



BESSEMER CITY PEDESTRIAN PLAN



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Bessemer City Pedestrian Plan

Introduction



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Virginia Avenue, Bessemer City



Introduction

The Bessemer City Pedestrian Plan is organized to provide the user with information ranging from the nature of pedestrian planning, to instructions on how to get a sidewalk built. The Plan is divided into four parts and appendices. The following will help orient the reader in how to use this document:

PART 1: PLAN OVERVIEW

1.1 Realizing the Vision

An explanation of the City's need for the Pedestrian Plan, the City's pedestrian vision, and how the Plan can help bring about that vision and the process by which this Plan was developed.

DEVELOPMENT OF THE PEDESTRIAN PLAN

NEED > VISION > GOALS > SCOPE > METHOD > PROCESS

1.2 Benefits of a Pedestrian Lifestyle

Background information about pedestrian planning and some examples of how pedestrian-oriented improvements will benefit the Bessemer City community.

PART 2: CURRENT CONDITIONS

2.1 Existing Conditions & Trends

- Bessemer City's existing layout, pedestrian amenities, and the current barriers to pedestrian lifestyle
- Current conditions that impact pedestrian planning throughout the community, from "big picture" issues, to the condition of individual sidewalks and other facilities
- Population trends of the City that have direct bearing on current and future pedestrian needs.

2.2 Current Policies, Ordinances and Plans

A thorough analysis of existing City policy, including ordinances, adopted plans, and other pertinent planning documents, and how these policies may aid or hinder pedestrian-friendly development.

2.3 Current Projects, Programs & Events

- Local and regional projects affecting the quality of pedestrian life in Bessemer City.
- Pedestrian-oriented programs and events currently active in the City.

2.4 Unique Opportunities

A brief summary of factors, which have the potential to positively affect the pedestrian quality of the City.

PART 3: RECOMMENDATIONS

3.1 Policies, Plans & Ordinance Modifications

- Broad strategies that will help integrate pedestrian planning measures into the City's overall planning processes.
- Recommended ordinance changes

3.2 Programs

Aids to meaningful community improvement through active involvement by citizens who care and have a stake in the matter.

3.3 Project Recommendations & Implementation Strategies

A more focused description of actions the City should take to correct current problems and initiate future projects, including both planning efforts and types of facilities required.

3.4 Proposed Projects

A detailed description of specific projects. Projects are categorized and ranked in priority, and explanations are provided as to how each of them can be implemented. The projects will require more detailed design for construction, as well as acquisition of right-of-way or easements. Some projects should

also receive additional public input.

3.5 Project Prioritization

An explanation of the methodology used in this Plan.

3.6 Maintenance Programs

All projects, as well as existing facilities, will require proper maintenance. This section provides information about programs appropriate to each type of project.

3.7 Evaluation Process

A brief description of how the Pedestrian Plan's goals and implementation strategies can be examined and improved over time.

PART 4: IMPLEMENTATION

4.1 Sample Cost Estimates for Facilities.

4.2 Funding Strategies

4.3 Plan Adoption and Approval Process.



Bessemer City Pedestrian Plan

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PART 1: PLAN OVERVIEW

1.1 Realizing the Vision

NEED

The City of Bessemer City is a compact historic community with a clearly discernable downtown business area, nearby schools, civic buildings, and public parks, all fitting together to create a small town charm highly valued by its citizens. But despite its obvious positive characteristics, the City is faced with growing challenges to its pedestrian character:

- **The City suffers aesthetically** from the presence of many closed and dilapidated industrial buildings and other abandoned properties. Entrances to the City lack clarity and a welcoming appearance. Its primary avenues offer few street trees or other visual amenities.
- **Economic and cultural vitality** suffers from the loss over time of some of its major industries. The City lacks a sufficient number of businesses particularly in its downtown and needs to foster greater opportunities for its citizens to work and shop in their own city.
- **The City is divided** by the CSX Railroad corridor. The tracks and broad right-of-way create a formidable barrier for pedestrians along much of the City's length.
- **A clear identity** for the City needs to be reinforced. A marked sense of arrival through coherent gateways would help define the City's edges and visually impart the vision Bessemer City has for itself. The City's main streets lack signature features - such as street lighting - to reinforce community identity.
- **Unsafe intersections** at central locations in the City are experiencing high levels of traffic that exceed their designed capacity and provide insufficient visibility.
- **Inadequate sidewalk connections** force pedestrians into some of the City's primary streets.
- **Trail links are needed** between parks, schools, neighborhoods, businesses, and scenic destinations.
- **Pedestrians feel intimidated** by unleashed dogs in some neighborhoods.

Each of these conditions requires specific actions that will produce tangible results. Such actions are most effective when they flow from a broad, cohesive strategy that the community supports and can realistically implement. Rather than simply reacting to the problems in a piecemeal manner as they occur, this comprehensive plan for pedestrian transportation improvements provides a systematic approach to the City for taking on these challenges and others that threaten its pedestrian environment, and to do so with community consensus and a coordinated effort.



View of Bessemer City from Whetstone Mountain

VISION

Through the public planning process, the citizens of Bessemer City have expressed a clear vision for their community:

Bessemer City is a place that celebrates its family-oriented, small town character especially through its heart, a thriving central business district.
We seek to be a safe, well-maintained community, where public utilities are dependable and available to support new growth.
We support a strong educational system and welcome a broad range of businesses and industries as fundamental to building a great community and in providing opportunities to our citizens.

In order to attain this vision, an ongoing effort must be undertaken to preserve the elements of the vision that exist, and guide the community's growth in a direction that will further achieve and maintain the vision. The Bessemer City Pedestrian Plan is intended to serve as a charter for this effort, as it assists the City in the following ways:

PURPOSE

- **POLICY REVISION**
A clear blueprint for revising City ordinances and supporting policies that guide development in order to better support the City's vision and goals
- **IMPLEMENTATION TOOL**
A comprehensive guide for building or improving pedestrian routes and amenities
- **FINANCIAL ASSISTANCE**
A firm basis for seeking financial assistance in the form of grants and other support from various outside sources in order to implement the Plan
- **PROMOTION**
A compelling tool for promoting the City's pedestrian vision
- **EDUCATION**
An effective source for conveying the values and methods of creating and maintaining a pedestrian-friendly community with decision makers and the general public

GOALS

As the Plan is embraced and utilized in the ways described above, the City's Vision can be realized. This process will take place both through solving immediate concerns and achieving the City's expressed long-term goals:

I. Walkability/Connectivity

- Increase connectivity by improving pedestrian connections between neighborhoods and key destinations, particularly the Central Business District. Make important destinations,



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PART 1: Plan Overview

attractions and pedestrian facilities more accessible to all members of the community.

- Improve safety conditions for pedestrians particularly at busy street crossings so that pedestrians can feel safe accessing downtown business areas, and other areas in Town. Address common hazards to pedestrians within neighborhoods, such as inadequate sight distance, poor lighting, and unleashed dogs.

II. Vitality

- Create and support a strong Central Business District.
- Encourage more owner-occupied properties.
- Foster quality, pedestrian-friendly development in currently vacant properties and underutilized buildings.

III. Aesthetics/Identity:

- Establish definite points of entry to the City with attractive entrance features that portray a clear and positive identity for the community.
- Provide additional aesthetic improvements throughout key portions of the City to reinforce City identity. These features may include signature paving and street lighting, street trees, sidewalks and other pedestrian facilities.
- Encourage redevelopment of derelict industrial properties.
- Ensure residences present a decent appearance to the street.

IV. Regional destination for visitors and businesses:

- Accentuate the unique aspects of the City, drawing upon historical roots, geographic assets, and cultural potential.
- Provide viable pedestrian connections from the City's industrial sites and business parks to downtown.
- Create pedestrian links to nearby open space and recreational areas, adjacent cities, and larger county and regional pedestrian networks.

SCOPE

In order to meet these goals for the City and its ETJ, this Pedestrian Plan examines a broad range of pedestrian-related issues and recommends actions that address them in a comprehensive manner, including:

1. Policy and ordinance revision
2. Participation programs and initiatives
3. Comprehensive system planning
4. Facility standards and guidelines

5. Project identification and prioritization
6. Project specific planning and development process
7. Cost estimation
8. Funding and local budget recommendations
9. Project implementation and construction
10. Maintenance
11. Project evaluation process

METHOD

This Plan was developed using methodology approved by the North Carolina Department of Transportation Bicycle and Pedestrian Transportation Division. The process included the following steps:

- Task 1:** Gather relevant documents relating to pedestrian concerns in the City.
- Task 2:** Determine the project scope, schedule, points of contact with municipal staff; identify stakeholder groups, potential Steering Committee members, target meeting dates and planning budget
- Task 3:** Conduct an initial physical survey of the City and gather additional input on pedestrian conditions from the community.
- Task 4:** Create composite maps of existing conditions to include current facilities and traffic conditions.
- Task 5:** The City Council appoints the project Steering Committee to review the project maps and other information, provide additional stakeholder input, and guide the development of the Plan.
- Task 6:** Conduct Stakeholder Interviews on pedestrian needs and preferences.
- Task 7:** Conduct an interactive public meeting to review initial Steering Committee input and interview results with the general public, obtain feedback, and gather additional input from the public on pedestrian and mobility issues and concerns.
- Task 8:** Review the public meeting results with the Steering Committee in order to gather direction for preparation of a Draft Pedestrian Plan.
- Task 9:** Prepare the Draft Pedestrian Plan based input from the Steering Committee and citizen comments.
- Task 10:** Facilitate a follow-up public meeting to review preliminary Pedestrian Plan and address how the input received through previous public processes has been incorporated into the draft Plan. Conduct online survey for additional public input and prioritization of projects.

Task 11: Submit the draft plan to the Steering Committee and NCDOT for preliminary review and comment.

Task 12: Revise the Plan based on input received and meet with the Steering Committee to finalize approval of the Plan.

Task 13: Submit the Plan to the Planning Board and City Council for review. Additionally, submit the Plan to the Lake Norman RPO for endorsement.

Task 14: Upon adoption of Plan, furnish the City and NCDOT with the Plan with its associated maps.



Pedestrian Plan Steering Committee

PROCESS

In 2008, Bessemer City was awarded a \$24,800 matching Pedestrian Planning Grant by the North Carolina Department of Transportation (NCDOT) Division of Bicycle and Pedestrian Transportation (DPBT) for the creation of a comprehensive pedestrian plan. Through a competitive bidding process, the City selected Centralina Council of Governments to develop the plan. Working with Kevin Krouse, City Planner, Centralina guided the City through a thorough, public-input driven planning process, involving a steering committee to oversee the elements of the plan. The steering committee members represented a variety of local interests including:

Schools	Local Business Community	Churches	Property Owners
Fitness Community	City Image Group	Local Government	Resident Walkers



1.2 Benefits of a Pedestrian Lifestyle

Throughout the country and only a few decades ago, streets and sidewalks served as the center of neighborhood life, where people of all ages walked, biked, shopped, ate, played, and met their neighbors. But today, streets with this kind of activity are the exception rather than the rule. New developments are full of barriers that discourage walking and often make a pedestrian feel like an outcast in a world designed primarily for cars. Overcoming these barriers requires more than simply constructing more sidewalks or trails. Land use and transportation planning, ordinance revision, and economic and community programs all play important roles toward creating an environment that makes walking practical, safe and convenient, and brings vitality back to the streets.

Walkable communities present numerous advantages to their citizens and provide many perks that attract visitors. They offer valuable incentives to prospective residents and businesses. Investments in a community through pedestrian-oriented improvements can, in just a few short years, show visible and economic results. Though Bessemer City may already possess many pedestrian-friendly qualities, those attributes can be improved upon in substantial ways. Such improvements would help make the community healthier, more vibrant and a more attractive place to live, visit, work and own a business.

Some direct benefits of the pedestrian lifestyle can be summarized in the following statements:

1. Local Economy

Retail and commercial developers have learned that walkable context sells. Pedestrian-oriented streets encourage shoppers to linger and enjoy the setting. Furthermore, works such as Richard Florida's *Rise of the Creative Class* indicate that the population segments most likely to contribute to thriving economic conditions are attracted by amenities such as walkability, street trees, linkages to outdoor activities, etc. In short, pedestrian-oriented communities are more likely to attract as new residents the type of people most likely to help stimulate the local economy.

2. Safety

Drivers familiar with a community learn which streets are generally more populated with pedestrian traffic. The more pedestrians likely to be encountered, the more cautious most

drivers are apt to be. In this way, pedestrian activity is self-protective. The more pedestrians using a street, the safer that street becomes for pedestrians.

3. Public Health

A key concern in all aspects of community planning and design is the health, safety and welfare of citizens. There is growing recognition of how the built environment influences health-related behavior. Decisions about zoning, transportation, land use and community design influence the distances people travel by foot and by car, and the general safety and attractiveness of neighborhoods for walking. Fitness experts agree that regular daily activity is the key to good health. Walking is the most affordable and convenient way for most people to stay active. Whenever walking becomes a reasonable alternative to driving, many people will choose to walk rather than drive. As walking becomes an even more significant part of daily life in Bessemer City, this will yield healthier lifestyles and ultimately impact community health care costs in a positive manner.

4. Elderly and Youth Friendly

When communities are pedestrian-friendly, the elderly retain greater independence and freedom, and young people are free to rely less on parents to drive them to school and other activities. As young people become accustomed to walking and biking, they are also less likely to depend on automobiles for short trips as they grow older. With a more complete system of sidewalks, trails, and other pedestrian amenities helping to connect a mix of significant destinations within close proximity of each other, walking becomes a safer and more reasonable option, particularly to those who need it most.

5. Friendly to Disabled Populations

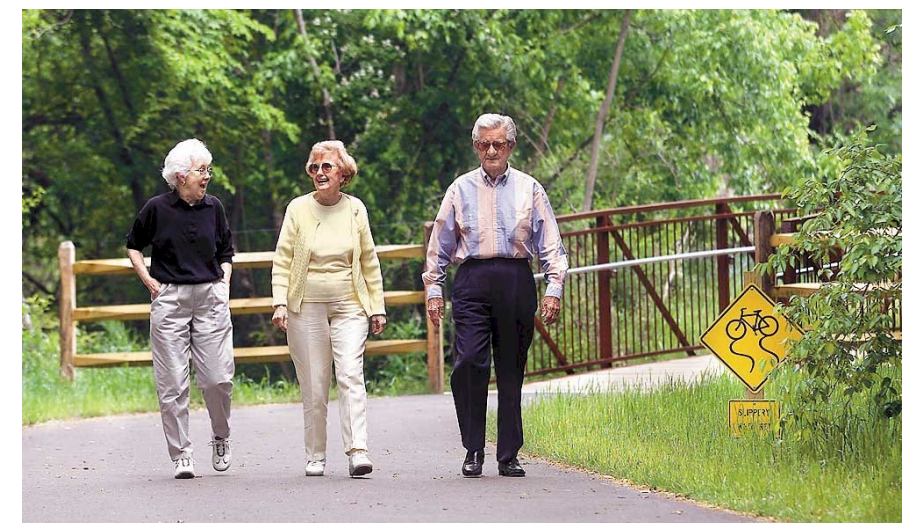
Another group for whom pedestrian friendliness means independence are those with disabilities. For those who cannot drive independently, mobility is severely limited in communities that are designed around the car. Walkable communities maximize the independence and mobility for disabled persons, in ways that auto-dependent communities cannot.

6. Improved Environment

Street trees and other forms of landscaping are an integral part of pedestrian friendly communities. Street trees not only make pedestrians more comfortable and increase the



Virginia Avenue, Bessemer City
Photo by Walkable Communities



Walkers on Gastonia Greenway



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likelihood that people will choose to walk, they also moderate temperatures, reduce storm water runoff, and contribute to cleaner air. A pedestrian-friendly environment will also contribute positively to air quality by reducing unneeded vehicular trips.

7. Reduced Crime and Better Emergency Access

Streets that draw more pedestrians and encourage social interaction tend to have lower crime rates and other social problems than those that are isolated and unpopulated. Furthermore, streets that are connected for pedestrian-friendliness are also much more accessible to emergency vehicles such as EMS and fire, as they have more than one way to reach an emergency location. Encouraging increased connectivity in future developments in Bessemer City will help the current system of streets function best for both pedestrians and vehicles.

8. Cultural and Community Life

Cities that feature interesting streets and public spaces with active pedestrian life become vibrant cultural and economic centers that draw visitors from the surrounding region.

9. Transportation

Pedestrian-friendly communities make full use of the most affordable and efficient transportation system available: walking. As various concentrated centers of development occur throughout Bessemer City, these locations will provide further transit options in the future. Such transportation hubs will allow Bessemer City citizens, commuters and non-commuters alike, to access work, shopping and recreational opportunities without need of a car.

A surprising number of people, when asked to recall or identify venues that make them feel comfortable or in which they would like to live, work, and play, will identify tree-lined streets with sidewalks, and pedestrians of all ages using them. While it would be true to say that “pedestrian friendliness” is not a cure-all for every economic, social, or political ill that modern society experiences, it is also true that the creation of more livable public spaces and the de-isolation of citizens by allowing them greater freedom from their cars, is an important part of the remedy.



Athens, Georgia



PART 2: CURRENT CONDITIONS

2.1 Existing Conditions & Trends

1. Bessemer City at a Glance

The City of Bessemer City is situated in the Charlotte, North Carolina region, just north of Interstate 85 in western Gaston County. It lies at the crossroads of State Roads 275, 274, and 161, less than 6 miles west of Gastonia, and 5 miles northeast of the City of Kings Mountain. The City is located 25 miles west of Charlotte, and 15 miles east of Shelby. Its 4.2 square miles present a gently rolling Piedmont topography with the exception of a 150' tall ridge which physically divides the City. The physical conditions and layout of Bessemer City, including all existing pedestrian facilities described in this section, are shown on the **Existing Conditions Map** at the end of Part 2.

Almost all of the area within the City's northwest quadrant, along with most of the land within the western and northern portion of the City's ETJ, lies within a protected Critical Watershed Area, where development is limited.

The community traces its **origins** to the mining and processing of iron ore, and takes its name from the "Bessemer" process of steel production. The historic Ormund furnace rises from the ground at the City's west end. At the time of Bessemer City's incorporation in 1893, cotton mills employed a large portion of its residents. Like many communities throughout the region, Bessemer City was known as a textile town. But between the years 2000 to 2005, Gaston County witnessed a loss of more than 4,000 textile-related jobs. Remnants of that industrial heritage persist in the derelict textile mills that dominate the City's modern appearance.

Other **employment centers** located in the City have to some degree helped offset the economic downturn.

- The FMC Corporation Lithium Plant was constructed in the 1950s. The facility is located along NC 161 on the west side of the City, adjacent to the Vantine neighborhood. The Plant employs more than 300 area residents.
- The Dole Fresh Vegetables' salad-packaging plant is located at 201 Southridge Parkway in the 350-acre Southridge Industrial Park on the City's south and east sides. The 285,000-square-foot facility currently provides

jobs to more than 350 people, and is expected to increase that number to 900 over the next ten years. Most of these jobs are filled by locals from the surrounding area, and are primarily low-wage food processing jobs.

- The Hunter Douglas headquarters office and manufacturing facility occupies 20 acres of the Southridge Industrial Park at 201 Southridge Parkway. This 185,000-square-foot office and manufacturing facility employs 150 full-time and 50 temporary workers.
- Advanced Drainage Systems (ADS) operates a 50,000 square foot facility in Southridge and employs 100 people. ADS is the largest polyethylene pipe and fittings manufacturer in the country.

A very modest downtown retail center lines one side of Virginia Avenue. Beginning at 14th Street, this commercial area runs about two blocks, after which buildings of retail or other uses become more sporadic. Other businesses are strewn along both sides of NC 274 on the east end of the City, from the intersection of Washington Ave., to the City limits. A few other businesses are clustered in the downtown area, across the tracks from Virginia Ave. on West Pennsylvania Ave. between 13th and 14th Streets, and at the Edgewood Road exit off I-85. The City is presently courting new business to its burgeoning industrial park situated between the City's south side and I-85.

Commuter traffic in or through the City is not a major threat to pedestrian circulation. However, a vast majority of Bessemer City's employed (95%) do drive to work, and many of them to locations outside of the City. The average commute time for Bessemer City workers is 24 minutes, compared with 26 minutes nationwide (2000 US Census). A small portion of these commuters utilize carpools. Approximately 56 homeowners and 83 renters in the City do not own a car; a percentage close to the state average. The nearest transit route comes within one mile of the City limit, to the east in Gastonia.

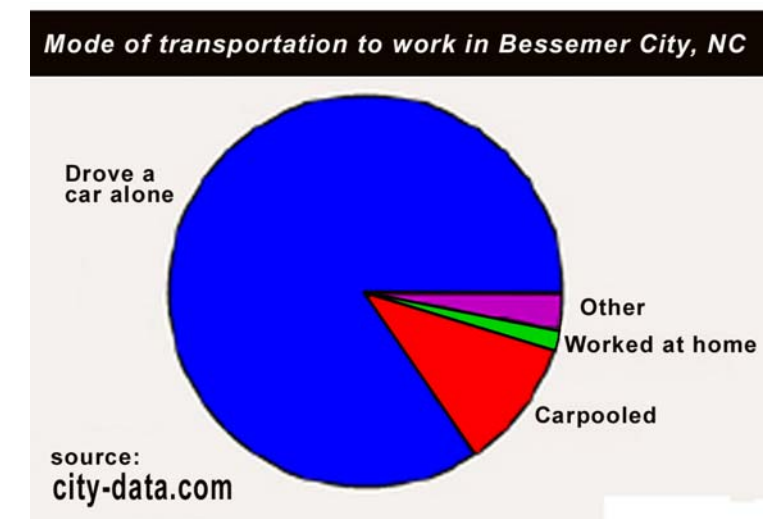
Bessemer City's **Population** experienced a gradual decline in the 70's and 80's and hit its recent historical lowest level around 1990 at 4,698, according to the US Census. From that point on, the City has experienced a moderate growth rate of roughly 4%. The 2000 Census reported the population at 5,119. The estimated population in 2005 was 5,351. The current median age is 33.6, which is higher than in neighboring communities. These census findings, contrasted with other communities within Gaston County over the same period, may indicate some level of out-migration by the younger population leaving the area to seek employment or



Bessemer City Regional Context Map



The Osage Mill building on 12th Street





Bessemer City Pedestrian Plan

PART 2: Current Conditions

housing elsewhere. With the median age of the City rising, Bessemer City's overall population is getting older. Nonetheless, the number of residents below legal driving age by the 2000 census was listed at 22% - almost 2% above the state average. Those 65 years or older was nearly 12%, at about the state average. Roughly 83% of the population is ethnically white, about 13% black, and almost 4% Hispanic. The City's median household income was reported in the 2000 Census at \$33,826, more than \$5000 below the state average.

Total **housing** units within the City by the 2000 Census was listed as 2,180. 33% of those homes were renter-occupied, compared to the state average of 27%. The median rent charged in the City was about 20% lower than rental amounts across the state. Owner-occupied housing was 1.5 % below the state average.

Residential development has seen very little activity over the last few decades. Some infill on the existing street right-of-way grid has occurred. Ashley Park Phase II, located on Ashley Place Circle in the northeast corner of the City, between Costner School Road and Sixth Street, is the City's most recent residential development. Construction began in 2004. Streets and other infrastructure are in but the project has been halted with only one house completed. While nestled within the City's historic street grid, this development follows a more suburban model of street connectivity, being structured along three cul-de-sacs, with only one entrance serving 29 residential lots. Sidewalks in the development do not meet City standards of width.

Vantine Community

Vantine is a distinct neighborhood within the City. This roughly 20-square block area is bounded by the FMC facility to the west, and Whetstone Mountain on the east. Like the rest of the City, Vantine is physically divided by the railway. Although Whetstone Mountain presents a significant barrier between Vantine and the rest of town, Vantine still considers itself very much a part of Bessemer City. Vantine community life has declined in recent decades, becoming increasingly transient and culturally mixed, with fewer children and homeowners. Many of its lots are vacant and structures abandoned. It no longer features any restaurants or stores. Most of the land is owned by FMC. Still, remnants of its past days persist. Indian Springs Park, at the community's south end, is still a viable park, though in need of refurbishment.



Typical single family residence in Bessemer City



Recent residential development in Bessemer City



Sears & Roebuck Kit Houses, Bessemer City, NC

Photo by Ryan-Harris



NC 161 entrance to Bessemer City at the west end of Vantine

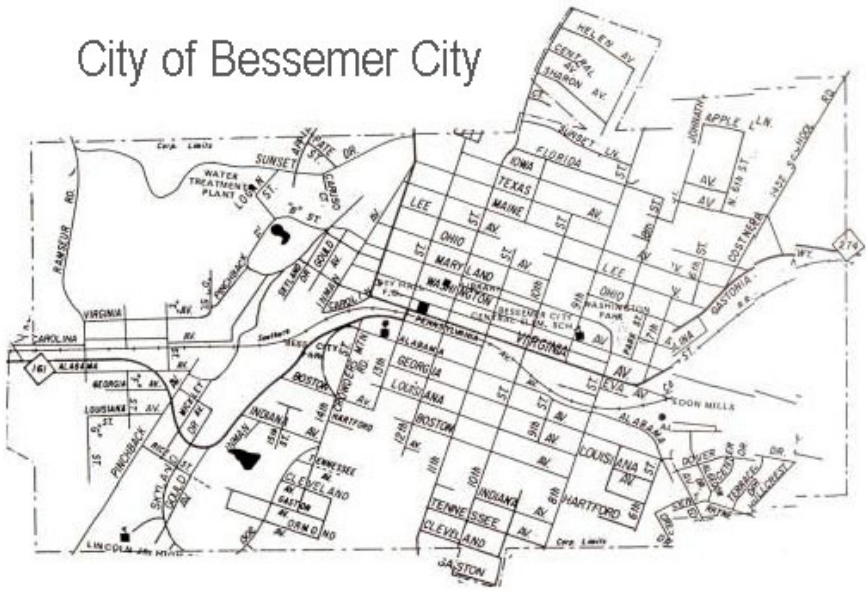


Bessemer City Pedestrian Plan

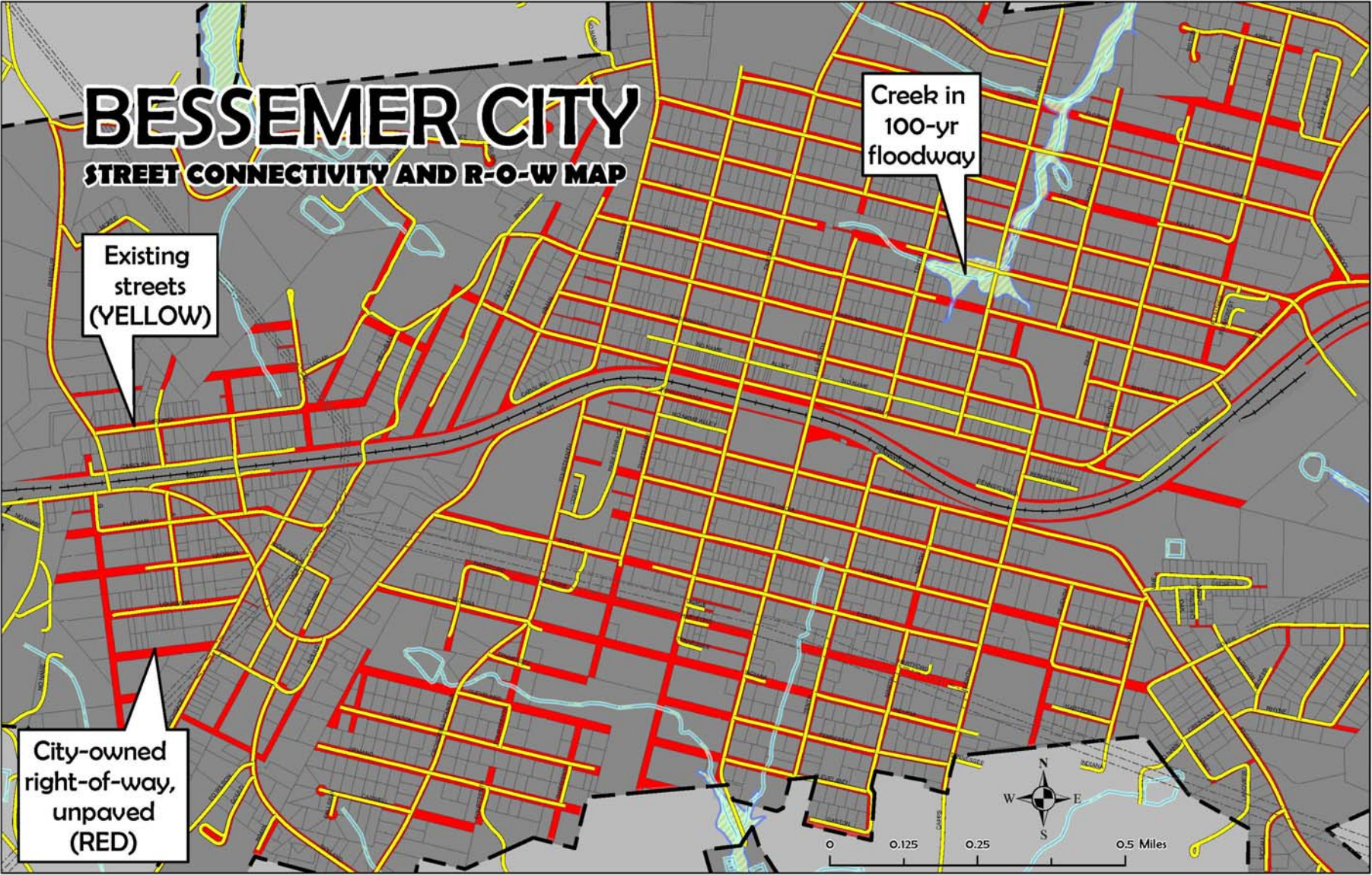
PART 2: Current Conditions

Bessemer City's **urban form** is typical of many historic American towns. Streets and blocks were laid out in a rectilinear grid. The tight, regular network of public rights-of-way permits a high degree of connectivity with few dead ends, allowing drivers and pedestrians multiple choices of route. Where development of streets has not yet occurred, the City has largely retained these rights-of-way to allow for continued growth. Besides these gaps, the grid is also interrupted in areas by creek floodways and Whetstone Mountain.

A widening project is currently underway on NC 274 that will create a four-lane connection between Bessemer City and Gastonia. As NC 274 enters the City, it eventually becomes known as Virginia Avenue. This two-lane street serves as the main spine of the City. The Norfolk Southern Railroad line runs roughly parallel and just south of this central street. The downtown grid pattern extends north from Virginia Avenue for about seven blocks before dissipating. Across the tracks, the same grid remains mostly intact for about five blocks, before the pattern of regular streets begins to erode.



Courtesy of the Bessemer City History and Arts Society



Bessemer City Street Right-of-Way Layout



Bessemer City Pedestrian Plan

PART 2: Current Conditions

The City grid is oriented to its central railroad corridor that runs adjacent to Virginia Avenue/274. The Norfolk Southern Railroad bisects the City and terminates many of its perpendicular streets. From one end of the City to the other, there are nine streets that cross the tracks. Each of these crossings presents challenges to pedestrians.

For nearly a four block length, in the heart of the Central Business District, the rail road right-of-way runs roughly adjacent to Virginia Ave. Spanning as much as 100 feet in width, this swath of unbuildable no-man's land carves a substantial gap in the heart of the potentially vibrant downtown, effectively turning the most commercially viable portions of Virginia and Pennsylvania Ave. into ill-defined "half-streets", with no significant activity or destination between them.



The "half-streets" of Virginia & Pennsylvania Avenues facing one another across the Norfolk Southern railroad right-of-way



Norfolk Southern Railway in Bessemer City

Railroad Crossings in Bessemer City





Bessemer City Pedestrian Plan

PART 2: Current Conditions

2. Existing Pedestrian Facilities

Sidewalks line many of the grid streets in Bessemer City's historic downtown, with some additional lengths reaching out along a few major streets. The table lists Bessemer City's existing sidewalk locations and their approximate length. The list begins with east-west running streets starting on the north side, and concludes with north-south streets beginning on the east side.

Many sidewalk segments throughout the system are in need of repair. The sidewalks are generally four feet in width but vary throughout City in levels of compliance with current ADA standards.

As the **Existing Conditions Map** (found at the end of Part 2) illustrates, most of the sidewalks listed below are concentrated in the downtown Central Business District (CBD). Apart from one length at Indian Springs Park, there are no sidewalks in Vantine.

Existing Sidewalk Inventory

SEGMENT	SIDE OF STREET	LENGTH IN FEET
Washington – from Gastonia Hwy to Park	South	486
Washington – from 8 th to 14 th	North	3800
Washington – from 13 th to 9 th	South	2509
Virginia – from Gastonia Hwy to Inman	North	5280
Virginia – from City Hall to 13 th	South	213
Alabama – from 8 th to 14 th	Varies	3648
Georgia – from 11 th to 12 th	South	608
Maryland – from 9 th to 13 th	South	2640
Maryland – from 13 th to Inman	North	981
12 th – from Georgia to Chadwick	West	5285
12 th – from Virginia to Washington	East	309
Gastonia Hwy – from Virginia to Lee	West	1374
9 th – from Virginia to Maryland	East	565
Pennsylvania – from 12 th to 13 th	South	608
13 th – from Virginia to Alabama	East	575
13 th – from Virginia to Maryland	West	707
Skyland – from Rice to ED Wilson	West	691
ED Wilson – from Skyland to Middle School	West	759
12 th – from Pennsylvania to Alabama	East	389
Alabama – from 8 th to 9 th	North	170
Ohio – from 14 th to end of Church	South	140
14 th – Virginia to Ohio	West	1047
TOTAL		32,784 (6.21 miles)

There are currently five **traffic lights** serving Bessemer City. Four of them are located along Virginia Ave./NC 274, at the crossing of 13th Street, 12th Street, 8th Street, E. Maine Ave., and the remaining light controls the intersection of Maine and 12th Street.

The City has provided striped **crosswalks** at a few of the heavy pedestrian trafficked locations. The central business district features one crossing 13th Street on the north side of the Virginia Ave. intersection, two more at the intersection of 12th Street and Virginia, a midblock crossing on Virginia between 13th and 12th at City Hall. Across the railroad track, mirroring its sister street, Pennsylvania Ave. features crosswalks at 13th and 12th Streets as well. Crosswalk striping has also been applied at the intersection of East Alabama and 11th Street to serve the Post Office. These crosswalks feature little to no supporting pedestrian warning signage, signals or other pedestrian aids. Some of them currently require re-striping or more intense maintenance.

There are currently no improved public **trails** in Bessemer City, but a few informal paths have been hewn into the land to form vital walkable connections between otherwise disconnected areas. Examples include a wooded link between Carolina and Mickley Ave, and across Whetstone Mountain between Mickley Ave and NC 161. Both of these rough trails attempt to connect the Vantine Neighborhood with the CBD.

Additionally, though currently revealing little sign of active trail use, several creek valleys weave their way into the heart of the City's network of streets, in some places disrupting the otherwise continuous grid. These natural corridors branch out into a system of floodways that wind through and around the City's environs.

The physical conditions and layout of Bessemer City, including all existing pedestrian facilities described in this section, are shown on the **Existing Conditions Map** at the end of Part 2.



Fading Crosswalk striping at Virginia Ave. and 12th Street



Midblock striped crossing on Virginia Ave. at City Hall



3. Primary Destination Points

Downtown

Many of the most visited destination points within Bessemer City are located in the downtown Central Business District (CBD). Lining the north side of Virginia Avenue, beginning at 14th Street, a very modest retail center runs about two blocks, after which buildings of retail or other uses become more sporadic. Many civic and cultural destinations are also clustered in the area within one or two blocks of Virginia Avenue, including City Hall, the Bessemer City Branch Library, the Historical Society, the Post Office and numerous churches. Other noteworthy destinations are located within just a couple of blocks of this center. Directly across the tracks, Pennsylvania Ave. mirrors Virginia Avenue as part of the CBD. From 12th to 14th Street, Pennsylvania features a Montessori school, a Masonic lodge, a medical clinic, and other business and civic destinations.

Bessemer City Park

Just west of the CBD on Pennsylvania Ave., the Bessemer City Park serves as a significant recreational center for the City as well as the surrounding region. This 18 acre park is bordered by NC 161, 14th Street, and Boston Avenue. Its facilities include a public pool, playground areas, a community center, tennis and basketball courts, a picnic shelter, and other recreational assets.

Washington Park

At the eastern end of the CBD but still in the heart of downtown, this 3-block active recreational facility, also known as Kevin Millwood Park, was formerly part of the Central School complex. The school building at Washington and Ninth Streets had been abandoned and vacant for years, but was eventually converted into Central School Apartments.

Gaston County Park

Located along the City's southern edge, on Crowders Mountain Road, and adjacent to the Middle School, this 30+ acre park offers baseball fields, a children's playground, and other recreational amenities.

Whetstone Mountain scenic overlook

Within a short walking distance from City Hall, one can reach the crest of Whetstone Mountain to look out over the City and on to Crowders Mountain. The City has just recently purchased property at this vista point with plans to develop a public park.

Arrowood Lake

The City's water source is currently closed to the public. But public opinion gathered for this plan as well as the City's concurrent Strategic Vision Plan, strongly suggests turning this attractive 1/2-mile long lake area at the northeast edge of the City into a public park.

Business and retail cluster on NC 274

At the City's eastern entrance, a concentration of retail, restaurants, banks and other businesses comprise a significant destination for locals. In addition to its importance as a commercial center, this point also serves as the gateway to Bessemer City for those travelling from its largest neighbor, the City of Gastonia. This popular commercial area continues along NC 274 into Bessemer City for a distance of roughly 1/2-mile.

Running/Walking Tracks

Two field tracks within the City limits are available for public use and are popular destinations for exercise. One is located on the north side of town at the High School on Yellow Jacket Lane. The other is part of the 1st Wesleyan Church and is located on the south side of the tracks at the intersection of Georgia Ave. and Athenia.

Commercial Area at Fourteenth & Sunset

A minor commercial district draws many patrons to the north end of town along Fourteenth Street between Sunset Road and Bessemer Town Road. The Surf & Turf Restaurant and Stop & Go Convenience Store are popular businesses. The City cemetery and the High School are located adjacent to these destinations. Other cemeteries in town include the Westview Cemetery on Edgewood Drive, and the Vantine Cemetery at Virginia and Logan.

Schools

The City's public schools are perhaps the most critical pedestrian destination, as the majority of their visitors are not drivers. The Bessemer City Primary School and the High School are located just a couple of blocks from one another along Twelfth Street/Puetts Chapel Road, at the northern end of town. The Middle School is located at the southern end along Skyland Drive.

To view the location of the destination points listed above and others, see the **Existing Conditions Map** at the end of Part 2.



Running track at Alabama & Athenia



Virginia Avenue, Downtown Bessemer City



4. Specific Pedestrian Barriers and Constraints

In addition to a number of general conditions that, to some degree, inhibit a more active pedestrian lifestyle in Bessemer City, there are some particular barriers that pose a tremendous challenge to pedestrians wanting to safely reach destinations on foot or to walk for recreation and exercise. The following are descriptions of some of these challenging areas.

- **Norfolk Southern Railway**

As described previously, one of the most profound challenges facing Bessemer City is the division created in the community by the physical barrier of the Norfolk Southern Railroad line.

- **Whetstone Mountain**

Though this majestic stone summit is one of Bessemer City's most prized natural assets, it is also perhaps the City's most divisive feature, separating the Vantine community from the City's central business district. Residents of Vantine are hard-pressed to reach most needed destinations because physical connections across or around Whetstone are often unsafe on foot.

- **NC 161**

One of the few ways around the barrier of Whetstone Mountain is NC 161, which bends sharply around the Mountain's southern end. Particularly at peak commuting times, the volume of cars streaming along this curving stretch of road to pass into Kings Mountain and Cleveland County is substantial. NCDOT reported average daily trips (AADT) along NC 161 in downtown Bessemer City at about 6,000 vehicle trips per day. At least one disabling accident by a vehicle to a pedestrian has been reported on this portion of NC 161 since 1998. Many students on their way to the Middle School must travel this route.

- **Virginia Avenue**

The City's main street sees its share of speeding vehicular traffic inhibiting pedestrian activity in the City's primary downtown corridor. Virginia Ave is part of NC 274 and connects additionally to NC 161. On average, it sees between 6000 and 7000 vehicles per day. Since 1990, four accidents involving pedestrian have been reported, two of them resulting in disabling injuries.

5. General Anti-pedestrian Conditions:

The problem areas described previously focus on specific locations, but they are all part of a larger system that requires attention on a number of fronts. The general conditions listed below each exert a negative influence on the community and limit pedestrian activity. Each may contribute in some way to the reality or perception that walking is not as safe, practical or enjoyable as it should be. This may prohibit a necessary trip for those unable to drive. Or it may tip the scale for those who can drive but would have preferred to enjoy the benefits of walking.

Sidewalks and connectivity

Despite Bessemer City's tight grid work of streets covering a substantial portion of the downtown, there are relatively few sidewalks. Sidewalks currently line only four of the City grid's 18 east-west streets. Of the north-south streets, which generally run 15 blocks in length, roughly only four 3-block sections are equipped with sidewalks. These existing sidewalks are clustered in the Central Business District (CBD). A considerable portion of these sidewalks, however, are reportedly in poor condition. Where sidewalks are unavailable, roads are often too narrow and/or too busy to be safe for pedestrian use.

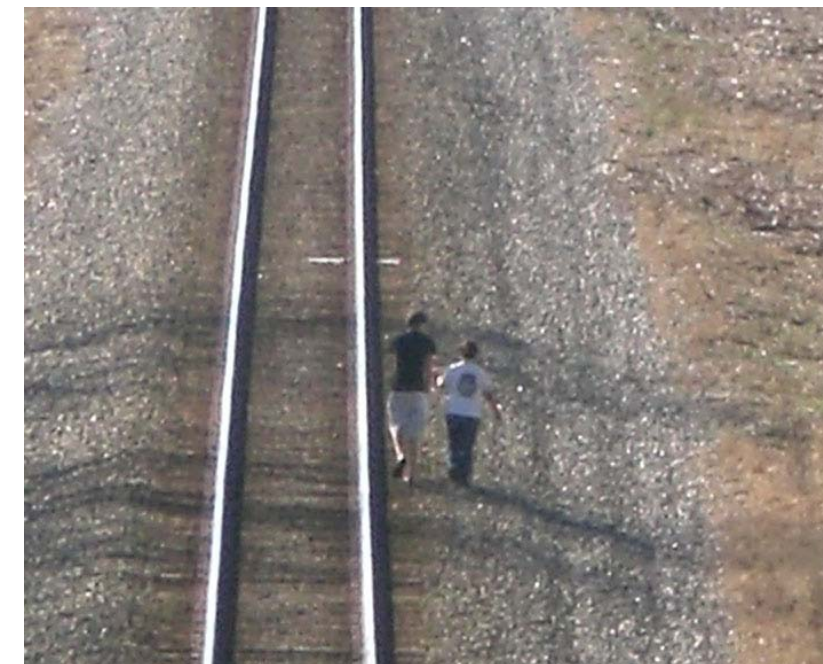
In addition to insufficient sidewalks, pedestrian connectivity is also severely impaired by two major barriers: Whetstone Mountain and the Norfolk Southern Railway. Both of these features inhibit walkable connections between some of Bessemer City's struggling neighborhoods and the CBD.

