2035 FLATS Long Range Transportation Plan

Final Report

Prepared for:

Florence Area Transportation Study
Metropolitan Planning Organization
Florence, South Carolina

Prepared by:

Kimley-Horn and Associates, Inc.

Acknowledgements

On behalf of the project team, the Florence Area Transportation Study Metropolitan Planning Organization thanks the diverse group of participants whose input was instrumental to create a blueprint for a safe, multimodal, and interconnected transportation system for the Florence region. The *2035 FLATS Long Range Transportation Plan* (*2035 LRTP*) reflects the collaborative efforts of the Transportation Plan Advisory Committee, local staff and elected officials, the South Carolina Department of Transportation, the Federal Highway Administration, numerous stakeholders, and the dedicated citizenry of the greater Florence area.The efforts of everyone are greatly appreciated.

Transportation Plan Advisory Committee

Debbie Price
Nathan Flowers
Carolyn Schretzmann
Windy Pierce
Jack Thompson
Peggy Brown
Lionel Brown
Alex Palkovich
Cheryl Floyd
Ken Jackson
Kyle Edney
Mary Crockett
Peter Knoller
Glynn Willis
Shane Belcher
Lorene Arnette
Michael Bethea
Kendra Cobb
Phillip Lookadoo
Phil Goff
Daniel Cox

The 30-day mandatory public comment period for the 2035 LRTP was held from January 23, 2012 through February 20, 2012. No public comments were received. **The *2035 LRTP* was adopted by the FLATS Policy Committee on July 23, 2012.**

Florence County Planning

Debi Matthews
Renee Proctor
Jay Graham
Kevin Griffin
Scott Park

Kimley-Horn and Associates, Inc.

Mike Rutkowski
Allison Fluitt
Jonathan Whitehurst
Cole Dagerhardt
Tim Padgett
Brett Wood
Matt Noonkester
Camille Barchers
Erin Musiol
Julie Young
Andy Fox

Contents

Chapter 6 — Bicycle and Pedestrian Element

Chapter 7 — Transit Element

Chapter 8 — Freight & Aviation Element

Chapter 9 — Land Use Element

Tables & Figures

Chapter 6 — Bicycle and Pedestrian Element

Chapter 7 — Transit Element

Chapter 8 — Freight & Aviation Element

Chapter 9 — Land Use Element

Chapter 10 — Financial Plan

Chapter 11 — Implementation Plan

Chapter 1

Background & Overview

In the mid-1800s, the town of Florence was founded at the crossroads of two rail lines. Today, the community stands at a different kind of crossroads, faced with limited funds for transportation projects and competing priorities. It's a problem that growing communities across the country must confront. Since the early 1900s, population growth in the Florence area has outpaced state and national averages. The region must plan for and provide appropriate transportation infrastructure to support this sustained growth while maintaining the quality of life that has fueled population growth and expansion of the economy in the region. The *2035 FLATS Long Range Transportation Plan* (*2035 LRTP*) has evolved from an inclusive process rooted in an understanding of the community's existing and future needs. The basis of this understanding begins with a brief review of the area's history.

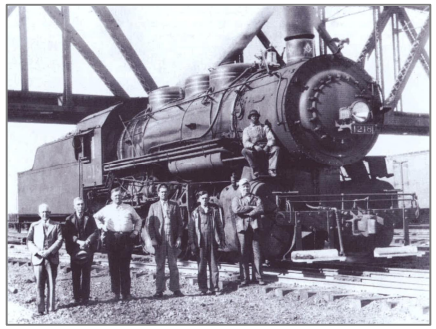
A Brief History of the Florence Area

Times were tough for the earliest settlers of the area that would become Florence County. These settlers mostly arrived from Pennsylvania and relied on the network of rivers for transportation. The remote area, its isolation from both church and state, and the lack of basic education led some to denounce these settlers as immoral, wicked, and rude. In actuality, the locals simply were making the best of a difficult environment, surviving on the land by hunting, fishing, and farming. In many ways, the area's modest start helped shape the southern way-of-life long-time locals and newcomers continue to enjoy today.

West Evans Street, 1921

The Florence area — including its economy, development patterns, and way of life — was shaped by the same events that formed the American South. Leading up to the Revolutionary War, the economy of the Pee Dee region began to flourish on the strength of agriculture. Exports during this time included cattle and horses, lumber, and Indigo. The rivers served as the region's earliest freight corridors, as merchants relied on the waterways to ship their goods.

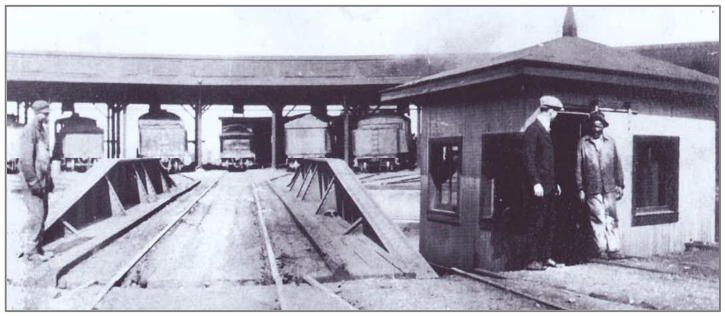
Despite the area's proximity to Charleston, the Revolutionary War had minimal affect on the landscape. However, other events had a profound impact on the growth of the Pee Dee region. The 1783 invention of the cotton gin further shifted the economy and agricultural focus in the region to cotton. But the lack of transportation continued to hamper growth. This changed in the mid 1800s with the arrival of the railroad.



Atlantic Coast Line Railroad, 1921

Eventually, three railroads were constructed in the Pee Dee region, all of which intersect in what today is known as Florence. The city of Florence began with a railroad depot, an inn, and a 577-acre land grant from the state. Even in name, the city acknowledges the critical role the railroad has played in its history. The Florence name comes from Florence Henning Harlee, daughter of General W.W. Harlee who was president of the Wilmington and Manchester Railroad. When the first map of Florence was created in 1860, the town included seven streets and 96 lots. Following the Civil War, the area's primary employer was the Northeastern Railroad. Growth in the town and region was based on its status as trade center for agricultural products from the surrounding Pee Dee River Basin.

Image Source: Images of Florence



Atlantic Coast Line Railroad, 1921

The transformation to a 20th century region was made easier due to the area's status as a rail and transportation center. With the onset of motor vehicles and air facilities, additional modes began to compete for users, infrastructure, and funding. Gilbert Field was created in the 1920s and served as Army Air Base and major training site during World War II. Automobiles and airplanes did little to dampen the city's rail industry leading up to the war, and in the 1940s the city was the state's largest rail station with 14 passenger trains and 48 freight trains passing through every day.

The automobile's presence was obvious in the 1960s and 1970s as the construction of I-95 and I-20 ushered in a new era as a crossroads community. The timing of many factors — including new-found wealth as the economy shifted away from agriculture, mass-produced affordable housing, and the burgeoning interstate highway system — paved the way for demographic shifts on a scale not seen in the area's history. The middle class shunned the city for automobile-oriented suburbs, requiring significant changes in transportation infrastructure. Suburban development and the construction of local streets put pressure on the region's arterial roadways. It's a pressure that continues today as residents in the city and countryside rely on the automobile to take them from their homes to work, school, and other community activities. The roadway system became the main focus for transportation growth as the City of Florence became the focus for business, health care, education, and cultural opportunities for the Pee Dee region.

The time to plan is now.

Transportation gives the Florence area a significant advantage in a competitive marketplace. The city is positioned at the intersection of two key interstate highways (I-95 and I-20) and major US highways (US 52 and US 76). The region boasts a major switching yard for CSX Railroad and direct rail service to the southeast's major ports (Charleston, SC and Wilmington, NC). With daily commercial services from Florence Regional Airport and passenger rail service offered by Amtrak, the residents and businesses of the Pee Dee region have many choices.

The challenge is to maintain this strategic advantage by making thoughtful decisions regarding the future of transportation in the region. The local desire for bicycle and pedestrian amenities reflects the need for a multimodal modal transportation system for local, regional, and national travel. Given the increasing competition for limited transportation funds, the time is now to outline a list of priorities and develop an implementation plan to see those projects to completion.

The Purpose of the Updated Plan

As a central element of daily life and something that affects everyone, transportation represents a critical component of an area's social and man-made infrastructure. The long range transportation plan is the community's comprehensive guide to developing a regional transportation system that accommodates not only the current mobility needs of residents but also looks to the future to anticipate where new needs will arise. The LRTP is a financially constrained plan, meaning it identifies projects and programs that can reasonably be implemented within the years of the plan. In response to federal mandates and the desires of local residents, this *2035 LRTP* addresses all modes of transport including automobile, bicycle, pedestrian, transit, air, rail, and freight movements.

The long range transportation plan is shaped by several elements, primarily federal legislation, but also the direction of state and local agencies. The *2035 LRTP* is governed by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was signed into law on August 10, 2005.

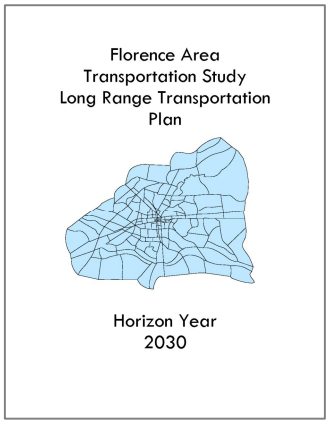
Image Source: Images of Florence

SAFETEA-LU Planning Factors

SAFETEA-LU improves upon earlier legislation by addressing the challenges the modern transportation system faces — safety, security, traffic congestion, intermodal connectivity, freight movement, and environmental protection. To further guide the planning process, SAFETEA-LU set forth eight planning factors that agencies must consider when developing their plans. These planning factors include:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
2. Increase the safety of the transportation system for motorized and non-motorized users
3. Increase the security of the transportation system for motorized and non-motorized users
4. Increase the accessibility and mobility of people and freight
5. Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
7. Promote efficient system management and operation
8. Emphasize the preservation of the existing transportation system

The *2035 LRTP* represents the culmination of a multi-level partnership between local, state, and federal policy-makers and the citizens, business owners, and stakeholders most impacted by transportation decisions. The plan updates the region's existing long range transportation plan and will be used in a variety of ways. First, the plan identifies key regional transportation decisions that were based on community needs. Second, it provides critical information to be considered in the prioritization and funding of projects in developing the Transportation Improvement Program (TIP). Finally, it fosters multimodal transportation decisions, and as a result, ensures consistency among competing modes.



For air quality attainment areas, the federal government requires an LRTP to be updated every five years to reflect the region's changing needs and priorities. The *2035 LRTP* builds upon the 2030 Plan, which was adopted in June 2006. Since launching the metropolitan planning process in 1970, the federal government has required a cooperative, continuous, and comprehensive planning framework for making transportation investment decisions in metropolitan areas. The Florence Area Transportation Study Metropolitan Planning Organization (MPO) includes the City of Florence, Town of Quinby, and unincorporated areas of Florence County. In addition, a small area of unincorporated Darlington County lies within the MPO boundary.

Figure 1.1 illustrates the study area.

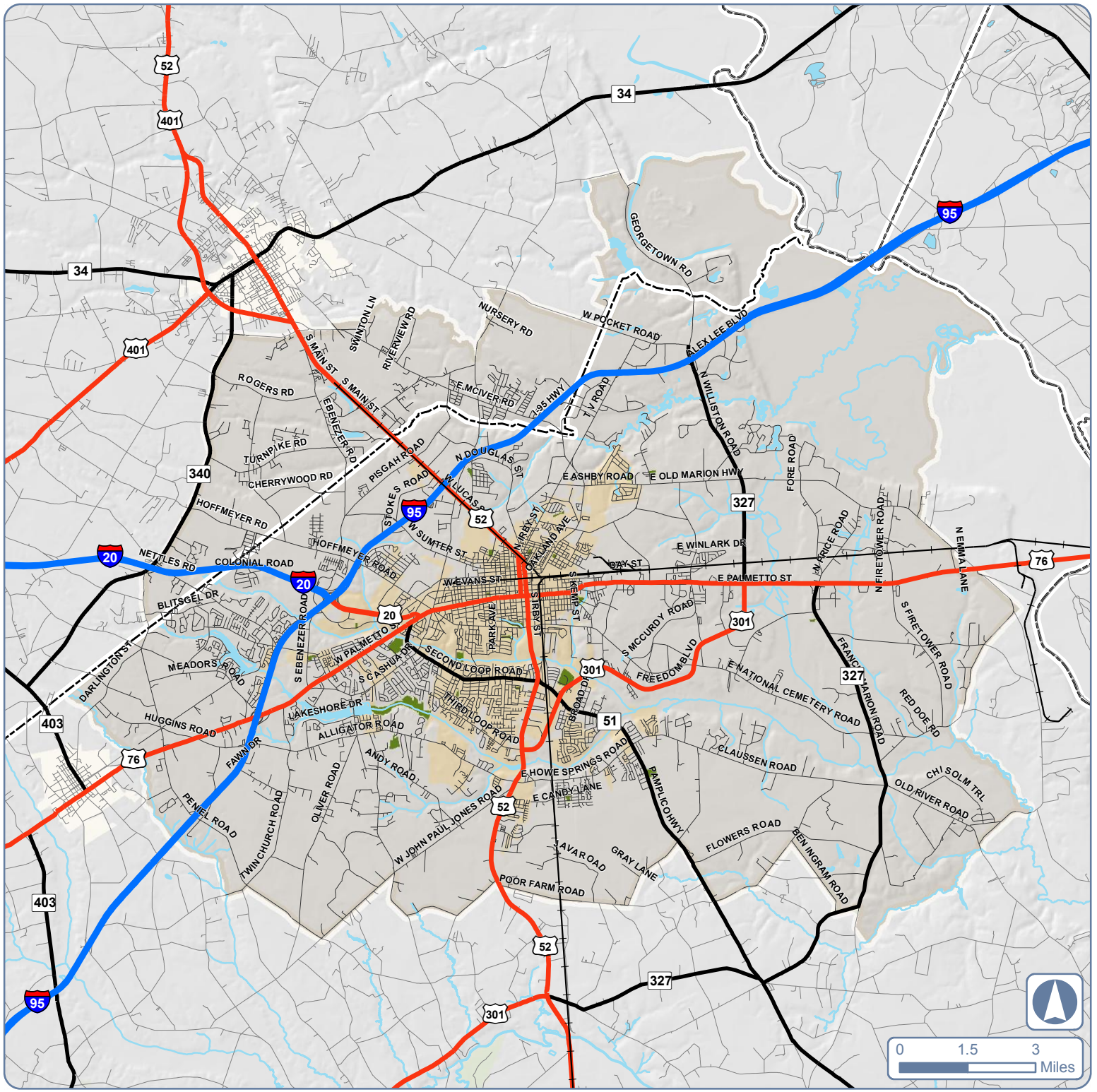


Figure 1.1

Study Area Map

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary

FLATS 2035 LRTP

Kimley-Horn and Associates, Inc.

