The proposed pedestrian facilities along significant roadways craft the spine of the entire pedestrian network. Some sections along these significant roadways have existing sidewalk. However, the existing sidewalk is segmented, creating gaps in the connectivity or lacking sidewalk on one side of the street. Sidewalk projects are prioritized in Appendix B and high priority segments are illustrated on Map B.1.

3.2.2 Pedestrian Crossings

Improving the safety of roadway crossings is essential for making Roxboro more walkable. Intersections present situations where a pedestrian must traverse the motor vehicle environment. Pedestrians have a much greater risk of being struck by a vehicle when crossing a roadway as opposed to walking on the shoulder or sidewalk beside it. Nationally, nearly 75% of all police-reported pedestrian crashes involve pedestrians crossing roadway travel lanes._

Consultant fieldwork and public input identified numerous intersections in Roxboro that are in need of minor to significant pedestrian facility improvements. Adequate facilities should be provided specific to the intersection, to provide a safe crossing environment. Improvements may include marked crosswalks, curb extensions, curb ramps, and pedestrian-activated signals. Recommendations for each specific intersection are discussed in section 3.4.



In roadway crossings with a stop sign only, marked crosswalks and curb ramps should always be provided, where sidewalk exists. These would be installed parallel to the more significant roadway. This will provide greater visibility for pedestrian space. A perfect example is any residential roadway crossing of Main Street and its sidewalk.

It should be noted that this is a planning level analysis. Each of these locations will need a more detailed project-level review. The conclusions reached through more detailed review may vary from those presented herein.

3.2.3 Greenway Corridors

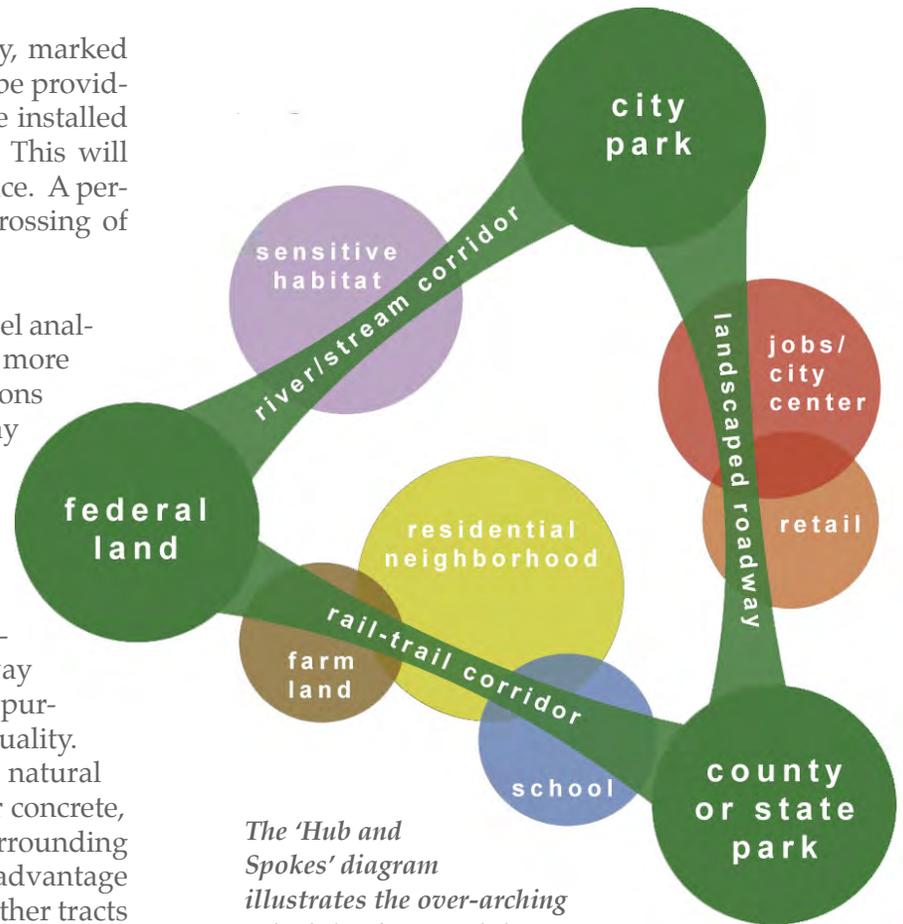
Greenway corridors, for the purposes of this study, are off-road, multi-use facilities that provide an excellent source for alternative transportation and recreation. Greenway corridors can also serve an environmental purpose, to protect forests and enhance water quality. Greenway corridors can be constructed of natural materials, gravel, crushed stone, asphalt, or concrete, depending upon the projected usage and surrounding landscape. These corridors typically take advantage of linear stream corridors, easements, and other tracts of open space. Greenway trails in Roxboro should be integrated with and serve as an off-road extension of the on-road pedestrian network. Numerous greenway opportunities were identified throughout Roxboro, via consultant fieldwork, public input, and other local and regional planning efforts. Proposed greenway corridors are illustrated on Map 3.1.

3.2.4 Ancillary Treatments

In addition to the above facilities, a number of other important pedestrian treatments can improve safety throughout the pedestrian network. A full listing and description of these facilities and treatments can be found in Chapter 6 - Design Guidelines. A summary of the major treatments recommended in Section 3.3 are described below.

Traffic Calming:

This refers to a range of measures that reduce the impact of vehicular traffic on residents, pedestrians and cyclists - most commonly on residential streets, but also now on commercial streets



The 'Hub and Spokes' diagram illustrates the over-arching principle of connectivity involved in network planning.

Median Refuge Island:

This refers to an island in the roadway median, that offers a stopping or halfway point for a pedestrian.

Driveway Access Management:

This refers to minimizing the size and amount of access points for motor vehicles crossing sidewalks to adjacent property.



3.3 NETWORK CORRIDORS

The following corridors and areas were chosen because of their importance in the overall network. They are key thoroughfares that connect multiple destinations and land uses. They also represent segments in need of significant improvements for pedestrian safety and connectivity.

The complete recommended network of sidewalks, crossing improvements, and off-road greenways can be found on Map 3.1. Each segment can be found in the prioritization matrix found in Appendix B.

See the Implementation Chapter (page 5-3) for more information on top priority network segments.

3.3.1 US 501 South (City Limits to Wal-Mart)

Importance

- Major artery through Roxboro
- Connects multiple land uses significant commercial areas
- Very dangerous intersection crossings
- Areas of possible future development

Recommendations

- Continuous sidewalks along both sides through Roxboro City limits
- Intersection crossing improvements throughout (see Section 3.5)
- Adequate buffer between roadway and sidewalk (heavy traffic)
- Driveway access management needed
- Curb ramps and marked crosswalks installed at intersections without traffic lights
- Ongoing development in this region should be required to add sidewalk (a new ordinance)
- Traffic calming throughout corridor - lower speed limits, increased aesthetic
- Improve access between commercial parcels and parking lots

Further study

- Consider segments of old railroad for parallel trail to 501

3.3.2 US 501 Middle (Wal-Mart to Court)

Importance

- Major artery through Roxboro
- Connects multiple land uses significant commercial areas
- Very dangerous intersection crossings
- History of pedestrian crashes
- Near Downtown area

Recommendations

- Continuous sidewalks along both sides through Roxboro City limits
- Intersection crossing improvements throughout (see Section 3.5)
- Adequate buffer between roadway and sidewalk (heavy traffic)
- Driveway access management needed
- Curb ramps and marked crosswalks installed at intersections without traffic lights
- Future development in this region should be required to add sidewalk (a new ordinance)
- Traffic calming throughout corridor - lower speed limits, increased aesthetic
- Improve access between commercial parcels and parking lots
- Vacant lots could be purchased by City to create pocket parks

3.3.3 US 501 North (Court to Virgilina)

Importance

- Major artery through Roxboro
- Connects multiple land uses significant commercial areas
- Very dangerous intersection crossings
- History of pedestrian crashes
- Near Downtown area

Recommendations

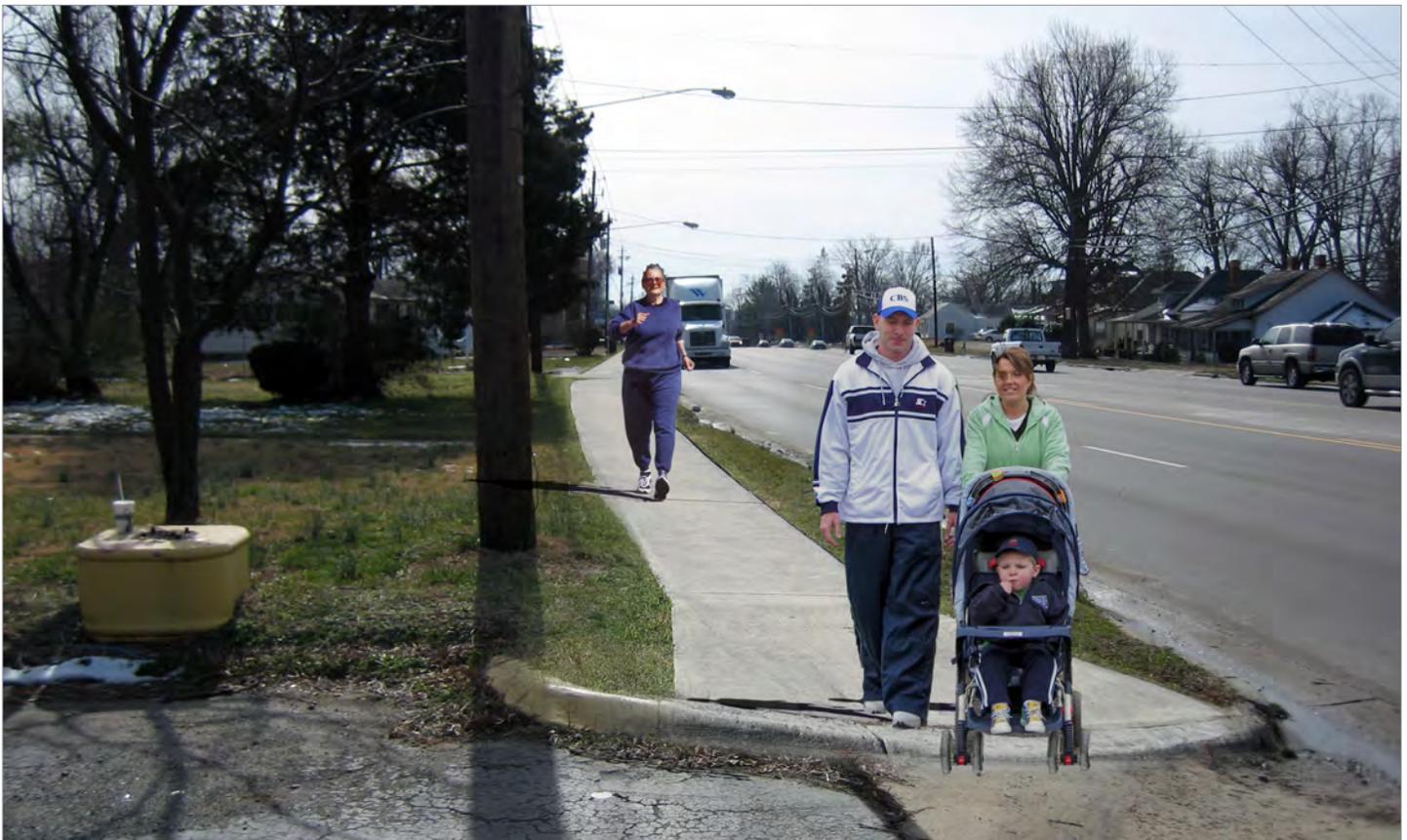
- Continuous sidewalks along both sides
- Intersection crossing improvements throughout (see Section 3.5)
- Adequate buffer between roadway and sidewalk (heavy traffic)
- Driveway access management needed
- Curb ramps and marked crosswalks installed at intersections without traffic lights



- Future development in this region should be required to add sidewalk (a new ordinance)
- Traffic calming throughout corridor - lower speed limits, increased aesthetic
- Improve access between commercial parcels and parking lots
- Vacant lots could be purchased by City to create pocket parks
- Improvements around Carver to provide safer access to Food Lion and Person High School



*Above: Existing conditions along US 501 (Madison Blvd.)
Below: A Photo rendering of proposed improvements*





3.3.4 North Main Street

Importance

- Major artery through Roxboro
- Visible evidence of foot paths with worn-down grass and soil
- Connection into Downtown area
- Service for some underserved and lower-income areas
- Safer alternative to walking along US 501

Recommendations

- Continuous sidewalks along both sides
- Intersection crossing improvements throughout including marked crosswalks and curb ramps across perpendicular, residential roads



Above: Existing conditions along North Main Street, with worn footpath.

Below: A photo rendering of proposed improvements.





3.3.5 Morgan Street

Importance

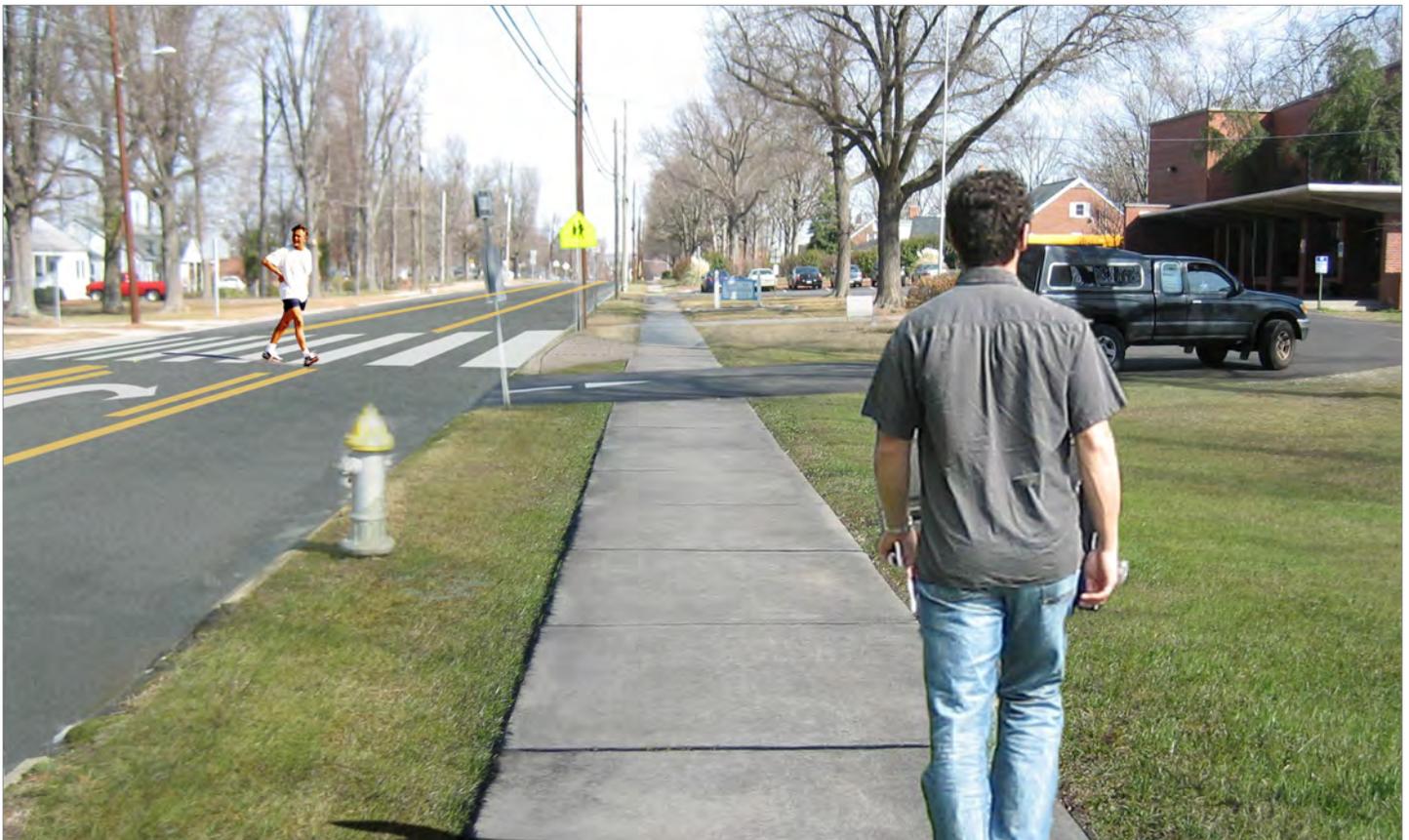
- Provides connection to Earl Bradsher Elementary and Huck Sansbury Park
- Provides connection from residential areas to some commercial areas

Recommendations

- Fill gaps in sidewalks along Morgan, especially west side of Earl Bradsher Elementary
- Upgrade existing crosswalk facilities to include curb ramps and lead to paved sidewalks. Crosswalks should also have ladder painting for increased visibility.
- Adequate buffer between roadway and sidewalk (heavy traffic)



Above: Existing conditions along Morgan Street, approaching Earl Bradsher Elementary. Below: A photo rendering of proposed improvements.





3.3.6 Hurdle Mills Road

Importance

- Provides connection to South Elementary School and Southern Middle School
- Serves lower-income areas

Recommendations

- Continuous sidewalks along both sides from Sandstone Way (just south of South Elementary School north to US 501)
- Crossing improvements from South Elementary School including median refuge islands
- Adequate buffer between roadway and sidewalk (heavy traffic)



*Above: Existing conditions near Southern Middle School (along Kappa Drive).
Below: A photo rendering of proposed sidepath.)*





3.3.7 North-South Greenway

Importance

- Provides off-road transportation and recreation opportunity for areas north of the City to access towards Downtown
- Follows existing City sewer easement
- Serves lower-income areas
- Could tie into redevelopment of Cotton Mill

Recommendations

- Multi-use, paved greenway along sewer easement
- Safe, highly-visible mid-block crossings of roadways
- Connector spurs and sidewalks to destinations



Above: Existing conditions along an existing City sewer easement. Below: A photo rendering of proposed improvements for a future north-south greenway.





3.3.8 South Main Street

Importance

- Major artery through Roxboro
- Connection into Downtown area
- Visible evidence of foot paths with worn-down grass and soil
- Safer alternative to walking along US 501

Recommendations

- Continuous sidewalks along both sides
- Intersection crossing improvements throughout including marked crosswalks and curb ramps across perpendicular, residential roads

3.3.9 Ridge Road

Importance

- Provides connection to Person High School and Person Memorial Hospital

Recommendations

- Continuous sidewalks along both sides from Reams to US 501 to provide service to Person High School
- Intersection crossing improvements at school (Carver and Ridge)
- Adequate buffer between roadway and sidewalk (heavy traffic)
- Curb ramps and marked crosswalks installed at intersections without traffic lights

3.3.10 Key Areas: Schools

South Elementary/Southern Middle School at South Main Street: Pedestrian facilities and safety should be a major priority in this area. A number of residential apartments are present here and the existing sidewalk on the west side of Main Street receives heavy use.

Earl Bradsher Elementary/Huck Sansbury Park: This area sees heavy pedestrian usage. All pedestrian facilities should be improved where needed, including the addition of curb ramps at mid-block crossings and sidewalks where gaps are currently found. Traffic calming should be considered as well with median pedestrian islands.

Person High School: Ridge Road and Carver Road need sidewalks on both sides and significant improvements to the Ridge/Carver intersection are necessary. Improvements are also needed at the crossing of Carver and US 501 (Food Lion shopping center).



Above: Existing conditions along Morgan Street, near Earl Bradsher Elementary School. Below: A photo rendering of proposed crossing improvements.





3.4 INTERSECTIONS

The intersection recommendations below outline the importance for needed improvements and detail recommended physical changes. This represents a planning-level analysis only.

3.4.1 US 501 and Somerset Church/Patterson

Importance

- Major roadway corridor
- Food Lion
- Residential area

Recommendations

- Longer term improvement
- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals across 501
- Advanced stop lines
- Traffic calming

3.4.2 US 501 and Flat River Church

Importance

- Major roadway corridor
- Some residential areas

Recommendations

- Longer term improvement
- Need sidewalk first
- Curb radius reduction
- Marked crosswalks (if/when a light is installed)
- Pedestrian signals across 501 (if/when a light is installed)
- Advanced stop lines (if/when a light is installed)
- Traffic calming

3.4.3 US 501 and Wal-Mart

Importance

- Significant shopping center
- Major roadway corridor
- Wide crossing over Wal-Mart entrance

Recommendations

- Short-term improvement
- Need sidewalk first
- Curb radius reduction
- Curb ramps installed
- Marked crosswalks (across Wal-Mart entrance)
- Pedestrian signals crossing Wal-Mart entrance
- Advanced stop lines
- Traffic calming

3.4.4 US 501 and Hurdle Mills

Importance

- Major roadway corridor
- Entrance into Uptown area
- Residential both sides
- Commercial areas
- Dangerous right-hand slip turn lane

Recommendations

- Need sidewalk first
- Curb radius reduction
- Add refuge island in right-hand slip turn lane
- Marked crosswalks
- Pedestrian signals
- Traffic calming
- Curb ramps
- Further analysis warranted
- Advanced stop lines

3.4.5 US 501 and Main

Importance

- Major roadway corridor
- Main Street entrance towards Uptown
- Residential and commercial

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals
- Traffic calming
- Curb ramps (at median islands too)



3.4.6 US 501 and Old Durham/Garrett

Importance

- Major roadway corridor
- Commercial area

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks across Old Durham
- Pedestrian signals across Old Durham
- Traffic calming
- Curb ramps
- Enhanced pedestrian island refuges
- Further analysis warranted



*Above: Existing conditions along US 501, near Old Durham.
Below: A photo rendering of a proposed sidewalk.*





3.4.7 US 501 and Help

Importance

- Major roadway corridor
- Small islands

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Traffic calming
- Curb ramps
- Further analysis warranted

3.4.8 US 501 and Court/Leasburg

Importance

- Major roadway corridor
- Commercial areas

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals (across US 501 only)
- Traffic calming
- Curb ramps
- Trim back vegetation at SE corner
- Advanced stop lines

3.4.9 US 501 and Reams

Importance

- Major roadway corridor
- Commercial areas

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals (across US 501 only)
- Traffic calming
- Curb ramps
- Advanced stop lines

3.4.10 US 501 and Morehead

Importance

- Major roadway corridor
- Commercial areas

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals (across US 501 only)
- Traffic calming
- Curb ramps
- Advanced stop lines

3.4.11 US 501 and Main/Virgilina

Importance

- Multiple major roadways
- Wide, dangerous connections
- Uptown connection
- Some commercial and residential
- Many commercial driveway entrances are an issue

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals
- Traffic calming
- Curb ramps
- Advanced stop lines
- With right-hand turn slip lane, pedestrian refuge island could slow traffic
- Further analysis warranted

3.4.12 US 501 and Providence

Importance

- Major roadway corridor
- Residential areas

Recommendations

- Add marked crosswalks
- Curb ramps
- Curb radius reduction



3.4.13 US 501 and Carver

Importance

- Heavy commercial areas
- Food Lion
- Near Person High School
- Near Uptown
- Major roadway corridor

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals (across US 501 only)
- Traffic calming
- Curb ramps
- Advanced stop lines



*Above: Existing conditions at US 501 and Carver.
Below: A photo rendering of a proposed improvements.*





3.4.14 US 501 and Foushee

Importance

- Major roadway corridor
- Small islands and long crossing

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks (over Foushee)
- Enhance small islands as pedestrian refuges
- Traffic calming
- Curb ramps (on islands too)
- Further analysis warranted



*Above: Existing conditions at US 501 and Foushee.
Below: A photo rendering of a proposed improvements.*





3.4.15 US 501 and Lamar

Note: Photo rendering shows Lamar Street, near Downtown indicating the importance of sidewalks along this entire corridor.

Importance

- Major roadway corridor
- Commercial areas
- Small islands with long crossing

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks (over Lamar)
- Enhance small islands as pedestrian refuges
- Traffic calming
- Curb ramps (on islands too)
- Further analysis warranted



Above: Existing conditions on Lamar.

Below: A photo rendering of a proposed improvements.





3.4.16 Semora and Morgan

Importance

- Near Earl Bradsher Elementary
- Very wide curb radius

Recommendations

- Need sidewalk first
- Curb radius reduction very important
- Curb extension (on Morgan right hand turn to Concord (coming from park))
- Marked crosswalks
- Pedestrian signals
- Advanced stop lines



Above: Existing conditions on Morgan, near Earl Bradsher Elementary.
 Below: A photo rendering of a proposed crossing improvements.





