



Old Fort, North Carolina

## Comprehensive Pedestrian Master Plan



Division of  
Bicycle &  
Pedestrian  
Transportation

**WITHERS & RAVENEL**  
ENGINEERS | PLANNERS | SURVEYORS

# **Prepared for the Town of Old Fort**

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## EXECUTIVE SUMMARY

### VISION STATEMENT

***“It is the vision of Old Fort to promote a safe and attractive system of accessible and sustainable on street and off street recreational paths that provide connectivity between various uses and destinations while focusing on the unique historical significance and musical heritage that Old Fort has to offer. The Town strives to continue to provide opportunities for outdoor recreation and education through appropriate wayfinding signage and an inviting pedestrian and pet friendly environment.”***

With the help of a \$24,800 Bicycle and Pedestrian Planning Grant Initiative from the North Carolina Department of Transportation (NCDOT), the Town of Old Fort is making their vision a reality by developing a Comprehensive Pedestrian Master Plan. Through the help of a steering committee comprised of community members and local business owners the Pedestrian Plan began to take shape. In addition to several steering committee meetings, public meetings were held as well as attendance at local festivals and gatherings to gain valuable public input from the community.

### DEMOGRAPHICS

The Town of Old Fort is located in McDowell County, North Carolina. McDowell County, like much of the Western North Carolina, is characterized by an abundance of breathtaking mountain views and natural environmental features. This area is experiencing growth in eco-tourism which will impact Old Fort’s population, traffic, and public facilities. The 2000 US Census Bureau reports that Old Fort is home to 963 people. As Old Fort grows and adapts, a clear and defined pedestrian environment should be developed simultaneously with growth to safely connect residents to destinations and points of interest.

Walking is a primary mode of transportation for some portions of the population as approximately 28% of the Old Fort population either have no car or choose to walk to their destinations.

Children aged 18 years or younger also account for 23% of the Town’s current population. It is important to provide safe and efficient facilities for these user groups as well as for those who walk for recreational and fitness purposes.

The Town of Old Fort’s Comprehensive Pedestrian Master Plan will help guide the improvement and development of pedestrian facilities and provide networks to help meet the future needs and desires of community residents and visitors, and is intended to reflect the Town’s character as a historic small town in Western North Carolina.

A map of the study area for this pedestrian master plan can be found on

page 4 of this document.

### EXISTING PLANS/ POLICIES

Old Fort's Comprehensive Pedestrian Master Plan is meant to complement previous planning efforts and provide additional information to help expand existing pedestrian facilities. The Town of Old Fort and McDowell County have a variety of ongoing plans, programs, and policies which effect the safety and appearance of the pedestrian environment. These tools deal with open space development and pedestrian connectivity, address the goals of growth, development, zoning, transportation and the revitalization of downtown Old Fort. The following public documents directly affect the future of Old Fort's pedestrian system and were reviewed by the Design Team in writing the Comprehensive Pedestrian Master Plan:

- North Carolina State Transportation Improvement Program Plan (July 2007)
- Town of Old Fort Design & Planning Report (NCSU)
- McDowell County Comprehensive Parks & Recreation Master Plan
- Mill Creek Greenway Trail Master Plan
- Old Fort's Land Use Plan

The Town and citizens of Old Fort have shown their support in creating a more pedestrian friendly community. This is apparent in the 2009 NCSU Old Fort Design and Planning Report where the desire for pedestrian friendly commercial areas, pedestrian scale buildings, and new sidewalks were noted. A commitment to implementing the NCSU Planning Report will help insure that the Town grows in a positive direction and will offer pedestrians an environment where walking is accepted and encouraged.

This Comprehensive Pedestrian Master Plan will provide conceptual facility standards and general design guidelines for future development, as well as conceptual retrofits of current facilities in need of improvement or repair. The Plan will also provide recommendations regarding new facilities and programs, as well as guidance in project prioritization. Finally, basic cost estimates will be provided as well as an extensive list of potential funding sources for pedestrian related projects.

### EXISTING NETWORK

The existing pedestrian system in Old Fort is comprised of inconsistent sidewalks and no greenways or other multi use trails except those that exist at Old Fort Elementary School. Currently, the downtown area is the most pedestrian friendly area in all of Old Fort due to wider shoulders and multiple destinations. Sidewalks are present throughout this section of Old Fort, however, many are in disrepair, or lack adequate width to meet today's ADA standards. A section of sidewalk along the main intersection in town that has a significant vertical drop to the road is currently under construction to repair this unsafe condition. Clusters of commercial uses including the Post Office and grocery store are within close proximity to the core downtown area and can be accessed via a partial sidewalk network that contains gaps and sidewalk segments that alternate on either side of the street. Crosswalks and pedestrian signalization are also lacking

as are traffic calming devices in areas of high use and high traffic speed.

Outside the central core of Old Fort, the rural nature becomes more evident. Houses are organized along road corridors and the few subdivisions are not based on a grid street system. Very few subdivisions contain sidewalks or other pedestrian facilities. Links between these neighborhoods are mostly in the form of roadways with narrow shoulders, winding roads and no sidewalks. Some of the residential areas in Old Fort are within walking distance of commercial areas, but the lack of sidewalks, crosswalks, and other safety measures impede and discourage pedestrian travel. The absence of a greenway connection to public facilities also limits public and tourist access by any means other than car.

Commercial areas in town should receive a higher intensity of pedestrian facilities such as wider sidewalks, crosswalks, pedestrian signalization and other necessary amenities to protect and safeguard pedestrians in these areas. Additionally, routes to these commercial areas from residential neighborhoods and other destinations, such as schools, attractions and community centers, need to be incorporated into the pedestrian plan to encourage interconnectivity.

For a detailed map of existing sidewalk and bicycle connections, refer to the Town of Old Fort Existing Conditions map on p.17 of this document.

#### PUBLIC INVOLVEMENT

In developing this Comprehensive Pedestrian Master Plan, the Design Team met with a **Steering Committee** which was comprised of representatives from NC DOT, Old Fort, the Isothermal Planning & Development Commission, the McDowell County health center and interested citizens. The Steering Committee held a total of four meetings, two in 2009 and two in 2010. The Steering Committee offered initial insight and analysis of the Town and its needs, input on the Vision Statement for the Comprehensive Pedestrian Master Plan and feedback throughout the process.

The Design Team also provided information and gathered input from the public during a joint meeting held on the Mill Creek Greenway Trail Master Plan. The Design Team gathered additional input by having a booth set up at Old Fort's OktoberFest in 2010 and distributed survey questionnaires at the festival, public meetings and schools.

All of these methods provided a thorough understanding of the needs, desires and concerns of the community and were reflected in the final Pedestrian System Plan, shown on page 26 of this document.

### PEDESTRIAN PROJECT RECOMMENDATIONS

The Comprehensive Pedestrian Master Plan identifies existing corridors in immediate need of immediate improvement as well as locations in need of spot improvements and locations for future improvements. These two groups of applications have been classified as Short Term projects and Long Term projects. The Short Term and Long Term project recommendations are discussed in further detail on the following page. Areas in immediate need of improvement, which are incorporated into the larger Pedestrian System Plan on page 26 include:

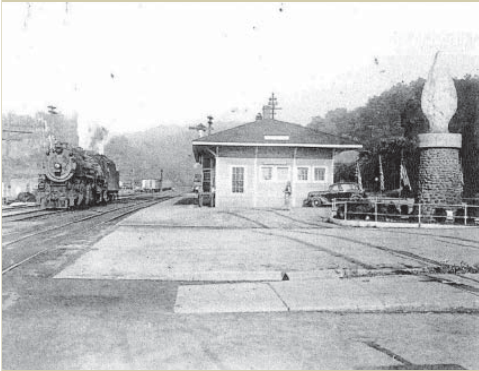
#### PEDESTRIAN CORRIDORS

- E. Main Street (US Hwy 70)
- Catawba Avenue
- W. Main Street (US Hwy 70)
- Salisbury Street
- Water Street
- Spring Street
- Mountain Gateway Museum

#### SPOT IMPROVEMENTS

- Bridge on Commerce Street
- Intersection Improvements throughout town
- I-40 Overpass
- Railroad Tracks
- ADA Compliance throughout town

## INTRODUCTION



*Historic photo of train depot  
and arrowhead statue*

### 1.1 PROJECT INTRODUCTION

The Town of Old Fort Comprehensive Pedestrian Master Plan was made possible through a \$24,800 Bicycle and Pedestrian Planning Grant Initiative funded through the North Carolina Department of Transportation (NCDOT). The purpose of this Pedestrian Master Plan is creating a document through proper planning to improve the accessibility, connectivity, safety, and overall functionality of the pedestrian environment within the Town of Old Fort. A dedication to providing facilities and amenities for active lifestyles and access to destinations will positively contribute to the mental and physical health of residents as well as their overall quality of life. Pedestrian facilities not only make it easier and safer for people to walk to destinations or for recreation, these facilities also make life more enjoyable and pleasant.

Pedestrian and bicycle issues are increasingly gaining notice and many public agencies, special interest groups, and municipalities are moving to integrate pedestrians and bicyclists into their comprehensive transportation systems. The Town of Old Fort Comprehensive Pedestrian Master Plan is an example of this growing awareness and provides an opportunity for the Town to plan for the future needs of its own present and future residents.

The Town of Old Fort is located in McDowell County, North Carolina. McDowell County, like much of Western North Carolina, is characterized by dramatic topography and smaller towns nestled amongst the rolling hills of the Blue Ridge Mountains. This area is experiencing increased tourism as a result of the rich early American history, culture and outdoor recreational opportunities. The many streams and rivers that flow through the region used by freshwater anglers and aquatic recreation enthusiasts contribute to the moderate growth impacting Old Fort's population, traffic, and public facilities. This Pedestrian Master Plan will help guide the improvement and development of pedestrian facilities and provide networks to help meet the future needs and desires of community residents and visitors. By planning now, the Town of Old Fort can implement the improvements and new pedestrian facilities recommended in this Master Plan in a cost efficient and timely manner. This Comprehensive Master Plan is meant to complement previous planning efforts and provide additional information to help expand existing pedestrian facilities.

This Master Plan will provide conceptual facility standards and general design guidelines for future development, as well as conceptual retrofits of current facilities in need of improvement or repair. The Plan will also provide recommendations regarding new facilities and programs, as well as guidance in project prioritization. Finally, basic cost estimates will be provided as well as potential funding sources for pedestrian related projects.



## 1.2 VISION STATEMENT

The Town of Old Fort's Comprehensive Pedestrian Master Plan is intended to reflect the Town's character as a quaint Western North Carolina community with rich early American history. Old Fort, named for its position as the once westernmost outpost for pioneers in the 1700's, now greets visitors with a 30' tall granite arrowhead landmark symbolizing the peace achieved between early pioneers and Native Americans, and today still continues to successfully balance adaptations for its future while preserving its historic charm.

***"It is the vision of Old Fort to promote a safe and attractive system of accessible and sustainable on street and off street recreational paths that provide connectivity between various uses and destinations while focusing on the unique historical significance and musical heritage that Old Fort has to offer. The Town strives to continue to provide opportunities for outdoor recreation and education through appropriate wayfinding signage and an inviting pedestrian and pet friendly environment."***



Existing Pedestrian Facilities



Existing Sidewalks in Downtown Old Fort



*Pedestrians use sidewalks for exercise.  
Photo Credit: D. Crites*



*Sidewalks provide a designated place for pedestrians to walk to their destinations and chat with friends.*

### 1.3 SCOPE AND PURPOSE

The purpose of the Town of Old Fort's Comprehensive Pedestrian Master Plan is to improve the quality and connectivity of Old Fort's pedestrian environment by focusing on both on-street sidewalks and off-street pedestrian paths to create a safe, accessible, and functional pedestrian system that meets bicyclists needs as well. The physical, social, and economic benefits of a walkable community are described throughout the Pedestrian Master Plan. This document is divided up into sections to provide the following:

#### Existing Conditions:

- Evaluate any current programs, plans, and policies affecting the pedestrian environment.
- An existing sidewalk facility inventory and evaluation has also been conducted and incorporated into this Master Plan. A copy of this Existing Conditions Map is on page 17.

#### Inventory of Existing Conditions and Analysis:

- Pedestrian routes, Barriers and Constraints
- Pedestrian facility standards and design guidelines
- Priorities
- Funding sources
- Project Recommendations

The Town of Old Fort is located 24 miles east of Asheville, NC along the I-40 Hwy corridor just south of the Pisgah National Forest. The larger City of Marion is located to the east of Old Fort and the Town of Black Mountain to the immediate west. The project study area consists of the Town of Old Fort town limits while analyzing the feasibility of regional connections. The map on the previous page illustrates the project scope of this Master Plan.

The intent of this Pedestrian Master Plan is not to provide specific development design standards for the Town of Old Fort, but to develop guidelines and recommendations that may be followed to create an integrated and cohesive town in functionality and aesthetic appearances. Development Standards and Code Regulations may be developed further as a result of the recommendations outlined in this Master Plan.



## OLD FORT PEDESTRIAN



Aerial image of Old Fort with orange outline indicating the Town Limits/Study Area



*Pedestrian facilities can contribute to and reinforce the character and history of a town. Photo Credit: D. Burden*



*A variety of pedestrian facilities are attractive amenities to residents and visitors. Photo Credit: D. Burden*



*Supporting pedestrians and bicyclists reduces the amount of vehicular traffic. Photo Credit: R. Huegerich*

## 1.4 HISTORY and BENEFITS OF PEDESTRIAN FACILITIES

With increased pedestrian facilities and amenities, the Town of Old Fort will gain many physical, social, and economic benefits for the Town as well as its community residents and visitors. For example, benefits of pedestrian facilities and pedestrian friendly communities include:

### **Physical:**

- Reductions in automobile air and noise pollution
- Improved health of community residents
- Improved safety and accessibility

### **Social:**

- Enhanced community environment, “livability” and quality of life
- Increased community interaction
- Creates a community identity

### **Economic:**

- Attractive amenities for visitors
- Reductions in vehicular traffic
- Quality of life contributes to economic potential
- Pedestrian facilities and connectivity benefit businesses and increase accessibility

**Reduction in air and noise pollution:** Walking uses calories, not fossil fuels. Motor vehicle fossil fuel emissions create a substantial amount of air pollution and 60% of the pollution created occurs in the first few minutes of vehicular movement according to the web site: [walkinginfo.org](http://walkinginfo.org). The quality of the physical environment greatly contributes to the quality of life and health of residents. When air and noise pollution is low, the emotional and physical health of residents is heightened.

**Improved health of community residents:** Contaminated air quality, as well as inactivity and sedentary lifestyles, are becoming more and more common in our society. Regular physical activity can reduce the risk of heart disease, stroke, hypertension, high cholesterol, and diabetes among other diseases. Regular exercise can also contribute to overall mental health by reducing anxiety and depression.

Walking is one form of exercise that not only allows people to reach their desired destination, but also improves health and quality of life. Many experts believe that increasing active transportation such as walking, cycling, running and skating is the most practical and effective way to improve public fitness. One major study concluded, “...regular walking and cycling are the only realistic way that the population as a whole can get the daily half hour of moderate exercise which is the minimum level needed to keep reasonably fit...” (Physical Activity Task Force, 1995).

### **Enhanced community environment, “livability” and quality of life:**

The ability to reach a destination through walking rather than driving a motor vehicle has many social benefits for a community. Pedestrian facilities contribute to and encourage building social ties among members



of the community. Walkable communities, including both sidewalks and greenways provide facilities which increase the amount of face to face interaction among community members. Additionally, walkable communities encourage increased time dedicated to exercise and recreation and visibility within communities. Increased visibility in turn increases safety. These benefits all contribute to the overall quality of life for residents as well as the “livability” of a place.

**Increased community interaction:** Residents living and working in walkable communities interact at a much higher rate due to their incidental contact with other residents. This interaction and visibility enhances the overall sense of community as well as the safety of an area. Pedestrian facilities that link destinations such as retail centers, parks, greenways, and schools also encourage interaction within a community.

**Creates a community identity:** Pedestrian facilities can be incorporated in a manner that reflect a particular history or geographic region of a community. Materials used for sidewalks, crosswalks, and pedestrian lighting can reinforce a community’s identity. Additionally street trees can be native to the community and contribute to the overall identity of the community. Residents can take pride in how their community looks, but also in their safe and accessible pedestrian system.

**Attractive amenities for visitors:** Visitors are attracted to places that are easy and safe to get around. By providing a variety of pedestrian facilities such as formalized routes, greenways, multi-use paths, wide sidewalks, and vehicle separation, a community can diversify the pedestrian experience and satisfy the needs of all visitors and residents. In addition, when visitors feel more comfortable walking through town, they take their time visiting local businesses and supporting the local economy.

**Reductions in vehicular traffic:** Pedestrians require very little space in comparison to vehicles. Walking is a viable means of transportation over short distances and reduces the volume of traffic in addition to the need for infrastructure such as parking spaces and extra lanes. Reducing vehicular traffic increases the safety of the streets for pedestrians and bicyclists.

The Town of Old Fort has now completed sufficient planning and taken the proper steps to achieve the benefits described above. The Town has had many partners and advocates throughout the planning process including NCDOT, the Isothermal Rural Planning Organization, McDowell County Staff, Town Staff and local officials. Local organizations and Citizen initiatives groups such as The Old Fort Mountain Heritage Alliance and Hand Made in America have also provided some documents to assist in initial data gathering. These documents will be discussed in further detail in Chapter-3, Current Plans, Programs, and Policies.

***GOALS***

## 1.5 GOALS AND OBJECTIVES

The goal of this Master Plan is to **make the Town of Old Fort a safer and more accessible pedestrian environment while also improving its aesthetic and historical characteristics and assets.** The goal is based on the social, environmental, and economic benefits of walkable communities. The objectives below were developed by the Steering Committee with the help of planning consultants from Withers & Ravenel and NCDOT. It is not the intent of this Pedestrian Master Plan to develop Standards and Design Guidelines for the Town of Old Fort, however, this Master Plan will guide and direct these development policies as needed. These goals and objectives will guide the development and implementation of this Master Plan.

In an effort to achieve the goal of creating a more walkable and pedestrian friendly community, these objectives of the Old Fort Pedestrian Master Plan include the following:

***OBJECTIVES***

- Develop an attractive and comprehensive network of pedestrian facilities that are affordable and maintainable.
- Identify gaps within the existing pedestrian system, as well as develop possible updated guidelines for new development.
- Provide solutions for safe crossings and sidewalk connections at schools, commercial centers, parks and recreation facilities, and at major barriers including bridges, underpasses and major thoroughfares.
- Provide methods for the Town to increase public awareness of pedestrian routes through means such as maps and signage.
- Provide methods to improve safe accessibility for people of all ages and abilities.
- Enable the Town to ensure that existing and new pedestrian facilities such as street crossings, sidewalks, etc., are safe and meet minimum ADA standards.
- Implement traffic calming measures and pedestrian facilities in conjunction with roadway expansion projects, particularly in areas near schools and neighborhoods.
- Provide ways to enhance vehicle and pedestrian separation with the use of planting strips.

## EXISTING CONDITIONS

### 2.1 OVERVIEW

The Town of Old Fort is located in McDowell County in close proximity to the Pisgah National Forest. The natural environment, flowing rivers and scenic topography in and around Old Fort provides both aesthetic character and outdoor recreational opportunities to residents as well as visitors. The Town was settled in the 1700's as the westernmost outpost for pioneers and frontiersmen and was later influenced by the introduction of rail in 1869 and again in 1875 as the rail line extended to Asheville. The furniture and textile industry played a large role in shaping the Town with the onset of active freight-lines. As Old Fort became home to the textile and manufacturing industries its rich history was preserved in the historical and culturally significant character of the original Depot and Mountain Gateway Museum, which is evident at the core of downtown and along the Mill Creek corridor where original houses from the late 18th Century still stand. Today, the Town is known for its culture, weekly music festivals, local and regional crafts and its annual Octoberfest. There is a small commercial business district in the center of Town comprised of coffee shops, cafes and art galleries as well as clusters of retail along Catawba Avenue and further east along Main Street (US 70). Many of the buildings in downtown Old Fort date from the late 1800's and early 1900's.

The current downtown and Mountain Gateway Museum area is the most pedestrian friendly area in all of Old Fort due to the more rural nature of the museum and the Mill Creek corridor containing off-street paths and sidewalks. Complementing adjacent uses also contribute to the walkability of the area; such civic and institutional uses as the library, elementary school and museum are all located in close proximity to one another and connected via a sidewalk system. Sidewalks are also present throughout the Main Street (US 70) corridor however, some are in disrepair or lack adequate width or grade requirements to meet today's ADA standards. Historically, residents of Old Fort relied on walking as a means of transportation and interaction within the community. Clusters of commercial uses including fast food restaurants, a grocery store and general goods stores (Family Dollar, Dollar General, etc.) are within close proximity to the core downtown area and can be accessed via a partial sidewalk network that contains gaps and sidewalk segments that are located at the back of curb with no separation from vehicles.

Outside the central core of Old Fort, the rural nature becomes more evident. Housing density in neighborhoods just outside the Town radiate from the core in a trend that is representative of practical small town growth; the older neighborhoods have a careful balance of residential amenities such as sidewalks while still having the luxury of being close to the downtown.

The residential areas in close proximity to downtown Old Fort are within walking distance to the commercial areas along Main Street (US Hwy 70), but the lack of sidewalks, crosswalks, and steep topography associated



*Rural character outside downtown*



*Pedestrian facilities downtown at the Mountain Gateway Museum*



*Andrew's Geyser Park*



*Pedestrian Safety Barriers at Andrew's Geyser Park*



with mountain towns impedes and discourages pedestrian travel outside of the downtown proper. The absence of greenway connections to downtown and other public facilities is also evident at the core of Old Fort.

Large tracts of undeveloped land exist surrounding the Town, consisting mostly of natural vegetation, mountainous terrain and the Pisgah National Forest. Roadways leading to areas of pedestrian recreation and trails such as Andrews Geyser Park have little to no road shoulder and steep side slopes, a direct result of cutting into the mountainside during road bed construction, inhibiting pedestrian travel both locally and regionally in some cases.

Fortunately, the Town and citizens of Old Fort support the move towards a more pedestrian friendly community as shown in survey questionnaires and planning initiatives. This is also apparent in the Mill Creek Greenway Master Plan and through public input at various Community Meetings where the desire for pedestrian friendly commercial areas, pedestrian scale buildings, and new sidewalks were noted. A commitment to implementing these improvements will help insure that the Town grows in a positive direction and will offer pedestrians once again an environment where walking is more commonplace. Other documents also outline and



emphasize the re-institution of pedestrian and bicycle facilities including the Isothermal Rural Planning Organization priorities list and the NCDOT Division 13 STIP current projects list.

## 2.2 COMMUNITY DEMOGRAPHICS

The U.S. Census Bureau reports that the Town of Old Fort is currently home to 963 residents making up 441 occupied housing units. In the last 5 years there has been an increased interest in greenway trails in McDowell County, more specifically in the Town of Old Fort and the City of Marion thanks in part to the Old Fort Mountain Heritage Alliance. With this increased interest and demand for walking trails and improved on street sidewalks comes improved infrastructure and roadway improvements in order to safely connect residents to destinations and points of interest.

### Race:

Of the town's 963 residents, 79.1% are White, 17.2% African American, 0.2% Native American, 0.1% are Asian, 0.8% from other races, and 2.5% from two or more races. Hispanic or Latino of any race include 1.7% of the population.

Race	Percent
White	79.1%
African American	17.2%
Native American	0.2%
Asian	0.1%
Hispanic or Latino	1.7%
Other Races	0.8%
Two or more Races	2.5%

Walking is the primary mode of transportation for some portions of the aforementioned population. It is important to provide safe and efficient facilities for these user groups as well as for those who walk for recreational and fitness purposes. Some people who rely heavily on walking include children, the elderly, and households that own one vehicle or no vehicle at all.

### Income and Poverty Status:

Of the town's 441 occupied housing units, 23 fall below the poverty level and it's probable that these families have the least access to vehicles on a regular basis, and must rely on alternate modes of transportation. According to the U.S. Census, 161 or 16.7% of Old Fort residents live in poverty.

Poverty Status	# of Families
Below Poverty	23
Above Poverty	418

*Source: 2000 US Census*

Children and adolescents:

Children and many adolescents do not have the ability to drive themselves and therefore rely on others for transportation. Children aged 17 years or younger account for 23.3% of the Town's current population. Safe, accessible, and efficient pedestrian facilities are essential to this portion of the population who do not and can not own and drive vehicles especially when destinations such as public parks, the library, and other destinations are not in immediate proximity to most residential neighborhoods. Pedestrian facilities allow for children and adolescents to walk to their destinations and it is essential that these pedestrian connections be safe for all who participate. Crosswalks, pedestrian refuge islands, and pedestrian signalization can help this user group cross streets by interacting with automobiles safely.

The elderly and people with disabilities:

Many people, including some elderly individuals, have disabilities that preclude driving. Twenty-one percent (21%) of the population is 65 years of age and older. This aging population group also may rely heavily on others to get them where they need to go. Safe and accessible pedestrian facilities connecting destinations are necessary so this portion of the population feels safe and able to walk. Pedestrian facilities which are fully ADA compliant are essential for all communities. Crosswalks, pedestrian refuge islands, ADA ramps and pedestrian signalization can help this user group cross streets more safely.

Age Distribution	Percent
Ages 0 - 4	7%
Ages 5 - 17	16%
Ages 18 - 64	57%
Ages 65 +	20%



Public Meeting

## 2.3 COMMUNITY PARTICIPATION AND PRIORITIES

An important part of the planning process is public participation. The opinions, concerns and involvement of the public is a crucial element in developing a pedestrian plan which is consistent with the desires of the public. Public “buy-in” and support of the Pedestrian Master Plan is necessary for the Plan to be a useful amenity to the Town. The Project Manager from Withers & Ravenel is a native of Old Fort, which added an extra touch of authenticity and understanding to the planning process.



Public Meeting at The Train Depot



Survey respondents indicated that the lack of pedestrian facilities inhibits walking

A variety of methods were used to integrate the citizens of Old Fort into the analysis and design process for the Pedestrian Master Plan. The following elements were central to the public input process:

- Formal public meetings
- Surveys
- Informal Public Feedback Opportunities
- Festivals

### Public Meetings

The Design Team held several steering committee meetings, a public input meeting and conducted a survey to gather input from the public. The Design Team also set up a booth at the Oktoberfest celebration in an effort to gain more input from the public on issues, opportunities and desires for the pedestrian master plan. The steering committee was made up of key Town officials and members of the public in an effort to ensure the needs of the Town were being addressed as the plan moved forward.



Proposed location of Mill Creek Greenway Phase 1

1. The Design Team held a kick-off meeting with members of the Steering Committee and representatives from NCDOT. The steering committee provided input on how to reach the public, existing barriers to pedestrian connectivity and key destinations in downtown. The Steering Committee also provided input on a Vision Statement for this project.
2. Three additional Steering Committee meetings were held to gain insight, receive feedback and provide guidance to the consultants.
2. A public meeting was combined with the Mill Creek Greenway public meeting in order to gain as much input as possible. Attendance was good and feedback was enthusiastic and responsive.
4. The Design Team set up a booth at Old Fort's Oktoberfest to provide information on the Comprehensive Pedestrian Master Plan and to receive additional input.

### Public Survey

The public survey questionnaires were distributed through a variety of methods to reach as much of the public as possible. The survey consisted of a one page (front and back) handout with 20 questions including



***Most people felt they would walk more around Old Fort if improvements were made to the pedestrian system and connections were expanded. Most people also said they would be willing to pay a small additional tax in order to improve sidewalks and bike pathways.***



*Main Street in downtown Old Fort*

multiple choice, Yes or No, and open-ended questions. The most common and successful method of distribution occurred through face to face interaction. Other methods proved to be useful as well, including:

- Email
- Adobe pdf format on the Town website
- Leaving surveys behind with local business owners
- Distribution at public meetings
- Distribution to children through Old Fort elementary school

A sample survey questionnaire is included in the appendix of this document. The survey generally showed that citizens saw gaps in the sidewalks and missing segments, along with the absence of marked crosswalks as major barriers to pedestrian connectivity. The creek running through town was seen as a positive feature that should be highlighted. Although walking is seen as fairly safe, other than particular areas, bicycling is not seen as a safe activity because provisions for biking have not been included. Most people felt they would walk more around Old Fort if improvements were made to the pedestrian system and connections were expanded. Most people also said they would be willing to pay a small additional tax in order to improve sidewalks and bike pathways.

