

2015

Comprehensive



# pedestrian

Plan

## Village of Pinehurst

NORTH CAROLINA



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**VILLAGE OF PINEHURST**  
**COMPREHENSIVE PEDESTRIAN PLAN**  
**JUNE 2015**



## SECTION ONE: INTRODUCTION

### 1.1 VISION STATEMENT



The Village of Pinehurst, North Carolina, is committed to providing its citizens with a safe community in which to live, work and play. Part of this commitment includes the future improvement and/or construction of pedestrian-friendly transportation corridors throughout the Village.

Consequently, the Village of Pinehurst hired McGill Associates to develop a Comprehensive Pedestrian Plan and assist with these efforts.

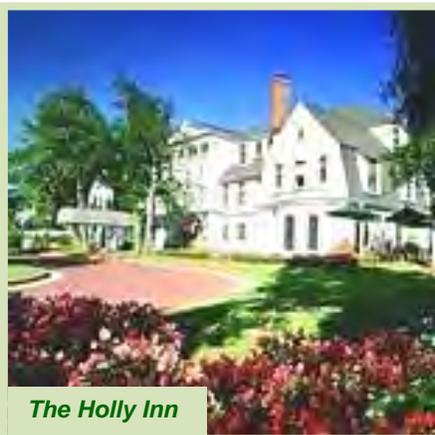
On June 3rd 2014, McGill Associates held a “kick-off” meeting with members of the Pedestrian Plan Steering Committee to define their vision for the proposed Pinehurst pedestrian network. After a brief introduction, the Steering Committee participated in an exercise designed to elicit their perceptions of the needs and desires for a pedestrian system in the Village. Throughout the development of this plan, the Steering Committee provided valuable input and guidance to McGill Associates.

In addition, the production of this Comprehensive Pedestrian Plan was performed concurrently with a North Carolina Department of Transportation (NCDOT) funded Comprehensive Bicycle Plan. The project Steering Committee guided both efforts and established the vision for developing bicycle and pedestrian facilities within Pinehurst.

### 1.2 HISTORY

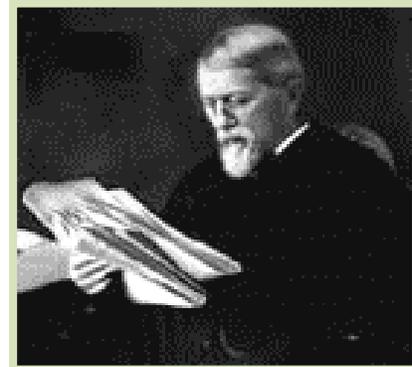
#### The History of the Village of Pinehurst

The Village of Pinehurst is situated in what is often referred to as the Sandhills of North Carolina. The Sandhills consist of a strip of ancient beach dunes in the interior of North and South Carolina (evidenced by a former coastline when the ocean level was higher, or the land was lower) and divides the “piedmont” and the “coastal plain”. Approximately 60 miles southwest of Raleigh, the state capitol, Pinehurst is also approximately 75 miles east of the Charlotte metro area. The Village spans approximately 14.9 square miles, having 14.3 square miles of land and 0.6 square miles of water. Major thoroughfares to Pinehurst include NC Highway 5, NC Highway 2, NC Highway 211 and US Highway 15-501.



*The Holly Inn*

The Village of Pinehurst is the largest municipality in Moore County and is regionally recognized as an outstanding residential community and, internationally, as a major golf resort. Incorporated in 1980, the Village was founded in 1895 by soda fountain magnate James Walker Tufts who purchased 598 acres of land for \$1.25 per acre to create a health resort in the Sandhills. Mr. Tufts wanted a first-rate, private resort; thus, he hired Frederick Law Olmsted (designer of Central Park in New York and the Biltmore Estate in Asheville) for the project dubbed "Tuftstown".



*James Walker Tufts founded Pinehurst as a private resort & spa*

Tuft dreamed of building a beautiful, healthful village – where those suffering from respiratory (and other) ailments could recuperate in the land of abundant sunshine and (thought to be) medicinal qualities of the pine-scented air. As patients' needs varied, Tuft built an assortment of cottages, rooming houses and hotels, later followed by a livery stable, fire department, laundry, markets, department stores and poultry/dairy farms. Tuft finally named the Village "Pinehurst" ("pine" for the trees and "hurst" for a rising plot of ground). Most of the original buildings are still in existence and can be toured today. The Tufts Archives is open to the public and free of charge.



*Given Memorial Library & Tufts Archives*

In 1900, Donald Ross was hired as the developer for golf at the Pinehurst Resort. Pinehurst Resort remained privately-held by the Tufts family until 1920 when a corporate form of ownership, Pinehurst, Inc., was obtained. By the late 1960's, the shareholders of Pinehurst, Inc., sold the property to the Diamondhead Corporation, who created 7,000 "membership" lots to sell, accompanied by the appropriate infrastructure – roads, water, sewer, etc. In 1980, pursuant to an Order of Incorporation, the Village of Pinehurst became an incorporated municipality. The resort property has changed hands several times over the years and world-renowned golf courses have been developed and expanded under each owner. Donald Ross eventually designed four (4) golf courses that would mark their places in history, as would famed golfers such as Ben Hogan, Sam Snead, Byron Nelson, Arnold Palmer, Jack Nicklaus, Payne Stewart and many more.



*Statue memorializes Payne Stewart's 1999 US*

In 1996, the Village of Pinehurst and Pinehurst Resort had the distinct pleasure of being given National Landmark status for their historical, significant role in United States golf history. The Village of Pinehurst has also become the home of the North & South Golf Amateur (since 1901), PGA Championships, Ryder Cup matches, US Amateurs, Senior Open and the 1999/2005 US Opens. In 2014, Pinehurst was the first venue in history to host the men's and women's US Open in back-to-back weeks.



Though known as the “Home of American Golf” (with more than 41 courses, most being playable year round), Pinehurst is rich with history, artists, pottery, architecture and beautiful horse country. Unlike other burgeoning golf communities, Pinehurst retains a true small town atmosphere. It also hosts world championship matches in clay court tennis, croquet and yard bowling; and is the home of superior equestrian and dog facilities. Each fall, equestrian owners from the North and Midwest bring their jumpers, hunters and dressage horses to the area to take advantage of the mild climate and soft sand footing.



*Pinehurst Harness Track*

Pinehurst has enjoyed its resort status, boasting world-renowned golf facilities and a Village Center filled with the charm of the New England area. Shopping in the Village of Pinehurst, the Town of Southern Pines and Aberdeen, offers quaint boutiques and specialty shops, as well as numerous restaurants and cafes. The quiet and tranquil atmosphere makes Pinehurst an excellent vacation destination as well as a wonderful place to live. Committed to offering top quality services to residents and visitors alike, the Village of

Pinehurst strives to ensure that residents enjoy a wonderful quality of life and visitors have a memorable experience.

Several factors have contributed to major demographic and economic changes to the Village of Pinehurst in recent years. The close working proximity to the Research Triangle (Raleigh, Durham and Chapel Hill), Charlotte Metro and Fort Bragg, have made Pinehurst an extremely desirable place to live and raise a family. From 1990 to 2000, the US Census Bureau indicated that Pinehurst's population grew by 91%, as compared to 27% for Moore County and 21% for North Carolina. This population growth is expected to continue, especially with changing demographics. While

Pinehurst remains largely a community based on retirement, there is a growing population of families with children relocating to the Village.

The Village's unique Sandhills location with its moderate year round climate has led to a large number of tourists and sports enthusiasts traveling through or visiting the area each year; consequently, some out-of-state tourists have begun to build summer/vacation homes in the area.



*Family activities abound in Pinehurst*

In addition, the resort area has become a very popular retirement community. The influx of residents during 2008 to 2012 has resulted in the median household income being \$66,436 in Pinehurst as compared to the state average of \$46,450. Likewise, persons living below the poverty level are only 4.1% as compared to the 16.8% statewide. It is noteworthy that, typically, children and the elderly population are generally in the greatest need of pedestrian facilities and/or use them more frequently. With senior citizens representing almost half of the population of the Village of Pinehurst, certainly health and wellness opportunities are in great demand.

Because of year-round tourism and rapid population growth, the leaders of the Village of Pinehurst have recognized the need for a Comprehensive Pedestrian Plan that addresses both the current and future needs of their residents and visitors.



*Enjoying the outdoor lifestyle*

This Pedestrian Plan will provide direction and purpose as the Village strives to meet the daily pedestrian needs of their community, as well as impact the citizenry of the Village and its surrounding area for many years to come. The *Village of Pinehurst Comprehensive Pedestrian Plan 2015* addresses their vision by identifying specific goals and objectives; and makes recommendations for achieving them.

### **1.3 OVERALL GOALS**

The purpose of the Comprehensive Pedestrian Plan is to create a document to guide the Village of Pinehurst with development criteria for the following phases of its proposed comprehensive pedestrian system: (1) Planning, (2) Design, (3) Financing, (4) Implementation and (5) Maintenance.

While enhancing and prioritizing capital improvements/maintenance projects for the Village, the Plan will also include special consideration given to critical areas for

pedestrian transportation and safety; as well as address compliance issues with Americans with Disabilities Act (ADA).

The goals of the Village of Pinehurst Comprehensive Pedestrian Plan 2015, which were developed with input from the study's Steering Committee, are as follows:

### **Goals and Objectives**

- Increase “walkability” in the Village of Pinehurst
  - Plan pedestrian routes with input from the community in mind.
  - Increase and improve the pedestrian infrastructure.
  - Provide aesthetically pleasing landscaping and resting places along commonly used paths and routes.
  - Connect the pedestrian network to common destination points.
  - Promote a “walking/biking culture” in Pinehurst.
- Create a pedestrian network that is an important part of the urban structure.
  - Provide attractive, yet safe, pedestrian *connections* from Village residential areas to nearby destinations.
- Promote walking as a healthy exercise
  - Develop and/or participate in more healthy walking programs such as “Eat Smart, Move More North Carolina”, etc.
  - Partner with health and recreation providers to create healthy living programs and events that encourage and promote walking as a form of alternative transportation.
- Create a pedestrian environment that is friendly to all users - including seniors, disabled persons and children
  - Provide ADA compliant sidewalks and curb ramps.
  - Increase pedestrian safety with regard to vehicular traffic.
  - Provide facilities for sitting/resting opportunities.



- Improve connections between disparate parts of the Village
  - Provide pedestrian connections between downtown Pinehurst and surrounding areas/destinations.
  - Promote neighborhood connectivity.
  - Provide equitable access to the pedestrian network(s).
  - Provide pedestrian access to schools, shopping areas and work places.
- Promote pedestrian safety
  - Promote pedestrian safety through educational programs both inside and outside the schools.
  - Design a pedestrian network that can be safely traversed by all.



## **1.4 Previously Completed Planning Studies and Documents**

Current planning studies include several on-going efforts by state and local entities, which were taken into consideration as the Comprehensive Pedestrian Plan for the Village of Pinehurst has evolved. These are discussed in greater detail in Section 3 and include, but are not limited to the 2003 Long Range Comprehensive Plan and the latest Village Greenway Plan. Other programs and/or initiatives that are either currently underway or being planned involve resources from the Transportation Improvement Program (TIP) and various Safety & Education Programs.

### **Past and Current Municipal Efforts**

#### **Village Greenway Master Plan**

Pinehurst maintains an existing Greenway trail that is approximately six miles long and represents the first three phases of the Village Greenway Plan. The previously completed plan ultimately proposed twenty four miles of planned trail. Part of the Greenway Project included the formation of the Village Greenway Habitat Committee. This group is working to make the



Pinehurst Greenway a place where people can learn about the native plants and animals. The Committee has conducted frequent surveys along the Greenway in order to catalog the diverse flora and fauna that can be found along the path.



The Greenway Master Plan consists of a system of several loops and endpoints, which meander through a suburban landscape of parks, homes, open areas, recreation facilities and wooded tracts. The Greenway accommodates runners, walkers and cyclists. Currently golf cart use of the trail is prohibited. However, there has been public interest in possibly accommodating golf cart travel on certain parts of this multi-modal pathway system.

### **Village of Pinehurst Engineering Standards and Specifications Manual**

In August 2004, the Pinehurst Village Council adopted an Engineering Standards and Specifications Manual that specifies the minimum design standards for all new development within the jurisdiction of the Village. Section Four of this Manual includes technical specifications for both sidewalks (minimum thickness of 4-inches, minimum clear-width of 5-feet) and for greenways (minimum 6-inches compacted, stone screenings, minimum clear-width of 6-feet). Standard details are also included in the Manual for Concrete Sidewalk, Brick Sidewalk and Greenways. The Manual has been amended on several occasions since its original adoption and continues to serve as the primary engineering reference document utilized in development within the Village.

### **Pinehurst Development Ordinance (PDO)**

The Pinehurst Development Ordinance, commonly referred to as the PDO, was recently updated and adopted by Village Council in October 2014. This document establishes various rules and regulations associated with development within the Village, including requirements for sidewalks and greenways. The current PDO requires sidewalks to be installed on one side of all new streets in new residential developments that serve 8 or more dwelling units and on both sides of all new streets in non-residential developments. The PDO also establishes the definition of a greenway as “a linear open space, either privately-owned or owned by the Village or another unit of government, which may contain a trail for walking, bicycling, horseback riding or other passive recreation, but not for use by vehicles for purposes other than maintenance of the greenway.”

### **Historic District Standards and Guidelines**

The Village’s Historic District Standards and Guidelines were originally adopted by Village Council in September 2006 and provide “design principles and standards” for

structures and landscaping within the local historic district. The document is also utilized by the Village's Historic Preservation Commission (HPC) in reviewing proposed changes and new construction within the District. While the document does not provide design standards for sidewalks or walkways, it does reference that "original sand-clay and patterned brick sidewalks contribute to the character of some streetscapes in the District." Projects within the public right-of-way do not require approval from the HPC according to the Standards and Guidelines document.

## 1.5 Benefits of Pedestrian Facilities

For centuries, the pedestrian has been a constant presence in the human environment.



Most individuals walk to some destination every day. The environment which facilitates walking is different for every pedestrian in that it varies from urban settings to linear parks running along creeks. Pedestrian environments are created either by being deliberately planned or they can develop as a result of natural landscape characteristics, with no particular forethought of the pedestrian. To better understand what makes a pedestrian-friendly environment, it is necessary to study and

analyze the places where people travel most comfortably as pedestrians. For instance, the addition of a random sidewalk may not encourage people to walk, unless it connects pedestrians to places they want to go. This example reinforces the need for a pedestrian plan *prior* to the actual realization of the plan.

A "walkable" community is defined by its ability to enhance the lives of all its citizens through a variety of measures, which include the following:

- Community Health
- Transportation Alternatives
- Environmental Benefits
- Safety
- Community Identity

A walkable community needs connected pedestrian corridors that are conveniently located in close proximity to homes, schools, entertainment/shopping meccas and places of employment.

### **Community Health**

There are numerous benefits to be gained by walking - the most prevalent being the acquisition of healthier lifestyles. Unhealthy eating habits, which are primarily due to the increased consumption of fast food, continue to contribute to rising obesity rates in Americans of all ages. Walking is a preventive measure for heart disease, cancer,

diabetes and mental health diseases. 'Walkable communities' encourage people to walk, thereby, increasing physical activity and decreasing television or computer time, which propagate sedentary lifestyles.

By providing accessible, inviting pedestrian facilities, the Village of Pinehurst can provide equal opportunities for everyone to improve health and prevent disease through routine or planned walking exercise(s). This, in turn, saves governments and local employers the money in health care costs and the lost productivity due to sick days that would otherwise have occurred.



Studies show that walking increases:

- Energy, stamina and metabolism
- Wellness, fitness and psychological well-being
- The reduction of risk factors (such as high blood pressure, anxiety, obesity, etc.), which contribute to coronary artery disease, some cancers and other chronic diseases
- HDL – the 'good' cholesterol
- Muscle development and bone density

Additional information regarding aspects of walking/biking and health can be found in the 2015 Pinehurst Comprehensive Bicycle Plan.

### **Transportation Alternatives**

Walking also creates an alternative to vehicular transportation. Nationally, traffic congestion in urban areas is getting worse and the cost of owning/operating an automobile is consistently rising. Pedestrian facilities are necessary to provide a means whereby people may choose to walk instead of drive; thus, reducing the number of vehicles on the road.

Walking is a cost-effective means of transportation. There are no fees, taxes, or licenses required as compared to the average annual cost of operating an automobile - which can easily exceed \$5,000 per year. Economically speaking, walking is by far the most affordable mode of transportation available to anyone.

For some segments of the population, walking is the *only* means of transportation available. Such a cross section of the community primarily includes people, whose incomes prohibit them from purchasing/maintaining automobiles and senior citizens, who eventually become unable to drive. These members of our society rely heavily on walking in order to work, shop, exercise and/or participate in other social activities.

## Environmental Benefits

Walking is not only the most affordable mode of transportation it also has the least negative impact on the environment. Choosing to walk to destinations as an alternative to using a vehicle will reduce air pollution. Improving air quality is a major concern across the United States. During the 1996 Olympics in Atlanta, Georgia, some Atlanta thoroughfares in the area were closed to vehicular traffic in order to relieve traffic congestion. During this period of time, the local, environmental air quality monitoring indicated a significant decrease in various air pollutants as when it was compared to periods of normal traffic flow. It is a well-known statistic that air pollutants will escalate in direct proportion to the increased vehicular miles that are traveled each year in this country.

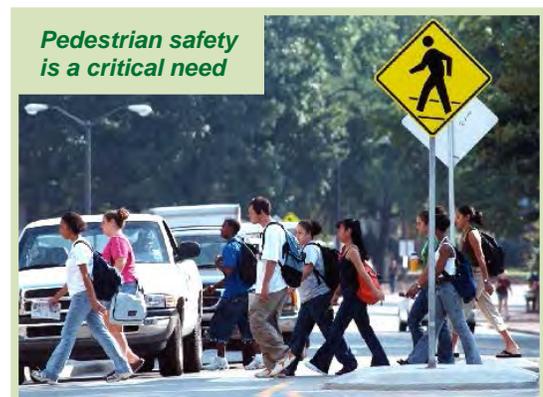


Walking, as opposed to driving vehicles, also positively impacts the availability and conservation of our natural resources. Reducing the consumption of petroleum (specifically in cars and asphalt) will be increasingly beneficial in the years to come. Although sensitive populations should *decrease* walking during ozone-active days, an overall *increase* in the amount of walking done on a regular basis could actually reduce mobile emissions/ozone. As more walking occurs, lesser emissions are produced, creating a cyclic phenomenon, that is naturally and environmentally friendly.

Some pedestrian facilities (such as greenways) are often developed along rivers and streams. Often, these facilities create “buffers”, which separate drainage areas from new development thereby improving the water quality for watersheds. As an added benefit, greenways help provide connectivity for wildlife habitats and natural ecosystems.

## Safety

The walking community needs to be safe and comfortable. Any area, which seems dangerous or has obstacles, discourages people from walking and consequently, the would-be walkers resort to other methods of transportation. Pedestrian routes need to be designed to minimize vehicular conflict by providing pathways, which are safe and free of hazards. Safety is a *major* component in all phases of this Comprehensive Pedestrian Plan and was a significant concern expressed by residents during community input events.



## **Community Identity**

Pedestrian facilities are also an important medium for maintaining and enhancing the public and social interaction of a community. The pedestrian experience should be aesthetically inviting and elicit feelings of pleasure and comfort. Open spaces, parks, the downtown area, convenient retail and other similar destinations all enhance the pedestrian environment. In addition, the ideal pedestrian environment should possess amenities such as landscaping, benches, specialty paving, safety factors and other elements that create a safe environment that pedestrians enjoy. The restoration or construction of new sidewalks should be an important aspect in the Village of Pinehurst since sidewalks often serve as *catalysts* for walking, outdoor dining, window shopping, sitting areas (benches) for social interaction, business engagements and tourism.

## **1.6 SCOPE, METHODOLOGY AND PURPOSE OF PLAN**

McGill Associates, P.A., was retained by the Village of Pinehurst to prepare a village-wide pedestrian plan as a guide for identifying and prioritizing safe pedestrian linkages and creating a viable pedestrian network. Many areas within the Village limits lack sufficient pedestrian facilities. The Village recognizes the need to plan for the future by developing a pedestrian network plan, which provides connectivity for its users. Using a proactive approach (such as this) is imperative in establishing priorities for future pedestrian facilities, reducing construction costs and implementing facilities in a logical manner.

The study area spans the Pinehurst Village limits and the immediate, surrounding extraterritorial jurisdiction (ETJ). Although the research will be focused primarily within the Village limits, it is important to understand the existing pedestrian patterns into and out of Pinehurst and their destination points.

In order to comprehend the existing conditions, identify user needs and be able to recommend appropriate improvements in the pedestrian plan, the following processes were used:

1. ***Inventory of the existing pedestrian system:*** A sidewalk, greenway and crosswalk inventory of the Village's pedestrian facilities was conducted - identifying existing safety issues.
2. ***Assessment of the needs of the pedestrian:*** The needs of pedestrians and the apparent lack of connectivity to destination points were identified and evaluated through data collected via public meetings, surveys and direction provided by Village Staff and the Project Steering Committee.
3. ***Formulation of objectives and recommendations:*** Guidelines for the future development of facilities, repair of existing facilities and maintenance were created. Probable costs for all recommendations were provided.

4. **Implementation of improvements by action-oriented method:** Key pedestrian linkages and sidewalk needs were identified and prioritized. Possible funding sources for the Village to pursue were identified.
5. **Examination and possible revision of current policies/programs:** Guidelines and implementation of current policies and existing pedestrian programs were identified and addressed.

These components provide justification for the proposed improvements. Also, any time that recommendations for improvements or new construction are made, these recommendations must be prioritized. Implementing all of the proposed improvements at one time, or in a short time frame, would be both cost-prohibitive and overwhelming. It is important that the most immediate necessities be recognized first as the implementation of capital improvements begins. In addition to facility needs, the formation of an implementation plan is an important short-term goal in establishing long-term objectives.



Pedestrian facility-related needs – which are considered to be of the highest priority – are called critical needs. The critical facility needs for the Village are all focused on improving safety conditions for pedestrians. In addition to sidewalk improvements, other emphasis should be placed on immediately addressing unmarked crosswalks and inappropriate signage. The safety of pedestrians is critical; it is the most important component of the pedestrian facilities.

Pedestrian facilities are the primary focus of this plan - in particular, sidewalks (located on Village streets and state roads) and pedestrian safety at intersection and crosswalks. In addition, off-street pedestrian facilities such as greenways and multi-purpose trails are examined. Thus, the Village Pedestrian Plan delineates the (current and future) location, implementation and maintenance of the proposed facility improvements thereby, creating a pedestrian network that allows for connectivity within the Village as well as with its neighboring communities.

The improvements recommended in this Pedestrian Plan are intended to be implemented over a period of time and will require creative funding mechanisms. Therefore, another significant short-term goal will be to identify improvement costs and funding opportunities, as well as prioritizing the improvements and projects.

**- END OF SECTION -**

## **SECTION TWO: EVALUATING CURRENT CONDITIONS**

### **2.1 OVERVIEW**

In Section 2, the existing pedestrian facility conditions in the Village of Pinehurst are inventoried and evaluated.

*Active, involved communities promote pedestrian-friendly environments*



To begin this process, information was gathered from a variety of sources, which included interviews, site analysis, a public questionnaire, community meetings, relevant planning documents and direction from the Project Steering Committee and Village staff. The information

gleaned from this initial research was later used to develop the final Village of Pinehurst Comprehensive Pedestrian Plan.

In general, a pedestrian-friendly environment indicates a strong and actively-involved community. Improving the walkability between destinations within the Village of Pinehurst would not only serve to support walking as a safe and healthy alternative to driving, but would also enhance the vitality of the entire community.

A viable pedestrian transportation network is essential to the economic and social welfare of a sizable population within the community. Functional pedestrian facilities strive for, but are not limited to, the following characteristics discussed in Section One:

- (1) Healthy lifestyles
- (2) Alternative transportation
- (3) Reduction of environmental impacts
- (4) Safety
- (5) Community identity

### **User Demographics/Current Usage**

According to the United States Census Bureau, the estimated population for the Village of Pinehurst in 2010 was 13,124 people. Census 2000 gauged the Village's population at 9,706, resulting in a growth between 2000 and 2010 of 35%. Recent data published by the North Carolina State Data Center estimates that the population increased to 15,525 in 2013, resulting in an 18% growth rate over a three year period. There are several suspected reasons for the rapid increase in population, such as:

1. The ever-increasing popularity of the resort area as both a sports mecca and a retirement community (with an extremely moderate climate) continues to lure residents.
2. The life expectancy of the retirement-aged citizens continues to increase.
3. Although an economic downturn occurred during this decade, many senior citizens received retirement packages earlier than planned, further increasing the number of possible retirees.
4. The closing of military bases in other parts of the country increased the military population of the Fort Bragg Army Base in nearby Fayetteville. The Village of Pinehurst is an attractive living area, on many levels, for those military families who can afford it.



The United States Federal Census gives a breakdown of the population of the Village of Pinehurst according to the following age groups:

*Age Distribution of Population of the Village of Pinehurst*

AGE	NO. RESIDENTS	PERCENTAGE
Under 5 years	560	4.3
5 to 9	610	4.6
10 to 14	622	4.7
15 to 19	452	3.4
20 to 24	236	1.8
25 to 29	406	3.1
30 to 34	533	4.1
35 to 39	709	5.4
40 to 44	658	5.0
45 to 49	689	5.2
50 to 54	684	5.2
55 to 59	844	6.4
60 to 64	1,174	8.9
65 to 69	1,255	9.6
70 to 74	1,080	8.2
75 to 79	944	7.2
80 to 84	835	6.4
85 yrs. and over	833	6.3

Source: U.S. Census Bureau, 2010 American Community Survey: General Profile of Characteristic at <http://factfinder.census.gov>

The age breakdown of the Village of Pinehurst's population is not typical to North Carolina. The "retired" population is by far the largest demographic for the Village, with adults between the ages of sixty and eighty-five supplying almost 47% of the population. It should be noted that a percentage of the senior population often utilizes alternate forms of transportation other than a personal motor vehicle.

Other important statistics revealed about Pinehurst include:

- The population density is approximately 940 people per square mile
- The daytime population change due to commuting is approximately + 3,931
- Only 1.6% of the population report walking as the main way they get to work
- 4.1% of the population lives in poverty
- 69% of residences are considered "family households"
- There were only two pedestrian fatalities between the years of 1975-2011

## **Physical Characteristics**

As noted in Section One, the Village of Pinehurst is located in the "sandhills" of North Carolina, which generally divides the Piedmont area from the Coastal Plains and is the evidence of a former coastline (when the ocean level was higher or the land was lower). These beach deposits were formed approximately twenty million years ago during the Miocene Epoch. Typically, beach fossils/deposits can be found near the front edges of the Sandhills. The Coastal Plains are also "terraced" from ocean levels, but none have been as long-lasting and as large as the dunes in the Sandhills.



Dry, sandy soils amid scrubby forests are typical of the Sandhills Region. Because the soils in this area are predominantly porous and sandy, the Sandhills suffers from drought; therefore, irrigation is normally required for agriculture. Some areas within the Sandhills are noted for peach production, primarily because peaches need a well-drained soil to prosper.

Prior to agricultural use, most of the Sandhills were forested with Longleaf Pine, Loblolly Pine, Turkey Oak and Blackjack Oak. In areas of extreme drainage, the forests are quite scrubby in appearance. Additionally, the Longleaf Pine begins to dominate in an area such as this – where frequent lightning-induced fires are typical.

The Sandhills region of North Carolina most notably refers to the area in and surrounding the municipalities of Pinehurst, Southern Pines and Aberdeen in Moore County. Pinehurst sits at an elevation of approximately 561 feet. There are no major rivers flowing through Pinehurst; however, there are several bodies of water, including Lake Pinehurst and Pinewild Lake. Four local thoroughfares are the predominant venues for transportation – US 15/501 (traveling north/south), NC 5 (traveling north/south), NC 2 (traveling east/west) and NC 211 (traveling east/west). The Moore County Airport is situated approximately five miles to the northeast.

The area is home to dozens of churches and synagogues representing most religions and denominations. Universities are also in close proximity to Pinehurst. Sandhills Community College is located approximately four miles from the Village and major universities within a two-hour driving distance include the University of North Carolina at Chapel Hill, Wake Forest University in Winston-Salem, North Carolina State University in Raleigh and Duke University in Durham.



## **2.2 LOCAL TRANSPORTATION NETWORK ASSESSMENT**

Public transportation plays a vital role in enhancing the productivity and the quality of life in the United States. It promotes access to employment, community resources, medical care and entertainment in communities across America. Both those who *choose* to ride (and those who have no other choice) benefit from its presence. By reducing congestion, air pollution and travel times; public transportation benefits pedestrians, as well.

In urban areas, public transit typically ranks as the second most used travel mode, after personal vehicles. North Carolina has one of the better Highway systems in the nation and it has supported the emergence of the state as an economic power and population center. However, in urban areas, congestion and travel delays are occurring more frequently due to vehicles. Even though North Carolina continues an aggressive Highway building program, it appears that the state will be unable to keep pace with the demands placed on its capacity. With this in mind, area planners have been leaders are trying to swiftly meet the current and future needs of transit.

### **Existing Non-Pedestrian Transportation Network**

#### **MCTS (Moore County Transportation Services)**

Moore County Transportation Services (MCTS) provides transportation services on an advanced reservation basis. Services for senior citizens, persons with disabilities, limited general public individuals and human service agencies are provided on a county-wide basis. Limited out-of-county services are provided for specialized care (for example: a trip to a specialized medical provider in the Triangle region).

MCTS is primarily controlled by an advisory board. The purpose of the Transportation Advisory Board (TAB) is to assist the MCTS in accomplishing its stated goal to provide safe and efficient transportation to the citizens of Moore County and promote community support for and participation in the MCTS department. The TAB functions include:

- Making recommendations to the Moore County Board of Commissioners regarding the MCTS system
- Overseeing transportation for the clients of the human service oriented agencies located in Moore County in order to fulfill the County's fiduciary responsibilities to citizens by the most effective means
- To provide advice and support to the MCTS Director regarding policy, planning and development of operational procedures and practices consistent with program policies

Members of the TAB are appointed by the County's Board of Commissioners.

## **Community Concerns, Needs and Priorities**

In order to ensure a successful study, it is vital that the public user of pedestrian facilities be able to share their issues, needs and desires. The methodology used in establishing a Pedestrian Plan for municipalities should always include citizen input.



To better understand the needs of facility users, three different methods were used to identify specific concerns/demands of Village residents. These methods consisted of Steering Committee discussions, pedestrian surveys and Community Workshops/Events. While the surveys and map exercises were good tools to record

participant responses to specific questions, open discussion with citizens also contributed a great deal of information regarding the desires and concerns of local pedestrians.

## **Steering Committee Discussions**

To act as a *guide* for the development of the Pedestrian Plan, a Steering Committee was formed during the initial planning process to establish a vision and identify the needs and priorities of pedestrians. The steering committee acted as the principal advisory body to McGill Associates and was composed of members from the Village staff, Village Council, NCDOT and local citizens. The names of Steering Committee members can be found in

the Acknowledgments at the beginning of this document. A total of five Steering Committee Meetings were held during the preparation of this plan.

During an initial Steering Committee meeting to solicit input on the pedestrian environment in the Village, members were divided into small groups and given maps along with colored dots and markers. The members were asked to check the maps for inaccuracies and to mark pedestrian destinations, areas where heavy pedestrian traffic occurred and problem intersections and gaps in the pedestrian network. They were also asked to draw where they would like to see new sidewalks and greenways. The results of this exercise led to the maps used for the Community Workshops.

## **Community Workshops**

Bicycle and Pedestrian Public Input was sought during both advertised, formal public workshops held at the Village Hall. These sessions were designed to provide drop in service for any Village resident that wished to attend and participate in either mapping exercises identifying needs and desires or open discussion to share opinions and suggestions.

Community workshops were also held during special events including a Live After 5 event and the Parks and Recreation Fall Festival to provide the public an opportunity to be involved in the pedestrian planning process. This also assured a good crowd from which to attract participants for the workshop exercises.

### **Community Workshop and Open House #1**

Over forty-five people participated in the initial pedestrian workshop held at Village Hall on September 16, 2014. Meeting participants could drop in during either morning or afternoon meeting times. Participants were invited to fill out a pedestrian survey, to participate in a mapping analysis exercise and/or an open discussion. A copy of the combined Bicycle/Pedestrian Plan survey can be found in Appendix A. The map exercise was used to initiate discussions about existing pedestrian corridors, needed pedestrian facilities and dangerous conditions for pedestrians in Pinehurst.



The consensus at this workshop is that the Pinehurst Greenway should be expanded to connect with the Downtown, surrounding neighborhoods and common destinations. Other popular ideas included having paved sidewalks in the residential areas tie to the Greenway. Additional pedestrian paths in which people were concerned with included the existing sand/clay paths in the historic Village area and the possibility of improving these paths. The major concern for participants during the workshop was if proposed improvements would follow the existing Pinehurst Greenway Plan recommendations calling for a wide cross-section for gravel paths. The most popular idea from

participants was for narrower sidewalks (5-feet to 6-feet) to be installed where appropriate within neighborhoods that should connect with the larger Greenway trails.

Dangerous Intersections that were identified by the community included:

- Numerous intersections along NC 211, NC 5/Beulah Hill Road and NC 2
- Juniper Creek Road and US 15/501
- Pinehurst Trace and US 15/501
- Monticello Drive and Morganton Road

## **Community Workshop #2**

The second community meeting took place during a Live After 5 event on October 10, 2014 in Downtown Pinehurst. Approximately forty participants stopped by the Pedestrian Plan booth and shared ideas and concerns for the Pedestrian system in Pinehurst. Participants were asked to review, comment and share their



ideas about the existing and proposed pedestrian facilities and conditions. Participants were also asked to complete a survey to collect more detailed information regarding their pedestrian experience in Pinehurst and their suggestions for improving the system.

## **Community Workshop #3**

The third community meeting took place at the Pinehurst Parks and Recreation Fall Festival on October 24, 2014 at Cannon Park. Participants were asked to review, comment and share their ideas about the existing and proposed pedestrian facilities and conditions. Participants were also asked to complete a survey to collect more detailed information regarding their pedestrian experience in Pinehurst and their suggestions for improving the system. Approximately thirty people participated in the open discussions, mapping exercise and/or completed a survey.

### Community Workshop and Open House #4

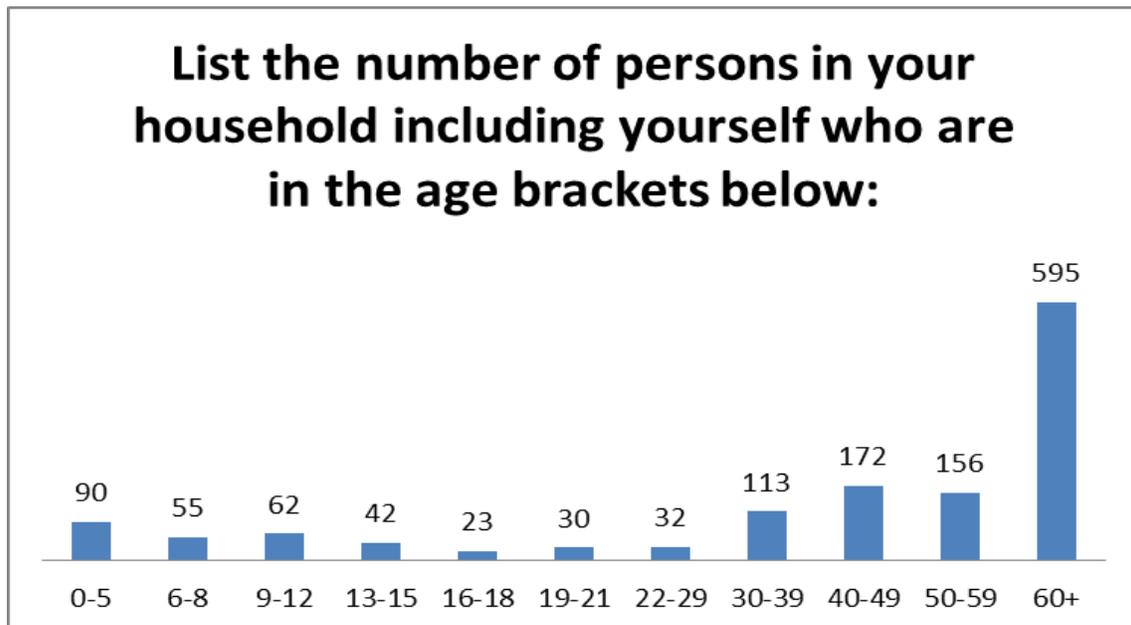
The fourth and final community meeting was also held at Village Hall on December 4, 2014. This meeting was attended by roughly fifty residents, who were provided with the current results of the survey/questionnaire, given the opportunity to fill out their own survey and provided with preliminary recommendations and future pedestrian corridors to be included within the plan.