3.4.17 Ridge and Carver

Importance

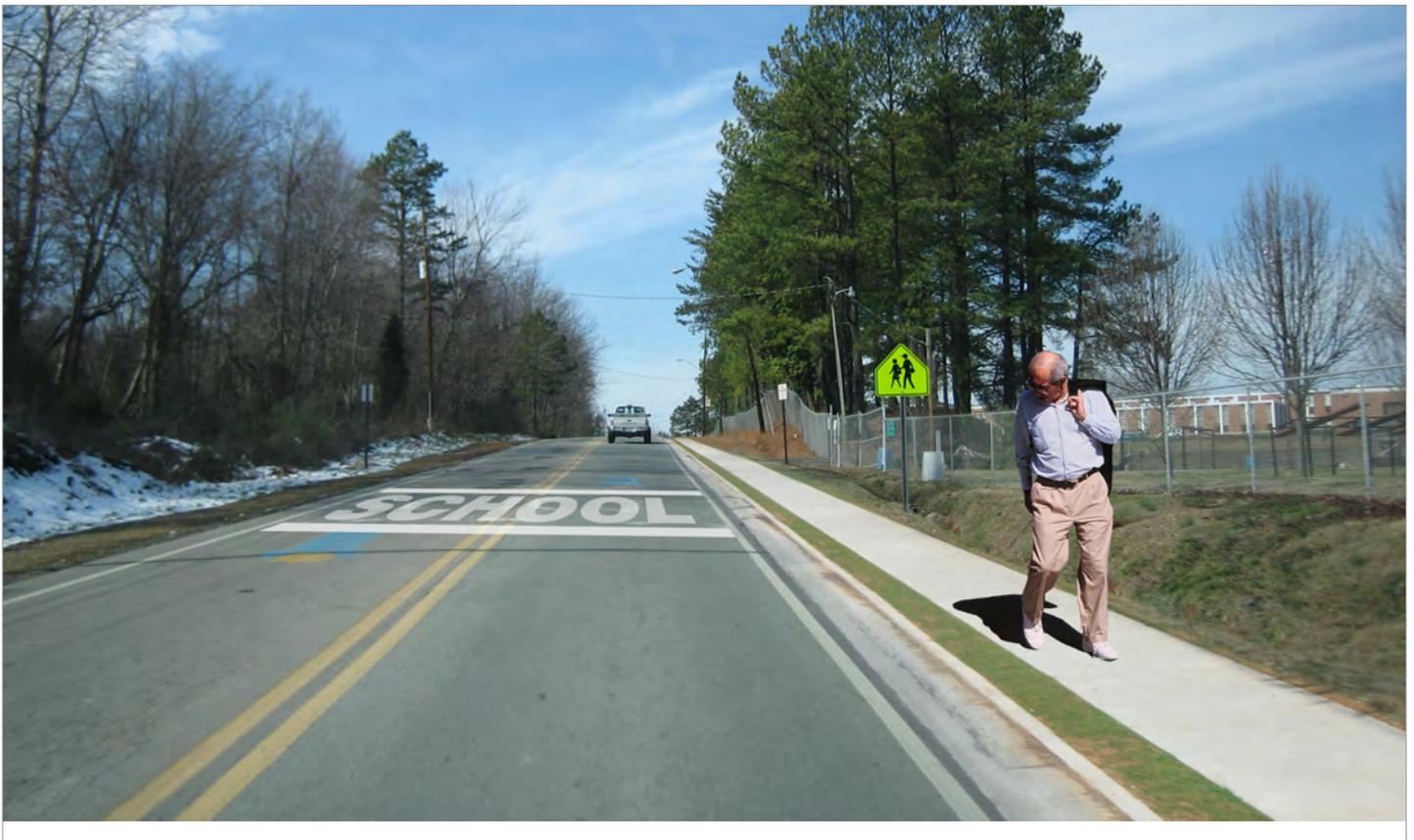
- Person High School
- Residential areas
- Near hospital

Recommendations

- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals
- Advanced pedestrian warning signs
- Advanced stop lines
- In-road State law pedestrian crossing signs
- Traffic calming



*Above: Existing conditions along Carver, near Person High School.
Below: A photo rendering of a proposed improvements.*





3.4.18 Court and Main

Importance

- Uptown

Recommendations

- Enhance crosswalk (new paint or brick pavers)
- Curb ramps where necessary

3.4.19 Abbitt and Main

Importance

- Uptown

Recommendations

- Enhance crosswalk (new paint or brick pavers)
- Curb ramps where necessary

3.4.20 US 501 and Barden

Importance

- Major roadway corridor
- Commercial and residential areas
- Library nearby

Recommendations

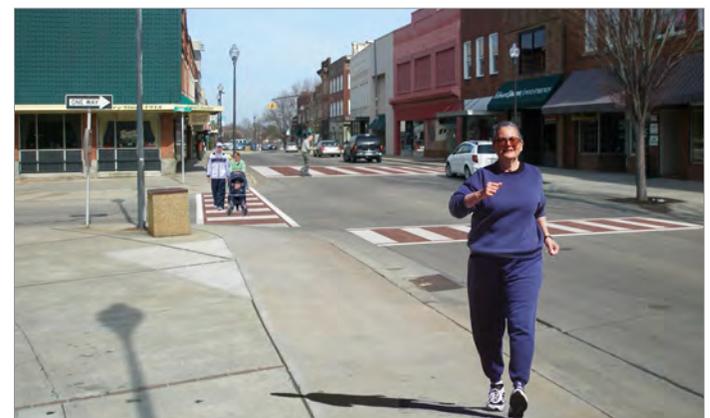
- Need sidewalk first
- Curb radius reduction
- Marked crosswalks
- Pedestrian signals (across US 501 only)
- Traffic calming
- Curb ramps



*Above: Existing conditions at Abbitt and Main.
Below: A photo rendering of a proposed improvements.*



*Above: Existing conditions at Court and Main.
Below: A photo rendering of a proposed improvements.*





3.4.21 US 501 and Gordon

Importance

- Major roadway corridor
- Commercial and residential areas

Recommendations

- Need sidewalk first
- Marked crosswalks
- Curb ramps
- Pedestrian signals (across US 501 only)

3.4.22 Leasburg and Help

Importance

- Residential and some commercial

Recommendations

- Need sidewalk first
- Marked crosswalks
- Curb ramps

3.4.23 Leasburg and Long

Importance

- Residential and some commercial

Recommendations

- Need sidewalk first
- Marked crosswalks
- Curb ramps

3.4.24 South Main Street at South Elementary

Importance

- Connections between South Elementary and Southern Middle along with residential areas
- At school location
- Mid-block crossing

Recommendations

- Need crossing guards during school opening and closing hours
- Advanced pedestrian warning signs
- In-road State law pedestrian crossing signs

3.4.25 Reams and Main

Importance

- Uptown

Recommendations

- Enhance crosswalk (new paint or brick pavers)

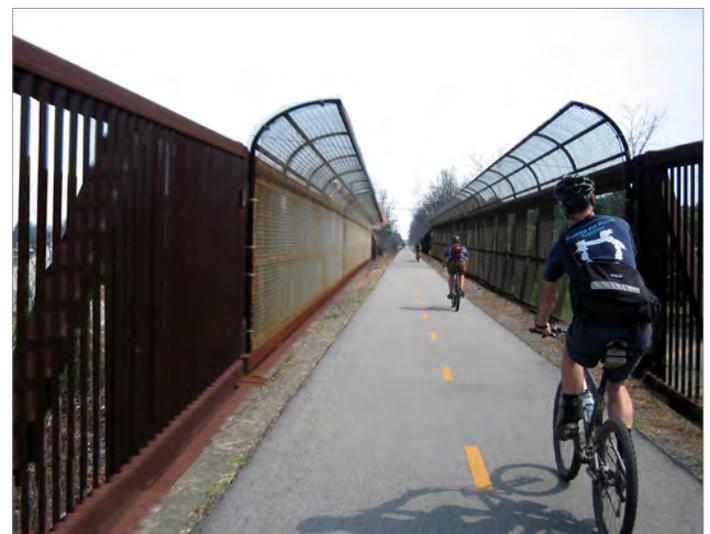
3.5 REGIONAL CONNECTIVITY

Roxboro should look beyond its city limits and link pedestrian facilities to neighboring and regional destinations. It is recommended that Roxboro coordinate efforts with surrounding communities, Durham, and Person County to create long distance connections for alternative transportation and recreation. Regional greenway trail connections will encourage and draw individuals to Roxboro from surrounding areas. One opportunity is the abandoned rail corridor parallel to US 501. Opportunities to partner with the railroad should continue to be sought after.



Above: Existing conditions along rail corridor near US 501 and Old Durham Road.

Below: A photo rendering of a proposed trail.





Regional Connectivity (Continued)

One of the most significant and valuable regional opportunities for pedestrian connections is the East Coast Greenway (www.greenway.org/). The East Coast Greenway is a national trail effort that encompasses thousands of miles from Maine to Florida. The geographic alignment of the North Carolina segment is still being determined. There is a possibility that the greenway would come near or through Roxboro. The City should remain engaged in conversations with this national and regional greenway effort.

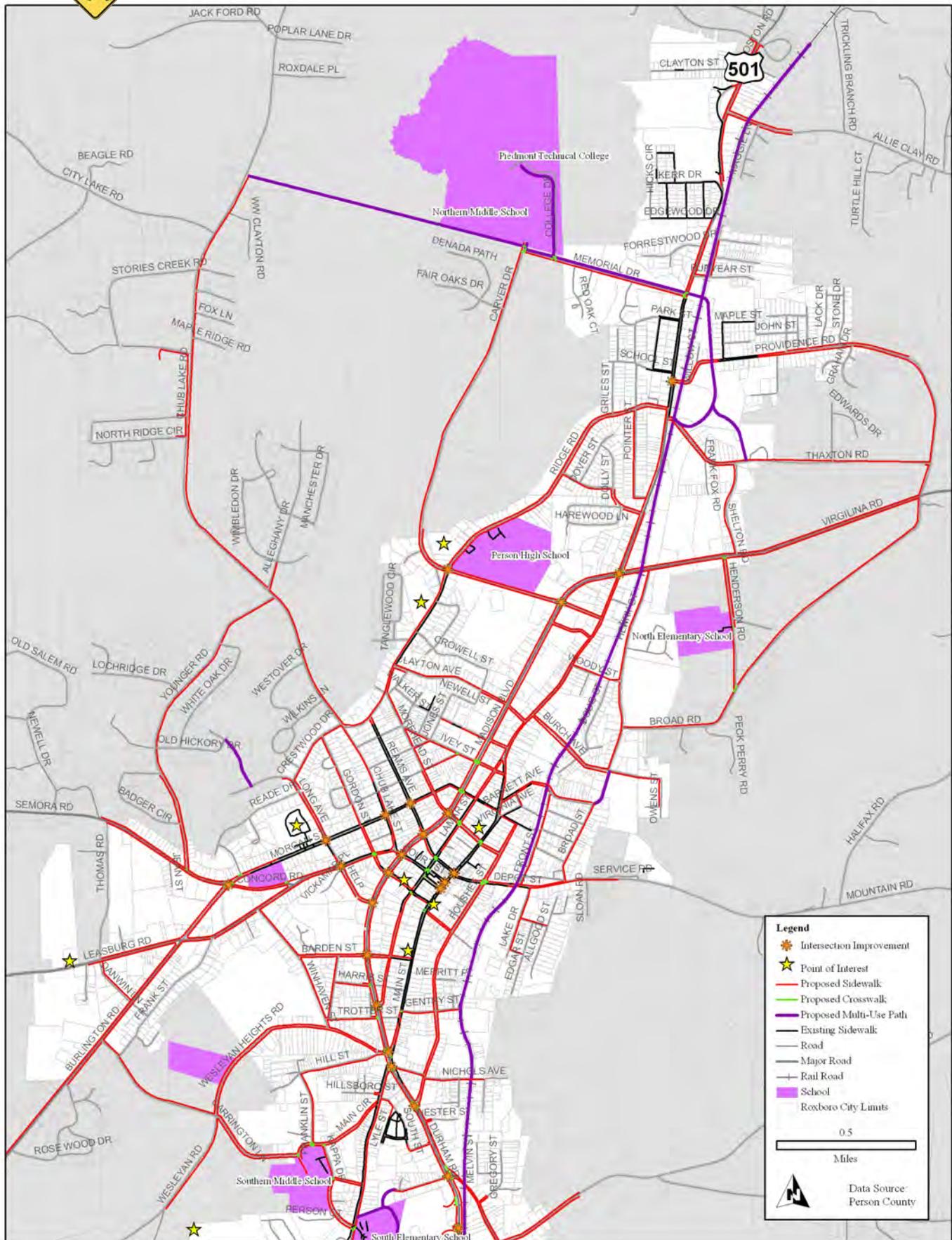


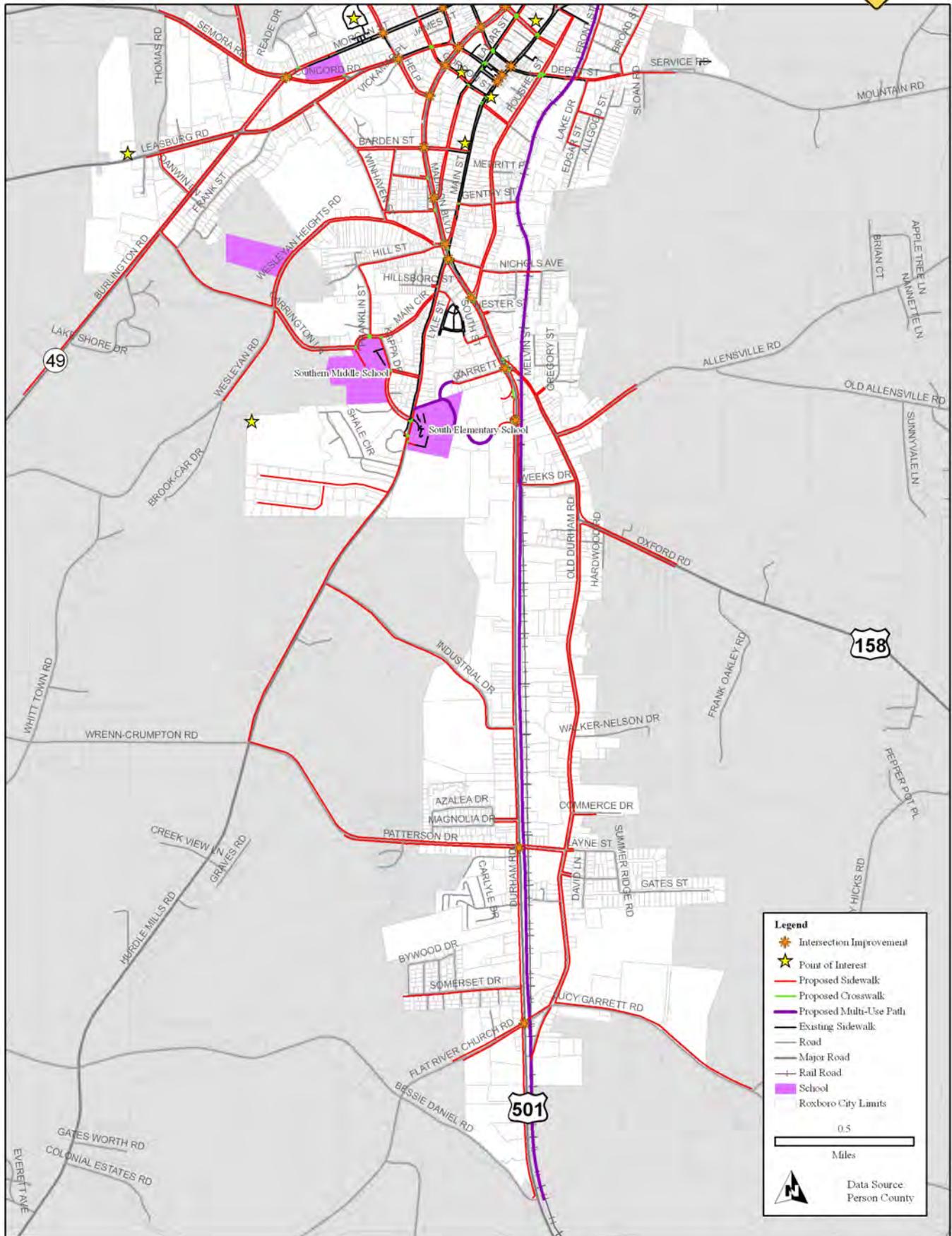
*Above: Existing conditions along rail corridor near US 501.
Below: A photo rendering of a proposed trail.*





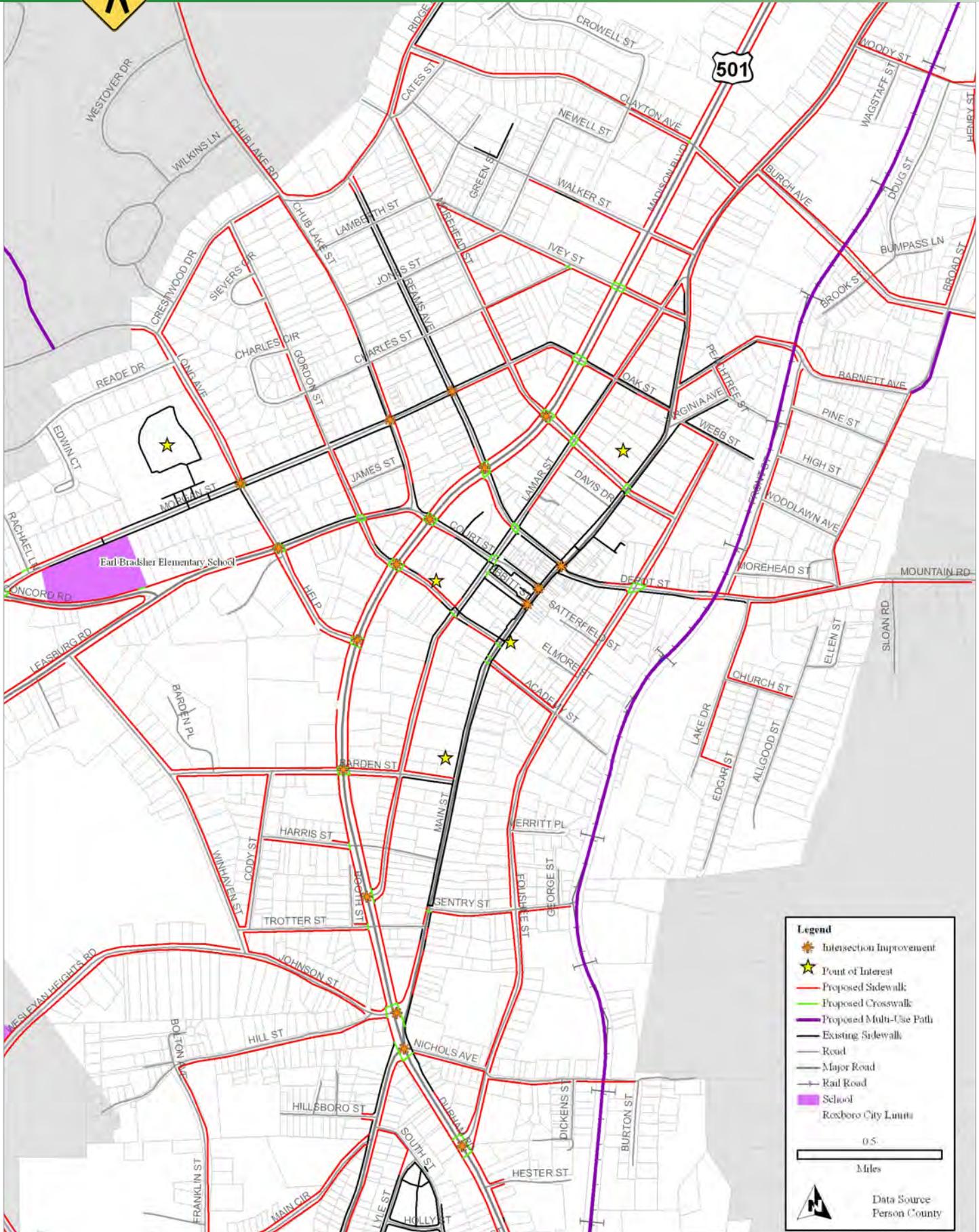
MAP 3.1 RECOMMENDED PEDESTRIAN NETWORK: NORTH ROXBORO







MAP 3.3 RECOMMENDED PEDESTRIAN NETWORK: UPTOWN ROXBORO





4. PROGRAM & POLICY RECOMMENDATIONS

4.0 OVERVIEW

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

4.1 PROGRAM RECOMMENDATIONS AND RESOURCES

Pedestrian-related programs fall into three main categories: education, encouragement, and enforcement. The programs listed below are provided to demonstrate the variety of opportunities that exist for promoting walking and active lifestyles in Roxboro. Communities all across North America are using these programs. The City of Roxboro should work closely with local volunteers and community organizations to initiate at least one of the following programs or events (whichever are deemed the most appropriate and/or feasible to those organizing) within the first year of adopting this plan. Also, it will be necessary for staff to be assigned to focus on programming, researching additional program ideas, and working with local groups, non-profits, schools, and citizens to develop programs further.

4.2 EDUCATION

4.2.1 Pedestrian Advocacy Group

The City of Roxboro should actively participate in the development of a local pedestrian advocacy group. A local advocacy group is a beneficial resource for promoting safe pedestrian travel, providing feedback on



opportunities and obstacles within the 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. This group can be modeled after the Pedestrian Plan Steering Committee, and may even include many of the same members. The group should meet on a regular basis (at least quarterly) following the adoption of the plan.

4.2.2 Public Education

Educational materials can focus on safe behaviors, rules, and responsibilities. Information may include important pedestrian laws, bulleted keys for safe pedestrian travel, 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.pedbikeinfo.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 events should be utilized to distribute information and a representative from the pedestrian advocacy group can answer questions related to pedestrian safety. A booth could also be used to display safety information at various community events.



Local law enforcement could play a crucial role in improving safety for pedestrians in the City of Roxboro.

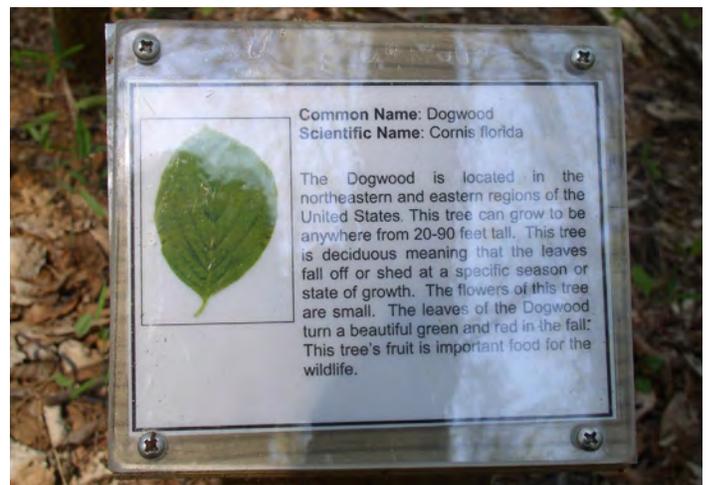
4.2.3 Internal Education

'Internal' education refers to the training of all people who are involved in the actual implementation of the Pedestrian Transportation Plan. Internal training will be essential to institutionalizing pedestrian issues into the everyday operations of engineering, planning, and parks & recreation departments. In addition to relevant City staff, members of the local planning commission, NCDOT Division 5 staff, and county staff should also be included in training sessions whenever possible. This training should cover all aspects of the transportation and development process, including planning, design, development review, construction, and maintenance. This type of 'inreach' can be in the form of brown bag lunches, professional certification programs and special sessions or conferences. Even simple meetings to go over the 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. Pedestrian planning and design issues are complex, and national research and guidelines continue to evolve. Therefore, training sessions need to be updated and repeated on a regular basis.

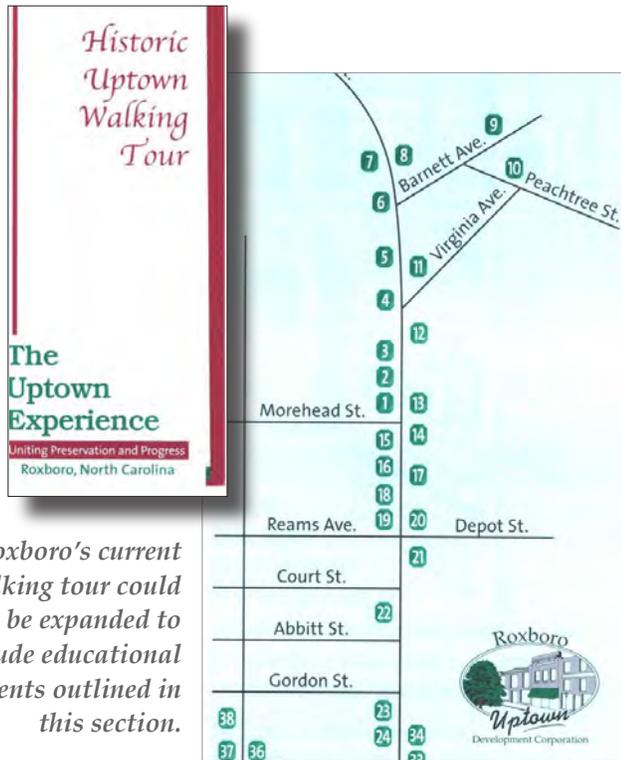
Local law enforcement should be trained in accurate reporting of pedestrian crashes involving automobiles. In many communities, police do not always adequately understand the rights of pedestrians. Proper interpretation of individual circumstances and events is critical for proper enforcement and respect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

4.2.4 Environmental and Historic Education/Interpretation

Educational programs and interpretative signage could be developed along greenways and pedestrian routes. Greenways 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.



Interpretive signs adds interest to walkways and trails while providing an important education tool for local history, culture, and the environment.



Roxboro's current walking tour could be expanded to include educational elements outlined in this section.

- Create a self-guided walking tour of downtown historical/cultural sites
- Establish outdoor classrooms utilizing interpretative signage in open space, parks, greenways, etc.
- Produce and/or obtain a variety of safety materials for distribution to various age groups and at various events/locations

4.2.6 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>

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

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

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 the City, using signage to identify the events, architecture, and landmarks that make the City of Roxboro unique. 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. Other ideas to supplement the signage could be organized "talks" or lectures by local experts.

4.2.5 Education Actions

- The City of Roxboro should actively participate in the development of a local pedestrian advocacy group, starting with members from the Pedestrian Plan Steering Committee.
- The City of Roxboro should sponsor annual training sessions for pedestrian design/review
- The City of Roxboro should sponsor a session for law enforcement focusing on pedestrian issues



4.2.6 Education Resources (Continued)

Pedestrian Fatalities Related to School Travel is a fact sheet pertaining to school age children (NHTSA).

http://www.nhtsa.dot.gov/people/injury/pedbiomot/ped/Getting_to_School/pedestrian.html

Rules of the Road for Grandchildren: Safety Tips is an information website for grandparenting. If you are a grandparent, you can play an important role in teaching your grandchildren the "rules of the road." AARP.