Plan Organization

Typical long range transportation plans include a description of the vision for the region and a detailed list of policies, operational strategies, and projects to achieve the vision. The *2035 LRTP* integrates these two parts through the presentation of a series of elements dedicated to specific modes of travel. But each element was not created in isolation. Instead, analysis and recommendations for the elements have been created in tandem to produce a series of actions that lead to an integrated intermodal transportation system that efficiently moves people and goods within and beyond the Florence area.

The recommendations presented in this plan represents the collective vision of a safe, multimodal, and interconnected transportation system that supports continued economic development without compromising the natural, historic, and social resources vital to the area's sustainability. In addition to this initial chapter, the following elements complete the *2035 LRTP*:

Ch. 2 – Introduction & Vision
Introduces the planning process, including a detailed review of public outreach events and a summary of previous planning efforts. Describes the vision of the plan and discusses various goals within the context of the eight SAFETEA-LU planning factors.

Ch. 3 – Social & Environmental
Examines the environmental justice, social, and environmental characteristics of the Florence area in order to provide a spatial frame of reference to assess the relative impacts of recommended projects on the community.

Ch. 4 – Existing Roadway
Reviews status of existing roadway system to better identify needs and priorities for planning improvements. Evaluates roadway system in terms of functional classification, corridor operations, and traffic safety and crash history.

Ch. 5 – Future Roadway
Summarizes future roadway conditions under various scenarios. Evaluates each project's impact on resources, congestion, safety, security, and benefits to the transportation system. Presents a toolbox of access management and context sensitive design strategies.

Ch. 6 – Bicycle & Pedestrian
Evaluates existing bicycle and pedestrian system and recommends facilities to expand the network of sidewalks, on-street bicycle facilities, and off-street paths. Recommends education, encouragement, and enforcement programs to promote safe and efficient travel.

Ch. 7 – Transit
Inventories existing public transportation and demand-response services. Addresses type, location, and frequency of services as well as the need for ancillary facilities.

Ch. 8 – Freight & Aviation
Documents existing infrastructure and key issues related to freight (highway and rail) and aviation. Examines how the movement of freight will be impacted by proposed roadway improvements. Identifies key corridors for both motor and rail freight.

Ch. 9 – Land Use
Highlights two focus areas representative of varying development patterns and intensities. Documents the causational relationships between transportation and land use. Recommends basic plans, programs, and policies for implementing the preferred scenario throughout the area.

Ch. 10 – Financial Plan
Evaluates potential funding sources, revenues, and probable costs for recommendations. Accounts for new SAFETEA-LU standards for incorporating inflation into cost and revenue projections. Creates a set of interim year recommendations and 2035 horizon year recommendations.

Ch. 11 – Implementation Plan
Presents priorities and an action for implemented multimodal recommendations. Includes an action plan to assist local decision-makers and planning staff in taking the necessary steps to implement the *2035 LRTP*.

Chapter 2

Introduction & Vision

Transportation has long been the driving force behind economic and population growth in the Florence area. Today more than ever, elected officials, local staff, and citizen advocates must join together in planning appropriate transportation infrastructure that guides growth in a way that enhances the quality of life in the region. Challenges to planning such infrastructure include deficiencies in existing roads, lack of interconnectivity between developments, natural barriers such as wetlands, and disconnect between land use and transportation decisions.

As it is with other areas in the state and nation, a balanced multimodal transportation network is critical for the sustaining the successes Florence and the surrounding areas have enjoyed over the last few decades. Decision-makers face tough choices as they develop a blueprint to overcome these challenges. In the past, transportation planning focused improvements on the network of highways and major roads. We now recognize such improvements can help only so much. Strategic investment in major roadways must be balanced with improvements to the bicycle, pedestrian, transit, rail, and freight network to keep people and goods moving, allow better access and mobility for residents and visitors, and enhance the way of life in the Pee Dee region.

The *2035 FLATS Long Range Transportation Plan* (*2035 LRTP*) addresses expected growth in the Florence and Quinby as well as the surrounding unincorporated land in Florence and Darlington Counties. The plan proposes a multimodal transportation network that fosters continued growth while preserving the natural, cultural, and social fabric of the region. The plan incorporates new planning factors established in the most recent federal transportation authorization legislation. At times, the *2035 LRTP* looks beyond the extents of the roadway to determine the effects of growth on the built environment. The intent is to develop strategies that begin to balance the land use and transportation equation.

This chapter describes the long range transportation planning process, presents the public outreach results, and defines the vision and goals of the *2035 LRTP*.

Planning Process

Transportation planning at its best is a collaborative process led by local staff and citizens invested in their community; it involves key stakeholders and the general public. The planning process should be rooted in a public involvement platform that gathers, processes, and applies a diversity of opinions from residents, the business community, and civic groups. Public outreach for the *2035 LRTP* occurred through a variety of small- and large-group meetings and an assortment of media. Two principles of public outreach were adhered to:

1. Citizens have a personal understanding of the transportation network and planning decisions have a direct impact on their daily lives.
2. Groups can share in the collective vision for a project even as they hold differing opinions on how this vision should be fulfilled.

With respect to these two principles, the planning process for the *2035 LRTP* was designed to create an open dialogue about the needs of current and future residents, visitors, and business owners.

Public Outreach

Most successful planning projects begin with an inclusive process of strong citizen involvement. For the *2035 LRTP*, the underlying principle for understanding local dynamics was collaborative planning and consensus building. Local staff and the project team worked hand-in-hand with the public throughout the planning process. Along the way, several overarching issues emerged:

- *We can't continue to build 4 lane roads to nowhere.*
- *We need to shift new construction money to bikeways, better signal coordination, and local improvements for efficiency and safety.*
- *We must make it safe for kids to walk or bike to school.*
- *We can support public transportation, and it contributes to the community even if everyone doesn't use it.*
- *We should improve street aesthetics within the goal of multimodal transportation.*
- *We must come up with a way to encourage what we like, discourage what we don't, and improve what we can.*
- *We can't disregard previous planning efforts.*
- *We have to create a plan that can be implemented with the political and financial constraints we'll face over the next 30 years.*
- *We need to acknowledge the role freight and commerce has played in our region's history and must find ways to enhance the freight network.*

These issues as well as others surfaced during the various channels of public outreached detailed on the following pages.

Transportation Plan Advisory Committee

At the outset of the project, a group of community representatives was selected to act as a sounding board throughout the planning process. The Transportation Plan Advisory Committee (TPAC) formed as a dedicated group of local officials, staff, stakeholders, and citizens to ensure the plan recognized previous planning efforts and incorporated the assorted perspectives found throughout the planning area. The TPAC was instrumental in formulating the vision and goals for the plan and ensuring the final product respected the vision and goals. The TPAC accepted the following mission:

> *The Transportation Plan Advisory Committee will provide guidance to the Project Team in the development of a multimodal transportation plan that adheres to good planning practices and encourages sustainable development by integrating transportation and land use decisions. The Plan — built upon a collaborative process between state and local governments — will effectively engage the community to create a comprehensive planning tool that directs future transportation decisions in the FLATS study area.*

Beginning with a kick-off meeting on March 25, 2009, the TPAC met periodically during the plan development phase to fulfill its mission and assist the project team. The TPAC examined existing deficiencies and potential solutions for biking, walking, using transit, driving, and moving freight. In addition to serving as a sounding board for project team ideas, the committee participated in visioning and mapping exercises, provided feedback to the project team, and spearheaded the promotion of other public involvement efforts.

The first meeting of the TPAC served as a kick-off meeting, at which the committee reviewed the basics of the long range transportation planning process and discussed the highs and lows of transportation in the Florence area. Following a discussion of the study background and brief introductions of the committee members and project team, the group participated in an issues identification exercise. This portion of the meeting prompted a conversation about the overarching challenges facing the area. While some of these challenges have sprouted since the 2030 LRTP was adopted, others were identified as long-standing issues within the community. Areas of concern centered on major bottleneck points and areas of safety concern, such as 5-Points, South Irby Street, and Second Loop Road. The committee also noted the need to coordinate the LRTP with other planning efforts specific to the different elements of the plan (bicycle and pedestrian, transit, freight, land use).

During the meetings that followed the initial kick-off meeting, the TPAC continued to explore these issues as well as potential challenges specific to the modal elements of the *2035 LRTP*. The short feedback loops provided through these regularly scheduled meetings ensure the project team never veered to far from the direction preferred by the TPAC.

Stakeholder Interviews

With well-designed meetings and multiple opportunities for interaction, the TPAC and general public can provide good insight into the planning issues facing the Pee Dee region. But for more specialized attention to specific matters affecting the development and implementation of the long range transportation plan, key stakeholders had to be targeted. At the outset of the planning process, the project team in consultation with local staff identified a list of stakeholders.

Conversations with these stakeholders provided insight into a variety of issues spanning the social, political, economic, and transportation spectrums. Numerous stakeholder interviews were conducted as part of the *2035 LRTP* planning process. Feedback gathered through these conversations helped validate background information collected through discussions with the TPAC and the results of other public outreach efforts. The information also helped the project team prepare a list of initial recommendations. Some of the comments included:

- Most residential growth is moving south and west.
- There is a lack of major east-west connections. Connectivity needs to be a major message of the plan.
- We need to make our city and region more bicycle friendly to everyone – young and old, experienced and inexperienced.
- Hoffmeyer Road is a growth corridor but it's very disconnected.
- Our industrial base is a blessing and a curse.
- Five Points warrants some attention.
- The biggest challenge for the airport is the runway length.
- US 52 (Irby Street) downtown needs a facelift.

Public Workshops

Citizens interact with the transportation system in a variety of ways. Given these unique experiences, they understand the strengths and weaknesses of the transportation system and feel the impact of transportation decisions on a daily basis. A well-publicized and properly designed outreach effort allows local planners and the project team to tap into this special knowledge. The *2035 LRTP* included the following two workshops, each of which had specific objectives.

Workshop # 1 – Visioning

The first public workshop, held May 12, 2009 at the Drs Bruce and Lee Main Library, was interactive and designed to develop project goals, identify issues and concerns, and generate ideas and potential solutions. The evening began with an overview presentation during which the project team outlined the planning process, introduced background information, and set the stage for the interactive sessions that formed the core of the workshop. Following the presentation, those in attendance expressed concerns and needs in a large group setting. Comments from this part of the evening were transcribed on large easel boards. Attendees then gathered in small groups around maps to discuss the opportunities and needs of the area. The comments spanned all the elements of the transportation plan as well as issues related to existing and future land use. Scenes from the first public workshop are shown to the right.

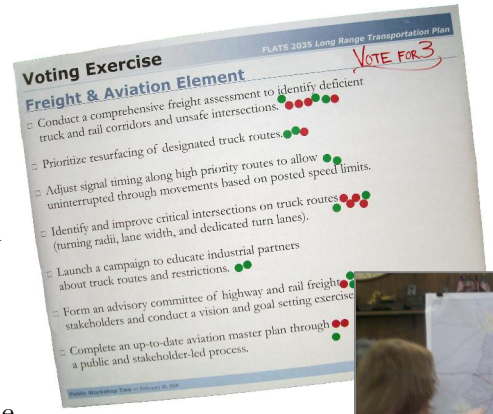
Comments received during the first round of workshops were used throughout the planning process while evaluating existing conditions and developing potential recommendations for facilities, programs, and policies. Some of these comments are shown on the following page. Prior to finalizing the plan, the project team hosted another public workshop as described later in the chapter.

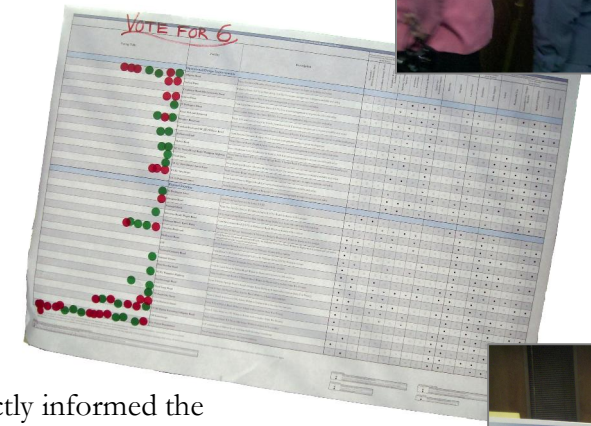
What We Heard:

- At all costs, I avoid 5 Points.
- The access road from Irby to Pamplico Hwy is horrible.
- Important to make heavy investment in bikeways that people could safely use on main commuter hubs.
- As US 301 bypass develops use access management to limit driveways.
- Lots more trees, please!
- Put bike lanes on Hoffmeyer Rd.
- Please take a serious look at underground utilities.
- Consider an ordinance that requires long-term (5+ years) land owners of unimproved property fronting a major high-use street to plant substantial greenspace.
- I support sidewalks and bike-friendly streets.
- With bike lanes on busy roads, Florence could be quite a good city for bikes as transportation. It is reasonably compact.
- We need a better city layout and more density before public transportation can be a priority.
- Where do I find out about bus routes?

Workshop # 2 – Feedback

Comments received during the first workshop formed the basis of the updated plan. Prior to submitting a draft plan of recommended facilities, programs, and policies, the project team again assembled with the public to discuss preliminary recommendations. The second workshop occurred at the Florence County Council Chambers from 5:30 p.m. to 7:30 p.m. February 18, 2010. At this workshop, the public reviewed the multimodal recommendations and discussed scenarios for two selected land use focus areas in the community. The workshop offered the public a final opportunity to engage the project team in a more formal environment.





