

# Comprehensive Pedestrian Plan for the Town of

# Waynesville, North Carolina

February 2010

*Presented to:*  
Town of Waynesville, NC

*Presented by:*  
**WilburSmith**  
ASSOCIATES



# Waynesville Comprehensive Pedestrian Plan February 2010

Prepared for:



Division of  
Bicycle &  
Pedestrian  
Transportation

Prepared by:

**Wilbur Smith Associates**

421 Fayetteville Street, Suite 1303

Raleigh, North Carolina 27601

919.755.0583

NC Licensure Number F-0378

---

Terry M. Snow, PE  
Project Manager



## Acknowledgements

The Comprehensive Pedestrian Plan for the Town of Waynesville has been prepared by Wilbur Smith Associates (WSA), in direct coordination with Town staff, North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation (NCDOT), and the citizens of Waynesville. This Plan is designed to be a visionary, yet practical approach towards making Waynesville a more walkable community which will enhance the quality of life for the citizens of Waynesville.

WSA would like to recognize and thank the following individuals and agencies for their active participation in the development of this Plan:

### Mayor and Board of Alderman

Gavin A. Brown, Mayor  
Gary Caldwell, Alderman/Mayor Pro Tem  
Elizabeth Feichter, Alderman  
J. Kenneth Moore, Alderman  
LeRoy S. Roberson, Alderman  
J. Wells Greely, Alderman

### Town Manager

Lee Galloway

### Town Project Manager

Paul Benson, Planning Director

### NCDOT Division of Bicycle & Pedestrian Transportation

Robert Mosher, ASLA, AICP, Planning Program Manager

### Steering Committee Members

Fred Baker, PE, Director of Public Works  
Alison Melnikova, Assistant to Town Manager  
Rhett Langston, Town of Waynesville Parks and Recreation  
Bill Hollingsed, Town of Waynesville Police Department  
Ginny Boyer, Town of Waynesville  
Claire Carleton, Haywood County Recreation and Parks  
Buffy Phillips Messer, Downtown Waynesville Association  
Buddy Young, Lake Junaluska Assembly  
Carol Lindstrom, Citizen  
Carolyn Ramsey, Citizen  
Janet Gray, Citizen  
Kathy Keogh, Haywood Regional Health and Fitness  
Sylvia Errett, Citizen  
Bill Kramer, Citizen

### Consultants – Wilbur Smith Associates

Terry M. Snow, PE, Project Manager	Anthony Isley
Deniece Swinton, PE	Deanna Berlin
Rajit Ramkumar, EI	Matt Pickens, EI





## Table of Contents

<b>Executive Summary .....</b>	<b>EX-1</b>
--------------------------------	-------------

### **Chapter 1 – Vision and Direction**

1.1 Introduction .....	1-1
1.2 Study Area .....	1-1
1.3 Public Involvement .....	1-2
1.4 Survey Results .....	1-7
1.5 Vision, Goals, and Objectives .....	1-8

### **Chapter 2 – Existing Conditions**

2.1 Introduction .....	2-1
2.2 Greenways .....	2-1
2.3 Sidewalks .....	2-3
2.4 User Demographics .....	2-8
2.5 Inventory of Existing Conditions .....	2-14
2.6 Pedestrian Crash Data .....	2-14
2.7 Town of Waynesville Existing Plans, Programs, and Policies .....	2-16
2.8 NCDOT Existing Plans, Programs, and Policies .....	2-19

### **Chapter 3 – Recommendations**

3.1 Programs .....	3-1
3.2 Policies .....	3-3
3.3 Facilities .....	3-4

### **Chapter 4 – Pedestrian Standards and Guidelines**

4.1 Sidewalks .....	4-1
4.2 Paths / Greenways .....	4-6
4.3 Raised or Lowered Medians .....	4-11
4.4 Marked Crosswalks .....	4-13
4.5 Advance Stop Bars .....	4-15
4.6 Pedestrian Signals .....	4-15
4.7 Right Turn On Red Restrictions .....	4-17
4.8 Curb Ramps .....	4-17
4.9 Curb Extensions (Bulb Outs) and Curb Radii .....	4-18
4.10 Lighting .....	4-19
4.11 Signage .....	4-20
4.12 School Zone Treatments and School Route Plan Map .....	4-23
4.13 Street Trees .....	4-24
4.14 Pedestrian Overpass/Underpass .....	4-25
4.15 Transit Stop Treatments .....	4-26
4.16 Bridges .....	4-26
4.17 Traffic Calming Techniques .....	4-26
4.18 Temporary Work .....	4-28



**Chapter 5 – Implementation**

5.1	Prioritization of Projects .....	5-1
5.2	Funding Sources .....	5-5

**Supplemental Appendix – Public Involvement Summary (separate document)**

**List of Figures**

**Chapter 1 – Vision and Direction**

Figure 1.1	Study Area .....	1-3
Figure 1.2	Existing Sidewalks and Trip Generators .....	1-4
Figure 1.3	Greenway Plan.....	1-5

**Chapter 2 – Existing Conditions**

Figure 2.1	Employment by Occupation .....	2-11
Figure 2.2	Waynesville Housing Values.....	2-13
Figure 2.3	Waynesville Ethnicity .....	2-13

**Chapter 3 – Recommendations**

Figure 3.1	Pedestrian Improvements .....	3-7
------------	-------------------------------	-----

**List of Tables**

**Chapter 1 – Vision and Direction**

Table 1.1	Pedestrian Plan Steering Committee .....	1-6
-----------	--	-----

**Chapter 2 – Existing Conditions**

Table 2.1	Age Distribution.....	2-10
Table 2.2	Employment by Occupation .....	2-11
Table 2.3	Waynesville Housing Values.....	2-12
Table 2.4	Pedestrian Crash Data by Age Waynesville 1997-2006 .....	2-15
Table 2.5	Pedestrian Crash Data by Gender Waynesville 1997-2006.....	2-15
Table 2.6	Pedestrian Crash Data by Ethnicity Waynesville 1997-2006 .....	2-16
Table 2.7	Level of Injury by Accident Waynesville 1997-2006.....	2-16

**Chapter 5 – Implementation**

Table 5.1	0-5 Years Project Prioritization.....	5-2
Table 5.2	5-10 Years Project Prioritization.....	5-3
Table 5.3	10+ Years Project Prioritization.....	5-4



## Executive Summary

Throughout the United States, more and more communities are implementing strategies to improve the walking environments and serve the needs of pedestrians. The benefits of walking are numerous and many fold. The obvious benefit is improved health and well being for the individual. Walking is a means of not only achieving physical fitness but also provides a means of releasing stress. Walking also provides alternative transportation options which could reduce traffic congestion. Overall, walking provides significant environmental and economic benefits while stimulating an increased sense of community and belonging among residents.

Waynesville is located in the southwest corner of North Carolina. The town is comprised of approximately 7.8 square miles of contiguous land and a population of approximately 10,000 (2008 estimate). Waynesville, the largest town in Haywood County, is located 30 miles southwest of Asheville between the Great Smoky and Blue Ridge Mountains. Most of Waynesville lies between 2,500 and 3,000 feet above sea level, and is located in a valley among 6,000 foot mountain peaks.

Public involvement was a major component of the development of this Plan. These efforts included the development of a Pedestrian Plan Steering Committee (PPSC), two public meetings, and a public survey. Based on information obtained from the public the following Vision Statement was developed:

**VISION:** *The town of Waynesville is a safe and healthy place to live, work, learn and play. Our town is a community where walking is a major travel mode and where the town's development patterns and interconnected pedestrian circulation network:*

- *Provide pedestrians convenient, safe and enjoyable access and mobility throughout the developed portions of the town.*
- *Link the town's neighborhoods by providing a "seamless system", which helps to maintain a vibrant and sustainable lifestyle.*

Additionally, the following goals were set forth, which guided all work done as part of this Plan.

### Goals and Objectives

**Goal #1:** Increase and enhance the safety of pedestrians in the town of Waynesville.

**Goal #2:** Enhance public awareness and education of pedestrians in the town of Waynesville

**Goal #3:** Adopt policies that promote connectivity, coordination and continuity of pedestrian facilities throughout the town of Waynesville

**Goal #4:** Enhance personal and environmental health in the town of Waynesville.

**Goal #5:** Develop a maintenance and implementation plan



The recommendations set forth in the Plan are divided into Programs, Policies, and Facilities. Within Programs, the recommendations are subdivided into Promotion of pedestrian activities and facilities, Issues of safety with regard to pedestrian facilities and use, and Maintenance of existing and proposed facilities. Development policies and regulations help provide guidelines for development decisions, location of pedestrian facilities, pedestrian safety, encouraging pedestrian activity, and creating pedestrian friendly environments. Programs developed in the Pedestrian Plan include those that promote and help in coordinating efforts with other groups and agencies, help in education and promotion of pedestrian facilities, and help in the town planning efforts. A number of facility recommendations have been detailed in the Pedestrian Plan. These include expansions and upgrades to greenways along Richland Creek and the Raccoon Road, the provision of sidewalks in numerous areas of town to ensure that safe routes are made available from residential areas to schools, public facilities, work areas, parks, and other facilities, as well as ensuring that gaps in existing sidewalks are connected to make continuous pedestrian paths. Safe crossing of roadways is made possible through recommendations for crosswalks and pedestrian crossings at busy intersections, railroad crossings, and other active areas of the town. Safety concerns are taken care of through lighting and signage recommendations, and finally, additional pedestrian connections are also recommended for areas that are not accessible or for which safety is a concern.

To aid in the construction of the facility recommendations made in the Plan, a set of pedestrian standards and guidelines were also developed. The Plan provides general design standards for sidewalks and walkways, trails and greenways, curb ramps, crosswalks, curb radius reductions, safety and lighting, and signals and signs.

As resources and time are not available to develop all projects at the same time, prioritization of the projects is necessary. The projects are divided into timeframes for completion, with the highest priority projects recommended to be completed in the short term (0-5 years), the next level of priority being projects expected to be completed in the medium term (5-10 years), and then long term projects that would be completed in more than 10 years. Although safety is the number one concern, top priority projects to be completed in the short term may include a combination of safety, accessibility and connections, as well as recreation projects.

Finally, the Plan includes a number of funding sources available to assist the Town in carrying out its recommendations. Funding comes from a variety of sources, including funding through the NCDOT's divisions, funding from other state agencies such as through the MPOs, State run grants programs, conservation funds and trusts. Federal funding sources are also provided as well as a number of local funding initiatives such as bonds, loans, different types of fees and taxes.



## **Chapter 1 – Vision and Direction**

### **1.1 INTRODUCTION**

Throughout the United States, more and more communities are implementing strategies to improve the walking environments and serve the needs of pedestrians. The benefits of walking are numerous and many fold. The obvious benefit is improved health and well being for the individual. Walking is a means of not only achieving physical fitness but also provides a means of releasing stress. Walking also provides alternative transportation options which could reduce traffic congestion. Overall, walking provides significant environmental and economic benefits while stimulating an increased sense of community and belonging among residents.

North Carolina is fortunate to have a strong culture of walking and biking activities that is driven by the desire for recreation, better health, and an effective alternative mode of transportation. The North Carolina Department of Transportation (NCDOT) supports communities by providing funding assistance to those communities who decide to pursue and actively support bicycle and pedestrian activity within their communities. From 2004 to 2009, the NCDOT awarded 92 grants to support bicycle and pedestrian activity. Personal benefits of increased health, decreased stress, and overall well being are just a few reasons why the Waynesville Comprehensive Pedestrian Plan is a step in the right direction toward improving the overall quality of life of the community.

The funding for this Plan was made possible through a grant obtained from NCDOT along with matching funds from the Town of Waynesville. Generous input was provided by Town staff and a Steering Committee consisting of Town, Haywood County, and NCDOT officials; citizens; and other pedestrian advocates. A public opinion survey was administered and several public meetings were also held to solicit input from the community on the need for pedestrian facilities.

The purpose of the Waynesville Comprehensive Pedestrian Plan is to develop a dynamic and comprehensive pedestrian planning tool for the Town of Waynesville. This Plan will provide the Town with a tool which will assist in the expansion, promotion and funding of safe and efficient pedestrian facilities, programs and initiatives throughout the town.

### **1.2 STUDY AREA**

Waynesville is located in the southwest corner of North Carolina. The town is comprised of approximately 7.8 square miles of contiguous land and a population of approximately 10,000 (2008 estimate). Waynesville, the largest town in Haywood County, is located 30 miles southwest of Asheville between the Great Smoky and Blue Ridge Mountains. Most of Waynesville lies between 2,500 and 3,000 feet above sea level, and is located in a valley among 6,000 foot mountain peaks.





The study area is shown Figure 1.1. The light orange shaded area represents the town limits of Waynesville while the bold red outline defines the Extraterritorial Jurisdiction (ETJ).

The town itself has many areas that are attractive for pedestrians. An existing greenway system is centered along Richland Creek and connects the Waynesville Recreation Center with the excellent pedestrian facilities around Lake Junaluska.

An extensive sidewalk system currently exists and links the Central Business District (CBD) to the Frog Level District, Hazelwood, Public Library, Museum of Handicrafts, Pigeon Community Center, and many parks, schools, shops, restaurants, and municipal buildings.

The town's existing sidewalks and major trip generators are illustrated on Figure 1.2. The Town's adopted Greenway Plan is shown on Figure 1.3.

## **1.3 PUBLIC INVOLVEMENT**

An important part of developing a successful and implementable Pedestrian Plan is to integrate citizen input into the planning process and project prioritization. To gather input from the public, the following three strategies were utilized:

1. Formation of a steering committee
2. Held two (2) public workshops and six (6) steering committee meetings
3. Distributed a public opinion survey

### **Steering Committee**

The Town of Waynesville staff assembled the Waynesville Pedestrian Plan Steering Committee (PPSC) to assist and provide guidance in the development of the Pedestrian Plan.

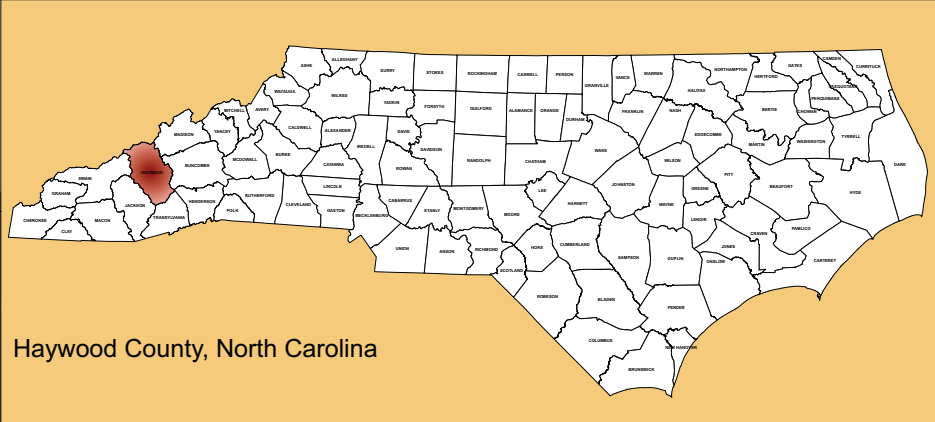
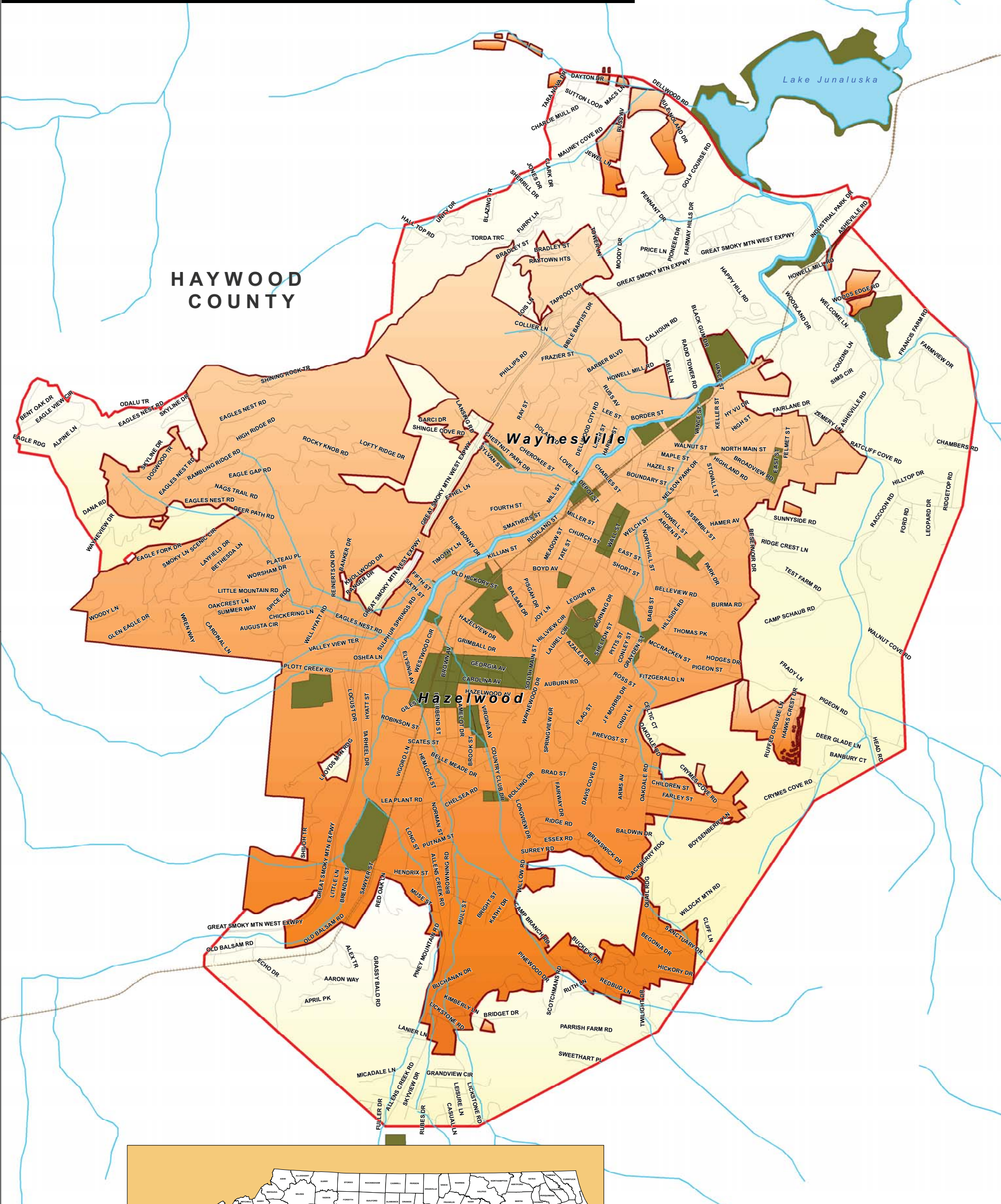
The PPSC met six (6) times over the course of the Plan's development and provided ideas and guidance for pedestrian improvements in Waynesville. Minutes and notes from each of these PPSC meetings are included in the Supplemental Appendix.



