TOWN OF CRAMERTON

PEDESTRIAN MASTER PLAN

North Carolina Department of Transportation

DIVISION OF BICYCLE AND PEDESTRIAN TRANSPORTATION

PREPARED FOR CRAMERTON, NORTH CAROLINA

FEBRUARY, 2008

Prepared By,

HSMM of NC, Inc.
Gene Haynes: Regional Manager
Bob Harned: Landscape Architect, Senior Project Manager
Barbara Johnson: Landscape Architect
Terry Naranjo: Landscape Architect
George Russell: Landscape Designer

4141 ParkLake Avenue, Suite 100
Raleigh, North Carolina 27612
919.786.4883

Acknowledgements

Mayor of Cramerton
Ronald Murphy

Mayor Pro Tempore
Ronald Worley

Cramerton Board of Commissioners
Tammy Lawrence
Jeff Ramsey
Jacque Sumner
Sandra R. Ware

Town Manager
Michael C. Peoples

Cramerton Pedestrian Master Plan Committee
Bob Mosher, AICP, ASLA, NCDOT Division of Bicycle and Pedestrian Transportation
Helen Chaney, Transportation Planner I, NCDOT Division of Bicycle and Pedestrian Transportation
Michael C. Peoples, Town Manager, Town of Cramerton
Steve Baucom, Director, Town of Cramerton Planning and Zoning
Sandra R. Ware, Commissioner Town of Cramerton
Cam Carpenter, Director, Town of Cramerton Parks and Recreation
Cristi Bostic, Principal, Cramerton Middle School
Greg Ratchford, Police Chief, Cramerton Police Department
Houston Helms, Cramerton Citizen
Ronnie Worley, Cramerton Citizen
Gene Haynes, HSMM, Hickory
Bob Harned, HSMM, Raleigh

Contents

INTRODUCTION

1.1 PROJECT INTRODUCTION

The Town of Cramerton Pedestrian Master Plan was made possible through a $16,000 Bicycle and Pedestrian Planning Grant Initiative from the North Carolina Department of Transportation (NCDOT). The purpose of this Pedestrian Master Plan is to improve the accessibility, connectivity, safety, and overall functionality of the pedestrian environment within the Town of Cramerton. 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 Cramerton 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 Cramerton is located in Gaston County, North Carolina, which is the Charlotte region's second-largest county. This area is experiencing significant growth which will impact Cramerton'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 Cramerton can implement the retrofit projects in this Plan and the new construction of pedestrian facilities in a cost efficient timely manner. Similar to the previously adopted Cramerton Greenway Plan, developed in November 2006, a pedestrian plan will utilize not only public funding but also private investment for ongoing and future pedestrian and greenway development projects.

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 SCOPE AND PURPOSE

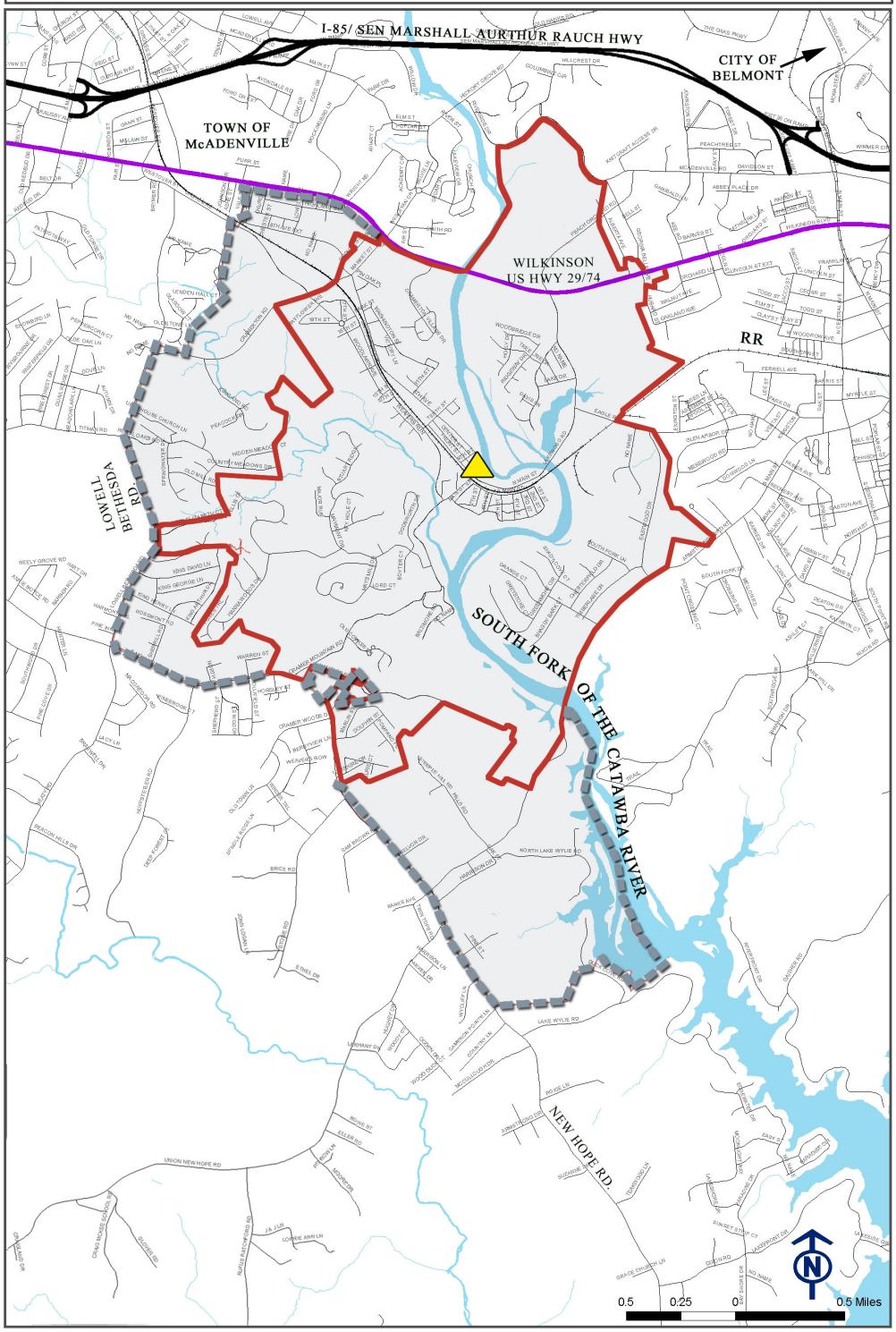
The purpose of the Town of Cramerton Pedestrian Master Plan is to improve the quality and connectivity of Cramerton's pedestrian environment by focusing on both on-road sidewalks and off-road greenway facilities to create a safe, accessible, and functional pedestrian system that meets bicyclists needs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

- Evaluate existing conditions current programs, plans, and policies affecting the pedestrian environment. An existing facility inventory and evaluation document has been independently completed by the Town and incorporated into this Master Plan. A copy of this Existing Conditions Map is incorporated into Section 2.6 Existing Conditions Analysis.
- Identify pedestrian routes, opportunities and challenges inherent in the existing pedestrian system.
- Provide facility standards and design guidelines for new facilities and the retrofit of existing facilities.
- Assign priorities in the Pedestrian Master Plan to assist the Town with implementation and construction.
- Identify potential funding sources to assist the Town with implementation costs.

The Town of Cramerton is located between the cities of Gastonia to the west and Charlotte to the east. The City of Belmont is located to the immediate east of Cramerton and McAdenville is located to the north across Interstate 85 from Cramerton. The project study area is the Town of Cramerton town limits and Extra-Territorial Jurisdiction. The map on the following 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 Cramerton.

The purpose is to develop guidelines and recommendations that may be followed to create an integrated and cohesive town in functionality and aesthetic appearances only. Development Standards and Development Code Regulations may be developed further than already exists within the Town as a result of this Master Plan.

Cramerton Pedestrian Master Plan
Study Area



Cramerton Pedestrian Master Plan

HSMM

1.2 Scope and Purpose

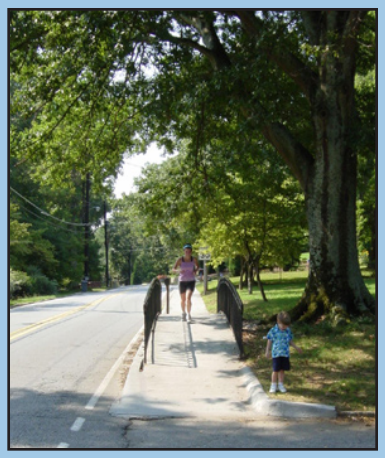
1.3 VISION STATEMENT

The Town of Cramerton Pedestrian Master Plan reflects Cramerton's historical character as a walking destination community. As a historic former mill town, Cramerton had a functioning pedestrian environment for all residents and workers. Just as former residents relied on walking as their primary mode of transportation, current and new residents also desire a safe, functional, and attractive pedestrian environment.

The vision for this Master Plan is to provide an attractive, safe, and accessible pedestrian system which reflects the Town's history as a small walkable community. The future pedestrian system is to eventually include on-street sidewalk routes to off-street greenway facilities in order to provide connectivity between the historic downtown center, new communities inside and outside of downtown, as well as the surrounding natural environment. The implementation of the recommendations in this Master Plan, and other Town documents, will enhance the quality of life for existing and future residents and visitors.

Existing Buildings in the Historic Downtown.

Pedestrian facilities in historic downtown residential neighborhood.



Pedestrians using sidewalk for exercise. Photo Credit: D. Crites

Sidewalks provide a designated place for pedestrians to walk to their destinations. Photo Credit: D. Burden

1.4 BENEFITS OF PEDESTRIAN FACILITIES

With increased pedestrian facilities and amenities, the Town of Cramerton will gain many benefits. These benefits include 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 website: 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, 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).

Sidewalks provide a place to meet and interact with fellow community members. Photo Credit: D. Burden

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 Benefits of Pedestrian Facilities

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.

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.

1.5 GOALS AND OBJECTIVES

GOALS

The goal of this Master Plan is to make the Town of Cramerton a safer and more accessible pedestrian environment while also improving its aesthetic and historical characteristics of available assets. The goals of this Town of Cramerton Pedestrian Master Plan are based on the social, environmental, and economic benefits of walkable communities. The objectives below were developed by the Pedestrian Master Plan Committee with the help of Landscape Architectural consultants, HSMM of NC, Inc. It is not the intent of this Pedestrian Master Plan to develop Standards and Design Guidelines for the Town of Cramerton, 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.

OBJECTIVES

In an effort to achieve the goal of creating a more walkable community, these objectives of the Cramerton Pedestrian Master Plan include the following:

- Develop pedestrian friendly, aesthetically-pleasing circulation corridors which link commercial centers, public facilities, residential neighborhoods, and recreational facilities. These facilities are set forth in the existing Cramerton Land Use Plan
- Conceptually identify gaps within the existing pedestrian system, as well as in areas of new development
- Provide solutions for safe crossings and sidewalk connections at schools, commercial centers, and parks and recreation facilities
- Provide methods for the Town to increase public awareness of pedestrian routes through means such as maps and mileage
- Provide methods to improve 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
- Provide for safe crossing opportunities at major barriers such as railroad corridors, major thoroughfares, and the river
- Implement traffic calming measures 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

Historic Character Along Eighth Ave. New sidewalks from recent enhancement project.

Historic Character Along Woodlawn Avenue

Subdivision on Timber Lane Drive

Commercial Area at Intersection of Armstrong Ford Road and New Hope Road

2.1 OVERVIEW

The Town of Cramerton is located in Gaston County, North Carolina. The natural environment in and around Cramerton provides both aesthetic character and recreational opportunities to residents as well as visitors. The Town was located and shaped by the South Fork of the Catawba River due to its physical attributes as well as its importance for industrial uses. The South Fork flows in a northwest to southeast direction through the eastern part of Cramerton The textile industry played a large role in shaping the Town, and the "mill village" as residence for the workers is still evident in the core of downtown where many of the original houses are still standing and still inhabited. There is a small commercial business district in the center of Town which has just recently undergone renovation.

The historic section of the downtown district is the most pedestrian friendly area in all of Cramerton due to the original layout and facilities of the Town. The density of houses is higher and the streets are organized into a grid system with sidewalks present throughout the historic section. Historically, residents of Cramerton relied on walking daily as a means of transportation and interaction within their community. The commercial area with the Post Office and other necessities was within close proximity to the mill village and there were sidewalks in place for people to use. New construction in the commercial area expanded the uses and functions of the area. Today the sidewalks in the historic downtown are at the top of curb which is only slightly raised off the street due to the roadway being resurfaced on multiple occasions.

Outside the central core of Cramerton, the history is less evident. Newer subdivisions are not organized around a grid street system and there are very few subdivisions with sidewalks or other pedestrian facilities. Links between these neighborhoods are mostly roadways without sidewalks or pedestrian facilities. As a result, these neighborhoods are isolated from one another and there is no safe alternative to vehicular travel. Some of the neighborhoods in Cramerton are within walking distance of commercial areas, yet the lack of sidewalks, crosswalks, and other safety measures impede and discourage pedestrian travel. The lack of a greenway connection to public facilities is also evident.

Fortunately the government and citizens of Cramerton support the move towards a more pedestrian friendly Town. This is apparent in the 2002 Cramerton Land Use Plan where the desire for pedestrian friendly commercial areas and new sidewalks with planting strips were noted. A commitment to implementing the Land Use Plan will help insure that the Town grows in a positive direction and will offer pedestrians once again an environment where walking is more commonplace.

2.2 COMMUNITY DEMOGRAPHICS

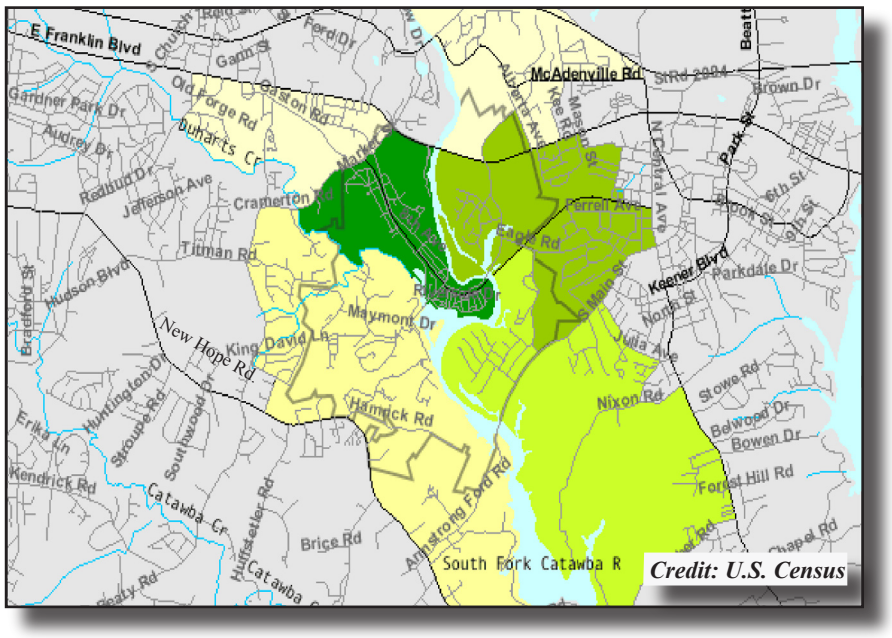
The Town of Cramerton is currently experiencing an increase in its population base. Cramerton experienced a population growth rate of 33% between 1990 and 2005. In 2006 the population was estimated to be 3,214 as indicated by the N.C. State Demographer's Office. According to Town officials, it is anticipated that Cramerton's population will double within the next five years. This substantial growth is primarily attributed to the Town's proximity to the Charlotte Metropolitan area, making it an attractive "place to call home", according to the Town of Cramerton website, on the outskirts of the City of Charlotte. New residential developments are planned for the Town, as well as new commercial services. This increase in population will affect the pedestrian environment as more housing is developed and roadways expand. A clear and defined pedestrian environment should be developed simultaneously with the housing growth in order to safely connect residents to destinations and points of interest.

Walking is the primary mode of transportation for some portions of the population. It is important to provide safe and efficient facilities for this user group as well as for those who walk for recreational and fitness purposes. Some people who rely heavily on walking include:

People who do not own vehicles:

Of the town's 1,148 occupied housing units, 59 or 5%, have no car, according to the 2000 U.S. Census. It is probable that those who fall below the poverty level have less access to vehicles on a regular basis, and must rely on alternate modes of transportation. According to the U.S. Census, 144, or 12.4%, of Cramerton residents live in poverty. The map below illustrates the geographic poverty distribution within the Town.