Safety

A number of hazardous conditions inhibit safe walking in Bessemer City. Among these are insufficient street lighting in many areas, speeding vehicles, and busy intersections with low visibility. But many members of the public also complain that City leash laws are not enforced and that unleashed dogs present a danger to walkers.

Aesthetics

High on the list of improvements desired by Bessemer City citizens is city beautification. Aesthetics can have a great affect on an individual's willingness to walk about their community. Many desired beautification features, such as street trees, signature street lighting, and cleaned up private properties, can



Crossing through Whetstone Mountain on the tracks

also affect general comfort, safety and practicality for pedestrians and improve community pride.

Destinations

The key to walkability is having places nearby to walk to. Despite the City's existing opportunities for employment, shopping, dining and recreation, many citizens must get in the car and drive to reach things they desire. More downtown businesses and other destinations would mean a more walkable community.

Plans and Policies

Implementation of already adopted plans and enforcement of laws already on the books could make an immediate difference in a number of the conditions cited above. Insufficient funding to implement plans is part of the problem. The Pennsylvania Streetscape Plan, for example, has not yet been implemented b/c it is not a state road and must therefore be funded by the City. But another issue is local police service. The City relies on County police to enforce its laws.



Bessemer City Pedestrian Plan

PART 2: Current Conditions

2.2 Current Policies, Ordinances & Plans

This section provides a summary analysis of the various documents that guide the ways Bessemer City continually shapes itself to provide a walkable environment for its citizens. Later in **Section 3.1.9**, the Pedestrian Plan provides a matrix with specific recommendations for revisions to these policies in order to enhance their positive effect on the City's pedestrian quality.

BESSEMER CITY COMPREHENSIVE PEDESTRIAN IMPROVEMENT PLAN (PIP)

This four-page document – adopted by the City in 2005 - was intended to guide the “construction and maintenance of sidewalks and other pedestrian related improvement projects.” These other projects are explicitly listed as: “crosswalks, stairs, tunnels, handrails, ramps, etc.” The stated goal was to “provide a planned, coordinated system of sidewalks which facilitate the safe and orderly movement of pedestrians throughout the City.” Its comprehensive objectives were fourfold:

- Fair and equitable treatment
- Public and private participation
- Planning and construction of new sidewalks
- Maintenance and repair of existing sidewalks

The PIP calls for a City **Sidewalk Construction Program (SCP)** as a multi-year schedule for the construction of specific sidewalk segments and associated pedestrian improvements. The SCP was to be updated annually from input by various City staff and the general public. The PIP provides a detailed list of ten criteria for selecting projects:

1. The project must be consistent with the Comprehensive Pedestrian Improvement Plan
2. Priority will be given to projects directly serving school sites, parks and other public use areas.
3. The project serves an area where there has been a history of vehicular/pedestrian conflicts.
4. Where the volume and/or speed of vehicular traffic poses a significant hazard for pedestrians.
5. The project serves or connects activity nodes that either generate or attract pedestrians such as high density residential area or neighborhood shopping facilities.
6. The project connects segments of existing paved sidewalks or connects an existing paved sidewalk with an activity node.

7. The project serves an area with heavy pedestrian traffic as evidenced through observation and/or the presence of established footpaths.
8. The project can be constructed as an element of a larger infrastructure project.
9. The project is a major joint public/private endeavor.
10. Topography and other physical features are favorable.

The PIP also makes provision for privately-funded projects with popular support that are not designated within the SCP.

In the manner of an ordinance, the PIP states that “sidewalks are required in all new public and private (approved) residential and non-residential subdivisions... on at least one side of new and existing streets... and paved pedestrian access to all adjacent public uses (schools, parks, greenways, etc.). It requires property owners to grant easements to the City for these access ways and places the maintenance responsibility fully upon the City.

In addition to strategic placement within the community and proper construction standards, the PIP Section V makes the following design requirements concerning minimum planting strip widths:

“Except in unusual circumstances, sidewalks may not be located less than 3 feet from the back of the curb or 6 feet from the edge of pavement when no curb and gutter is required. If existing public street right-of-way is not available, the developer will be required to construct the sidewalk outside the street right-of-way on a permanent sidewalk easement.”

The PIP also describes the permitting process for sidewalk design and construction. Allowances are made for unique urban design conditions, in which case the PIP designates the City Manager as the authority to approve the use of alternative design and materials standards.

SPECIFICATIONS & STANDARDS FOR SIDEWALKS

Bessemer City adopted standards for the design and construction of sidewalks in October, 2005. Included in this four-page document is a standard concrete sidewalk detail. The document begins by referencing the standard detail and stating that all concrete sidewalks shall “be five feet (5’) in width.” However, the single standard detail depicts a 4’ width. This minimum sidewalk

width of 5’ is also now in contradiction to the minimum described in the City’s newly adopted UDO, Section 9.18.1 (A.).

BESSEMER CITY LAND DEVELOPMENT PLAN

This Plan was developed by the City in 1995 with technical assistance from Centralina Council of Governments. Though the document is now roughly 15 years old, the City has not grown significantly in that time span and many of its policy recommendations are still valid. Among them, the following in particular relate well to current pedestrian needs:

ISSUE CATEGORY #2: COMMERCIAL DEVELOPMENT

1. Develop a closer relationship with realtors to promote commercial development in the Central Business District.
2. Enforce the City’s minimum building code in the CBD
3. Curtail strip commercial development along major thoroughfares by encouraging such activity in strategically-located nodes adjacent to residential development.

ISSUE CATEGORY #5: TRANSPORTATION

1. Continue sidewalk extensions along all major traffic routes and in school access areas.
2. Continue the repair and connection of all sidewalks in the existing sidewalk network.

ISSUE CATEGORY #6: BEAUTIFICATION

1. Adopt a tree ordinance establishing an organized program for planting and maintaining trees in selected locations, with particular emphasis in the CBD and along gateways.
2. Work cooperatively with utility companies to bury utility lines underground.

CONNECT RESOLUTION OF SUPPORT

CONNECT is regional vision process for the Greater Charlotte Bi-state Region. CONNECT supports collaborative approaches to sustainable growth, healthy environment, strong economy, high-quality education, and enhanced social engagement.

Bessemer City adopted the CONNECT Values, Vision, and Action Agenda in 2008 as a guide for the City’s future growth. In so doing, the City agreed to consider the Values/Vision and associated policy options as a guide in their own decision-making about community growth. It also agreed to assess its current policies, programs, and decision directions in light of the CONNECT vision and values, to provide a baseline from which to work.

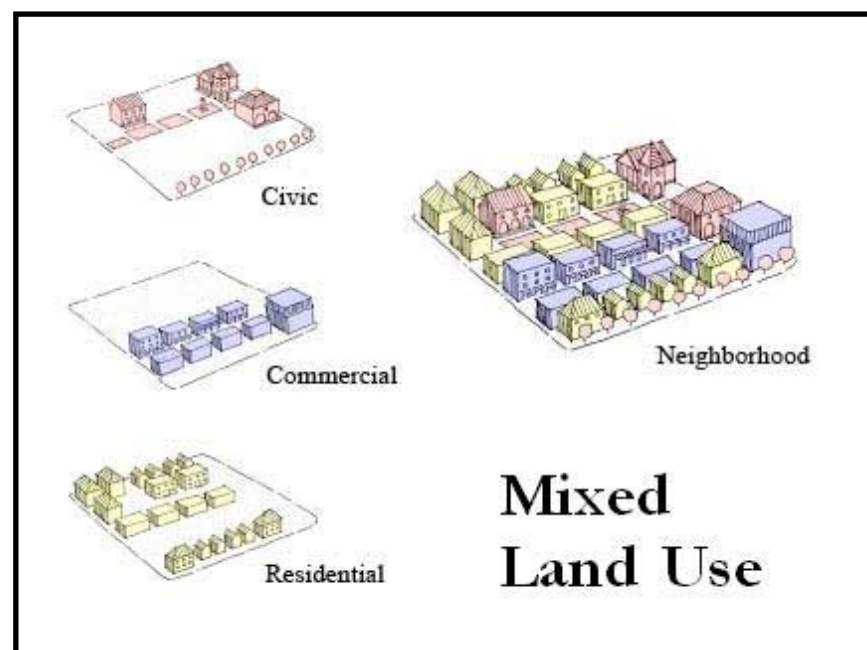


Bessemer City Pedestrian Plan

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BESSEMER CITY UNIFIED DEVELOPMENT ORDINANCE

The Bessemer City UDO, adopted in 2007, is the most binding legal document affecting the contemporary form of Bessemer City and its future development patterns. As the City grows and changes with economic conditions, the degree to which it will develop in a pedestrian-friendly manner – with all the benefits thereof – will depend largely upon the continuing development of this document as it provides guidance or direct rulings on the various land use issues described in this section.



Issue 1: Mix of Land Uses

When various land uses are mixed together in close proximity – for instance: residences, commercial establishments and civic buildings – more activities can be accomplished on foot (One can walk to the corner store or restaurant, for instance.)

The Bessemer City UDO outlines four major zoning classifications in chapter six – Zoning Districts: Residential, Office, Commercial, and Industrial. Subsets within each of these classifications are generated by certain variables, such as density. The land use zones are also subject to eight overlay districts.

1. Traditional Downtown Overlay
2. Historic District Overlay
3. Urban Standards Overlay
4. Thoroughfare Highway Overlay

5. Special Highway Overlay
6. Corridor Highway Overlay
7. Flood Hazard Overlay
8. Watershed Overlay

According to the UDO, most of the general zoning districts allow for or encourage a variety of land use types and categories; particularly within the Central Business District (CBD).

Explicit mention of mixed-use zoning policy within the UDO is made in the following sections:

Section 6-1 ZONING DISTRICTS ESTABLISHED

B. "Each general zoning district category serves a different function. A number of "residential", "commercial", "office" and "industrial" zoning districts have been created. Most allow for a variety of land use types and categories; certain districts allow for the mixing of land use types is encouraged."

Section 6-2 GENERAL ZONING DISTRICTS

6.2.3 Office Districts

A. "Four office and low-impact commercial zoning districts are hereby created: Transitional Mixed Use (TMU), Office/Light Commercial (OLC), Office (O-1) and the Medical Office (OM) districts.

B. "The TMU district encourages office and mixed office and residential uses at an intensity to compliment nearby residential land uses. Such areas are most often found in developed, urban portions of the County within the Urban Standards Overlay District. Many such areas, especially those found along major corridors, were originally developed for residential areas. But due to their location, the blending of office uses and higher density residential development has taken place. The TMU district is designed to encourage such mixed development to continue.

C. "The OLC district also allows for and is designed to accommodate mixed office, retail and residential development. Such higher intensity development will most likely occur within the Urban Standards Overlay District where public utilities are present and where access to major thoroughfares and/or transit is found."

6.2.4 Commercial Districts

B. "The CBD is designed to accommodate the uses found in a central city location and to encourage high intensity, compact, urban development in a pedestrian-oriented setting. Retail, office, personal service, and institutional uses normally found in a central business district are allowed. In order to encourage more efficient building usage and to take advantage of the area's

centralized location, second-story residential uses are permitted, as are high-density residential developments."

In Section 6.6.2.2 G. (WS - WATER SUPPLY WATERSHED OVERLAY DISTRICT) the UDO includes mixed-use developments in its definition of "cluster developments". As such, (according to Section 6.6.2.2 O.) mixed-use developments are allowed in Watershed Areas if they meet certain Low Impact Development criteria.

Although areas that permit mixed-use zoning are intended for higher density urban development, the UDO sets a limit of one dwelling unit per mixed-use structure.

Section 8.1.4 DWELLING, MIXED-USE

D. "A maximum of one dwelling unit may be located in the building housing the nonresidential use."

These zoning and overlay districts that permit mixed-use development are currently confined to the City's Central Business District (CBD), Maine Ave., Alabama Ave., Washington Ave., Edgewood Road, and along NC-274 at the eastern end of the City. Though much of the City is within a convenient proximity to these areas, outlying parts of the community do not enjoy this luxury. As the City expands, the physical distances between newer residential neighborhoods and other land uses, like stores, will likely expand as well. Increasingly more daily tasks will require use of an automobile.





Bessemer City Pedestrian Plan

PART 2: Current Conditions



Issue 2: Street Connectivity

"Connectivity" means being able to get from one place to another without having to go long distances out of the way. Communities with high connectivity are more walkable because destinations are within easier reach and there are more choices of routes. A connected network of streets also gives drivers more choices of vehicular routes. Allowing drivers a greater choice in routes helps decrease vehicular congestion. When more streets interconnect, local vehicular traffic can take shorter routes and avoid busy arterial roads, as can pedestrians.

Street connectivity can be compromised both by limiting access points into and out of subdivisions, and by limiting the number of opportunities that streets intersect within subdivisions. Over the last few decades, many residential developments have been designed with fewer street intersections in favor of incorporating more cul-de-sacs. Cul-de-sacs were initially used to avoid terrain that would prohibit streets from connecting. However, development practices grew to rely upon them, even on flat land, as a way of discouraging traffic in front of individual homes, turning public thoroughways into semi-private drives that dead-end

into semi-private courts. While this arrangement does reduce non-residents cutting through the neighborhood, it also gives residents very limited options. Traffic can back up into the neighborhood during rush hour, as everyone tries to get out by the same street onto busy arterial roads. Emergency vehicle access is also severely limited. Kids going to school, events, or just wanting to visit friends in neighboring subdivisions have to walk or bike much greater distances, often upon busy main thoroughfares or be driven by a parent.

One of the "13 Points of Pedestrian-Oriented Development", a foundational planning document developed by Duany Plater-Zyberk, is street connectivity. 13 Points recommends: "Streets within the neighborhood form a connected network, which disperses traffic by providing a variety of pedestrian and vehicular routes to any destination." See **Appendix A.4**.

As shown earlier, Bessemer City's historic urban street grid offers a very high degree of connectivity, and the potential for further connections within the grid have been preserved by virtue of the remaining City-owned vacant rights-of-way. However, the City's current code governing street connections does not require or encourage the continuation of this historic development pattern or any comparable degree of connectivity.

The UDO addresses the issue of connectivity solely in terms of access to subdivisions:

Section 13.23 MULTIPLE ACCESSES

Multiple accesses into a subdivision are required to be provided for additional ingress and egress. Any subdivision exceeding seventy-five (75) lots shall be provided with at least two entrances on to a public street or interconnect to an adjoining/adjacent existing public street, road or highway. Requirement for multiple entrances shall be based on the cumulative number of lots for a contiguous development, whether or not it is developed in phases. Subdivision entrances shall be no closer than two hundred feet, as measured from the street centerlines.

Aside from the above stipulation, the UDO sets no restrictions or parameters related to street connectivity. No limit on the use of cul-de-sacs by way of a connectivity ratio or other objective means is provided or referenced.



Issue 3: Cul-de-sac Length

One method of curtailing the overuse of cul-de-sac design while still permitting them, when necessary, is to limit their allowable lengths. As cul-de-sacs lengths increase, connectivity decreases. Properties accessible from only one direction become more isolated and difficult to reach. And vehicular traffic on these cul-de-sacs increases in speed and volume. All of these issues are critical factors affecting the walkability of such neighborhoods.

The UDO provides governance on this critical design variable.

Section 13.22 CUL-DE-SACS

Permanent dead end streets in the Urban Standards Overlay District shall not exceed six hundred (600) feet in length, except that cul-de-sacs shall not be greater than two-hundred fifty (250) in length in a TND. Permanent dead end streets outside the Urban Standards Overlay District shall not exceed one thousand (1000) feet in length.

The Urban Standards Overlay District of Bessemer City occupies the entire corporate limit and is delineated by the City limits, but does not extend into the City's ETJ. Therefore, residential zones within Bessemer City are permitted a minimum lot width of 60 to 90 feet depending on the underlying zoning district. But proposed residential areas just outside of the City limit would be allowed up to 25 lots to be located on a single cul-de-sac.



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Issue 4: Block Length

Connectivity is also product of block length. Short blocks and frequent cross streets open up more direct routes. Pedestrians benefit from more opportunities for choice in travel path for a given distance. More choices mean a greater variety in the walking experience, an increase in walk-in customer exposure for businesses, and more opportunities for new neighbors to meet and interact. There is also a psychological benefit of short blocks: pedestrians do not have a sense of having to walk “forever” to get to a crossing. People tend to judge such distances as “too far to walk” before they can turn a corner to get to a parallel street. A dense network of streets also disperses traffic, making streets more pleasant to walk along and easier to cross. Long streets without interruption encourage drivers to travel at excessive unsafe speeds.

A review of the best block sizes for walkable neighborhoods was performed for TND Design Rating Standards. A wide range of sources was consulted, including *Great Streets* by Allan Jacobs, *Planning for Street Connectivity* by Handy et al., various municipal ordinances, and direct evidence from historic neighborhoods and towns in the U.S. The following guidelines were developed:

BLOCK LENGTH (RANGE IN FEET)

Excellent	250-400
Good	200-250 or 400-500
Acceptable	500-600
Fair	150-200 or 600-800
Poor	Less than 150 or more than 800

In car-free or car-restricted areas, smaller block sizes are more viable and should not be given low ratings.

–TND Design Rating Standards, Version 1.5 (2005)

The Bessemer City UDO specifies parameters for block length in Chapter 13 regarding subdivisions:

Section 13.21 LAYOUT OF BLOCKS

B. Block length shall be not less than 400 feet and shall not exceed 1,200 feet except in cases where, in the judgment of the

TRC, a longer block is necessary because of unusual topography or in order to complete a comprehensive neighborhood plan.

No additional restrictions or guidelines related to block length are found in the UDO.



Issue 5: Crosswalks

Intersection and mid-block crosswalks are an effective way of safely channeling pedestrian traffic along major traffic arteries. Crosswalks also offer a secondary pedestrian benefit of calming traffic.

The UDO addresses the need for crosswalks only within its Chapter on Subdivisions, and there only briefly in one section.

Section 13.17 PEDESTRIAN WALKWAY/GREENSTRIPS

Crosswalks including the necessary improvements, may be required at or near the center of any block which is more than 1,000 feet long, or at the end of cul-de-sac streets where deemed necessary for pedestrian circulation or for access to schools and commercial areas.

The UDO provides some useful suggestions for strategic crosswalk placement. Specific requirements for developers are unspecified, and no reference is made to other guiding policy, such as the City’s **Comprehensive Pedestrian Improvement Plan** for the placement of these facilities. However, the UDO does provide guidance to the City (Planning Board) for

determining the need for crosswalks based upon street configuration and pedestrian-oriented areas of use. See **Appendix A.3.4** for general information about crosswalk design.



Issue 6: Sidewalks

Sidewalks form the backbone of a pedestrian system in urban and suburban environments. They can provide highly visible, accessible and practical pedestrian connections to common destinations points. They can also serve as vital public space in themselves, particularly in front of retail shops, restaurants, and civic buildings. For many pedestrians, sidewalks provide the most common opportunity for public interaction.

In addition to strategic placement within the community and proper construction standards, critical design features for sidewalks include:

- Width of pavement
- Width of planting strip
- Pavement type

See **Appendix A.3.1** for additional sidewalk information.

In addition to the rules and guidelines for sidewalk design and construction found in the City’s **Comprehensive Pedestrian Improvement Plan** (PIP) reviewed earlier, the UDO addresses sidewalks in its General Provisions section.



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The sidewalk section begins with the definition of areas where sidewalks are required.

Section 9.18 SIDEWALKS/GREENSTRIPS

Sidewalks and greenstrips shall be required only for subdivisions and developments located in the USO Urban Standards Overlay District (unless specifically mandated for a particular type of development, irrespective of whether it lies in the USO district or not.)

The UDO defines the Urban Standards Overlay District (USO) as:

SECTION 6.3.6 USO - URBAN STANDARDS OVERLAY DISTRICT

Areas of the County that are located (1) within existing municipal corporate limits or (2) outside their corporate limits but where the provision of public water and sewer services can reasonably be expected to occur over the next 10-15 years, have been designated as the "Urban Standards Overlay District".

Section 9.18 indicates that sidewalks are required throughout the corporate limits and within certain areas of the ETJ that are:

- a. likely to receive water and sewer service soon
- b. specifically mandated by zone

As to the "particular type(s) of development" in the ETJ where sidewalks are mandated, as Section 6.3.6 indicates, the following UDO sections indicate these include: TND, PRD, MFD, PUD, multi-tenant developments, and some infill residential developments.

SECTION 9.18.1 SIDEWALKS

C. Infill Residential Developments - Sidewalks shall only be required on internal streets if such street has a pavement width of less than twenty-four (24) feet or a right-of-way width of less than forty (40) feet (refer to Section 8.1.12(A)(13)).

D. Traditional Neighborhood Developments - Sidewalks shall be required on all streets within a TND, whether or not the TND lies within the USO district. Given that TNDs have unique design elements and building relationships, the Administrator or approval body shall have the authority to otherwise modify the sidewalk requirements in order to achieve a better layout and design and to support pedestrian activity and access throughout the TND.

E. Planned Residential Developments - Sidewalks shall be required in all PRDs, whether or not the PRD lies within the USO

district. Sidewalk requirements within a PRD shall be the same as any other subdivision.

F. Multi-family Developments - The following sidewalk requirements shall apply to all multi-family developments, irrespective of whether they lie in the USO district. A sidewalk shall be required to connect the front entryway of any apartment, townhome or condominium building to an adjoining parking lot. In addition, if the multi-family development fronts on a public road with sidewalks, then the development shall connect internal sidewalks to the public road. For condominium or townhome developments that contain fifty (50) or greater units, there shall be a sidewalk on at least one side of all internal streets [greater than two-hundred and fifty (250) feet in length], irrespective of whether they are public or privately maintained.

G. Planned Unit Developments - Sidewalks shall be required in a PUD irrespective of whether the PUD lies in the USO district. Sidewalks within the various residential and non-residential components of the PUD shall be provided in accordance with the standards contained herein for residential subdivisions, multi-tenant developments and other developments.

H. Multi-tenant Developments - ...Within non-residential unified developments, including but not limited to, office parks and commercial centers, a five (5) foot wide sidewalk shall be constructed on one side of major stem streets and circumferential and radial connectors as needed to safely move pedestrians throughout the site and to connect pedestrians to adjoining public streets. The provisions for internal sidewalks shall apply to both public and private streets and are in addition to the requirements for sidewalks along adjacent public streets. ...Unified developments within any zoning district (including those located in the USO district) which primarily serve industrial-type uses (e.g. warehousing, distribution centers, contractors' operations centers, welding shops, or machine shops), which generate little or no pedestrian traffic, may be exempt from the internal sidewalk requirements of this section.

In the following sections, the UDO provides extensive instructions for the placement of sidewalks wherever they are required.

Section 9.18.1 SIDEWALKS

(A.) Sidewalks shall be a minimum of five (5) feet in width along principal and minor arterials and four (4) feet in width along other streets. Notwithstanding, in no case shall a sidewalk be required along a publicly maintained alley. Sidewalks shall otherwise be placed and constructed in accordance with specifications on file with the Administrator.

In regards to allowable sidewalk widths, this section is in conflict with the PIP as it permits a 4' width for sidewalks along secondary (non-arterial) streets.

(B.) Residential Subdivisions (except as otherwise required in TNDs, PRDs PUDs, and Infill Residential developments):

1. Sidewalks shall be constructed on one side of existing principal or minor arterial streets and both sides of extensions thereof.
2. Sidewalks shall be constructed on one side of the principal or minor arterial where the street will not function, at the time the subdivision is approved, as an arterial street because of its lack of continuity.
3. Except along cul-de-sacs, sidewalks shall be placed on both sides of all local subdivision streets. As used herein, the term "local subdivision street" shall mean any subdivision street other than a collector street or arterial. Where a subdivision abuts an existing street (other than a arterial), a sidewalk shall be provided where the subdivision abuts said street.

Sidewalks shall not be required along cul-de-sac streets that are less than two-hundred fifty (250) feet in length. For cul-de-sac streets that are greater than 250 feet in length, sidewalks along the "bulb" of the cul-de-sac may be waived by the plat approval body (without necessitating the issuance of a plat variation) upon determination that such waiver would increase the aesthetics of the subdivision and that there are practical difficulties and unnecessary hardships in placing the sidewalks along the bulb.

4. All sidewalks in subdivisions shall be installed within two years of final plat approval unless a fee in lieu is paid per Section 13.17 of this Ordinance.

Additional requirements and guidelines for each development type are detailed previously (Section 9.18.1 C-H). All other development types are addressed in the section 9.18.1 (I.).

(I.) Other Developments

1. When Required
Sidewalk construction required by this section shall be installed adjacent to uses and developments, under the following circumstances:
 - a. When the property is subject to site plan approval per Section 5.2; and,



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- b. Where curbing exists or is being installed on the applicable side of said adjacent street, and
- c. Where adequate right-of-way is available to construct a sidewalk in accordance with all applicable standards and specifications.

2. Required Locations

Except as exempted in Subsection 3 (Exempt Locations) below, sidewalks shall be placed in the following locations:

- a. Along the abutting side of principal or minor arterial streets
- b. Along one (1) side of new and existing collector and local streets. When determining if a sidewalk is required on a particular side of the street, the Administrator shall review such criteria as the pattern of existing sidewalks, the location of existing right-of-way, and expected pedestrian patterns. Sidewalks may be required on both sides of a collector or local street if one or more of the following conditions exists:
 - The current or projected average daily traffic volume is greater than eight-thousand (8,000) vehicles per day.
 - The posted speed limit is greater than thirty-five (35) miles per hour.
 - The street is a strategic pedestrian route to an existing or planned pedestrian destination, such as a school, park, recreational or cultural facility, greenway trail (or similar amenity), retail commercial site, restaurant, or a multi-family development of ten (10) or more units, located within a one-quarter (1/4) mile, as measured along the street centerline.
 - Other pedestrian safety, access, or circulation needs are identified.
- c. Sidewalks required by this section shall be constructed along the street for the full extent of each side of a parcel upon which such street abuts.

3. (this entry shown as "2." in UDO) Exempt Locations

The following locations shall be exempt from the placement of sidewalks:

- a. Sidewalks may be required for industrial uses in urban settings.
- b. Sidewalks shall not be required along new and existing local and collector streets where, upon determination of the Administrator, the following conditions are found to exist:
 - The character and size of the proposed development will not result in substantial additional pedestrian facility needs; and

- The proposed development is not within one-quarter (1/4) mile of a transit stop (as measured along the street centerline), and
 - The proposed development is not within one-quarter (1/4) mile of an existing or planned pedestrian destination, such as a school, park, recreational or cultural facility, greenway trail (or similar amenity), retail commercial site, restaurant, or a multi-family development of ten (10) or more units (as measured along the street centerline); and
 - There are no new pedestrian facilities planned that would provide a pedestrian connection to the proposed development.
- c. In no instance shall sidewalks be required along a local or collector street for a use that is likely to generate little or no pedestrian traffic.
 - d. Further, the Administrator may reduce or waive sidewalk construction required herein provided that specific circumstances unique to the subject property would make meeting the requirements impractical or impossible and that granting such reduction or waiver would not impair the public safety.

The exceptions listed above in Section 9.18.1 (1.) 3. Exempt Locations merit the following comments:

1. Exceptions are to be determined on a case-by-case basis with no definition or objective criteria for determining exception-worthy "character and size" of the development, or what constitutes "substantial additional pedestrian facility needs".
2. No reference is made to any master plan that considers future development which could in turn affect pedestrian facility needs. The potential of an "exempt location" development eventually serving as a pedestrian connection to another non-exempt development is not considered.
3. There are currently no transit stops in Bessemer City or its ETJ. However, future transit stop locations will require pedestrian facilities that can be better constructed with the development as it occurs rather retro-fitted after the fact. Such developments will directly benefit from transit stops located in their vicinity.
4. No reference is made to any master plan (such as this pedestrian plan) that designates existing or planned pedestrian destinations, or planned pedestrian facilities.
5. No objective criteria are provided by which to determine a level of pedestrian activity that above which would rule out an exempt status.

Section 9.18.2 GREENSTRIPS

- A. A minimum 6' greenstrip shall be required ... between the edge of the curb and the sidewalk (except) if the abutting street does not contain either a curb or sidewalk. In no case shall a greenstrip be required to be placed along and parallel to a publicly maintained alley.
- B. Greenstrips shall be provided along streets with curbs and sidewalks in any planned unit development (PUD) or traditional neighborhood development (TND), irrespective of whether the PUD is or is not within the USO district.
- C. The Administrator, or plat approval body, shall have the authority to waive or modify the greenstrip requirements herein stated on a case-by-case basis where he determines that the placement of a greenstrip would serve no public purpose and/or the greenstrip would not be in keeping with adjacent developed areas along the same street. Examples where such requirements may be found include:
 1. (Where) other adjacent or nearby developed lots ...do not contain greenstrips;
 2. (Within) an infill residential development or TND and ... would achieve a better layout and design and would support pedestrian activity and access;
 3. (Where) unique ...physical characteristics associated with the site that would severely restrict placement and/or long-term maintenance of the greenstrip; or,
 4. (Where) public utilities ... would affect the long-term maintenance and upkeep of the greenstrip.

The Bessemer City UDO as a whole includes no additional requirements or guidelines for sidewalks, and makes no reference to any additional plans or policies that take into account destinations, or current or future land use or transportation facilities or issues.



Issue 7: Greenways, Trails and Open Space

While parks and other open space are intended to accommodate a community's recreational needs, they also provide vital public space and accommodate public functions that help reinforce a city's identity. Greenways and other trails also serve a dual role. In addition to providing opportunities for recreation and exercise, they are also intended to link destinations points, functioning as a transportation resource for pedestrians and bicyclists. Within municipalities, parks and greenways are often located in otherwise undevelopable land, such as streams and floodways, required buffers, utility right-of-ways or abandoned railroad corridors.

Chapter 13 of the UDO, regarding Subdivisions, contains the most complete description of Open Space requirements for the City.

13.26.1 GENERAL PROVISIONS

Every subdivider who proposes a subdivision of land for residential purposes shall dedicate a portion of land or pay a fee in lieu thereof, in accordance with this Section, for public park, greenway, recreation, and open space sites to serve the recreational needs of the residents of the subdivision or development.

When a subdivision is located on a tract of land where a future greenway or greenway connection has been specifically identified on a locally adopted recreation plan, or greenway master plan, open space for such designated greenway shall be dedicated and the fee-in-lieu option shall not be used for such lands.

The proximity of existing publicly dedicated and publicly accessible open space (e.g., park, greenway) to the subdivision shall reduce the amount of open space required in the subdivision. If such open space is located no greater than one-quarter (1/4) mile walking distance (such distance measured from the pedestrian access point of the existing open space to a perimeter public street or sidewalk within the development), the amount of required open space shall be reduced by up to twenty-five (25) percent. If directly adjacent... up to fifty (50) percent.

The UDO specifies the quality of land that can be dedicated as open space in terms of cohesiveness, usability, shape, location, access, topography, and sufficient buffering from adjacent lands. Each of these requirements is significant for the creation of open space that is pedestrian-oriented. The above provisions also reference adopted plans that may potentially exist that are to be used to guide the location of these open spaces and facilities.

Additional more intensive requirements are made of open space (and other pedestrian concerns) for specially-zoned, more pedestrian-oriented areas. These zones include:

- traditional neighborhood developments (TND)
- planned residential developments (PRD)
- planned unit developments (PUD)
- infill residential developments (IRD)
- multi-family developments

These requirements are found in Section 13.26.7, and in Chapter 8 of the UDO, which covers Supplemental Use Regulations (Sections 8.1.10-8.1.13 & 8.2.26)

On the western side of Whetstone Mountain, Bessemer City and its ETJ occupy a portion of the Long Creek water supply watershed (See **Existing Conditions Map**). The watershed occupies the area directly south of Sherwood Road and north and west of NC 161. This area is subject to water protection requirements that include additional vegetative buffer areas for certain levels of development. These buffers are described in the UDO's Chapter 6 on Zoning Districts.

6.6.2.2 WS- WATER SUPPLY WATERSHED OVERLAY DISTRICT

P. BUFFER AREAS REQUIRED

1. A minimum one hundred (100) foot vegetative buffer is required for all new development activities that employ the high density option; otherwise, a minimum thirty (30) foot vegetative buffer for development activities is required along all perennial waters. Desirable artificial stream banks or shoreline stabilization is permitted.
2. No new development is allowed in the buffer except [structures] which result in only diminutive increases in impervious area and public projects such as road crossings and greenways... These activities should minimize built-upon surface area... and maximize the utilization of stormwater Best Management Practices.

Note that greenways are permitted within the required buffers.

See **Appendix A.3.11** for general information about greenway and trail considerations.



Bessemer City Pedestrian Plan

PART 2: Current Conditions



Issue 8: Street Trees

Street trees provide a variety of environmental and economic assets to communities. In addition to a broad range of air and water quality benefits, street trees offer the pedestrian shade, a physical buffer to traffic, and bring a human scale to an otherwise car-oriented landscape. Trees can even bring to a community a strong sense of identity.

Chapter 11 of the UDO provides street tree and landscaping requirements.

SECTION 11.4 LANDSCAPING AND STREET YARD TREES

B. Where Required

Street yard and landscaping requirements shall be met along and parallel to any public road for all new developments (except those listed in Section 11.2.2), new developments along road frontage not developed, or substantial redevelopment of an existing site to another use... Street trees shall also be required on lots located within a planned residential development (PRD), traditional neighborhood development (TND), and planned unit development (PUD).

The number and location of street trees is further specified so as to provide “a substantial canopy within twenty years of initial planting.” The code also requires trees to be located within parking lots to insure “that no parking space is located greater

than seventy-five (75) linear feet from a canopy or understory tree.” Furthermore, the UDO specifies requirements for the proper planting areas of these trees.

Section 13, regarding Subdivisions, also specifies that street trees are to be planted “along all streets within a subdivision and along the abutting side of streets forming the perimeter of the subdivision.”

The UDO does not provide a list of street trees or further requirements related to proper planting, maintenance or preservation of required trees.

See **Appendix A.3.3** for general information about street trees.



Issue 9: Building Setbacks

Excessive building setbacks are disadvantageous and even problematic to communities for reasons of safety, economic vitality, and general pedestrian friendliness. With no regulations to establish maximum setbacks (or “build-to” lines), retailers can create very deep front yards to accommodate their off-street parking, if otherwise permitted to. Such strip-development arrangement deteriorates street definition, making pedestrian use uncomfortable, unsafe and impractical.

On the other hand, minimal setbacks provide a number of advantages:

- 1. Safety.** Buildings set close to the street do not require visitors on foot to navigate significant distances through parked cars (and moving ones!) in parking lots to reach their desired destination point – an often unsafe experience for pedestrians.
- 2. Good business.** Buildings in a central business district are ideally built with little or no front yard setback. Businesses built close to the street offer pedestrians opportunity to “window-shop” or walk into a business immediately from the sidewalk.
- 3. Comfort.** Streets with minimum setbacks are usually more inviting to walk along. This phenomenon is largely due to a sense of enclosure that buildings can impart to a street, along with the lack of large, hot expanses of asphalt. Buildings set close to the street help make the street viable and interesting public space rather than the vast, open no-man’s land often found with strip development.

Minimum front yard setback requirements for each standard zoning district are laid out in Chapter 7 of the UDO as follows:

USE	SETBACK	TABLE
Residential	20' (RLD* 50')	7.1-2(C)
Office	0-30'	7.1-3 (A)
Commercial	0-30'	7.1-4(A&B)
Industrial	50'	7.1-5

*Residential Low Density

While these dimensions may function well as minimums, no maximum front yard setback has been provided in the UDO for any of these uses, with the exception of CDD and TMU zones described in Chapter 8.



Bessemer City Pedestrian Plan

PART 2: Current Conditions



Issue 10: Off-Street Parking

Although parking lots provide a convenience to motorists, they can significantly diminish the pedestrian quality of a community, creating a hot, barren car-dominated landscape that is unsafe, uncomfortable, and inconvenient to pedestrians. Property owners with expansive impervious areas also incur substantial maintenance costs to maintain valuable land that is yielding a less-than-profitable use. Parking lots (like other impervious surfaces) also negatively impact the local environment, particularly with respect to water supplies and water quality. **See Appendix A.3.7** for information regarding off-street and on-street parking.

General provisions for off-street parking are found in Chapter 10 of the UDO. The General provisions begin with the stated purpose that “Off-street parking areas shall be designed to create a safe and comfortable environment for both motorists and pedestrians.”

The information which follows in Chapter 10 primarily concerns required minimum parking spaces for various circumstances. Minimum off-street parking requirements for each standard use are provided in **Table 10.5.1**. However, the UDO sets no limit on the maximum number of parking spaces allowable, in any use category, in any zoning classification, or in any overlay.

Typical allotments of required parking spaces per use are often found to be excessive for most uses. In an effort to reduce the “sea of asphalt” phenomenon, there has been a trend to lower the number of required parking spaces for retail uses and to reduce the required area of each space. Some ordinances set a *maximum* parking requirement rather than a minimum.

Requiring a minimum number of off-street parking for all uses in a downtown area inadvertently conflicts with the pedestrian nature of a “downtown.” These areas should be designed to facilitate the movement of persons by foot, as well as by car. Pedestrian-friendly zoning ordinances either waive or significantly limit the amount of off-street parking required in a downtown setting or other centers of pedestrian activity.

Fortunately, some provisions have been made in the UDO for a reduction to the minimum number of required off-street spaces through on street parking and shared parking opportunities.

The General Provisions state that “In certain instances, on-street parking may be counted towards meeting the required number of off-street parking spaces.” The UDO later elaborates:

SECTION 10.5.3 ON-STREET PARKING

On-street parking may be used to satisfy some of the off-street parking that otherwise is required for a particular use. Those on-street parking spaces that (1) lie on a public street and (2) that lie within one hundred (100) feet from the principal pedestrian entrance to such use that abuts such street or an intersecting street, may used to offset the number of on-site off-street parking space otherwise required. Refer to Figure 10.5.3-1 below for an illustration of this requirement.

SECTION 10.8 SHARED PARKING

- A. Cooperative provisions for off-street parking may be made by contract between two or more adjacent property owners. The end result shall be that the sum of the parking spaces for the uses computed cooperatively shall be the same or more than if the uses were computed separately.
- C. To the extent that developments that wish to make joint use of the same parking spaces operate at different times, the same spaces may be credited to both uses.

Options in offsite parking can encourage clustering of businesses and civic uses near a common parking area within a walkable proximity. They give businesses flexibility without placing undue hardship on customers. Motorists can park in one location and conveniently walk from there to a variety of destinations. Such an arrangement can also encourage a greater mix of uses within reach of residential areas.

Allowing business owners the opportunity to voluntarily share parking spaces helps decrease the total number of parking spaces in the area while still satisfying the parking needs of the uses. In this way, the UDO encourages common sense cooperation and helps eliminate unnecessary paved surfaces. It also provides an incentive for the development of mixed-use areas, with a clustering of businesses and civic uses.

The UDO also includes design standards for off-street parking that favor pedestrians. **Section 10.2** specifies pedestrian ways within parking lots and other means of avoiding conflict with vehicles:

SECTION 10.2 OFF-STREET PARKING LOT DESIGN STANDARDS

- B. Off-street parking lots shall be designed to allow pedestrians to safely move from their vehicles to on-site buildings. Lots containing more than one-hundred (100) off-street parking spaces on any one (1) side of the building shall be designed to have at least one (1) designated and readily identifiable corridor that channels pedestrians from their vehicles in that parking area to a nearby on-site building.
- F. Circulation areas shall be designed so that vehicles can proceed safely without posing a danger to pedestrians or other vehicles and without interfering with parking areas.

In designated areas and for specific uses, **SECTION 10.2** also places limits on the depth of off-street parking, limiting the number of vehicle rows a pedestrian must negotiate:

- A. In the Urban Standards Overlay District, off-street parking in the front yard of the lot shall be limited to no greater than two (2) rows of parking.

Section 10.2 further respects pedestrians by safeguarding the physical clearance of sidewalks and other designated pedestrian areas:

- E. Off-street parking areas shall be designed so that parked vehicles do not encroach upon or extend into public rights-of-way, sidewalks ... Any off-street parking area shall be designed so that, without resorting to extraordinary movements, vehicles may exit such areas without backing onto a sidewalk ...



Bessemer City Pedestrian Plan

PART 2: Current Conditions

BESSEMER CITY LAND DEVELOPMENT PLAN (LDP)

Centralina Council of Governments prepared this Plan for the City in 1995 as an outgrowth of the City's Strategic Planning effort in 1992. The Plan addresses a variety of issues related to the pedestrian quality of the City. It locates the nodes of commercial development (still in existence), and areas of industrial development (some no longer existing). It identifies eight registered historic dwellings but points out that there is no established historic district in the City. It records that of the 46.47 miles of streets within the City's corporate limits at the time, 34.36 miles of them are locally maintained and almost all of which are paved, with the remainder composed of a mix of gravel and stone. The Plan details various services provided by or within the City including among them: street maintenance, police, library, schools and recreation.

In its Thoroughfare Analysis section, the LDP recommends the extension of Maine Avenue across NC 274 and south to connect to Edgewood Road. This extension would serve the Interstate Park West industrial complex. Additionally, the Plan mentions a southern loop to link Edgewood Road with Crowders Mountain Road, and a connector between these two roads east of the City.

The LDP identifies seven major gateways into Bessemer City, citing that their appearance "can significantly influence visitors' first impressions of the quality of life in Bessemer City." The Plan makes specific recommendations for improving and protecting the appearance of each of these corridors into the City. Among these recommendations are included:

- Resolve ownership issues for blighted properties in order to rehabilitate or demolish dilapidated buildings.
- Prohibit billboards and portable signage.
- Provide landscaping within the street right-of-way.
- Adopt highway corridor zoning in order to minimize strip development.
- Require vegetative screens for parking lots and other unsightly uses.
- Place limitations on signage.
- Limit the number of curb/driveway cuts.
- Revitalize commercial investment particularly in the CBD.
- Control litter accumulation.
- Install aesthetic signage at selected locations.

Each of the above recommendations would improve the pedestrian experience in the gateway corridors, and would help achieve overall goals of the Pedestrian Plan such as economic vitality and aesthetics/identity of the City (Goals II & III). In

addition to these, the LDP recommends objectives and policies for a number of other issues that affect pedestrian life. A few of the most pertinent include:

- Intensify existing code enforcement.
- Consider zoning text changes to allow for residential uses within the CBD and other commercial zones.
- Curtail strip commercial development by encouraging strategically-located nodes adjacent to residential development.
- Provide transportation alternatives for the poor, elderly and handicapped.
- Adopt a philosophy of local government which routinely considers the impact of future land use decisions upon community transportation networks.
- Connect segmented portions within the City's street grid system.
- Continue sidewalk extensions along all major traffic routes and in school access areas.
- Continue the repair and connection of all sidewalks in the existing sidewalk network.
- Utilize the assessment procedure to finance sidewalk expansion and improvement projects (see City Charter).
- Work with Gaston County Central Transportation Services to provide assistance to disadvantaged target populations.
- Require new development to contribute equitably to the future transportation network.
- Adopt a tree ordinance and establish an organized program for planting and maintaining trees and landscaping in selected locations, with particular emphasis in the CBD and at gateways.
- Adopt a beautification ordinance.
- Beautify and soften concrete medians with landscaping.
- Initiate a process with other agencies to develop greenways along Long Creek and Arrowood Lake.
- Encourage the dedication of open space in high-density development.
- Designate potential park sites within the ETJ area.
- Protect historic sites through zoning and code enforcement. The Plan lists four specific sites, including the Ormand Furnace, and the Eury House on Skyland Avenue.
- Preserve significant areas of agricultural activity for economic benefit and enhancement of scenic quality.