*PPSC members reviewing the Draft Plan during on the PPSC meetings.*



FIGURE 1.1  
STUDY AREA  
TOWN OF WAYNESVILLE PEDESTRIAN PLAN



Haywood County, North Carolina

LEGEND

- Roads
- Lakes
- Town Limits
- Railroad
- Town Destinations
- ETJ Boundary
- Rivers/Streams

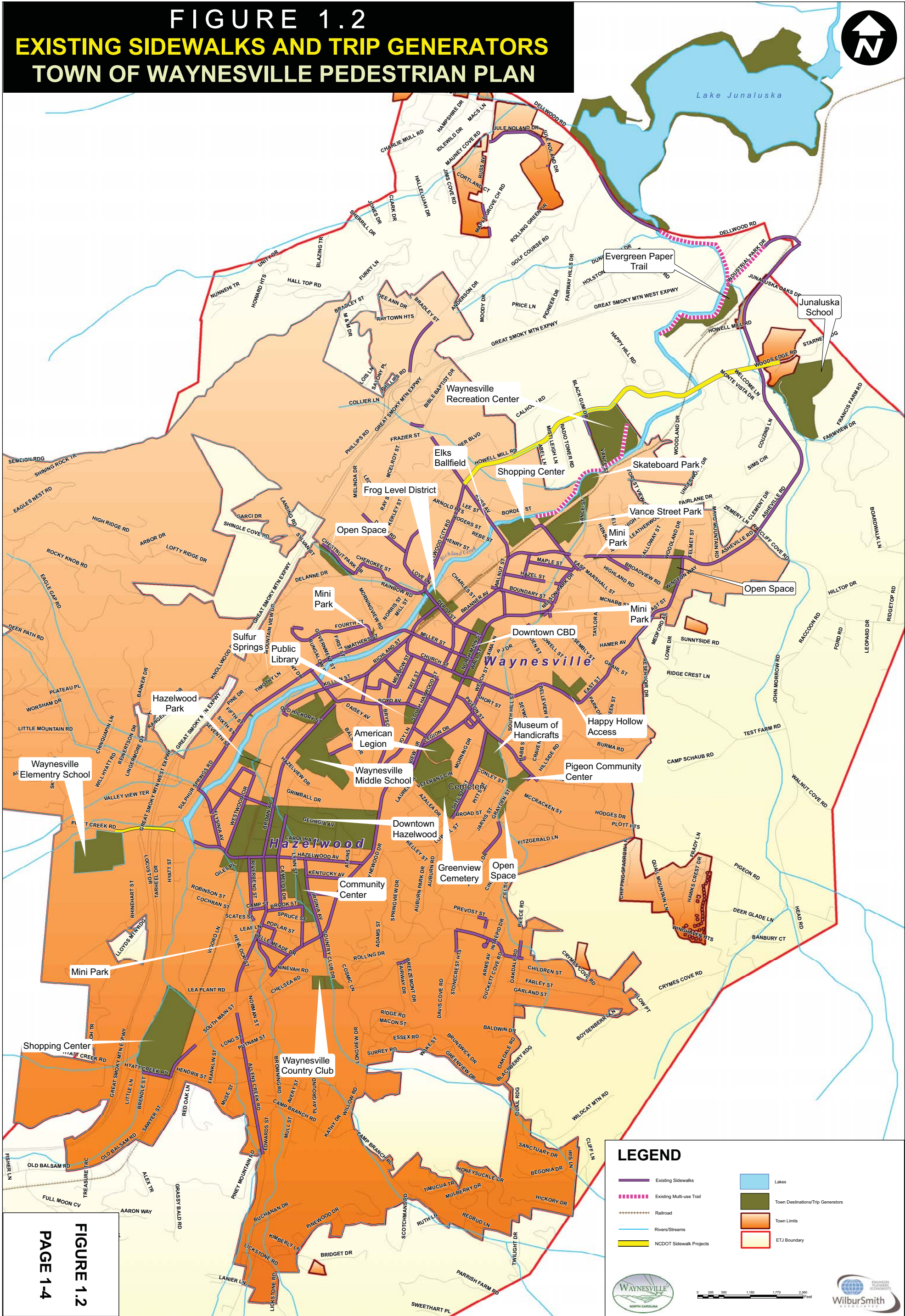


0 490 980 1,960 2,940 3,920 Feet





FIGURE 1.2  
EXISTING SIDEWALKS AND TRIP GENERATORS  
TOWN OF WAYNESVILLE PEDESTRIAN PLAN









The following individuals actively participated on the Pedestrian Plan Steering Committee:

**Table 1.1  
Pedestrian Plan Steering Committee**

Name	Agency
Robert Mosher, ASLA, AICP	NCDOT Division of Bicycle & Pedestrian Transportation
Paul Benson	Town of Waynesville Planning Director
Ginny Boyer	Town of Waynesville
Alison Melnikova	Assistant to Town Manager
Janet Gray	Citizen
Carolyn Ramsey	Citizen
Buddy Young	Lake Junaluska Assembly
Kathy Keogh	Haywood Regional Health and Fitness
Sylvia Errett	Citizen
Rhett Langston	Town of Waynesville Parks & Recreation
Bill Kramer	Citizen
Fred Baker, PE	Town of Waynesville Director of Public Works
Bill Hollingsed	Town of Waynesville Police Department
Claire Charleton	Haywood County Recreation and Parks
Buffy Phillips Messer	Downtown Waynesville Association
Carol Lindstrom	Citizen

## Public Workshops

Another important part of the Pedestrian Plan planning process was to allow the general public in Waynesville an opportunity to review and provide input on the draft Plan and maps. Two (2) public workshops were conducted during the planning process. The purpose of the first meeting, held on Wednesday August 20, 2008, was to introduce the public to the project, discuss how the planning process was conducted, review the responses to the public opinion survey, identify and confirm existing conditions in Waynesville, present draft project recommendations, and seek comments and input from the community regarding pedestrian needs and expectations.



*First public workshop held on August 20, 2008.*

The second public meeting was held on Thursday, June 25, 2009 where the Draft Pedestrian Plan was presented to the public to review. This meeting provided the public with the Draft Final recommendations which highlighted the proposed projects, programs, and policies as well as an implementation process.



*Second public workshop held on June 25, 2009.*



During both public workshops, the attendees were encouraged to provide written comments on the Draft Plan. At the conclusion of both public meetings, the attendees participated in “question and answer” sessions.

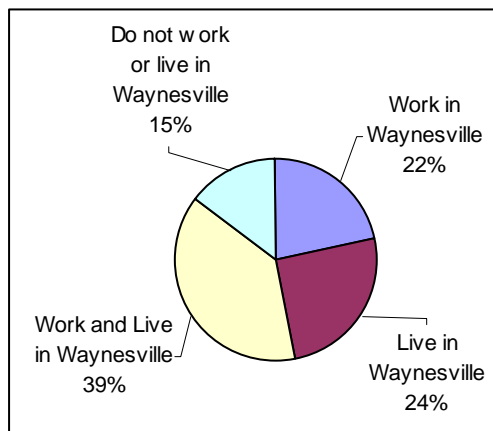
A copy of all public involvement materials, including public comments, is included in the Supplemental Appendix.

## 1.4 SURVEY RESULTS

A public opinion survey was administered to determine the pedestrian-oriented needs and desires of the community. A total of 86 surveys were returned. Thirty-two (32) of the respondents were between the ages of 40 and 55. Thirty (30) respondents were between the ages of 25 to 39. Twenty (20) respondents were older than 55 years of age while four (4) respondents were between the ages of 16 and 25.

The majority of the respondents were female. Sixty-seven (67) females responded to the survey while only nineteen (19) males responded.

Based on the respondents to the survey, 39% both work and live in Waynesville while 24% only live in Waynesville. Twenty-two (22) percent of the respondents indicated they only work in Waynesville while 15% indicated they were visitors.



Walking or running for personal fitness was the most common answer given when asked why people chose to use pedestrian facilities followed closely by leisure and recreation. Some chose to walk because they do not have other means of transportation but others walk as a personal choice. Walking and/or running are already a lifestyle choice of many of the respondents of the survey. Most respondents said that they walk or run at least several times in a week. Their choice of location for walking was mostly on sidewalks; however some respondents indicated that they do walk on streets which do not have sidewalks

Respondents also expressed that if there was a pedestrian system of better sidewalks and trails connections, people would choose to walk more. As gas prices continue to rise, a safer and accessible alternative to the automobile is desired for local trips. Also, many respondents expressed that public awareness program needs to be implemented to make citizens more aware of the readily available pedestrian facilities. The respondents are also very supportive of the Town’s efforts to promote a more pedestrian friendly environment.

A copy of the pedestrian summary comments received is included in the Supplemental Appendix.



## **1.5 VISION, GOALS, and OBJECTIVES**

At the PPSC Meeting held on June 26, 2008, steering committee members noted the need for improved pedestrian facilities as well as better education and communication of the availability of existing pedestrian facilities and future pedestrian facility planning. Pedestrian safety along with the need to create an inviting pedestrian experience was also mentioned. Based on these expressed needs, the PPSC committee developed the following vision for the Waynesville Comprehensive Pedestrian Plan:

**VISION:** *The town of Waynesville is a safe and healthy place to live, work, learn and play. Our town is a community where walking is a major travel mode and where the town's development patterns and interconnected pedestrian circulation network:*

- *Provide pedestrians convenient, safe and enjoyable access and mobility throughout the developed portions of the town.*
- *Link the town's neighborhoods by providing a "seamless system", which helps to maintain a vibrant and sustainable lifestyle.*

The following Goals and Objectives were established as a guideline for the development of the Waynesville Comprehensive Pedestrian Plan. The purpose of these goals is to ensure that the development of the Plan complies with the needs and input of the residents in Waynesville. These goals exemplify the foremost pedestrian principles for local stakeholders, elected officials and residents, based on input provided by the Town of Waynesville's Pedestrian Plan Steering Committee members and Town Staff.

Project prioritization criteria are tied to these goals in order to ensure the most economic and efficient pedestrian improvement projects and programs are ranked according to the needs of the community. Any pedestrian improvement completed within the town that addresses these goals will help Waynesville become a better community for pedestrians and residents.

### **Goals and Objectives**

**Goal #1:** Increase and enhance the safety of pedestrians in the town of Waynesville

#### **Objectives**

- Change the perception that roads are for cars only, particularly on low volume, low speed facilities
- Implement measures to enhance pedestrian visibility during the day and night
- Provide adequate wheelchair accessibility to sidewalks
- Create facilities that provide separation from the travel lanes
- Promote the enforcement of current pedestrian laws
- Provide well marked crosswalks with signal actuation where appropriate
- Promote appropriate vehicular speed through the design of pedestrian facilities



**Goal #2:** Enhance public awareness and education of pedestrians in the town of Waynesville

### Objectives

- Promote the town of Waynesville to be a walkable community
- Promote walking through the various events held within the town
- Create a pedestrian friendly environment that encourages people to think about “walking first”

**Goal #3:** Adopt policies that promote connectivity, coordination and continuity of pedestrian facilities throughout the town of Waynesville

### Objectives

- Identify a network of sidewalks and shared use paths that serve all user groups, including commuting, recreation, and utilitarian trips
- Utilize innovative designs, where appropriate, to promote pedestrian activity and safety
- Continue to pursue the expansion of the greenway system
- Promote the provision of handicapped accessible pedestrian facilities throughout the town
- Coordinate with adjoining communities and NCDOT to ensure future pedestrian plans are compatible with other projects
- Develop standards for new developments that will help ensure that consistent pedestrian facilities are constructed as the town of Waynesville grows
- Incorporate this Plan into the NCDOT Comprehensive Transportation Planning process

**Goal #4:** Enhance personal and environmental health in the town of Waynesville

### Objectives

- Promote walking to children in the town
- Encourage residents of the town to “be active”
- Coordinate with the hospital and county health department’s programs to promote walking.

**Goal #5:** Develop a maintenance and implementation plan

### Objectives

- Ensure that pedestrian facilities are routinely maintained for the safe operation of pedestrians
- Develop an evaluation matrix that evaluates existing facilities to ensure that facilities adequate for pedestrian use are being provided in Waynesville and to identify appropriate routes for pedestrian travel.



## Chapter 2 - Existing Conditions

### 2.1 INTRODUCTION

Based on 2008 population estimates, the town of Waynesville is home to approximately 10,000 residents. Located in Haywood County in southwestern North Carolina, Waynesville is approximately 30 miles southwest of Asheville between the Great Smoky and Blue Ridge Mountains. The town's population has grown over the years as residents have moved to Waynesville for the cool clean air, clean water, outstanding scenery, great neighborhoods, and an opportunity to avoid the hustle and bustle of big city life. With the influx of residents, Waynesville has grown to the third largest town in western North Carolina behind Asheville and Hendersonville.

Vacationers and tourists continue to gravitate to Waynesville for its cool summers, dramatic autumns, mild winters, outstanding shopping, hiking, golfing, as well as the southern hospitality and small town charm.

### 2.2 GREENWAYS

The town itself has many areas that are attractive for pedestrians. An established greenway system is located along Richland Creek beginning at Recreation Park extending northeast to the Vance Street Park and the Waynesville Recreation Center. This section is connected by existing sidewalks, as shown on Figure 1.3 to another existing section of the greenway located off Industrial Park Drive which extends northeast along Richland Creek, crossing under US 23-74, and ending at an access point on US19. This access point is connected by sidewalks to the pedestrian system at Lake Junaluska.

The Greenway Plan is shown on Figure 1.3. The Greenway Plan indicated the further extension of the greenway system to the southwest along Richland Creek to Hyatt Creek Road, construction of a greenway along Raccoon Creek from its confluence with Richland Creek to US 276/Pigeon Road and completing the missing link along Richland Creek between the Waynesville Recreation Center and Industrial Park Drive.



*Marker along existing Greenway*

*Existing Greenway near  
Industrial Park Drive*





*Greenway along Richland Creek*



*Existing Map of Waynesville Greenway*



*Waynesville Recreation Center*

## 2.3 SIDEWALKS

Waynesville has an established system of sidewalks throughout much of the town. The Waynesville Central Business District (CBD) includes many destinations including numerous shops, restaurants, and municipal buildings. Sidewalks are provided throughout the CBD, and appear to be in excellent condition in most areas of the CBD. Most of the sidewalks are made of concrete but some are paved with brick. Public art displays, benches, and even water fountains are located along with the CBD area accessible by sidewalks. Well marked pedestrian crosswalks and pedestrian signalization is located at major crossings within the CBD. Pedestrian mobility is promoted within the CBD as a local coffee shop has maps embedded in serving tables illustrating pedestrian destinations.



*Public Art Displays in Downtown  
Waynesville Central Business District*



*A Pedestrian Common Area with Art,  
Benches, and Water Fountain*





*A Pedestrian Oriented Map  
Inlaid in Coffee Table*



*Public Art in Downtown Waynesville's  
Central Business District*



*Pedestrian Crosswalk in CBD*





*Pedestrian Signals in Downtown  
Waynesville Central Business District*



*Pedestrian Amenities Downtown  
Waynesville Central Business District*

West and southwest of the CBD, existing sidewalks are located along most streets in the Frog Level and Hazelwood communities. Many of these sidewalks are narrow or have utility poles constructed within the sidewalks. There are few delineated crosswalks with handicap ramps at the crosswalks and pedestrian signalization.

Most of the railroad crossings do not have modern sidewalks at the railroad tracks as sidewalk construction stopped short of the tracks. Also, railroad crossing signs and gates/signalization need upgrading for both pedestrian and vehicular safety at many locations.



*Sidewalk Gap at Railroad*



*Utility Pole in Sidewalk*

There is a history of speeding along Brown Avenue in the vicinity of Waynesville Middle School. There is no clearly delineated pedestrian crossing at the school. Since the classrooms are located on the east side of Brown Avenue with the bus shelter, parking lot, and athletic fields being on the west side of Brown Avenue, there is considerable amount of pedestrian traffic crossing Brown Avenue. School and Town officials have expressed concern about speeding and pedestrian safety crossing Brown Avenue and at the intersection of Brown Avenue and Boyd Avenue. Due to curvature and grade of Brown Avenue, this intersection has been reported as being unsafe.



*No Crosswalks at Brown Avenue/Boyd Avenue*



*No Delineated Crosswalks at Waynesville Middle School*

Along South Main Street south of the CBD, sidewalks are located along one side, and in some cases, both sides from the CBD to just south of Riverbend Street. Due to a newly constructed shopping center (anchored by Wal-Mart) located in the northwest quadrant of South Main Street and Hyatt Creek Road intersection, sidewalks have been constructed along portions of South Main Street from Hyatt Creek Road to the shopping center entrance. Along sections of South Main Street, there are no delineated sidewalks pedestrian crosswalks, or pedestrian signalization at any of the major intersections, and there is a gap in sidewalk construction along South Main Street from the shopping center entrance to Riverbend Street.





Southeast of the CBD, including Waynesville Country Club area and other older residential areas, there are few sidewalks, but this is appropriate for low volume roadways. Several residents of the Waynesville Country Club have indicated a desire to have sidewalks along residential streets.

Further northwest, Russ Avenue is considered the gateway into Waynesville from the north. Russ Avenue is the newer business district which features restaurants, retail stores, auto dealerships, banks, and grocery stores and is the most traveled surface street in Haywood County. Sidewalks exist along Russ Avenue from the CBD to Frazier Street and from Phillips Road north to Bradley Street. There are significant sidewalk gaps along Russ Avenue, specifically near the US 23/74 interchange area and northward to Lake Junaluska.



*No Sidewalks, Crosswalks, or Pedestrian Signals along South Main Street*



*Russ Avenue Sidewalks*

## **2.4 USER DEMOGRAPHICS**

Understanding the demographic makeup of the community can provide an understanding of potential pedestrian needs for the community. For example, a community that has a predominant youth and young adult population will have different needs than a community that has a dominant senior population. The following tables provide an insight into the demographic needs of the community.





## Population

Data contained in the Town of Waynesville Comprehensive Plan and in the US Census show that the town has been experiencing a steady growth since 2000. In 1990, the town's population was 6,758 and increased by three percent per year to 9,232 in the year 2000. However, since then, the population growth has been considerably slower. Census data shows the town's population to be approximately 10,000 (2008 estimate).

## Age Distribution

As stated earlier, age distribution within a community provides an estimation of the types of activities and facilities that will be needed to serve its population. Waynesville's 2000 population distribution is provided in Table 2.1. Although the 2000 Census data may not be up to date, it does provide a good start in identifying what would be needed to enhance the community's quality of life.



The 2000 Census age distribution for Waynesville depicts a fairly clear picture of the community. As would be expected, the age groups that have the highest number of people are the groups that represent in the 25-44 (25.5%) and 45-64 (25.8%) years age groups. Residents over 65 years of age make up 22.72% of the population in Waynesville. However, 19.9% percentage of the population is children 18 years of age and under. As such, the types of facilities planned for the town should support active lifestyles for all age groups.