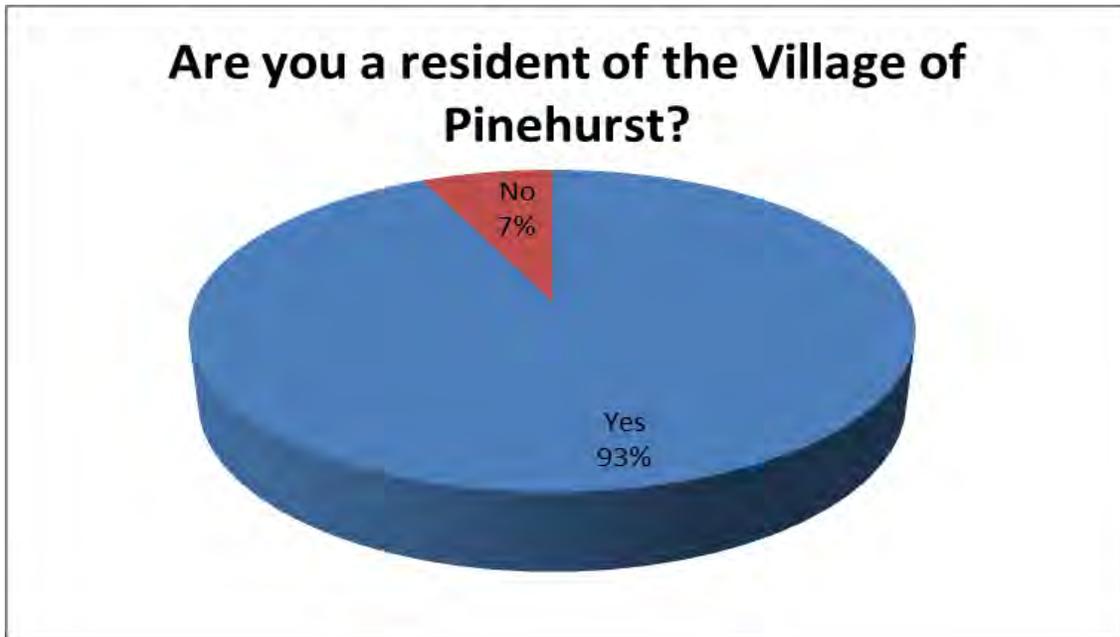


Attendees were also given the opportunity to express comments and/or concerns regarding existing facilities, ask questions about the plan and recommendations and view various maps that are intended to be included within the plan.

### Pedestrian/Bicycle Survey

To further solicit input from the public about the pedestrian system in Pinehurst, a public survey was conducted by means of a questionnaire, which was made available to residents via Community Meetings, by pick-up at Village Hall and via the internet from a link on the Village’s main web page. The combined bicycle and pedestrian survey, which can be found in the Appendix, was designed to solicit opinions on both *general* and *specific* pedestrian concerns in the Village of Pinehurst. Approximately 600 people, representing 1,370 individuals, filled out the Pinehurst Pedestrian & Bicycle Plan Survey. The survey questions and a summary analysis for each are pictured in the next few pages. Responses to the questions related to bicycling have also been included for reference.

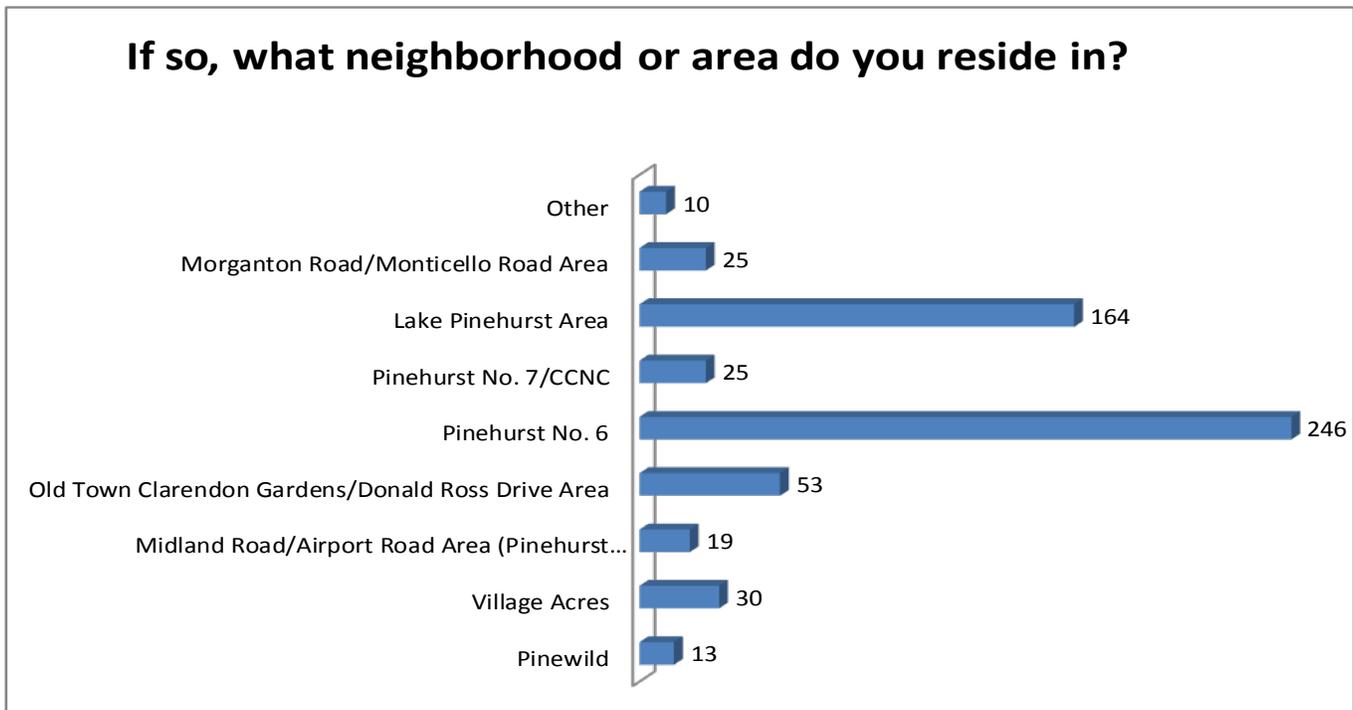




As indicated in the previous graphic, the majority of survey participants were adults age sixty and above (approximately 48%). While all age groups were represented, this outcome reflects the typical profile for Pinehurst (47% of residents are age 60+).

The majority of survey participants were residents of Pinehurst.

Participants from all of Pinehurst chose to participate in the survey, however, the majority of surveys were provided by residents identifying with Pinehurst Number 6 and the Lake Pinehurst Area.

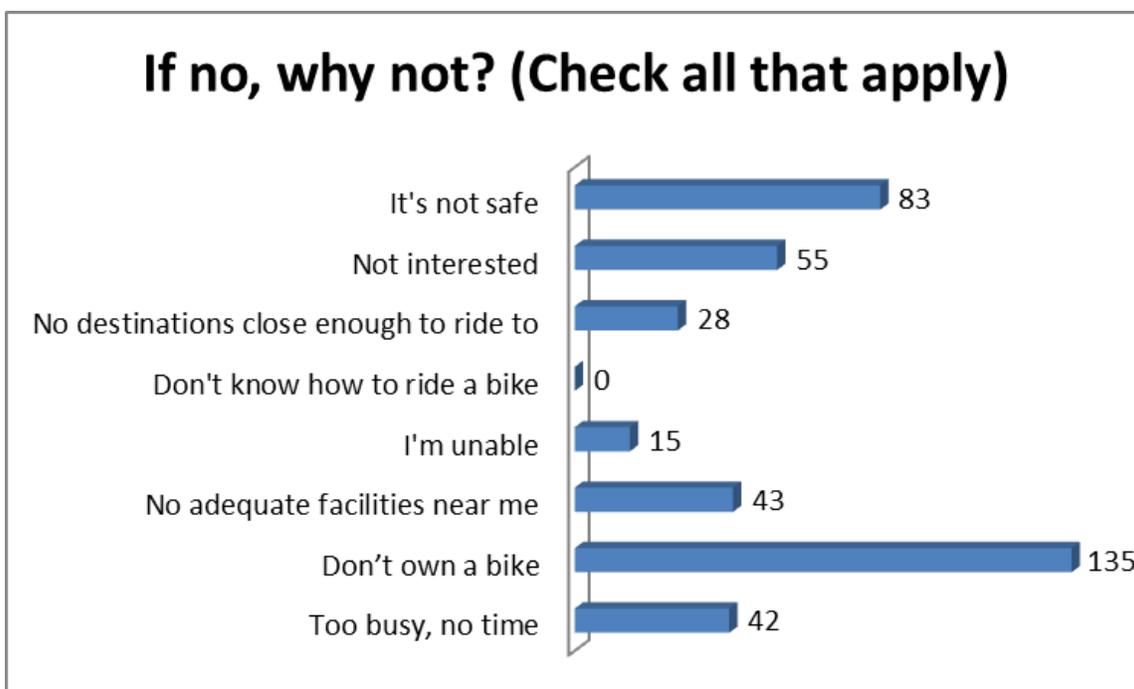


The next four questions pertain to the Comprehensive Bicycle Plan, but are being included for reference in this Pedestrian Plan.

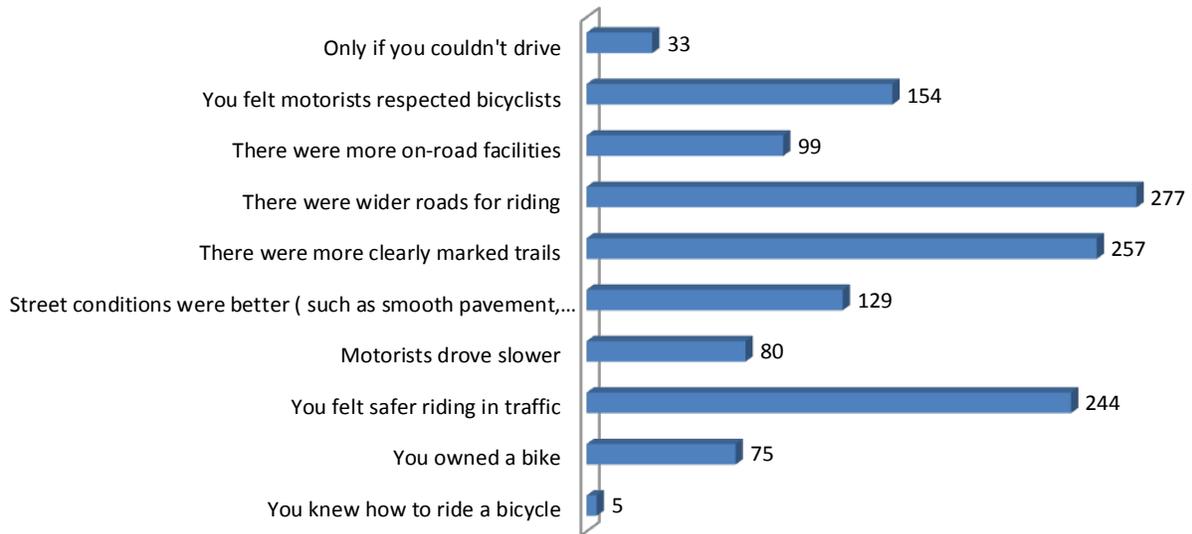


Half of survey responses indicated riding a bike within the last six months; those that hadn't ridden reported not doing so either because they didn't own a bike or felt riding in Pinehurst was not safe, were not interested in riding or didn't feel adequate facilities were located near them.

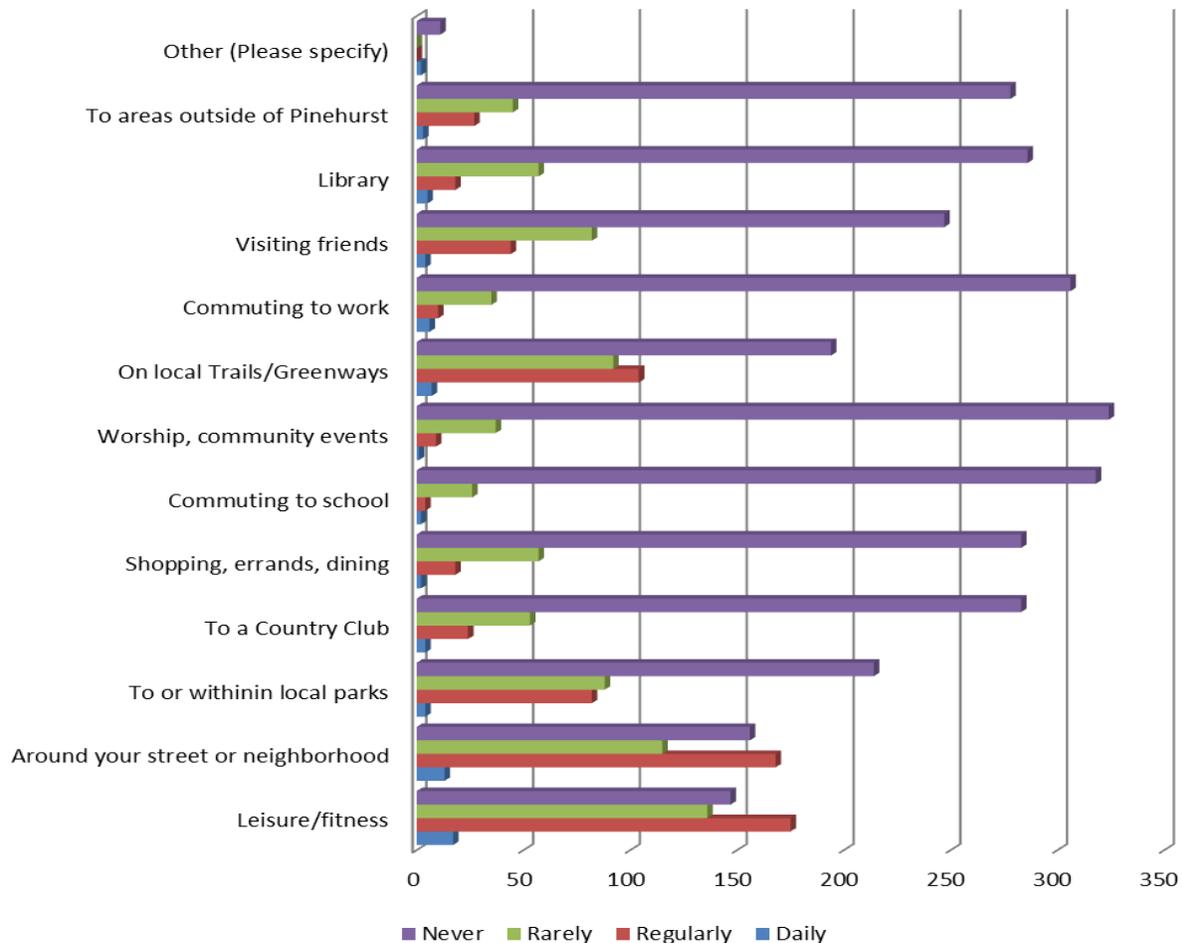
Other reasons included a lack of time, inability to ride or the perception that desired destinations were not close enough in proximity to ride to.



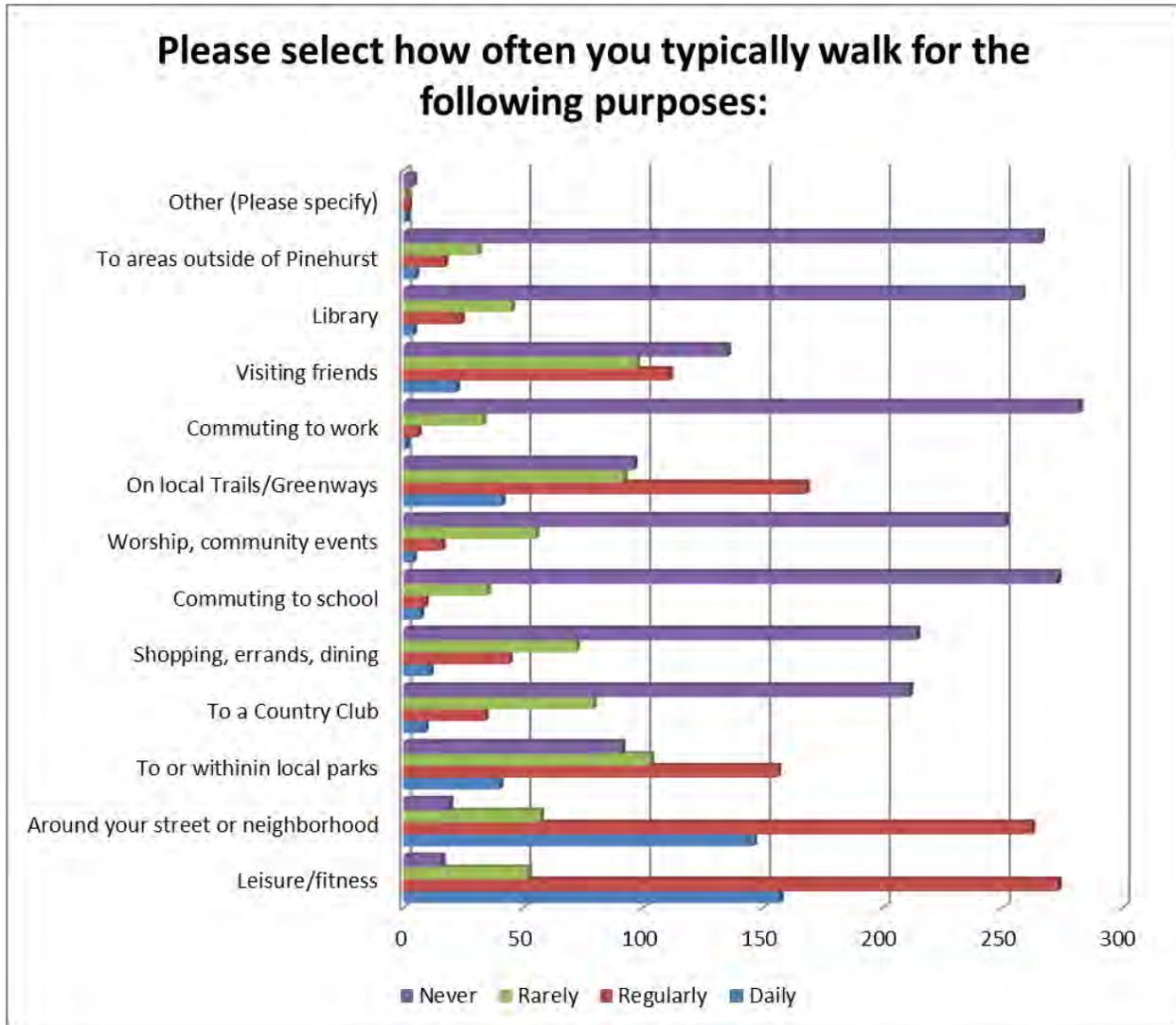
### Would you ride your bike more if: (Check all that apply)



### Please select how often you typically bike for the following purposes:

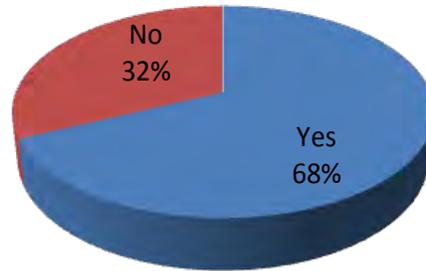


Survey responses indicate that riding for leisure/fitness and riding around neighborhood streets were the major reasons for riding a bike in Pinehurst.



Survey participants reported walking for leisure/fitness and walking around their neighborhood streets as being the most common reason for walking in Pinehurst. Other common reasons included walking to parks, the Greenway and to visit friends.

**Would you or your family members walk or bike to or within any of the previously listed destinations (schools, parks, greenways, etc.) if better and/or safer facilities were provided?**



The majority of survey participants reported not having participated in the Pinehurst Walking School Bus program. This is not surprising, considering the age distribution of survey participants.

**Have you or anyone in your family ever participated in the Walking School Bus Program at Pinehurst Elementary School?**



While 45% of those surveyed were in favor of restoring the historic sand/clay paths within the Village, 22% were not in favor of restoration. However, 33% of survey participants were not certain whether or not the historic paths should be restored. This level of uncertainty should be further explored by the Village prior to deciding a course of action regarding the restoration of the historic sand/clay paths.

**Are you or anyone in your household  
in favor of the restoration of the  
historic sand/clay paths within the  
Village?**

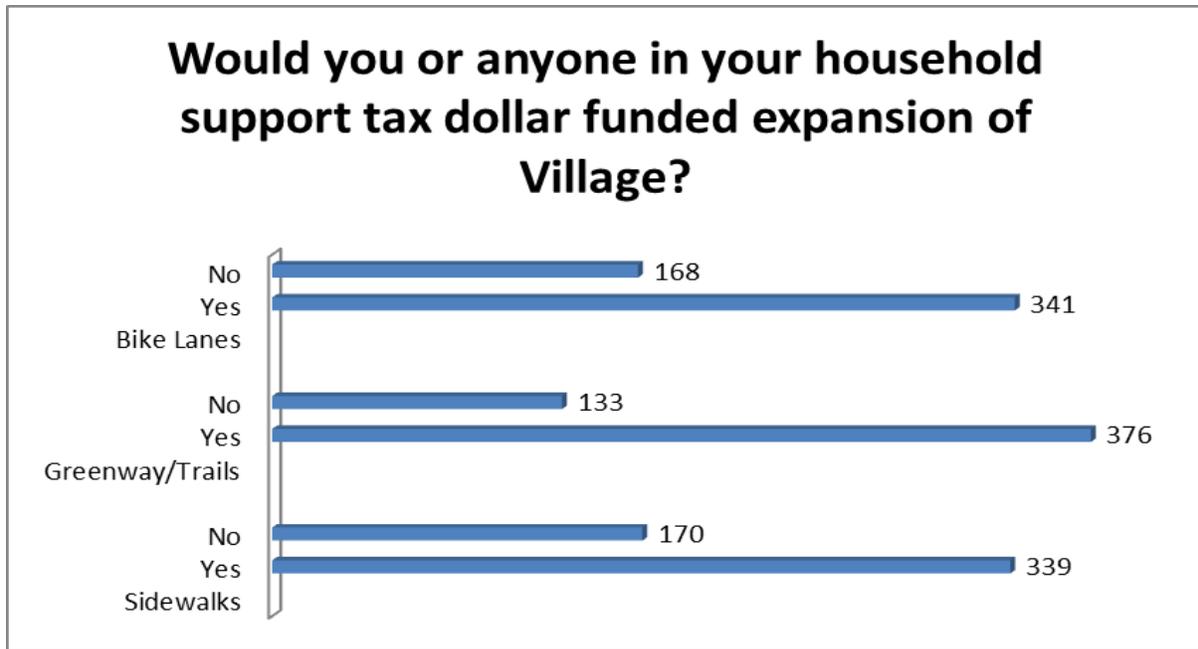


Most of the survey participants either think there are enough signalized crosswalks or don't know.

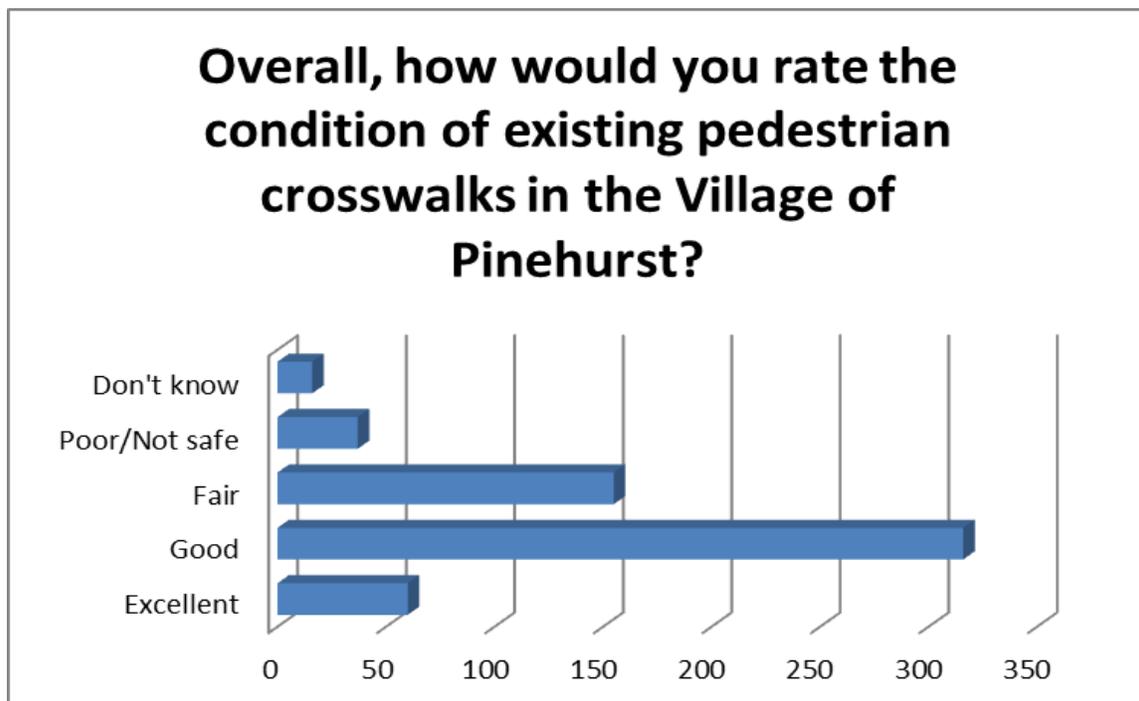
**Do you think there are enough  
signalized pedestrian crosswalks in  
Pinehurst?**



The majority of survey respondents reported being in favor of tax dollar funded expansion of the bike lanes, Greenways/Trails and Sidewalks in the Village, with Greenway/Trails being the highest percentage.



Most of the survey participants reported the condition of existing pedestrian crosswalks in the Village as being good.



## **Additional Comments**

The survey/questionnaire also gave participants the option of providing additional written comments related to bike and pedestrian facilities in Pinehurst. Questions were asked about suggested bike lane and trail routes, physical barriers that prevent the safe use of the existing system, the Village's best investment in walking/bicycling facilities, and any additional comments that the respondent had. Common themes associated with the written comments include:

- More connectivity is needed between residential areas and destination points, such as Downtown Pinehurst and neighboring communities
- Praise to the Village for the existing greenway system, trails at the Arboretum and trails at Rassie Wicker Park
- A desire for more sidewalks in residential neighborhoods and the opinion that existing roads are too narrow and that walking/biking in residential areas is generally unsafe. Some resistance to sidewalks in front yards was noted due to small lot sizes
- A preference for off-street biking opportunities in lieu of bike lanes within existing streets
- The current greenway system is generally good for walking but not for biking (particularly with training wheels) or pushing a stroller
- Safety concerns for walkers and cyclists along Linden Road, particularly those that utilize the roadway in lieu of the greenway
- A need for signalized crosswalks across major highways (15-501, 211, etc.)
- Many respondents don't like the idea of having to drive somewhere to safely walk or bike

## **Pinehurst Crash Data**

When pedestrian paths cross vehicular pathways there is always the possibility of collision, injury and/or death. According to NCDOT data, only two incidents have occurred in Pinehurst within the last twenty years and both incidents were located on major roadways. The residential areas of Pinehurst do not have a history of accidents involving pedestrians, but with the lack of pedestrian facilities available for jogging, running, walking or riding a bike; the numbers may indicate a lack of pedestrians having access or confidence related to using Pinehurst roads for non-vehicular transportation.

With the rise of fitness minded residents looking to improve their health by getting out more and walking or biking as alternative means of transportation on the rise, the need for providing safe ways for pedestrians to get around will continue to grow.

## **Analysis**

The survey results indicate that people are using the existing pedestrian facilities that have been put in place in the Village. However, many feel there is a lack of connectivity to common destinations within the Village and that not enough biking/walking facilities exist to safely access these destinations. The public outreach efforts have also indicated strong support for improving and expanding the pedestrian/bicycle system in Pinehurst.

Other reasons for improvements to the pedestrian system include the growing trend of healthy living and fitness as they relate to improving quality of life. Access to pedestrian facilities was a common theme coming from the responses and many comments were made related to the need for expanding both pedestrian and bicycling facilities.

## **2.3 ASSESSMENT OF THE PEDESTRIAN COMPATIBILITY OF THE LOCAL TRANSPORTATION SYSTEM**

### **Pedestrian System Access**

The current pedestrian system in Pinehurst mainly consists of formal sidewalks on busy thoroughfares, greenway trails traversing the Village and informal sand/clay paths mainly located within the historic downtown area. In addition to these facilities, some isolated side-of-the-road foot paths worn from frequent use exist between common destinations, such as along Rattlesnake Trail from 211 to Cannon Park.

Most of the sidewalks were noted to be in good condition at the time of this study. There is a limited network of sidewalks from the Market Square retail area to nearby residential areas but many of the adjoining paths are sand/clay and not ADA compliant. Many areas of development just outside the Historic Village area either are without any sidewalks or do not connect with the existing system of sidewalks.



*There is poor connectivity from individual residential neighborhoods to local recreation and retail destinations*

Some residential areas within the Village of Pinehurst, primarily Village Acres, benefit from the recent development of the Pinehurst Greenway. These areas along the Greenway now have access to recently completed sidewalks along Highway 211.

The historic Village areas offer the best pedestrian facilities within the Village. Unfortunately, there is poor connectivity to get to the Village Center from residential and business areas just outside the historic Village area.

Hotels and restaurants which serve tourist traffic in the area are not accommodated by a planned pedestrian network. Village businesses may benefit by being accessible via a planned pedestrian network linking the various tourist attractions, resorts, government facilities, hotels, restaurants, residential areas and the hospital, etc.

As previously stated, many pedestrian destinations in Pinehurst are not served by sidewalks at all, while others are not accessible via ADA approved accessible sidewalks. Cannon Park and Camelot Playground are located adjacent to the Greenway but these paths are not made of a material that is approved as suitable by the ADA. Other than Pinehurst's historic village area, the Village Green, there are very few pedestrian paths from residential neighborhoods into shopping/retail areas.

## **Walking Trip Accessibility Characteristics**

Walking trips are typically broken down into two main categories: walking for recreation and walking to reach a destination.

Most residential areas within the Village (Pinehurst No. 6, Pinehurst Lake Area, Village Acres, etc.) are without street side sidewalks. Pedestrian travel is often along the edge of or within a roadway. A number of residents voiced frustration during community meetings about the safety of walking within the roadway or for having to use their car to drive to a separate location to access the Greenway.



*This is a good example of recent pedestrian improvements (beside Pinehurst Elementary) that provides a marked crosswalk for historic sand/clay paths*

The common idea shared by participants of the community meetings is that all residential areas within the Village need access to at least one major sidewalk within their immediate neighborhood that connects to the Greenway. Areas within close proximity of the Village Green do have pedestrian paths that connect with the Greenway; some of the sand/clay paths did show evidence of ongoing improvements and recent repairs taking place (near Pinehurst Elementary). However, a large number of these paths consist of sand/clay and pose a barrier to some individuals accessing the pedestrian network.

The Pinehurst Greenway is currently gravel/sand in most locations, limiting accessibility for some users. Some sections of this system are paved due to steep slopes and/or ADA compliance. This important asset to the Village will serve as a critical unifying component linking neighborhoods and resort areas with shopping areas, job sites, schools, parks, doctors' offices, the local Hospital and other nearby communities.

Sites generating Pedestrian traffic include:

- **FirstHealth Moore Regional Hospital & Fitness Center** – Sidewalks currently exist along the perimeter of this property, which connect with the recently completed sidewalk along Highway 211. Several of the existing crosswalks are not ADA compliant, lacking curb ramps and/or signage. (See inventory map at the end of this section).
- **Pinehurst Greenway** – The Greenway currently extends from a trailhead parking lot along Forest Drive in Village Acres to the intersection of Linden Road and Foxfire Road. The Greenway also connects to Rassie Wicker Park, Cannon Park and Camelot Playground, Given Memorial Library, Carolina Hotel, Sidewalks on Highway 211 and eventually extends to the FirstHealth campus and adjacent residential properties.
- **Rassie Wicker Park** – There are brick sidewalks leading to the park from the Village Hall and Arboretum; the existing Greenway system extends through the park.
- **Village Arboretum** – Both paved and non-paved paths traverse this park which is accessible from the Village Hall.
- **Village Hall** – There are brick sidewalks leading to this municipal center from Rassie Wicker Park and the Fire and Police Stations.
- **Given Memorial Library** – The Library is accessible via brick sidewalk adjoining the Village Green. These paths are connected to the sidewalks in Market Square which are accessible to some paved sidewalks and sand clay paths in the adjacent residential area.
- **Pinehurst Elementary School** – A recently updated portion of sand/clay path provides pedestrian connectivity from the adjacent residential community and Cannon Park. The school utilizes the paths as part of their Walking School Bus program in warmer months of the year.
- **Sandhills Community College** – There are no sidewalks or bike lanes leading to the College along Airport Road.
- **Harness Track/Fair Barn** – No pedestrian paths lead to these locations.
- **Various resorts/country clubs within the Village** – Some areas do not have pedestrian access, though the Village installed a new brick sidewalk along Highway 2 to link the Village Center with Pinehurst Resort prior to the 2014 U.S. Opens. Pedestrian access to Pinehurst Resort will likely increase in the future as



***Brick sidewalk near the Arboretum with marked crossing along McCaskill Road***

a result of the new Members Club Pool Complex scheduled to open in the summer of 2015.

- **Residential neighborhoods** – As previously noted, most do not have access to pedestrian paths or sidewalks within the neighborhood.

Shopping destinations are scattered throughout the Village and adjacent areas, but the main areas that generate pedestrian traffic are:

- **Market Square/Downtown Pinehurst Retail Areas** – The Historic downtown within Pinehurst has a mix of fair to good condition sidewalks that extend from the center of the square to nearby residential areas. The paved sidewalks typically connect to historic sand/clay paths.
- **Olmsted Village** – This popular destination is not located within the Village limits but is frequently used by Pinehurst residents. The recent widening of Highway 211 included the construction of new concrete sidewalks on both sides of the road that terminate at Olmsted Village near the intersection of Highway 211, NC Hwy 5 and Central Park Avenue.

Busy roadways pose a major barrier for pedestrians trying to walk from one point to another. According to NCDOT, the roadways with the highest Annual Average Daily Traffic (AADT) counts for 2013 in the Village of Pinehurst include:

- **US Highway 211** – 11,000 to 12,000 AADT
- **NC5/Beulah Hill Road** – 11,000 to 17,000 AADT
- **US 15/501** – 16,000 to 26,000 AADT
- **NC2/Midland Road/Palmetto Road** – 8,700 to 18,000 AADT
- **Linden Road** – 3,600 AADT

An NCDOT map showing Average Annual Daily Traffic Counts for the Village of Pinehurst can be found in Appendix C of this document.

There are a number of intersections along these typically busy corridors that have a perception of being unsafe because of the volume and/or speed of vehicular traffic that pedestrians must navigate. Most of these intersections do not have pedestrian signals or crosswalks.

The exceptions are the intersections on Highway 211 that were recently improved by NCDOT. These intersections are equipped with pedestrian crosswalks and ped-heads.

To create a pedestrian-friendly transportation system in Pinehurst, existing pedestrian corridors should be strengthened by filling in gaps, repairing existing facilities and

providing safe, efficient paths across busy vehicular corridors. Additional pedestrian corridors need to be provided to connect major portions of the Village (east to west and north to south) and to serve as neighborhood connectors. New connectors need to be provided to reach important destinations, especially near public schools, parks and popular commercial areas.

## **2.4 INVENTORY AND ASSESSMENT OF EXISTING PEDESTRIAN FACILITIES**

In generating this plan, McGill Associates conducted an inventory of existing pedestrian facilities to delineate the location(s) of existing sidewalks and their condition(s). These facilities are shown on the *Inventory* map, found at the end of this section.

**Pedestrian Crossing with ramp in drain**



This inventory includes the existing condition of Village sidewalks, greenways, suggested locations of crosswalk and curbs ramp improvements, as well as suggested signalized crossings. The inventory was developed to identify needed linkages that would improve connectivity and to assess both the condition of facilities and ADA compliance.

In addition to the visual survey, interviews were conducted with appropriate staff and agencies within the Village government. These interviews were designed to solicit information from knowledgeable staff about departmental issues and concerns with the existing pedestrian network and how it currently serves the needs of the citizens of Pinehurst.

### **Visual Survey Results**

#### **Sidewalks**

The locations and conditions of existing sidewalks are shown on the Inventory Map at the end of this section. Existing sidewalks in the pedestrian network were rated as good, fair, or poor.

- Good – overall good, usable condition. Sidewalks must be at least four feet wide. A few minor cracks, small amount of spalling and/or discoloration is acceptable.
- Fair – usable condition. Any sidewalk less than four feet in width, moderate number of cracks, minor settling or uplifting, spalling and/or intrusive vegetation.
- Poor – dangerous or unusable sidewalks. Major cracks and breakage, major uplifting or settling, crushed concrete, missing segments and/or excessive vegetation intrusion.

Overall, most of the existing sidewalks in Pinehurst are in good condition. The major issues for the overall pedestrian system are:

- ADA accessibility: Sand/clay paths and portions of the Greenway are not in compliance with Federal/State accessibility standards. Curb ramps, tactile detection pads and paved paths would improve the existing system.
- Lack of sidewalks: While many of the residential areas in or near Downtown have access to pedestrian pathways, a number of residential areas within the Village limits do not have pedestrian paths of any kind.
- Lack of Connectors: A number of neighborhoods and popular destinations in the Village lacked a connecting sidewalk to the next destination, adjacent residential area or to shopping areas.
- Debris: Some sidewalks were obstructed by cars parked improperly (parked at the end of a driveway where a path was located). This is a parking enforcement issue. Other sidewalks had trash cans or vegetative overgrowth blocking the safe accessibility of these paths.
- Poor repair: Many of the existing sand/clay paths in the Village needed repairs to correct rilling/erosion, root intrusion, etc. A number of intersections needed curb ramp improvements (to meet ADA requirements).



## **Pedestrian Intersections**

There are several busy intersections serving both vehicular and pedestrian traffic within the Village. Some intersections offer safe pedestrian facilities such as those in the Market Square/Chinquapin Road area. However, there are many other intersections within the Village that will require safety upgrades like pedestrian signals, marked crosswalks, areas of refuge, tactile warning devices, curb ramps, paved path or a combination of these needs in order to protect pedestrians as they navigate near vehicular traffic.

The following list describes intersections in need of safe pedestrian crossing improvements. All intersections listed require further assessment for ADA compliant curb ramps, tactile warning devices, etc. The recommended crossing treatment is in parentheses (Also see Map in Appendix B).