In the Parks-Recreation-Institutional section, the LDP designates greenways to be developed along Long Creek and around Arrowood Lake, and recommends working closely with Gaston County to acquire property adjacent to these waterways. It states that zoning and subdivision regulations should be amended to guide development within the Long Creek Corridor. Finally, the Plan advises that vegetative buffers be established in these areas according to Gaston County watershed regulations to protect water quality and preserve the natural state of these areas.

THE STRATEGIC VISION PLAN

This planning effort was conducted by the Ryan-Harris Group during the early stages of the Pedestrian Plan and confirms the findings of Centralina's 1995 Land Development Plan. Its Strategic Vision Plan Map (See **Appendix A.1.5**) designates the northern portion of the ETJ for "Conservation Development", and identifies the southern area between the City and I-85 as "Industrial Opportunity Area". The Plan further identifies Whetstone Mountain as natural/recreational asset, and targets the Gastonia Highway (NC 274 East) as a "Redevelopment Zone". The Plan was officially adopted in February 2009.

TRAFFIC CALMING POLICY

Bessemer City adopted this policy in 2004 in an effort to curb the problem of speeding vehicles on City maintained streets where specified criteria are satisfied. Acceptable traffic calming strategies are nowhere listed in the policy. However, the sole strategy mentioned within the document is the use of speed humps.

THE GASTON COUNTY BIKE TRAIL NETWORK

The City of Gastonia Planning Department produced this plan of designated bike trails in 2001. The plan covers all of Gaston County. Five different bike routes are recognized, in addition to greenways and some "unmarked connectors". Various destinations of interest are also shown. Two of the five routes terminate in Bessemer City. One connects the City to Mount Holly, the other to Crowders Mountain. An unmarked connector route circling about the northwest end of the county begins and ends in Bessemer City. A number of destinations are designated in Bessemer City, including a museum, schools and parks. See **Appendix A.1.2**

THE GASTON URBAN AREA MPO 2030 LONG RANGE TRANSPORTATION PLAN

The 2030 Plan indicates four road improvement projects within Bessemer City in the next twenty years. However, the only project that would have directly aided in the construction of Pedestrian Plan projects (Puetts Chapel Road Widening (D-4) has been removed in the updated MPO plan that is scheduled for adoption in January, 2010.

See **Appendix A.1.4** for a map of the 2030 Plan projects.





THE CAROLINA THREAD TRAIL

The Carolina Thread Trail (CTT) is a proposed regional network of multi-purpose greenways, serving 15 counties and over 2 million people. This greenway system will eventually link communities and attractions throughout the region by connecting smaller trail systems throughout its bi-state area. Bessemer City is located along the proposed alignment of the Carolina Thread Trail, as seen in the [Carolina Thread Trail Master Plan for Gaston County Communities](#). The Master Plan has also been adopted by most of the remaining jurisdictions throughout Gaston County. For a map of the Master Plan, see **Appendix A.1.3**).

Local governments adopted the Master Plan to serve as a guideline for developing future connections. CTT designated segments have already begun to appear one-by-one. Adjustments will be made to the proposed routes as circumstances change and more information becomes available. Similarly, trail development will follow through various arrangements with multiple funding partners.

Bessemer City has already taken the following initial steps to advance the Thread Trail Master Plan from concept to reality within the City and its environs:

- I. **ENDORSEMENT:** The City endorsed the Carolina Thread Trail (CTT) November 14, 2007.
- II. **ADOPTION:** The City adopted the CTT Master Plan on February 9, 2009.
- III. **POLICY:** The Bessemer City UDO contains regulations which encourage developers to set aside land for trails whenever a development proposal overlaps with the proposed routes, as adopted. Moreover, further policy recommendations favorable to trail implementation are contained within this pedestrian plan.
- IV. **PRIORITIZATION:** Development of the Bessemer City Pedestrian Plan has included the process of identifying and prioritizing specific trail projects through a public input and steering committee procedure.
- V. **FUNDING:** Bessemer City recently submitted for funding through the CTT Implementation Grant. The grant application was for the design and construction of a specific trail project recommended within the Pedestrian Plan.



Building upon these previous actions, the CTT Master Plan recommends the following steps for implementation:

Build public support for trail implementation.

Advocacy from individuals with a personal and professional interest in these topics is essential. It is recommended that a Trail Advisory Committee be formed for these leaders to discuss and celebrate progress with public events, share resources/tools, and otherwise coordinate trail planning and development activities. Other organizations can assist in identifying viable trail opportunities and working with willing landowners to build support and interest in trails and greenways. For example, early collaboration with county schools will encourage more partners to become vested in local greenways.

Knit together various public and private funding sources.

Trail networks are generally funded by piecing together funding from multiple sources, creating a “funding quilt.” The CTT Master Plan lists local, state, federal and other funding sources, many of which local communities will need to acquire land, construct trails, and operate and maintain these facilities and amenities. The Carolina Thread Trail organization, housed within the Catawba Lands Conservancy, can provide assistance with funding strategies, as well as potential catalytic seed funding for planning and implementation from its private capital campaign.



Steps to the Carolina Thread Trail

Planning	Corridor Design	Acquisition	Construction
Objective Create a countywide Master Plan, adopted by elected officials, identifying regionally significant legs as the Carolina Thread Trail and an action plan for implementation of those corridors.	Create actionable, detailed corridor designs for specific legs of The Thread.	Acquire land or easements for The Thread, as well as open space along the designated corridors.	Complete construction design and build segments of The Thread.
Description Plan incorporates GIS modeling, assessment of current trail conditions (existing and planned trails), identification of key destinations, connection points and corridors. Includes community meetings for public input and implementation plan.	Counties & municipalities conduct detailed planning to include route identification at a parcel level, a plan for landowner outreach, general design elements, implementation budget and a financial strategy.	Practitioners and conservation groups acquire parcels (outright or through easements) that will become The Thread, as well as open space along the designated corridors.	Practitioners contract for construction drawings and construction of The Thread segments.
Grant Type – private funds that will serve as catalytic seed funding for segments of The Thread			
Planning Grants- Cash grants to lead organization. Counties, municipalities and NGOs are partners.	Corridor Design Grants- Cash grants to counties, municipalities and NGOs.	Land Acquisition Grants- Cash grants and grants of donated land to counties, municipalities & NGOs.	Construction Grants- Cash grants to counties and municipalities.
Participants Community steering committee, planning consultant (may include sub-contractors designated by committee), TPL (manages mapping process), Thread staff	Local practitioners and steering committee, consultants, Thread staff	Local practitioners and steering committee, consultants, conservation groups, Thread staff	Practitioners, consultants, Thread staff

Evaluate land or right-of-way acquisition options.

Where public land is not already available or private developers are not already building trails along the planned trail route, conversations with private landowners are recommended to assess their interest in trails through their communities. This will assist with route feasibility and alignment.

Complete top priority segments.

The CTT Master Plan recommends certain trail segments in Gaston County that exhibited broad support and available land. Though Bessemer City is not currently listed among them, its trails may become priorities as local support grows and opportunities are identified.

Design, construct and maintain trails.

Communities should work through a public process to determine intended use of the particular segment at issue, and design with that in mind, as well as safety and affordable maintenance.



2.3 Current Projects, Programs & Events

THE GASTON URBAN AREA METROPOLITAN PLANNING ORGANIZATION

As a member government of the **MPO**, Bessemer City participates in transportation planning initiatives for the region, and enjoys the benefits and resources available through the organization. One of those benefits has been assistance in applying for the North Carolina Department of Transportation Pedestrian Planning Grant that funded the development of this Pedestrian Plan.



GASTON COUNTY AND MUNICIPAL PLANNERS

GCAMP was formed in November 2002 as a cooperative group of planners, school officials, health department representatives and law enforcement officers from 15 jurisdictions within the County. They meet monthly, together and with other stakeholders, to coordinate planning efforts and discuss emerging issues. Bessemer City's participation in GCaMP means they are part of a support system that shares best planning practices and information for more informed decisions at the local level.

FESTIVALS

Bessemer City is home to a number of events that draw crowds of participants on foot. In addition to public sports events held throughout the year, other examples include:

- **Down Home Days** – Every year in May, the City closes off a couple of blocks on Virginia Avenue. Food and craft vendors line the street, bands perform on a stage, local politicians meet the crowds, churches host events, and kids enjoy carnival rides.
- **The Christmas Parade** is held the first Saturday of in December
- **Christmas in the City**
- **Community Easter Egg Hunt**



Gaston County ACCESS van

GASTON COUNTY ACCESS

Gaston County ACCESS Central Transportation provides general public and human service transportation. ACCESS identifies and arranges efficient and economical transportation services by request, whether through its own vehicles, or by making arrangements with outside private providers, such as private transport services or other public transit providers. When the transportation service is provided directly by ACCESS, payment is expected at the time the service is rendered, unless an account arrangement is made for monthly billing.

Subscription Routes can be used for daily van service to and from the same destination. Demand Response service is available for individuals requiring one-time scheduled trips for reasons such as medical appointments, service agencies, etc.

ACCESS (formerly known as the Department of Central Transportation) seeks to maximize the use of existing transportation resources in order to economically provide for Human Service Agencies and the general public.

For more information regarding the types of services and the rates, contact ACCESS at 704-866-3206.

2.4 Unique Opportunities

Though faced with many challenges, Bessemer City possesses a number of features that make it an inviting place for pedestrians. Each of these deserves a spotlight so that their value can be understood, and their characteristics preserved and enhanced.

1. **A highly connected street network**

Like many historic cities in America, Bessemer City's urban core is a tight-knit grid of streets. This time-honored arrangement provides a convenient and inviting setting for pedestrian life where businesses can flourish and residents can enjoy the convenience of a walkable community.

2. **Existing sidewalk network**

The City's central retail, civic and recreational destinations are connected with sidewalks that line the main streets. This established network provides a core for a pedestrian system that could branch out to serve more of the City.

3. **Undeveloped street grid rights-of-way**

Portions of the original street grid have not yet been paved. The City maintains ownership of many of these undeveloped segments, many of which could provide worthwhile connections for pedestrians, were they to be fitted with trails.

4. **Opportunities for new and re-development**

Opportunities remain for infill development in vacant or underdeveloped land within the City. Bessemer City could potentially benefit from new development that mimics and blends into the traditional walkable arrangement of the downtown.

5. **Greenway opportunities along creeks and utility corridors**

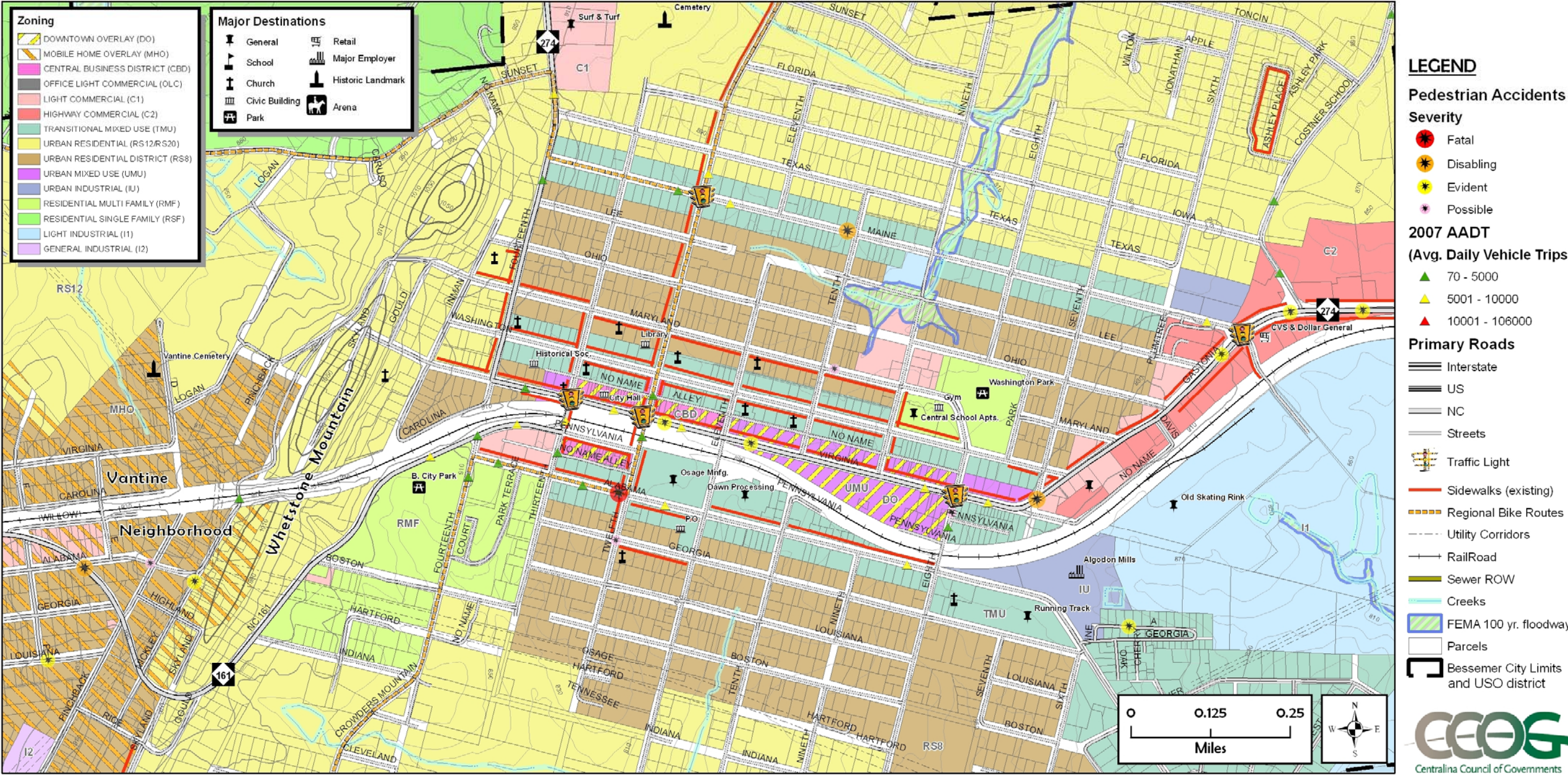
Some attractive wooded creek beds run directly through the City grid. Utility rights-of-way cut lengthy broad grassy swaths across town. These corridors could provide opportunities for a system of greenways and allow an alternative transportation route to some key areas of the City and its surroundings.

Building upon these strengths and assets of the City, **Part 3: Recommendations** of the Pedestrian Plan will outline specific strategies to meet the community's pedestrian goals.

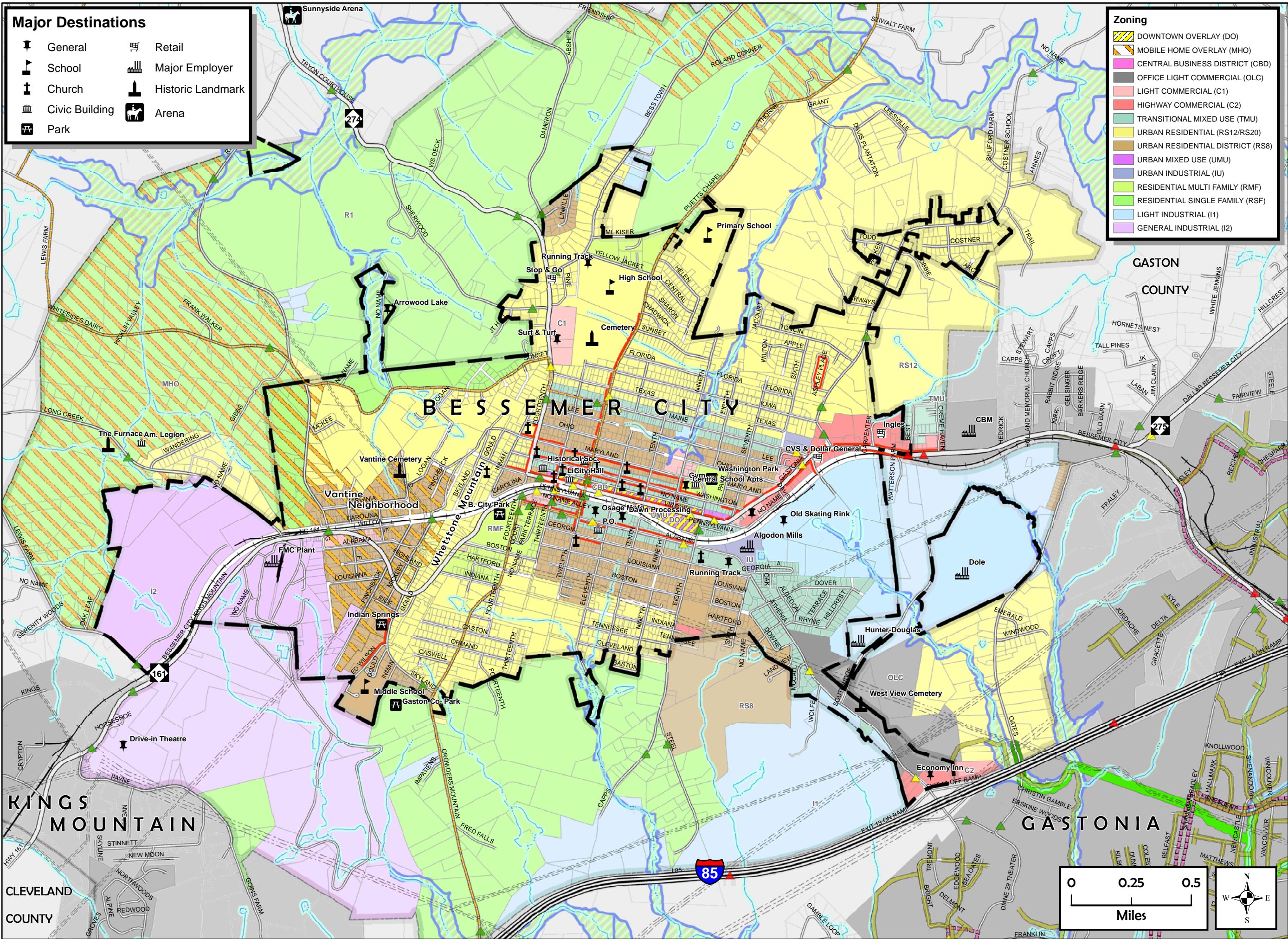


Bessemer City Pedestrian Plan

PART 2: Current Conditions



Bessemer City Existing Conditions (close up)



BESSEMER CITY
PEDESTRIAN
PLAN



Existing
Conditions
Map

LEGEND

Primary Roads

2007 AADT

(Avg. Daily Vehicle Trips)



PART 3: RECOMMENDATIONS

Communities can employ a number of differing strategies in implementing pedestrian improvements depending on the philosophy of its leadership. They may choose to:

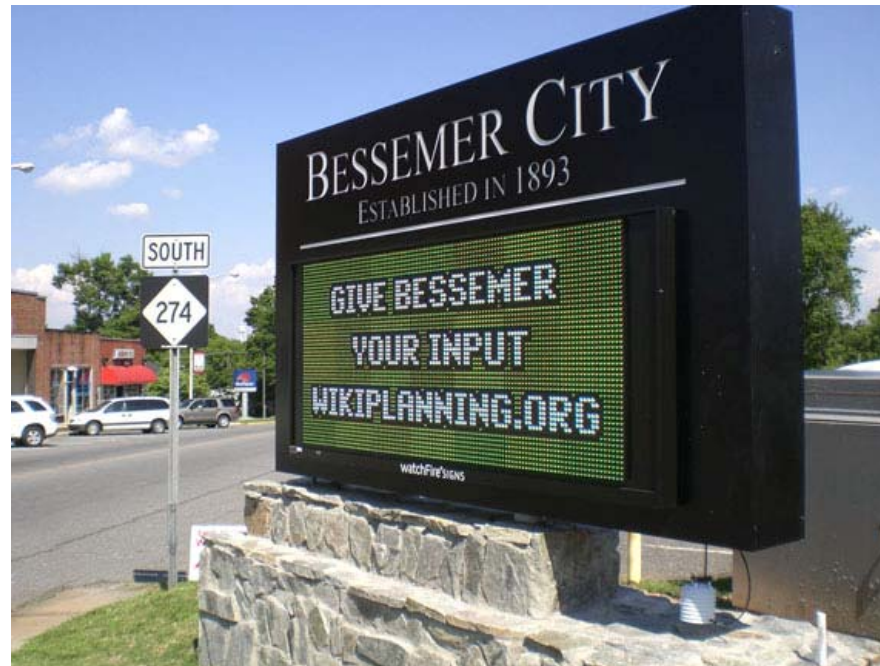
1. Simply build sidewalks and other amenities on a per request basis that may or may not address overall pedestrian needs
2. Systematically identify and address existing pedestrian barriers and constraints
3. Address both current and expected future pedestrian needs on a case-by-case basis
4. Develop and implement an approach that integrates the need for pedestrian amenities into other aspects of planning, in order to ensure that future development supports pedestrian travel as a practical mode of transportation

Many municipalities will, by default, take the first approach, or else employ a more coordinated effort the second two require. But Bessemer City has indicated a commitment to finding ways to integrate pedestrian needs into their comprehensive planning efforts through this Pedestrian Plan process, so that both current and future pedestrian needs are addressed. Additionally, policy tools are put into place to ensure that future development decisions strongly consider pedestrian interests. Through this process, the developing pedestrian system will work toward the realization of the overall vision and goals of the community by helping to engender a cohesive and compact City where walking is not only a viable option but often the preferred way of getting to destination points. It will help Bessemer City develop as a community whose initial historic urban core provides the framework for future growth.

Transportation needs do not exist in a vacuum. They are interwoven with other needs reflected in the way land is used. Transportation systems and land use patterns must be mutually supportive for either to work in a fully functional and efficient manner. This is particularly true in the case of pedestrian planning, where a number of land-use factors often determine whether even the “best” pedestrian facilities actually ever get used.

Citizens may be unfamiliar with how particular development patterns come about, or they may not realize how those forms of development may encourage or discourage pedestrian activity and lifestyle. And they may underestimate the power their

community has to shape its own future development. This Pedestrian Plan is intended to convey options in urban design and describe the means of improving pedestrian conditions in Bessemer City, and with those improvements, to see the increased civic and economic vitality of the City itself.



Promotion for public input for the Pedestrian Plan



Pedestrian Plan Steering Committee Meeting in Bessemer City

3.1 RECOMMENDED POLICIES, PLANS AND ORDINANCE MODIFICATIONS

1. Form a stakeholder-based Pedestrian Needs Committee (PNC). (See Section 1.1 Goals I-V)

The PNC should represent a wide variety of pedestrian interests and populations in the City. Members should include representatives of the business community, long-time residents, and residents of recent residential developments. Various areas of expertise represented by the PNC should include:

- Transportation
- Commerce
- Industry
- Health and Fitness
- Safety and crime prevention
- Recreation
- Education
- Aesthetics
- Environment
- Engineering and Design
- Public outreach

The purpose of the PNC is to ensure that the Pedestrian Plan stays in the forefront of public awareness, that it is implemented through ordinance changes, grant opportunities, and as development occurs in the private and public sectors. The PNC should also help assure that the Pedestrian Plan is updated as needed to reflect changing conditions and pedestrian needs. The PNC can be an important avenue for integrating pedestrian needs with other planning processes. The group can serve as advocate, monitor, facilitator, and educator, as well as ensure that emerging public needs are addressed in the planning process. The PNC should also ensure that citizens are alerted of planning efforts, changes in facilities, and upcoming construction.

Implementation Strategy:

The City Council shall appoint PNC members and invest them with the authority and charge to pursue the Pedestrian Plan strategies.

2. Enhance Conditions and Accessibility of Existing Sidewalk System. (Goals I & III)

Many segments of existing sidewalks throughout the City are in poor condition and inaccessible to handicapped users.



Bessemer City Pedestrian Plan

PART 3: Recommendations

Portions of sidewalks are crumbling or are partially obstructed by utility poles and other objects that impede the travel path. Accessible ramps are needed for curbs at intersections. Crosswalk striping at prominent intersections has faded.

Implementation Strategy:

- a.) The City's current sidewalk maintenance schedule may be insufficient to keep up with City's increasing pedestrian infrastructure requirements. Review the funding sources referenced by the schedule along with the funding sources provided in Part 4: Implementation of this Plan to see if additional funding sources could be tapped to increase a steady flow of maintenance funds.
- b.) Handicapped pedestrians are particularly sensitive to sidewalk maintenance and accessibility needs. Contact these users directly, or through local organizations that work with the physically challenged, and develop a volunteer reporting system that helps these users to record and report maintenance and accessibility problem spots.
- c.) Develop a maintenance reporting system for City staff that travel city streets weekly. Maintenance needs can be reported by cell phone or radio to a central dispatch, or be recorded on a laminated map with grease pencil, or by using an adapted GPS system. For more information, call PinPoint Geotech at (864) 643-0344, or visit:
bob@PinPointGeoTech.com

3. Implement existing development policy. (Goals I - IV)

A number of City's current policy documents complement and can work directly in tandem with the Pedestrian Plan. For example, the City's Pedestrian Improvement Plan (described in Section 2.2) calls for a Sidewalk Construction Program (SCP), as a multi-year schedule for the construction of specific sidewalk segments and associated pedestrian improvements. The SCP is intended to be updated annually from input by various City staff and the general public. The SCP listed ten selection criteria. These criteria were used to help prioritize projects in this Pedestrian Plan (See Appendix A.2.4).

Implementation Strategy:

- 1.) Review adopted policies, particularly those cited in the Pedestrian Plan. Resolve all conflicts that exist

between these documents (e.g. sidewalk width required by the City's PIP and UDO).

- 2.) Identify the complementary goals, any common funding strategies, and potential private partners. Discuss priorities, strategies and responsibilities with all pertinent municipal staff, planning board and elected officials.
- 3.) Establish partnerships with local corporate entities, citizen action groups, and regional public organizations (such as Centralina COG)
- 4.) Target specific projects for funding and implementation efforts.
- 5.) Engage the public and development community with education campaigns and open house events.

4. Engage in community planning for infill of derelict or under-developed parcels in and around the City. (Goals I - III)

As part of the land use planning process, serious discussions at the community level should guide the desired character infill development on large parcels, and how much street connectivity and pedestrian-friendly actions should be promoted in that development. These discussions should occur sooner rather than later, before these properties are developed, so that pedestrian facilities can be included in planning (because they are very difficult to successfully retrofit). As a part of these discussions, current zoning restrictions for these properties should be evaluated in terms of pedestrian-friendliness. A higher density and broader mix of uses (as permitted in the Downtown Overlay and CBD zoning, for example), along with sidewalks and street trees, could support walking as a desirable means of transportation. Mixed-use zones (such as the CBD, OLC, TMU and UMU zones) would allow a variety of destination points to exist in these areas – restaurants, stores and offices, for instance – providing citizens more opportunities to walk in their daily routine and work near their homes. Widely spaced and dispersed uses tend to discourage walking as a form of transportation between them.

Implementation Strategy:

- a.) This element should be included in ongoing land use planning.
- b.) The City planning staff, the Planning Board and the PNC should evaluate public input and present recommendations for adoption by the City Council.

- c.) Amend related regulatory documents as needed to incorporate the changes recommended.

5. Work with Gaston County on areas outside of Bessemer City's incorporated limits. (Goal IV)

Bessemer City can directly determine what happens within its corporate limits and ETJ, but not what happens just over the line. However, the City's UDO is closely modeled after Gaston County's Unified Development Ordinance (GUDO), both of which explicitly discourage sprawl. Sprawling growth patterns inevitably lead to strip-type development that would, in the long run, prove auto-dependent and not support the pedestrian vision the City has articulated. This aspect of the County's vision meshes well with Bessemer City's, but it will be important to monitor development to see whether these mutually supportive visions are being fulfilled, or whether something further should be done to promote them.

Implementation Strategy:

The PNC shall continue to monitor land development near Bessemer City, and coordinate with the Gaston County Planning Department, and the Carolina Thread Trail.

6. Create a safe and comfortable pedestrian system to improve pedestrian connectivity throughout the City and its surroundings. (Goals I & IV)

In addition to the recommended sidewalks - with their associated crosswalks - many of the links recommended in the Pedestrian Plan are by way of proposed greenways. Creek lands, particularly those within utility right-of-ways and existing parks can be most readily utilized.

Implementation Strategy:

- a.) Locate pedestrian facilities according to the Pedestrian Plan. Require sidewalks, trails, crosswalks and associated facilities with minimum deviation from alignments shown in the **Comprehensive System Plan**, to be built according to the Facility Standards and Guidelines.
- b.) Ensure that all new development respect planned or proposed corridors for greenways.
- c.) Implement traffic calming measures for designated streets, including signage, restriping of road lanes to allow on-street parking, textured pavement at



Bessemer City Pedestrian Plan

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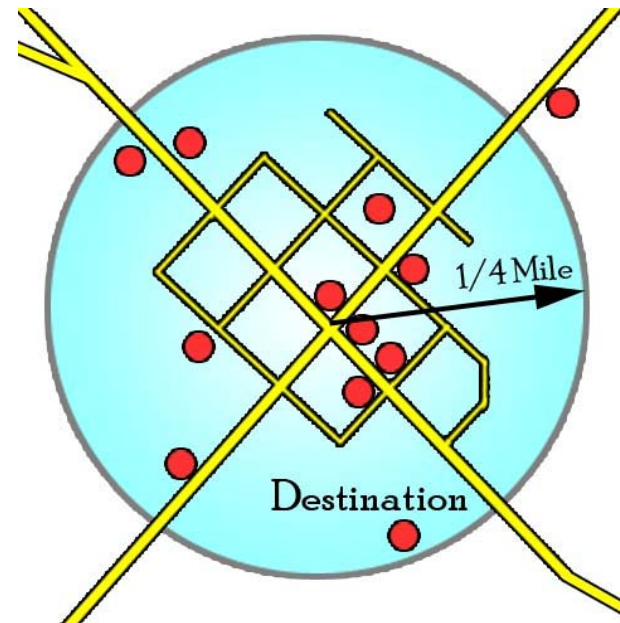
crossings, repositioning curb lines for curb extensions/bulb-outs and reduced curve radii, in addition to related educational programs and police enforcement.

7. Designate Development Nodes. (Goals I-III)

Nodes of concentrated mixed-use development could foster a more walkable Bessemer City. Currently, many of the most visited destination points within Bessemer City are located in the downtown CBD area. However, there are other points within the City where popular destinations are concentrated. Such clusters - particularly when connected with a dense grid of streets and paths - create hubs (or nodes) of pedestrian activity. These nodes of activity require and deserve particular attention with regard to pedestrian improvements and other incentives that will attract a mix of destination types.

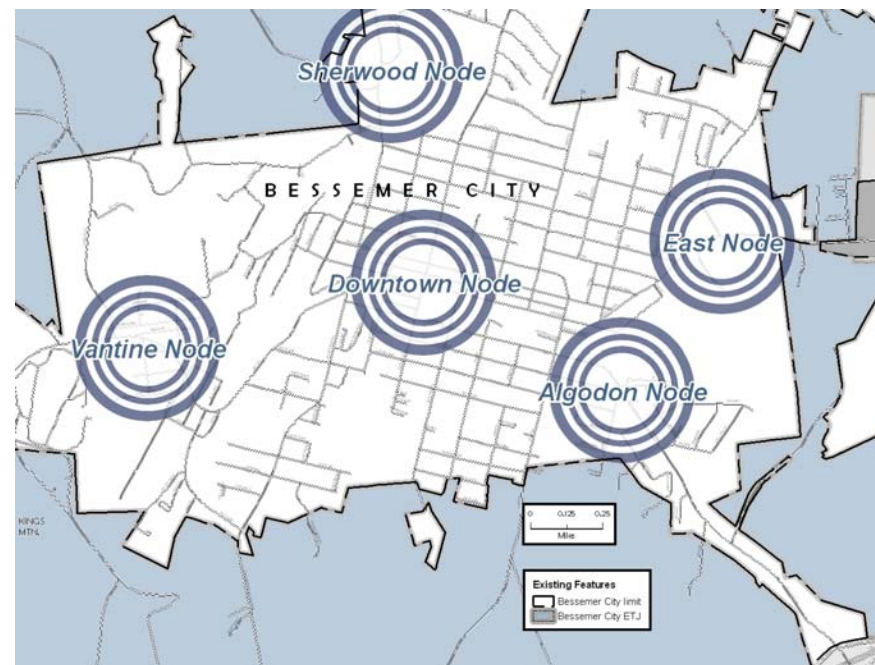
Implementation Strategy:

- Develop Node Overlay Standards. Examine the City's UDO standards for the Downtown Overlay and CBD Zoning, as well as other design principles (such as the 13 Points of Pedestrian Oriented Development in **Appendix A.4**) and consider which elements could be employed to foster walkable overlay districts in proposed nodes of concentrated development. Some of the City's potential nodes are located in what is currently C-1, C-2 or CBD Zoning (See City Zoning Map in **Appendix A.1.1**).
- Develop a map of existing and potential nodes with the boundaries of each node clearly defined (Examples locations are illustrated here and shown in the Pedestrian Plan's **Comprehensive System Plan**). Ideally, each node should be based upon a 1/4 mile radius (= 5 minute walking distance). Evaluate the node locations in light of current land planning documents and any additional community input from Item 4. Determine the geographic boundaries of each node and define those boundaries on a revised land use map.
- Revise the City's current Land Use Plan to incorporate these nodes of development. Follow additional implementation strategies prescribed in the adopted Land Use Plan.
- Adopt the node map and establish it in the UDO. Create a new ordinance section addressing nodes. Apply Node Overlay zoning standards to all nodes.



Typical Pedestrian Node

Nodes offer a concentration of destination points, creating a walkable center of activity. Various destinations are all within an easy 5-minute (1/4 mile) walking distance from the node center. In American urban centers, nodes most often occur at prominent street intersections.



Suggested Potential Node Map for Bessemer City

8. Accentuate City Identity (Goal II)

A clear sense of arrival through coherent gateways can help define the city's edges and provide opportunities to reinforce the unique identity of Bessemer City.

Implementation Strategy:

- Identify signature landmark elements that express the City's unique heritage and special qualities.
- Select a qualified landscape architect (and/or other design consultant(s)) to design a signature landscape to be used at the locations selected as gateways for the City, and a central location at the intersection of Virginia Ave. and Twelfth Street. The design should include signature elements such as a planting palette and design, pavement palette and design, signage and monumentation.
- Adopt the landscape design with provisions for minor adaptive changes to be made to the generic design to fit the individual constraints of each location.
- Designate the selected gateway locations as a special landscape zone in the UDO node section, citing the adopted landscape plan.
- The ordinance shall require any new development on affected land to include the signature landscape features. The City may implement the signature landscape plan on parcels it considers will not be developed or re-developed within the preferred timeframe. The City shall be responsible for permitting and constructing improvements within the NCDOT right-of-way.

9. Enact UDO and Land Use Plan changes (Goal I-IV)

Specific revisions to the Bessemer City UDO and Land Use Plan could help achieve the expressed pedestrian vision of the City.

Implementation Strategy:

Examine the following list of recommended ordinance modifications that would positively impact the pedestrian quality of the City. Then select a qualified planning consultant to guide the City through the ordinance revision process.



Bessemer City Pedestrian Plan

PART 3: Recommendations

Bessemer City Pedestrian Plan

~ RECOMMENDED ORDINANCE MODIFICATIONS ~

Refer to **Section 2.2** for additional analysis of the existing ordinance concerning each issue.

Issues affecting walkability	Current Ordinance	Concern With Current Regulations	Recommended Ordinance Revisions and Actions
1. Mixed Land Uses	The UDO Section 6-1 (B) establishes zoning districts, stating that most of the zoning districts allow for or encourage a variety or mixing of land use types and categories. Section 6-2 establishes a Transitional Mixed Use (TMU) district intended to encourage mixed development, and an Office/Light Commercial (OLC) to accommodate mixed office, retail and residential development, particularly within an Urban Standards Overlay District. Section 6.2.4 describes the Central Business District (CBD) "designed to accommodate the uses found in a central city location and to encourage high intensity, compact, urban development in a pedestrian-oriented setting. Retail, office, personal service, and institutional uses normally found in a (CBD) are allowed. In order to ... take advantage of the area's centralized location, 2nd-story residential uses are permitted, as are high-density residential developments." Section 8.1.4 limit the number of dwelling units per mixed-use building to one.	Currently the mixed-use "pedestrian-oriented" zones and overlay district are located in the CBD, along Maine Avenue and Edgewood Road, and at the eastern gateway to Bessemer City along the NC-274 strip. While this arrangement favors particular areas of the City, the distances and physical barriers between some neighborhood residences and these pockets of business and mixed-use pose challenges for pedestrians, especially for those who must also negotiate barriers such as the railroad or Whetstone Mountain. Despite the City's compact area, the predominant segregation of allowable land uses in this arrangement encourages or necessitates the use of a car for many citizens. Under current zoning, as the City expands, the physical distances between newer residential neighborhoods and other land uses, like stores, will likely expand as well. The current arrangement of commercial zoning (C1, C2) also encourages "strip commercial" development pattern along NC-274, which is designed for motorists as opposed to the pedestrian.	Re-examine the table of permitted uses contained in the Zoning Ordinance. Effective changes that could be made include: 1.) Amend UDO Sections 6.2.1 to allow mixed residential-commercial developments as a conditional use where residential zones (including: RS8, RS12, RS20 & RMF) are located within proposed pedestrian nodes. 2.) Revise UDO Section 8.1.4 to increase the maximum number of dwelling units permissible within a mix-use building when space and infrastructure are sufficient. 3.) Review areas within newly designated nodes (see Pedestrian Plan Section 3.1.7) and rezone appropriate areas to pedestrian oriented zoning, including CBD, UMU, TMU & OLC.
2. Street Connectivity	UDO Section 13.23 addresses connectivity issues in terms of requiring multiple access into subdivisions. It states that "Any subdivision exceeding seventy-five (75) lots shall be provided with at least two entrances on to a public street or interconnect to an adjoining/adjacent existing public street, road or highway. Requirement for multiple entrances shall be based on the cumulative number of lots for a contiguous development, whether or not it is developed in phases. Subdivision entrances shall be no closer than two hundred feet, as measured from the street centerlines."	Though the City's historic downtown street pattern exhibits excellent connectivity, there is no mandate or guideline in the City's regulations for continuing this pattern or level of connectivity in future development. The UDO calls for connectivity solely in terms of a relationship between the number of lots within a subdivision and the number of entrances that subdivision should have to a public street. The UDO does not provide any specific stipulations or ratio for this relationship above the minimum of two public entrances for a minimum of 75 lots. The UDO does not require any connections to undeveloped contiguous lots or any guidelines as to how such stub connections should be located. It provides no parameters or comprehensive plan in place to guide connectivity decisions. The UDO also provides no restrictions or guidelines on the use of cul-de-sacs other than a restrictions on maximum lengths.	Revise UDO Section 13.23 with the following additional stipulations: 1.) Lower the minimum number of lots requiring a second entrance from 75 to 50. Require a second entrance for developments between 61 and 120 lots, and a third between 121 and 180 lots. Provide a table that indicates the number of lots within a subdivision and the associated minimum number of required street entrances. 2.) Mandate that new subdivisions have at least one stub to adjoining properties greater than 10 acres having a minimum contiguous adjacent frontage of 100 feet. This would require providing a stub for an adjoining (future) development to hook into the subdivision. Require that the location of proposed stubs be indicated on the sketch plan in Section 13.9.1 and on the preliminary and final plat in Table 13.1-1 . 3.) Limit the use of cul-de-sacs to promote internal connectivity within the subdivision. This could be accomplished by a). Limiting the percentage of streets within a subdivision that can be cul-de-sacs; b). Institute a connectivity ratio for all subdivisions which uses an established mathematical standard for street connections both within the subdivision and connections to other streets and properties at the subdivision periphery. 4.) Require pedestrian trails where street connections are considered impractical.
3. Cul-de-sac street length	UDO Section 13.22 states: "Permanent dead end streets in the Urban Standards Overlay District shall not exceed six hundred (600) feet in length, except that cul-de-sacs shall not be greater than two-hundred fifty (250) in length in a TND. Permanent dead end streets outside the Urban Standards Overlay District shall not exceed one thousand (1000) feet in length."	As cul-de-sacs lengths increase, connectivity decreases. Properties accessible from only one direction become more isolated and difficult to reach. And vehicular traffic on these cul-de-sacs increase in speed and volume. Outside of the CBD, the City is permitting cul-de-sacs over three football fields in length. According to UDO dimensional standards Table 7.1-2, this means that in RS-12 zoning, where minimum lot widths are 90 feet, a single cul-de-sac may serve 23 homes, providing all residents only a single way to an adjoining street.	Reduce the maximum allowable length of cul-de-sacs in Section 13.22 of the UDO to 400 feet. This length would allow up to 9 Single-Family RS-12 lots to front on a cul-de-sac.
4. Block length	UDO Section 13.21 requires that "Block length shall be not less than 400 feet and shall not exceed 1,200 feet except in cases where, in the judgment of the TRC , a longer block is necessary because of unusual topography or in order to complete a comprehensive neighborhood plan.	The UDO offers no objective standard to guide the TRC as to what degree of slope necessitates a longer block. 1.) Long block lengths allow for cars to travel at fast speeds and hinder pedestrian accessibility. 2.) Long blocks present pedestrians with fewer route alternatives.	Amend UDO Section 13.21 to limit block lengths in new development to no greater than 600' and no less than 200 feet. Include objective guidelines for determining "unusual topography" such as maximum slopes, stream valley widths, and floodway and endangered stream classifications.



Bessemer City Pedestrian Plan

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Refer to **Section 2.2** for additional analysis of the existing ordinance concerning each issue.