**Table 2.1**  
**Age Distribution**

Age	Number			Percent			Males per 100 Females
	Both sexes	Male	Female	Both sexes	Male	Female	
<b>Total population</b>	<b>9,232</b>	<b>4,301</b>	<b>4,931</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>87.2</b>
Under 18 years	1,841	952	889	19.9	22.1	18.0	107.1
18 to 64 years	5,292	2,559	2,733	57.3	59.5	55.4	93.6
18 to 24 years	563	276	287	6.1	6.4	5.8	96.2
25 to 44 years	2,351	1,193	1,158	25.5	27.7	23.5	103.0
25 to 34 years	1,112	577	535	12.0	13.4	10.8	107.9
35 to 44 years	1,239	616	623	13.4	14.3	12.6	98.9
45 to 64 years	2,378	1,090	1,288	25.8	25.3	26.1	84.6
45 to 54 years	1,155	543	612	12.5	12.6	12.4	88.7
55 to 64 years	1,223	547	676	13.2	12.7	13.7	80.9
65 years and over	2,099	790	1,309	22.7	18.4	26.5	60.4
65 to 74 years	1,025	433	592	11.1	10.1	12.0	73.1
75 to 84 years	840	298	542	9.1	6.9	11.0	55.0
85 years and over	234	59	175	2.5	1.4	3.5	33.7
Median age (years)	44.0	40.9	47.4	(X)	(X)	(X)	

### Income

The 2000 Census data for Waynesville shows that of the total working population (population aged 16 and older), 54.5% were in the labor force. The median family income for the town in 2000 was \$28,296.00.

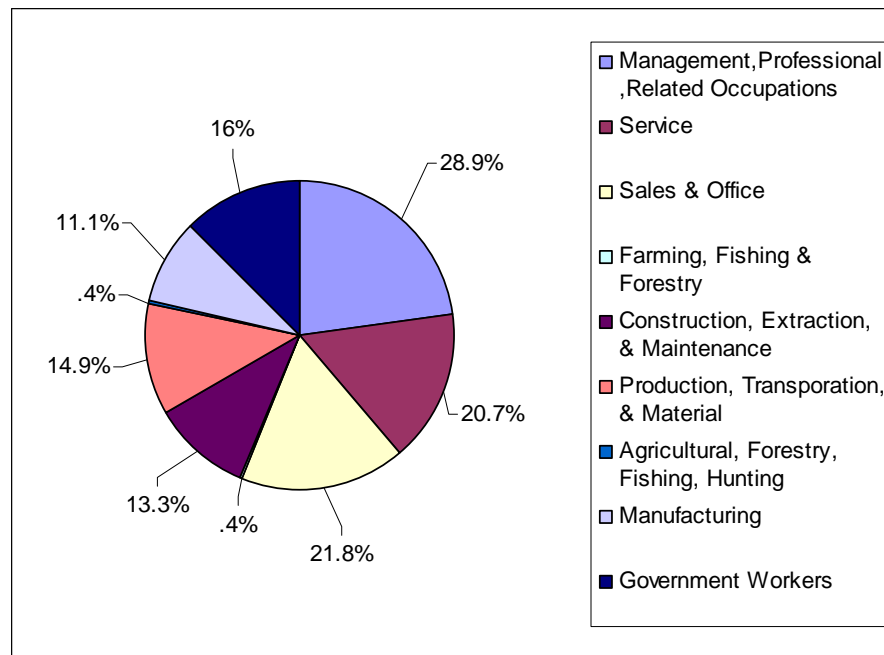
From the 2000 Census data listed in Table 2.2 and illustrated in Figure 2.1, majority of residents are in the “management, professional, and related occupations” (28.9%), “service occupations” (21.8%), and “sales and office occupations” (20.7%) professions. In addition, the 2000 Census provides information on the income levels of Waynesville residents. In 2000, 12.6% of families had incomes below the poverty line, which is only slightly higher than the US average of 12.4%. Creating a safe, friendly pedestrian environment with easy access to employment areas, schools, and other town amenities may provide some relief to families, particularly lower income families who may not have immediate access to personal vehicles.



**Table 2.2**  
**Employment by Occupation**

Percentage Employment in Waynesville & Haywood County	Occupation
28.9	Management, professional, and related occupations
20.7	Service occupations
21.8	Sales and office occupations
0.4	Farming, fishing and forestry occupations
13.3	Construction, extraction, and maintenance occupations
14.9	Production, transportation, and material moving occupations
0.4	Agriculture, forestry, fishing and hunting
11.1	Manufacturing
16	Government workers (local state, or federal)

**Figure 2.1**  
**Employment By Occupation**





Housing

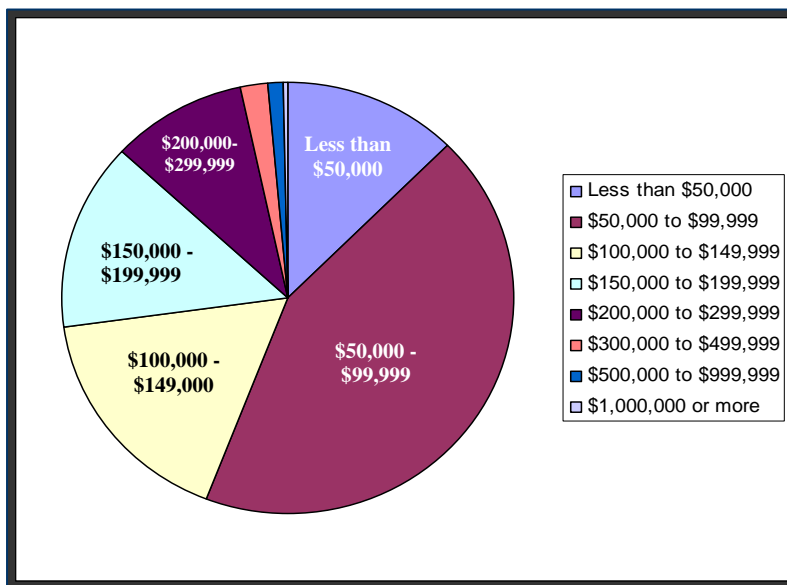
According to the 2000 Census listed in Table 2.3 and illustrated in Figure 2.2, owner occupied housing units was 2,192. According to information included in Figure 2.2, the majority of the total residential units in Waynesville were valued between \$50,000 and \$149,999. The median value for housing units in the town of Waynesville was estimated at \$93,400.

**Table 2.3**  
**Waynesville Housing Values**

Subject	Number	Percent
<b>Specified owner-occupied housing units</b>	<b>2,192</b>	<b>100.0</b>
<b>VALUE</b>		
Less than \$10,000	8	0.4
\$10,000 to \$14,999	0	0.0
\$15,000 to \$19,999	7	0.3
\$20,000 to \$24,999	7	0.3
\$25,000 to \$29,999	0	0.0
\$30,000 to \$34,999	35	1.6
\$35,000 to \$39,999	78	3.6
\$40,000 to \$49,999	141	6.4
\$50,000 to \$59,999	204	9.3
\$60,000 to \$69,999	164	7.5
\$70,000 to \$79,999	188	8.6
\$80,000 to \$89,999	200	9.1
\$90,000 to \$99,999	191	8.7
\$100,000 to \$124,999	211	9.6
\$125,000 to \$149,999	163	7.4
\$150,000 to \$174,999	175	8.0
\$175,000 to \$199,999	133	6.1
\$200,000 to \$249,999	86	3.9
\$250,000 to \$299,999	127	5.8
\$300,000 to \$399,999	40	1.8
\$400,000 to \$499,999	5	0.2
\$500,000 to \$749,999	23	1.0
\$750,000 to \$999,999	0	0.0
\$1,000,000 or more	6	0.3
Median (dollars)	93,400	(X)



**Figure 2.2**  
**Waynesville Housing Values**

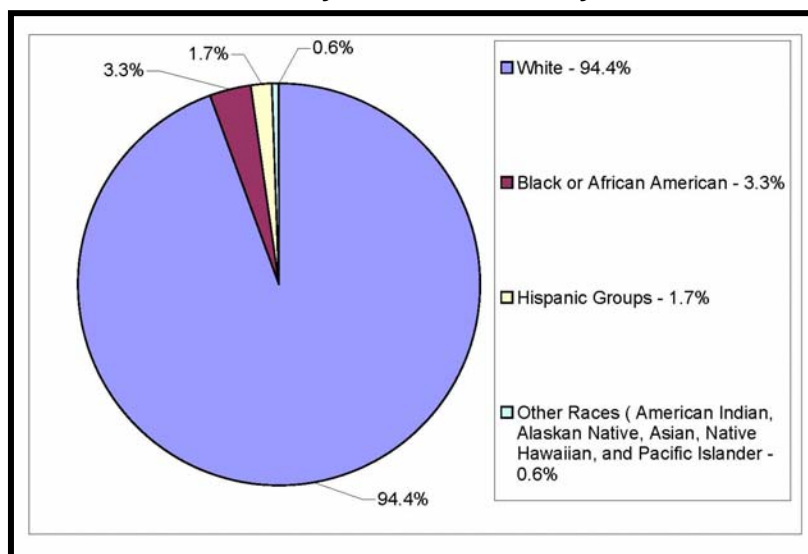


### Ethnicity

From a walking standpoint, ethnicity is also an important consideration. As with lower income groups, certain ethnic groups have a greater need for low-cost utilitarian trip options due to not owning vehicles or not having driver's licenses.

As indicated in Figure 2.3, the population in Waynesville is predominately white (94.4%). The largest non-white group in Waynesville is black or African American (3.3%) and Hispanic groups represent 1.7% of the population. Other races such as American Indian, Alaskan Native, Asian, Native Hawaiian and Pacific Islander make up approximately 0.6% of the town of Waynesville's total ethnicity.

**Figure 2.3**  
**Waynesville - Ethnicity**





## **2.5 INVENTORY OF EXISTING CONDITIONS**

Waynesville is fortunate to have a number of existing features that can significantly add to the pedestrian experience. The following is a short list of features within the town of Waynesville:

**1. Old Mountain Charm:** Waynesville's quaint old buildings, brick sidewalks, art galleries, enticing shops, along with the Museum of North Carolina Handicrafts are important assets when developing a pedestrian friendly environment. Exploring the historic Frog Level District and Hazelwood community offers views of historic buildings constructed in the late 1800's when the influence of the railroad created a boom in agricultural, lumber, and tourism industries. The Downtown Waynesville and Frog Level districts are listed on the National Register of Historic Places.

**2. Parks:** Waynesville has six (6) designated park areas that include both active and passive recreation opportunities. These parks are well distributed within the town and provide opportunities for connections from residential areas and schools to these park facilities. Parks are an essential element in trail network planning.

**3. Richland Creek, Raccoon Creek, and Lake Junaluska:** These two streams are the primary riparian systems in Waynesville. They are bordered by flood hazard areas for which greenways are among the few appropriate uses. These two streams provide opportunities for extensions of existing river trail system and greenways, connecting them to town amenities and places of interest, including Lake Junaluska which is the premier pedestrian destination in Haywood County. Lake Junaluska is the headquarters of the World Methodist Council which holds annual conferences throughout the year. The hiking trails around Lake Junaluska are very popular with pedestrians.

## **2.6 PEDESTRIAN CRASH DATA**

Information on pedestrian accidents in the Waynesville area is collected by the UNC Highway Safety Research Center between 1997 and 2006 and is available through their web based interactive pedestrian crash database. <http://www.pedbikeinfo.org/pbcat/>

Table 2.4 illustrates the number of pedestrian accidents (crashes) in Waynesville between 1997 and 2006 based on age of the pedestrian. The total number of pedestrian related accidents over this nine year period was twelve (12). The largest number of accidents was reported among the 41-50 years age group. The next most affected age group was the 61 years and older group. Four (4) of the twelve (12) accidents happened in 2002.



**Table 2.4**  
**Pedestrian Crash Data by Age**  
**1997-2006**

Age Grouped	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Totals
0 - 5	0	0	0	0	0	0	0	0	0	0	0
06 - 10	0	0	0	1	0	0	0	0	0	0	1
11 - 15	0	0	0	0	0	1	0	0	0	0	1
16 - 20	0	0	0	0	0	0	0	0	0	0	0
21 - 25	0	0	0	0	0	0	0	0	1	0	1
26 - 30	0	0	0	0	0	0	0	0	0	0	0
31 - 40	0	0	0	0	0	0	0	0	1	0	1
41 - 50	0	0	0	0	0	2	0	0	0	1	3
51 - 60	0	0	0	0	0	0	0	0	1	0	1
61 - 70	0	0	0	0	0	0	1	0	0	1	2
>70	0	1	0	0	0	1	0	0	0	0	2
Unknown	0	0	0	0	0	0	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>12</b>

Table 2.5, illustrates pedestrian crash data for Waynesville between 1997 and 2006 by gender. Twice as many crashes involved men rather than women during the period between 1997 and 2006.

**Table 2.5**  
**Pedestrian Crash Data by Gender**  
**1997-2006**

Gender	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Totals
Male	0	1	0	1	0	3	0	0	2	1	8
Female	0	0	0	0	0	1	1	0	1	1	4
Unknown	0	0	0	0	0	0	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>12</b>

Table 2.6 illustrates the number of pedestrian accidents by ethnicity. It shows that the majority (75%) of accidents occurred to those who are "white". Since the majority of the population of Waynesville is white, these ethnicity crash statistics is consistent with the population by race.



**Table 2.6**  
**Pedestrian Crash Data by Ethnicity**  
**1997-2006**

Race	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Totals
White	0	1	0	1	0	3	1	0	2	1	9
Black	0	0	0	0	0	1	0	0	0	0	1
Native American	0	0	0	0	0	0	0	0	0	0	0
Hispanic	0	0	0	0	0	0	0	0	0	0	0
Asian	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	1	1	2
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>12</b>

Table 2.7 shows the level of injury by accident in Waynesville. Seven (7) of the non-fatal accidents involved some type of injury. Two (2) accidents involved fatalities, the first in 1998 and the second in 2005.

**Table 2.7**  
**Level of Injury by Accident**  
**1997-2006**

Injury	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Totals
K Killed	0	1	0	0	0	0	0	0	1	0	2
A Type Injury (disabling)	0	0	0	0	0	1	0	0	0	0	1
B Type Injury (evident)	0	0	0	1	0	0	0	0	0	0	1
C Type Injury (possible)	0	0	0	0	0	2	0	0	2	1	5
O No Injury	0	0	0	0	0	0	1	0	0	0	1
Unknown	0	0	0	0	0	1	0	0	0	1	2
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>12</b>

## **2.7 TOWN OF WAYNESVILLE EXISTING PLANS, PROGRAMS AND POLICIES**

Town of Waynesville has several regulatory frameworks in place to help guide the development of sidewalks and pedestrian areas in the town. The following provides some of the highlights of these policies and programs.

### **Town of Waynesville Unified Development Ordinance**

The Town's Subdivision Regulations provide the guidelines for the installation of sidewalks and pedestrian access in new developments and providing connections to nearby community facilities and amenities. The developer is responsible for dedicating the right-of-way and for the construction of improvements, including sidewalk installation.





The Town's *Unified Development Ordinance*, Section 154.307, outlines the following requirements for pedestrian amenities:

A. General Requirements

- Sidewalk, pedestrian pathways, and other required or proposed pedestrian amenities shall be reflected in all site and subdivision plans.

B. Sidewalks

1. General Standards/Location

- Stipulations as to when sidewalks are required are set forth in each land development district.
- Unless an alternate walkway (see below) is approved, conventional sidewalks shall be located on all new streets. Street designs are located in Section 154.309.

2. Design Standards

- Sidewalks shall generally be a minimum of five (5) feet in width. Sidewalks located along main streets and avenues shall be a minimum of eight (8) feet in width. Sidewalks located along boulevards and avenues shall be a minimum of eleven (11) feet in width.
- Where existing sidewalk abuts an area where new sidewalk is to be developed, the new sidewalk shall be the same width as the existing sidewalk or meet the standards listed above, whichever standard width is greater.
- Within commercial areas and places with high pedestrian volumes, sidewalks should be designed to meet the anticipated pedestrian/traffic volume.
- Sidewalks shall be constructed of concrete and other approved materials (such as pavers) and built to the specifications of the Public Works Department.
- Where a sidewalk abuts a curb, the minimum width is six (6) feet.

3. Alternative Compliance

- Alternative provisions for pedestrian movement meeting the intent of this Section 154.307 may be used where unreasonable or impractical situations would result from application of these requirements. Such situations may result from significant street trees, impending road widening, topography, utility easements, lot configuration or other unusual site conditions.
- Planning Department staff, in consultation with the Public Works Department, may approve an alternate plan that proposes different pedestrian amenities provided that the intent of Section 154.307 is fulfilled.
- Decisions of the staff regarding alternate methods of compliance may be appealed to the Board of Adjustment.
- In districts where trails are permitted, they are subject to the following design standards:
  - Trail widths are 6-14 feet.
  - Minimum trail right-of-way is 18 feet.
  - Trails should form a link that connects all homes, parks, schools, and recreation areas.
  - Shade trees are recommended.
  - Trails are generally allowed in very low density development and are only required on one side of the road.



4. Easements in Lieu of Sidewalks
  - In land development districts where an easement is required in lieu of providing a sidewalk said easement shall be provided to the Town of Waynesville and recorded with the Register of Deeds of Haywood County prior to the issuance of a certificate of occupancy on the development.
  - Required easements shall be a minimum of eleven (11) feet in width with the location approved by the Public Works Department.
- C. Pedestrian Connections to Greenways and Parks and Between Developed Properties
  1. General Standards
    - In many land development districts, it is required that accessways shall be provided from major residential developments, to greenway, park, and open space areas.
    - Such access is required to be provided to public greenways and parks (those depicted on adopted town park and greenway plans) as well as to greenways, parks and open spaces created with the development itself.
  2. Access Standards
    - Where a cul-de-sac street is permitted within a development, accessways to greenways, parks and open space areas must be provided where such streets back to these areas.
    - Where lots back up to greenways, parks and open space areas, accessways must be provided at a minimum of every 600 feet.
    - Where two (2) cul-de-sac streets end within 300 feet from each other, accessways shall be provided between the cul-de-sacs.
    - Where no sidewalk is provided between two (2) abutting developments, and pedestrian access is required, a pedestrian walkway shall be provided.
    - Accessways must be a minimum of five (5) feet in width.
    - Paving of accessways is encouraged, but not required.
- D. Pedestrian Pathways in Parking Areas
  - Parking lots shall be designed to separate pedestrian travel from vehicles and include protecting pedestrian walkways within parking areas that lead to business/office/store entrances.
  - Perimeter sidewalks and interior parking lot pedestrian corridors may be utilized to provide the required pedestrian access.
  - Pedestrian pathways must be minimum five (5) feet in width.
  - Pedestrian pathways must be clearly delineated. This may be accomplished with the use of paving materials that differ from that of vehicular areas, striping or other similar methods.