<http://www.aarp.org/confacts/grandparents/rules-road.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.tfhrc.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>

Safekids is a child safety information website. Pedestrian injury remains the third leading cause of unintentional injury-related death among children ages 5 to 14. <http://www.safekids.org/>

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/>

NCDOT Division of Bicycle and Pedestrian Transportation provides significant information related to pedestrian programming.

<http://www.ncdot.org/transit/bicycle/>

4.3 ENCOURAGEMENT

4.3.1 School Programs

Many programs exist to aid communities in developing safer pedestrian facilities around schools. Programs can be adopted by parents or the schools to provide initiatives for walking or biking. Information is available to encourage group travel, prevent pedestrian related injuries, and sponsor commuter related events. For example, a 'Walking School Bus' is an encouragement program that provides an alternative way to transport children to school. A parent can be responsible for accompanying a group of children to school by utilizing the pedestrian system in Roxboro.

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 below.

4.3.2 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 the City of Roxboro can use to improve usage of pedestrian facilities:

Walk to Work Day/International Car Free Day (Sept. 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 Roxboro, 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 trail use within Roxboro. The Parks and Recreation-Trails Division sponsors National Trails Day for the City of Greensboro every year and it has become a huge event for the City.

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 in Roxboro.

Use Facilities to Promote Other Causes

Network 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 w/ Local Organizations

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



Art is one of the best ways to strengthen and encourage the connection between people and trails.

Art in the Landscape

The inclusion of art along pedestrian corridors and trails would encourage use of facilities and provide a place for artwork and healthy expression to occur. Artwork could be displayed in a variety of ways and through an assortment of materials. Living artwork could be "painted" through the design and planting of various plant materials. Sculpture gardens could be arranged as an outdoor museum. Art through movement and expression could be displayed during certain hours during the day or during seasonal events. An "Art Walk" could be established as an event featuring destinations throughout the City that display local art. Artwork can be provided by local schools, special interest clubs and organizations, or donated in honor or memory of someone.



Local clubs and organizations provide great volunteer services for maintaining and patrolling trails.

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:

- Mother's Morning Club (mom's with strollers)
- Walking Wednesdays (senior groups)
- Lunch Bunch (office 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 Programs

The City of Roxboro should be proactive in increasing revenue from programs and events that can help fund the building, management, and maintenance of future facilities. Fees could be increased in events annually or biannually to increase revenue. Specific program and event ideas that are being used to generate revenue across the country include:

- Races/triathlons (fees and/or donations)
- Concessions
- Educational walks/Nature walks/Historic walks (fees and/or donations)
- Fund-raisers including dinners/galas
- Moonlight bike rides and walks (fees and/or donations)



- Greenway parade (fees and/or donations)
- Concerts (fees and/or donations)
- Art events along greenway (fees and/or donations)
- Events coincident with other local events such as fairs, festivals, historic/folk events, etc.
- Media events and ribbon-cuttings for new walkways (donations)

4.3.3 Encouragement Actions

- Encourage children to walk to school, safely, through a combination of programs, listed under encouragement resources
- Establish awareness days
- Encourage the establishment of walking clubs
- Use pedestrian facilities, particularly trails, to promote causes and hold special events for causes
- Utilize greenways for artwork and plantings

4.3.4 Encouragement Resources

Safe Routes to School is a national program with \$612 million dedicated from Congress from 2005 to 2009. Local Safe Routes to School programs are sustained by parents, community leaders, and citizens to improve the health and well-being of children by enabling and encouraging them to walk and bicycle to school. Recently, the state of North Carolina has started the NC Safe Routes to School Program based off of the national program. The state has \$15 million over the next 5 years for infrastructure improvements within 2 miles of 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. <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 in Roxboro, go to the main webpage, and follow the International Walk to School links: www.walktoschool-usa.org

Walk a Child to School in North Carolina. Forty years ago, half of all U.S. school children walked to school. Today, according to the Centers for Disease Control, only an estimated 10 percent walk to school. In many communities, as much as 30 percent of morning commuter traffic is generated by parents driving their children to school. These traffic habits and children's lifestyle choices can have serious consequences. Traffic jams around our schools foul the air, waste fuel, and create safety problems for children. In addition, the U.S. Surgeon General recently reported that thirteen percent of children aged 6 to 11 years and 14 percent of adolescents aged 12 to 19 were overweight in 1999. This statistic has nearly tripled in the past two decades for adolescents. 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/sb-prevent.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. www.cdc.gov/nccdphp/dnpa/kidswalk/kidswalk_guide.htm



4.2 ENFORCEMENT

4.2.1 Motorist Enforcement

Based on crash data analysis and observed patterns of behavior, law enforcement can use targeted enforcement to focus on key issues such as motorists speeding, not yielding to pedestrians in crosswalks, parking on sidewalks, etc. Sidewalk parking, for example, is often not enforced but should be in order to maintain pedestrian accessibility, avoid maintenance issues, and comply with local ordinances. All of these key issues should be targeted and enforced consistently. The goal is for pedestrians and motorists to recognize and respect each other's rights on the roadway.

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

4.2.2 Pedestrian Enforcement

Observations made by local trail and pedestrian facility users can be utilized to identify any conflicts or issues that require attention. To maintain proper use of trail facilities, volunteers could be used to patrol the trails, particularly on the most popular trails and on days of heavy use. The volunteer patrol can report any suspicious or unlawful activity, as well as answer any questions a trail user may have. The volunteer patrol could be a responsibility of the pedestrian advocacy group. When users of the pedestrian network witness unlawful activities, they should have a simple way of reporting the issue to police. A hot line should be created, which would compliment trail patrol programs. People could call in and talk to a live operator or to leave a voice mail message about the activity they witnessed. Accidents could also be reported to this hot line. Accident locations could then be mapped to prioritize and support necessary facility improvements.



4.2.3 Enforcement Actions

- Target and enforce all illegal motorist and pedestrian behavior that may jeopardize the success of the Pedestrian Network
- Require all crossing guards to complete an NCDOT Crossing Guard Training Program
- Establish a crossing guard program for peak school hours
- Establish a local "Trail Patrol"
- Establish an enforcement hot line



4.2.4 Enforcement Resources

NCDOT School Crossing Guard Program

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 <http://www.nhtsa.dot.gov/people/injury/ped-bimot/bike/resourceguide/index.html>

4.3 POLICY RECOMMENDATIONS

While the physical recommendations described in this Plan represent an overall pedestrian network, strong pedestrian-oriented policies and regulations are also necessary to ensure these facilities are developed, especially when new development takes place. All recommended policy statements would help the City of Roxboro achieve its vision of becoming a pedestrian-friendly community. City planning staff should become familiar with these policies and regulations to ensure the full suite of policy tools are used and enforced. Further tools to initiate pedestrian development are described in Chapter 5 and Appendix E.

Policy statements that require pedestrian facilities with development must be somewhat flexible and practical within regulations for physical restrictions. All decisions need to be environmentally sensitive. Sidewalk locations and widths may need to be modified on a case-by-case basis. There must be a proven environmental constraint for pedestrian modifications.

Several high priority requirements for pedestrian facilities are listed below. These requirements create a safer and more convenient environment for pedestrian transportation and should be integrated into all policy documents for the City of Roxboro. They apply to all new roadway construction and roadway reconstruction projects in the downtown, suburban, and rural areas, as appropriate (e.g., areas where new developments are being constructed).

4.3.1 Additions to City Ordinance

Sidewalk Dedication

Sidewalks should be expressly required for new development in the *City of Roxboro Zoning Ordinance, Section 8: Street Access*. The following language is suggested for use in a new subsection, '8-3', as adapted from model ordinances that have successfully produced pedestrian-friendly environments:

"Sidewalks shall be constructed along both sides of all streets except alleys, and rural roads. Residential sidewalks shall be a minimum of 5 ft in width. 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). All new sidewalks in the downtown area shall be paved in brick pavers. All other sidewalks may be concrete, pavers, or similar material. Sidewalks should not be constructed without an adequate planting strip unless on-street parking protects pedestrians."

Dedication and Maintenance of Sidewalks, Greenways, and Open Space

In any case in which a greenway or sidewalk is indicated on an adopted plan of the City of Roxboro as being located on lands proposed for development, such greenway or sidewalk should be dedicated and developed. These developed lands for open space, greenways, and sidewalks would be dedicated to the City as park land to form a connected pedestrian network. Local communities across North Carolina have included similar requirements in development ordinances related lot design and/or public place reservation. This can come in the form of a simple mandatory dedication (development of greenway, park, or sidewalk), a fee-in-lieu of a mandatory dedication (see below), or an impact fee (another form of fee required that developers can pay on a unit-by-unit basis). If dedication does not occur, fees are an excellent means for the City of Roxboro to pool monies for sidewalk and greenway development. These three methods are described in more detail in Appendix E.



Fee-in-Lieu for Sidewalk Dedication

Roxboro's ordinances should also allow developers to pay a fee-in-lieu of mandatory dedication of sidewalks. The amount of the fee should equal the cost of the sidewalk that would have otherwise been constructed. Such fees should be collected into an account specifically dedicated to the construction of priority sidewalk improvements as identified in the City of Roxboro Pedestrian Transportation Plan. Option of the fee-in-lieu should be determined by City Council, and should only be granted when the dedicated portion of sidewalk would not likely connect to the overall pedestrian network in the near future.

4.3.2 Strategic Policy Recommendations

More recommended policy statements and paragraphs by category are provided below that facilitate specific changes. The categories include pedestrian network and connectivity, safety, aesthetics, land use and development, and greenways.

Pedestrian Network and Connectivity

Goal: Create and maintain a pedestrian route network that provides direct connections between downtown, trip attractors, schools, and residential/commercial areas.

- 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.
- All roads surrounding schools should have sidewalks on both sides of the road with safe crosswalks.
- Pedestrian access should be provided through cul-de-sacs and large parking lots, which are typical obstacles to pedestrian connectivity.
- Pedestrians and bicyclists should be accommodated on roadway bridges, underpasses, and interchanges and on any other roadways that are impacted by a bridge, underpass, or interchange

project (except on roadways where they are prohibited by law). All new bridges should be constructed with bicycle lanes and wide sidewalks.

- Sidewalks and greenways should be developed in order of priority where possible as listed in Chapter 5 - Implementation. These segments facilitate immediate improvements and connections to major trip attractors within the City of Roxboro.

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.

- Raised medians or pedestrian refuge islands should be provided, 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.
- 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 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.
- Develop and expand the City's maintenance program of sidewalk repairs, debris removal, and trimming of encroaching vegetation.



- The buffer space between the sidewalk and the curb and gutter should be maximized within the available right-of-way. 4' is suggested as a minimum on major thoroughfares, but could be decreased in areas with slower and lower volume automobile traffic. Larger buffers are preferred for street tree health and pedestrian comfort. Suggested width is flexible related to environmental constraint.

Aesthetics

Goal: Encourage the inclusion of art, historic, and nature elements along with street furniture, landscaping, and lighting in pedestrian improvement projects.

- Develop street design guidelines to incorporate recommendations of this plan (See Chapter 6 - Design Guidelines)
- 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.

Land Use and Development

Goal: Promote land uses and site designs that make walking convenient, safe, and enjoyable.

- Use building and zoning codes to encourage a mix of uses, 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.

- Applicable buildings should be required to build to the sidewalk. Also, parking lots should be prohibited 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.

- Parked vehicles shall not block pedestrian walkways.

- Require benches, shelters, sheltered transit stops, trees, and other features to facilitate the convenience and comfort of pedestrians.

Greenways

Goal: Establish greenways as part of the City of Roxboro's public infrastructure

- 'Greenways' should be defined as part of the City of Roxboro'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.



- Subdividers are required 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.



5. IMPLEMENTATION

5.0 OVERVIEW

Successful implementation requires the dedication of City staff and the continued support of Steering Committee members and local advocates. This chapter will serve as a simple guide with key action steps, top priority projects, staffing recommendations, an evaluation and monitoring process, methods of pedestrian facility development and greenway acquisition.

5.1 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.

Key Action Steps

Adopt this Plan

Begin Top Priority Projects

Improve and Enforce City Regulations

Create a Bicycle/Pedestrian/Greenway Commission

Take What You Can Get

Seek Multiple Funding Sources and Facility Development Options

Develop pedestrian programming

Ensure Planning Efforts Are Integrated Regionally

5.1.1 Adopt this Plan.

Through adoption, the Plan becomes a legitimate planning document of the City. Adoption shows that the City of Roxboro has undergone a successful, supported planning process. The City can then use this document to receive funding through NCDOT and other resources. The City Council and Planning staff should become knowledgeable of this Plan and support ordinance amendments and policy recommendations.

This document should also be accepted and integrated into the future Comprehensive Transportation Plan for the Kerr-Tar Rural Planning Organization (RPO). This Plan should also be integrated into future City of Roxboro planning documents.

5.1.2 Begin Top Priority Projects.

The prioritization of pedestrian facility development provides a list of the most important projects to improve connectivity and safety. The prioritization matrix, found in Appendix B, lists the improvements in order of importance. Top priority projects are pulled from this matrix and described in the next section. Steering Committee input, public input, and criteria such as sidewalk gap closure and proximity to schools and other trip attractors were used to develop this list. Immediate attention to the high priorities will instantly have a large impact on pedestrian conditions in Roxboro. These high priority projects should be supported by local funding and part of the local Capital Improvement Program (CIP).

5.1.3 Improve and Enforce City Regulations.

To ensure future development provides pedestrian facilities and improves pedestrian friendliness, regulations should be updated and enforced. These policy recommendations are provided in more detail in Chapter 4. Currently, pedestrian facilities are not required with development and this should be modified. It should be the goal of the Planning Department to update land use and subdivision regulations as soon as possible and to enforce these. All pedestrian-



related regulations should be subject to case-by-case environmental evaluation. The most important regulation updates are:

- Adapt and implement Design Guidelines (Chapter 6).
- Mandatory development of sidewalk and greenway network when on adopted City Plan map through an area of new development.
- The creation of a mandatory dedication, impact fee, or fee-in-lieu program for new development to provide pedestrian and greenway facilities.
- Include Pedestrian Issues in Community Group discussions. Recently, the City of Roxboro Police Department formed active community groups to address issues within each community. Pedestrian issues and requested improvements should be addressed within these groups that understand and value their individual community most.

5.1.4 Create a Bicycle/Pedestrian/Greenway Commission

The City of Roxboro would benefit from having an active Commission advocating for pedestrian and bicycle improvements throughout the City. Many communities across the State have commissions for this purpose. This Commission would take on the role of on-road bicycle and pedestrian planning to provide a network of off-road and on-road facilities that connects people to places. This board should help coordinate and oversee the implementation of this Plan, develop programs, continue to listen to community needs, promote the pedestrian network, and keep positive momentum going.

This Commission can also help monitor the progress of the City and NCDOT as they develop new facilities and programs. This group also can push for additional improvements to build upon the recommendations of this plan. Coordination with NCDOT, specifically the Division of Bicycle and Pedestrian Transportation, the Transportation Planning Branch, Kerr-Tar RPO, and the Division 5 office will prove critical if this plan is to be implemented successfully.

5.1.5 Take What You Can Get

While it is ideal to develop pedestrian facilities in order of priority, it is wise to also create facilities when opportunity arises. 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 build sidewalks or trails as a component of an existing effort, saving costs.

5.1.6 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 the short-term, top 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 for each year. A variety of local, state, and federal options and sources exist and should be pursued. These funding options are described in Appendix D. Other methods of pedestrian facility development and greenway acquisition that are efficient and cost-effective are described later in this chapter.

5.1.7 Develop pedestrian programming.

Programming 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 also be considered when announcing new walkways and upcoming projects.

5.1.8 Ensure Planning Efforts Are Integrated Regionally.

Regional efforts such as those described in Chapter 3 are opportunities for the City of Roxboro. Combining resources and efforts with surrounding municipalities, regional entities, and stakeholders is mutually beneficial. Regional, long-distance trails often spark the most excitement, use, and tourism. The City should remain coordinated with the Kerr-Tar RPO on regional trail initiatives. It is important to stay aware and communicative with other municipality, county, state, and NCDOT efforts to ensure the City takes advantage of funding opportunities and support.



5.2 TOP PRIORITY PROJECTS

As generated and listed in the Appendix B Prioritization Matrix, the top pedestrian sidewalk projects in Roxboro are ones that create significant and immediate improvements to connectivity and safety. These are projects that should occur in the short-term to have an immediate, positive impact. These projects should be incorporated into the City's Capital Improvement Program (CIP) and/or State Transportation Improvement Program (TIP). In order to make the State TIP list or the Priority Needs List, the City of Roxboro will have to work directly to submit needs through the Kerr-Tar RPO.

As described in Chapter 3, there are three pedestrian facility types recommended: sidewalks, greenways, and intersection improvements. Sidewalks are prioritized in matrix format in Appendix B with the Top 10 below. Intersection improvement recommendations are provided in Chapter 3, all of which are high priority. Greenways should be developed based on feasibility and opportunity.

The table below lists the top 10 priority sidewalks and estimated costs. The table to the right provides per unit cost estimates for intersection improvements and a shared-use greenway.

Pedestrian Infrastructure Cost Estimates (NCDOT 2008)			
Crossings			
Crosswalk Countdowns	Per Intersection	\$4,000 - \$6,400	Per intersection (assumes 8 signals). Cost is \$500 - \$800 for one countdown signal
Crosswalk: Raised above grade (speed table)	EA	Stationary: \$10,000-\$15,000 Portable: \$6,000	Stationary and Portable: Rubber crosswalk 6' in width and 30' long.
Crosswalk: Striping (Standard and High Visibility)	LF	Standard: Thermo = \$2.40 Paint = \$1.60 High Visibility: Thermo = \$4.80 Paint = \$1.60	24' (2 lane) Standard Thermo: \$56.40 Standard Paint: \$38.40 48' (4 lane) High Visibility Thermo: High Visibility Paint:
Signage (Standard vs. High Visibility)	EA	Standard: \$150 High-Visibility: \$200	Assumes new post is needed in sidewalk and installation
Wheelchair Ramps (w/ warning surface half domes or truncated domes)	EA	Wheelchair ramp: \$1,200 Truncated dome panel: \$300	Does not include demolition costs.
Yield Lines (Advanced Limit Lines or Back Lines)	LF	Thermo = \$6.50 Paint = \$2.75	12-inch lines
Shared-Use Pedestrian and Bicycle Facilities			
Construct 10-foot shared-use path	Linear foot Linear mile	\$133 \$700,000	

Top 10 Sidewalk List and Costs

Roadway Corridor	From	To	Corridor Distance (ft)	Existing - One Side	Existing - Second Side	Sidewalk Needed (ft)	Estimated Cost
Morgan St	Concord Rd	US 501/ Madison Blvd	4822	3827	3321	2496	\$137,280
US 501/ Madison Blvd	NC 49/Virgilina Rd	Reams Ave	6453	0	0	12906	\$709,830
US 158/Leasburg Rd	Burlington Rd	US 501/ Madison Blvd	4619	700	0	8538	\$469,590
S Main St	US 501/Durham Rd	Patterson Dr	5295	3431	0	7159	\$393,745
US 501/ Madison Blvd	Reams Ave	S Main St	4732	0	0	9464	\$520,520
N Main St	NC 49/Virgilina Rd	Depot St	6658	2363	1304	9649	\$530,695
S Main St	Depot St	US 501/Durham Rd	3741	2945	3136	1401	\$77,055
Lamar St	N Main St	US 501/ Madison Blvd	5364	2527	945	7256	\$399,080
Crestwood Dr/Long Ave	Chub Lake Rd	N Madison Blvd	4261	268	0	8254	\$453,970
Chub Lake Rd	Poplar Lane Dr	Court St	2963	1086	306	4534	\$249,370

Cost estimates above are for recommendations along both sides of the road with an assumed minimum 5' sidewalk width and \$11 per square foot cost.



5.3 STAFFING

The proper staffing for implementation, operation, and maintenance tasks described above should be coordinated and shared by several departments.

5.3.1 Public Works Department/Planning and Development Department

First and foremost is the need for the City to create a Pedestrian Coordinator task list to deliver to a current City planner with the capacity to task of implementing this Plan. The Coordinator would lead the effort to apply for funding, oversee planning, design, and construction of pedestrian facilities. The Coordinator would lead and assign tasks such as coordinating programming, leading public outreach, staff training on pedestrian issues, monitoring the use of and demand for pedestrian facilities, reporting to the planning department, and proposing future alternative routes. The coordinator would also ensure coordination with surrounding municipalities and with regional trail connections.

The planning and development department would have other important roles. These include being responsible for site plan review to ensure pedestrian-friendliness, particularly in large residential and commercial development. Also, pedestrian-related GIS and mapping should be maintained, consolidated, and updated by GIS staff as new greenways and sidewalks are constructed. It is recommended that coordination occur between departments to construct a single, maintained pedestrian GIS layer (sidewalk and greenways) for the City with informative attributes that include sidewalk width, length, material, current condition, etc.

The Public Works Director should participate in the construction and maintenance of all trail and pedestrian facilities. The Public Works section devoted to Streets should also be devoted to future recommendations for the pedestrian networks, discussed earlier in this plan. Public Works should handle facility development and construction (including posting pedestrian signs) among other responsibilities. The Public Works Department should assist the Planning Depart-

ment in updating the GIS sidewalk database in terms of new sidewalk and current sidewalk condition.

5.3.2 Person County Recreation Arts and Parks Department

There is no Parks and Recreation Department within the City of Roxboro. Person County manages and maintains all parks in the county. This Department would be responsible for carrying out greenway recommendations for this Plan, applying for funding, and overseeing all park and greenway facilities. This includes updating and publishing new maps, creating and updating GIS layers of all greenway facilities, proposing future alternative routes, and working with adjacent communities/counties to coordinate linkages to other greenways. Within current parks, future parks, and recreation centers should be education and encouragement program opportunities.

5.3.3 North Carolina Department of Transportation

NCDOT Division Five maintains some pedestrian facilities within the roadway rights-of-way that are owned by the State. This includes crosswalks, signage, and pedestrian signals. The City of Roxboro is responsible for the maintenance of ALL sidewalks through the City.

The City can utilize annual Powell Bill allocations toward repair and construction of sidewalks (See Appendix D).

5.3.4 Police Department

The Roxboro Police Department plays a vital role in pedestrian safety and works very hard to assist the schools during peak school traffic hours and in policing City streets, parks and greenways. All local police officers should be educated 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. Programs such as the Safe Routes to School grants, offer the opportunity for the Police Department to part-



ner with other City Departments to improve pedestrian safety.

5.3.5 Volunteers

Services from volunteers, student labor, 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 the basic needs of the proposed networks. 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.

5.4 PERFORMANCE MEASURES (EVALUATION AND MONITORING)

The City of Roxboro should establish performance measures to benchmark progress towards achieving the goals of this Plan. These performance measures should be stated in an official report within one to three years after the Plan is adopted. Baseline data should be collected as soon as the performance measures are established. The performance measures should address the following aspects of pedestrian transportation and recreation in Roxboro:

- Safety. Measures of pedestrian crashes or injuries.
- Usage. Measures of how many people walking on on-road and off-road facilities.
- Facilities. Measures of how many pedestrian facilities are available and the quality of these facilities.
- Education/Enforcement. Measures of the number of people educated or number of people ticketed as a part of a pedestrian safety campaign.
- Institutionalization. Measures of the total budget spent on pedestrian and greenway

projects and programs or the number of municipal employees receiving pedestrian facility design training.

When establishing performance measures, the City should consider utilizing data that can be collected cost-effectively and be reported at regular intervals, such as in a performance measures report that is published every two to three years. As the process of collecting and reporting pedestrian and greenway data is repeated over time, it will become more efficient. The data will be useful for identifying trends in non-motorized transportation usage and conditions.

Land use, transportation, development, and the overall landscape will continue to change as Roxboro grows resulting in a dynamic area. Also new opportunities or input from an on-going monitoring and evaluation process may emerge, leading to the need to adapt and update the recommendations of this Plan.

5.5 PEDESTRIAN FACILITY DEVELOPMENT

This section describes different construction methods for the proposed pedestrian facilities outlined in Chapter 3 of this Plan.

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 and transit 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 assigned "Pedestrian Coordinator" should keep track of the City's projects and any other local and NCDOT transportation improvements. While doing this, he/she should be aware of the different procedures for state and local roads and interstates. More detail on facility design and treatment can be found in Chapter 6.

5.5.1 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 Roxboro, guided by the Pedestrian Coordinator, should strongly consider important pedestrian projects along State roads to present to the Greater Hickory Metropolitan Planning Organization and State. Local requests for small pedestrian projects, such as sidewalk links, can be directed to the MPO or relevant NCDOT Highway Division office. Further information, including the criteria evaluated can be found at: http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html

5.5.2 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 Roxboro 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 exist.

5.5.3 Residential and Commercial Development

As detailed in Chapter 4, the construction of sidewalks and safe crosswalks should be required during development. Construction begins on a blank slate and the development of pedestrian facilities that corresponds with site construction is more cost-effective than retrofitting. In commercial development, emphasis should also be focused on safe pedestrian access into, within, and through large parking lots. This ensures the fu-

ture growth of the pedestrian network and the development of safe communities

5.5.4 Retrofit Roadways with New Pedestrian Facilities

There may be critical locations in the proposed Pedestrian Network that have pedestrian safety issues or are essential links to destinations. In these locations, it may be justified to add new pedestrian facilities before a roadway is scheduled to be reconstructed or utility/sewer work is scheduled.