Issues affecting walkability	Current Ordinance	Concern With Current Regulations	Recommended Ordinance Revisions and Actions
5. Crosswalks	Crosswalks are addressed in the UDO only in Section 13.17 regarding pedestrian walkways and greenstrips, where it states: "Crosswalks including the necessary improvements, may be required at or near the center of any block which is more than 1,000 feet long, or at the end of cul-de-sac streets where deemed necessary for pedestrian circulation or for access to schools and commercial areas."	While the UDO does provide guidance for mid-block crosswalk placement based upon block length and proximity to specific categories of pedestrian-oriented destinations, it makes no reference to additional planning documents to guide these decisions. The City has no further guidelines or specifications for crosswalk placement or design.	1.) Amend UDO Section 13.9 to require that all uses that generate substantial amount of pedestrian traffic (e.g., schools, library, etc.) be subject to a conditional use. A condition that could be placed on such uses is the installation of crosswalks on major streets that abut such facilities. 2.) Amend UDO Section 13.21 to require midblock crosswalks along principal streets within subdivisions for block lengths of greater than 500 feet. 3.) Reference the City Pedestrian Plan and other future related planning documents for implementation of proposed crosswalks and improvements to existing crosswalks. 4.) Require that the location of proposed crosswalks be indicated on the sketch plan (Section 13.9.1) and on the preliminary and final plat (Table 13.11-1).
6. Sidewalks: location, condition, connections	UDO Section 9.18 specifies that sidewalks shall be required only for subdivisions and developments located within the City limits (USO district), and also within the ETJ for the following development types: TND, PRD, MFD, PUD, multi-tenant (non-residential) developments, and infill residential developments. Section 9.18.1 allows exemptions in all other development types if they meet the following conditions: a.) The character and size of the proposed development will not result in substantial additional pedestrian facility needs; and b.) The proposed development is not within one-quarter (1/4) mile of a transit stop (as measured along the street centerline), and c.) The proposed development is not within one-quarter (1/4) mile of an existing or planned pedestrian destination, such as a school, park, recreational or cultural facility, greenway trail (or similar amenity), retail commercial site, restaurant, or a multi-family development of ten (10) or more units (as measured along the street centerline); and d.) There are no new pedestrian facilities planned that would provide a pedestrian connection to the proposed development. It also states that in no instance shall sidewalks be required along a local or collector street for a use that is likely to generate little or no pedestrian traffic.	1.) Exceptions are to be determined on a case-by-case basis with no definition or objective criteria for determining exception-worthy "character and size" of the development, or what constitutes "substantial additional pedestrian facility needs". 2.) No reference is made to any master plan that considers future development which could in turn affect pedestrian facility needs. The potential of an "exempt location" development eventually serving as a pedestrian connection to another non-exempt development is not considered. 3.) There are currently no transit stops in Bessemer City or its ETJ. However, future transit stop locations will require pedestrian facilities that can be better constructed with the development as it occurs rather retro-fitted after the fact. Such developments will directly benefit from transit stops located in their vicinity. 4.) No reference is made to any master plan that designates existing or planned pedestrian destinations, or planned pedestrian facilities. 5.) No objective criteria are provided by which to determine a level of pedestrian activity that above which would rule out an exempt status. 6.) No specifications are sited for sidewalk design and construction except for a minimum width.	1.) Require that all sidewalk construction meet all applicable ADA standards . Reference the City Specifications and Standards . 2.) Reference the City Pedestrian Plan for location of all required sidewalks within the City limits and the ETJ. 3.) Add a condition to UDO Section 9.18.1 requiring the developer to install sidewalks along residential streets for the length of their development of more than four dwelling units per acre. 4.) Provide clear regulations in UDO Section 9.18.1 as to who (developer, property owners, or governmental agency) will pay for the sidewalks if they are not installed at the time of development. Developer contributions to sidewalks must be set aside in an account at the time of development.
7. Greenways, Trails & Open Space	UDO Section 13.26.1 states: Every subdivider who proposes a subdivision of land for residential purposes shall dedicate a portion of land or pay a fee in lieu thereof, in accordance with this Section, for public park, greenway, recreation, and open space sites to serve the recreational needs of the residents of the subdivision or development. When a subdivision is located on a tract of land where a future greenway or greenway connection has been specifically identified on a locally adopted recreation plan, or greenway master plan, open space for such designated greenway shall be dedicated and the fee-in-lieu option shall not be used for such lands. The proximity of existing publicly dedicated and publicly accessible open space (e.g., park, greenway) to the subdivision shall reduce the amount of open space required in the subdivision. If such open space is located no greater than one-quarter (1/4) mile walking distance (such distance measured from the pedestrian access point of the existing open space to a perimeter public street or sidewalk within the development), the amount of required open space shall be reduced by up to twenty-five (25) percent. If directly adjacent... up to fifty (50) percent. Section 13.26.3 specifies the quality of land that can be dedicated as open space in terms of cohesiveness, usability, shape, location, access, topography, and sufficient buffering from adjacent lands.	1.) The UDO effectively allows a developer to "count" nearby public open space toward their open space requirement; however, no requirements are stated for providing pedestrian connections to that open space when it is adjacent to the development/subdivision. 2.) No mechanisms for funding, building or maintaining greenways or other improved open space within a private development are stated within the UDO . 3.) Though reference is made to recreation and greenway plans, there is no reference made to a pedestrian plan.	1.) Develop and adopt an Open Space Protection Plan and/or a Comprehensive Park System Plan . 2.) Amend UDO Section 13.26.6 to reference the above plan and the Pedestrian Plan for the (approximate) location of greenways/trails and require the dedication of open space to secure land for greenway (and other open space) development or usage. NCGS 160A-372 gives NC municipalities the authority to require this as part of a subdivision development. These areas should be open to the general public and fall under municipal responsibility for construction, maintenance, security and liability. 3.) Provide or reference design standards for greenways in the UDO Section 13.26.6 . See Pedestrian Plan Facility Standards and Guidelines . 4.) Revise UDO Section 13.26.2 to include a stipulation of providing internal pedestrian paths to adjacent open space for off-site open space credit.



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Refer to **Section 2.2** for additional analysis of the existing ordinance concerning each issue.

Issues affecting walkability	Current Ordinance	Concern With Current Regulations	Recommended Ordinance Revisions and Actions
8. Street Trees	UDO Section 11.4 B. Where Required 1. Street yard and landscaping requirements shall be met along and parallel to any public road for all new developments (except those listed in Section 11.2.2), new developments along road frontage not developed, or substantial redevelopment of an existing site to another use (except for those listed in Section 11.2.2) within the Urban Standards (USO) Overlay and CH Corridor Highway Overlay Districts . In addition, street yard and landscaping requirements shall be met on any internal road two-hundred fifty (250) linear feet or greater in length that is used as an entryway into a parking lot for a commercial development within said districts. Street trees shall also be required on lots located within a planned residential development (PRD), traditional neighborhood development (TND), and planned unit development (PUD) whether such developments are located in a USO or CH overlay district.	1.) The City's goal to "establish definite points of entry to the City with attractive entrance features that portray a clear and positive identity for the community" is not being adequately served by generally limiting the applicable area of Section 11.4 B to the City limits. The current City Zoning map indicates no Corridor Highway Overlay District (CH) within the ETJ or the City. Those prominent entrance points to Bessemer City (gateways) that are outside of the City limits are currently zoned so as not to require street trees (C2, I2, RS12 and RSF). 2.) The UDO does not provide a list of recommended or required street tree species or further requirements related to proper planting, maintenance or preservation of required trees.	1.) Revise UDO Section 11.4 to include all areas within the City's ETJ, particularly as this will guide all new development around the City. 2.) Consider Corridor Highway Overlay Districts for roads leading into Bessemer City, including NC 274, NC 161, Edgewood Road, Puetts Chapel Road, Costner School Road, Besstown Road, Whitesides Dairy Road, Long Creek Road, and Crowders Mountain Road. 3.) Develop and adopt more complete landscaping requirements within the UDO Section 11.4 , or in addition to as a supporting document.
9. Building Setbacks	UDO Section 7 includes minimum setback requirements for all standard zoning districts, including Table 7.1-4 (B) for CBD & UMU, Table 7.1-4 (A) for all other zoning districts.	With no regulations to establish maximum setbacks (or "build-to" lines), retailers can create very deep front yards to accommodate their off-street parking entirely in the front yard. Such strip-development arrangement deteriorates street definition, making pedestrian use uncomfortable. It also requires pedestrians to walk (and navigate) long distances through parked cars (and moving ones!) in parking lots.	Establish "build-to" lines or maximum front yard setbacks for each zone in the UDO Section 7 Table 7.1-4 (A) & (B) , or establish guidelines as to how much of the required off-street parking shall be allowed to be placed in the front yard.
10. Off-street Parking Requirements	Minimum off-street parking requirements for each standard use are provided in UDO Table 10.5.1 . However, the UDO sets no limit on the maximum number of parking spaces allowable, in any use category, in any zoning classification, or in any overlay.	1.) Excessive off-street parking for all uses inadvertently conflicts with the pedestrian quality of an area. Most zoning ordinances either waive or significantly limit the amount of off-street parking required in a downtown setting. 2.) In an effort to reduce the "sea of asphalt" phenomenon created by excessive requirements of previous codes (before their detrimental social, environmental and economic effects were popularly understood), current trends tend to lower the number of required parking spaces for retail uses and to reduce the required area of each space.	1.) Revise UDO Table 10.5.1 to include an additional requirement limiting the maximum number on off-street spaces for each category. 2.) Consider waiving or severely lowering minimum requirements for off-street parking for the Downtown Overlay and designated Node areas. Require a certain amount of off-street parking only for residential uses located in these zones (assuming the UDO is modified to permit residential use within them.) 3.) Reduce the required number of off-street parking spaces in all districts to reduce the negative impacts of excessive impervious area. Many ordinances now have a 1 space/300 sq. ft. gfa parking standard. 4.) Grant Zoning Administrator greater discretion to allow exemptions from additional parking requirements.



Bessemer City Pedestrian Plan

PART 3: Recommendations

3.2 RECOMMENDED PROGRAMS

Pedestrian facilities, old or new, will receive greater use if certain programs are in place to promote and encourage pedestrian activity, especially for people who are not accustomed to walking much. Many such programs are already in existence throughout the country. The following existing programs are recommended for Bessemer City.

The Heart Walk

Bessemer City can show that it truly is the City with a Heart with an annual American Heart Association **Start! Heart Walk** for Heart Disease. Many events may be featured, including an 10K and 8K runs, a 5K walk, a Tot Trot, a 1 mile "Fun Run" or even a half or full marathon. These popular events are sponsored by various businesses and can be organized by an independent contractor. Find out more by visiting:

<http://www.heart.org/presenter.jhtml?identifier=3053039>

To talk to an experienced consultant about beginning a program, contact Jodi Heimrich of First Health Center for Health & Fitness, (910) 715-1843 or jheimrich@firsthealth.org



Walk a Kid to School event

On special days each year, non-profit organizations, teaming up with area restaurants, could provide school children breakfast before leading them on a community group walk to school. Programs like these help children, parents and all participating adults see for themselves the benefits and viability of children walking to and from school. NCDOT has more information about this type of initiative and related ones at:

http://www.ncdot.org/transit/bicycle/safety/programs_initiatives/walk2school_intro.html

Walking School Bus

The walking school bus idea encourages students to walk together with supervision of one or more adults, depending on the size of the group. Adults can take turns walking with students by having assigned days of duty. The group follows a planned route, similar to the traditional school bus, on their commute to and from school. Children can be met by the group at their homes or at supervised "bus stops". The bus participants can have fun with the idea by wearing a specific color, use a wagon for the backpacks, or hold a rope linking them all together. Adults can use

the opportunity to teach pedestrian safety skills to students while walking to school as well. Special days might be designated, like "Walking Wednesdays", on a weekly or monthly basis to encourage participation. Classes that have the greatest percentage of students participating can be recognized and rewarded.

Crossing Guards

Volunteers from the community can work with the local school system to provide safe crossings for school children at key crossing areas. Crossing guards help guide students safely across busy streets and provide additional supervision for children. They also serve as visual cues to drivers to slow down.



Students can also serve as safety patrol volunteers. The AAA School Safety Patrol program has helped reduce injuries and deaths among younger students most at risk for pedestrian injury. The AAA program also instills students with a sense of responsibility and leadership, as each day they protect classmates going to and from school. Contact the AAA School Traffic Safety Coordinator for North Carolina, at (888) 274-4459 x6201, mllyles@mailaaa.com. Or visit AAA at:

<http://www.aaapublicaffairs.com/Main/Default.asp?CategoryID=7&SubCategoryID=25&ContentID=71>

Pedestrian Safety Roadshow

In an effort to reduce pedestrian injuries and fatalities in North Carolina, the Division of Bicycle and Pedestrian Transportation (DBPT) hosts this special program to train facilitators who could help communities identify and solve problems that affect pedestrian safety and walkability. The Federal Highway Administration (FHWA) developed this program in conjunction with the National Highway Traffic Safety Administration (NHTSA).

The objectives of the Pedestrian Safety Roadshow are these:

- Increase awareness of pedestrian safety and walkability concerns
- Provide participants with information about the elements that make a community safe and walkable
- Channel community concerns into a plan of action for addressing pedestrian issues.

Led by a trained facilitator, the Roadshow brings together community officials, concerned citizens, and local business leaders for an educational workshop about pedestrian issues. An accompanying slide show illustrates both problems and solutions to help pedestrians. The Roadshow also addresses health, environmental, and quality of life concerns that impact a community. After the classroom portion of the Roadshow, participants are asked to visit a particular street, neighborhood, or area of their community to identify pedestrian concerns and then to discuss possible solutions. The participants are then challenged to follow up on the Roadshow with a plan of action to develop and implement appropriate solutions. To request a Pedestrian Safety Roadshow for Bessemer City, contact the DBPT at 919/733-2804 or bikeped_transportation@dot.state.nc.us.

Adopt a Sidewalk/Trail Program

The Adopt-a-Road program is very successful in gathering volunteer groups to regularly clean a particular stretch of road. Adopting a trail or sidewalk section can be just as effective. Any interested individual or organization can care for their "own" section of trail. They may adopt a favorite site or a Beautification Committee can suggest a trail or sidewalk section most in need. Volunteers pick up litter four times annually, or more if necessary. They also serve as an extra set of eyes to watch for downed trees and branches or report other maintenance issues. Adopt-a-Trail or Adopt-a-Sidewalk signs are placed on the trails to recognize those volunteers who have taken their valuable time to keep the trails clean and help preserve these valuable assets for the community.

Wireless Internet (Wifi) and trail webcam coverage.

Wifi allows people to enjoy a mobile workplace. Anyone working on a laptop computer can choose to work inside or outside, wirelessly, anywhere within the Wifi range. Wireless broadband access can be set up in areas where people are likely to want to gather outside, such as existing parks, area restaurants, or open spaces provided within new communities. Wireless webcams can also work off of the same system and be incorporated into greenway trails. These "trailcams" would enhance public safety and provide promotion for greater trail use. Additionally, 911 call buttons could also be stationed along various parts of each trail.





Sustainable Environments for Quality of Life (SEQL) is a regional initiative in the rapidly growing 15-county Charlotte, NC /Rock Hill, SC area. SEQL supports the region's efforts to develop integrated and sustainable long-range plans to ensure robust economic development, a clean and healthy environment, and a positive quality of life for its future. SEQL is funded in part by a grant from the EPA to Centralina Council of Governments in cooperation with Catawba Regional Council of Governments. Initiatives include the development of an action notebook for local jurisdiction elected officials and planners to use as a guide to development of policies and actions on the local level. Outreach extends to chambers, environmental groups and citizens. See more at www.seql.org

Pedestrian-related Action Items include:

- Pedestrian Friendly Streetscapes
<http://www.seql.org/actionplan.cfm?PlanID=16>
- Connectivity for Multi-Modal Transit
<http://www.seql.org/actionplan.cfm?PlanID=4>
- Greenways and Open Space
<http://www.seql.org/actionplan.cfm?PlanID=3>



The Bessemer Trekkers (NEW PROGRAM)

When the proposed trails are complete, they will provide opportunities for the community to meet, socialize and exercise. As part of initial promotions for particular trails, the "Bessemer Trekkers" would provide an organized opportunity to gather for a trek along the trails. As part of the weekly event, refreshments could be provided by sponsoring area restaurants and served by volunteers. Printed T-shirts or ball caps could also be available to initial participants, along with area retail coupons. The Bessemer Trekkers could also hold events like Special Olympics and charity relay races, walkathons and marathons. Proceeds could be directed toward park or trail improvements. Such events would also draw attention to the healthy benefits of walking.

3.3 PROJECT RECOMMENDATIONS AND IMPLEMENTATION STRATEGIES

Before considering individual site-specific projects (or how to implement them), a broad description of recommended pedestrian initiatives for Bessemer City is provided below. Each of these project types or strategies is intended to improve pedestrian conditions in terms of increased safety and mobility. These general recommendations are listed categorically. Individual projects and project priorities within those categories are described in detail in the subsequent section: **Individual Project Identification and Priority List**, and are also shown on the **Comprehensive System Map**. All improvements should be constructed and maintained in accordance with the **Facility Standards and Guidelines** section in **Appendix A.3**.



GENERAL PROJECT RECOMMENDATIONS

Short-term Project Types


Short-term Projects are elements that can be constructed to help accomplish the overall goals of the Pedestrian Plan. They are considered "short-term" because they generally satisfy the following criteria:

- Address critical safety, mobility, or access needs
- Primarily improve or utilize already existing facilities
- Require minimal purchase of right-of-way or easements
- Are consistent with other previously adopted plans
- Require no changes in existing ordinances
- Require a minimum of funding

Immediately address safety concerns over street crossing conditions.

Contact NCDOT Division 12 and formerly request a site visit to existing crosswalks and other crossing points and traffic calming areas recommended in this Plan as needing particular attention. Crosswalks are proposed at strategic locations where increased pedestrian activity, linked to existing or proposed sidewalks, encounters the greatest potential conflict with vehicular traffic. Properly designed crosswalks not only facilitate safer street crossing opportunities for pedestrians, they also offer a secondary pedestrian benefit of calming traffic. Request that consideration be given to the need for crosswalk signalization, pedestrian activation mechanisms,

signage and striping in locations listed in the **Proposed Pedestrian Infrastructure Projects Appendix A.2**.


-  **Spot improvements to existing sidewalks** in accordance with the Plan's priorities. Sidewalk conditions to be considered for improvements may include:

- a. Pavement condition and type
- b. ADA compliance
- c. Path width
- d. Drainage
- e. Removal of obstructions
- f. Lighting
- g. Planter islands
- h. Landscaping
- i. Trash cans, benches, and other "pedestrian furniture"

Long-term Project Types:

Long-term projects may have equal or greater impact than Short-term but may require that one or more of the following actions be taken:

- Private development or private land and thus public-private cooperation
- Require additional right-of-way or easement acquisition
- Fall within NCDOT right-of-way
- Require NCDOT funding, engineering and construction
- Require ordinance modification

-  **Construct pedestrian trails and supporting facilities** in acquired easements and right-of-way including proposed public destination points identified in the **Comprehensive System Map** and other desirable destinations.

It should be noted that the term "trail" refers to a path other than a sidewalk that links destination points (and thus is useful for transportation) as well as a path that may be used simply for recreation. A trail may (or may not) be part of a greenway. The Carolina Thread Trail organization defines greenways as:

"Linear natural spaces, often containing trails that link parks, nature reserves, cultural features or historic sites with each other, for recreation, transportation and conservation purposes."

When developing pedestrian trails (and/or greenways) consider the following steps:



Bessemer City Pedestrian Plan

PART 3: Recommendations

- 1.) Identify, plan and develop trails and greenways in cooperation with all affected landowners, local businesses, civic organizations, pertinent citizen advisory groups, jurisdictions, and local law enforcement. A "Greenways Partnership" can facilitate communication between these groups.
- 2.) Ensure the preservation, protection and appropriate management of significant and sensitive environmental, ecological and cultural resources within greenways through conformance with the standards and criteria identified in this Plan and other pertinent policies and plans.
- 3.) Where acquisition of land needed for a greenway or trail is not feasible or desirable, work with landowners to protect identified resources, and provide public access where appropriate, through voluntary means such as conservation and trail easements and/or cooperative agreements.
- 4.) Identify roadside segments of the greenway/trail plan. Ensure that these segments are incorporated into local and state transportation plans and developed and maintained through appropriate agencies.

Construct sidewalks and related facilities

As improvements are made to existing roads and as new road construction occurs. Many of the Pedestrian Plan's recommended sidewalk projects are to be constructed as road improvements are implemented by NCDOT.

Develop the Whetstone Mountain Scenic Trail


This signature trail is proposed as a loop to traverse various areas of the City's center. It will include both sidewalk and non-sidewalk path segments. The Whetstone Trail should have a unique look to identify it within the City's pedestrian system. Its identifying features should special signage, paving and landscaping. The design should feature a visually strong continuous paving element, such as a band of "whetstone", that will run throughout the entire length of the Trail, incorporated into sidewalk, asphalt paving or other trail materials utilized.


Read more about the Whetstone Trail concept in **Section 3.4**.



IMPLEMENTATION STRATEGIES

Each of the specific strategies listed below are interdependent steps. Each will help put the pieces in place necessary for effectively building pedestrian projects and meeting the vision set forth in the Pedestrian Plan. These strategies should be addressed simultaneously to the greatest degree possible.

 **Apply for recommended funding** and enact revisions to the local budget. See Funding Strategies and Local Budget Recommendations in this Plan.

 **Revise current development policies** per the **Recommended Policies and Ordinance Modifications** section of this Plan. New streets, trails and associated pedestrian facilities will become available to the City through the development process, with minimal public expense. Encouraging mixed-use development in these parcels through the creation of a mixed-use zoning category will foster new neighborhood development where walking can serve as a useful means of transportation and help Bessemer City develop as a more walkable community.

Initiate right-of-way agreements for sidewalks, trails and other improvements.


All pedestrian projects should be coordinated with the appropriate right-of-way owners, including NCDOT Division 12, local utility companies, and individual parcel owners to be identified. Coordinate with new development and Gaston County where trails leave Bessemer City municipal limits. All projects must meet all local ordinance buffer requirements and state wetlands requirements.

See the **Funding Strategies** section for various options of land acquisition and public-private partnerships. New trail easements may be acquired through a subdivision process, as proposed in the **Recommended Policies and Ordinance Modifications** chart, or through various other means including:

- Donation of right-of-way or easements by public or private landowners
- Public purchase of right-of-way or easements
- Public/private partnerships

Evaluate current City staffing needs.

Implementation of the Pedestrian Plan may require some additional staff responsibilities to coordinate individual improvement projects and work with the Pedestrian Needs Committee.

 **Initiate recommended programs** for community awareness, safety and maintenance procedures. The PNC and City staff shall work with stakeholders to reach out to pedestrians about safety issues. The Police Department can participate by distributing materials through their Community Policing program, the schools by distributing materials to their students and parents.

Evaluate existing and ongoing pedestrian projects and strategies.

See the **Recommended Evaluation Process** in this Plan.



3.4 PROPOSED PROJECTS

BESSEMER CITY PEDESTRIAN PROJECT STAGES

The recommended projects described within this plan have each been grouped into one of four project “stages”. Each stage encompasses a group of sidewalk and trail projects (together with associated crosswalk improvements) that will work in a coordinated manner to accomplish similar ends; that is, specific Community Goals expressed by the Steering Committee and the public during the in pedestrian planning process and documented in the City’s Strategic Vision Plan. The four Project Stages include:

- a. The Whetstone Mountain Scenic Trail
- b. Community Network
- c. Commercial Connectors
- d. Regional Green Links

These four project groups fit together to form a cohesive pedestrian system for the City. While many of the individual projects within each of these stages may help to accomplish more than one expressed goal, the stages are characterized below by a list of particular planning goals that primarily define them and give them shape.

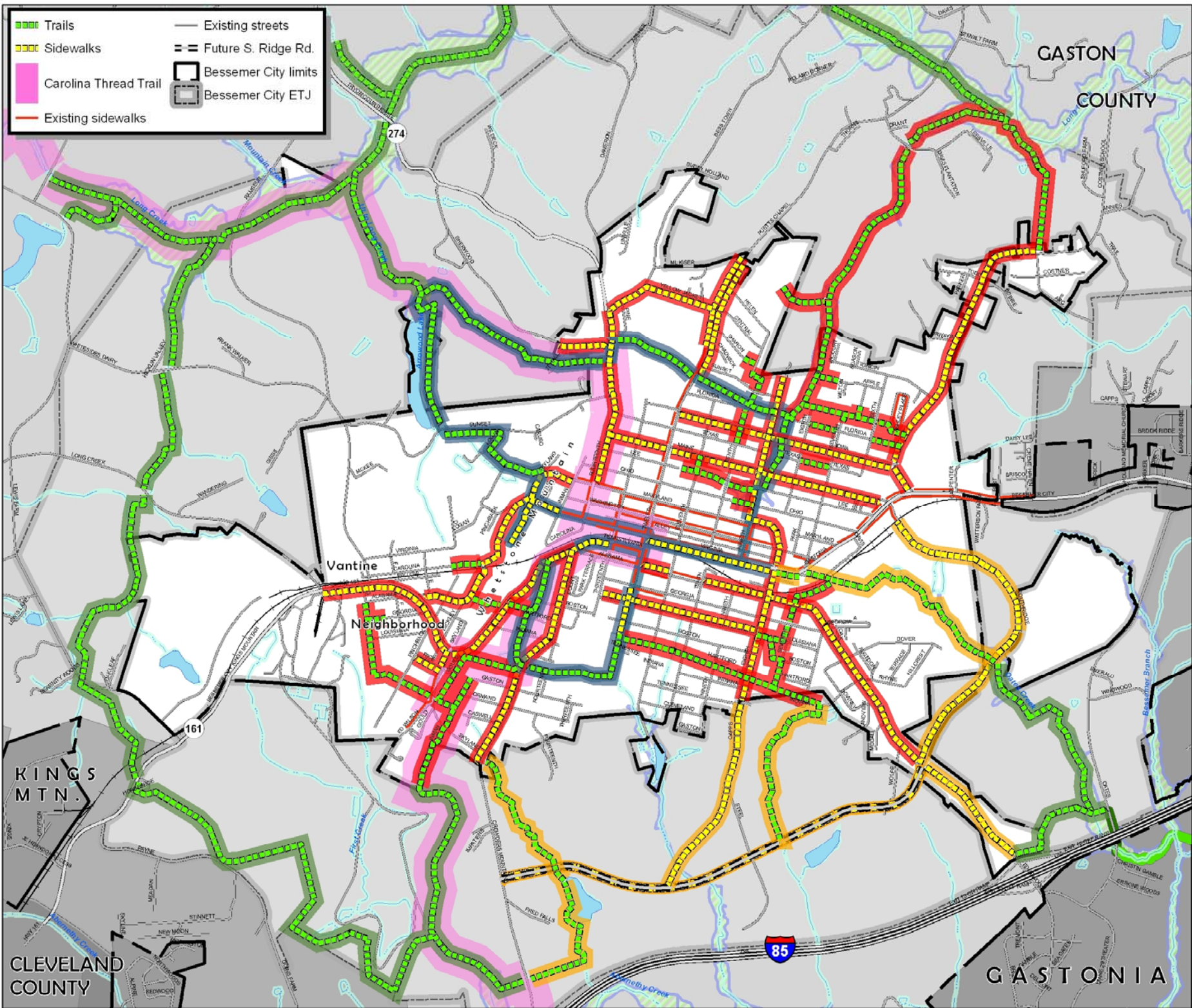
Projects within each successive stage may be built concurrently, or projects of different stages may be built as various opportunities arise.

Whetstone Scenic Trail

Community Network

Commercial Connectors

Regional Green Links





Bessemer City Pedestrian Plan

PART 3: Recommendations

1. THE WHETSTONE MOUNTAIN SCENIC TRAIL

Key Pedestrian Plan Goals:

- Accentuate the unique aspects of the City, drawing upon historical roots, geographic assets, and cultural potential.
- Provide additional aesthetic improvements throughout key portions of the City to reinforce City identity. These features may include signature paving and street lighting, street trees, sidewalks and other pedestrian facilities.

Supporting Strategic Vision Plan Goals:

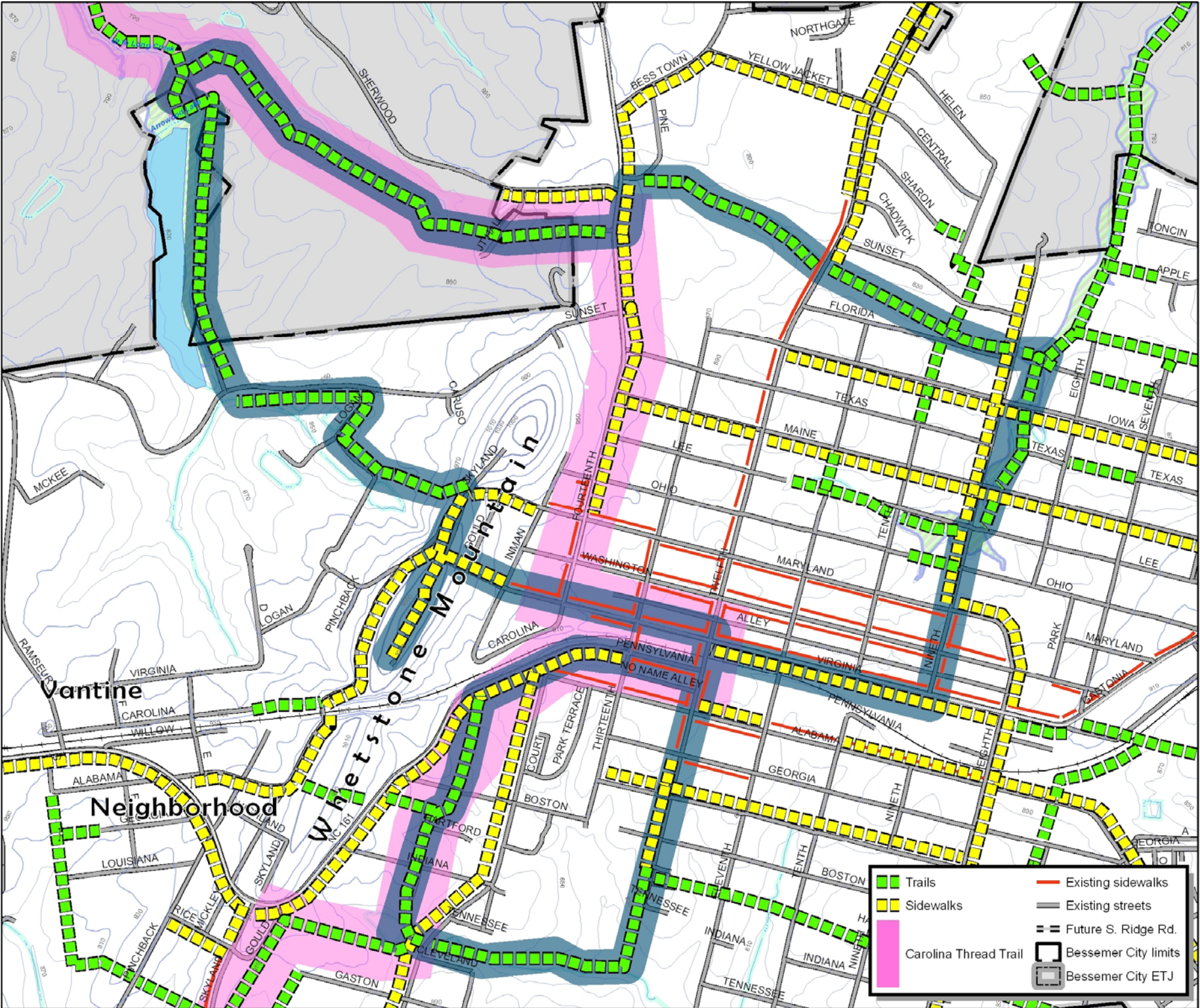
- “Build-on, protect and promote the City’s unique assets. Build the City’s image as a proud place full of family-oriented interests. Link them with the Whetstone Mountain Scenic Trail to create a coherent collection of places.”

This signature pedestrian loop will provide a physical and cultural link through the City’s recreational attractions and open space, its center of commerce, and its historic features. As recommended in the Bessemer City 2009 Land Use Plan, the Trail could prove an inexpensive way of imparting a strong identity to the community as it draws attention the City’s gateways and unique assets and makes them more visible to residents and visitors.

Areas of Focus: Whetstone Mountain Scenic Overlook
Downtown



View of Bessemer City form Whetstone Mountain





2. COMMUNITY NETWORK

Key Pedestrian Plan Goal:

- Increase connectivity by improving pedestrian connections between neighborhoods and key destinations, particularly the Central Business District. Make important destinations, attractions and pedestrian facilities more accessible to all members of the community.
- Create and support a strong Central Business District.

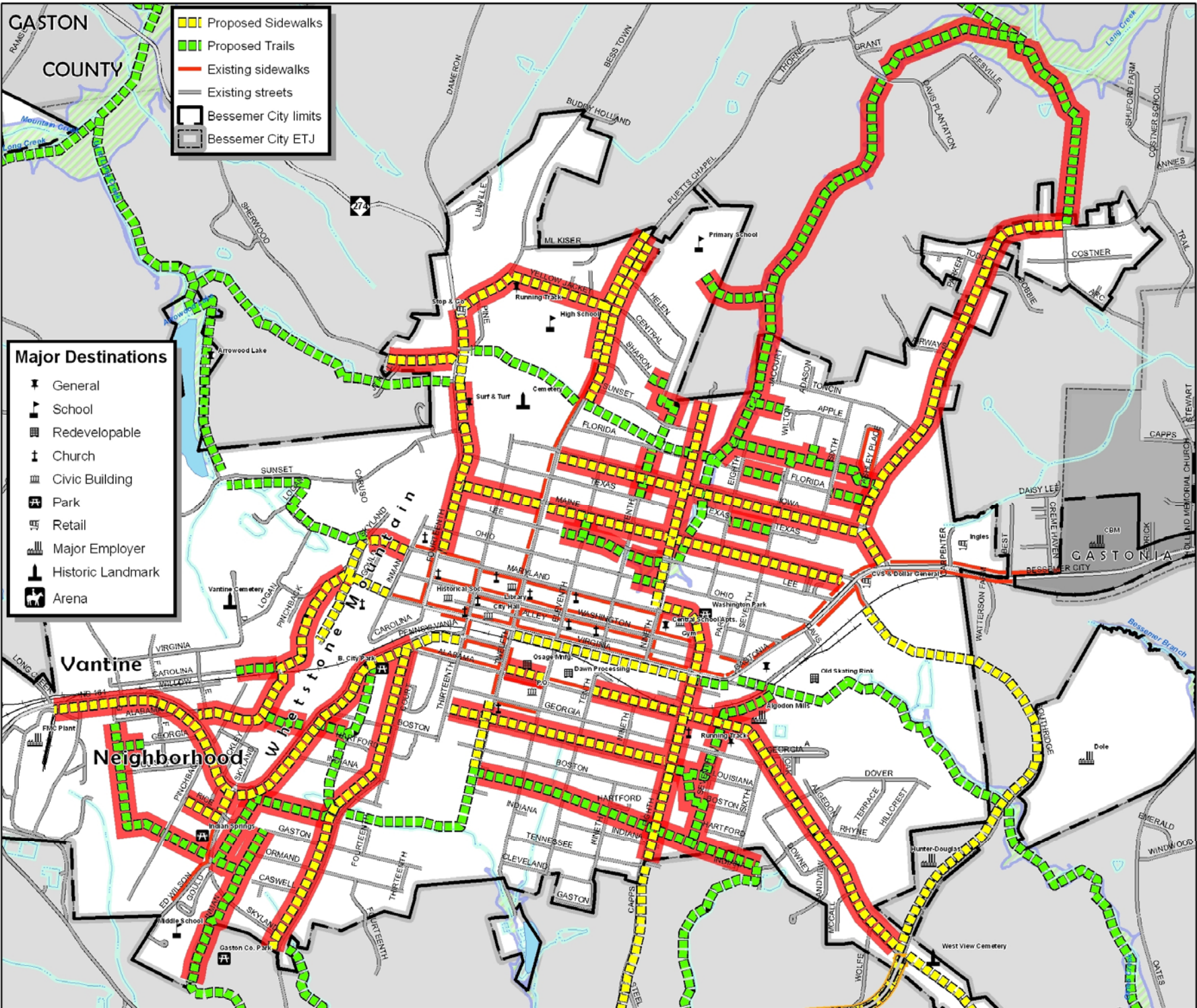
Supporting Strategic Vision Plan Goals:

- “Maintain Bessemer City’s small town character.”
- “Support a thriving downtown – Support and promote the central business district and the businesses that are located there as integral to small town character and the City’s economic development.”
- “Support Excellence in Education. Build strong neighborhood schools by coordinating with the County School Board and finding local resources to supplement them.”
- “Walkable Neighborhoods. Build a network of bike trails and sidewalks that allow residents to live without a car.”

Areas of Focus: Downtown, Vantine Neighborhood



Dirt path in a power easement across Whetstone Mountain connecting the Vantine Neighborhood with downtown





3. COMMERCIAL CONNECTORS

Key Pedestrian Plan Goal:

- Provide viable pedestrian connections from the City's industrial sites and business parks to downtown.

Supporting Strategic Vision Plan Goals:

- "Welcome a Broad Business Base. Work with County Economic Development to ready land for appropriate industrial development."
- "Partner with Local Industries. Develop a relationship that is collaborative and mutually beneficial."

Areas of Focus: Industrial/Business Development Area

The proposed South Ridge Road is one segment of the proposed Bessemer City South Loop.



Oates Creek corridor between Dole and Hunter-Douglas





Bessemer City Pedestrian Plan

PART 3: Recommendations

4. REGIONAL GREEN LINKS

Key Pedestrian Plan Goal:

- Create pedestrian links to nearby open space, adjacent cities, and larger county and regional pedestrian networks.

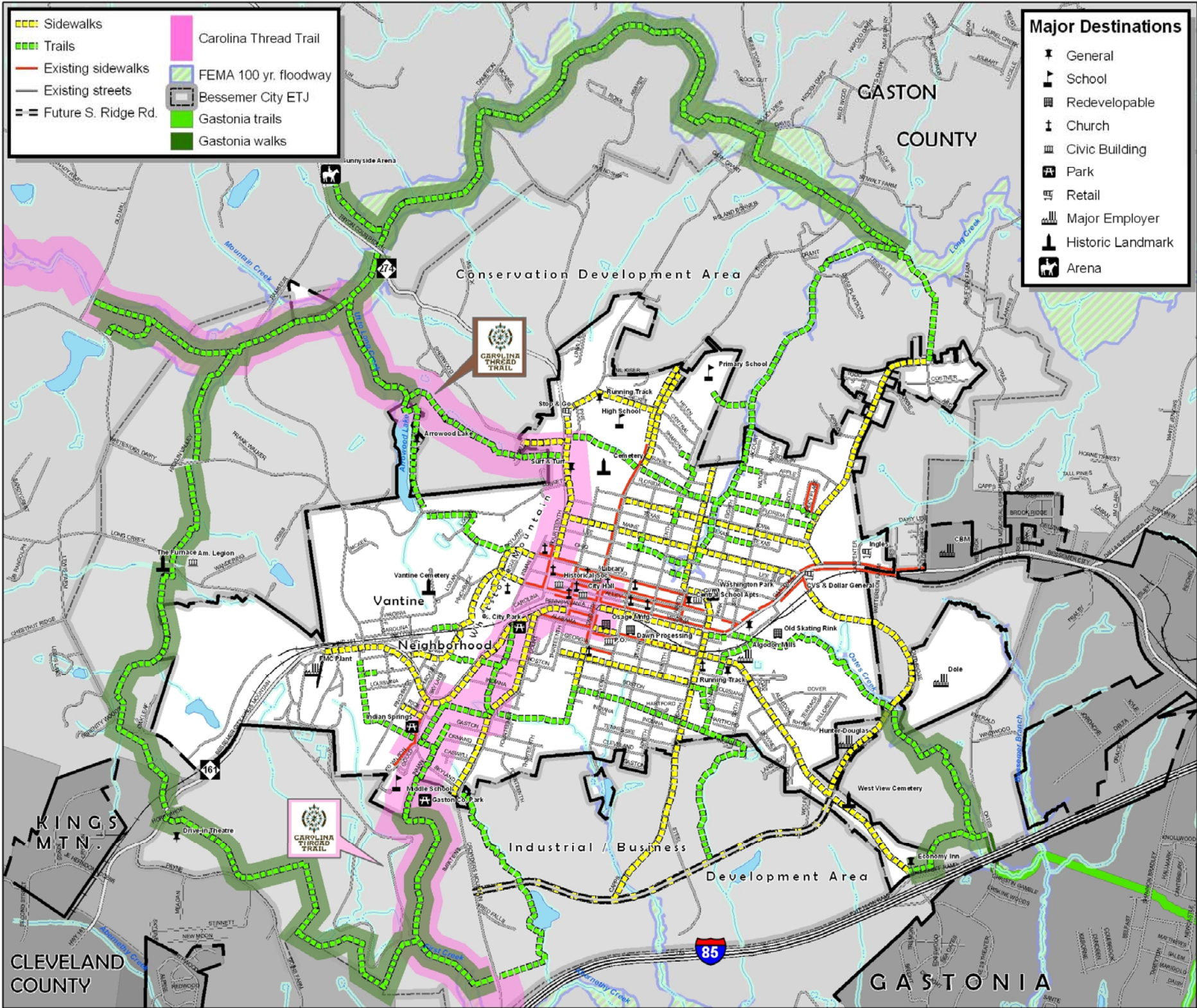
Supporting Strategic Vision Plan Goals:

- “Protect the Natural Environment. Support policies that begin by saving what needs to be saved, then allow others to build what needs to be built.”
- “Provide Visionary Leadership. Ask the public for their input, then lead with ideas that are big enough to inspire others to follow.”
- **Provide more outdoor recreational opportunities** in the form of greenway trails that connect City parks to one another, to area schools, and to a trail ring around the City.

Areas of Focus: Conservation Development Area
Carolina Thread Trail
Industrial Development Area
Neighboring Communities



Historic Ormand Furnace on Long Creek Road





All project locations depicted in the previous maps are shown on the **Comprehensive System Map** included in Part 3. For a detailed listing of the location, length, and approximate cost of each project, refer to **Appendix A.2 - Proposed Pedestrian Infrastructure Projects**. Project distance and cost estimates provided in this Plan are approximate. All sidewalk and trail projects will require sufficient right-of-way to permit the paved area, necessary grade changes, shoulders or planter strips, and other accessories as described in the **Facility Standards and Guidelines**.

For further general description of these facilities, see **Appendix A.3 - Facility Standards & Guidelines**.

Refer to the **Project Recommendations and Implementation Strategy** section for background, justification and further explanation of each project type.

All improvements shall be designed and constructed in accordance with the descriptions in **Facility Standards and Guidelines**, all pertinent NCDOT specifications and the most current **Manual on Uniform Traffic Control Devices (MUTCD)**. All improvements in NCDOT right-of-way are contingent upon NCDOT District 12 approval.



3.5 PROJECT PRIORITIZATION

Prioritizing pedestrian infrastructure projects is by nature a fluid process. Priorities depend upon a number of factors that are each subject to change; factors such as traffic demands, individual parcel sales, development trends, and employment opportunities. The projects recommended by the Pedestrian Plan were prioritized using an average value of four sets of criteria:

1. Pedestrian Plan Goals

These four foundational goals, listed in Section 1.1, are a summary of the values expressed by the Steering Committee and distilled from the City's other ongoing planning efforts, in order to realize the City's expressed Vision. Each project was evaluated by how well it fulfilled that goal as determined by the consultant using a range of 1-5, with 5 being the best. The values assigned for each goal were then aggregated for each project and converted into a percentage value. In addition to the four goals, a fifth category of "considerations" was incorporated which expressed the measure of the practicality of each project. These "considerations" included the following:

- a.) Physical / geographic constraints
- b.) Potential for right-of-way acquisition
- c.) Estimated project costs
- d.) Support by existing plans and initiatives

2. Public Input Votes

The public was invited to view and evaluate the proposed projects through an Open House as described in Section 1.1 – Method, Task 10). Each participant was asked to select eight most favored sidewalk projects and eight trail projects. A total of 21 votes were received and tallied and a percentage was calculated.