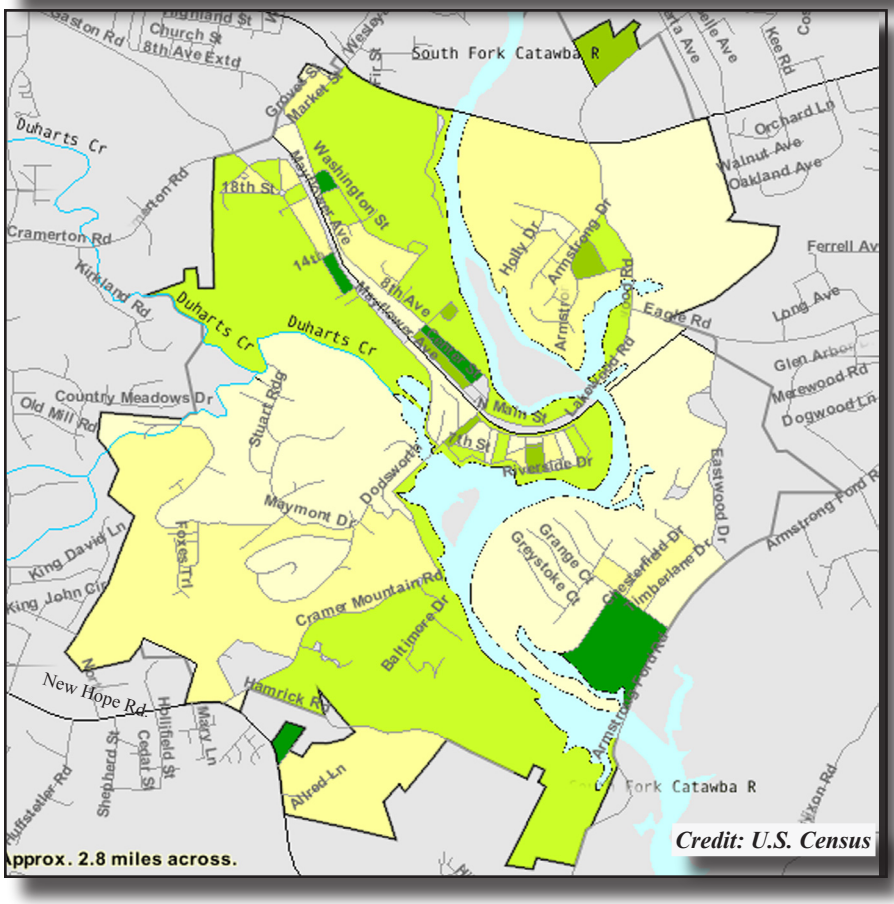
Persons in Cramerton Living in Poverty



Children and adolescents: Children and many adolescents do not have the ability to drive themselves and therefore rely on others for transportation. Children aged 15 years or younger account for 23.3% of the Town's current population. Safe, accessible, and useful pedestrian facilities are essential to this portion of the population who do not and can not own and drive vehicles. Pedestrian facilities allow for children and adolescents to walk to their destinations and it is essential that these facilities be safe for all who participate. As safety is always a critical concern for children, it is important to provide pedestrian facilities that help young people. 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. This 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, and pedestrian signalization can help this user group cross streets safely. The map below indicates a geographical distribution of persons 65 years of age and older.

Persons of 65 Years of Age or Better



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 and no one knows the Town of Cramerton better than its citizens. A variety of methods were used to integrate the citizens of Cramerton 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
- Mapping workshops

The first public meeting was held in Cramerton on 12 March 2007. Two public meetings were held on March 19, 2007. In an effort to reach as many citizens as possible, the meetings were held at different times (2-4PM, 6-8PM) at the Cramerton Town Hall. These meetings consisted of an overview of the Pedestrian Master Plan, the goals and objectives of the Master Plan, distribution of the public survey, and a mapping workshop. Unfortunately, attendance at the public meetings was less than optimum.

As a result of low attendance at the public meetings and the critical role of public participation needed as input into the master planning process, surveys were sent out in a mass mailing. The mailings were intended to capture additional input that was not obtained with the public meetings. The surveys, included in citizens utility bills were sent out. This effort was successful in gaining the public opinion necessary to move forward with the planning efforts. Surveys were returned by mail to HSMM where they were reviewed and tabulated. Seventy six (76) surveys were returned to HSMM. The survey and complete tabulations are located in Appendix A. A summary of the survey highlights follows below.

Frequent areas to walk in Cramerton: The areas where most respondents frequently walk are those which currently have pedestrian amenities, such as sidewalks, or are located away from vehicular traffic. such as parks, greenways, or schools. Although the majority of residents drive to these places, they often walk once they arrive. Frequent destinations in Cramerton by walking or biking include:

- Neighborhoods
- Eighth Avenue
- Mayflower Avenue
- Lakewood
- Cramer Mountain
- Cramerton Middle School
- Old Town/Downtown
- Riverside Park and Greenway
- Recreation Center

Survey respondents indicated that parking on sidewalks is a deterrent to pedestrians.

Survey respondents feel unsafe in underpasses.

Survey respondents feel safe walking on Eighth Avenue. This is partly due to the presence of sidewalks.

Respondents indicated they walked along several residential and neighborhood streets. A large portion of respondents walk for recreation and exercise rather than for transportation. Respondents indicated they would walk more if there were pedestrian facilities, specifically if sidewalks and bridges were safer for pedestrians.

Main Deterrents from walking include:

Results from the survey indicate there is support for pedestrian facilities in Cramerton. The survey results indicate that 63% of respondents felt the need for improved pedestrian facilities. They emphasize the condition of existing pedestrian facilities such as uneven pavement and sidewalks, sidewalks being used for parking and storing items such as garbage cans. Other deterrents to walking include: bridges with no pedestrian access, and inconsistencies in facilities (sidewalks dead-end). Main deterrents from walking and biking include:

- No sidewalks or bike lanes
- Cars/Traffic
- Dogs
- Bridges
- Railroad
- River
- Uneven pavement/sidewalks
- Lack of street lighting

Areas respondents feel most unsafe:

The locations respondents felt most unsafe were roads where there are either no sidewalks or in poor condition, insufficient lighting, and areas where there is a high probability of vehicle-pedestrian conflict such as underpasses, bridges, and narrow roads with no shoulder. Some of the respondents did not feel unsafe anywhere, while others called out specific locations of concern. These include Cramer Mountain Road, Riverside Drive, Wilkinson Boulevard US Highway 29/74, Bennie Cunningham Bridge, N. Main Street, Washington Street, Lakewood Road, Armstrong Road, and Eagle Road. Pedestrian amenities include street lights, vehicle-pedestrian separation, traffic calming and sidewalk maintenance appear necessary. Areas where survey respondents felt most unsafe while walking include:

- Bridges
- Unlit areas
- Underpasses
- Cramer Mountain Road
- Mayflower Avenue
- Riverside Greenway
- Woodlawn Avenue

Areas respondents feel safest:

The locations survey respondents feel safest include areas where there are sidewalks and low traffic volumes, such as in neighborhoods. The streets in downtown Cramerton, where there are sidewalks, appear to be perceived as the safest by respondents. Other areas of comfort include parks and nearby towns such as Belmont. Areas where survey respondents feel safest include:

- Eighth Avenue
- Neighborhoods
- Downtown Cramerton
- Areas with sidewalks
- Lakewood Neighborhood
- Cramer Mountain
- Recreation Center
- Well-lit areas

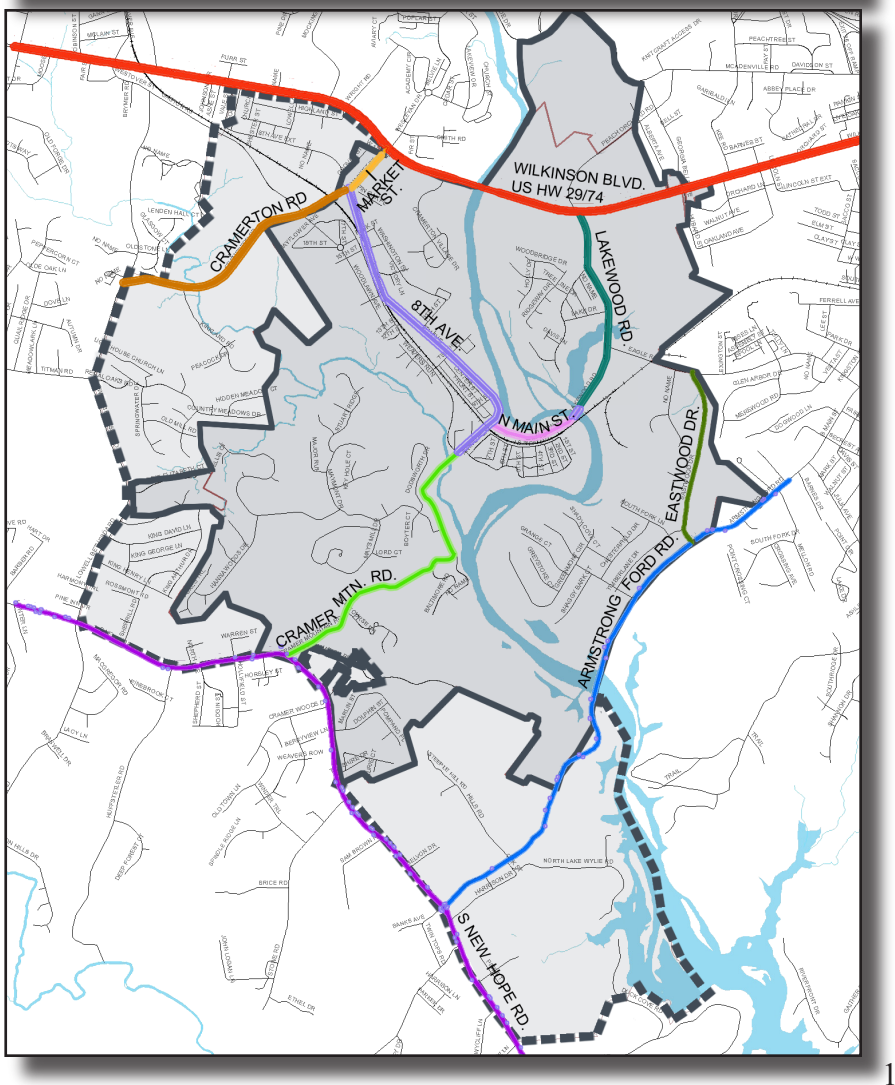
2.4 CRAMERTON TRANSPORTATION SYSTEM

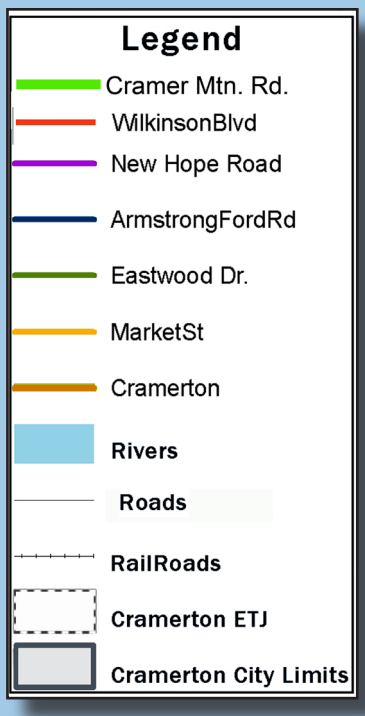
Cramerton's transportation system is composed of major thoroughfares, connectors, and neighborhood streets. Interstate 85 is just north of the Town limits and is easily accessible by vehicle. Major thoroughfares handle most of the vehicular traffic in Cramerton, as they provide connectivity in and out of the Town, as well as between destinations such as commercial areas and schools.

Important NCDOT thoroughfares within Cramerton include:

- North Main Street
- South New Hope Road
- Armstrong Ford Road
- Lakewood Road
- Eighth Avenue
- Eastwood Drive
- Market Street/Cramerton Road
- Cramer Mountain Road
- Eighth Avenue
- Wilkinson Boulevard (US Highway 29/74)

Major Corridors and Thoroughfares in Cramerton





Wilkinson Boulevard (US 29/74) is a wide NCDOT thoroughfare with curb and gutter and overhead utilities on one side. Increased lighting should be included.

New Hope Road lacks curb and gutter and pedestrian facilities such as sidewalks and crosswalks.

Armstrong Ford Road lacks curb and gutter and has no pedestrian facilities such as sidewalks and crosswalks.

Wilkinson Boulevard (US Highway 29/74) and New Hope Road are the two major traffic NCDOT classified thoroughfares within the Town of Cramerton. The other arterial and collector streets create north/south connections between Wilkinson Blvd. and New Hope Road. Most of the streets in Cramerton do not have pedestrian facilities. The streets that do provide sidewalks and crosswalks do so inconsistently.

Wilkinson Boulevard, or US Highway 29/74, is considered to be one of the "gateways" into the downtown area of Cramerton. It provides east - west access along the northern half of the Town and is heavily used to travel between Charlotte and Gastonia. According to public opinion in the 2002 Cramerton Land Use Plan, this route is "...perceived as being somewhat unsightly..." and "... does not, for many, present the first impression that the Town would like to convey...". Negative perceptions are most likely due to existing commercial structures, the lack of vegetation and pedestrian facilities, and the huge expanse of asphalt created by the multiple traffic lanes. Some of the comments documented in the 2002 Cramerton Land Use Plan call for making "Wilkinson Blvd. Cramerton's unique gateway" and a call to fix and "beautify the median along Wilkinson Boulevard". This route currently has no sidewalks, crosswalks, pedestrian signalization, lighting or street trees, because of its heavy use and function it is a very dangerous road for pedestrians.

New Hope Road is also considered a "gateway" or entrance into the Town of Cramerton. New Hope Road provides connectivity along the southern portion of the Town and links schools, neighborhoods, small commercial areas and an existing Senior Living facility. It is also the main route to access the Daniel Stowe Botanical Garden. Objectives and strategies of the adopted 2002 Cramerton Land Use Plan expressed a commitment to improving the pedestrian environment by mandating the construction of street curbs and gutters, sidewalks and providing a pedestrian friendly environment along New Hope Road. The NC Department of Transportation Thoroughfare Plan, adopted by the Gaston Master Plan Ordinance, proposes widening New Hope Road to five traffic lanes. Currently New Hope Road is not safe for pedestrians as it does not have a curb and gutter, sidewalks, crosswalks, lighting, or pedestrian signalization. This of particular concern due to the close proximity of schools and other high use/high traffic areas.

Armstrong Ford Road provides north - south connectivity on the eastern side of Cramerton. This two-lane roadway intersects with New Hope Road at the southern boundary of Town. There are some small commercial businesses on the southern end of Armstrong Ford Road, however development along this road is mostly low density residential. The Thoroughfare Plan proposes widening Armstrong Ford Rd. to three lanes and moving the intersection with New Hope Road to the east. Currently there are no sidewalks, crosswalks, or signalization for pedestrians.

The existing greenway is an asphalt paved path which meanders through open space areas separated from the roadway.

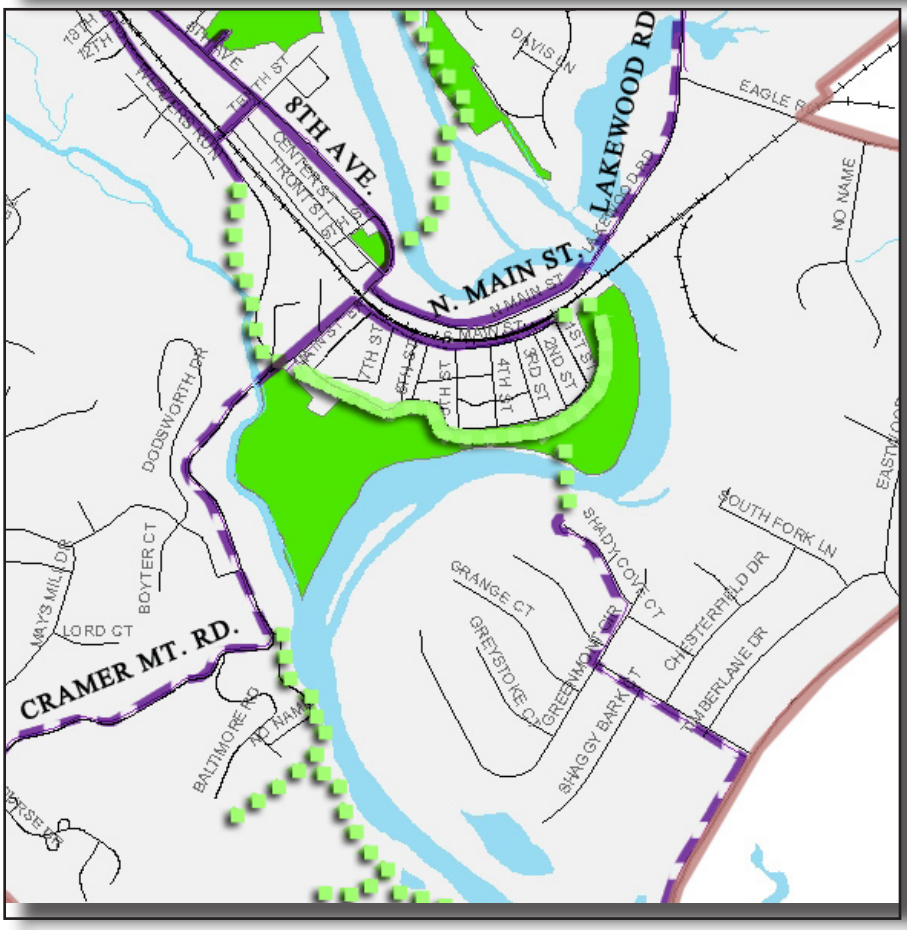
Existing Sidewalk on Eighth Avenue

2.5 CRAMERTON PEDESTRIAN SYSTEM

The existing pedestrian system in Cramerton consists of inconsistent sidewalks and greenways. Currently there is little connectivity throughout the entire Town; the historic downtown is the most pedestrian-friendly area in Cramerton. Almost all sidewalks within Town are located at the top of curb without separation between sidewalk and roadway. Accessibility is a challenge in almost all areas as there are few ramps onto the sidewalks. Crosswalks and pedestrian signalization are also absent as are traffic calming devices in areas of high use and high traffic speed.