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, regrading ditches or cut and fill sections.

5.5.5 Bridge Construction or Replacement

Provisions should always be made to include a walking facility as a part of vehicular bridges, underpasses, or tunnels, especially if the facility is part of the Pedestrian Network. All new or replacement bridges should accommodate pedestrians with wide sidewalks on both sides of the bridge. Even though bridge replacements do not occur regularly, it is important to consider these in longer-term pedestrian planning. 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".

5.5.6 Signage and Wayfinding Projects

Signage along specific routes or throughout an entire community can be updated to make it easier for people to find destinations. Pedestrian route and greenway signs are one example of these wayfinding signs, and they can be installed along routes independently of other signage projects or as a part of a more comprehensive wayfinding improvement project.

5.5.7 Existing City Easements

The City of Roxboro may have existing utility easements throughout City offering an opportunity for greenway facilities. Sewer easements are very commonly used for this purpose. This avoids the difficulties of acquiring land. For example, sewer easements



exist along the Lyle Creek in several locations.

5.6 GREENWAY ACQUISITION

Land acquisition is an important component of greenway development. It will be necessary to work with some landowners and potentially deal with future development. Land acquisition and resource protection methods should be strategic, efficient, and respectful. Non-profit land protection agencies, land trusts, 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 E - Acquisition.

5.6.1 Land Acquisition / Conservation Tools

Partnerships

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

- Land Trusts
- Private Land Managers

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
- Reservation of Land
- Planned Unit Development
- Cluster Development

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
- Eminent Domain





6. DESIGN GUIDELINES

6.0 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. 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 (for example, the 2009 update to the MUTCD will provide new guidance). 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, and have been tailored to meet the specific facility development needs of Roxboro's pedestrian system. 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.

6.1 PEDESTRIAN WALKWAYS

6.1.1 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. They are spaces where children play, neighbors meet and talk, shoppers meander casually, parents push strollers, and commuters walk to transit stops or directly to work. Because of the social importance of these spaces, great attention should be paid to retrofit and renovate areas with disconnected, dangerous, or otherwise malfunctioning walkways.



There are a number of options for different settings, both urban and rural. From a European style 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.

Sidewalks are typically built in curb and gutter sections but can also be planned in coordination with ditches or planted swales. They need to be kept completely free of obstructions such as utility poles. A four to eight foot buffer zone parallel to the sidewalk or walkway is recommended to separate pedestrian traffic from automobile traffic and to keep the sidewalk free of light pole obstructions. Much like the sidewalk and walkway itself, the form and topography of this buffer will vary greatly. Native street tree plantings have historically proven to work successfully within these buffer zones. They regulate micro-climate, create a desirable sense of enclosure, promote a local ecological identity and connection to place, and can act as a pleasant integration of nature into an urban environment. In the event that vegetation is not possible, a row of parked cars,



Figure 6(a):
Well designed residential sidewalk¹.



Figure 6(b):
Sidewalk with a vegetated buffer zone. Notice the sense of enclosure created by the large canopy street trees¹.

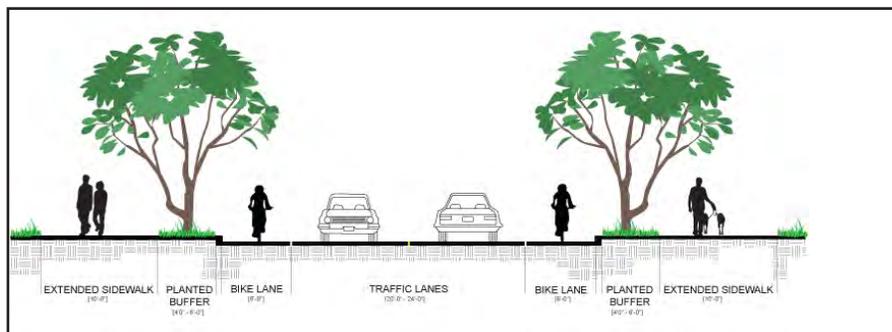


Figure 6(c):
Typical street with bike lanes and adjacent sidewalk.

bike lane, or street furniture can be used to create this buffer.

Guidelines^{3,9}:

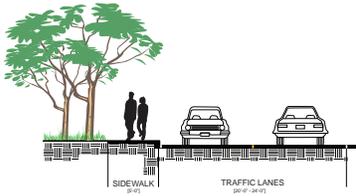


Figure 6(d):

Where space and topography are limiting, this cross section may be applied.

- 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; eight to ten feet wide within downtown; ten feet can also be considered in other areas of heavy pedestrian traffic. When sidewalk abuts storefronts, an additional two feet of space from walls is recommended.
- 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 Vegetation section later in this chapter for shade and buffer opportunities of trees and shrubs.
- Motor vehicle access points should be kept to minimum.
- In Roxboro, 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.

6.1.2 Greenway Trail

A greenway is defined as a linear corridor of land that can be either natural, such as rivers and streams, or manmade, such as abandoned railroad beds and utility corridors. Most 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 minimum width for two-directional trails is 10', however 12'-14' widths are preferred where heavy traffic is expected. Centerline stripes should be considered for paths that generate substantial amounts of pedestrian traffic. Possible conflicts between user groups must be considered during the design phase, as cyclists often travel at a faster speed than other users. Radii minimums should also be considered depending on the different user groups.

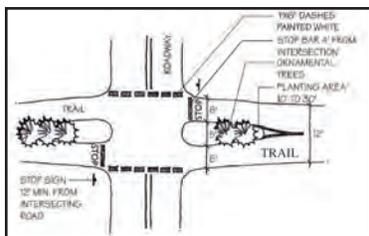


Figure 6(e):

Typical greenway trail approach to a roadway



While the vegetative clearing needed for these trails varies with the width of the trail. The minimum width for clearing and grubbing a 14' 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.

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

Concrete: 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: 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.

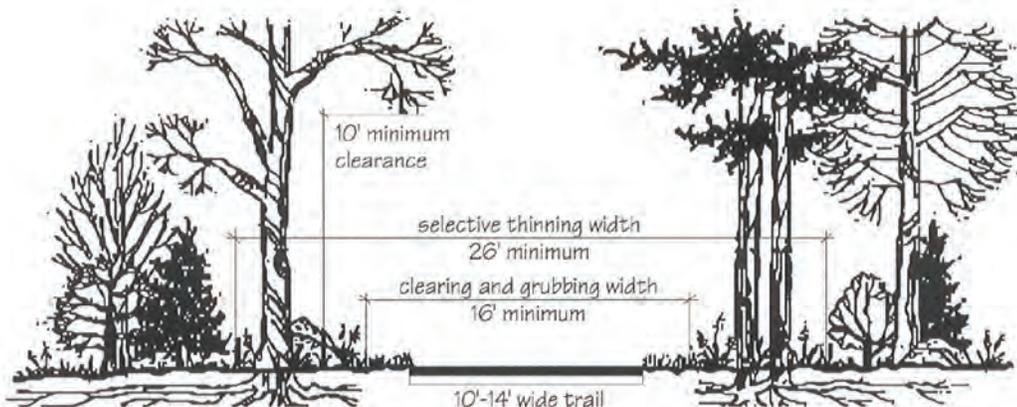


Figure 6(f):
Vegetation clearing guidelines



(Left) Figure 6(g):
Typical asphalt path section

(Right) Figure 6(h):
Typical natural surface trail section



Figure 6(i):
Asphalt pavement construction detail

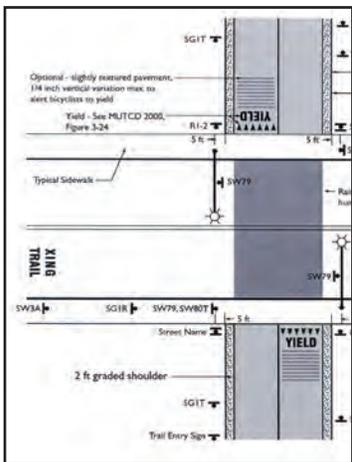
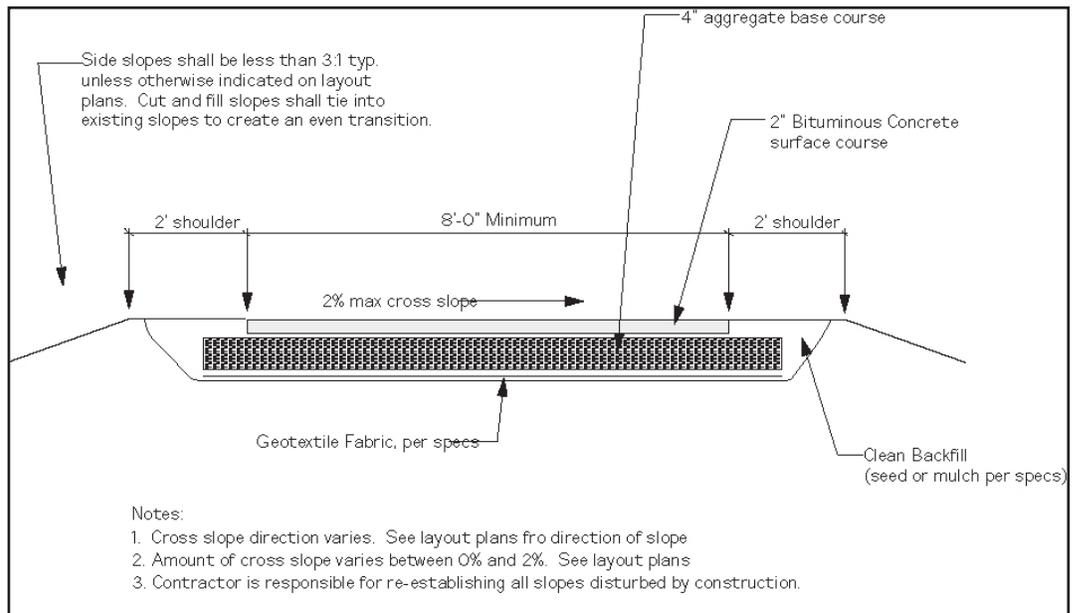


Figure 6(j):
Typical greenway trail crossing a roadway

Trail and Roadway Intersections: The images to the left present detailed specifications for the layout of intersections between trail corridors and roadways. Signage rules for these sorts of intersections are available in the MUTCD as ll.



6.2 PEDESTRIAN FACILITY ELEMENTS

6.2.1 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) and in this Plan are prescribed for the Uptown area, school areas, and key residential and commercial areas where pedestrian activity is greatest. Although marked crosswalks provide strong visual clues to motorists that pedestrians are present, it is important to consider the use of these elements in conjunction with other traffic calming devices to fully recognize low traffic speeds and enhance pedestrian safety. In general, “marked crosswalks should not be installed in an uncontrolled environment where speeds exceed 40 mph”³. Every attempt should be made to install crossings in places where pedestrians are most likely to cross. A well-designed traffic calming location is not effective if pedestrians are using other unmodified and potentially dangerous locations to cross the street.

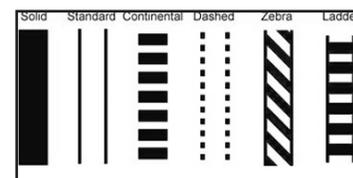
Marked pedestrian crosswalks may be used under the following conditions: 1) At locations with stop signs or traffic signals, 2) At non-signalized street crossing locations in designated school zones, and 3) At non-signalized locations where engineering judgment dictates that the use of specifically designated crosswalks are desirable⁹.

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. Also, as it degrades from use or if it is improperly installed, it may become a hazard for the mobility or vision impaired.

A variety of color or texture may be used to designate crossings. These materials should be smooth, skid-resistant, and visible³. Reflective paint is inexpensive but is considered more slippery than other devices such as inlay tape or thermoplastic. A variety of patterns may be employed as detailed in Figure 6(l). In areas with a high volume of pedestrian traffic, particularly at mid-



*Figure 6(k):
Notice the wide, well marked crosswalk with a crossing island in the middle. The crosswalk size and street furniture decoration make this a safe and visible pedestrian crossing¹.*



*Figure 6(l):
Illustration of all the variety of patterns possible in designating a crosswalk¹.*



block crossings, a crosswalk can be raised to create both a physical impediment for automobiles and a reinforced visual clue to the motorist. These can be provided on top of a speed tables.

An engineering study may need to be performed to determine the appropriate width of a crosswalk at a given location, however marked crosswalks should not be less than six feet in width. In downtown areas or other locations of high pedestrian traffic, a width of ten feet or greater should be considered.

Guidelines^{3,9}:

- Should not be installed in an uncontrolled environment where speeds exceed 40 mph.
- 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 wide; 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 in Roxboro for aesthetic and visibility purposes. Lines should be one to two feet wide and spaced one to five feet apart.



Figure 6(m):
Curb ramps shown have
two separate ramps at the
intersection¹.

6.2.2 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%¹.



6.2.3 Curb Ramps

Curb ramps are critical features that provide access between the sidewalk and roadway for wheelchair users, people using walkers, crutches, or handcars, 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 exist¹. In addition, these federal regulations require that all new constructed or altered roadways include curb ramps. Although the federally prescribed maximum slope for a curb ramp is 1:12 or 8.33% and the side flares of the curb ramp must not exceed a maximum slope of 1:10 or 10.0%, it is recommended that much less steep slopes be used whenever possible.

It is also recommended that two separate curb ramps be provided at each intersection (Figure 6(n)). 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.

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 for the Access board's right-of-way report¹.

Guidelines⁹:

- 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%).

6.2.4 Raised or Lowered Medians

Medians are barriers in the center portion of a street or roadway¹. 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.



Figure 6(o):
An attractive lowered median landscaped to appear raised³.



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 discussed in this chapter. An alternative to the continuous median is to create a segmented median with left turn opportunities.

Figure 6(p):
A lowered median can be used to filter storm water and provide refuge for pedestrians crossing a roadway³.

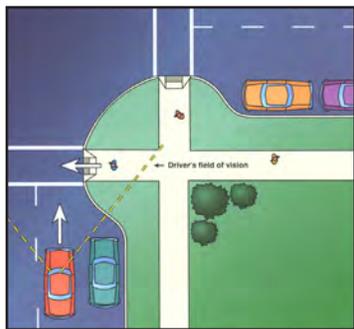
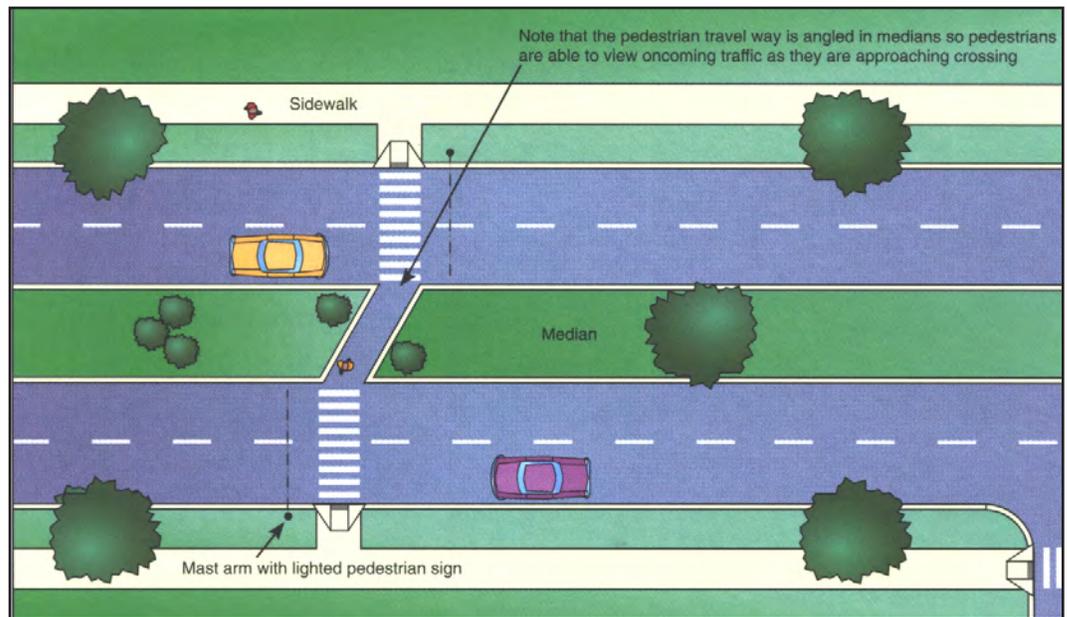


Figure 6(q):
By reducing a pedestrian's crossing distance, less time is spent in the roadway, and pedestrian vehicle conflicts are reduced³.

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.

Guidelines^{3,9}:

- 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 8 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 pushbuttons should be located in the median of all signalized mid-block crossings, where the roadway width is in excess of 60 feet.

6.2.5 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.

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 possible¹. 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 shoulders¹.

Guidelines¹⁰:

- 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.

6.2.6 Pedestrian Overpass/Underpass

Pedestrian overpasses and underpasses efficiently allow for pedestrian movement across busy thoroughfares¹. These types of facilities are problematic in many regards and should only be considered under suitable circumstances or where no other solution is possible. Perhaps the best argument for using them sparingly is that research proves pedestrians will avoid using such a facility if they perceive the ability to cross at grade as taking about the same amount of time¹.



Figure 6(r):
Attempting to separate pedestrians from the street is often problematic. As shown here, given the opportunity, many choose to cross at street level¹.

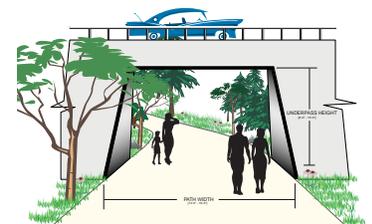


Figure 6(s):
Typical underpass dimensions.



The other areas of contention arise with the high cost of construction. There are also ADA requirements for stairs, ramps, and elevators that in many cases once complied with result in an enormous structure that is visually disruptive and difficult to access.

Overpasses work best when existing topography allows for smooth transitions. Underpasses as well work best with favorable topography when they are open and accessible, and exhibit a sense of safety¹. Each should only be considered with rail lines, high volume traffic areas such as freeways, and other high volume arteries¹.

Guidelines¹⁰ :

- Over and underpasses should be considered only for crossing arterials with greater than 20,000 vehicle trips per day and speeds 35 - 40 mph and over.
- Minimum widths for over and underpasses should follow the guidelines for sidewalk width.
- Underpasses should have a daytime illuminance minimum of 10 fc achievable through artificial and/or natural light provided through an open gap to sky between the two sets of highway lanes, and a night time level of 4 foot-candle.
- In underpasses, where vertical clearance allows, the pedestrian walkway should be separated from the roadway by more than a standard curb height.
- Consider acoustics measures within underpasses to reduce noise impacts to pedestrians and bicyclists.

6.2.7 Roundabouts

A roundabout is a circular intersection that maneuvers traffic around in a counterclockwise direction so that cars make a right-hand turn onto a desired street¹. Vehicles from approaching streets are generally not required to stop although approaching vehicles are required to yield to motorists in the roundabout. It is believed that this system eliminates certain types of crashes at traditional intersections.

Roundabout design can become quite problematic in dealing with pedestrian and bicycle use. Every effort must be made to prompt motorists to yield to pedestrians crossing the roundabout. A low design speed is required to improve pedestrian safety. Splitter islands and single lane approaches both lend to pedestrian safety as well as other urban design elements discussed in this chapter.



Figure 6(t):
Typical roundabout³.



Problems also arise with the vision-impaired because there are not proper audible cues associated with when to cross. Studies are underway to develop and test solutions. Auditory accessible pedestrian signals placed on sidewalks and splitter islands are one solution, but again there is no research to prove their efficacy¹.

In areas where traffic is low, a roundabout presents little in the way of a barrier for bicyclists. However, in multi-lane roundabouts where speeds are higher, and the traffic is heavy, bicyclists are at a distinct and dangerous disadvantage. Adding a bike lane within such a roundabout has not proven to be effective. A possible solution involves creating a bike lane that completely skirts the roundabout allowing the cyclist to use or share the pedestrian route.

Guidelines¹¹ :

- The recommended maximum entry design speed for roundabouts ranges from 15 mph for 'mini-roundabouts' in neighborhood settings, to 20 mph for single-lane roundabouts in urban settings, to 25 mph for single-lane roundabouts in rural settings.
- Refer to roundabout diagram for typical crosswalk placement.
- Please refer to FHWA's report, Roundabouts, an Information Guide, available online through: www.tfhr.gov The report provides information on general design principles, geometric elements, and provides detailed specifications for the various types of roundabouts.

6.2.8 Signalization

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 street¹⁴. 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 volume¹.



Figure 6(u):
International symbols used in a crosswalk to designate WALK



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.

Pedestrian Signals

There are a host of possible traffic signal enhancement opportunities that can greatly improve the safety and flow of pedestrian traffic. Some include: international symbols for WALK and DON'T WALK, providing large traffic signals, the positioning of traffic signals so that those waiting at a red-light cannot see the opposing traffic signal and anticipate their own green-light, installing countdown signals to provide pedestrians information on how long they have remaining in the crossing interval, automatic pedestrian sensors, and selecting the proper signal timing intervals¹.



*Figure 6(v):
Audible cues can be used along
with a countdown signal for*

New federal policy requires all new pedestrian signals to be of the countdown variety. All existing signals must be updated to countdown within 10 years (of 2008). It has been proven to be an effective means of crash reduction.

According to the MUTCD, international pedestrian signal indication should be used at traffic signals whenever warranted¹. As opposed to early signalization that featured “WALK” and “DON’T WALK”, international pedestrian symbols should be used on all new traffic signal installations as illustrated in Figure 6(t). Existing “WALK” and “DON’T WALK” signals should be replaced with international symbols when they reach the end of their useful life.

Symbols 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 signals¹. For additional information on accessible pedestrian signals, please visit: www.walkinginfo.org/aps.

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



The timing of these or other pedestrian signals needs to be adapted to a given situation. 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.

Concurrent signal timing refers to a situation where motorists running parallel to the crosswalk are allowed to turn into and through the crosswalk, left or right, after yielding to pedestrians. This condition is not considered as safe as some of the latter options, however this type of signal crossings generally allows for more pedestrian crossing opportunities and less wait time. In addition, traffic is allowed to flow a bit more freely. *Concurrent* signal timing is best used where lower volume turning movements exist¹.

Where there are high-volume turning situations that 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 commercial or downtown areas by using these intervals, the long wait times can encourage some to attempt a cross when there is a perceived lull in traffic¹. These types of crossings are dangerous and may negate the use of the system. A problem is also created for those with visual impairments when the audible cues of the passing parallel traffic is eliminated. Often an audible signal will have to accompany a WALK signal¹.

A proven enhancement that prevents many of the conflicts addressed under either of the former methods is LPI. An LPI works in conjunction with a *concurrent* signal timing system and simply gives the pedestrian a few seconds head start on the parallel traffic. An advance walk signal is received prior to a green light for motorists. This creates a situation where the pedestrian can better see traffic, and more importantly, the motorists can see and properly yield to pedestrians¹. Long-term research has shown that this system has worked well in places like New York City (where it has been used for 20 years) at reducing motorist and pedestrian conflict¹. As with the *exclusive* pedestrian interval, an audible cue will need to accompany the WALK signal for the visually impaired.



Figure 6(w):

A low cost sign that restricts right-hand turns at a red light¹.



Figure 6(x):

Landscaping used on the Sea Street in Seattle, Washington shows how stormwater treatment can be tied to aesthetically pleasing plantings⁷.



Figure 6(y):

Street trees buffer and soften often harsh urban environments in a number of psychological, physical, and ecological ways¹⁰.

The use of infrared or microwave pedestrian detectors has increased in many cities worldwide. These devices replace the traditional push-button system. Although still experimental, they appear to be improving pedestrian signal compliance as well as reducing the number of pedestrian and vehicle conflicts¹. Perhaps the best use of these devices is when they are employed to extend crossing time for slower moving pedestrians. Whether these devices are used or the traditional push-button system is employed, it is best to provide instant feedback to pedestrians regarding the length of their wait. This is thought to increase and improve pedestrian signal compliance.

Guidelines^{3,9}:

- 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.

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 pedestrians¹. 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 in Figure 6(w).



6.2.9 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.

Guidelines³:

- Buffer zone plantings should be maintained at no higher than three feet to allow sight distance for motorists and pedestrians.
- Trees with large canopies planted between the sidewalk and street should generally be trimmed to keep branches at least seven feet above the sidewalk.
- Plants and trees should be chosen to match character of area.



6.2.10 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 conditions³. 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.



*Figure 6(z):
The street furniture shown here
is placed in such a manner so
as to create a safe, pleasurable,
and accessible walking
environment¹.*

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 lighting¹. 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”⁴. Whenever urban improvements are made where lighting is addressed, a qualified lighting expert should be consulted early in the process. This individual should not only create a safe and attractive ambience, but will do so with the minimum of fixtures, an awareness of the importance of minimizing photo pollution, and with a focus on minimizing future energy use. A thoughtful plan of how and where to light will reap benefits not only in potential reduced infrastructure cost, but future energy costs as well.

Guidelines⁹:

- 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.



6.2.11 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 Uptown 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 should be given 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.

Guidelines³:

- 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.

6.2.12 Transit Stop Treatments

Currently the City of Roxboro is not served by public transportation. In the event that such an opportunity is made available to the City, it is appropriate to consider some of the basic elements of a well designed, accessible, and functional transit stop.

Bus or other transit stops should be located in places that are most suitable for the passengers. For example, stops should be provided near higher density residential areas, commercial or business areas, and schools, and connected to these areas by sidewalk. Some of the most important elements to consider are the most basic: sidewalk connectivity to the stops, proper lighting, legible and



*Figure 6(aa):
This typical transit stop has all of the key features of shelter, ample seating, bicycle parking, landscaping, and trash bins¹.*



adequate transit stop signage, shelter, seating, trash bins, bicycle and even car parking. Transit stops create an area of activity and may generate additional business and pedestrian traffic. Therefore an opportunity is created to provide adequate sidewalks and other pedestrian oriented design elements. At a minimum, marked crosswalks (especially at mid-block stops), curb ramps, and proper sidewalk widths should be considered.