The Town's UDO also defines the minimum front yard width that is to be devoted to sidewalks, grass and plants, and the necessary entrances and exits of driveways for non-residential uses, creating a pedestrian friendly environment and easy access to businesses, shopping and industrial uses.



The *Town's UDO* further provides the guidelines that ensure a safe and visually interesting pedestrian experience in the town. Development standards ensure that pedestrian views and visibility are not impaired nor blocked nor do the placement of buildings and/or design of streetscape block views of pedestrians to on-coming traffic. Lighting, buffering, and signage shall also be carefully designed ensuring that pedestrians and their pathways are well lit and that the use of buffering and signage does not in any way jeopardize the safety of the pedestrian. In addition, structures shall be arranged to provide for adequate on-site vehicular and pedestrian traffic, and minimize obstructions. The pedestrian experience should also be visually interesting, thus encouraging movement along different pathways, and experiencing varying pathways to town destinations.

### *Town of Waynesville Comprehensive Plan*

The *Town of Waynesville Comprehensive Plan* provides the guidelines for Waynesville's long range planning in terms of land uses, transportation, parks and open space planning. Richland Creek plays an important role in the recreation and open space planning for the community, and the transportation system includes a greenway system that is maintained by the Town of Waynesville.

The *Comprehensive Plan's* goals and objectives have a strong focus on the creation of a safe pedestrian friendly environment within the downtown area, as well as through residential developments. Alternate modes of transportation are also encouraged as well as traffic calming and other safety measures that will help to promote walking and bicycling.

## **2.8 NCDOT EXISTING PLANS, PROGRAMS AND POLICIES**

NCDOT has established policies and minimum standards for all types of roadway classifications. NCDOT recommends sidewalks be installed along both sides of all residential streets where practical but as a minimum of one side unless environmental constraints prohibit sidewalk construction. NCDOT recommends the minimum 5-foot wide sidewalk with wider sidewalks in downtown areas, near schools, and other high pedestrian activity areas.

## Chapter 3 -Recommendations

The recommendations developed as part of this Comprehensive Pedestrian Plan fall into three main categories; Programs, Policies, and Facilities. The Program recommendations deal primarily with education and enforcement of pedestrian laws and the promotion of walking within Waynesville. The Policy recommendations are aimed at helping the Town establish new policies and laws to handle development that is occurring in the area to ensure that the appropriate facilities and connections are being provided for pedestrians. Facilities recommendations focus on specific facilities that have been identified through the planning process as being necessary for providing a safe, efficient, and interconnected pedestrian network.

### **3.1 Programs**

Developing an effective and safe pedestrian network requires a fully comprehensive strategy that includes extensive education, enrichment, enforcement, and engineering. The following is an inventory of recommendations for programs that the Town of Waynesville may use as a guideline for developing a more pedestrian-friendly community.

#### **Promotion**

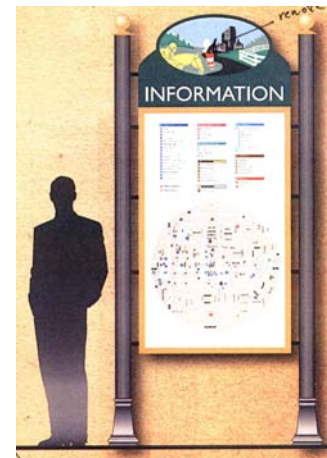
The promotion of existing and future facilities and services, as well as the promotion of Waynesville as a “pedestrian friendly community” will play an important role in achieving the vision set forth by the Pedestrian Plan Steering Committee. To achieve this vision, WSA recommends the following:

The Town's web site should include a page (or pages) dedicated to pedestrian travel. The Web site could provide information such as route maps, points of interest along routes, route conditions, pedestrian traffic laws and safety tips, community events, links for local bicycle and pedestrian groups, and other related links.



We recommend that the Town work with Haywood County to develop a more comprehensive and uniform pedestrian system map and signage that indicates the location and types of future pedestrian facilities. These facilities should include sidewalks, area connections, proposed pedestrian routes, proposed greenway extensions, rest areas, scenic vistas, and historic trails. We recommend that the Town highlight and promote scenic areas and public recreational facilities with pedestrian facilities.

A more elaborate way-finding system for pedestrians should be established by the Town, including kiosks that provide route maps, transit information, tourist information, directions to destinations and end-of-trip facilities.







The Town should participate in and promote national activities, such as *Walk to School Day*, *Bike to Work Day*, and *Car Free Day*; events specifically designed to promote the widespread use of alternative modes of transportation.

### Education

The education of citizens, Town Leaders, and Town Staff is an important component of developing a viable, convenient, and particularly safe transportation system.

The Town should use one of its local festival days to help promote pedestrian safety and Waynesville's pedestrian network. In addition to educating the public on the availability of the pedestrian network and its accessibility, the public also needs to be provided some basic guidelines to follow that would ensure a safer, more enjoyable pedestrian experience.

The Town should coordinate with local walking groups to provide informational workshops to educate both motorists and pedestrians.

### Safety

One of the main portions of the Steering Committee's vision for Waynesville was safety-related. While comprehensive education recommendations are important in increasing pedestrian safety, other initiatives are needed.

The Town should support *Safe Routes to School (SRTS)* efforts that include educational and incentive programs to encourage more students to bicycle or walk to school. The NCDOT SRTS program includes a grant reimbursement program to fund infrastructure and non-infrastructure projects, a program to provide consultant services to develop Action Plans, spot improvement project funds administered by the NCDOT Highway Divisions, and facilitator support for presenting community-based SRTS workshops. This could be a potential funding source for spot improvements around Waynesville's schools and perhaps funding for some of the connections recommended below.



### Maintenance

The Town should develop a maintenance request program to allow the Town to respond to requests for small-scale and low-cost maintenance activities, such as sweeping, repairing surface problems, and replacing unsafe gaps. Pedestrians who use unsafe facilities may risk personal injury while others will choose not to use the facility at all.

### Town Planning Efforts

The Town should develop and implement a plan to remove sidewalk obstructions and improve sidewalk maintenance. The Town should continue to expand its sidewalk condition inventory. Potential issues identified in the condition inventory should include horizontal and vertical offsets in sidewalk sections, damaged sidewalk sections, overgrown trees and landscaping, utility poles, and other obstructions that may provide unsafe conditions or that do not meet the guidelines of the Americans with Disabilities Act (ADA).



The Town should develop and implement a plan to provide sidewalk facilities in established residential areas. The primary focus in these areas should be connecting the major trunk roads in residential areas with the existing sidewalk system and pedestrian destinations.

The Town should develop and implement a plan to install missing sidewalk segments to provide continuous pedestrian routes. The Town should first focus these efforts in areas surrounding schools (the Safe Routes to School Program is a potential source) and between major residential areas and major activity centers.

The Town should continue to implement a plan to provide end-of-trip facilities, such as seating, drinking fountains, and restrooms, at major destinations, such as shopping centers, employment centers, and recreational facilities. Public art has been incorporated into these amenities and the effort to expand this initiative should continue. For new developments, these facilities can be required to be provided by developers. For existing developments, the Town could partner with local retailers and organizations to provide these facilities (such as an “Adopt a Bench” program).

## **3.2 Policies**

Policies serve as a daily guide and reference for planning officials and Town staff and should be utilized when making decisions regarding future developments within Waynesville and its extraterritorial jurisdiction. In particular, policies should be utilized in implementing goals, objectives and actions, and in reviewing zoning classification changes or plats for proposed developments. The following policies are recommended guidelines for the development, location and maintenance of existing and planned pedestrian facilities. These policies have been divided into three main categories: Development Policies and Regulations, Coordination with other Groups and Agencies, and Town Planning Efforts.

### **Developmental Policies and Regulations**

#### ***Guidelines for development decision:***

- Ensure that the Town’s development review process for commercial and office developments include careful consideration of pedestrians to ensure safety.
- Require all development proposals to incorporate sidewalks along the pedestrian corridors, and require developers to dedicate right-of-way, as needed, to accommodate these sidewalks.
- Require all sidewalks to be at least five feet wide, with wider sidewalks required along streets that have a high volume of pedestrian traffic.
- Require sidewalks to be constructed on both sides of thoroughfares and arterials (high volume roadways) and one side of local residential streets, as a minimum, where topography allows.

#### ***Location of pedestrian facilities:***

- Require sidewalk connections between adjacent commercial/office developments.
- Require sidewalk and/or greenway connections between trip origins and nearby destinations, such as between residential neighborhoods, shopping centers, schools, parks, employment centers, significant historical sites, transit stops, civic buildings, and other major destinations.



- Require developers to provide off-street pedestrian connectors, such as sidewalks or greenways, between cul-de-sac termini and nearby developments. This will provide shorter walking distances to nearby destinations, which will help encourage residents to walk to these destinations instead of driving.
- Where steep slope issues exist, require sidewalks to be constructed on one side of the road or require off street pedestrian facilities such as multi-use paths.
- When deemed desirable for pedestrian connectivity by the Planning Board, require developers to construct a sidewalk or greenway for the purpose of accommodating a completed public sidewalk and/or greenway system. Require developers to also dedicate the necessary land to accommodate these facilities for public right-of-way, or require that an ingress/egress easement for the facilities be provided.
- Develop a program for developers to pay a fee in lieu of sidewalk construction where topography and /or low potential for pedestrian use make sidewalk construction undesirable, with fees to be spent on high priority sidewalk projects.

## ***Pedestrian safety***

- Require marked crosswalks, indicated with pavement markings, and pedestrian signals at key signalized intersections where sidewalks and wheelchair ramps are provided. Marked crosswalks should also be provided at unsignalized intersections that have high volumes of pedestrian traffic or where increased pedestrian crossing awareness is desired.
- Require curb radii at intersections to be the shortest length possible that will accommodate turning movements of the anticipated vehicular traffic. This recommendation will reduce the crossing distances for pedestrians thereby reducing reduce the amount of time pedestrians are in the roadway.
- Require two curb ramps per corner, one at each radius return, for pedestrian crossings at intersections. Unlike diagonally placed ramps (which result in one ramp per corner), this placement will provide the shortest crossing distances and will not require pedestrians to realign themselves while in the roadway in order to remain in the crosswalk.
- Ensure bushes and trees are appropriately trimmed at intersections and along sidewalks to ensure pedestrian visibility. According to the Code of Ordinances, it is the homeowner's responsibility to remove any shrubs, undergrowth, trees, weeds, or any other type of plant growth which obstructs sidewalks.

## ***Creating pedestrian friendly environments***

- Adopt sidewalk regulations (widths, allowable uses, etc.) for urban and pedestrian-oriented areas that accommodate sidewalk cafés and pedestrian and bicyclist appurtenances, such as landscaping, benches, pedestrian-scaled lighting, and bicycle parking (bike racks and bike lockers).
- As areas near the CBD redevelop, the Town should promote mixed-use and pedestrian oriented development for these areas, with a focus on providing pedestrian connections to the CBD and surrounding areas.

## **3.3 Facilities**

The following are recommendations for specific facilities and facility improvements for Waynesville. Additional information regarding specific priorities of facilities is available in Chapter 5.



## Greenways

- Extend the greenway system along Richland Creek and Raccoon Creek as indicated in Figure 3.1.
- Acquire ownership interest in properties, especially those within floodways, along corridors designated for greenway expansion as shown in Figure 3.1.
- Post highly visible signage along the greenway and surrounding roads to inform residents and visitors of greenway access points.
- Provide for more distinguished wayfinding signage along the greenway system.

## Sidewalks

- Improve existing sidewalks by removing obstructions, repairing damage, and providing wheel chair ramps at intersections throughout the town.
- Work with NCDOT on new projects to insure the provision of pedestrian facilities as recommended by this plan, including on Howell Mill Road, Plott Creek Road, South Main Street and all bridge replacement projects
- Provide for pedestrian facilities in corridor plans in accordance with the standards of this plan.
- Complete sidewalk construction, especially the missing links, along the “backbone” of the pedestrian system: Main Street (US Business 23) and Russ Avenue / Pigeon Street (US 276) for their entire length within the town’s planning jurisdiction.
- Complete the sidewalk systems, especially the missing links, within the two primary nodes of the pedestrian system: the CBD and downtown Hazelwood.
- Complete missing links within existing neighborhood sidewalk systems.
- Develop new sidewalks along residential collector streets and thoroughfares linking neighborhoods with the existing pedestrian transportation system.
- Develop new linkages between the greenway system and the existing sidewalk system.

## Crosswalk and Pedestrian Crossings

- Provide marked crosswalks at all “sidewalk connector” road crossings as shown on the Greenway Plan, Figure 1.3
- Extend sidewalks across the railroad tracks at all railroad crossings where sidewalks are present.
- Provide well-marked and signed pedestrian crossings and pedestrian refuge islands, where appropriate, in the vicinity of Hazelwood Elementary School, Junaluska Elementary School, Waynesville Middle School and Central Elementary School.
- Provide pedestrian crossing pavement marking, signage and other facilities at all pedestrian crossings along and across major and minor thoroughfares such as Russ Avenue at Frazier Street, Barber Boulevard, Dellwood Road/Howell Mill Road, Waynesville Plaza driveway, and Walnut Street and along South Main Street at Brown Avenue, Riverbend Street, Virginia Street/Country Club Drive, Legion Drive, Hazelwood Avenue, and Pigeon Street (US 276).

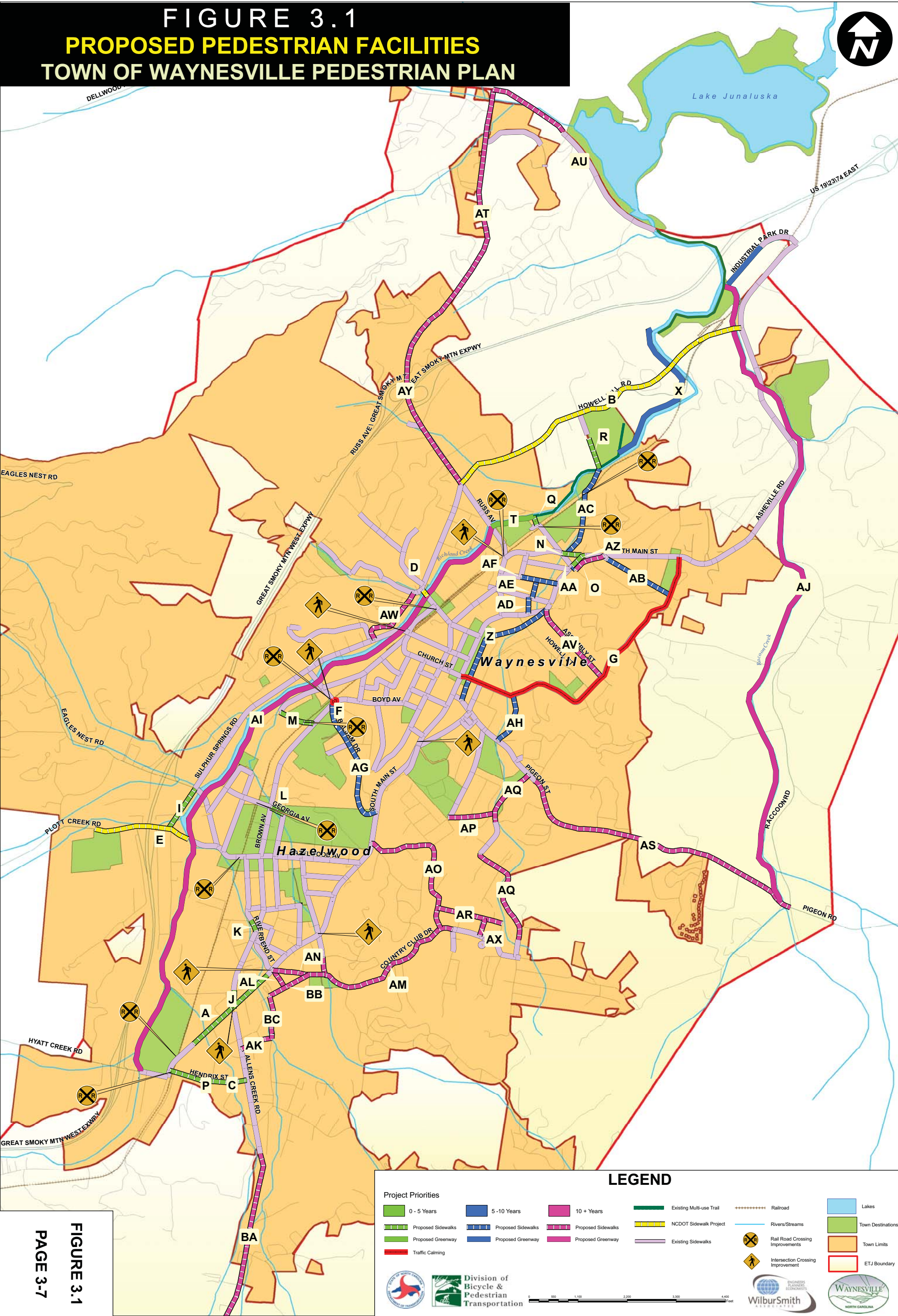
The specific projects associated with each of the facility improvements listed above are included in Chapter 5 and illustrated on Figure 3.1.





Intentionally left blank

FIGURE 3.1  
PROPOSED PEDESTRIAN FACILITIES  
TOWN OF WAYNESVILLE PEDESTRIAN PLAN





## Chapter 4 - Pedestrian Standards and Guidelines

To aid in the construction of the facility recommendations proposed in Chapter 3, this chapter presents various bicycle facility design guidelines that are appropriate for the proposed facilities. The Bicycle and Pedestrian Transportation Division (BPTD) of the North Carolina Department of Transportation (NCDOT) created these guidelines to assist municipalities in planning and engineering a safe and comfortable walking environment for pedestrians. The guidelines presented are in accordance with standards set by the American Association of State Highway Transportation Officials (AASHTO), the Manual for Uniform Traffic Control Devices (MUTCD) and the Americans with Disabilities Act (ADA).

### **4.1 SIDEWALKS**

Sidewalks and walkways are “pedestrian lanes” that provide people with space to travel within the public right-of-way that is separated from roadway vehicles. In many ways, they act as the seam between private residences, stores, businesses, and the street. Sidewalks 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 sidewalks.

The Federal Highway Administration (FHWA) defines sidewalks as “walkways that are parallel to a street or highway” and walkways as generally being “pedestrian paths, including plazas and courtyards.”



*Sidewalk 5 feet in width*

#### **Sidewalk Widths**

BPTD recommends a minimum travel path width of 5 ft. for a sidewalk or walkway, in accordance with AASHTO, the FHWA, and the Institute of Transportation Engineers (ITE). A sidewalk width of 5 feet 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 with curb and gutter sections. The division recommends that areas with significant pedestrian traffic, such as in the CBD area of Waynesville, should feature eight- to ten-foot wide sidewalk. Where sidewalks align with the edge of an angled or 90-degree parking lot, a minimum of 30 inches of parked car overhang obstructing the sidewalk shall be taken into account in order to maintain the minimum travel path width.