3. Steering Committee Votes

The Committee also selected eight of each project type. A total of seven Committee members participated in this exercise (See Section 1.1 – Method, Task 9). Their votes were tallied and a percentage was calculated.

4. Project Selection Criteria

The City's adopted Comprehensive Pedestrian Improvement Plan (PIP) is described at the beginning of Section 2.2. The PIP lists ten Project Selection Criteria (PSC) for evaluating proposed sidewalk construction projects. The PSC was

intended to be used in the recommended Sidewalk Construction Program. Each of the Pedestrian Plan's recommended sidewalk projects were evaluated by these ten criteria. A value of 10% was added for each criterion met for a potential total per project of 100%.

The percentage values assigned to each sidewalk and trail project within each of the four criteria were then averaged with all four values equally weighted. The final averaged values were then compared to determine the project priority rankings. The sidewalk project with the highest final average was ranked as the highest priority project within the sidewalk category, and so forth. In cases where the average percentage tied, preference was given to the highest Pedestrian Plan Goals score. Trail projects were ranked using the same method, except that final averages were determined with no PSC value. Crosswalk projects were not ranked. It is recommended that the installation of these facilities be coordinated with associated sidewalks and trail projects.

To see the final ranking results for each project, along with the individual criterion ratings, refer to **Appendix A.2 - Proposed Pedestrian Infrastructure Projects**.



Steering Committee Meeting



3.6 MAINTENANCE PROGRAMS

Sidewalks and other pedestrian paths must be properly maintained and kept clear of debris, overgrown landscaping, tripping hazards, or areas where water accumulates. Other pedestrian facilities, such as signage, lighting, striping and landscaping, require other care and occasional replacement.

In general, maintenance costs include:

- Personnel Costs – Wages and benefits for the people who perform the work.
- Materials – Or supplies, including paving materials, and landscape materials such as soil, rocks, and plants.
- Water – For irrigation.
- Utilities – Including electricity and phone for running automatic or centralized irrigation systems and traffic signals.

Equipment – For on-going maintenance and future purchases of maintenance tools.

Maintenance Considerations for Landscaped Areas

All outdoor public areas require regular maintenance procedures, such as weed control, litter pickup, inspection and general repair. Additionally, individual landscape areas require particular maintenance procedures.

- For tree and shrub areas: structural pruning, sucker removal, pest/disease control, fertilizing, adjustment/checking/repair of irrigation systems, applying post/pre-emergents, staking and bracing of trees, rodent control, and pruning and clearing branches or trimming shrubs when they encroach on the travel path or impair the line of sight for drivers and pedestrians.
- For groundcover areas: pruning, edging, applying post/pre-emergents & plant growth regulators, fertilizing, adjustment/checking/repair of irrigation systems, rodent control and dead-heading (removal of dead blooms).
- For turf areas: mowing, edging, aeration, fertilizing, adjustment/checking/repair of irrigation systems, cleaning hardscape areas (paths, squares, etc.), and rodent control.
- For non-vegetated areas (open space): applying post/pre-emergent (selected areas), fire abatement, cleaning of hardscape areas (concrete pathways, squares, etc.)
- Additional work as needed: decorative light inspection/repair, inspection for acceptance of new sites, vandalism and graffiti cleanup.

Maintenance & Operations of Off-road Trails

Facility inspections are an essential part of maintaining any facility. Planning and design of all off-road trails should include management plans that help gauge operational funds for various maintenance projects. Proper maintenance must address both the performance condition of the trail preserving the environmental integrity and character of any environmental areas that are adjacent to the trail. Maintenance and repair projects can be managed either through annual service contracts put out to bid, or become an integral part of the Facilities Management maintenance program. Annual budgets for trail maintenance and operations should document maintenance items, facility improvements, and other related costs to ensure the long-term health of trail facilities, the environment, and safety for users.

Three tiers of maintenance programs should be included in the management plan:

1. **Long-term maintenance programs** - includes renovation of facilities and trail resurfacing. Comprehensive inspections should occur twice a year to record user impacts, general wear and tear, and other factors that may affect safety, environmental features, or structural integrity of the facility. If long-term maintenance programs are deferred, the safety of the trail is compromised and costly capital improvement funds to renovate damaged areas may be required. Typical long-term maintenance activities include:
 - Annual vegetation clearance (June and September)
 - Annual inspection by engineer to identify potential repairs needed for bridges and structures, drainage structures, pavement, railings, and fences
 - Revegetation during planting seasons
2. **Routine maintenance** – includes safety and repair issues that occur throughout the life of the facility. Frequency of routine maintenance should take place on a monthly basis, dependent upon the amount of usage and availability of funds. Typical routine maintenance activities include:
 - Removal of litter and general cleaning
 - Sweeping and leaf removal
 - Mowing and weed control
 - Pruning and removal of encroaching/fallen branches
 - Trail edging
 - Route signage maintenance
 - Graffiti control
 - Regular presence of volunteers to report faults

3. **Emergency repairs** - necessitated when storm damage makes the trail unsafe for daily use. Severe weather may occasionally cause damage to the facility either through wind, erosion, or fallen trees. Emergency repair funds for severe weather should be allocated and allowed to rollover from year to year for this inevitability.

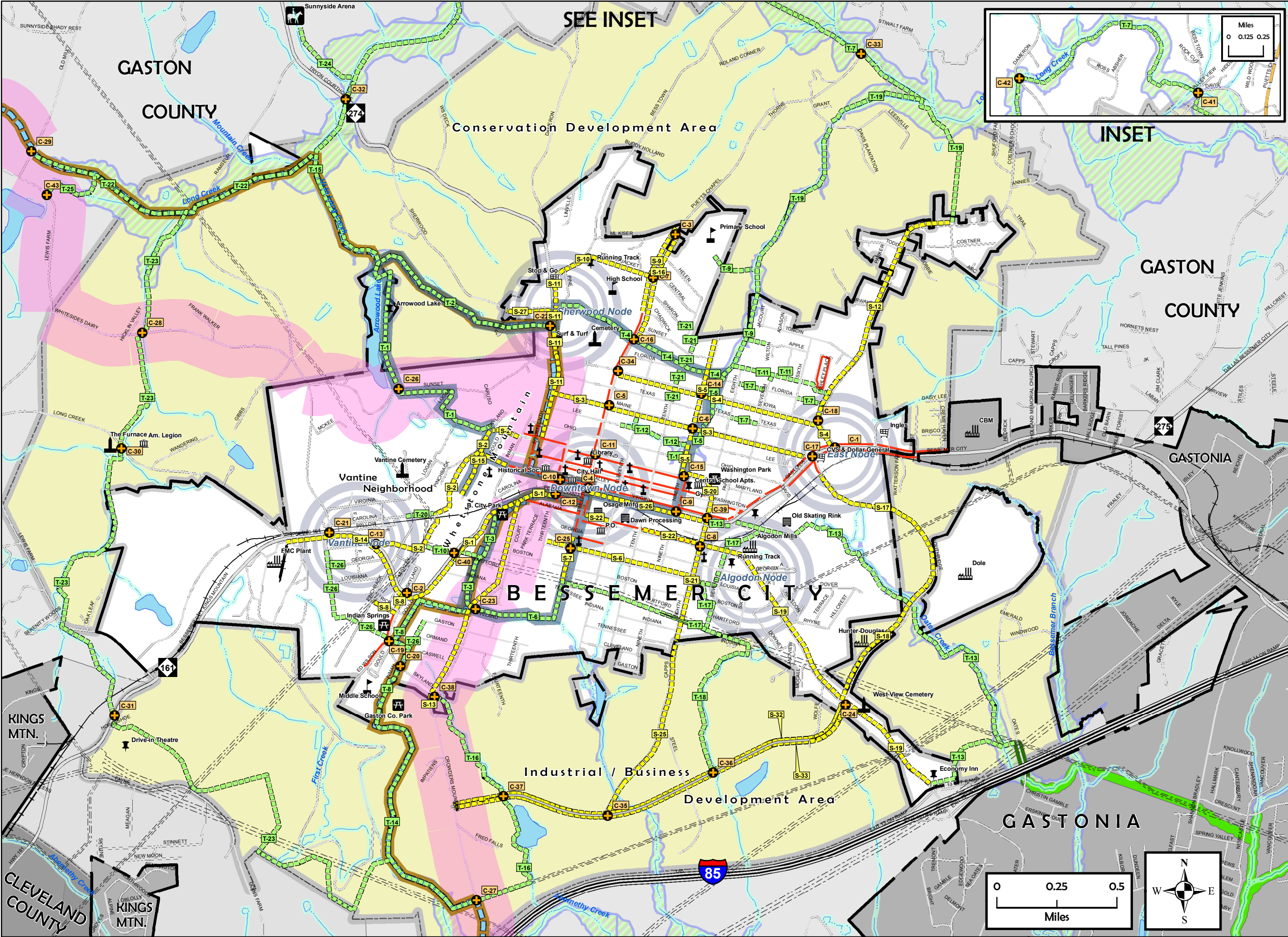
Volunteer programs

Volunteer programs for greenway maintenance can be organized through the “Adopt-A-Park” program. Volunteer labor can yield a substantial savings for labor costs on routine maintenance and repair. Materials can be donated by a group, provided through a corporate sponsor, or purchased by the City.

3.7 EVALUATION PROCESS

As the Bessemer City Pedestrian Plan is implemented and pedestrian facilities are constructed, it is recommended that the City perform a periodic evaluation of the goals and the processes described in the Plan, particularly in coordination with road projects, and as more growth in the area occurs. Plans in themselves are static and unchanging documents, but circumstances change constantly. Though the City remains true to the vision described in this Plan, the means of achieving that vision may change with fluctuating economic conditions, property sales and redevelopment, fluid population trends, changing development practices, and evolving technology. The following recommendations are provided as examples of regular means of evaluation.

1. Pedestrian Needs Committee (PNC) should meet periodically to confirm and re-evaluate the priorities of this Plan and its recommended projects, particularly as tracts of land are developed.
2. The Public Works Director should regularly report facility conditions and needs.
3. Public surveys can be used to solicit the opinions of everyday users to determine if the plan and its rate of execution are adequately meeting the needs of the populace.



SEE INSET

INSET

BESSEMER CITY PEDESTRIAN PLAN



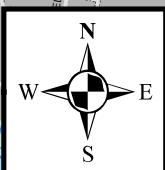
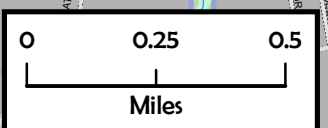
Comprehensive System Plan

Proposed Improvements

- Crosswalk
- Sidewalk
- Trail
- Carolina Thread Trail (1/4 mile band alignment, adopted 2008)
- Carolina Thread Trail Recommended finalized alignment

Existing Features

- Sidewalk
- Utility Corridor
- Bessemer City limit
- Interstate
- US hwy.
- NC hwy.
- RailRoad
- Pond
- Creek
- Gastonia trail (planned)
- Gastonia walk (planned)
- FEMA 100 yr. floodway
- Bessemer City ETJ
- Neighboring cities
- Gaston County





PART 4: IMPLEMENTATION

4.1 SAMPLE COST ESTIMATES FOR FACILITIES

In order to build pedestrian facilities, a number of different costs associated with projects must be considered. There are material costs, labor costs, mobilization costs, right-of-way purchase or easement costs, design costs, and project management expenses. Sidewalk and trail projects might also include changes to existing grades and necessitate alterations to drainage structures. Together these items are considered “project costs.” In addition to the project costs, there are also ongoing expenses associated with the new facility, such as maintenance, security, promotion and other programs necessary for the initial and continued success of the facility.

The cost estimates provided below are primarily limited to material and labor. They are provided by NCDOT only as a guide and are approximate. Prices are current for the time of this publication. Materials, labor and other project costs will vary with fluctuating interest rates and inflation.

Sidewalks and Trails



Virginia Creeper Trail

<u>Surface Material (width)</u>	<u>Costs per LF/per mile</u>	<u>Longevity</u>
Concrete (4')	\$135 / \$700,000	20 years +
Pervious Concrete (10')	\$50 / \$245,000 – 265,000	unestablished
Asphalt (10') - 2" w/6" base	\$135 / \$700,000	7-20 years
Crushed stone walkway (10')	\$15 - 25 / \$80,000 -106,000	7-10 years
Wood chips (10')	\$14 - 18 / \$ 70,000 - 90,000	1-3 years
Soil cement (10')	\$14 - 22 / \$ 70,000 -110,000	5-7 years
Native soil (10')	\$11 - 15 / \$ 55,000 - 75,000	variable
Boardwalk (6' – 8') - wood or recycled material	\$200 - 250 / \$1.0 – 1.3 million	7-15 years
Polyurethane track (8') - or Rubberized running track	\$22 / \$110,000	13-15 years
Installation costs do not include ROW purchase, grading or utility relocation		

<u>Total Cost of Resurfacing Trails</u>		<u>Typical Annual Maintenance Costs for a 1-Mile Paved Trail</u>	
Concrete	\$ 25 LF	Drainage and storm channel maintenance	\$ 500
Asphalt	\$ 10 LF (per linear foot) (\$ 5 LF to overlay w/ top coat)	Sweeping/blowing debris off trail head	\$ 1,200
Crushed Stone	\$ 5 LF	Pickup/removal of trash	\$ 1,200
Polyurethane track	\$70,000/mile to re-spray after 6 years	Weed control and vegetation management	\$ 1,000
		Mowing of 3-foot grass shoulder along trail	\$ 1,200
		Minor repairs to trail furniture/safety features	\$ 500
		Maintenance supplies for work crews	\$ 300
		Equipment fuel and repairs	\$ 600
		TOTAL	\$ 6,500



Street Improvements

Crosswalks

Approximate installation costs per unit:

Regular striped	\$ 100
Ladder crosswalk	\$ 300
Stamped asphalt	\$1,100 (\$50/square yard)
Patterned concrete	\$3,000
Raised	\$2,000 - \$5,000

Warning signage: \$50 to \$150 per sign plus \$150/sign in installation costs.

Traffic signals \$40,000 to \$200,000 per signal

Pedestrian signals \$20,000 to \$40,000 for all four legs

Traffic signal enhancements: \$10,000 to add new pedestrian signals

Motion activated crossing: \$20,000 per typical two-pole system (excluding installation)

Striping: 12-inch: \$1 per linear yard (LY)
4-inch: \$10 K per mile, or \$2 LF

Costs do not include maintenance, which varies according to materials used.

Concrete curb and gutter: \$12 - \$15/LF

Curb inlets \$2000 per unit

Curb extensions: \$5,000 - 10,000 per corner or midblock section.

Costs vary with design and site conditions, particularly utilities, control boxes and drainage considerations. Special pavement, street furnishings and landscaping are recommended but contribute to costs.

Crossing Islands/Medians: \$8,000 to \$15,000 for a raised curbed island with minimal landscaping.

Reconstructing turning radius: \$5,000 to \$30,000 per corner, depending on site conditions (e.g., drainage and utilities may need to be relocated).

Speed humps: \$1,700 per unit

Bike Racks: \$350-\$750 (10-12 bikes)

Trees: \$200/tree, installed

Lighting: \$ 45/LF frontage

Street Furniture:

Prices vary greatly according type of facility, brand, and level of customization. Benches or outdoor trashcans installed start at approximately \$600/unit.

General park facilities \$ 25/SF

The construction of new park or open space facilities on land not currently used as park, with some furniture and amenities



Cost Estimate Sources:

- NCDOT DBPT
- Walkinginfo.org – Pedestrian & Bicycle Information Center
- "Trails For The 21st Century," published by Rails-To-Trails Conservancy, 2001:
- <http://www.trafficcalming.org/measures2.html>
- http://www.nysphysicalactivity.org/site_beactiveenv/nybc/source_files/3_pedfac_improve/FHA_EmergTechPedXWalk.pdf
- <http://www.charmeck.org/Departments/Transportation/About+Us/Speed+Humps.htm>
- National Trails Training Partnership
- <http://www.americantrails.org/resources/trailbuilding/AsphaltCO.html>



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4.2 FUNDING STRATEGIES

Careful planning of pedestrian facilities is half the battle. The other half is building them. Both procedures require funding. However, there are many sources available for funding the planning and construction of pedestrian improvements. Using the right source and getting the best return requires strategy. This Plan itself was funded by the NCDOT Bicycle and Pedestrian Planning Grant. But grants usually provide only a portion of overall funding needs. The most successful strategy for a municipality to develop and improve its pedestrian system will involve an appropriate combination of all possible sources, public and private.

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

Funding Allocated by State Agencies



North Carolina Department of Transportation

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

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

Projects programmed into the TIP are independent projects – those that are not related to a scheduled highway project. Incidental projects – those related to a scheduled highway project

– are handled through other funding sources described in this section.

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

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

A total of \$5.3 million dollars of TIP funding is available for funding various bicycle and pedestrian independent projects, including the construction of multi-use trails, the striping of bicycle lanes, and the construction of paved shoulders, among other facilities. Prospective applicants are encouraged to contact the DBPT regarding funding assistance for bicycle and pedestrian projects.

For a detailed description of the TIP project selection process, visit: http://www.ncdot.org/transit/bicycle/funding/funding_TIP.html.

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

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

Governor's Highway Safety Program (GHSP) – The mission of the GHSP is to promote highway safety awareness and reduce the number of traffic crashes in the state of North Carolina through the planning and execution of safety programs. GHSP funding is

provided through an annual program, upon approval of specific project requests. Amounts of GHSP funds vary from year to year, according to the specific amounts requested. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance highway safety. Once a grant is awarded, funding is provided on a reimbursement basis. Evidence of reductions in crashes, injuries, and fatalities is required. For information on applying for GHSP funding, visit:

www.ncdot.org/programs/ghsp/.

Transportation Enhancement Call for Projects, EU, NCDOT

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

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

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

The Call process has typically taken place on even numbered years or as specified by the Secretary of Transportation. However, in recent years, federal funding for the program has not been available. Find out more at: www.ncdot.org/financial/fiscal/Enhancement/



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

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



Safe Routes to School Program, managed by NCDOT, DBPT

The NCDOT Safe Routes to School Program is a federally funded program that was initiated by the passing of the Safe, Accountable, Flexible,

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

The state of North Carolina has been allocated \$15 million in Safe Routes to School funding for fiscal years 2005 through 2009 for infrastructure or non-infrastructure projects. All proposed projects must relate to increasing walking or biking to and from an elementary or middle school. A typical **non-infrastructure** project

could be an education or encouragement program to improve rates of walking and biking to school. An example of an **infrastructure** project is construction of sidewalks around a school. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding. For more information, visit <http://www.ncdot.org/transit/bicycle/saferoutes/SafeRoutes.html> or contact:

Sarah O'Brien - Safe Routes to School Coordinator
Division of Bicycle and Pedestrian Transportation
1552 Mail Service Center
Raleigh, NC, 27699
Email: skworth@ncsu.edu
Phone: 919.807.0774 Fax: 919.807.076

The North Carolina Conservation Tax Credit (managed by NCDENR)

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

Land and Water Conservation Fund (LWCF)

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

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the US Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by NCDENR. Since 1965, the LWCF program has built a permanent park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than \$63 million in matching grants to protect land and support more than 800 state and local park projects. More than 37,000 acres have been acquired with LWCF assistance to establish a park legacy in our state. For more information, visit: <http://ils.unc.edu/parkproject/lwcf/home1.html>

NC Adopt-A-Trail Grant Program

This program, operated by the Trails Section of the NC Division of State Parks, offers annual grants to local governments to build, renovate, maintain, sign and map and create brochures for pedestrian trails. Grants are generally capped at about \$5,000 per project and do not require a match. A total of \$108,000 in Adopt-A-Trail money is awarded annually to government agencies. Applications are due during the month of February. For more information, go to: <http://ils.unc.edu/parkproject/trails/grant.html>

Recreational Trails Program

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

The grant application is available and instruction handbook is available through the State Trails Program website at <http://ils.unc.edu/parkproject/trails/home.html>. Applications are due during the month of February. For more information, call (919) 715-8699.

North Carolina Parks and Recreation Trust Fund (PARTF)

This fund was established in 1994 by the North Carolina General Assembly and is administered by the Parks and Recreation Authority. Through this program, several million dollars each year are available to local governments to fund the acquisition, development and renovation of recreational areas. Applicable



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

The trust fund is allocated three ways:

65% to the state parks through the N.C. Division of Parks and Recreation

30% as dollar-for dollar matching grants to local governments for parks and recreation

5% for the Coastal and Estuarine Water Access Program

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

Powell Bill Program

Annually, State street-aid (Powell Bill) allocations are made to municipalities that establish their eligibility and qualify as provided by statute. This program is designed to help municipalities maintain, repair, construct, reconstruct or widen local streets within their jurisdiction, or to plan, construct, and maintain bikeways or sidewalks along public streets and highways. Funding for this program is collected from fuel taxes. Funding amounts are based on population and mileage of city-maintained streets. For more information, visit www.ncdot.org/financial/fiscal/ExtAuditBranch/Powell_Bill/powellbill.html

Clean Water Management Trust Fund

North Carolina's Clean Water Management Trust Fund (CWMTF) was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. At the end of each fiscal year, 6.5 percent of the unreserved credit balance in North Carolina's General Fund, or a minimum of \$30 million, is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The Fund has provided money for land acquisition of numerous greenway projects featuring trails, both paved and unpaved. For a history of awarded grants in North Carolina and more information about this fund and applications, visit www.cwmtf.net/, or contact Bern Shumack at (336) 366-3801.

Natural Heritage Trust Fund

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

North Carolina Conservation Tax Credit Program

North Carolina has a unique incentive program to help landowners protect the environment and quality of life. A credit is allowed against individual and corporate income taxes when real property is donated for conservation purposes. Interests in property that promote specific public benefits may be donated to a qualified recipient. Such conservation donations qualify for a substantial tax credit. For more information, visit: www.enr.state.nc.us/conservationtaxcredit/



Urban and Community Forestry Assistance Program

This program offers small grants that can be used to plant urban trees, establish a community arboretum, or other programs that promote tree canopy in urban areas. The program operates as a cooperative partnership between the NC Division of Forest

Resources (NCDFR) and the USDA Forest Service, Southern Region. To qualify for this program, a community must pledge to develop a street-tree inventory, a municipal tree ordinance, a tree commission, and an urban forestry-management plan. All of these can be funded through the program. For more information and a grant application, contact NCDFR and/or visit: http://www.dfr.state.nc.us/urban/urban_grantprogram.htm.

Urban and Community Forestry Grant can provide funding for a variety of projects that will help toward planning and establishing street trees as well as trees for urban open space. See: http://www.dfr.state.nc.us/urban/urban_ideas.htm



Ecosystem Enhancement Program

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

Community Conservation Assistance Program (CCAP)

Through the (CCAP) Program, the Gaston County Soil & Water Conservation District can pay up to 75% of the cost to install various facilities designed to protect or improve stormwater quality. These facilities may include various greenway or park improvements such as pet waste stations, or buffers and other best management practices (BMPs) for farmlands.

Contact Dean Parker at the Gaston County Natural Resources Department
1303 Cherryville Highway
Dallas, NC 28034
Site Location: Citizens Resource Center
Telephone: 704-922-4181
Or visit

www.enr.state.nc.us/DSWC/pages/agcostshareprogram.html



Water Resources Development Grant Program

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

Small Cities Community Development Block Grants

State level funds are allocated through the NC Department of Commerce, Division of Community Assistance for promoting economic development and to serve low-income and moderate-income neighborhoods. Greenways that are part of a community's economic development plans may qualify for assistance under this program. Recreational areas that serve to



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improve the quality of life in lower income areas may also qualify. Approximately \$50 million is available statewide to fund a variety of projects.

Call 919-733-2853, or visit:

www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/

North Carolina Health and Wellness Trust Fund

The NC Health and Wellness Trust Fund was created by the General Assembly as one of 3 entities to invest North Carolina's portion of the Tobacco Master Settlement Agreement. HWTF receives one-fourth of the state's tobacco settlement funds, which are paid in annual installments over a 25-year period. Fit Together, a partnership of the NC Health and Wellness Trust Fund (HWTF) and Blue Cross and Blue Shield of North Carolina (BCBSNC) announces the establishment of **Fit Community**, a designation and grant program that recognizes and rewards North Carolina communities' efforts to support physical activity and healthy eating initiatives, as well as tobacco-free school environments. Fit Community is one component of the jointly sponsored Fit Together initiative, a statewide prevention campaign designed to raise awareness about obesity and to equip individuals, families and communities with the tools they need to address this important issue.

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

- Physical activity in the community, schools, and workplaces
- Healthy eating in the community, schools, and workplaces
- Tobacco use prevention efforts in schools

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

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



The application for Fit Community designation is available on the Fit Together Web site:

www.FitTogetherNC.org/FitCommunity.aspx.

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

Funding Allocated by Federal Agencies

Congestion Mitigation and Air Quality (CMAQ):

CMAQ is an EPA program that currently designates \$20 million annually to North Carolina to fund programs and projects designed to improve air quality and reduce congestion, without adding single-occupant vehicle capacity to the transportation system. All of the sidewalk improvements recommended for the Bessemer City Pedestrian Plan are eligible CMAQ projects. Bessemer City should contact the Gaston Urban Area Metropolitan Planning Organization (Gaston MPO) for application details. The Gaston MPO historically has received approximately \$800,000 for CMAQ projects per year.

Wetlands Reserve Program

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

The Community Development Block Grant (HUD-CDBG)

The U.S. Department of Housing and Urban Development (HUD) offers financial grants to communities for neighborhood revitalization, economic development, and improvements to community facilities and services, especially in low and moderate-income areas. Several communities have used HUD funds to

develop greenways, including the Boulding Branch Greenway in High Point, North Carolina. Grants from this program range from \$50,000 to \$200,000 and are either made to municipalities or non-profits. There is no formal application process. Visit: www.hud.gov/offices/cpd/communitydevelopment/programs/.



USDA Business Enterprise Grants

Public and private nonprofit groups in communities with populations under 50,000 are eligible to apply for grant assistance to help their local small business environment. \$1 million is available for North Carolina on an

annual basis and may be used for sidewalk and other community facilities. For more information from the local USDA Service Center, visit:

<http://www.rurdev.usda.gov/rbs/busp/rbeg.htm>

Rivers Trails and Conservation Assistance Program (RTCA)

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

Although the program does not provide funding for projects, it does provide valuable on-the-ground technical assistance, from strategic consultation and partnership development to serving as liaison with other government agencies. Communities must apply for assistance.

For more information, visit: www.nps.gov/ncrc/programs/rtca/ or call Chris Abbett, Program Leader, at 404-562-3175 ext. 522.

Public Lands Highways Discretionary Fund

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



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FHWA Recreational Trails Program

The Recreational Trails Program is a Federal program administered by the FHWA from the Highway Users Trust Fund dollars derived from Federal fuel tax. But each state receives an annual portion committed to grants for recreational trail projects. In FY 2006 states shared in \$60 million. This amount is expected to increase to \$85 million by FY 2009.

Contact the Recreational Trails Program North Carolina Administrator:

Darrell L McBane - State Trails Coordinator

NC Division of Parks & Recreation

12700 Bayleaf Church Road

Raleigh NC 27614-9633

phone: 919-715-8699

email: darrell.mcbane@ncmail.net

<http://www.ils.unc.edu/parkproject/trails/home.html>

Local Funding Sources

Local Land Use Ordinance

As shown earlier in this Plan, improving the pedestrian qualities of the community may have more to do with guiding its growth patterns than it has with building individual sidewalks or trails. These patterns of development are guided by the land use ordinances governing the municipality. If these documents are guiding and directing privately funded growth in a coordinated, pedestrian-friendly manner, private development will accomplish many of the City's pedestrian-friendly goals through private initiative and investment. For examples of how the City's ordinances can accomplish this, refer to the **Recommended Policies and Ordinance Modifications** of this Plan.

Individual ideas by which private investment can help build and maintain public pedestrian improvements are limited only by the imaginations and incentive of those involved. If the community has a definite vision of what it wants, and promotes that image clearly and positively, it will attract developers that will be more inclined to work with the community to accomplish mutual goals.

Capital Improvement Programs

Municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single

purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each of these categories is described below.

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

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

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

Tax increment financing

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

Installment Purchase Financing

As an alternative to debt financing of capital improvements, communities can execute installment/lease purchase contracts for

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

Taxes

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

Sales Tax

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

Property Tax

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



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agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

Excise Taxes

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

Occupancy Tax

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

Fees

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

Stormwater Utility Fees

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

Streetscape Utility Fees

Streetscape Utility Fees could help support streetscape maintenance of the area between the curb and the property line through a flat monthly fee per residential dwelling unit. Discounts would be available for senior and disabled citizens.

Non-residential customers would be charged a per foot fee based on the length of frontage on streetscape improvements. This amount could be capped for non-residential customers with extremely large amounts of street frontage. The revenues raised from Streetscape Utility fees would be limited by ordinance to maintenance (or construction and maintenance) activities in support of the streetscape.

Impact Fees

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

Exactions

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

In-Lieu-Of Fees

As an alternative to requiring developers to dedicate on-site greenway sections that would serve their development, some communities provide a choice of paying a front-end charge for off-site protection of pieces of the larger system. Payment is generally a condition of development approval and recovers the cost of the off-site land acquisition or the development's proportionate share of the cost of a regional facility serving a larger area. Some

communities prefer in-lieu-of fees. This alternative allows community staff to purchase land worthy of protection rather than accept marginal land that meets the quantitative requirements of a developer dedication but falls a bit short of qualitative interests.

Bonds and Loans

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

Revenue Bonds

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

General Obligation Bonds

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



Bessemer City Pedestrian Plan

PART 4: Implementation

available for immediate purchases and projects. Voter approval is required.

Special Assessment Bonds

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

State Revolving Fund (SRF) Loans

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

Other Local Options

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

Partnerships

Due to the linear and connective nature of many pedestrian facilities, oftentimes improvements may involve numerous landowners. Greenway projects, for example, can present complex challenges of working with multiple property owners and jurisdictions. Creating partnerships may be the only way to solve the complex problems that ensue, as well as deal with the inevitable web of utility lines and transportation corridors. Though these partners may have some conflicting interests at times, opportunities for funding, support and publicity may arise and broaden by involving partners with diverse interests.

Multiple uses of utility corridors provide one example of effective partnership. Most utilities use a linear corridor but occupy only a small portion of the ground surface. Rather than being solely dedicated to that one isolated use, these valuable corridors can often include a complementary public transportation and recreation use along with the utility functions. Utilities benefit from sharing corridors with trails through maintenance savings.

Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their participation. Major employers and developers should be identified and provided with a "Benefits of Walking"-type handout for themselves and their employees. Very specific routes that make critical connections to place of business would be targeted for private partners' monetary support following a successful master planning effort. Potential partners include major employers that are located along or accessible to pedestrian facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trailheads or interpretive signage along greenway systems. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement. Find more information about partnerships through American Trails, at: <http://www.americantrails.org/resources/greenways/GrnwyUrbanSHM.html>

Local Trail Sponsors

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the

placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

Volunteer Work

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



Greenway construction by volunteers,
Marin County, California

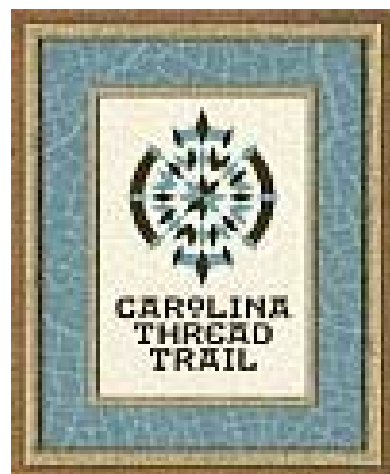


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Private Foundations and Organizations

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



The Carolina Thread Trail

A \$50,000 planning grant was recently awarded to Gaston County by the Carolina Thread Trail organization. The resulting Master Plan depicts corridors of opportunity for future greenways (See Appendix A.1.3). Additional funding may be made available through the organization in upcoming years for design and construction of the trail in the Bessemer City area.

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

Or contact:
Carolina Thread Trail
105 West Morehead Street
Charlotte, NC 28202
704-376-2556
randi@carolinathreadtrail.org

Land for Tomorrow Campaign

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign is asking the North Carolina General Assembly to support issuance of a bond for \$200 million a year for five years to preserve and protect its special land and water resources. Land for Tomorrow will enable North Carolina to reach a goal of ensuring that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; historic downtowns and neighborhoods; and more, will be there to enhance the quality of life for generations to come. For more information, visit <http://www.landfortomorrow.org/>

The Trust for Public Land

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

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

These are some of the conservation services of TPL:

- Conservation Vision: TPL helps agencies and communities define conservation priorities, identify lands to be protected, and plan networks of conserved land that meet public need.
- Conservation Finance: TPL helps agencies and communities identify and raise funds for conservation from federal, state, local, and philanthropic sources.
- Conservation Transactions: TPL helps structure, negotiate, and complete land transactions that create parks, playgrounds, and protected natural areas.
- Research & Education: TPL acquires and shares knowledge of conservation issues and techniques to improve the practice of conservation and promote its public benefits.

Since 1972, TPL has worked with willing landowners, community groups, and national, state, and local agencies to complete more than 3,000 land conservation projects in 46 states, protecting more than 2 million acres. Since 1994, TPL has helped states and communities craft and pass over 330 ballot measures, generating almost \$25 billion in new conservation-related funding. For more information, visit: <http://www.tpl.org/>

Z. Smith Reynolds Foundation

This Winston-Salem based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The foundation has two grant cycles per year and generally does not fund land acquisition. However, the foundation may be able to support municipalities in

other areas of greenways development. More information is available at www.zsr.org



**Robert
Wood
Johnson
Foundation**

The Foundation seeks to help communities become increasingly walkable and thereby promote more active lifestyles that include exercise, like walking or biking, as a part of daily routine, particularly for children. **Active Living by Design** is a national program of The Robert Wood Johnson Foundation and is a part of the UNC School of Public Health in Chapel Hill, North Carolina. The program will establish and evaluate innovative approaches to increase physical activity through community design, public policies and communications strategies. For more information, visit www.activelivingbydesign.org or call: 919-843-2523.

North Carolina Community Foundation

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

National Trails Fund

In 1998, the American Hiking Society created the National Trails Fund, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. Each year, 73 million people enjoy foot trails, yet many of our favorite trails need major repairs due to a \$200 million in badly needed maintenance. National Trails Fund grants give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. For 2005, American Hiking distributed over \$40,000



Bessemer City Pedestrian Plan

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in grants thanks to the generous support of Cascade Designs and L.L.Bean, the program's Charter Sponsors. To date, American Hiking has granted more than \$240,000 to 56 different trail projects across the U.S. for land acquisition, constituency building campaigns, and traditional trail work projects. Awards range from \$500 to \$10,000 per project.

What types of projects will American Hiking Society consider?

- Securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements.
- Building and maintaining trails that will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage.
- Constituency building surrounding specific trail projects - including volunteer recruitment and support.

Web site:

www.americanhiking.org/alliance/fund.html

See additional information about funding sources and procedures in **Appendices A.5 - How-to Build a Sidewalk** (and other pedestrian facilities).

4.3 THE PLAN ADOPTION AND APPROVAL PROCESS

Upon final approval of the Pedestrian Plan by the Steering Committee and NCDOT's Division of Bicycle and Pedestrian Transportation, the Steering Committee will submit the Plan to the City Planning Board for review. At this time the Plan Consultant (Centralina Council of Governments) will also submit the Plan to the Gaston Metropolitan Planning Organization (Gaston MPO) for endorsement.

The Planning Board will make any recommendations it sees fit and either return the Plan to Steering Committee for revision and resubmittal, or will recommend the Plan to the City Council for review.

The City Council and attorney will review the Plan, and hold a public hearing of the Plan for public comment. The City Council will then either publicly adopt the Plan, or make other determinations.

Once adopted, the Plan should be referred to and used in making future land use decisions.



Charleston, South Carolina



Bessemer City Pedestrian Plan

PART 4: Implementation



APPENDICES

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2. Gaston County Bike Trail Network
3. Gaston County Greenways Master Plan
4. Gaston Urban Area MPO TIP Projects 2009-2015
5. Bessemer City Future Land Use Plan
6. Bessemer City Pedestrian Plan Survey Results
7. Crash Data

A.2 Proposed Pedestrian Infrastructure Projects

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2. TRAILS: Project Descriptions and Ranking
3. CROSSWALKS: Project Descriptions and Ranking
Table A.2.3a Recommended Crosswalk Features
Table A.2.3b Project Category Totals
4. Project Selection Criteria ranking

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1. Sidewalks
 2. Pedestrian Buffer Zones
 3. Street Trees
 4. Crosswalks
 5. Signage, Signals & Striping
 6. Traffic Calming Devices
 7. On-street Parking
 8. Lighting
 9. Street Furniture
 10. Pedestrian Overpasses/Underpasses
 11. Off-Road Trails
- Additional Accessibility Information
Information Sources

A.4 Articles

- The 13 points of pedestrian-oriented development
- Some Benefits of Greenways
- Excerpts from studies concerning Safety along Greenways and Trails
- Planning on Walking?

A.5 How to Build a Sidewalk

A STEP-BY-STEP GUIDELINE FOR BUILDING PEDESTRIAN IMPROVEMENTS



Virginia Avenue, Bessemer City



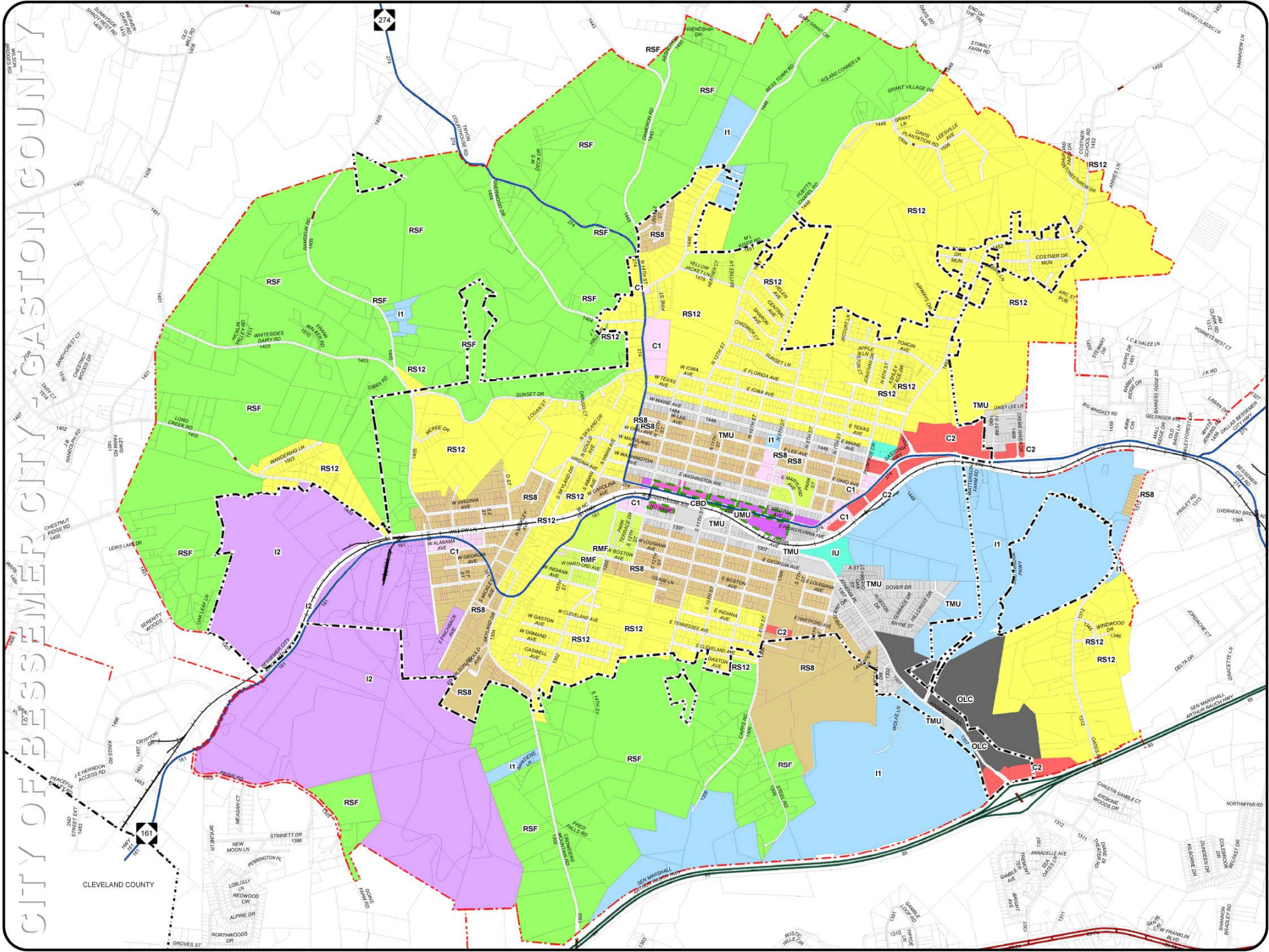
Bessemer City Pedestrian Plan

Appendices

A.1 Maps

A.1.1 Zoning Map, Bessemer City Unified Development Ordinance, 2007

Note:
Bessemer City's Urban Standards Overlay District (USO) is limited to the existing municipal limits.



City of Bessemer City
Gaston County, NC

County Line
Bessemer ETJ Boundary
Bessemer City Limits
Railroads
Bridges
Property Parcels
Downtown Overlay

Bessemer City Zoning

Zoning Type

- RS8 - Urban Residential District
- RS12 - Urban Residential
- RS20 - Urban Residential
- RSF - Residential Single Family
- RMF - Residential Multi Family
- C1 - Light Commercial
- C2 - Highway Commercial
- CBD - Central Business District
- OLC - Office Light Commercial
- I1 - Light Industrial
- I2 - General Industrial
- IU - Urban Industrial
- TMU - Transitional Mixed Use
- UMU - Urban Mixed Use

Streets and Roads

by road type

- Interstate 95
- US Highway 321
- US Highway 29/74
- Municipal Roadways
- Public Roadways
- Private Roadways
- SC Roadways
- Secondary Roadways
- Trails

I HEREBY CERTIFY THAT THIS MAP
IS THE OFFICIAL REGULATING MAP
FOR THE CITY OF BESSEMER CITY,
ADOPTED ON _____
TOGETHER WITH ALL AMENDMENTS
THROUGH.

Mayor _____ Date _____
Chairman, City of Bessemer City
Planning Board _____ Date _____

This map was compiled from the existing Gaston County Property
parcel layer for the sole purpose of presenting Zoning information for
the City of Bessemer City. This map shall not be used for the transfer
of property, easements or conveyances. Although strict accuracy
standards have been employed in the production and maintenance of
this map all property parcels, roadways and other features may not be
correctly shown.