As with any human scale design element discussed, safety is an important

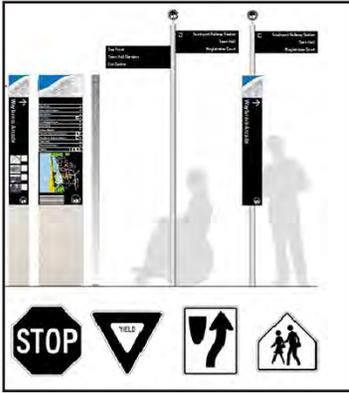


Figure 6(bb):
Wayfinding signs promote aesthetics as well as provide important information⁶. Below are typical traffic signs found around pedestrian friendly places¹.

Regulatory Signs



School, Warning, and Informational Signs



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 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.



factor to consider when locating bus stops. In the case of a bus stop, special attention should be paid to the number of lanes and direction of traffic when deciding to locate a stop on the near or far side of an intersection. Also special consideration must be paid to the wheelchair lifts in terms of how and where the mobility impaired will exit and enter the bus.

6.2.13 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.

Regulatory signage are used to inform motorists or pedestrians of a legal requirement and should only be used when a legal requirement is not otherwise apparent³.

Warning signage are 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 signs³.

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 identity⁵.

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



*Figure 6(cc):
Sidewalks or multi-use trails
should be included as part of
vehicular bridge designs.*

6.2.14 Bridges

Provisions should always be made to include a walking facility as a part of vehicular bridges, underpasses, or tunnels, especially if the facility is part of the Pedestrian Network. All new or replacement bridges, other than those for controlled access roadways, should accommodate pedestrians with wide sidewalks on both sides of the bridge. Even though bridge replacements do not occur regularly, it is important to consider these in longer-term pedestrian planning.

It is NCDOT bridge policy that within Urban Area boundaries, sidewalks shall be included on new bridges with curb and gutter approach roadways with no controlled access. Sidewalks should not be included on controlled access facilities. A determination on whether to provide sidewalks on one or both sides of new bridges will be made during the planning process according to the NCDOT Pedestrian Policy Guidelines. When a sidewalk is justified, it should be a minimum of five to six feet wide with a minimum handrail height of 42".

It is also NCDOT bridge policy that bridges within the Federal-aid urban boundaries with rural-type roadway sections (shoulder approaches) may warrant special consideration. To allow for future placement of ADA acceptable sidewalks, sufficient bridge deck width should be considered on new bridges in order to accommodate the placement of sidewalks.

Additional Information:

<http://www.ncdot.org/doh/construction/altern/value/manuals/RDM2001/part1/chapter6/pt1ch6.pdf>

<http://www.ncdot.org/doh/construction/altern/value/manuals/bpe2000.doc>

Guidelines:

- Sidewalks should be included on roadway bridges with no controlled access with curb and gutter approach in Urban Areas.
- Sufficient bridge deck width should be considered on new bridges with rural-type shoulder approaches for future placement of sidewalks.
- Sidewalk should be 5' to 6' wide.
- Minimum handrail height should be 42"



Footnotes

- 1 Walkinginfo.org. [Internet]. Chapel Hill, NC: Pedestrian and Bicycle Information Center . (cited 2005 May 2). Available from <http://www.walkinginfo.org/>
- 2 Georgia Department of Transportation. (2003). Pedestrian Streetscape and Guide
- 3 Association of State Highway and Transportation Officials. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
- 4 The Free Dictionary. [Internet]. Huntingdon Valley, PA: Farlex, Inc. (cited 2005 May 1). Available from <http://encyclopedia.thefreedictionary.com/light%20pollution>
- 5 City of Portland, Office of Transportation. [Internet]. Portland OR: The City of Portland. (cited 2005 May 3). Available from <http://www.portlandonline.com/transportation/?c=eafaa>
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- 7 Seattle.gov. [Internet]. Seattle, WA: Seattle Public Utilities. (cited 2006 May 4). Available from http://www.ci.seattle.wa.us/util/About_SPU/Drainage_&_Sewer_System/Natural_Drainage_Systems/Street_Edge_Alternatives/COS_004467.asp
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- 10 Photo courtesy of www.image03.webshots.com



A. PUBLIC INPUT

A.1 OVERVIEW

Significant public input was gathered from multiple efforts throughout the planning process, which helped shape the outcome of a majority of the recommendations in this Plan. Public input was solicited via two public workshops, public outreach, paper opinion forms, and an online interactive version of the opinion form. A Steering Committee, composed of Roxboro officials and residents, was created to guide and foster the development of this Plan. The variety and depth of public input sought to ensure that a range of citizens from all areas of Roxboro were expressed and represented.

A.2 PUBLIC WORKSHOPS

Two public workshops were conducted during the planning process, each drawing significant comment, suggestion, support and awareness for the project. Newsletters were created and distributed at each Public Workshop, to keep the public abreast of the planning process. Copies of these newsletters can be found on pages A-3 through A-6.

The initial public workshop was held in April 2008 in the Uptown area coincident with the Clash of the Carts event. People were asked to complete comment forms. Base maps of the Roxboro area were provided to gather input on desired walking routes, problem areas, areas of opportunity and existing pedestrian facility identification. Approximately 40 people provided input through map markups, direct conversation with Client and consultant, and comment forms.

The second public workshop was held in May of 2008, as part of the Roxboro Chamber of Commerce's Good Morning Coffee Hour during the final phases of the project. The consultant gave an update presentation to approximately 50 people in attendance including local leaders. This event led to greater interest and support for the Plan. Preliminary network maps were presented and people were solicited for comments. Approximately 20 people provided input through map markups, direct conversation with Client and consultant, and comment forms.

Below: flyers from the public meetings.

ROXBORO PEDESTRIAN TRANSPORTATION PLAN

PUBLIC WORKSHOP BOOTH

The *Roxboro Pedestrian Transportation Plan* is early in its development and we need your input! One of the major goals is providing a safe, integrated, connected pedestrian system to serve destinations around Roxboro. Improvements can include sidewalks, multi-use paths, and safer intersection crossings.

Are there places you would like to access by foot around town? Are there areas that you think are unsafe? What types of pedestrian facilities do you prefer?

Come help shape the future of your community!

APRIL 26, 2008, 9AM
CITY HALL, at Clash of the Carts

For more information, please contact Andy Oakley, City of Roxboro, (336) 503-0489.

ROXBORO PEDESTRIAN TRANSPORTATION PLAN

PUBLIC SESSION @
THE GOOD MORNING COFFEE HOUR

The *Roxboro Pedestrian Transportation Plan* is being developed and we need your input!

Where do we need sidewalks, crosswalks, and trails?

How can we make Roxboro more walkable?

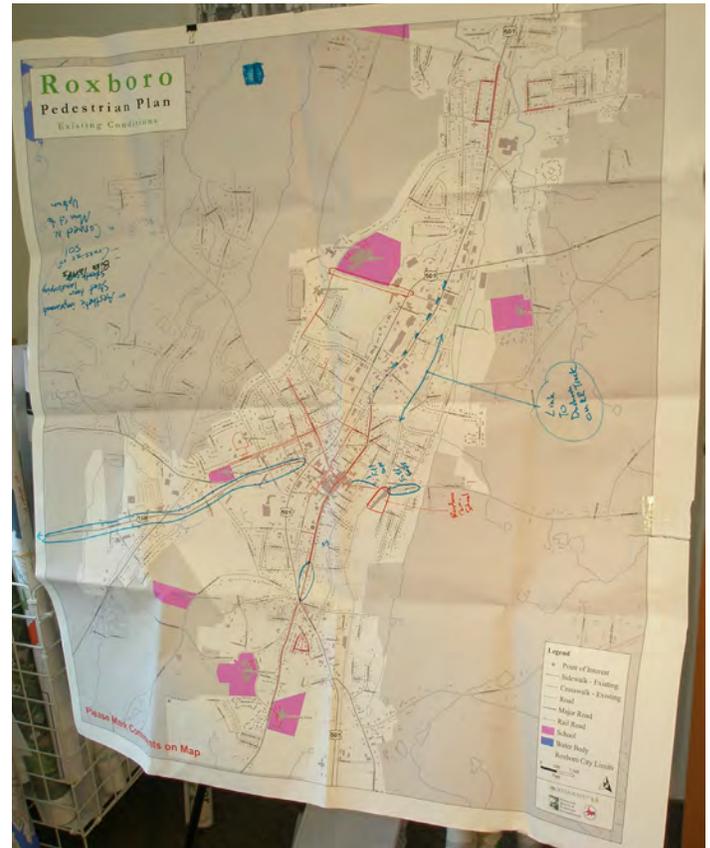
Come enjoy some breakfast, listen to a presentation about the planning process, and help shape the future of your community!

MAY 28, 2008, 8AM
GOLDEN CORRAL

For more information, please contact Andy Oakley, City of Roxboro, (336) 503-0489.



Participants at public workshops and steering committee meetings were invited to write and draw their comments directly on the draft maps. Their comments were transcribed and are listed below.



Area	Comment
North Roxboro	1. Piping, culvert, and sidewalk on Carver Dr- near person High
Citywide	2. Regional connections of trails to surrounding communities
South Roxboro	3. Lot of people walking 100-120 units- many with no vehicle
Citywide	4. Demand for Walking to Food Lion and Wal-Mart-
Citywide	5. Maintenance of existing facilities identified as priority
Central Roxboro	6. County offices across Morgan and Huck Sansbury Park- need connections
Citywide	7. Madison Blvd. Pedestrian facilities needed
Citywide	8. Wheelchair accessibility needed
Citywide	9. Need SW network map to require developers to build sidewalk
Central Roxboro	10. Improve crossing at Morgan and Long
South Roxboro	11. Need sidewalk on Kappa @ Southern Middle School
Central Roxboro	12. Sidewalks needed on Lamar St.
North Roxboro	13. Need sidewalk on Carver Dr at Person High
North Roxboro	14. Need sidewalk on North Main St
Citywide	15. Link to Durham on abandoned railroad track
Central Roxboro	16. Connect sidewalks on Leasburg to the West
Central Roxboro	17. Fill gap in sidewalk on Depot St
South Roxboro	18. Fill gaps in sidewalk on S. Main St
South Roxboro	19. Maintain sidewalks on S. Main St
Citywide	20. Aesthetic improvement in streetscapes needed
Citywide	21. Improved crossings of Hwy 501
North Roxboro	22. Connect North Main St to uptown.
Citywide	23. Need bicycle lanes



ROXBORO PEDESTRIAN TRANSPORTATION PLAN



PROJECT NEWSLETTER

In the Spring of 2008, City staff, local residents, and the project consultants met to begin work on the City of Roxboro Pedestrian Transportation Plan.

The Pedestrian Plan is part of a statewide matching grants program from NCDOT that is designed to support local communities in their efforts to plan for bicycle and pedestrian improvements. The project consultant, Greenways Inc. (GWI), has successfully completed several such plans with other communities in North Carolina, and has worked in over 150 towns, cities and regions in 35 states to create more liveable communities.

The Pedestrian Plan Steering Committee was selected for their useful expertise and interest in related fields. At the project kick-off meeting in March of 2008, participants agreed that connectivity was the biggest priority. Connections from residential areas and new development into Uptown and to destinations such as Huck Sansbury Park were of significant inter-



^ The Uptown Merritt Commons area is a unique pedestrian destination.



^ Huck Sansbury Park's walking track attracts a large number of exercise walkers.

est. The Committee was very interested in providing more "active-living" opportunities in terms of pedestrian facilities and programs. Committee members also identified major roads and intersections which posed a concern for pedestrian safety and require improvements.

More specific goals will be established as public input is gathered, and as the steering committee contributes further to the development of this plan.

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

1. Online Survey: The survey will take about five minutes and can be found at:

<http://www.cityofroxboro.com/>



^ Intersections are currently formidable for pedestrians, including Carver and US 501.

< Foot paths along North Main Street indicate the need for sidewalk.

Old business store fronts and pedestrian friendliness are commonplace Uptown >



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

2. Public Input Opportunity April 26, 2008, 9am at City Hall (Uptown) during the 1st Annual Clash of the Carts. Stop by to learn more about the Pedestrian Plan and talk directly with Steering Committee members and project consultants. Maps will be provided for writing comments and identifying places you would like to get to by foot, areas that you think are unsafe, and ideas for trails. Please come share your ideas!

3. 2nd Public Input Opportunity in Summer. Date, time and place TBD. This will be an opportunity to learn about the main components of the Draft Pedestrian Transportation Plan and to comment on initial recommendations.

4. Support the Adoption of the Final Plan. In the Fall of 2008, the Final Plan will be ready for adoption by the City of Roxboro. It is critical that the Final Plan be adopted in order for its recommendations to be carried out. Also, the adoption of the plan will send a clear message to outside funding sources that the City of Roxboro has a well thought-out and planned set of pedestrian improvements, making them more

likely to fund projects. Be sure to write a letter of support to the City Council, or show up to support the Plan when it goes before the Council this summer.

5. Contact a Steering Committee Member. If you are not able to provide input through the opportunities listed above, please contact Andy Oakley, Director of Public Services for the City of Roxboro. He can either answer your questions or direct you to a Steering Committee Member or project consultant who can.

Andy Oakley
 Director of Public Services
 City of Roxboro
 779 Mountain Road
 Roxboro, NC 27573
 (336) 503-0489
aoakley@cityofroxboro.com



ROXBORO PEDESTRIAN TRANSPORTATION PLAN



PROJECT NEWSLETTER #2

In the Spring of 2008, City staff, local residents, and the project consultants met to begin work on the City of Roxboro Pedestrian Transportation Plan. The Committee formed numerous goals including pedestrian connectivity, programming improvements, better facilities near schools, and safer roadway crossings.

The Consultant has been conducting fieldwork and developing preliminary recommendations for the City of Roxboro. Also, a booth was setup at the 1st Annual *Clash of the Carts* on April 26th to receive public input via map comments and a comment form. An online comment form was also established with over 200 responses to date. Some preliminary results are shown on the back of this newsletter.

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

1. Online Survey: The survey will take about five minutes and can be found at:

<http://www.cityofroxboro.com/>

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

2. Public Input Opportunity #2 May 28, 2008, 8am at the Town's *Good Morning Coffee Hour* at the Golden Corral. Roxboro residents are invited to have breakfast and learn more about the Pedestrian Plan and talk directly with Steering Committee members and project consultants. Maps will be provided for writing comments and identifying places you would like to get to by foot, areas that you think are unsafe, and ideas for trails. Please come share your ideas!



^ Photo renderings help visualize pedestrian improvements. Here, the intersection of Madison Boulevard and Carver Drive is transformed. Marked crosswalks, safe curb ramps, and pedestrian countdown signals would produce a safer crossing environment for pedestrians.



^ An abandoned railroad line runs parallel to US 501 in Roxboro. This provides an opportunity for a walking and biking trail next to or along the rail that would provide connections within and away from Roxboro. This will require cooperation from the Railroad owners though, as the City is already interested in the concept.

3. Support the Adoption of the Final Plan. In the Fall of 2008, the Final Plan will be ready for adoption by the City of Roxboro. It is critical that the Final Plan be adopted in order for its recommendations to be carried out. Also, the adoption of the plan will send a clear message to outside funding sources that the City of Roxboro has a well thought-out and planned set of pedestrian improvements, making them more likely to implement and fund projects. Be sure to write a letter of support to the City Council, or show up to support the Plan when it goes before the Council this summer.

4. Contact a Steering Committee Member. If you are not able to provide input through the opportunities listed above, please contact Andy Oakley, Director of Public Services for the City of Roxboro. He can either answer your questions or direct you to a Steering Committee Member or project consultant who can.

Andy Oakley
 Director of Public Services
 City of Roxboro
 779 Mountain Road
 Roxboro, NC 27573
 (336) 503-0489
aoakley@cityofroxboro.com

Early Comment Form Responses

(Over 200 completed as of May 8)

Top Roadways in need of Pedestrian Improvements:

Madison Blvd - 47 responses

Main Street - 24 responses

Ridge Road - 20 responses

Long Avenue - 12 responses

Carver Drive - 9 responses

Lamar Street - 6 responses

96.2% say the goal of a walkable community is very important or somewhat important. (71% said very important)

88.1% say the **availability of a safe route** plays a role in determining whether or not to work to a destination

The most important factor discouraging walking was **lack of sidewalks and trails**.

The majority of respondents walk for recreation or exercise. Still, over **30% walk as a means of transportation** to a destination.

According to Frank Hu, epidemiologist at the Harvard School of Public Health, "The single thing that comes close to a magic bullet, in terms of its strong and universal benefits, is exercise."
 (Harvard Magazine, 2004)

“Walking gets the feet moving, the blood moving, the mind moving. And movement is life.”

~ Carrie Latet



A.3 PUBLIC COMMENT FORM

An online comment form was created for the Roxboro Pedestrian Transportation Plan. The consultant worked with the City of Roxboro to prepare questions and tabulate the results of this survey that received 262 online and paper responses. The online survey link was made available on the City of Roxboro's website, distributed to numerous local email listserves, and publicized at each of the public workshops. The survey contained 18 questions related to walking and demographics.

A variety of respondents completed the survey including a wide range of age groups and user groups. In general, most respondents supported the concept of a more walkable community. An overwhelming majority of respondents walked for recreation and fitness, but a significant portion of the respondents walked for transportation. People wanted to walk to a number of locations including parks, restaurants, and places of work. The leading factors that discouraged respondents from walking was a lack of pedestrian facilities, especially sidewalks and crosswalks, along with traffic. Overall, there was interest in improvement of pedestrian conditions throughout the whole of Roxboro.

A.4 PUBLIC COMMENT FORM RESULTS

All results are shown on the following pages, A-8 through A-18.

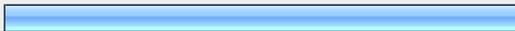


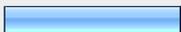
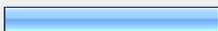
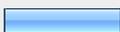
1. How important to you is the goal of creating a walkable community? (select one)			
		Response Percent	Response Count
very important		71.8%	186
somewhat important		25.1%	65
not important		3.1%	8
answered question			259
skipped question			3

2. How often do you walk now? (select one)			
		Response Percent	Response Count
never		5.0%	13
few times per month		35.1%	91
few times per week		46.7%	121
5+ times per week		13.1%	34
answered question			259
skipped question			3

3. Should public funds be used to improve pedestrian options and facilities?			
		Response Percent	Response Count
Yes		92.6%	238
No		7.4%	19
answered question			257
skipped question			5



4. What types of funds should be used? (Choose all that apply)			Response Percent	Response Count
Capital improvements bond or other financing strategy			48.2%	122
Existing local taxes			45.8%	116
New local taxes			10.7%	27
State and federal grants			71.9%	182
Other (please specify)			7.1%	18
			<i>answered question</i>	253
			<i>skipped question</i>	9

5. 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
Fitness or recreation			94.9%	244
Transportation to some destination			34.2%	88
Social visits			24.5%	63
Walking the dog			30.0%	77
Walking the baby / pushing a stroller			16.0%	41
			<i>answered question</i>	257
			<i>skipped question</i>	5



6. Which of the following factors play a role in whether or not you walk to a destination? (Check as many as apply)			
		Response Percent	Response Count
Availability of a safe route		88.8%	222
Availability of an aesthetically pleasing route		38.0%	95
Costs of other travel modes		13.6%	34
Availability of other travel options		8.0%	20
Need for exercise		76.0%	190
Weather		75.6%	189
Travel time/length of trip		40.8%	102
Other (please specify)		2.4%	6
answered question			250
skipped question			12

7. Are there places you would like to be able to walk that you cannot at this time?			
		Response Percent	Response Count
From:		98.5%	67
To:		83.8%	57
From:		52.9%	36
To:		51.5%	35
From:		16.2%	11
To:		14.7%	10
answered question			68
skipped question			194



8. What walking destinations would you most like to get to? Select all that apply.		Response Percent	Response Count
Place of work		36.8%	85
School		21.2%	49
Restaurants		51.5%	119
Public Transportation		13.0%	30
Shopping		46.3%	107
Parks		71.4%	165
Entertainment		29.9%	69
Trails and greenways		52.4%	121
Libraries or recreation centers		50.6%	117
	answered question		231
	skipped question		31



9. What factors discourage walking? Select all that apply.			
		Response Percent	Response Count
Lack of sidewalks and trails		81.9%	199
Unsafe crossings		65.4%	159
Traffic		67.1%	163
Pedestrian unfriendly streets and land uses		56.0%	136
Lack of interest		6.6%	16
Lack of time		19.8%	48
Aggressive motorist behavior		40.3%	98
Deficient sidewalks		56.4%	137
Lack of nearby destinations		39.9%	97
		answered question	243
		skipped question	19



10. What actions do you think are most needed to increase walking in the community? Select all that apply.

		Response Percent	Response Count
New sidewalks		72.9%	172
Crossing improvements		64.0%	151
Education for pedestrians and drivers		33.5%	79
Promotional efforts		29.2%	69
Repairing old sidewalks		66.5%	157
Replacing deficient sidewalks		57.2%	135
Improved public transportation		20.8%	49
Improved greenway trail systems		37.7%	89
Planting street trees		17.4%	41
More pedestrian friendly land-uses		53.0%	125
		answered question	236
		skipped question	26

11. What roadways are most in need of pedestrian improvements? (Top 10 shown below)

Roadway	Response Count
Madison Blvd.	76
Main Street	35
Ridge Road	27
Morgan Street	21
Carver Drive	13
Long Avenue	12
Lamar Street	9
Uptown Roxboro	8
Chub Lake Road	6
Hwy 49	6



12. Do you have suggestions about specific programming or pedestrian related policies that you would like to see enacted?

(responses are shown below exactly how they were submitted)

a plan or goal to place sidewalks on all city streets, and possibly some bike trails.
Adding Crosswalks at Madison Boulevard
adequate signage denoting presence of crosswalks and high pedestrian areas. citations written to individuals walking in the streets where there are sidewalks available for the same route and likewise with use of crosswalks.
better lighting. dogs out in city streets not detained. more police patrol
Better marked crossings (and even raised above road surface)
bike trail, Rails to Trails
Bike Trails
bring more sidewalks up do standards
Bury the electric wires and plant trees along Main Street.
Crime on our streets is on the rise. We feel unsafe on our streets. Increased Police involvement in key areas (foot patrols on main street would be wonderful!)
Crossing for Person High School to cross safely on Carver & Ridge Road
Crossing Signal at major intersections along Madison Blvd and Durham Rd
crosswalk lights downtown and all major road crossings to make crosswalks safer, also bicycle lanes on the roads
Current side walks need to be observed after rainstorms....somehave puddles where concrete has sagged or does not drain where recent handicap ramps were installed...like at the corner if Gordon street and Morgan street
Develop master plan, require sidewalks to be built as sites are developed
Encourage responsible pet walking on all sidewalks and trails Have bag dispensers to encourage people to walk their dogs on the trails and side walks while also cleaning up doggy doo! Turn the railroad along 501 into a level walking trail to improve the area
be nice to walk out of my home on Ridge Road and go walking whenever I feel comfortable. Also, safety for walkers is a huge issue. I walk at Huck Sansbury every morning at 5am and cannot go alone because of people sleeping in bushes and in the bathrooms.
I would consider using public transportation or alternate methods to driving my personal car to work. I live 10 miles out of town, so walking would not be practical. I do not walk much near my home because the speed limit is high, there are no sidewalks and I often have to walk before or after the sun is up to fit it into my schedule.
I would like to also see safer and more accessible bike routes.
pedestrians and bicyclists.
adults and children.
I would like to see bike lanes as well
I would like to see bike trails and lanes too!!!
If we had better sidewalks and more appropriate advertising for pedestrians, motorists would be more aware.
in addition to sidewalks, Trails that can be used for biking, walking, jogging, skating etc. would be a fantastic asset for this community.
Inform drivers that pedestrians have the right of way in cross walks and when turning into driveways and at stop signs look out for us!!!!!!
install pedestrian crossing lights with traffic signals
it is difficult to walk to places due to the size and sprawl of the county, which is why people like to live here work. The down town walking track would be nice to use in the evening if there were more street lights or better lighting.
Let safety and beauty be primary concerns of any project that is developed.
Live After Five would be nice.. More advertisement about parks and nature trails that are available
Make as many streets as possible inviting and user friendly.
Mandatory that new sub-divisions have sidewalks
Maybe use the old train tracks as a walking trail.
More bikeways/bike lanes
Pedestrian crossing
MORE TRAILS



12. (CONTINUED) Do you have suggestions about specific programming or pedestrian related policies that you would like to see enacted?