- Memorial Drive mid-block crossing near FirstHealth of the Carolinas (ADA Curb cuts/ramps)

- Memorial Drive/1st Village Drive  
(Crosswalk markings re-painted)
- Memorial Drive/Driveway to FirstHealth Fitness Facility  
(Crosswalk marking re-painted)
- Memorial Drive and Page Road  
(Signalized Crosswalk)
- NC 211/Rassie Wicker  
(ADA connectivity from existing sand path to new sidewalk)
- NC 211/Driveway to First Health Fitness Facility  
(Painted Crosswalk)
- Dundee Road and NC 211  
(Painted Crosswalk)
- NC 5/McCaskill Road  
(ADA Sidewalk and Crosswalks)
- Ritter Road/NC 5  
Signalized Crosswalk
- Hilliard/McDairmid Road  
(Painted Crosswalks)
- Pinehurst Trace and US 15/501  
(Signalized Crosswalk)
- Juniper Creek Boulevard and US 15/501  
(Signalized Crosswalk)
- Juniper Lake Road and US 15/501  
(Painted Crosswalk)
- Spring Lake Drive and US 15/501  
(Painted Crosswalk)
- Gun Club Road and Spring Lake Drive  
(Painted Crosswalk)
- McCaskill Road and Magnolia Road  
(Painted Crosswalk)
- NC 2 and Fields Road/Muster Branch Road  
(Painted Crosswalk)



- McKenzie Road and Linden Road  
(Painted Crosswalk)
- Cherokee Road and Country Club Driveway  
(‘HAWK’ Signalized Crosswalk)
- Chicken Plant Road and Pine Vista Drive  
(Painted Crosswalk)
- Pine Vista Drive and Burning Tree Road  
(Painted Crosswalk)
- St. Andrews Drive and Lake Forest Road  
(Painted Crosswalk)
- Lake Hills Drive and Sugar Gum Lane  
(Painted Crosswalk)
- Lake Hills Drive/Monticello Road and NC 5  
(Signalized Crosswalk)
- Morganton Road and Monticello Road  
(Signalized Crosswalk)
- Diamondhead Drive and Linden Road  
(Painted Crosswalk)
- Morganton Road and entrance to CNCC  
(Painted Crosswalk)

## **Barriers**

In addition to the lack of safe and complete sidewalks, curb ramps and pedestrian crossings shown on Sidewalk Inventory/Existing Conditions Map (See the end of this section), other obstacles and barriers may prevent safe walking trips. Barriers consist of objects located on sidewalks which prevent a safe lateral clearance. Typical sidewalk barriers include utility poles, traffic signs, fire hydrants and intrusive vegetation.

The biggest barrier within the pedestrian system is the absence of sidewalks and pedestrian crossings within neighborhoods. Features such as cul-de-sacs pose a limitation to pedestrian travel within the



Village of Pinehurst. However, some local foot and bicycle traffic does move across undeveloped properties in some cul-de-sacs.

There are few tactile warning devices for visually-challenged pedestrians at existing intersections within the Village of Pinehurst.

Other potential barriers for pedestrian traffic in Pinehurst include utility poles, trash containers, parked vehicles, traffic signs, poles and/or boxes. In the Village of Pinehurst, these objects are typically placed either near a building or by the curb, which keeps them out of the pedestrian pathway. However, this is not always the case on some of the narrower sand/clay paths located in residential areas.

Path surfacing may also be considered a barrier if the surface is not firm and stable. Bicycles, strollers and wheel chairs may have difficulty traveling on sand covered or other natural surfaced paths.

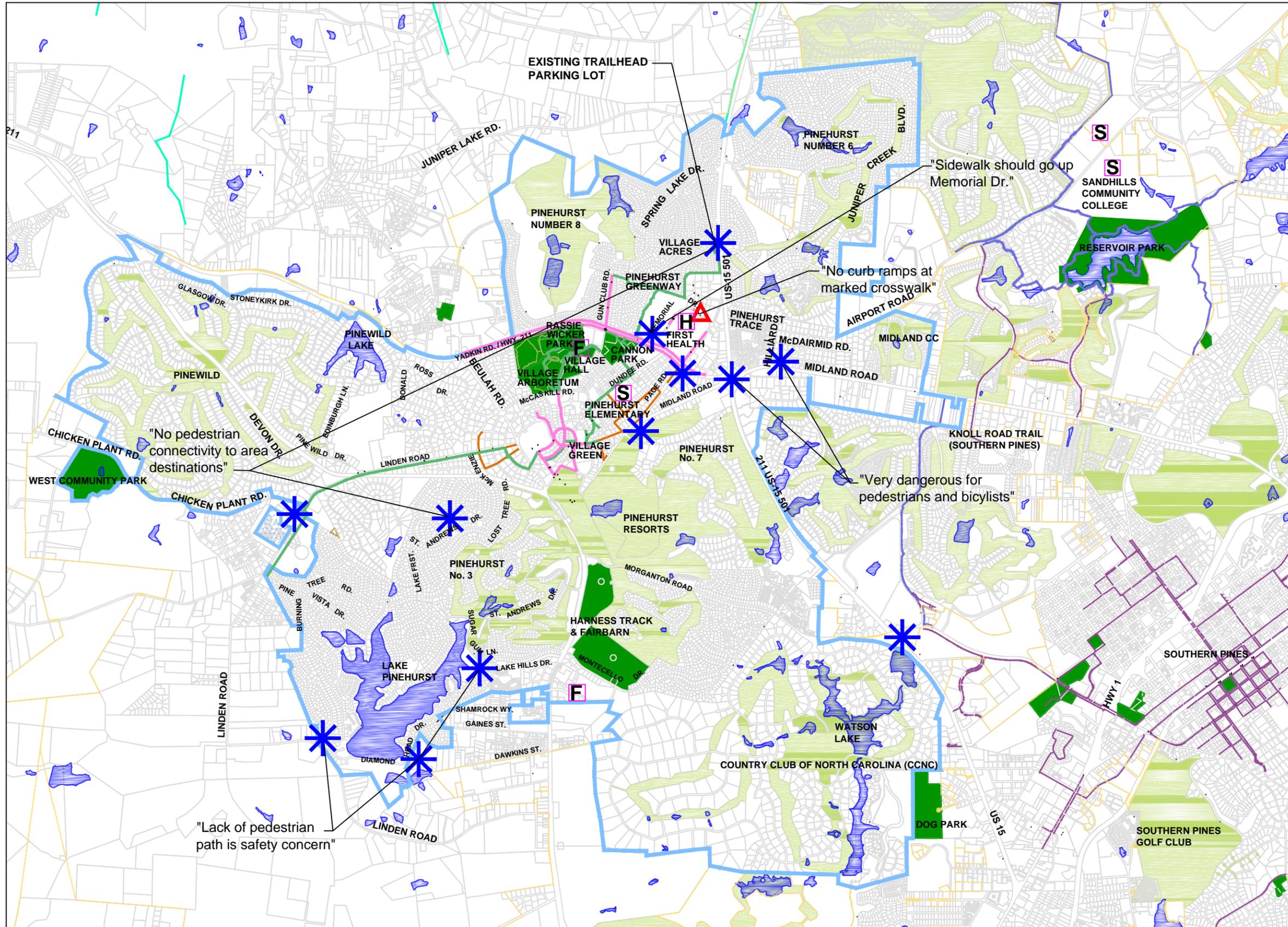
### **Pinehurst Sidewalk Inventory Map**

A visual assessment and inventory which exhibits existing sidewalk and other pedestrian facility conditions in Pinehurst is provided in Figure 2-1.

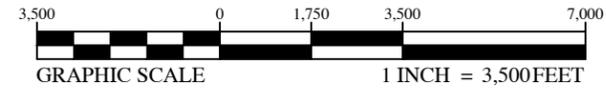
# Village of Pinehurst North Carolina

## 2015 Comprehensive Pedestrian Plan

**Figure 2-1  
EXISTING INVENTORY**



-  Existing Park Facility
-  Golf Course
-  Existing Pond/Lake
-  Existing Greenway Trail
-  Existing Sand/Clay Path
-  Existing Sidewalk Good Condition
-  Existing Sidewalk Poor Condition
-  Moore County Potential Greenway Corridor
-  Existing Southern Pines Greenway Trail
-  Existing Southern Pines Sidewalk
-  Village of Pinehurst
-  Pinehurst ETJ
-  Existing School
-  Existing Hospital
-  Existing Fire Station
-  Community Comment - Problem Area (Sidewalk Ends, ADA issue, Lack of connectivity, Etc.)
-  Crosswalk Issue (Needs Pedhead, needs maintenance, etc.)



## SECTION THREE: EXISTING PLANS, PROGRAMS AND POLICIES

Numerous planning documents and recommendations have previously been prepared relating to issues addressing current and future pedestrian facilities for the Village of Pinehurst. Several of these documents, such as the Village Greenway Master Plan, Pinehurst Development Ordinance (PDO), Engineering Standards and Specifications Manual and Historic District Standards and Guidelines were previously described in Section 1. However, additional such reports and documents represent important efforts that apply to this Pedestrian Plan. Many of these planning documents address greenways, transportation, public transportation, capital improvements and land-use planning. These also provide valuable insight and background information toward future decisions for the Village. This section outlines the key documents and studies which already exist.

### 3.1 LOCAL, REGIONAL AND STATE PLANS AND GUIDELINES

#### Transportation and Other Related Plans

##### **Moore County Comprehensive Transportation Plan (CTP)**

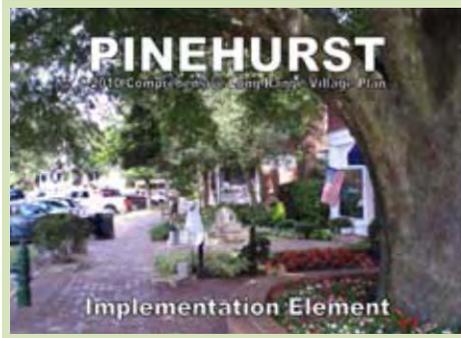


The CTP planning process for Moore County is a combined effort between the county, the participating municipalities and communities of Aberdeen, Cameron, Carthage, Foxfire Village, Pinebluff, Robbins, Southern Pines,

Taylortown, Vass, Village of Pinehurst, Whispering Pines, Woodlake and the organizations of Triangle Area Rural Planning Organization (TARPO) and NCDOT. Once this plan is complete, it will provide recommendations on transportation improvements in Moore County that could be implemented over the next thirty (30) years.

##### **Pinehurst 2010 Comprehensive Long Range Village Plan**

The 2010 Comprehensive Long Range Village Plan is divided into two main elements, including a *Strategic Element* and an *Implementation Element*. The main part, known as the Strategic Element, is a statement of the overall strategic directions which are considered important for the Village to promote and pursue for the conservation and enhancement of the overall character, ambience and quality of life in Pinehurst. This element shows the “big picture” and is strategic in nature so that Pinehurst residents will use it to discuss and refine the major directions of the community. It is envisioned that the Strategic Element will be reviewed every five to ten years to ensure that the directions for Pinehurst are appropriate in addressing the issues facing the community.



The Implementation Element is a more detailed compilation of tasks and programs which will be considered to accomplish the overall strategies. This element identifies specific tasks to be completed, the entity responsible for completing the task and the anticipated time-frame for completing the task. It is envisioned that the Implementation Element will be reviewed and updated every year to clear completed tasks and to add new tasks. In addition, this annual review will help to ensure that the work program for

the coming year (and beyond) reflects fiscal and operational capabilities and the evolving needs of the Village.

Based on community meetings and input, the two elements of the Plan are based on the following goals. The Village of Pinehurst intends to:



*Maintain character and legacy*

- *Preserve and enhance the unique character and ambience of the entire community, especially the historic Village Center*
- *Enhance the quality of life for present and future residents*
- *Guide growth or change in ways that complement the unique character and ambience of the community*
- *Address community needs in the most efficient and cost-effective manner*
- *Maintain the legacy of Pinehurst for future residents and visitors to enjoy*

The Comprehensive Long Range Plan was reviewed as part of the research that went into this Pedestrian Plan. With regards to pedestrian facilities, the Comprehensive Plan recommends a number of strategies to improve the walkability of the Village. Relevant recommendations from the Plan that are incorporated into this Pedestrian Plan include:

- *Reduce energy use by promoting walking & bicycling through site and building design*
- *Promote pedestrian activity by expanding street and path lighting*
- *Advocate that a raised median be constructed along 15/501 and that pedestrian and bicycle facilities be included in any future improvements to this corridor*

- *Align both sides of Spring Lake Road with sidewalks*
- *Ensure continuous brick sidewalk is constructed in business areas within Village Center*
- *Extend brick sidewalks from Village Center along major roadways*
- *Require sidewalks as part of all future development of outlying business areas*
- *Extend greenways to outlying residential areas*
- *Safely route trails/sidewalks across major Highways*
- *Facilitate connectivity to greenways via sidewalks from major streets within residential areas*
- *Provide an updated sidewalk/greenway trails map for residents of the Village*
- *Promote bicycle/pedestrian connectivity to surrounding communities*



*Install new and extend existing brick sidewalks in Village*

## **State Transportation Improvement Program (STIP)**



NCDOT officials have developed a strategic plan for transportation decision-making that focuses on achieving the department's long-term goals of safety, mobility and infrastructure health. Reforms regarding transportation projects follow the 2040 Plan. The 2040 Plan outlines a 30-year Statewide Long-Range Plan which includes the State Transportation Improvement Program (STIP) projects per NCDOT Highway Division and County. It provides costs and schedules for each project. It is important to evaluate existing initiatives in order to appropriately incorporate current proposed improvements into the pedestrian plan. STIP is important in establishing long range goals for improving pedestrian transportation.

## **Design Guidelines**

### **ADA Design Guidelines**

The Americans with Disabilities Act (ADA) states that cities and municipalities must construct, modify or adapt pedestrian facilities to accommodate individuals with disabilities and accessibility limitations. The following are some basic topics that must be addressed for sidewalks to comply with ADA requirements:

- *Overgrown, broken, root laden or otherwise rough conditions are not acceptable*
- *Curb ramps provide entry and exit to sidewalks*
- *Ramps also provide alternate routes around staircases*
- *Cuts in medians at crosswalks allow travel across divided roadways*
- *Slopes must be realistic for traveling*
- *Ramps provide access to buildings that are not ground level*
- *Adequate width provides sufficient passing*
- *Historic district exemptions should be taken into account*
- *Adjusted crossing times allow for safe travel across wide intersections*



## **3.2 PROGRAMS AND INITIATIVES**

### **Safety and Education Programs and Resources**

#### **Village Parks and Recreation Department**

The Pinehurst Parks and Recreation Department offers a variety of programs geared towards all ages of residents, from children to senior adults. Programs vary from organized athletic leagues to arts and crafts classes, exercise classes, special events and festivals. Programs are designed with the residents of Pinehurst in mind, but are open to all Moore County



residents. The department is also responsible for Cannon Park & Camelot Playground, Rassie Wicker Park, the Pinehurst Greenway System, the Arboretum, the Fair Barn and the Pinehurst Harness Track.

## **Village Planning Department**

The Planning Department is responsible for formulating and enforcing planning policies and standards that will ensure a quality living and working environment for Pinehurst. This is done by establishing the regulations set forth in the Pinehurst Development Ordinance (PDO) and the Pinehurst Municipal Code. A major responsibility of the department is to review subdivision and site development plans to ensure compliance with the PDO. In addition, the Village's Code Enforcement Officer enforces the provisions of the Municipal Code and the PDO. The department also performs zoning inspections and provides support to the Community Appearance Commission, the Conservation Commission, the Planning and Zoning Board, the Board of Adjustment, the Historic Preservation Commission and Village Council. Another significant responsibility of the department is to oversee the Village's Long Range Comprehensive Plan, which was discussed earlier in this section.

## **FirstHealth Fitness**

As a medical fitness center, FirstHealth Fitness in Pinehurst offers programs that are medically based and under the supervision of a medical doctor. The personal trainers and fitness coaches have college degrees in the fitness field and a licensed dietitian is on staff to guarantee quality information and guidance.



With more than 63,000 square feet, the flagship facility in Pinehurst offers the region's largest free-weight area, innovative

group exercise, aquatic center, swimming lessons, children's programs, nutrition services and massage therapy.

## **Moore County Health Department**

The Moore County Health Department (MCHD) is located at 705 Pinehurst Avenue in Carthage and assists with promoting the wellness of individuals, families and the community. Offering many services, the MCHD strives "*To Protect and Promote Health Through Prevention and Control of Disease and Injury*". Some of the following MCHD-sponsored programs, which contribute to the overall fitness of the local community include, but are not limited to, the following:

- WIC/Nutrition Services
- MooreHealth (Healthy Carolinians Task Force)
- Eat Smart, Move More Coalition

The Moore County Health Department currently employs a staff of over 70 professionals representing a wide variety of health related disciplines. Programs and services include community health assessment, health promotion, communicable disease, epidemiology, personal health/clinical services and environmental health.



Today the department is involved in a wide range of collaborative community health activities designed to protect and promote health through prevention and control of disease and injury.

### **MooreHealth (Healthy Carolinians Task Force)**



MooreHealth is a volunteer community organization committed to developing cooperative planning that promotes health and improves the quality of life for the residents of Moore County. This organization, composed of representatives from a broad spectrum of the community, provides a mechanism for innovative, cost-effective and challenging approaches for a healthier tomorrow by coordinating resources of Moore County for the greater benefit of its residents.

The mission of MooreHealth is to collaboratively assess needs, raise awareness and identify resources to address them. Their core purpose is to promote health and quality of life. Health priorities, which have been identified for 2014 to 2017 are:

- Obesity
- Substance Abuse
- Aging Issues

### **Eat Smart, Move More Coalition**

The Eat Smart Move More Coalition encourages healthy eating and exercise habits for all North Carolinians. In addition to nutritional resources offered, the program encourages walking and biking initiatives that support accessibility and wellbeing. The following web address provides a wealth of resources on healthy habits and choices: <http://www.eatsmartmovemorenc.com>.



## **Moore Alive - Stress Less, Live Moore**



Last year, Moore County Partners in Progress, the 501(c)(3) economic development organization serving all of Moore County, North Carolina, spearheaded the Moore Alive marketing and talent recruitment initiative to promote the local assets, amenities and exceptionally healthy lifestyle in Moore County and its collective communities. Moore Alive wants people to know that Moore County is much more than a great place to retire or play golf. There are many opportunities for people of all ages to succeed in Moore County, while living more healthily and enjoying the quality of life. The foundation of the Moore Alive campaign is the Moore Alive website at, [www.MooreAlive.com](http://www.MooreAlive.com).

## **Moore County Department of Aging**

Many services and facilities are available to seniors and disabled adults (50 years of age and older) of Moore County, as well as their families and caregivers, through the Moore County Department of Aging located at the Senior Enrichment Center (SEC). These include nutrition, recreation, transportation, wellness, in-home aid and housing.

When clients of the Moore County Department of Aging come to receive guidance for any of the above listed services, they come in contact with a number of local resources and opportunities that may encourage them to become involved with walking for exercise.

## **Military Families**

Pinehurst and Moore County's outstanding quality of life and proximity to Fort Bragg, the nation's largest US Army base, combine to make the area a magnet for military families, who find great schools, excellent healthcare, low taxes, tons of great recreational opportunities and other military families.



These families deal with issues civilians may never dream of, such as the hardships of having young children when your spouse is deployed for 6 months or more. To deal with these and other challenges, support systems comprised of friends, neighbors and church families are relied upon to maintain a sense of normalcy. One case in point is the Sandhills Military Wives Meetup Group. The group of more than 160 members is open to wives of active duty or retired military. They share their lives while involved in book clubs, wine tastings and many recreational activities – either individually or with their families.

## **Economic Development – Moore County Partners in Progress**



“When you want more, look for Moore”. The Moore County Partners urge people to visit and relocate to Moore County, the heart of North Carolina. In efforts to accomplish this end, the Economic Development group stress the unique lifestyle, which is brought on by the County’s geography, demographics, infrastructure, culture, commerce, education and retirement living.

## **Village Center Enhancement Strategy**

The Village Center has been the heart and soul of the historic Village of Pinehurst since 1895. The Center, a retail shopping destination with character and ambience like no other, is a place for residents to congregate and visitors to explore.



The Village Center, however, has been negatively impacted by the most recent economic recession and as a result faces many challenges in ensuring its economic viability.

In May 2010, The Village Council appointed the Village Center Enhancement Committee to develop strategies to “formulate actionable recommendations designed to enhance the health and vibrancy of the Village Center.” This Village Center Enhancement Strategy represents those recommendations.

As a result of The North Carolina Downtown Development Association (NCDDA) report, the Village Center Enhancement Committee reorganized itself and formed three subcommittees to formulate work plans for the recommendations:

1. Business and Community Relations
2. Downtown Facilities
3. Business Recruitment and Retention

## **Community Appearance Grant Program**

The Village of Pinehurst has a Community Appearance Grant Program that is intended to help businesses and property owners in commercial areas upgrade and improve the exterior appearance of their property.



Grant rebates of up to \$1,500 or 50% of the exterior/site-up-fit cost (whichever is less) are available for building and site improvements. Review and approval of the proposed improvement projects are based upon design guidelines, community plans and streetscape plans for the area in which the project is located.

### **Warren H. Manning Beautification Award Program**

In response to a desire by the Pinehurst Village Council to develop an Award Program which would recognize the efforts of individuals and business owners for their contribution to the beautification of the Village, a program named after Warren H. Manning, who was instrumental in designing and planting over 200,000 trees and shrubs in the Village, has been developed. A former employee of the Olmsted Group, he went on to be a nationally renowned landscape architect. The program will have two distinct parts, residential and non-residential. Each part will consist of awards for new development and remodeled projects.



### **3.3 PEDESTRIAN LAWS**

The State of North Carolina follows a standard set of basic pedestrian laws, outlined in a guidebook published by the North Carolina Department of Transportation. Below, is a summary of these laws.

1. *Pedestrians need to obey traffic control signals*
2. *Pedestrians have the right-of way in crosswalks where there are no traffic control signals*
3. *Pedestrians have the right-of-way at intersections without marked crosswalks*



4. *Pedestrians have the right-of-way in walkways at alleys, driveways, private roads and building entrances*
5. *Between adjacent intersections with traffic control signals, pedestrians may cross only in a marked crosswalk*

6. *Pedestrians must yield to vehicles, which have the right-of-way, if they are in the roadway but not at a marked or unmarked crosswalk (intersection)*
7. *It is unlawful to walk in the roadway if a sidewalk has been provided*
8. *If no sidewalk is provided, pedestrians should walk on the extreme left of the road, or the left shoulder, facing on-coming traffic*
9. *Standing, sitting or lying upon highways or streets is prohibited*
10. *At any street, highway, road crossing or intersection that is not regulated by traffic control signals or officers, a blind or partially-blind pedestrian with a white cane or guide dog shall receive the right-of-way*
11. *At intersections with traffic control signals, if a blind or partially-blind pedestrian with a white cane or guide dog is partially across the street when the signal changes, that pedestrian shall have the right-of-way to finishing crossing the street*
12. *A person with a mobility impairment that is using a motorized wheelchair or similar conveyance shall be given all the rights and responsibilities of a pedestrian*
13. *Electric personal assistive mobility devices may be operated on public highways with speeds of less than 25 mph, sidewalks and bicycle paths. They are required to yield to the right-of-way to pedestrians and other human-powered devices*

These laws are available to the public in the NCDOT booklet, [A Guide to North Carolina Bicycle and Pedestrian Laws](#), and can be accessed at the NCDOT website, <http://www.ncdot.gov/bikeped/laws/policies/laws/>.

Other relevant state and federal policies are listed below and can be accessed at the accompanying websites.

- NCDOT Pedestrian Policy Guidelines  
[http://www.ncdot.gov/\\_templates/download/external.html?pdf=http%3A//www.ncdot.gov/doh/preconstruct/altern//value/manuals/ppm/ppm28/ppm28-1.pdf](http://www.ncdot.gov/_templates/download/external.html?pdf=http%3A//www.ncdot.gov/doh/preconstruct/altern//value/manuals/ppm/ppm28/ppm28-1.pdf)
- NCDOT Greenway Policy  
[http://www.ncdot.gov/\\_templates/download/external.html?pdf=http%3A//www.ncdot.gov/bikeped/download/bikeped\\_laws\\_Greenway\\_Admin\\_Action.pdf](http://www.ncdot.gov/_templates/download/external.html?pdf=http%3A//www.ncdot.gov/bikeped/download/bikeped_laws_Greenway_Admin_Action.pdf)



- NCDOT Board of Transportation Resolution for Bicycling and Walking  
[http://www.ncdot.org/transit/bicycle/laws/laws\\_resolution.html](http://www.ncdot.org/transit/bicycle/laws/laws_resolution.html)
- United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations (March 2010)  
[http://www.fhwa.dot.gov/environment/bikeped/policy\\_accom.htm](http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm)
- FHWA Policy for Mainstreaming Non-motorized Transportation (FHWA Guidance – Bicycling and Pedestrian Provision of Federal Transportation Legislation)  
<http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm>
- TND Guidelines  
<http://www.ncdot.org/doh/preconstruct/altern/value/manuals/tnd.pdf>
- NCDOT Complete Streets Policy  
([http://www.bytrain.org/fra/general/ncdot\\_streets\\_policy.pdf](http://www.bytrain.org/fra/general/ncdot_streets_policy.pdf)  
And <http://www.nccompletestreets.org/>)

**- END OF SECTION -**

## SECTION FOUR: STRATEGIC PEDESTRIAN SYSTEM PLAN

Based on the objectives established earlier in this document – along with inventories of existing conditions and prior studies – McGill Associates has prepared recommendations for a Comprehensive Pedestrian Plan for the Village of Pinehurst. Section Four describes these recommendations and/or proposals, which would expand the pedestrian facilities into a cohesive, safe and usable network.

This section is separated into several components, which include: the *types* of recommended facilities, *specific* recommendations and *users* of the pedestrian facilities. (The methodology utilized in the development of these pedestrian recommendations was described in Section 1.6)

This Pedestrian Plan serves as a guide for identifying and prioritizing safe pedestrian linkages within the Village; thereby, creating a viable pedestrian network. This guide is based on input from the public, Steering Committee members and Village of Pinehurst staff. While enhancing and prioritizing capital improvements and maintenance projects for the Village, the plan will give special consideration to *critical* areas for pedestrian transportation and safety. In addition, the plan will address the Americans with Disabilities Act (ADA) compliance issues.



Section Four and Section Seven will include recommendations, the establishment of priorities and implementation guidelines for proposed pedestrian facilities. In particular, Section Four outlines the proposed pedestrian network and identifies areas of need and opportunity.

### 4.1 SYSTEM OVERVIEW

#### Overall Network

As previously noted, the Village of Pinehurst currently has an established and frequently used greenway system, but many residential areas lack pedestrian connections to/from retail and civic destinations. Survey respondents repeatedly noted a desire for better connectivity during public outreach activities.

## **Gaps in System**

While the existing greenway system extends from the trailhead parking lot on Forest Drive, through the Village, to the intersection of Linden/Foxfire Roads, most of the larger residential areas in Pinehurst do not have access to the pedestrian network. There are some connections to the Village Center from residential areas near downtown however; these connections do not extend into larger subdivisions such as Pinehurst No. 6 or the Pinehurst Lake Area.

In addition, many of the intersections along the main corridors (NC 2, NC 5, Hwy 211 and US 15/501) lack clearly marked pedestrian crosswalks and pedestrian signals.

## **Lack of Safe Connectivity**

By far, one the greatest barriers to pedestrian travel in the Village is the lack of sidewalks and crosswalks along potential pedestrian corridors. While the sidewalk inventory map provided at the end of Section Two indicates where sidewalks exist and where crossings are noted to need improvement; new sidewalks and safe pedestrian crossings should be considered for any areas that generate walking traffic, now and in the future, as new development occurs.

Significant pedestrian corridors through the Village of Pinehurst have been identified as Highway NC 211, NC 5 and NC 2. These busy corridors support a large amount of vehicular traffic, but few marked pedestrian facilities are in place (with the exception of recent sidewalks along NC 211). These corridors link many pedestrian generators, though few pedestrian facilities currently exist to serve the non-vehicular population.

While recent portions of sidewalk have been constructed along Highway 211, there is still a crucial need for pedestrian signage, pedestrian refuge locations and sidewalk connectors off of this large corridor to connect to the secondary roads.

The lack of connecting sidewalks, crossing locations and other pedestrian facilities leading to the new NC 211 sidewalks, limit many people from being able to safely utilize this potentially significant pedestrian corridor.



## 4.2 CORRIDOR IDENTIFICATION

### Existing Pedestrian Corridors

#### NC Highway 211



NC 211 is a very busy vehicular corridor that also supports pedestrian traffic. This major roadway through Pinehurst carries a high volume of traffic and is a major corridor for residents and guests alike – with lodging, restaurants, schools, shops and businesses spread out along the length from Murdocksville Road to the Traffic Circle. NC 211 also serves as the main route to FirstHealth Moore Regional Hospital. Recently constructed sidewalks along both sides of NC 211 have provided east/west pedestrian connectivity to which future sidewalks will be able to link. A node of the Pinehurst Greenway is accessible near Cannon Park with signal crosswalks at the intersection with Rattlesnake Trail and Gun Club Road.

Some people who access the new sidewalk along NC 211 drive to this location and park at Cannon Park. Although secondary sidewalks and other pedestrian facilities are lacking along this corridor, foot paths can be seen worn into the ground at various intersections.

#### Pinehurst Greenway

While the Pinehurst Greenway has become a destination unto itself, it should be emphasized that this corridor has increased the walkability, quality of living and connectivity of Pinehurst. Pedestrians can now walk along approximately 6.8 miles of trail that stretches from Rassic Wicker Park, north, to NC 211. The greenway heads east on NC 211 to Cannon Park. From Cannon Park, walkers are led across NC 211 via recently completed pedestrian crosswalks, further east along the trail that is adjacent to the FirstHealth Fitness Center. This trail continues on to the northern edge of the First Health Hospital property. From this east/west route, greenway users can go either west to Gun Club Drive or east (1/4 mile) to a route parallel to Rutledge Lane, behind residential properties in Village Acres. This leg of the trail heads north (1/5 mile) before heading east and north to terminate at NC 15/501 and Forest Drive at the recently constructed trailhead parking lot.

*The Greenway connects to some residential neighborhoods*



South of Rassic Wicker Park, the greenway heads along Magnolia Road to Azalea Road where walkers are led towards the Carolina Hotel and Pinehurst Resort. The trail then turns southwest down Ritter Road to Shaw Road. This leg takes Pinehurst Greenway users to Linden Road and ends the greenway trail at Foxfire Road.

Village of Pinehurst officials and staff should be commended on their efforts and encouraged to maintain and expand the Pinehurst Greenway as possibilities arise. Many survey respondents praised the Village for their efforts to develop the greenway and noted their regular use of the system. This important pedestrian corridor could one day serve as the main “pedestrian highway” that links all of the main parts of the Village of Pinehurst together.

### **Brick Sidewalks within Village Center**

The Village Center (the Downtown area) is a busy hub within Pinehurst. Emanating from Village Green and the nearby retail shops, offices and dining establishments, brick sidewalks serve to move foot traffic from Market Square and Chinquapin roads to brick sidewalks along Magnolia Road and Cherokee Road. Brick sidewalks have also been constructed along other residential streets in the Village Center area including those along:

- Orange Road
- Azalea Road
- Carolina Vista Drive
- Ritter Road
- Barrett Road
- Village Green Road West



It should also be noted that a significant amount of brick sidewalk is also associated with the Village Arboretum, Rassie Wicker Park and the Pinehurst Municipal Facility along Magnolia Road.

### **Historic Sand Clay Paths**

Sand/clay paths originally laid out in the Fredrick Law Olmsted design for the Village of Pinehurst still function as originally conceived. They offer a unique character to the

*World renowned golf courses in Pinehurst have sand cart paths, which have tremendous historical significance*



Village and are considered an important part of the Village landscape. These paths, some restored or improved with marked street crossings and others overgrown or abandoned, have for years served as the primary pedestrian paths within the historic residential areas of Pinehurst. Debate on whether or not these paths can remain as they exist or must be updated to accommodate persons with disabilities (ADA standards) has yet to be settled. This plan proposes that all pedestrian paths must meet ADA

standards, but it also suggests that the solution does not include the destruction of these significant landscape features. These paths help define the Historic District of Pinehurst and all efforts to preserve and restore these paths should be made. The following description from the Village of Pinehurst Standards and Guidelines supports the notion of maintaining these paths:

*"The overall character of the Pinehurst Local Historic District is not only defined by the historic buildings and their sites, but also by the network of streets, sidewalks, planting strips and alleys that interconnect and interrelate to those buildings and sites. Village, private, public utility and/or NCDOT initiated projects in the public rights-of-way do not require approval from the Historic Preservation Commission."*

The difficulty has been that sand is inherently loose and pedestrians with limited mobility or those persons dependent on using wheel chairs or walkers cannot safely use such a path; therefore, the paths are not fully accessible. However, a number of strategies exist that would provide for a firm and stable path that is both accessible and could maintain the intent of the natural paths with regard to the original Olmsted design.

These strategies are aimed at stabilizing the sand in the path surface similar to how clay



has been used in the past for this purpose. Newer, approved surfacing additives should be considered and used where required. The North Carolina Department of Insurance should be consulted for guidance on the latest treatment options and strategies.

The existing sand/clay paths are located within the historic areas of the Village. These areas have been classified as significant to identifying the character of the Historic District of Pinehurst and should be preserved according to the standards set forth by the National Register of

Historic Places and the Pinehurst Historic Preservation Commission. Any change to address ADA issues must go through the appropriate review by these governing organizations.

## **Pedestrian Generators/Attractors**

Typical pedestrian generators and attractors for the Village of Pinehurst area are noted as follows. Many of these are not currently served by pedestrian facilities and may not be attracting many pedestrians because of this deficiency.

### **Parks/Recreation**

- Cannon Park and Camelot Playground
- Rassie Wicker Park
- Pinehurst Greenway System

Arboretum  
Fair Barn  
Pinehurst Harness Track  
West Community Park  
The Spa at Pinehurst  
Village of Pinehurst Area Golf Courses  
Given Memorial Library  
Tuft's Archives

### **Shopping**

Olmsted Village  
Pinehurst Place  
Sandhills Women's Exchange  
Village Center Shopping  
Historic Downtown Southern Pines  
Area dining establishments  
Area Lodging

### **Schools**

Sandhills Community College  
Pinecrest High School  
Episcopal Day School  
The O'Neal School  
Pinehurst Elementary School  
Sandhills Classical Christian School



## **4.3 SPECIAL FOCUS AREAS**

### **High Pedestrian Use Areas**

Corridors with the highest pedestrian usage in the Village of Pinehurst are located at:

- FirstHealth Moore Regional Hospital and Fitness Center
- Areas located at Village Center
- Areas near the Pinehurst Resort
- All parks and greenways
- Residential neighborhoods

## 4.4 POTENTIAL PROJECTS AND INFRASTRUCTURE IMPROVEMENTS

### Pedestrian Network Methodology

As mentioned in previous sections of the Pedestrian Plan, the Village of Pinehurst has pedestrian facilities in some areas, but also has many areas that need improvements. Section Four identifies both *general* and *specific* areas that need to be addressed. 'Connectivity' is a recurring theme within this portion of the comprehensive plan. Connecting pedestrian facilities to form a network of sidewalks and multi-use trails is a long-range project that requires extensive time and funding.

*A good pedestrian system links with neighboring communities*



To create and develop a practical and feasible pedestrian transportation system for the Village, a network of pedestrian-friendly facilities should be implemented. The system should be part of the urban fabric of the Village, with the essential element being 'connectivity' that will allow pedestrians to reach their destinations. The pedestrian system must also be safe for users. If pedestrians have to risk their lives in order to walk to a destination, they will choose to travel by a different mode of transportation.

In addition to connectivity, repairing existing dangerous pedestrian areas is also a major concern with the system. Hazardous areas are priorities that need to be addressed immediately. The safety of pedestrians is obviously a significant concern and as new projects are developed, connectivity and safety should be among the primary goals and objectives.

A number of factors were used to develop the pedestrian recommendations. The previous sections describe topics such as community input and planning documents that were used as information sources. In addition, the Steering Committee, Village of Pinehurst staff and on-site field work were also integral parts of plan development.

#### ***Pinehurst Pedestrian Plan Input***

- *Input from community workshops*
- *Input and recommendations from Steering Committee, Village of Pinehurst Staff and NCDOT*
- *Site visits*
- *Review of existing planning documents*
- *Evaluations of existing pedestrian facilities and gaps*
- *Evaluation of pedestrian trip generators (destination areas)*

Based on input from these groups, goals and objectives were established as guides for making recommendations. The following are the predominate themes that served as catalysts for development of the proposals:

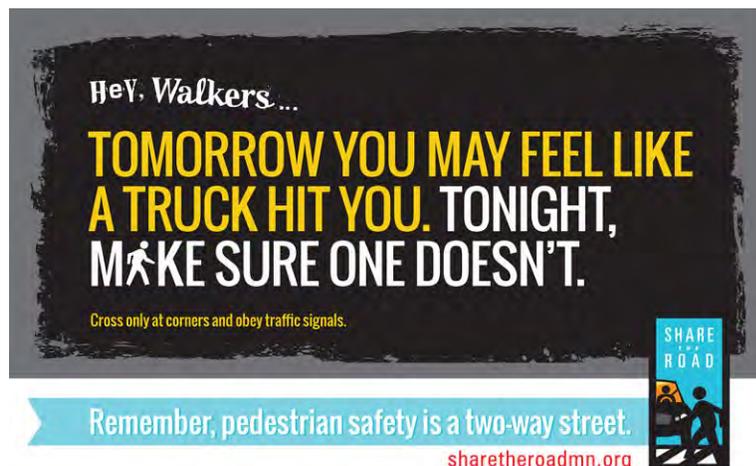
- Increase connectivity from residential to destination areas
- Improve existing conditions and expansion of the pedestrian system in the Downtown areas
- Improve and repair existing non-compliant ADA pedestrian facilities
- Implement safe conditions for pedestrians where dangerous conditions exist
- Consider “future” development with regard to pedestrian facilities
- Connect pedestrian facilities where gaps and barriers exist
- Educate the public on fitness opportunities and walking benefits

## **Recommended Pedestrian Facilities**

Numerous methods were involved in developing recommendations and proposals for the Pinehurst Comprehensive Pedestrian Plan. The process can be broken down into these basic tasks:

- Demographics and Population Trends
- Existing Facilities
- Needs Inventory
- Goals and Recommendations
- Implementation

Contained in each of these tasks is detailed information used to help develop and justify the proposals within the total document. Meetings and site visits were conducted to ensure a better understanding of the needs and issues regarding pedestrian improvements. The proposals for ADA compliance and safety concerns are typical of most pedestrian plans. In addition to these *general* recommendations, the document identifies and makes proposals regarding issues that are *specific* to the Village of Pinehurst.