AASHTO recommends the construction of sidewalks on all town streets, including those in rural areas. ITE recommends sidewalk installation on both sides of the street whenever possible for new urban and suburban streets, especially in commercial areas, residential areas with 4 or more units per acre, or residential areas on major arterials and collectors. If sidewalks on both sides of the road are not possible, lower density rural or suburban



residential areas might adequately serve its pedestrians with a sidewalk on only one side or with four-foot wide shoulders on either side of the road.

It is important to note the potential for conflicts between pedestrians and bicyclists on paved shoulder. Both bicyclists and pedestrians must exercise caution in order to avoid potential crashes on paved shoulders. A paved shoulder is sometimes adequate in certain low density, low traffic situations, or where steep terrain or limited Right of Way make grading for sidewalks difficult.

## Construction Materials and Methods

Improvements for new, retrofitted, and repair to sidewalks throughout the town should be constructed using the following methods and materials:

**Materials** — Sidewalks should be constructed of Portland Cement Concrete (PCC) with a 14-day flexural strength that is not less than 3,000 pounds per square inch (psi).

**Subgrade Preparation** — Subgrade should be thoroughly compacted and finished to a smooth, firm surface, and should be moist at the time the concrete is placed.

**Subgrade Compaction** — Except in areas where it is practical to use standard type rollers, compaction should be by means of vibratory hand compactors.

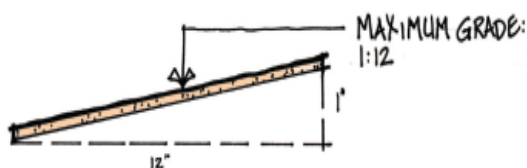
**Final Finish** — Surface finish for sidewalks should be completed by brushing (with brooms) or by another approved method to provide a uniform non-skid surface.

**Inspections and Performance** — Sidewalk forms should be inspected by municipal staff prior to the placement of concrete. Concrete that does not meet minimum mixture and strength standards or settles after placement should be removed and replaced by the installer.

**Alternative Materials Usage** — Use of materials for sidewalks other than concrete and the construction methods used therewith must be approved by the Town engineer or designated representative on a case by case basis. There are some successful examples where other materials such as asphalt, crushed stone, or other slip resistant material have been used. Concrete is preferred surface, providing the longest service life and requiring the least maintenance.

## Grade

AASHTO recommends the following grades for sidewalks: Continuous sidewalk grades should not exceed 5% (1:20). However, in areas where the existing topography or the



adjacent street cause grades of more than 5%, sidewalk grades of up to 8.33% (1:12) may be used for a rise of no more than 2.5 feet, provided that level landings (grades less than 0.5%) are provided at the end of such grades and are at least 5 feet long.

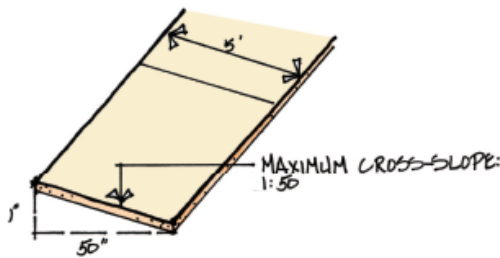


In cases where grades greater than 8.33% (1:12) must be negotiated, switchbacks or other approved ramping techniques must be provided and will conform to ADA requirements.

Additional right-of-way and/or easements necessary to accommodate these features will be obtained by the applicant and legally dedicated to the Town.

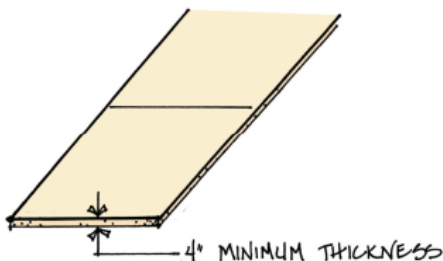
## Cross-Slope

Sidewalks and walkways should be designed such that grades and cross slopes are minimized to allow those with mobility impairments to negotiate with greater ease. The maximum allowable cross-slope for sidewalks is 2% (1:50). At driveways, curb cuts, and both marked and unmarked crosswalks, the maximum allowable cross-slope must be maintained for a minimum width of 3 feet. Cross-slope should be oriented toward the adjacent roadway and sufficient to provide storm water runoff without creating standing water on the walkway.



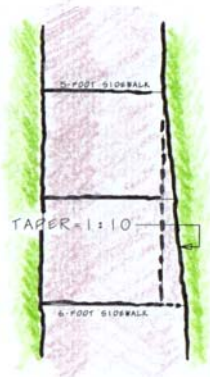
## Sidewalk Thickness

A minimum thickness (or depth) of 4 inches of concrete is required for all new sidewalks except as noted. To accommodate the additional loading caused by pedestrian density or by vehicles crossing a sidewalk, a thickness of 6 inches is required where sidewalks intersect at wheelchair/crosswalk ramps, and at driveways that use a ramp or apron-type access to cross the sidewalk from the adjacent public street.



## Transitions

Wheelchair ramp and driveway transitions to or crossing sidewalks must conform to current ADA requirements.



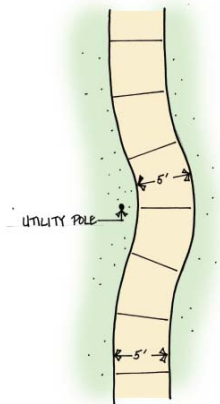
## Tapers

Transitional tapers to and from sidewalks of different widths are to be at a maximum rate of 1-foot of width per 10 feet of length (1:10) except as approved by the Town.

## Sidewalk Alignment

Sidewalks should parallel the roadway. Typical exceptions include:

**Horizontal Curve Sections on Roadways** — In situations where a roadway curves at an angle greater than 60 degrees (and where right-of-way permits), the designer is permitted to adjust the curve of the sidewalk to more easily accommodate pedestrians.



**Presence of Natural and Manmade Features** — The 5-foot minimum width of the travel path must be free of obstructions. The designer is permitted to alter the sidewalk path to avoid significant obstructions including but not limited to: transformers, utilities and utility poles, fire hydrants, and traffic signal hardware. Sidewalk path exceptions should be evaluated and approved on a case-by-case basis by the Town. Care should also be used to ensure that the travel path does not interfere with the integrity of trees or of historic features.

**Meanders** — Unwarranted sidewalk meandering is strongly discouraged. Meandering to avoid an obstacle or feature is acceptable, but people generally prefer to walk in a direct path to their destination. Meanders must meet minimum ADA requirements unless otherwise approved by the municipality.

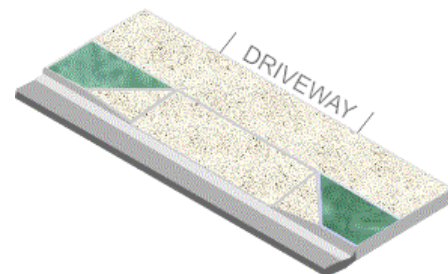
## Driveways

*It is important to understand the effect that ADA standards have on driveways and cross-slope.*

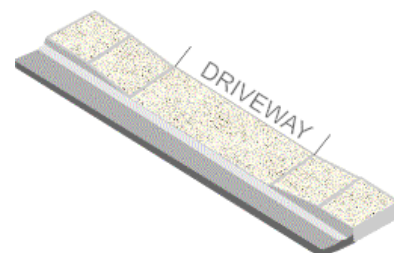
The figures at right indicate the preferred (top), conditionally acceptable (middle), and unacceptable (bottom) design solutions for new driveways as they interface with sidewalks. The intent is to make wheelchair travel safe along the sidewalk without directing the user into traffic through angled (cross) slope designs. The preferred alternative is also easier for the pedestrian to negotiate and indicates that the pedestrian has right of way over the automobile. Cross-slope on sidewalks should not exceed 2%, preferably not 1.5% where possible.

## Sidewalk Buffers

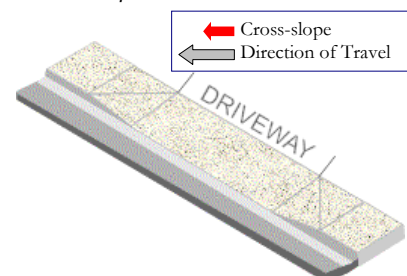
Buffer zones between pedestrian paths and vehicular traffic provide a sense of security to those on foot or in wheelchairs and give the path a comfortable scale and clear definition. Buffers can also provide other benefits to pedestrians depending on the type used. Buffer zones may either be paved or they may involve a planting strip. Much like the sidewalk itself, the form and topography of a buffer may vary greatly. AASHTO recommends a buffer width of two to four feet for local or collector streets, and a buffer width of five to six feet for arterial or major streets, whether for a paved buffer zone or a planting strip.



**Preferred** – The sidewalk is set behind the driveway apron and planting strip.



**Conditionally Acceptable** – The "dip" at the driveway apron allows for safer passage with no cross-slope.



**Not Acceptable** – The cross-slope at the driveway apron provides a difficult challenge for a person using a wheelchair or cane.

## Planting Strips

Continuous zones of landscape, located between the sidewalk and the street curb or the edge of road pavement, perform a multitude of essential tasks. Planting strips contribute to the walkability of a street by providing shade. In addition to providing shade, street trees - along with turf and other plantings - help reduce urban temperatures, improve water quality, lower stormwater management costs, and add beauty to the street for the pedestrian, the driver, and the adjacent land use.

The recommended planting width to permit healthy tree growth is 4 to 10 feet measured from the back of curb. Planting strips are the preferred means of providing a buffer, but are not feasible or appropriate in all pedestrian situations.

The width of the planting strip shall increase with a greater plant density or as the size of the mature tree increase. This separation from motorized traffic decreases road noise while increasing a pedestrian's sense of security and comfort. Added benefits of this separation include space for signage, utilities (fire hydrants), and vegetation.

The **NCDOT Guidelines for Planting Within Highway Right-of-Way**, provides guidelines for planting within highway right-of-way for various types of roadway facilities, different travel speeds and different curb and gutter or shoulder sections. These guidelines also provide guidance for planting within the existing right-of-way considering:

- Distance from travel lane
- Vertical clearance
- Sight distances
- Selection of plants
- Pavement removal
- Effect on mowing and drainage
- Traffic operation and safety

## Paved Buffer Zones

In some situations, continuous planting strips are not feasible, particularly where there is a high degree of foot traffic between the sidewalk and the street. As such, these planting strips are typically used in downtown or commercial areas. In these cases, a paved buffer zone should be provided between the travel path of the sidewalk and the curb. Though a constant width is preferred for this buffer zone, the width may vary as long as the buffer does not interrupt the pedestrian travel path. Items located in the buffer zone can include street furniture, planters, trees planted with tree grates, streetlights, street signs, fire hydrants, etc. Such items are placed in the buffer zones so as not to restrict pedestrian flow in the travel path.



*Sidewalk with a paved buffer zone and planting zone.*

Street Tree plantings in tree grates and tree pits with an improved soil and drainage 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 a paved or vegetative buffer zone is not possible, a row of parked cars or a bike lane can be used to create this buffer.

#### Buffer Paving Options

A different type of paving from the sidewalk paving could be considered for the buffer zone for various reasons. Textured pavements, pavers, or pervious pavement can be used to add significant aesthetic value and help define a unique place. Using pervious materials for parking, sidewalk furniture areas, and for frontage zones can reduce environmental concerns. A change in paving type can help distinguish the pedestrian buffer zone from the pedestrian travel path. Sand-set pavers are recommended in the buffer zone for ease of utility maintenance. In designing sidewalk buffers, it is important to provide adequate clearance from potential obstructions.

Type	Sidewalk Width	Planting Strips	
		With Street Tree	No Street Tree
Local residential	5 ft.	4 - 6 ft.	3 - 5 ft.
Thoroughfares/ Collectors	6 - 8 ft.	6 - 10 ft.	5 - 6 ft.
Downtown or business districts	*10 - 15 ft.	n/a	n/a

\* Planting strip would be located within sidewalk width.

#### Additional Considerations

Though the buffers described above each provide some sort of physical barrier from moving vehicular traffic, it is vital for pedestrians on the sidewalk to have a clear view of drivers and vice-versa. This is a particularly important consideration in designing and maintaining planting strips. It is important to eliminate both high and low contact points with tree branches, mast-arm signs, overhanging edges of amenities or furniture. In addition, it is necessary to provide two feet of clear space from store fronts to accommodate shy distance from walls and the opening and closing of doors.

## **4.2 PATHS/GREENWAYS**

### Multi-Use Paths

Multi-use paths are paved road-like facilities, such as the Richland Creek Greenway, designed to be used by pedestrians and bicyclists as well as others, including those on roller blade, skateboards and other alternative modes of transportation. Paths can be paved or unpaved, can be along creeks or streams, and can be designed to accommodate a variety of path users.





The alignment of these corridors should avoid road right-of-way whenever possible to minimize intersection and driveway crossings. Because these paths typically do not cross roads at signalized intersections, they should include pedestrian crosswalks, underpasses, culverts, or overpasses at each road crossing for safety.

## Design Criteria

Multi-use paths shall be designed with clearance requirements, minimum radii, stopping sight distance requirements, and other criteria — similar to the criteria for roadway design.

Multiple-use paths shall be a minimum of 10 feet wide; with minimum 2 foot wide graded shoulders on each side (AASHTO recommends 5 foot shoulders) to protect users from grade differences. These shoulders can be grass, sand, finely crushed rock or gravel, natural groundcover, or other material. Sections of the path where shoulders cannot be provided because of stream crossings or other elevated grade issues should have protection such as rails, fences, or hedges.

Paths of 12'-14' in width are preferred for areas where high volumes of users are expected. If it is not possible to increase the width, including a divider line down the center for bi-directional traffic can be helpful as a means of increasing safety for path users. The width of a path may be reduced to 8 feet, depending upon physical or right-of-way constraints. These paths should keep the contour of the land for aesthetic and environmental reasons, but for practicality reasons should not be unnecessarily curved. The minimum radii or curvature recommended by AASHTO is 30-50 feet, and the cross slope should typically be less than 2%. The grade should not be more than 5%, but could reach 11% for short distances according to ADA and AASHTO guidelines. Right angles should be avoided for safety reasons, especially when considering bridge and road crossings.

## Vertical and Horizontal Clearance

Selective thinning of vegetation along a path increases sight lines and distances and enhances the safety of the path 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. A total of 8 to 10 feet of vertical clearance should be provided.

## Pavement Types

Each path is unique in terms of its location, design, environment, and intended use. For each segment of the path, care should be given to selecting the most appropriate pavement type, considering cost-effectiveness, environmental benefit, and aesthetics.

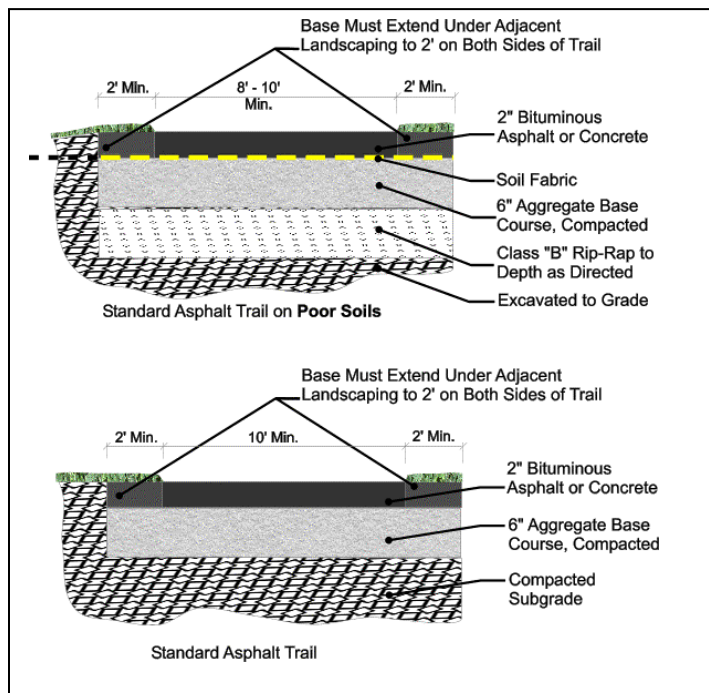
Typical pavement design for a paved, off-road, multi-use paths and greenway paths should be based upon the specific loading and soil conditions for each project. These paths should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles. Pavement types may vary between conventional or pervious concrete, asphalt, crushed fines, dirt, or boardwalk.

**Conventional Concrete** – In areas prone to frequent flooding, it is recommended that concrete be used because of its excellent durability. Concrete surfaces are capable of holding up well against the erosive action of water, root intrusion and subgrade deficiencies such as soft soils. Of all surface types, it is the strongest and has the lowest maintenance requirement, if properly installed. Installation of concrete is the most costly of

all surface types, but, when properly installed, requires less periodic maintenance than asphalt or crushed fines. It is recommended to install 4-inch thickness on compacted 4-inch aggregate base course.

**Pervious Concrete** – Pervious concrete is a recent invention which allows storm water to percolate, reducing pollutants included in the stormwater runoff, when used over permeable soils. This type of concrete has superior traction due to its rough, uneven surface. However, the rough surface is unfavorable for rollerblading and skateboarding as it does not allow for smooth mobility. Pervious concrete has a higher installation cost than conventional concrete.

**Asphalt** – Asphalt is a flexible pavement and can be installed on virtually any slope. Asphalt is smooth, joint free and softer than concrete, preferred by runners, rollerbladers, cyclists, handicap users, and parents pushing baby buggies.



Construction costs are significantly less than for concrete. Installation should include a minimum 2-inch 1-2 asphalt thickness with 4-inch aggregate base course. Installation of a geotextile fabric beneath a layer of aggregate base course (ABC) can help to maintain the edge of a path. Asphalt pavement is also helpful in supporting a path in poor soils. Asphalt pavement can last up to 20 years with periodic maintenance. One important concern for asphalt paths is the deterioration of path edges. It is important to provide a 2' wide graded shoulder to prevent path edges from crumbling.

**Crushed fines** – Crushed fines are excellent for running paths, as well as walking, mountain bike and equestrian use and are constructed of small, irregular and angular particles of rock, crushed into an interlocking tight matrix. They can be constructed to meet ADA requirements. Crushed fines paths must be smoothed out and graded several times per year.

**Dirt/Compacted Soil** – Dirt paths are recommended for hiking trails, mountain bikes and equestrian uses. It is important to grade dirt on steep slopes to avoid erosion.

**Boardwalk** – Boardwalks are structures made of wooden planks constructed for pedestrians and/or cyclists along beaches or through wetlands, coastal dunes and other sensitive environments.

## Environmental Issues

Environmental protection should be a priority with the planning and construction of a path. Path design, construction type, and construction schedule should all reflect environmental considerations. For example, a path offers some leniency with its alignment compared to a sidewalk, offering opportunities for selective clearing of vegetation. Also, asphalt may not be considered a good surface material in areas that are often wet or have moving water, because of its petroleum base and its tendency to break up when flooded.