## 2.4 Old Fort TRANSPORTATION SYSTEM

Old Fort's transportation system is composed of major thoroughfares and connectors with few neighborhood streets located within the core downtown area. Catawba Avenue is located just north of I-40 Hwy and is a major artery that carries motorists from I-40 Hwy through downtown Old Fort traveling to US 70 Hwy and vice versa. Main Street (US 70 Hwy) intersects with Catawba Avenue in the heart of downtown and provides access to Andrews Geyser Park via Old US 70 Hwy. Once motorists arrive in downtown, Main Street (US 70 Hwy) has sidewalks, as does the east side of Catawba Avenue, and continues with sidewalks one block in each direction of the main intersection described above. Major thoroughfares handle most of the vehicular traffic in Old Fort, as they provide connectivity in and out of the Town, as well as between the two highways. Important NCDOT thoroughfares within Old Fort include:

- |                           |                   |
|---------------------------|-------------------|
| • Main Street (US 70 Hwy) | • Catawba Avenue  |
| • I-40 Hwy                | • Mitchell Street |
| • Commerce Street         | • Old US 70 Hwy   |

Main Street (US 70 Hwy), I-40 Hwy and Catawba Avenue are the three major NCDOT classified thoroughfares within the Town of Old Fort. Fortunately for the Town, many of the other collector streets are arranged in a grid system and handle north/south and east/west connections between Catawba Avenue and Main Street, although they lack pedestrian facilities with the exception of the Mountain Gateway Museum. Few streets outside the downtown limits provide sidewalks or crosswalks and most lack a sufficient road shoulder.



View of Catawba and Main Street (US 70) intersection showing the vertical drop from the existing sidewalk to Main Street.



View of Catawba Avenue from the Mountain Gateway Museum.

**Catawba Avenue** is considered to be one of the main “gateways” into the downtown area of Old Fort. It is a four (4) lane undivided roadway from I-40 Hwy to Main Street (US 70) with two (2) travel lanes in each direction and a design speed of 30 mph. From I-40 Hwy south it narrows to a two lane thoroughfare with no sidewalks south of the I-40 Hwy underpass. As mentioned earlier, Catawba Avenue is a heavily traveled thoroughfare for trucking and freight transportation and provides access to both US 70 and I-40 Hwy.

**Main Street (US Hwy 70)** is also considered a “gateway” or entrance into the Town of Old Fort from the east and west directions. Main Street somewhat dissects the downtown into halves, creating Northern and Southern portions; the southern portion consists of more commercial and institutional uses, whereas the northern portion is mostly residential with some small businesses. Main Street is also a 30 mph design speed within downtown, and consists of a two (2) lane undivided highway, one (1) travel lane in each direction, providing connectivity to neighborhoods and small pockets of commercial and industrial uses including the Tessner Fork-Lift Plant, the Ethan Allen Factory and Ziti’s Restaurant. Main Street is home to small restaurants, shops, cafes, art galleries and offices. As the town expanded in the late 19th Century, sidewalks were constructed at higher elevations than the roadway, causing present day issues with ADA compliance and site distance on Main Street. This is of particular concern due to the close proximity of schools, parks and the Mountain Gateway Museum.

**Additional Connectors:** In addition to the main two transportation arteries described above, many smaller streets provide interior access to and from destinations within Old Fort. **Commerce Street, Mitchell Street, Water Street** and **Crawford Street** all provide east-west access within Old Fort Town Limits. These roadways consist of two travel lanes, one in each direction, and a 30 mph design speed. These streets are mostly residential in nature.

## 2.5 OLD FORT PEDESTRIAN SYSTEM



*Grade changes on portions of Main Street make sidewalk ADA access difficult*

The existing pedestrian system in Old Fort consists of a mixture of on-street sidewalks and off-street multi-use paths providing adequate and safe connection opportunities within the immediate proximity of downtown, however little or no connectivity exists to other destinations outside of the downtown proper. The downtown is the most pedestrian-friendly area in Old Fort. Although sidewalks exist, most are located at the top of curb, anywhere from 6 inches to 18 inches above the existing road bed, creating unsafe conditions for sidewalk users and very difficult opportunities to implement ADA ramps. Crosswalks are present along the two main thoroughfares, Main Street (US Hwy 70) and Catawba Avenue, but site distance issues and higher than posted vehicular speeds support the need for pedestrian signalization and traffic calming techniques at major intersections and stop lights.

The future of Old Fort's pedestrian environment is brighter due to new plans and guidelines recommended in the Old Fort Mill Creek Greenway Master Plan and thanks to local individual and interest group efforts to promote pedestrian and bicycle use. The map on p.26 illustrates sidewalks and greenways that are present or proposed for the entire Old Fort community.

There are numerous challenges and opportunities inherent in Old Fort's pedestrian environment. By meeting the challenges facing the safety and accessibility of the pedestrian environment, the Town can ensure a better future for residents as well as attract visitors to its walkable Town. The next page presents a summary of these challenges.

### **Pedestrian Facilities Challenges:**

- Sidewalks lack ADA accessibility.
- Busy thoroughfares with site distance issues for pedestrians and objects in site triangles.
- Bridge over Commerce Street.
- There is a lack of connectivity between downtown and outlying areas, such as residential neighborhoods, local factories, and a park and restaurants south of I-40.
- Lack of connectivity to local amenities and tourist attractions such as Mount Music, the museum, the elementary school, the library and Davidson's Fort.
- Most shoulders on roads do not have adequate space for pedestrians or bicyclists.
- Lack of lighting.
- Railroad Tracks/Railroad Crossings.





*The proposed Mill Creek Greenway will provide pedestrian access downtown along the creek.*

- I-40 Overpass/Heavy Truck Traffic.

It is also important to recognize the positive and promising conditions the Old Fort's pedestrian environment has to offer. A commitment to improving the pedestrian environment includes identifying opportunities. Below is a brief listing of possible opportunities present in Old Fort.

#### **Pedestrian Facilities Opportunities:**

- Downtown Old Fort currently has sidewalks and paths in place and a street network conducive to pedestrian circulation.
- Many frequented and tourist destinations are located in close proximity to the downtown core area.
- The Town and region is very receptive to alternative transportation and promoting pedestrian transportation
- There is wide public and governmental support for pedestrian facilities.
- There has been proactive planning resulting in increased pedestrian facilities for the Town of Old Fort, such as the Mill Creek Greenway Master Plan.
- There is a rich history and commitment to improving the quality of life for Old Fort residents, both existing and future.
- There are immediate plans and goals in place for implementing off road connections to area destinations both within downtown and outlying areas.
- NCDOT is currently working on sidewalk and curb improvements at the intersection of US 70 (Main Street) and Catawba Avenue.

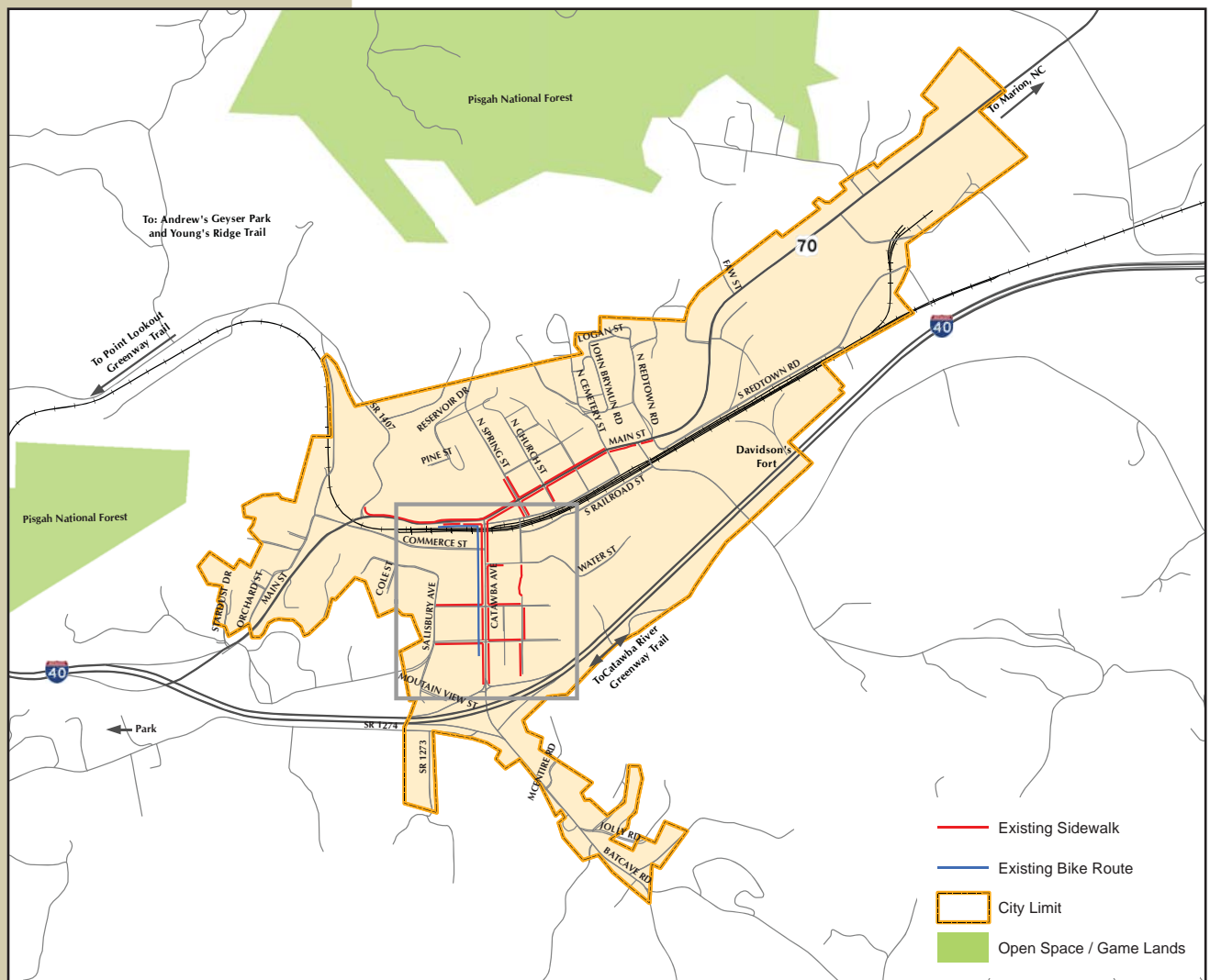
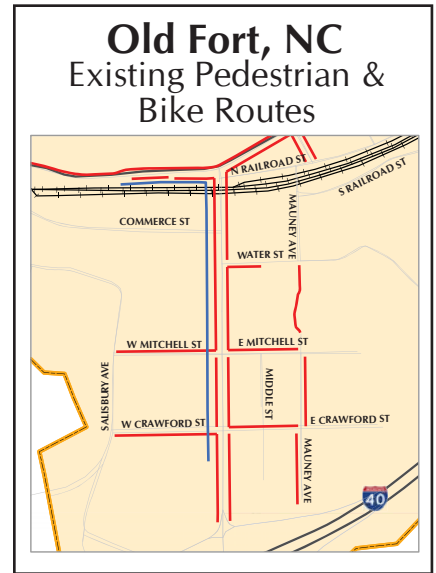
## **2.6 EXISTING CONDITIONS AND ANALYSIS**

The public input survey respondents corroborated their commitment to improved walkability and to improve the pedestrian environment through the effort put forth in previous planning documents. Fortunately, the Town of Old Fort has more pedestrian facilities planned for future development and growth than currently exist. According to the Mill Creek Greenway Master Plan, pedestrian facilities are to be constructed throughout downtown Old Fort and along the remainder of the corridor.

The existing condition for some of the Town's facilities is a challenge to overcome. Fortunately, some of this work is currently under construction. Sidewalks containing steps along Main Street (US Hwy 70) are being remedied to meet ADA standards by NCDOT. This was a major safety concern and a priority for the Town.

The downtown area is connected through existing sidewalks, however

# EXISTING SIDEWALK INVENTORY



no connection to other areas of Town such as neighborhoods and factories exists. It appears as though most neighborhoods and residential construction were planned and designed based on vehicular transportation, as they are located a few miles from the core of downtown Old Fort. The costs associated with extending sidewalks to these clusters of neighborhoods would be a significant undertaking, but one that is necessary to provide outward connection. Although many of the secondary roadways in Old Fort that lack a sidewalk are not heavily traveled, sidewalks should be added in these areas as funds become available. Even in low traffic areas, walking on a narrow shoulder or in the roadway is not a safe alternative. Refer to the Town of Old Fort *Existing Sidewalk Inventory Map* on p.17 of this section.

The community's major retail areas are located on Catawba Avenue and further east on Main Street (US Hwy 70) towards Marion, NC. Some of these retail centers and stores are not sufficiently connected to each other via sidewalks or crosswalks and most are not connected to areas of residential housing. Commercial areas should receive a higher intensity of pedestrian facilities such as wide sidewalks, crosswalks, pedestrian signalization, and other necessary amenities to protect and safeguard pedestrians in these areas. Additionally, routes to these areas need to be incorporated into the pedestrian plan for interconnectivity when possible.

As expressed by residents, walkability is a necessary and essential component for a high quality of life and overall livability. Areas in immediate need of improvement, which are incorporated into the larger Pedestrian Master Plan include:

#### PEDESTRIAN CORRIDORS

- E. Main Street (US Hwy 70)
- Catawba Avenue
- W. Main Street (US Hwy 70)
- Salisbury Street
- Mountain Gateway Museum Greenway
- Spring Street
- Water Street

#### SPOT IMPROVEMENTS

- Bridge on Commerce Street
- Intersection Improvements
- I-40 Overpass
- Railroad Tracks
- ADA Compliance

## CURRENT PLANS, PROGRAMS AND POLICIES

### 3.1 OVERVIEW

The Town of Old Fort and McDowell County have a variety of ongoing plans, programs, and policies which affect the safety and appearance of the pedestrian environment. These tools deal with open space development and pedestrian connectivity, address the goals of development and growth, zoning, transportation issues and challenges, and the revitalization of downtown Old Fort.

The following public documents may directly affect the future of Old Fort's pedestrian system.

- North Carolina State Transportation Improvement Program Plan (2009)
- Isothermal Planning & Development Commission (IPDC) "Shovel Ready" Bicycle/Pedestrian Priority Project List (2009)
- Isothermal Planning & Development Commission (IPDC) "Shovel Ready" Highway Priority Project List (2009)
- McDowell County Recreation Plan (Updated 2009)
- McDowell County Greenway Master Plan (2007)
- Mill Creek Greenway Master Plan (2010)

Some of a pedestrian infrastructure already exists within McDowell County and the Town of Old Fort. Many historic and scenic trails have already been developed. The Town of Old Fort Pedestrian Master Plan took the location of these trails and local parks into consideration during the planning process. Some of the more relevant trails will be discussed later in this document and in the appendix.

### 3.2 State Transportation Improvement Program (TIP)

The purpose of the State TIP is to improve the quality and interconnectivity of thoroughfares within the state. The TIP recommends and prioritizes projects based on need and cost. McDowell County currently has many bridge projects planned, which will enhance the pedestrian system by allowing newer, wider bridges that can accommodate pedestrians to replace older more narrow bridges. The Old US Hwy 70 -Old Fort to Montreat/Black Mountain Bicycle Trail, consisting of 0.5 miles is currently under construction which will tie into the Old Fort Pedestrian plan and assist in providing connection to Andrews Geyser Park. Many statewide signage programs, specifically for the Blue Ridge Parkway, are planned as well as statewide improvements and lane widening to accommodate bicycle transportation. A statewide tree planting program is also planned, that will surely enhance the visual pedestrian environment. With the addition of new roadways and improvements to existing ones, comes the possible addition of sidewalks, planting strips, and road shoulders, all of which add to a safer pedestrian environment.

### 3.3 IPDC “Shovel Ready” Bicycle/Pedestrian Priority Project List (2009)

The Isothermal Planning & Development Commission is a partnership between North Carolina’s Department of Transportation (NCDOT) and the local governments of McDowell, Polk and Rutherford Counties. Staffed by IPDC, the Rural Planning Organization (RPO) serves as the transportation planning authority for the region. The region is hoping to receive possible funds from an infrastructure stimulus package. It has created a list of projects that could be ready in 90 days or less, including a bicycle lane on US Hwy 70 (Lackeytown-I40). A more comprehensive list of projects for the IPDC is included in the appendix of this document.

### 3.4 IPDC “Shovel Ready” Highway Priority Project List (2009)

The RPO listed projects for highway improvement. The region is hoping to receive possible funds from an infrastructure stimulus package. No planned projects in McDowell County will affect the Town of Old Fort’s proposed pedestrian system.

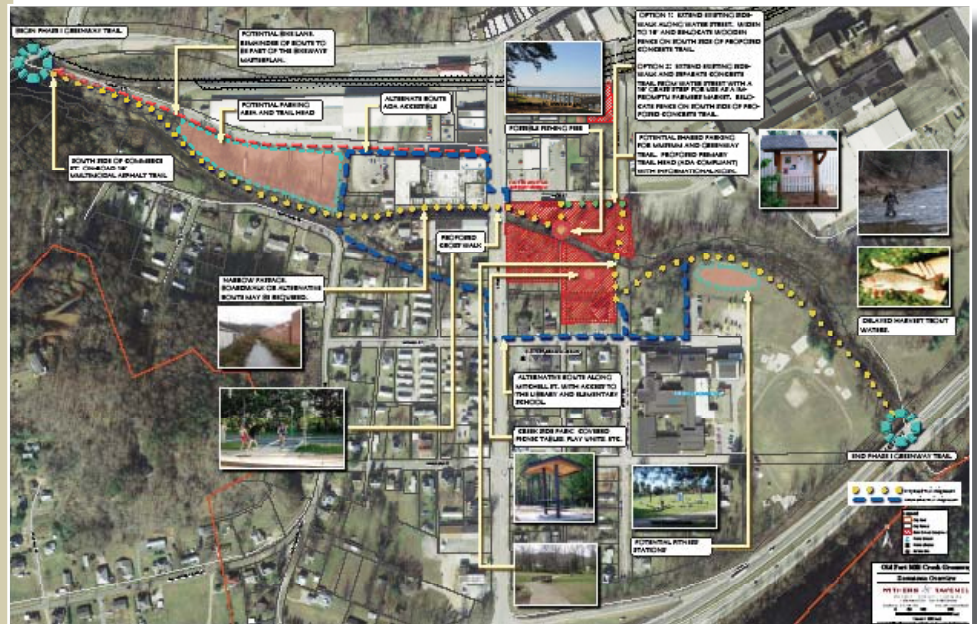
### 3.5 McDowell County Recreation Plan Update (2010)

In the fall of 2009, McDowell County hired Withers & Ravenel to update a Recreation Master Plan (adopted January 2010) for the county. Although much of the plan does not relate specifically to the location of trails to be planned within McDowell County, survey questionnaire results indicated that 87% of survey respondents would choose to walk on a trail as a recreational activity, the highest yielding percentage of the study. The County’s enthusiasm in trails provides an indication of the recreation facilities that will need to be constructed over the next 10-15 years to meet the needs of a growing population. This interest in trails has been taken into account when analyzing locations of proposed multi-use trails, hubs and connectors recommended within this pedestrian master plan.

### 3.6 McDowell County Greenway Master Plan

As a result of the overwhelming interest in Greenway Trails, the County and local government officials, in cooperation with the McDowell Trails Association, produced a Greenway Master Plan that layed out realistic goals and studied local destinations to determine the most efficient and practical locations for trails and blueways. Old Fort and locations within and around the Town have been shown as greenway trail destinations per the plan. These previous planning documents will be complemented by the Old Fort Pedestrian Master Plan and will help achieve the greater goal of a more comprehensive pedestrian network.





*The Mill Creek Greenway Master Plan provided connections through downtown Old Fort to regional greenway trails. See the Appendix for a larger map.*

### 3.7 Mill Creek Greenway Master Plan (Phase 1)

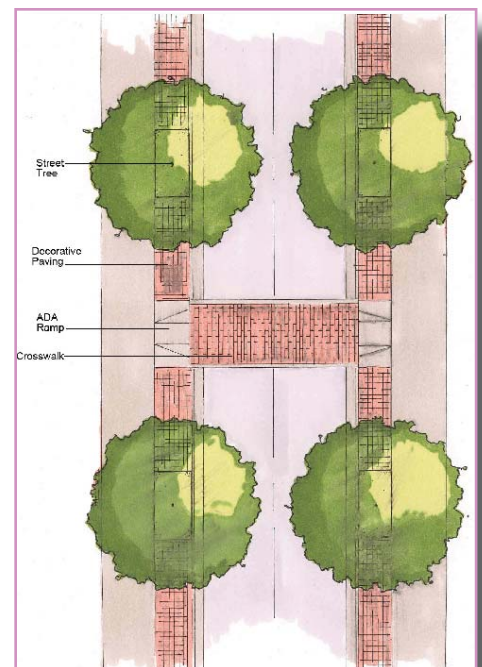
Old Fort hired Withers & Ravenel to produce the Mill Creek Greenway Master Plan (adopted April 2010). The Master Plan provides a conceptual alignment and guidelines for future greenway construction. The trail follows the Mill Creek corridor providing both on and off-street access to downtown Old Fort, Town Hall, The Depot, Old Fort Elementary School and The Mountain Gateway Museum. The Greenway Master Plan will be complemented by the Old Fort Pedestrian Master Plan and will help achieve the greater goal of a more comprehensive pedestrian network.

## PEDESTRIAN SYSTEM PLAN

### 4.1 OVERVIEW

The proposed pedestrian system incorporates all of the previously discussed information: Old Fort's vision statement, project goals, public input from local citizens, and the existing plans, programs, and policies already in place which shape and impact the pedestrian system. Chapters 4 through 6 provide direction in the development and implementation of the specifics of this Comprehensive Pedestrian Master Plan as well as additional guidelines and resources to aid in future planning and development. The organization of the physical pedestrian system plan is based on the following street type classifications: Major Corridors, Downtown Streets, Existing Subdivisions, New Subdivisions, and Greenways. The drawings on the following pages provide illustrations of each street type. In all cases, it is mandatory to provide for emergency vehicle access to streets and buildings.

The proposed pedestrian system identifies existing corridors in immediate need of improvement as well as locations in need of "spot" improvements. These two groups of applications have been classified as **"Short Term"** or necessary Phase I priorities. Additionally, the pedestrian system includes corridors in need of future improvement that have been classified as **"Long Term"** priority development projects.



*Decorative paving between plantings.*

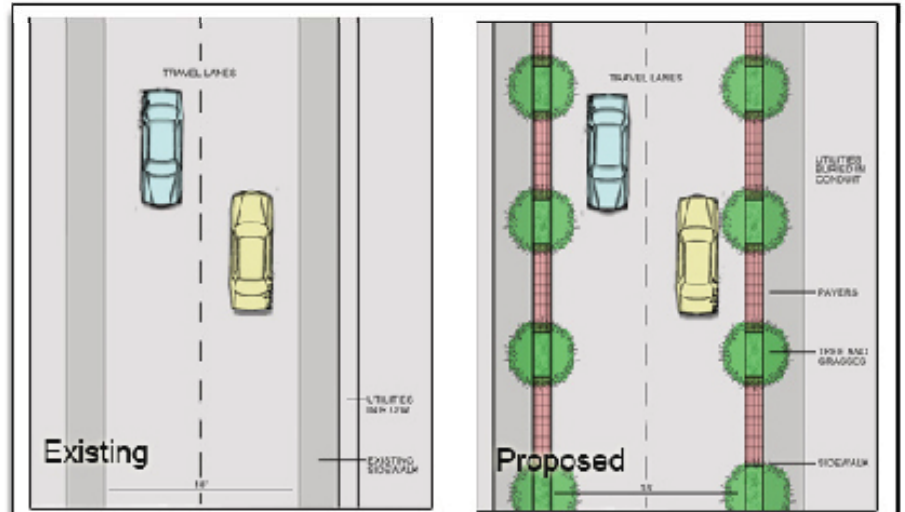


## GENERAL DESIGN GUIDELINES

### ***Downtown Streets:***

- Utilize ROW to bury utilities in immediate Downtown area.
- Plant trees in planting strips or planters.
- Repair sidewalks where necessary.
- Install decorative paving between plantings.
- Use groundcover/plantings under trees to reduce maintenance.

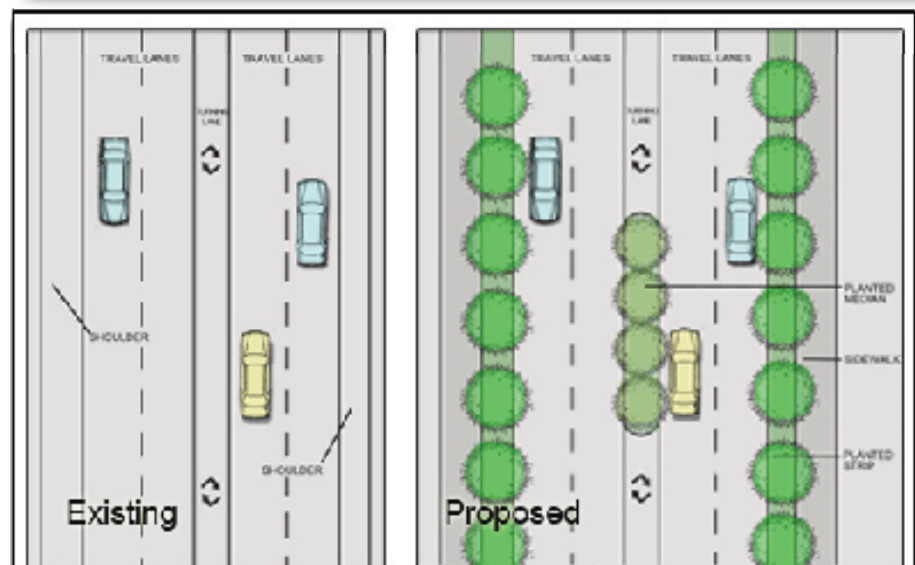
### ***Downtown Streets***



### ***Major Corridors:***

- Planted medians where turning lanes are not necessary.
- Locate sidewalks min. 5' in width on both sides of the roadway with planted separation min. 5' in width (NCDOT only requires 3' width).
- Use crosswalks, pedestrian refuge islands when necessary, with pedestrian signalization at all crossings.
- Incorporate NCDOT Standards where appropriate.