Many of the general proposals recommend connectivity, repair of existing facilities and enhancement of future improvements; however, some of the future projects may not be facilities such as sidewalks or multi-use trails. Rather, the proposals may be goal-oriented – such as establishing creative partnerships, instituting safety programs and/or coordinating

special events. Proposed programs such as these will promote pedestrian use within the Village, but are not project-based recommendations.

The Pedestrian Plan proposes a basic network of non-vehicular corridors. These corridors will allow pedestrians to use alternative transportation methods. The network will consist of both existing corridors and new corridors. Some of the existing pedestrian facilities within Pinehurst are in need of repair or improvement but the Village has made a number of recent improvements such as the painted crosswalks and brick sidewalks near the Village Center and Village Green. The Village should continue to maintain the existing pedestrian facilities while expanding the system to include new facilities.

### **Pedestrian Crossing Projects**

As previously noted, several unsuitable pedestrian crossings that have been identified in Pinehurst (See Figure 2-1, Inventory Map in Section 2) as part of this plan. Steps to improve these conditions range from installing high visibility striping at crosswalks to the installation of pedestrian signals at high-volume traffic intersections. In extreme cases, intersection curb radii may be reduced to shorten crossing distances. Correcting potentially dangerous intersections will not only encourage pedestrians to use the facilities, but will also reduce potential injuries.

The intersections listed in the Intersection Improvements table on the following page were chosen for improvements by means of field observation, public input and Steering Committee input.

The following subsection lists intersections in need of practical improvements such as marked pedestrian crossings, pedestrian signal heads, pedestrian refuge islands, traffic lights and/or a combination of the above. A larger version of the Intersection Improvement Table can be found in the Appendix D.



*Recommendations will include highly visible marked crossings and additional pedestrian signaling at intersections*

### **Pedestrian Signals and Marked Pedestrian Crossings**

Proposed locations for pedestrian signals have been restricted to areas where danger to pedestrians from vehicular traffic currently has been noted by the public. Locations for pedestrian improvements are shown on the Proposed Trails, Sidewalks, Greenways and Crosswalks Map in Appendix B. Regular evaluation of pedestrian traffic patterns should occur by Pinehurst to identify new or additional pedestrian crossing needs. Pedestrian crossings at any uncontrolled intersection should include NCDOT/MUTCD approved signage (Section 5.1) to warn approaching vehicles of the crossing ahead. All

pedestrian crossing locations should include ADA compliant curb ramps and tactile warning devices.

Pedestrian crossing markings/ped-heads (crossing signals) are recommended at:

- US 15/501 and Spring Lake Drive (Hawk Signal)
- US 15/501 at Forest Drive and Juniper Creek Boulevard
- US 15/501 at Pinehurst Trace and Memorial Drive
- Page Road and Memorial Drive
- NC 5 at Lake Hills Drive and Monticello Road
- Linden Road and McKenzie Road (Hawk Signal)
- Monticello Drive and Morganton Road
- NC 5 and Ritter Road



Crossing locations in need of marked/painted crosswalks and pedestrian signage without signalization include the following locations:

- NC 5/McCaskill Road
- NC 5 and Pine Tree Road
- Juniper Lake Road and US 15/501
- US 15/501 and Spring Lake Road
- Gun Club Road and Spring Lake Drive
- Linden Road and Burning Tree Road
- Burning Tree Road and Diamond Head Drive
- McCaskill Road and Magnolia Road
- NC 2 and Fields Road/Muster Branch Road
- St. Andrews Drive and Lake Forest Road
- St. Andrews Drive and Pine Tree Road
- Morganton Road and Forest Hills Drive
- Traffic Circle in Pinehurst Lake area
- McDairmid and Hilliard Road

As with all pedestrian crossing projects there are potential constraints and barriers that must be identified and overcome prior to proceeding with design and construction. Constraints and barriers may include financial/economic deficiencies, politics, physical/mechanical obstacles or other occurrences that may prevent action on pedestrian projects. Ensuring that all stakeholders involved with the project have an opportunity to take part in the planning and design process will help to avoid most barriers encountered.

### **ADA Curb Ramps**

Curb ramps that meet the ADA standards are a vital part of a good pedestrian system, ensuring equal access to the system for all mobile people. Several existing paths and/or intersections in Pinehurst do not currently have adequate curb ramps; thus, access to the sidewalk system for those in wheelchairs or strollers is not readily available.

All existing curb ramps in the Village of Pinehurst should be regularly inspected for needed repairs and accessibility issues.

However, the following pedestrian paths and the intersections associated with these



paths have been identified for further examination by the Village and if deemed necessary, brought into compliance with current ADA requirements as soon as possible:

- Dundee Road
- Page Road
- Everett Road
- Short Road
- Kelly Road
- Fields Road
- Cherokee Road
- Laurel Road
- Maple Road
- Woods Road
- Memorial Drive

All new sidewalks that are installed should have ADA compliant curb ramps at intersections and driveways (See Section Five).

### **Sidewalk Projects**

Sidewalk projects primarily range from the replacement of unsuitable facilities to the implementation of new sidewalks for connectivity to destinations or existing sidewalks. By implementing these recommendations, the Village of Pinehurst can provide a more safe, accessible and usable pedestrian network.

Improvements are intended to connect to areas of high pedestrian volumes such as parks, commercial/retail centers, government/service centers, cultural amenities and the existing sidewalk network. Intersections (having a high volume of vehicular traffic) should possess pedestrian crossing signals. These facility improvements should also be evaluated as future widening and roadway projects are constructed.



Sidewalk projects should include the following pedestrian-related amenities:

- Minimum of 5' in width (current Village Standard)
- ADA compliant curb cuts and ramps at all driveways and intersections
- Marked crosswalks at all intersections

- Pedestrian crossing signals at high-volume traffic intersections
- Sidewalks on one or both sides of the roadway

Sidewalks in Pinehurst currently cover a majority of the Downtown area, with some extensions to nearby residential areas and new commercial developments. The following proposed improvements enhance the connectivity of these existing corridors by filling gaps to extend the pedestrian network into new areas to help create a more cohesive and pedestrian friendly walking environment in the Village. The plan calls for both the expansion of the existing network and the renovation of the portions needing repair and upgrades. A detailed outline describing the general location(s), priority and construction/renovation costs of proposed sidewalk projects can be found at the end of Section Seven.

Based on discussions with the community, Village Staff, the Project Steering Committee and review of the available existing pedestrian facilities within the Village; a list of proposed pedestrian corridors has been compiled below. These projects are also depicted on the Proposed Trails, Sidewalks, Greenways and Crosswalks Map in Appendix B.

### **Potential Pedestrian Network - Sidewalk Routes**

**NC 211** - recently, sidewalks have been added by NCDOT to both sides

**Dundee Road** - From NC 211 to Craig Road

**NC Highway 5/Beulah Hill Road** - NC 211 to Linden Road

**Morganton Road** - NC 5 to CCNC Entrance

**NC Highway 2/Midland Road - Palmetto Road** - Existing sidewalks are present in the Village Center, but areas to the east are more likely bike routes than sidewalk routes

**Monticello Drive** - NC 5 to Morganton Road

**Diamondhead Drive** - Burning Tree Road to Lake Hills Road

**Lake Hills Road** - Diamondhead Drive to NC 5

**Rattlesnake Trail** - NC 211 to Woods/Magnolia Road

**Memorial Drive** -

- (a) End of existing sidewalk on 211 to Driveway of FirstHealth Fitness Center
- (b) From Employee Parking Lot Entrance to Existing Crosswalk
- (c) From Existing Crosswalk to US 15/501

**Juniper Creek Boulevard** - From US 15/501 at Forest Drive to Spring Lake Road at US 15/501

**McCaskill Road** - Dundee Road to Highway 5

**Page Road** - (a) Memorial Drive to US 15/501

**Burning Tree Road** - Diamondhead Drive to Lake Forest Road

**St. Andrews Drive** - Linden Road to Lake Hills Road

**Lost Tree Road** - St. Andrews Road to McKenzie Road

**Pine Tree Road** - St. Andrews Drive to NC 5

**Spring Lake Drive** - US 15/501 to Gun Club Road

**Lake Forest Drive** - St. Andrews Dr. to Sugar Gum Ln.

**Sugar Gum Lane** - Lake Forest Dr. to St. Andrews Dr.

**Hilliard Road** - McDiarmid Rd. to Turner Rd.

**McDairmid Road** - Airport Rd. to Hilliard Rd.

**Pinehurst Trace Drive** - Turner Rd. to US 15/501

**Pine Vista Drive** - Linden Rd. to Lake Shore Drive

**Gun Club Road** - Village Greenway to Spring Lake Dr.

The preceding sidewalk projects would include installation of a minimum 5-foot wide sidewalk on one side of the roadway (unless both sides are warranted). These projects would include curb ramps and tactile warning devices at all intersections as well as meet all established accessibility requirements.

## **Potential Greenway Corridor Routes**

Greenway corridor projects include multi-purpose or off-road pedestrian facilities, which typically follow existing linear stream corridors, easements and other open space areas. The Village's existing trails and greenways are very popular among residents and visitors.

Visitors appreciate and often return to communities that provide places for bicycling and walking when they are safely



*Projects could include the use of existing linear stream corridors*

removed from busy roads and streets. Trails offer scenic recreation opportunities suitable for a wide range of ages and abilities. These trails can have a tremendous impact on the economy, potentially providing additional tourist dollars. Where popular trails exist, lodging providers can encourage extended stays among their guests, thereby increasing occupancy. For residents, investment in trails and greenways can increase property values and improve the overall livability of a community.

**Recommended Greenway routes include the following:**

- US 15/501 - Juniper Lake Drive to Spring Lake Drive
- US 15/501 - Spring Lake Drive to Forest Drive
- US 15/501 - End of existing greenway trail to Page Road
- Linden Road - Pine Vista Drive to Sandy Woods Farm Road
- Linden Road - Sandy Woods Farm Road to Burning Tree Road
- Linden Road - Burning Tree Road to NC 5
- Chicken Plant Road - From Linden Road to West Pinehurst Community Park

These projects are depicted on the Proposed Trails, Sidewalks, Greenways and Crosswalks Map in Appendix B.

***Benefits of Greenways***

- *Encourage people to enjoy the area from an outdoor perspective.*
- *Provide opportunities for families to safely enjoy a healthy activity together.*
- *Encourage walking or bicycling to locations within a reasonable distance, such as school, work and recreational areas.*
- *Enhance the safety and convenience of travel to many residential and commercial areas, recreational access sites and other points of interest.*
- *Provide benefits to all road users by reducing congestion and enhancing motorists' safety.*
- *Reduce parking congestion at popular destinations.*
- *Increase safe and affordable options for recreation and exercise, thus helping to improve the health of visitors and residents alike.*
- *Increase economic benefits such as increased tourism, higher property values, additional residential and business growth and job growth.*

## **Future Planning Efforts**

Existing and future utility easements should be assessed to determine if they can be used for possible pedestrian connections. In many cases, utility lines can create a network of connectivity to neighborhoods. The associated public easements should include recreation and alternative transportation as uses for the public right-of-way, allowing trails to be constructed in the future.

### **4.5 SPECIAL POPULATION SECTORS**

Many different user groups will make use of the increased pedestrian facilities in Pinehurst. A segment of this population will be visitors while the vast majority will be residents – including those with special needs. It will be imperative that new and existing facilities provide safe, pedestrian-friendly corridors for all users to navigate within the Village, particularly for senior adults and children.

#### **Senior Citizens**

Senior adults are special populations that need particular consideration in pedestrian projects. The US Census reported that there were 40.3 million people 65 and older in the US on April 1, 2010, increasing by 5.3 million since the 2000 Census when this population numbered 35.0 million. The percentage of the population 65 and older also increased during the previous decade. In 2010, the older population represented 13.0 percent of the total population, an increase from 12.4 percent in 2000.

The senior population now represents the fastest growing and largest percentage group in the Country and will continue to grow in the foreseeable future. Pinehurst has always trended high in the numbers of seniors that choose to live here and that trend shows no sign of diminishing.

As a general trend, seniors have the time and desire to participate in pedestrian activities. Seniors also tend to more regularly rely on alternate means of transportation rather than personal vehicles.

With the promotion of healthy lifestyles and a need for alternate transportation, this population will need safe pedestrian facilities to be offered by the Village of Pinehurst. Special attention is needed to ensure a community where this segment of the population can safely traverse the streets.



## **Children**

Children also require special safety procedures with regard to public safety. An equally important component in this equation is *safety education*. Many children are injured every year due to their lack of understanding of the utilization of a pedestrian system.

Education programs such as *Safe Routes to School, Walking School Buses, etc.*, should be promoted to assist children in learning how to cross a street and to walk in safe areas. Promoting healthy lifestyles for children will encourage physical activity and the use of sidewalks for exercise. The encouragement of walking is very important; at the same time, the pedestrian facilities must exist (sidewalks to schools) and be user-friendly. It has been noted in preparing this plan that Pinehurst Elementary School currently operates a successful Walking School Bus program.



*The Walking School Bus promotes fitness*

**- END OF SECTION -**

## SECTION FIVE: FACILITY STANDARDS AND GUIDELINES

### 5.1 PEDESTRIAN DESIGN CONSIDERATIONS AND GUIDELINES

The guidelines in this Pedestrian Plan were developed through assessment and documentation of practices (observed or informed) documented by site observation, community input and/or Steering Committee comments. National and State design standards as defined by the NCDOT, the Manual of Uniform Traffic Control Devices (MUTCD), the American Association of State Highway Transportation Officials (AASHTO), the Americans with Disabilities Act (ADA) and the Federal Highway Administration (FHA) directly influenced the formation of these guidelines. If any discrepancies occur between the design guidelines developed for the Village of Pinehurst and existing national and state standards, the national and state standards take precedence.

Furthermore, cost estimates provided for proposed improvements are relevant only for the date in which this document was prepared. The Village of Pinehurst should seek a current cost estimate for any proposed work from a qualified engineer and/or landscape architect before submitting the work for bid.

The following descriptions and typical details are intended to be used as design standards and alternative treatments for pedestrian facilities. It is noted that the Village's Engineering Standards and Specifications Manual contains both specifications and standard details for sidewalks and greenways and the PDO dictates when new sidewalks are required as new developments occur. Being that many of the streets are NCDOT roadways, the Village should also obtain the proper approvals and permits prior to implementing projects on subject roads.

### 5.2 PEDESTRIAN FACILITY ELEMENTS

#### Sidewalks and Walkways

Sidewalks make up the majority of pedestrian facilities and are the most important component of a pedestrian network. The number of pedestrians using a particular facility will determine which type of sidewalk should be implemented.

Sidewalks are the primary connectors for residential areas, shopping centers and businesses. They create opportunities for people to meet and socialize. They provide





places for children to play and adults to exercise. They provide an alternate means for people to access commercial and business areas.

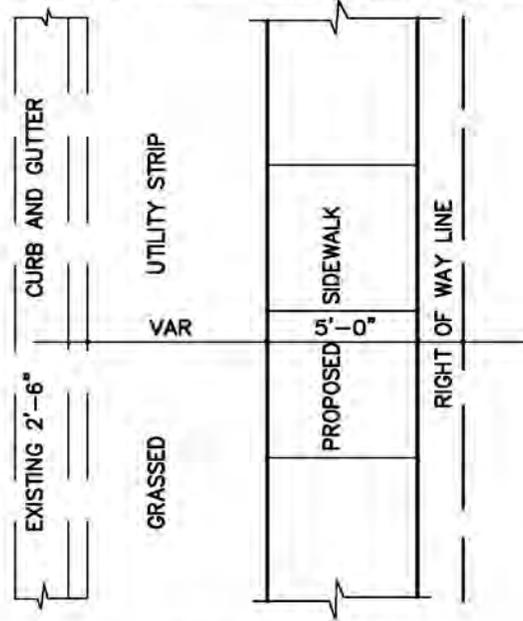
The Village Engineering Standards and Specifications Manual requires all sidewalks to be a minimum of 5-feet in clear width, providing an ample pathway for pedestrians to walk to their destinations. Where adequate right-of-way is available, a buffer can be utilized in order to separate the sidewalk from the roadway. Sidewalk areas within and leading to busier areas in Pinehurst should be wider to allow for a denser population, street furniture and other amenities.

Sidewalks shall be constructed within the street right-of-way or a dedicated and platted sidewalk easement in accordance with NCDOT and Village standards. Sidewalks shall normally be installed at the time of roadway construction or widening unless otherwise approved by the Village. In addition, sidewalks shall be provided along streets within new developments as well as existing development expansion that are non-residential, multi-family or single family residences.

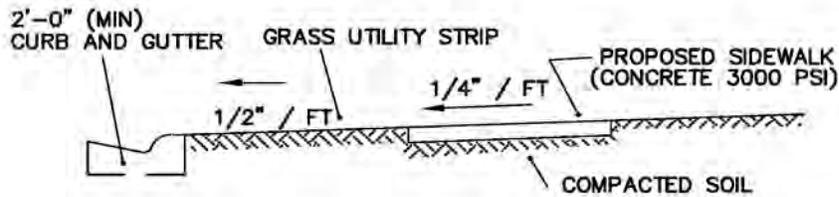
The Village's Standard Concrete Sidewalk Detail is shown on the following page.

**NOTES:**

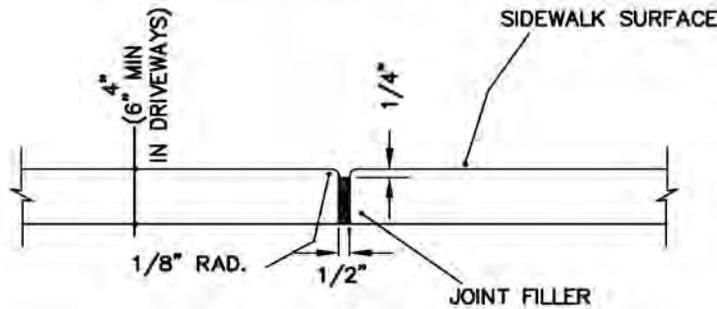
1. TRANSVERSE EXPANSION JOINT TO BE A MAXIMUM OF 50 FT. (90' - EXTRUDED CURB).
2. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.



PLAN VIEW



TYPICAL SECTION



TRANSVERSE EXPANSION JOINT

REV	DESCRIPTION	DATE	APPROVED BY
△	ISSUE FOR PUBLICATION	06/04	HJG
NOT TO SCALE DWG NO. 4.02		SHEET 1 OF 1	

**STANDARD  
 CONCRETE  
 SIDEWALK**



All sidewalks shall be constructed in accordance with the standard detail and the additional specifications as follows:



**Guidelines for Sidewalk Design/Construction:**

- The minimum thickness of a sidewalk shall be 4-inches. At locations where a driveway crosses a sidewalk, a 6-inch depth is required.
- All paved sidewalks shall be constructed of concrete unless intended for the historic Village areas where they shall be brick to match existing material and colors used at Village Green sidewalks or unless otherwise approved by the Village. Sidewalks shall typically be a minimum distance of 5-feet off the back of curb with a minimum width of 5-feet. This requirement may vary upon the approval of the Village depending on site constraints.
- The design of the sidewalk shall be such that pedestrian safety is provided and the usability of the sidewalk is not affected.
- Sidewalks shall have a uniform slope toward the roadway of ¼ inch per foot.
- If a 5-foot wide buffer or planting strip is provided between the sidewalk and back of curb/EOP, the slope shall not be less than ¼ inch per foot nor greater than 18-inches toward the roadway unless approved by the Village. In some cases there may not be sufficient width to provide the planting strip.
- Where no curb and gutter exists on a road that requires sidewalks, the Village may require curb and gutter installation in addition to the installation of the sidewalk.
- Where sidewalks and/or greenways intersect any section of curb/gutter or street section, wheelchair ramps shall be installed per Village standards.
- The sidewalk design and construction shall conform to ADA standards.
- Pipes, drains or other such concentrated storm water devices shall not discharge across a sidewalk, but be piped or flumed under the sidewalk.



**Sidewalk/Walkway Costs:**

The cost of a 5-foot wide concrete sidewalk is approximately \$25/linear foot, while the cost of curb and gutter is approximately \$22/linear foot. Asphalt walkways are generally

less expensive in terms of construction costs but more difficult to traverse and more expensive to maintain.

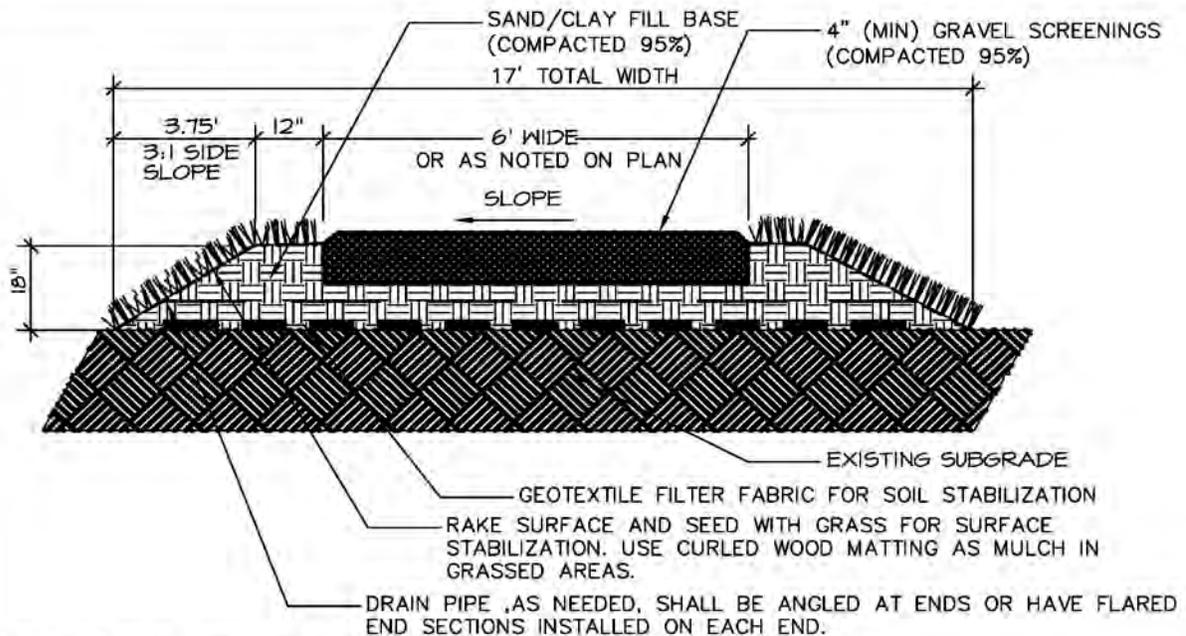
## **Greenway and Multi-Use Trails**



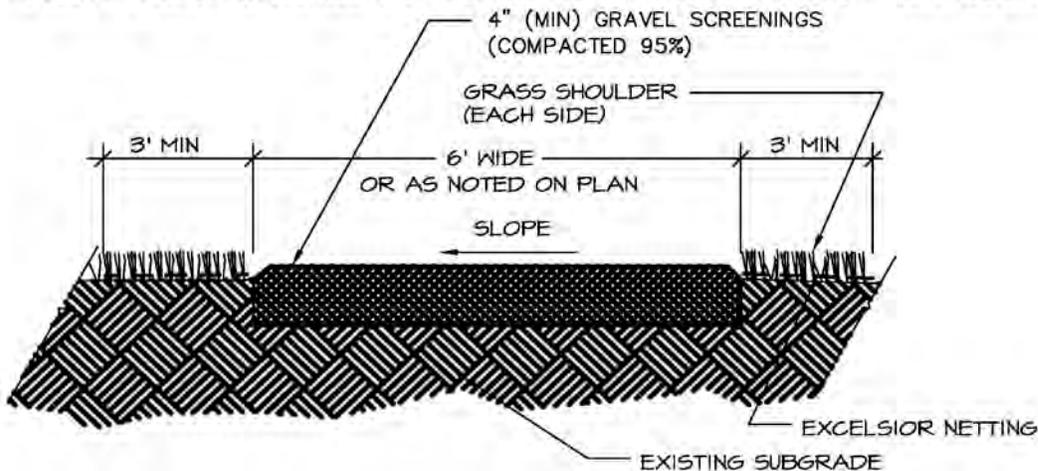
As sidewalks have different standards for various applications, greenways vary due to such factors as space, existing conditions and usage. The pedestrian facilities, which have been proposed for the Village of Pinehurst, differ in variety and purpose. A greenway can be a multi-use facility that is located off-street and offers multiple opportunities for different users - such as walking, in-line skating and biking. Special considerations of safety should be made when these facilities are located near a roadway. Adequate separation or barriers should be implemented between the roadway and the multi-use path.

The Village's Standard Greenway Detail is shown on the following page. In addition, the Village's Engineering Standards and Specifications Manual includes a specification on greenways, which states:

- All greenways shall have a minimum section of 6-inch compacted thickness stone screenings (note that this conflicts with the detail which shows 4-inch gravel screenings)
- Asphalt paving may be required if felt to be in the best interest of the Village
- Minimum width shall be 6' clear width with a 4-foot shoulder/swale on each side
- Maximum allowable longitudinal gradient of 10%
- All greenways shall be located within a platted 15-foot wide easement



- \* FINISHED TRAIL SURFACE TO BE A MAXIMUM OF 1" ABOVE FINISHED SOIL GRADE.
- \* STONE SCREENINGS SHALL VARY IN SIZE FROM 1/64" TO 1/8" WITH A UNIFORM DISTRIBUTION OF SIZES. A SAMPLE OF SCREENINGS SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL PRIOR TO USE IN CONSTRUCTION.
- \* PROVIDE A MAXIMUM CROSS SLOPE OF 1.5% TO THE LOW SIDE OF TRAIL FOR SURFACE DRAINAGE.



- \* FINISHED TRAIL SURFACE TO BE A MAXIMUM OF 1" ABOVE FINISHED SOIL GRADE.
- \* ROOT PRUNE AREA WHERE TRAIL IS TO BE LOCATED AND COMPACT LOOSENEED SOIL TO 2" MIN BELOW EXISTING GRADE. INSTALL GRAVEL SCREENINGS AND COMPACT TO A MIN DEPTH OF 3" THICK AND 1" ABOVE GRADE.
- \* STONE SCREENINGS SHALL VARY IN SIZE FROM 1/64" TO 1/8" WITH A UNIFORM DISTRIBUTION OF SIZES. A SAMPLE OF SCREENINGS SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL PRIOR TO USE IN CONSTRUCTION.
- \* PROVIDE A MAXIMUM CROSS SLOPE OF 1.5% TO THE LOW SIDE OF TRAIL FOR SURFACE DRAINAGE.

REV	DESCRIPTION	DATE	APPROVED BY
△	ISSUE FOR PUBLICATION	06/04	HJG
NOT TO SCALE	DWG NO. 5.13	SHEET 1 OF 1	

GREENWAY



A greenway is defined simply as a *trail corridor on primarily undeveloped land, as along a river or between urban centers, that is reserved for recreational use or environmental preservation.* As the greenway movement has experienced tremendous popularity, these facilities have been developed on abandoned railroad beds, utility corridors and through residential communities. Most multi-use trails are wider than sidewalks for a variety of reasons. The minimum width for two-directional trails is generally 10-feet however, 12-feet to 14-feet widths are preferred where heavy pedestrian traffic is anticipated. Due to many of the facilities being off-road, the larger width provides access for maintenance and emergency vehicles.

**Greenways are multi-functional**



A majority of greenways are now constructed using asphalt as the surface. This application is used primarily due to the lower cost as compared to concrete, which is typically used for sidewalks.

Design techniques should be considered in order to create an aesthetically pleasing greenway; clearing of vegetation should be limited to clearing for construction, clearing underbrush to increase sight lines and clearing for the safety of the trail user. Meandering the

greenway can help create opportunities for landscaping/sightlines – particularly along long, straight corridors.

### **Greenway/Multi-Use Trails Costs:**

The cost of a 10-foot wide asphalt trail is approximately \$800,000/mile. This consists of a 6-inch stone base and 2-inch of asphalt, but can also vary based on a variety of factors.

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

Concrete trails should be used in flood prone areas - due to its durability versus asphalt, which can wash away or heave. In addition, concrete trails will withstand sub-grade failure and root intrusion better than asphalt surfacing.

Asphalt is predominately used on greenway trails primarily due to cost. It requires more maintenance than concrete due to its flexibility, which can cause movement of the trail. It is also important to construct a 2-inch stone shoulder on both sides of the asphalt edge to help prevent the edges from failure and erosion.

## Sidepaths

A sidepath is essentially a multi-use path that is oriented alongside a road but is separate from the road. The AASHTO Guide to the Development of Bicycle Facilities and North Carolina Bicycle Facilities Planning and Design Guidelines caution prudence for those contemplating a sidepath (or widened sidewalk) facility to look at all the various elements of the roadway corridor environment and the right-of-way before making a decision.



Sidepaths should only be constructed along corridors that have relatively few intersections and driveways, reducing possible conflict points.

There are certain roadways with high traffic volume and vehicle speeds where sidepaths are the only bicycle facility that can be considered without radical changes to the existing roadway design. In these cases, a sidepath could be a possible treatment to accommodate bicycle traffic. This option must take into account the possibility of intersecting driveway and roadway conflicts. Sidepaths should be provided

on both sides of the roadway if possible to encourage bicyclists to ride in the same direction as adjacent traffic. Eventual long-term solutions should be to widen the roadway or provide narrower travel lanes to accommodate bicycle lanes.

## Marked Crosswalks

Pedestrians need to be able to traverse the local transportation system as easily and safely as those in vehicles. Providing marked crosswalks is one of many ways to facilitate the safe crossing of streets and parking lots. A marked crosswalk is any crosswalk, which is delineated by white painted markings placed on the pavement. *Crosswalks consisting of textured, colored or otherwise contrasting materials are 'unmarked' crosswalks unless white paint is also present.*

- Crosswalks should consist of two 12-inch white lines with a minimum separation of 6-feet
- Pedestrian crossing zones should have a width of at least 6-feet to 8-feet
- All marked pedestrian traffic crossings must be approved by the Village or NCDOT Traffic Engineer prior to installation
- All mid-block pedestrian traffic crossings shall be designated as a crosswalk with pavement markings and signage in accordance with MUTCD and must be approved by the Village or NCDOT Traffic Engineer prior to installation

The Village Engineering Standards and Specifications Manual requires all pavement markings to be made with reflective thermoplastic.



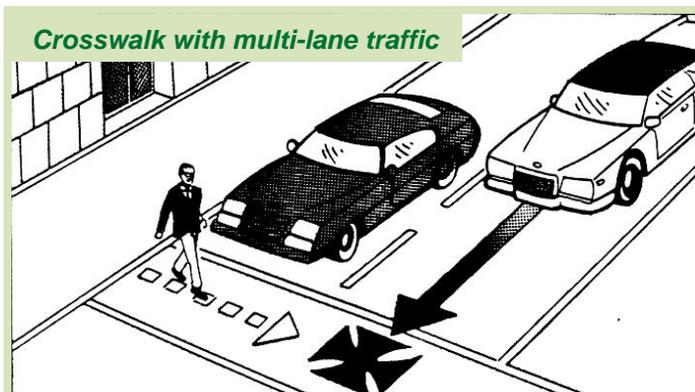
*A change of materials is not always sufficient to clearly mark a crosswalk (right).  
The white border makes the crosswalk much more visible to drivers (left).*

NCDOT follows the national guidelines outlined in the federal MUTCD, the Traffic Control Devices Handbook and other references. These references cover all aspects of the placement, construction and maintenance of all approved traffic control devices.

In order to ensure the public understanding of traffic control devices, the devices need to be consistent. All traffic devices - including crosswalk markings and signs - must conform to all state and federal standards and regulations for dimensions, color, working and graphics. Legal crosswalks usually exist at all public street intersections, whether marked or unmarked. However, the only way a crosswalk can exist at a *mid-block* location is if it is marked. It should be noted that NCDOT requires that mid-block crossings be no less than 400-feet from an adjacent signalized intersection.

Crosswalks are not a guarantee of pedestrian safety. State laws require a motorist to yield to pedestrians in a marked crosswalk. However, on roads with moderate to higher speeds and traffic volumes, drivers seldom comply. More vehicle/pedestrian collisions occur at marked crosswalks on multi-lane streets with a high volume of vehicular traffic than at unmarked crosswalks. This may be explained in part by the observation that older adults tend to cross at marked crosswalks, rather than at unmarked. As this age group is the most vulnerable pedestrian group, this may explain the accident numbers. The addition of warning signs and lights for drivers greatly decreases the risk to pedestrians.

There are definitely safety concerns on multi-lane roads, which have crosswalks. (See the figure shown here.) If the driver nearest the curb stops for a pedestrian, but the driver in



the next lane cannot see them and continues through the crosswalk, then the driver in the adjacent lane strikes the pedestrian.

Pedestrians should not be totally dependent on crosswalks; they ought to consider crosswalks as means of assistance and direction along the safest route, rather than as a way to stop traffic.

Crosswalks should be marked at intersections where there is substantial conflict among the vehicles and the pedestrian activity, where there are concentrations of pedestrians (otherwise pedestrians could not find the proper place to cross) and where traffic movements are controlled. Examples of such locations are:

- Approved school crossings
- Signalized intersections
- Four-way stop intersections

## **Midblock Crossings**

A Mid-Block Crossing is any crosswalk that is not located within an intersection. NCDOT standard practice is to install Mid-Block Crosswalks based on an engineering study. Mid-Block Crossings should be signed and marked in compliance with the MUTCD, the North Carolina Supplement to the MUTCD and the current NCDOT Roadway Standard Drawings.



- Crosswalks at mid-block should not be installed within 300-feet of a non-signalized intersection or within 400-feet of a signalized crossing point
- Advanced warning signs are needed when mid-block crossings are present
- Raised crosswalks, if utilized, are typically used on two lane streets with less than 35 MPH speed limit

For additional information regarding the NCDOT policy on Mid-Block Crossings please refer to: <http://www.ncdot.org/doh/PRECONSTRUCT/traffic/tepp/Topics/C-36pr.pdf>

### **Additional Guidelines for Crosswalks:**

The following guidelines are taken from the USDOT Federal Highway Administration's *Pedestrian Facilities Users Guide – Providing Safety and Mobility* (2002) and the

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

- Crosswalks should not be installed where speeds exceed 40 mile per hour
- As noted above, in some areas, crosswalks should be used together with other traffic control devices to increase pedestrian safety. This is especially important on roads where the average daily traffic exceeds 10,000 vehicles
- When placing crosswalks, NCDOT typically requires pedestrian facilities (sidewalks) on both sides of the roadway
- The MUTCD requires that the width of crosswalks be at least 6-feet wide. In areas of high vehicle and pedestrian traffic, the crosswalks should be at least 10-feet wide. The NCDOT recommends widths of 10-feet or greater
- Pedestrian access to the crosswalks via curb ramps and other sloped areas should be fully contained within the crosswalk markings
- Markings for the crosswalk should extend across the entire width of roadway
- The MUTCD recommends all crosswalk markings be white
- The continental and ladder patterns for crosswalk markings are more easily seen and comprehended by motorists. Therefore it is recommended that one of these patterns should be chosen for crosswalks in the Village of Pinehurst. All lines should be 12-inches to 24-inches wide and spaced one foot to five feet apart, depending upon the location and width of the roadway
- Additional devices such as traffic signals and beacons should be added where vehicle speeds and traffic are higher



Many factors must be analyzed before deciding on the location and type of crosswalk(s) to be installed. Some of them are:

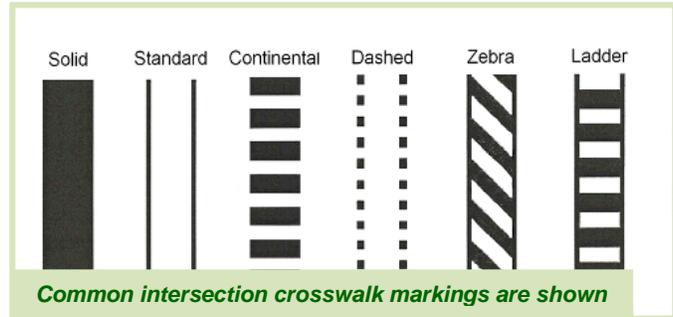
- The number of pedestrians that will be served
- The function of the highway
- The volume and speed of vehicles
- The width of the road

- Both current and future predicted conditions
- The typical abilities of the pedestrians that would use the crosswalk
- How they will be initially funded; then, maintained

**Typical Crosswalks Costs:**

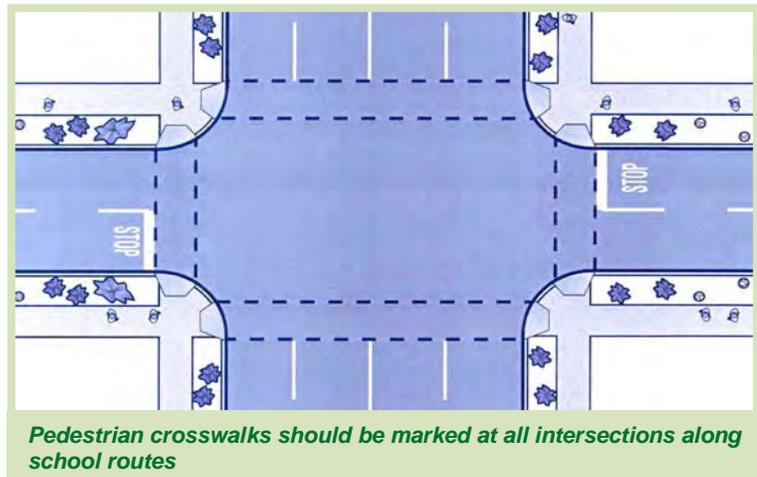
Regular striped: \$150  
 Ladder or continental crosswalks: \$350  
 Pattern Concrete: \$3,500

Maintenance costs vary according to the region and the pattern of striping used.