Greenway paths improve water quality by establishing buffers along creeks and streams. These buffers provide habitat for a diversity of plant and animal species. They serve as natural filters, trapping pollutants from urban runoff, eroding areas and agricultural lands. Stream buffers also reduce the severity of flooding by releasing storm water more gradually, giving the water time to evaporate, or percolate into the ground and recharge aquifers, or be absorbed and transpired by plants. In addition, paths provide more transportation choices for people who wish to walk or bicycle. By doing so, they help to decrease dependence upon automobiles and thus contribute to improved air quality. All proposed paths and other improvements should be designed, constructed and maintained with their ecological value in mind. Any disturbance of natural features should be kept to a minimum and conform to all jurisdictional environmental policy and ordinances.



*Multiuse Path*

The protection of streams by easement and the creation of paths along a greenway easement can help to ensure that no dumping occurs in the waterway, as users of this facility would report dumping to authorities. There is a need to help preserve these resources by ensuring that there is sufficient space between the greenway and the waterway, by avoiding building in the path of trees, and by avoiding constructing on rock features, such as escarpments.

Protection of trout streams within Waynesville and Haywood County is extremely important. According to the North Carolina Department of Environment & Natural Resources (NCDENR), trout waters are defined in the Environmental Management Commission Rule (15A NCAC 2B.0202) as “waters which have conditions which shall sustain and allow for trout propagation and survival of stocked trout on a year-round basis”. All named and unnamed tributaries to trout waters usually carry the trout waters classifications. The Sedimentation Pollution Control Act of 1973 requires buffer zones along trout waters. G.S. 113A-57(1) of this Act says: “Waters that have been classified as trout waters by the Environmental Management Commission shall have an undisturbed buffer zone 25 feet wide or of sufficient width to confine visible siltation within the twenty-five percent (25%) of the buffer zone nearest the land-disturbing activity, whichever is greater. Provided, however, that the Sedimentation Control Commission may approve plans which include land-disturbing activity along trout waters when the duration of said disturbance is temporary and the extend of said disturbance would be minimal.”

By law, buffers are required on trout waters regardless of the size of land disturbance. Trees, left undisturbed, provide protection for waters that support trout populations





Division of Land Resources (DLR) Rule 15A NCAC 04B.0125 specifies the following requirements for buffer zones for trout waters that must be met:

- The (minimum) 25-foot buffer must be measured horizontally from the top of bank.
- A land-disturbing activity in the buffer zone adjacent to trout water can be permitted if the duration of the disturbance is temporary and the extent of the disturbance is minimal. Permission must be received from DLR.
- To be considered minimal, a land-disturbing activity must meet two conditions:
  1. The land-disturbance must be limited to a maximum of ten percent of the total length of the buffer zone on your property.
  2. There must not be more than 100 linear feet of disturbance in each 1000 linear feet of buffer zone.
- If the disturbance will exceed 10 percent or 100 linear feet in every 1000 linear feet, approval for the disturbance must be obtained from the Director of Division of Land Resources.

Construction of pedestrian facilities in Waynesville and Haywood County must adhere to these trout waters buffer requirements.

### Path Amenities and Accessibility

Although paths should be thought of as roadways for geometric and operational design purposes, they require much more consideration for amenities than do roadways. Shade and rest areas with benches and water sources should be designed along multi-use paths. Where possible, vistas should be preserved. Way finding signs (e.g., how far to the library or the next rest area, or directions to restrooms) are important for non-motorized users.

Path amenities should be just as accessible as the paths themselves. Periodic rest areas off to the side of accessible paths are important features as well, and should be level and placed after a long ascent.

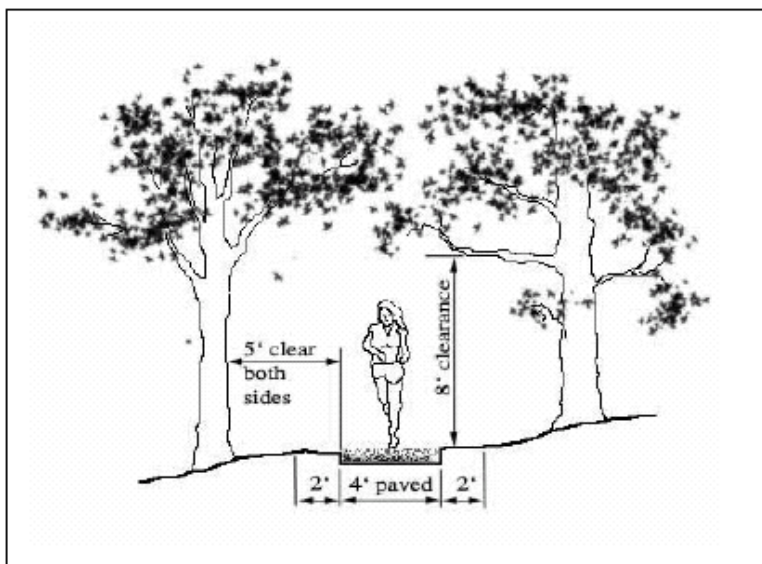
These paths should be open at all hours so that it can serve as a reliable transportation route. Lighting in some situations should be avoided along greenways, as it would disrupt the atmosphere surrounding the path. Reflective stripes or markers also aid in providing directional guidance in low-light situations. Lighting the path itself can restrict the visibility of areas beyond the path. Existing street and structure lighting in urban areas can effectively and adequately light an adjacent path. For safety reasons, requiring that all bicycles and roller-bladers carry lights and all pedestrians wear reflective clothing during non-daylight hours is also important.

### Sidepaths/Wide Sidewalks

A sidepath is essentially a multi-use path that is oriented alongside a road. The AASHTO bike guide and North Carolina Design Guidelines strongly caution those communities contemplating the construction of a sidepath (or wide sidewalk) facility to investigate various elements of the roadway corridor environment and right-of-way before committing to its construction.

### Foot Path

In environmentally sensitive areas, such as stream banks and lowlands, a 4 ft. wide soft surface should be used (crusher fines recommended), with 2 ft. wide improved shoulders. A vertical clearance of a minimum of 8 ft. should be maintained. All paths should be maintained with a 5 ft. cleared area from the edge of the path on each side and paths should be pitched to drain with a 2% minimum grade. Paving materials may vary in specific locations.



### 4.3 RAISED OR LOWERED MEDIANS

Medians are barriers in the center portion of a street or roadway. Medians allow for less interaction between cars and bicycle and pedestrians, and make more opportunities for bicycle lanes. A center turn lane can be converted into a raised or lowered median thus increasing motorist safety. Travel lanes may be narrowed to accommodate the placement of a median. 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. According to AASHTO guidelines, the length of a median should be a least 20 feet.



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.

Sensitivity to large vehicles (buses, trucks and fire equipment) dictates some elements of the median design, curb style, and placement. Median-controlled roadways reduce the number of turning conflicts and are generally preferred for both pedestrians and cyclists over a two-way, left-turn lane (TWLTL) roadway.

## Landscaping

Medians provide opportunities for landscaping that in turn can change the character of the street and help to slow traffic. Landscaping should not obstruct the visibility between motorists and pedestrians.

## Median Pedestrian Refuge Islands

When used in conjunction with mid-block or intersection crossings, medians can be used as a crossing island to provide a place of refuge for pedestrians. Pedestrian refuge islands should be designed along roadways with fewer lanes and pedestrian signals that will allow the pedestrian enough time to cross the street.

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. 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.

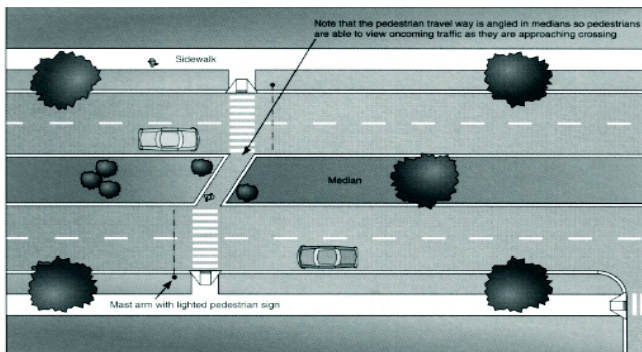


Figure (I):  
A lowered median can be used to filter stormwater and provide a refuge for pedestrians crossing a roadway<sup>3</sup>.

### *Median Pedestrian Refuge Island*

two halves as they cross the street. Note that the crosswalk on the right side of the diagram is configured at a skewed angle as it crosses the median. This allows pedestrians to have a better angle of sight as they approach and cross each side of the street. In all cases, a minimum 10-foot travel lane is maintained for pedestrians.

The graphic at left indicates the design and markings associated with refuge islands. Note that pavement markings delineate the approach to the islands and that the islands are “split” to allow for a level platform for wheelchair use. Median crossings should possess a minimum of a 4 foot square level landing to provide a rest point for wheelchair users. In cases where there are wide roads and high traffic volumes, a push-button pedestrian signal may be mounted in the refuge area to allow pedestrians to split their trip into



## **4.4 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). A study should be completed prior to placing crosswalks to determine the need and the best type and location of that crosswalk.

North Carolina state law permits crossing at all intersections whether the intersection is marked with a crosswalk or not. 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 is desirable.

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 not difficult to maneuver by any person including those with physical mobility or vision impairments.

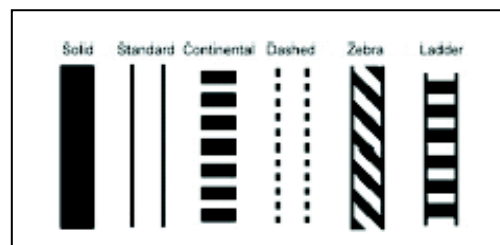
Although marked crosswalks provide strong visual clues to motorists that pedestrians are present, it is important to consider the use of these elements in conjunction with other traffic calming devices to fully recognize low traffic speeds and enhance pedestrian safety.

### Width

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. An engineering study may need to be performed to determine the appropriate width of a crosswalk at a given location.

### Paint

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 the adjacent figure. Crosswalk markings should be white, per MUTCD. Crosswalk markings should extend the full length of the crossings. Crosswalk lines of 10-12 inches of width are the recommended minimum. Curb ramps and other sloped areas should be fully contained within the markings.



*Illustration of all the variety of patterns possible in designating a crosswalk*

## Pavement Treatment

A variety of colors or textures may be used to designate crossings. These materials should be smooth, skid-resistant, and visible. 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.

## Raised Crosswalk

In areas with a high volume of pedestrian traffic, particularly at mid-block crossings, a crosswalk can be raised to create both a physical impediment for automobiles and a reinforced visual clue to the motorist. Raised crosswalks are typically installed only on two-lane streets with a speed limit of less than 35 mph. In conjunction with raised crosswalks, it is necessary to use detectable truncated dome warnings at the curb lines. Visible pavement markings are necessary for the roadway approach slopes.



*Raised Crosswalk*

## Mid-Block Crossings

Midblock crossings can help pedestrian access by supplementing crossing options. Midblock crossings may be used in areas where there are substantial pedestrian generators or where intersections along a roadway are spaced far apart. Mid-block crossings pose special problems for many state and local departments of transportation, since pedestrians will often choose to cross at the location that is the most convenient for them to do so, not necessarily where it is the safest. As a result, engineers and planners have developed guidelines for mid-block crossings.

Below are some general guidelines on mid-block crossings:

- Provide only on roads with a speed limit of less than 45 MPH.
- Do not install within 300 feet from another signalized crossing point.
- Base installation of a mid-block crossing on an engineering study or pedestrian route placement.
- These crossings are recommended near schools, pedestrian routes, retail areas, recreation, and residential areas.
- Require advance auto-warning signs and good visibility for both the driver and the pedestrian.
- Providing a safe crossing point is necessary since pedestrians tend not to walk far for a signalized intersection.
- Provide an audible tone.
- Include a pedestrian refuge island on wide streets that:
  - Have fast vehicle speeds, or with large vehicle or pedestrian traffic volumes.
  - Where children, people with disabilities, or elderly people would cross.
  - Have complex vehicle movements.
- Offers insufficient time to cross because of traffic demands

#### **4.5 ADVANCE STOP BARS**

Vehicle and pedestrian visibility is increased by placing a vehicle advance stop bar 4 to 10 feet back from the pedestrian crosswalk at signalized crossings and mid-block crossings. In certain situations, a larger setback of the advance stop bar may be required. 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%.



*Advance stop bar  
Source: Pedestrian and Bicycle  
Information Center  
Image Library*

#### **4.6 PEDESTRIAN SIGNALS**

Traffic signals assign the right of way to motorists and pedestrians and produce openings in traffic flow, allowing pedestrians' time to cross the street. When used in conjunction with pedestrian friendly design, proper signalization should allow for an adequate amount of time for an individual to cross the street. The suggested amount of pedestrian travel speed recommended in the Manual on Uniform Traffic Control Devices (MUTCD) is 4ft/sec. However, a longer crossing time may be necessary to accommodate 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 significant numbers of elderly and children using an area.

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

##### **Types of Pedestrian Signals**

**International Pedestrian Signals** - According to the MUTCD, international pedestrian signal indication should be used at traffic signals whenever warranted. As opposed to early signalization that featured "WALK" and "DON'T WALK", international pedestrian symbols should be used on all new traffic signal installations. 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, and clearly visible to make crossing safe for all pedestrians.

**Countdown signals** - Countdown signals are pedestrian signals that show how many seconds the pedestrian has remaining to cross the street. The countdown can begin at the beginning of the WALK phase, perhaps flashing white or yellow, or at the beginning of the clearance, or DON'T WALK phase, flashing yellow as it counts down.



**Audible signals** - Audible cues can be used to pulse along with a countdown signal. The signals are used for visually and audibly impaired individuals. Consideration should be paid to the noise impact on the surrounding neighborhoods when deciding to use audible signals.

**Pedestrian signal timings** - 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 crossing 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 exist<sup>1</sup>.



Where there are high-volume turning situations that conflict with pedestrian movements, the exclusive pedestrian interval is the preferred solution. The exclusive pedestrian interval stops traffic in all directions. In order to keep traffic flowing regularly, there is often a greater pedestrian wait time associated with this system.

A proven enhancement that prevents many of the conflicts addressed under either of the former methods is Leading Pedestrian Signal (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 pedestrians. As with the exclusive pedestrian interval, an audible cue will need to accompany the WALK signal for the visually impaired.

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 conflicts. 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.



Passive pedestrian detection equipment is becoming more common, and can be recommended in high-volume locations where many pedestrians are crossing a five-lane (or greater) street cross-section.

#### **4.7 RIGHT TURN ON RED RESTRICTIONS**

Introduced in the 1970's as a fuel saving technique, the Right Turn on Red (RTOR) law is thought to have had a detrimental effect on pedestrians. The issue is not the law itself but rather the relaxed enforcement of certain caveats within the law such as coming to a complete stop and yielding to pedestrians. Often motorists will either



*A low cost sign that restrict right-hand turns at a red light.  
Source: Pedestrian and Bicycle Information Center*

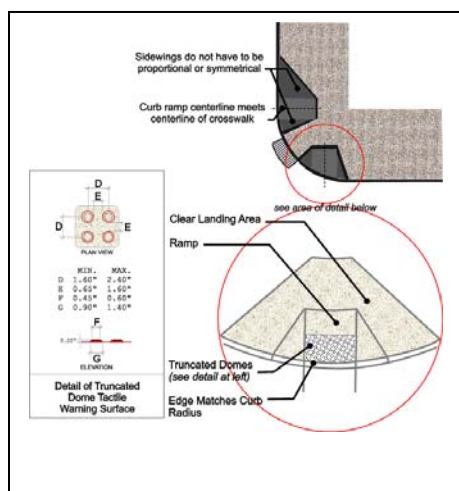
nudge into a crosswalk to check for oncoming traffic without looking for pedestrians or slow, but not stop, for the red-light while making the turn. There is legitimate concern that eliminating an RTOR will only increase the number of right-turn-on-green conflicts where all of the drivers who would normally have turned on red, now are anxious to turn on green. Some experts are concerned that eliminating right on red will increase the



R1-5  
**MUTCD**  
*Regulatory Signs*

number turning on green. Consider elimination on case by case basis and only where there are usually high pedestrian volumes.

#### **4.8 CURB RAMPS**



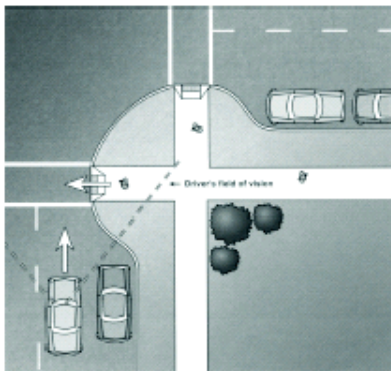
Curb ramps are critical features that provide access between the sidewalk and roadway for wheelchair users, people using walkers, crutches, or handcars, people pushing bicycles or strollers, and pedestrians with mobility or other physical impairments. In accordance with the 1973 Federal Rehabilitation 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 exist. 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 (or "sidewings" as listed in the graphic) 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. The minimum width for the curb ramp is four feet. 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. To provide a tactile warning to the visually impaired, raised truncated domes with a color contrast to the background material (typically concrete) should be used.<sup>i</sup> Two separate curb ramps, one for each crosswalk, should be provided at each corner of an intersection.

For additional information on curb ramps see the Federal Highway Administration and Designing Sidewalks and Trails for Access, Parts I and II, by the Federal Highway Administration.

## 4.9 CURB EXTENSIONS (BULB OUTS) AND CURB RADII



*By reducing a pedestrian's crossing with a bulb out, less time is spent in the roadway, and pedestrian vehicle conflicts are reduced.*

extensions preclude vehicle parking too close to a crosswalk. Also, curb extensions at intersections can greatly reduce turning speed, especially if curb radii are set as tight as possible. Finally, curb extensions also reduce travel speeds when used in mid-block crossings because of the reduced street width. Curb extensions should only be used where there is an existing on-street parking lane and should never encroach into travel lanes, bike lanes, or shoulders.

A curb extension, or bulb out, is an extension of the sidewalk 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. In addition, curb extensions may encourage motorists to drive slower by narrowing the travel lane and reducing vehicular speeds during turning movements at intersections. Curb extensions can be placed either at mid-block crossings or at intersections. Curb extensions at midblock locations are known as "chokers." Curb extensions at intersections are known as "neckdowns."

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, curb



*Curb Extensions (Bulb Outs)*

The table below illustrates the relationship between posted speeds and the curb (often called “corner”) radii Motorists will travel more slowly around corners with smaller curb radii even without the use of curb extensions.

Posted Speed Limit (mph)	Minimum Curb Radius (Feet)
Residential Lane or Alley – 10-15 mph	5
Residential Street - 15-25 mph	10-15
Residential Collector – 25-35 mph	15-25
Collector Street – 35-45 mph	20-30

#### **4.10 LIGHTING**

Proper lighting in terms of quality, placement, and sufficiency can greatly enhance a nighttime urban experience as well as create a safe environment for motorists and pedestrians. Two-thirds of all pedestrian fatalities occur during low-light conditions. Attention should be paid to lighting walkways and crossings, so that there is sufficient ambience for motorists to see pedestrians. Pedestrian lighting should be considered for areas of higher pedestrian volume, including downtown and key intersections. Lighting in commercial areas should be provided on both sides of the street.