Note: For visual clarity Zoning may not be shown within the right of
way of streets and roadways.

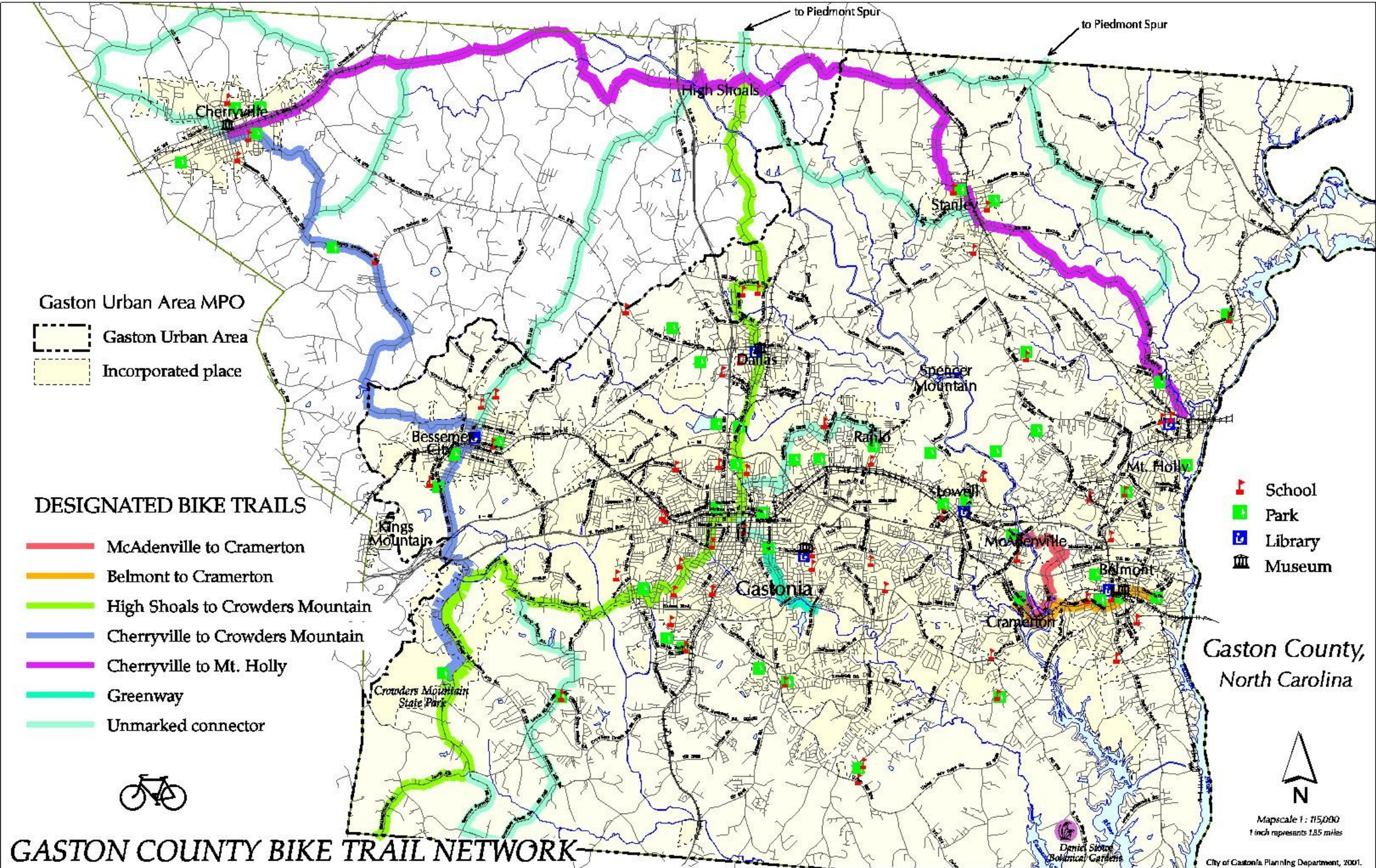
This map was created by the Gaston County Planning GIS Division.
Not to be used or otherwise used for trade or commercial purposes
as provided by the NC General Statute 132-10.

Plot Date: January 11, 2007 - By JGG.

0 2,000 Feet



A.1.2 Gaston County Bike Trail Network
City of Gastonia Planning Department
2001

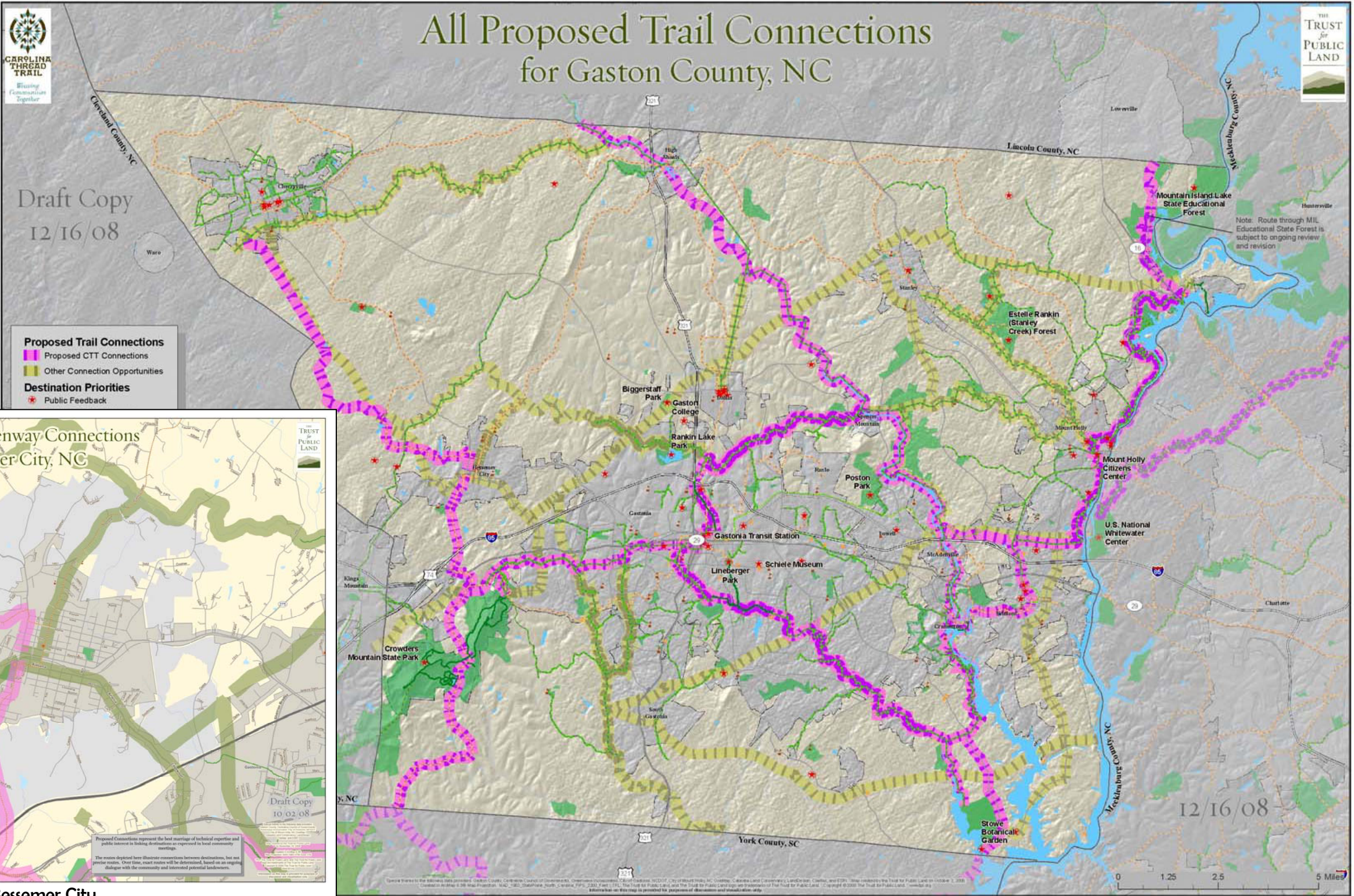




Bessemer City Pedestrian Plan

Appendices

A.13 Gaston County Greenways Master Plan

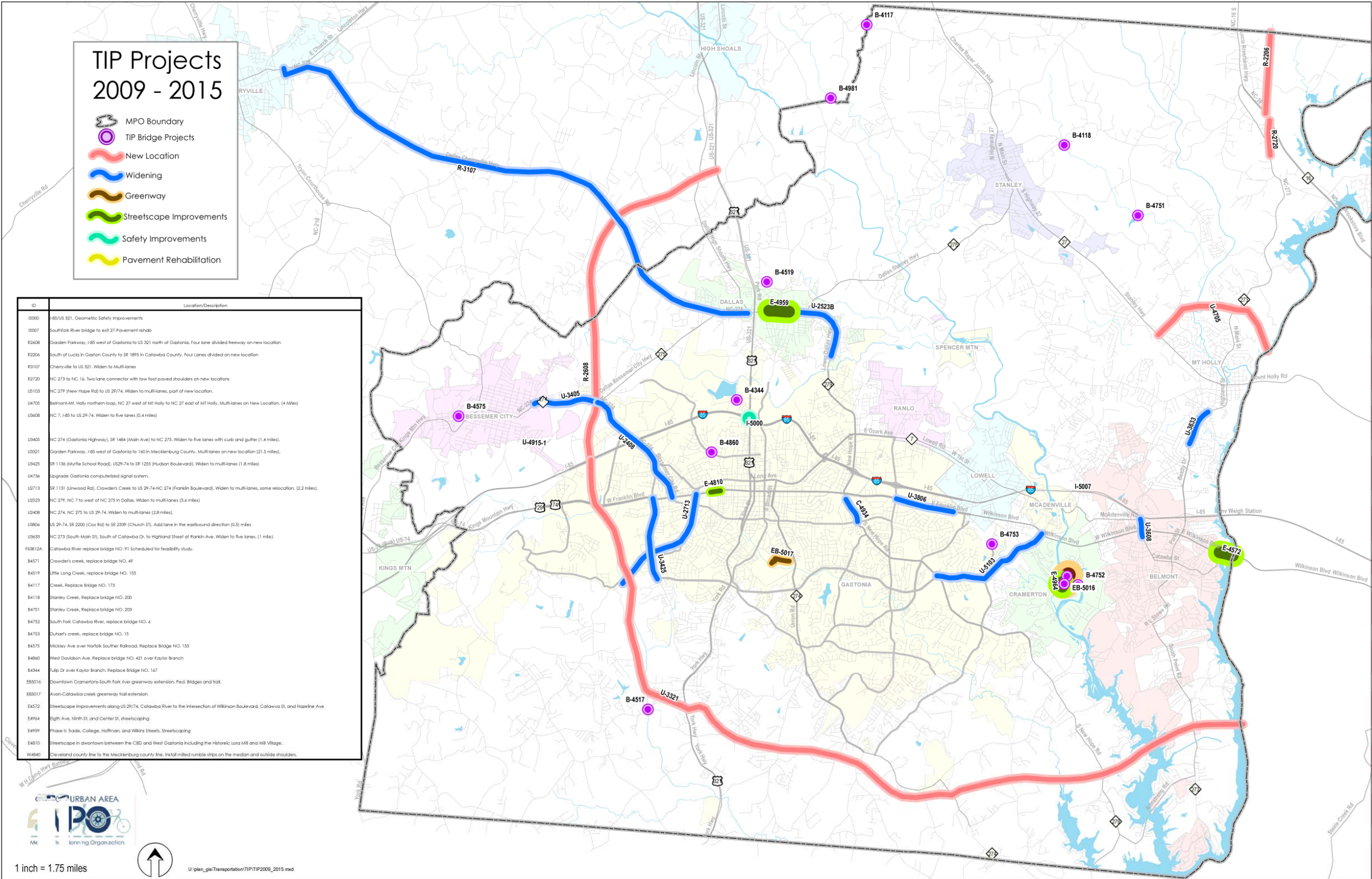




Bessemer City Pedestrian Plan

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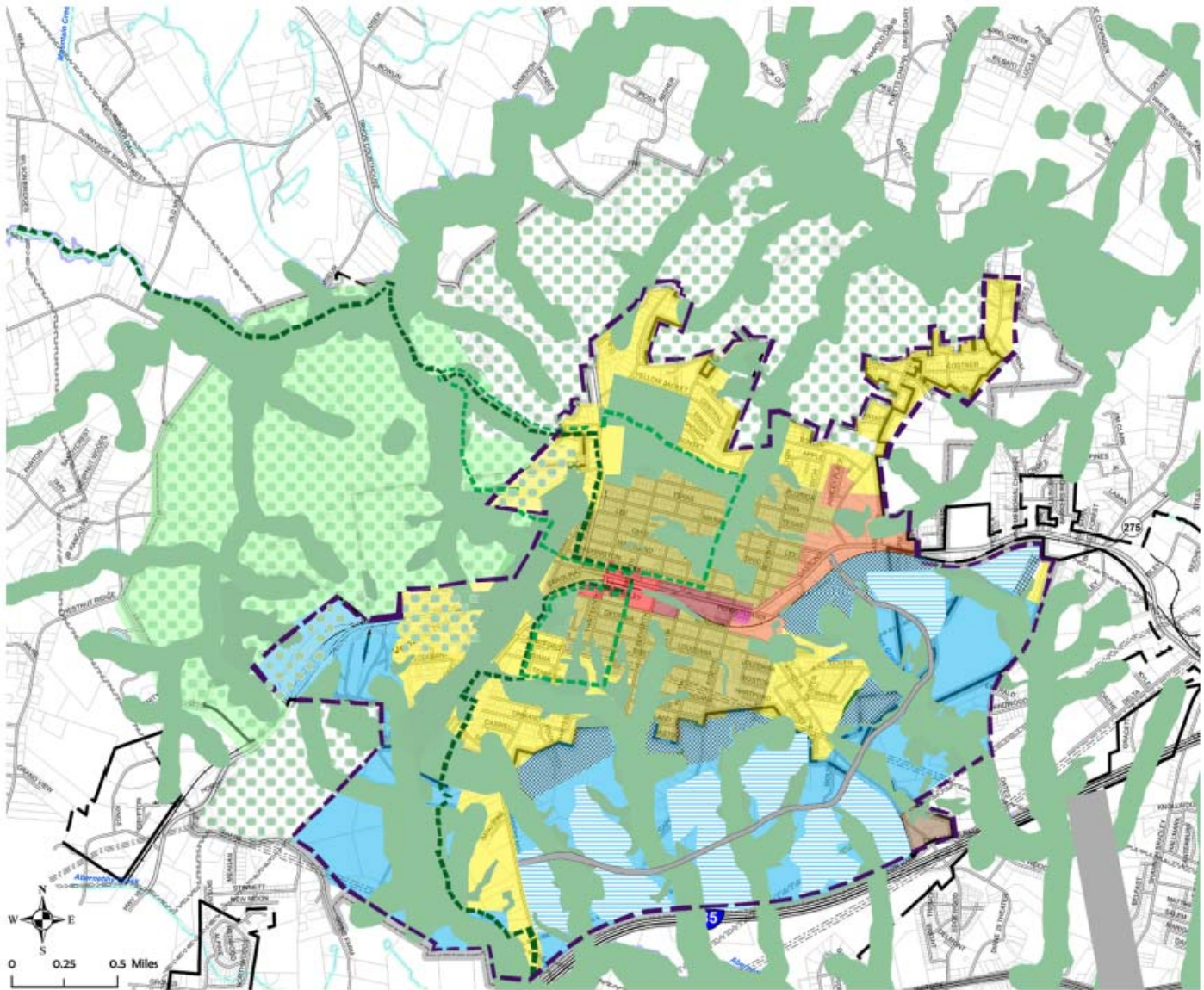
A.1.4 Gaston Urban Area MPO TIP Projects





Bessemer City Pedestrian Plan

A.1.5 Bessemer City
Future Land Use Plan
Ryan-Harris, LLC 2009



Legend

Open Space	New Roads	East Downtown Office/Retail	Medium Density Residential
Watershed Area	Industrial/Business Development Area	Highway Retail	Growth Boundary
Conservation Development	Industrial Buildable Area	Mixed-Use Traditional Neighborhood Development	
Carolina Thread Trail	Residential/Industrial Buffer	Historic District	
Whetstone Mountain Scenic Trail	Downtown Retail/Office	Urban Residential	

Future Land Use Plan
Bessemer City Community Planning Project





Bessemer City Pedestrian Plan

Appendices

A.1.6 Crash Data

Reported Pedestrian Crashes in Bessemer City, North Carolina

For the Reporting Period of January 1, 1990 to September 30, 2008

<i>On Road</i>	<i>Miles</i>	<i>Dir</i>	<i>From Road</i>	<i>Toward Road</i>	<i>Crash Severity</i>	<i>Date of the Crash</i>	<i>Time of the Crash</i>	<i>Crash Type</i>
VIRGINIA AVE	0		12TH ST	13TH ST	A-Injury (Disabling)	05/05/1990	9:30 AM	Pedestrian
MARYLAND AVE	0.013	W	10TH ST	9TH ST	C-Injury (Possible)	09/27/1990	7:57 AM	Pedestrian
MAINE AVE	0.008	W	10TH ST	11TH ST	A-Injury (Disabling)	11/02/1990	7:29 AM	Pedestrian
NC 274	0.015	S	TEXAS AVE	MAINE ST	B-Injury (Evident)	10/08/1992	10:10 PM	Pedestrian
GASTONIA HWY	0.005	S	7TH ST	VIRGINIA AVE	A-Injury (Disabling)	04/21/1994	7:45 AM	Pedestrian
ALABAMA AVE	0		PINCHBACK AVE	F ST	C-Injury (Possible)	07/20/1994	11:00 PM	Pedestrian
8TH ST	0.028	S	VIRGINIA AVE	PENN ST	C-Injury (Possible)	12/03/1994	12:41 PM	Pedestrian
GASTONIA HWY	0.029	E	LEE AVE	MAINE AVE	B-Injury (Evident)	02/20/1995	8:15 PM	Pedestrian
12TH ST	0		VIRGINIA AVE	ALABAMA AVE	C-Injury (Possible)	08/27/1995	1:29 PM	Pedestrian
ALABAMA AVE	0.015	W	12TH ST	13TH ST	Fatal (Killed)	05/16/1996	8:50 PM	Pedestrian
12TH ST	0.005	S	GEORGIA AVE	LOUISIANA AVE	C-Injury (Possible)	09/13/1996	7:00 PM	Pedestrian
MICKLEY ST	0.019	S	ALABAMA AVE	W MARYLAND AVE	B-Injury (Evident)	03/26/1997	4:04 PM	Pedestrian
NC 161	0.007	E	ALABAMA AVE	GEORGIA AVE	A-Injury (Disabling)	07/21/1998	3:38 PM	Pedestrian
N 12TH ST	0		CHADWICK CT	SUNSET LN	B-Injury (Evident)	10/10/2000	7:47 AM	Pedestrian
GASTONIA HWY	0.1	S	COSTNER SCHOOL RD	WATTERSON FARM RD	B-Injury (Evident)	01/17/2002	8:27 PM	Pedestrian
A STREET	0.106	E	GEORGIA AVE	VINE ST	B-Injury (Evident)	04/08/2002	4:12 PM	Pedestrian
EAST VIRGINIA AVE	0.041	E	NORTH 11TH ST	NORTH 10TH ST	B-Injury (Evident)	08/02/2002	7:29 PM	Pedestrian
900 BLK W LOUISIANA AV	0.004	W	S F ST	PINCHBACK AVE	B-Injury (Evident)	06/16/2005	3:30 AM	Pedestrian
NC 274	0.028	S	12TH ST	11TH ST	B-Injury (Evident)	03/29/2006	3:17 PM	Pedestrian



Bessemer City Pedestrian Plan

Appendices

A.2 Proposed Pedestrian Infrastructure Projects

A.2.1 SIDEWALKS: Project Descriptions & Ranking

Proposed Pedestrian Infrastructure Projects for Bessemer City																									
PROJECT DESCRIPTIONS					PROJECT COSTS					PROJECT EVALUATION															
					See Section 4.1					See Section 3.8															
					PROJECT GOALS & CONSIDERATIONS																				
Proj. No.	Location	Side of Street	From	To	Length or Qty.	Unit	Unit Cost	Project cost est. (R.O.W. not included)	Owner/ R.O.W.	Linkage	Downtown Vitality	Aesthetics & Identity	Recreation & Regional Interest	Available ROW, costs, barriers	TOTAL	Public Input Votes	Str'g Cmte. Votes	Total Pts.	PIP PSC*	Average	FINAL RANKING				
SIDEWALKS					67,450	total Linear Feet	\$12,262,050 (total)			5 = Best 1 = Worst					OF 25	%	OF 21	%	OF 7	%		%			
S-1	NC 161	SE	13th St.	Skyland Dr.	4,200	LF	\$135	\$567,000	NCDOT	5	3	5	5	4	22	88	9	43	5	88	36	70	72	1st	
S-2	Mickley Ave./Alabama Ave	TBD	Inman Ave.	NC 161	3,000	LF	\$135	\$405,000	B. City	4	3	3	4	1	15	60	4	19	3	43	22	50	43	15	
S-3	Maine Ave.	S	14th St.	NC 274	4,500	LF	\$135	\$607,500	NCDOT	4	4	5	2	2	17	68	14	67	4	57	35	70	66	2nd	
S-4	Iowa Ave. & Costner School Rd.	S	12th St.	NC 274	4,500	LF	\$135	\$607,500	B. City	3	3	4	2	2	14	56	5	24	3	43	22	30	38	17	
S-5	9th St.	W	Maryland Ave.	City limit	3,100	LF	\$135	\$418,500	B. City	4	4	5	4	3	20	80	5	24	1	14	26	40	40	16	
S-6	Louisiana Ave.	N	13th St.	8th St.	3,200	LF	\$135	\$432,000	B. City	3	4	4	2	2	15	60	2	10	1	14	18	30	29	23	
S-7	12th St.	W	Georgia Ave.	Hartford Ave. ext. (utility)	1,000	LF	\$135	\$135,000	NCDOT	1	3	5	3	3	15	60	4	19	2	29	21	40	37	18	
S-8	Skyland Dr. & Rice St.	W	NC 161	Pinchback Ave.	350	LF	\$135	\$47,250	B. City	4	2	2	4	3	15	60	1	5	2	29	18	50	36	19	
S-9	Puetts Chapel Rd. (12th St.)	W	Chadwick Ct.	Kiser Rd.	2,000	LF	\$135	\$270,000	NCDOT	5	3	4	4	4	20	80	5	24	4	57	29	80	60	5th	
S-10	Yellow Jacket & Besstown	S	12th St.	14th St.	2,400	LF	\$135	\$324,000	B. City	4	3	4	5	5	21	84	11	52	2	29	34	60	56	8	
S-11	Tryon Courthouse Rd./14th St.	E	Maryland Ave.	Bess Town Ave.	1,850	LF	\$135	\$249,750	NCDOT	4	4	5	2	2	17	68	11	52	3	43	31	60	56	9	
S-12	Costner School Rd.	W	Iowa Ave	Arc St.	5,550	LF	\$135	\$749,250	B. City	3	2	4	2	2	13	52	4	19	1	14	18	20	26	26	
S-13	14th St./Crowders Mtn. Rd.	W	NC 161	City limit	4,800	LF	\$135	\$648,000	NCDOT	4	4	5	5	3	21	84	6	29	5	71	32	60	61	4th	
S-14	NC 161	SW	Skyland Dr.	Long Creek Rd.	3,250	LF	\$135	\$438,750	NCDOT	5	2	5	3	3	18	72	4	19	2	29	24	80	50	12	
S-15	Virginia Ave. & Skyland Dr.	N&W	Inman Ave.	left at Skyland to dead end	2,200	LF	\$135	\$297,000	B. City	4	4	5	5	3	21	84	2	10	2	29	25	50	43	14	
S-16	Puetts Chapel Rd. (12th St.)	E	Elem. Sch. entrance drive	creek (south of Sunset Ln.)	2,450	LF	\$135	\$330,750	NCDOT	4	3	4	3	2	16	64	10	48	2	29	28	90	58	7	
S-17	Southridge Pkwy. ext./E. Maine	NE	Gastonia Hwy./NC 274	Dole entrance, Southridge	3,700	LF	\$135	\$499,500	Private	3	2	3	3	5	16	64	2	10	0	0	18	60	34	20	
S-18	Southridge Pkwy.	SE	Dole entrance, Southridge	Edgewood Rd.	3,650	LF	\$135	\$492,750	Private	2	2	3	3	5	15	60	1	5	0	0	16	40	26	25	
S-19	Athenia Pl./Edgewood Rd.	NE	8th St.	City limit	7,700	LF	\$135	\$1,039,500	NCDOT	2	3	5	3	3	16	64	12	57	2	29	30	70	55	10	
S-20	Maryland Ave./8th St.	NE	9th St.	Virginia Ave.	1,300	LF	\$135	\$175,500	B. City	2	5	4	5	4	20	80	7	33	3	43	30	60	54	11	
S-21	8th St.	S	Virginia Ave.	Tennessee Ave.	2,750	LF	\$135	\$371,250	B. City	4	4	4	3	2	17	68	6	29	2	29	25	70	49	13	
S-22	Alabama Ave. (two sections)	N	12th St.	8th St.	580	LF	\$135	\$78,300	B. City	3	4	4	2	1	14	56	10	48	4	57	28	80	60	6	
S-23	South Ridge Road (future)	N	Crowders Mtn. Rd.	Edgewood Rd.	9,350	LF	\$135	\$1,262,250	Private	2	1	3	3	5	14	56	x	x	0	0	14	40	32	21	
S-24	South Ridge Road (future)	S	Crowders Mtn. Rd.	Edgewood Rd.	9,350	LF	\$135	\$1,262,250	Private	2	1	3	3	5	14	56	x	x	0	0	14	40	32	22	
S-25	Capps Rd.	SE	Tennessee Ave.	South Ridge Rd.	4,100	LF	\$135	\$553,500	Private	3	1	3	3	5	15	60	0	0	0	0	15	40	25	27	
S-26	Virginia Ave.	S	12th St.	8th St.	2,600	LF	\$135	\$351,000	NCDOT	3	5	5	3	5	21	84	x	x	2	29	23	80	64	3rd	
S-27	Sherwood Drive	S	14th St.	City limits	1,000	LF	\$135	\$135,000	Private	1	2	4	2	3	12	48	x	x	1	14	13	20	27	24	

*PIP PSC: See Appendix A.2.4 for matrix of sidewalk project evaluation according to the Comprehensive Pedestrian Improvement Plan Project Selection Criteria.



Bessemer City Pedestrian Plan

Appendices

A.2.2 TRAILS: Project Descriptions and Ranking

Proposed Pedestrian Infrastructure Projects for Bessemer City																								
PROJECT DESCRIPTIONS					PROJECT COSTS					PROJECT EVALUATION														
		Part of the "Whetstone Trail"		Part of Carolina Thread Trail		See Section 4.1					See Section 3.8													
Proj. No.	Location	Side of Street	From	To	Length or Qty.	Unit	Unit Cost	Project cost est. (R.O.W. not included)	Owner/ R.O.W.	PROJECT GOALS & CONSIDERATIONS					Public Input Votes	Str'g Cmte. Votes	Total Pts.	PIP PSC*	Average	FINAL RANKING				
TRAILS					\$11,491,200 (total)					5 = Most 1 = Least					OF 25	%	OF 21	%	OF 21	%		%		
T-1	Arrowood Trail	EXACT ALIGNMENT TO BE DETERMINED IN FIELD	Skyland Drive	Arrowood Lake north end	6,300	LF	\$135	\$850,500	B. City	4	3	5	5	4	21	84	10	48	4	57	35	x	63	2nd
T-2	Sherwood Trail (Part1)		14th St.	Arrowood Lake north end	4,480	LF	\$135	\$604,800	private	4	3	5	5	4	21	84	10	48	2	29	33	x	54	4th
T-3	City Park Trail		Alabama Ave	Cleveland Ave	2,820	LF	\$135	\$380,700	BC/pvt.	4	5	5	5	4	23	92	10	48	3	43	36	x	61	3rd
T-4	Jackets Trail		14th Street	9th St. (Florida Ave)	3,950	LF	\$135	\$533,250	BC/pvt.	5	4	5	4	4	22	88	11	52	4	57	37	x	66	1st
T-5	9th Street Trail (Part 1)		Lee Street	Florida Ave	1,620	LF	\$135	\$218,700	pvt./SS	4	4	5	3	4	20	80	1	5	3	43	24	x	43	10
T-6	Cleveland Trail		12th Street @ Osage Ln.	Crowders Mtn. Rd.	2,670	LF	\$135	\$360,450	BC/pvt.	3	3	5	3	3	17	68	7	33	3	43	27	x	48	7
T-7	Fla-Tex Tr. (3)1-block segments		Costner Sch. Rd.	8th Street	1100	LF	\$135	\$148,500	B. City	3	3	2	1	4	13	52	10	48	1	14	24	x	38	16
T-8	Gould Trail		Crowders Mtn. Rd.	Gaston Co. Park - S. end	2,200	LF	\$135	\$297,000	BC/pvt.	4	3	3	4	4	18	72	4	19	3	43	25	x	45	9
T-9	9th Street Trail (Part 2)		Florida Ave	Elementary School	3,680	LF	\$135	\$496,800	pvt./SS	5	3	4	4	5	21	84	6	29	1	14	28	x	42	12
T-10	Whetstone Crossing		Bessemer City Park Trail	Mickley Ave	1,200	LF	\$135	\$162,000	Duke	5	3	3	4	5	20	80	9	43	1	14	30	x	46	8
T-11	Ashley Trail		9th St. Trail (2)	Costner School Road	2,240	LF	\$135	\$302,400	BC/pvt.	3	3	2	2	4	14	56	3	14	2	29	19	x	33	21
T-12	Lee Street Trail		Lee St. terminus	9th Street Trail	1,500	LF	\$135	\$202,500	BC/pvt.	3	4	3	2	3	15	60	0	0	0	0	15	x	20	24
T-13	Oates Creek Trail		9th St.	Edgewood Rd. at I-85	4,770	LF	\$135	\$643,950	pvt./SS	5	4	4	4	4	21	84	5	24	1	14	27	x	41	13
T-14	First Creek Trail		Gaston Co. Park - S. end	Crowders Mtn. Rd.	6,000	LF	\$135	\$810,000	FMC/pvt.	4	2	4	3	4	17	68	4	19	5	71	26	x	53	5th
T-15	Sherwood Trail (Part 2)		Arrowood Lake north end	Long Creek Tr.	4,600	LF	\$135	\$621,000	private	4	1	4	4	4	17	68	5	24	1	14	23	x	35	17
T-16	Abernethy Creek Trail		School/Park (north side)	Crowders Mtn @ 1st Ck Tr	2,920	LF	\$135	\$394,200	private	3	2	2	3	5	15	60	3	14	2	29	20	x	34	20
T-17	Hartford Trail		Oates Creek Trail	12th St.	4,250	LF	\$135	\$573,750	BC/pvt.	4	4	4	4	3	19	76	1	5	3	43	23	x	41	14
T-18	Crescent Trail		7th St. Tr. near 6th St.	Southridge (Fut. Ext.)	3,580	LF	\$135	\$483,300	private	3	3	3	3	5	17	68	2	10	1	14	20	x	31	22
T-19	Costner Trail		9th Street Trail (2)	Costner Sch. Rd. at Arc St	3,700	LF	\$135	\$499,500	private	3	2	2	3	4	14	56	3	14	3	43	20	x	38	15
T-20	Carolina Trail		Mickley Ave	Carolina Ave	600	LF	\$135	\$81,000	B. City	4	2	2	2	4	14	56	1	5	0	0	15	x	20	25
T-21	10th Street Trail		Texas Ave	Sharon Ave	1,800	LF	\$135	\$243,000	BC/pvt.	3	3	4	3	3	16	64	2	10	1	14	19	x	29	23
T-22	Long Creek Trail		Old Mill Rd.	Costner Trail	6,940	LF	\$135	\$936,900	private	4	1	4	5	3	17	68	4	19	3	43	24	x	43	11
T-23	Furnace Trail		Long Creek Trail	First Creek Trail (2)	5,800	LF	\$135	\$783,000	private	2	1	5	4	3	15	60	7	33	4	57	26	x	50	6
T-24	Sunnyside Trail		Long Creek Trail (3)	Sunnyside Arena	1,800	LF	\$135	\$243,000	private	3	1	2	4	3	13	52	5	24	2	29	20	x	35	18
T-25	Weber Lake Trail		Long Creek Trail (2)	Weber Lake	1,500	LF	\$135	\$202,500	private	2	1	1	3	2	9	36	1	5	0	0	10	x	14	26
T-26	Indian Springs Trail		Alabama Ave @ G Street	Gaston Ave.	3,100	LF	\$135	\$418,500	B. City	3	2	2	4	5	16	64	2	10	2	29	20	x	34	19

NOTE: Top 5 in each rating system are indicated by the system color.



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A.2.3 CROSSWALKS: Project Descriptions and Ranking

Proposed Pedestrian Infrastructure Projects for Bessemer City												
PROJECT DESCRIPTIONS												
Proj. No.	Location	Side of Street	From					To				
			Features (see Tab. A.2-1)					Recommended components				
			stripe	signs	lights	pedx	sensr	count	radrx	curbrx	txpvt	isle
Indicates off-road trail crossing	CROSSWALKS											
C-1	NC 274 & Costner School Rd.	N&W	\$800	\$800	\$20,000				\$20,000			
C-2	NC 161 & Skyland Dr.	S&W	\$800	\$800	\$20,000	\$30,000			\$20,000			
C-3	12th St. & Elementary Sch.	S&E	\$800	\$800	\$20,000	\$30,000		\$40,000	\$20,000			
C-4	12th St. & Virginia Ave	4	\$1,600	\$1,600	\$20,000	\$60,000		\$80,000		\$40,000	\$17,600	
C-5	12th St. & Maine Ave	S&W	\$800	\$800	\$20,000	\$30,000		\$40,000	\$20,000			
C-6	9th St. & Maine Ave	S&W	\$800	\$800	\$20,000				\$20,000			
C-7	12th St. & Yellow Jacket Ln.	S&W	\$800	\$800	\$20,000	\$30,000		\$40,000	\$20,000			
C-8	8th St. & Alabama Ave	N&E	\$800	\$800	\$20,000				\$20,000			
C-9	9th St. & Virginia Ave	N&E	\$800	\$800	\$20,000	\$30,000		\$40,000		\$20,000	\$8,800	
C-10	13th St. & Virginia Ave	N,E,S	\$1,200	\$1,200	\$20,000	\$45,000		\$60,000			\$13,200	\$15,000
C-11	12th St. & Maryland Ave	S&W	\$800	\$800								
C-12	13th St. & Pennsylvania Ave	S&E	\$800	\$800	\$20,000					\$20,000		
C-13	NC 161 & Alabama Ave	S&W	\$800	\$800	\$20,000							
C-14	9th St. & Iowa Ave	S&W	\$800	\$800								
C-15	9th St. & Maryland Ave	4	\$1,600	\$1,600	\$40,000	\$60,000			\$20,000			
C-16	12th St. & Jackets Trail	1	\$400	\$400	\$10,000	\$15,000	\$20,000				\$4,400	
C-17	NC 274 & Maine Ave	S&W	\$800	\$800	\$20,000	\$30,000		\$40,000	\$20,000			
C-18	Costner School Rd. & Iowa Ave	W	\$400	\$400						\$10,000		
C-19	Skyland Drive & Ed Wilson	N	\$400	\$400	\$10,000	\$15,000	\$20,000					
C-20	Skyland Drive & Inman Road	E	\$400	\$400			\$20,000					
C-21	NC 161 & Ramseur Road	E	\$400	\$400	\$10,000	\$15,000			\$10,000			
C-22	14th St. & Sherwood Trail	1	\$400	\$400	\$10,000	\$15,000	\$20,000				\$4,400	
C-23	Crowders Mtn. & Cleveland Ave	1	\$400	\$400	\$10,000	\$15,000	\$20,000				\$4,400	
C-24	Edgewood Rd & Southridge Pky	N,E,W	\$1,200	\$1,200	\$30,000	\$45,000		\$60,000				\$15,000
C-25	12th St. & Louisiana Ave	N&W	\$800	\$800	\$20,000	\$30,000		\$40,000			\$8,800	
C-26	Sunset Rd. & Arrowood Trail	S&W	\$800	\$800	\$20,000	\$30,000	\$20,000		\$20,000			
C-27	Crowders Mtn Rd & 1st Ck Tr (2)	1	\$400	\$400	\$20,000	\$15,000	\$20,000					
C-28	Whitesides Dairy & Furnace Tr.	1	\$400	\$400								
C-29	Old Mill Road & Long Creek Trail	1	\$400	\$400								
C-30	Long Creek Rd. & Furnace Trail	1	\$400	\$400								
C-31	NC 161 & Lewis Farm Rd.	S	\$400	\$400	\$10,000	\$15,000	\$20,000					
C-32	NC 274 & Long Creek Trail	0	\$400		CROSSING BELOW GRADE							
C-33	Puetts Chapel Rd & Long Ck Trail	0	\$400		CROSSING BELOW GRADE							
C-34	12th St. & Iowa Ave	S&W	\$800	\$800								
C-35	Southridge Rd. & Capps Rd.	N&E	\$800	\$800	\$20,000	\$30,000		\$40,000				\$15,000
C-36	Southridge Rd. & Crescent Trail	1	\$400	\$400								\$15,000
C-37	Southridge Rd. & Abernethy Trail	1	\$400	\$400								\$15,000
C-38	Crowders Mtn.Rd. & Skyland Dr.	S&W	\$800	\$800	\$20,000	\$15,000	\$20,000					
C-39	8th St. & Virginia Ave	N&W	\$800	\$800	\$20,000	\$30,000						
C-40	NC 161 & Hartford	N	\$800	\$800								
C-41	Besstown Rd & Long Creek Trail	0	\$400		CROSSING BELOW GRADE							
C-42	Dameron & Long Creek Trail	0	\$400		CROSSING BELOW GRADE							

SEE INDIVIDUAL FEATURE COST ESTIMATES IN TABLE A.2.3a.

*Table A.2.3a		Average
Recommended crosswalk features		Costs
Green indicates feature is recommended.		
stripe	crosswalk lines and advanced stop bars per street	\$400
signs	pedestrian warnings, STOP, No-R on red, per street	\$400
lights	flashing warning or upfit of existing traffic lights	\$10,000
pedx	pedestrian-activated crossing lights	\$15,000
sensr	motion-activated warning systems	\$20,000
count	audible accessible ped-activated countdown signals	\$20,000
radrx	curb radius reductions	\$10,000
curbrx	curb extension/bulb out	\$10,000
txpvt	textured pavement	\$4,400
isle	pedestrian island/median	\$15,000

Table A.2.3b	
Project Category Totals	
SIDEWALKS	\$12,262,050
CROSSWALKS	\$2,327,600
TRAILS	\$11,491,200
TOTAL	\$26,080,850



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A.2.4 Project Selection Criteria Bessemer City Comprehensive Pedestrian Improvement Plan (PIP) 2005

Sidewalk Project Number	Adheres to PIP	Serves schools, parks, etc.	History of accidents	Vehicular Speed or Volume	Connects multiple nodes	Connects node to exist'g SW	Heavy ped. usage	Part of larger project	Public / Private venture	Physically practical	% of Total Criteria
	1 = Yes 0 = No										%
S-1	1	1	0	1	1	0	1	1	0	1	70
S-2	1	0	1	0	0	1	1	1	0	0	50
S-3	1	0	1	1	1	1	1	0	0	1	70
S-4	1	0	0	0	0	1	0	0	0	1	30
S-5	1	1	0	0	0	0	0	1	0	1	40
S-6	1	1	0	0	0	0	0	0	0	1	30
S-7	1	0	1	0	0	0	0	1	0	1	40
S-8	1	1	0	0	0	0	1	1	0	1	50
S-9	1	1	0	1	1	1	1	1	0	1	80
S-10	1	1	0	0	1	0	1	1	0	1	60
S-11	1	0	0	1	1	1	0	1	0	1	60
S-12	1	0	0	0	0	0	0	0	0	1	20
S-13	1	1	0	0	1	1	1	0	0	1	60
S-14	1	0	1	1	1	1	1	1	0	1	80
S-15	1	1	0	0	1	1	0	1	0	0	50
S-16	1	1	1	1	1	1	1	1	0	1	90
S-17	1	0	0	0	1	1	0	1	1	1	60
S-18	1	0	0	0	0	0	0	1	1	1	40
S-19	1	1	0	1	0	1	1	1	0	1	70
S-20	1	1	0	0	0	1	1	1	0	1	60
S-21	1	0	1	1	1	1	0	1	0	1	70
S-22	1	0	1	1	1	1	1	1	0	1	80
S-23	1	0	0	0	0	0	0	1	1	1	40
S-24	1	0	0	0	0	0	0	1	1	1	40
S-25	1	0	0	0	0	0	0	1	1	1	40
S-26	1	0	1	1	1	1	0	1	1	1	80
S-27	1	0	0	0	0	0	0	0	0	1	20



A.3 Facility Standards and Guidelines

Contents:

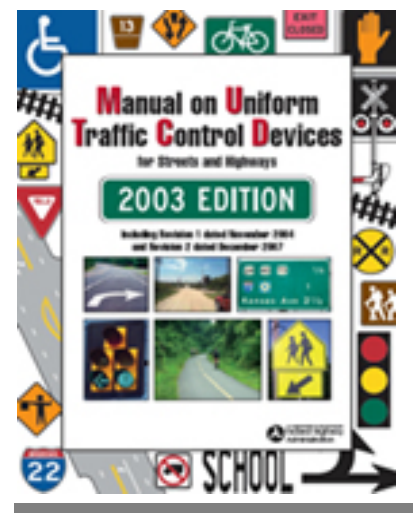
- **Facilities:**
 1. **SIDEWALKS** – width, connectivity, paving
 2. **PEDESTRIAN BUFFER ZONES** – planting strips, paved buffer zones, on-street parking
 3. **STREET TREES** – planting and maintenance, visibility, tree characteristics, pits & grates
 4. **CROSSWALKS**
 5. **STRIPING, SIGNAGE & SIGNALIZATION**
 6. **TRAFFIC CALMING DEVICES**
 7. **ON-STREET PARKING**
 8. **LIGHTING** – location, type, style
 9. **STREET FURNITURE** – seating, trash receptacles, bike racks, raised planters, water features
 10. **PEDESTRIAN OVERPASSES/UNDERPASSES**
 11. **OFF-ROAD PATHS/TRAILS** – trail types, paving, environmental concerns, grade and site lines, accessibility, multi-use, acquisition and ownership, liability, security and safety, front-yard v. backyard paths, access points, maintenance and operations
- **Additional Accessibility Information**
- **Information Sources**

Specific locations for facility installation and site improvements are provided in the **Project Identification and Priority List**. Any recommended improvements proposed to be located in the North Carolina Department of Transportation (NCDOT) right-of-way are under the jurisdiction of NCDOT Division 10. Contact the Division 10 Engineer before considering implementation of any improvements in the NCDOT right-of-way.