The project team conducted a brief overview presentation that highlighted the feedback received from the first public workshop and public questionnaire before introducing recommendations various modes. Following a large group question and answer session, attendees were tasked with voting for their preferred recommendations by placing dots on posters that described recommendations for the major elements of the plan: roadway, bicycle and pedestrian, transit, and freight and aviation. The results of the voting exercise directly informed the evaluation matrix presented in **Chapter 5** and helped the project team prioritize recommendation for each mode as discussed in **Chapter 11**.

Overall, some of the plan's recommendations were adjusted based on the information provided at the workshop. By the time the draft plan was completed, the community had devised a shared vision for their area and multiple ways to fulfill it.

Public Questionnaire

A public questionnaire distributed to TPAC members and the public provided valuable information on various transportation issues and helped determine the community's perception of the transportation network. The questionnaire included general questions as well as questions specific to individual elements of the LRTP. Other questions challenged respondents to choose among transportation priorities and funding opportunities. While the questionnaire was not intended to be a scientifically valid survey, the responses proved helpful in assessing the transportation system and compiling multimodal recommendations. More than 90 questionnaires were completed. In addition, several responses to the questionnaire were received through the Florence County Planning blog (http://florenceco.blogspot.com/).

Demographic Trends

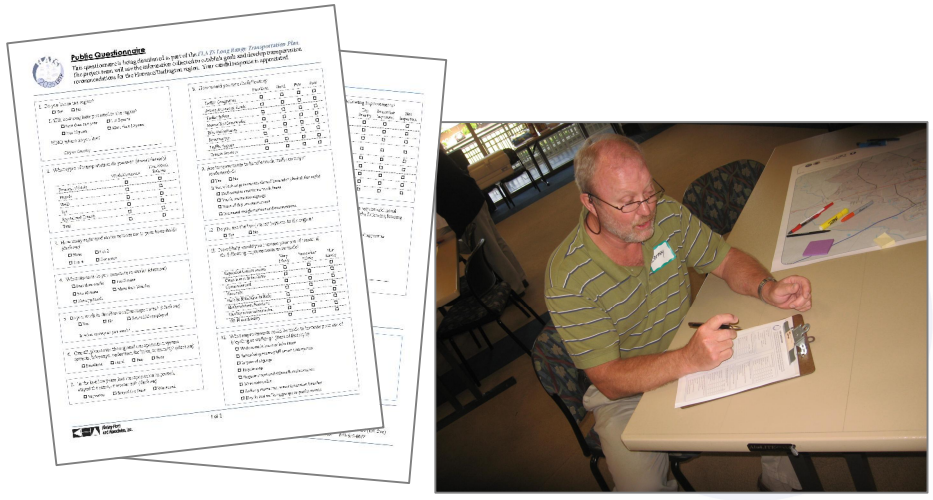
Demographic questions are helpful not only to gain insight into who is completing the questionnaires but also to understand who is attending the workshops and providing feedback on the maps and in large-group discussions. These questions revealed the following about respondents:

- 71% have lived in the region more than 10 years
- 98% use personal vehicles to get to work;
  11% bike to work (more than one response allowed)
- 62% use personal vehicles for non-work related trips;
  34% bike and 46% walk for these trips
- 66% have one or two registered vehicles in their household; 1% do not have a registered vehicle
- 31% commute 5 to 10 miles to work;
  32% commute more than 10 miles
- 90% work in the area; 8% are retired or unemployed

General Trends

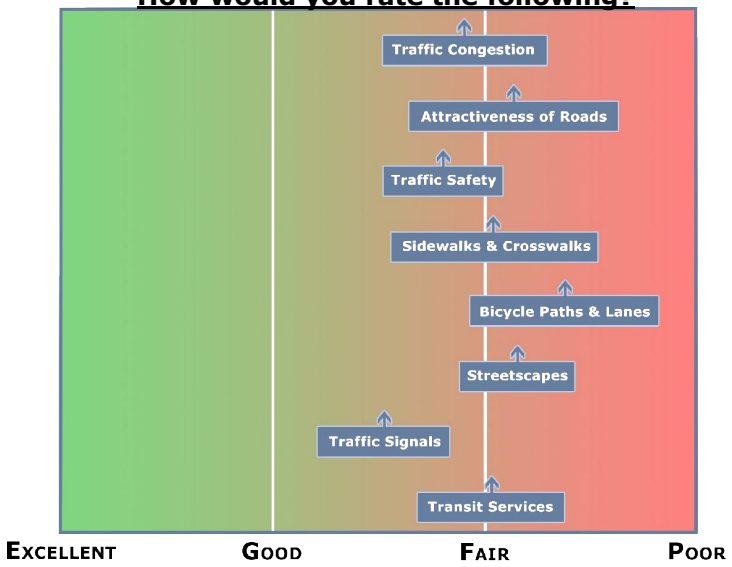
The questionnaires validated the trends that emerged through other public outreach channels. According to the questionnaires, the perception of the transportation system mostly is fair or poor. More than 75% rated the transportation system in the study area as fair or poor. Only 2% of respondents rated the transportation system as excellent. When asked if transportation has gotten better, stayed the same, or gotten worse in the last few years, slightly more than 45% of the questionnaires indicated things have stayed the same. More than a quarter of those participating indicated things have worsened. In addition to these quantitative questions, the questionnaire also asked the public to list three roads in the Florence region in need of access management improvements. The top three choices included Palmetto Street, Irby Street, and Second Loop Road.

The graphs on the following page illustrate some of the trends as expressed through the public questionnaire. Additional results specific to individual elements are detailed in the appropriate chapters of this report.



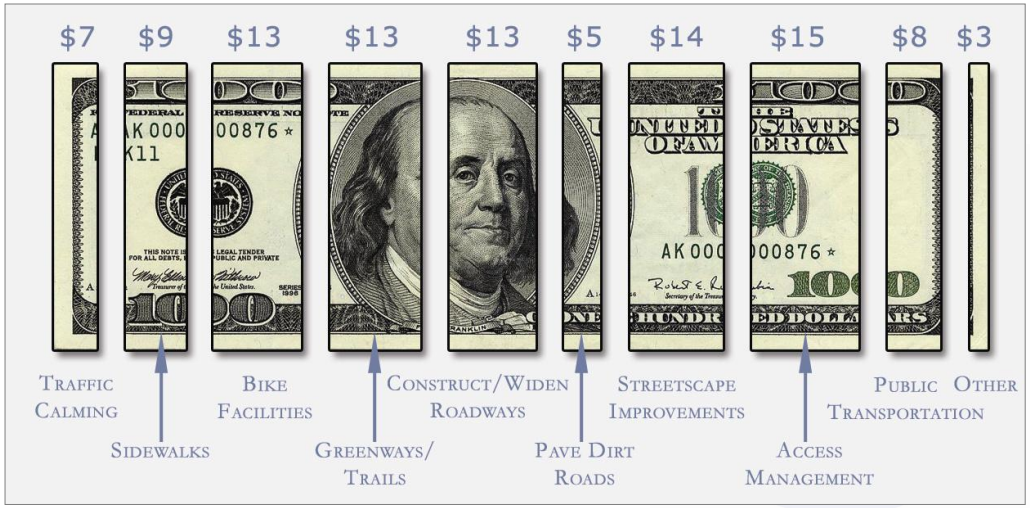
Overall, please rate the regional transportation system (streets, bikeways, pedestrian facilities, or transit).

How would you rate the following?



In the last few years, has transportation improved, stayed the same, or worsened?

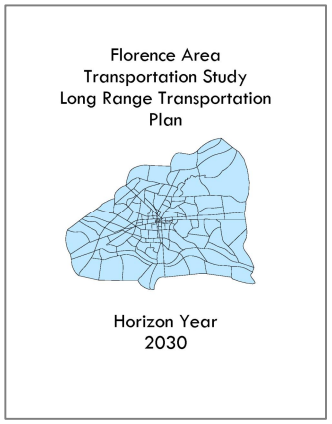
If you had $100 to spend on transportation improvements, how would you spend it?



Previous Planning Efforts

Several plans and programs have preceded the *2035 LRTP*. To recognize a level of efficiency, the *2035 LRTP* should be coordinated with other state, regional, county, and local plans and/or policies that impact planning efforts within the area. In particular, the updated plan must recognize the planning process and outcomes of the previous plan (Horizon Year 2030). This section summarizes a general review of transportation plans prepared within the region. This list does not constitute all of the previous planning efforts. It does, however, review a few of the key documents that have informed the development of the *2035 LRTP*. The land use focus area planning process conducted as part of this plan and described in detail in **Chapter 9** includes a review of local land use plans and policies as described in that chapter.

2030 FLATS Long Range Transportation Plan



The *2030 Florence Area Transportation Study Long Range Transportation Plan* was adopted by the MPO June 13, 2006. This plan was developed and adopted through the efforts of the FLATS Study Team that included representatives from the South Carolina Department of Transportation, Florence County, and the Pee Dee Council of Governments. The study team projected future year level of service on network roads and developed a list of congestion management strategies aimed to alleviate areas congestion. Other features include sections dedicated to bicycle and pedestrian, transit, freight, and air quality. The plan concludes with a financial plan. The 2030 LRTP provides the foundation upon which the *2035 LRTP* builds.

Florence County Capital Project Sales Tax Road Projects

On November 7, 2006, Florence County voters approved a One-Cent Capital Project Sales Tax for roads for up to seven years. This penny tax went into effect on May 1, 2007 and is estimated to generate $148 million over the seven years. When combined with a grant from the State Infrastructure Bank of $250 million, $398 million will be available for the following road projects (listed in prioritized order):

1. Pine Needles Rd: Widen from Southborough Rd to South Ebenezer Rd
2. US 378: Widen from US 52 near Lake City to SC 41 in Kingsburg
3. US 76: Widen from I-95 to Main St in Timmonsville
4. TV Rd: Widen from Wilson Rd to I-95
5. Pamplico Hwy: Widen from Claussen Rd to US 378 in Kingsburg
6. US 301 Bypass: Complete bypass from US 76 near Timmonsville to the intersection of US 52/301 and Howe Springs Rd

Florence Area Bikeway Master Plan

The *Florence Area Bikeway Master Plan* was prepared for the FLATS in October 2004. The plan documents the bicycling needs of the community, identifies the necessary improvements, and prioritizes the recommendations based on potential usage, geographic coverage, and cost. The central component of the planning process was a Bicycle Summit, which brought together stakeholders to learn the benefits of bicycle-friendly community and discuss the needs and issues facing bicyclists in the Florence area. The result was a host of on- and off-street recommendations presented as a series of fact sheets. In addition to the recommended facilities, the plan also discusses necessary policies and strategies to develop a local environment supportive of bicycling.

Vision and Goals

The vision for the *2035 LRTP* was developed in collaboration with the Transportation Plan Advisory Committee and validated through public outreach. The Vision, which is intended to guide the planning process, is as follows:

> **We envision a growing community serviced by a safe and sustainable transportation system that provides real choice among modes of travel. Our transportation system contributes to an enhanced quality of life by providing attractive connections between destinations for motorists, bicyclists, pedestrians, and transit users without compromising cultural and environmental resources, and it supports the efficient movement of people and goods at both the local and regional scale.**

The eight SAFETEA-LU planning factors described in **Chapter 1** represent one way federal officials can assess how a transportation plan addresses the unique needs of today's complex transportation systems. In order to reinforce the connection between the federal legislation and the *2035 LRTP*, the plan's goals are grouped according to the eight planning factors. However, it should be noted that some goals address more than one planning factor.

Source: Images of Florence

East Evans Street in the 1920s

Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

- Improve access to downtown Florence for people and freight.
- Integrate into the planning process the general aviation needs of the region as a way to attract additional economic activity.

Increase the safety of the transportation system for motorized and non-motorized users.

- Provide a safe traveling experience for all users by implementing safety measures at high priority crash locations and improving facilities for bicyclists and pedestrians.

Increase the security of the transportation system for motorized and non-motorized users.

- Implement a flexible transportation system that aids the response to and recovery from natural and manmade disasters.
- Develop long-term strategies to protect the safety of employees and patrons of the Pee Dee Regional Transportation Authority.

Increase the accessibility and mobility of people and for freight.

- Enhance freight mobility to and from key industrial areas.
- Develop a comprehensive set of typical cross sections that illustrate effective congestion management and context-sensitive solutions that balance local accessibility with regional mobility.

Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

- Integrate land use and transportation policies to limit impacts to sensitive land, focus development in prime locations, encourage trips by modes other than personal automobiles, and enhance the region's quality of life.
- Minimize direct and indirect environmental impacts of the transportation system by first considering improvements to the existing system before selecting strategic locations for newly constructed facilities.
- Support mixed-use development to encourage biking and walking, in turn improving the Florence area's environment and the health of its citizens.
- Utilize planning tools to preserve areas along streambeds and restore and maintain air quality status for the FLATS area.

Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

- Connect homes, parks, community activity centers, employment hubs, and other key destinations to one another through a coordinated network of bicycle facilities and off-road trails.
- Promote a pedestrian-friendly environment by filling gaps and improving connectivity throughout the sidewalk system and to key destination or activity nodes.
- Create a system of interconnected streets to improve mobility and distribute traffic efficiently and appropriately by purpose and function.

Promote efficient system management and operation.

- Encourage streetscape and traffic calming features in roadway designs for collector and residential streets.
- Outline how local policy can encourage a network of Complete Streets that operate efficiently as conduits of travel and elements of public space.
- Identify opportunities to integrate Intelligent Transportation Systems (ITS) as part of an overall transportation management strategy.

Emphasize the preservation of the existing transportation system.

- Develop a plan that maximizes benefits to the transportation system while minimizing costs.
- Recognize that the area's most important transportation corridors must balance the needs of adjacent property owners dependent upon access to the roadway with the needs motorists, bicyclists, and pedestrians.

2035 FLATS LRTP

As mentioned in **Chapter 1**, the recommendations that form the essence of this plan represent the collective vision for a safe, multimodal, and interconnected transportation system that supports continued economic development without compromising the natural, historic, and social resources vital to the area's sustainability. The elements that follow, beginning with existing roadway conditions and concluding with an implementation plan, adhere to this vision.