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. Lighting for sidewalks and off-street paths should be provided where considerable pedestrian traffic is expected at night, where there is insufficient available light from the surrounding area, and at all designated road crossings.



*Source: Pedestrian and Bicycle Information Center*

Each lighting situation is unique and must be considered on a case-by-case basis. Average maintained horizontal illumination levels of 5 lux (0.5 foot candles) to 22 lux (2 foot candles) should be considered, though higher levels of light are sometimes advisable in special areas where security or safety issues might exist. Light poles should generally be 12 to 15 ft. high for lighting pedestrian areas. Luminaries and poles should be at a scale appropriate for pedestrian use.

Light fixtures, as well as other on-street facilities, like street furniture, can add a great deal in terms of street aesthetics and reinforce community identity. It is recommended that the community adopt a particular style of street lighting fixture appropriate for the municipality's identity and coordinate this choice with stylistic choices in other street facilities.





Sophisticated lighting needs to be directional and focused upon the street. A flat lens light is the best choice in lighting the street. Fixtures that produce glare should be avoided, as they produce diffused light and cause visibility problems. In addition, a cobra head light should be avoided.

The pedestrian-level lighting that is preferred includes mercury vapor, metal halide, or incandescent. Although low-pressure sodium lights may be energy-efficient, they are less desirable due to the color distortion they create. High-pressure sodium lights are preferable, as they create less color distortion.

Lighting should be sufficient so that pedestrians can see cars, and cars can see pedestrians. However, overlighting of an area can produce an environment that is unattractive to pedestrians and the resulting glare can cause visibility issues and can be dangerous to motorists, cyclists, and pedestrians.

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.” 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 ambiance, 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.

### **4.11 SIGNAGE**

Signage is governed by the MUTCD (6) which provides specific specifications on the design and placement of signage on the right-of-way. There are three types of signage:

- Regulatory
- Warning
- Wayfinding Signs

Regulatory Signs give notice of traffic laws or regulations that pedestrians, cyclists, and motorists are required by law to follow.

Warning Signs call attention to unexpected conditions on, or adjacent to, a roadway, bike or pedestrian facility that can be potentially hazardous to users.

Wayfinding or Guide Signs direct drivers, pedestrians, or cyclists to destinations, identify routes and streets, and nearby natural, historical or cultural features. The MUTCD includes categories of service, tourist, and recreational information. Examples of signage shown below:



Signage can be an effective tool to alert drivers to reduce speeds and allow pedestrians to exercise extra caution. It is important not to cause “clutter” when using a variety of signage. This can cause complacency and noncompliance with signs in general. Signs, and the sign text, should be large enough to be seen from a distance.

It is imperative that all signs be properly located so as not to obstruct the pedestrian and visibility triangles of motorists.

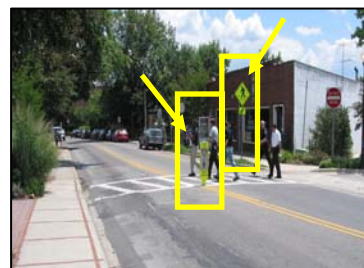


Wayfinding signage should orient and communicate in a clear, concise and functional manner. It should enhance pedestrian circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity. Regulations should also address the orientation, height, size, and sometimes even style of signage to comply with a desired local aesthetic.

It is recommended that municipalities adopt consistent and descriptive graphics to identify pedestrian routes. This signage system would assure pedestrians that they are safe and will not encounter gaps in facilities along these routes. A map should be incorporated into each route illustrating the entire pedestrian system and their location. Bus stops, destinations, and mileage should also be identified on the signs.

Maintenance of signage is as important as walkway maintenance. Clean, graffiti free, and relevant signage enhances guidance, recognition, and safety for pedestrians. Pedestrian-related signage serves primarily to notify motorists and others of the presence of pedestrians. The intended effect is to cause motorists drive more cautiously and reduce their speeds, thereby improving the safety for pedestrians in the given area.

Signs can be used in a variety of places, including at crosswalks, at intersections, in-street, and near schools. National standards for sign placement and use can be found in the Manual for Uniform Traffic Control Devices (MUTCD). The MUTCD provides guidance for warning signs which can be used at both crosswalks, or along the roadway:



*An example of two types of signs used to notify motorists of a pedestrian crossing.*

“Nonvehicular signs may be used to alert road users in advance of locations where unexpected entries into the roadway or shared use of the roadway by pedestrians, animals, and other crossing activities might occur.” (Page 2C – 21, 2003 Edition)

The following are some recommended signs which municipalities should consider installing. For more signs and more detailed guidelines for sign installation and use, Waynesville should consult the MUTCD.



The first sign is usually installed within the street to warn motorists to yield to pedestrians in a crosswalk - it does not have to be near a school. The second and third signs are common general pedestrian warning signs, while the fourth and fifth signs notify motorists of specific instances to watch for pedestrians. The fourth sign, "Turning Traffic", is usually placed at intersections to warn motorists that are turning right or left to yield to pedestrians in crosswalks.

For the fifth sign, the top sign can either be combined with the smaller "ahead" sign or the arrow symbol to indicate the presence of a crosswalk to motorists in a school zone. The signs at far right are examples of typical wayfinding signage to help direct cyclists at major decision points along a route.



**MUTCD Pedestrian-Related Signage**

Regulatory Signs

  
R1-5

  
R1-5a

  
R1-6

  
R1-6a

  
R5-10b

  
R5-10c

  
R9-1

  
R9-2

  
R9-3a

  
R9-4

  
R9-4a

  
R9-6

  
R10-4b

School, Warning, and Informational Signs

  
S1-1

  
S3-1

  
W11-2

  
W15-1

  
I-4

Sign	MUTCD Code	MUTCD Section	Conventional Road	
Yield here to Peds	R1-5	2B.11	450x450 (18x18)	Regulatory
Yield here to Peds	R1-5a	2B.11	450x600 (18x24)	
In-Street Ped Crossing	R1-6, R1-6a	2B.12	300x900 (12x36)	
Peds and Bikes Prohibited	R5-10b	2B.36	750x450 (30x18)	
Peds Prohibited	R5-10c	2B.36	600x300 (24x12)	
Walk on Left Facing Traffic	R9-1	2B.43	450x600 (18x24)	
Cross only at Crosswalks	R9-2	2B.44	300x450 (12x18)	
No Ped Crossing	R9-3a	2B.44	450x450 (18x18)	
No Hitch Hiking	R9-4	2B.43	450x600 (18x24)	
No Hitch Hiking (symbol)	R9-4a	2B.43	450x450 (18x18)	
Bikes Yield to Peds	R9-6	9B.10	300x450 (12x18)	
Ped Traffic Symbol	R10-4b	2B.45	225x300 (9x12)	
School Advance Warning	S1-1	7B.08	900x900 (36x36)	School, Warning, Informational
School Bus Stop Ahead	S3-1	7B.10	750x750 (30x30)	
Pedestrian Traffic	W11-2	2C.41	750x750 (30x30)	
Playground	W15-1	2C.42	750x750 (30x30)	
Hiking Trail	I-4	—	600x600 (24x24)	

1. Larger signs may be used when appropriate.

2. Dimensions are shown in millimeters followed by inches in parentheses and are shown as width x height.

3. First dimension in millimeters; dimensions in parentheses are in inches.

4. All information in table taken directly from MUTCD.

## 4.12 SCHOOL ZONE TREATMENTS AND SCHOOL ROUTE PLAN MAP

Section 7 of the MUTCD is entirely devoted to “Traffic Controls for School Areas” and is the dominant guidance available to municipalities for installing signs and markings in school zones. The section provides valuable additional guidance for school crossing treatments that can be utilized for the planning and design of schools that should be considered when making safety improvements.

### **4.13 STREET TREES**

Street trees enhance the landscape for pedestrians, creating an attractive environment for walking. Street trees also act as a traffic calming device, encouraging drivers to drive more slowly.



*Source: Pedestrian and Bicycle Information Center*

In addition, a large line of leafy street trees can absorb engine noise, providing enough of a buffer to block street traffic noise from reaching private yards and homes. Trees also improve air quality by consuming carbon dioxide and emitting oxygen. Street trees may also increase real estate values by increasing curb appeals of homes. This Plan strongly recommends that municipalities adopt a tree ordinance to give direction for tree installation and maintenance. Local Arborists or Landscape Architects should be consulted to select the proper tree and planting technique.

**Planting requirements** - All street trees should be selected according to the standards described in the American Standard for Nursery Stock of the American Nursery and Landscape Association. Install and maintain trees according to the International Society of Arboriculture (ISA) guidelines.

**Visibility** - Street trees should never be allowed to obscure the line of sight between pedestrians and drivers. A clear view should be maintained between 30" and 72" above street.



*Street trees and other plantings provide comfort, a sense of place, and a more natural and inviting setting for pedestrians.*

*Source: Pedestrian and Bicycle Information Center*

This area must be free of limbs and foliage for safe cross visibility. Other plantings should also follow this rule within 50 ft. proximity of street corners and other designated crossing points. In order to maintain visibility, provide shade, and a comfortable pedestrian corridor, street trees should primarily be vase shaped, columnar, or oval in form (habit) with large spreading crowns.

**Roots** - Avoid trees with aggressively invasive roots adjacent to pavement or buildings.

**Size** - Large trees (growing over 35 ft. in height at maturity) are preferred as street trees except near overhead utility lines. Small tree (growing less than 35 feet in height at maturity) should be used in areas directly adjacent to or under utility lines.

**Spacing** – typically, large trees should be spaced approximately 40 – 50 feet when planted in a line, and small trees spaced at approximately 30 ft. The spacing of street trees in a planting strip will depend upon the size of the tree and upon the demand for sidewalk furniture and parking.

**Tree Pits and Tree Grates** - Street trees should generally be located in open planting strips. However, tree pits with tree grates may be a practical, although expensive, alternative in very high pedestrian traffic areas. Tree grates should generally not encroach upon the travel path. For optimal pedestrian safety and comfort, all tree grates used should meet the ADA standards for "accessible pathway".

**Maintenance** - Trees and landscaping require ongoing maintenance. Local municipalities typically take responsibility for maintenance of these amenities, although there are instances where local community groups have provided funding and volunteers for maintenance. In order to reduce the amount of maintenance necessary, it is helpful to use 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 causing a pedestrian obstruction.

#### **4.14 PEDESTRIAN OVERPASS/UNDERPASS**

Pedestrian overpasses and underpasses efficiently allow for pedestrian movement across busy thoroughfares. These types of facilities typically feature very high construction costs. These facilities are problematic in many regards and should only be considered when no other solution is expected to be effective. Research shows that pedestrians will avoid using such a facility if they perceive the ability to cross at grade as taking about the same amount of time. ADA requirements for stairs, ramps, and elevators often require the construction of an enormous structure that is visually disruptive.



*Attempting to separate pedestrians from the street is often problematic. As shown here, given the opportunity, many choose to cross at street level.*

Overpasses and underpasses should only be considered with rail lines, high volume traffic areas such as freeways, and other high volume arteries. In addition, they 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 these structures 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.



*Pedestrian-friendly bus stop*



#### **4.15 TRANSIT STOP TREATMENTS**

To accommodate as many users as possible, a transit system must include well-planned routes and safe, accessible stops. Bus stops should be designed to accommodate the appropriate number of users and should be highly visible to pedestrians and motorists. Bus or other transit stops should be located in places that are most suitable for 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.

As with any human scale design element discussed, safety is an important 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. It is good practice to construct a transit stop just beyond an intersection, which encourages riders to cross the intersection behind the bus and in full view of approaching motorists. The location also should be set back enough from the roadway to buffer users from traffic without impeding pedestrian activity.

Safety and comfort at a bus stop is determined by the amenities offered to users. Bus stop signage including route information, shelter with seating, trash cans, and bicycle parking encourage transit use. Pedestrian-level lighting improves the visibility of pedestrians to motorists and increases the level of safety for users. At a minimum, marked crosswalks (especially at mid-block stops), curb ramps, and proper sidewalk widths should be considered.

#### **4.16 BRIDGES**

Provisions should be made to include a walking facility as a part of vehicular bridges, if there is an indication that pedestrians would use the facility. It is important to consider the needs of pedestrians when planning for a bridge replacement or the construction of a new bridge. Sidewalks on bridges should be a minimum of 5 feet wide, with a minimum handrail height of 42."



*Source: Pedestrian Bicycle Information Center Image Library*

#### **4.17 TRAFFIC CALMING TECHNIQUES**

Traffic Calming Devices (TCDs) are physical measures in street design that cue drivers to slow down. The effectiveness of TCDs does not depend upon a driver's compliance with traffic signs and signals, or police enforcement, though they may be used effectively in conjunction with them. In coordinated combinations, TCDs reduce speeds, alert drivers to pedestrians, and reduce the severity of collisions. TCDs listed below are generally recommended for consideration on a project-by-project basis. These include traffic circles, roundabouts, speed humps, speed tables, textured pavements and curb extensions (bulbouts). Curb extensions are discussed in detail earlier in this section.





**Neighborhood Traffic Circles** – Small raised circular islands positioned in the center of an intersection, designed to slow traffic by requiring traffic to maneuver around the island.

**Roundabout** – Roundabouts are circular intersections with raised circular islands in the center, with “yield on entry” and deflecting islands on all approaches designed to slow traffic. Traffic proceeds in a counterclockwise direction.

Roundabouts are highly engineered to accommodate specific traffic types, volumes and speeds.

Roundabout design can become challenging 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. Pedestrian refuge islands and single lane approaches both lend to pedestrian safety. 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 refuge islands are one solution, but there is no research to prove their efficacy.

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.

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 FHWA’s report, Roundabouts: An Informational Guide. The report provides information on general design principles, geometric elements, and provides detailed specifications for the various types of roundabouts.

**Speed Humps** - raised sections of a roadway. They are similar to a speed bump in their application, but a speed hump is wider and has a sloping side taper so they are easy to navigate at slower speeds. They are placed across residential streets to control chronic speeding problems where other methods of slowing traffic have not been effective. They are designed to calm traffic in residential areas, particularly near parks and schools. The physical impact on passing vehicles is less severe at slower speeds than at higher speeds. Studies indicate that speed humps reduce speeds by approximately six miles per hour. A standard speed hump has a length of approximately 22 feet and a height of 3 and 5/8 inches at its center.



*Speed Hump*

*Source: PBIC Image Gallery*



*Speed Table*

*Source: PBIC Image Gallery*

Speed Tables – flat-topped speed humps typically long enough for the entire wheelbase of a passenger car to rest on the flat section. They often constructed with brick or other textured materials on the flat section.

Textured pavements - stamped pavement or alternate paving materials to create an uneven surface for vehicles and pedestrians to traverse. Textured street pavement provides a visual and tactile cue for both drivers that they are driving in an area of high pedestrian usage. Similarly, they cue pedestrians that they are entering a vehicular

zone, and are a particularly effective treatment to warn visually impaired pedestrians. Textured street pavements should be used in areas of substantial pedestrian activity and where noise is not a major concern.

Curb Extensions –rounded extensions of the curb which slow vehicles by alerting drivers to potential pedestrians, visually tightening the vehicular path, and physically reduces turning radii, thereby encouraging a decrease in vehicle speeds. Curb extensions also increase safety for pedestrians by shortening the road crossing distance. Curb extensions are covered in detail earlier in this section.

## **4.18 TEMPORARY WORK**

Temporary work should be accessible. Where construction blocks a public sidewalk for more than a short time, an alternate accessible route should be provided that is cane-detectable. Sidewalk barriers should be continuous and cane-detectable as well. Temporary events and facilities should also meet accessibility criteria.

---

<sup>i</sup> Vanguard Company, accessed November, 2005  
(<http://www.vanguardonline.com/downloads.asp>)

## Chapter 5 – Implementation

After adoption of this Plan, the Town must work toward implementing the projects outlined in this Plan. To aid in the selection of which projects to pursue, this chapter presents a prioritization of projects based on a variety of metrics and a discussion of potential funding sources.