(responses are shown below exactly how they were submitted)

need to get an ordinance to require people who walk dogs to get up their poop....have a dog walking park/area
Need to inform public that it is now State law to stop for people in a crosswalk.
Pedestrial safety training especially rules for crossing streets with and without traffic signal lights. Bicycle safety training. Speed limits adjusted in areas with sidewalks.
Pedestrian related policies - more advertising to inform the citizens that people do walk and to be more careful and considerate of those taking advantage of the walking areas. Also, BIG, BRIGHT posted signs that announce Pedestrian Walking Areas, like those that suggest Kids Playing.
Person county also needs bike trails!
Pick a central starting point and expand from there.
Please install sidewalks so people can walk to their destinatins safely!
Rails to Trails
Reminders to motorists that bike and walkers have rights to use the road. Reminders to bikes and walkers about the proper way to do it
remove, educate, invite
slower traffic from the cars, even people who ride bikes are in danger from careless people who are always in a hurry or on the damn phone!!!!
The legislators need to wake up to reality and finally accept creating a small tax for the construction of public infrastructure. And their needs to be mandates for the developers to share the costs.
There are a growing number of pedestrians walking in Roxboro and we must implement a safe crossing plan for these individuals. I travel 501 N daily and I never remember a day when I didn't see someone walking between Cavel and Uptown however, there are no crossing designated for these pedestrians.
There should be bus stops in the city for PATS riders. Like the city of Durham they have signs marked for specific bus stops. If this community wants to grow this should be looked into.
Walk and Don't Walk lights at strategic locations.
Well maintained trails all around the county, safely lit and near populated activities or areas.
with the increase in fuel cost this should be a priorty over other projects. this has been needed for years but overlooked
Would like to see an off highway walking/biking trail (greenway) that is near town. The only ones available require that you drive quite a distance.
Would like to see benefits for people who choose to walk vs. driving- maybe in the form of local merchant discounts and some kind of local tax break; to encourage less fuel consumption and air pollution.
YES! Walking from work - on Courthouse Square - to the library one work day, I encountered a man urinating on a trash-can in front of the Old Maxway Building. This happened probably around the end of last summer and was totally disgusting. Also the men that hang out between Toofies & Greens Jewelry on a daily basis are rather seedy, too. This is suppose to be a nice community, not Washington D.C. Perhaps we need uniformed officers to walk the downtown area at sporadic times to "clean up" the neighborhood.



13. Please order this list according to the importance you place on each item. Rank the options below from 1 (highest importance) to 4 (lowest importance).

	#1	#2	#3	#4	Rating Average	Response Count
Maximizing safety for pedestrians across the entire community.	76.6% (141)	11.4% (21)	7.6% (14)	4.3% (8)	1.40	184
Perfecting a few major travel corridors for pedestrians.	14.2% (24)	37.9% (64)	33.1% (56)	14.8% (25)	2.49	169
Maximizing pedestrian opportunities in certain hubs or nodes around the community.	11.5% (21)	38.8% (71)	33.9% (62)	15.8% (29)	2.54	183
Improving aesthetic quality of existing pedestrian facilities.	11.3% (23)	21.1% (43)	19.6% (40)	48.0% (98)	3.04	204
	<i>answered question</i>					215
	<i>skipped question</i>					47

14. What is your zip code?

Zip Code	Response Count
27573	105
27574	71
27583	10
Other	30



15. What is your gender?			Response Percent	Response Count
M			31.6%	68
F			68.4%	147
			<i>answered question</i>	215
			<i>skipped question</i>	47

16. What is your age?			Response Percent	Response Count
0-18			1.4%	3
19-25			2.7%	6
26-35			17.6%	39
36-45			24.4%	54
46-55			35.3%	78
56-65			16.3%	36
65 and older			2.3%	5
			<i>answered question</i>	221
			<i>skipped question</i>	41



17. Where do you live?			
		Response Percent	Response Count
Roxboro		41.0%	91
Person County		50.0%	111
Durham County		2.7%	6
Other		6.3%	14
<i>answered question</i>			222
<i>skipped question</i>			40

18. What is your living and work status in Roxboro?			
		Response Percent	Response Count
Live in Roxboro only		9.5%	21
Work in Roxboro only		34.2%	76
Live and work in Roxboro		50.5%	112
Neither live nor work in Roxboro		5.9%	13
<i>answered question</i>			222
<i>skipped question</i>			40



B. PRIORITIZATION

B.1 OVERVIEW

The prioritization process began by making a list of all the roadways in the study area that make up the overall pedestrian sidewalk network. The corridors were then broken down into segments at logical points, such as major intersections. Most segments are under a mile long, with several just over a mile.

The total list of segments consists of over seventy recommend improvements for pedestrian facilities, specifically sidewalks.

All crossing improvement projects have high priority because of the direct interaction between motorists and pedestrians in these spaces. These were not prioritized separately although those intersections falling along higher priority sidewalk segments should be addressed.

As described in Chapter 3, the North-South Greenway corridor is a tremendous opportunity for a greenway corridor as development continues. Opportunity is great here with a sewer easement corridor in place at the northern end of the City and a connection to the Piedmont Community College. This entire corridor should be developed into a greenway when opportunity arises such as new development. With the great potential of providing recreation and transportation, this greenway should be a priority of the City.

The criteria used to rank each sidewalk segment is custom designed for Roxboro, based on public input, steering committee input, and data collected pertaining to Roxboro's existing conditions. Furthermore, the criteria were weighted according to standards used through-out North Carolina, and modified to reflect input from Roxboro's online public survey results. Specifically, the following criteria and weights were used:

- Top 10 "Most in Need of Improvement" from Public Survey (5 points each)
- Direct Access to a School (5 points each)

- School Proximity (1/2 mile radius) (5 points each)
- Connections to Uptown (4 points each)
- Direct Access to/from an Existing Sidewalk (4 points each)
- Parks/Rec/Playground Proximity (1/2 mile radius) (3 points each)
- Direct Access to/from Huck Sansbury Park (3 points each)
- Regional Connection and/or Interstate Highway Crossing (3 points each)
- Direct Access to/from Higher Density Residential Areas (3 points each)
- Direct Access to Commercially Zoned Areas (3 points each)
- Direct Access to/from a Proposed Greenway (2 points each)
- Route with Reported Pedestrian Accident (1 point each)

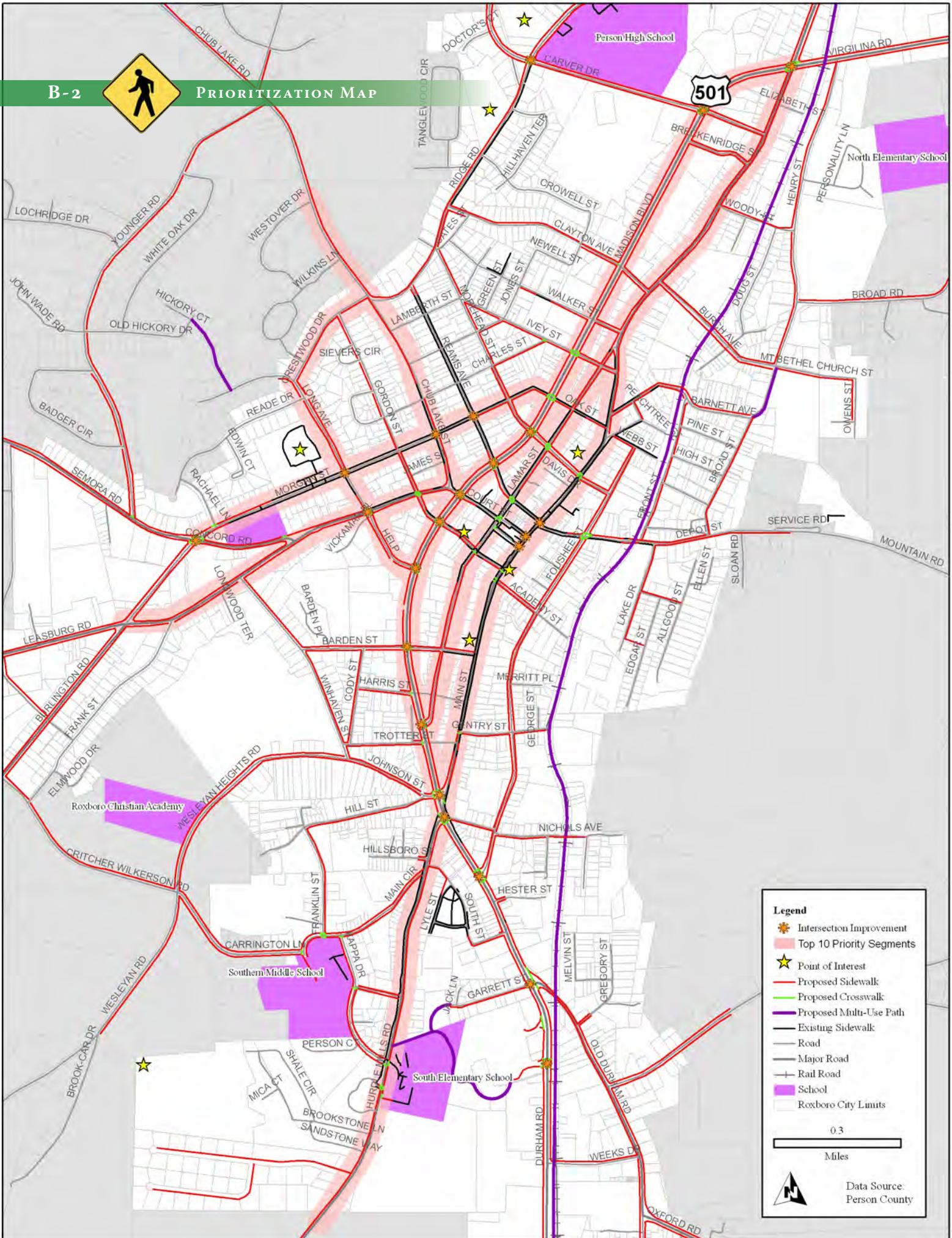
Some priority segments have sections of existing sidewalk while others have none. Even though sidewalk may exist for some priority segments, a comprehensive approach should be taken towards overall pedestrian improvements including traffic calming measures, sidewalk maintenance, and crosswalks. This is due to the segment's importance in the overall network.

B.2 PRIORITIZATION MAP

The map on page B-2 contains the Top 10 priority sidewalk segments (as designated in the Prioritization Table) and all crossing improvement projects. All crossings are high priority as these spaces feature direct interaction between motorists and pedestrians.

B.3 PRIORITIZATION TABLE

Page B-3 contains the prioritization table for pedestrian corridors. While these rankings represent where there is need, pedestrian facilities should be built when opportunity arises, regardless of their ranking here.



Legend

- Intersection Improvement
- Top 10 Priority Segments
- Point of Interest
- Proposed Sidewalk
- Proposed Crosswalk
- Proposed Multi-Use Path
- Existing Sidewalk
- Road
- Major Road
- Rail Road
- School
- Roxboro City Limits

0.3
Miles

Data Source: Person County

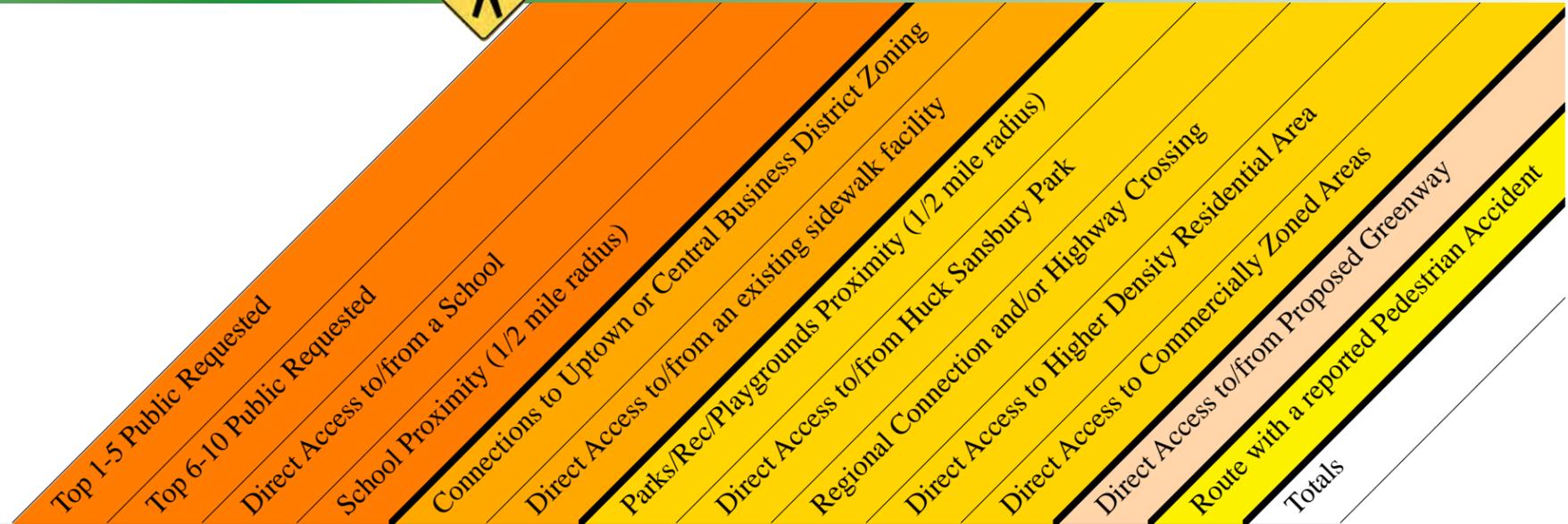


**PRIORITIZATION TABLE (PART I)
SIDEWALK CORRIDORS**

			Top 1-5 Public Requested				Top 6-10 Public Requested		Direct Access to/from a School		School Proximity (1/2 mile radius)		Connections to Uptown or Central Business District Zoning		Parks/Rec/Playgrounds Proximity (1/2 mile radius)		Direct Access to/from an existing sidewalk facility		Regional Connection to/from Huck Sansbury Park		Direct Access to Higher Density Crossing		Direct Access to Commercially Zoned Area		Route with a reported Pedestrian Accident		Totals
			5	5	5	5	4	4	3	3	3	3	3	3	3	3	2	1			46						
Corridor	From	To																									
Morgan St	Concord Rd	US 501/ Madison Blvd	5	0	5	5	0	4	3	3	3	3	3	3	3	3	0	0			34						
US 501/ Madison Blvd	NC 49/Virgilina Rd	Reams Ave	5	0	0	5	4	4	3	0	3	3	3	3	3	3	0	2			32						
US 158/Leasburg Rd	Burlington Rd	US 501/ Madison Blvd	0	0	5	5	4	4	3	0	3	3	3	3	3	3	0	1			31						
S Main St	US 501/Durham Rd	Patterson Dr	5	0	5	5	0	4	3	0	3	3	3	3	3	3	0	0			31						
US 501/ Madison Blvd	Reams Ave	S Main St	5	0	0	5	4	4	3	0	3	3	3	3	3	3	0	0			30						
N Main St	NC 49/Virgilina Rd	Depot St	5	0	0	5	4	4	3	0	3	3	3	3	3	3	0	0			30						
S Main St	Depot St	US 501/Durham Rd	5	0	0	5	4	4	3	0	3	3	3	3	3	3	0	0			30						
Lamar St	N Main St	US 501/ Madison Blvd	0	5	0	5	4	4	3	0	3	3	3	3	3	3	0	0			30						
Crestwood Dr/Long Ave	Chub Lake Rd	N Madison Blvd	0	5	0	5	0	4	3	3	3	3	3	3	3	3	0	1			30						
Chub Lake Rd	Poplar Lane Dr	Court St	0	5	0	5	4	4	3	0	0	3	3	3	3	3	2	0			29						
Ridge Rd	US 501/N Main St	Carver Dr	5	0	5	5	0	4	0	0	3	3	0	3	3	0	2	1			28						
Burlington Rd	Dee Long Rd	NC 57/Semora Rd	0	5	5	5	0	0	3	0	3	3	3	3	3	3	0	0			27						
US 501/N Main St	Tonker Dr	NC 49/Virgilina Rd	5	0	0	5	0	4	0	0	3	3	3	3	3	3	2	1			26						
Critcher Wilkerson Rd/Carrington	Burlington Rd	S Main St	0	0	5	5	0	4	3	0	3	3	3	3	3	3	0	0			26						
Hill/Franklin	US 501/Madison Blvd	Main Cir	0	0	5	5	0	4	3	0	3	3	3	3	3	3	0	0			26						
Ridge Rd	Carver Dr	Chub Lake Rd	5	0	5	5	0	4	3	0	0	3	0	3	0	0	0	0			25						
Reams Ave	Ridge Rd	N Main St	0	0	0	5	4	4	3	0	3	3	3	3	3	3	0	0			25						
Gordon St	Crestwood Dr	N Main St	0	0	0	5	4	4	3	0	3	3	3	3	3	3	0	0			25						
Carver Dr	Memorial Dr	N Main St	5	0	5	5	0	0	0	0	3	0	3	0	3	3	2	1			24						
Kappa Dr	Main Cir	S Main St	0	0	5	5	0	4	3	0	0	3	3	3	3	3	0	0			23						
Foushee St	Webb St	US 501/Durham Rd	0	0	0	5	4	4	0	0	3	3	3	3	3	3	0	0			22						
Memorial Dr	US 501/N Main St	Carver Dr	0	0	5	5	0	4	0	0	3	3	0	3	0	3	2	0			22						
Court St	N Madison Blvd	N Main St	0	0	0	5	4	4	3	0	3	0	3	0	3	3	0	0			22						
NC 57/Semora Rd/Concord Rd	Robert Norris Rd	Leasburg Rd	0	0	5	5	0	0	3	0	3	3	3	3	3	3	0	0			22						



**PRIORITIZATION TABLE (PART II)
SIDEWALK CORRIDORS**



			5	5	5	5	4	4	3	3	3	3	3	2	1	46
<i>Corridor</i>	From	To														
NC 49/Virgilina Rd	Broad Rd	US 501/N Main St	0	5	0	5	0	0	0	0	3	3	3	2	0	21
Barden St	Winhaven St	S Main St	0	0	0	5	0	4	3	0	3	3	3	0	0	21
US 501/Durham Rd	S Main St	Bessie Daniel Rd	0	0	0	5	0	4	0	0	3	3	3	2	0	20
Kerr Dr/Forest St	US 501/N Main St	US 501/N Main St	0	0	0	5	0	4	0	0	3	3	3	2	0	20
Nichols Ave	US 501/Durham Rd	Burton St	0	0	0	5	0	4	0	0	3	3	3	2	0	20
Henderson Rd	NC 49/Virgilina Rd	Broad Rd	0	0	5	5	0	0	0	0	3	3	3	0	0	19
Johnson St/Wesleyan Heights Rd	US 501/Madison Blvd	Critcher Wilkerson Rd	0	0	5	5	0	0	0	0	3	3	3	0	0	19
South St/Kirby St	S Main St	US 501/Durham Rd	0	0	0	5	0	4	0	0	3	3	3	0	0	18
Younger Rd	Chub Lake Rd	NC 57/Semora Rd	0	0	0	5	0	0	3	0	3	3	3	0	0	17
US 158/Leasburg Rd	Robert Norris Rd	Burlington Rd	0	0	0	5	0	0	3	0	3	3	3	0	0	17
Winhaven St	US 158/Leasburg Rd	Johnson St	0	0	0	5	0	0	3	0	3	3	3	0	0	17
Delta Dr	Kappa Dr	S Main St	0	0	5	5	0	4	0	0	0	3	0	0	0	17
Thaxton Rd	Providence Rd	US 501/N Main St	0	0	0	0	0	4	0	0	3	3	3	2	1	16
Ivey St	N Main St	Draven/Lambert St	0	0	0	0	0	4	3	0	3	3	3	0	0	16
W Morehead St	Ridge Rd	N Foushee St	0	0	0	0	0	4	3	0	3	3	3	0	0	16
Depot St/Service Rd	N Main St	Town Limits	0	0	0	0	4	4	0	0	0	3	3	2	0	16
Garrett St	US 501/Durham Rd	Jack Ln	0	0	0	5	0	0	0	0	3	3	3	2	0	16
Old Durham Rd	US 501/Durham Rd	US 501/Durham Rd	0	0	0	5	0	0	0	0	3	3	3	2	0	16
Park St/Beacon St/School St	US 501/N Main St	US 501/N Main St	0	0	0	5	0	4	0	0	3	3	0	0	0	15
Clayton Ave	Ridge Rd	N Main St	0	0	0	5	0	0	0	0	3	3	3	0	1	15
Power St/Brater St	Ridge Rd	US 501/N Main St	0	0	0	5	0	0	0	0	3	3	3	0	0	14
Windsor Dr/DollySt/Montpelier A	Ridge Rd	US 501/N Main St	0	0	0	5	0	0	0	0	3	3	3	0	0	14
Cody St	Barden St	Trotter St	0	0	0	5	0	0	3	0	0	3	3	0	0	14
Oxford Rd	Frank Oakley Rd	Old Durham Rd	0	0	0	5	0	0	0	0	3	3	3	0	0	14
Burch Ave/Mt Bethel Church Rd	N Main St	Owens St	0	0	0	5	0	0	0	0	0	3	3	2	0	13



**PRIORITIZATION TABLE (PART III)
SIDEWALK CORRIDORS**

Corridor	From	To	Public Requested					School Proximity		Direct Access			Regional Connection		Direct Access		Totals
			5	5	5	5	5	4	4	3	3	3	3	3	2	1	
Walker St	N Main St	Cates St	0	0	0	0	0	4	0	0	3	3	3	0	0	13	
Oak St	N Madison Blvd	N Main St	0	0	0	0	0	4	0	0	3	3	3	0	0	13	
Weeks Dr	US 501/Durham Rd	Old Durham Rd	0	0	0	5	0	0	0	0	3	0	3	2	0	13	
Providence Rd	NC 49/Virgilina Rd	US 501/N Main St	0	0	0	0	0	4	0	0	3	3	0	2	0	12	
Henry St/Broad St	NC 49/Virgilina Rd	Depot St	0	0	0	5	0	0	0	0	3	3	0	0	1	12	
Clayton St	Dead End	US 501/N Main St	0	0	0	5	0	0	0	0	3	0	3	0	0	11	
Puryear St/Shotwell St	US 501/N Main St	Dead Ends	0	0	0	0	0	0	0	0	3	3	3	2	0	11	
Shelton Rd	Thaxton Rd	NC 49/Virgilina Rd	0	0	0	5	0	0	0	0	3	3	0	0	0	11	
Broad Rd	NC 49/Virgilina Rd	Henry St	0	0	0	5	0	0	0	0	3	3	0	0	0	11	
Breckenridge St	US 501/Madison Blvd	N Main St	0	0	0	5	0	0	0	0	3	0	3	0	0	11	
Harris St	Cody St	US 501/ Madison Blvd	0	0	0	5	0	0	0	0	3	3	0	0	0	11	
Trotter St	Cody St	US 501/ Madison Blvd	0	0	0	5	0	0	0	0	3	3	0	0	0	11	
Patterson Dr/Somerset Church Rd	S Main St	Old Durham Rd	0	0	0	0	0	0	0	0	3	3	3	2	0	11	
Flat River Church Rd	Bessie Daniel Rd	Old Durham Rd	0	0	0	0	0	0	0	0	3	3	3	2	0	11	
Allensville Rd	Old Allensville Rd	Old Durham Rd	0	0	0	5	0	0	0	0	3	0	3	0	0	11	
Executive Lane	US 501/N Main St	US 501/N Main St	0	0	0	0	0	4	0	0	3	0	3	0	0	10	
Woody St	N Main St	Henry St	0	0	0	5	0	0	0	0	0	3	0	2	0	10	
Barnett Ave	N Main St	Broad St	0	0	0	0	0	4	0	0	0	3	0	2	0	9	
Gentry St	N Main St	End	0	0	0	0	0	4	0	0	0	3	0	2	0	9	
Somerset Dr	Bywood Dr	US 501/Durham Rd	0	0	0	0	0	0	0	0	3	3	3	0	0	9	
Industrial Dr	S Main St	US 501/Durham Rd	0	0	0	0	0	0	0	0	3	0	3	2	0	8	
Peachtree/Virginia	Barnett	N Main St	0	0	0	0	0	4	0	0	0	3	0	0	0	7	
Webb St	Virginia	End	0	0	0	0	0	4	0	0	0	3	0	0	0	7	
Allie Clay Rd	Clay Thomas Rd	US 501/N Main St	0	0	0	0	0	0	0	0	3	0	0	2	0	5	

B-6



PRIORITIZATION



C. FUNDING

C.1 OVERVIEW

The primary purpose of this appendix is to define and describe possible funding sources that could be used to support the planning, design and development of pedestrian and greenway improvements.

Implementing the recommendations of this plan will require a strong level of local support and commitment through a variety of local funding mechanisms. Perhaps most important is the addition of sidewalk and greenway recommendations from this Plan into the City's Capital Improvement Program (CIP). Pedestrian improvements should become a high priority and be supported through the CIP and local bonds.

The City should also seek a combination of funding sources that include local, state, federal, and private money. Fortunately, the benefits of protected greenways are many and varied. This allows programs in Roxboro to access money earmarked for a variety of purposes including water quality, hazard mitigation, recreation, air quality, alternate transportation, wildlife protection, community health, and economic development. Competition is almost always stiff for state and federal funds, so it becomes imperative that local governments work together to create multi-jurisdictional partnerships and to develop their own local sources of funding. These sources can then be used to leverage outside assistance. The long term success of this plan will almost certainly depend on the dedication of a local revenue stream for greenways and sidewalks. An important key to obtaining funding is for Roxboro to have adopted plans for greenway, bicycle, pedestrian or trail systems in place prior to making an application for funding.

For the past two decades, a variety of funding has been used throughout North Carolina to support the planning, design and construction of urban and rural pedestrian and greenway projects. The largest single source of funding for these projects has come from the Surface Transportation Act, first the Intermodal Surface Transportation Efficiency Act (ISTEA) in the early to mid 1990's; then its successor, Transportation Equi-

ty Act for the Twenty-First Century (TEA-21) through the early part of 2002; and now the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The North Carolina Department of Transportation manages and distributes the majority of federal funds that are derived from the Act to support the development of bicycle/pedestrian/trail development.

The majority of federal funding is distributed to states in the form of block grants and is then distributed throughout a given state for specific projects. State funding programs in North Carolina also support the creation of greenways. North Carolina has developed a broad array of funding sources that address land acquisition, green infrastructure development, and trail facility development.