The future of Cramerton's pedestrian environment is brighter due to new plans and policies set forth in the 2002 Cramerton Land Use Plan, the Town of Cramerton Development Code and the current Cramerton Greenway Plan. The map below illustrates sidewalks and greenways that are present, or proposed by the above Town documents, in the Town of Cramerton's downtown area. A map on the following page illustrates these same conditions for the entire Cramerton community.

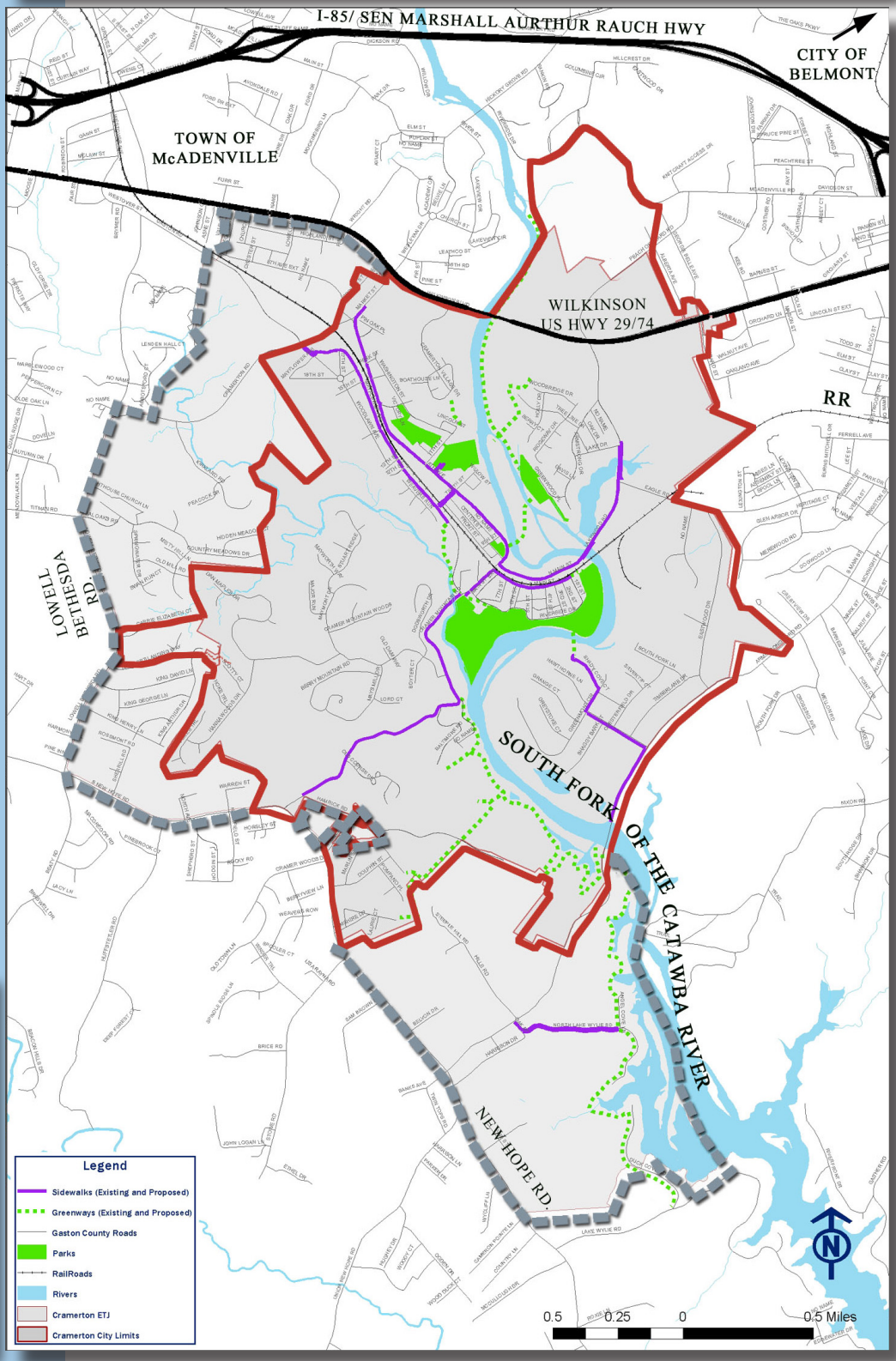
Existing Conditions and Previously Adopted* Cramerton Greenway Plan - *Downtown Enlargement



Legend

- Existing Sidewalks
- Proposed Sidewalks
- Roads
- Railroads
- Existing Greenways
- Proposed Greenways
- Rivers
- Cramerton ETJ
- Cramerton City Limits

Existing Conditions and Previously Adopted Cramerton Greenway Plan- Town of Cramerton



Legend

- Existing Sidewalks
- Proposed Sidewalks
- Roads
- Railroads
- Existing Greenways
- Proposed Greenways
- Rivers
- Cramerton ETJ
- Cramerton City Limits

2.5 Cramerton Pedestrian System

Bridges currently lack sufficient sidewalks or sidewalk width for pedestrian safety and comfort.

Rail underpasses do not meet ADA compliance and do not allow for proper visibility.

Cramerton has developed a greenway plan and has demonstrated a commitment to the construction of new facilities.

There are numerous challenges and opportunities inherent in Cramerton'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 historic walkable Town. Below is a summary of these challenges.

Pedestrian Facilities Challenges:

- Outside the historic center of Cramerton sidewalks are inconsistent or completely absent.
- There is a lack of crosswalks and pedestrian signalization to aid in pedestrians safely crossing streets.
- Existing pedestrian facilities are not ADA compliant and present safety and liability concerns for the Town and adjoining property owners.
- There is a lack of connectivity between neighborhoods due to insufficient pedestrian facilities, the railroad tracks, and the river.
- Most bridges across the river do not have adequate space for pedestrians.
- Railroad underpasses are not ADA accessible and do not allow for proper visibility for drivers, bicyclists, or pedestrians.

It is also important to recognize the positive and promising condition of Cramerton's pedestrian environment and policies. A commitment to improving the pedestrian environment includes identifying opportunities. Below is a brief listing of possible opportunities present in Cramerton.

Pedestrian Facilities Opportunities:

- Historic downtown section of Cramerton currently has sidewalks.
- There is policy in place requiring sidewalks on the interior and street frontage of all new development, with interconnection between.
- There is wide public and governmental support for pedestrian facilities.
- There has been proactive greenway and open space planning resulting in a Greenway Plan for the Town of Cramerton.
- New mixed-use developments planned for Cramerton in the future will have pedestrian facilities incorporated into their design.
- There is a rich history and commitment to improving the quality of life for Cramerton residents, both existing and future.

Commercial uses along Market Street could benefit from additional pedestrian facilities.

Bridge on Wilkinson Boulevard does not provide a safe separation between vehicular traffic and pedestrians.

2.6 EXISTING CONDITIONS ANALYSIS

The public input survey respondents corroborated the commitment to improved walkability and the pedestrian environment found in the 2002 Cramerton Land Use Code. Fortunately, the Town of Cramerton has more pedestrian facilities planned for future development and growth than currently exist. According to the 2002 Cramerton Land Use Plan and the 2002 Land Development Code, pedestrian facilities are to be constructed in all areas of new development and those existing areas identified as priorities.

The existing condition for some of the Town's facilities is a challenge to overcome. Most roadways do not have pedestrian amenities and there are few facilities compliant in ADA codes as well. The historic downtown area is connected through existing sidewalks, however they are in fair to poor condition and do not consistently meet ADA regulations. Most of the major roads which provide connectivity throughout the Town do not have any pedestrian facilities. Refer to the Town of Cramerton Sidewalk Inventory Existing Conditions Map at the conclusion of this section.

According to the Town of Cramerton Land Use Plan (2002), the community's major retail areas are located on Market Street, Wilkinson Boulevard (US 29/74), and South New Hope Road. These areas are not sufficiently connected by sidewalks and are not pedestrian friendly. 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.

Improvement of existing and the installation of new facilities, is of great importance due to the high rate of population growth in and around the Town of Cramerton. As expressed by existing residents, walkability is a necessary 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:

ROADWAYS

- Wilkinson Boulevard
- South New Hope Road
- Market Street
- Cramer Mountain Road
- Lakewood Road
- Eighth Avenue
- Mayflower Avenue
- Eagle Road
- Cramerton Road

SPOT IMPROVEMENTS

- Rail Underpasses
- Intersection Improvements
- Bridges

CURRENT PLANS, PROGRAMS, POLICIES

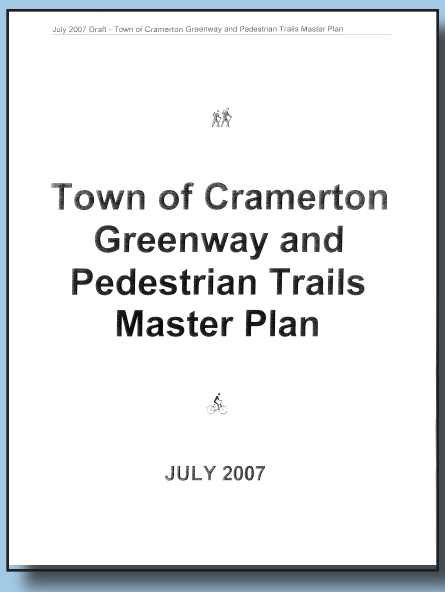
3.1 OVERVIEW

The Town of Cramerton and Gaston County have a variety of ongoing plans, programs, and policies which effect the safety and appearance of the pedestrian environment. These tools deal with green space development and connectivity, address the goals of development and growth, land use regulations, transportation issues and challenges, and revitalization of downtown Cramerton.

The following public documents directly effects the future of Cramerton's pedestrian system.

- Town of Cramerton Greenway and Pedestrian Trails Master Plan (July 2007)
- Town of Cramerton Land Use Plan (December 2002)
- Town of Cramerton Land Development Code (December 2002)
- Gaston County Unified Development Ordinance (UDO) (to be completed in 2008)
- 2030 Long Range Transportation Plan for Gaston Urban Area Metropolitan Planning Organization (GUAMPO).

3.2 GREENWAY AND PEDESTRIAN TRAILS



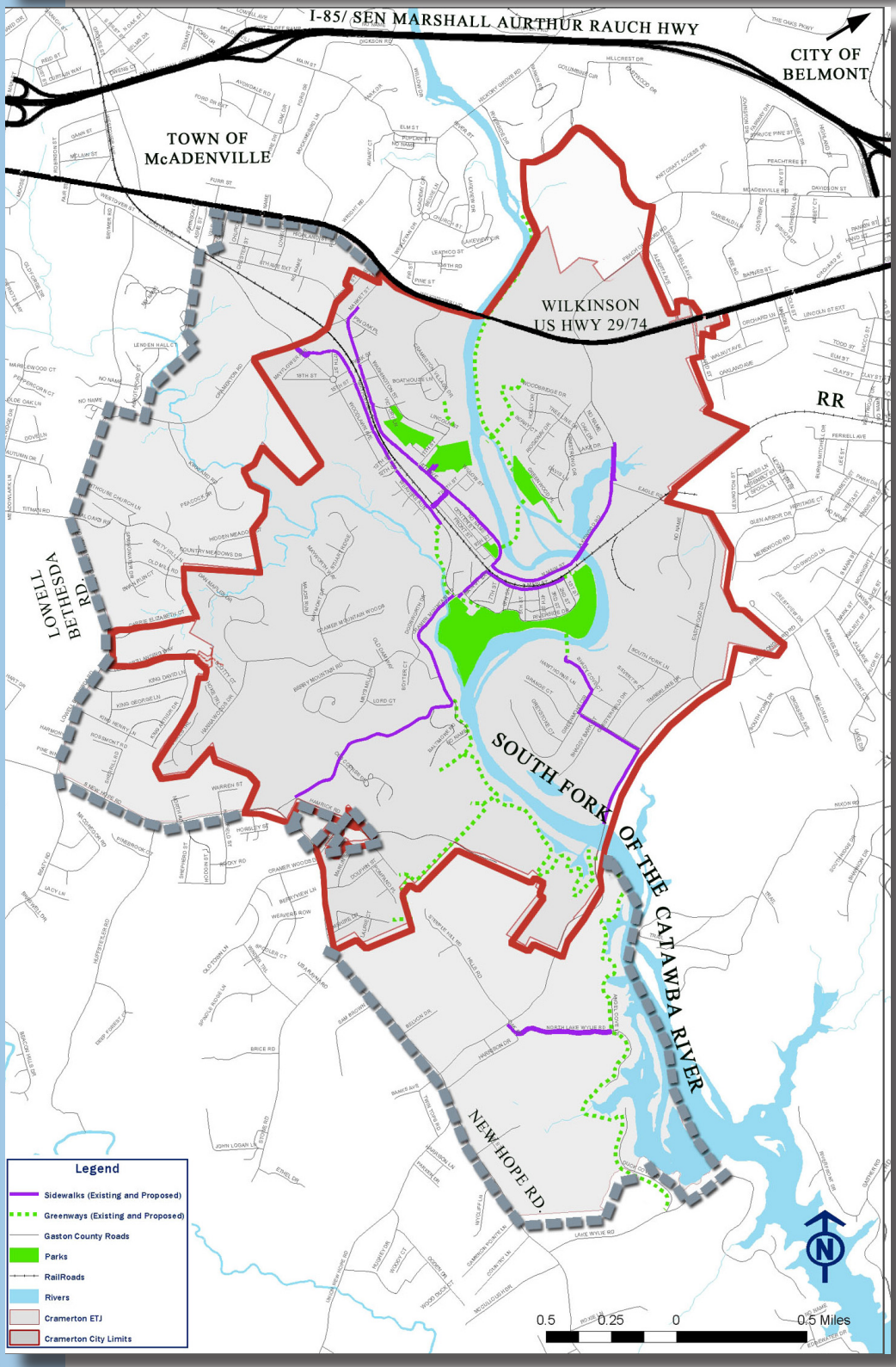
The purpose of the Cramerton Pedestrian Master Plan is to improve the quality and interconnectivity of the Cramerton pedestrian environment. Greenways and other off-road trails add diversity to the pedestrian experience and offer options to typical sidewalks as a means to destinations. The existing Town of Cramerton Greenway and Pedestrian Trails Master Plan (Greenway Plan) is a very important tool for the Town to use when planning new developments, recreational facilities, and transportation systems. The Greenway and Pedestrian Trails Master Plan seeks to develop a future greenway network which serves many purposes. These purposes are described further in the document itself and include the following:

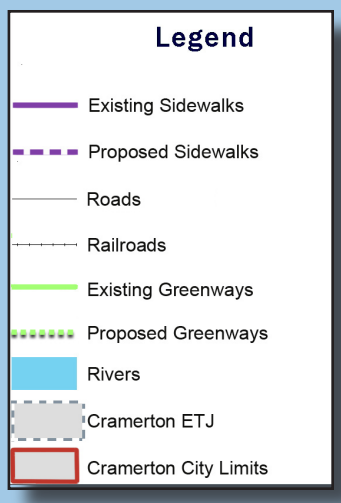
- Better Floodplain Management
- Improved Water Quality
- Alternative Transportation System
- Recreational Facility
- Increased Wildlife Habitat

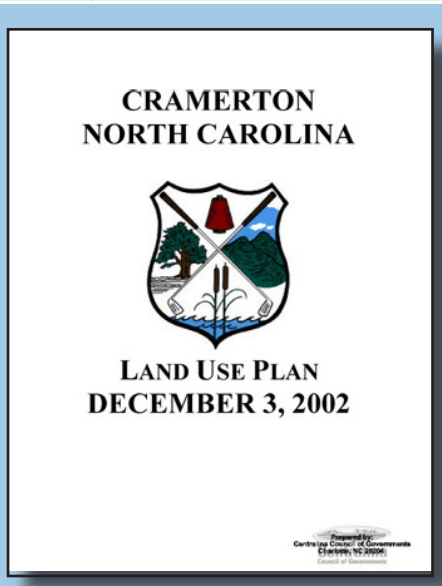
The greenways proposed in the already adopted Cramerton Greenway Plan are primarily located along natural and man-made waterways and roadway corridors. These currently planned greenways are dispersed throughout the Town and will improve the overall connectivity between neighborhoods, schools, parks, and other destinations. Existing and proposed greenways and how they relate to other pedestrian facilities within the Town such as sidewalks are illustrated on the map below.

The public facilities addressed within the currently adopted Greenway Plan will not be reiterated or further described within this Town of Cramerton Pedestrian Master Plan. Interested parties may reference the Greenway Plan at their convenience for information on any facility detailed by this public document.

Existing Conditions and Previously Adopted Cramerton Greenway Plan- Town of Cramerton







3.3 Town of Cramerton Land Use Plan

The adopted Town of Cramerton Land Use Plan articulates the vision of the Town through the year 2012. The Land Use Plan was adopted in 2002 and replaces the 1992 Cramerton Land Use Plan. The Land Use Plan primarily focuses on land use and development issues within Cramerton. Land use and development patterns significantly effect the connectivity and safety of the pedestrian environment as well as the pedestrian experience. For a pedestrian plan to be successful it needs to be integrated into the larger organization and transportation network of a community. The ease in which pedestrian facilities can be effectively integrated depends heavily on land use. The Land Use Plan identifies patterns that encourage and provide facilities for pedestrians include:

- Greater housing densities which allow more residents to live near community destinations such as schools, commercial areas and downtown.