Chapter 3

Social & Environmental Resources

Introduction

Long before interstate highways — or even railroads — crisscrossed the Florence region, a network of navigable rivers and streams served as the area's main mode of transportation. The rivers, fertile lands, and abundant forests allowed the agrarian economy to prosper. But as the economy shifted and transportation evolved, the natural features of the Pee Dee region began to compete with transportation infrastructure. Without proper controls and adequate planning, the natural, social, and cultural resources of the Florence area are sure to lose this battle. In the last several decades, the Federal government has placed increasing emphasis on the role transportation planning plays in conserving the environment, preserving our neighborhoods, and protecting our quality of life.

This chapter considers the social and environmental resources of the Florence area and provides a series of maps that illustrate the distribution of minority, Hispanic, and low-income populations and document natural and cultural resources. When overlaid with proposed transportation projects, this information provides a frame of reference to help assess the relative impacts of these projects on the community. Information introduced in this chapter is included in the evaluation matrix explained in **Chapter 5**. This matrix assesses the relative impacts of roadway projects according to environmental justice and environmental mitigation concerns.

Environmental Justice

Environmental justice has been a federal requirement since recipients of federal funds were required to certify nondiscrimination following the Civil Rights Act of 1964. A 1994 Presidential Executive Order required all federal agencies to make environmental justice part of their missions. The law was enacted to avoid the use of federal funds for projects, programs, or other activities that generate disproportionate or discriminatory adverse impacts on minority or low-income populations. The U.S. Department of Transportation (USDOT) promotes environmental justice as an integral part of the long range transportation planning process as well as individual project planning and design.

According to the USDOT, environmental justice requires the understanding and incorporation of the unique needs of distinct socioeconomic groups in order to create transportation projects that fit harmoniously within the framework of their communities without sacrificing safety or mobility. The environmental justice assessment incorporated in the *LRTP* is based on three fundamental principles derived from guidance issued by the USDOT:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensure all potentially affected communities' full and fair participation in the transportation decision-making process.
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Existing Considerations

The assessment of environmental justice issues for the *2035 LRTP* began by analyzing the geographic distribution of minority and low-income populations. Using the most recent data available through the U.S. Census Bureau, the project team created a series of maps showing the location of these communities at the smallest possible level of census geography (block group or block). These maps were presented at the first TPAC meetings as well as the first public workshop to allow a better understanding of how these populations may have shifted in the years since the census was recorded. In fact, some changes are expected to have occurred since the data was compiled by the U.S. Census Bureau. Identifying these communities is an important step to ensure the transportation recommendations of the *2035 LRTP* properly disperses both the benefits and negative impacts.

U.S. Census Estimates

Because the next decennial census will not occur until April 2010, the *2035 LRTP* relies on data compiled in 2000 to show minority, Hispanic, and low-income populations at the block and block group level. However, the U.S. Census Bureau releases estimates for several social, economic, and housing characteristics. A comparison of the 2000 census and 2007 estimates indicate the following changes in minority, Hispanic, and low income populations for the Florence Urban Area. Data was compared for this Census geography because its area best represents the LRTP study area.

- The urban area's population increased 4.5% to 70,448.
- The percentage of the urban area's population that was minority increased 4.6% (40.1% in 2000 to 44.7% in 2007).
- The percentage of the urban area's population that was Hispanic showed a small increase — from 1.0% in 2000 to 1.2% in 2007.
- The percentage of individuals below poverty in the urban area increased from 15.1% to 16.5%.

Minority Population

Figure 3.1 shows the distribution of the region's minority population. Locations with higher percentages of minority residents include north and east of downtown Florence, south of Howe Springs Road, and east of Oliver Road.

Hispanic Population

Figure 3.2 illustrates the distribution of the Hispanic population throughout the Florence MPO area. Because the area has a relatively low Hispanic population, the few locations with concentrations of Hispanics are dispersed throughout the region. The highest concentration of populations greater than 25% Hispanics is south of Hoffmeyer Road in the western portion of the study area.

Impoverished Population

Figure 3.4 shows the locations in the study area with higher percentages of persons living in poverty. This information, presented at the census block group level, indicates that low-income populations are concentrated near the City of Florence as well as to the west of Williston Road.

Purpose of the Screening Process

Careful planning and early consideration can manage impacts to these communities more effectively. Input received through public involvement and discussions with local staff influenced the selection and, when necessary, the alignment of future transportation projects. The environmental justice screening conducted for the *2035 LRTP* did not attempt to quantify specific impacts. Instead, it guided the development of an equitable plan in terms of benefits and costs. The screening identifies projects that due to proximity potentially can affect communities of special interest. More detailed analysis will be needed prior to funding and construction specific transportation projects.

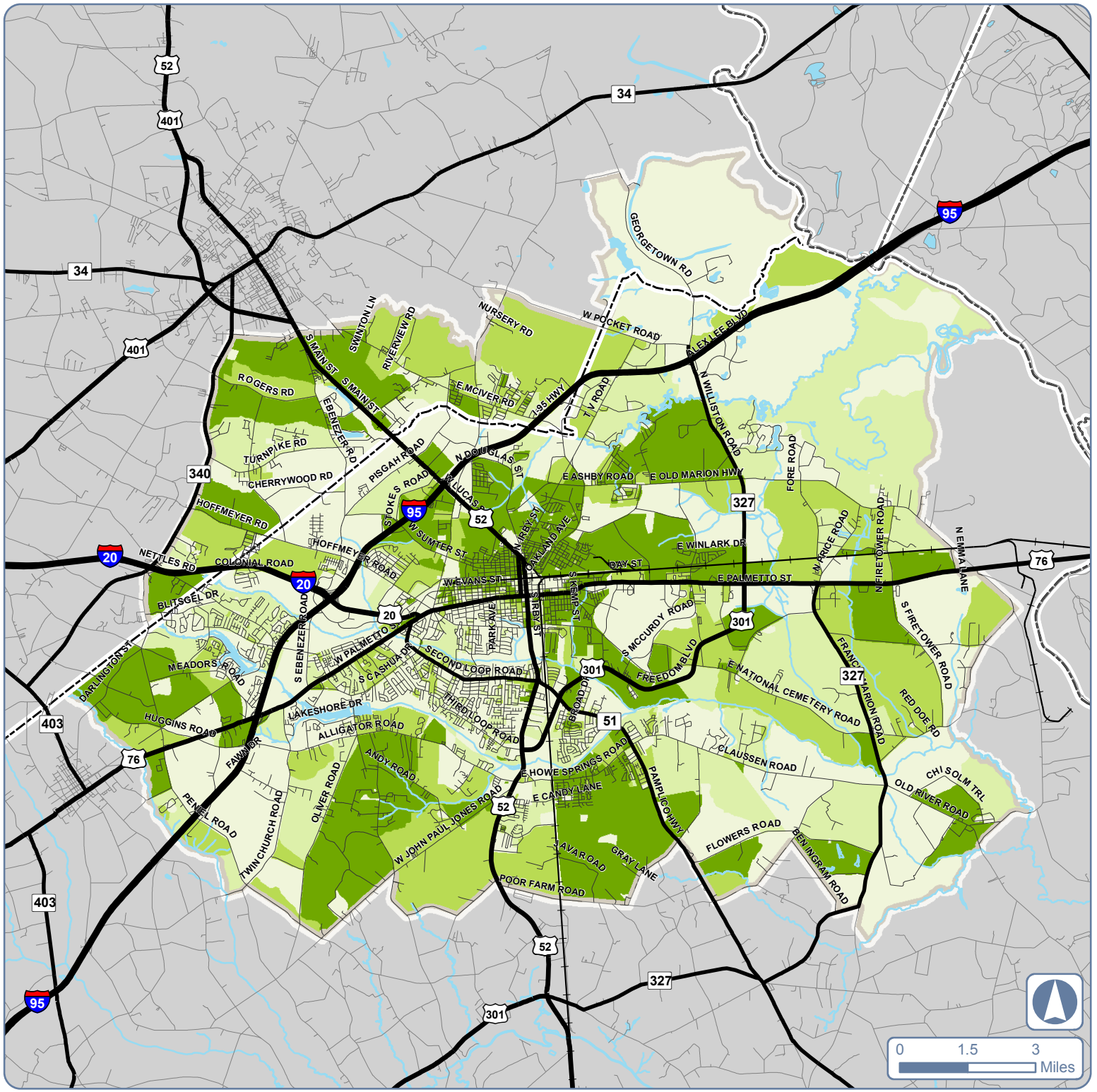


Figure 3.1

Minority Population

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- FLATS Boundary
- County Boundary

Percent Minority

- Less than 10%
- 10% to 25%
- 25% to 50%
- More than 50%

Notes:

- Data shown at the census block level based on the 2000 Census.
- Percentages shown for each census block does not account for the total population in the block. That is, a block with less people may reveal higher percentages of minorities despite having fewer minorities overall.

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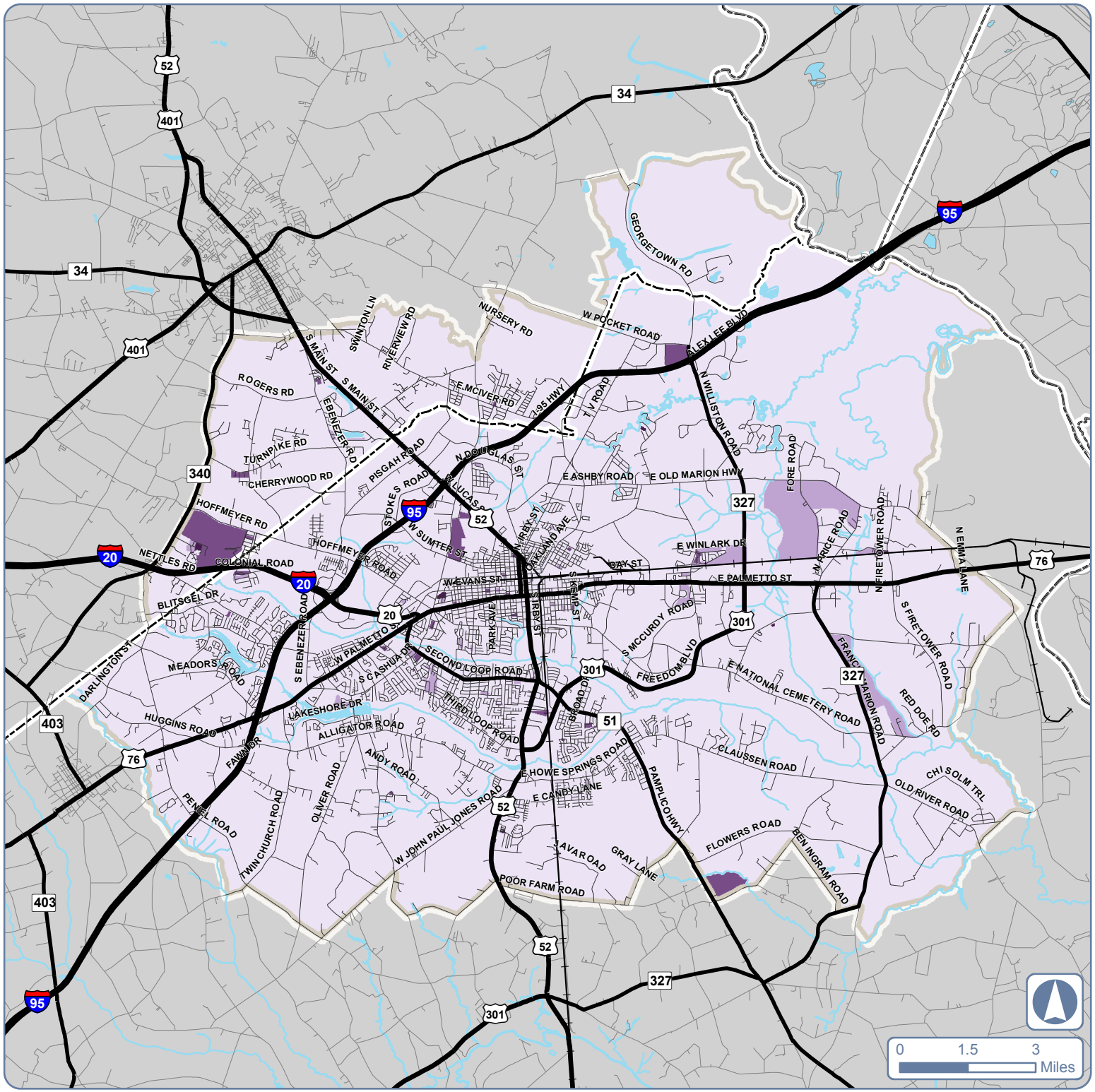
Figure 3.2

Hispanic Population



Notes:

- Data shown at the census block level based on the 2000 Census.
- Percentages shown for each census block does not account for the total population in the block. That is, a block with less people may reveal higher percentages of Hispanics despite having fewer Hispanics overall.