Additionally, there are many things that the City of Roxboro can do to establish their own funding for sidewalk and greenway initiatives. For the most part, it takes money to get money. For Roxboro, it will be necessary to create a local funding program through one of the methods that is defined within this report. Financing will be needed to administer the continued planning and implementation process, acquire parcels or easements, and manage and maintain facilities.

This appendix is organized by first addressing the state sources of funding, then addresses separate federal and local government funding sources. It is by no means an exhaustive list as there are hundreds of additional funding sources available that should be researched and pursued as well.

Greenways Incorporated advises the City of Roxboro to pursue a variety of funding options and establish pedestrian recommendations from this Plan as a priority in its Capital Improvement Program (CIP). This appendix identifies a list of some of the pedestrian and greenway funding opportunities that have typically been pursued by other communities. Creative planning and consistent monitoring of funding options will likely turn up new opportunities not listed here.



C.2 HIGH PRIORITY FUNDING OPTIONS

While there are a number of funding sources provided in the following pages, these sources should be the highest priority in order to achieve successful implementation. It is critical for local government to step up given the competitiveness and changing, finite availabilities of most funding sources. Details about the following sources are found later in this appendix.

- Local Capital Improvements Program (CIP)
- Local Bond
- Local Fees
- State Transportation Improvement Program (TIP)
- State Powell Bill Funds
- State Safe Routes to School Program
- State Parks and Recreation Trust Fund (PARTF)
- State Health and Wellness Trust Fund (HWTF)
- Private Sources

C.3 STATE FUNDING SOURCES

The most direct source of public-sector funding for the City of Roxboro will come from state agencies in North Carolina. Generally, these funds are made available to local governments based on grant-in-aid formulas. The single most important key to obtaining state grant funding is for local governments to have adopted plans for greenway, open space, bicycle, pedestrian or trail systems in place prior to making an application for funding. Unfortunately, there is no direct correlation between any of the programs listed and a constant stream of funding for greenway or trail projects and all projects are funded on the basis of grant applications. There is no specific set aside amount that is allocated for greenway and trail development within a given program. Funding is based solely on need and the need has to be expressed and submitted in the form of a grant application. Finally, all of these programs are geared to address needs across the entire state, so all of the programs are competitive and must allocate funding with the needs of the entire state in mind.

The Powell Bill Program is an annual state allocation to municipalities for use in street system maintenance and construction activities. There is considerable local control over Powell Bill Funds (It is not a grant application process). In the past, the State allocated a

considerable portion of these revenues for construction purposes. However, budgetary constraints since 2001 have led to a shift of new Powell Bill funds to cover maintenance and operations activities.

Both the Powell Bill reserves and the 2000 Transportation Bond funds are limited funding sources that will eventually be depleted. Further, federal highway funds can be expected to provide only a portion of the future resource needs of the sidewalk construction program. For this reason, the development of future state transportation bond initiatives will be critical for continuing implementation of the sidewalk construction program in the future.

In North Carolina, the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT) has been the single largest source of funding for bicycle, pedestrian and greenway projects, including non-construction projects such as brochures, maps, and public safety information for more than a decade. DBPT offers several programs in support of bicycle and pedestrian facility development. The following information is from NCDOT's interactive web site (www.ncdot.org). Contact the NCDOT, Division of Bicycle and Pedestrian Transportation at (919) 807-2804 for more information.

North Carolina programs are listed below. A good starting website with links to many of the following programs is http://www.enr.state.nc.us/html/tax_credits.html.

North Carolina Department of Transportation
Bicycle and Pedestrian Independent Projects Funded Through the Transportation Improvement Program (TIP):

In North Carolina, the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT) manages the Transportation Improvement Program (TIP) selection process for bicycle and pedestrian projects.

Projects programmed into the TIP are independent projects – those which are not related to a scheduled highway project. Incidental projects – those related to a scheduled highway project – are handled through other funding sources described in this section.



A total of \$6 million is annually set aside for the construction of bicycle improvements that are independent of scheduled highway projects in communities throughout the state. Eighty percent of these funds are from STP-Enhancement funds, while the State Highway Trust provides the remaining 20 percent of the funding.

Each year, the DBPT regularly sets aside a total of \$200,000 of TIP funding for the department to fund projects such as training workshops, pedestrian safety and research projects, and other pedestrian needs statewide. Those interested in learning about training workshops, research and other opportunities should contact the DBPT for information.

A total of \$5.3 million dollars of TIP funding is available for funding various bicycle and pedestrian independent projects, including the construction of multi-use trails, the striping of bicycle lanes, and the construction of paved shoulders, among other facilities. Prospective applicants are encouraged to contact the DBPT regarding funding assistance for bicycle and pedestrian projects. For a detailed description of the TIP project selection process, visit: http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html.

Incidental Projects – Bicycle and pedestrian accommodations such as bike lanes, widened paved shoulders, sidewalks and bicycle-safe bridge design are frequently included as incidental features of highway projects. In addition, bicycle-safe drainage grates are a standard feature of all highway construction. Most bicycle and pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of National Highway System funds and State Highway Trust Funds.

Sidewalk Program – Each year, a total of \$1.4 million in STP-Enhancement funding is set aside for sidewalk construction, maintenance and repair. Each of the 14 highway divisions across the state receives \$100,000 annually for this purpose. Funding decisions are made by the district engineer. Prospective applicants are encouraged to contact their district engineer for information on how to apply for funding.

Governor's Highway Safety Program (GHSP) –

The mission of the GHSP is to promote highway safety awareness and reduce the number of traffic crashes in the state of North Carolina through the planning and execution of safety programs. GHSP funding is provided through an annual program, upon approval of specific project requests. Amounts of GHSP funds vary from year to year, according to the specific amounts requested. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance highway safety. Once a grant is awarded, funding is provided on a reimbursement basis. Evidence of reductions in crashes, injuries, and fatalities is required. For information on applying for GHSP funding, visit: www.ncdot.org/programs/ghsp/.

Funding Available Through North Carolina Metropolitan Planning Organizations (MPOs)

MPOs in North Carolina which are located in air quality nonattainment or maintenance areas have the authority to program Congestion Mitigation Air Quality (CMAQ) funds. CMAQ funding is intended for projects that reduce transportation related emissions. Some NC MPOs have chosen to use the CMAQ funding for bicycle and pedestrian projects. Local governments in air quality nonattainment or maintenance area should contact their MPO for information on CMAQ funding opportunities for bicycle and pedestrian facilities.

Transportation Enhancement Call for Projects, EU, NCDOT

The Enhancement Unit administers a portion of the enhancement funding set-aside through the Call for Projects process. In North Carolina the Enhancement Program is a federally funded cost reimbursement program with a focus upon improving the transportation experience in and through local North Carolina communities either culturally, aesthetically, or environmentally. The program seeks to encourage diverse modes of travel, increase benefits to communities and to encourage citizen involvement. This is accomplished through the following twelve qualifying activities:

1. Bicycle and Pedestrian Facilities
2. Bicycle and Pedestrian Safety
3. Acquisition of Scenic Easements, Scenic or Historic Sites



4. Scenic or Historic Highway Programs (including tourist or welcome centers)
5. Landscaping and other Scenic Beautification
6. Historic Preservation
7. Rehabilitation of Historic Transportation Facilities
8. Preservation of Abandoned Rail Corridors
9. Control of Outdoor Advertising
10. Archaeological Planning and Research
11. Environmental Mitigation
12. Transportation Museums

Funds are allocated based on an equity formula approved by the Board of Transportation. The formula is applied at the county level and aggregated to the regional level. Available fund amount varies. In previous Calls, the funds available ranged from \$10 million to \$22 million.

The Call process takes place on even numbered years or as specified by the Secretary of Transportation. The Next Call is anticipated to take place in 2008, barring financial constraints related to federal rescissions resulting from the war on terror and Hurricane Katrina. For more information, visit: www.ncdot.org/financial/fiscal/Enhancement/

Bicycle and Pedestrian Planning Grant Initiative, (managed by NCDOT, DBPT)

To encourage the development of comprehensive local bicycle plans and pedestrian plans, the NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) have created a matching grant program to fund plan development. This program was initiated through a special allocation of funding approved by the North Carolina General Assembly in 2003 along with federal funds earmarked specifically for bicycle and pedestrian planning by the TPB. The planning grant program was launched in January 2004, and it is currently administered through NCDOT-DBPT and the Institute for Transportation Research and Education (ITRE) at NC State University. Over the past three grant cycles, 48 municipal plans have been selected and funded from 123 applicants. A total of \$ 1,175,718 has been allocated. Funding is secured for 2007 at \$400,000. Additional annual allocations will be sought for subsequent years. For more information, visit www.itre.ncsu.edu/ptg/bikeped/ncdot/index.html

Safe Routes to School Program (managed by NCDOT, DBPT)

The NCDOT Safe Routes to School Program is a federally funded program that was initiated by the passing of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005, which establishes a national SRTS program to distribute funding and institutional support to implement SRTS programs in states and communities across the country. SRTS programs facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. The Division of Bicycle and Pedestrian Transportation at NCDOT is charged with disseminating SRTS funding.

The state of North Carolina has been allocated \$15 million in Safe Routes to School funding for fiscal years 2005 through 2009 for infrastructure or non-infrastructure projects. All proposed projects must relate to increasing walking or biking to and from an elementary or middle school. An example of a non-infrastructure project is an education or encouragement program to improve rates of walking and biking to school. An example of an infrastructure project is construction of sidewalks around a school. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding. For more information, visit www.ncdot.org/programs/safeRoutes/ or contact Leza Mundt at DBPT/NCDOT, (919) 807-0774.

Recreational Trails Program (RTP)

The Recreational Trails Program (RTP) is a grant program funded by Congress with money from the federal gas taxes paid on fuel used by off-highway vehicles. This program's intent is to meet the trail and trail-related recreational needs identified by the State-wide Comprehensive Outdoor Recreation Plan. Grant applicants must be able contribute 20% of the project cost with cash or in-kind contributions. The program is managed by the State Trails Program, which is a section of the N.C. Division of Parks and Recreation.

The grant application is available and instruction handbook is available through the State Trails Pro-



gram website at <http://ils.unc.edu/parkproject/trails/home.html>. Applications are due during the month of February. For more information, call (919) 715-8699.

Powell Bill Program

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by statute. This program is a state grant to municipalities for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public streets and highways. Funding for this program is collected from fuel taxes. Amount of funds are based on population and mileage of town-maintained streets. For more information, visit www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell_Bill/powellbill.html.

North Carolina's Clean Water Management Trust Fund (CWMTF)

This fund was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. At the end of each fiscal year, 6.5 percent of the unreserved credit balance in North Carolina's General Fund, or a minimum of \$30 million, is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The fund has provided funding for land acquisition of numerous greenway projects featuring trails, both paved and unpaved. For a history of awarded grants in North Carolina and more information about this fund and applications, visit www.cwmtf.net/.

North Carolina Parks and Recreation Trust Fund (PARTF)

The fund was established in 1994 by the North Carolina General Assembly and is administered by the Parks and Recreation Authority. Through this program, several million dollars each year are available to local governments to fund the acquisition, develop-

ment and renovation of recreational areas. Applicable projects require a 50/50 match from the local government. Grants for a maximum of \$500,000 are awarded yearly to county governments or incorporated municipalities. The fund is fueled by money from the state's portion of the real estate deed transfer tax for property sold in North Carolina.

The trust fund is allocated three ways:

- 65 percent to the state parks through the N.C. Division of Parks and Recreation.
- 30 percent as dollar-for dollar matching grants to local governments for park and recreation purposes.
- 5 percent for the Coastal and Estuarine Water Access Program.

For information on how to apply, visit: www.partf.net/learn.html

Land and Water Conservation Fund – North Carolina (LWCF)

The Land and Water Conservation Fund (LWCF) program is a reimbursable, 50/50 matching grants program to states for conservation and recreation purposes, and through the states to local governments to address "close to home" outdoor recreation needs. LWCF grants can be used by communities to build a trail within one park site, if the local government has fee-simple title to the park site. Grants for a maximum of \$250,000 in LWCF assistance are awarded yearly to county governments, incorporated municipalities, public authorities and federally recognized Indian tribes. The local match may be provided with in-kind services or cash. The program's funding comes primarily from offshore oil and gas drilling receipts, with an authorized expenditure of \$900 million each year. However, Congress generally appropriates only a small fraction of this amount. The allotted money for the year 2007 is \$632,846.

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the US Department of the Interior for outdoor recreation development and land acquisition by local governments



and state agencies. In North Carolina, the program is administered by the Department of Environment and Natural Resources. Since 1965, the LWCF program has built a permanent park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than \$63 million in matching grants to protect land and support more than 800 state and local park projects. More than 37,000 acres have been acquired with LWCF assistance to establish a park legacy in our state. For more information, visit: <http://ils.unc.edu/parkproject/lwcf/home1.html>

North Carolina Farmland Preservation Trust Fund

Established in 1986, the Farmland Preservation Trust Fund was funded by appropriations from the General Assembly. Managed by the N.C. Department of Agriculture and Consumer Services and contracted to the Conservation Trust for N.C (CTNC). The General Assembly has appropriated \$2.65 M since 1998. The 2002 General Assembly appropriated \$200K; 2003 General Assembly, \$0. NCDACS has awarded grants to help local land trusts and counties with farmland protection programs work with farm families to arrange permanent conservation easements on over 4270 acres and large parts of 30 farms. These grants have leveraged over \$20 M from other private and public funding sources and donations of development rights from farm owners. Contact CTNC at 919-828-4199. E-mail: info@ctnc.org or Web site: <http://www.ctnc.org>

Any county that has established by ordinance a farmland preservation program or a qualified, private, non-profit land conservation organization, is eligible to apply for a grant. Grants may be submitted for reimbursement of up to 70% of real costs for transactional expenses in acquiring agricultural conservation easements through donation or purchase, including—but not limited to—documented costs for environmental audits, legal fees, appraisals, surveys, purchase options, personnel expenses for project preparation, and long-term easement monitoring and enforcement costs. Grant requests cannot exceed a maximum of \$25,000 per project.

Contact: Conservation Trust for North Carolina, 1028 Washington St, Raleigh, NC 27605. 919-828-4199. Web site: www.ctnc.org. E-mail: info@ctnc.org.

Agriculture Cost Share Program

Established in 1984, this program assists farmers with the cost of installing best management practices (BMPs) that benefit water quality. The program covers as much as 75 percent of the costs to implement BMPs. The NC Division of Soil and Water Conservation within the NC Department of Environment and Natural Resources administers this program through local Soil and Water Conservation Districts (SWCD). For more information, visit www.enr.state.nc.us/DSWC/pages/agcostshareprogram.html or call 919-733-2302.

North Carolina Natural Heritage Trust Fund

This trust fund, managed by the NC Natural Heritage Program, has contributed millions of dollars to support the conservation of North Carolina's most significant natural areas and cultural heritage sites. The NHTF is used to acquire and protect land that has significant habitat value. Some large wetland areas may also qualify, depending on their biological integrity and characteristics. Only certain state agencies are eligible to apply for this fund, including the Department of Environment and Natural Resources, the Wildlife Resources Commission, the Department of Cultural Resources and the Department of Agriculture and Consumer Services. As such, municipalities must work with State level partners to access this fund. Additional information is available from the NC Natural Heritage Program. For more information and grant application information, visit www.ncnhtf.org/.

North Carolina Adopt-a-Trail Grants

Operated by the Trails Section of the NC Division of State Parks, annual grants are available to local governments for trail and facility construction. Grants are generally capped at about \$5,000 per project and do not require a match. The Adopt-A-Trail grant program awards \$135,000 annually to local governments, nonprofit organizations and private trail groups for trails projects. The funds can be used for trail building, trail signage and facilities, trail maintenance, trail brochures and maps, and other related uses. Applications for funding may be obtained by contacting a regional trails specialist or the State Trails Program at (919) 715-8699. Applications are due for the each year's funding cycle at the end of February.



Contact: Darrell McBane, State Trails Coordinator, 12700 Bayleaf Church Road, Raleigh, NC 27614 (919) 846-9991. Web site: <http://ils.unc.edu/parkproject/trails/grant.html>. E-mail: darrell.mcbane@ncmail.net.

North Carolina Division of Water Quality - 319 Program Grants

By amendment to the Clean Water Act Section in 1987, the Section 319 Grant program was established to provide funding for efforts to curb non-point source (NPS) pollution, including that which occurs through stormwater runoff. The U.S. Environmental Protection Agency provides funds to state and tribal agencies, which are then allocated via a competitive grant process to organizations to address current or potential NPS concerns. Funds may be used to demonstrate best management practices (BMPs), establish Total Maximum Daily Load (TMDL) for a watershed, or to restore impaired streams or other water resources. In North Carolina, the 319 Grant Program is administered by the Division of Water Quality of the Department of Environment and Natural Resources. Each fiscal year North Carolina is awarded nearly \$5 million dollars to address non-point source pollution through its 319 Grant program. Thirty percent of the funding supports ongoing state non-point source programs. The remaining seventy percent is made available through a competitive grants process. At the beginning of each year (normally by mid-February), the NC 319 Program issues a request for proposals with an open response period of three months. Approximately \$880,000 will be available statewide for distribution to grant recipients.

Grants are divided into two categories: Base and Incremental. Base Projects concern research-oriented, demonstrative, or educational purposes for identifying and preventing potential NPS areas in the state, where waters may be at risk of becoming impaired. Incremental projects seek to restore streams or other portions of watersheds that are already impaired and not presently satisfying their intended uses. State and local governments, interstate and intrastate agencies, public and private nonprofit organizations, and educational institutions are eligible to apply for Section 319 monies. An interagency workgroup reviews the proposals and selects those of merit to be funded.

Contact: North Carolina DWQ, 512 N. Salisbury St. Raleigh, NC 27604. (919) 733-7015 Web site: www.h2o.enr.state.nc.us/nps/Section_319_Grant_Program.htm. E-mail: kimberly.nimmer@ncmail.net.

Small Cities Community Development Block Grants

State level funds are allocated through the NC Department of Commerce, Division of Community Assistance to be used to promote economic development and to serve low-income and moderate-income neighborhoods. Greenways that are part of a community's economic development plans may qualify for assistance under this program. Recreational areas that serve to improve the quality of life in lower income areas may also qualify. Approximately \$50 million is available statewide to fund a variety of projects. For more information, visit www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/ or call 919-733-2853.

North Carolina Ecosystem Enhancement Program

Developed in 2003 as a new mechanism to facilitate improved mitigation projects for NC highways, this program offers funding for restoration projects and for protection projects that serve to enhance water quality and wildlife habitat in NC. Information on the program is available by contacting the Natural Heritage Program in the NC Department of Environment and Natural Resources (NCDENR). For more information, visit www.nceep.net/pages/partners.html or call 919-715-0476.

North Carolina Wetlands Restoration Program (NCWRP)

This is a non-regulatory program established by the NC General Assembly in 1996. The goals of the NCWRP are to:

- Protect and improve water quality by restoring wetland, stream and riparian area functions and values lost through historic, current and future impacts.
- Achieve a net increase in wetland acreage, functions and values in all of North Carolina's major river basins.



- Promote a comprehensive approach for the protection of natural resources.
- Provide a consistent approach to address compensatory mitigation requirements associated with wetland, stream, and buffer regulations, and to increase the ecological effectiveness of compensatory mitigation projects.

Additional information about the program and potential funding assistance with the restoration or creation of wetlands can be found at www.h2o.enr.state.nc.us/wrp

Contact: Tad Boggs, Ecosystem Enhancement Program Coordinator, NC Wetlands Restoration Program, 1619 Mail Service Center, Raleigh, NC 27699-1619. (919) 715-2227. E-mail: tad.boggs@ncmail.net.

Conservation Reserve Enhancement Program (CREP)

This program is a joint effort of the North Carolina Division of Soil and Water Conservation, the NC Clean Water Management Trust Fund, the Ecosystem Enhancement Program (EEP), and the Farm Service Agency - United States Department of Agriculture (USDA) to address water quality problems of the Neuse, Tar-Pamlico and Chowan river basins as well as the Jordan Lake watershed area.

CREP is a voluntary program that seeks to protect land along watercourses that is currently in agricultural production. The objectives of the program include: installing 100,000 acres of forested riparian buffers, grassed filter strips and wetlands; reducing the impacts of sediment and nutrients within the targeted area; and providing substantial ecological benefits for many wildlife species that are declining in part as a result of habitat loss. Program funding will combine the Federal Conservation Reserve Program (CRP) funding with State funding from the Clean Water Management Trust Fund, Agriculture Cost Share Program, and North Carolina Wetlands Restoration Program.

The program is managed by the NC Division of Soil and Water Conservation. For more information, visit www.enr.state.nc.us/dswc/pages/crep.html

Urban and Community Forestry Assistance Program

The program operates as a cooperative partnership between the NC Division of Forest Resources and the USDA Forest Service, Southern Region. It offers small grants that can be used to plant urban trees, establish a community arboretum, or other programs that promote tree canopy in urban areas. To qualify for this program, a community must pledge to develop a street-tree inventory, a municipal tree ordinance, a tree commission, and an urban forestry-management plan. All of these can be funded through the program.

Greenways are a specific category within the program "Naturalization Projects or Greenway Development." These types of projects can be combined with tree planting, where native species are used and environmental benefits to the community are emphasized. Planning and development, assessments and studies, maps and drawings, promotional and educational materials may be eligible for funding when matched with a solid volunteer and in-kind staffing match. Forest buffers, connecting corridors between fragmented wooded areas, riparian buffers/protection, or reduction of mowing maintenance in municipal parks through edge naturalization, are some naturalization projects that will be considered for grants. Approximately \$200,000 is available each year for grant recipients.

For more information and a grant application, contact the NC Division of Forest Resources and/or visit http://www.dfr.state.nc.us/urban/urban_grantprogram.htm.

Water Resources Development Grant Program

The NC Division of Water Resources offers cost-sharing grants to local governments on projects related to water resources. Of the seven project application categories available, the category which relates to the establishment of greenways is "Land Acquisition and Facility Development for Water-Based Recreation Projects." Applicants may apply for funding for a greenway as long as the greenway is in close proximity to a water body. For more information, see: www.ncwater.org/Financial_Assistance or call 919-733-4064.



North Carolina Health and Wellness Trust Fund (HWTF)

The NC Health and Wellness Trust Fund was created by the General Assembly as one of 3 entities to invest North Carolina's portion of the Tobacco Master Settlement Agreement. HWTF receives one-fourth of the state's tobacco settlement funds, which are paid in annual installments over a 25-year period.

Fit Together, a partnership of the NC Health and Wellness Trust Fund (HWTF) and Blue Cross and Blue Shield of North Carolina (BCBSNC) announces the establishment of Fit Community, a designation and grant program that recognizes and rewards North Carolina communities' efforts to support physical activity and healthy eating initiatives, as well as tobacco-free school environments. Fit Community is one component of the jointly sponsored Fit Together initiative, a statewide prevention campaign designed to raise awareness about obesity and to equip individuals, families and communities with the tools they need to address this important issue.

All North Carolina municipalities and counties are eligible to apply for a Fit Community designation, which will be awarded to those that have excelled in supporting the following:

- physical activity in the community, schools, and workplaces
- healthy eating in the community, schools, and workplaces
- tobacco use prevention efforts in schools

Designations will be valid for two years, and designated communities may have the opportunity to reapply for subsequent two-year extensions. The benefits of being a Fit Community include:

- heightened statewide attention that can help bolster local community development and/or
- economic investment initiatives (highway signage and a plaque for the Mayor's or County Commission Chair's office will be provided)

- reinvigoration of a community's sense of civic pride (each Fit Community will serve as a model for other communities that are trying to achieve similar goals)
- use of the Fit Community designation logo for promotional and communication purposes.

The application for Fit Community designation is available on the Fit Together Web site: www.FitTogetherNC.org/FitCommunity.aspx.

Fit Community grants are designed to support innovative strategies that help a community meet its goal to becoming a Fit Community. Eight to nine, two-year grants of up to \$30,000 annually will be awarded to applicants that have a demonstrated need, proven capacity, and opportunity for positive change in addressing physical activity and/or healthy eating.

The North Carolina Conservation Tax Credit (managed by NCDENR)

This program, managed by the North Carolina Department of Environment and Natural Resources, provides an incentive (in the form of an income tax credit) for landowners that donate interests in real property for conservation purposes. Property donations can be fee simple or in the form of conservation easements or bargain sale. The goal of this program is to manage stormwater, protect water supply watersheds, retain working farms and forests, and set-aside greenways for ecological communities, public trails, and wildlife corridors. For more information, visit: www.enr.state.nc.us/conservationtaxcredit/.



C.4 FEDERAL FUNDING SOURCES

Most federal programs provide block grants directly to states through funding formulas. For example, if a North Carolina community wants funding to support a transportation initiative, they would contact the North Carolina Department of Transportation and not the US Department of Transportation to obtain a grant. Despite the fact that it is rare for a local community to obtain a funding grant directly from a federal agency, it is relevant to list some additional federal programs below.

Community Block Development Grant Program (HUD-CBDG)

The U.S. Department of Housing and Urban Development (HUD) offers financial grants to communities for neighborhood revitalization, economic development, and improvements to community facilities and services, especially in low and moderate-income areas. Several communities have used HUD funds to develop greenways, including the Boulding Branch Greenway in High Point, North Carolina. Grants from this program range from \$50,000 to \$200,000 and are either made to municipalities or non-profits. There is no formal application process. For more information, visit: www.hud.gov/offices/cpd/communitydevelopment/programs/.

Wetlands Reserve Program

This federal funding source is a voluntary program offering technical and financial assistance to landowners who want to restore and protect wetland areas for water quality and wildlife habitat. The US Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) administers the program and provides direct payments to private landowners who agree to place sensitive wetlands under permanent easements. This program can be used to fund the protection of open space and greenways within riparian corridors. For more information on all SAFETEA-LU programs, visit <http://www.fhwa.dot.gov/safetealu/>.