- Mixed-use zoning which allows a diversity of services to be located closer to or within neighborhoods and therefore making it easier to get to them. These services include retail, office or professional buildings, as well as recreation and institutional services.

- Multiple-use zoning allows a diversity of uses to share one building. An example of this is a building which is used for a residence and retail sales. This type of zoning reduces travel time and increases safety.

- Locating buildings close to the street and sidewalk allows for greater pedestrians usage and access.

- Conserving open space areas between neighborhoods creates a greenbelt which helps discourage sprawl while providing connectivity and recreational amenities to residents.

(Oregon Bicycle and Pedestrian Plan, 1995)

Land use categories specified in the existing Cramerton Land Use Plan as having a higher intensity of pedestrian facilities and amenities include: areas within a ***Central Business District*** as well as ***Neighborhood and Community Business***. This Plan establishes retail concentrations along Market Street, Wilkinson Boulevard (US 29/74), and South New Hope Road.

3.4 Town of Cramerton Land Development Code

The current Town of Cramerton Land Development Code consists of and identifies Land Development Code Text, Table of Allowed Uses, Traditional Neighborhood Development, and Residential Design Standards. The portion of the Cramerton Land Development Code which greatly impacts the future of the Town's pedestrian environment is Section 12.4 Traditional Neighborhood Developments. Cramerton has made a commitment to expanding this type of development within their boundaries. Traditional Neighborhood Development is strongly recommended for use within this Pedestrian Master Plan due to the following list of characteristics:

- Emphasis on the public space - streets, plazas, parks, etc.
- Non-residential uses set adjacent or very close to the sidewalk
- Presence of street trees
- Incorporation of planting strips
- Locate utility equipment out of sight
- Locate utilities underground
- Presence of decorative street lighting
- Connecting network of streets
- Cul-de-sacs are to be discouraged
- Long blocks are to be discouraged
- Streets designed to be driven at 25 miles per hour
- Sidewalks on both sides of the street
- Pedestrian facilities to meet safety, comfort, and interests
- Gated neighborhoods are forbidden
- Contain a mixture of uses and housing types
- Have at least one defined "Center"
- Encourage civic uses in the "Center"
- Incorporate formalized common open spaces

Fortunately, the Town of Cramerton has emphasized the use of Traditional Neighborhood Developments in all new housing developments. With this designation in place the current and future residents of Cramerton will enjoy and benefit from their increased connectivity, open spaces, and walkability.

The current Land Development Code should be expanded to include recommendations in this Pedestrian Master Plan. The existing Land Development Code includes a Tree Ordinance which should be modified to incorporate a standard for street trees when possible and a minimum width for standard planting strips. Refer to ***Section 5.2 Landscaping*** of this Town of Cramerton Pedestrian Master Plan for recommendations.

3.5 Gaston County Unified Development Ordinance

The Gaston County Unified Development Ordinance (UDO) is currently being developed. It is projected that the UDO will be complete and ready for public review during the First Quarter of 2008. Fortunately Gaston County has developed *Guiding Principles/Desired Outcomes* for the UDO that may be used for future planning with the expectation of a 2008 approval. The following is a partial listing of those principles and outcomes which will have the greatest impact on the desired pedestrian environment in Cramerton:

"Address problems of sprawl patterns in land uses....."
The goal is to reduce the amount of "sprawl patterns" within identified land uses. As already noted in this Pedestrian Master Plan, the ease in which pedestrian facilities can be effectively integrated depends heavily on land use. Land use patterns which encourage and provide facilities for pedestrians are those with greater housing densities which allow residents to live close to community and employment destinations.

"Develop procedures and standards to safeguard Gaston County from undesirable development....."
This permits the County to refuse development which is not in line with the larger goals and objectives of creating livable communities. This principle requires developers to meet with local staff for pre-submittal meetings allowing preemptive review of the plans to ensure they comply with the UDO and other planning tools in place for Staff plan review. This process should definitely be incorporated into the planning approval process for new developments within the Town of Cramerton.

"Develop design guidelines that promote livable communities, not exclusive ones.... North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation..."
One of the more specific objectives of this principle is to encourage street interconnectivity in all new residential developments. Additionally, it calls for the standard placement of sidewalks in all new residential and commercial developments. This will promote the use of pedestrian facilities and their overall effectiveness in offering alternate modes of transportation.

Although there are positive elements of the Gaston County UDO, it is recommended that Cramerton develop its own UDO to further specify what is and is not appropriate within the Town Limits. This UDO should incorporate specific guidelines for pedestrian amenities and facility locations.

3.6 GUAMPO 2030 Long Range Transportation Plan

The previously adopted Gaston Urban Area Metropolitan Planning Organization (GUAMPO) 2030 Long Range Transportation Plan recommends programs and specific projects. These programs and projects are based on future travel conditions as well as land development and environmental issues. Below is a primary goal of the 2030 Long Range Transportation Plan which specifically addresses pedestrian and bicycle modes of transportation:

"Develop a transportation system that integrates pedestrian and bicycle modes of transportation with motor vehicle transportation and encourages the use of walking and bicycling as alternative modes...*

- *Increase the design sensitivity of specific transportation projects to the needs of pedestrians and bicyclists.*
- *Assist the development of pedestrian and bikeway systems for both recreation and transportation purposes.*
- *Improve the transportation system to accommodate pedestrian and bicycle access along roadways.*
- *Increase pedestrian and bicycle safety through public awareness programs.*
- *Provide linkages for pedestrians and bicyclists between neighborhoods, employment centers, services, cultural facilities, schools, parks, and businesses."**

**2030 Long Range Transportation Plan adopted by GUAMPO Technical Coordinating Committee.*

Specific projects, some of which have begun implementation, recommended in the Long Rang Transportation Plan, which directly impact the Town of Cramerton and its pedestrian environment are listed below:

South New Hope Road Widening Project:
Widen existing two-lane road to five lanes with enhancements.

Titman Road & Cramerton Road Widening and New Alignment Project:
Widen existing two-lane roads to three lanes, and construct a new three lane connector from South New Hope Road to Woodlawn Avenue.

Wilkinson Boulevard Bridge Replacement and Road Widening Project:
Replace existing four-lane bridge with six-lane bridge. Widen east bound and west bound approaches to bridge to six lanes from Market Street to Alberta Avenue.

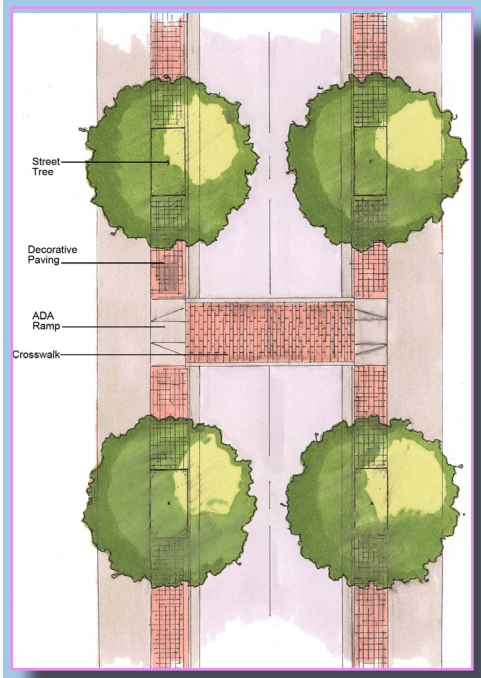
Eighth Avenue Railroad Underpass Widening Project:
Widen the existing one-lane underpass bridge to two-lanes beginning at Main Street and continuing until 500' beyond railroad tracks.

Market Street Widening Project:
Incorporate a right turn lane on Market Street between railroad tracks and Wilkinson Boulevard.

PEDESTRIAN SYSTEM PLAN

4.1 OVERVIEW

This proposed Pedestrian System Master Plan Section is based on the original vision statement, project goals, along with public input from the residents, and the existing plans, programs, and policies already in place which shape and impact the pedestrian system. Sections 4 through Section 6 provide direction in the development and implementation of the specifics of this Pedestrian System 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 Corridor, Downtown Streets, Existing Subdivisions, and both Historic and New Subdivisions. The map on the following page provides an illustration of each type. In all cases, it is manditory to provide for emergency vehicle access to streets and buildings.



Decorative paving between plantings.

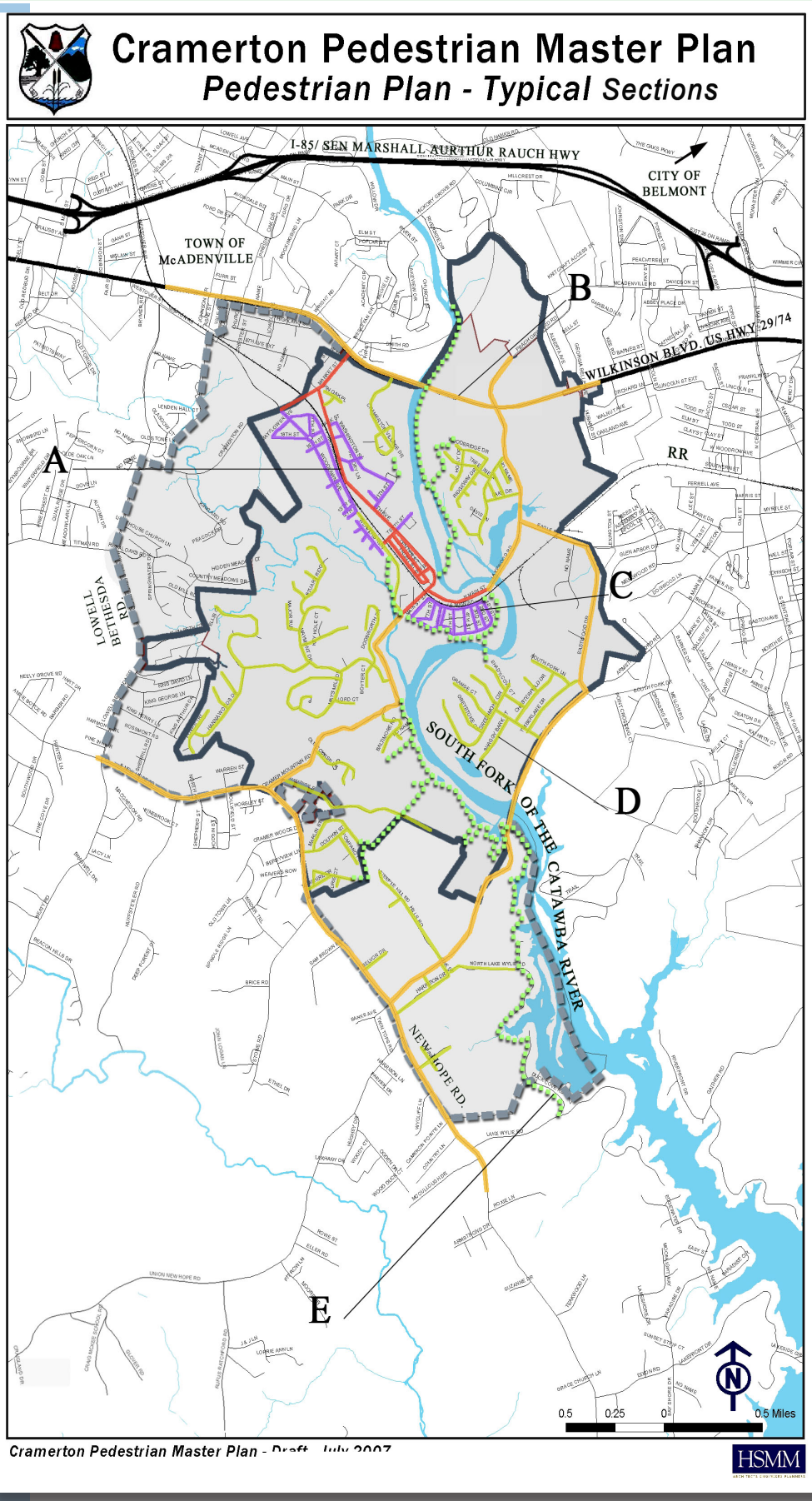
Major Corridors are to have the following treatments:
- Planted medians where turning lanes are not necessary.
- Locate sidewalks min. 5' in width on both sides of the roadway with planted separation min. 5' in width.
- Use crosswalks, pedestrian refuge islands when necessary, with pedestrian signalization at all crossings.
- Incorporate NCDOT Standards where appropriate.

Downtown Streets are to have the following treatments:
- Utilize ROW to bury utilities in immediate Downtown area.
- Plant trees in rectangular planting strips for separation.
- Install decorative paving between plantings.
- Use groundcover/plantings under trees to reduce maintenance.

Existing Subdivisions are to have the following treatments:
- Road Diet: Where appropriate, reduce travel lanes to 10' wide.
- Sidewalks with a minimum 5' wide on one side of the street.
- Provide a min. 5' wide planted separation between sidewalk and roadway.

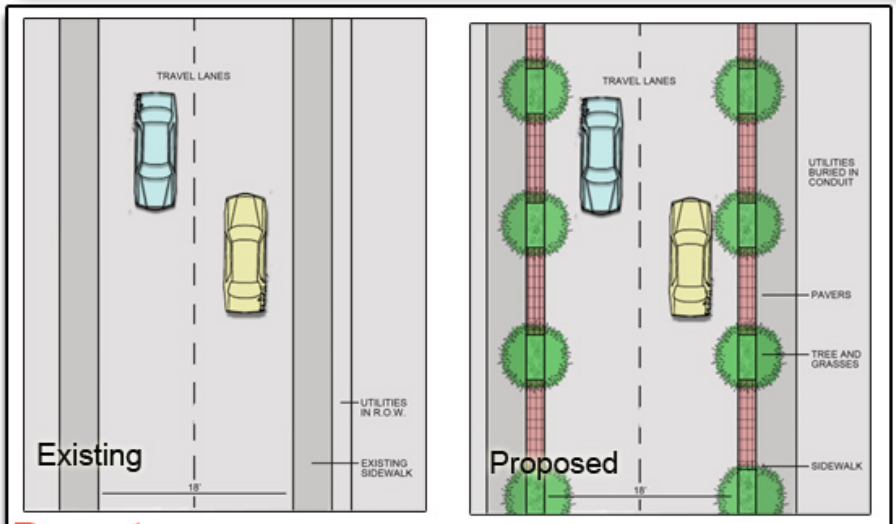
Existing Subdivisions (Historic) are to have the following treatments:
- Stripe streets sparingly to better delineate street zones.
- Locate striped pedestrian zone min. 5' wide on one side of street.

New Subdivisions are to have the following treatments:
- Install sidewalks min. 5' in width on both sides of the street.
- Provide a min. 5' in width planted separation between sidewalk and roadway - require 10' travel lanes on interior streets.
- Incorporate NCDOT Standards where appropriate.


Cramerton Pedestrian Master Plan
Pedestrian Plan - Typical Sections
I-85/ SEN MARSHALL ARTHUR RAUCH HWY
CITY OF BELMONT
TOWN OF McADENVILLE
WILKINSON BLVD, US HWY 29/74
RR
LOWELL BETHESDA RD.
SOUTH FORK OF THE CATAWBA RIVER
NEW HOPE RD.
A
B
C
D
E
LEGEND
Greenways (Existing and Proposed)
Major Corridor
Existing Subdivision- Historic
Existing Subdivision
Downtown
Rivers
Roads
Railroads
Cramerton ETJ
Cramerton City Limits
0.5 0.25 0 0.5 Miles
Cramerton Pedestrian Master Plan - Draft July 2007
HSMM

4.1 Overview

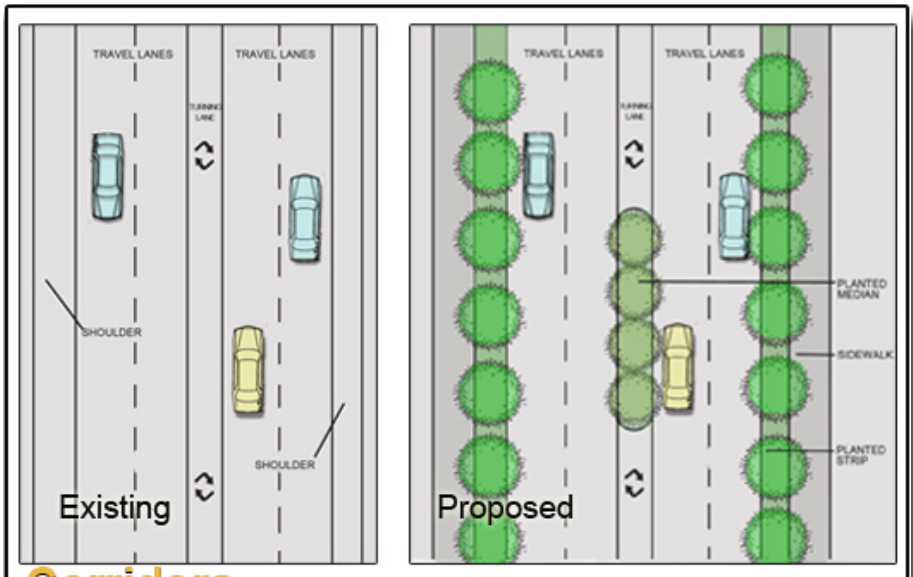
Typical Profile A- Downtown



Downtown

Utilize available ROW by burying utilties in immediate downtown
Plant trees in rectangular planting strip for separation
Repair sidewalk in necessary areas
Introduce decorative paving between plantings
Underplant trees with groundcover to reduce maintenance

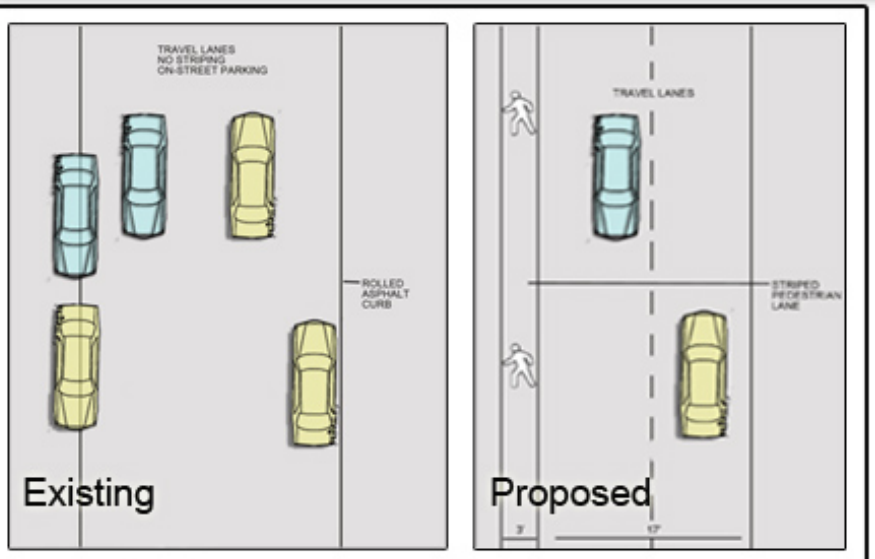
Typical Profile B- Corridors



Corridors

Use planted median where turning lanes are not necessary.
Sidewalks both sides (min.5') with planted strip.
Crosswalks/Pedestrian Refuge Islands at crossings.