**School Crosswalks**

With the elevated concern for the safety of children walking to school, criteria for placing marked crosswalks along the route are generally a bit different. Crosswalks should be marked at all intersections along the suggested route to school where the volume of children reaches about forty in a two-hour period.



**Regulatory Signs and Warning Signs for Crosswalks**



Regulatory signs give notice of traffic laws or regulations that pedestrians, cyclists and motorists are required 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.

Pedestrian-related signage serves primarily to alert motorists to the presence of pedestrians. The intended effect is to cause motorists to drive more cautiously and reduce their speeds, thereby improving safety for pedestrians in the given area.

Signs can be used in a variety of places, including crosswalks, intersections, in-street and near schools. National standards for sign placement and use can be found in the MUTCD, which provides

guidance for warning signs which can be used at crosswalks or along the roadway:

The following signs have been recommended to municipalities for installation. For more signs and more detailed guidelines for sign installation and use, the municipality should consult the MUTCD.

The first sign (previous page) is usually installed *in-street* to warn motorists to yield to pedestrians in a crosswalk.

**SCHOOL** The *school* sign (shown here) can be added to the *in-street* sign for placement near a school.

These signs are commonly used as pedestrian *warning* signs. The third of these signs is shaped with a horizontal bottom edge in order to either be combined with the “arrow” symbol or with the “ahead” sign to indicate crosswalk(s) for motorists in a school zone. These indicators, in particular, notify motorists to watch for pedestrians in *specific* instances.



*Turning* signs are usually placed at intersections to warn motorists (that are turning right or left) to yield to pedestrians in crosswalks.

The last sign is an example of typical *way-finding* signage that is used to help cyclists at major decision points along designated bicycle routes. *Way-finding* signs are specific to their locations.



Additional pedestrian-related signage includes the STOP for pedestrians, as shown on the left side; as well as the signs displaying “stop” and “yield” signs as state laws.



This chart has been taken from the MUTCD and shows Pedestrian-Related Signage of the regulatory” type.

### MUTCD Pedestrian-Related Signage

#### Regulatory Signs



#### School, Warning, and Informational Signs



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

Regulatory

School, Warning, Informational

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.

For a step-by-step guide to help non-professionals participate in the process of developing and designing a signage system, as well as information on the range of signage types, visit the Project for Public Places website:

[http://www.pps.org/info/amenities\\_bb/signage\\_guide](http://www.pps.org/info/amenities_bb/signage_guide)

## Regulatory Signs



Regulatory signs are designed to warn motorists and pedestrians of a legal requirement such as STOP or YIELD. These signs require certain actions and are enforceable by law. Many motorist signs, including stop signs, yield signs, turn restrictions and speed limits, all have a direct or indirect impact on pedestrians. Some examples of signs which affect pedestrians include pedestrian warning signs, motorists warning signs, NO TURN ON RED signs and guide signs.

The Village Engineering Standards and Specifications Manual requires regulatory signs to meet the requirements of the MUTCD, latest edition and any modifications hereto established by NCDOT.

The NO TURN ON RED sign may be used in some instances to facilitate pedestrian movements. The MUTCD lists six (6) conditions when "no turn on red" may be considered, three (3) of which are directly related to pedestrians or signal timing for pedestrians.



The use of NO TURN ON RED signs at an intersection should be evaluated on a case-by-case basis. Less restrictive alternatives should be *considered* in lieu of NO TURN ON RED. Also, supplementary signs, such as WHEN PEDESTRIANS ARE PRESENT or WHEN CHILDREN ARE PRESENT may be placed below the NO TURN ON RED sign.

There are occasions when NO-TURN-ON-RED restrictions are beneficial and specific recommendations relating to pedestrians include:

- Part-time restrictions should be discouraged; however, they are preferable to full-time prohibitions when the need only occurs for a short period of time.
- Universal prohibitions at school crossings should not be made, but rather restrictions should be sensitive to special problems of pedestrian conflicts, such as the unpredictable behavior of children and problems of the elderly and/or persons with disabilities. Pedestrian volume should not be the only criterion for prohibiting right turns on red.

There are a number of regulatory signs, which are posted specifically for pedestrians, which include:

- PEDESTRIANS PROHIBITED signs to prohibit pedestrian entry at freeway ramps.

- Pedestrian crossing signs are used to restrict crossings at less safe locations, prohibit pedestrian activity and divert them to optimal crossing locations. Various alternatives include the USE CROSSWALK (with supplemental arrow) sign, which may be used at intersections with traffic signals that have high-conflicting turning movements or at mid-block locations directing pedestrians to use an adjacent signal or crosswalk. These signs are critical at schools or other buildings that generate significant pedestrian volumes.
- Traffic signal signs include the pedestrian push-button signs or other signs at signals directing pedestrians to cross only on the green light or WALK signal. Pedestrian push-button signs should be used at all pedestrian-actuated signals. It is helpful to provide guidance to indicate *for which* street the button is intended (either with arrows or street names). The signs should be located adjacent to the push button and the push buttons should be accessible to pedestrians with disabilities.



## Warning Signs



*Warning* signs are used to inform motorists/pedestrians, who are unfamiliar with any unusual or unexpected conditions. Warning signs predominantly fall under the permissive category ("may" condition) and when used, should be placed to provide adequate response times. Warning signs are generally diamond-shaped with black letters or drawings on a yellow background and should be made of reflective or illuminated material. The overuse of warning signs breeds disrespect and should be avoided.

The Advance Pedestrian Crossing sign is predominantly used to warn motorists of possible pedestrian conflicts. This sign should be installed in advance of mid-block crosswalks or other locations where pedestrians may not be expected to cross busy streets. Their use is significantly minimized at most urban intersections since pedestrian crossings are an expected occurrence. However, in some cases, this sign may be selectively used in advance of high-volume pedestrian crossing locations to add emphasis to upcoming crosswalks.



Where there are multiple crossing locations, a supplemental distance plate may be used (NEXT XXX FEET). The advance pedestrian crossing signs should not be linked to other *warning* signs (except for a supplemental distance sign or an advisory speed plate) or *regulatory* signs (except for NO PARKING signs) to avoid information overload and to allow for an improved driver response. Care should be taken in sign placement in relation to other signs to avoid sign clutter and to allow adequate motorist response.

The Pedestrian Crossing Sign is similar to the Advance Pedestrian Crossing sign, but has the crosswalk lines shown on it. This sign is intended to be used at the crosswalk. When used, it should be preceded by the advance warning sign and should be located immediately adjacent to the crossing point. To help alleviate motorist confusion, a black-and-yellow diagonally downward pointing arrow sign may be used to supplement the pedestrian crossing sign.



The Playground sign may be used in advance of a designated children's play area to warn motorists of a potentially high concentration of young children. This sign should generally not be needed on local or residential streets where children are expected. Furthermore, play areas should not be located adjacent to high-speed major or arterial streets; or if so, should be fenced off to prevent children from darting into the street.

According to the *Traffic Control Devices Handbook*, CAUTION-CHILDREN AT PLAY or SLOW CHILDREN signs should not be used since they may encourage children to play in the street and may encourage parents to be less vigilant. Such signs also provide no guidance to motorists in terms of a safe speed and the sign has no legal basis for determining what a motorist should do. Furthermore, motorists should expect children to be "at play" in all residential areas and the lack of signage on some streets may indicate otherwise. The signs are unenforceable and act as another roadside obstacle to pedestrians and errant motorists. Use of these non-standard signs may also imply that the involved jurisdiction approves of streets as playgrounds, which may result in the jurisdiction being vulnerable to liability.



Flashing lights, warning signs and posted speed limits give motorists advance warning of school crossings

School Warning signs include the advance school crossing signs, the school crossing sign, SCHOOL BUS STOP AHEAD sign and others. School-related traffic control devices are discussed in detail in Part VII (Traffic Controls for School Areas) of the MUTCD. A reduced speed limit sign with flashing lights can be installed ahead of the actual crossing. The lights are set to flash during school hours, alerting drivers that a lower speed limit

is in effect when the flashers are operating. Another sign and light combination is SCHOOL SPEED LIMIT 20, where the speed limit is illuminated during school hours.

The MUTCD allows for the development of other specialty warning signs based on engineering judgment for unique conditions. These signs can be designed to alert unfamiliar motorists or pedestrians of unexpected conditions and should follow the criteria for the design of warning signs. Their use should be minimized to retain effectiveness and should be based on well-informed judgment.

## Signs and Way-finding

Signage is governed by the *MUTCD*, which provides specifications on the design and placement of traffic and pedestrian signs installed within public right-of-ways. Signs are designed to provide important information that improves pedestrian and vehicular safety. By letting people know what to expect, there is a greater chance that they will react and behave appropriately. For example, giving motorists advanced warnings of upcoming pedestrian crossings or that they are entering a traffic calming area will enable them to modify their speeds. The amount and types of signage should be carefully considered as the overuse of signs can result in noncompliance, confusion and disrespect.

Municipalities should develop clear guidelines for the use of vehicular and pedestrian signs. Care should be taken to avoid an over-reliance on signs and paint to control motorist behavior. This may mean altering and/or relocating existing signs and markings that have proven to be ineffective for pedestrian safety.

The MUTCD has developed guidelines for signs and pavement markings that leave sufficient room for creative regulatory design. As a result, there is leeway in adapting guidelines to policy needs for specific signing/markings. Colors for signs and markings should conform to the color schedule recommended by the MUTCD. For instance, the orange signs to the right indicate construction. Such uniformity allows for recognition across jurisdictions.

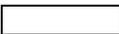


The recommended background colors for signs are as follows:

-  General warning and school signs
-  Stop or prohibited
-  Service guidance, route markings
-  Destinalional/directional guidance, recreation, information
-  Public recreation and scenic guidance

-  Construction and maintenance warning
-  Regulation
-  Regulation and route markings
-  A new fluorescent yellow-green color is now approved for use on school and warning signs. This bright, unique color easily attracts the attention of drivers.

For pavement markings, the following should be used:

-  Centerline stripes
-  All other pavement stripes and markings, including edge stripes, lane markings and crosswalks.

## Pedestrian Signs

Pedestrian signs are designed to give information and direction in order to improve safety and relieve conflict between motorists and pedestrians. Signs are used to direct pedestrians to crosswalks or to limit pedestrian crossings at specific locations. Signs can also warn pedestrians of unexpected driver maneuvers. All signs should be periodically checked to make sure they are in good condition; free from graffiti and that they continue to serve a purpose.



*Unauthorized graffiti is illegal & disruptive*



Other additional signs (as seen above) may be used for pedestrians at traffic signals to define the meaning of the WALK, DON'T WALK and flashing DON'T WALK signal indications. The decision to use these signs (or alternatively, stickers mounted directly on the signal pole) is strictly a judgment call and is primarily for educational purposes. As such, their use may be more helpful near schools and areas with concentrations of elderly pedestrians – both of which are high-risk areas. This information may also be effectively converted into brochures for distribution and ongoing educational purposes.

**Guidelines for Pedestrian Signs:**

- Pedestrian signs must be in compliance with the MUTCD.
- Signs can be used to direct pedestrian traffic to desirable crossing locations and to prohibit pedestrian crossings at undesirable locations.
- Installing too many signs at a location should be avoided to prevent confusion and disregard.

Aside from signs designed to impart information or explanation to pedestrians, there are additional types of signs, directed at both pedestrians and motorists. These signs are intended to increase the safety of bicyclists and pedestrians.

**Directional Signs**

Directional signs for pedestrians are intended to assist people (who are unfamiliar with an area) or to assist residents who may not know the most direct route to a destination by foot (or by vehicle, for that matter). Distances, which are meaningful to pedestrians (such as the number of blocks, miles and/or the average walking time), should be used to assist them when possible and/or practical. When installed by NCDOT, directional signs are green in color, as consistent with the color chart discussed earlier.



**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 primary 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

School crossing signs should clearly mark all school crosswalks on the suggested route, as well as be placed at crosswalks within the school zone. Busy intersections crossed by children should include traffic control devices such as signals and signs.

**Advance Stop Bars**

In order to increase vehicle and pedestrian visibility, the vehicle stop bar should be applied to the street 15 to 30 feet back from the pedestrian crosswalk at signalized crossings and mid-block crossings. Stop



bars are one-foot to two-foot wide and extend across all approach lanes at intersections. By moving the bar further away from the crossing, motorists are influenced to stop further back from the crosswalk when yielding right-of-way to pedestrians. This helps to reduce conflicts (near collisions) between motor vehicles and pedestrians.

### **Advance Stop Bar Cost:**

Signage: \$50 - \$150 plus installation

No additional cost if new line is installed in new paving.

### **Curb Ramps**

Curb ramps are vital in providing access between the sidewalk and the street for people who use wheelchairs and other motorized mobility devices. Curb ramps are most commonly found at intersections, but they may also be used at other locations such as on-street parking, loading zones, bus stops and midblock crossings. The implementation regulations under Title II of the ADA specifically identify curb ramps as requirements for existing facilities and all new construction. Curb ramps for existing facilities must be included in Transition Plans. According to the Title II implementation regulations, priorities for the installation of curb ramps in existing facilities should include access to government facilities, transportation, public accommodations and for employees at their place of employment (U.S. Department of Justice, 1991a).



For many people with mobility impairments, curb ramps actually make it more difficult to navigate the pedestrian corridor. Crutches and canes are sized to fit the individual user so that the energy required for walking is minimized on a hard, level surface. Use of these types of walking aids is more difficult on sloped surfaces such as curb ramps. Widening the crosswalk to allow people to use either the curb or the curb ramp will ease access for cane and crutch users, who are not comfortable traveling on a sloped surface.

People with vision impairments rely on the “curb” to identify the transition between the sidewalk and the street. The installation of curb ramps removes this cue and replaces it with a ramp which is much more difficult to detect. Therefore, it is important that as curb ramps are installed to create access for people who use wheelchairs, they are installed in such a way as to maximize detectability for people with vision impairments. The ADA requires the addition of a detectable warning on all curb ramps. This consists of truncated domes extending across the entire width of the ramp and they must be in a contrasting color to the surrounding paving - either dark to light or light to dark.

## **Guidelines for Curb Ramps:**

- Provide a level maneuvering area or landing at the top of the curb ramp.
- Clearly identify the boundary between the bottom of the curb ramp and the street with a detectable warning.
- Design ramp grades that are perpendicular to the curb.
- Place the curb ramp completely within the marked crosswalk area.
- Avoid changes of grade that exceed 11% over a 610 mm (24 in) interval.
- Design the ramp that does not require maneuvering on the ramp surface.
- Provide a curb ramp grade that can be easily distinguished from surrounding terrain; otherwise, use detectable warnings.
- Design the ramp with grades of  $7.1 \pm 1.2\%$ . [Do not exceed 8.33% (1:12)].
- Design the ramp and gutter with a cross slope of 2.0%.
- Provide adequate drainage to prevent the accumulation of water or debris on or at the bottom of the ramp.
- Transitions from ramps to gutter and streets should be flush and free of level changes.
- Align the curb ramp with the crosswalk, so there is a straight path of travel from the top of the ramp to the center of the road to the curb ramp on the other side.
- Provide clearly defined and easily identified edges or transitions on both sides of the ramp to contrast with sidewalk.

## **Curb Ramp Costs:**

The cost is approximately \$1,500 to \$2,000 per curb ramp (new or retrofitted).

## **Raised Medians**

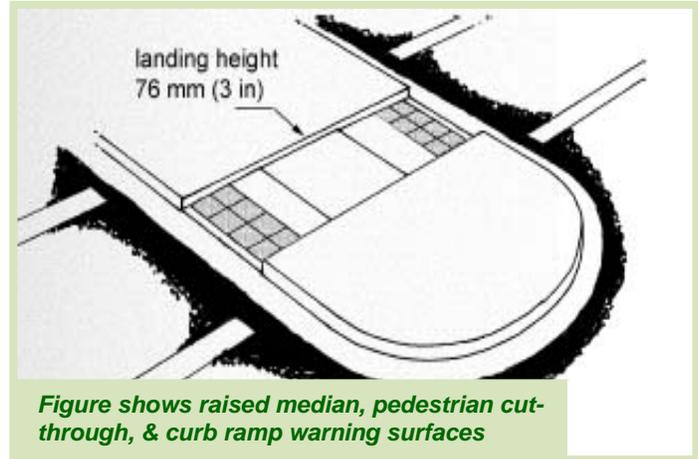
Medians (also known as refuge islands) are the portion of a divided roadway that separates traffic flows, which head in opposite directions. At roundabouts, these are called splitter islands. Medians help pedestrians cross intersections by reducing the crossing distance from the curb to a



*Raised median with cut-through*

protected area. This allows pedestrians to cross during smaller gaps in traffic. For this reason, medians are especially helpful for pedestrians who are unable to judge distances accurately. In addition, medians also help people with slow walking speeds to cross wide intersections during a short signal cycle. Medians are also useful at irregularly-shaped intersections, such as sites where two roads converge into one. In commercial districts, medians provide pedestrians with valuable protection from oncoming traffic. In residential areas, they serve as traffic calming devices and green space.

- Median crossings should be at least 6-feet in width to accommodate more than one pedestrian.
- Median crossings should include a level landing that is at least four feet square, providing a balanced resting space.
- Where streets are in excess of 60-feet, push-buttons for signalized crossing should be installed.
- Crossings in excess of 60-feet in width should be provided with medians or crossing islands and curb extensions.



Whenever possible, medians should be raised to separate pedestrians and motorists. Raised medians make the pedestrian more visible to motorists and they are easier for people with vision impairments to detect. Raised medians should be designed with a street level cut-through or a ramp. This provides pedestrian access to individuals who cannot travel over a curb.

Detectable warning surfaces should be placed at the edge of both ends of the median in order for the streets to be recognized by pedestrians who are visually impaired. If the corner includes a pedestrian actuated control device, one should also be located at the median.

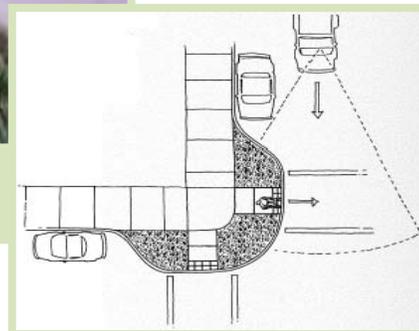
**Raised Median Costs:** The cost is approximately \$15,000 to \$30,000 per 100 ft.

## Curb Extensions (Bulb-outs)

Curb extensions improve visibility between pedestrians and motorists and make it easier to install perpendicular curb ramps with level landings. They also reduce the crossing distance for pedestrians.



*Photo and diagram illustrate features of pedestrian bulb-outs*



Low landscaping or grass can be added to the curb extension to clarify the appropriate path of travel for individuals with vision impairments. In addition, the following steps should be considered:

- Trim the vegetation, relocate signs and utilities and eliminate clutter
- Prohibit parking near the corner of the intersection
- Provide for raised medians /crosswalks. Provide advance stop line before marked crosswalk on a multi-lane road

Curb extensions are appropriate at certain mid-block crossings. The presence of turning truck traffic must also be taken into consideration/acknowledged when considering the installation of any curb extensions. While larger curb radii may accommodate truck turning, smaller radii help to shorten pedestrian crossing distance.

#### **Curb Extension/Bulb-out Costs:**

The cost is approximately \$2,000 to \$20,000. The cost can increase depending on the amount of relocated infrastructure.

### **Traffic Calming**

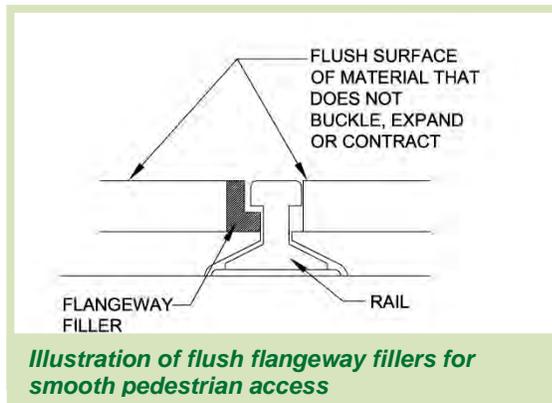
The term “traffic calming” may be described as the physical features and methods used to help negate the effects of vehicular traffic on pedestrian travel. Often the objectives of traffic calming are to reduce vehicular speeds, provide for a safer and more pleasing travel experience for both pedestrians and drivers and to improve the livability of neighborhood streets. Traffic calming often discourages the use of residential streets

as a cut-through to main arterial routes. There are a number of different traffic calming engineering techniques such as median islands, speed tables, raised crosswalks, traffic circles, chicanes, curb extensions and speed limit reductions.

Recommendations for traffic calming along specific roadways are discussed further in Section Six, Program and Policy Recommendations. Good planning and study of how particular traffic calming options may impact the local community including nearby parallel roadways, on street parking availability and emergency vehicles should be conducted before installing any selected treatment.

## Pedestrian Railroad Crossings

Railroad crossings pose unique hazards for pedestrians. The rails, ties and bedding surface(s) are potential tripping hazards; especially if the material used to pave the crossing is subject to buckling, expanding or heaving (such as asphalt). Also, if there are inadequate lines of sight and/or poor night lighting, the approach of trains can be hidden from pedestrians.



*Illustration of flush flangeway fillers for smooth pedestrian access*

These hazards are magnified if the pedestrian has special visual needs and/or mobility challenges.

One solution has been to fill the areas between the rail(s) with walking grade material, but in order for a train to pass, there must be at least a 2-inch gap between the material and the track or flange. This gap poses a hazard for wheelchairs and mobility scooters; when the small, narrow front wheels hit the unevenness of the gap, they will often turn sideways and

can become lodged in the flangeway gap. The gaps are also large enough for a small child's foot or the tip of a cane walker to become stuck in the flangeway. Where pedestrians must cross Light Rail Train tracks or the tracks of slowly, moving trains, there is a rubber insert that can fill the flangeway gap and not interfere with the operation of the train.

### Guidelines for Pedestrian Railroad Crossings:

- Raise the approach to the track to meet the top level of the rail. The approach should be flat for five feet on either side of the track.
- Use flangeway fillers wherever railroad traffic will allow.
- Use surface material that will not buckle, expand or contract adjacent to the tracks to prevent tripping hazards.

- Pedestrian paths should always approach the tracks at a 90 degree angle.
- Install detectable, truncated warning domes in the sidewalk to warn pedestrians.
- Install railroad crossing warnings along sidewalk in the form of signs, flashing lights and audible sounds.
- Signals and/or gates shall be considered to prevent the passage of pedestrians when a train is approaching.



### Pedestrian Railroad Crossing Costs:

Level Paving at Track: \$400 per linear foot (lengthwise along track)

### Pedestrian/Countdown Signals

Pedestrian signal heads should be used at all traffic signals where pedestrians are permitted to cross, unless pedestrian volumes are extremely low. The use of WALK/DON'T WALK pedestrian signal indicators at signal locations is important in many cases; in particular,

- when vehicle signals are not visible to pedestrians
- when signal timing is complex (e.g., there is a dedicated left turn signal for motorists)
- at established school zone crossings
- when an exclusive pedestrian interval is provided
- when streets are extra wide and where pedestrian clearance information is considered helpful



In addition, *countdown signals* offer an additional safety measure by informing pedestrians of the amount of time remaining for safe crossing.

The use of international symbols on pedestrian signal heads is preferable and is recommended in the MUTCD; the "WALK" and "DON'T WALK" word messages are also accepted as allowable alternatives in the MUTCD. NCDOT policy is the use of signals



with hand symbols. Pedestrian signal heads should be clearly visible to the pedestrian at all times – whether pedestrians are in the crosswalk or simply waiting on the far side of the street. Larger pedestrian signal heads



can be beneficial in some circumstances where more activity is prevalent or greater distances are involved. Signals may be supplemented with audible messages to assist trained visually impaired pedestrians; however, these audible messages should not be used randomly, because they can become an environmental (noise) issue – thus, inhibiting pedestrian safety.

### Leading Pedestrian Interval

According to Ron Van Houten, Ph.D., Center for Education and Research in Safety, Dartmouth, Nova Scotia;

“At signalized intersections, right and left turning vehicles present a danger to pedestrians crossing during the WALK interval and crash statistics show that pedestrians are especially vulnerable to left turning vehicles (left turning vehicles are overrepresented in pedestrian crashes).

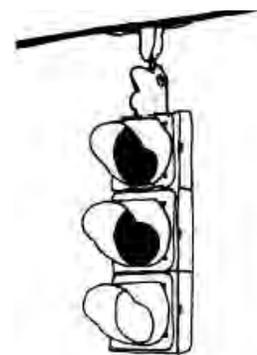
One practical solution to this problem is to program the traffic signals to allow the pedestrian to begin crossing before the vehicle traffic on the parallel street is given the green light. This is commonly referred to as a leading pedestrian interval (LPI). One of the most effective ways to decrease crashes that involve motor vehicles and pedestrians is to separate them in time. Pedestrians and motor vehicles can be separated in time by providing a leading pedestrian interval, which permits pedestrians to gain a head start before turning vehicles are released.

Research has shown that this treatment is associated with a decrease in pedestrian/motor vehicle conflicts and an increase in the percentage of motorists that yield right of way to pedestrians. This study examined the influence of a three-second LPI on pedestrian behavior and conflicts with turning vehicles.”

### Guidelines for Pedestrian and Countdown Signals:

- Pedestrian signals should be placed in locations that are clearly visible.
- Larger pedestrian signals should be utilized on wider roadways to ensure readability.

- Pedestrian signal pushbuttons should be well-signed and visible.
- Pedestrian signal pushbuttons should clearly indicate which crossing direction they control.
- Pedestrian signal pushbuttons should be reached from a maximum height of 3.5 feet and be located on a level landing to ensure ease of operation by pedestrians in wheelchairs.
- Walk intervals should be provided during every cycle, especially in high pedestrian traffic areas.



### **Pedestrian Signal/Countdown and Audible Cue Costs:**

Signal cost is \$5,000/ \$500 to \$800 per head; audible cue is approximately \$300 per signal.

### **High Intensity Activated Crosswalk (HAWK) and Rectangular Rapid Flash Beacon**

The following description is an excerpt taken from the MUTCD:

“The majority of pedestrian crashes occur at mid-block crossings. Any alternative traffic control device that is not a traffic signal has historically had minimal effect on motorist yielding behavior on multilane roads. Because of the high cost of traffic signals, their installation is restricted to intersections with high motor vehicle and pedestrian usage. The traffic signal warrant also limits the application of such devices to high pedestrian volume areas.



*Rectangular-shaped rapid flash LED beacon system*

One alternative to a traffic signal is the use of the "High Intensity Activated Crosswalk" (HAWK) signal to assist pedestrians in crossing major streets. The HAWK beacon signal consists of two RED signal indications above a YELLOW signal indication forming a beacon signal that remains dark until activated by a pedestrian. Once activated, the signal initiates a flashing yellow indication to warn approaching drivers, followed by a

solid yellow identical to a normal signal to warn of impending requirement to stop. The solid yellow is followed by a brief solid red indication, which is followed by a wig wag flashing red signal requiring drivers to stop before proceeding.”

Typical costs range from \$35,000 – \$60,000.

It should be noted that pedestrian/vehicular conflicts can be further mitigated by adding painted warning stripes in advance to an approaching crosswalk in both lanes. The addition of stop bars and signage indicating where vehicles are to stop during a crossing event should also be included in this type of “mid-block” crossing. Other alternatives to the above described signalization are suggested in the MUTCD as follows:

“One inexpensive device to increase yielding rates on multilane roads is the use of pairs of rectangular yellow LED beacons (RRFB) that employ a stutter flash pattern similar to that used on emergency vehicles.”

One important study on the LED Beacon was performed by The Center for Education and Research in Safety. The study affirmed that, “At several multilane pedestrian crossings, the device produced yielding levels that are equivalent to a traffic signal. No other device without a red indication has produced similar yielding data.” ([An Analysis of the Efficacy of Rectangular-shaped Rapid-Flash LED Beacons to Increase Yielding to Pedestrians Using Crosswalks on Multilane Roadways in the City of St. Petersburg, FL.](#) Dr. Ron Van Houten & Dr. J.E. Louis Malenfant,).

RRFB Cost is approximately \$10,000 to \$15,000 for purchase and installation of two units (one on either side of a street). This includes solar panels for powering the units, pad lighting, indication units (for both sides of street) with RRFBs in the back and front of each unit, signage on both approaches, all posts and either passive infrared detection or push buttons with audio instructions. Costs would be proportionately higher for additional units placed on a median island, etc.

For additional information on HAWK and RRFB signalized crossings go to:

- <http://mutcd.fhwa.dot.gov/htm/2009/part4/part4f.htm>
- <http://safety.fhwa.dot.gov/intersection/resources/techsum/fhwas09009/>

## **Traffic Signals**

Traffic signals create gaps in traffic flow allowing pedestrians to cross the street. Traffic signals should allow adequate crossing time for pedestrians and an adequate clearance interval based upon a maximum walking speed of four feet per second. A lower speed of less than four ft. /sec. should be used in determining pedestrian clearance time for areas where there is a heavy concentration of the elderly or children. Signals are particularly important at high use, mid-block crossings on higher-speed roads, on multi-lane roads and around more highly-congested intersections.

National warrants from the MUTCD (based on the numbers of pedestrians and vehicles crossing an intersection) are usually used in the selection of traffic signal sites. However, judgment must also be used on a case-by-case basis. If a new facility is

being built (such as a park or recreational path) there will be a new demand and a signal should be installed in conjunction with the new facility, based on projected crossing demand. There may also be *latent* demand if a destination is not currently accessible but could become so with new facilities or redesign.

In downtown areas, signals are often closely spaced, sometimes located at every block. They are usually spaced further apart in suburban or outlying areas. When high pedestrian traffic exists during a majority of the day, fixed-time signals should be used to consistently allow crossing opportunities. Pedestrian actuation should only be used when pedestrian crossings are intermittent.

### Traffic Signal Guidelines:

- Traffic signals should be used where pedestrian traffic is regular and frequent. The signal should be timed to a consistent interval. Pedestrian actuation should only be used when pedestrian crossings are intermittent.
- Signal cycles should be kept short (ideally 90 seconds maximum) to reduce pedestrian delay. Pedestrians are very sensitive to delays and a 30-second maximum wait time is ideal.
- Marked crosswalks at signals can encourage pedestrians to cross at the signal and help dissuade motorists from encroaching into the crossing area.

### Traffic Signal Cost:

The cost ranges from \$20,000 to \$140,000.

## Landscaping/Enhancement

A network of safe, comfortable, aesthetically pleasing pedestrian corridors with connectivity to desirable destinations creates and promotes a livable community. Without each of these elements present, the walking community is incomplete. Safety, beauty and connectivity all play important roles in forming a Comprehensive Pedestrian Plan and each basic fundamental should be considered throughout the entire planning process.



Landscaping provides street buffer

Landscaping can provide aesthetic improvement into a place that is otherwise hardened by buildings, concrete and streets. It can also be used to provide a buffer and separation from pedestrians and motorists, reduce the width of the roadway, calm traffic and help to develop a desired aesthetic appearance.

Street trees can visually impact areas by breaking up the hardscape often found in

urban areas. Also, trees and plantings improve the environment by shading the street; thus, providing cleaner and better air quality.

When tree islands are built and designed correctly, they can help collect and filter vegetative swales from nearby streets and buildings. These areas, called bioretention ponds, act as a sponge collecting oils, fertilizers and detergents and then release the stormwater. Bioretention ponds are encouraged - not only to improve water quality, but also to reduce storm flows during heavy rain events.

The local municipality is typically responsible for the landscaping requirements although, there are some instances where community groups assist with the funding and installation of landscaping and maintenance. Native plants are often preferable as they more easily adapt to the local environment. Growth characteristics of the plant material should be carefully considered when choosing plants for a particular location. For example, when choosing street trees – their height, spread and root systems should all be considered – thereby avoiding overhead wires and the buckling of sidewalks and streets in the future.

### **Guidelines for Landscaping:**

- Buffer zone plantings should be maintained at no higher than three feet to allow sight distance for motorists and pedestrians.
- Trees with large canopies planted between the sidewalk and street should be trimmed to keep branches at least seven feet above the sidewalk.
- Plants and trees should be chosen to correspond to seasonal blooming and they should complement the culture and natural resources of the area.
- Landscape irrigation should be planned for and installed in the early phases of the construction process.

### **Landscaping Costs:**

Landscaping costs can vary greatly. They may be supplemented by funds from community organizations or homeowners associations.



### **Roadway Lighting Improvements**

Proper lighting quality, placement and sufficiency can greatly enhance a nighttime urban experience as well as create a safe pedestrian facility. Two-thirds of all pedestrian

fatalities occur during low-light conditions. Particular attention should be addressed at crosswalk locations so there is adequate lighting for motorists to see pedestrians.

Many times, street lighting is implemented along roadways to light the roadway and the sidewalk, allowing adequate lighting for motorists and pedestrians. In urban areas, low-level lighting can be implemented through decorative streetlights which offer pedestrian-scale lighting. This type of lighting should be placed where there is high pedestrian volumes to offer improved aesthetics. Roadway streetlights can range from 20-feet to 40-feet in height while pedestrian-scale lighting is typically 10-feet to 15-feet.

When planning for lighting, it is important to have *sufficient* lighting while also, preventing light pollution and glare. A qualified lighting expert should be consulted in order to properly plan for the wattage and placement with regard to area lighting.

### **Guidelines for Lighting Improvements:**

- Ensure pedestrian walkways and crosswalks are sufficiently lit
- Consider adding pedestrian-level lighting in areas of higher pedestrian volumes, downtown and at major intersections.
- Install lighting on both sides of the street in commercial areas
- Use uniform lighting levels

### **Roadway Lighting Improvements Costs:**

The cost of roadway lighting varies depending upon the type of fixtures and the service agreement with the local utility company. The cost can range from \$10,000-\$20,000 per pole.

## **Street Furniture and the Walking Environment**



*Benches enhance sidewalk*

Sidewalks should be continuous and be part of a system that provides access to goods, services, public transit and homes. Well-designed walking environments are enhanced by urban design elements and street furniture such as benches, bus shelters, trash receptacles and drinking fountains. Carefully designed streetscapes enliven commercial districts and foster community life.

Sidewalks and walkways should be kept clear of poles, sign posts, newspaper racks and other obstacles that could block the path of pedestrians or become tripping hazards. Benches, water fountains, bicycle parking racks and other street furniture

should be carefully placed to create an unobstructed path for pedestrians. Such areas must also be properly maintained and kept clear of debris, overgrown landscaping, tripping hazards or areas in which water accumulates and causes problems for pedestrians.

Walking areas should also be interesting for pedestrians and provide a secure environment. Storefronts should exist at street levels and walking areas should be well lit and have good sight lines.

### Street Furniture Guidelines:

- Good quality street furniture will show that the community values its public spaces; good furniture is more cost effective in the long run.
- Ensure proper placement of furniture and fixtures. Do not block pedestrian walkways or curb ramps.

### Street Furniture Costs:

Benches: \$600 - \$1200

Trash Receptacles: \$500 - \$1000

Drinking Fountains: \$1,000 – \$4,000

Bollards: \$300 - \$1000

## Pavement Word and Symbol Markings

The MUTCD allows for the use of pavement word and symbol markings such as SCHOOL XING or PED XING, as motorist warning devices. These may be helpful on high-volume or high speed streets with unusual geometrics (such as vertical or horizontal curves) in advance of a pedestrian crossing. Markings should be white and placed to provide an adequate motorist response time. Their use should be kept to a minimum to retain effectiveness.



*Pavement symbol and word markings*



- END OF SECTION -

## SECTION SIX: PROGRAM AND POLICY RECOMMENDATIONS

A variety of programs and facilities, designed to increase walking and promote pedestrian safety in the Village of Pinehurst, are outlined in this section. These elements were developed using and evaluating existing planning documents mentioned in Section Three. The Steering Committee also assisted in developing the plan's overall goals which include the following:

- Increase walkability in the Village of Pinehurst
- Create a pedestrian network that is an important part of the urban structure
- Promote walking as a healthy exercise
- Create a pedestrian environment that is friendly to all users including seniors, the disabled and children
- Improve connections between disparate parts of the Village
- Promote pedestrian safety

*Walking contributes to overall fitness*



### 6.1 ANCILLARY FACILITIES AND PROGRAMS

#### Maintenance

Safety should be a high priority with existing and new facilities. Continual maintenance will be required to have a functional pedestrian network. Pedestrians typically aspire to use a facility that is in a good and safe condition; otherwise, it will not be used effectively. In addition to sidewalks, crosswalks at traffic intersections and mid-block crossings need to conform to the Manual of Uniform Traffic Control Devices (MUTCD). As crosswalks are installed, it will be important to place crosswalk warning signs to caution motorists where required.

With an aging population, it is imperative that accessibility and user needs be addressed at all street crossings. In order to effectively address these issues, it is recommended that the Village staff conduct an inspection of existing pedestrian facilities within the Village on a quarterly basis. This will not only address previously identified maintenance issues, but also to inventory any additional areas where issues have arisen.

## Signage and Way-finding

A map of existing facilities in the Village of Pinehurst can be found at the end of Section Two. Not only does the map delineate the conditions of existing pedestrian facilities, they also address crosswalk needs and the lack of curb ramps. A number of destination areas such as schools and parks are shown in order to better understand the relationship of existing pedestrian facilities to their uses.

Proper signage is an important part of any transportation system - whether it is pedestrian or vehicular in nature. Signs in schools zones, parking lots and other areas alert drivers to the presence of pedestrians in the area. Signage for *pedestrian* facilities is equally as important as signage for *roadways*. Often, pedestrian facilities lack signage directing pedestrians along a designated route. It is hard to imagine having to walk to a specific destination without knowing the exact route to use; but, this is often the case with pedestrians - especially visitors to the area.