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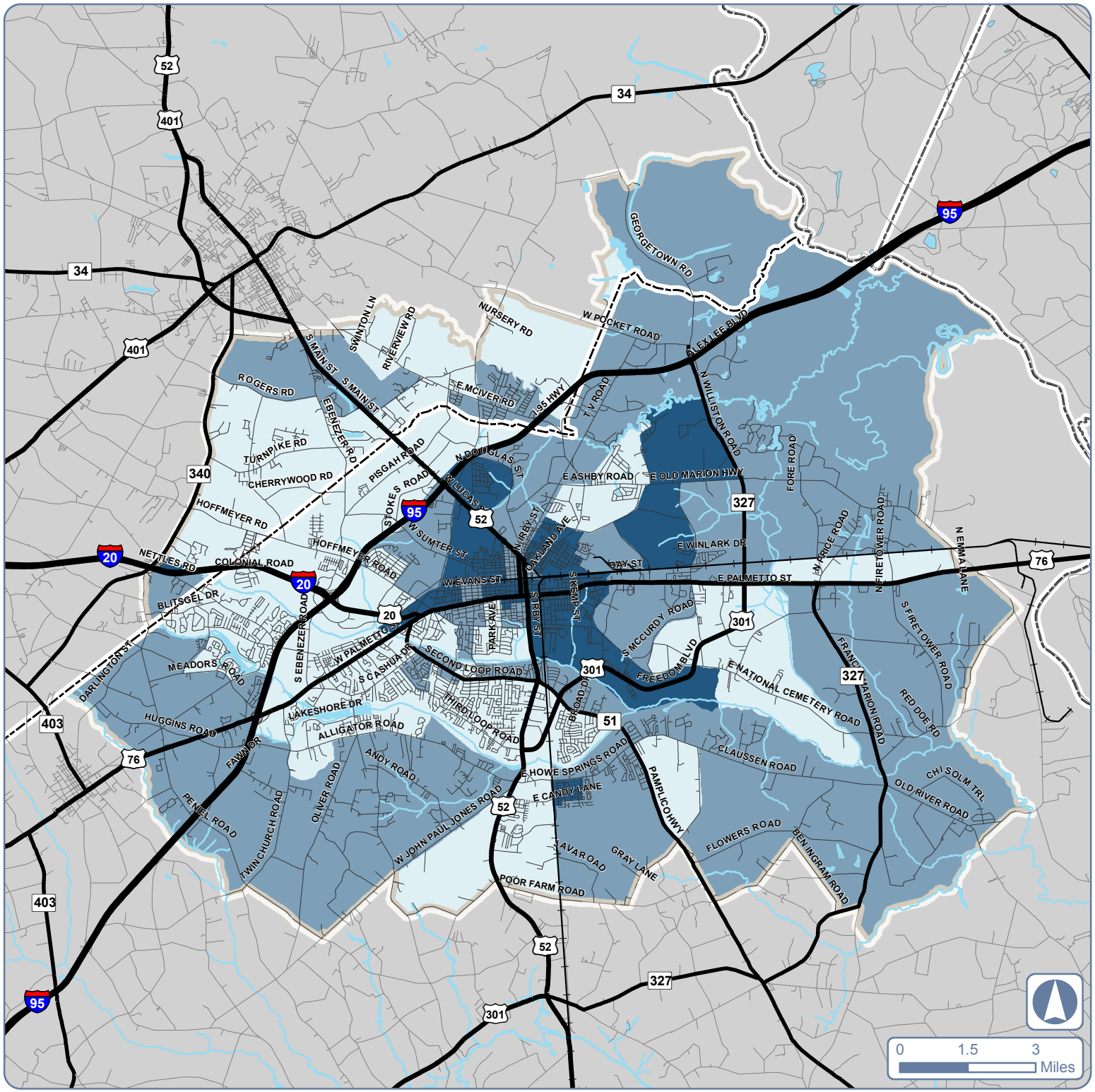

Figure 3.3

Persons Below Poverty

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- FLATS Boundary
- County Boundary

Percent Below Poverty

- Less than 10%
- 10% to 25%
- More than 25%

Notes:

- Data shown at the census block group level based on the 2000 Census.
- Percentages shown for each census block group does not account for the total population in the block group. That is, a block with less people may reveal higher percentages of impoverished persons despite having fewer impoverished persons overall.

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Environmental Assessment

When the President signed SAFETEA-LU into law in August 2005, the Federal government affirmed its commitment to environmental mitigation. The transportation bill required MPOs to consult with Federal and state agencies to develop possible environmental mitigation activities for incorporation into transportation projects identified in long range transportation plans. The Transportation Plan Advisory Committee (TPAC) included representatives from FHWA (environmental), the South Carolina Department of Natural Resources, and various individuals representing local planning interests.

To fulfill SAFETEA-LU requirements, it is important to understand the definition of mitigation according to Federal regulation. Mitigation:

- Avoids the impact altogether by not taking a certain action or parts of an action.
- Minimizes the impact by limiting the degree or magnitude of the action and its implementation.
- Rectifies the impact by repairing, rehabilitating, or restoring the affected environment.
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the action.
- Compensates for the impact by replacing or providing substitute resources or environments. (Source: 40 CFR 1508.20)

An ordered approach to mitigation starts with an understanding of the affected environment and assesses transportation effects throughout project development. To be most effective, mitigation must start at the beginning of the NEPA process and play a role in the development and analysis of alternatives.

Because long range transportation planning is regional in scope, the environmental mitigation discussion that follows does not focus on each individual project of the *2035 LRTP*. Instead, this section provides maps and a general summary of environmentally sensitive areas for consideration. As mentioned, the evaluation matrix in **Chapter 5** introduces project-level analysis of potential impacts to the environment.

Image Source: Bing.com

I-95 crossing the Great Pee Dee River

Existing Considerations

Growth in the Florence area provides new opportunities but also creates new challenges as public and private entities try to balance the need for additional developable land and associated infrastructure with the preservation of natural resources. At the center of this balancing act is the importance of finding stability among the competing interests in development, mobility, and commerce and the desire for a high quality of life that includes clean air and water, environmental preservation, and recreational opportunities.

Natural Resources

Natural resources abound in the Florence area, including rivers, streams, and wetlands. While the role of rivers in the area has changed since the earliest settlers used them as primary transportation corridors, their beauty and importance remain. Recent growth has pitted the area's natural resources against the roads and infrastructure designed to accommodate rising population and business interests. The inventory of natural resources is more than just placing features on a map. The project team considered the location of rivers, streams, wetlands, and floodplains in the development of preliminary alignments for various projects. Some projects such as new location roadways required avoidance of these resources where possible. Other projects such as multiuse trails were located along natural resources to take advantage of the area's green infrastructure and connect activity centers. The most prominent features include:

- **Great Pee Dee River** — Forms the eastern boundary of Florence County
- **Back Swamp** — Covers the northeastern portion of the MPO area
- **Jeffries Creek** — Stretches across the MPO area and bisects the City of Florence from east to west near Second Loop Road
- **Middle Swamp** — Bisects the southern portion of the city from east to west

Many of the area's parks take advantage of these and other natural resources. The City of Florence operates 16 neighborhood parks that total more than 600 acres, including several miles of trails. Major parks in the city include:

- **Freedom Florence Recreation Complex** — 100-acre multipurpose recreation park with championship caliber softball fields, multipurpose fields, a Gymnastics center, a lake, and jogging trails — located off Pamplico Highway
- **Jeffries Creek Park** — 55-acre park featuring nature trails and a playground — located between Edisto Drive and DeBerry Boulevard
- **McLeod Park** — 51.5-acre park filled with nature trails, picnic areas, lighted baseball fields, volleyball and basketball courts, and a skateboard facility — located on Santiago Drive
- **Timrod Park** — 18-acre park with administrative offices, lighted tennis courts, picnic areas, interpretive nature trails, and fitness courses — located on Timrod Park Drive

In 2009, the Southern Environmental Law Center named the Great Pee Dee River to its Top Ten Most Endangered List, a listing of the ecological, scenic, and cultural riches at stake in the south. As new infrastructure is constructed to accommodate additional residents and business opportunities, it will be critical to manage and minimize impacts to the natural environment in the Florence area. **Figure 3.4** illustrates the occurrence of important environmental features such as rivers, streams, wetlands, and floodplains. The map also shows the location of parks in the MPO area.

Cultural Resources

Cultural and community resources in the area include schools, libraries, community centers, and hospitals. These locations provide popular destinations for citizens and visitors of all ages as well as important community landmarks and critical service facilities. **Figure 3.5** shows the location of these resources. Though not shown on these maps, churches also offer important cultural and community services. As projects are considered for implementation, officials must bear in mind any impacts that might affect these important community features.

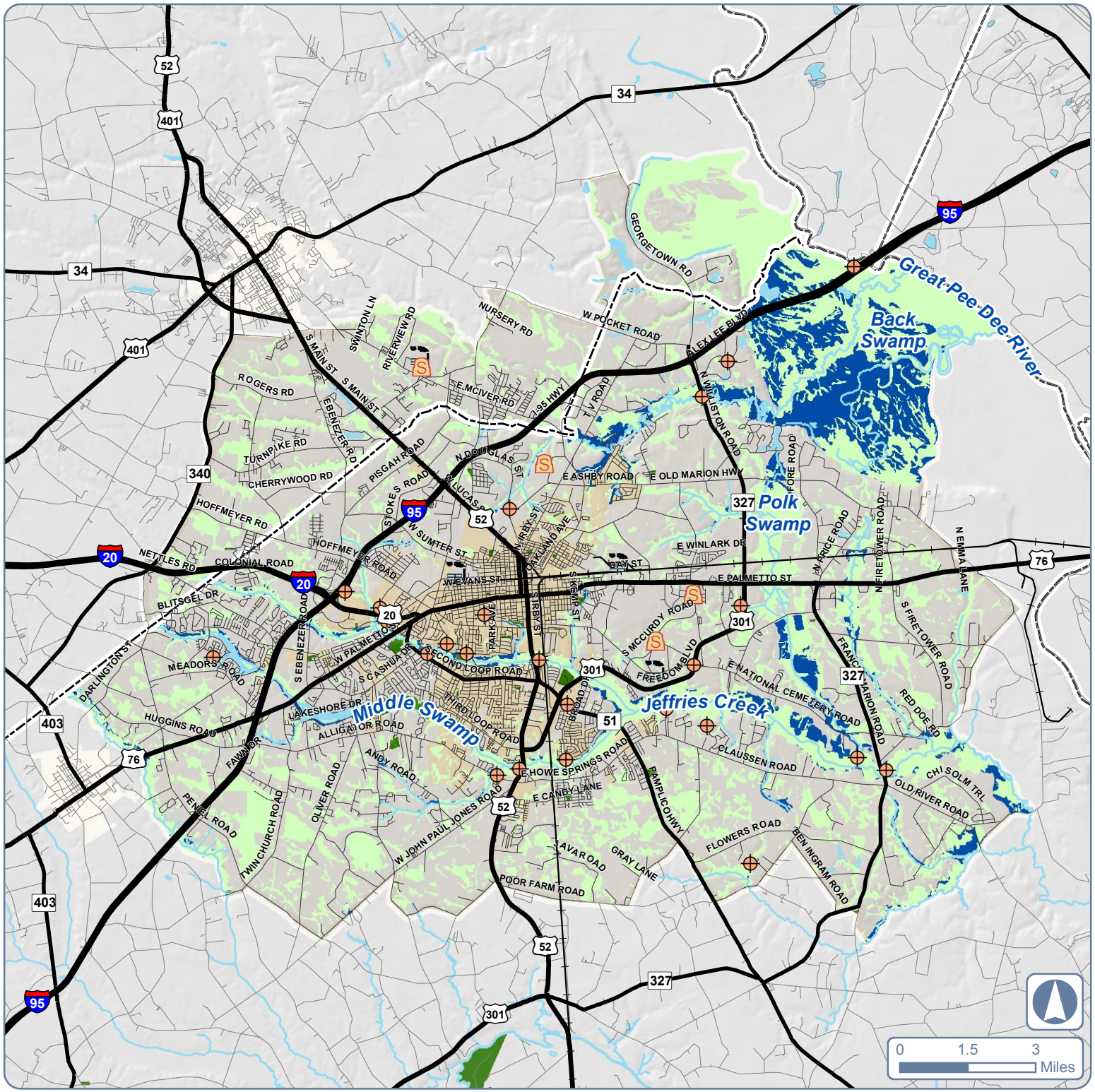

Figure 3.4

Natural Resources

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- Wetland
- Floodplain
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary
- 401 Certification Site
- Solid Waste Landfill
- Air Regulated Facility

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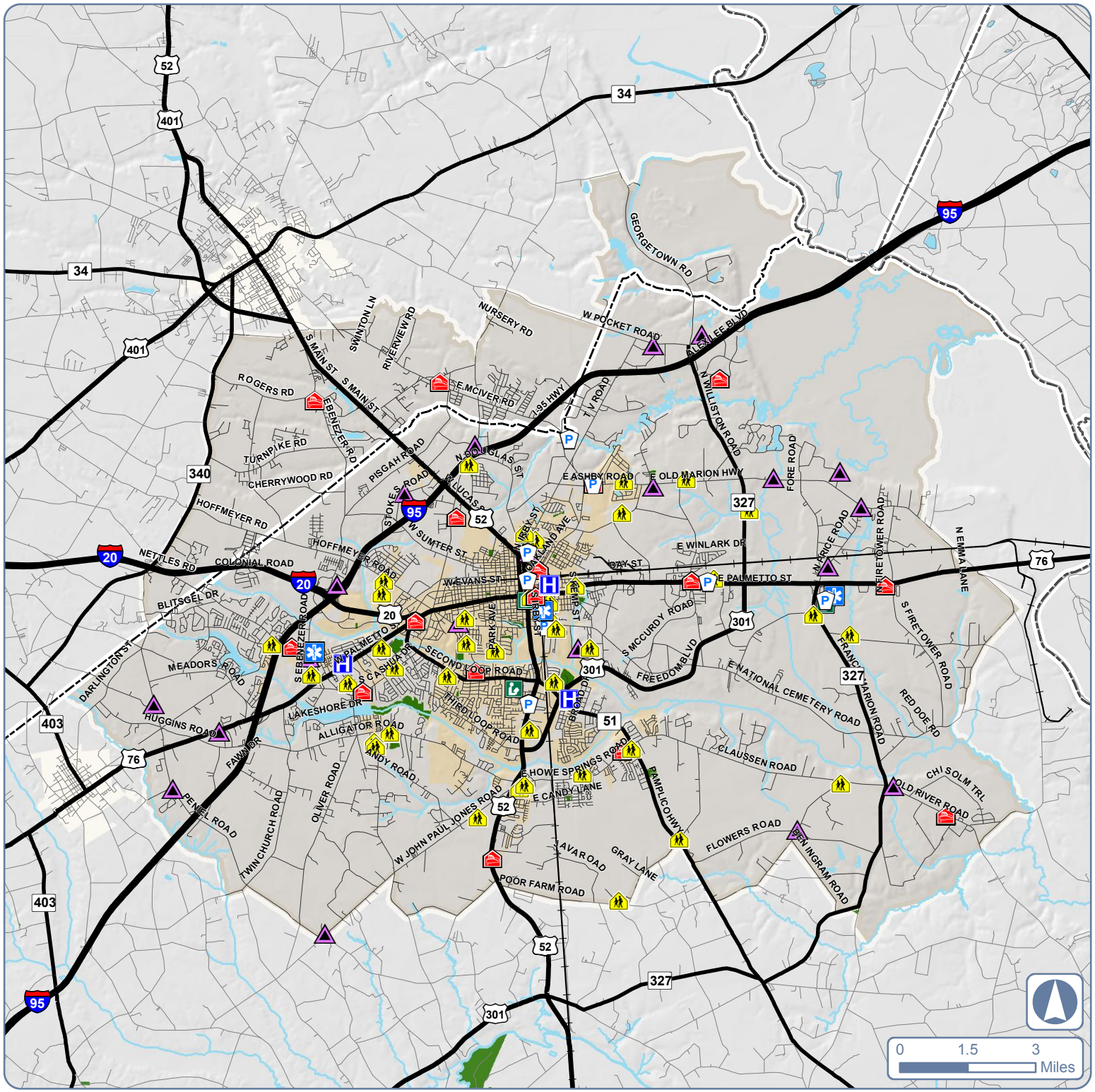
Figure 3.5

Cultural Resources



- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary
- Historic District
- Hospital
- Fire Station
- EMS Station
- Police Station
- Library
- School
- Historic Site

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Planning Integration

More so than most infrastructure initiatives, transportation projects can disrupt communities and significantly impact natural resources. Today's transportation planning process includes a system of checks and balances designed to mitigate unfair and disproportionate impacts of these projects on a community. The Federal government requires the planning process be cooperative, continuous, and comprehensive to ensure disadvantaged communities receive fair consideration regarding the benefits and impacts of transportation projects. The planning process for the *2035 LRTP* included a review of social and environmental resources to evaluate system-wide and project-specific impacts. This information ensures proposed transportation projects do not lose sight of the plan's goal to respect the environmental resources and cultural fabric of the region.