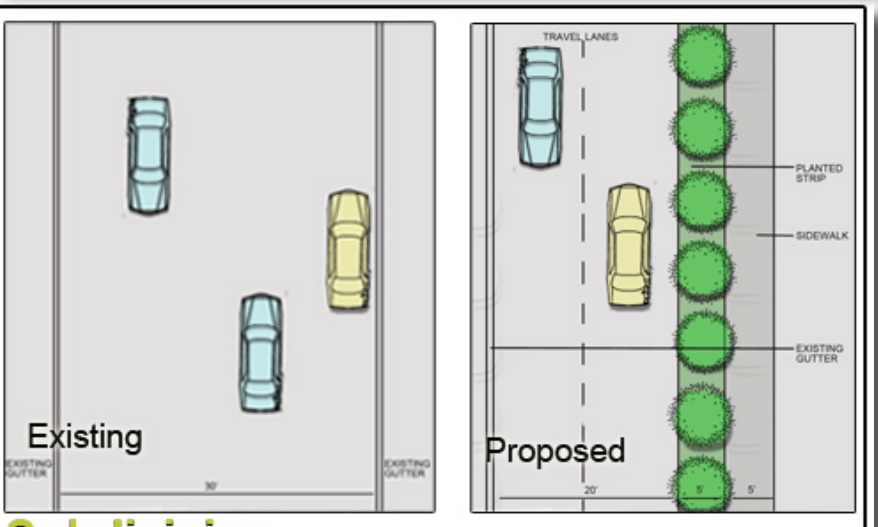
Typical Profile C- Subdivision/ Historic



Subdivision- Historic

Delineate street zones through striping (limited space)
One side on-street parking (9')
One side pedestrian lane (min. 5')

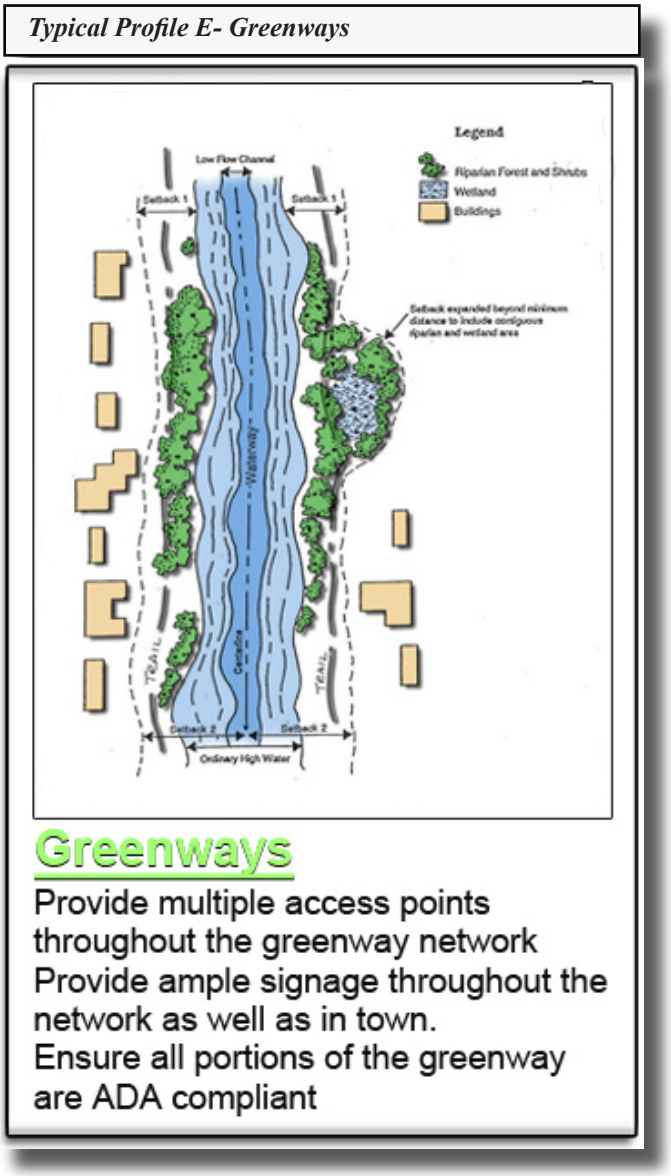
Typical Profile D- Subdivision



Subdivision

Road Diet: Delineate street for pedestrians and vehicles.
10' travel lanes
Sidewalk on one side of street minimum (5' min.)
Planted strip (min. 5')

Typical Profile E- Greenways



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

Tier 1

- **Wilkinson Boulevard (1) (US29/74)**
- **Eighth Avenue (2)**
- **Market Street (3)**
- **Mayflower Avenue (4)**
- **South New Hope Road (5)**
- **Eagle Road (6)**
- **Cramer Mountain Road (7)**
- **Cramerton Road (8)**

The new Pedestrian System Master Plan developed herein 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 **"Tier 1"** or necessary Phase I priorities. Additionally, the Pedestrian System Master Plan includes corridors in need of future improvement and have been classified as **"Tier 2"** priority development projects. The Tier 1 and Spot Improvements are listed and discussed on this and following pages. Tier 2 projects follow in the text after the Spot Improvements section.

4.2 TIER 1: MAJOR PEDESTRIAN CORRIDORS

Improvement projects for corridors within the Tier 1 priority, itemized at the left, will improve connectivity and pedestrian access on roadways which are already utilized by pedestrians. These corridors currently provide connectivity to destinations such as schools, commercial areas, neighborhoods, and Downtown. It is recommended that these corridors receive first priority for improvement projects due to the ability to immediately impact the existing pedestrian infrastructure and access to current destinations. When undertaken, these projects will acheive critical connection link throughout the Town of Cramerton and may also be directly connected into accessible areas within the previously adopted Cramerton Greenway Master Plan.

US Highway 29/74 Existing Conditions (Wilkinson Blvd.)

Existing Conditions

Conceptual perspective with a planted separation, street trees, and decorative crosswalks.

Spot Improvements Projects

- **Intersection: Wilkinson Blvd and Market St. (B)**
- **Intersection: Wilkinson Blvd and Lakewood Rd. (D)**
- **Intersection: S. New Hope Rd and Cramer Mountain Rd. (I)**
- **Intersection: Eighth Ave and Market St. (A)**
- **Bridges: Wilkinson Blvd. (C)**
- **Bridges: Lakewood Rd. (E)**
- **Bridges: N. Main St. Ext. (G)**
- **Underpass: N. Main St. Ext. (F)**
- **Underpass: 10th St. (H)**

Intersection of Wilkinson Boulevard and Lakewood Road.

Intersection of S. New Hope Road and Cramer Mountain Road.

4.3 SPOT IMPROVEMENT PROJECTS

An important component of the Pedestrian System Plan are the Spot Improvement projects which were identified in the public input stages of this planning process. As funding becomes available, the areas identified in this section should accompany the Tier 1 projects in priority. These areas were identified during site visits, but mostly through the public input process. 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, bridges, and railroad underpasses. These areas cause significant deterrence to pedestrians and cyclists.

Intersection at Wilkinson Boulevard and Market Street (B): Recommendations at this intersection include the installation of high visibility or decorative crosswalks for all four crossings. Pedestrian signalization is also recommended for this intersection. Pedestrian refuge islands should eventually be integrated into Wilkinson Boulevard / US Highway 29/74 to assist pedestrians when crossing. Additionally, all crosswalks should terminate at ADA compliant curb cuts and ramps.

Intersection at Wilkinson Boulevard and Lakewood Road (D): Recommendations at this intersection include the same treatments as the intersection of Wilkinson Boulevard and Market Street. High visibility or decorative crosswalks should be installed at all four crossings. Pedestrian signalization should be incorporated into the intersection and pedestrian refuge islands should be installed on Wilkinson Boulevard to assist in pedestrian safety when crossing traffic lanes.

Intersection at S. New Hope Road and Cramer Mountain Road (J): Recommendations at this intersection include the installation of high visibility or decorative crosswalks. Pedestrian signalization is also recommended due to the close proximity of schools and senior housing. Other traffic calming measures could be incorporated into the intersection if funding is available.

Intersection of Eighth Avenue and Market Street.

Bridge on Lakewood Road.

Rail underpass on Eighth Avenue/ Cramer Mountain Road.

Intersection at Eighth Avenue and Market Street (A):
Recommendations at this intersection include the installation of high visibility or decorative crosswalks and a pedestrian refuge island to be incorporated into the existing median.

Bridge on Wilkinson Boulevard (C):
Recommendations for this bridge include traffic calming measures on both approaches to the bridge by narrowing existing traffic lanes. When a new bridge is constructed sidewalks should be installed on both sides with a low wall or railing separating it from vehicular traffic. Sidewalks should be a minimum of five feet in width.

Bridges on Lakewood Road (E):
Recommendations for these bridges include traffic calming measures on both approaches. When new bridges are constructed, sidewalks should be constructed on both sides with a railing separating it from vehicular traffic. Sidewalks are to be a minimum of five (5) feet in width.

Bridge on North Main Street Ext. (G):
The South Fork River Bridge on North Main Street is slated for replacement in Fiscal Year 2010. Recommendations for this Bridge should be included in the new construction design and engineering packages. Recommendations include traffic calming measures on both approaches similar to those mentioned above. When the new bridge is constructed, sidewalks should be constructed on both sides with a railing separating it from vehicular traffic. Sidewalks are to be a minimum of five (5) feet in width.

Rail Underpass on Eighth Avenue/Cramer Mountain Road (F):
Recommendations for the underpass include installing ADA compliant ramps entering and exiting the underpass. Lighting should be installed in underpasses to improve safety. A crosswalk should be installed on North Main Street to provide a safe crossing for pedestrians.

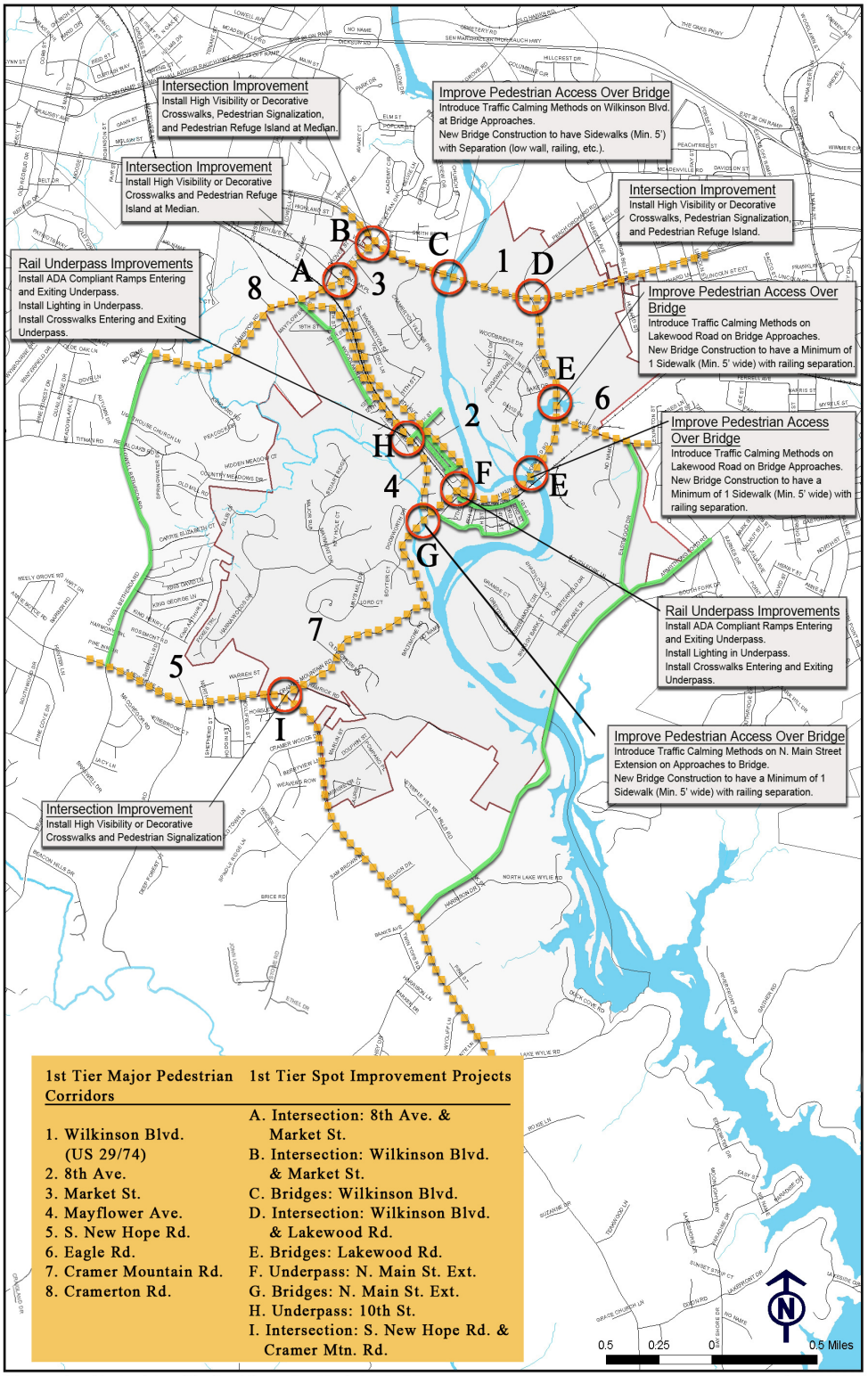
Rail Underpass on Tenth Street (H):
Recommendations for the underpass include installing ADA compliant ramps entering and exiting underpass. Lighting should be installed in underpasses to improve safety. A crosswalk should be installed across Mayflower Avenue so that pedestrians can safely access the sidewalk on the other side. Appropriate signage should be installed to alert motorists to the approach of a mid block pedestrian crossing.

A map illustrating the locations of the Tier 1 Corridors and Spot Improvement Projects is located on the following page.