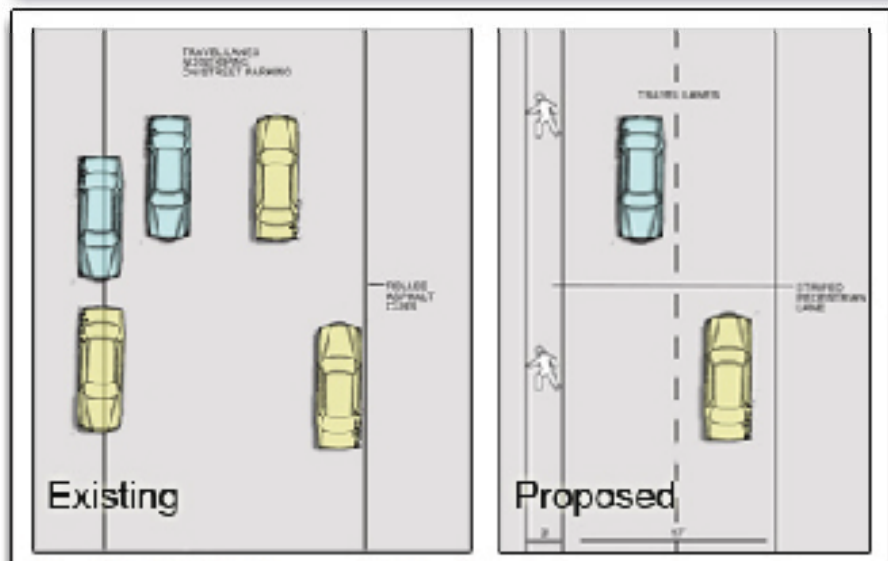
### ***Major Corridors***



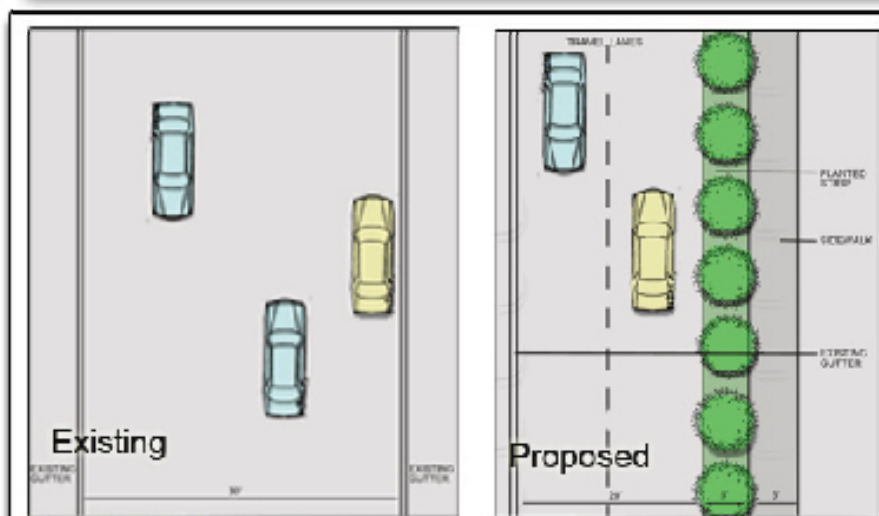
### Historic Subdivisions

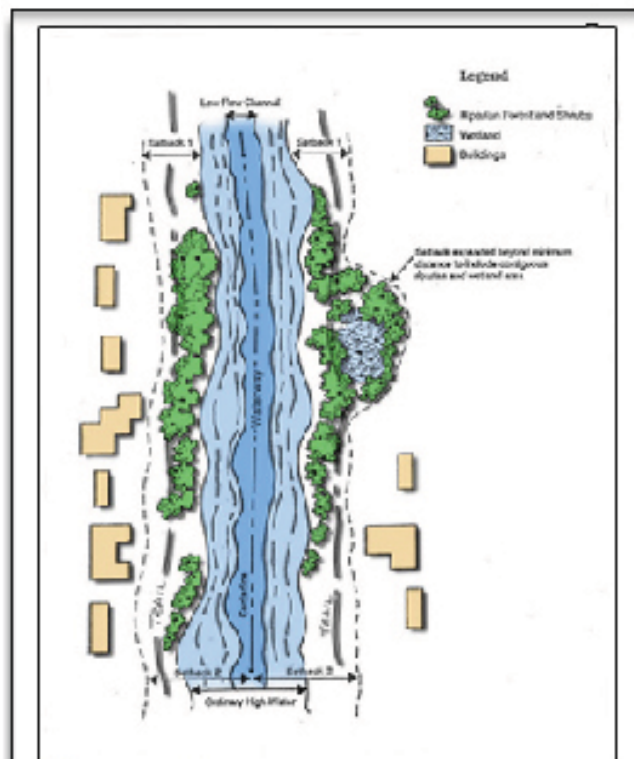
#### Subdivisions:

- Road Diet: Where appropriate, reduce travel lanes to 11' or 10' wide (applies only to existing subdivisions).
- Sidewalks with a minimum 5' wide on at least one side of the street.
- If space allows, provide a min. 5' wide planted separation between sidewalk and roadway (NCDOT only requires 3' width).
- Incorporate NCDOT Standards where appropriate.



### Subdivisions



*Typical Profile E- Greenways***Greenways**

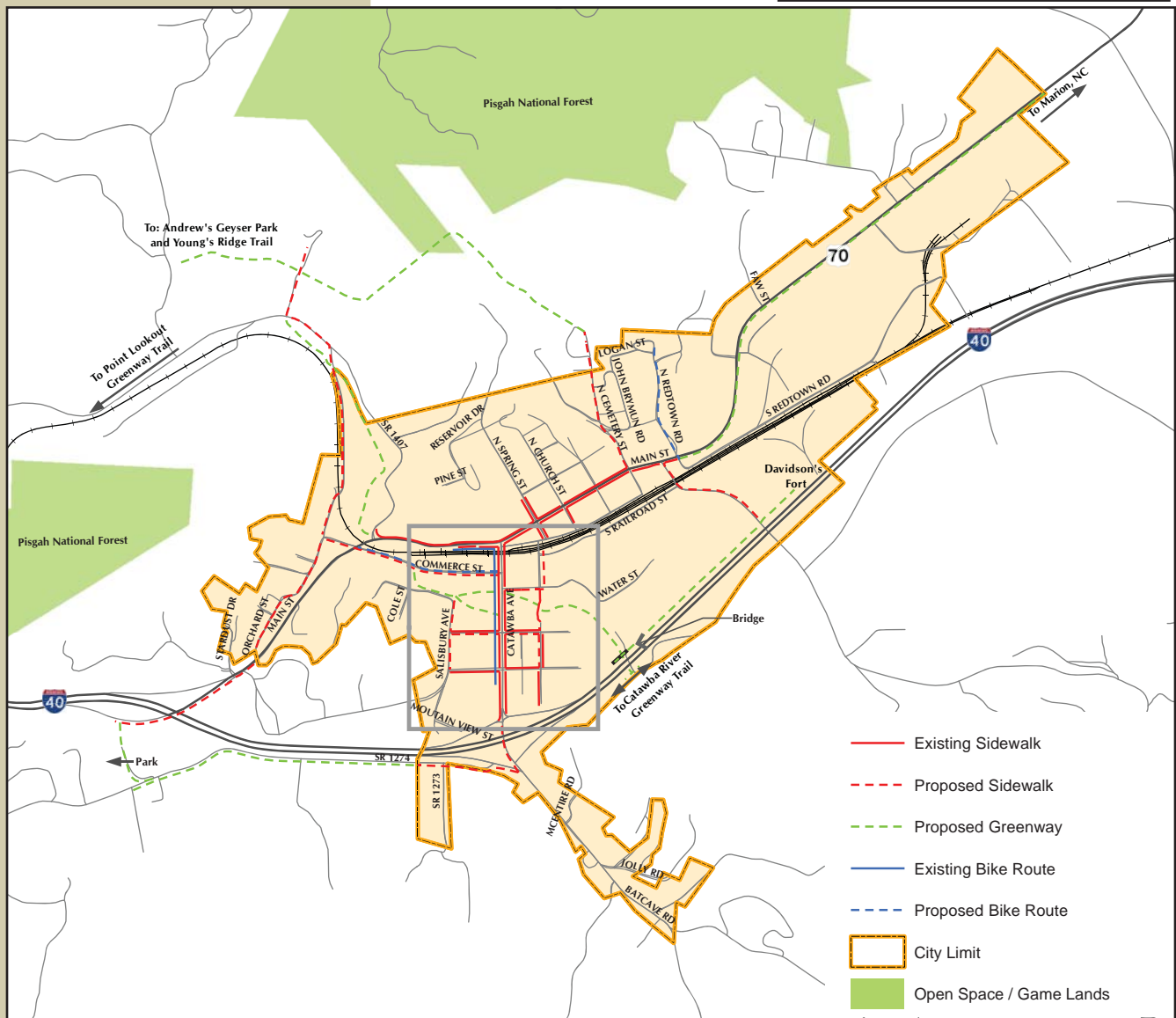
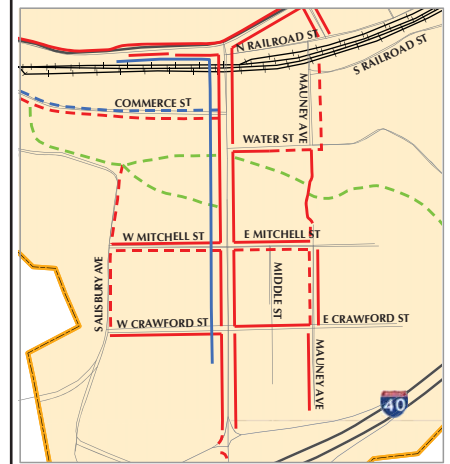
Provide multiple access points throughout the greenway network  
 Provide ample signage throughout the network as well as in town.  
 Ensure all portions of the greenway are ADA compliant



*Greenway paths should be minimum 10' wide to accommodate both Pedestrians and Bicyclists*

# Old Fort, NC

## Pedestrian System Plan



## MAJOR PEDESTRIAN CORRIDOR IMPROVEMENTS

### 4.2-SHORT-TERM PROJECTS

Short-term improvement projects will improve connectivity and pedestrian access along roadways and off-street paths which are currently utilized by pedestrians. These corridors provide connectivity to destinations such as schools, neighborhoods, and downtown. It is recommended that these corridors receive first priority for improvements due to their ability to immediately impact the existing pedestrian infrastructure and access to various destinations. When undertaken, these projects will build upon the existing connectivity within the Town of Old Fort.

As funding becomes available, the areas identified in this section should become priorities for the Town. These areas were identified during site visits, but also through the public input process, previous planning efforts and the Steering Committee recommendations. Since these areas were brought forth by public input, these “spot improvements” should be recognized as particularly hazardous areas most frequented by residents. These improvement areas are focused on intersections, and existing sidewalks.

#### **Destinations & Attractors**

- Mountain Gateway Museum
- Old Fort Branch Library
- Central Business District
- The Depot
- Auction House/Mountain Music
- Old Fort Elementary School
- Neighborhoods off of Main Street
- Senior Center
- Ethan Allen Plant
- Andrew’s Geyser/Greenway Trail
- Downtown Old Fort

**Intersection Improvements/Traffic Calming:** Provide traffic calming methods such as “bulb outs” or curb extensions in concert with the existing planters along Main Street (US Hwy 70) in an effort to reduce high vehicular speeds by visually narrowing the roadway. Incorporating curb extensions will increase pedestrian visibility and safety at cross walks by reducing the crossing distance and slowing motorist speeds. The crosswalk should be highly visible and terminate at ADA compliant curb ramps.

A Curb Extension is recommended on the southeast side of the Main Street and Catawba Avenue intersection as well as some minor curb and gutter construction on the southwest side of the intersection in the plaza area at the arrowhead and fountain.

Two highly visible crosswalks should be installed to accommodate pedestrian movement on the south and west side of the intersection terminating at new ADA compliant handicapped ramps in addition to the existing crosswalk on the eastern side of the “T” intersection, which should also terminate at new ADA compliant ramps. Audible and visible Pedestrian signalization or “Ped-Heads” should be installed at this intersection as well as new ADA compliant ramps to correct the grade issues associated with the steps along portions of Main Street (US Hwy 70). The improvements to this intersection will aid in pedestrian movement among The Depot, Town Hall, The Mountain Gateway Museum and other downtown destinations as well as remediate the issues associated with pedestrians crossing Main Street (US Hwy 70) and



***There must be a demonstrated need for a crosswalk to be installed, ie: a significant number of pedestrian crossing at a specific location, in order to be considered by NCDOT***



*Widening the sidewalk around the Arrowhead sculpture and fountain will allow for safer pedestrian movement in this busy intersection.*



*View of Catawba and Main Street (US 70) intersection.*

the rail road tracks on Friday and Saturday nights for the Mountain Music and auctions.

Curb extensions are also suggested on the two northern corners, the southwest corner and the south east corner (Spring Street side only) of the Main Street (US Hwy 70) and Spring Street intersection. One crosswalk currently exists crossing Main Street (US Hwy 70) on the western side of the intersection, but another highly visible crosswalk is recommended on the southern side of Main Street (US Hwy 70), crossing over Spring Street. This will aid pedestrian movement and accessibility along Main Street (US Hwy 70) and provide a safer corridor for pedestrians traveling downtown.

**Sidewalk Re-Construction/ADA Ramps:** As mentioned above, providing safe and compliant ADA ramps along Main Street (US Hwy 70) and at certain locations along Catawba Avenue will be a large undertaking in itself due to the 12"-18" grade change between the road bed and top of sidewalk. This project may involve cutting existing concrete, incorporating a small retaining wall, railing and potentially relocating utility lines. Further information will need to be gathered for underground utilities before further design can be developed. Improvements to this area are currently under construction.

**Sidewalk Construction:** Construct a 5' minimum concrete sidewalk along the southern side of Mitchell Street from Salisbury Avenue to the school. Highly visible crosswalks will be necessary to connect all corners of the signalized intersection at Catawba. Where possible, incorporate a minimum 3 foot wide planting strip between the back of curb/ edge of roadway and the edge of sidewalk.

**Sidewalk Construction:** Construct a 5' minimum concrete sidewalk along the eastern side of Salisbury Street from the existing sidewalk on Crawford to the proposed Mill Creek Greenway trail on the south side of Mill Creek. Where possible, incorporate a minimum 3 foot wide planting strip between the back of curb/ edge of roadway and the edge of sidewalk.

**Sidewalk Construction:** Construct a 5' minimum concrete sidewalk along the western side of Mauney Street from the existing sidewalk on Crawford to the existing bridge at the Mountain Gateway Museum. Where possible, incorporate a minimum 3 foot wide planting strip between the back of curb/ edge of roadway and the edge of sidewalk.

**Roadway Improvements:** Widen Commerce Street at the Main Street (US Hwy 70) bridge underpass to accommodate two travel lanes and extend the road shoulder for a bike lane or greenway trail to comply with the recommendations set forth in the Mill Creek Greenway Master Plan.

*Off-street trails add diversity to the pedestrian experience and offer options to typical sidewalks as a means to get from one destination to another. This can be accomplished by using wood mulch from clearing the easements, granite fines, wooden boardwalk, concrete, or asphalt.*

*Only concrete, asphalt and granite fines are considered ADA compatible and material selection will greatly affect costs.*

**Sidewalk/Trail Construction:** In concert with the Commerce Street Roadway widening, incorporate a 5' minimum concrete sidewalk from Catawba Avenue to Orchard Street along the south side of Commerce street to tie into the future proposed Mill Creek Greenway Trail Phase 2. This sidewalk will also provide ADA access to the 1st Phase of Mill Creek Greenway, the Mountain Gateway Museum and downtown Old Fort. Where possible, incorporate a minimum 3 foot wide planting strip between the back of curb/ edge of roadway and the edge of sidewalk.

**Sidewalk/Trail Construction:** Complete the first phase of the proposed 10' wide asphalt Mill Creek Greenway Trail, as illustrated on the Pedestrian System Plan on page 26, beginning at Orchard Street and continuing to Old Fort Elementary School and tying into the McDowell County Trails System via the Catawba River Greenway Trail.

**Sidewalk Completion/Construction:** Complete gaps in existing sidewalk system, specifically on Water Street from the existing sidewalk east to the sidewalk on Mountain Gateway Museum property extending from the bridge.

**Sidewalk Completion/Construction:** Construct a 5' minimum concrete sidewalk along the southeastern portion of Lackeytown Road to provide access from Main Street (US Hwy 70) to Davidson's Fort. Where possible, incorporate a minimum 3 foot wide planting strip between the back of curb/ edge of roadway and the edge of sidewalk.

**Lighting:** Correct areas of poor lighting by installing new light fixtures to match existing, specifically near the Mountain Gateway Museum, as indicated in public surveys and meetings.

#### **4.3-LONG TERM PROJECTS**

The Pedestrian System Plan also includes corridors in need of future improvement herein noted as Long Term Improvements. Following the Short Term Spot Improvement projects, roadway corridors on the Long Term improvements list should be improved and enhanced as recommended when funding becomes available. These future corridors offer roadways with a finer degree of interconnectivity and pedestrian linkages throughout Old Fort and are not in as immediate need of improvement as the Major Pedestrian Corridors listed previously. Long-term projects are not as urgent a safety hazard as short-term improvement projects previously listed.

Descriptions of these long term improvements can be found below:

**Sidewalk/Trail Construction:** As funding becomes available construct a minimum 10' wide asphalt trail along the Mill Creek corridor, Phase 2 of Mill Creek Greenway Master Plan, from the existing sidewalk at the intersection of Main Street (US Hwy 70) and Old US Hwy 70 (SR 1407) to

its intersection with Orchard Street. A highly visible crosswalk would also be necessary at the intersection of Main Street (US Hwy 70) and Old US Hwy 70 (SR 1407) to safely accommodate traffic crossing Old US Hwy 70 (SR 1407).

**Sidewalk Completion/Construction:** Construct a minimum 5' concrete sidewalk along the northwestern side of Cemetery Street. This sidewalk will provide safer access to the cemetery as well as to the proposed greenway trail north of Town. Where possible, incorporate a minimum 3' wide planting strip between the back of curb/ edge of roadway and the edge of sidewalk.

**Sidewalk Completion/Construction:** Construct a minimum 5' concrete sidewalk along the western side of Orchard Street from Commerce Street to the intersection with Old US Hwy 70 (SR1407). A highly visible crosswalk at Orchard Street will be necessary where the sidewalk on the south side of Commerce ties into the existing sidewalk on Orchard. This will provide safe access to Orchard Street and access to future trails that have regional connection points. Where possible, incorporate a minimum 3 foot wide planting strip between the back of curb/ edge of roadway and the edge of sidewalk

**Side Path Construction:** Provide access to downtown Old Fort from the Ethan Allen Plant, Senior Center and additional outlying factories and businesses via a minimum 5' wide concrete sidewalk along the southern side of Main Street (US Hwy 70) or via an extended road shoulder or side path that can accommodate bicyclists and or multi-use trail users. The side path would begin at Lackeytown Road and tie into the existing sidewalk network and eventually provide regional access to points east including the Catawba Valley Greenway Trail and Marion, NC.

**Bike Route Designation:** Provide alternative transportation access to regional destinations for bicyclists including Black Bear County Park and Andrew's Geyser Park via a bike route on US Hwy 70 West.

**Trail Construction/Creation:** Provide alternative transportation access to Davidson's Fort from the downtown area via the 1st Phase of Mill Creek Greenway Trail. The off-road route to Davidson's Fort will begin at Old Fort Elementary School heading east across Mill Creek by way of a new bridge structure. The Town will need to obtain an easement from the property owner to run the trail parallel to I-40. This trail will provide unimpeded off-road access for school children and classes to learn about the Town's early history by taking field trips to Davidson's Fort.

**Trail/Side Path Construction/Creation:** Construct a 5' minimum walkway or side path along the western side of Catawba Avenue from the I-40 entrance ramp westbound to SR 1274 and Catawba River Road. This will provide safe pedestrian access to the Catawba Falls Ballfield. This sidewalk will need to be accompanied by highly visible crosswalks and ADA

ramps located at the entrance ramp of I-40 westbound and the exit ramp of I-40 eastbound to safely accommodate both pedestrians and pedestrians in wheelchairs. Where possible, incorporate a minimum 3 foot wide planting strip between the back of curb/ edge of roadway and the edge of side path.

**Trail Construction/ Creation:** The Town should take advantage of the easements north of downtown Old Fort as shown on the Pedestrian System Plan. These easements create inexpensive opportunities for recreational trails to safely move pedestrians from residential areas to parks, regional destinations and to downtown Old Fort. The Greenway Trail proposed north of Town will connect to the proposed sidewalk at the cemetery located at the end of Cemetery Street and continue on to Andrew's Geyser Park, Young's Ridge Trail and Camp Grier (Camp Grier Lake/Lake Refugee). There will also need to be a short distance of concrete sidewalk constructed north to the easement from US Hwy 70 along an unnamed road in the curve.

**Sidewalk Construction:** Construct a 5' minimum wide concrete sidewalk along the eastern side of Orchard Street from Commerce Street south to US Hwy 70 crossing over I-40. This sidewalk will provide access from the beginning of Phase 1 of the Mill Creek Greenway across to the park located south of I-40.

## FACILITY STANDARDS & DESIGN GUIDELINES

### 5.1 OVERVIEW

The Division of Bicycle and Pedestrian Transportation (DBPT) of the North Carolina Department of Transportation (NCDOT) created the following pedestrian guidelines to assist municipalities in planning and engineering a safe and comfortable walking environment for pedestrians. The guidelines presented are in accordance with standards set by the American Association of State Highway Transportation Officials (AASHTO), the Manual for Uniform Traffic Control Devices (MUTCD) and the Americans with Disabilities Act (ADA).



*Typical sidewalk 5 feet in width*

### 5.2 SIDEWALKS

Sidewalks are extremely important public right-of-way components often times adjacent to, but separate from automobile traffic. In many ways, they act as the seam between private residences, stores, businesses, and the street. Sidewalks are spaces where children play, neighbors meet and talk, shoppers meander casually, parents push strollers, and commuters walk to transit stops or directly to work. Because of the social importance of these spaces, great attention should be paid to retrofit and renovate areas with disconnected, dangerous, or otherwise malfunctioning sidewalks. The Federal Highway Administration (FHWA) defines sidewalks as “walkways that are parallel to a street or highway” and walkways as generally being “pedestrian paths, including plazas and courtyards.”

#### Sidewalk Widths

BPTD recommends a minimum travel path width of 5 feet for a sidewalk or walkway, in accordance with the American Association of State and Highway Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), and the Institute of Transportation Engineers (ITE). A sidewalk width of 5 feet is considered ample room for two people to walk abreast or for two pedestrians to pass each other.

Often downtown areas, near schools, transit stops, or other areas of high pedestrian activity call for much wider sidewalks. Sidewalks are typically built with curb and gutter sections. The division recommends that areas with significant pedestrian traffic should feature eight- to ten-foot wide sidewalks. Where sidewalks align with the edge of an angled or 90-degree parking lot, a minimum of 30 inches of parked car overhang obstructing the sidewalk shall be taken into account in order to maintain the minimum travel path width.

AASHTO recommends the construction of sidewalks on all city or town streets, including those in rural areas. The Institute of Transportation Engineers (ITE) recommends sidewalk installation on both sides of the street whenever possible for new urban and suburban streets, especially in commercial areas, residential areas with 4 or more units per acre, or residential areas on major arterials and collectors. If sidewalks on both sides of the road are not possible, lower density rural residential or suburban areas might adequately serve its pedestrians with a sidewalk on



only one side. Under certain low-traffic, low-density situations, a wide paved shoulder can serve as an adequate pedestrian path.

It is important to note the potential for conflict between pedestrians and bicyclists on a paved shoulder. Both bicyclists and pedestrians must exercise caution in order to avoid potential crashes on paved shoulders.

### Construction Materials and Methods

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

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

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

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

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

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

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

### Grade

AASHTO recommends the following grades for sidewalks: Continuous sidewalk grades should not exceed 5% (1:20). However, in areas where the existing topography or the adjacent street cause grades of more than 5%, sidewalk grades of up to 8.33% (1:12) may be used for a rise of no more than 2.5 feet, provided that level landings (grades less than 0.5%) are provided at the end of such grades and are at least 5 feet long.

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

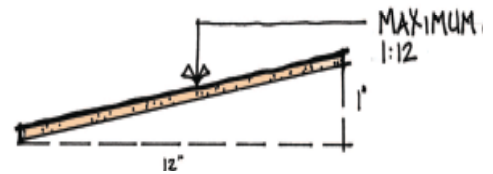


*Neighborhood Street with  
Planting Strip  
Photo credit:  
www.pedbikeimages.org*

easements necessary to accommodate these features will be obtained by the applicant and legally dedicated to the city or town.

### Cross-Slope

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

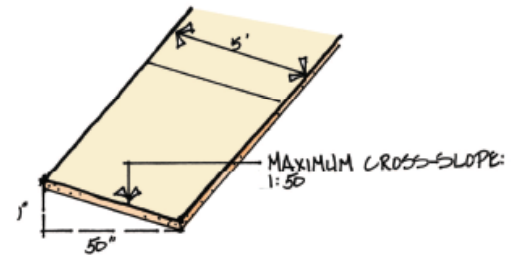


### Sidewalk Thickness

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

### Transitions

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



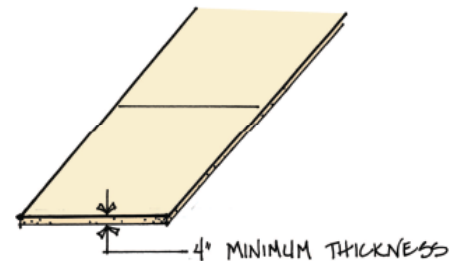
### Tapers

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

### Sidewalk Alignment

Sidewalks should parallel the roadway. Typical exceptions include:

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



**Presence of Natural and Man made Features** — The 5-foot minimum width



Crosswalk with continental striping.  
Photo credit: www.smmirror.com

## QUICK GUIDE

### Crosswalk Guidelines:

- **Minimum 8' wide.** In high use areas such as near schools and at commercial centers minimum width should be 10'.
- **Stripe crosswalks with continental markings except in historic downtown where decorative crosswalks are appropriate.**
- **Install crosswalks across the full width of a roadway.**
- **Locate ADA compliant ramps on both sides of the crosswalk.**
- **Develop and adopt a crosswalk policy and associated design guidelines.**

### Estimated Costs\*:

Simple Crosswalk (signs and striping)	\$500-\$1,500 each
Decorative Crosswalk	\$5,000-\$15,000 each

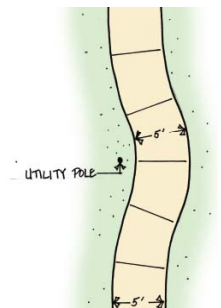
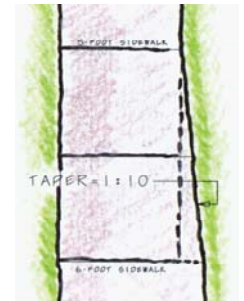
\*Costs provided by NCDOT

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

**Meanders** — Sidewalk meandering is strongly discouraged. People generally prefer to walk in a straight line, particularly when walking for utilitarian purposes. Meanders must meet minimum ADA requirements unless otherwise approved by the municipality.

### ADA: Dealing with Cross-Slope from Driveways

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



### Sidewalk Buffers

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

### 5.3 PLANTING STRIPS

Continuous zones of landscape, located between the sidewalk and the street curb or the edge of road pavement, perform a multitude of essential tasks. Planting strips contribute to the walkability of a street by providing shade. In addition to providing shade, street trees, along with turf and other plantings, help reduce urban temperatures, improve water quality, lower stormwater management costs, and add beauty to the street for the pedestrian, the driver, and the adjacent land use. The recommended planting width to permit healthy tree growth is 4 to 10 feet measured from the back of curb. Planting strips, or tree lawns, are the preferred means of providing a buffer, but are not feasible or appropriate in all pedestrian situations. The width of the planting strip shall increase with a greater plant density and potential as the intensity of development increases. This



Pedestrian Refuge Island with at-grade crosswalk- credit: [www.saferoutes.org](http://www.saferoutes.org)

## QUICK GUIDE

### Pedestrian Refuge Islands Guidelines:

- Implement pedestrian refuge islands on streets with multiple lanes or more and in areas of both high pedestrian activity and high traffic volumes.
- Use landscaping in the medians of pedestrian refuge islands to increase their visibility to motorists and help reduce speeds.
- Insure all sides of the crosswalk and pedestrian refuge island are ADA compliant.
- Insure all cross-walkways through pedestrian refuge islands are at minimum of 8' in width to accommodate pedestrians, bicycles and wheelchairs.
- Install high visibility crosswalks through the pedestrian refuge islands.

### Estimated Costs\*:

Pedestrian Refuge Island (signs and markings)	\$7,500-\$40,000
Simple Crosswalk (signs and striping)	\$500-\$1,500 each
Decorative Crosswalk	\$5,000-\$15,000 each

separation from motorized traffic decreases road noise while increasing a pedestrian's sense of security and comfort. Added benefits of this separation include space for signage, utilities (fire hydrants), and vegetation.

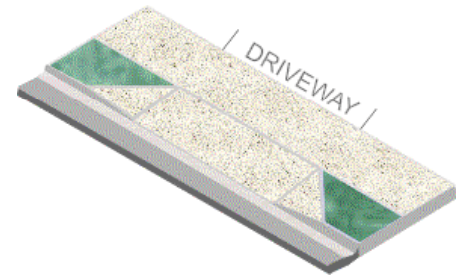
### Paved buffer zones

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

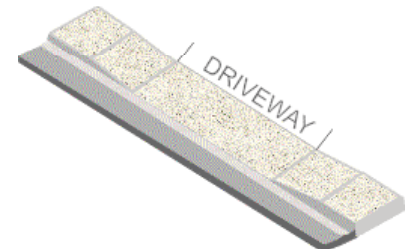
Street tree plantings in tree pits (with grates and guards, have historically proven to work successfully within these buffer zones. They regulate micro-climate, create a desirable sense of enclosure, promote a local ecological identity and connection to place, and can act as a pleasant integration of nature into an urban environment. For healthy trees, attention should be given to amending the soil and providing drainage within the tree pits. In the event that a paved or vegetative buffer zone is not possible, a row of parked cars or a bike lane can be used to create this buffer.