There are many different way-finding signs pedestrians may find helpful depending on the reason for the pedestrian trip. However, most pedestrian facilities should have a clear and concise system of signage to direct users to various destinations such as Village Center shopping, Given Memorial library, FirstHealth Moore Regional Hospital and Fitness Center, area parks/trails and other pedestrian generators. Various types of way-finding signage are illustrated below.



## Spot Improvement Programs

The Village of Pinehurst will be responsible for most of the spot improvements within the Village. Spot improvements are small projects such as the maintenance of curb ramps, the repair of damaged sidewalks and the removal of debris. These improvements should be performed on a case-by-case basis with special consideration given to hazardous areas. The Village should (annually) inventory and inspect areas requiring

spot improvements, prioritize these locations and proceed with the proper implementations.

One potential, *specific* project for such funding is the upgrade of existing curb ramps. Many of the curb ramps in the Downtown area do not have ADA-approved, tactile, detectable warning devices.

Spot improvements prevent pedestrian accidents at hazardous areas



## **Traffic Calming**

There are many areas within the Village where vehicular and pedestrian traffic could potentially interfere with one another. Areas where traffic speed may conflict with pedestrian routes include: the parking areas and streets near Village Green, areas near FirstHealth and medical offices along both Memorial Drive and Page Road.

Some areas of conflict, which have previously been identified, are Memorial Drive and 1st Village Drive, Carolina Vista Drive and NC 2; they have received traffic calming treatments (marked cross walks, ramps, striping and signage).

On-street parking has a traffic calming effect



A more comprehensive assessment of possible pedestrian/vehicular conflicts should be conducted for areas near schools, parks, greenways, shopping, eating establishments, residential areas and where areas of future development are known to be sited within the Village of Pinehurst. These areas may meet standard roadway criteria; however, they are dangerous locations from the perspective of the pedestrian, creating unsafe situations. High pedestrian traffic areas need safe traffic speeds in order to reduce the possibility of vehicle/pedestrian accidents.

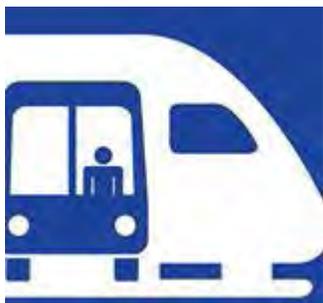
Pedestrians want to be in *secure* areas where they feel comfortable and vehicular traffic is controlled.

There are many simple and effective methods used to achieve traffic calming. These techniques can be as simple as lane striping or on-street parking. Subconsciously, a driver feels the need to travel slower in areas where the traffic lane is *visually* narrower. Methods such as street trees, bulb-outs and crossing islands may not narrow the actual traffic lane; but, will create a constricted visual corridor of the roadway, causing most drivers to decrease speed.

Other techniques such as speed tables, raised crosswalks and specialty pavement all attract the driver's attention, causing an immediate slow down. Although many speed tables and similar measures have been used successfully throughout the State, it is imperative that proper planning, evaluation and engineering occur before these devices

are implemented. The Village should consider “street narrowing” techniques as a way of creating more pedestrian oriented corridors.

## **Transit Interface**



Moore County Transportation Services (MCTS) offer Subscription Service, Demand Response Service and General Public Service by utilizing conversion and lift-equipped vehicles. For a small fee, they also provide transportation for the general public. The system runs regular routes with transit stops. MCTS provides transportation services on an advanced reservation basis.

Services for senior citizens, persons with disabilities, limited general public individuals and human service agencies are provided on a County-wide basis.

Limited out-of-county services are provided for specialized care (for example: a trip to a specialized medical provider in the Triangle region).

The Village of Pinehurst should consider including facilities for future MCTS stops in and around parks, schools and medical areas. These should include bus stop shelters, benches and other street furniture to reduce the discomfort of standing by a busy street waiting for a bus. It will be important to place these stops where they can be easily accessed by pedestrians. The provision of crosswalks and signals for safely crossing the street, sidewalks or paving (which is wide enough to accommodate a group of people) and clearly-marked signage leading to identifiable bus stops will be critical, as well.

## **Identify Countermeasures**

The Village of Pinehurst should continue to stay aware of measures which may be used to mitigate pedestrian accidents. National statistics indicate that nearly one-third of all pedestrian-related vehicular accidents occurred within fifty feet of a street intersection. Even though crosswalks at intersections may be properly marked with appropriate signage, accidents still occur. At times the pedestrian does not take the proper precautions when crossing intersections. Sometimes the driver is at fault by failing to yield to pedestrians.

Drivers and pedestrians should both take a defensive attitude toward pedestrian/vehicular safety when approaching intersections. NCDOT has published the handbook, *A Guide to North Carolina Bicycle and Pedestrian Laws: Guidebook on General Statutes, Ordinances, and Resources* (<http://www.ncdot.gov/vikeped/lawspolicies/laws/>). This document serves as an educational tool for pedestrians, drivers and the general public.

Statistically, less than 10% of pedestrian fatalities in the nation involved a pedestrian walking along a road and not on a sidewalk. Most of these incidents involved the

pedestrian walking “with” the traffic and being struck from behind. Safety guidelines suggest that pedestrians “face” the traffic when walking. More than one-fourth of all pedestrian accidents occurred at mid-blocks. This type of accident is typically associated with a pedestrian *darting* across the road. Prior to establishing a marked mid-block crossing, proper evaluation should be done to ensure the safety of the public.

These two noted types of pedestrian accidents represent over 65% of pedestrian fatalities in the nation. Over the past several years, countermeasures have been developed to mitigate pedestrian accidents. Countermeasures are generally “site-specific” improvements, which hopefully provide immediate solutions. The most effective countermeasures include roadway design, intersection design, traffic calming, traffic management, signals, signage and pedestrian facility design. These planning and engineering methods are instrumental in reducing pedestrian accidents. Education and enforcement are also countermeasures that must be implemented in the prevention of pedestrian accidents. The following are examples of countermeasures that are related to pedestrian safety in the Village.

Roadway Design

- Roadway Narrowing*
- Lane Reduction*
- Driveway Improvements*
- Raised Medians*
- Curb Radius Reduction*
- Improved Right-Turn Slip-Lane Design*

Intersection Design

- Modified T-Intersections*
- Intersection Median Barriers*

Traffic Calming

- Curb Extensions*
- Chokers*
- Crossing Islands*
- Chicanes*
- Mini-Circles*
- Speed Tables*
- Raised Intersections*
- Raised Pedestrian Crossings*
- Gateways*
- Landscaping*
- Specific Paving Treatments*
- Serpentine Design*

Traffic Management

- Diverters*
- Partial Street Closure*
- Pedestrian Street/Malls*



*Chicanes are a set of 2 or 3 bulb-outs or curves that alternate from one side of the street to the other. They are designed to slow the speed of drivers – in this case, by creating a narrower lane.*

Signals and Signage

*Traffic Signals*

*Pedestrian Signals*

*Pedestrian Signal Timing*

*Traffic Signal Enhancements*

*Right-Turn-on-Red Restrictions*

*Advanced Stop Lines*

*Signing*

Pedestrian Facility Design

*Sidewalks and Walkways*

*Curb Ramps*

*Marked Crosswalks and Enhancements*

*Roadway Lighting Improvements*

*Street Furniture/Walking Environment*

*Pedestrian Railroad Crossings*

Education and Enforcement

*Neighborhood Identity*

*Speed-Monitoring Trailer*

*On-Street Parking Enhancements*

*Pedestrian/Driver Education*

*Police Enforcement*

*Speed-Monitoring Trailer*



## **6.2 POLICY RECOMMENDATIONS**

The design and planning of pedestrian facilities are important components of roadway design. Fundamentally, both modes of transportation (pedestrian and vehicular) should complement each other in matters of safety and accommodation. Pedestrian movement has become an important focus for the Village of Pinehurst. The public requests connectivity, safer routes and more walking opportunities. Although public meetings do not capture a *complete* synopsis of the Village's pedestrian needs, they do identify certain concerns and issues. Based on information from the general public, there is also a perceived need for an expanded pedestrian network in the Village of Pinehurst.

Village staff and the Steering Committee also recognize other important issues. Many areas within the Village were acknowledged as safety concerns that need to be addressed with regard to reducing potential pedestrian accidents. Increasing public safety (with devices such as pedestrian signals, signage and the removal of existing barriers) will create a more user-friendly pedestrian network and thereby, increase the number of pedestrians.

## Land Use

Land-use policies and regulations have a strong influence on promoting walkable communities. If pedestrian facilities are not *required*, developers may be discouraged from incorporating these facilities in future projects. The recent updated Pinehurst Development Ordinance considers this issue and requires sidewalks on one side of all new streets in residential developments serving eight or more dwelling units and on both sides of new streets in non-residential developments and subdivisions.



As part of this Comprehensive Pedestrian Plan, the Village should continue to promote pedestrian facilities, particularly within new developments, both residential and commercial. Sidewalks should always be required for new streets, improved streets and/or street extensions. Although developers may argue that this requirement increases development costs, this requirement will continually enhance and promote the pedestrian network established by the Village.

This allows the Village to have control over current and future construction and maintenance of the pedestrian facilities. It also allows the Village to develop facilities in a continuous and efficient way, preventing the pedestrian facilities from being removed by the developer.

Although the Village of Pinehurst should be flexible with development opportunities, the Village must require the developer to provide right-of-ways or easements for pedestrian facilities, including proposed greenway trails. All development approved by the Village must include the accommodation of pedestrians by the developer(s).

## 6.3 FACILITY RECOMMENDATIONS AND ACTION ITEMS

### Pedestrian Network

The following recommendations are intended to help create and maintain a pedestrian route network that strengthens the local communities of the Village by connecting to existing and future parks, shopping centers, government offices and businesses.

**Recommendation #1** – *Enforce the language in the PDO requiring sidewalks in new developments. Exceptions may be considered on a case-by-case basis due to such considerations as difficult terrain, inadequate width or exponential costs.*

**Recommendation #2** – *Village ordinances and plans should be updated to reflect pedestrian plan recommendations and proposals.*

**Recommendation #3** – The Village should work with the Moore County School System to ensure that future schools in the Village have a strong emphasis on non-vehicular transportation, such as walking, bicycling, skating, etc. In choosing locations for future schools, emphasis should be placed on orienting the main entrance toward residential neighborhoods rather than at major thoroughfares. School programs should promote non-motorized means for transportation for students, when applicable.



Coordinate efforts with Moore County Schools

**Recommendation #4** – Provide pedestrian connectivity along existing thoroughfares such as NC5 and McKenzie Road.

**Recommendation #5** – Develop a system of way-finding signage for pedestrian facilities and greenways that is consistent with the Village standards.

**Recommendation #6** – New commercial and residential development should be oriented to the pedestrian and include internal pedestrian walkways connecting the development to the external sidewalk network in the public right-of-way as well as future development. If a planned residential or commercial development is located on a planned pedestrian project, an easement must be dedicated for the future shared-use.

**Recommendation #7** – Construct pedestrian facilities as identified on the Proposed Pedestrian Facilities Map and according to the prescribed guidelines. Alignment for facilities may require adjustment in order to meet necessary requirements.

**Recommendation #8** – Maintain and repair existing sidewalks to current standards, ensuring that facilities are safe and free of obstacles and debris.

**Recommendation #9** – Repair all noncompliant pedestrian facilities and ensure all new facilities provide ADA accessibility to the maximum extent possible.



Facilities must be ADA compliant

**Recommendation #10** – All maintenance should follow NCDOT standards, including the removal of unused or non-conforming driveway cuts.

**Recommendation #11** – Coordinate planning efforts with County and nearby jurisdictions to provide regional pedestrian facility connectivity.

**Recommendation #12** – Work closely with the local RPO to ensure sidewalk projects are included in all NCDOT roadway projects.

**Recommendation #13** – Continue to require developers to provide pedestrian connectivity to adjacent developments and destination areas.

## **Safety and Health**

Create, implement and maintain safe pedestrian facilities which allow for a “walkable” community.

**Recommendation #14** – Continue to partner with the Moore County School System in the initiation and implementation of school safety programs for school children.

**Recommendation #15** – Install and/or replace all damaged and noncompliant pedestrian facilities as noted in the network recommendations, Items 6 and 7.

Fill in sidewalk gaps



**Recommendation #16** – Prioritize sidewalk implementation where gaps are located and where there is a high volume of pedestrian activity.

**Recommendation #17** – Ensure that all sidewalks are extended across driveways at safe and usable cross slopes.

**Recommendation #18** – Create a maintenance program which monitors existing

sidewalks for damage and fills in gaps in the pedestrian system that meets current standards.

**Recommendation #19** – Establish regular reviews for the annual budget for sidewalk repair and expansion to obtain connectivity goals.

**Recommendation #20** – Provide pedestrian scale lighting at regular intervals where there is pedestrian activity in remote areas and at traffic intersections.

**Recommendation #21** – Connect local businesses to the public sidewalk system.

**Recommendation #22** – Ensure that new construction projects are installed and meet all Village design requirements.



Install marked crosswalks

**Recommendation #23** – Work with local organizations such as the Moore County Health Department and Moore County, Services for Seniors to educate and encourage citizens to include walking as a part of a healthy living plan.

**Recommendation #24** – Continue to coordinate walking programs with schools to promote healthy exercise amongst their pupils.

## **Crossing Safety**

Improve and construct all pedestrian crossings in areas where there is a high volume of pedestrian activity or where safety is an issue.

**Recommendation #25** – Install marked crosswalks at all major intersections and where greenways cross major roadways.

**Recommendation #26** – Evaluate traffic intersections for possible design elements such as extended curbs and refuge islands for pedestrian safety.



**Recommendation #27** – Update local traffic intersection guidelines to meet current state and federal requirements.

**Recommendation #28** – Enforce the lower speed limit of 25 M.P.H. that was recently implemented for all Village roads. Make sure that all speed reductions are clearly marked and enforced. Roads within the Village Center area should be designated as 20 mph or less. It is recommended that residential areas in Village be studied further for traffic calming and speed reduction.

**Recommendation #29** – Ensure that traffic intersections with pedestrian facilities are well lit.

**Recommendation #30** – Evaluate pedestrian facilities annually for safety issues and implement solutions.

## **Traffic Signals**

Implement traffic signals at unsafe and dangerous intersections which improve pedestrian conditions

**Recommendation #31** – Install pedestrian signals at all major intersections.

**Recommendation #32** – Seek funding opportunities which help with design assistance and implementation of traffic and pedestrian signals.

**Recommendation #33** – Review the signal timing to ensure that pedestrians have adequate crossing times at intersections.

**Recommendation #34** – Consider audible pedestrian signals near senior centers and other high volume pedestrian attractors.

**Recommendation #35** – Consider using “countdown” pedestrian signals near high pedestrian volume locations such as those along NC Hwy 5, McKenzie and Linden Roads.



## **Community Strengthening**

Provide amenities and elements that enhance the pedestrian environments and create a desirable place to live and work.

**Recommendation #36** – Continue to implement sidewalk and sand/clay path improvements in the historic residential neighborhoods that include A.D.A. accessibility, marked crossings and pedestrian safety signage.

**Recommendation #37** – Develop environmental education and interpretive facilities, particularly along greenway corridors.

**Recommendation #38** – Provide a planting strip between sidewalks and roadways for street trees and low plantings, where possible.

**Recommendation #39** – Enforce design standards for the placement of utilities (power poles, telephone poles, sewer inlets, etc.) so that they do not impede pedestrian traffic.

**Recommendation #40** – Coordinate the placement of all traffic and pedestrian signs with Moore County and the NCDOT. Such coordination should include the replacement and/or repair of damaged or aged signs.



## **6.4 PROGRAM RECOMMENDATIONS**

Education, encouragement and enforcement programs should be in place to teach and promote safety and ensure the success of the Village’s pedestrian network for the future. The recommended programs will be successful in serving the Village’s need to support pedestrian activity.

## Pedestrian Safety Efforts

Speed enforcement is particularly important in areas of high pedestrian traffic, since small differences in vehicle speed make dramatic differences in survivability for the pedestrian. Officers patrolling areas of high pedestrian activity can also step up enforcement for distracted driving violations, unsafe lane changes, failure to signal, aggressive driving, DUI and other unsafe motorist behaviors that create a particularly grave danger for vulnerable road users and also discourage individuals from choosing walking as their mode of transportation for short trips because a car gives them more protection from dangerous drivers.

Officers patrolling near unprotected crosswalks, intersections with unmarked crosswalks or signalized intersections where there is heavy turning traffic should pay particular attention to the crosswalks and ticket or warn motorists who fail to yield the right-of-way. In addition, crosswalk enforcement actions often referred to as “stings,” provide a targeted way to increase public awareness of the requirement to yield to pedestrians in crosswalks.

**Figure 6-4a: The Impacts of Vehicle Speed in Pedestrian Fatalities**



## **Safety Education Programs**

School-based programs that stress safety should be implemented regularly, particularly for young children. The promotion of 'walking to school initiatives' will raise public awareness of child safety and instruct children in the proper usage of sidewalk and other pedestrian facilities, whether walking to school or to the school bus stop. The local police departments typically provide such educational/informational programs. Police officials go to the schools and educate children on the proper use of sidewalks and street crossings. In particular, young pedestrians need instruction on how to cross streets safely and how to interact properly with vehicle traffic.



*Safety education in school*

## **Traffic Safety**

The National Highway Traffic Safety Administration (NHTSA) has a web resource for promoting traffic safety, including pedestrian safety. The site provides research and information on these related topics:

- preventing pedestrian casualties
- a walkability checklist
- child safety
- walking to school
- other topics that are of use in developing a safety education program

<http://www.nhtsa.gov/portal/site/nhtsa/menuitem.dfedd570f698cabbbf30811060008a0c/> is the website for NHTSA.

## **Pedestrian Safety Action Plan**

The Pedestrian and Bicycle Information Center (PBIC) has materials to help communities and organizations develop Pedestrian Safety Action Plans (PSAP). There are several safety training courses available on their website. These courses are designed to help communities develop and implement safe pedestrian networks. The website is <http://www.walkinginfo.org/training/pdps/>.

## Safe Routes to School

Safe Routes to School (SRTS) is a program meant to encourage students to walk or bike to school safely. Information can be found at NCDOT's website and at the National Center for Safe Routes to School website. According to the website, "the program is designed to "improve safety and reduce traffic, fuel consumption and air pollution in the vicinity of schools." The NCDOT grant program provides federal funds for the construction of infrastructure, such as sidewalks and bike lanes, within two miles of a school. The program also provides for the education and encouragement of communities in the planning and construction of pedestrian facilities for their neighborhoods.

# SafeRoutes

National Center for Safe Routes to School



For additional information visit the SRTS website at <http://www.saferoutesinfo.org/>.

## Safe Kids Walk this Way

A program sponsored by Safe Kids, USA, Safe Kids Walk this Way strives to teach and promote safe behavior to both motorists and children for safe, walkable communities. The program promotes safe walking events for children, provides research, participates in the International Walk to School Day (IWSD) in October each year and promotes school-based pedestrian safety committees. Go to <http://www.usa.safekids.org/wtw/>.



Community safety for children

## Other Education Resources:

- Turner-Fairbank Highway Research Center – Pedestrian and Bicycle Safety: Articles, facts, issues, publications, research, resources and links to other sites. <http://www.tfhrc.gov/safety/pedbike/index.htm>
- Federal Highway Administration (FHWA) Pedestrian and Bicycle Safety. Materials, research, facts and information on a variety of topics dealing with pedestrian safety. [http://safety.fhwa.dot.gov/ped\\_bike/](http://safety.fhwa.dot.gov/ped_bike/)
- PedNet: Pedestrian advocacy group in Missouri. Their website is a useful tool for creating other groups like them at <http://www.pednet.org/>.
- The National Center for Bicycling and Walking (NCBW): Publications for promoting walking as a healthy lifestyle at <http://www.bikewalk.org/>.

- The Active Living Resource Center has a website to encourage the development of active neighborhoods by increasing the walkability of the community. The website, <http://www.activelivingresources.org/index.php>, has information on community involvement in developing active, pedestrian facilities.

## **Encouragement and Promotion**

There are many initiatives that can be implemented by the Village of Pinehurst to promote pedestrian activity. Likewise, health-based organizations, employers and civic organizations should offer incentive programs to encourage walking and physical fitness in general. Programs such as ‘walk to school days’ and ‘visiting area walking facilities’ can not only encourage walking, but also allow residents to use areas they may not know are available.

Other means to encourage and promote the Village as a walkable community include:

- Publish and distribute a Village walking guide brochure that covers the area’s highlights, safety tips, suggested walking routes and pedestrian rights and responsibilities.
- Promote neighborhood walks and nature walks
- Promote walk-for-health programs with local churches, businesses and recreation centers
- Organize walk-to-work/school days and/or weeks
- Promote the various walking tours in the Village by providing historical and/or directional maps

## **Eat Smart Move More North Carolina**

The Eat Smart Move More (ESMM) North Carolina program is a statewide promotion to encourage healthier lifestyles for North Carolinians. Encouraging residents to walk more is just one part of this multi-disciplinary program, which some residents of the Village have participated in. However, the Village should continue to encourage residents to take part in this program. Healthy walking programs such as this can be put in place by a wide variety of organizations, including the health department, local hospitals, senior centers, local businesses, schools, churches and recreation departments.



## Walk to School Initiative

The National Center for Safe Routes to School and the NCDOT Safe Routes to School encourage “walk to school” events every October. These events are seen as a preliminary step in changing the attitude of people towards increased pedestrian activity. The *International I Walk to School in the USA* website has suggestions for events and classroom lesson plans for promoting the walk to school initiative. Visit <http://www.walktoschool.org/eventideas/index.cfm>.

## Mature Adults: Be Healthy, Walk Safely

A resource for mature adults by the National Highway Traffic Safety Administration (NHTSA), this web brochure provides tips for developing a personal walking exercise program and safety guidelines for dealing with traffic at <http://www.nhtsa.dot.gov/people/injury/olddrive/steppingout/index.html>.

## Enforcement Programs



A prominent issue that the Village of Pinehurst faces with *vehicular* verses *pedestrian* traffic is with regard to enforcement. For decades, the law has stated that **pedestrians have the right-of-way** but many drivers ignore this law. To ensure safety, this law must be enforced as well as the enforcement of speed limits. It is also recommended that local law enforcement organizations ensure that all officers are fully knowledgeable on pedestrian laws. Studies have proven that motorists’ speeds are directly proportional to the number of pedestrian deaths that occur. Reduced speeds give pedestrians more time to see and react in a timely manner. Pedestrians feel unsafe and will opt not to use sidewalks in areas where traffic laws are not enforced.



The Pinehurst Police Department has initiated a Village Bike Patrol program consisting of eight Bike Patrol officers. The Pinehurst community has donated at least five of the bikes used by the Department. The bikes allow officers to get face-time in Village neighborhoods.



Village Bike Patrol

Police officers on bicycles should remain a major factor in ensuring safe pedestrian practices on the streets of Downtown, during community and school events and as a part of a possible future greenway system.

As the pedestrian network expands to include the schools within the Village, it will be necessary to ensure safety oversight at school crossings and within the school zones. Crossing guards should be present at all official school crossings, along with approved

school crossing signage and signals. The crossing guards should be trained using NCDOT's Crossing Guard Training Program. The police department needs to provide a regular schedule of oversight of traffic during school hours in school zones. Any infractions within the school zone must be penalized to discourage future infractions and help to ensure the safety of the children.

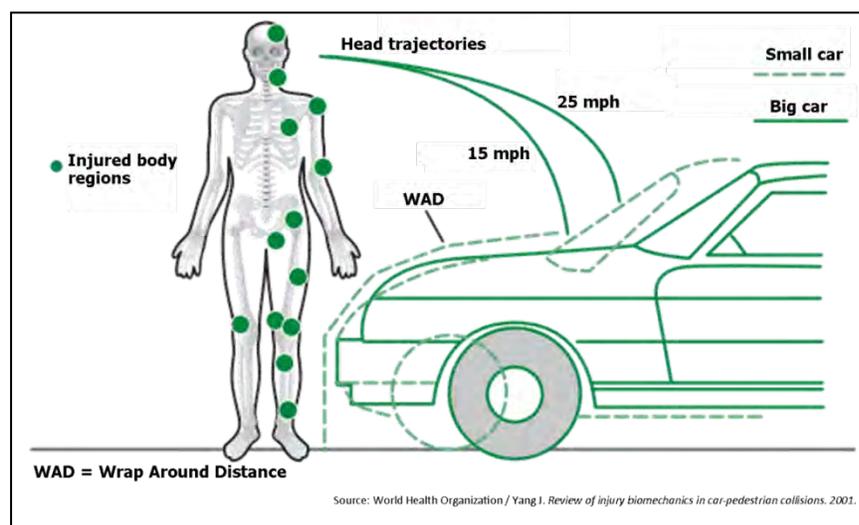
### **Crosswalk Enforcement Actions**

Police departments in jurisdictions participating in the Watch for Me NC campaign have received specialized training in conducting crosswalk enforcement actions. In these targeted operations, officers set up around a marked, unsignalized crosswalk and have an officer, usually wearing highly visible clothing but not a police uniform, cross the street. The decoy officer is trained to begin crossing when an approaching vehicle is far enough away to easily stop but close enough to see him/her.

Other officers intercept drivers who fail to yield and issue citations or warnings, along with educational material. When these actions are held, they are typically accompanied by press releases to maximize educational impact. Campaigns usually begin less aggressively, issuing warnings to all but the most egregious violators or those who are committing multiple traffic violations and move toward issuing tickets instead of warnings after the campaign has received news coverage.

In some national jurisdictions, creative decoys are used to further attract public attention. For example, Las Vegas has had the plainclothes officer serving as a decoy dress up as Santa Claus in December and in the small town of Mechanicsburg, PA, the mayor has gone through training with the police department and frequently serves as the decoy instead of a police officer. Support for planning crosswalk enforcement actions, including accompanying educational handouts, is available through the Watch for Me NC program.

**Figure 6-4b: Injured Body Regions of Pedestrian Hit by a Car**





## **What about enforcement for pedestrians?**

While motorists ticketed for failure to yield to pedestrians often demand “equal treatment,” it is important to remember that motorists and pedestrians are not equal in their vulnerability, their potential to cause harm to others or their requirements for being on the road. Legal motorists are licensed, however, they are theoretically responsible adults operating machines that have the potential to kill or maim pedestrians; who include the very young and very old as well as people incapacitated by illness or disability, and may not be able to fully differentiate the rules of the road.

Educational efforts to reduce problematic pedestrian behaviors have value, but enforcement focus is most effectively used on ensuring that licensed road users are prepared to respond to obstacles and control their vehicles even in adverse circumstances. Additionally, enforcement of “jaywalking” laws has historically occurred disproportionately in minority and low-income communities, serving to strain police-community relations and lead to a disproportionate financial burden on residents who are forced to walk in less than desirable traffic conditions because they can’t afford safer options.

Practically speaking, because most people have a survival instinct, the majority of “jaywalking” or technically illegal street crossings by pedestrians take place in circumstances where a crash is not likely to occur. Therefore, issuing tickets to pedestrians who disobey signals or cross between adjacent signalized intersections typically does not have any significant impact on pedestrian crash rates.

As documented by the District of Columbia Department of Transportation and Metropolitan Police Department in their Street Smart Pedestrian and Bicycle Safety Enforcement Training Manual (2007), the city of Seattle conducted an aggressive “jaywalking” enforcement campaign throughout the 1990’s, but found that it had no impact on the city’s rate of pedestrian crashes. Crosswalk actions and general enforcement of speeding, distracted driving and other motor vehicle safety laws have proven far more effective in reducing crash rates. Officers who witness particularly dangerous pedestrian law violations can issue tickets, but a concentrated effort of forcing pedestrians to wait for signals or go out of their way to use crosswalks is of limited safety value.

## **Watch for Me NC**

Watch for Me NC is a comprehensive program, run by NCDOT in partnership with local communities, aimed at reducing the number of pedestrians and bicyclists hit and injured in crashes with vehicles. According to NCDOT, Watch for Me NC involves two key elements:

- Safety and educational messages directed toward drivers, pedestrians and bicyclists

- Enforcement efforts by area police to crack down on violations of traffic safety laws

Local programs are typically led by municipal, county, or regional government staff with the involvement of many others, including pedestrian and bicycle advocates, city planners, law enforcement agencies, engineers, public health professionals, elected officials and others. NCDOT piloted the program Wake, Durham and Orange counties (Triangle Area) in 2012. In 2014, communities were asked to apply for Watch for Me NC funding to become partner communities. Any community is allowed to use the materials developed for the program, which are available at <http://www.watchformenc.org/>.

Based on the community's awarded campaign funding for 2014, Pinehurst should work with Moore County and other Towns within the County, as well as Sandhills Community College, to submit an application during a future grant cycle. Some partnerships that were awarded during the 2014 campaign are:

- Chowan County/Edenton (pop. 14,800)
- Craven County/New Bern (pop. 104,000)
- Jackson County/Sylva/Western Carolina University (pop. 40,500; enrollment 10,300)
- New Hanover County/Wilmington/UNC-Wilmington (pop. 209,000; enrollment 13,900)
- Pitt County/Greenville (pop. 172,600)
- Watauga County/Boone/Appalachian State University (pop. 51,900; enrollment 17,900)

**Figure 6-4c: Watch for Me NC Promotional Materials**



- END OF SECTION -

## SECTION SEVEN: PROJECT DEVELOPMENT

Section Four of the Pinehurst Pedestrian Plan provided a *vision* for a comprehensive pedestrian system for the Village of Pinehurst. Section Seven of the Plan provides a *blueprint* for the Village of Pinehurst to assist them in implementing that vision. Section Seven identifies specific opportunities/strategies and provides a series of action steps to guide the Village as it begins to execute the Plan. The projects proposed in Section Four are prioritized in this section in order to present the Village with a project schedule that is manageable. This section closes with ideas and sources for funding the projects.

### 7.1 OPPORTUNITIES AND STRATEGIES

*An opportunity is a situation or condition that is favorable for the attainment of a goal.*



The most obvious of the opportunities for the Village of Pinehurst in attaining the goals set out in this Plan is the already existing network of pedestrian facilities. The existing facilities consist of a well maintained network of pedestrian pathways, sidewalks and trails with numerous potential destination points, which are already attracting pedestrian traffic. The fact that people

continuously use the existing facilities makes it easier to promote the expansion of the network into a safer and more comprehensive, connected, pedestrian system.

A strongly committed group of individuals interested in the development of a pedestrian network for the Village of Pinehurst yields another opportunity for attaining the stated goals of this plan. Members of the Steering Committee, Village staff and users of the existing pedestrian network provide Pinehurst with a core group of advocates, who can promote the plan and recruit needed volunteers and supporters.

Previous initiatives, such as those undertaken by the Pinehurst Greenway Committee, have provided Pinehurst with a network of trails that can be linked via sidewalk projects and serve to facilitate future connectivity within the Village. By embracing these past initiatives and working with other regional organizations, the Village of Pinehurst can connect to the regional pedestrian trails and greenway systems of neighboring communities and increase the walkability and quality of life for Village residents.

## 7.2 ACTION STEPS

In order to implement the Pinehurst Comprehensive Pedestrian Plan, the following steps need to be taken:

- Adopt the Plan The first step in implementing the Pedestrian Plan is the adoption of the plan by the Village Council. Adoption of the plan will allow the Village of Pinehurst to effectively influence regional decisions, so that the Village and region concur with the goals set forth in the plan. Adopting the plan will also provide the Village with greater authority to shape local land-use decisions and seek funding opportunities.
- 
- A photograph of the Village Hall building, a large, multi-story structure with a prominent clock tower and a green roof. The building is surrounded by a well-maintained lawn and tall pine trees under a clear blue sky. A parking lot is visible in the foreground.
- Create an Oversight Committee An Oversight Committee consisting of Village Staff and representatives from various other staffs (such as Moore County, Triangle J Council of Governments, etc.) can be used to oversee the implementation of the plan.
  - Develop a funding strategy In order to undertake the proposed projects and secure adequate funding, it will be necessary to develop a funding strategy. The strategy should allow the community to incrementally complete each of the suggested pedestrian facility improvements over a 10-year period. Opportunities are listed below:
    1. *The Capital Improvement Plan (CIP) needs to include yearly appropriations for sidewalk, crosswalk and greenway development.*
    2. *The annual operating budget needs to include monies for minor construction and maintenance of pedestrian facilities.*
      - a. *The Village should consider issuing a local municipal bond with monies allocated towards the pedestrian system.*
    3. *Actively pursue the addition of roads within the Village via NCDOT's TIP program for sidewalk and greenway development and improvement.*
    4. *Pursue funding from potential sources listed in Section 7.6 Funding Opportunities.*
  - Begin improvements and/or new construction The work on the project(s) should begin with those listed as High Priority in Section 7.6.

- Develop education and awareness programs These programs will help to inform the public about the proposed projects and increase public support for them while strengthening enforcement and encouragement programs (See Section Six and 7.4).
- Acquire property and/or easements Develop a plan for acquiring the land and easements necessary for future portions of the Pinehurst Greenway System.
- Coordinate with other governing entities Work with other government agencies such as with Moore County, the RPO and the State of North Carolina to integrate the Village of Pinehurst's Pedestrian Plan with other transportation, land use, economic development, parks and recreation, environmental and community planning efforts.
- Modify policies Update the Pinehurst Development Ordinance as necessary to contain strong, carefully-considered policies and goals that will promote the development of pedestrian facilities as part of any *new* development or redevelopment.
- Connect to adjacent facilities Schedule road or utility work to include improvements and additions to the adjacent pedestrian network, where possible.
- Identify supporting policies and guidelines The NCDOT Division of Bicycle and Pedestrian Transportation has published a guidebook on General Statutes, Ordinance and Resources with regard to bicycle and pedestrian laws. This is a great resource, which pertains not only to responsibilities for bicyclists and pedestrians, but also for motorists. This guide should be incorporated into the standards for the Village of Pinehurst. It is particularly valuable for teaching public safety to school children.



TRIANGLE J COUNCIL OF GOVERNMENTS

As mentioned in previous sections of this document, the street design guidelines need to conform to NCDOT standards. In addition to NCDOT standards, the Manual on Uniform Traffic Control Devices (MUTCD) should also be a reference for projects, particularly existing roadways that have not conformed to these standards. Areas such as traffic intersections will need to incorporate these guidelines for future improvements.



The American Association of State Highway and Transportation Officials (AASHTO) have published the 'Guide for the Planning, Design and Operation of Pedestrian Facilities'. The purpose of this guide is to provide assistance with the planning, design and operation of pedestrian facilities along streets and highways. Specifically, the guide focuses

on identifying effective measures for accommodating pedestrians within public right-of-ways. This useful tool can be used to provide user-friendly pedestrian facilities along roadways.

- Develop an evaluation/monitoring process Each year the Village should evaluate the progress made in implementing proposed improvements suggested in this Pedestrian Plan. This evaluation should not only include new facilities; but also, repair to existing facilities and evaluation of program and policy recommendations. At the beginning of the budget process for the next fiscal year, the Village should determine the projects to be implemented for that year. In some cases, there may be large projects that will limit the number of tasks the Village can feasibly commit to implementing.



The listed action steps should be considered annual tasks and projects stemming from these recommendations should be scheduled for annual review. Village of Pinehurst staff should work closely with the NCDOT, Moore County and the Triangle J Council of Governments.

### 7.3 PRIORITIZATION OF THE PROPOSED PEDESTRIAN NETWORK

Proposed projects are listed within the Priority Matrix table which is located later in this section and in Appendix D. In addition, the Proposed Trails, Sidewalks, Greenways, and Crosswalks Map in Appendix B graphically provides the locations of the proposed projects listed in the Priority Matrix table. The proposed projects are listed by priority and location, the length and current opinion of probable cost are also provided. As mentioned earlier in this section, sidewalk improvements make up the majority of project costs for the proposed improvements.

The projects listed in the Priority Matrix table are also listed in the priority calculator in this section. The priority calculator helps to analyze and compare important factors of each project which lead to each project's ranking from High to Low.

The Village of Pinehurst and NCDOT are the primary agencies that will be involved with these pedestrian improvements. Many of these facilities are located on NCDOT public right-of-ways and are eligible to receive funding for NCDOT improvements. As new development or redevelopment occurs, it will be important for the Village of Pinehurst to require the developers to implement the appropriate pedestrian facilities, as necessary.

## **Prioritization of Projects**

The priorities of the pedestrian plan are divided into three different categories of priorities: high, medium and low. A priority calculator was used to help determine the priority ranking of each project.

The priority calculator was based on three factors: Safety, Connectivity and Recommendations from the Steering Committee. Each factor was broken down into categories. The categories were given a scale of numeric values.

Pedestrian corridors were then given a numeric value in each category. The total number of points provided a ranking to each corridor. The corridors were then grouped by thirds (approximately) to determine high, medium or low rankings.

## **Priority Calculator Results**

### **High Priority Projects**

Some of the needed facilities or improvements that received high priority rankings were:

- A lack of sidewalks - forcing pedestrians out onto roads with medium to high volumes of traffic
- A lack of crosswalks and/or pedestrian signals at busy intersections that are commonly traversed by pedestrians
- Sidewalks that are in poor condition - creating hazards for pedestrians
- Lack of safety and accessibility amenities at intersections
- Lack of connectivity to high priority destinations, such as medical facilities and schools

### **Moderate Priority Projects**

Moderate priority projects are designed to create a cohesive pedestrian network – with the use of the *existing* system. Some of the projects involve filling in missing gaps; others involve additional safety issues that arise from the expansion of the network.

### **Low Priority Projects**

The final category contains the low priority corridors. These areas are important to the Village- but due to economic factors, may not be feasible to implement the facilities within the 10-year time frame. These facilities are located primarily in residential neighborhoods and connect to other existing/proposed sidewalks that are of high or



moderate priority. A long-range time period will be allowed for the implementation of pedestrian facilities in the low priority areas. As different areas in and around the Village of Pinehurst develop, priorities may change in the coming years.