For the Cramerton Pedestrian Master Plan Map Legend Key Elements Refer to the following pages

Cramerton Pedestrian Master Plan

Pedestrian Plan - Phasing Priorities



Cramerton Pedestrian Master Plan

HSMM

LEGEND
- 1st Tier Priority
- 1st Tier Spot Improvements
- 2nd Tier Priority
- Rivers
- Gaston County Roads
- Railroads
- Cramerton ETJ
- Cramerton City Limits

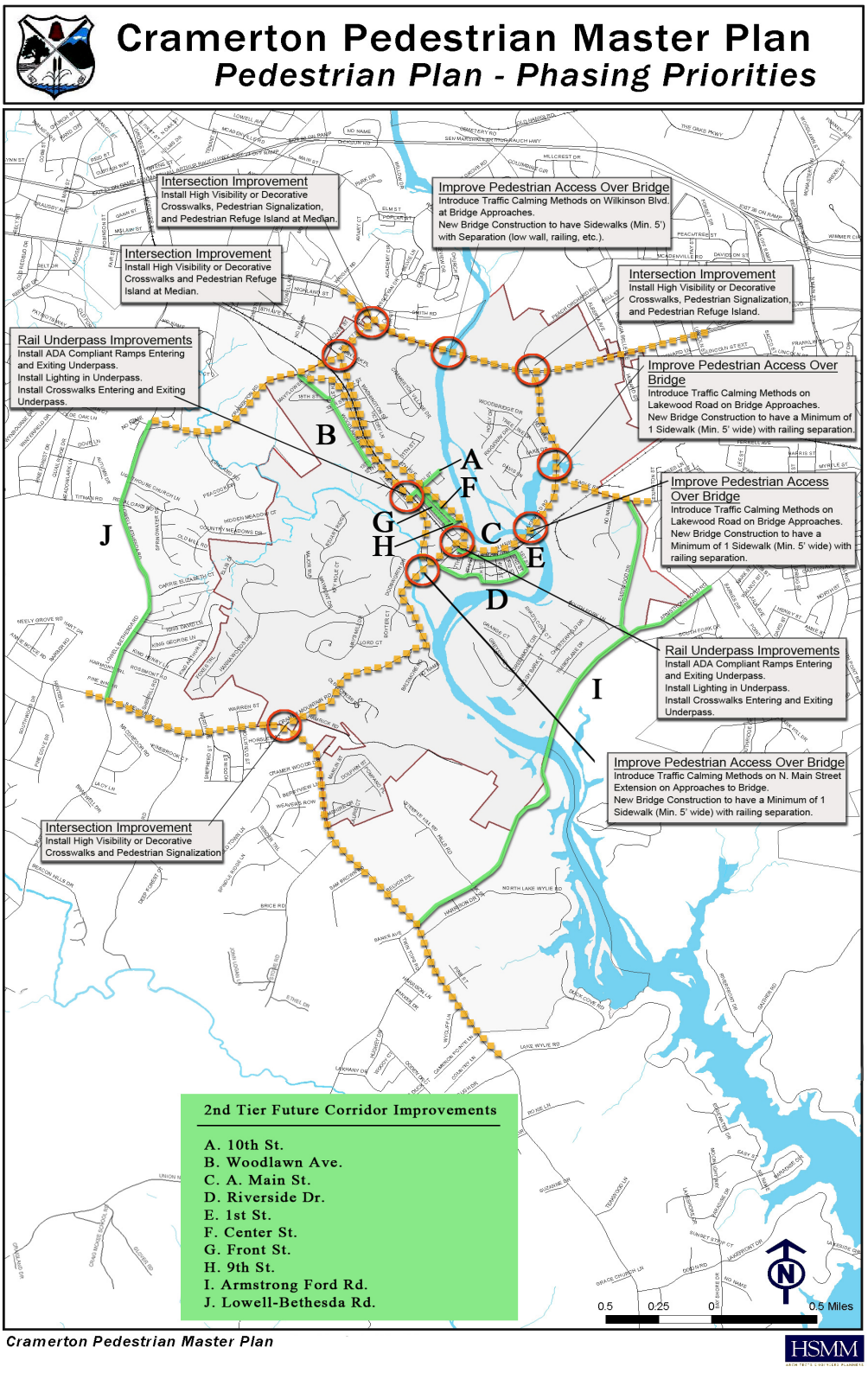
4.4 TIER 2: FUTURE PEDESTRAIN CORRIDORS

Tier 2

- **Tenth Street (A)**
- **Woodlawn Avenue (B)**
- **South Main Street (C)**
- **Riverside Drive (D)**
- **First Street (E)**
- **Center Street (F)**
- **Front Street (G)**
- **Ninth Street (H)**
- **Armstrong Ford Road (I)**
- **Lowell-Bethesda Road (J)**

The Pedestrian System Plan also includes vehicular corridors in need of future improvement herein noted as Tier 2 Improvements. Following the Tier 1 and Spot Improvement projects, roadway corridors on the Tier 2 list should be improved and enhanced as recommended as soon as funding becomes available. These Tier 2 corridors offer roadways with a finer degree of interconnectivity and pedestrian linkages throughout Cramerton and are not in as immediate need of improvement as the Major Pedestrian Corridors listed in Tier 1. Tier 2 projects are not safety hazards or existing problem areas noted by public opinion such as those classified as Tier 1 projects.

A map illustrating the locations of the Tier 2 Future Pedestrian Corridors is located on the following page.



4.4 Tier 2: Future Pedestrian Corridors

FACILITY CONCEPUTAL STANDARDS & DESIGN GUIDELINES

5.1 OVERVIEW

This section is dedicated to delineating the proposed standards and guidelines for planning and developing pedestrian routes and facilities within the Town of Cramerton. These guidelines will improve the Town's compliance with the Americans with Disabilities Act (ADA) and the North Carolina Department of Transportation (NCDOT) standards for pedestrian facilities. Conceptual standards are included for pedestrian facilities and amenities, off-street routes, and intersection treatments. Cost estimates are also provided to help the Town plan financial obligations necessary for installation and implementation.

The following are conceptual Pedestrian System Master Plan standards included here as recommendations for the Town of Cramerton. Some of the following recommendations are specifically expounded upon in the Section 4: Pedestrian System Master Plan, while others are provided for their potential applicability. All are appropriate for the Town of Cramerton. This section should act as guidelines for the Town for implementation and future development purposes, and be considered as a resource and be referred to frequently.

Wide sidewalk in a commercial area
Photo credit: www.state.nj.us

QUICK GUIDE

Sidewalk Guidelines:

• Ensure a minimum five foot sidewalk width in residential areas.

• Ensure a minimum eight foot sidewalk width in high use areas, commercial areas, and heavily used corridors.

• Ensure a four to eight foot separation between back of curb and sidewalk to increase safety and comfort of pedestrians.

• Comply with ADA regulations for all new sidewalks.

• A brushed concrete surface is the preferred treatment except in areas where decorative paving may be advantageous (commercial centers, downtown, etc.).

• Construct sidewalks on both sides of major and minor thoroughfares, collector streets, and secondary streets. See Section 15.22 in 2002 Cramerton Development Code.

Estimated Costs*:

5' wide Concrete sidewalks	$20/L.F.
Concrete Curb and Gutter (24")	$15-$20/L.F.
Standard Handicap Ramp (Std. pavmt)	$500-$800 per corner

*Costs provided by NCDOT

5.2 PEDESTRIAN FACILITIES AND AMENITIES

The pedestrian facilities and amenities discussed in this section provide standards for the improvement of Cramerton's pedestrian environment. Each element listed below will be discussed and will include an estimated cost for installation and implementation. Recommendations made in this ***"5.2 Section Pedestrian Facilities and Amenities"*** should be included in the adopted 2002 Cramerton Land Development Code in order to have a consistent application of guidelines throughout the Town. With this inclusion, the Development Code should include overall text changes that require new developments to install sidewalks along their property with public street frontages. The pedestrian facilities and amenities include:

- Sidewalks
- Crosswalks
- Pedestrian Underpasses
- Pedestrian Refuge Islands
- Pedestrian Signalization
- Landscaping
- Street Furniture - including lights and signage
- Bridges
- Limit utility conflicts

Sidewalks:

Sidewalks are important public space in any community. Public sidewalks are located between the edge of a roadway and the edge of the public right-of-way (ROW). They not only provide a designated space for pedestrians to walk, they can also serve gathering and social purposes, often a place where community members interact.

The appropriate width of a sidewalk depends on its location and use. Wide sidewalks provide more space for a variety of activities to take place. The minimum width of a sidewalk, excluding curb and other obstructions such as signal poles, signage poles, parking meters, and street furniture, shall be at least five feet in residential areas. This is the minimum width necessary for two pedestrians to walk side by side or for two pedestrians to pass one another comfortably. Sidewalks should be wider in areas of heavy pedestrian traffic such as a commercial area, near schools, and along heavily used corridors such as Wilkinson Boulevard. Eight to ten feet is the recommended sidewalk width for these heavy use areas.

According to the 2002 Cramerton Land Development Code (LDC), sidewalks shall be constructed on both sides of major and minor thoroughfares, and collector streets providing direct traffic routes, and secondary neighborhood streets. See LDC Section 15.22 *Pedestrian Walkways* for further details.

A separation of four to eight feet is recommended between the back of a curb and sidewalk. This separation is beneficial for the safety and comfort of pedestrians and acts as a transition from the vehicular zone and pedestrian areas. Often this separation consists of a planting strip with street trees and/or low maintenance vegetation such as groundcover or grass. Along NCDOT streets trees must be 10' off the face of curb.

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

Crosswalks:

Marked crosswalks are an important part of the pedestrian environment because they delineate pedestrian zones across a roadway. A crosswalk is defined by the Institute of Transportation Engineers as "the portion of a roadway designated for pedestrians to use in crossing the street (1998)". Crosswalks vary in regards to size, color, texture and visibility. It is necessary that all crosswalks be designed in accordance with the Federal Highway Administration's Manual of Uniform Traffic Control Devices (MUTCD).

There are many types of crosswalks available for use ranging from simple white striped crosswalks to highly decorative crosswalks with pavement stenciling and alternative materials. It is recommended that crosswalks be striped with continental markings; high-visability crosswalks as these are the most visible to motorists. In historic areas, such as the center of Cramerton, a more decorative crosswalk can be installed provided it meets ADA regulations and is not too bumpy or difficult for handicapped users. Crosswalks should be installed at all intersections where there is a traffic light or stop sign. Crosswalks should not be installed where sidewalks are not present or in locations where there is not appropriate ADA compliant accessibility on both sides of the street. All crosswalks should be at least eight feet (8') wide and a minimum of ten feet (10') wide in high use areas such as around schools and commercial areas.

The 2002 Cramerton Land Development Code references crosswalks in Section 15.22, however the standards are not specific and are not sufficient to improve the safety and accessibility of Cramerton's pedestrian environment. It is recommended that Cramerton develop and adopt a crosswalk policy and associated design guidelines. This policy is as simple as the following:

"Crosswalks are to be installed at all roadway intersections where stop signs or signalization is located. Crosswalks should not be installed where sidewalks are not present or are not ADA compliant on both street sides. All crosswalks must be 8' to 10' minimum width in high use critical areas such as school districts or commercial areas. Developers must install crosswalks where property frontage is adjacent public right-of-way. Proposed crosswalk color, types and materials must be approved by the Town of Cramerton and NCDOT where necessary prior to construction and installation."

Decorative cross-walk with signage.
Photo credit: www.fhwa.dot.gov

Pedestrian Refuge Island with at-grade crosswalk-Photo credit: 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

Pedestrian Refuge Islands:

Pedestrian refuge islands are spaces designed within travel lanes to protect pedestrians from vehicular traffic by providing a safe place for pedestrians between traffic lanes. Pedestrian refuge islands are raised islands located in the center of a roadway. They are typically located at intersections or at mid-block crossing for pedestrians at needed locations. This allows a pedestrian to be concerned with one direction of traffic at a time and is particularly helpful for elderly, disabled, and young pedestrians, as these users often need more time to cross a roadway.

Pedestrian refuge islands typically consist of a median in the center of a roadway with ramps or at-grade crosswalks through the median. These medians provide a safe place for pedestrians who are unable to cross the entire road in one traffic light signal cycle.

Pedestrian refuge islands not only provide safe crossings for pedestrians, they also can be used as a traffic calming device. Incorporating landscape elements or colored pavement into the design of an island makes it more visible to motorists. These enhancements also contribute to the character and overall friendliness of the pedestrian environment by way of utilization of increased vegetation and decorative elements.

Pedestrian signalization, or traffic crossing push button attenuators, can be installed on either side of the refuge island to further help pedestrians negotiate traffic. Appropriate signage and signalization should be used to make these crossings more visible and user friendly to both motorists and pedestrians.

Pedestrian refuge islands should be used on streets with multiple travel lanes of two-way traffic, high vehicular speeds, and high pedestrian activity. Vegetation should be incorporated into the median to help alert drivers of the pedestrian refuge island, as well as increase vegetation and overall character of the street environment. Any design implementation within or adjacent to a NCDOT owned or maintained roadway must incorporate NCDOT standards for planting as well as island widths. It is necessary to insure that vegetation does not reduce visibility of motorists and pedestrians. A crosswalk should be incorporated into the refuge island design as well as plant materials to alert drivers and designate a specific location for pedestrians to cross. Crosswalks and walks through the median should be a minimum of eight feet in width. Signalization, pedestrian push buttons attenuators, and signage will improve the safety and accessibility of refuge islands and should be installed in high pedestrian use areas.

It is recommended that the Town of Cramerton develop and adopt a pedestrian refuge island policy and associated design guidelines. This policy can also then be incorporated into the Land Development Code.

Pedestrian Signalization
Photo credit: www.pedbikeimages.org

Count Down Pedestrian Signal
Photo credit: www.trhrc.gov

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

Pedestrian Signalization:

Pedestrian signals are an important element in the pedestrian environment where the environment interacts with vehicular movements. Typically pedestrian signalsor push button attenuators indicating the need to allow pedestrians to cross roadways, are installed at intersections where there is a need to control pedestrian traffic. There are two types of pedestrian signals: pedestrian sensors, which usually consists of a button pedestrians can push to walk, and automatic signals. Pedestrian sensors are useful in areas where pedestrians may experience a delay waiting for the light to turn red, and in areas where vehicular traffic signal movements have a short green light timing. A pedestrian sensor will increase the amount of time the light is green for vehicles and pedestrians.

Pedestrian signals consist of illuminated symbols, either the words "walk" and "don't walk" or an image of a person walking, or a raised hand are used to direct pedestrian traffic. Countdown pedestrian signals are very effective because they display the amount of time a pedestrian has left to cross a street. This eliminates the ambiguity of knowing how long the pedestrian will have the right of way before vehicular traffic movements begin. It is also important to provide audio support at signalized intersections to assist visually impaired pedestrians. This increases the safety of all pedestrians.

Pedestrian signals should be installed in the following locations:

- Areas of heavy pedestrian use, such as a central business district or a school district
- Intersections which have complex or multiple traffic patterns, or at intersections where it may not be clear to a pedestrian when it is safe to cross
- Intersections where there is poor visibility and it may be unclear to a pedestrian when it is safe to cross.

Prior to signal installation, it is important to fully evaluate each intersection for the proper application and type of signalization, and insure that all requirements and regulations have been satisfied.

Landscaping:

Incorporating vegetation into the pedestrian environment not only improves the visual quality of a community, but it can also function as traffic calming devices and safety improvement devices. The use of vegetation along street right-of-ways and in medians slows traffic down as it visually narrows the roadway. Vegetation along street rights-of-way acts as a separation between pedestrians and vehicles, reduces the scale of wide expanses of pavement and improves the overall comfort in the pedestrian environment.

Curb Extension with Vegetation
Photo credit: www.greatstreets.org

Landscaping in the pedestrian environment typically is where adjoining public streets, consists of planting strips located between the constructed street curb and the sidewalk or between the sidewalk and the adjacent property line. Vegetation can also be located in center medians, as well as in curb extensions, such as indicated by the photograph at the left.

Increased usage of street trees and other plant materials soften the streetscape while vegetation improves the overall quality of a community's environment. Additionally, street trees offset high temperatures retained by asphalt and concrete by providing shade in the summer months. Vegetation in the pedestrian environment can also help mitigate stormwater flow, as planted islands and strips help in collecting and filtering stormwater runoff produced by the built environment.

Street trees and other vegetation used in the pedestrian environment should not compromise the visibility of motorists and pedestrians. This can be done by using low shrubs or groundcover and canopy trees. It is important to insure that branches are kept above six feet and shrubs below three feet in height to allow motorists and pedestrians to see one another. The use of native, drought tolerant plant species can help offset maintenance costs as well as establish a street environment which is reflective of a particular region. In more urban areas, or locations where there is little room for vegetation, planters can be used to establish a separation between vehicles and pedestrians as well as improve the character of the street environment. This section should be incorporated into the adopted Town of Cramerton Tree Ordinance.

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.

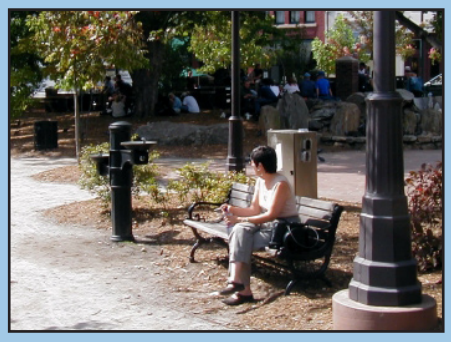
• Concentrate elaborate plantings in business districts and other high volume pedestrian areas.

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

Street Furniture:

Street furniture can serve many functions in the pedestrian environment. Sidewalks and streets not only provide for pedestrian and vehicular circulation, they also account for large amounts of public space. Sidewalks and street edges often function as social spaces where people gather, rest, chat, meet friends, and watch people pass by. Street furniture amenities such as benches, drinking fountains, bike racks and trash receptacles, provide a place for pedestrians to participate in these activities. Street furniture in the pedestrian environment improves the

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



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.

overall livability of a community and provides incentives for people to be active participants. If the pedestrian environment is comfortable and pleasant, it will become inviting to more people. Good-quality street furniture will demonstrate that the community values its public spaces.

The style of these elements should be consistent throughout the community. Cramerton Planning, Engineering and Public Works Departments should cohesively agree on a specific type, whether historical, period, contemporary, etc., of site furniture design for the overall Town as a whole and then specifications, such as brand and model numbers, can be adopted into the Town of Cramerton Development Code. This consistency will reinforce the overall character of the community and contribute to the overall identity of the place and help create a "Town Branding" of "Feel" within the Town's planning jurisdiction.

Street furnishings should be concentrated in areas with heavy pedestrian use such as business districts, downtowns, and institutional areas such as schools and libraries. By enhancing the street environment, a community not only demonstrates how much it values its public spaces, enhancement also encourages the use of public spaces.

All street furniture, including street lighting and signage standards, should be carefully located so it does not interfere with or obstruct the minimum required pedestrian paths. It is critical to insure all street furniture does not block curb ramps and store front entrances. Careful location of street furniture is important so it does not reduce vehicular sight lines or introduce trip hazards for visually impaired pedestrians.