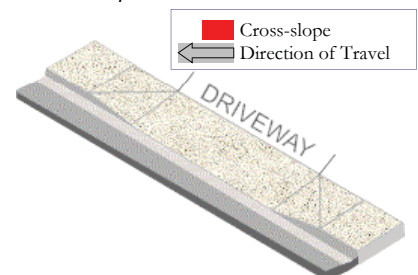
Sidewalk buffer along Cameron Village Shopping Center in Raleigh



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



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



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

### Buffer Paving Options

A different type of paving from the sidewalk paving could be considered for the buffer zone for various reasons. Textured pavements – pavers or pervious pavement – can be used to add significant aesthetic value and help define a unique place. Using pervious materials for



## QUICK GUIDE

### Pedestrian Signalization:

- Provide pedestrian signalization at critical intersections such as schools, commercial areas, and intersections with high speeds and high volume traffic.
- Provide pedestrian signalization at all heavy-use or complex intersections.
- Provide pedestrian controlled push buttons at intersections.
- Locate pedestrian push buttons in clear view and adjacent to crosswalks.
- Provide audio support at pedestrian signals for visually impaired pedestrians.

### Estimated Costs\*:

Pedestrian Signal	\$40,000-
	\$75,000

\*Costs provided by NCDOT

parking, sidewalk furniture areas, and for frontage zones could reduce environmental concerns. A change in paving type can help distinguish the pedestrian buffer zone from the pedestrian travel path. Sand-set pavers are recommended in the buffer zone for ease of utility maintenance. In designing sidewalk buffers, it is important to provide adequate clearance from potential obstructions.

### Additional Considerations

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



*Paved buffer with a planting zone*

## 5.4 PATHS/GREENWAYS

### Multi-Use Paths

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

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



*Buffer paving option and Tree Pits*  
Photo credit: [www.gatech.edu](http://www.gatech.edu)

### Design Criteria

Multi-use paths shall be designed with clearance requirements, minimum radii, stopping sight distance requirements, and other criteria — similar to the criteria for roadway design. High standards should be observed when designing these paths.

Multiple-use paths shall be a minimum of 10 feet wide; with minimum 2



## QUICK GUIDE

### Landscaping:

- Use vegetation in center medians to reduce traffic speeds and use planting strips to provide a separation between pedestrians and vehicles.
- Use native, drought tolerant plant species to improve survivability and create a sense of place.
- Use plant material which does not reduce visibility such as low shrubs, groundcover, and canopy trees.
- Concentrate elaborate plantings in business districts and other high volume pedestrian areas.

### Estimated Costs:

Costs vary and are dependent on the type, quantity, and size of vegetation used.

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

Paths of 12'-14' in width are preferred for areas where high volumes of users are expected. If it is not possible to increase the width, including a divider line down the center for bi-directional traffic can be helpful as a means of increasing safety for path users. Width of a path may be reduced to 8 feet, depending upon physical, environmental or right-of-way constraints and topography.

These paths should keep the contour of the land for aesthetic and environmental reasons, but for practicality reasons should not be unnecessarily curved. The minimum radii or curvature recommended by AASHTO is 30-50 feet, and the cross slope should typically be less than 2%. The grade should not be more than 5%, but could reach 11% for short distances according to ADA and AASHTO guidelines. Right angles should be avoided for safety reasons, especially when considering bridge and road crossings.

### Vertical and Horizontal Clearance

Selective thinning of vegetation along a path increases sight lines and distances and enhances the safety of the path user. This practice includes removal of underbrush and limbs to create open pockets within a forest canopy, but does not include the removal of the forest canopy itself. A total of 8 to 10 feet of vertical clearance should be provided.

### Pavement Types

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

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

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

to install 4-inch thickness on compacted 4-inch aggregate base course. Pigment can also be added to concrete at a minimal cost to provide a subtle, aesthetically pleasing look.

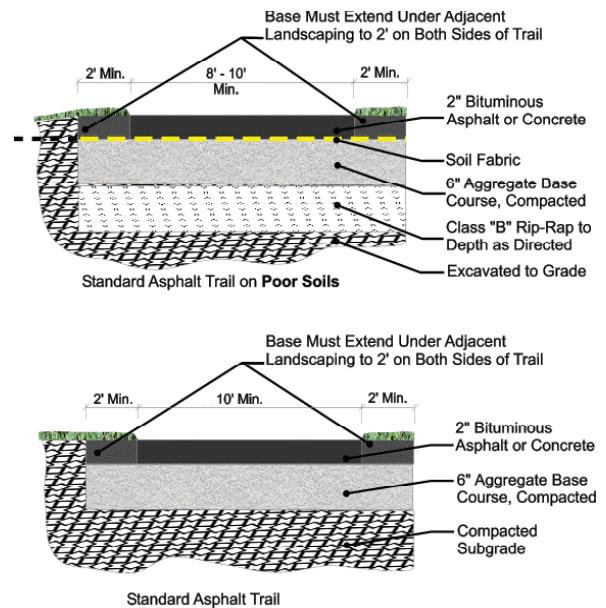
**Pervious Concrete** – This concrete is a newer invention which allows

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

\* Planting strip or tree pit would be located within sidewalk width.

storm water to percolate, reducing pollutants in stormwater runoff when used over permeable soils. Although pervious concrete provides superior traction, it is unfavorable to roller blading and skateboarding and has a higher installation cost.

**Asphalt** – Asphalt is a flexible pavement and can be installed on virtually any slope. Asphalt is smooth, joint free and softer than concrete, which is preferred by runners, roller bladers, cyclists, handicap users, and parents pushing baby strollers. In most cases, construction costs are significantly less. Standard installation calls for a minimum of 2-inch I-2 asphalt thickness with a 4-inch aggregate base course. Installation of a geotextile fabric beneath a layer of aggregate base course (ABC) can help to maintain the edge of a path. Asphalt pavement is also helpful in supporting a path in poor soils. Asphalt pavement can last up to 20 years with periodic maintenance. One important concern for asphalt paths is the deterioration of path edges. It is important to provide a 2' wide graded shoulder to prevent path edges from crumbling.



**Crusher fines** – Crusher fines are constructed of small, irregular and angular particles of rock, crushed into an interlocking tight matrix. The aggregate is excellent for running paths, as well as walking, mountain



Pedestrian sidewalk on bridge with separation.

Photo credit: [www.fhwa.dot.gov](http://www.fhwa.dot.gov)

## QUICK GUIDE

### Bridges:

- Provide sidewalks on both sides of all bridges when possible.
- Comply with ADA regulations for all sidewalks and ramps.
- Increase the width of a sidewalk if only one sidewalk is installed.
- Elevate walkways and sidewalks on bridges at least 6" above roadway for use separation.

### Estimated Costs:

Costs vary and are dependent on the type and length of bridge.

bike riding and equestrian use and can be constructed to meet ADA requirements. Paths must be smoothed out and graded several times per year.

**Dirt** – Dirt paths can be utilized well for hiking trails, mountain bike tracks, and equestrian uses. It is particularly important in steep terrain to include swales and other measures to direct water off the paths in an effort to avoid erosion in a rain event.

**Boardwalk** – Boardwalks are structures made of wooden planks constructed for pedestrians or cyclists along beaches or through wetlands, coastal dunes and other sensitive environments. They are typically constructed on piers and are elevated, providing rare interaction with an ecologically unique area.

### Environmental Issues

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

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

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

### Path Amenities and Accessibility

Though paths should be thought of as roadways for geometric and operational design purposes, they require much more consideration for



A water fountain located next to a bench provides a functional rest area.  
Photo credit: A. Lux

## QUICK GUIDE

### Street Furniture:

- Concentrate street furniture in areas of heavy pedestrian use such as downtown and business districts.
- Use a consistent style of furnishings to establish or reinforce the character of the community.
- Locate street furniture so it does not interfere or obstruct the required or desired pedestrian paths.
- Insure street furniture does not block curb ramps and entrances.
- Insure street furniture does not reduce or block sight lines.

### Estimated Costs:

Costs vary and are dependent on the type and style of street furniture.

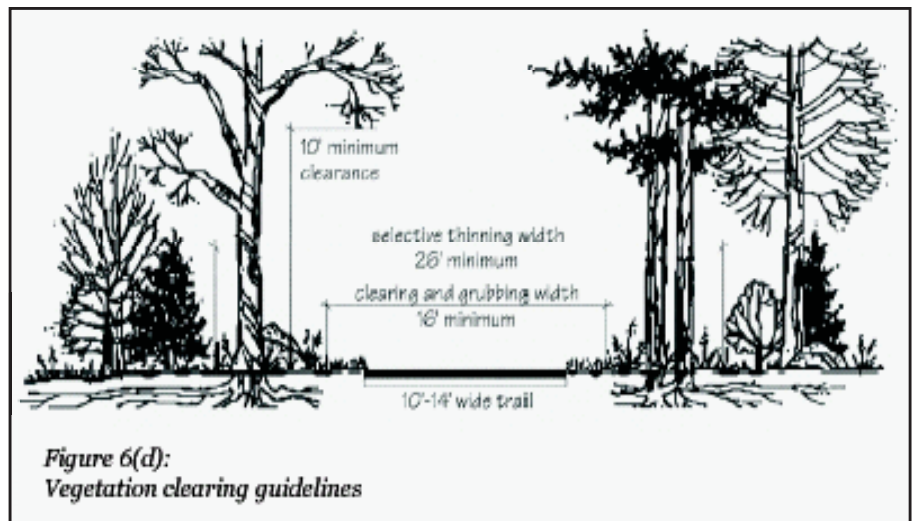
amenities than do roadways. Shade and rest areas with benches and water sources should be designed along multi-use paths. Where possible, vistas should be preserved. Wayfinding signs (e.g., how far to the library or the next rest area, or directions to restrooms) are important for non-motorized users.

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

## 5.5 SIDEPATHS/FOOTPATHS

### Sidepaths/Wide Sidewalks

A sidepath is essentially a multi-use path that is oriented alongside a



Vegetation clearing guidelines for a path/greenway

road. The AASHTO bike guide and North Carolina Design Guidelines strongly caution those communities contemplating the construction of a sidepath (or wide sidewalk) facility to investigate various elements of the roadway corridor environment and right-of-way before committing to its construction. If a road needs to be widened in the future, there will be costs associated with relocating the sidepath alongside the road.

### Foot Path

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





*Paved Greenway Trail  
Photo credit: D.Burden*

## 5.6 MEDIANS

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

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

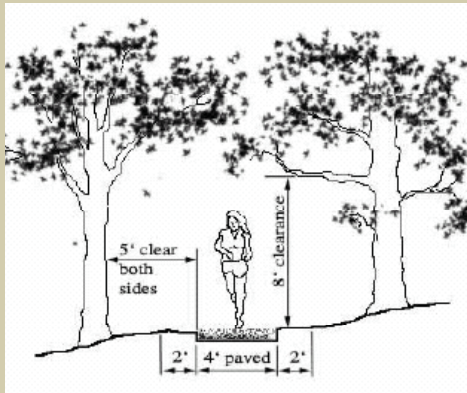
Sensitivity to large vehicles (buses, trucks and fire equipment) dictates some elements of the median design, curb style, and placement. Median-controlled roadways reduce the number of turning conflicts and are generally preferred for both pedestrians and cyclists over a two-way, left-turn lane (TWLTL)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

### Landscaping

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

### Median Pedestrian Refuge Islands

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



*Foot paths provide sensitive access to ecologically delicate areas.*

Median pedestrian refuge islands should be provided as a place of refuge for pedestrians crossing busy or wide roadways at either mid-block locations or intersections. Median crossings should be at least 6 feet wide in order to accommodate more than one pedestrian, while a width of 8 feet (where feasible) should be provided for bicycles, wheelchairs, and groups of pedestrians.

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





*Photo of Pedestrian  
Refuge Island*



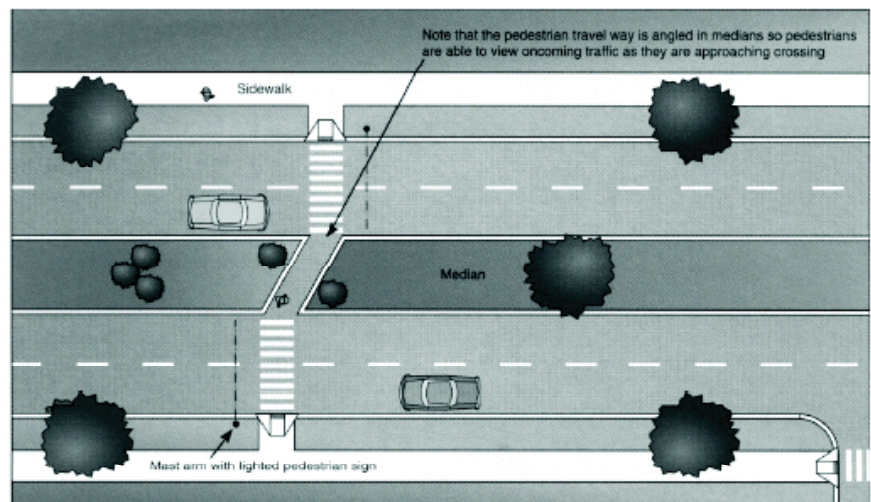
*Illustration of Pedestrian  
Refuge Island*

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

## 5.7 MARKED CROSSWALKS

A marked crosswalk designates a pedestrian right-of-way across a street. It is often installed at controlled intersections or at key locations along the street (a.k.a. mid-block crossings). A study should be completed prior to placing crosswalks to determine the need and the best type and location of that crosswalk.

North Carolina state law permits crossing at all intersections whether the intersection is marked with a crosswalk or not. Every attempt should be made to install crossings in places where pedestrians are most likely to cross. A well-designed traffic calming location is not effective if pedestrians are using other unmodified and potentially dangerous locations to cross the street.



*A lowered median can be used to filter stormwater  
and provide a refuge for pedestrians crossing a roadway.*

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

There is a variety of form, pattern, and materials to choose from when creating a marked crosswalk. It is important however to provide crosswalks that are not slippery, are free of tripping hazards, or are otherwise not difficult to maneuver by any person including those with physical mobility or vision impairments. Although marked crosswalks provide strong visual



*Raised Intersection*

*Photo credit: www.trans.ci.portland.or.us*

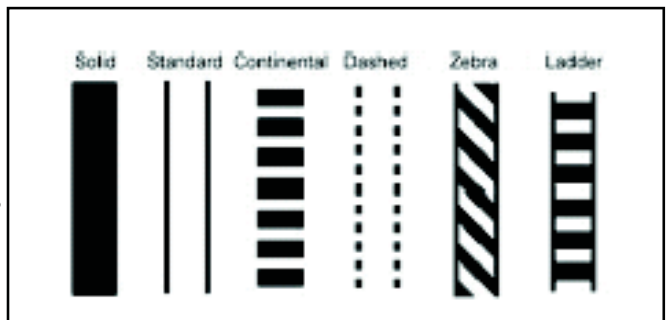
clues to motorists that pedestrians are present, it is important to consider the use of these elements in conjunction with other traffic calming devices to fully recognize low traffic speeds and enhance pedestrian safety.

#### Width

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

#### Paint

Reflective paint is inexpensive but is considered more slippery than other devices such as inlay tape or thermoplastic. A variety of patterns may be employed as detailed in the figure above. Crosswalk markings should be white, per MUTCD. Crosswalk markings should extend the full length of the crossings. Crosswalk lines of 10-12 inches of width are the recommended minimum. Curb ramps and other sloped areas should be fully contained within the markings.



or

*A variety of patterns are possible to designate a crosswalk.*

#### Pavement Treatment

A variety of colors textures may be used to designate crossings. These materials should be smooth, skid-resistant, and visible. Although attractive materials such as inlaid stone or certain types of brick may provide character and aesthetic value, the crosswalk can become slippery. Also, as it degrades from use or if it is improperly installed, it may become a hazard for the mobility or vision impaired.



*Crosswalk with decorative paving*

*Photo credit: Dan Burden*

#### Raised Crosswalk

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

#### Mid-Block Crossings

Mid-block crossings can help pedestrian access by supplementing crossing options. Mid-block crossings may be used in areas where there are substantial pedestrian generators or where intersections along a roadway are spaced far apart. Mid-block crossings pose special problems for many



*Raised Crosswalk*



*Advance stop bar at a crosswalk; Source: PBIC Image Library*

state and local departments of transportation, since pedestrians will often choose to cross at the location that is the most convenient for them to do so, not necessarily where it is the safest. As a result, engineers and planners have developed guidelines for mid-block crossings.

Below are some general guidelines on mid-block crossings:

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

#### Advance Stop Bars

Vehicle and pedestrian visibility is increased by placing a vehicle advance stop bar 4 to 10 feet back from the pedestrian crosswalk at signalized crossings and mid-block crossings. In certain situations, a larger setback of the advance stop bar may be required. Advance stop bars are 1–2 feet wide and they extend across all approach lanes at intersections. The time and distance created allows a buffer in which the pedestrian and motorist can interpret each other's intentions. Studies have shown that this distance translates directly into increased safety for both motorist and pedestrian. One study in particular claims that by simply adding a "Stop Here for Pedestrians" sign reduced pedestrian motorist conflict by 67%. When this was used in conjunction with advance stop lines, it increased to 90%.

#### Pedestrian Signals

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

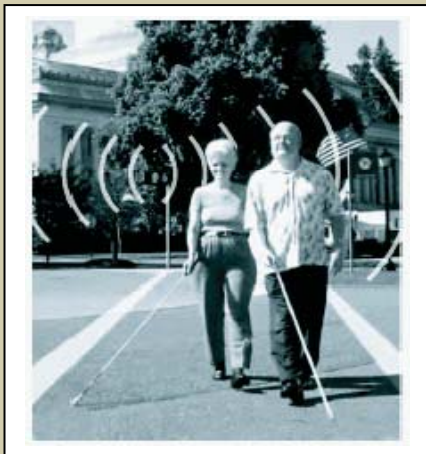




*International symbol for a pedestrian crossing, along with a countdown signal.;  
Source: ITE Pedestrian Bike Council*



*Pedestrian Signalization;  
Photo credit: www.pedbikemages.org*



*Audible Pedestrian Signals help the hearing impaired cross the street safely.*

to accommodate the walking speed of the elderly or children. Therefore it is suggested that a lower speed of 3.5ft/sec be used whenever there are adequate numbers of elderly and children using an area.

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

## 5.8 TYPES OF PEDESTRIAN SYMBOLS

International Pedestrian Symbols - According to the MUTCD, international pedestrian signal indication should be used at traffic signals whenever warranted. As opposed to early signalization that featured "WALK" and "DON'T WALK", international pedestrian signal symbols should be used on all new traffic signal installations. Existing "WALK" and "DON'T WALK" signals should be replaced with international symbols when they reach the end of their useful life. Symbols should be of adequate size, and clearly visible to make crossing safe for all pedestrians.

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

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

Pedestrian signal timings - The timing of these or other pedestrian signals needs to be adapted to a given situation. There are three types of signal timing generally used: concurrent, exclusive, and leading pedestrian interval (LPI). The strengths and weaknesses of each will be discussed with an emphasis on when they are best employed.

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

Where there are high-volume turning situations that conflict with pedestrian movements, the exclusive pedestrian interval is the preferred solution. The exclusive pedestrian interval stops traffic in all directions. In order to





A low cost sign that restricts right-hand turns at a red light. Source: PBIC Image Library



Examples of signs that protect pedestrians at crossings.

keep traffic flowing regularly, there is often a greater pedestrian wait time associated with this system.

A proven enhancement that prevents many of the conflicts addressed under either of the former methods is Leading Pedestrian Signal (LPI). An LPI works in conjunction with a concurrent signal timing system and simply gives the pedestrian a few seconds head start on the parallel traffic. An advance walk signal is received prior to a green light for motorists. This creates a situation where the pedestrian can better see traffic, and more importantly, the motorists can see and properly yield to pedestrians. As with the exclusive pedestrian interval, an audible cue will need to accompany the WALK signal for the visually impaired.

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

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

#### Right Turn on Red Restrictions

Introduced in the 1970's as a fuel saving technique, the Right Turn on Red (RTOR) law is thought to have had a detrimental effect on pedestrians. The issue is not the law itself but rather the relaxed enforcement of certain caveats within the law such as coming to a complete stop and yielding to pedestrians. Often motorists will either nudge into a crosswalk to check for oncoming traffic without looking for pedestrians or slow, but not stop, for the red-light while making the turn. There is legitimate concern that eliminating an RTOR will only increase the number of right-turn-on-green conflicts where all of the drivers who would normally have turned on red, now are anxious to turn on green. Consider elimination on case by case basis and only where there are usually high pedestrian volumes.

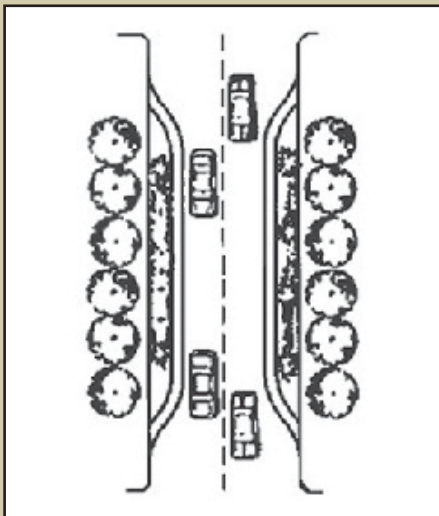
## QUICK GUIDE

### Curb Extensions Guidelines:

- Plant curb extensions whenever possible. Ensure vegetation does not block vehicular sight lines.
- Do not extend curb into travel lanes. Only use curb extensions on roadways with an existing parking lane.
- Consult with local fire, EMS, and sanitation departments to ensure maneuvering space is provided for their use.

### Estimated Costs:

Costs vary and are dependent on the type and length of the curb extension. Curb extensions range in cost from \$5,000-\$25,000 per corner. Cost is dependent on design, condition of the site, and intensity of amenities, such as street furniture, landscaping, lighting, etc.



Choker with curb extensions.  
Photo credit: Making Streets that Work

## 5.9 CURB RAMPS/CURB EXTENSIONS

Curb ramps are critical features that provide access between the sidewalk and roadway for wheelchair users, people using walkers, crutches, or handcarts, people pushing bicycles or strollers, and pedestrians with mobility or other physical impairments. In accordance with the 1973 Federal Rehabilitation Act and to comply with the 1990 Federal ADA requirements, curb ramps must be installed at all intersections and mid-block locations where pedestrian crossings exist. In addition, these federal regulations require that all new constructed or altered roadways include curb ramps. Although the federally prescribed maximum slope for a curb ramp is 1:12 or 8.33% and the side flares (or "sidewings" as listed in the graphic) of the curb ramp must not exceed a maximum slope of 1:10 or 10.0%, it is recommended that much less steep slopes be used whenever possible. It is also recommended that two separate curb ramps be provided at each intersection. The minimum width for the curb ramp is four feet. With only one large curb ramp serving the entire corner, there is not safe connectivity for the pedestrian. Dangerous conditions exist when the single, large curb ramp inadvertently directs a pedestrian into the center of the intersection, or in front of an unsuspecting, turning vehicle. To provide a tactile warning to the visually impaired, raised truncated domes with a color contrast to the background material (typically concrete) should be used. Two separate curb ramps, one for each crosswalk, should be provided at each corner of an intersection.

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

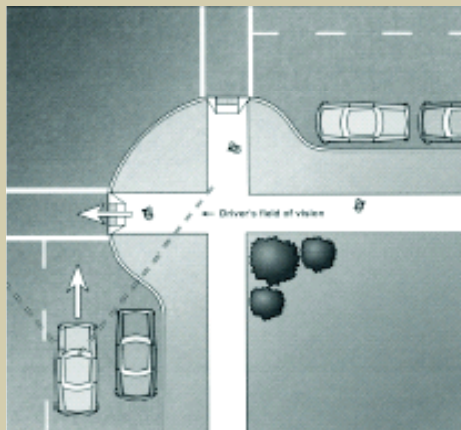


One-lane Chicane  
Source: Richard Drdul





*Choker in a mixed use area*  
Photo credit: Michael Cynecki



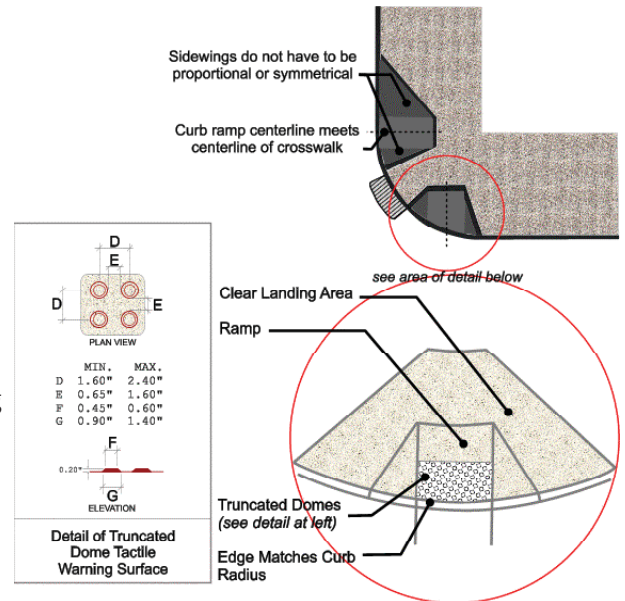
*By reducing a pedestrian's crossing with a bulb out, less time is spent in the roadway.*



*Curb extensions (bulb outs)*

### Curb Extensions ("Bulb Outs," "Chokers," "Neckdowns") and Curb Radii

A curb extension, or bulb out, is an extension of the sidewalk into the parking lane of a street. Because these curb extensions physically narrow the roadway, a pedestrian's crossing distance and consequently the time spent in the street is reduced. In addition, curb extensions may encourage motorists to drive slower by narrowing the travel lane and reducing vehicular speeds during turning movements at intersections. Curb extensions can be placed either at mid-block crossings or at intersections. Curb extensions at mid-block locations are known as "chokers." Curb extensions at intersections can also be referred to as "neckdowns."



Sight lines and pedestrian visibility are reduced when motor vehicle parking encroaches too close to corners creating a dangerous situation for pedestrians. When placed at an intersection, curb extensions preclude vehicle parking too close to a crosswalk. Also, curb extensions at intersections can greatly reduce turning speed, especially if curb radii are set as tight as possible. Finally, curb extensions also reduce travel speeds when used in mid-block crossings because of the reduced street width. Curb extensions should only be used where there is an existing on-street parking lane and should never encroach into travel lanes, bike lanes, or shoulders. The below table illustrates the relationship between posted speeds and the curb (often called "corner") radius. Motorists will travel more slowly around corners with smaller curb radii even without the use of curb extensions.

**Maximum Desired Speed and Curb Radii**

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



Pedestrian Lighting can add a unique aesthetic to a project while keeping an area safe. Source: PBIC Image Library

***It is recommended that the community adopt a particular style of street lighting fixture appropriate for the municipality's identity and coordinate this choice with stylistic choices in other street facilities.***

### 5.10 LIGHTING

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

In most cases, roadway street lighting can be designed to illuminate the sidewalk area as well. The visibility needs of both pedestrian and motorist should be considered. In commercial or downtown areas and other areas of high pedestrian volumes, the addition of lower level, pedestrian-scale lighting to streetlights with emphasis on crossings and intersections may be employed to generate a desired ambiance. Lighting for sidewalks and off-street paths should be provided where considerable pedestrian traffic is expected at night, where there is insufficient available light from the surrounding area, and at all designated road crossings.

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

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

Sophisticated lighting needs to be directional and focused upon the street. A flat lens light is the best choice in lighting the street. Fixtures that produce glare should be avoided, as they produce diffused light, and sometimes make visibility difficult. The pedestrian-level lighting that is preferred includes mercury vapor, metal halide, LED, or incandescent. Although low-pressure sodium lights may be energy-efficient, they are less desirable due to the color distortion they create. High-pressure sodium lights are preferable, as they create less color distortion.