The National Endowment of the Arts

Many organizations seek ways to incorporate more of their community into their pedestrian, and greenway planning. One way to do this is to celebrate the cultural and historic uniqueness of communities. There are some funding opportunities for these types of proj-

ects. The National Endowment of the Arts funds arts-related programs through the Design Arts Program Assistance, and provides many links to other federal departments and agencies that offer funding opportunities for arts and cultural programs.

USDA Rural Business Enterprise Grants

Public and private nonprofit groups in communities with populations under 50,000 are eligible to apply for grant assistance to help their local small business environment. \$1 million is available for North Carolina on an annual basis and may be used for sidewalk and other community facilities. For more information from the local USDA Service Center, visit: <http://www.rurdev.usda.gov/rbs/buspr/beg.htm>

Rivers Trails and Conservation Assistance Program (RTCA)

The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is the community assistance arm of the National Park Service. RTCA staff provide technical assistance to community groups and local, State, and federal government agencies so they can conserve rivers, preserve open space, and develop trails and greenways. The RTCA program implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America

Although the program does not provide funding for projects, it does provide valuable on-the-ground technical assistance, from strategic consultation and partnership development to serving as liaison with other government agencies. Communities must apply for assistance. For more information, visit: www.nps.gov/nrcr/programs/rtca/ or call Chris Abbett, Program Leader, at 404-562-3175 ext. 522.

Public Lands Highways Discretionary Fund

The Federal Highway Administration administers discretionary funding for projects that will reduce congestion and improve air quality. The FHWA issues a call for projects to disseminate this funding. The FHWA estimates that the PLHD funding for the 2007 call will be \$85 million. In the past, Congress has earmarked a portion of the total available funding for projects. For information on how to apply, visit: <http://www.fhwa.dot.gov/discretionary/>



C.5 LOCAL FUNDING SOURCES

The City of Roxboro will need to create independent, local funding sources to be used to match federal and state grants for pedestrian facility and greenway development. Local support and funding is the most integral component of successful pedestrian facility implementation. This section provides a list of funding options that each of the local governments should consider for future greenway development, sidewalk development, and open space protection.

Municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs (CIP). In Raleigh, for example, the greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Recreation and Parks Department. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each of these categories are described below.

Capital Reserve Fund

Municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants and donations for the specified use.

Capital Project Ordinances

Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

Municipal Service District

Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the citywide property tax,

and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts.

Bonds/Loans

Bonds have been a very popular way for communities across the country to finance their open space and greenway projects. A number of bond options are listed below. If local government decides to pursue a bond issue, consideration should be given to combining the needs of Roxboro into a single bond proposal. Contracting with a private consultant to assist with this program may be advisable. Since bonds rely on the support of the voting population, an education and awareness program should be implemented prior to any vote.

Revenue Bonds

Revenue bonds are bonds that are secured by a pledge of the revenues from a certain local government activity. The entity issuing bonds, pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payment). Revenue bonds are not constrained by the debt ceilings of general obligation bonds, but they are generally more expensive than general obligation bonds.

General Obligation Bonds

Local governments generally are able to issue general obligation (G.O.) bonds that are secured by the full faith and credit of the entity. In this case, the local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. Frequently, when local governments issue G.O. bonds for public enterprise improvements, the public enterprise will make the debt service payments on the G.O. bonds with revenues generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use oth-



er sources of revenue to make the payments. G.O. bonds distribute the costs of open space acquisition and make funds available for immediate purchases. Voter approval is required.

Special Assessment Bonds

Special assessment bonds are secured by a lien on the property that benefits by the improvements funded with the special assessment bond proceeds. Debt service payments on these bonds are funded through annual assessments to the property owners in the assessment area.

State Revolving Fund (SRF) Loans

Initially funded with federal and state money, and continued by funds generated by repayment of earlier loans, State Revolving Funds (SRFs) provide low-interest loans for local governments to fund water pollution control and water supply related projects including many watershed management activities. These loans typically require a revenue pledge, like a revenue bond, but carry a below market interest rate and limited term for debt repayment (20 years).

Taxes

Many communities have raised money through self-imposed increases in taxes and bonds. For example, Pinellas County residents in Florida voted to adopt a one-cent sales tax increase, which provided an additional \$5 million for the development of the overwhelmingly popular Pinellas Trail. Sales taxes have also been used in Allegheny County, Pennsylvania, and in Boulder, Colorado to fund open space projects. A gas tax is another method used by some municipalities to fund public improvements. A number of taxes provide direct or indirect funding for the operations of local governments. Some of them are:

Sales Tax

In North Carolina, the state has authorized a sales tax at the state and county levels. Local governments that choose to exercise the local option sales tax (all counties currently do), use the tax revenues to provide funding for a wide variety of projects and activities. Any increase in the sales tax, even if applying to a single county, must gain approval of the state legislature. In 1998, Mecklenburg County

was granted authority to institute a one-half cent sales tax increase for mass transit.

Property Tax

Property taxes generally support a significant portion of local government activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance open space system acquisitions. Because of limits imposed on tax rates, use of property taxes to fund open space could limit the county's or a municipality's ability to raise funds for other activities. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. In other parts of the country, this mechanism has been popular with voters as long as the increase is restricted to parks and open space. Note, other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

Excise Taxes

Excise taxes are taxes on specific goods and services. These taxes require special legislation and the use of the funds generated through the tax are limited to specific uses. Examples include lodging, food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation related activities.

Occupancy Tax

The NC General Assembly may grant towns the authority to levy occupancy tax on hotel and motel rooms. The act granting the taxing authority limits the use of the proceeds, usually for tourism-promotion purposes.

Fees and Service Charges

Several fee options that have been used by other local governments are listed here:

Impact Fees

Impact fees, which are also known as capital contributions, facilities fees, or system development charges, are typically collected from developers or property owners at the time of building permit issuance to pay for capital improvements that provide capacity to serve new growth. The intent of



these fees is to avoid burdening existing customers with the costs of providing capacity to serve new growth (“growth pays its own way”). Park and greenway impact fees are designed to reflect the costs incurred to provide sufficient capacity in the system to meet the additional open space needs of a growing community. These charges are set in a fee schedule applied uniformly to all new development. Communities that institute impact fees must develop a sound financial model that enables policy makers to justify fee levels for different user groups, and to ensure that revenues generated meet (but do not exceed) the needs of development. Factors used to determine an appropriate impact fee amount can include: lot size, number of occupants, and types of subdivision improvements.

Pursuing park and greenway impact fees will require enabling legislation to authorize the collection of the fees.

In-Lieu-Of Fees

As an alternative to requiring developers to dedicate on-site open space that would serve their development, some communities provide a choice of paying a front-end charge for off-site open space protection. Payment is generally a condition of development approval and recovers the cost of the off-site greenway or open space land acquisition or the development’s proportionate share of the cost of a regional parcel serving a larger area. Some communities prefer in-lieu-of fees. This alternative allows community staff to purchase land worthy of protection rather than accept marginal land that meets the quantitative requirements of a developer dedication but falls a bit short of qualitative interests.

Exactions

Exactions are similar to impact fees in that they both provide facilities to growing communities. The difference is that through exactions it can be established that it is the responsibility of the developer to build the greenway or pedestrian facility that crosses through the property, or adjacent to the property being developed.

Streetscape Utility Fees

Streetscape Utility Fees could help support streetscape maintenance of the area between the curb and the property line through a flat monthly fee per residential dwelling unit. Discounts would be available for senior and disabled citizens. Non-residential customers would be charged a per foot fee based on the length of frontage on streetscape improvements. This amount could be capped for non-residential customers with extremely large amounts of street frontage. The revenues raised from Streetscape Utility fees would be limited by ordinance to maintenance (or construction and maintenance) activities in support of the streetscape.

Stormwater Utility Fees

Greenway sections may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants.

Stormwater charges are typically based on an estimate of the amount of impervious surface on a user’s property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharge into public storm drainage facilities and creates a need for stormwater management services. Thus, users with more impervious surface are charged more for stormwater service than users with less impervious surface. The rates, fees, and charges collected for stormwater management services may not exceed the costs incurred to provide these services. The costs that may be recovered through the stormwater rates, fees, and charges includes any costs necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and state laws, regulations, and rules.

Installment Purchase Financing

As an alternative to debt financing of capital improvements, communities can execute installment/ lease purchase contracts for improvements. This type of financing is typically used for relatively small projects that the seller or a financial institution is willing to finance or when up-front funds are unavailable. In



a lease purchase contract the community leases the property or improvement from the seller or financial institution. The lease is paid in installments that include principal, interest, and associated costs. Upon completion of the lease period, the community owns the property or improvement. While lease purchase contracts are similar to a bond, this arrangement allows the community to acquire the property or improvement without issuing debt. These instruments, however, are more costly than issuing debt.

Tax Increment Financing

Tax increment financing is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project, such as the construction of a greenway, is carried out, there is an increase in the value of surrounding real estate. Oftentimes, new investment in the area follows such a project. This increase in value and investment creates more taxable property, which increases tax revenues. These increased revenues can be referred to as the “tax increment.” Tax Increment Financing dedicates that increased revenue to finance debt issued to pay for the project. TIF is designed to channel funding toward improvements in distressed or underdeveloped areas where development would not otherwise occur. TIF creates funding for public projects that may otherwise be unaffordable to localities. The large majority of states have enabling legislation for tax increment financing.

Partnerships

Another, often overlooked, method of funding pedestrian systems and greenways is to partner with public agencies and private companies and organizations. Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their participation.

Major employers and developers should be identified and provided with a “Benefits of Walking”-type hand-out for themselves and their employees. Very specific routes which make those critical connections to place of business would be targeted for private partners’ monetary support, but only after a successful master planning effort. People rarely fund issues before they understand them and their immediate and direct

impact. Potential partners include major employers which are located along or accessible to pedestrian facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trail heads or interpretive signage along greenway systems.

Utilities often make good partners and many trails now share corridors with them. Money raised from providing an easement to utilities can help defray the costs of maintenance. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement.

Other Local Options

Local Capital Improvements Program

As discussed in Chapter 5 and the beginning of this appendix, a strong local Capital Improvements Program (CIP) commitment, dedicated to sidewalk and greenway development, is critical for long-term implementation. A prioritized table of sidewalk/greenway projects can be found in Chapter 5 to be added to the City’s CIP. Currently, \$15,000 is allocated for greenway development each year in Black Mountain, NC. In Raleigh, the greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Parks and Recreation Department. In Graham, NC, \$100,000 is allocated towards sidewalk development each year.

Facility Maintenance Districts

Facility Maintenance Districts (FMDs) can be created to pay for the costs of on-going maintenance of public facilities and landscaping within the areas of the City where improvements have been concentrated and where their benefits most directly benefit business and institutional property owners. An FMD is needed in order to assure a sustainable maintenance program. Fees may be based upon the length of lot frontage along streets where improvements have been installed, or upon other factors such as the size of the parcel. The program supported by the FMD should include regular maintenance of streetscape of off road trail improvements. The municipality can initiate public outreach efforts to merchants, the Chamber of



Commerce, and property owners. In these meetings, City staff will discuss the proposed apportionment and allocation methodology and will explore implementation strategies.

The municipality can manage maintenance responsibilities either through its own staff or through private contractors.

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 or a new park or canoe access point. 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.

Private Foundations and Corporations

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

Foundation for the Carolinas

Established in 1958, the Foundation for the Carolinas is the one of the largest community foundations in the South. Building A Better Future, the foundation's major grantmaking program, awards grants only to organizations located in or serving the greater Charlotte area. The foundation's specialized grants programs include the African American Community Endow-

ment Fund (Charlotte-Mecklenburg and surrounding communities), HIV/AIDS Consortium Grants (13 Charlotte-area counties), and the Medical Research Grants program (North and South Carolina). The foundation's Web site features information for potential donors; program information, guidelines, and deadlines; listings of senior management and board members; an electronic form for requesting copies of the foundation's publications; and contact information. Web site: <http://www.fftc.org/>

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. Web site: <http://nccommunity-foundation.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 support Roxboro in other areas of open space and greenways development. More information is available at 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.

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.

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.

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 grantmaker 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. E-mail: 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 conserva-



tion 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 & 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/>.



D. ACQUISITION STRATEGIES

D.1 OVERVIEW

There are many different ways for the City of Roxboro to secure trail right-of-way for its greenway system. 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 in securing right-of-way. Funding sources for acquiring right-of-way and trail development are described and provided in Appendix D of this Plan.

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

D.2 PARTNERSHIPS

The City of Roxboro 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, such as the Tar River Lands Conservancy, 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 and railroad companies that manage land throughout the northern Piedmont 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 Roxboro 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.

D.3 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 Roxboro, Person 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.

Exactions: An exaction is a condition of development approval that requires development to provide or contribute to the financing of public facilities at their own expense. For example, a developer may be required to build a greenway on-site as a condition of developing a certain number of units because the develop-



ment will create the need for new parks or will harm existing parks due to overuse. This mechanism can be used to protect or preserve greenway lands, which are then donated to the City of Roxboro. Consideration should be given to include greenway development in future exaction programs. Most commonly, exactions are in the form of mandatory dedications of lands for parks and infrastructure, fees in lieu of mandatory dedication, or impact fees.

Mandatory Dedication: This is a type of exaction where subdivision regulations require a developer to dedicate or donate improved land to the public interest. A dedication may involve the fee simple title to the land, an easement, or some other property interest. Sometimes, the construction of an improvement itself is required such as a park or greenway.

Fee-in-Lieu: An exaction can take the form of a fee-in-lieu of mandatory dedication. It can also complement negotiated dedications (described below). Based on the density of development, this program allows a developer the alternative of paying money for the development/protection of open space and greenways in lieu of dedicating greenway and park lands. Payments are made representing the value of the site or improvement that would have been dedicated or provided. This allows local governments to pool fees from various subdivisions to finance facilities like parks and greenways. This money can be used to implement greenway management programs or acquire additional open space.

Impact Fee: A final type of exaction, an impact fee can fund a broader range of facilities that serve the public interest. They are commonly imposed on a per unit rather than a build out basis, making them more flexible and keeping developers from having to pay large up front costs. These do not have to be directly tied to any requirements for improvements or dedications of land. They can be more easily applied to off-site improvements.

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 Tigard*.

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 Town 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.





E. GLOSSARY

E.1 OVERVIEW

The material in this glossary is largely taken from the International Pedestrian Lexicon available online at: <http://user.itl.net/~wordcraf/lexicon.html#a>. Other definitions came from a variety of other sources.

E.2 DEFINITIONS

AASHTO – American Association of State Highway and Transportation Officials: a nonprofit, nonpartisan association representing highway and transportation departments of all transportation modes in the 50 states, the District of Columbia and Puerto Rico.

ADA – American Disabilities Act of 1991: The Act gives civil rights protections to individuals with disabilities including equal opportunities in public accommodations, employment, transportation, state and local government services, and telecommunications.

Advance Stop lines - applies to a stop line placed prior to a crosswalk, to either prevent motor vehicle encroachment, or to improve visibility. It plays an important safety role especially in multi-lane roads.

Alternative Transportation Network – a connected system for travel using transportation other than private cars, such as walking, bicycling, rollerblading, carpooling and transit

Arterial Connections – interconnected corridors designed to accommodate a large volume of through traffic

Bargain Sale – the sale of a property at less than the fair market value. The difference between a bargain sale price and fair market value often qualifies as a tax-deductible charitable contribution. Commonly used to acquire land or easements for greenways or multi-use paths.

Bicycle Facilities – a general term denoting improvements and provisions made by public agencies to

accommodate or encourage bicycling. Examples include, but are not limited to bicycle parking/storage facilities, shared roadways not specifically designated for bicycle use, bicycle lanes, paved shoulders, and sidepaths.

Blank Walls – relatively large walls of empty surface that provide opportunity for vandalism with graffiti. Set backs, special lighting, and aesthetic architectural interruptions are possible blank wall treatments.

Blighted Building – a structure whose condition within the town, neighborhood or city is detrimental to the physical, social, and/or economic well-being of that community

Bridge Culvert – a sewer or drain crossing used for the transference of surface water from a bridge

Buffer Zone - an area of land specifically designed to separate one zoning use from another

Bulb-out - extended pavement to narrow roadway, or pinch through fare, or provide space for bus stop, bench, etc. Commonly used as a traffic calming measure.

Collector Streets – a public road designed to flow traffic from small neighborhood streets and connect to larger thoroughfares

Concurrent Signal Timing - motorists running parallel to a crosswalk are allowed to turn into and through the crosswalk (left or right) after yielding to pedestrians

Condemnation - the taking of private property for public use, with adequate compensation to the owner, under the right of eminent domain

Connectivity - the logical and physical interconnection of functionally related points so that people can move among them



Conservation Easement - a legally binding agreement not to develop part of a property, but to leave it “natural” permanently or for some designated very long period of time regardless of ownership transfer

Corridor - a spatial link between two or more destinations

Crosswalk - a designated point on a road at which some means are employed to assist pedestrians who wish to cross a roadway or intersection. They are designed to keep pedestrians together where they can be seen by motorists, and where they can cross most safely with the flow of vehicular traffic.

Curb Cut – interruption in the curb, as for a driveway

Curb Extension - a section of sidewalk at an intersection or mid-block crossing that reduces the crossing width for bicyclists and pedestrians and is intended to slow the speed of traffic and increase driver awareness

Curb Ramp - a ramp leading smoothly down from a sidewalk, greenway or multiuse path to an intersecting street, rather than abruptly ending with a curb

Driveway Apron – the section of a driveway between a sidewalk or greenway and the curb

Eminent Domain – the acquisition of property by the government which is deemed to be necessary for the completion of a public project from an owner that is unwilling to negotiate a price for its sale.

EPA – Environmental Protection Agency

Fee Simple Purchase – an outright purchase of the land by municipality

FHWA – Federal Highway Administration

First Right of Refusal - the right specified in an agreement to have the first opportunity to purchase or lease a given property before it is offered to others

Fitness Trail - a pathway upon which users jog or walk from station to station to perform various exercise tasks

GIS – (Geographic Information System) a system for collecting, analyzing and displaying spatial information

Greenway - a linear open space; a corridor composed of natural vegetation.

Greenways can be used to create connected networks of open space that include traditional parks and natural areas.

High Volume Artery – an important transportation corridor that is used by large traffic levels

Hydrologic Resources – stream and sewer corridors and buffer zones that can be used to facilitate the building of greenways

Incentive Zoning - a system by which zoning incentives are provided to developers on the condition that specific physical, social, or cultural benefits are provided to the community

Intersection - an area where two or more pathways or roadways join together.

Islands of Vegetation - a landscaping feature that is planted with flora chosen for its ability to remove pollution and toxins. These spaces manage stormwater runoff from impervious surfaces; the water is slowed down, preventing erosion and allowing water to be absorbed into the ground.

Leaseback - the process of selling a property and also entering into a lease to continue using that property

Linear Stream Corridor - generally consists of the stream channel, floodplain, and transitional upland fringe aligned linearly

LPI – Leading pedestrian interval. Pedestrians are given the signal to begin crossing before parallel traffic.

L RTP – Long Range Transportation Plan

Median - a barrier, constructed of concrete, asphalt, or landscaping and separates two directions of traffic.

Median Refuge Island - island in the median, that offers a stopping or halfway point for a pedestrian



Mixed Use Area – a term used to describe a specific area that possesses a combination of different land use types, such as residential, commercial, and recreation

Mode Share - a term used to describe percentage splits in transportation options

MPO – Metropolitan Planning Organization

MUTCD – Manual of Uniform Traffic Control Devices: National standards guidebook on signage and pavement marking for roadways

Municipal Boundary – the limit of municipal jurisdiction

Nature Trail - a marked trail designed to lead people through a natural environment, which highlights and protects resources

NCDOT – North Carolina Department of Transportation

Negotiated Dedications - a local government may ask a landowner to enter into negotiations for certain parcels of land that are deemed beneficial to the protection and preservation of specific parcel of land

On-Road Pedestrian Facility – any sidewalk, curb, median refuge or crosswalk designed for pedestrian use.

Off-Road Trail – paths or trails in areas not served by the street system, such as parks and greenbelt corridors. Off-street paths are intended to serve both recreational uses and other trips, and may accommodate other non-motorized travel modes, such as bicycles in addition to walking.

Open Space - empty or vacant land which is set aside for public or private use and will not be developed. The space may be used for passive or active recreation, or may be reserved to protect or buffer natural areas.

Overlay Zone - a zone or district created by the local legislature for the purpose of conserving natural resources or promoting certain types of development. Overlay zones are imposed over existing zoning districts and contain provisions that are applicable in addition to those contained in the zoning law.

Pedestrian - a person on foot or a person on roller skates, roller blades, child's tricycle, non-motorized wheelchair, skateboard, or other non-powered vehicles (excluding bicycles)

Pedestrian Corridor – long distance corridor comprised of on-road sidewalks, crosswalks and related pedestrian facilities.

Planned Unit Development (PUD) - a project or subdivision that includes common property that is owned and maintained by a homeowners' association for the benefit and use of the individual PUD unit owners

Pocket Park - a small area accessible to the general public that is often of primarily environmental, rather than recreational, importance; they can be urban, suburban or rural and often feature as part of urban regeneration plans in inner-city areas to provide areas where wild life can establish a foothold.

Preservation Easement – a voluntary legal agreement that protects historic, archaeological, or cultural resources on a property. The easement provides assurance to the property owner that intrinsic values will be preserved through subsequent ownership. In addition, the owner may obtain substantial tax benefits.

Public Access Easement – a voluntary legal agreement which grants a municipality a perpetual right-of-way and easement for public access and public benefit

Quality of Life - a measure of the standard of living which considers non-financial factors such as health, functional status and social opportunities that are influenced by disease, injury, treatment or social and political policy

Retrofit - the redesign and reconstruction of an existing facility or subsystem to incorporate new technology, to meet new requirements, or to otherwise provide performance not foreseen in the original design.

Right Turn Cut-Off - the channel created in larger intersection by a very long turning radius and the construction of a pedestrian island, to which the pedestrian must cross before being in the formal intersection that is controlled by lights. The right-turn cut-off allows continuous right turns at fairly high speeds



without stopping but the drivers who are meant to but at times do not yield to pedestrians.

Roundabout - traffic calming device at which traffic streams circularly around a central island after first yielding to the circulating traffic

ROW (right of way) - an easement held by the local jurisdiction over land owned by the adjacent property owners that allows the jurisdiction to exercise control over the surface and above and below the ground of the right-of-way; usually designated for passage

RTOR – Right turn on red

Safe Routes to School (SRTS) – a federal program that provides funding to encourage and facilitate the planning and implementation of bicycle and pedestrian projects near schools.

SAFETEA-LU - Safe, Accountable, Flexible, Efficient Transportation Equity Act:
A Legacy for Users

Shoulder - The portion of the roadway contiguous with the traveled way for the accommodation of stopped vehicles, for emergency use, and for lateral support of sub-base, base, and surface courses. Paved shoulders can be used for pedestrian and bicycle travel as well.

Shared Use Path (Multi Use Path/Sidepath) - A bike-way physically separated from motorized vehicular traffic by an open space or barrier and located either within the highway right-of-way (often termed “parallel shared use path”) or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. In some cases shared use paths also accommodate equestrians.

Sidewalk - an improved facility intended to provide for pedestrian movement; usually, but not always, located in the public right-of-way adjacent to a roadway. Typically constructed of concrete, but can be made with asphalt, bricks, stone, wood, and other materials.

Speed Table - Speed tables are flat-topped speed humps often constructed with brick or other textured materials on the flat section. Speed tables are typically long enough for the entire wheelbase of a passenger car to rest on the flat section. Their long flat fields give speed tables higher design speeds than Speed Humps. The brick or other textured materials improve the appearance of speed tables, draw attention to them, and may enhance safety and speed-reduction. Speed tables are good for locations where low speeds are desired but a somewhat smooth ride is needed for larger vehicles.

Thoroughfare - a public road from one place to another, designed for high traffic volumes and essential connections

TND (traditional neighborhood development) - an area of land developed in a planned fashion for a compatible mixture of residential units for various income levels and nonresidential commercial and workplace uses, with a high priority placed on access to open spaces

Traffic Calming - a range of measures that reduce the impact of vehicular traffic on residents, pedestrians and cyclists - most commonly on residential streets, but also now on commercial streets

Trip Attractor - a location which, because of what it contains, generates itself as a destination for people

Village Center - an area in a community where people naturally congregate.



F. STATE & FEDERAL POLICIES

F.1 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.

F.2 UNITED STATES DEPARTMENT OF TRANSPORTATION BICYCLE AND PEDESTRIAN POLICY

A United States Department of Transportation (USDOT) 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 Roxboro:

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 de-



mand 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)

F.3 FHWA MEMORANDUM ON MAINSTREAMING BICYCLE AND PEDESTRIAN PROJECTS

(See pages G-3 through G-5)

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



Environment

FHWA > HEP > Environment > Human > Bicycle & Pedestrian



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

Memorandum

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

Date: February
24, 1999

From: Kenneth R. Wykle
Federal Highway Administrator

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

To:
Division Administrators
Federal Lands Highway Division Engineers

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

The Transportation Equity Act for the 21st 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.

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



F.4 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 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.

F.5 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 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.

F.6 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.

F.7 NCDOT PEDESTRIAN POLICY GUIDELINES

(See pages G-9 through G-10)



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.



F.8 NCDOT ONLINE PEDESTRIAN PLANNING AND DESIGN RESOURCES LIST

Useful On-Line Pedestrian Planning and Design Resources

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



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

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.dfedd570f698cabbbf30811060008a0c/>

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