Bridges:

Bridges provide pedestrian connections across barriers such as water bodies, highways, and railroads. Unfortunately, some bridges do not have a designated area for pedestrians, pedestrians and bicyclists are forced to share the travel lane with vehicles. Bridges often have narrower travel lanes than adjacent roadways and as a result problems of shared land usage and of pedestrian/bicycle safety issues are compounded further.

Properly Located Street Furniture
Photo credit: www.gatech.edu

Pedestrian sidewalk on bridge with separation.
Photo credit: 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.

Walkways and sidewalks on bridges should be elevated above the roadway. Typically this elevation consists of the standard 6" high curb at the edge of the sidewalk. This grade separation increases the safety and comfort of pedestrians and reduces potential conflicts. Bridges should have pedestrian access on both sides, however if only one sidewalk is possible it should be wider to accommodate the larger joint volume of two-way pedestrians using the sidewalk. In this case, it is essential that there is a safe crossing on either side of the bridge, such as a high-visibility or continental crosswalk, allowing pedestrians to safely access the necessary side of the street. This crosswalk should be a safe distance from the bridge approach and have signage directing pedestrians to this specific location to cross the street in order to access the sidewalk.

Unfortunately, all existing bridges in Cramerton may not have sufficient room to incorporate pedestrian walkways and sidewalks. It should be stated in the Town public development documents that all new bridges should be designed to meet ADA regulations and incorporate the above recommendations including sidewalks on both sides of vehicular travel lanes. It should be very clear in the wording of this text that pedestrian and bicycle movements should be protected by whatever means possible. The two photographs on this page indicate two possible methods of incorporating pedestrian safety into roadway and bridge designs.

Pedestrian Underpasses:

Pedestrian underpasses provide connectivity across barriers such as water bodies, high traffic thoroughfares and railroad tracks. In Cramerton, the railroad tracks bisect the Town and present challenges to pedestrian, bicycle, and vehicular connectivity. There are two underpasses in Cramerton, one is located on Eighth Avenue and the other is located on Tenth Street. Underpasses cannot provide universal connectivity if

Metal railing and a concrete barrier wall provide a safe and functional area for pedestrians and bicyclists. *Photo credit: D. Burden*

Pedestrian Underpass on Main Street Extension.

they are not ADA compliant. This can introduce a challenge for many municipalities and the railroad tracks currently provide challenges within the Town of Cramerton.

Underpasses in general are expensive facilities and should only be used until it is absolutely necessary. The design of an underpass affects its use and safety. Pedestrian underpasses should be designed so they feel open and accessible, and should have a minimum vertical clearance of ten feet and a minimum clear width of twelve feet. Approaches to the underpass should be very visible for public viewing and easy to access. In order to be ADA compliant, ramp grades cannot exceed 8%, however it is recommended that ramp grades not exceed 5%, this is typical for any pedestrian access not necessarily underpasses alone. NCDOT standards must be adhered to for these conditions and should be used as a safe standard for design and reference.

Appropriate lighting is necessary in order to illuminate the underpass at night as well as in the daytime and increase the general safety of the area. Positive drainage can be a challenge for underpasses which are below street grade and efforts need to be made to ensure that stormwater does not remain in the underpass to increase safety for hazardous ice or water.

5.3 Off-Street Routes and Greenways

Off-street routes and greenway trails provide alternatives and diversity to the pedestrian experience in any environment and increase the amount of recreational options within a community. Off-street routes and greenway trails can provide important connections and links between recreational and popular destinations. These routes are attractive not only to residents, but also to people visiting the Town of Cramerton. Off-street routes

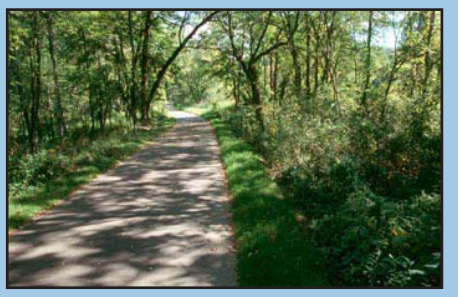
Pedestrian underpass with metal railing for pedestrian safety and separation.
Photo credit: ITE Pedestrian Bicycle Council

QUICK GUIDE

Pedestrian Underpasses:

- **Comply with ADA regulations for all sidewalks and ramps.**
- **Increase width of sidewalk if only one sidewalk is installed.**
- **Elevate walkways and sidewalks in underpasses at least 6” above roadway.**
- **Minimum vertical clearance to be 12 feet; minimum width to be 12 feet.**
- **Ramp grades should not exceed 5% slope.**
- **Install appropriate lighting to illuminate the underpass at night.**

Estimated Costs:
Costs vary and are dependent on the type and length of the underpass.



Paved Greenway Trail
Photo credit: D.Burden

QUICK GUIDE

Greenway Guidelines:

• Provide a minimum trail width of 10'; 12-14' in high use portions.

• Insure all major corridors are constructed of a surface material which meets ADA regulations for handicap access.

• Incorporate signage into greenway design. Locate signage at the beginning of trails heads and at regular intervals throughout the trails.

• Incorporate lighting and other site furniture where necessary.

• Implement the Town of Cramerton Greenway and Pedestrian Trails Master Plan.

Estimated Costs*:

10' Asphalt Multi-Purpose Trail	$55/ linear ft.
10' Concrete Multi-Purpose Trail	$80/linear ft.
10' Boardwalk Trail	$160/linear ft.
Information Signs	$250 each
Benches	$600 each
Trash Receptacles	$200 each
Restrooms	$40,000 each

*Costs taken from Cramerton Greenways and Pedestrian Master Plan 2007

and greenway trails have numerous benefits for communities such as environmental, economic, transportation, health, and cultural benefits. The Town of Cramerton Greenway and Pedestrian Trails Master Plan describes these benefits in detail and should be referred to for proposed trail locations.

Greenway trails are a viable option for connectors between destinations, sidewalks, and neighborhoods. Their location away from any roadways significantly reduces or eliminates the threat of vehicle and pedestrian conflict. It is important to design greenway trails so they are safe and accessible for all users, as well as sufficiently lighted for public safety and well being. Greenway trails can be constructed of a variety of materials such as concrete, asphalt, wooded boardwalk, stone, gravel or woodchips. Concrete, asphalt and wooden boardwalks are most accessible for handicap accessible use. Stone, gravel, and woodchip trails can be used to diversify the greenway trail system and are more suitable for secondary routes. All primary routes should be constructed with a material that meets ADA regulations.

Just as surface material can vary, so can the width of a greenway trail. The minimum standard for a greenway trail is ten feet. In areas of high use, widths of twelve to fourteen feet are recommended.

Standards to consider in the designing phase are the type and placement of signage. Signs should be easily identified, of a specific standard, and located in conspicuous areas; at the beginning of the trail head and at regular intervals along it. Consistent signage that is easy to read is necessary to provide users with wayfinding tools which help them feel more comfortable and secure using the trail system. For example, signage can include distances and average times from points along the trail so each person can decide which trail in the system is best for them to take.

Lighting may be necessary along certain portions of a greenway if it is a primary corridor for pedestrians, through a neighborhood, or designated as public property for town liability issues. Other amenities such as trash receptacles, benches, and restrooms should be incorporated into the greenway system. Refer to the already adopted Town of Cramerton Greenway and Pedestrian Trail Master Plan for more information.

Curb extension with decorative paving
Photo credit: Dan Burden

5.4 Intersection Treatments

Intersection treatments in this section have the potential to slow traffic, increase green space, and improve the overall appearance of the street and pedestrian environments. Each treatment is discussed and advantages and challenges of each are addressed. Recommendations made in this section should be included in the Cramerton Land Development Code in order to have consistency in the implementation and application of these guidelines and standards throughout the Town. The intersection treatments discussed include:

- Curb Extensions / Bulb-Outs
- Chokers
- Raised Intersections
- Roundabouts
- Neighborhood Traffic circles
- Chicanes
- Roadway Diets or Reductions

Curb Extensions / Bulb-Outs:

Curb extensions, often referred to as bulb-outs, extend the pedestrian zone into the parking lane. This reduces the street width at intersections and provides benefits for parked motorists and for pedestrians. By reducing the street width, curb extensions reduce the distance and time a pedestrian needs to be in the street when crossing. By narrowing the street, curb extensions also reduce traffic speeds. These site features also eliminate the possibility of a parked vehicle blocking the crosswalk or curb ramp. Curb extensions improve safety for pedestrians and motorist by increasing visibility and decreasing the speeds of turning vehicles. Furthermore, curb extensions accentuate pedestrian crossing locations which encourage pedestrians to use crosswalks and other safe crossings. These streetscape additions can work as places for introducing plant material into the environment.

Curb extensions provide space for pedestrian amenities such as street furniture, signage, lighting, as well as landscaping. Planted curb extensions not only improve the visual quality of the street environment, they also have the ability to filter stormwater runoff from sidewalks and the built environment. Planted curb extensions offer a viable alternative to traditional stormwater management techniques of piping water directly into underground sewers. Curb extensions help to purify and infiltrate a portion of stormwater runoff generated on-site.

Roadway narrowing by use of curb extensions should only be used in areas where there is an existing parking lane and curb extensions do not extend into travel lanes. Insure that pedestrian amenities such as street furniture within these new plantable areas do not block sight lines of motorists or pedestrians. Drainage of a curb extension can be a challenge and it is necessary to address it early in the design process.

QUICK GUIDE

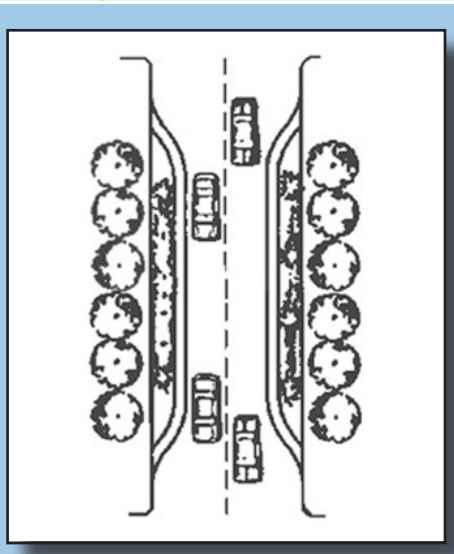
Curb Extensions Guidelines:

• 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 manuevering 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

QUICK GUIDE

Choker Guidelines:

•Install chokers on low traffic volume, low speed streets.

•Use chokers in areas where there is a desire to reduce traffic speeds, such as near commercial areas and central business districts.

•Incorporate signage, vegetation, and alternative paving materials to indicate a change in the traffic pattern and visually enhance the street environment.

•Consult with local fire, EMS, and sanitation departments to ensure appropriate space is available for their use.

Estimated Costs:
Chokers range in cost from $10,000-$30,000. Costs vary and are dependent on design, condition of the site, and intensity of amenities, such as street furniture, landscaping, lighting, etc.

Chokers:

Chokers are a form of curb extension and are most appropriate on low speed, low traffic volume streets. Chokers reduce two way street pavement widths to one-way or two-way with very narrow lanes and force motorists to reduce speeds dramatically or yield to others. Chokers can be used at intersections or at other points along a roadway where traffic speeds need to be reduced or in locations where there is a desire to widen one side of the street such as at a gateway or important entrance.

Typically a choker would be sixteen to seventeen feet in width to allow for emergency vehicles to pass through the travel lanes, although some studies suggest a rare minimum width of ten feet. Chokers of ten feet in width are rarely used because of emergency vehicle requirements. Appropriate signage that signal the presence of a choker is necessary to warn drivers encountering the choker's presence for the first time. Trees and other landscaping can help indicate a change in the traffic pattern as well. From a distance it is easier for motorists to see large trees, this indicates to them of the change in the traffic pattern ahead.

Chokers can be attractive amenities in the street environment as they provide space for plantings such as tress and groundcover. This not only softens the street by breaking up expanses of asphalt, it also improves the visual quality for residents and visitors. Incorporating decorative pavement materials into chokers can further calm traffic and positively contribute to the visual environment. This application is most effective in commercial areas, entrances or gateways, and other high use areas.

It is important to consider bicycle access and safety when designing a choker. Ensure there is ample space for a bicycle to move through a choker without compromising safety. It is also important to consult with local fire, ambulance, and sanitation departments when designing a choker to ensure appropriate maneuverability is available for their use.

Choker in a Mixed Use Area *Photo credit: Michael Cynecki*

Raised Intersection
Photo credit: www.trans.ci.portland.or.us

QUICK GUIDE

Raised Intersections:

• May require bollards to designate the edge of roadway.

• Ensure the raised intersection is visible from all approaches.

• Avoid installing raised intersections on streets with existing steep grades and those located on sharp turns

• Incorporate contrasting or decorative paving material to further distinguish pedestrian and vehicle zones as well as improve the visibility from afar

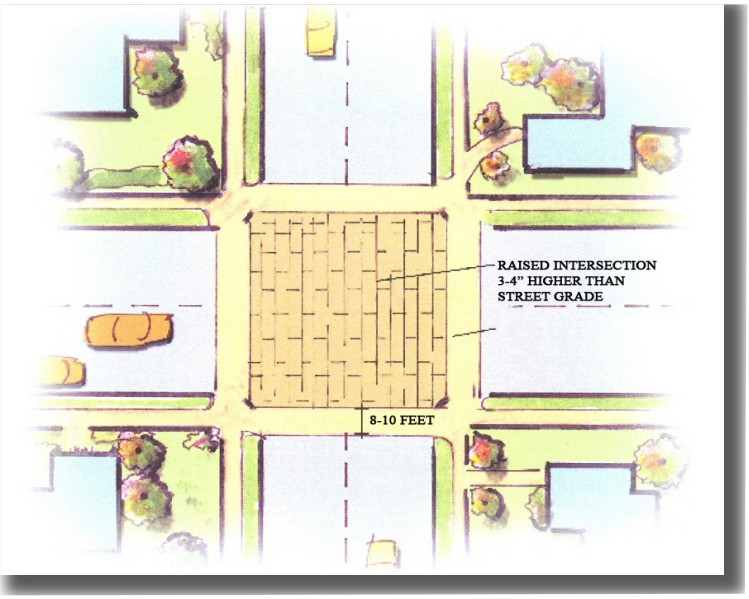
Estimated Costs:
Costs vary and are dependent on the intensity of decorative elements. Costs can vary from $35,000 to $80,000. The cost is highly dependent on the size of the roadway. intersection being considered.

Raised Intersections:

Raised intersections, also known as tabletops or traffic tables are flat raised areas approximately 3-6 inches in height with ramps on all approaches. The entire area of the intersection is raised from the surrounding street grade usually to the level of the adjacent sidewalks. Typically raised intersections are constructed of a surface material such as pavers, stamped colored concrete, etc., that contrasts with the existing roadway asphalt material. This helps to highlight the area as a pedestrian space. and may be applied in a variety of contexts. They often work well with other traffic calming measures such as curb extensions and textured crosswalks. They are recommended in the following locations:

- Areas of high pedestrian traffic
- Commercial areas
- Business districts
- Within a ten minute walking radius of schools
- Entrances into important or high use areas or gateways
- Intersections where roundabouts may be accommodated
- Areas in need of traffic calming measures or devices

Raised intersections are not recommended for roadways with an existing steep grade or at intersections located in sharp turns. Adding drainage is often necessary and may increase costs of these devices. It is necessary to consider emergency vehicle access, as raised intersections reduce speeds to approximately 15 miles per hour. Raised intersections need to be visible on all approaches and this is often accomplished through contrasting or decorative paving treatment and signage. Designers must insure all approach aprons are of sufficient width to allow vehicular through-movements to be uninhindered, with at least ten feet in width for verticle curvature of the roadway surface.



Raised intersection with decorative pavement.

Nieghborhood Traffic Circle in a Residential Area
Photo credit: www.alexandria.gov

QUICK GUIDE

Roundabouts & Traffic Circles:

•Ensure that the design of roundabout/traffic circle forces motorists to reduce speeds by way of tight curb radii

•Incorporate signage for pedestrians and motorists to assist in navigating through the roundabout/traffic circle as well as the locations of pedestrian crossings

•Incorporate vegetation to cue motorists on the approach as well as improve the visual quality of the street environment

•Ensure vegetation does not block sight lines

•Install a mountable curb on the outer side of the circle for fire trucks and other large vehicles

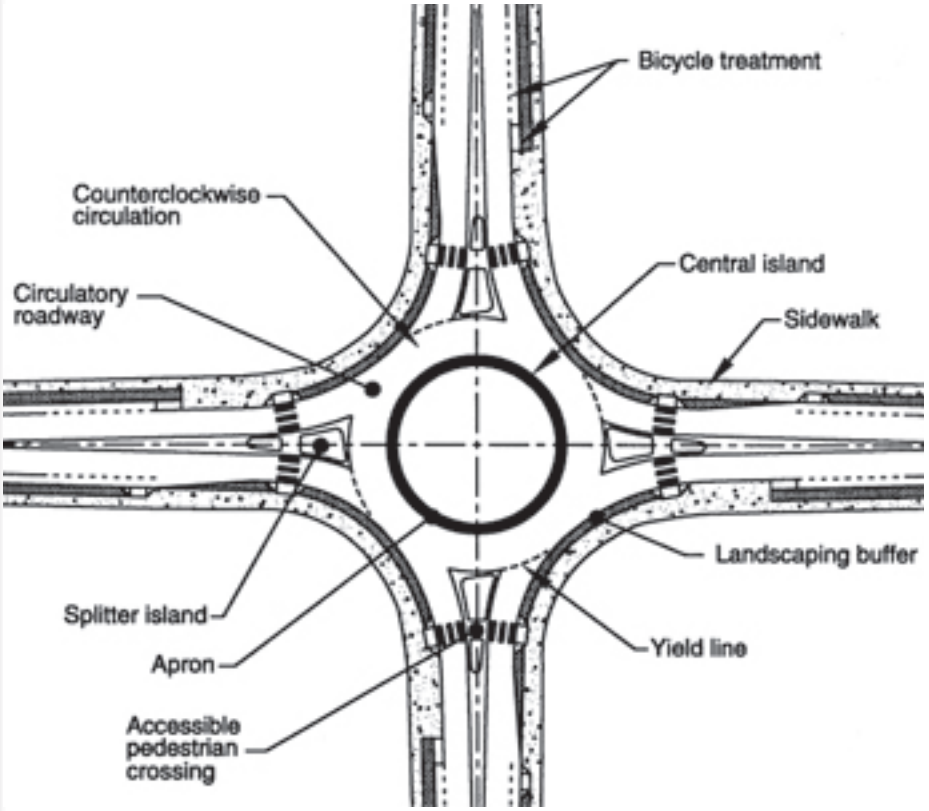
Estimated Costs:

Costs vary and are dependent on the size and application of the roundabout or traffic circle. Costs can range from $50,000 for a small neighborhood roundabout to $550,000 for a major roadway.