Lighting should be sufficient so that pedestrians can see cars, and cars can see pedestrians. However, over lighting of an area can produce an environment that is unattractive to pedestrians, and the resulting glare becomes an environmental issue.

It is important to note that every effort should be made to address and prevent light pollution. Also known as photo pollution, light pollution is "excess or obtrusive light created by humans." Whenever urban improvements are made where lighting is addressed, a qualified lighting expert should be consulted early in the process. This individual should





*Example of wayfinding signage in California*



*Examples of wayfinding signage in Raleigh, NC; photo credits: City of Raleigh*

not only create a safe and attractive ambiance, but will do so with the minimum of fixtures, an awareness of the importance of minimizing photo pollution, and with a focus on minimizing future energy use. A thoughtful plan of how and where to light will reap benefits not only in potential reduced infrastructure cost, but future energy costs as well.

### 5.11 SIGNAGE

Signage can be an effective tool to alert drivers to reduce speeds, allow pedestrians to exercise extra caution and make visitors and residents aware of attractions. It is important not to cause “clutter” when using a variety of signage. This can cause complacency and noncompliance with signs in general. Signs, and the sign text, should be large enough to be seen from a distance. It is imperative that all signs be properly located so as not to obstruct the pedestrian and visibility triangles of motorists.

Signage is governed by the MUTCD, which provides specifications on the design and placement of signage on the right-of-way. There are three types of signage: 1) Wayfinding signage 2) Regulatory and 3) Warning signs. Maintenance of signage is as important as walkway maintenance. Clean, graffiti free, and relevant signage enhances guidance, recognition, and safety for pedestrians.

#### Wayfinding Signs

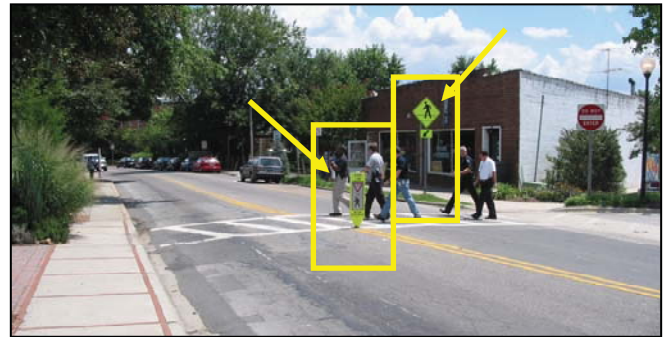
Wayfinding or guide signs provide directional cues to attractions, points of interest or main districts of a town. Wayfinding signage should orient and communicate in a clear, concise and functional manner. It should enhance pedestrian circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity. Regulations should also address the orientation, height, size, and sometimes even style of signage to comply with a desired local aesthetic. It is recommended that municipalities adopt consistent and descriptive graphics to identify pedestrian routes. This signage system would assure pedestrians that they are safe and will not encounter gaps in facilities along these routes. A map should be incorporated into each route illustrating the entire pedestrian system and their location. Bus stops, destinations, and mileage should also be identified on the signs.

### Regulatory and Warning Signs

*Regulatory signs* give notice of traffic laws or regulations that pedestrians, cyclists and motorists are required by law to follow. Warning signs call attention to unexpected conditions on, or adjacent to, a roadway, bike or pedestrian facility that can be potentially hazardous to users.

*Pedestrian-related signage* serves primarily to notify motorists and others of the presence of pedestrians. The intended effect is for motorists to drive more cautiously and reduce their speeds, thereby improving the safety for pedestrians in the given area. Signs can be used in a variety of places, including at crosswalks, at intersections, in streets, and near schools.

National standards for sign placement and use can be found in the Manual for Uniform Traffic Control Devices (MUTCD). The MUTCD provides guidance for warning signs which can be used at both crosswalks, or along the roadway. The following are some



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

recommended signs which municipalities should consider installing. For more signs and more detailed guidelines for sign installation and use, the municipality should consult the MUTCD. The S4-3/R1-6 crosswalk warning sign as well as the W11-2 signs are regulatory. The remaining signs directly below are warning signs. The first sign (R1-6) is usually installed within the street to warn motorists to yield to pedestrians in a crosswalk. The small "school" sign installed directly above (S4-3) is added to the in-street sign for placement near a school. The fourth sign, "Turning Traffic", is usually placed at intersections to warn motorists that are turning right or left to yield to pedestrians in crosswalks. For the fifth sign, the top sign can either be combined with the smaller "ahead" sign or the arrow symbol to indicate the presence of a crosswalk to motorists in a school zone.



*Examples of typical regulatory signs*

The following signs are additional MUTCD signs related to pedestrians.



### School Zone Treatments

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





*Trees enhance the pedestrian environment, slow drivers down, improve air quality and create a unique aesthetic.*

## 5.12 STREET TREES

Street trees enhance the landscape for pedestrians, creating an attractive and comfortable environment for walking. Street trees also act as a traffic calming device, encouraging drivers to drive more slowly. In addition, a large line of leafy street trees can absorb engine noise, providing enough of a buffer to block street traffic noise from reaching private yards and homes. Trees also improve air quality by consuming carbon dioxide and emitting oxygen. Street trees may also increase real estate values by increasing curb appeals of homes. This Plan strongly recommends that municipalities adopt a tree ordinance to give direction for tree installation and maintenance.

**Planting requirements** - All street trees should be selected according to the standards described in the American Standard for Nursery Stock of the American Nursery and Landscape Association. Install and maintain trees according to the International Society of Arboriculture (ISA) guidelines. A landscape architect should be consulted to select the proper tree and planting technique.

**Visibility** - Street trees should never be allowed to obscure the line of sight between pedestrians and drivers. A clear view should be maintained between 30" and 72" above the street. This area must be free of limbs and foliage for safe cross visibility. Other plantings should also follow this rule within 50 ft. proximity of street corners and other designated crossing points. In order to maintain visibility, provide shade, and a comfortable pedestrian corridor, street trees should primarily be vase shaped, columnar, or oval in form (habit) with large spreading crowns.

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

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

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

**Tree Pits and Tree Grates** - Street trees should generally be located in open planting strips. However, tree pits with tree grates may be a practical, although more expensive, alternative in very high pedestrian traffic areas. Tree grates should generally not encroach upon the travel path. For optimal pedestrian safety and comfort, all tree grates used should meet the ADA standards for "accessible pathway". Tree grates also require occasional maintenance to remove the radial spokes from the grate as the tree matures and the trunk grows in diameter.





*Street trees in an urban setting can be planted in small planting beds or in street tree grates*

Maintenance - Trees and landscaping require ongoing maintenance. Local municipalities typically take responsibility for maintenance of these amenities, although there are instances where local community groups have provided funding and volunteers for maintenance. In order to reduce the amount of maintenance necessary, it is helpful to use native plant material that is already adapted to the local soil and climate. Growth pattern and space for maturation, particularly with larger tree plantings, are important to avoid cracking sidewalks and causing a pedestrian obstruction.

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

City of Durham Public Works "Reference Guide for Development," Table of Minimum Design Requirements for Public and Private Residential Streets. Rev. October, 2003. Page 154. ([http://www.ci.durham.nc.us/departments/works/handbook/reference\\_guide.pdf](http://www.ci.durham.nc.us/departments/works/handbook/reference_guide.pdf))



*Street trees provide shade, a "sense of place" and an inviting setting for both pedestrians and motorists.*



*Pedestrian underpass with metal railing for pedestrian safety and separation.*

*Photo credit: ITE Pedestrian Bicycle Council*



*A pedestrian-friendly bus stop provides a safe place to wait with covered seating.*



*Attempting to separate pedestrians from the street can prove problematic. As shown here, despite the elevated pedestrian bridge, many pedestrians choose to cross at street level.*

### 5.13 PEDESTRIAN OVERPASS/UNDERPASS /TRANSIT STOP TREATMENTS/BRIDGES

#### Underpasses/Overpasses

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

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

#### Transit Stop Treatments

To accommodate as many users as possible, a transit system must include well-planned routes and safe, accessible stops. Bus stops should be designed to accommodate the appropriate number of users and should be highly visible to pedestrians and motorists. Bus or other transit stops should be located in places that are most suitable for passengers. For example, stops should be provided near higher density residential areas, commercial areas and schools, and be connected to these areas by sidewalks.

As with any human scale design element discussed, safety is an important factor to consider when locating bus stops. In the case of a bus stop, special attention should be paid to the number of lanes and direction of traffic when deciding to locate a stop on the near or far side of an intersection. Also special consideration must be paid to the wheelchair lifts in terms of how and where the mobility impaired will exit and enter the bus. It is good practice to construct a transit stop just beyond an intersection, which encourages riders to cross the intersection behind the bus and in full view of approaching motorists. The location also should be set back enough from the roadway to buffer users from traffic without impeding pedestrian activity.

Safety and comfort at a bus stop is determined by the amenities offered to users. Bus stop signage including route information, shelter with seating,

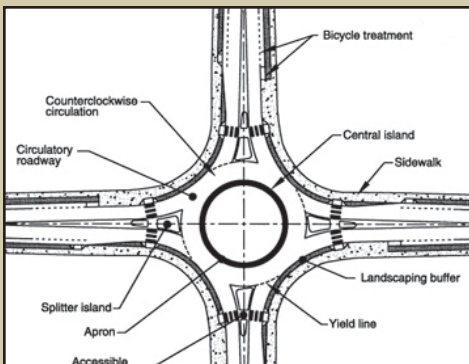




Safe pedestrian walkway along a bridge. Source: PBIC Image Library



Chicane with a center island and curb extensions  
Photo credit: Dan Burden



Key roundabout features  
Source: US DOT

trash cans, and bicycle parking encourage transit use. Pedestrian-level lighting improves the visibility of pedestrians to motorists and increases the level of safety for users. At a minimum, marked crosswalks (especially at mid-block stops), curb ramps, and proper sidewalk widths should be considered.

### Bridges

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

## 5.14 TRAFFIC CALMING TECHNIQUES

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

Neighborhood Traffic Circles - a small, raised circular island positioned in the center of an intersection, designed to slow traffic by requiring traffic to maneuver around the island.

Roundabout –circular intersection with raised circular islands in the center, with “yield on entry” and deflecting islands on all approaches designed to slow traffic. Traffic proceeds in a counterclockwise direction. Roundabouts are highly engineered to accommodate specific traffic types, volumes and speeds.

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

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



*Neighborhood Traffic Circle in a Residential Area*  
Photo credit: [www.alexandria.gov](http://www.alexandria.gov)



*Speed Hump;*  
Photo credit: PBIC Image Gallery



*Speed Table;*  
Photo credit: PBIC Image Gallery

**Textured pavements** - stamped pavement or alternate paving materials to create an uneven surface for vehicles and pedestrians to traverse. Textured street pavement provides a visual and tactile cue for drivers that they are driving in an area of high pedestrian usage. Similarly, they cue pedestrians that they are entering a vehicular zone, and are a particularly effective treatment to warn visually impaired pedestrians. Textured street pavements should be used in areas of substantial pedestrian activity and where noise is not a major concern.

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

### **5.15 TEMPORARY WORK**

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



## ANCILLARY FACILITIES AND PROGRAMS

### 6.1 ADDITIONAL SIGNAGE AND MAPPING

As mentioned earlier, wayfinding systems are a means for a municipality to increase directional clarity, visibility, and mobility within their jurisdiction, helping corporate and private individuals as well as visitors maneuver about their municipality with ease and certainty. Continuity of color, shape, size, and text aid in providing clarity within the town. The Town of Old Fort should engage a design professional for their assistance in developing these standards. There are many publications to research this topic prior to engaging any outside professional. The following types of signs are part of a town's wayfinding system.

#### Directional Signage OR Pedestrian Related Signage

Directional, referred to as **Pedestrian Related Signage** in the previous section, signage is effective in alerting motorists to reduced speeds and encourage pedestrians to exercise caution in certain conflict areas. It is important to not cause "visual clutter" when using a variety of signage. Signs and their text should be large enough to be seen from a viewing distance of around 50'. It is imperative that all signs are properly located so they do not obstruct pedestrians and visibility triangles of motorists. All signage for motorists and pedestrians must meet Department of Transportation and MUTCD signage standards.

#### Interpretative Signage

Interpretative signage is an effective means of displaying information other than traffic rules and regulations. Visually consistent signage about the history of Old Fort and the larger region can help guide visitors to important sites, destinations, or to share interesting information. These signs may be effective in encouraging people to experience a particular place or engage in an activity such as visiting the museum, train depot, mountain music venue and Davidson's Fort. This concept could be expanded to develop a self-guided walking tour of historic downtown and neighborhoods. The greenway system would also benefit from interpretative signage.

A study by the North Carolina State University Community Design & Development Laboratory offered several examples of possible wayfinding graphics for the Town of Old Fort in a report titled "Town of Old Fort Design & Planning Report". These suggestions should be considered by the Town and community in an effort to create a visually appealing and unified look for Old Fort.

#### Sign Placement

Locate signs in prominent locations so they can be easily viewed. It is important to ensure they do not interfere with pedestrian and vehicular movement. For example, signs should not be placed within a sidewalk or reduce the clearance of a sidewalk to less than five feet.

#### Pedestrian Corridor Mapping

It is recommended that the Town of Old Fort adopt consistent illustrative



*Photo Simulation of possible wayfinding signage for Old Fort; Image credit: NCSU*



*Signage showing a designated district within a city.*

graphics to identify pedestrian routes in Old Fort. Destinations such as schools, greenways, and the commercial development on Market Street should be identified so pedestrians are aware of distances and locations of these areas.

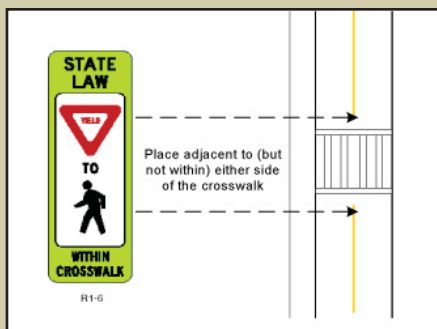
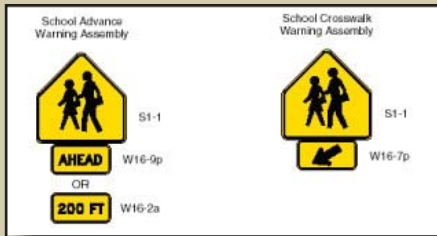
## 6.2 SCHOOL AREAS

Safe interconnectivity to schools from surrounding neighborhoods is a high priority and concern for everyone in any community. Safety programs should be developed and implemented at all schools within Old Fort's planning jurisdiction. It is recommended that the Town of Old Fort adopt a "Safe Routes to School" program to promote and support students walking and bicycling to school. This is a federal program to encourage and enable children to walk and bike to school safely and hopefully increase an opportunity to incorporate exercise into the children's daily schedule. These routes are usually patrolled by bicycle police officers. The National Center for Safe Routes to School is available to assist communities in developing and implementing programs and strategies to create successful results.

Safe Routes to School Programs help to reduce traffic congestion and traffic speeds around schools which allow children to experience a greater sense of independence and personal responsibility, as well as encourage them to learn important traffic safety skills. Schools should work with their communities to develop routes for children to take to and from school. These routes should include those with adult crossing guards, stop signs, traffic signals, and traffic calming measures. Involvement with the local police force is highly encouraged.

In addition to the **School Zone Treatments** outlined in the previous section, the following safety standards should be implemented at all school locations:

- Install sidewalks within a half mile radius of all schools
- Incorporate traffic calming measures such as decorative pavement and those discussed in Section 5 within a half mile radius of all schools
- Incorporate signage to alert motorists that they are in a school zone. Signs placed in the median or the middle of the street are effective
- Adopt a Safe Routes to School Program in all elementary and middle schools
- Provide educational programs on pedestrian and bicycle safety at all schools



*School Speed Sign*

*Photo credit: ITE Pedestrian Bicycle Council*



*School Crossing Guard*  
Photo credit: Dan Burden



### 6.3 SAFETY EDUCATION PROGRAMS

Pedestrian safety and health programs can help target problem areas and educate the residents of Old Fort about safety and accessibility issues. Below is a description of safety and health programs which should be implemented in the Town of Old Fort planning jurisdiction.

#### School Zone Safety Program

Creating a School Zone Safety Program provides information to students, parents, and community members of the safe routes to school and safe pedestrian behavior. It will also help identify areas in need of additional attention such as problem areas or locations in need of traffic calming devices. The School Zone Safety Program can be done in conjunction with a Safe Routes to School Program. The school, school district, and safety committee can develop a safety plan which consists of the following:

- Develop a school route plan
- Evaluate and configure the school site
- Consider other safety elements
- Distribute and maintain the plan

#### Safe Routes to School Program

Safe Routes to School (SRTS) is a program focused on encouraging and enabling children to walk and bike to school safely. The program assists in the facilitation of planning, developing and implementing projects that improve safety for pedestrians and bicyclists and helps make these an appealing mode of transportation for children and adults alike. SRTS encourages infrastructure improvements, education programs, and funding to provide safe and comfortable pedestrian environments and instill active lifestyles at an early age. For more information please visit:

[www.ncdot.org/transit/bicycle/safety/programs\\_initiatives/Safe\\_Routes.html](http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/Safe_Routes.html)

#### Pedestrian Safety Campaign

The Pedestrian Safety Campaign is available to municipalities and communities within North Carolina. States and communities are eligible to receive a free Pedestrian Safety Campaign Planner from the Federal Highway Administration which is a tool kit for municipalities to customize and apply within their communities. The materials provided in the Campaign Planner are available in multiple medias: television, radio, cinema, and print advertising. A Step by Step Guide is also available to assist in implementing the campaign at the local level. The purposes of the campaign are as follows:

- Educate motorists that pedestrians and bicyclists are legitimate road users and they should expect them on or near roadways.
- Educate pedestrians on how to minimize risks to their safety
- Develop program materials which explain pedestrian facilities such as sidewalks, crosswalks, pedestrian refuge islands, etc.,



and their purpose and function

For more information please visit:

[safety.fhwa.dot.gov/local\\_program/pedcampaign/index.htm](http://safety.fhwa.dot.gov/local_program/pedcampaign/index.htm)

#### Share the Road Initiative

The North Carolina Department of Transportation (NCDOT) Division of Bicycle and Pedestrian Transportation is dedicated to educating the general public of pedestrian and bicycle rights and responsibilities. The Share the Road Initiative is an example of NCDOT's efforts to educate motorists of the presence of pedestrians and bicyclists in traffic areas. Additionally, the Division of Bicycle and Pedestrian Transportation assisted in the development of the North Carolina Driver's Handbook which includes sections devoted to pedestrian and bicycle rights and responsibilities.

For more information please refer to:

[www.ncdot.org/transit/bicycle/safety/programs\\_initiatives/share.html](http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/share.html)

#### North Carolina School Crossing Guard Training Program and Manual

In 1998 NCDOT Division of Bicycle and Pedestrian Transportation developed a program to train law enforcement officers who in turn trained school crossing guards. The purpose of the course is to standardize procedures and instruction of school crossing guards, as well as educate children on how to cross streets safely. In 1999 the program was updated and is currently training law enforcement officers in 42 jurisdictions. **Currently the Town of Old Fort is not included on this list and the law enforcement department should contact the Division of Bicycle and Pedestrian Transportation to participate in the program.**



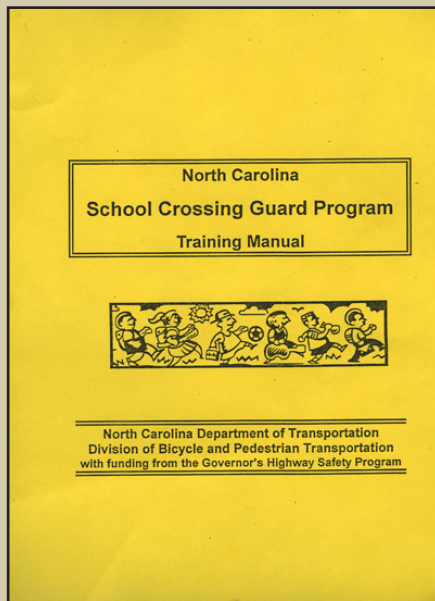
*School Crossing Guard; Photo credit: Dan Burden*

For the NC School Crossing Guard Training Manual and more information please visit:

[www.ncdot.org/transit/bicycle/safety/programs\\_initiatives/crossing.html](http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/crossing.html)

#### National Walk a Child to School Program

Together the Partnership for a Walkable America, the US Department of Transportation, and the Pedestrian & Bicycle Information Center sponsor the National Walk a Child to School Program. The purpose of the program is to increase the number of children who walk to school. The NCDOT Division of Bicycle and Pedestrian Transportation supports this program. Typically the program is held in October with the following



### 6.3 Safety Education Programs



## objectives:

- Encourage adults including teachers, parents, staff, community members to teach children safe pedestrian behavior



*Walk to School Day, Indianapolis; Photo credit: IndyStar.com*

- Encourage adults to help children identify and use safe routes to school
- Remind everyone in the community of the health benefits of walking on a daily basis

For more information please visit: [www.ncdot.org/transit/bicycle/safety/programs\\_initiatives/walk2school\\_national.html](http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/walk2school_national.html)

*Walk a Child to School in North Carolina*

To encourage North Carolina residents to walk to school, the State of North Carolina has its own initiative. Support from the NC Governor's Highway Safety Program has helped make this a growing and successful program. To view a list of schools participating visit: [www.ncdot.org/transit/bicycle/safety.programs\\_initiatives/walk2school\\_NC2001.html](http://www.ncdot.org/transit/bicycle/safety.programs_initiatives/walk2school_NC2001.html)

## 6.4 ENCOURAGEMENT AND PROMOTION

The Town of Old Fort is committed to improving the pedestrian environment and overall walkability of the Town. This section deals with how the Town and its residents can encourage and promote walking as a viable mode of transportation as well as improving community interaction.

Education about pedestrian facilities and routes are an important component of the Town of Old Fort Pedestrian Master Plan's success. Following the design and implementation process, it is imperative that education about pedestrian and bicyclist facilities as well as safety continue to be addressed. This may be done through advocacy groups, pedestrian citizen committees, schools and the media. This will ensure that new



*Children walking and biking  
to school;  
Photo credit: Dan Burden*

challenges are addressed and that opportunities are identified and realized.

### Maintenance Policies and Enforcement

Maintaining an accessible, functional, and clean pedestrian environment is essential to a walkable community. Regular upkeep and maintenance insuring sidewalks, greenways and other pathways are clear of debris and other obstructions demonstrates a municipal commitment to a walkable environment. In order to meet the needs of maintenance and enforcement, the Town of Old Fort should evaluate current maintenance policies to determine if they are adequate to include implementation of the recommendations in this Pedestrian Master Plan.

Incorporate pedestrian improvements early in the NCDOT Planning Process. To ensure pedestrian improvements are accepted, they must be incorporated early in the NCDOT planning process for streets under consideration. Promoting pedestrian facilities and their ongoing

maintenance into the forefront of roadway design increases the possibility that they will be included in annual improvements. It is very difficult and costly to attempt to incorporate pedestrian facilities into a roadway improvement project after it has been accepted for NCDOT maintenance.

#### Identify Funding Sources

Identifying sources of funding that support pedestrian facilities and their construction helps ease the burden of expensive pedestrian facility projects. There are a variety of funding programs and sources from the Federal, State, and local level. For a complete list of funding sources please see Section 7.3.



*Children walking to school on a crosswalk;  
Photo credit: PBIC Image Library*

#### Education Programs and Events

Pedestrian and bicycle education programs aimed at all residents of Old Fort regardless of age or ability encourage people to walk and bike safely. These types of programs can easily be organized through the Parks and Recreation Department and public school systems. For example, the Safe Routes to School Program is an excellent example of how a school program can educate children about safe pedestrian behaviors and pedestrian routes. The Town has the opportunity to team with schools, senior centers, and other groups to educate all residents about safe pedestrian behavior and routes.

#### Tourism and Local Events

Events such as “Walk-to-School” days and “Walk-for-Health” days can help spark interest, attract visitors, and bring the community together.

## PROJECT DEVELOPMENT AND COSTS

### 7.1 PRIORITIES

Priorities for implementation of the Pedestrian Master Plan are the projects listed in the Short Term Improvements category. As discussed earlier, these areas represent the most heavily used pedestrian corridors, those which provide links between destinations such as schools and commercial areas and those that address the most immediate safety or functionality concerns in the Town.

#### Short Term Projects- Phase 1

Project Type	Project Description
ADA Ramps	Add ADA ramps at all corners of the intersection of US Hwy 70 (Main Street) and Catawba Ave. Address the safety concern of the difference in elevation between the existing sidewalk and the roadway.
Crosswalks	Add two crosswalks at the south and west sides of the intersection of US Hwy 70 (Main Street) and Catawba Ave.
Sidewalk/Curb and Gutter Construction	Expand the walking area and repair the curb and gutter at the southwest corner of US Hwy 70 (Main Street) and Catawba Ave near the Arrowhead statue and fountain.
Curb Extension	Add bump-outs/curb extensions on the southeast side of the Main and Catawba intersection.
Curb Extension	Add bump-outs/curb extensions on the Spring Street side of all corners of the intersection of Main and Spring.
Crosswalk	Add a highly visible crosswalk on the southern side of Main Street, crossing Spring Street.
Sidewalk Construction	Add a sidewalk on the south side of Mitchell from Salisbury Ave. to the elementary school.
Crosswalks	Add crosswalks on all four sides of the intersection of Mitchell and Catawba.
Lighting	Install new light fixtures at Mountain Gateway Museum.



**Short Term Projects- Phase 2**

Sidewalk Construction	Install a sidewalk on the east side of Salisbury from Crawford to the proposed Mill Creek Greenway.
Sidewalk Construction	Install a sidewalk on the west side of Mauney from Crawford north to the pedestrian walkway and bridge at the museum.
Roadway Improvements	Widen Commerce Street at the underpass under US Hwy 70 to comply with the Mill Creek Greenway Master Plan, expanding the shoulder for a greenway.
Sidewalk Construction	Install a sidewalk on the south side of Commerce from Catawba to Orchard to tie into the proposed greenway and provide ADA access between the greenway and downtown.
Trail Construction	Construct the first phase of the proposed Mill Creek Greenway trail between Orchard Street and the elementary school and continuing to connect to the McDowell County Trails system.
Sidewalk Infill Construction	Complete the gap in the sidewalk on Water Street from the museum to the pedestrian bridge.
Sidewalk Construction	Install a sidewalk on the east side of Lackeytown Road from Main Street to Davidson's Fort.

Following the Short Term improvements listed above, the Long Term Projects listed earlier in the document should take place as soon as funding sources or capital expenditures become available. These corridors will provide a finer degree of connectivity throughout Old Fort, promoting the vision for the Town, but are not in immediate need of improvement.

## 7.2 COSTS

The Pedestrian Master Plan provides numerous recommendations for the integration and locations for pedestrian facilities. Below is a list of sample costs for recommended pedestrian facilities. Specific site factors and cost fluctuations can increase actual costs, these estimates are intended to serve only as a rough guide.