The corridor priority calculator is shown below, and priority rankings are provided in Appendix D.

Village of Pinehurst Comprehensive Pedestrian Plan 2015 Corridor Priority Calculator																
Point Range	Existing Corridor Ped. Facility Condition	Accessible Ped. Facilities	Bicycle Facilities	Traffic Volume	Traffic Speed	Pedestrian Crashes	Vehicular Crashes	**SC/ Public Recommendation	Safety Score	Schools # (4)	Medical Facilities	Recreation/ Leisure	Retail Center	Downtown	Connectivity Score	Total Score
NC Hwy 211	1	1	1	4	4	0	0	0	10.0	4	3	1	3	1	12	22.0
US 15/501	3	2	2	4	4	0	0	0	13.0	0	3	2	3	1	9	22.0
Airport Road	3	2	2	4	4	0	0	0	13.0	4	1	2	1	1	9	22.0
Dundee Road	2	2	1	2	2	0	0	0	8.0	8	1	1	2	2	14	22.0
NC Hwy 5/Beulah Hill Ro	3	2	2	3	3	0	0	0	11.0	0	1	3	1	2	7	18.0
Morganton Road	3	2	2	3	4	0	0	0	12.0	0	1	3	1	1	6	18.0
Linden Road	3	2	2	3	4	0	0	0	12.0	0	1	3	1	1	6	18.0
Road	3	2	2	3	3	0	0	0	11.0	0	1	2	1	1	5	16.0
Road	3	2	2	3	3	0	0	0	11.0	0	1	2	1	1	5	16.0
Monticello Drive	3	2	2	3	2	0	0	0	10.0	0	1	3	1	1	6	16.0
Diamondhead Drive	3	2	2	3	2	0	0	0	10.0	0	1	3	1	1	6	16.0
Lake Hills Road	3	2	2	2	4	0	0	0	11.0	0	1	2	1	1	5	16.0
Rattlesnake Trail	3	2	2	2	2	0	0	0	9.0	0	1	3	2	1	7	16.0
Memorial Drive	3	1	2	3	2	0	0	0	9.0	0	3	1	1	1	6	15.0
Juniper Creek Blvd.	3	2	2	2	2	0	0	0	9.0	0	1	3	1	1	6	15.0
McCaskill Road	3	2	2	2	2	0	0	0	9.0	0	1	1	2	2	6	15.0
Page Road	3	2	2	2	2	0	0	0	9.0	0	3	1	1	1	6	15.0
St. Andrews Drive	3	2	2	2	2	0	0	0	9.0	0	1	3	1	1	6	15.0
Burning Tree Road	3	2	2	2	2	0	0	0	9.0	0	1	2	1	1	5	14.0
Chicken Plant Road	3	2	2	2	2	0	0	0	9.0	0	1	2	1	1	5	14.0
Sugar Gum Lane	3	2	2	2	2	0	0	0	9.0	0	1	2	1	1	5	14.0
Spring Lake Drive	3	2	2	2	2	0	0	0	9.0	0	1	1	1	2	5	14.0
Lake Forest Drive	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Lost Tree Road	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Pine Tree Road	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Hilliard Road	3	2	1	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Pinehurst Trace Drive	3	2	1	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
McDairmid Road	3	2	1	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Pine Vista Drive	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Gun Club Road	3	1	2	3	2	0	0	0	9.0	0	1	1	1	1	4	13.0

\* = Sidewalks may have been divided by side of street, low priority automatically given to less prominent side of street

\*\* SC = Steering Committee

**Point Range Key**

Safety	
Existing Ped. Corridor Facility Condition	1=Good, 2=Fair/incomplete, 3=None/Poor
Facilities	1=Exists, 2=None
Bicycle Facilities	1=Exists, 2=None
Traffic Volume	1=0-4,999, 2=5,000-9,999, 3=10,000-11,999, 4=12,000+
Traffic Speed	1=Under 25mph, 2=25-34mph, 3=35-44mph, 4=45+mph
Ped. Crashes	Number of reported pedestrian crashes from January 2000-June 2012
Vehicular Crashes	1 = 0-39, 2 = 40-79, 3 = 80-119, 4 = 120-159, 5 = 160+ (10 year time frame from City Police and NCDOT)
Other	
Recommendation	1=Not from POG or public recommendations, 2=A POG or Public Recommendation
Connectivity	
Schools	The number of schools located along the corridor X (4)
Medical Facilities	1=None, 2=Clinics, Private Med. Offices, 3=Hospital or EMS station
Recreation/ Leisure	1=None, 2=(1) park/rec. facility, 3=(2+) park/rec. facility
Retail Destinations	1=None, 2=(1-4) retail locations, 3=(4+) retail locations
Near "Downtown"	1=Not in Downtown, 2=Within downtown

The proposed improvements incorporate planning initiatives from other agencies (NCDOT) that affect the Village of Pinehurst. It will be essential to continue cooperation with NCDOT and other entities that can enhance the pedestrian network within the Village of Pinehurst and the surrounding communities. As additional needs are identified in the future, communication with these agencies will help with the coordination of future projects.

The Pinehurst Pedestrian Plan proposes numerous pedestrian projects composed mainly of sidewalks, natural surface trails and intersection improvements. In order to develop an action plan that is manageable, the recommendations have to be separated into projects that will be implemented on an annual basis. Each fiscal year, the Village should identify specific projects and allocate funding for them. There are numerous funding mechanisms to assist with costs. The acquisition of funds will be an important component in the completion of the identified projects.

## **Sidewalk Projects**

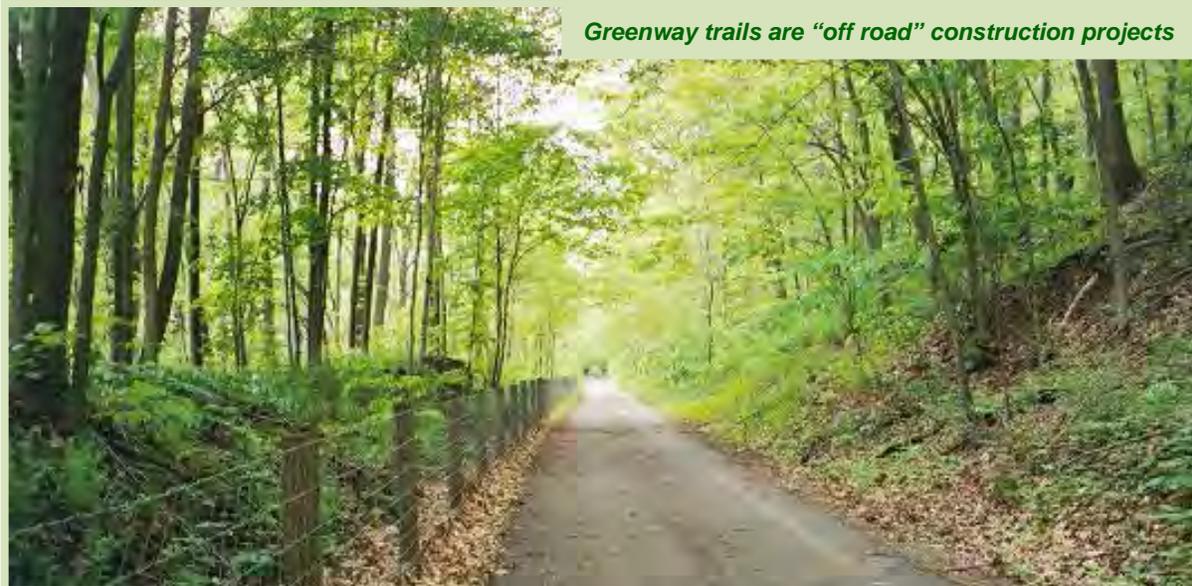


Sidewalks are “on road” construction projects

Many of the proposed improvements for the Pinehurst Pedestrian Plan consist of either new sidewalks or accessibility improvements. These are considered to be *on-road construction projects*. A priority list identifying pedestrian corridors/sidewalks can be found above. Standards for the construction of the sidewalk projects can be found in Section Five: Design Guidelines and the Village Engineering Standards and Specifications Manual.

As many of the proposed facilities are located on NCDOT roadways, the Village of Pinehurst will need to receive an approval for all permitting and construction documents for this work *prior* to construction.

## The Pinehurst Greenway



Multi-purpose trails such as the proposed and future portions of the Pinehurst Greenway Network are designated as *off-road construction projects*. These trails are typically 8-feet to 10-feet wide and allow for biking, which is not permitted on downtown sidewalks.

This pedestrian plan proposes expanding the existing greenway corridor - creating a network that can connect into similar projects initiated by immediate neighboring communities. The completion of these projects would prove to be an important asset to both the Pinehurst and neighboring communities by providing clear and safe routes between area towns, extra-territorial planning jurisdictions and the Village - as well as creating a possible attraction that could increase the number of visitors to the area. In order to proceed with such projects, the Village should identify and cooperate with local land owners and research possible routes along utility easements or other available land before further developing these kinds of multi-purpose pathways.

### **7.4 ANCILLARY FACILITIES AND PROGRAMS**

There are many ancillary facilities and programs that Pinehurst can initiate or participate in. Many of these initiatives are relatively inexpensive. Signing/mapping projects and safety/enforcement programs can be performed through in-house services. Partnering with other organizations such as the Moore County Public Health Department, the Moore County Transportation Services (MCTS), Moore County School System, the Triangle J Council of Governments, FirstHealth Moore Regional Hospital as well as

other civic groups and health-based companies will allow promotional programming and transit interface programs.

### **Expanded Transportation Options**

The Village of Pinehurst should work with Moore County and MCTS to expand the existing transportation service to increase needed services for the citizens of the Village. An expansion in the transit system should correspond with the needs of residents.

### **Education Programs**

Several state and national program guidelines are available for educating the public about pedestrian safety (see Section 6.4). These programs focus on law enforcement, pedestrians and drivers. The Village of Pinehurst should work with the Moore County School System and the Pinehurst Police Department to provide safe walking programs for the children and adults of Pinehurst. Some of the resources available for use are:

**National Center for Safe Routes to School** – The Center offers a number of resources and information on how to start a Safe Routes to School program.

**Walking School Bus** – A program under the auspices of the National Center for Safe Routes to School, the Walking School Bus combines safety, community awareness, healthy exercise and fun to help educate children and adults on pedestrian safety.

**A Guide to the North Carolina Bicycle and Pedestrian Laws** – This guide is intended for use by law enforcement officials, educators, planners and citizens for education/enforcement of North Carolina pedestrian laws.



*Provide safe walking routes*

### **Healthy Communities Program**

*Healthy Communities Program should include input from FirstHealth*



The Village of Pinehurst, the Moore County Health Department and FirstHealth Moore Regional Hospital should join together in promoting and furthering the Health Department's wellness goals and programs. A Healthy Communities program encourages walking as healthy exercise. This program should recruit churches, civic organizations and

neighborhood associations to organize and promote walking for better health. The program should also include pedestrian education.

### **Way-finding**

As pedestrian facilities are completed, they need to be incorporated into the way-finding system for the Village. Updated walking maps that highlight pedestrian routes should be developed as needed to educate pedestrians as to the various routes available. Maps of primary pedestrian corridors can be made available at local government and retail centers. A uniform system of signage should be installed to direct pedestrians to destination points. Traffic signs should be installed that alert motorists to the pedestrian network (see Section Five: Design Guidelines.)

### **Spot Improvement and Maintenance Program**

A Spot Improvement and Maintenance Program is recommended and would most likely be the responsibility of the Village of Pinehurst Public Services Department. The Department needs to develop a regular schedule of inspection and repair to the various elements of the pedestrian network - including sidewalks, crosswalks, signage and street furniture. In addition, the Department (itself) can make several of the spot improvements on the proposed project list. Some of the tasks that can be undertaken by the Maintenance Department include:

- Repair retaining walls
- Install, repair or replace signage
- Remove (or supervise removal) of litter
- Maintain landscaping
- Inspect/repair pedestrian amenities (benches, trash receptacles, etc.)
- Repair/install small areas of sidewalk or multi-purpose trail



## **7.5 STAFFING**

The Village Manager, Planning Department staff, Public Works staff and Parks and Recreation staff will serve as the major catalysts for the development of Pinehurst's pedestrian system. These departments will guide the Village in the planning, design, construction and funding of pedestrian facilities. They will also facilitate cooperation between the various agencies, which were mentioned in Section 7.4



*Public Works can assist with projects*

The Village Public Works Department will be a vital component in the implementation of projects and in the maintenance of those facilities that are the Village's responsibility. The Planning Board and Village Council will need to be advocates of pedestrian planning. Each fiscal year the Village should implement pedestrian improvements as part of the Village's general budget.

The Pedestrian Plan Steering Committee was an integral component in developing recommendations for the Pedestrian Plan. It is recommended that an ongoing Oversight

Committee be created to evaluate the pedestrian facilities and programs on an annual basis. An evaluation program is too comprehensive for just one individual to perform; such a program will require a group working together to conduct the evaluation. The Oversight Committee could also be responsible for recruiting volunteers and civic groups to assist with programming and simple maintenance tasks (such as litter removal). Maintenance issues and problems can often be addressed through the Oversight Committee and it, in turn, can inform the Village of complaints from local residents and visitors.



The Pinehurst Police Department will continue to assume tasks related to pedestrian safety. This includes total enforcement of traffic and pedestrian laws as well as education and crime prevention. The

Department should also continue to maintain a record of all accidents involving pedestrians in order to address necessary improvements to the pedestrian network that might develop after the adoption of this plan.

*Police Dept. enforces pedestrian laws*



## 7.6 FUNDING OPPORTUNITIES

Funding for the implementation of proposed projects can be overwhelming - particularly with increasing construction costs. Therefore, prioritization will aid in the completion of the proposed tasks. The projected construction cost estimates for all the proposed sidewalk projects is summarized in the table on the following page.

A more detailed listing of the sidewalk projects, their priority status and approximate costs can be found in Appendix D.

*Prioritized Facility Cost Estimates*

<i>Priority</i>	<i>Sidewalk Projects</i>
High	\$1,323,550
Medium	\$3,986,150
Low	\$800,300
<b>TOTAL</b>	<b>\$6,110,000</b>

The function of the “Priority Matrix” is to help determine what pedestrian projects may be most needed or have the most positive impact on existing pedestrian circulation. The projects with the highest priority rankings should be considered as the initial improvements made by the Village. However, as economic, environmental and political changes will inevitably occur in the future, the calculator results should only serve to guide the Village in deciding what projects to pursue.

With a very talented and capable Village Staff, Pinehurst has the ability to accomplish many of the proposed improvements within their department(s). Spot improvements such as ADA compliant curb ramps, repair to damaged sidewalks and small sidewalk projects can be accomplished by Village Staff, which will dramatically decrease the costs of these projects.



The cost of the sidewalk applications will vary depending upon the choice of contractor, the scope of the project and the cost of materials. The probable costs associated for implementing the high priority projects is \$1,323,550.

Funding will be a large component in the process of developing Pinehurst’s pedestrian facilities. The Village will need to be aggressive in applying for funding every year for individual projects. Monies can be a combination of grants, contributions, bonds and other methods. The cost of curbs, ramps, crosswalks, pedestrian signals and traffic signals can be shared with NCDOT. In addition, proposed improvements that are a part of a larger NCDOT project can be funded as an “incidental” project by NCDOT. The Village will work with NCDOT to have them install the proposed sidewalks and intersection improvements as approved by the Village.

Grants, in particular, will be an important mechanism for funding. The projects, which are to be submitted for grants, need to reflect the objectives specified with each individual grant. Grants are typically oriented toward connectivity to a specific arena – such as education, recreation or safety.



A variety of funding opportunities are available to Pinehurst as the Village prepares for future improvement/development of its pedestrian system. These opportunities include, the Village of Pinehurst's Capital Improvement Program, Triangle Area RPO/Triangle J Council of Governments, BlueCross Blue Shield of NC Foundation and the Robert Wood Johnson Foundation. The list below shows funding sources that have been utilized by other communities for pedestrian projects. Each of these will be addressed in this section.

- Taxation
- Bonds
- Grants
- User Fees
- Contributions
- Foundations
- Homeowner Assessments

## Taxation

Traditionally, *ad valorem tax revenue* has been the primary source of funding for the pedestrian facilities of properties/facilities owned by municipalities and counties. 'Pedestrian opportunities' are considered a public service and often are *standard line items* on general fund budgets. Creative financial opportunities are possible; however, ad valorem taxes will continue to be the major revenue source to support the system. As such, communities often vote to raise their local tax rate temporarily in support of their pedestrian systems. Some possible tax funding strategies are:



**Sales Tax** – local county governments are authorized to implement a local sales tax. These taxes are typically used for a variety of projects within the county. The increase in local sales tax must be approved by the state government. The sales tax may be implemented for a fixed period of time and then expire.

**Property Tax** – because of concern by local home owners, increases in property taxes should be addressed with care. *Property Tax Increase* must have wide public support for the resulting project. Such funds are often used to pay debt service on general obligation bonds that were issued for land acquisition(s).



**Excise Taxes** – excise taxes are levied on specific goods and services and are to be used for specified purposes. In general, these taxes are levied to achieve funds for the promotion of tourism or transportation, which include pedestrian facilities.

**Occupancy Tax** – occupancy taxes are levied by local governments on hotel and motel rooms. The funds are typically used for the promotion of tourism and related activities.



## North Carolina Conservation Tax Credit (NCTC)

This program 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, preserve working farms and forests and set aside greenways for ecological communities, public trails and wildlife corridors. The website is <http://ncctc.enr.state.nc.us/>.



## Bonds



Many communities issue *bonds*, which are typically approved by the shareholders, to finance site development and land acquisition costs. The State of North Carolina grants municipal governments the authority to borrow funds through the issuance of bonds - the amount of which is not to exceed the cost of acquisition or the cost for improvement of pedestrian facilities.

Total bond capacities for local governments (for pedestrian facilities) are limited to a maximum percentage of assessed property valuation. Since the issuance of bonds relies on the support of the voting population, the implementation of awareness programs is absolutely essential *prior* to a referendum vote. This method can be used for specific projects such as the creation of multi-purpose trails within a greenway.

Revenue Bonds – Revenue Bonds are issued by government agencies or funds that generate operating revenues and expenses, much like a business. Repayment of the bond is limited strictly to revenues generated by the agency associated with the purpose of the bonds. Only the revenues specified in the contract between the bond holder and bond issuer are subject to use for repayment of the bond principal and interest.

**General Obligation Bonds** – General Obligation Bonds are the preferred financing approach by the North Carolina Local Government Commission and the general securities market - because these instruments are backed by the full faith and credit of the issuer – which simply means that the bonds are representative of an encumbrance against the property tax base of the issuing jurisdiction and therefore offer the best available security to the bond holder.





The State of North Carolina gives the issuance of bonds that are not to exceed the total cost of improvements, including land acquisition. In view of the recommended capital improvements suggested in this plan, the borrowing of funds to develop new facilities may be necessary. Total bonding capacities for local governments is limited for parks and recreation to a maximum percentage of assessed property valuation.

The following are key factors to consider when evaluating the use of General Obligation Bonds for financing:

- In North Carolina, the issuance of General Obligation Bonds requires a referendum of the voters within the issuing jurisdiction.
- The term of the debt may be extended to 20-30 years.
- The debt is publicly sold. Therefore, there are costs associated with the sale that generally total 3% to 5% of the total bond principal. The issuance costs offset the lower interest rate so this instrument becomes more attractive as the size of the issuance increases and the issuance costs are spread over the larger debt. It has been found that this financing option becomes financially superior as the debt principal exceeds \$10-\$12 million.
- Prepayment of the debt can generally not be accomplished until reaching a call date, which is generally around 75% of debt retirement.
- Failure of the General Obligation Bond to be ratified by referendum could mean that the County could not go forward with an alternative approach to financing without substantially changing the scope of the project.

Special Assessment Bonds – Special Assessment Bonds are municipal bonds used to fund a project that benefits a specific neighborhood or community. The neighborhood or community then repays the bond through the levy of additional taxes or fees on the property owners who have benefited from the improvements.

## **Grants**

State and federal agencies offer funding opportunities to assist municipalities in the financing of their pedestrian projects - including greenway trails. These sources of funding should definitely be investigated and pursued by the Village of Pinehurst for present and future improvements.

## State Agencies

### North Carolina Department of Transportation Grants

#### **Bicycle and Pedestrian Independent Projects Funded Through the Transportation Improvement Program (TIP)**

NCDOT has established priorities that are addressed in the 2006-2012 Traffic Improvements Program (TIP). The projects are identified within the "Region E" thoroughfare plan, which includes Moore County. The program identifies long-range projects of varied scopes, small to multi-million dollar facility improvements. The projects identify location, phase and schedule.

Pedestrian facility projects are divided into two categories within the TIP - *independent* projects and *incidental* projects. Independent projects are those which are not related to a 'scheduled' highway project. Incidental projects are those related to a 'scheduled' highway project.

- NCDOT annually sets aside funding dollars for the construction of bicycle and pedestrian improvements that are independent of scheduled highway projects in communities throughout the state. Types of projects include shared-use paths, wide-paved shoulders, bike lanes and sidewalks. These independent projects are funded through the Strategic Prioritization/State Transportation Improvement Program (STIP) process. 
- The strategic prioritization process serves as the primary input source for the STIP. Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), NCDOT Divisions, such as the Division of Bicycle and Pedestrian Transportation (DBPT), as well as other units at NCDOT may submit projects through the prioritization process. For bike and pedestrian projects, the DBPT utilizes a project prioritization methodology with defined criteria to rank all bike/pedestrian projects. This process occurs every two years. Priority projects are included in the developmental STIP (years 6 to 10) and the 10-year Program & Resource Plan.
- Bicycle and pedestrian accommodations such as bike lanes, widened paved shoulders, sidewalks and bicycle-safe bridge design are frequently funded as incidental features of highway projects. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds or with a local fund match.
- NCDOT's Sidewalk Program – Each year, funding dollars for STIP-Enhancement projects (sidewalk construction, maintenance and repair) are made available.

Each of the fourteen highway divisions across the state typically 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)

Upon approval of specific project requests, GHSP funding is provided through an annual program to undertake a variety of pedestrian and bicycle safety initiatives. Amounts of GHSP funds vary from year to year, according to the specific amounts requested. The GHSP plans and supports several highway safety programs annually. ‘Click It or Ticket’ began in 1993 and has become the national model for an enforcement and education campaign (bearing the same name), which is operated by the National Highway Traffic Safety Administration. All funding from the GHSP is allocated for highway safety purposes only. The funding provided for this program has been described as ‘seed money’, which is money that is needed to get programs started. The grantee is expected to provide a portion of the project cost and is expected to continue the program after GHSP funding expires. <http://www.ncdot.gov/programs/GHSP/>



### Safe Routes to School Program (Managed by NCDOT, DBPT)



Safe Routes to School (SRTS) is a program that enables and encourages children to walk and bike to school. The program helps make walking and bicycling to school a safe and more appealing method of transportation for children. SRTS facilitates 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 North Carolina Safe Routes to School Program is supported by federal funds through SAFETEA-LU and MAP-21 legislation.

Different types of reimbursable funding opportunities are available through this program which include Action Plans or School Travel Plans, Non-Infrastructure Program funding, Infrastructure Program funding and Highway Division Funds. Please note that all SRTS projects “shall be treated as projects on a Federal-Aid System under Chapter 1 of Title 23, United States Code.” Although no local match is required and all SRTS projects are 100% federally funded, agencies are encouraged to leverage other funding sources that may be available to them, including grant awards, local, state or other federal funding.

The following provides information about the program:

- Action Plans or School Travel Plans: These are plans to improve pedestrian and bicycle safety within a two-mile radius of schools that are grades K-8. The Action

Plans provide a framework for identifying projects, programs and activities that will make walking and bicycling to school safer and more appealing.

- **Non-Infrastructure Funds:** are used for pedestrian and bicycle education, encouragement, evaluation and enforcement. These grants are good for developing programs that inspire children to walk and bike to school.
- **Infrastructure Funds:** are funds that are awarded for the planning, design and construction of pedestrian and bicycling facilities within a 2-mile radius of a school. Funding requests typically range from \$100,000 to \$300,000 per project. Types of projects may include sidewalk improvements, crossing improvements, on-street bike and pedestrian improvements, bike parking, traffic calming and traffic separation devices among others. An adopted Comprehensive Transportation Plan or other type of pedestrian and bicycle plan that identifies needed infrastructure improvements is helpful in obtaining these grants.
- **Highway Division Funds:** are funds that are allocated by each of NCDOT's fourteen Highway Divisions and the SRTS office to fund infrastructure projects on state-maintained roadways. The projects must be within 2-miles of a school serving grades K-8 to be eligible. The funding amounts can be used to improve conditions for walking and biking to school. <http://www.ncdot.gov/doh/preconstruct/traffic/congestion/cm/msta/docs/SRTS.pdf>

### **Powell Bill Program**

The Powell Bill or the North Carolina Street-Aid Allocations to Municipalities is a program of the North Carolina Department of Transportation. Allocations are made annually to municipalities that establish their eligibility and qualify as provided by G.S. 136-41.1 through 136-41.3. These funds can be used for planning, construction and maintenance of sidewalks along public streets and highways. <http://www.ncdot.org/programs/PowellBill/>

### **North Carolina Department of Environment and Natural Resources**

#### **Land and Water Conservation Fund – North Carolina (LWCF)**



A federally-funded program, LWCF was established for local and state governments in 1965 as a funding source for outdoor recreation development and land acquisition. LWCF monies are derived from the sale or lease of nonrenewable resources, primarily offshore oil/gas leases and surplus federal land sales. Acquisition and development grants may be used for a wide variety of outdoor projects such as bike trails, Village parks, tennis courts, outdoor swimming pools and support facilities (roads, water supply, etc.). Facility design must be basic in nature (as opposed to elaborate) and must remain accessible to the general public. No

more than 50% of the project cost may be federally funded by LWCF, although all or part of the project sponsor's matching share may be obtained from certain other federal assistance programs. <http://ils.unc.edu/parkproject/lwcf/home1.html>

### North Carolina Ecosystem Enhancement Program

The NC Ecosystem Enhancement Program (EEP) combines a wetlands-restoration initiative by the N.C. Department of Environment and Natural Resources with ongoing environmental efforts by the Department of Transportation to restore, enhance and protect its wetlands and waterways. EEP provides:



- High-quality, cost-effective projects for watershed improvement and protection
- Compensation for simply unavoidable environmental impacts associated with transportation, infrastructure and the area's economic development
- Detailed watershed-planning and project-implementation efforts within North Carolina's threatened or degraded watersheds  
[http://www.enr.state.nc.us/html/tax\\_credits.html](http://www.enr.state.nc.us/html/tax_credits.html)

### North Carolina Division of State Parks

#### NC Adopt-A-Trail Grant Program



The North Carolina Division of State Parks awards \$108,000 each year to government agencies, nonprofit organizations and private trail groups for trail projects, through the Adopt-a-Trail program. Funds may be used for building trails, signage and facilities, brochures and maps.  
[http://www.ncparks.gov/About/grants/trails\\_grant.php](http://www.ncparks.gov/About/grants/trails_grant.php)

#### Recreational Trails Program (RTP)

The Recreation Trails Program (RTP) is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA). RTP makes recreation funds available for state allocation – in the development and maintenance of recreation trails and trail-related facilities for both non-motorized and motorized recreation trail users. RTP funds are distributed to states by a legislative formula: half of the funds are distributed equally among all states and half are distributed in proportion to the estimated amount of non-highway

*RTP assists with development of motorized recreation trails*



recreational fuel used in each state. *Non-highway recreational fuel is the type that is typically used by snowmobiles, all-terrain vehicles, off-road motorcycles and off-road light trucks.*

### **North Carolina Parks and Recreation Trust Fund (PARTF)**

PARTF was established for local governments and the North Carolina Division of Parks



and Recreation in 1994 as a funding source for the development and/or improvement of parks and recreation facilities, as well as for the purpose of land acquisition. A state-funded program, PARTF matches monies spent by municipalities on parks and recreation, with each sharing 50% of the cost. In 2004, the

fund request was elevated from a maximum of \$500,000 to \$1,000,000. The Recreational Resources Service should be contacted for additional information at (919) 515-7118. [www.ncparks.gov/About/grants/partf\\_main.php](http://www.ncparks.gov/About/grants/partf_main.php)

### **North Carolina Division of Forest Resources**

#### **Urban and Community Forestry Grant Program**

This program is designed to assist local governments in preserving existing tree cover in communities and to effectively and efficiently manage urban and community forests. Tree planting projects need to be part of a larger project aimed at promoting and enhancing the existing tree cover in a community. [http://www.dfr.state.nc.us/Urban/urban\\_grant\\_overview.htm](http://www.dfr.state.nc.us/Urban/urban_grant_overview.htm)

Projects with pedestrian network elements include:

- Development of a pocket park
- Greenway development
- Tree planting in low-income neighborhoods
- Master Tree Plans
- Neighborhoods

## **North Carolina Division of Water Resources**

### **Water Resources Development Grant Program**

This grant is designed to provide cost-share grants and technical assistance on projects related to water resources. There are seven different project categories. The category which describes *the establishment of a greenway in close proximity to a body of water* is eligible for the Land Acquisition and Facility Development for Water-Based Recreation grant.



<http://www.ncwater.org/Financial Assistance/>

## **North Carolina Division of Commerce**

### **Community Revitalization Grants**

The purpose of the Community Revitalization Grant is to revitalize low or moderate income residential areas through improvements, preservation or development. Eligible activities include housing, street improvements, public water service, public sewer service, community centers and recreation facilities. Other activities may be eligible with pre-approval. Maximum grants are one million dollars.

<http://www.nccommerce.com/en/CommunityServices/CommunityDevelopmentGrants/CommunityDevelopmentBlockGrants/>

## **Miscellaneous State Funding Organizations**

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

Created in 1996 by the North Carolina General Assembly, the Clean Water Management Trust Fund (CWMTF) grants monies to local governments, state agencies and not-for-profit conservation groups to help finance projects that specifically address water pollution issues. CWMTF will fund projects that contribute toward a network of riparian buffers and greenways for environmental, educational and recreational benefits. There is no match required from local municipalities for CWMTF funds,

however, the "suggestion" of a match is highly recommended. <http://www.cwmtf.net/>



## North Carolina Natural Heritage Trust Fund (NHTF)



Monies from the NHTF must be accessed through state agencies such as DENR, the Wildlife Resources Commission, the Department of Cultural Resources and/or the Department of Agriculture and Consumer Services (NCDA&CS). Funds are meant for the acquisition and protection of land with significant habitat value and/or cultural heritage value. <http://www.ncnhtf.org/>

## North Carolina Health and Wellness Trust Fund (HWTF)

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

In 2004, HWTF partnered with Blue Cross and Blue Shield of North Carolina to launch a statewide campaign designed to raise awareness of the dangers of being overweight and address the growing obesity problem in North Carolina. The Fit Community Program provides communities and individuals with the information and tools they need to overcome this problem.



Fit Community Grants are funded for two years, for a maximum of \$60,000. Applicants must first submit a Fit Community designation application and then apply for a Fit Community grant. Funding is for policy changes that will influence the public by promoting physical activity and changes to the physical environment, which encourage more physical activity. <http://www.healthwellnc.com/>

## Federal Agencies

### Rivers, Trails and Conservation Assistance Program (RTCA)

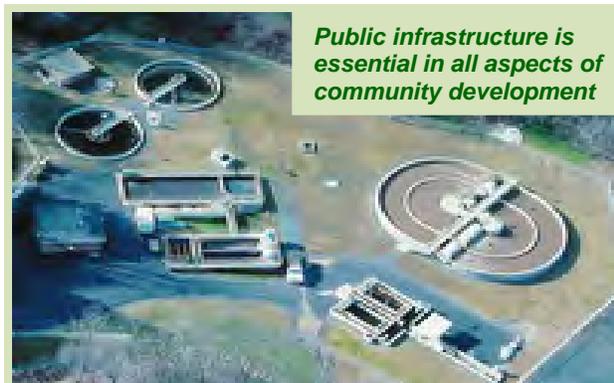


The National Park Service (NPS) provides this program of advisory services and counseling. The NPS works with community groups and local and state governments to conserve rivers, preserve open space and develop trails/greenways. No fixed amount is established for these services. Candidates must demonstrate a commitment for cost-sharing, which may include donations of time, cash and services. RTCA has played a major role in community conservation/recreation through citizen-led partnership approaches to river protection, trail

development and land conservation. [www.nps.gov/ncrc/programs/rtca/](http://www.nps.gov/ncrc/programs/rtca/)

## Public Works and Economic Development Program

This program is administered by the Economic Development Administration for the US Department of Commerce. Public Works and Economic Development investments help support the construction or rehabilitation of essential public infrastructure and facilities necessary to generate or retain private sector jobs and investments, attract private sector capital and promote regional competitiveness.



This includes investments that expand and upgrade infrastructure to attract new industry, support technology-led development, redevelop brownfield sites and provide Eco-industrial development. <http://www.eda.gov/AboutEDA/Programs.xml>

## Contributions

The solicitation of *contributions* is an acceptable method of fund-raising for pedestrian improvements. These donations - typically in the form of land, cash, labor and/or materials - can be solicited to assist the Village of Pinehurst with the enhancement of its pedestrian system. Corporations, civic organizations, individuals and other groups generally donate to a specific pedestrian project; however, donations may also be solicited for multiple project improvements or additions. Private, nonprofit, tax-exempt foundations, such as the North Carolina Community Foundation (NCCF), are often used as a means of accepting and administering *private* gifts to a *public* entity.

## Foundations

*Foundations* are another source of financing that allows direct contributions to be made within communities, states or the nation. These types of funds are usually described as special program foundations, general-purpose foundations or corporate foundations. Foundations generally have very few restrictions or limitations and are typically received from local entities.

### Blue Cross Blue Shield Foundation

The Blue Cross Blue Shield partners with its grantees to make a difference in the health of its constituents. The foundation supports policies and programs across the state and nation to



better the lives of citizens – wherever they live, work and play. It connects the community with experienced leaders, who provide financial and program support for active lifestyles for all North Carolinians.

### **Robert Wood Johnson Foundations**

As the world's largest philanthropic organization devoted to public health, the Robert Wood Johnson Foundation works to improve the health and health care of all Americans. The foundation is dedicated to building a Culture of Health that enables this diverse society to lead healthier lives – now and for generations to come. It focuses on:

- Child and Family Well-Being
- Childhood Obesity
- Health Insurance Coverage
- Healthy Communities
- Health Leadership and Workforce
- Health System Improvement



### **Partnerships**

To implement the recommendations contained in the comprehensive pedestrian plan, Pinehurst will most certainly have to expand their partnership agreements with other public agencies and private-sector organizations. There are many different types of partnerships that can be formed to achieve the goals established by the Village. In fact, many local governments throughout the nation are utilizing partnerships with public and private-sector interests to accomplish community goals.



*Health systems typically partner with counties and municipalities to promote wellness programs*

Listed below are the various types of partnerships that the Village should consider in its efforts for the improvement of pedestrian facilities:

- Programming partnerships to co-sponsor events and facilities or to allow qualified outside agencies to conduct activities on properties, which are municipally-owned.

- Operational partnerships to share the responsibility for providing public access and use of facilities.
- Development partnerships to purchase land and/or build facilities.
- Management partnerships to maintain properties and/or facilities.
- Elected officials should become advocates for pedestrian facilities and promote the development of future improvements.



Partnership presentations may be required

The Village of Pinehurst is currently “partnered” with several entities in other Village-related endeavors/functions and should evaluate forming additional partnerships, which address the needs of the pedestrian system.

NCDOT will be a very important partner as more facilities are developed in the area. Proposed improvements often involve NCDOT. It will be imperative that this

partnership has good communication and coordination for the efficient implementation of projects.

Direct requests should be made to potential partners, asking them to meet to evaluate the possible benefits of partnering. This step should be made to generate interest and agreement *prior* to solidifying any responsibilities for each participating party.

## Land Acquisition and Development

There are many different types of *land acquisition* available to the Village of Pinehurst for the pedestrian system expansion and/or future development. Due to the land costs and availability, it is recommended that the Village prioritize the property to be acquired for facilities regarding multi-purpose trails, which are typically off-street facilities. Listed below are several methods for acquiring/developing these trails:



Donations enable acquisitions

## **Local Gifts**

*Donations* of land, money, labor and/or construction can have a significant impact on the acquisition and development of pedestrian facilities. The solicitation of local gifts is highly recommended and should be organized thoroughly, with the utilization of very

specific strategic methods. Often untapped, this source of obtaining funds requires the contacting of potential donors - such as individuals, institutions, foundations, service clubs, etc.

### **Life Estate**

A life estate is a gift whereby a donor retains the land during his/her lifetime and relinquishes title of the property after his/her death. In return, the owner (or family) is relieved of property tax for the given land.

### **Easement**

An easement is the most common type of “less-than-fee” interest in land. An easement seeks to compensate the property owner for the right to use his/her land in some way or to compensate for the loss of his/her privileges to use the land. Generally, the land owner may still use the land and therefore continues to generate property tax revenue for the municipality.



### **Fee Simple Purchase**

*Fee simple purchase* is the most common method used to acquire municipal property for pedestrian facilities. Although it has the advantage of simplifying justification to the general public, fee simple purchase is the most difficult method to pursue, due to limited monetary resources.

### **Fee simple with lease-back or resale**

This method allows municipalities to acquire land by fee simple purchase, yet allows them to either sell or lease the property to prospective users with restrictions that will preserve the land from future development. The fee simple with lease-back or resale method of development commonly results from situations in which land owners who have lost considerable monetary amounts in property value, determine that it is more economical to sell the land to the municipality (with a lease-back option) than to keep it.

### **Long-term option**

Long-term options allow municipalities to purchase property over a long period of time. This method is particularly useful because it enables the municipality to consider particular pieces of land that may have future value, though it is not currently desired or affordable at the time. There are several advantages to this method of property acquisition: the Village can protect the future of the land without purchasing it upfront; and meanwhile, the purchase price of the land will not increase, with the Village having

the right to exercise its option. The disadvantage to the Village is that all privileges relinquished by the land owner require compensation in the form of securing the option.