As described in the Future Roadway Element (**Chapter 5**), the Roadway Project Total Benefit and Impact Matrix considers potential impacts to environmental, social, and cultural resources and therefore inserts the these issues into the selection process. The matrix helps identify major impacts that diminish a project's feasibility. However, the screening and subsequent matrix is not intended to replace a more thorough evaluation for each project as it progresses. For most projects, more detailed environmental assessments will be needed as the project is developed.

Environmental Mitigation

Protecting and enhancing the environment is a concern shared throughout the transportation community. SAFETEA-LU planning factors provide guidance to protect the environment, identify the need for integrating the planning and environmental processes, and promote a streamlined process for reviews and permitting. By doing so, the legislation emphasizes environmental mitigation. Early integration of the planning and environmental review and approval processes makes it more likely that transportation projects can be implemented in a timely and environmentally sensitive manner.

The coordinated effort of *2035 LRTP* supports the protection and enhancement of the environment and sets the stage for the streamlined process outlined by NEPA regulations. Although the integration will vary by project, every effort should be made to initiate the environmental assessment and mitigate environmental concerns as early in the project developmental phase as practical.

National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) was signed into law on January 1, 1970 and establishes national environmental policy and goals to protect, maintain, and enhance the environment. All transportation project utilizing federal funds must include a NEPA review to ensure proper environmental considerations occur.

The NEPA process involves detailed investigation of environmental impacts of a transportation-related project, usually occurring prior to the engineering and design stage of project development. Issues identified for mitigation are addressed and integrated into the engineering of the project. The NEPA evaluation may result in one of three levels of assessment, depending on the severity of the impact:

- **Categorical Exclusion** — This first level allows a project to be categorically excluded from detailed environmental analysis if it meets criteria previously determined by a federal agency as having no significant environmental impact. Several agencies have developed lists of actions normally categorically excluded from environmental evaluation under their NEPA regulations.
- **Environmental Assessment/Finding of no significant impact (EA/FONSI)** — For the second level, a federal agency prepares a written environmental assessment (EA) to determine if the project would significantly affect the environment. If it will not, the agency issues a finding of no significant impact (FONSI). The FONSI may address ways the agency can mitigate potential significant impacts.
- **Environmental Impact Statement (EIS)** — If the EA determines significant environmental consequences may occur, an EIS is prepared. An EIS is a more detailed evaluation of the proposed action and alternatives. The EIS process includes the opportunity for the public, other federal agencies, and outside parties to provide comments during preparation as well as once the draft EIS is completed. (If a federal agency anticipates the project may have a significant impact or if the project is environmentally controversial, the agency may choose to prepare an EIS without first preparing an EA.) Once the EIS is finalized, a federal agency prepares a public record of its decision that addresses the findings of the EIS, including how consideration of alternatives weighed into the agency's decision.

Conclusion

As potential transportation recommendations are identified, the Florence area must consider the social and environmental resources unique to the area as well as the rivers, streams, wetlands, and other natural features. But screening social and environmental resources is more than just good practice, it's a federal requirement. These screenings help identify and either mitigate or avoid significant impacts resulting from implementing recommendations. Identifying potential impacts helps balance the often competing interests of improving mobility and preserving the Florence area's important social and environmental resources. The earlier these features are identified, the more likely sustainable solutions will arise to minimize or avoid impacts and reduce unnecessary delays and expenses throughout the implementation of the project.

Florence's commitment to environmental mitigation is evidenced by the inclusive planning process described in **Chapter 2** coupled with the screening presented in this chapter and the evaluation matrix explained in **Chapter 5**. The MPO recognizes every project will not require the same type or level of mitigation. For example, roadway projects (new roadway construction and to a lesser degree widening projects) involve major construction while smaller projects such as intersection improvements and resurfacing involve minor construction. The mitigation efforts chosen for a specific project will depend on the severity of the impact.

Chapter 4

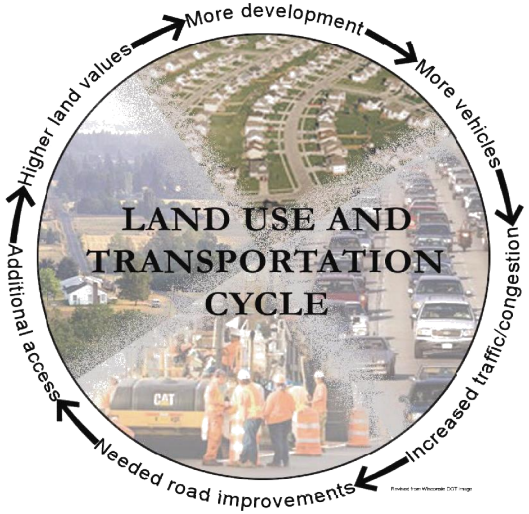
Existing Roadway Conditions

Introduction

The City of Florence originally was founded as a crossroads community for the burgeoning railroad system. Florence still fills the role of a crossroads community today, with Interstates 95 and 20 converging nearby. Chartered in 1871, Florence continues to serve as a hub for northeastern South Carolina. Florence's historic downtown is laid out on a grid of interconnected streets originally focused on the now abandoned railroad corridor running through the center of the city. Traveling outward from the city's historic core, the urban fringe continues to develop in a typical suburban and rural pattern and at a much lower density than the historic downtown. Suburban areas of Florence extend beyond the boundaries of Florence County into Darlington County.

The Existing Roadway Conditions chapter of the *2035 FLATS Long Range Transportation Plan (2035 LRTP)* evaluates the existing transportation system to better identify needs and priorities for the purposes of planning. The discussion of existing roadway conditions is organized into the following sections:

- Transportation Corridors and Activity Centers
- Public Perception
- Functional Classification
- Corridor Operations
- Planning Precedent



Transportation Corridors & Activity Centers

As residential, commercial, and industrial growth occurs and more vehicles take to the road, roadway improvements are needed to reduce traffic congestion and improve safety. These roadway improvements often enhance access, thus raising land values and attracting more development. The circular diagram below illustrates this continuing cycle of influence between land use and transportation.

The interaction between activity centers and the transportation corridors that link them to other centers is important, as are the mobility choices provided within the center. Often neighborhoods and activity centers rely on few transportation corridors to provide essential links between home, school, employment, shopping, social, and recreational destinations. The extent to which these origins and destinations blend into multi-purpose activity centers has a dramatic effect on a person's ability to choose between modes for their trip. In many cases, the range of trip alternatives (walk, bike, drive, or transit) also influences the overall perception of a community. **Table 4.1** summarizes three types of activity centers and provides local examples.

The level of success for corridors within and between activity centers largely depends on the street's intended function. A unique challenge for the future will be to balance the area's mobility needs with other priorities. Often, traffic mobility has been given priority without regard for other considerations such as the function of the street, corridor relationship to land use, urban design, and the promotion of alternate modes.

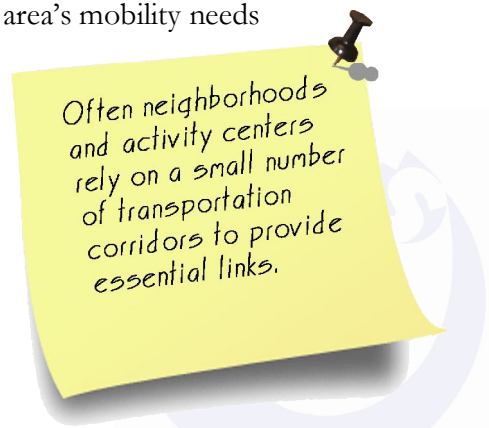


Table 4.1 – Activity Centers

Center Type	Characteristics
Regional Activity Center	
Local Example ▪ Downtown Central Business District Transportation Corridor ▪ Irby Street ▪ US 76/Palmetto Street	▪ Large-scale, transit-supportive center of employee-intensive land uses ▪ Core areas contain large-scale and high intensity urban land uses supported by and serving communities within the region ▪ Accessed by interstates/freeways, principal arterials, and public transportation ▪ Served by municipal water and sewer ▪ Higher residential densities ▪ Balance between residential/non-residential land uses
Community Activity Center	
Local Example ▪ Florence Mall Shopping Center Transportation Corridor ▪ 2nd Loop Road	▪ Include a combination of retail, personal services, civic, educational, and social uses ▪ Core areas contain medium-scale development that serve the day-to-day needs and activities of the core area occupants and the surrounding neighborhoods ▪ Accessed by principal arterials and public transportation ▪ Served by municipal water and sewer ▪ Medium density residential areas ▪ Land use mix is approximately 60% residential and 40% non-residential
Neighborhood Activity Center	
Local Example ▪ Quinby Business Core Transportation Corridor ▪ Ashby Road	▪ Mostly residential with a mixed-use core that serves as a focal point for the neighborhood and provides retail and service needs ▪ Accessed by major and minor arterials with integrated collector street access ▪ Mixture of low and medium density residential areas ▪ Transit service provided or desired

A unique challenge in creating a successful transportation system for the Florence region is blending connectivity and access functions with preservation of natural features and the unique character of the metropolitan area. Neighborhoods and smaller communities within the region may have different needs and priorities. While recognizing these differences, it is important not to lose focus of the practical concept of overall connectivity. This concept particularly is relevant as it relates to people's desires to make safe and efficient trips not only by driving but also by walking, bicycling, or using public transportation. The discussion of complete streets in **Chapter 5** sets the stage for the region to balance the mobility and access functions of the transportation system through the multimodal recommendations detailed in **Chapters 6, 7, and 8**.

Multimodal Integration – "Complete Streets"

The Florence region recognizes the need to integrate bicycles, pedestrians, transit, and automobiles into the context of the roadway network. Florence County ordinances require sidewalk construction along certain street classifications. Subdivision requirements also call for street trees to be provided in new subdivisions. These ordinances are resulting in the gradual creation of a more multimodal-friendly network.

At this time, only a portion of the roads in the Florence region contain additional multimodal provisions. Pedestrian and transit facilities are most prevalent in the downtown Florence area. Through the *2035 LRTP*, areas will be identified where enhancements to the multimodal amenities of the streets will be of the greatest value.

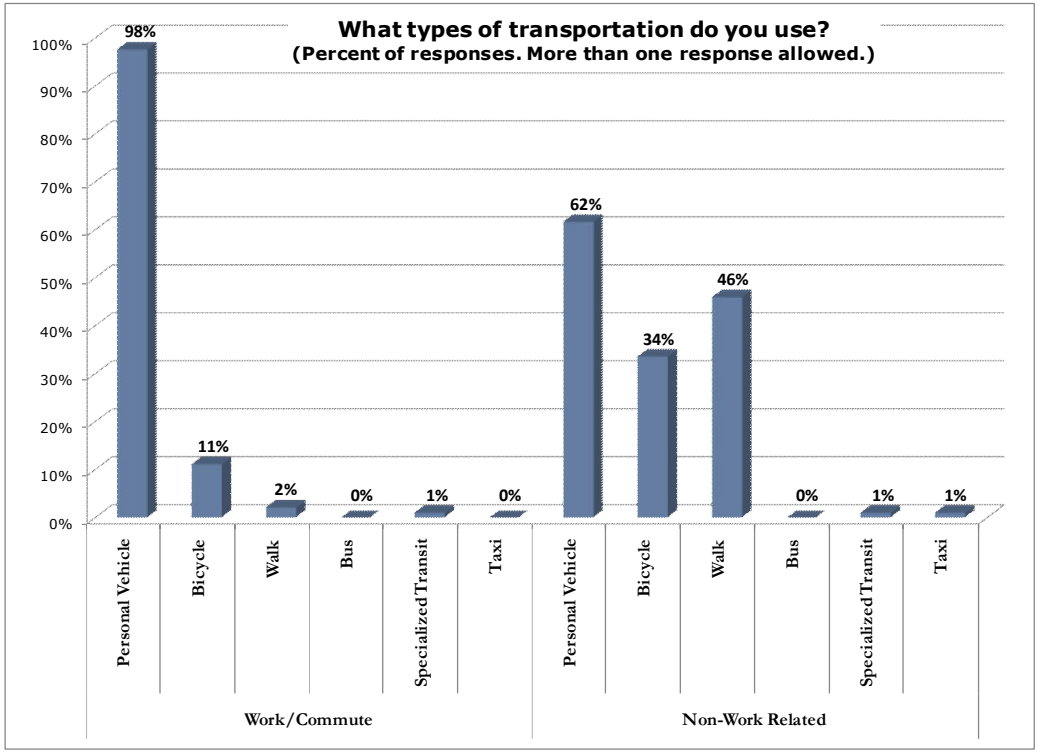
Public Perception

Traffic problems may not always be a product of congestion. Some problems are created by confusing roadway geometry, lack of alternative travel choices, or general frustrations caused by difficult commutes. These problems cannot be measured with traditional traffic analysis methods. The nature of these problems is best identified by going to the source of the frustration: the driving public.