<b>Item</b>	<b>Cost</b>
<i>Sidewalks (5' wide concrete)</i>	<i>\$25 per linear yard*</i>
<i>Concrete Curb and Gutter</i>	<i>\$15-\$20 per linear foot*</i>
<i>Standard Handicap Ramp</i>	<i>\$500-\$800 per corner*</i>
<i>Simple Crosswalk (Signs and Pavement markings)</i>	<i>\$500-\$1,500 each*</i>
<i>Decorative Crosswalk</i>	<i>\$5,000-\$15,000 each*</i>
<i>Pedestrian Refuge Island (Signage and Markings)</i>	<i>\$7,500-\$40,000 each*</i>
<i>Pedestrian Signal</i>	<i>\$40,000-\$75,000 each*</i>
<i>Pedestrian Sign</i>	<i>\$250 each*</i>
<i>Speed Hump (Signage and Markings)</i>	<i>\$1,500-\$2,500 each*</i>
<i>Curb Extensions</i>	<i>\$5,000-\$25,000 per corner</i>
<i>Chokers</i>	<i>\$10,000-\$30,000</i>
<i>Raised Intersections</i>	<i>\$35,000-\$80,000</i>
<i>Roundabouts</i>	<i>\$50,000-\$550,000</i>
<i>Chicane</i>	<i>\$20,000-\$40,000</i>

The following list provides suggestions to reduce the total costs of pedestrian facilities:

- Include pedestrian facilities such as sidewalks in all road construction projects (water/sewer lines, underground utility projects, roadway widening, etc.).
- Combine pedestrian facility projects. Rather than constructing sidewalks along one side of a street, combine it with several other smaller sidewalk projects to help reduce costs. However, be sure to provide connectivity between segments of sidewalk, avoiding sidewalks that end abruptly.
- Combine pedestrian facility projects with other compatible uses, such as School Bonds.
- Advanced land and right of way acquisition can help disperse the total costs of pedestrian facility projects. Growth and development trends indicate where future pedestrian facilities may be necessary.
- Utilize funding sources such as Tax Incremental Financing Bonds to offset costs through incremental payment.

Below is a list of sample costs for recommended facilities for greenways and off-road trails. As site factors and cost fluctuations can increase actual costs, these estimates are intended to serve as a rough guide.

<b>Item</b>	<b>Cost*</b>
<i>Boardwalk</i>	<i>\$160 per linear foot</i>
<i>Information Sign</i>	<i>\$250 each</i>
<i>Simple Crosswalk (Signs and Pavement markings)</i>	<i>\$500-\$1,500 each</i>
<i>Decorative Crosswalk</i>	<i>\$5,000-\$15,000 each</i>
<i>Pedestrian Refuge Island (Signage and Markings)</i>	<i>\$7,500-\$40,000 each</i>
<i>Pedestrian Signal</i>	<i>\$40,000-\$75,000 each</i>
<i>Multi-Purpose Path (8-10' wide asphalt) Clearing, Grading and Drainage**</i>	<i>\$40-\$60 per linear foot \$100 per linear foot**</i>
<i>Benches</i>	<i>\$600 each</i>
<i>Trash Receptacles</i>	<i>\$200-\$800 each</i>
<i>Restrooms</i>	<i>\$40,000 each</i>

The following list provides suggestions to reduce the total construction costs for greenways and off-road trails:

- *Collect Impact Fees* from developers to help pay for improvements and necessary facilities to serve new growth. These fees are charged to all new development and alleviate the burden on existing residents to pay for new growth. These fees can be used for greenways and obtaining the land necessary to serve a growing community.
- *In-Lieu-Of Fees* allow a developer to pay up front the cost of greenways rather than construct the section within their development. This allows a municipality to use the funds for the appropriation of optimum land for conservation and greenway as well as park development rather than accepting less than optimum parcels that meet the minimum standards for greenways.
- *Volunteers* have the potential to significantly contribute to the maintenance and development of greenways. The Parks and Recreation Department can organize a volunteer work day for participants, as well as encourage other groups such as scouts, churches, and schools to contribute to fund-raising and maintenance. This not only alleviates the burden of maintenance and fund-raising, it can also increase the awareness of the greenway system and bring the community together.

### 7.3 FUNDING SOURCES

Pedestrian projects like the Old Fort Pedestrian Master Plan are eligible for funding from many of the major Federal-aid highway, transit, safety, State, and private programs. This section will focus on potential funding sources for the implementation of the Old Fort Pedestrian Master Plan.

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

The following descriptions of funding resources were taken directly from each fund's marketing materials. Additional information can be gained from the contact or web site listed.

#### FUNDING ALLOCATED BY STATE AGENCIES

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

In North Carolina, the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT) manages the State Transportation Improvement Program (STIP) selection process for state bicycle and pedestrian projects. Projects included in the STIP outline transportation priorities for the next ten years. The STIP indicates when each phase of a project is slated to begin and the cost of each project phase. The STIP are determined through the strategic prioritization process every two years. Metropolitan Planning Organizations (MPO's) and Regional Planning Organizations (RPO's) are given an opportunity to recommend projects to be included.

Bicycle and pedestrian projects are divided into two categories, which determine the types of funds that may be available. Independent projects are those which are not related to a scheduled highway project. Incidental projects are those related to a scheduled highway project. Local requests for small pedestrian projects, such as sidewalk links, should be directed to the relevant NCDOT Highway Division office.

##### *Independent Projects*

Six million dollars is annually set aside for the construction of bicycle improvements that are independent of scheduled highway projects in communities throughout the state. These include shared-use paths, wide-paved shoulders, bridge improvements, intersection improvements, and other project types. Eighty percent of these funds are from STP-Enhancement funds, while state funds provide the remaining 20 percent.



Currently, \$1.4 million is annually set aside for pedestrian hazard elimination projects in the fourteen NCDOT highway divisions across the state; \$200,000 is allocated to the Division of Bicycle and Pedestrian Transportation for projects such as training workshops, pedestrian safety and research projects, and other pedestrian needs statewide.

#### *Incidental Projects*

Bicycle and pedestrian accommodations such as bike lanes, sidewalks, intersection improvements, widened paved shoulders and bicycle and pedestrian-safe bridge design are frequently included as incidental features of highway projects.

In addition, bicycle-safe drainage grates are a standard feature of all highway construction. Most 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.

*For more information, visit: <http://www.ncdot.org/planning/development/tip/tip/>*

#### **Governor's Highway Safety Program (NCDOT)**

The mission of the Governor's Highway Safety Program (GHSP) is to promote highway safety awareness and reduce the number of traffic crashes in the state of North Carolina through the planning and execution of safety programs. The GHSP launched a new web-based grant system on April 1, 2011.

*For information on applying for GHSP funding, visit: [www.ncdot.org/programs/ghsp/default/html](http://www.ncdot.org/programs/ghsp/default/html)*

#### **Transportation Enhancement Program (NCDOT)**

The Federal Transportation Enhancement funding is administered by the NCDOT Enhancement Unit. Transportation enhancement activities are awarded through the *NC Call for Projects* process and must benefit the travelling public and help communities increase transportation choices and access, enhance the built or natural environment and create a sense of place. Projects must have a relationship to surface transportation and fit into one of the following twelve qualifying activities:

1. Bicycle and Pedestrian Facilities
2. Bicycle and Pedestrian Safety
3. Acquisition of Scenic Easements, Scenic or Historic Sites
4. Scenic or Historic Highway Programs (including tourist or welcome centers)
5. Landscaping and other Scenic Beautification
6. Historic Preservation

7. Rehabilitation of Historic Transportation Facilities
8. Preservation of Abandoned Rail Corridors
9. Control of Outdoor Advertising
10. Archaeological Planning and Research
11. Environmental Mitigation
12. Transportation Museums

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

The Call process usually takes place on even numbered years or as specified by the Secretary of Transportation. The next Call was anticipated to take place in 2009 but was put on hold. At this time, no funding is available.

*For more information, visit: [www.ncdot.org/financial/fiscal/Enhancement/](http://www.ncdot.org/financial/fiscal/Enhancement/)*

### **Bicycle and Pedestrian Planning Grant Initiative (NCDOT-DBPT)**

To encourage the development of comprehensive local bicycle plans and pedestrian plans, the NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) have created a matching grant program to fund plan development. This program was initiated through a special allocation of funding approved by the North Carolina General Assembly in 2003 along with federal funds earmarked specifically for bicycle and pedestrian planning by the TPB. The planning grant program was launched in January 2004, and it is currently administered through NCDOT-DBPT. To date, a total of \$2,595,616 has been allocated to 103 municipalities.

*For more information, visit [www.itre.ncsu.edu/ptg/bikeped/ncdot/index.html](http://www.itre.ncsu.edu/ptg/bikeped/ncdot/index.html)*

### **Safe Routes to School Program (NCDOT-DBPT)**

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

All proposed projects must relate to increasing walking or biking to and from an elementary or middle school. An example of a non-infrastructure project is an education or encouragement program to improve rates of walking and biking to school. An example of an infrastructure project is

***The STIP are determined through the strategic prioritization process every two years. MPO's and RPO's are given an opportunity to recommend projects to be included.***

***Transportation enhancement activities are awarded through the NC Call for Projects process and must benefit the travelling public and help communities increase transportation choices and access, enhance the built or natural environment and create a sense of place.***

construction of sidewalks around a school. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding.

*For more information, visit [www.ncdot.org/programs/safeRoutes/](http://www.ncdot.org/programs/safeRoutes/) or contact Ed Johnson, Safe Routes to School Coordinator for the NCDOT Division of Transportation Mobility and Safety Program (919)-662-4344.*

### **The North Carolina Conservation Tax Credit (NCDENR)**

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

*For more information, visit: [www.enr.state.nc.us/conservationtaxcredit/](http://www.enr.state.nc.us/conservationtaxcredit/)*

### **Land and Water Conservation Fund (NCDENR)**

The Land and Water Conservation Fund (LWCF) program is a reimbursable, 50/50 matching grant program to states for conservation and recreation purposes, and through the states to local governments to address “close to home” outdoor recreation needs. Grants for a maximum of \$250,000 in LWCF assistance are awarded yearly to county governments, incorporated municipalities, public authorities and federally recognized Indian tribes.

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the US Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by NCDENR. Since 1965, the LWCF program has built a permanent park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than \$75 million in matching grants to protect land and support more than 875 state and local park projects. More than 38,500 acres have been acquired with LWCF assistance to establish a park legacy in our state. At this time, the level of funding available for the federal LWCF has not been determined.

*For more information, visit: [http://www.ncparks.gov/About/grants/LWCF\\_main.php](http://www.ncparks.gov/About/grants/LWCF_main.php)*

### **State Trails Program (NC Division of Parks and Recreation)**

The NC Division of Parks and Recreation and its State Trails Program offers two grant programs:

- Adopt-A-Trail
- Recreational Trails Program

Governmental agencies and non-profits are encouraged to apply for grants

***All proposed projects must relate to increasing walking or biking to and from an elementary or middle school for the Safe Routes to School Program.***

for trail construction and maintenance projects and for land acquisition projects. Applications are due during the month of February.

*The grant application and instruction handbook are available through the State Trails Program website at [http://www.ncparks.gov/About/trails\\_grants.php](http://www.ncparks.gov/About/trails_grants.php).*

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

The North Carolina Parks and Recreation Trust Fund (PARTF) was established in 1994 by the North Carolina General Assembly and is administered by the Parks and Recreation Authority. Through this program, several million dollars each year are available to local governments to fund the acquisition, development and renovation of recreational areas. Applicable projects require a 50/50 match from the local government. Grants for a maximum of \$500,000 are usually awarded annually to county governments or incorporated municipalities. At this time, funding available through PARTF is undetermined, based upon decisions in the state budget.

The trust fund is allocated three ways:

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

*For information on how to apply, visit: [ncparks.gov/About/grants/partf\\_grant.php](http://ncparks.gov/About/grants/partf_grant.php).*

### **Powell Bill Program (NCDOT)**

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by statute. This program is a state grant to municipalities for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public streets and highways. Amount of funds are based on population and mileage of town-maintained streets. For more information, visit [http://www.ncdot.gov/programs/Powell\\_Bill/](http://www.ncdot.gov/programs/Powell_Bill/).

### **Clean Water Management Trust Fund**

The Clean Water Management Trust Fund (CWMTF) was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. The CWMTF receives a direct appropriation from the NC General Assembly in order to issue grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems.



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

CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The fund has provided funding for land acquisition of numerous greenway projects featuring trails, both paved and unpaved.

*For a history of awarded grants in North Carolina and more information about this fund and applications, visit [www.cwmtf.net/](http://www.cwmtf.net/).*

### **Natural Heritage Trust Fund**

The Natural Heritage Trust Fund (NHTF), managed by the NC Natural Heritage Program, has contributed more than \$319 million through 499 grants to support the conservation of North Carolina's most significant natural areas and cultural heritage sites. The NHTF is used to acquire and protect land that has significant habitat value. Some large wetland areas may also qualify, depending on their biological integrity and characteristics. Only certain state agencies are eligible to apply for this fund, including the Department of Environment and Natural Resources, the Wildlife Resources Commission, the Department of Cultural Resources and the Department of Agriculture and Consumer Services. As such, municipalities must work with State level partners to access this fund. Additional information is available from the NC Natural Heritage Program.

*For more information and grant application information, visit [www.ncnhtf.org/](http://www.ncnhtf.org/).*

### **North Carolina Conservation Tax Credit Program**

North Carolina has a unique incentive program to help land-owners protect the environment and their quality of life. A credit is allowed against individual and corporate income taxes when real property is donated to promote conservation of ecosystem functions (fish and wildlife conservation and conservation of natural areas), ecosystem services (farmland conservation) and other public benefits (public access to trails, water, beaches).

Interests in property that promote specific public benefits may be donated to a qualified recipient (state or local government or non-profit organization). Such conservation donations qualify for a substantial tax credit.

*For more information, visit: [www.onencnaturally.org/pages/conservationtaxcredit.html](http://www.onencnaturally.org/pages/conservationtaxcredit.html)*

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

This program offers matching funds that can be used to improve public understanding of the benefits of preserving existing tree cover in communities and assist local governments with projects that will lead to a more effective and efficient management of urban and community forests. The program operates as a cooperative partnership between the NC Division of Forest Resources and the USDA Forest Service, Southern Region.

*For more information and a grant application, contact the NC Division of Forest Resources and/or visit [http://www.dfr.state.nc.us/urban/urban\\_grant\\_overview.htm](http://www.dfr.state.nc.us/urban/urban_grant_overview.htm)*

### **Ecosystem Enhancement Program (NCDENR)**

Developed in 2003 as a new mechanism to facilitate improved mitigation projects for NC highways, the Ecosystem Enhancement Program (EEP) offers funding for restoration projects and for protection projects that serve to enhance water quality and wildlife habitat in NC. Information on the program is available by contacting the EEP in the NC Department of Environment and Natural Resources (NCDENR).

*For more information, visit [www.nceep.net](http://www.nceep.net)*

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

The NC Division of Water Resources offers cost-sharing grants to local governments on projects related to water resources. Of the seven project application categories available, the category which relates to the establishment of greenways is "Land Acquisition and Facility Development for Water-Based Recreation Projects." Applicants may apply for funding for a greenway as long as the greenway is in close proximity to a water body.

*For more information, visit: [www.ncwater.org/Financial\\_Assistance](http://www.ncwater.org/Financial_Assistance).*

### **State Administered Community Development Block Grants**

State-level Community Development Block Grants (CDBG) are allocated through the NC Department of Commerce, Division of Community Assistance, to be used to promote economic development and to serve low-income and moderate-income neighborhoods. Greenways and sidewalks that are part of a community's economic development plans may qualify for assistance under this program. Recreational areas that serve to improve the quality of life in lower income areas may also qualify. Planning activities, demolition, street construction and property acquisition are also qualifying activities.

*For more information, visit [www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/](http://www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/).*

### **North Carolina Health and Wellness Trust Fund**

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

Fit Together, a partnership of the NC Health and Wellness Trust Fund (HWTF) and Blue Cross and Blue Shield of North Carolina (BCBSNC) announced the establishment of Fit Community, a designation and grant program that recognizes and rewards North Carolina communities' efforts to support physical activity and healthy eating initiatives, as well

***To receive a PARTF grant, applicable projects require a 50/50 match from the local government. Grants for a maximum of \$500,000 are usually awarded annually to county governments or incorporated municipalities.***

***CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The fund has provided funding for land acquisition of numerous greenway projects featuring trails, both paved and unpaved.***

as tobacco-free school environments. Fit Community is one component of the jointly sponsored Fit Together initiative, a statewide prevention campaign designed to raise awareness about obesity and to equip individuals, families and communities with the tools they need to address this important issue.

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

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

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

- heightened statewide attention that can help bolster local community development and/or economic investment initiatives (highway signage and a plaque for the Mayor's or County Commission Chair's office will be provided)
- reinvigoration of a community's sense of civic pride (each Fit Community will serve as a model for other communities that are trying to achieve similar goals)
- use of the Fit Community designation logo for promotional and communication purposes.

Fit Community grants are designed to support innovative strategies that help a community meet its goal to becoming a Fit Community. Eight, two-year grants of up to \$60,000 annually will be awarded to applicants that have a demonstrated need, proven capacity, and opportunity for policy and environmental change in addressing physical activity and/or healthy eating behaviors (e.g. designate and promote safe walking routes).

*For more information and an application, visit: [www.FitTogetherNC.org/FitCommunity.aspx](http://www.FitTogetherNC.org/FitCommunity.aspx).*

## **FUNDING ALLOCATED BY FEDERAL AGENCIES**

### **Wetlands Reserve Program (USDA)**

This federal funding source is a voluntary program offering technical and financial assistance to landowners who want to restore, protect and enhance wetland areas on their property. The US Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) provides technical and financial support to help landowners with their wetland restoration efforts. This program can be used to fund the protection of open space and greenways within riparian corridors.

*For more information, visit <http://www.nrcs.usda.gov/programs/wrp/>.*

***Greenways and sidewalks that are part of a community's economic development plans may qualify for assistance through Community Development Block Grants.***

### **USDA Rural Business Enterprise Grants**

Public and private nonprofit groups in communities with populations under 50,000 are eligible to apply for grant assistance to help their local small business environment. Grants may be used for a number of projects, including acquisition of land, easements and constructions projects (such as sidewalks and other community facilities) that benefit small and emerging private businesses in rural areas. Small projects are given priority and grants usually range from \$10,000-\$500,000.

*For more information from the local USDA Service Center, visit: <http://www.rurdev.usda.gov/rbs/buspr/rbeg.htm>*

### **Rivers Trails and Conservation Assistance Program (NPS)**

The Rivers, Trails, and Conservation Assistance Program (RTCA), is the community assistance arm of the National Park Service. RTCA supports community-led natural resource conservation and outdoor recreation projects. On average, RTCA helps project partners protect more than 700 miles of rivers, create over 1,400 miles of trails, and conserve more than 63,700 acres of open space annually.

The RTCA program does not provide funding for projects. The RTCA program provides technical assistance to its project partners by: building partner relationships; helping partners define goals through consensus; developing conceptual, strategic, and workable project plans; helping the public participate in defining community goals; identifying potential sources of funding for project implementation; and teaching “hands-on” conservation and other technical skills necessary to successfully realize conservation and outdoor recreation projects. Assistance is provided for one year and may be renewed for a second year, if warranted. Communities must apply for assistance.

*For more information, visit: [www.nps.gov/ncrc/programs/rtca/](http://www.nps.gov/ncrc/programs/rtca/).*

### **Public Lands Highways Discretionary Fund (DOT)**

The Federal Highway Administration administers discretionary funding for projects that improve access to and within the Federal lands of the nation. Congress usually earmarks a portion of the total available funding for projects. State DOT's must apply for this funding.

Approved projects can include a variety of activities including land acquisition, parking, signage, and provisions for bicyclists and pedestrians.

*For more information, visit: <http://www.fhwa.dot.gov/discretionary/>*

## **LOCAL FUNDING SOURCES**

### **Capital Improvement Programs**

Municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs (CIP). In Raleigh, for example, the greenways system has been developed



***Fit Community grants are designed to support innovative strategies that help a community meet its goal for policy and environmental change in addressing physical activity and/or healthy eating behaviors (e.g. designate and promote safe walking routes).***

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

#### Capital Reserve Fund

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

#### Capital Project Ordinances

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

#### Municipal Service District

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

#### Tax increment financing

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

***Through technical assistance, RTCA helps project partners protect more than 700 miles of rivers, create over 1,400 miles of trails, and conserve more than 63,700 acres of open space annually.***

### Installment Purchase Financing

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

### Taxes

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

#### *Sales Tax*

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

#### *Property Tax*

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

*Excise Taxes*

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

*Occupancy Tax*

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

Fees

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

*Stormwater Utility Fees*

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

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

*Streetscape Utility Fees*

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

### *Impact Fees*

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

### Exactions

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

### In-Lieu-Of Fees

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

### Bonds and Loans

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



has also used bond issues to fund a portion of their bicycle and trail system. Raleigh, NC, passed an \$88 million bond issue for parks and greenway projects in 2007. Wake County, NC, passed a \$50 million bond for open space in 2007 in an effort to preserve land along stream corridors to protect drinking water supplies.

#### *Revenue Bonds*

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

#### *General Obligation Bonds*

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

#### *Special Assessment Bonds*

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

### **State Revolving Fund Loans**

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

### **Facility Maintenance Districts**

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

The municipality can initiate public outreach efforts to merchants, the Chamber of Commerce, and property owners. In these meetings, Town staff will discuss the proposed apportionment and allocation methodology and will explore implementation strategies. The municipality can manage maintenance responsibilities either through its own staff or through private contractors.

### **Partnerships**

Another method of funding pedestrian systems and greenways is to partner with public agencies and private companies and organizations. Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their participation. Major employers and developers should be identified and provided with a “Benefits of Walking”-type handout for themselves and their employees. Very specific routes that make critical connections to place of business would be targeted for private partners’ monetary support following a successful master planning effort. Potential partners include major employers which are located along or accessible to pedestrian facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trail heads or interpretive signage along greenway systems. Utilities often make good partners and many trails now share corridors with them. Money raised from providing an easement to utilities can help defray the costs of maintenance. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement.

### **Local Trail Sponsors**

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

### **Volunteer Work**

It is expected that many citizens will be excited about the development

of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community work days. Volunteers can also work on fund-raising, maintenance, and programming needs.

## **PRIVATE FOUNDATIONS AND ORGANIZATIONS**

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

### **Land for Tomorrow Campaign**

Land for Tomorrow is a diverse partnership of businesses, citizens, interest groups and local governments committed to securing support from the NC General Assembly for the state's conservation trust funds. Land for Tomorrow will enable North Carolina to reach a goal of ensuring that working farms and forests, sanctuaries for wildlife, land bordering streams, parks and greenways, land that helps strengthen communities and promotes job growth, and historic downtowns and neighborhoods will exist to enhance the quality of life for generations to come.

*For more information, visit <http://www.landfortomorrow.org/>*

### **The Trust for Public Land**

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and well being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL's legal and real estate specialists work with landowners, government agencies, and community groups to:

- Create urban parks, gardens, greenways, and riverways.
- Build livable communities by setting aside open space in the path of growth.
- Conserve land for watershed protection, scenic beauty, and close-to-home recreation, and to safeguard the character of communities by preserving historic landmarks and landscapes.

The following are TPL's Conservation Services:

- Conservation Vision: TPL helps agencies and communities define conservation priorities, identify lands to be protected, and plan networks of conserved land that meet public need.
- Conservation Finance: TPL helps agencies and communities identify and raise funds for conservation from federal, state, local, and philanthropic sources.
- Conservation Transactions: TPL helps structure, negotiate, and complete land transactions that create parks, playgrounds, and

protected natural areas.

- **Research & Education:** TPL acquires and shares knowledge of conservation issues and techniques to improve the practice of conservation and promote its public benefits.

Since 1972, TPL has worked with willing landowners, community groups, and national, state, and local agencies to complete almost 4,000 land conservation projects in 47 states, protecting more than 2.8 million acres. Since 1994, TPL has helped states and communities craft and pass over 380 ballot measures, generating almost \$36 billion in new conservation-related funding.

*For more information, visit <http://www.tpl.org/>*

### **Z. Smith Reynolds Foundation**

This Winston-Salem based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The foundation has two grant cycles per year and looks for innovative community-based projects within its prescribed focus areas reaching low-resource and/or rural regions in the state. The foundation has a focus area dealing with environmental issues that may relate to greenway, open space and pedestrian projects.

*For more information, visit <http://www.zsr.org>*

### **North Carolina Community Foundation**

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for nonprofit organizations and institutions throughout the state. Based in Raleigh, North Carolina, the foundation also manages a number of community affiliates throughout North Carolina that make grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. In addition, the foundation manages various scholarship programs statewide. Web site: <http://nccommunityfoundation.org/>

### **National Trails Fund**

In 1998, the American Hiking Society created the National Trails Fund, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. National Trails Fund grants give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails.

*For more information, visit: [www.americanhiking.org/alliance/fund.html](http://www.americanhiking.org/alliance/fund.html).*



## **The Safe, Accountable, Flexible, Efficient, Transportation Equity Act**

The Safe, Accountable, Flexible, Efficient, Transportation Equity Act (SAFETEA-LU) is the primary source of Federal funding for pedestrian and bicycle transportation projects. SAFETEA-LU is divided into sections which provide funding for greenways, sidewalks, and pedestrian corridors. The sections which apply to the recommendations provided in the Old Fort Pedestrian Master Plan include:

### Surface Transportation Program (STP) Funds

These funds may be used for the construction of pedestrian facilities such as walkways and non-construction projects such as route maps, brochures, and public service announcements which deal with safety. In order for the projects to be eligible they must be related to pedestrian transportation and be part of a Long Range Transportation Plan.

### National Recreational Trails Fund Act (NRTFA)

These funds may be used for the development of non-motorized and motorized trails. Typically these funds are spent on the acquisition of easements, trail development, construction and maintenance.

### State Construction Funds

Funds from North Carolina roadway construction may be used for the construction of sidewalks which are part of roadway improvement projects. NCDOT will pay one hundred percent of the costs required to replace sidewalks which are removed due to the widening of a roadway.

### American Greenways DuPont Awards

These are small grants that range from \$250-\$2,000 which are used to stimulate the planning, design, and development of greenways. These funds may be used for a variety of purposes such as mapping, ecological assessments, surveying, brochures, interpretative signs and displays, and trail construction.

## CONCLUSION/RECOMMENDATIONS



### 8.1 - CONCLUSION

The Town of Old Fort has many wonderful assets and attractions for visitors and residents alike. However many of these attractions are difficult to find for first-time visitors or dangerous to navigate due to disconnected and inaccessible walkways within Town. By adopting a comprehensive pedestrian master plan, the Town is showing its commitment to encourage increased pedestrian connectivity for residents, safer access to historical sites for visitors, and greater clarity in how to reach destinations.

The proposed Pedestrian System Plan promotes increased connectivity in Old Fort by:

- Installing additional sidewalks on both sides of the street where possible.
- Re-configuring sidewalks that do not meet ADA guidelines.
- Including sidewalks and bike lanes to outlying residential neighborhoods.
- Adding a greenway along Hwy 70 to improve access to nearby towns.
- Adding bike lanes to connect to neighborhoods and proposed greenways.
- Connecting sidewalks to proposed greenway trails for a different user experience and added recreational opportunities for tourists and residents.
- Providing highly visible crosswalks and traffic-calming measures at high-volume intersections, particularly the intersection at the corner of Hwy 70 and Catawba, the intersection at Orchard and Main, and entrances to popular destinations, such as Mountain Music.
- Adding a pedestrian bridge for greenway trail access to Davidson's Fort.