## **Identify Special Funding Opportunities for High Priority Projects**



*The County should set aside money for construction of new facilities*

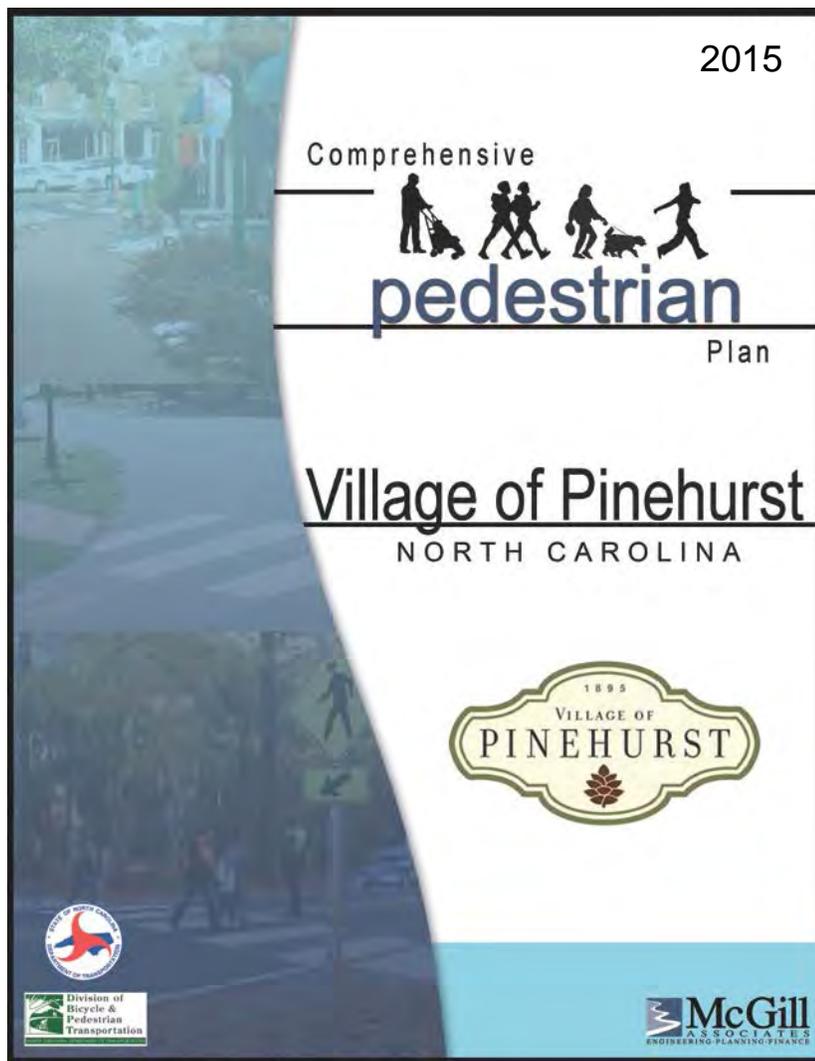
The funding sources listed above can be used for numerous projects proposed in this plan as well as future projects. Many of these projects can be funded as enhancement projects of TIP. The improvements along the major corridors (that have substantial construction cost) should be strongly considered. Funding for mapping and signage can be allocated through the Governor's Highway Safety Program.

It will be important to incorporate the future facilities with incidental highway projects. This document will be used by NCDOT to determine areas where pedestrian improvements should be incorporated into any proposed roadway improvements. Major construction projects may require more than grants. Although grant funding is a great resource, the amount of money available can limit the size of the project. A bond referendum could help to determine whether the Village's residents are willing to accept the cost for construction of major facilities.

The grants available for funding pedestrian facilities will evolve in the future. The funding amount for many grants may not be as much as others, while some may be very competitive because of the monies available. Partnering with other organizations typically lends more project significance when applying to funding agencies. Having multiple organizations applying for a grant, shows unity within a community, this, in turn, supports the grant application. In addition, having multiple partners will allow for more monies to be used for matching funds.

## 7.7 THE VILLAGE OF PINEHURST COMPREHENSIVE PEDESTRIAN PLAN

*The Village of Pinehurst Comprehensive Pedestrian Plan 2015* is merely a guide for the future. As new development and growth occurs in Pinehurst, new priorities may develop. The Village should continually evaluate and update the plan in order to meet the primary needs of the community. As the projects are implemented, the Village should take steps to update all involved parties in the progress being made. Additions to the plan should be formalized in order to insure continuity as stakeholders change.



- END OF SECTION -

# **APPENDICES**

# **APPENDIX A**

## **BIKE AND PEDESTRIAN SURVEY**



### VILLAGE OF PINEHURST - BIKE AND PEDESTRIAN SURVEY

The Village of Pinehurst is in the process of preparing Comprehensive Bicycle and Pedestrian Plans and would like your input! This survey is intended to obtain information on local bicycling and walking habits, conditions, and needs in order to help guide the plans, which will ultimately produce recommendations to improve bicycling and walkability across the Village. We also want to know why you do not ride a bicycle or walk more and what would entice you to do so. Please take a few minutes to complete the following survey, which will help determine priorities in our community. Please limit one survey completed per household. Instructions for returning a hard copy of the survey are provided at the end of the document, or you may complete this survey on-line at [www.vopnc.org](http://www.vopnc.org)

Are you a resident of the Village of Pinehurst?       Yes    No

If so, what neighborhood or area do you reside in?

- Pinewild     Old Town/Clarendon Gardens/Donald Ross Drive Area     Lake Pinehurst Area
- Village Acres     Pinehurst No. 6    Pinehurst No. 7/CCNC    Morganton Road/Monticello Road Area
- Midland Road/Airport Road Area (Pinehurst Trace/Pinedale/Midland CC)    Other \_\_\_\_\_

If you are not a resident, where do you live? \_\_\_\_\_

List the number of persons in your household including yourself who are in the age brackets below:

0-5\_\_\_ 6-8\_\_\_ 9-12\_\_\_ 13-15\_\_\_ 16-18\_\_\_ 19-21\_\_\_ 22-29\_\_\_ 30-39\_\_\_ 40-49\_\_\_ 50-59\_\_\_ 60+\_\_\_

Have you or a member of your family ridden a bicycle in the last six months?       Yes    No

If no, why not? (check all that apply)

- Too busy, no time    Don't know how to ride a bike    Don't own a bicycle    Not interested
- No adequate facilities near me    No destinations close enough to ride to    It's not safe
- I'm unable    Other \_\_\_\_\_

Would you ride your bike more if: (check all that apply)

- You knew how to ride a bicycle                       There were more clearly-marked trails
- You owned a bike                                               There were wider roads for riding
- You felt safer riding in traffic                               There were more on-road facilities
- Motorists drove slower                                       You felt motorists respected bicyclists
- Street conditions were better                               Only if you couldn't drive
- (such as smooth pavement, less debris)    Other: \_\_\_\_\_

Please select how often you typically bike for the following trip purposes:

Daily	Regularly	Rarely	Never	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Leisure/fitness
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Around your street or neighborhood
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	To or within local parks
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	To a Country Club
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Shopping, errands, dining
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Commuting to school
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Worship, community events
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	On local Trails/Greenways
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Commuting to work
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Visiting friends
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Library
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	To areas outside of Pinehurst
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Other (Please specify) _____

Please select how often you typically walk for the following trip purposes:

Daily	Regularly	Rarely	Never	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Leisure/fitness
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Around your street or neighborhood
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	To or within local parks
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	To a Country Club
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Shopping, errands, dining
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Commuting to school
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Worship, community events
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	On local Trails/Greenways
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Commuting to work
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Visiting friends
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Library
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	To areas outside of Pinehurst
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Other (Please specify) _____

Have you or anyone in your family ever participated in the Walking School Bus program at Pinehurst Elementary School?  Yes  No

Do you think there are enough signalized pedestrian crosswalks in Pinehurst?

Yes  No  Don't Know

Overall, how would you rate the condition of existing pedestrian crosswalks in the Village of Pinehurst?

Excellent  Good  Fair  Poor/not safe  Don't know

Would you or your family members walk or bike to or within any of the previously listed destinations (schools, parks, greenways, etc.) if better and/or safer facilities were provided?  Yes  No

If so, which ones?

\_\_\_\_\_

What routes for alternative transportation (bike lanes, trails, etc. including both on and off road), if any, are most needed in the Village of Pinehurst? (Please list below or skip if you don't know)

\_\_\_\_\_

Are you or anyone in your household in favor of the restoration of the historic sand/clay paths within the Village?  Yes  No  Don't Know

Would you or anyone in your household support tax dollar funded expansion of Village:

Sidewalks  Yes  No Greenway/trails  Yes  No Bike lanes  Yes  No

Please list any physical barriers (gaps in sidewalks, lack of curb cut/ramp, utilities in path, etc.) that you feel may prevent the safe use of existing sidewalks or greenway trails within the Village of Pinehurst. If you don't know of any, leave blank. \_\_\_\_\_

\_\_\_\_\_

What do you feel has been the Village of Pinehurst's best investment in walking or bicycling facilities? If you don't know, leave blank. \_\_\_\_\_

\_\_\_\_\_

Please list any additional comments you may have: \_\_\_\_\_

\_\_\_\_\_

November 1, 2014, is the deadline for returning this survey by mail to the Village of Pinehurst, 395 Magnolia Road, Pinehurst, NC 28374; by FAX to (910) 295-1853; by hand delivery to – Village of Pinehurst **Parks and Recreation Department** or by email to – [parksandrec@vopnc.org](mailto:parksandrec@vopnc.org). Please check the Village website's Calendar of Events for dates of future community meetings.

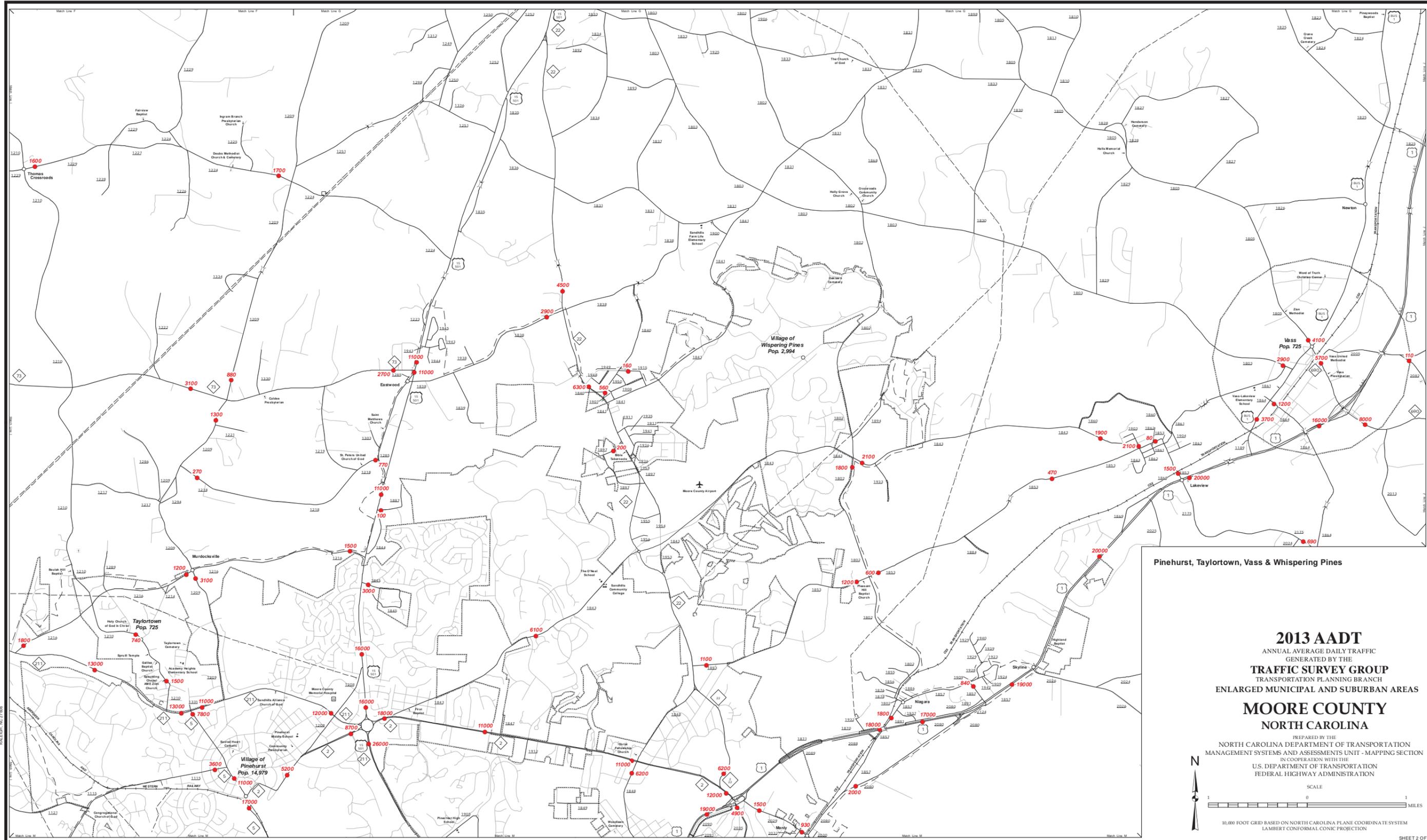
## **APPENDIX B**

# **PROPOSED TRAILS, SIDEWALKS, GREENWAYS AND CROSSWALKS MAP**



## **APPENDIX C**

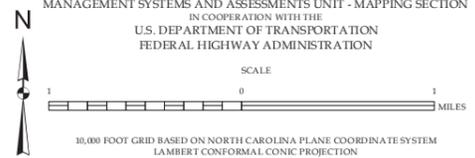
### **NCDOT MAP SHOWING AVERAGE ANNUAL DAILY TRAFFIC COUNTS**



Pinehurst, Taylortown, Vass & Whispering Pines

**2013 AADT**  
 ANNUAL AVERAGE DAILY TRAFFIC  
 GENERATED BY THE  
**TRAFFIC SURVEY GROUP**  
 TRANSPORTATION PLANNING BRANCH  
 ENLARGED MUNICIPAL AND SUBURBAN AREAS  
**MOORE COUNTY**  
 NORTH CAROLINA

PREPARED BY THE  
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 MANAGEMENT SYSTEMS AND ASSESSMENTS UNIT - MAPPING SECTION  
 IN COOPERATION WITH THE  
 U.S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION



COPIES OF THIS MAP ARE AVAILABLE  
 TO THE PUBLIC AT NOMINAL COST.  
 N.C. DEPARTMENT OF TRANSPORTATION  
 4800 BERRY RD SECTION  
 RALEIGH, NC 27606

## **APPENDIX D**

**CORRIDOR PRIORITY CALCULATOR**

**AND**

**PRELIMINARY ESTIMATES OF**

**PROBABLE COSTS**

**Village of Pinehurst  
Comprehensive Pedestrian Plan 2015  
Corridor Priority Calculator**

	Existing Corridor Ped. Facility Condition	Accessible Ped. Facilities	Bicycle Facilities	Traffic Volume	Traffic Speed	Pedestrian Crashes	Vehicular Crashes	**SC/ Public Recommendation	Safety Score	Schools	Medical Facilities	Recreation/Leisure	Retail Center	Downtown	Connectivity Score	Total Score
Point Range	1-3	1-2	1-2	1-4	1-4	#	1-5	1-2		# (4)	1-3	1-3	1-3	1-2		
NC Hwy 211	1	1	1	4	4	0	0	0	10.0	4	3	1	3	1	12	22.0
US 15/501	3	2	2	4	4	0	0	0	13.0	0	3	2	3	1	9	22.0
Airport Road	3	2	2	4	4	0	0	0	13.0	4	1	2	1	1	9	22.0
Dundee Road	2	2	1	2	2	0	0	0	8.0	8	1	1	2	2	14	22.0
NC Hwy 5/Beulah Hill Road	3	2	2	3	3	0	0	0	11.0	0	1	3	1	2	7	18.0
Morganton Road	3	2	2	3	4	0	0	0	12.0	0	1	3	1	1	6	18.0
Linden Road	3	2	2	3	4	0	0	0	12.0	0	1	3	1	1	6	18.0
NC Hwy 2/Midland Road	3	2	2	3	3	0	0	0	11.0	0	1	2	1	1	5	16.0
NC Hwy 2/Palmetto Road	3	2	2	3	3	0	0	0	11.0	0	1	2	1	1	5	16.0
Monticello Drive	3	2	2	3	2	0	0	0	10.0	0	1	3	1	1	6	16.0
Diamondhead Drive	3	2	2	3	2	0	0	0	10.0	0	1	3	1	1	6	16.0
Lake Hills Road	3	2	2	2	4	0	0	0	11.0	0	1	2	1	1	5	16.0
Rattlesnake Trail	3	2	2	2	2	0	0	0	9.0	0	1	3	2	1	7	16.0
Memorial Drive	3	1	2	3	2	0	0	0	9.0	0	3	1	1	1	6	15.0
Juniper Creek Blvd.	3	2	2	2	2	0	0	0	9.0	0	1	3	1	1	6	15.0
McCaskill Road	3	2	2	2	2	0	0	0	9.0	0	1	1	2	2	6	15.0
Page Road	3	2	2	2	2	0	0	0	9.0	0	3	1	1	1	6	15.0
St. Andrews Drive	3	2	2	2	2	0	0	0	9.0	0	1	3	1	1	6	15.0
Burning Tree Road	3	2	2	2	2	0	0	0	9.0	0	1	2	1	1	5	14.0
Chicken Plant Road	3	2	2	2	2	0	0	0	9.0	0	1	2	1	1	5	14.0
Sugar Gum Lane	3	2	2	2	2	0	0	0	9.0	0	1	2	1	1	5	14.0
Spring Lake Drive	3	2	2	2	2	0	0	0	9.0	0	1	1	1	2	5	14.0
Lake Forest Drive	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Lost Tree Road	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Pine Tree Road	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Hilliard Road	3	2	1	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Pinehurst Trace Drive	3	2	1	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
McDairmid Road	3	2	1	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Pine Vista Drive	3	2	2	2	2	0	0	0	9.0	0	1	1	1	1	4	13.0
Gun Club Road	3	1	2	3	2	0	0	0	9.0	0	1	1	1	1	4	13.0

\* = Sidewalks may have been divided by side of street, low priority automatically given to less prominent side of street

\*\* SC = Steering Committee

**Point Range Key**

**Safety**

- Existing Ped. Corridor Facility Condition 1=Good, 2=Fair/incomplete, 3=None/Poor
- Accessible Ped. Facilities 1=Exists, 2=None
- Bicycle Facilities 1=Exists, 2=None
- Traffic Volume 1=0-4,999, 2=5,000-9,999, 3=10,000-11,999, 4=12,000+
- Traffic Speed 1=Under 25mph, 2=25-34mph, 3=35-44mph, 4=45+mph
- Ped. Crashes Number of reported pedestrian crashes from January 2000-June 2012
- Vehicular Crashes 1 = 0-39, 2 = 40-79, 3 = 80-119, 4 = 120-159, 5 = 160+ (10 year time frame from City Police and NCDOT)

**Other**

- POG/Public Recommendation 1=Not from POG or public recommendations, 2=A POG or Public Recommendation

**Connectivity**

- Schools The number of schools located along the corridor X (4)
- Medical Facilities 1=None, 2=Clinics, Private Med. Offices, 3=Hospital or EMS station
- Recreation/Leisure 1=None, 2=(1) park/rec. facility, 3=(2+) park/rec. facility
- Retail Destinations 1=None, 2=(1-4) retail locations, 3=(4+) retail locations
- Near "Downtown" 1=Not in Downtown, 2=Within downtown

The higher the overall score the higher the need for pedestrian facilities, thus higher the priority rating.

**Village of Pinehurst  
Comprehensive Pedestrian Plan 2015  
Preliminary Estimates of Probable Costs**

<b>High Priority Sidewalk Projects</b>											
Type of Facility	Primary Pedestrian Corridor	From	To	Length of 5' Sidewalk (\$50 per lf)	Length of 10' Greenway (\$130 per lf)	Curb Ramps (\$1,500 ea.)	Crosswalks See X-ing Projects Table	Traffic Signals (\$40,000 ea.)	Ped Heads (\$2,400 ea.)	Probable Cost Estimate	
<b>Dundee Road</b>											
1	Sidewalk	Dundee Rd.	NC 211	Craig Rd.	1,303	0	0	0	0	0	\$65,150.00
<b>Subtotal Sidewalk Improvements</b>				<b>1,303</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$65,150.00</b>	
<b>NC 5</b>											
1	Sidewalk	NC 5	NC 211	Linden Rd.	3,528	0	0	0	0	0	\$176,400.00
1	Sidewalk	NC 5	Linden Rd	NC 2	1,865	0	0	0	0	0	\$93,250.00
2	Sidewalk	NC 5	NC 2	Morganton Road	3,200	0	0	0	0	0	\$160,000.00
3	Sidewalk	NC 5	Morganton Rd.	Monticello Dr.	3,373	0	0	0	0	0	\$168,650.00
4	Sidewalk	NC 5	Monticello Dr.	Dawkins St.	3,763	0	0	0	0	0	\$188,150.00
4	Sidewalk	NC 5	Dawkins St.	Linden Rd.	2,168	0	0	0	0	0	\$108,400.00
<b>Subtotal Sidewalk Improvements</b>				<b>17,897</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$801,600.00</b>	
<b>Morganton Road</b>											
1	Sidewalk	Morganton Rd.	NC 5	Monticello Dr.	5,427	0	0	0	0	0	\$271,350.00
2	Sidewalk	Morganton Rd.	Monticello Dr.	CCNC Entrance	3,679	0	1	0	0	0	\$185,450.00
<b>Subtotal Sidewalk Improvements</b>				<b>9,106</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$456,800.00</b>	
<b>Total Pedestrian Improvements for High Priority Sidewalk Projects:</b>				<b>28,306</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,323,550.00</b>	

MEDIUM PRIORITY SIDEWALKS PROJECTS											
	Type of Facility	Primary Pedestrian Corridor	From	To	LF of New or Repaired Sidewalks	Length of 10' Greenway (\$130 per lf)	# of Curb Ramps along Corridor	Crosswalks See X-ing Projects Table	Traffic Signals (\$40,000 ea.)	Ped Heads (\$2,400 ea.)	Probable Cost Estimate
<b>Monticello Drive</b>											
1	Sidewalk	Monticello Dr.	NC 5	Morganton Rd.	8,833	0	0	0	0	0	\$441,650.00
<b>Subtotal Sidewalk Improvements</b>					<b>8,833</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$441,650.00</b>
<b>Diamondhead Drive</b>											
1	Sidewalk	Diamondhead Drive	Burning Tree Rd.	Lake Hills Road	8,368	0	0	0	0	0	\$418,400.00
<b>Subtotal Sidewalk Improvements</b>					<b>8,368</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$418,400.00</b>
<b>Lake Hills Road</b>											
1	Sidewalk	Lake Hills Road	Diamondhead Dr.	NC 5	2,466	0	0	0	0	0	\$123,300.00
<b>Subtotal Sidewalk Improvements</b>					<b>2,466</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$123,300.00</b>
<b>Rattlesnake Trail</b>											
1	Sidewalk	Rattlesnake Trail	NC 211	Woods Rd./Magnolia	730	0	0	0	0	0	\$36,500.00
<b>Subtotal Sidewalk Improvements</b>					<b>730</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$36,500.00</b>
<b>Memorial Drive</b>											
1	Sidewalk	Memorial Drive	End of ex. sw on NC 211	Driveway of First Health Fitness Cen.	1,200	0	0	0	0	0	\$60,000.00
2	Sidewalk	Memorial Drive	Employee Parking Lot Entrance	Existing Crosswalk	670	0	0	0	0	0	\$33,500.00
3	Sidewalk	Memorial Drive	Existing Crosswalk	15/501	1,175	0	0	0	0	0	\$58,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>3,045</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$152,250.00</b>
<b>Juniper Creek Boulevard/Spring Lake Road</b>											
1	Sidewalk	Juniper Creek Blvd	US 15/501	Glen Abby Ln.	2,717	0	0	0	0	0	\$135,850.00
2	Sidewalk	Juniper Creek Blvd	Glen Abby Ln.	Norfolk Court	4,135	0	0	0	0	0	\$206,750.00
3	Sidewalk	Juniper Creek Blvd	Norfolk Court	Deerwood Ln.	4,910	0	0	0	0	0	\$245,500.00
4	Sidewalk	Juniper Creek Blvd	Deerwood Ln.	Hampshire Ln. (West)	3,142	0	0	0	0	0	\$157,100.00
5	Sidewalk	Juniper Creek Blvd	Hampshire Ln. (West)	Bedford Cir. (East)	2,937	0	0	0	0	0	\$146,850.00
6	Sidewalk	Juniper Creek Blvd	Bedford Cir. (East)	Spring Lake Road	1,152	0	0	0	0	0	\$57,600.00
6	Sidewalk	Spring Lake Road	Juniper Creek Blvd	US 15/501	443	0	0	0	0	0	\$22,150.00
<b>Subtotal Sidewalk Improvements</b>					<b>19,436</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$971,800.00</b>

<b>McCaskill Road</b>											
1	Sidewalk	McCaskill Road	Dundee Rd.	Magnolia Rd.	1,393	0	0	0	0	0	\$69,650.00
2	Sidewalk	McCaskill Road	Magnolia Rd.	NC 5	2,111	0	0	0	0	0	\$105,550.00
<b>Subtotal Sidewalk Improvements</b>					<b>3,504</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$175,200.00</b>
<b>Page Road</b>											
1	Sidewalk	Page Road	Memorial Dr.	US 15/501	1,133	0	0	0	0	0	\$56,650.00
<b>Subtotal Sidewalk Improvements</b>					<b>1,133</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$56,650.00</b>
<b>Burning Tree Road</b>											
1	Sidewalk	Burning Tree Road	Diamondhead Dr.	Pine Vista Dr.	6,420	0	0	0	0	0	\$321,000.00
2	Sidewalk	Burning Tree Road	Pine Vista Dr.	Lake Forest Rd.	4,258	0	0	0	0	0	\$212,900.00
<b>Subtotal Sidewalk Improvements</b>					<b>10,678</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$533,900.00</b>
<b>St. Andrews Drive</b>											
1	Sidewalk	St. Andrews Drive	Linden Rd.	Lake Forest Rd.	2,950	0	0	0	0	0	\$147,500.00
2	Sidewalk	St. Andrews Drive	Lake Forest Rd.	Pine Tree Rd.	6,200	0	0	0	0	0	\$310,000.00
3	Sidewalk	St. Andrews Drive	Pine Tree Rd.	Lake Hills Dr.	4,360	0	0	0	0	0	\$218,000.00
<b>Subtotal Sidewalk Improvements</b>					<b>13,510</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$675,500.00</b>
<b>Lost Tree Road</b>											
1	Sidewalk	Lost Tree Road	St. Andrews Dr.	McKenzie Rd.	1,955	0	0	0	0	0	\$97,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>1,955</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$97,750.00</b>
<b>Pine Tree Road</b>											
1	Sidewalk	Lost Tree Road	St. Andrews Dr.	NC 5	526	0	0	0	0	0	\$26,300.00
<b>Subtotal Sidewalk Improvements</b>					<b>526</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$26,300.00</b>
<b>Spring Lake Drive</b>											
1	Sidewalk	Spring Lake Drive	US 15/501	Longleaf Dr.	1,859	0	0	0	0	0	\$92,950.00
2	Sidewalk	Spring Lake Drive	Longleaf Dr.	Gun Club Rd.	3,680	0	0	0	0	0	\$184,000.00
<b>Subtotal Sidewalk Improvements</b>					<b>5,539</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$276,950.00</b>
<b>Total Pedestrian Improvements for Medium Priority Sidewalk Projects:</b>					<b>79,723</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$3,986,150.00</b>

LOW PRIORITY SIDEWALKS PROJECTS											
	Type of Facility	Primary Pedestrian Corridor	From	To	LF of New or Repaired Sidewalks	Length of 10' Greenway (\$130 per lf)	# of Curb Ramps along Corridor	Crosswalks See X-ing Projects Table	Traffic Signals (\$40,000 ea.)	Ped Heads (\$2,400 ea.)	Probable Cost Estimate
<b>Lake Forest Drive</b>											
1	Sidewalk	Lake Forest Drive	St. Andrews Dr.	Sugar Gum Ln.	4,124	0	0	0	0	0	\$206,200.00
<b>Subtotal Sidewalk Improvements</b>					<b>4,124</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$206,200.00</b>
<b>Sugar Gum Lane</b>											
1	Sidewalk	Sugar Gum Lane	Lake Forest Dr.	St. Andrews Dr.	3,066	0	0	0	0	0	\$153,300.00
<b>Subtotal Sidewalk Improvements</b>					<b>3,066</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$153,300.00</b>
<b>Hilliard Road</b>											
1	Sidewalk	Hilliard Road	McDiarmid Rd.	Turner Rd.	435	0	0	0	0	0	\$21,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>435</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$21,750.00</b>
<b>McDairmid Road</b>											
1	Sidewalk	McDairmid Road	Airport Rd.	Hilliard Rd.	2,059	0	0	0	0	0	\$102,950.00
<b>Subtotal Sidewalk Improvements</b>					<b>2,059</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$102,950.00</b>
<b>Pinehurst Trace Drive</b>											
1	Sidewalk	Pinehurst Trace Drive	Turner Rd.	US 15/501	1,575	0	0	0	0	0	\$78,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>1,575</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$78,750.00</b>
<b>Pine Vista Drive</b>											
1	Sidewalk	Pine Vista Drive	Linden Rd.	Burning Tree Rd.	1,665	0	0	0	0	0	\$83,250.00
2	Sidewalk	Pine Vista Drive	Burning Tree Rd.	Lake Shore Dr.	2,527	0	0	0	0	0	\$126,350.00
<b>Subtotal Sidewalk Improvements</b>					<b>4,192</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$209,600.00</b>
<b>Gun Club Road</b>											
1	Sidewalk	Gun Club Road	Village Greenway	Spring Lake Dr.	555	0	0	0	0	0	\$27,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>555</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$27,750.00</b>
<b>Total Pedestrian Improvements for Medium Priority Sidewalk Projects:</b>					<b>16,006</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$800,300.00</b>

Intersection Crossing Projects											
Type of Facility	Intersection of...	Crossing	Along	Pedestrian Signage (\$1,200)	Reduction of Curb Radii or refuge island (\$15,000)	Curb Ramps (\$1,500 ea.)	Crosswalks (including stop bar/relocate) (\$350 ea.)	Traffic Signals (\$40,000 ea.)	Ped Heads (\$2,400 ea.)	Probable Cost Estimate	
<b>Juniper Lake Road</b>											
1	Painted Crosswalk	Juniper Lake Rd./US 15/501	Juniper Lake Rd.	US 15/501	2	0	0	1	0	0	\$2,750.00
<b>Subtotal Intersection Improvements</b>					<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>\$2,750.00</b>
<b>Spring Lake Road</b>											
1	Painted Crosswalk	US 15/501/Spring Lake Rd.	Spring Lake Rd.	US 15/501	2	0	0	1	0	0	\$2,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>\$2,750.00</b>
<b>US 15/501</b>											
1	Hawk Signal/Crosswalk	US 15/501/Spring Lake Dr.	US 15/501	Spring Lake Dr.	3	0	2	2	1	2	\$52,100.00
2	Signalized Crosswalk	US 15/501/Forest Dr. and Juniper Creek Blvd.	US 15/501	Forest Dr./Juniper Creek Blvd.	4	0	0	2	0	4	\$15,100.00
3	Signalized Crosswalk	US 15/501/Pinehurst Trace and Memorial Dr.	US 15/501	Pinehurst Trace and Memorial Dr.	4	0	2	3	0	2	\$13,650.00
<b>Subtotal Intersection Improvements</b>					<b>11</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>1</b>	<b>8</b>	<b>\$80,850.00</b>
<b>Page Road</b>											
1	Signalized Crosswalk	Page Rd./Memorial Dr.	Page Rd. and Memorial Dr.	Page Rd. and Memorial Dr.	4	0	2	4	0	8	\$28,400.00
<b>Subtotal Sidewalk Improvements</b>					<b>4</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>\$28,400.00</b>
<b>Spring Lake Drive</b>											
1	Painted Crosswalk	Gun Club Rd./Spring Lake Dr.	Spring Lake Dr.	Near Porkchop	2	0	0	1	0	0	\$2,750.00
<b>Subtotal Intersection Improvements</b>					<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>\$2,750.00</b>
<b>NC 5</b>											
1	Painted Crosswalk	NC 5/McCaskill Rd.	McCaskill Rd.	NC 5	5	0	0	5	0	0	\$7,750.00
2	Signalized Crosswalk	NC 5/Lake Hills Dr. and Monticello	NC 5	Lake Hills Dr. and Monticello Drive	4	0	0	1	0	2	\$9,950.00
<b>Subtotal Intersection Improvements</b>					<b>9</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>\$17,700.00</b>

Linden Road											
1	Hawk Signal/Crosswalk	Linden Rd./McKenzie Rd.	Linden Rd.	McKenzie	4	0	0	2	1	2	\$50,300.00
<b>Subtotal Sidewalk Improvements</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>\$50,300.00</b>
Burning Tree Road											
1	Painted Crosswalk	Burning Tree Rd./Linden Rd.	Burning Tree Rd.	Linden Rd.	2	0	0	1	0	0	\$2,750.00
2	Painted Crosswalk	Burning Tree Rd./Diamondhead	Burning Tree Rd. and Diamondhead	Burning Tree Rd./Diamondhead Dr.	4	0	0	4	0	0	\$6,200.00
<b>Subtotal Sidewalk Improvements</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>\$8,950.00</b>
McCaskill Road											
1	Painted Crosswalk	McCaskill Rd./Magnolia Rd.	McCaskill Rd.	Magnolia Rd.	4	0	1	1	0	0	\$6,650.00
<b>Subtotal Sidewalk Improvements</b>					<b>4</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>\$6,650.00</b>
Palmetto Road (NC 2)											
1	Painted Crosswalk	Palmetto Rd./Fields/Muster Brnch	Palmetto Rd.	Fields Rd. and Muster Branch Rd.	2	0	0	1	0	0	\$2,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>\$2,750.00</b>
St. Andrews Drive											
1	Painted Crosswalk	St. Andrews Dr./Lake Forest Dr.	St. Andrews Dr.	Lake Forest Dr.	4	0	0	2	0	0	\$5,500.00
2	Painted Crosswalk	St. Andrews Dr./Pine Tree Rd.	St. Andrews Dr.	Pinetree Rd.	2	0	0	1	0	0	\$2,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>6</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>\$8,250.00</b>
Pinetree Road											
1	Painted Crosswalk	NC 5/Pinetree Rd.	Pinetree Rd.	NC 5	2	0	0	1	0	0	\$2,750.00
<b>Subtotal Sidewalk Improvements</b>					<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>\$2,750.00</b>
Monticello Drive											
1	Signalized Crosswalk	Monticello Dr./Morganton Rd.	Monticello Dr. and Morganton Rd.	Monticello Dr. and Morganton Rd.	4	0	0	4	0	8	\$25,400.00
<b>Subtotal Intersection Improvements</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>\$25,400.00</b>
Morganton Road											
1	Painted Crosswalk	Morganton Rd./Forest Hills Dr.	Morganton Rd. and Forest Hills Dr.	Morganton Rd. and Forest Hills Dr.	4	0	0	5	0	0	\$6,550.00
<b>Subtotal Intersection Improvements</b>					<b>4</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>\$6,550.00</b>
<b>Total Project Units</b>					<b>62</b>	<b>0</b>	<b>7</b>	<b>42</b>	<b>2</b>	<b>28</b>	<b>\$246,800.00</b>

Greenway Projects											
	Type of Facility	Primary Pedestrian Corridor	From	To	LF of New or Repaired Sidewalks	Length of 10' Paved Greenway (\$130 per lf)	Curb Ramps (\$1,500 ea.)	Crosswalks (\$200 ea.)	Traffic Signals	Pedestrian Signals	Probable Cost Estimate
<b>US 15/501</b>											
1	Greenway	US 15/501	Juniper Lake Rd.	Spring Lake Dr.	0	1669	0	0	0	0	\$216,970.00
2	Greenway	US 15/501	Spring Lake Dr.	Forest Dr.	0	2922	0	0	0	0	\$379,860.00
3	Greenway	US 15/501	End of Ex. Greenway Trail	Page Rd.	0	666	0	0	0	0	\$86,580.00
<b>Subtotal Greenway Improvements</b>					<b>0</b>	<b>5,257</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$683,410.00</b>
<b>Chicken Plant Road</b>											
1	Greenway	Chicken Plant Road	Linden Rd.	West Community Park	0	8470	0	0	0	0	\$1,101,100.00
<b>Subtotal Sidewalk Improvements</b>					<b>0</b>	<b>8,470</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,101,100.00</b>
<b>Linden Road</b>											
1	Greenway	Linden Rd.	Pine Vista Drive	Sandy Woods Farm Rd.	0	6429	0	0	0	0	\$835,770.00
2	Greenway	Linden Rd.	Sandy Woods Farm Rd.	Burning Tree Rd.	0	3517	0	0	0	0	\$457,210.00
3	Greenway	Linden Rd.	Burning Tree Rd.	NC 5	0	9914	0	0	0	0	\$1,288,820.00
<b>Subtotal Greenway Improvements</b>					<b>0</b>	<b>19,860</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,581,800.00</b>
<b>Turner Road</b>											
1	Paved Cut-through	Turner Rd./Pinehurst Trace	(land acquisition and paved sw)	Turner Rd.	185	0	0	2	0	0	\$29,650.00
<b>Subtotal Sidewalk Improvements</b>					<b>185</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>\$29,650.00</b>
<b>Total Pedestrian Improvements for Medium Priority Greenway Projects:</b>					<b>185</b>	<b>33,587</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>\$4,395,960.00</b>