All facilities shall adhere to the current U.S. Access Board definition of the American's with Disabilities Act (ADA). See: <http://www.access-board.gov/>

For additional facility information, refer to the NCDOT Office of Bicycle & Pedestrian Transportation's *Planning and Designing Local Pedestrian Facilities*, available by request:

Email: bikeped_transportation@dot.state.nc.us



For crosswalk markings, dimensions and other standards, refer to the **Manual on Uniform Traffic Control Devices** (MUTCD). The MUTCD is published by the Federal Highway Administration (FHWA) and defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways. See: <http://mutcd.fhwa.dot.gov/>

1. SIDEWALKS

Public sidewalks are intended to provide pedestrians a clear and convenient path of travel within the public right-of-way, separated from roadway vehicles, in a manner that is safe and accessible to all members of the public. They also provide places for children to walk, run, skate, ride bikes, and play. Sidewalks should feature a continuous travel path, clear of poles, signposts, and other obstacles that could block the obstruct pedestrians, obscure a driver's or pedestrian's view, or become a tripping hazard.

Width of travel path

The Plan recommends a minimum travel path width of 5 ft. for a sidewalk or walkway, in accordance with the Federal Highway Administration (FHWA) and the Institute of Transportation Engineers (ITE). This width allows two people to pass comfortably or to walk side-by-side. This minimum width of the travel path must be free of obstructions, such as utility poles, or pedestrian amenities such as street furniture, trashcans, etc. and shall meet all requirements of the ADA standards for "accessible pathway".

Where sidewalks abut public or commercial buildings, or anywhere high concentrations of pedestrians are expected, a minimum travel path of 8 ft. should be allowed for.

Where sidewalks align with the edge of an angled or 90-degree parking lot, a minimum of 30 inches of parked car overhang obstructing the sidewalk shall be taken into account in order to maintain the minimum travel path width.



Old Town Alexandria Sidewalk (Photo by EDAW)



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Connectivity

New sidewalks shall be designed and built to serve pedestrians in the most direct and convenient manner possible without causing undue physical or aesthetic damage to existing trees or other site features. New sidewalk design shall also respect all required or proposed landscaping and other site features.

All new commercial and industrial development shall feature an on-site sidewalk system that connects the main entrance or the most convenient accessible entrance of the primary building to existing public sidewalks or public trails that are adjacent to or abutting the property. Sidewalk/driveway crossings shall be minimized in on-site sidewalk systems.

Paving type

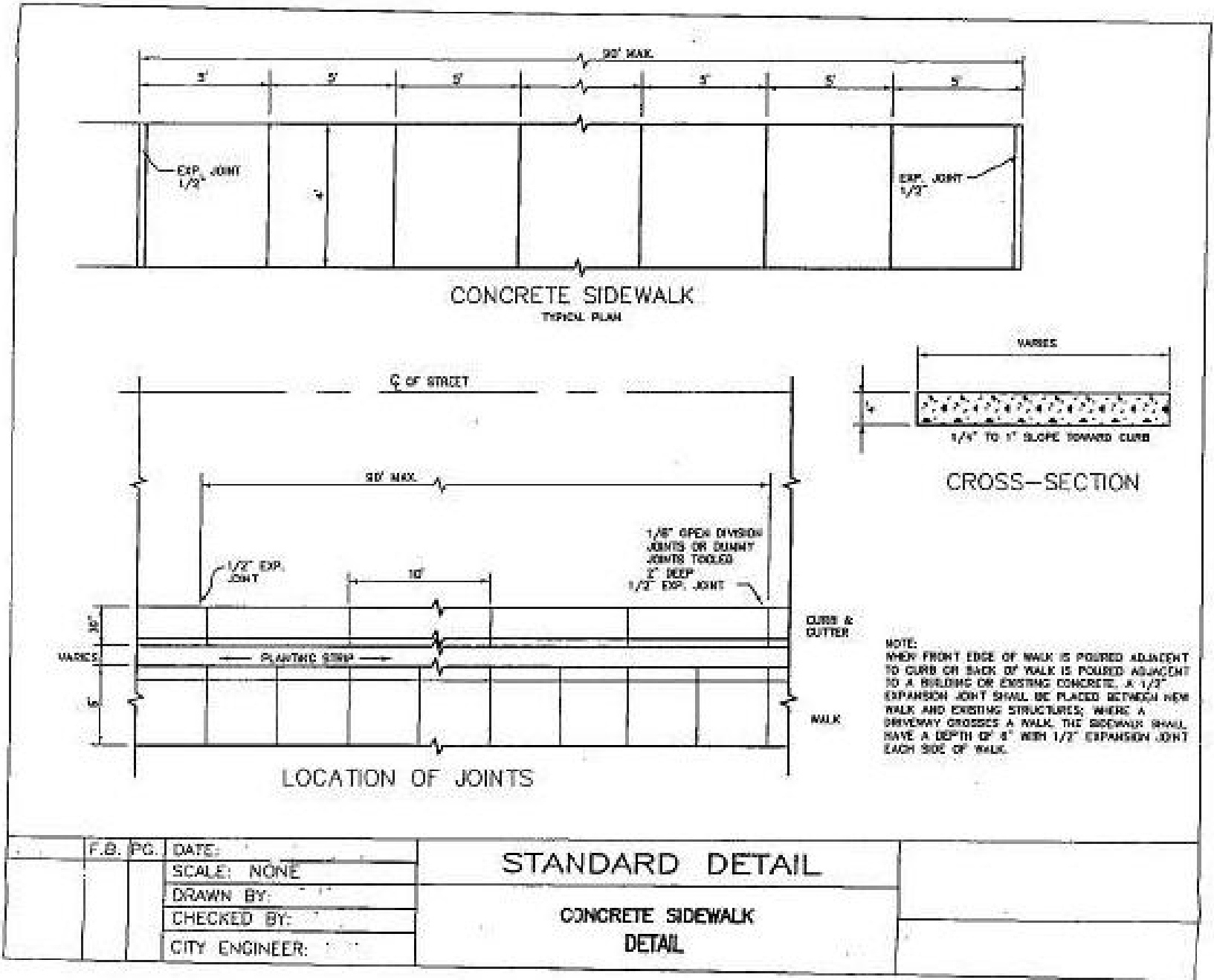
For typical concrete sidewalk paving and construction methods, refer to the City's standard specifications and construction details.

Alternative paving should be considered for the following applications:

- A change in paving type can help distinguish the pedestrian buffer zone from the pedestrian travel path. Sand-set pavers are recommended in the buffer zone for ease of utility maintenance.
- Paving type should vary as a pedestrian path crosses a vehicular path to visually cue pedestrians (and drivers) and provide tactile warning to the visually impaired.
- Textured pavements can add significant aesthetic value and help define a unique place.



Prague, Czech Republic



Sidewalk Detail
Bessemer City – Sidewalks: City Specifications & Standards, 2005



2. PEDESTRIAN BUFFER ZONES

Buffer zones between pedestrian paths and vehicular traffic impart an increased sense of security to those on foot or in wheelchairs. They also help define the path and give it a more comfortable scale. Buffers also provide additional benefits depending on the type used.

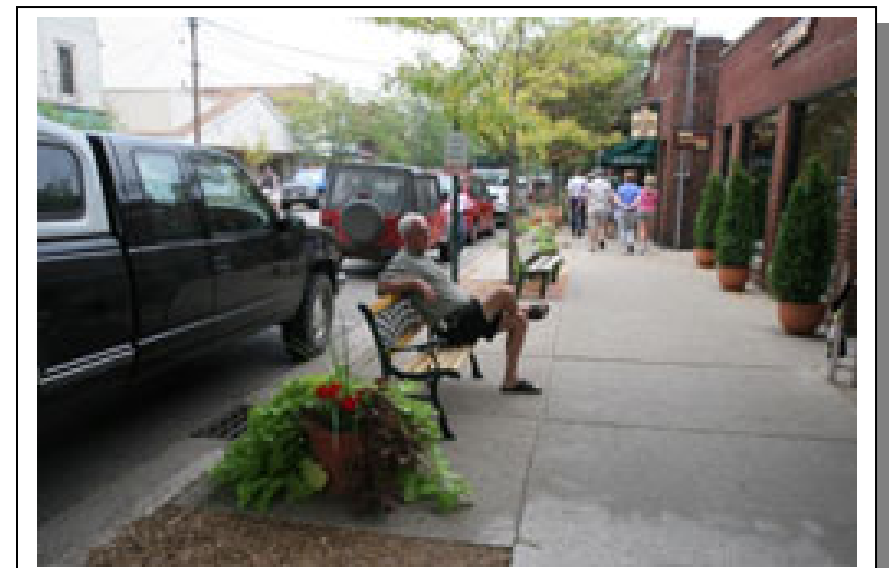
Planting Strips of sufficient width provide a zone for street trees and other landscaping, creating a more comfortable and attractive environment for pedestrians and drivers. Street trees are most effective when placed between the walkway and the curb. When planting strips are properly engineered to provide storm water drainage, they can eliminate the need for curb and gutter, thereby vastly reducing the cost of road and sidewalk construction while providing an environmental benefit. Planting strips should not be less than 4-feet in width. The recommended planting width to permit healthy tree growth is 6 to 8 feet measured from the edge of pavement or back of curb. While planting strips are the preferred means of providing a buffer, they are not always feasible or appropriate. Areas of high foot traffic may preclude landscaping due to maintenance or space considerations. Additional information about street trees is provided on the following page.



Paved buffer zones are appropriate in more urbanized settings. This zone is located between the travel path of the sidewalk and the curb, though an additional buffer zone may also exist along the opposite side of the travel path, adjacent to buildings, open space, or off-street parking. Though a constant width is preferred for the buffer zone, widths may vary as long as the buffer does not interrupt the pedestrian travel path. Items such as street furniture, trees planted in tree grates, streetlights, street signs, fire hydrants, parking meters, etc., are placed in the buffer zones so as not to restrict pedestrian flow in the travel path. The buffer zone may be a good location to use paver stones for easy and affordable access to underground utilities.



On-street parking provides another opportunity to physically shield pedestrians from vehicular traffic, making them feel safer and more comfortable. On-street parking allows pedestrians to clearly see into the street and allows drivers to clearly see pedestrians. See more about on-street parking further along in Facilities section 7.





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3. STREET TREES

This Pedestrian Plan recommends adopting a City Tree Ordinance to provide guidance for tree installation and maintenance. For more information about developing a Tree Ordinance and related policies and programs, see: <http://www.seql.org/actionplan.cfm?PlanID=10>

Planting and Maintenance requirements

All street trees should be selected according to the standards described in the *American Standard for Nursery Stock* of the American Nursery and Landscape Association.

See:

<http://www.anla.org/applications/Documents/Docs/ANLAStandard2004.pdf>

Install and maintain trees according to the International Society of Arboriculture (ISA) guidelines. See:

<http://www.treesaregood.com/treecare/treecareinfo.aspx> or

contact:

ISA, P.O. Box 3129, Champaign, IL 61826-3129, USA. E-mail: isa@isa-arbor.com

Visibility

Street trees should never be allowed to obscure the line of sight between pedestrians and drivers. A clear view should be maintained between 30" and 72" above street. This area must be free of limbs and foliage for safe cross visibility. Other plantings should also follow this rule within 50 ft. proximity of street corners and other designated crossing points.

Tree characteristics

- **Form** - To maintain visibility and provide shade for a comfortable pedestrian corridor, street trees should be vase shaped, columnar, or oval in form (habit) with large spreading crowns.
- **Leaf** - Street trees should primarily be deciduous, losing their leaves in the winter season.
- **Roots** - Avoid trees with aggressively invasive roots adjacent to pavement or buildings.
- **Size** - Large trees (growing over 35 ft. in height at maturity) are preferred as street trees except near overhead utility lines. Small tree (growing less than 35 feet in height at maturity) should be used in areas directly adjacent to or under utility lines.
- **Spacing** – typically, large trees should be spaced approximately 40 – 50 feet when planted in a line, and small trees spaced at approximately 30 ft.

Species not recommended

Due to problems with weak branches, aggressive roots, invasive spreading, or vulnerability to vehicular fumes, the following species are not recommended for street tree use:

- ❖ Bradford Pear / *Pyrus calleryana* 'Bradford' Pin
- ❖ Eastern White Pine / *Pinus strobus*
- ❖ Silver Maple / *Acer saccharinum*
- ❖ Norway Maple / *Acer platanoides*
- ❖ Sweetgum / *Liquidambar styraciflua*
- ❖ Tree-of-Heaven / *Ailanthus altissima*

Tree Pits and Tree Grates

Street trees should generally be located in open planting strips, however tree pits with tree grates may be a practical (though expensive) alternative in very high pedestrian traffic areas. Tree pits should be constructed so that a continuous channel of soil under the pavement connects the individual pits and allows greater volumes of soil for root growth and water storage. Raised tree planting areas should likewise be designed to accommodate multiple rather than single trees. Tree grates should generally not encroach upon the travel path. However, for optimal pedestrian safety and comfort, all tree grates used should meet the ADA standards for "accessible pathway". Gratings should have openings not greater than 1/2" wide with slots perpendicular to the general direction of travel and have a coefficient of friction at least 0.6 on flat surfaces and 0.8 on ramps.



Street tree planting comparison
Charlotte, North Carolina

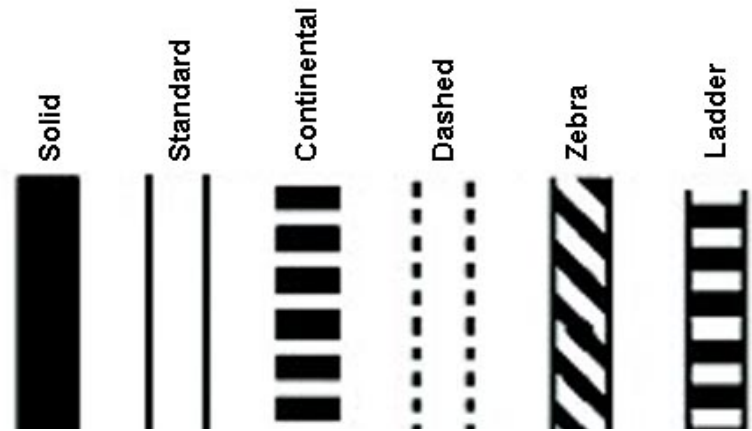


4. CROSSWALKS

Marked crosswalks indicate preferred locations for pedestrians to cross streets. They provide paths of increased safety to pedestrians as they warn motorists to yield to pedestrians in this designated right-of-way. Crosswalks should be placed strategically at high pedestrian volume locations, such as signalized intersections and high volume mid-block locations.

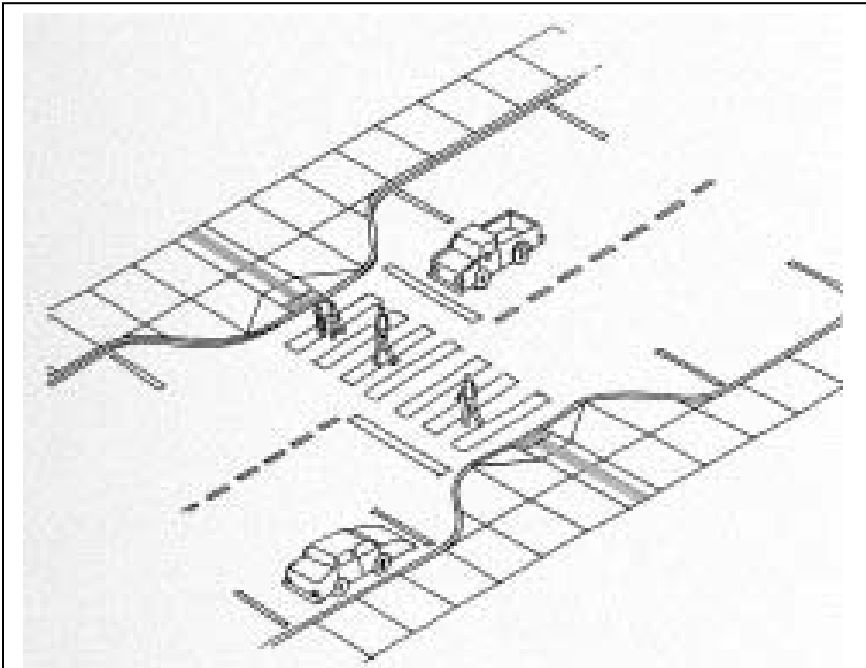
Considerations for location and design:

- ⚠ Crosswalk locations should be convenient for pedestrian access.
- ⚠ Crosswalks should be used in conjunction with other measures that help reduce speeds and warn drivers to be prepared to stop, such as advance warning signs, warning signs, stop bars, median crossing islands and curb extensions (only where there is on-street parking), to improve the safety of a pedestrian crossing, particularly on multi-lane roads with average daily traffic (ADT) above about 10,000.
- ⚠ Crossings with higher pedestrian volume require wider crosswalk paths.
- ⚠ Marked crosswalks are particularly important for pedestrians who are visually impaired.
- ⚠ Crosswalk markings must be placed to include the ramp so that a wheelchair does not have to leave the marked crosswalk to access the ramp.
- ⚠ Pedestrians will generally wait only 30 seconds at crossings before looking for opportunities to cross, regardless of the walk indication and the crossing location.
- ⚠ Pedestrian walking speeds generally range between 2.5 to 6.0 ft/s.



Types of Crosswalk Striping

Curb extensions can enhance the effectiveness of crosswalks, either midblock or at intersections. Curb extensions shorten the crossing distance for pedestrians and improve their visibility of the crosswalk to oncoming vehicular traffic. They also serve as traffic calming devices whether pedestrians are crossing or not. Curb extensions also provide opportunities to enhance the street through landscaping.



Midblock curb extension with striped crosswalk

Raised crosswalks, constructed 3-4 inches above the elevation of the street can be appropriate for midblock pedestrian crossings where vehicle speeds are excessive. Textured paving should be incorporated into the edges in order to provide visual and tactile cues.

For more information about curb extensions and raised crosswalks, see **Traffic Calming Devices** in Section 6. For crosswalk markings, dimensions and other standards, refer to the Manual on Uniform Traffic Control Devices (MUTCD).



Crosswalk Speed Table



Brick Crosswalk



5. SIGNAGE, SIGNALS & STRIPING

SIGNAGE can serve effectively to alert drivers to reduce speeds and to warn pedestrians to use extra caution. However, too much signage can produce visual “clutter” and can encourage complacency and noncompliance with signs in general. Signs, and the sign text, should be large enough to be seen from a distance. The distance is dependent upon the road speeds. It is imperative that all signs be properly located so as not to obstruct the pedestrian and visibility triangles of motorists.

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

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

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

Though traffic signage can carry legal authority, it should not be relied upon as the primary or sole means of influencing driver or pedestrian behavior. However, it is essential to anticipate the need for traffic signs in every situation to provide clear direction for both pedestrians and drivers. It is also important to avoid unnecessary signs as they may cause physical or visual obstruction, will require maintenance, can confuse and erode the significance of necessary signage and add to visual blight. Signs should only be installed when they fulfill a need based on an engineering study or engineering judgment.

All pedestrian and vehicular pavement striping, signage and signals, and the locations thereof shall conform to the MUTCD.



SAMPLE PEDESTRIAN REGULATORY SIGNAGE

MUTCD Pedestrian-Related Signage

Regulatory Signs

School, Warning, and Informational Signs

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

1. Larger signs may be used when appropriate.
2. Dimensions are shown in millimeters followed by inches in parentheses and are shown as width x height.
3. First dimension in millimeters; dimensions in parentheses are in inches.
4. All information in table taken directly from MUTCD.



Bessemer City Pedestrian Plan

Appendices

SIGNALS, or traffic control devices, include those intended to direct vehicle drivers, such as traffic signals and flashing warning lights, and pedestrian signals, directing pedestrians to walk/don't walk.

Traffic signals create gaps in the traffic flow, providing intervals where pedestrians can cross streets safely. These intervals should allow adequate crossing time for pedestrians and based upon a maximum walking speed of 3.5 ft/s. Most traffic signals are installed based on vehicular traffic considerations, but some high-volume pedestrian circumstances warrant traffic signals themselves. Judgment must be used on a case-by-case basis. For example, a new facility being built, such as a park, recreational path, or school, will create a new demand. A new signal could be installed based upon the projected crossing demand. There may also be latent demand if a destination is not currently accessible, but could become so with new facilities or redesign. According to the MUTCD, a traffic signal may be warranted when the pedestrian volume crossing a major street or mid-block location during an average day reaches 100 or more for each of any 4 hours; or 190 or more during any 1 hour.



In downtown areas, signals are often closely spaced, sometimes every block. When high or regular pedestrian traffic exists during a majority of the day, fixed-time signals should be used to consistently allow crossing opportunities. Pedestrian activated signals should only be used when pedestrian crossings are intermittent and should be made accessible to all pedestrians, including those with disabilities. Signal cycles should be kept short (90 seconds maximum) to reduce pedestrian delay. Pedestrians are very sensitive to delays. Marked crosswalks at signals should always be installed at all four legs. They encourage pedestrians to cross at the signal and discourage motorists from encroaching into the crossing area.

Simply meeting certain MUTCD warrants for signalization, however, does not always justify installation of a traffic signal. Traffic signals can sometimes cause excessive delay for drivers and pedestrians alike, and may lead to an increase in certain accident types.

Overhead warning signals warn drivers of crossing pedestrians at midblock crosswalks, or at intersections that periodically see heavy pedestrian traffic but that do not otherwise warrant traffic signals. These signals are most effective when triggered directly by pedestrian activity, or when flashing only during peak pedestrian times, such as school commute times.



Pedestrian activated warning signals with signage at a midblock crosswalk



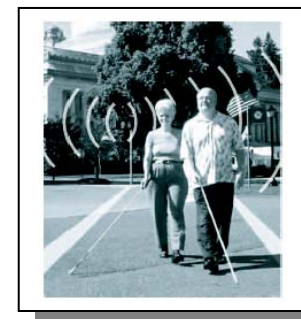
Warning signals with signage can alert drivers to crossing pedestrians at an otherwise unsignalized intersection

Pedestrian signal devices are recommend at all traffic signals, unless the signal is located on a highway where walking is prohibited. Pedestrian signals should be clearly visible to the pedestrian at all times when in the crosswalk or waiting on the far side of the street.



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

Audible signals - Audible cues can be used to pulse along with a countdown signal. The signals are used for visually and audibly impaired individuals. Audible pedestrian signals should be carefully placed to ensure that false readings of the signal are not presented where there is a free-right or "slip" lane, in the presence of complex signal phasing, or other conditions where background noise can interfere with the audible signal. Consideration should be paid to the noise impact on the surrounding neighborhoods when deciding to use audible signals.



Pedestrian detectors automatically activate the red traffic and WALK signals when pedestrians are detected. Since pedestrian pushbutton devices are not activated by about one-half of pedestrians (even fewer activate them where there are sufficient motor vehicle gaps), new "intelligent" microwave or infrared pedestrian detectors are now being considered in many locations. Detectors can also be used to extend the crossing time for slower moving pedestrians in the crosswalk. Automatic pedestrian detectors have been found to improve pedestrian signal compliance and also reduce pedestrian conflicts with motor vehicles. These devices, however, are still considered experimental and their reliability may vary under different environmental conditions. Motion activated warning systems are one example.



Motion activated warning systems present an option where trails intersect roads. When triggered by path activity, these devices flash warning beacons to signal approaching motorists of path users near the intersection, without altering the existing flow of traffic. This solution is ideal for mid-block crossings or intersections where crosswalks that stop traffic are not warranted. The system also flashes beacons to pathway users warning them to stop. Active warning systems are more effective than 24-hour flashes that motorists come to ignore over time. Such devices can be equipped with trail counters to provide data of trail use. Solar energy with battery backup systems can be used to power the signal. For an example of this system, visit www.crossalert.com.



Motion Activated Warning System

In-pavement flashing warning light systems consist of a series of high-intensity luminaries buried in the pavement on both sides of the crosswalk that direct light along the road towards oncoming traffic. When activated, either by a pedestrian pressing a signal button or by some form of automatic pedestrian detection system, the lamps in each luminary flash for a fixed time, effectively alerting drivers that the crosswalk is in use. These systems can be integrated with other traffic signal lights if required. The MUTCD contains language that makes the use of in-pavement flashing warning lights at crosswalks acceptable and gives guidance for their application.



In-pavement flashing warning light system



STRIPING is a warning and directional feature that should always be used in conjunction with other devices. It can include crosswalk striping, stop bars, etc. One of the best materials for marking crosswalks is tape, which is installed on new or repaved streets. It is highly reflective, long lasting, slip-resistant, and does not require a high level of maintenance if installed properly. However, it does require a higher level of expertise to install well. Although initially more costly than paint, both inlay tape and thermoplastic are more cost-effective in the long run. Inlay tape is recommended for new and resurfaced pavement, while thermoplastic may be a better option on rougher pavement surfaces. Both inlay tape and thermoplastic are more visible and less slippery than paint when wet.

“An **advanced stop bar**, when used, should ordinarily be placed four feet in advance of and parallel to the nearest crosswalk line. In the absence of a marked crosswalk, the stop bar should be placed at the desired stopping point and in no case more than 30 feet or less than four feet from the nearest edge of the intersecting roadway. When a stop bar is used in conjunction with a STOP sign, it should be placed in line with the STOP sign. However, if the STOP sign cannot be located exactly where vehicles are expected to stop, the stop bar should be placed at the desired stopping point. Finally, the stop bar should be placed so that vehicles have optimum sight distance along the intersecting roadway.”

■ **Institute of Transportation Engineers** Traffic Engineering Council



6. TRAFFIC CALMING DEVICES

Traffic Calming Devices (TCDs) are physical measures in street design that cue drivers to slow down. The effectiveness of TCDs does not depend upon a driver's compliance with traffic signs and signals, or police enforcement, though they may be used effectively in conjunction with them. In coordinated combinations, TCDs reduce speeds, alert drivers to pedestrians, and reduce the severity of collisions. Some TCDs can also provide greater refuge for pedestrians, reducing their exposure to at-grade traffic.

Though most of the examples listed below are not specified in the **Project Identification and Priority List**, the following TCDs are generally recommended for consideration by the City on a project-by-project basis:

- **4-way stops** – used strategically at key intersections, this inexpensive strategy can effectively reduce driver speeds and encourage increased caution at intersections.
- **Textured pavements** - stamped pavement or alternate paving materials to create an uneven surface for vehicles and pedestrians to traverse. Textured street pavement provides a visual and tactile cue for both drivers that they are driving in an area of high pedestrian use. Similarly, they cue pedestrians that they are entering a vehicular zone, and are a particularly effective treatment to warn visually impaired pedestrians. Textured street pavements should be used in areas of substantial pedestrian activity and where noise is not a major concern.
- **Curb radius reduction** - Reconstructing turning radii to a tighter turns will reduce turning speeds, shorten the crossing distance for pedestrians, and also improve sight distance between pedestrians and motorists.
- **Curb extensions** – also referred to as bulb-outs, neckdowns, or chokers, extend the sidewalk or curb line out into the parking lane, which reduces the effective street width from curb to curb. Curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street. Curb Extensions slow vehicles by alerting drivers to potential pedestrians, visually tightening the vehicular path, and physically reducing the turning radii. Curb extensions can provide adequate space on narrow sidewalks for curb ramps and landings. Curb extensions should only be used where there is a parking lane. Curb extensions can create additional

space for curb ramps, landscaping, and street furniture that are sensitive to motorist and pedestrian sightlines; this is especially beneficial where sidewalks are otherwise too narrow. Care should be taken to ensure that street furniture and landscaping do not block motorists' views of pedestrians.



Intersection crosswalk with curb extension



Raised median with crosswalk

- **Medians/pedestrian islands** – an island located along the centerline of a street that may or may not narrow the vehicular travel lanes at that location. Medians can be combined with crosswalks to provide pedestrians a temporary “refuge” as they cross the street. They are often landscaped to provide a visual amenity. Placed at the entrance to a neighborhood, and often combined with textured pavement, and called “gateway islands.” Medians may be raised, or partially sunken and combined with hydrophilic landscaping and drainage infrastructure to treat and drain storm water.
- **Raised crosswalks** - speed tables outfitted with crosswalk markings and signage. Raised cross walks are intended to reduce vehicle speeds specifically where pedestrians will be crossing a street. By raising the level of the crossing, pedestrians are more visible to approaching motorists. Raised crosswalks can be appropriate for midblock pedestrian crossings where vehicle speeds are excessive.
- **Raised intersections** - raised flat areas that cover an entire intersection, with ramps on all approaches. By modifying the level of the intersection, the crosswalks are more readily perceived by motorists to be “pedestrian territory”. Raised intersections should be used only where there is substantial pedestrian activity where other traffic calming measures have not been effective.
- **Speed humps** - raised mounds placed across residential streets to control chronic speeding problems where other methods of slowing traffic have not been effective. They are designed to calm traffic in residential areas, particularly near parks and schools. Similar to a speed bump, the speed hump is wider and has a more sloping side taper. The physical impact on passing vehicles is less severe at slower speeds than at higher speeds. Speed humps reduce vehicular speeds between intersections.
- **Speed Tables** - flat-topped speed humps typically long enough for the entire wheelbase of a passenger car to rest on the flat section. They often constructed with brick or other textured materials on the flat section.

Other strategies that do not rely on pavement and curb manipulation can also be employed to cue drivers to the presence of pedestrians and induce slower vehicular speeds. One of the most effective means among them is on-street parking.



7. ON-STREET PARKING

On-street parking benefits both pedestrians and drivers in a variety of ways, as well as contributing to the economic viability of a street.

- On-street parking provides a physical buffer between pedestrians on sidewalks and moving traffic in the streets. Pedestrians feel safer with such a barrier that still allows them to clearly see into the street and drivers to clearly see pedestrians.
- On-street parking compliments pedestrian-friendly setbacks for on street commercial development. Commercial establishments with on street parking require fewer parking spaces in large expanse pedestrian-unfriendly parking lots. When commercial buildings are set back behind parking lots, longer walking trips through vehicular areas are necessitated for pedestrians coming from the street. This arrangement discourages pedestrian usage of the area.
- On-street parking calms traffic. Drivers tend to slow down when they sense potential conflict with opening car doors or vehicles suddenly moving into the traffic lane.
- On-street parking can be easily monitored and controlled in order to maximize short-term visitor usage.
- On-street parking can even provide a source of revenue that helps pay for parking enforcement and other transportation improvements.

Despite the potential for on-street collisions, such collisions more commonly occur in interior parking lots.

On-street parking alignment options include: parallel, diagonal or angle, and perpendicular.

1. **Parallel parking** is preferred. Parallel parking permits drivers a clear view of oncoming traffic. And it requires the least amount of additional right-of-way depth to accommodate parked cars.
2. **Diagonal or angle parking.** Though diagonal parking provides the advantage of greater ease in maneuvering into a space with fewer steps than parallel parking, it is the most accident-prone on-street parking arrangement commonly used, providing the most potential conflicts between vehicles

and pedestrians. Diagonal parking is the least efficient use of space per car and is exceptionally unsafe of bicyclists.

Diagonal parking can be either “back-out” or back-in”.

- a. **Back-out diagonal parking** requires a person leaving a parking space to back out into traffic, often without a good view of approaching cars or pedestrians.
- b. **Back-in diagonal parking** requires additional maneuvering skill but provides some advantages over back-out diagonal parking:
 - i. Children are directed to the sidewalk and shielded by the door.
 - ii. Easier to unload and load trunk at the sidewalk.
 - iii. Sight visibility is improved for drivers and cyclists.
- c. **Perpendicular parking** has many of the disadvantages of angled parking but requires the even more depth in right-of-way.

Learn more about parking management at:

<http://www.seql.org/actionplan.cfm?PlanID=13>

Parking Lots and Community Water Management Issues

~ Water Quantity Issues ~

Impervious parking lots do not permit rainwater to soak into the ground. So as large areas of vegetative cover are cleared and replaced with impervious surfaces, two water management problems occur:

1. Water that was formerly available to recharge local groundwater aquifers is now lost. This can turn into a problem for communities that depend on groundwater for their drinking water, as they are more likely to face shortages.
2. Instead of recharging the aquifer, or being absorbed by vegetation, this rainfall now has to be managed as storm water runoff.

Storm water that was formerly an asset has now become a liability.

~ Water Quality Issues ~

In the first few minutes of a rainstorm, the things that normally end up in parking lots (dripping oil, anti-freeze, grease, gas, trash, etc.) get flushed into stormwater catchments leading to streams that empty into nearby water basins. These “non-point source” pollutants (NPS), and the high-velocity, heated runoff waters that carry them, degrade streams and water basins, as well as the living environment within them.

NPS accounts for at least half of the water pollution problem nationwide and poses a major threat to water supplies.

8. LIGHTING

Location

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

Type

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

Style

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





9. STREET FURNITURE

Well-designed walking environments are enhanced by street furniture, such as outdoor seating, lighting fixtures, bus shelters, trash receptacles, and water fountains. To select and properly site street furniture, careful attention should be given to the physical and social needs of the community and the various groups within it.

General design principles for selection, design, and siting of street furniture are listed below:

- Street furniture placement should never be placed so as to restrict regular pedestrian flow.
- Street furniture can be positioned to help reinforce a physical or visual buffer between pedestrians and vehicular traffic.
- Consider the role street furniture can take by providing familiar tactile landmarks, which can aid navigation for the visually impaired.
- Coordinate the style of various street elements to complement one another and reinforce a sense of common identity for the community.

Seating

- Seating should be located periodically along well-traveled paths and at destination points. For paths frequented by elderly citizens, adequate seating should be provided for along the path at a minimum of 150 ft.
- Provide seating in locations that are logical destinations or gathering points to allow opportunities for community interaction, particularly for students and the elderly.
- Seating should be oriented toward travel ways and areas of visual interest. Align benches with sidewalks and prominent views.
- Whenever possible in destination areas, provide moveable chairs.
- Seating should generally be located to take advantage of shade or in “suntraps” - areas that take advantage of winter sun and blocked from the wind.
- In addition to benches and other pre-manufactured seating, additional opportunities for seating may include other areas that meet the following parameters: smooth, level areas with a minimum depth of 14 inches, a minimum height of 12 inches, and a maximum height of 36 inches.
- The following procedure for selection and placement of benches is recommended:

- 1.) Hold a community meeting to determine optimal locations for benches.
- 2.) Select appropriate bench design based on utility, maintenance and aesthetic concerns.
- 3.) Determine ongoing maintenance procedures and responsibilities.
- 4.) Identify parcel owners if easement acquisition is required and acquire easement.
- 5.) Involve community volunteer workers in installing benches where practical.



Trash receptacles

- Well placed, attractive, and properly maintained trash receptacles encourage pedestrian behavior toward keeping a cleaner community.
- Design style of trash receptacles should be carefully coordinated with other street furnishings to optimize aesthetic quality and opportunity for reinforcing community identity.
- Apply the recommended procedure for bench selection and placement.

Bike racks

- Bike racks encourage pedestrian life by providing greater opportunity for people to leave their cars at home.
- Rack design should be attractive to encourage use by cyclist and property owners.
- Racks must allow the bike frame and wheel(s) to be locked securely.

- Racks should be built from heavy duty, weather & tamper resistant materials.
- Racks must support the bicycle frame and not hold the wheel.
- Most racks are misused to some degree. Look for racks that provide the same opportunity for security whether the bike is on the end or middle of the rack.
- Locate racks next to entrance doors and in line of site of a window.



Raised Planters

- Planters can provide opportunities in addition to planting strips for street landscaping.
- Raised planters should be located either to act as buffers between pedestrian and vehicular ways, or to help define or enhance a public gathering space. Planters should not be located in the travel path or where they will otherwise obstruct normal pedestrian flow.
- Raised planters should be designed to provide additional opportunities for comfortable seating (meeting the dimensions specified in the **Seating** section) as well as community identity.

Water features

- Decorative Fountains usually provide an inviting visual and audible focal point for a public space. They are usually the dominant feature in any space.



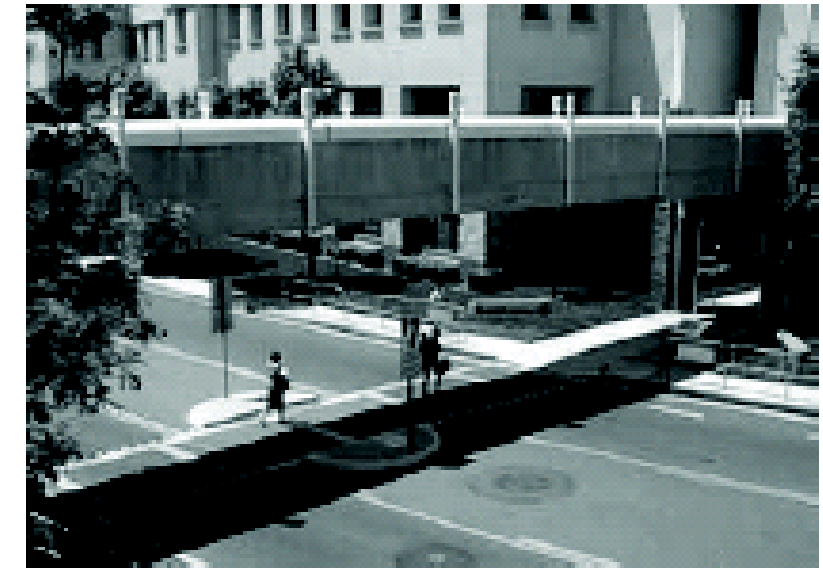
- Fountains should be designed with audible effects in mind, so as to create an atmosphere conducive to conversation. Splashing water provides an element of privacy in public areas as it masks conversational tones.
- Raised fountains can provide highly favorable additional seating area.
- Fountains should be designed to permit free access to water by pedestrians.
- Great care should be given in planning fountain projects. Insure that there is an ongoing funding source for adequate fountain maintenance, as well as sufficient liability protection.



10. PEDESTRIAN OVERPASSES/UNDERPASSES

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

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



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



11. OFF-ROAD TRAILS

Trails can be used for walking, bicycling, horseback riding or other forms of recreation or transportation. Some trails are located in corridors of protected open space known as greenways. Greenways often follow natural land or water features. They may also provide an additional complimentary use for existing utility rights-of-way. Greenways improve the quality of life for a community not only by providing additional recreation opportunities and connections between points of interest, they are also a tool to help preserve open space, improve environmental quality, facilitate economic development, and celebrate the unique heritage of the area they traverse. A network of connecting greenways results in a system that can be greater than the sum of its parts.

To create a viable and lasting greenway or trail system, many elements should be coordinated. The brief outline of topics below is followed by lengthier consideration of the issues. Additional information on these topics can be found in other appendices and throughout the Plan.

A. Elements of trail **planning**:

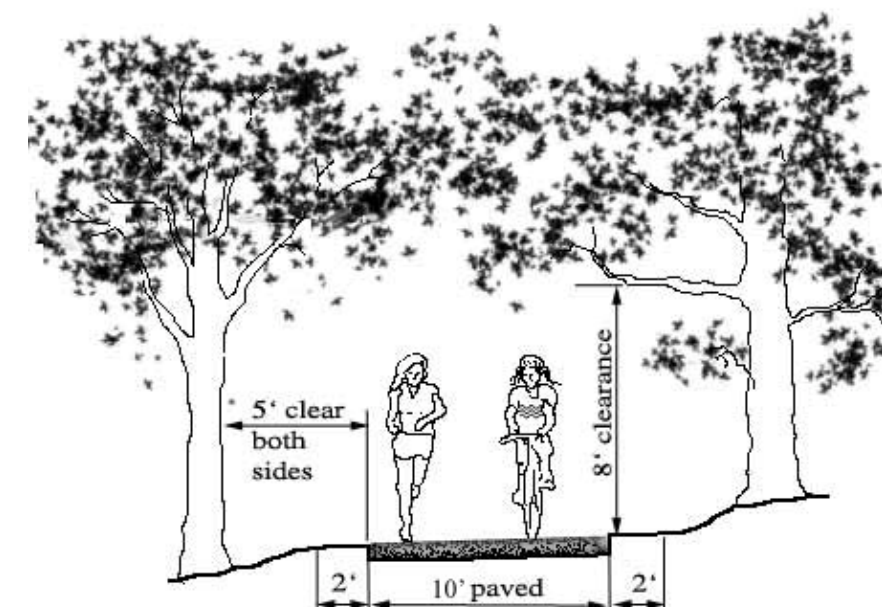
1. Context: cultural and geographic
2. Destinations and access
3. Adjacent land use
4. Environmental concerns
5. Utilities
6. Public involvement
7. Coordinating agencies/permitting
8. Maintenance

B. Elements of trail **design & construction**:

1. Land acquisition
2. Clearing & demo
3. Grading
4. Trail layout
5. Typical sections
6. Accessibility
7. Intersection crossings
8. Signage
9. Landscaping
10. Structures
11. Furnishings

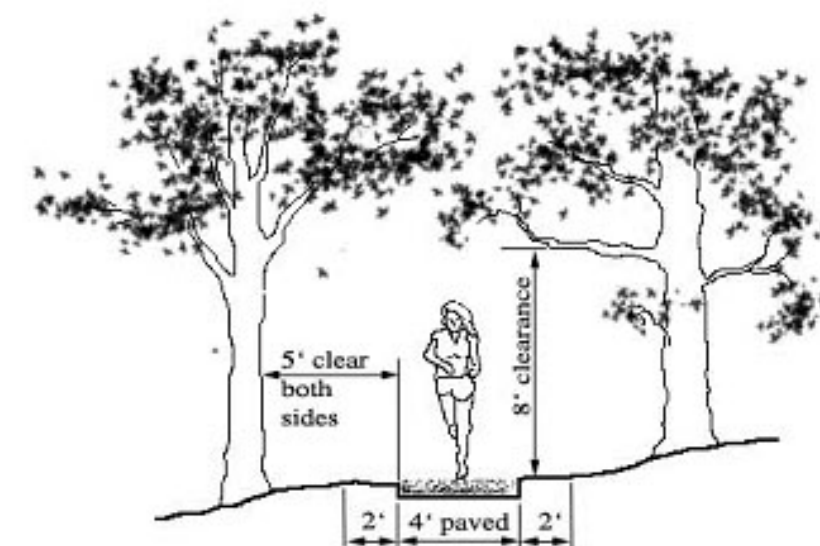
Trail types (typical sections)

1.) Multi-purpose Trails – Trail systems - particularly in and near populated areas - should be composed primarily of pathways that can accommodate a variety of user types, including walkers, runners, bicyclists, and other non-motorized users. These multi-purpose paths must meet certain design criteria to simultaneously accommodate these different needs. Clearance dimensions are critical. Width of pavement should be maintained at ten feet, with two feet improved shoulders on both sides. Deviations for very short distances may be acceptable when existing conditions do not physically permit standard trail width, but paved trail surfaces must maintain at least 6 ft. in width to allow accessibility for maintenance equipment (ATV type). Pavement types may vary between conventional or pervious concrete, asphalt or crusher fines. Maximum slope shall not exceed 8%. Maintain a vertical clearance minimum of 10 ft.