This Comprehensive Pedestrian Master Plan also recommends the following:

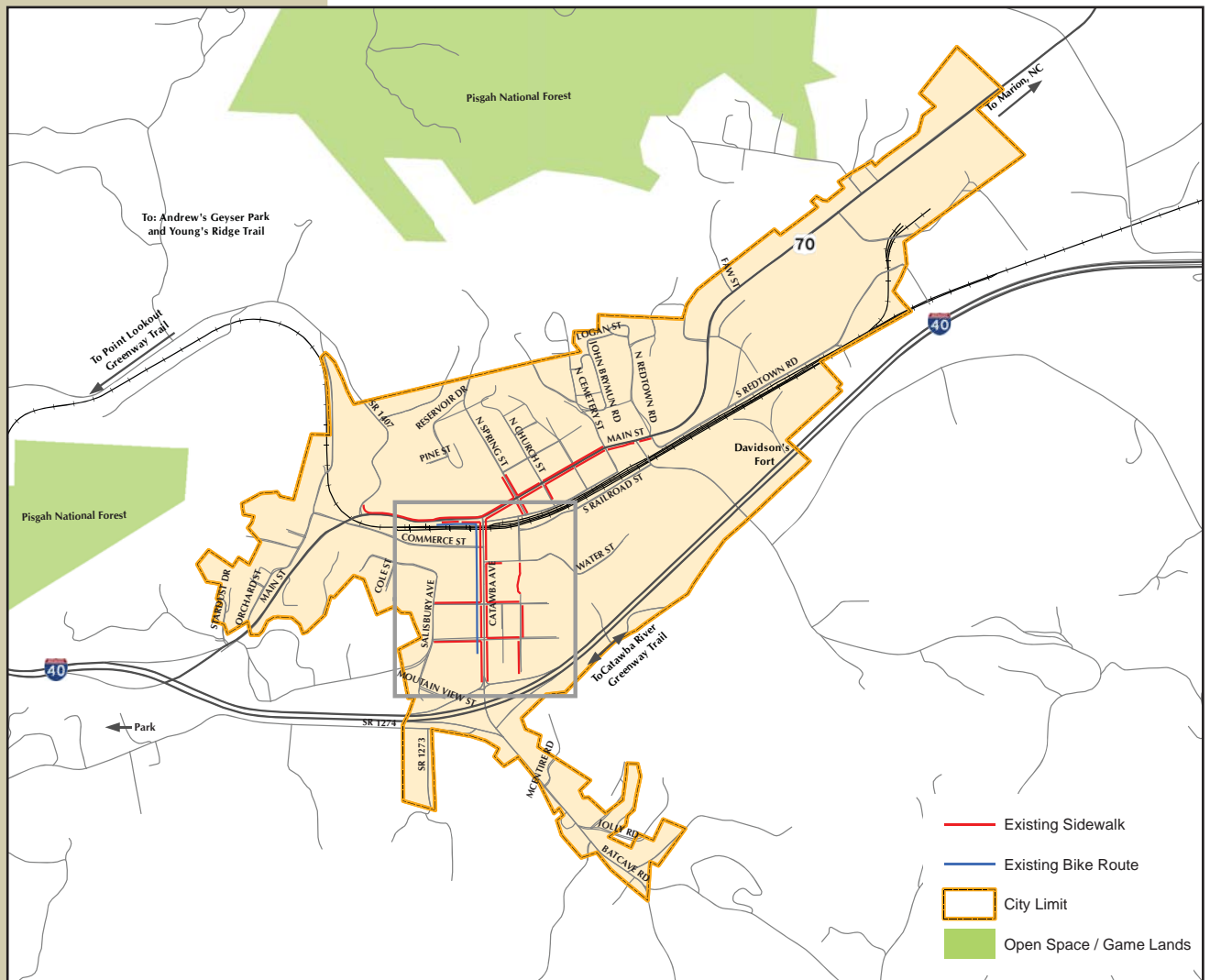
- The Town of Old Fort should adopt a wayfinding signage system to create a unified aesthetic around the Town and make attractions easily identifiable.
- The Town of Old Fort should use the list of possible funding sources in the master plan document to identify ways to implement the Pedestrian System Plan.
- The Town of Old Fort should make short-term improvements as identified in the report, as soon as funding is available to increase safety and connectivity immediately.



## 8.2 - OLD FORT PEDESTRIAN MASTER PLAN STUDY AREA

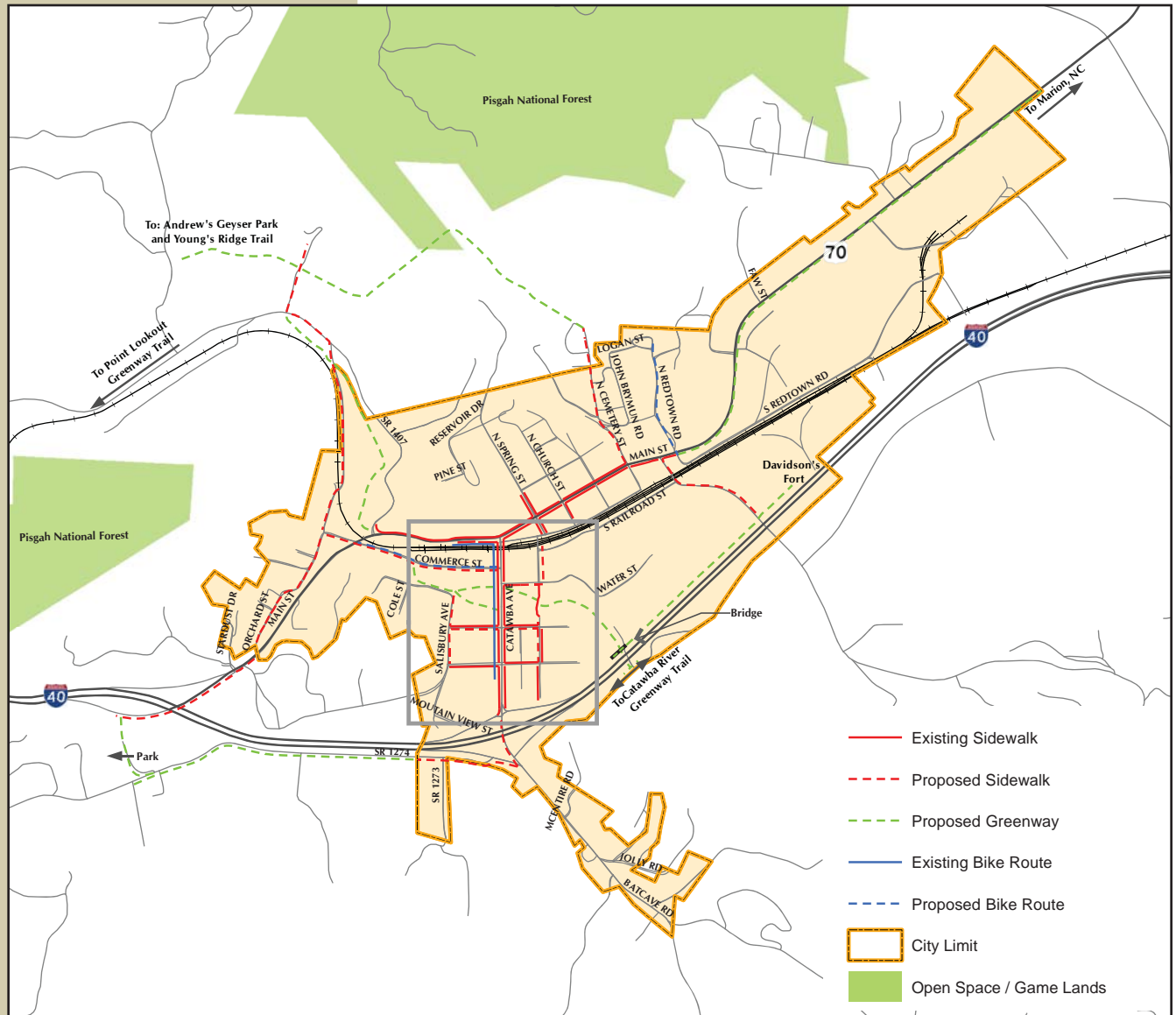


### 8.3 - EXISTING SIDEWALK INVENTORY





# 8.4 - OLD FORT PEDESTRIAN SYSTEM PLAN





## OLD FORT'S COMPREHENSIVE PEDESTRIAN MASTER PLAN

### SURVEY/QUESTIONNAIRE

The Town of Old Fort is initiating a comprehensive pedestrian planning process to help make Old Fort a more livable and walk-able Town that is safer for pedestrians and bicyclists. This project is funded through a North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation Planning Grant. We would like for you to share your thoughts and opinions about how the pedestrian environment in Old Fort can be enhanced to improve safety, create a more enjoyable community and provide more connectivity to various destinations within the Town and surrounding region.

Please take a few minutes to fill out this questionnaire. Questionnaires must be returned by **July 31<sup>st</sup>, 2010** to Old Fort Town Hall located @ 38 South Catawba Avenue, Old Fort, NC 28762. Additional comments can be written in the space provided or on an attached piece of paper. The results of this survey and additional information about the Comprehensive Pedestrian Plan will be announced at future public meetings and in the newspaper.

1. Where do you frequently walk in Old Fort?

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a. What park, greenway, boardwalk, sidewalk, path or public open space did you most recently use?

b. How did you get there?

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2. List the most frequent destinations in Old Fort where you walk or bike ...

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3. The main deterrents or barriers to walking and biking to destinations include... *(check all that apply)*

- ☐ Gaps in sidewalk or missing segments
- ☐ Uneven or broken surfaces
- ☐ Unsafe separation from vehicles
- ☐ Lack of lighting
- ☐ Absence of marked crosswalks
- ☐ Inadequate sidewalk width
- ☐ Tree branches, Trash-cans, or other obstructions
- ☐ Stray dogs
- ☐ Other \_\_\_\_\_

4. Areas I feel most unsafe/ uncomfortable while walking and biking include...

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5. Areas I feel safest/ most comfortable while walking and biking include...

---

6. I would walk and bike more places in Old Fort if...

---

7. Do you have access to walking facilities from your home?

a) Yes \_\_\_\_ b) No \_\_\_\_ From work? a) Yes \_\_\_\_ b) No \_\_\_\_

9. If you have children, how do they get to school?

a) Car \_\_\_\_ b) Bus \_\_\_\_ c) Walk \_\_\_\_ d) Bike \_\_\_\_

10. Is there a safe route for your children to walk or bike to school?

a) Yes \_\_\_\_ b) No \_\_\_\_

If no- If there was a safe route, would you let your children walk or bike to school? a) Yes \_\_\_\_ b) No \_\_\_\_

11. Do you currently use existing greenways? a) Yes \_\_\_\_ b) No \_\_\_\_

12. How do you get to work?

a) Car \_\_\_\_ b) Bus \_\_\_\_ c) Walk \_\_\_\_ d) Bike \_\_\_\_

13. Would you bike or walk to work if you could?

a) Yes \_\_\_\_ b) No \_\_\_\_ c) Maybe \_\_\_\_

14. Getting around Old Fort by car is easy and safe.

a) Agree \_\_\_\_ b) Disagree \_\_\_\_ c) No Opinion \_\_\_\_

15. Getting around Old Fort on foot is easy and safe.

a) Agree \_\_\_\_ b) Disagree \_\_\_\_ c) No Opinion \_\_\_\_

16. Generally speaking, I feel safe and comfortable walking to and from places in Old Fort.

a) Agree \_\_\_\_ b) Disagree \_\_\_\_ c) No Opinion \_\_\_\_

17. Old Fort needs improved pedestrian facilities (trails, greenways, multi-use trails).

a) Agree \_\_\_\_ b) Disagree \_\_\_\_ c) No Opinion \_\_\_\_

18. Old Fort should promote and expand pedestrian connections.

a) Agree \_\_\_\_ b) Disagree \_\_\_\_ c) No Opinion \_\_\_\_

19. New and Future development in and around Old Fort should be incorporated into the Town's public pedestrian system.

a) Agree \_\_\_\_ b) Disagree \_\_\_\_ c) No Opinion \_\_\_\_

20. Would you be willing to pay additional taxes (ie: \$0.005) for improved sidewalks and other pedestrian / bicycle amenities?

a) Yes \_\_\_\_ b) No \_\_\_\_

**WITHERS & RAVENEL**

ENGINEERS | PLANNERS | SURVEYORS

**Old Fort Pedestrian Master Plan  
Kick – Off Meeting**

Date: Thursday, January 15, 2009

Place: Old Fort Train Depot

Time: 12 Noon and 4:00 PM

**In Attendance:**

Bob Mosher, NCDOT Bike / Ped Division  
Doug McNeal, NCDOT District Engineer  
Wade Tate, NCDOT Asst. District Engineer

**Committee Members**

Mayor G. L. Norton  
Nancy Jordan, HSMM  
Josh King, Isothermal Planning and Development Council  
Greg Lambert, Withers & Ravenel  
Bob Harned, Withers & Ravenel  
Chuck Aldridge  
Carol Price  
Terra Wyatt  
Mary Smith

**Meeting Minutes**

The following information is presented to document the Kick-Off Meeting for the Old Fort Pedestrian Master Plan. These meeting minutes are based solely on the recollection of the author and have been abbreviated to highlight the topics of discussion and comments made during the meeting and establish a record of the tasks and action items that were identified.

- The Design Team Members from HSMM and Withers & Ravenel, met with Bob Mosher, Mayor Norton and Josh King briefly at the Train Depot for introductions and to discuss the development of the Old Fort Comprehensive Pedestrian Master Plan.
- Bob Mosher gave a brief background on the NCDOT Division of Bike and Pedestrian Transportation and the funding source for the Old Fort Pedestrian Master Plan. He reviewed the Grant Initiative and the Guidance For Consultants Document.
- Following a brief discussion in the Train Depot, the entire group walked down the street and continued the conversation over lunch.
- Following lunch, the entire group took a walk in the Central Business District then continued to the Museum and the Library, along the recently installed walkway. This project was installed



by the inmates that provide labor to the Town at a reduced rate. The Town is responsible for purchasing the materials and has enjoyed a beneficial relationship with the inmate program.

- The walking tour continued to the Elementary School and then down Catawba, on the way back to the Town Hall and then the Train Depot
- The Mayor, Bob Mosher, Greg Lambert and Bob Harned went for a windshield survey of the entire project study area, and beyond to the Greenway Trail, the Geyser, and out to the Park, beyond the project limits.
- The windshield survey allowed the group to discuss some of the destinations and barriers to pedestrian circulation and also discuss some of the regional connectivity and specific areas that have challenges and need to be addressed in the plan.
- Following the windshield survey, the group was joined by Nancy, Josh and Doug and Wade with NCDOT for a meeting to discuss the project parameters. This gave the DOT representatives an opportunity to meet with Bob Mosher, who would not be able to attend the entire Kick Off Meeting, due to scheduling conflict.
- Bob Mosher reviewed the grant program and described the development of the plan shared the appreciation for their participation and attending the kick off meeting.
- Bob Mosher asked the DOT representatives if there were any problem areas in the Town.
- Doug indicated several areas that were a concern and should be evaluated in the planning, including: the grade issue at the sidewalk along US Hwy 70 Downtown, Weekend traffic at the Mountain Music, Railroad crossings and the main intersections Downtown.
- The group reviewed the project limits and the general parameters of the plan.

Members of the Steering Committee arrived at the Train Depot for the scheduled Kick Off Meeting for the Old Fort Pedestrian Master Plan and enjoyed snacks and beverages and informal greetings before the meeting began at 4:00 pm.

- The Committee Members gathered around a large table and each introduced themselves and identified their affiliations.
- Greg Lambert welcomed everyone and thanked them for their willingness to be on the Steering Committee and take part in the development of the Old Fort Pedestrian Master Plan. Greg described his role as the Project Manager and that Bob Harned would be assisting him with coordination and preparation of the plan.
- Greg reviewed the informal agenda for the meeting and the topics of discussion, which included: the purpose of the plan, barriers and constraints to pedestrian circulation, the vision and the goals and objectives of the plan. Lastly, the group would discuss the project schedule, which will need to be adjusted to account for the time required to finalize the contract with NCDOT.
- Bob briefly discussed the role of the Committee and how important the public input was to the development and success of the plan. Bob described the public participatory planning process and the need for involvement. The plan will include a public meeting and surveying efforts. He expressed the desire to have each member become involved in engaging the public and spreading the word about the plan. The committee members will be ambassadors for the Town.
- Everyone discussed the Public Meeting and it was suggested that the Design Team also consider festivals as an opportunity to gain additional exposure for the pedestrian plan and public input. It was noted that Pioneer Days is the last Saturday in April, on the 25<sup>th</sup>.

- Another possibility for spreading the word and possibly distributing surveys would be every Friday Night at Mountain Music and at the local auctions, which are held every other Saturday Night.
- The study area for the project was discussed and the boundary was identified on the large aerial photograph. Regional connectivity will be considered and included as necessary, beyond the study limits.
- A general discussion of the objectives of the plan followed and Greg described the importance of Destinations and Barriers to pedestrian circulation. Destinations will include schools, public buildings, parks, shopping areas and other places where pedestrians frequently walk.
- Barriers to pedestrian circulation could include the railroad tracks, busy streets, large intersections, and areas that do not have sidewalks and other connectivity.

An open discussion of barriers took place and the Committee Members provided their input. The following list details the areas that were collectively provided:

#### Barriers

Catawba and US Hwy 70, where there are steps up to the sidewalk

The area where pedestrians cross to Mountain Music (due to volume of traffic and conflicts between vehicles and pedestrians)

The railroad tracks at the crossings

The bridge off of Commerce

Areas off Salisbury Ave. which have no sidewalks and there are a lot of kids in the area

Visual barriers such as where sidewalks end

Areas where overgrown or encroaching vegetation limits visibility

Lack of connectivity from the Museum to the Fire Department, behind the site of the new venture

The restaurants and park beyond the I-40 Overpass

Areas that lack lighting were described as a deterrent

- Several questions were directed to Doug McNeal regarding the potential for creating a safer pedestrian environment Downtown by prohibiting truck traffic and / or reducing the speed limit. Doug responded that there are limitations due to the road being a US Highway. DOT can not stop trucks from using the road as there is a need to service the plants and other businesses.
- While the DOT probably can not re-route truck traffic around the Town, , there is a potential to incorporate traffic calming measures such as bump outs, chokers and striping.

An open discussion of destinations took place and the Committee Members provided their input. The following list details the barriers or challenges to pedestrian movement that were collectively provided:

#### Destinations

The Museum and Library

The Elementary School

The Central Business District

Mountain Music  
The Train Depot  
Town Hall  
Neighborhoods in Town  
The greenway trail and Geyser

- It was noted that people come into Town to walk and get their exercise.
- Existing pedestrian routes will also be identified through public input at the meetings and through the proposed pedestrian plan public survey

A discussion about the development of the plan followed and specifically the creation of a Vision Statement. Greg read provided examples of vision statements from the Hertford Pedestrian Plan and the Cramerton Pedestrian Master Plan.

- The members were tasked with “homework” to individually think about the vision statement and put down their thoughts for the next meeting.
- The Committee Members will create an initial vision statement which will be used at the public meeting. The public will be encouraged to contribute to the development of the final vision statement.

The Committee Members were thanked again for their participation and encouraged to use word of mouth to spread the news about the project and build interest in the Old Fort Pedestrian Master Plan.

Greg indicated the project schedule would need to be updated because the contract negotiations with NCDOT had pushed the Kick Off Meeting off two months from the original proposal. The sequence of tasks will remain the same, but the schedule will be adjusted forward two months to reflect the actual beginning. A new schedule will be distributed to the Steering Committee via email.

The Design Team thanked everyone for their attendance and participation in the project and encouraged everyone to spread the word about the plan and involving the public.

The meeting was informally adjourned at approximately 5:30 pm.





## Old Fort, North Carolina Sidewalk and Greenway Plan



Old Fort Chamber of Commerce  
presents an alcohol free family  
event.

Oktoberfest



October 1 2 3 2010



Please Take Part in Planning Your Community!

WHEN & WHERE:

OCTOBER 2, 2010

We'll be located along Water Street from 9 am -5 pm

\*BE SURE TO STOP BY AND SEE US\*



Provide Your Input on:

- Pedestrian Safety
- Local & Regional Greenway Trail Connections
- Future Sidewalks
- Traffic Calming Techniques
- Problem Areas
- Recommended Crosswalks
- Amenities

**WITHERS & RAVENEL**  
ENGINEERS | PLANNERS | SURVEYORS



6/2/2010

Old Fort town, North Carolina - Fact She...



**U.S. Census Bureau**  
American FactFinder

## FACT SHEET

## Old Fort town, North Carolina

View a Fact Sheet for a race, ethnic, or ancestry group

## Census 2000 Demographic Profile Highlights:

## General Characteristics - show more &gt;&gt;

	Number	Percent	U.S.		
Total population	963			map	brief
Male	460	47.8	49.1%	map	brief
Female	503	52.2	50.9%	map	brief
Median age (years)	40.0	(X)	35.3	map	brief
Under 5 years	67	7.0	6.8%	map	
18 years and over	739	76.7	74.3%		
65 years and over	193	20.0	12.4%	map	brief
One race	939	97.5	97.6%		
White	762	79.1	75.1%	map	brief
Black or African American	166	17.2	12.3%	map	brief
American Indian and Alaska Native	2	0.2	0.9%	map	brief
Asian	1	0.1	3.6%	map	brief
Native Hawaiian and Other Pacific Islander	0	0.0	0.1%	map	brief
Some other race	8	0.8	5.5%	map	
Two or more races	24	2.5	2.4%	map	brief
Hispanic or Latino (of any race)	16	1.7	12.5%	map	brief
Household population	963	100.0	97.2%	map	brief
Group quarters population	0	0.0	2.8%	map	
Average household size	2.18	(X)	2.59	map	brief
Average family size	2.76	(X)	3.14	map	
Total housing units	496			map	
Occupied housing units	441	88.9	91.0%		brief
Owner-occupied housing units	273	61.9	66.2%	map	
Renter-occupied housing units	168	38.1	33.8%	map	brief
Vacant housing units	55	11.1	9.0%	map	

## Social Characteristics - show more &gt;&gt;

	Number	Percent	U.S.		
Population 25 years and over	669				
High school graduate or higher	430	64.3	80.4%	map	brief
Bachelor's degree or higher	36	5.4	24.4%	map	
Civilian veterans (civilian population 18 years and over)	115	15.7	12.7%	map	brief
Disability status (population 5 years and over)	282	32.1	19.3%	map	brief
Foreign born	11	1.2	11.1%	map	brief
Male, Now married, except separated (population 15 years and over)	174	47.3	56.7%		brief
Female, Now married, except separated (population 15 years and over)	164	39.8	52.1%		brief
Speak a language other than English at home (population 5 years and over)	31	3.5	17.9%	map	brief

## Economic Characteristics - show more &gt;&gt;

	Number	Percent	U.S.		
In labor force (population 16 years and over)	433	56.5	63.9%		brief
Mean travel time to work in minutes (workers 16 years and over)	20.2	(X)	25.5	map	brief
Median household income in 1999 (dollars)	25,000	(X)	41,994	map	
Median family income in 1999 (dollars)	28,854	(X)	50,046	map	
Per capita income in 1999 (dollars)	20,782	(X)	21,587	map	

factfinder.census.gov/servlet/SAFFacts?...

1/2

6/2/2010

Old Fort town, North Carolina - Fact She...


Families below poverty level	23	8.7	9.2%	map	brief
Individuals below poverty level	161	17.0	12.4%	map	

**Housing Characteristics - show more >>**

	Number	Percent	U.S.		
Single-family owner-occupied homes	164				brief
Median value (dollars)	57,200	(X)	119,600	map	brief
Median of selected monthly owner costs	(X)	(X)			brief
With a mortgage (dollars)	700	(X)	1,088	map	
Not mortgaged (dollars)	197	(X)	295		

(X) Not applicable.

Source: U.S. Census Bureau, Summary File 1 (SF 1) and Summary File 3 (SF 3)

The letters PDF or symbol  indicate a document is in the Portable Document Format (PDF). To view the file you will need the Adobe® Acrobat® Reader, which is available for free from the Adobe web site.

# Town of Old Fort Comprehensive Pedestrian Plan



Kick-Off Meeting

JANUARY 15, 2009

**GUEST BOOK**

**WITHERS & RAVENEL**  
ENGINEERS | PLANNERS | SURVEYORS



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NAME Wade Tate  
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NAME Doug McNeal  
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NAME TERRA P. WYATT  
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NAME GL Norton  
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 TELEPHONE NUMBER \_\_\_\_\_



NAME Chuck Aldridge  
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NAME Mary Smith  
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NAME Carol B Price  
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NAME \_\_\_\_\_  
STREET ADDRESS \_\_\_\_\_  
E-MAIL ADDRESS \_\_\_\_\_  
TELEPHONE NUMBER \_\_\_\_\_

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TELEPHONE NUMBER \_\_\_\_\_

# Town of Old Fort Comprehensive Pedestrian Plan



First Steering Committee Meeting

March 2, 2009

**GUEST BOOK**

**WITHERS & RAVENEL**  
ENGINEERS | PLANNERS | SURVEYORS

NAME Chuck Aldridge  
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NAME \_\_\_\_\_  
STREET ADDRESS \_\_\_\_\_  
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TELEPHONE NUMBER \_\_\_\_\_

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TELEPHONE NUMBER \_\_\_\_\_



NAME ALMA LAMBERT

STREET ADDRESS \_\_\_\_\_

E-MAIL ADDRESS \_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_

NAME DEAN KANIPÉSTREET ADDRESS 54 COLLEGE DR. MARION, NC 28752E-MAIL ADDRESS deank@mcdowelltech.eduTELEPHONE NUMBER (828) 652-0634NAME SCOTT SWICKLESTREET ADDRESS 178 S. CATAWBA AVE. OLD FORTE-MAIL ADDRESS SSWICKLE@CHARTER.NETTELEPHONE NUMBER 828-337-8692NAME Bob Mosher

STREET ADDRESS \_\_\_\_\_

E-MAIL ADDRESS \_\_\_\_\_

TELEPHONE NUMBER \_\_\_\_\_

NC DOTBike/PED Div.rmosher@ncdot.govNAME Carroll K. MillerSTREET ADDRESS 203 CATAWBA AVE, OLD FORT, NCE-MAIL ADDRESS ckjmill@verizon.netTELEPHONE NUMBER 828-668-1077NAME Doug McNeal - NCDOT

STREET ADDRESS \_\_\_\_\_

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NAME Joe Sam  
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E-MAIL ADDRESS \_\_\_\_\_  
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NAME \_\_\_\_\_  
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# Town of Old Fort Comprehensive Pedestrian Plan



Third Public Meeting

October 2, 2010

**GUEST BOOK**

**WITHERS & RAVENEL**  
ENGINEERS | PLANNERS | SURVEYORS



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NAME Sheila Taylor  
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NAME FRANK Cioffari  
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NAME PATRICK BAGWELL  
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NAME Eric Stanczyk  
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NAME Jane Schroeder  
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NAME John L. Knighton  
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NAME Nicole Thompson  
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NAME Michael B. Burnell  
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TELEPHONE NUMBER \_\_\_\_\_



3

NAME Moueny T.S. Moueny  
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NAME ARIAH Moueny  
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NAME Fred Davis  
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NAME Mark A. Turner  
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E-MAIL ADDRESS \_\_\_\_\_  
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NAME Linda Turner  
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NAME Jean Davis  
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NAME Linda Hensley  
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4

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TELEPHONE NUMBER \_\_\_\_\_

NAME \_\_\_\_\_  
STREET ADDRESS \_\_\_\_\_  
E-MAIL ADDRESS \_\_\_\_\_  
TELEPHONE NUMBER \_\_\_\_\_

NAME \_\_\_\_\_  
STREET ADDRESS \_\_\_\_\_  
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**NC STATE UNIVERSITY**