### 5.1 Prioritization of Projects

The recommendations found in this Plan represent a wide variety of projects, from very short connections that can open up large portions of Waynesville, to improvements in infrastructure that will provide pedestrians a safer and more enjoyable walking experience. With the focus on making walking a viable, convenient, and safe transportation choice throughout the town, WSA staff developed a matrix to aid in categorizing the proposed facility recommendations into short term (less than 5 years), medium term (5 to 10 years) and long term (greater than 10 years) recommendations. This matrix contains three categories based on the goals set forth by the steering committee: safety (Goal #1), accessibility and connections (Goal #3), and recreation (Goal #4). Consideration was also given to the timeframe and funding required to implement a project. The following tables, Tables 5.1 thru 5.3, identifies the main function(s) of each of the facilities recommendations and defines its priority and grouped by time frame:



**Table 5.1**  
**0-5 Years**  
**Project Prioritization**

REF LET.	0-5 Years	SAFETY	ACCESSIBILITY & CONNECTIONS	RECREATION	ESTIMATED COSTS
<b>NCDOT PROJECTS</b>					
A	Coordinate with NCDOT to ensure that pedestrian amenities are planned as part of TIP Project U-4712, US 23 Business South, SR 1164 (Hyatt Creek Road) to US 276, Widen to Multilanes (2.5 miles), Feasibility Study in Progress. Specifically, new sidewalks should be constructed the entire project length to connect to existing sidewalk sections. Intersection improvements, including but not limited to decorative crosswalks with pedestrian signalization are recommended along South Main Street at Brown Avenue, Riverbend Street, Virginia Street/Country Club Drive, Legion Drive, Hazelwood Avenue, and Pigeon Street (US 276).	✓	✓		N/A
B	Coordinate with NCDOT to ensure that pedestrian amenities are provided along TIP Project U-4412, SR 1184 (Howell Mill Road), From US 276 to US 23 Business, Upgrade Two Lanes and Reconstruct Railroad Grade Separation (1.5 miles) ROW-FY 2010, Construction - FY 2012. Extend sidewalks along Howell Mill Road from US276/Russ Ave to Asheville Road.	✓	✓		NCDOT Projected Cost \$12,687,000
D	Coordinate with NCDOT to ensure that pedestrian amenities are planned as part of TIP Project B-5013 Depot Street, Replace Bridge No. 262 over Richland Creek, Right-of-Way and Construction FY 2012.	✓	✓		NCDOT Projected Cost \$ 780,000
E	Provide sidewalk along Plott Creek Road and Hazelwood Avenue from Hazelwood Elementary School to the existing sidewalk on Hazelwood Avenue.	✓	✓		\$50 per foot without curb and gutter - 1415' = \$70,750
H	Convert existing street railroad crossings at Old Hickory and Shackleford Streets to pedestrian only crossings	✓	✓	✓	N/A
<b>RAILROAD CROSSINGS</b>					
	Provide enhanced crossings and sidewalks at at-grade railroad crossings along West Marshall Street, South Main Street, Hazelwood Avenue, Georgia Avenue, Old Hickory Street, Shackleford Street, Boyd Avenue, Vance Avenue, Depot Street, Industrial Park Drive, and Miller Street.	✓	✓		Approximately \$1,500 per railroad crossing
<b>TRAFFIC CALMING</b>					
F	Construct a traffic circle or otherwise improve with delineated crosswalks at the intersection of Brown Avenue and Boyd Avenue, Waynesville Middle School vicinity	✓	✓		Approximately \$200,000
G	Plan and implement traffic calming devices along the length of East Street.	✓	✓		\$10,000 per device
<b>SIDEWALKS/CROSSWALKS</b>					
	As the opportunity arises, remove utility poles which are located in the existing sidewalks.	✓	✓		N/A
I	Provide sidewalks along Sulphur Springs Road from Eagles Nest Road to Hazelwood Avenue.	✓	✓		\$50 per foot without curb and gutter - 1080' = \$54,000
J	Connect missing sidewalk links along Brown Avenue from South Main Street to Lea Plant Road.	✓	✓		\$50 per foot without curb and gutter - 375' = \$18,750
K	Connect missing sidewalk links along Riverbend Street from Scates Street to Brown Avenue.	✓	✓		\$50 per foot without curb and gutter - 310' = \$15,500
L	Provide sidewalks along Georgia Avenue from Brown Avenue to Camelot Drive.	✓	✓		\$50 per foot without curb and gutter - 330' = \$16,500
M	Extend sidewalks along Old Hickory Street to Brown Avenue.	✓	✓		\$50 per foot without curb and gutter - 815' = \$40,750
N	Connect missing sidewalk link along Walnut Street between West Marshall Street and Bridges Street.	✓	✓		\$50 per foot without curb and gutter - 450' = \$22,500
O	Connect missing sidewalk link along North Main Street between West Marshall Street and Bridges Street.	✓	✓		\$50 per foot without curb and gutter - 315' = \$15,750
P	Provide sidewalk along Hendrix Street from South Main Street to Allens Creek Road	✓	✓		\$50 per foot without curb and gutter - 1780' = \$89,000
Q	Extend sidewalks along West Marshall Street to connect to existing greenway.	✓	✓		\$50 per foot without curb and gutter - 250' = \$12,500
R	Extend sidewalks along Vance Street southward to connect to Richland Creek greenway.	✓	✓		\$50 per foot without curb and gutter - 815' = \$40,750
<b>GREENWAY</b>					
	Provide for more distinguished wayfinding signage along the greenway system.	✓	✓	✓	\$200 per High-Visibility Sign
T	Extend the Richland Creek Greenway from its current terminus at West Marshall Street along Richland Creek southwest to Russ Avenue.	✓	✓	✓	\$133 per foot of 10' shared use path - 965' = \$128,345
	Acquire ownership interests in floodway properties along corridors designated for greenway expansion.	✓	✓	✓	N/A
	Develop plans for extension of the Richland Creek Greenway along Richland Creek southwestward to Hyatt Creek Road.	✓	✓	✓	N/A
	Develop plans for development of a Raccoon Creek Greenway from the Richland Creek Greenway at the confluence of Richland and Raccoon Creeks southward along Raccoon Creek to US 276 (Pigeon Road).	✓	✓	✓	N/A





**Table 5.2**  
**5-10 Years**  
**Project Prioritization**

5 - 10 Years		SAFETY	ACCESSIBILITY & CONNECTIONS	RECREATION	ESTIMATED COSTS
GREENWAY					
X	Fill in the missing link of the Richland Creek Greenway along Richland Creek from the Waynesville Recreation Center northeastward to the existing greenway at the confluence of Richland Creek and Raccoon Creek.	✓	✓	✓	\$133 per foot of 10' shared use path - 4175' = \$555,275
SIDEWALKS/CROSSWALKS					
Z	Provide sidewalks along Wall Street from Pigeon Street to Assembly Street.	✓	✓		\$50 per foot without curb and gutter - 2855' = \$142,750
AB	Extend sidewalk along Broadview Road from east of North Main Street to East Street.	✓	✓		\$50 per foot without curb and gutter - 1725' = \$86,250
AC	Provide sidewalk along Vance Street from Walnut Street north to Richland Creek Greenway.	✓	✓		\$50 per foot without curb and gutter - 1450' = \$72,500
AD	Provide sidewalk along Mead Street from North Main Street to Boundary Street.	✓	✓		\$50 per foot without curb and gutter - 375' = \$18,750
AE	Provide sidewalk along Beech Street from Boundary Street to Hazel Street.	✓	✓		\$50 per foot without curb and gutter - 425' = \$21,250
AF	Connect missing sidewalk link along Hazel Street between Cherry Street and North Main Street.	✓	✓		\$50 per foot without curb and gutter - 840' = \$42,000
AG	Provide sidewalks along Balsam Drive from Brown Avenue to South Main Street.	✓	✓		\$50 per foot without curb and gutter - 2950' = \$147,500
AH	Extend sidewalk along South Hill Street from Pigeon Street to East Street.	✓	✓		\$50 per foot without curb and gutter - 1150' = \$57,500



**Table 5.3**  
**10+ Years**  
**Project Prioritization**

10+ Years		SAFETY	ACCESSIBILITY & CONNECTIONS	RECREATION	ESTIMATED COSTS
<b>GREENWAY</b>					
AI	Extend the Richland Creek Greenway southward along Richland Creek to Hyatt Creek Road.	✓	✓	✓	\$133 per foot of 10' shared use path - 16,255' = \$2,161,915
AJ	Establish a Raccoon Creek Greenway from the Richland Creek Greenway at the confluence of Richland and Raccoon Creeks southward along Raccoon Creek to US 276 (Pigeon Road).	✓	✓	✓	\$133 per foot of 10' shared use path - 15,230' = \$2,025,590
<b>SIDEWALKS/CROSSWALKS</b>					
AK	Provide sidewalks along Putnam Street from Allens Creek Road to Browning Road.	✓	✓		\$50 per foot without curb and gutter - 725' = \$36,250
AL	Provide sidewalks along Epsom Street from South Main Street to Chelsea Road.	✓	✓		\$50 per foot without curb and gutter - 305' = \$15,250
AM	Extend sidewalks along Country Club from Rolling Drive eastward to Davis Cove Road.	✓	✓		\$50 per foot without curb and gutter - 2965' = \$148,250
AN	Provide sidewalk along Ninevah Drive from South Main Street to Country Club Drive.	✓	✓		\$50 per foot without curb and gutter - 1205' = \$60,250
AO	Provide sidewalks along Auburn Road from South Main Street to Country Club Drive.	✓	✓		\$50 per foot without curb and gutter - 3445' = \$172,250
AP	Provide sidewalks along Broad Street from Shelton Street to Oakdale Road.	✓	✓		\$50 per foot without curb and gutter - 1095' = \$54,750
AQ	Connect missing sidewalk links along Oakdale Road from US 276 (Pigeon Street) to Country Club Drive.	✓	✓		\$50 per foot without curb and gutter - 4180' = \$209,000
AR	Extend sidewalk on Prevost Street westward to Auburn Road.	✓	✓		\$50 per foot without curb and gutter - 1480' = \$74,000
AS	Extend sidewalks along US 276 (Pigeon Road) from Hillside Road to Raccoon Road.	✓	✓		\$50 per foot without curb and gutter - 6740' = \$337,000
AT	Extend sidewalks along Russ Avenue from Bradley Street to Dellwood Road (US 19/US 276).	✓	✓		\$50 per foot without curb and gutter - 5695' = \$284,750
AU	Extend sidewalks on Dellwood Road from east of Russ Avenue to North Lake Shore Drive	✓	✓		\$50 per foot without curb and gutter - 5265' = \$263,250
AV	Provide sidewalk along Assembly Street from Wall Street to East Street.	✓	✓		\$50 per foot without curb and gutter - 1980' = \$99,000
AW	Provide sidewalks along Mill Street from Chestnut Park Drive to 4th Street.	✓	✓		\$50 per foot without curb and gutter - 1460' = \$73,000
AX	Extend sidewalks on Victory Street to connect with Country Club Drive.	✓	✓		\$50 per foot without curb and gutter - 400' = \$20,000
AY	Provide sidewalk connections along Russ Avenue from Bradley to Dellwood Road/Howell Mill Road. Intersection improvements, including but not limited to decorative crosswalks with pedestrian signalization are recommended along Russ Avenue at Bradley Street, Phillips Road, Frazier Street, Barber Boulevard, and Dellwood Road/Howell Mill Road.	✓	✓		\$50 per foot without curb and gutter - 1545' = \$77,250
AZ	Connect missing sidewalk link along Summit Street between Highland Road and East Marshall Street, consider boardwalk where shoulder is too narrow.	✓	✓		\$50 per foot without curb and gutter - 465' = \$23,250
BA	Extend sidewalk along Allens Creek Road to Haywood County Soccer Park.	✓	✓		\$50 per foot without curb and gutter - 6035' = \$301,750
BB	Provide sidewalk along Chelsea Road from Ninevah Road to Browning Branch Road	✓	✓		\$50 per foot without curb and gutter - 1015' = \$50,750
BC	Provide sidewalk along Browning Branch Road from Chelsea Road to Putnam Street.	✓	✓		\$50 per foot without curb and gutter - 975' = \$48,750



These categorizations bring to the forefront the numerous small projects that are possible within the town, that have the potential to greatly improve pedestrian travel. Most of these small improvements are centered around ensuring pedestrian facilities are included in NCDOT TIP projects, enhanced railroad crossings, and providing sidewalk connections south of the CBD.

On a larger scale, and on a somewhat larger timeframe, the Town should work closely with developers and NCDOT to ensure that greenways and sidewalks are provided on the pedestrian focus corridors. The Town will have to play a major role in ensuring that sidewalks are required as part of new developments, but will also have to fund the installation of sidewalks at locations that have already been developed or are unlikely to develop in the future.

## **5.2 FUNDING SOURCES**

Local, state, federal, and private funding is available to support the planning, construction, right of way acquisition and maintenance of pedestrian facilities. Available funding sources are related to a variety of purposes including transportation, water quality, hazard mitigation, recreation, air quality, wildlife protection, community health, and economic development. This section identifies a list of some of the pedestrian facility funding opportunities available through federal, state, nonprofit and corporate sources. An important key to obtaining funding is for local governments to have adopted plans for greenway, bicycle, pedestrian, or trail systems in place prior to making an application for funding.

### **Funding Allocated by State Agencies**

Funding Opportunities through NCDOT:

Bicycle and Pedestrian Independent Projects Funded through the Transportation Improvement Program (TIP) - In North Carolina, the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT) manages the Transportation Improvement Program (TIP) selection process for bicycle 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.

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](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: <http://www.ncdot.org/programs/ghsp/>.

**Safe Routes to School Program, managed by NCDOT, DBPT** - The NCDOT Safe Routes to School Program (SRTS) 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 <http://www.ncdot.gov/transit/bicycle/saferoutes/SafeRoutes.html> or contact Leza Mundt at DBPT/NCDOT, (919) 807-0774.





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. For more information, visit:

<http://www.ncdot.org/financial/fiscal/Enhancement/>

### ***Funding Opportunities from Other State Agencies:***

***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.

***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:

<http://www.onencnaturally.org/pages/ConservationTaxCredit.html>.

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

**NC Adopt-A-Trail Grant Program** - This program, operated by the Trails Section of the NC Division of State Parks, offers annual grants to local governments to build, renovate, maintain, sign and map and create brochures for pedestrian trails. Grants are generally capped at about \$5,000 per project and do not require a match. A total of \$108,000 in Adopt-A-Trail money is awarded annually to government agencies. Applications are due during the month of February. For more information, visit: [http://www.ncparks.gov/About/grants/trails\\_main.php](http://www.ncparks.gov/About/grants/trails_main.php).

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

The grant application and instruction handbook is available through the State Trails Program website at [http://www.ncparks.gov/About/grants/trails\\_main.php](http://www.ncparks.gov/About/grants/trails_main.php). 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 [http://www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell\\_Bill/powellbill.html](http://www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell_Bill/powellbill.html).



**Clean Water Management Trust Fund** - This fund was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. At the end of each fiscal year, 6.5 percent of the unreserved credit balance in North Carolina's General Fund, or a minimum of \$30 million, is placed in the 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 <http://www.cwmf.net/>

**Urban and Community Forestry Assistance Program** - This program offers small grants that can be used to plant urban trees, establish a community arboretum, or other programs that promote tree canopy in urban areas. The program operates as a cooperative partnership between the NC Division of Forest Resources and the USDA Forest Service, Southern Region. To qualify for this program, a community must pledge to develop a street-tree inventory, a municipal tree ordinance, a tree commission, and an urban forestry-management plan. All of these can be funded through the program. For more information, contact the NC Division of Forest Resources. For more information and a grant application, contact the NC Division of Forest Resources and/or visit [http://www.dfr.state.nc.us/Urban/Urban\\_Forestry.htm](http://www.dfr.state.nc.us/Urban/Urban_Forestry.htm)

**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 <http://www.hud.gov/offices/cpd/communitydevelopment/programs/> or call 919-733-2853.

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

Fit Together, a partnership of the NC Health and Wellness Trust Fund (HWTF) and Blue Cross and Blue Shield of North Carolina (BCBSNC) announced 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: <http://www.FitTogetherNC.org/FitCommunity.aspx>

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

### **Funding Allocated by Federal Agencies**

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

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





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

**Rivers Trails and Conservation Assistance Program (RTCA)** - The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is the community assistance arm of the National Park Service. RTCA staff provides 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: <http://www.nps.gov/ncrc/programs/rtca/> or call Chris Abbett, Program Leader, at 404-562-3175 ext. 522.

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

### Local Funding Sources

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

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



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

**Municipal Service District** - Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the citywide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts.

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

**Installment Purchase Financing** - As an alternative to debt financing of capital improvements, communities can execute installment/ lease purchase contracts for improvements. This type of financing is typically used for relatively small projects that the seller or a financial institution is willing to finance or when up-front funds are unavailable. In a lease purchase contract the community leases the property or improvement from the seller or financial institution. The lease is paid in installments that include principal, interest, and associated costs. Upon completion of the lease period, the community owns the property or improvement. While lease purchase contracts are similar to a bond, this arrangement allows the community to acquire the property or improvement without issuing debt. These instruments, however, are more costly than issuing debt.

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

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



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

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

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

**Fees** - Three fee options that have been used by local governments to assist in funding pedestrian and bicycle facilities are listed here:

**Stormwater Utility Fees** - Greenway sections may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants. Stormwater charges are typically based on an estimate of the amount of impervious surface on a user's property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharge into public storm drainage facilities and create 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.

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



**Impact Fees** - Developers can be required to provide greenway impact fees through local enabling legislation. Impact fees, which are also known as capital contributions, facilities fees, or system development charges, are typically collected from developers or property owners at the time of building permit issuance to pay for capital improvements that provide capacity to serve new growth. The intent of these fees is to avoid burdening existing customers with the costs of providing capacity to serve new growth ("growth pays its own way"). Greenway impact fees are designed to reflect the costs incurred to provide sufficient capacity in the system to meet the additional needs of a growing community. These charges are set in a fee schedule applied uniformly to all new development. Communities that institute impact fees must develop a sound financial model that enables policy makers to justify fee levels for different user groups, and to ensure that revenues generated meet (but do not exceed) the needs of development. Factors used to determine an appropriate impact fee amount can include: lot size, number of occupants, and types of subdivision improvements. If Waynesville is interested in pursuing open space impact fees, it will require enabling legislation to authorize the collection of the fees.

**Exactions** - Exactions are similar to impact fees in that they 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.

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

**Bonds and Loans** - Bonds have been a very popular way for communities across the country to finance their projects. A number of bond options are listed below. Contracting with a private consultant to assist with this program may be advisable. Since bonds rely on the support of the voting population, an education and awareness program should be implemented prior to any vote. Billings, Montana used the issuance of a bond in the amount of \$599,000 to provide the matching funds for several of their TEA-21 enhancement dollars. Austin, Texas has also used bond issues to fund a portion of their bicycle and trail system.

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





**General Obligation Bonds** - Cities, counties, and service districts generally are able to issue general obligation (G.O.) bonds that are secured by the full faith and credit of the entity. In this case, the local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. Frequently, when local governments issue G.O. bonds for public enterprise improvements, the public enterprise will make the debt service payments on the G.O. bonds with revenues generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use other sources of revenue to make the payments. G.O. bonds distribute the costs of land acquisition and greenway development and make funds available for immediate purchases and projects. Voter approval is required, special assessment bonds 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.

**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)** - 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.

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

### Other Local Options

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



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

**Partnerships** - Another method of funding 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 handout for themselves and their employees. Very specific routes that make critical connections to place of business would be targeted for private partners’ monetary support following a successful master planning effort. Potential partners include major employers which are located along or accessible to pedestrian facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trail heads or interpretive signage along greenway systems. Utilities often make good partners and many trails now share corridors with them. Money raised from providing an easement to utilities can help defray the costs of maintenance. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement.

**Local Trail Sponsors** - A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

**Volunteer Work** - It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community work days. Volunteers can also be used for fund-raising, maintenance, and programming needs.

### Private Foundations and Organizations

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are a few examples of private funding opportunities available in North Carolina.

**Land for Tomorrow Campaign** - Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign is asking the North Carolina General Assembly to support issuance of a bond for \$200 million a year for five years to preserve and protect its special land and water resources. Land for Tomorrow will enable North Carolina to reach a goal of 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. For more information, visit <http://www.landfortomorrow.org>.

**The Trust for Public Land** - Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national 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>.

**Z. Smith Reynolds Foundation** - This Winston-Salem based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The foundation has two grant cycles per year and generally does not fund land acquisition. However, the foundation may be able to support municipalities in other areas of greenways development. More information is available at <http://www.zsr.org/>.

**National Trails Fund** - In 1998, the American Hiking Society created the National Trails Fund, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. Each year, 73 million people enjoy foot trails, yet many of our favorite trails need major repairs due to a \$200 million in badly needed maintenance. National Trails Fund grants give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. For 2005, American Hiking distributed over \$40,000 in grants thanks to the generous support of Cascade Designs and L.L.Bean, the program's Charter Sponsors. To date, American Hiking has granted more than \$240,000 to 56 different trail projects across the U.S. for land acquisition,



constituency building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project.

What types of projects will American Hiking Society consider? Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements. Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/ or avoidance of environmental damage. Constituency building surrounding specific trail projects - including volunteer recruitment and support. Web site: <http://www.americanhiking.org/default.aspx>.





# WilburSmith ASSOCIATES

421 Fayetteville Street, Suite 1303  
Raleigh, NC 27601

(p) 919.755.0583  
(f) 919.832.8798