The public outreach events for the *2035 LRTP* included a public questionnaire distributed to determine perceptions of the existing transportation system and the community's appetite for potential improvements. Questions ranged from average commuting distance to the willingness to fund additional projects. The charts and tables in this section provide a sampling of the public's feelings toward existing traffic conditions.

Transportation Use

Personal automobiles continue to be the primary mode choice in the region, especially for work related commuting. Non-work related trips have begun to achieve a more multi-modal balance, with walking and cycling trips reaching a much higher percentage of the trips generated. Few respondents use transit for work or recreational travel.



Transportation Issues

While efforts (particularly in the City of Florence) have been expended to improve the bicycle and pedestrian opportunities in the area, questionnaire respondents continue to consider these facilities inadequate. The questionnaire revealed a variety of transportation issues. For example, by asking respondents to rate features/conditions of the transportation network, the project team was able to identify specific amenities that need improvement. The results suggest amenities such as streetscaping, attractiveness of the roads, and transit services need to be enhanced. The need to address these issues was reinforced through other public outreach channels, including discussions with the TPAC, stakeholder interviews, and public workshops.

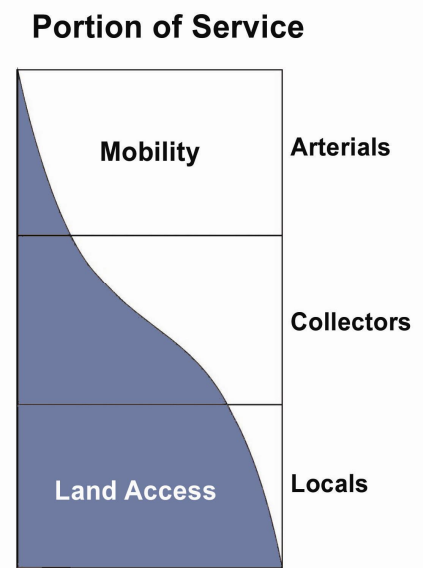
Access Management

Questionnaire respondents were asked to identify the roads in the Florence region that could most benefit from access management strategies. As mentioned in **Chapter 2**, the top three roads were Palmetto Street, Irby Street, and Second Loop Road. Other streets identified included Cashua Drive, Cherokee Road, Evans Street, and Third Loop Road.

Functional Classification

The classification of streets into several "functional" categories aids in communication among policy makers, planners, engineers, and citizens for expanding the transportation system. The functional classification system groups streets according to the land use served (or to be served) and provides a general designation of the type of traffic each street is intended to serve. The street functional classification system primarily defines the street in terms of roadway design and character, as well as operational features for the movement of vehicles.

Two major considerations for classifying arterials from neighborhood streets are access and mobility. The primary function of local or neighborhood streets is to provide access. These streets are intended to serve localized areas or neighborhoods, including local commercial and mixed-use land uses (i.e. low speeds, low volumes, short distances). Local streets are not intended for use by through traffic. The primary function of arterials is mobility. Limiting access points (intersections and driveways) on arterials enhances mobility. Too much mobility at high speeds limits access by pedestrians and bicyclists. The arterial is designed with the intent to carry more traffic than is generated within its corridor (i.e. higher speeds, higher volumes, longer distances).



Once streets have been classified into these functional categories, they can be further classified to reflect the character of the surrounding landscape. This urban or rural context adds an additional layer of design considerations. For example, an arterial in an urban setting may exhibit different features — curb and gutter, lighting, or bicycle and pedestrian facilities — that are not always present in a rural setting.

Classifying the Florence region's street system required close examination of the roles that each street performs in the overall transportation system. Existing plans, as well as quantitative and qualitative classification criteria, also helped in the development of the hierarchy of streets within the study area transportation system. The existing public street network in this region is divided into several functional classifications, including arterials, collectors, and locals. **Figures 4.1 and 4.1a** illustrate the functional classifications for the MPO's roadway network according to the regional travel demand model developed by SCDOT for the Florence MPO.

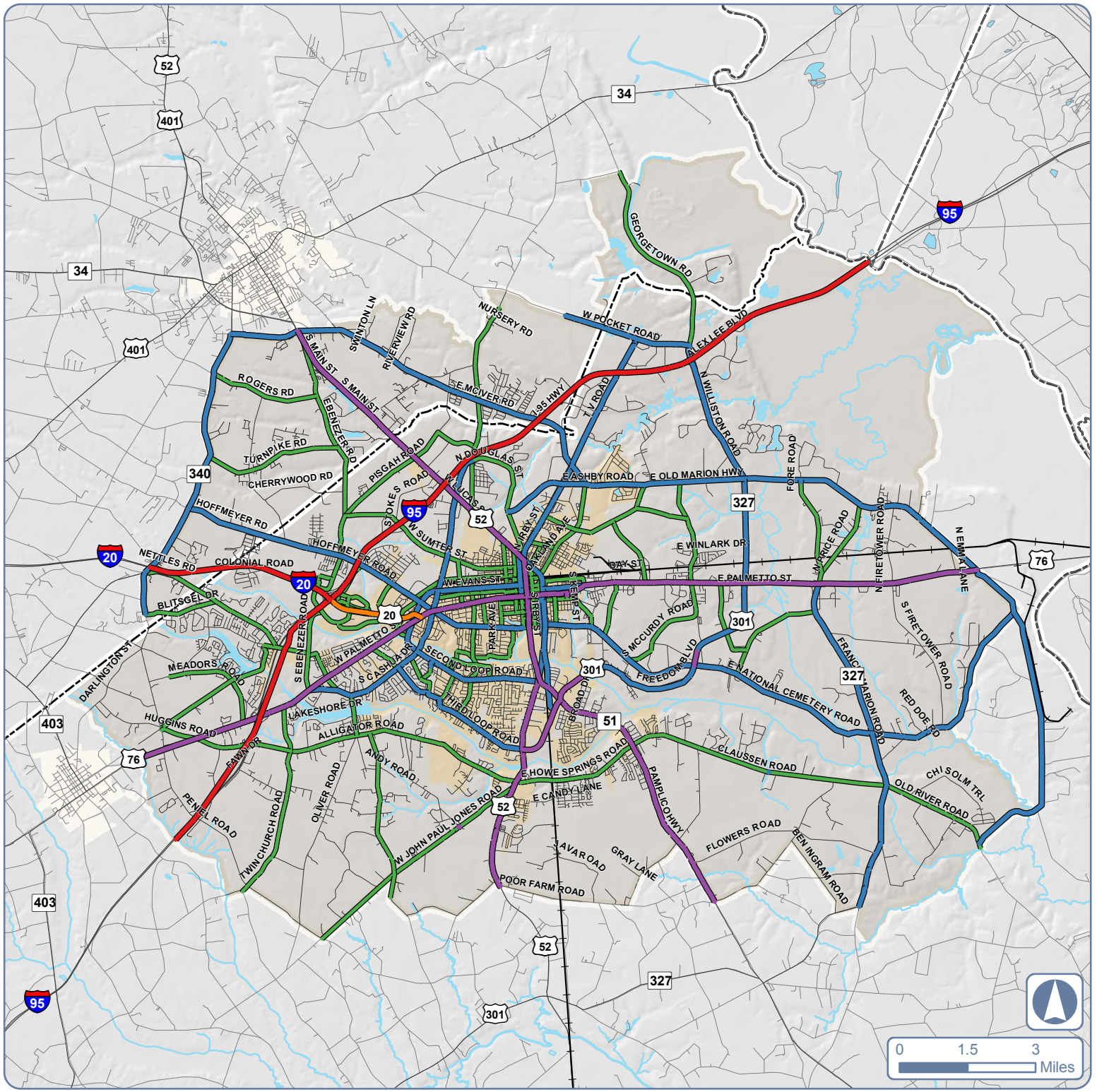


Figure 4.1

Functional Classification

Functional Classification

- Arterial: Freeway
- Arterial: Expressway
- Arterial: Major
- Arterial: Minor
- Collector
- Local
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary

*The Functional Classifications are based on the regional travel demand model developed by SCDOT for the Florence metropolitan area.

FLATS 2035 LRTP

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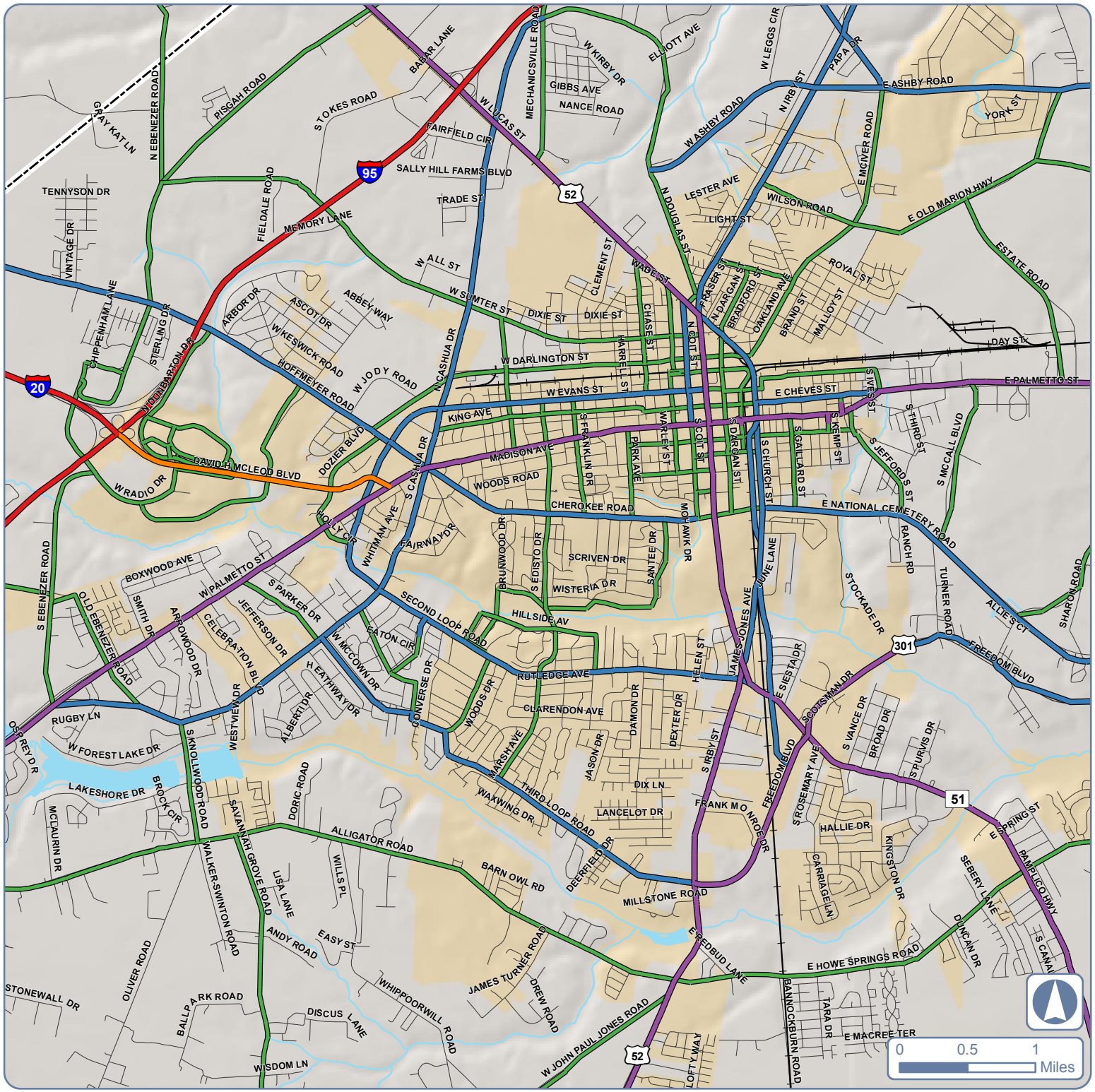

Figure 4.1a

Functional Classification

Inset: City of Florence

Functional Classification

- Arterial: Freeway
- Arterial: Expressway
- Arterial: Major
- Arterial: Minor
- Collector
- Local
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary

*The Functional Classifications are based on the regional travel demand model developed by SCDOT for the Florence metropolitan area.

2035 LRTP

Kimley-Horn and Associates, Inc.

Arterials

Arterials provide high mobility, operate at higher speeds (45 mph and above), provide significant roadway capacity, have a great degree of access control, and serve longer distance travel. Arterials can be subdivided into categories that include facilities with full access control such as freeways and expressways as well as major and minor arterials. Arterials usually connect to one another or to collector streets. Very few arterials connect to local streets.

Expressways and Freeways

Expressways and freeways provide the most mobility and least access (since access is only available at interchanges). Expressway /freeway facilities typically serve longer distance travel and support regional mobility. The state funds roadway improvement and maintenance on these facilities. The Florence area is served by Interstates 95 and 20. Interstate 95 runs between Miami, FL and the Canadian border, connecting major urban areas such as New York City, Boston, and Washington, D.C. along the way. Florence serves as the eastern terminus for I-20, which intersects nine other interstates on its trek from west Texas to Florence.

I-95

Major Arterials

Major arterials typically have tightly controlled access and few, if any, individual site driveways. These facilities serve medium to longer distance travel and connect minor arterials and collector streets to freeways and other higher type roadway facilities. Generally, roadway improvements and maintenance on major arterials are funded by the state. Major arterials within the Florence region include US 52 (Irby Street), US 76 (Palmetto Street), and SC 51 (Pamplico Highway).

East Palmetto Street

Pamplico Highway

Minor Arterials

Minor arterials primarily serve a mobility function but often have more closely spaced intersections, some individual site driveways, and generally lower design and posted speeds compared to other arterials. The minor arterial network is primarily intended to serve local travel demand. These roadways connect to other minor arterials, to major arterials, and to collector streets. Minor arterials provide a higher level of access to adjacent land uses than major arterials and typically have lower traffic volumes. For the most part, minor arterials are maintained by the state, but the cost of improvement may be the responsibility of local governments.