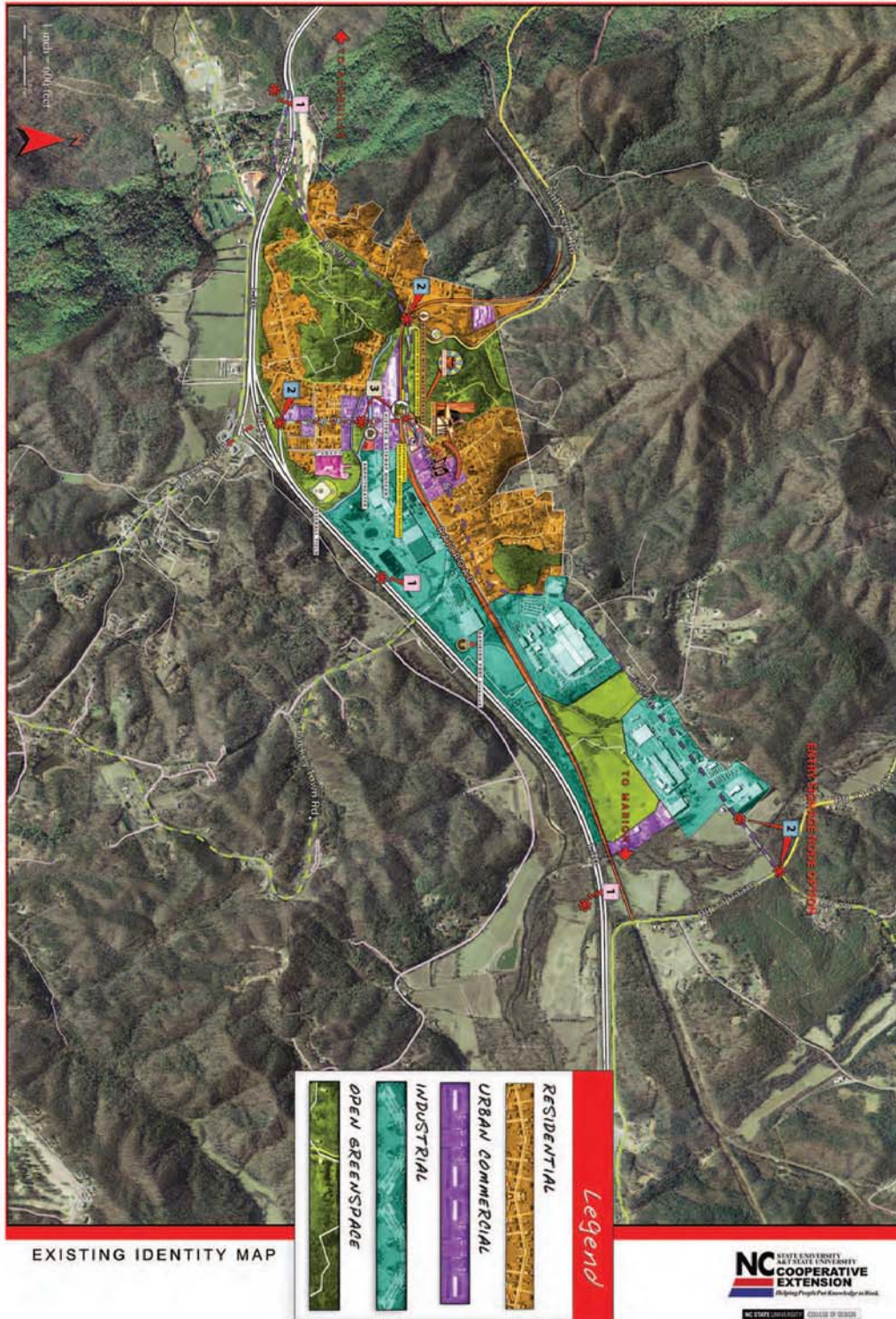
# Town of Old Fort Design & Planning Report

Presented by  
North Carolina State University  
Community Design & Development Laboratory

*To view the entire report, visit [http://design.ncsu.edu/sites/all/files/research-extensions/cdi/McDowell\\_Co.\\_Old\\_Fort\\_Report.pdf](http://design.ncsu.edu/sites/all/files/research-extensions/cdi/McDowell_Co._Old_Fort_Report.pdf)*



EXISTING IDENTITY MAP





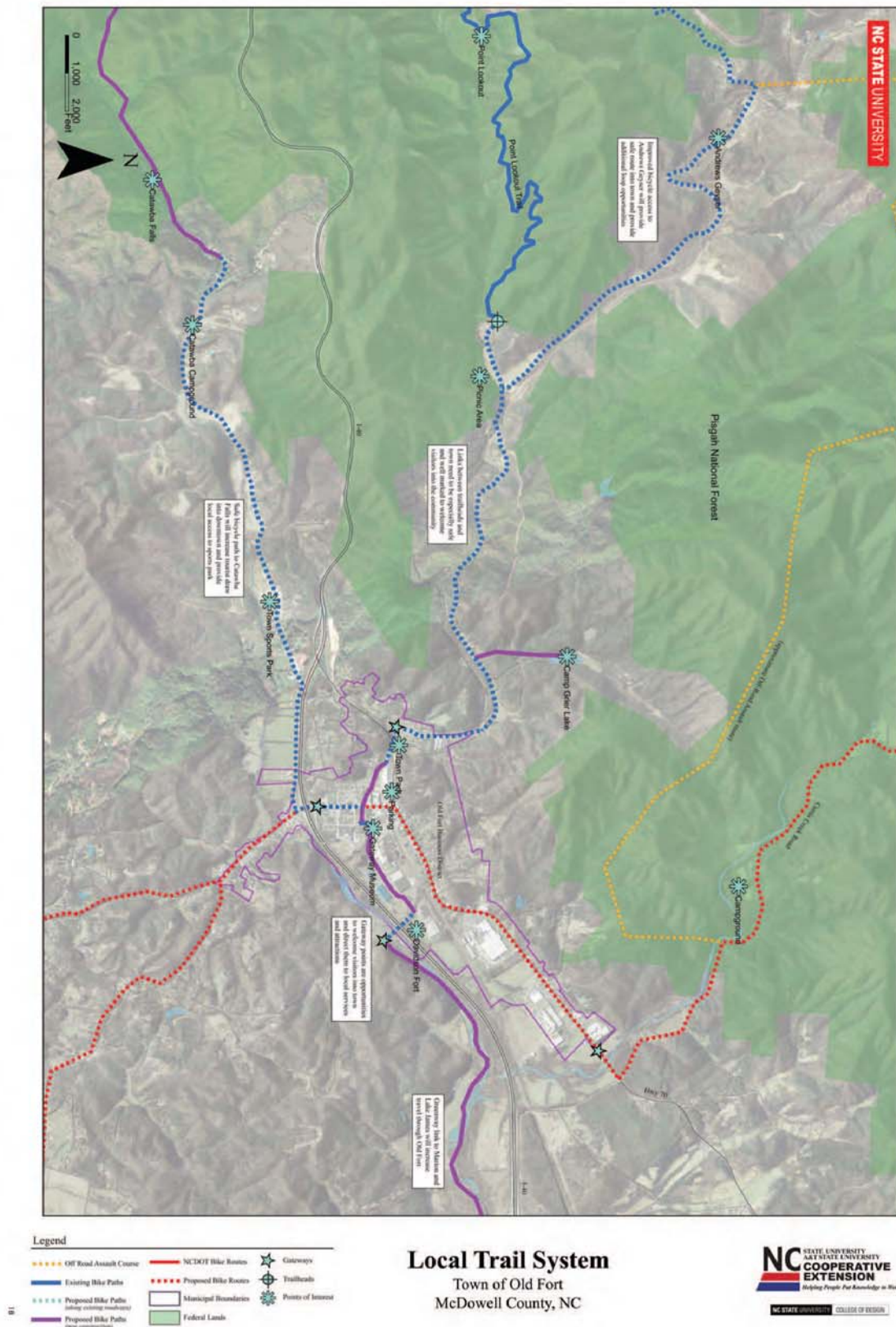


NTS

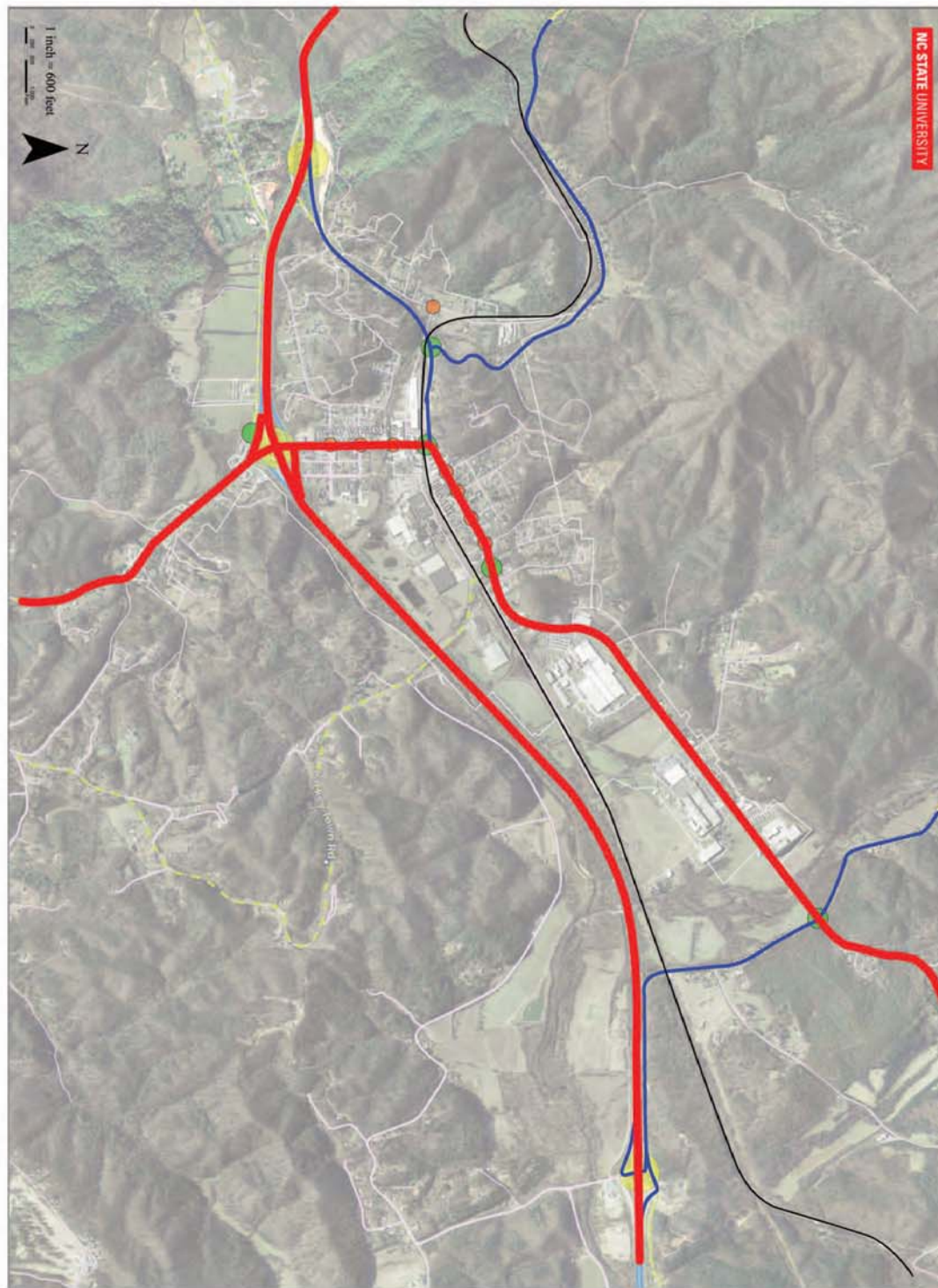
EXISTING IDENTITY











#### Legend

##### Traffic Density

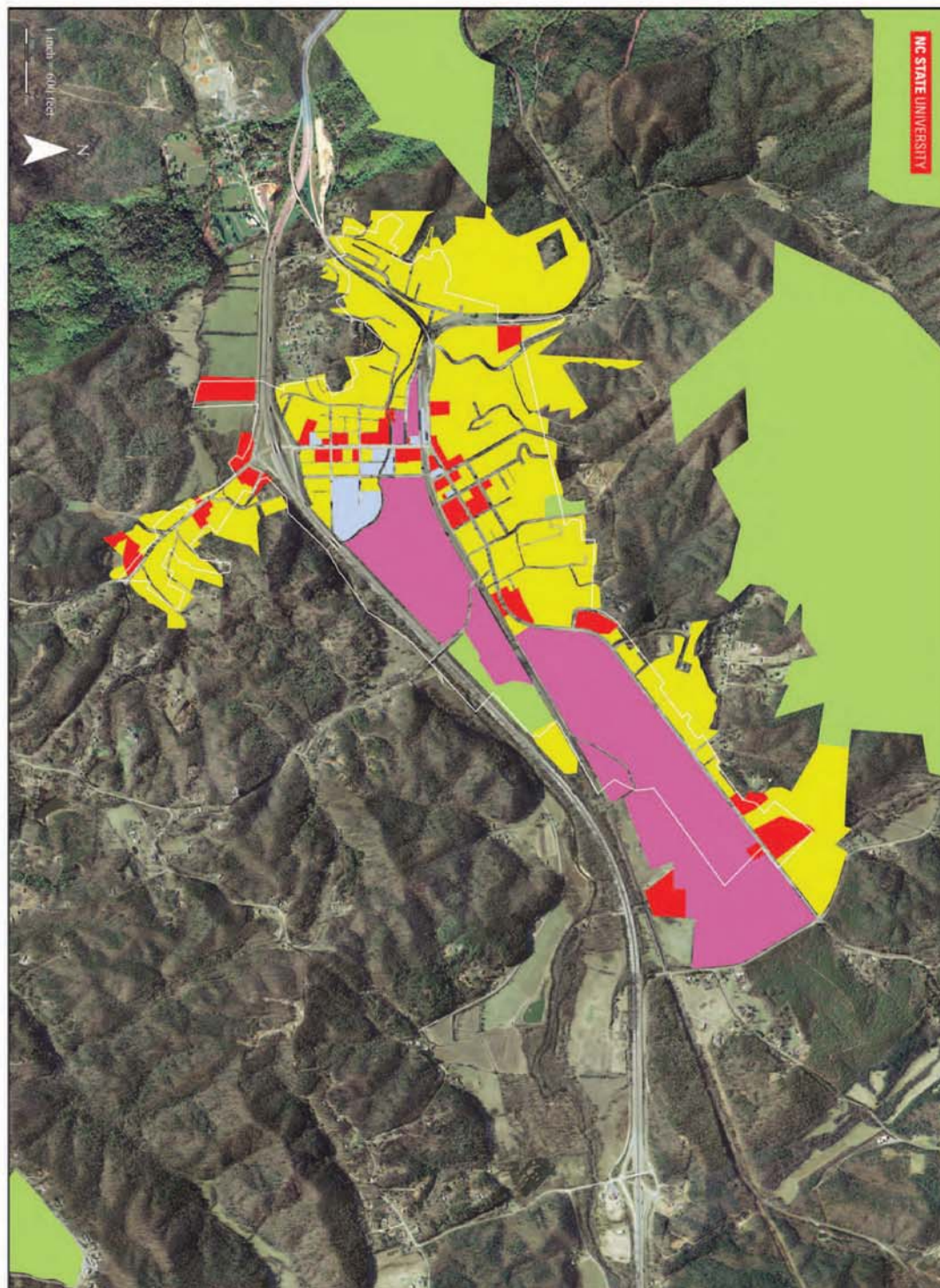
- Major Road Use
- Minor Road Use
- Norfolk Railway

### Circulation Map

Town of Old Fort  
McDowell County, NC







**Legend**

**Existing Land Uses**

- |  |  |
|--|--|
| <span style="color: red;">■</span> Commercial                | <span style="color: yellow;">■</span> Residential    |
| <span style="color: pink;">■</span> Industrial               | <span style="color: lightblue;">■</span> City Limits |
| <span style="color: lightblue;">■</span> Institutional       |  |
| <span style="color: green;">■</span> Open Space, Parks, Etc. |  |

## Existing Land Uses

Town of Old Fort  
McDowell County, NC







- Legend**
- Floodway
  - 100 Yr Flood Zn
  - 500 Yr Flood Zn
  - Major Transportation
  - City Limits

## Flood Hazard Map

Town of Old Fort  
McDowell County, NC







**Legend**

**Road Types**

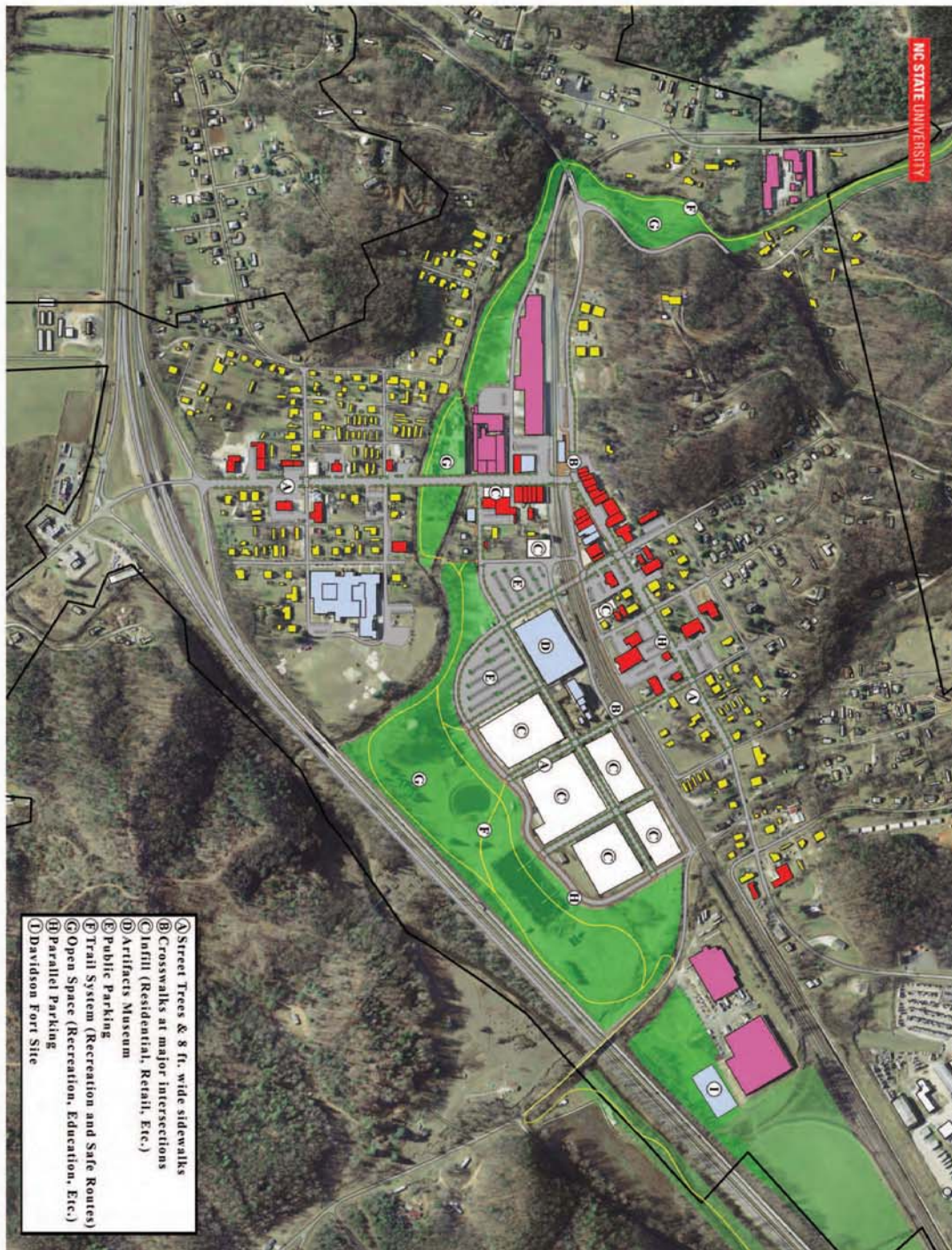
- Level I
- Level II
- Level III
- Level IV



**Node Map**  
Town of Old Fort  
McDowell County, NC





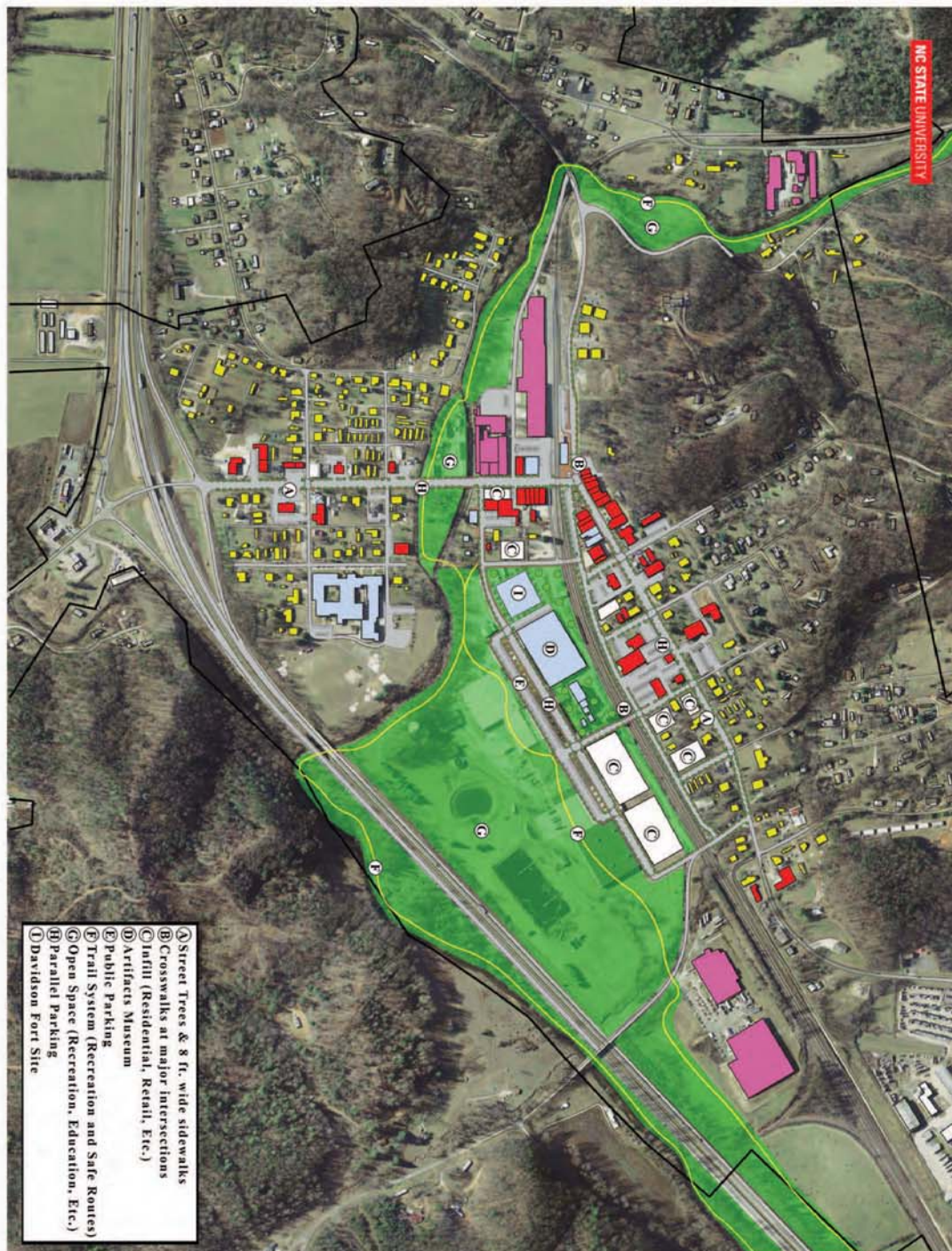


## Conceptual Master Plan A

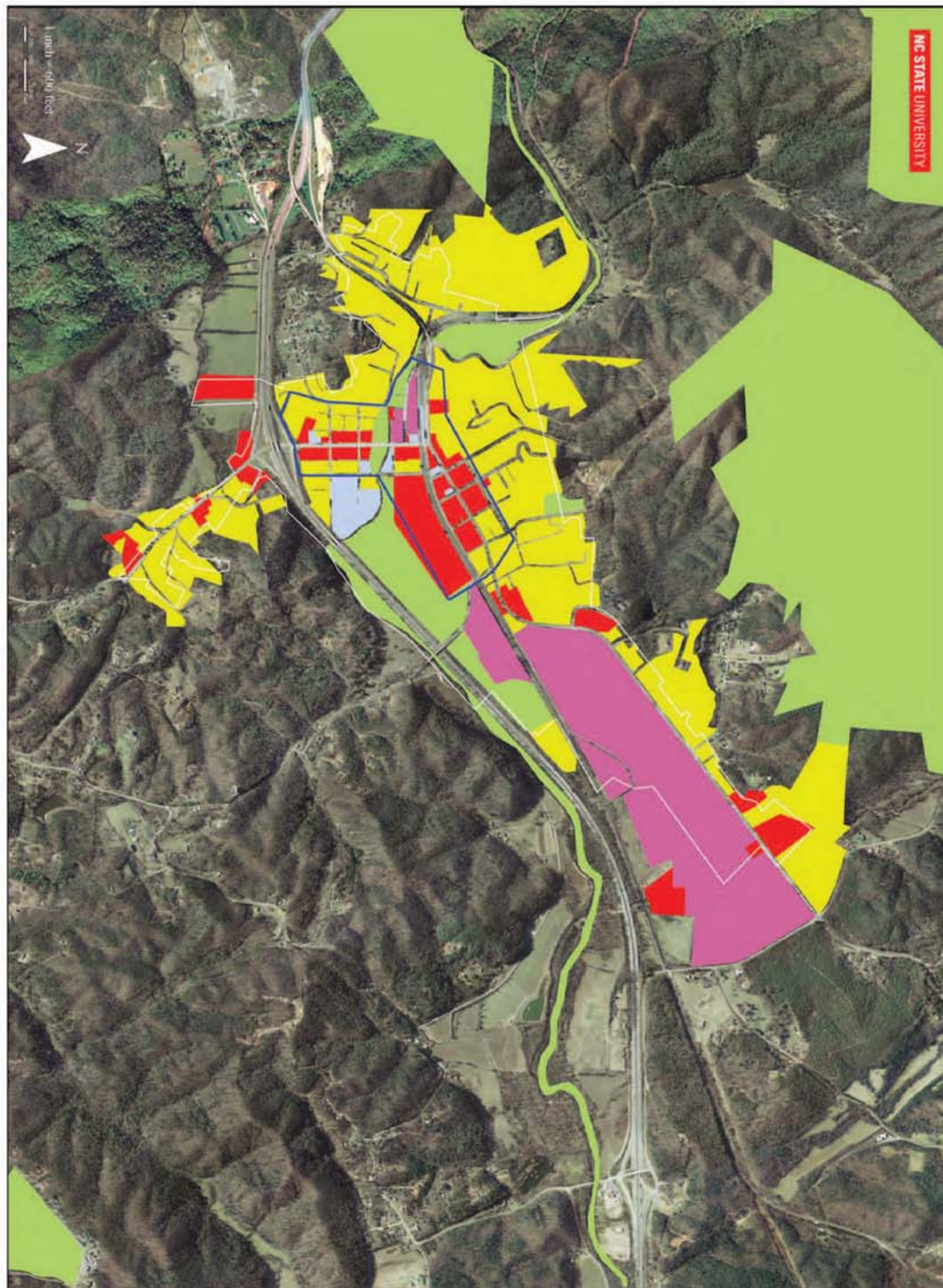
Town of Old Fort  
McDowell County, NC











**Legend**

**Existing Land Uses**

- Commercial
- Industrial
- Institutional
- Open Space, Parks, Etc.
- Residential
- City Limits
- Historic District

## Proposed Land Uses

Town of Old Fort  
McDowell County, NC

**NC STATE UNIVERSITY**  
**COOPERATIVE EXTENSION**  
Helping People Put Knowledge to Work

PROPOSED- CATAUBA ST. SECTION CUT LOOKING WEST

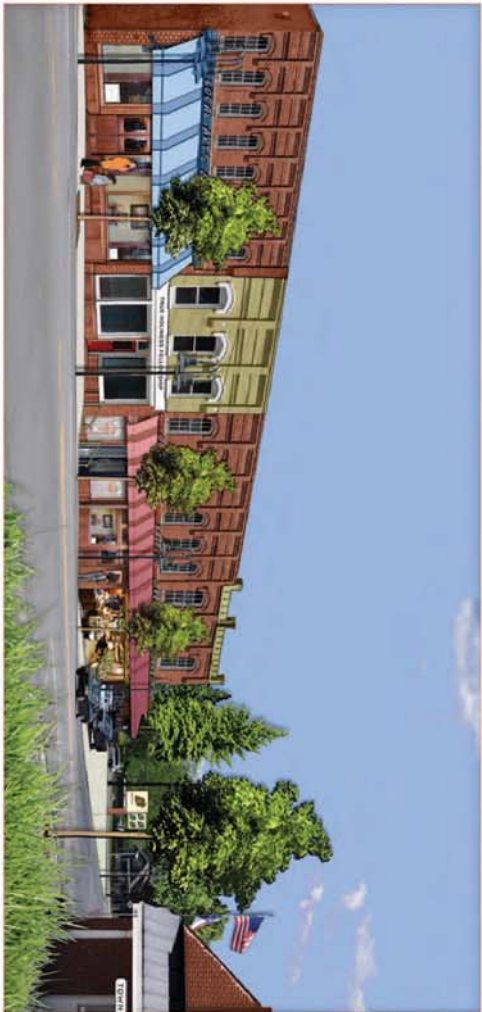


EXISTING VIEW TOWN OF OLD FORT McDowell county, NC





PROPOSED- CATAUBA AVE.



NC STATE UNIVERSITY

EXISTING VIEW TOWN OF OLD FORT McDowell county, NC