Roundabouts and Neighborhood Traffic Circles:

Roundabouts and neighborhood traffic circles are two different methods of popular traffic calming techniques. They each are raised circular islands in the center of a street system and may be applied in a variety of sizes and materials.

Roundabouts are heavily engineered elements within a roadway system design and typically may not by retrofitted into an existing intersection. Roundabouts are similar to traffic circles as they both utilize a circular island rather than the typical stop sign or traffic signals, however roundabouts are often much larger and handle more traffic and typically more than two streets. They have mountable curbs with engineered truck aprons.



Key roundabout features

Photo credit: US DOT

Traffic circles are small landscaped islands located in an intersection to provide geometric control of traffic. Traffic circles reduce vehicular speeds as drivers need to slow down in order to maneuver around them. Studies have shown that traffic circles reduce the number of turning crashes and are effective in reducing vehicle speeds in the immediate area. Traffic circles are a more costly device than bump-outs or curb extensions for traffic calming and require extensive evaluation to determine their effectiveness in a particular location.

Recommended applications for roundabouts and traffic circles are entrances or gateways, intersections near schools, parks, and commercial areas, and in neighborhood streets where signalization is not appropriate, but there is a need for reduced traffic speeds and increased pedestrian safety.

Vegetation can be incorporated into the center of roundabouts and traffic circles. This breaks up the expanse of pavement, provides added green space into the street environment, and acts as an indicator for motorists to a change in the traffic pattern.

Benefits of roundabouts and traffic circles include:

- Lower vehicle speeds
- Fewer accidents
- Increased pedestrian and bicyclist safety
- No signals to fail or maintain
- Reduce vehicle speeds within an intersection
- Provide opportunity for beautification.

Pedestrian and bicyclist safety can be a challenge if the roundabout or traffic circle is not designed for their inclusion. Street lighting should be a significant area of concern for the designing engineer. Installation of pedestrian refuge islands is recommended for roundabouts in high traffic areas. All traffic circles and roundabouts should incorporate signage to alert motorists to pedestrians and crosswalks in appropriate locations.

QUICK GUIDE

Roundabouts & Traffic Circles:

•Ensure that the design of roundabout/traffic circle forces motorists to reduce speeds by way of tight curb radii

•Incorporate signage for pedestrians and motorists to assist in navigating through the roundabout/traffic circle as well as the locations of pedestrian crossings

•Incorporate vegetation to cue motorists on the approach as well as improve the visual quality of the street environment

•Ensure vegetation does not block sight lines

•Install a mountable curb on the outer side of the circle for fire trucks and other large vehicles

Estimated Costs:

Costs vary and are dependent on the size and application of the roundabout or traffic circle. Costs can range from $50,000 for a small neighborhood roundabout to $550,000 for a major roadway.

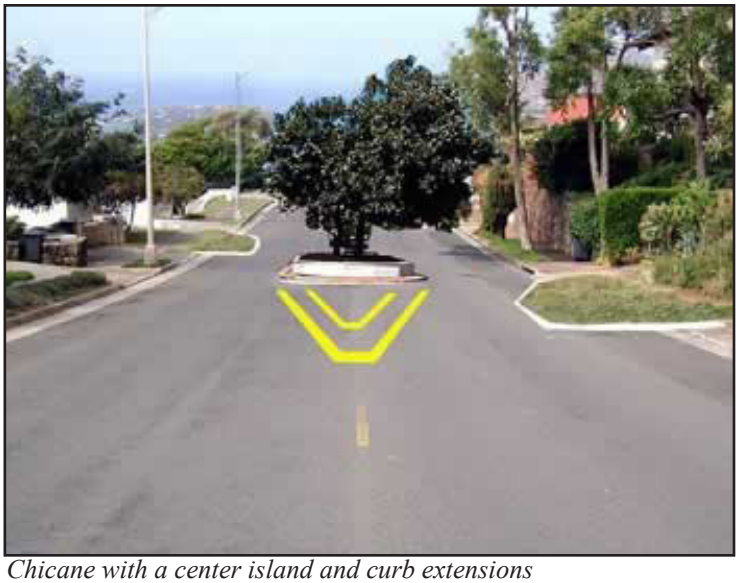
Chicane in a Residential Area
Photo credit: Dan Burden

Chicanes:

Chicanes are also known as deviations, serpentines, reversing curves, and twists. They can also be center islands or islands of refuge in the middle of travel lanes. Chicanes calm traffic and reduce vehicular speeds by diverting or shifting traffic travel lanes in an unexpected but highly engineered manner. This is done through a series of narrowed lanes or curb extensions which alternate on each side of the roadway and form S-shaped curves in the travel lanes. On-street parking stalls can also create a chicane. Typically speeds through chicanes range from 15-20 miles per hour and it is important that the lane taper is not too gradual or motorists will be forced to reduce their speeds. Proper design is required for a chicane to be effective and not a traffic hazard causing further problems for motorists.

Chicanes may be located only at midblock locations and are most effective when traffic volumes in both directions are equivalent. Recommendations include implementing shifts in alignment of at least one lane width and deflection angles of at least 45 degrees. Center islands are an important element as they prohibit motorists from taking the straight line through the chicane and therefore avoiding the travel lane shifts all together. Center islands and curb extensions also provide opportunities for landscaping.

Unlike chokers, chicanes provide alternating narrow and wide sections of the roadway. By horizontally deflecting traffic, chicanes reduce vehicular speeds through a particular section of roadway, as well as reducing unwanted cut-through traffic within neighborhoods. Due to the change in the traffic pattern, it is important to alert motorists on their approach into the chicane. This can be done through vertical elements such as vegetation, a raised islands similar to a curb extension, and signage.



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

QUICK GUIDE

Chicanes:

•Design chicane for speeds of 15-20 mph.

•Ensure deflection angles are at least 45 degrees to force motorists to reduce their travel speed.

•Incorporate a center island to provide space for landscaping and prevent motorists from avoiding the chicane.

•Ensure plantings do not obstruct sightlines. Trees with high canopies and low shrubs are good options.

•Incorporate signage to alert motorists to the approaching chicane and describe alternate traffic pattern.

Estimated Costs:
Costs vary and are dependent on the application and presence of center island and curb extensions. Costs can range from $20,000 to $40,000.

ANCILLARY FACILITIES AND PROGRAMS

6.1 SIGNAGE AND MAPPING

Interpretative Signage.
Photo credit: www.aucklandcity.govt.nz

Wayfinding systems are a means for any 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 and the Town of Cramerton 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

Directional 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 Cramerton 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 historic areas of Cramerton. 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.

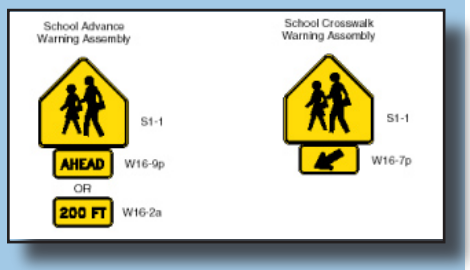
Sign Placement

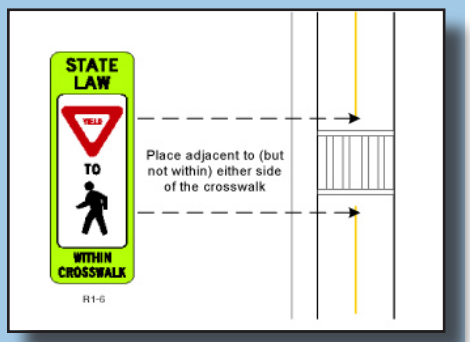
Locate signs in prominent locations so they can be easily viewed. It is important to ensure they do not interfere with pedestrian and vehicular movement. For example, signs should not be placed within a sidewalk or reduce the clearance of a sidewalk to less than five feet.

Pedestrian Corridor Mapping

It is recommended that the Town of Cramerton adopt consistent illustrative graphics to identify pedestrian routes in Cramerton. 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 Cramerton's planning jurisdiction. It is recommended that the Town of Cramerton 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.

The following 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 or sessions on pedestrian and bicycle safety at all schools

School Speed Sign
Photo credit: ITE Pedestrian Bicycle Council

6.3 SAFETY EDUCATION PROGRAMS

School Crossing Guard
Photo credit: Dan Burden

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

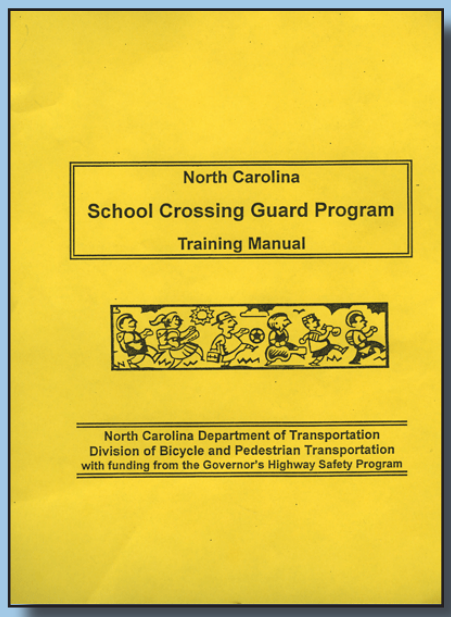
www.ncdot.org/transit/bicycle/safety/programs_initiatives/Safe_Routes.html

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.

North Carolina DOT Share the Road warning sign



- 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

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

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 Cramerton is not included on this list and should contact the Division of Bicycle and Pedestrian Transportation to participate in the program.

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

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

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

School Crossing Guard. *Photo credit: Dan Burden*

Walk to School Day Event *Photo credit: Dan Burden*

6.4 ENCOURAGEMENT AND PROMOTION

The Town of Cramerton 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 Cramerton 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 challenges are addressed and that opportunities are identified and capitalized.

Maintenance Policies and Enforcement

Maintaining an accessible, functional, and clean pedestrian environments 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 Cramerton should evaluate current maintenance policies to determine if they are adequate to include implement of the recommendations in this Pedestrian Master Plan.

Incorporate Pedestrian Improvements Early in the NCDOT Planning Process

To insure 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 which 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.

Education Programs and Events

Pedestrian and bicycle education programs aimed at all residents of Cramerton 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 for how a school program can educate children about safe pedestrian behaviors and pedestrian routes. The Parks and Recreation Department 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. Generating a "Walking Guide" or "Pedestrian Map" for the Town of Cramerton, the greenway system, and the historic center could be distributed from the Parks and Recreation Department for aiding in the implementation of these recommendations.

Children Walking and Biking to School. *Photo credit: Dan Burden*

PROJECT PHASING AND COSTS

7.1 PRIORITIES

Priorities for implementation of the Pedestrian Master Plan are the corridors in Tier 1 and the Spot Improvement Projects. These areas represent the most heavily used pedestrian corridors and those which provide links between destinations such as schools and new and proposed commercial areas. The priorities within these two categories are outlined below:

Tier 1 - Phase 1

Street Type	Project
Major Corridor	*Wilkinson Boulevard (US Highway 29/74)*
Major Corridor	*Cramer Mountain Road*
Major Corridor	*South New Hope Road*
Major Corridor	*Lakewood Road*
Downtown Streets	*Market Street*
Downtown Streets	*Eighth Avenue (along with existing improvements)*
Spot Improvement	*Intersection Market Street and Wilkinson Boulevard*
Spot Improvement	*Intersection South New Hope Road and Cramer Mountain Road*
Spot Improvement	*Intersection Eighth Avenue and Market Street*
Spot Improvement	*Pedestrian Access over Bridges on Lakewood Road*
Spot Improvement	*Pedestrian Access over Bridge on Cramer Mountain Road*
Spot Improvement	*Tenth Street Rail Underpass*
Spot Improvement	*Eighth Avenue Rail Underpass*

Tier 2 - Phase 2

Street Type	Project
Major Corridor	*Cramerton Road*
Major Corridor	*Eagle Road*
Downtown Streets	*Mayflower Avenue*
Spot Improvement	*Intersection Wilkinson Boulevard and Lakewood Road*
Spot Improvement	*Pedestrian Access over Bridge on Wilkinson Boulevard*

Following the improvement of the above, improvements on the Tier 2 projects should take place as soon as funding sources or capital expenditures become available. These corridors will provide a finer degree of connectivity throughout Cramerton and 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. Other factors and cost fluctuations can increase actual costs, these estimates are intended to serve only as a rough guide.

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

* Estimates provided by NCDOT

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.
- 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 other factors and cost fluctuations can increase actual costs, these estimates are intended to serve as a rough guide.

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

* Estimates provided by Town of Cramerton Greenways and Pedestrian Master Plan 2007 and NCDOT.

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

- Upon Investigation, collecting *Impact Fees* can be 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

Pedestrian projects like the Cramerton 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 Cramerton Pedestrian Master Plan.

The Safe, Accountable, Flexible, Efficient, Transporation Equity Act (SAFETEA-LU)

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 Cramerton Pedestrian Master Plan include:

Surface Transporation 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.

Transportation Enhancement Program

This program is funded by ten percent of North Carolina's annual STP funds. Transportation enhancements include pedestrian projects such as trails, greenways, sidewalks, signage, and safety education. STP Enhancement Funding is the primary source of funding for pedestrian projects such as the Cramerton Pedestrian Master Plan.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

These funds can be used for the construction of pedestrian walkways and non-construction projects such as maps and brochures. These projects are not required to be in the right-of-way of a Federal Highway, but they must demonstrate a measurable improvement in air quality.

Recreational Trails Program (RTP)

These funds are distributed at the State level and are available to help fund trails and trail related recreational projects. Of the funds distributed in North Carolina, thirty percent must be used for motorized trail uses, thirty percent used for non-motorized trail uses, and forty percent used for any combination of trail uses. Projects eligible for funding under the RTP are new trail construction, trail renovation projects, trail head and trail side facilities, and land acquisition for trails.

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.

Safe Routes to School
These funds are available for the planning, development, and implementation of projects which encourage walking and bicycling to and from school safely. The program's purpose is to improve the infrastructure around elementary and middle schools, as well as implement educational programs about pedestrian and bicycle safety.

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.

Governor's Highway Safety Program (GHSP)
GHSP funds are available to promote highway safety and awareness. This annual program is for the planning and execution of safety programs, which include pedestrian safety initiatives.

Tax Incremental Financing Bonds (TIF)
TIF Bonds are issued by municipalities to fund public improvement projects and are reimbursed through incremental property tax revenues generated by the project. These funds can be used to improve the safety and quality of the pedestrian environment through the construction of sidewalks, crosswalks, and traffic calming features.

Parks and Recreation Trust Fund (PARTF)
PARTF is the primary funding source for the improvement and construction of park facilities. Funds may be used to acquire land and develop public parks and recreation projects. PARTF is allocated three ways: 65% provided to State Parks through the NC Division of Parks and Recreation, 30% matching grants to local governments for parks and recreation, and 5% for the Coastal and Estuarine Water Access Program.

Land and Water Conservation Fund (LWCF)
This funding source provides matching grants to local governments and States to assist in the development of recreation facilities and areas. LWCF offers funding for the acquisition of outdoor recreation areas helps protect natural resources and valuable open space. In the past, the U.S. Congress has appropriated LWCF funds for "state-side" projects which may be used by municipalities to acquire and build park and recreation facilities such as greenways and trails.

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.

NC Adopt-a-Trail Grant Program (AAT)

The AAT Program annually awards $108,000 for trail projects to government agencies, non-profit organizations, and private trail groups. The funds from the program can be used for a variety of purposes including trail building, trail signage and facilities, maintenance, and trail brochures and maps. The AAT Grant Program *does not* require a match or in-kind services. The applications are available for download at: http://ils.unc.edu/parkproject/trails/08%20AAT%20Application.doc

State Street-Aid (Powell Bill)

The Powell Bill provides funds to municipalities for street construction and maintenance. The funds are dispersed on or before October 1 of every year. The funds from the Powell Bill may only be used for maintaining, repairing, construction, reconstruction, or widening of local streets or for planning, construction and/or maintenance of bikeways and sidewalks along public roadways.

For more information please visit: www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell_Bill/powellbill.html

Section 8 Appendix A