Multi-purpose Path

2.) Secondary Footpaths – Some trails in the system may be considered secondary or alternate paths, particularly in cases of challenging topography where ADA compliance is impractical, or particularly sensitive environmental areas. These secondary “footpaths” should be limited to pedestrian use only. Here a soft pavement surface may be preferred (crusher fines recommended), four feet wide with two feet wide improved shoulders. Maintain a vertical clearance minimum of 8 ft. **If secondary footpaths are used, be sure that the destinations they serve can also be reached by a multi-purpose path.**



Secondary Footpath

All trails should be maintained with a 5 ft. cleared area from the edge of the trail on each side. Trails should be pitched to drain with a 2% minimum grade. Paving materials may vary in specific locations.



Bessemer City Pedestrian Plan

Appendices

Paving

Each trail is unique in terms of its location, design, environment, and intended use. For each segment of the trail, care should be given to selecting the most appropriate pavement type, considering cost-effectiveness, environmental benefit, accessibility and aesthetics. Various pavement types can be used to meet ADA standards, as long as the surface is "firm and stable." Pavement options include:

- **Conventional Concrete** – Costly installation and maintenance, but requires less periodic maintenance than asphalt or crusher fines. Install 4-inch thickness on compacted 4-inch aggregate base course.
- **Pervious Concrete** – Allows storm water to percolate when used over permeable soils, superior traction, unfavorable to rollerblading and skateboarding, higher installation cost. Install according to manufacturer's specifications.
- **Asphalt** – smooth, joint free and softer than concrete, preferred by runners, roller-bladers, cyclists, handicap users, and parents pushing baby buggies, construction is quicker and costs significantly less than a concrete. Install a minimum 2-inch 1-2 asphalt thickness with 4-inch aggregate base course. Pavement can last up to 20 years with periodic maintenance. Repair is quick and inexpensive.
For further information, see:
<http://www.americantrails.org/resources/trailbuilding/betterAsphalt.html> and
<http://www.americantrails.org/resources/trailbuilding/AsphaltCQ.html>
- **Crusher fines** – Excellent for running trails, as well as walking, mountain bike and equestrian use. Can be constructed to meet ADA requirements. Constructed of small, irregular and angular particles of rock, crushed into an interlocking tight matrix. A crusher fine trail combines the rustic feeling of a natural surface trail with a surface type that's durable (but not concrete or asphalt). The natural gravel-like surface feels more like a trail than a hard surfaced path and fits in well with primitive settings. Typically costs about 1/3 the price of concrete paths, installed. More susceptible to erosion than asphalt or concrete. For detailed information, see:
<http://www.americantrails.org/resources/trailbuilding/BuildCrusherFinesOne.html>
- **Dirt** – Recommended for mountain bikes and equestrian uses.
- **Boardwalk** – very expensive, for environmentally sensitive areas and wetlands.

For comparative costs of pavement types, see **Sample Cost Estimates for Facilities**.

Accessibility

The trail system should be designed to accommodate all people, regardless of age and ability. Off-road trails should meet ADA accessibility requirements whenever possible in the design. Does an accessible trail have to be paved with concrete or asphalt? Not as long as the surface is "firm and stable". Packed crushed stone, gravel fines compacted with a roller, packed soil and other natural materials bonded with synthetic materials can provide the required degree of stability and firmness.

For further paving information, see:

<http://www.americantrails.org/resources/accessible/ADASummFeb00.html>

Multi-use

Most off-road trails should accommodate a wide range of activities going on simultaneously, including walking, running, bicycling, skateboarding, and other non-motorized uses. Trail alignment (turning radii and sightlines), slope, pavement width and paving materials should be designed with the needs of each user type in mind.

Environmental Concerns

Trail corridors serve the community by protecting and enhancing the natural environment. Trails provide more transportation choices for people who wish to walk or bicycle. By doing so, they help to decrease dependence upon automobiles and thus contribute to improved air quality. Trails also improve water quality when they are used in conjunction with buffers along creeks and streams. These buffers provide habitat for a diversity of plant and animal species. They serve as natural filters, trapping pollutants from urban runoff, eroding areas and agricultural lands. Stream buffers also reduce the severity of flooding by releasing storm water more gradually, giving the water time to evaporate, or percolate into the ground and recharge aquifers, or be absorbed and transpired by plants.

All proposed trails and other improvements should be designed, constructed and maintained with their ecological value in mind. Any disturbance of natural features should be kept to a minimum and conform to all jurisdictional environmental policy and ordinances.

Grade and sight lines

Trails should be designed with a minimum slope to insure proper drainage and prevent pooling. The maximum slope should not

exceed 8% on primary paths to prevent undue erosion of the trail, accessibility, safety and ease of use.

Horizontal and vertical curves should be gentle in order to permit ADA accessibility, the safe use of bicycles on the path, and to allow maximum sight distances for the safety and security of all trail users. Sight lines along the trail should be maintained at a minimum of 100 ft. wherever feasible.

Acquisition & Ownership

Acquisition negotiations of the proposed off-road trail corridors can result in various types of agreements with current landowners.

The owner of the property need not be the same entity that operates and maintains the trail corridor if appropriate agreements are drawn. Ownership options to consider for individual trails include:

1. **Local government** – An existing department within the City government (usually a department of parks and recreation) is assigned to manage and maintain the corridor.
2. **Non-profit association** – A non-profit association or council may assume ownership of the corridor or control of the trail property. Local organizations that are experienced in trail management have distinct advantages in managing the trail system and responding to public needs. Local land trusts or trail conservancies may also be formed to take ownership of the trails.
3. **Private landowners** – May open their land to trail use by formal or informal agreement, and may sell or donate conservation easements while retaining other rights to the land.

Several legal instruments that may be used to transfer ownership or interests in property, either temporarily or permanently:

1. **Titles** – transfer permanent ownership of the land, usually acquired in "fee-simple" through contribution or outright sale.
2. **Easements** – permanently or temporarily convey ownership and control of a certain interest, right or tangible element of the property to a second property while the other retains other rights to the land. Conservation easements are often particularly appropriate to retain off-road trail ways, as these lands are often valuable for lowland or wildlife corridor protection.
3. **Access and Use Agreements** – specify how a portion of property may be used for a specified time. The agreement should contain a termination clause, obligations of the



municipality or trail manager, and a list of impermissible activities.

4. **Leases** – convey almost all rights, control and liability of the property to the lessee for a specified number of years (usually 25 or 99) and may provide the landowner with compensation from the lease.

Acquisition of land for trail corridors, on land that is currently underdeveloped, can take place as part of the City's subdivision process. As large parcels are subdivided, corridors that are specified in the adopted Pedestrian Plan are acquired from the developer and incorporated in to the City's trail system through whichever legal instruments are specified in the City's Subdivision Ordinance. The City may choose to require through the ordinance that the developer contribute a fee for the construction of the trail improvements, as well as continual maintenance fees for its upkeep through a portion of homeowners' association fees.

Liability

The following risk management strategy steps should be taken as the trail is planned and developed:

1. Identify potential hazards in the proposed trail alignment.
2. Develop a list of permitted trail uses along with the risks associated with each.
3. Identify applicable laws.
4. Design and construct the trail in accordance with recognized guidelines.
5. Develop a plan for handling medical emergencies.
6. Conduct regular inspections once the trail is open for use (see **Routine maintenance**).
7. Document inspection findings and actions taken.

For detailed information concerning liability, see:

<http://www.americantrails.org/resources/adjacent/RailLiability.pdf>

Security & Safety

- Safety concerns, such as minimizing accidents and exposure to risk should be addressed during the design process of any off-road trails.
- Safety design elements to consider include:
 1. Lighting and emergency phones,
 2. Elimination of obstructions
 3. Clear sight lines by selective vegetation removal
 4. Planting prickly shrubs at select locations
- In addition to standard police patrol, Adopt-A-Trail programs should be considered that encourage local residents to police trails much like Neighborhood Watch.

- Trails are typically accessible during daylight hours only, and violations after dark are viewed as trespassing.
- Emergency access points for Police, Fire, and EMS should be signed and have restricted-access bollards that allow emergency vehicles into the site while prohibiting access by unauthorized vehicles. Most maintenance access points also suffice as emergency access points.
- When extreme weather is expected, efforts should be taken to close trail to protect the safety of the public.

“Front yard” v. “backyard” paths

Although off-road trails will typically follow stream banks and utility corridors, they should be designed as “front yard elements” whenever possible, connecting to existing sidewalks, as well as civic, residential and commercial destinations. This arrangement will maximize the transportation value of the trail, and also increase visibility and safety for users.

Access Points & Linkages to private property

Access opportunities to off-road trails should be maximized. The trail system should readily accessible from sidewalks in the public right-of-way. Commercial and institutional establishments, as well as residential developments, are strongly encouraged to provide direct access to the trail from their property at points convenient to potential users.

Maintenance & Operations

Facility inspections are an essential part of maintaining any facility. Planning and design of all off-road trails should include management plans that help gauge operational funds for various maintenance projects. Proper maintenance must address both the performance condition of the trail preserving the environmental integrity and character of any environmental areas that are adjacent to the trail. Maintenance and repair projects can be managed either through annual service contracts put out to bid, or become an integral part of the Facilities Management maintenance program. Annual budgets for trail maintenance and operations should document maintenance items, facility improvements, and other related costs to ensure the long-term health of trail facilities, the environment, and safety for users.

Three tiers of maintenance programs should be included in the management plan:

1. **Long-term maintenance programs** - includes renovation of facilities and trail resurfacing. Comprehensive inspections should occur twice a year to record user

impacts, general wear and tear, and other factors that may affect safety, environmental features, or structural integrity of the facility. If long-term maintenance programs are deferred, the safety of the trail is compromised and costly capital improvement funds to renovate damaged areas will be required. Typical long-term maintenance activities include:

- Annual vegetation clearance (June and September)
- Annual inspection by engineer to identify potential repairs needed for bridges and structures, drainage structures, pavement, railings, and fences
- Revegetation during planting seasons

2. **Routine maintenance** – includes safety and repair issues that occur throughout the life of the facility. Frequency of routine maintenance should take place on a monthly basis, dependent upon the amount of usage and availability of funds. Typical routine maintenance activities include:

- Removal of litter and general cleaning
- Sweeping and leaf removal
- Mowing and weed control
- Pruning and removal of encroaching/fallen branches
- Trail edging
- Route signage maintenance
- Graffiti control
- Regular presence of volunteers to report faults

3. **Emergency repairs** - necessitated when storm damage makes the trail unsafe for daily use. Severe weather may occasionally cause damage to the facility either through wind, erosion, or fallen trees. Emergency repair funds for severe weather should be allocated and allowed to rollover from year to year for this inevitability.

Volunteer programs for greenway maintenance can be organized through the “Adopt-A-Park” program or could be coordinated with the existing greenway volunteer programs. Volunteer labor can yield a substantial savings for labor costs on routine maintenance and repair. Materials can be donated by a group, provided through a corporate sponsor, or purchased by the City.



ADDITIONAL ACCESSIBILITY INFORMATION

The following accessibility standards and guidelines are provided by the **Pedestrian and Bicycle Information Center** (www.walkinginfo.org)

A Checklist for Accessible Sidewalks and Street Crossings

The Americans with Disabilities Act (ADA) requires that new and altered facilities be accessible. Title II of the ADA covers sidewalk and street construction and transit accessibility, referencing the ADA Accessibility Guidelines (ADAAG) or the Uniform Federal Accessibility Standards (UFAS) for new construction and alterations undertaken by or on behalf of a state or local government. The Department of Justice (DOJ) title II regulation specifically requires that curb ramps be provided when sidewalks or streets are newly constructed or altered. (Requirements for existing pedestrian networks not otherwise being altered are also included in the DOJ regulation, available on line at www.ada.gov/reg2.html). The ADA Accessibility Guidelines (www.access-board.gov/adaag/html/adaag.htm) include standards for site development applicable to new construction and alterations in the public right-of-way.

CURB RAMPS

A curb ramp or other sloped area is required wherever a new or altered pedestrian walkway crosses a curb or other barrier to a street, road, or highway. Similarly, a curb ramp is required wherever a new or altered street intersects a pedestrian walkway. A curb ramp may be perpendicular to the curb it cuts or parallel with the sidewalk. Other designs may also comply, including sidewalks that ramp down to a lesser curb height, with a short perpendicular curb ramp to the street; blended or at-grade connections, or raised crossings that connect at sidewalk level.

The running slope of a new curb ramp should not exceed 1 in 12 (8.33%). Steeper ramps are not usable by many pedestrians in wheelchairs and scooters. Cross slope should be limited to 2%.

A level landing should be provided at the top of a perpendicular curb ramp. A curb ramp must connect at the top to a level landing that is at least 48 inches deep with a cross slope of no more than 2%. The side flares of a curb ramp are not intended for accessible travel (the slope of a side flare is limited so that it will not present a tripping hazard to pedestrians).

The foot of a curb ramp should be contained within the crosswalk markings. Pedestrians who use wheelchairs should not be directed outside the crosswalk or into an active travel lane

in order to cross stopped traffic. If a diagonal ramp is used, a 48-inch long bottom landing must be provided in the space between the curb radius and curb line extensions.

The transition from curb ramp to gutter should be flush. Lips are not permitted. Gutter counter slope in the line of travel should not exceed 1 in 20 (5%) and should connect smoothly with other elements of the pedestrian network.

The boundary between the sidewalk and street should be detectable underfoot. A 24-inch strip of truncated dome or other approved detectable warning material should be provided the full width of the ramp or other uncurbed connection to the crosswalk so that pedestrians do not inadvertently travel into the street.

SIDEWALKS

A new sidewalk should be wider than the minimum accessible travel width of 36 inches. Additional maneuvering space is necessary for a pedestrian using a wheelchair to turn, to pass by other pedestrians, to operate and pass through an entrance door, to use sidewalk telephone or to activate a pedestrian crossing button. A 60-inch minimum width can accommodate turns and passing space and is recommended for sidewalks adjacent to curbs in order to provide travel width away from the drop-off at street edge; a 48-inch width can accommodate side-by-side travel with a service animal.

The cross slope of a sidewalk should not exceed 2%. Excessive cross slope requires additional energy to counteract and tends to direct wheelchair users into the street, particularly when it is wet, icy, or snowy underfoot. At driveways there should be a minimum 36-inch (915 mm) wide passage with a cross slope of no more than 1:48 (2%). Corners at intersections should comply in both directions, since the running slope of one walkway will be the cross slope of another.

Street furniture, plantings, and other fixed items should not protrude into travel routes. Pedestrians with vision impairments can detect objects mounted on walls or posts if they are installed so that the leading edge is less than 27 inches above the sidewalk. Items mounted above this height should not project more than 4 inches into any circulation route. Particular care should be taken to locate temporary signage so that it does not impede pedestrian travel.

STREET CROSSINGS

Consider the information needs of blind and low-vision pedestrians at intersections.

When pedestrian signals are provided, their crossing and timing information should be available to all users. The audible and

tactile information delivered at the pedestrian button of an accessible pedestrian signal (APS) can identify pedestrian signal phases and provide other non-visual information about the nature of a crossing.

Insufficient crossing time may be a barrier for some pedestrians. Every pedestrian cohort should be expected to contain some walkers whose rate of travel is less than 3.5 feet per second. Some jurisdictions add additional time using video technology; others employ a pedestrian button to call for a longer crossing cycle.

TEMPORARY WORK

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

OTHER PEDESTRIAN FEATURES

Pedestrian facilities on and along sidewalks must be accessible. Signal actuating buttons, drinking fountains, telephones, kiosks, and other pedestrian elements should meet accessibility criteria for approach and maneuvering space, reach range, and operation.

Additional rights-of-way guidelines may be found at the U.S. Access Board's website at www.access-board.gov. The Board also maintains a toll-free technical assistance line at 800/872-2253 (V); 800/993-2822 (TTY).



Bessemer City Pedestrian Plan

Appendices

INFORMATION SOURCES:

Planning and Designing Local Pedestrian Facilities – NCDOT, Office of Bicycle and Pedestrian Transportation, February 1997

North Carolina Bicycles Facilities Planning and Design Guidelines – NCDOT, Office of Bicycle and Pedestrian Transportation, January 1994

James City County Greenway Master Plan (2002)
Greenway Maintenance and Management, www.jccgov.com

American Trails – Resources & Library
<http://www.americantrails.org/resources/index.html>

Creating Connections

The Pennsylvania Greenways and Trails How-to Manual – Russ Johnson, Pennsylvania Environmental Council, Pennsylvania Greenways Partnership, 1998
<http://www.pagreenways.org/toolbox/creatingconnections.pdf>

Rail-Trails and Liability

A Primer on Trail-Related Liability Issues & Risk Management Techniques – Hugh Morris, Rails-to-Trails Conservancy in cooperation with the National Parks Service Rivers, Trails and Conservation Assistance Program, September 2000
<http://www.americantrails.org/resources/adjacent/RailLiability.pdf>

Cary Parks, Recreation and Cultural Resources Facilities Master Plan
<http://www.townofcary.org/depts/prdept/greenwayreco.pdf>

SEQL.org - Sustainable Environment for Quality of Life

Walkinginfo.org

Trafficcalming.org

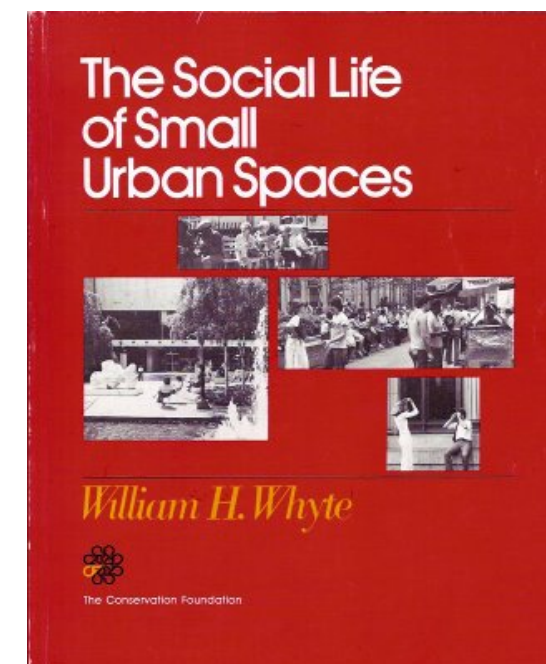
ePodunk – the power of place
<http://www.epodunk.com/cgi-bin/popInfo.php?locIndex=19109>

Federal Highway Administration
<http://www.fhwa.dot.gov/environment/sidewalk2/contents.htm>

The Social Life of Small Urban Spaces – Whyte, William H., 1980

“This book is about city spaces, why some work for people and some do not, and what the practical lessons may be. It is a by-product of first-hand observation.”

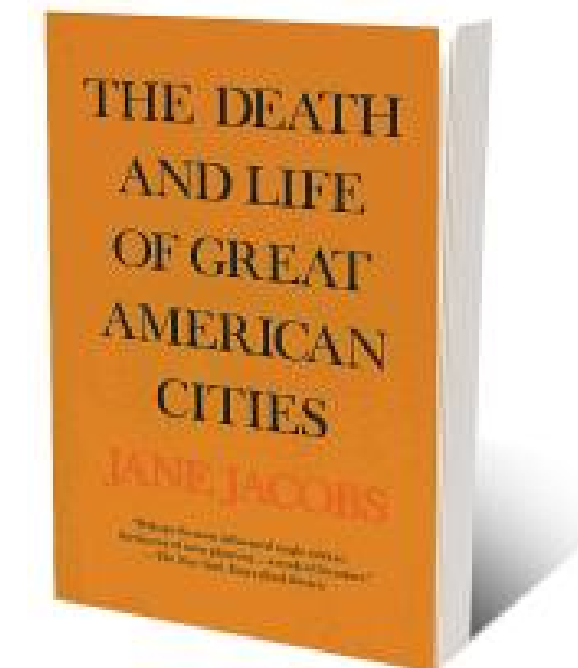
- William H. Whyte



The Death and Life of Great American Cities – Jacobs, Jane, 1961

“In setting forth different principles, I shall mainly be writing about common, ordinary things: for instance, what kinds of city streets are safe and what kinds are not; why some city parks are marvelous and others are vice traps; why some slums stay slums and others regenerate themselves even against financial opposition; what makes downtowns shift their centers; what is a city neighborhood, and what jobs neighborhoods in great cities do. In short, I shall be writing about how cities work in real life, because this is the only way to learn what principles of planning and what practices in rebuilding can promote social and economic vitality in cities.”

- Jane Jacobs





A.4 Articles

The 13 points of pedestrian-oriented development

Duany Plater-Zyberk & Company

1. The neighborhood has a discernible center. This is often a square or a green and sometimes a busy or memorable street corner. A transit stop would be located at this center.
2. Most of the dwellings are within a five-minute walk of the center, an average of roughly 2,000 feet.
3. There are a variety of dwelling types - usually houses, rowhouses and apartments - so that younger and older people, singles and families, the poor and the wealthy may find places to live.
4. At the edge of the neighborhood, there are shops and offices of sufficiently varied types to supply the weekly needs of a household. (Collective neighborhood edges form a town center.)
5. An elementary school is close enough so that most children can walk from their home.
6. There are small playgrounds accessible to every dwelling - not more than a tenth of a mile away.
7. Streets within the neighborhood form a "connected network, which disperses traffic by providing a variety of pedestrian and vehicular routes to any destination.
8. The streets are relatively narrow and shaded by rows of trees. This slows traffic, creating an environment suitable for pedestrians and bicycles.
9. Buildings in the neighborhood center are placed close to the street, creating a well-defined outdoor room.
10. Parking lots and garage doors rarely front the street. Parking is relegated to the rear of buildings, usually accessed by alleys.

11. Certain prominent sites at the termination of street vistas or in the neighborhood center are reserved for civic buildings. These provide sites for community meetings, education, and religious or cultural activities.
12. The neighborhood is organized to be self-governing. A formal association debates and decides matters of maintenance, security, and physical change. Taxation is the responsibility of the larger community.
13. For single-family homes: A small ancillary building is permitted within the backyard of each house. It may be used as a rental unit or place to work (e.g., office or craft workshop).



Outdoor Market, Roanoke, VA

Some Benefits of Greenways

📍 From the Great Rivers Greenway District in St. Louis

Greenways improve everyday living.

An interconnected system encourages neighborhood and community lifestyles that emphasize outdoor recreation and promote walking and bicycling to school, work and shopping. By linking the system to streets, sidewalks and other public spaces, it helps communities and neighborhoods to function in a more connected, healthy and enjoyable way.

Greenways Link a Community's Resources.

By providing physical connections and green "buffers," a system of greenways, parks and trails helps unite spaces within a community. Residential and commercial districts, educational campuses, civic and cultural amenities, and light industry all can be interwoven with a well-designed open space plan that incorporates and respects the natural environment.

Greenways Create a Stronger Tax Base.

Neighborhoods and communities thrive when public investment is made in greenways, parks and trails, encouraging additional public and private investment in the area. The enhancement of "green infrastructure" is an important aspect of redevelopment and contributes to increased property values and, thus, tax revenue. Neighborhoods and communities prosper, job opportunities increase and the region stabilizes financially. In established and growing communities, the additional open space provided by the interconnected system also increases.

📍 Research from the National Park Service:

By conserving a greenway corridor rather than permitting intensive development, local agencies may reduce costs for public services such as sewers, roads, and school facilities. Establishing a greenway in an area prone to hazards, such as flooding, may decrease costs for potential damages. Greenways and associated vegetation can also help control water, air and noise pollution by natural means, resulting in potential decreased pollution control costs. Greenways and trails may promote physical fitness, leading to decreased public health care costs.



Greenway corridors provide a variety of amenities, such as attractive views, open space preservation, and convenient recreation opportunities. People value these amenities. This can be reflected in increased real property values and increased marketability for property located near open space. Developers also recognize these values and incorporate open space into planning, design, and marketing new and redeveloped properties. Cases and examples: <http://www.nps.gov/pwro/rtca/propval.htm>

More information available at:
<http://www.nps.gov/pwro/rtca/index.htm>

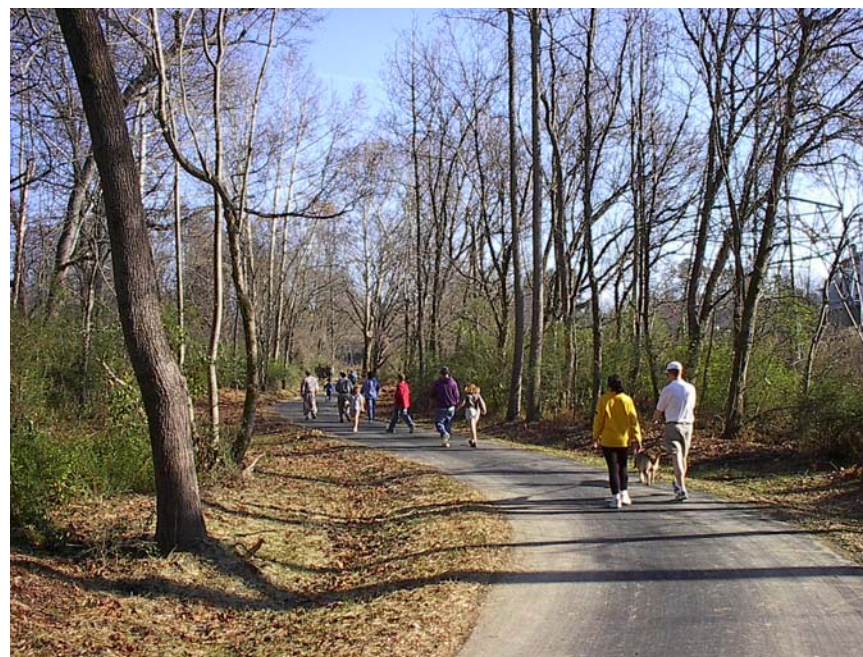
📍 From San Marco Greenbelt Alliance:
Several examples of development and tax revenue
<http://www.smgreenbelt.org/benefits.htm>

Trail users generate tax revenue and income for local businesses. A study conducted by the Maryland Department of Natural Resources found that although the Northern Central Rail-Trail cost \$191,893 to construct, it generated \$303,750 of State tax revenue during one year. (see <http://ntl.bts.gov/DOCS/430.html>) And the 1992 "Impacts of Rail-Trails" study by Roger L. Moore, et al. found that for the three trails studied, trail users of each trail were responsible for generating over \$1.2 million for local businesses. "Users spent an average of \$9.21, \$11.02, and \$3.97 per person per day as a result of their trail visits to the Heritage, St. Marks, and Lafayette/Moraga Trails respectively." For more data on outdoor recreation spending, "Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors" at the National Forest Service site: <http://www.nps.gov/pwro/rtca/econindx.htm>

📍 From Florida Greenways, "What is a greenway?
Economic Prosperity"

Property near but not on the Burke-Gilman Trail in Seattle sold at an average of 6.5 percent more than similar property elsewhere. Property values directly adjacent to the trail were not affected, either in average price or ease of sale. Approximately 60 percent of the owners of homes and condominiums adjacent to the trail believed either their homes sell for more because of the trail or would not be effected. It was also found that homes and condominiums near the trail are easier to sell because of their proximity to the trail (Source: Evaluation of the Burke-Gilman

Trail's Effect on Property Values and Crime, by the Seattle Engineering and Department Office of Planning, 1987).
http://www.geoplan.ufl.edu/projects/greenways/whatisagree_nway.html#economicprosperity



Greenway in Gastonia, North Carolina

Excerpts from studies concerning Safety along Greenways and Trails

**"Generally speaking, where there is
no desirable activity, there is
undesirable activity."**

Greenways are areas of high utilization for recreational purposes. There is little evidence to support the fear that these natural spaces encourage criminal activity.

Evidence supports the notion that greenways, trails and converted rail beds may actually discourage crime and vandalism in many areas. These areas no longer serve as places for people to hang out, dump trash, vandalize or

engage in criminal activity because there is too great a risk that they will be discovered.

Police Chief Terry Sult from the City of Gastonia stated recently:

"[Greenways/trails] just don't tend to be a magnet for crime as a lot of people might think. That doesn't mean greenways don't need to be patrolled, and they must be in use to become criminal deterrents. But the good people who use them for recreation are like unofficial police... The reality is, if you can make sure the [greenways/trails] are activated, it creates more eyes and ears than areas that don't have them. Anything you can do to raise the risk level of a criminal is going to deter crime."

Safety Studies

- A study conducted by UNC-Charlotte explored property crime rates on the entire Mecklenburg County greenway system between 2001 and 2003. The study compared crime on properties next to greenways with those of surrounding neighborhoods. Researchers found that the properties adjacent to the greenways actually experienced less crime during the majority of the years surveyed concluding that greenways do not incur a greater risk of crime. (Assessment of Crime Risk along Greenways in Charlotte, North Carolina 1994-2003 by Walter Martin Presented at the Association of American Geographers 2005 Annual Meeting, Denver, CO, April 8, 2005)

Conclusions:

- The data suggests that Greenways are not significantly more prone to property crimes than their parent neighborhood. Crime rates were lower along greenways in 3 of the 4 years and significantly lower in 2001.
- The assertion that greenways are inherently unsafe is merely an urban legend.



- By challenging the baseless fear of greenways, similar studies can support development and extension of these delightful linear parks.
- A survey of persons using greenways in Raleigh and Charlotte, NC found that 59 % of Raleigh users and 75% of Charlotte users felt that crime was not a problem. www.fogvq.org/trail_user_faq.php
- A report in Asheville, NC 1998 Master Greenway Plan called *Benefits of Greenways* stated that Americans are concerned with crime. Some of the most successful deterrents to criminal activity have involved increased neighborhood awareness by citizens and participation in community watch programs.

Conclusions:

- Greenways have proven to be an effective tool to encourage local residents to participate in neighborhood watch programs.
- Some greenways have even been developed as part of efforts to deter criminal activity in a neighborhood.
- Crime statistics and reports from law enforcement officials have shown that parks and greenways are typically land uses with the lowest incident of reported criminal activity.
- As a recreation resource, alternative transportation corridor, or area where fitness activities can take place, most greenways provide a much safer and more user-friendly resource than other linear corridors, such as local roads.
- Greenways typically attract local residents, who use the facility frequently, creating an environment that is virtually self-policing.
- Additionally, greenways--whether publicly or privately owned—are dedicated for multiple use and are normally designed to meet federal, state and local standards for public safety and use.
- Another study conducted on the effects of three Cary, NC greenways on adjacent residents found that no substantial evidence that these trails negatively impacted

public safety. "Only one resident interviewed was concerned with the issue, and none of the police officers interviewed believed that trails had any effect on public safety."

Conclusions:

- Overall, the study found that *"The trail does not encourage crime, and in fact, probably deters crime since there are many people, tourists and local citizens using the trail for many activities at various hours of the day."*—Pat Conlin, Sheriff, Green County, WI
- These figures are very low considering the 372 trails surveyed cover nearly 7,000 miles of trail and more than 45 million estimated annual users.
- Letters from law enforcement agencies support these findings. They consistently report that rail-trails do not encourage crime; rather, several letters cited heavy trail usage as a crime deterrent in areas of former isolation: *"The trail has not caused any increase in the amount of crimes reported and the few reported incidents are minor in nature... We have found that the trail brings in so many people that it has actually led to a decrease in problems we formerly encountered such as underage drinking along the river banks. The increased presence of people on the trail has contributed to this problem being reduced."*—Charles R. Tennant, Chief of Police, Elizabeth Township, Buena Vista, PA



Planning on Walking?

<http://www.planetizen.com/node/22955><http://www.planetizen.com/node/22955>

20 February 2007 - 9:00am

Author: Wayne Senville

With positive effects on public health, safety, and environmental quality -- walkability has become the new buzzword in planning.

Atlanta Journal-Constitution, "Demand for Walkable Communities Unmet," Jan. 19, 2007: "A report scheduled to be released in conjunction with a panel discussion of Georgia planners and health experts has expanded findings on the benefits of pedestrian-friendly neighborhoods...[the study says] there is a significant, unmet demand for developments that make it easier to walk from place to place."

As editor of the Planning Commissioners Journal ("PCJ") <http://www.plannersweb.com/>, I try to keep up with news on what's happening around the country, and what topics planners are dealing with. The Atlanta Journal-Constitution article cited above is typical of what we're seeing nationwide: a rapidly growing interest in "walkable communities."

A confluence of trends seems to be behind this. For one, there's been growing interest in the health implications of sprawl. From a relatively limited concern, this has exploded into coverage in major national publications and has led to a growing body of research.

The focus of the Winter 2006 issue of the Journal of the American Planning Association ("JAPA"), for example, is on connections between health and planning. Inside that issue, you'll find a detailed analysis of the correlation between health and walkable communities. The researchers found that "individuals who live in counties that are more walkable and have lower rates of crime tend to walk more and to have lower body mass indices." (See "Active Community Environment and Health: The Relationship of Walkable and Safe Communities to Individual Health.")

In the same issue of the JAPA, there is also an article entitled: Many Pathways from Land Use to Health <http://www.planning.org/japa/pdf/JAPAFrank06.pdf>, that examines the link between walkability and air quality. The researchers asked if more walkable environments led to reduced auto use and, in turn, better air quality. Using a "walkability index"



that factored in things like net residential density and street connectivity, they found that more walkable neighborhoods yield at least some improvements in air quality (also pointing out that "greater improvements in walkability should lead to larger effects").

Consider also the rapidly growing "safe routes to school" movement, which seeks to get more kids walking to school -- in large part for the health benefits, but also as a way of promoting neighborhood schools in places where walking to school is still possible (we've reported on "school sprawl" <http://www.plannersweb.com/wfiles/w165.html> in the PCJ, and know that in many places walking to school is simply an impossibility).

Advocating for the opposite end of the age spectrum, AARP has started a major "livable communities" initiative. In Burlington, Vermont, one of the pilot communities in this project, seniors have taken neighborhood walks, where they've evaluated the condition of sidewalks, crosswalks, and signal timing -- with the aim of enabling more seniors to be able to walk from where they live to nearby stores and community services.

Cities where you wouldn't expect it are also focusing on pedestrians. In Kansas City, Missouri, one of the nation's most auto-oriented places, the City has adopted a Walkability Plan <http://www.kcmo.org/planning.nsf/plnpres/walkability?opendocument>, with innovative strategies for promoting more walkable neighborhoods. Kansas City now requires neighborhood walkability audits as a prerequisite to receipt of certain capital improvement funds. The city's development review process also takes into account not just traffic, but pedestrian impacts. PCJ offers a summary of what Kansas City is up to. http://www.plannersweb.com/Kansas_City_walkable.pdf

Here's one more force behind the interest in walkable communities: the New Urbanism movement. Those of you familiar with New Urbanism -- which has taken off as an approach to urban design and planning in recent years -- know that it has as a core value a commitment to developing walkable communities. Consider just two of the guiding principles in the Charter <http://209.31.179.62/charter> of the Congress of the New Urbanism (new urbanism's guiding body).

- Many activities of daily living should occur within walking distance, allowing independence to those who do not drive, especially the elderly and the young. Interconnected

networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, and conserve energy.

- Concentrations of civic, institutional, and commercial activity should be embedded in neighborhoods and districts, not isolated in remote, single-use complexes. Schools should be sized and located to enable children to walk or bicycle to them. Also connected to the heightened interest in walkable communities is the voice of hundreds of Main Street organizations and downtown business groups. They are seeing how their efforts tie in nicely to promoting walkability. And, of course, there are few places more conducive to walking than downtown main streets.

But even in newer suburbs, town center developments are proliferating -- and are being promoted in terms of their walkability, not just their auto accessibility.

In the current issue of our publication, the PCJ, transportation planner Hannah Twaddell points to many of the developments I've just noted (see excerpts from Let's Plan on Walking <http://www.plannersweb.com/wfiles/w258.html>). But she also highlights another important ingredient in the brewing interest in walkable communities -- economic value:

"One of the keys to regional and local prosperity is the ability to attract and retain high-skilled people. ... Many people can, and do, choose where they want to live based on factors beyond their ability to make a living. "Quality of life" has become the coin of the realm. The economic value of a community's attractiveness as a place to live, work, and play is becoming widely recognized by business leaders, local officials, and planners. This has led many cities to focus on ... a built environment that encourages a vibrant street life -- elements that require a welcoming, walkable environment for people of all ages."

Twaddell goes on to note, "Walkability isn't just for cities and suburbs. The economic health and livability of small towns and villages depends upon it, too. Participants in surveys and focus groups conducted for a recent national study on integrating land use and transportation in rural communities repeatedly emphasized the need to invest in sidewalks, crossings, and street

amenities in order to take advantage of the compact, connected design they already enjoy."

And before I close, it's interesting to note that even the National Highway Traffic Safety Administration is promoting walkability, witness its Partnership for a Walkable America <http://www.nhtsa.dot.gov/people/outreach/safesobr/12qp/walkable.html>. As the NHTSA puts it, "Our nation has simply become 'unwalkable' despite the fact that everyone is a pedestrian!" The NHTSA's objectives: "to make walking in America safer by reducing motor vehicle-related deaths and injuries; to provide information about how to achieve walkable communities; and to encourage walking as one of the easiest ways for Americans to improve their health and lower health care costs."

So what's the bottom line? It seems that walkability is in. It's hard to argue with benefits that range from health, to air quality, to quality of life, to economic value, to safety (and I probably left something out!). What we seem to be witnessing, dare I say, is a walkability movement.

But I'm curious to hear your take on this. Is walkability of growing importance in your city or town? And, if so, what do you think is behind the interest?

Wayne Senville is publisher and editor of the Planning Commissioners Journal (since founding the PCJ in 1991). He served as a member of the Burlington, Vermont, Planning Commission from 1990-1999, including three years' service as Chair. Senville was also honored by the Northern New England Chapter of the American Planning Association, and the Vermont Planners Association, as Citizen Planner of the Year in 1999. Between 1988 and 1991, Senville was Director of Local & Regional Planning Assistance for the Vermont Dept. of Housing & Community Affairs.

Resource: A great resource for anyone interested in this topic is the Walkable Communities web site <http://www.walkable.org/>, put together by Dan Burden.



A.5 How to Build a Sidewalk

A STEP-BY-STEP GUIDELINE FOR BUILDING PEDESTRIAN IMPROVEMENTS

I. PROJECT REQUEST

All requests for new sidewalks (or other pedestrian facilities) should be directed to the Pedestrian Needs Committee (PNC). A request may come from various sources, including:

1. A Pedestrian Plan evaluation exercise (see the **Plan Evaluation** section)
2. An unsolicited request from an individual or group
3. Observations of PNC members themselves, elected officials, City Manager, Public Works Director or other City staff members.



II. PROJECT EVALUATION PHASE

The PNC should evaluate the project with respect to the following criteria:

1. Appropriateness of the project with respect to the Pedestrian Plan

- a. Does the project meet the goals of the Pedestrian Plan?
- b. Where does the project fall into the priorities of the Plan?
- c. Does the project meet current and anticipated needs and conditions?
- d. Can the requested project be altered in some way to meet the above criteria?

2. Ownership of the land

Does the City already own the right-of-way? If not, the PNC should determine and recommend the most appropriate course of action:

- a. Purchase the property required by fee simple.
- b. Acquire an easement on the property.
- c. Condemn the portion of the property needed.
- d. Find an alternate project to meet the goal.

3. Source and availability of proper funding

The PNC should determine and recommend a funding strategy that would be most appropriate to the project. The PNC may consider:

- a. Powell Bill funds
- b. Applicable grants
- c. Other sources (see **Funding Opportunities**).

III. PROJECT DESIGN/CONSTRUCTION PHASE

If the project meets the intent of the Pedestrian Plan, and it has been determined that the property required for the project can be obtained, the PNC should then examine the project in terms of the four specific parameters listed below. Each of these parameters will determine some aspect of how the project construction process will play out.

1. Project Area

Larger projects require additional state permitting. If the project involves one acre or more of disturbed earth, a plan must be submitted to the North Carolina Department of Natural Resources (NCDENR) for a 30-day review of the project. The process for submitting projects to NCDENR, as well as the application forms required, can be found at their Division of Land Resources webpage:

<http://www.dlr.enr.state.nc.us/pages/sedimentforms.html>

Additional permits may be required for particular projects depending upon the site involved. For more information, contact the local NCDENR office at 704-663-1699.





Bessemer City Pedestrian Plan

Appendices

2. Project Cost

A rough estimate of the overall project cost should be performed at the outset to determine if the project must be bid publicly.

Project cost <\$300,000

Project does not require public bidding, however obtaining multiple bids, informally, is recommended to find the most competitive price for project construction.

Project cost >\$300,000

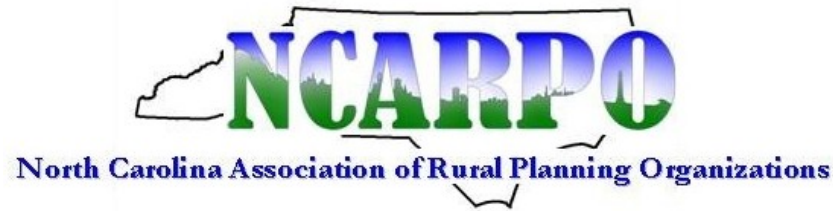
- Public bid for the project is required according to General Statute.
- Requires Planning Board Approval
- Bid projects using a professional list serve. Advertising in newspapers may serve this purpose, but are usually not as cost-effective.

3. Project Property Owners

Owners of properties directly affected by the project must always be contacted, but depending upon the project size as well as its civic importance, this can occur privately or may require a public workshop.

4. Project Design

Some projects are small enough and/or do not require exact measurements for construction, such as some sections of trails. These may be field determined and built according to a standard specification (see **Facility Standards & Guidelines**). But projects that tie into existing streets or other facilities more often require careful coordination and measured plans. An attempt to save money at the front end by not requiring construction plans can likely produce a project that is unsatisfactory, problematic, and reap unexpected expense.



The **North Carolina Association of Rural Planning Organizations** website has answers for an array of transportation questions, including how to fund projects.

Find the NCARPO at <http://www.kerrtarcoq.org/rpo/NCARPO.php>

The following is an excerpt from their page on constructing sidewalks:

Constructing a sidewalk sometimes involves a variety of players, from the NCDOT and municipalities, to private property owners and utility departments. A range of federal and state and local funding sources are available to assist in the development and construction of these non-motorized improvements; however local financial participation is often required, in the form of matching funds, right-of-way acquisition or in-kind services.

Below are some of the resources available to assist in the construction of sidewalks. Please contact the NCDOT early in the process if the sidewalk you would like built is along a state-owned road.

On-Road Pedestrian Facilities

Federal

- [Enhancement Funds](#)
- [Congestion Mitigation and Air Quality Funds](#) (in qualifying areas)
- Earmarks (contact [local legislator](#))
- [Safe Routes to Schools](#) (within 2 miles of an elementary or middle school)

State

- [Independent Projects through the Surface Transportation Program Evaluation Criteria](#)
- [Incidental Projects \(in conjunction with road maintenance or widening projects\)](#)

- [Governor's Highway Safety Program](#)
- Board Member Discretionary Funds (via [Division Office](#))

Local

- Community Foundations
- Tourism Authority
- Health Foundations/Hospitals
- Powell Bill

To view more, see

<http://www.nctransportationanswers.org/Construct%20Sidewalks.htm>

For further information about funding projects, see
Part 4: IMPLEMENTATION.