Minor arterials in the Florence Area include two-lane undivided and multi-lane roads with little or no paved shoulders. They typically have occasional left-turn lanes at intersections and major driveways and have posted speed limits ranging from 35 mph to 45 mph. Other characteristics may include sidewalks, signalized intersections, and on-street parking (in residential areas and the centralized business district). Minor arterials in the Florence area include Second Loop Road, Hoffmeyer Road, and National Cemetery Road.

Cheves Street

TV Road

Collectors

Collectors typically provide less overall mobility, operate at lower speeds (less than 35 mph), have more frequent and greater access flexibility with adjacent land uses, and serve shorter distance travel than arterials. Collectors provide critical connections in the roadway network by bridging the gap between arterials and locals. Thus, the majority of collector streets connect with one another, with local streets, and with non-freeway/expressway arterials.

Edisto Drive

The primary purpose of the collector street system is to collect traffic from neighborhoods and distribute it to the system of major and minor arterials throughout an area. In general, collector streets have two lanes and often have exclusive left-turn lanes at intersections with major and minor arterials and less frequently at intersections with other collector streets. Collector streets rarely are constructed and funded by the state. Responsibility for collector streets usually falls to the local government and the development community for funding, design, and construction. In the Florence area, collector streets have a wide range of physical characteristics, some of which are attributable to the neighborhoods in which they exist. Though different, the one commonality is that of providing good connectivity.

Examples of collector streets in the Florence area include Alligator Road, Sumter Street, and McCurdy Road.

Locals

Local facilities provide greater access and the least amount of mobility. These facilities typically connect to one another or to collector streets and provide a high level of access to adjacent land uses/development (i.e., frequent driveways). Locals serve short distance travel and have low posted speed limits (25 mph to 35 mph). Most roadways within the Florence area are classified as locals.

Combray Circle

Quail Point Road

Corridor Operations

Regional Mobility

The Florence area benefits from having multiple options for regional mobility. This mobility is anchored by I-95 and I-20, which connects Florence with many major eastern cities. In addition, routes such as US 52, US 76, and US 301 serve as critical inter and intra-regional transportation corridors, connecting points in the Florence area such as downtown Florence, the Florence Regional Airport, and McLeod Regional Medical Center with cities across the Carolinas.

I-20 west of I-95

US 76 (East Palmetto Street) near Firetower Road

Image Sources: Bing.com

Congested Corridors

Congestion along corridors is related to numerous factors but often results from bottlenecks, primarily at intersections, along the corridor. Aside from individual bottleneck locations in corridors, congestion also occurs when too many people use a route that already operates at or over-capacity.

Average Annual Daily Traffic

Traffic volumes signify the total number of vehicles traveling along a roadway segment on an average day. **Figures 4.2 and 4.2a** illustrate 2007 average annual daily traffic (AADT) volumes on study roadways in Florence and Darlington Counties. The area's highest traffic volume of 49,000 vehicles per day occurs on I-95 between I-20 and US 52. Through the study area, volumes on I-95 range between 30,000 and 49,000 vehicles per day (vpd), while volumes on I-20 average around 25,000 vpd. Other notable corridors with traffic volumes in excess of 20,000 vpd include segments of US 52, SC 51, and US 76. Overall, traffic volumes on facilities classified as collector streets are lower than those on minor arterials, and traffic volumes on minor arterials are lower than those on principal arterials. This tendency reflects the purpose and function of each roadway class design and location.

West Palmetto Street

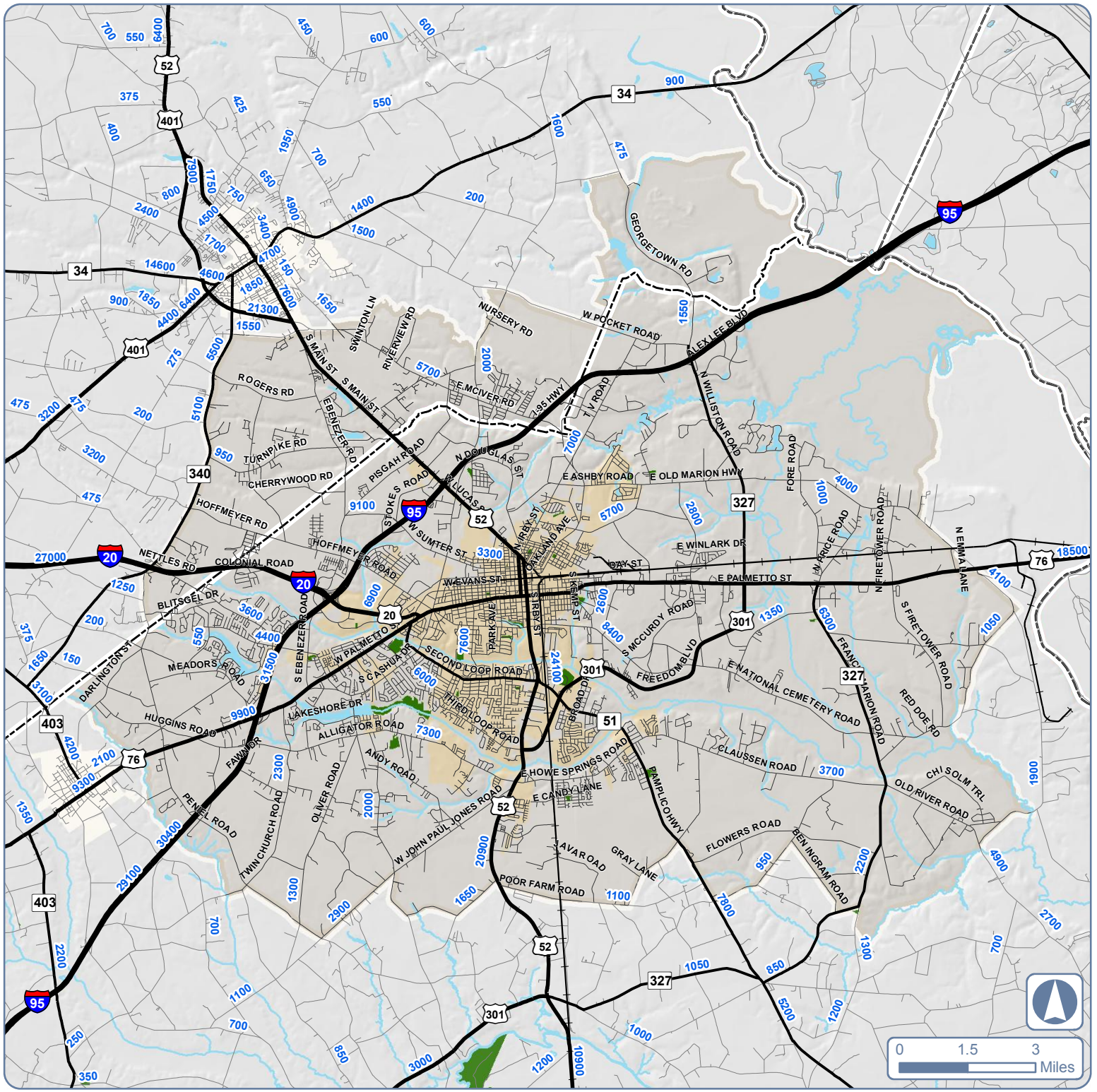

Figure 4.2

Average Annual Daily Traffic (AADT)

- ### 2007 AADT
- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary

2035 LRTP

Kimley-Horn and Associates, Inc.

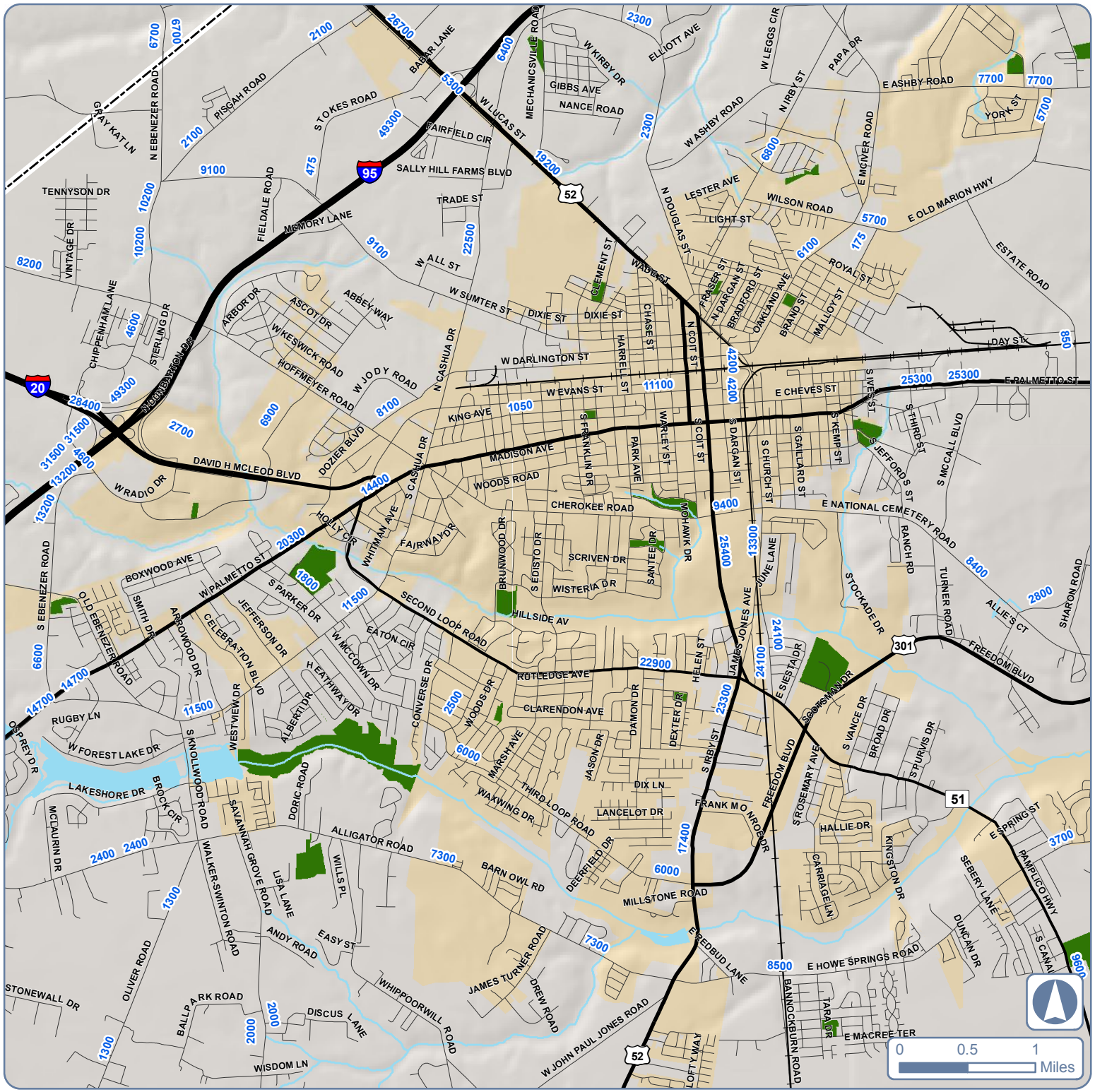

Figure 4.2a

Average Annual Daily Traffic (AADT)

Inset: City of Florence

- ### 2007 AADT
- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary

2035 LRTP

Kimley-Horn and Associates, Inc.

Level of Service

Traffic volumes alone should not be used to determine congested corridors because this measurement does not take into account functional classification and roadway capacity. A better measurement is volume-to-capacity (V/C) ratios. V/C ratios are calculated by dividing the traffic volume of a roadway segment by the theoretical capacity of the roadway. The resulting universal measurement standardizes traffic analysis and provides a benchmark for levels of congestion. Typically V/C ratios are grouped into one of the following categories:

- **LOS A or B** – *Well below capacity* (V/C = less than 0.6) – Roadways operating with a V/C ratio less than 0.60 operate with no congestion during peak travel periods. This level of service usually occurs on rural or local streets.
- **LOS C** – *Approaching capacity* (V/C = 0.6 to 0.8) – As the V/C nears 0.8, the roadway becomes more congested. These roadways operate effectively during non-peak hours but may be congested during morning and evening peak travel periods.
- **LOS D** – *At Capacity* (V/C = 0.8 to 1.0) – Roadways operating at capacity are somewhat congested during non-peak periods, with congestion building during peak periods. A change in capacity due to incidents impacts the travel flow on corridors operating within this V/C range. Roadways in this category most efficiently balance corridor operations with cost of instrastructure.
- **LOS E** – *Slightly Over Capacity* (V/C = 1.0 to 1.2) – Roadways operating with V/C ratios between 1.0 and 1.2 experience heavy congestion during peak periods and moderate congestion during non-peak periods. Changes in capacity can have major impacts on corridors and may create gridlock conditions.
- **LOS F** – *Well Over Capacity* (V/C = greater than 1.2) – Roadways in this category represent the most congested corridors in the study area. These roadways are congested during non-peak hours and most likely operate in stop-and-go gridlock conditions during the morning and evening peak travel periods.

Figure 4.3 shows the roadways in the Florence area that fall into the final three categories for the 2007 base year. The V/C ratios computed for these roadways is based on output from the Florence Area Travel Demand Model, which predicts volumes and movement on the transportation system based on development patterns, mode choice, and a preferred routing based on trip length, speed, and friction. Roadways identified as congested in **Figure 4.3** were part of the foundation for determining future improvements intended to alleviate congestion and improve the overall transportation system.

Existing Conditions

As shown in **Figure 4.3**, traffic growth throughout the area combined with insufficient increases in roadway capacity has resulted in traffic congestion on area roadways. Corridors with the most notable congestion in the 2007 model base year include US 52 near the I-95 interchange, portions of Pine Needles Road and Ebenezer Road southeast of I-95, Palmetto Street west of the Five Points intersection, and Second Loop Road. Due to the unavailability of additional crossing opportunities, even smaller facilities such as Knollwood Road face congestion issues.

Existing + Committed Conditions

Figure 4.4 depicts traffic congestion in 2035 for the FLATS area. To establish an appropriate baseline for this future projection, existing roadways were combined with committed projects. For this region, the committed projects include projects scheduled to be funded through the Florence County Sales Tax initiative (discussed later in this chapter). This scenario helps illustrate what needs of the system beyond the projects currently slated for improvement.

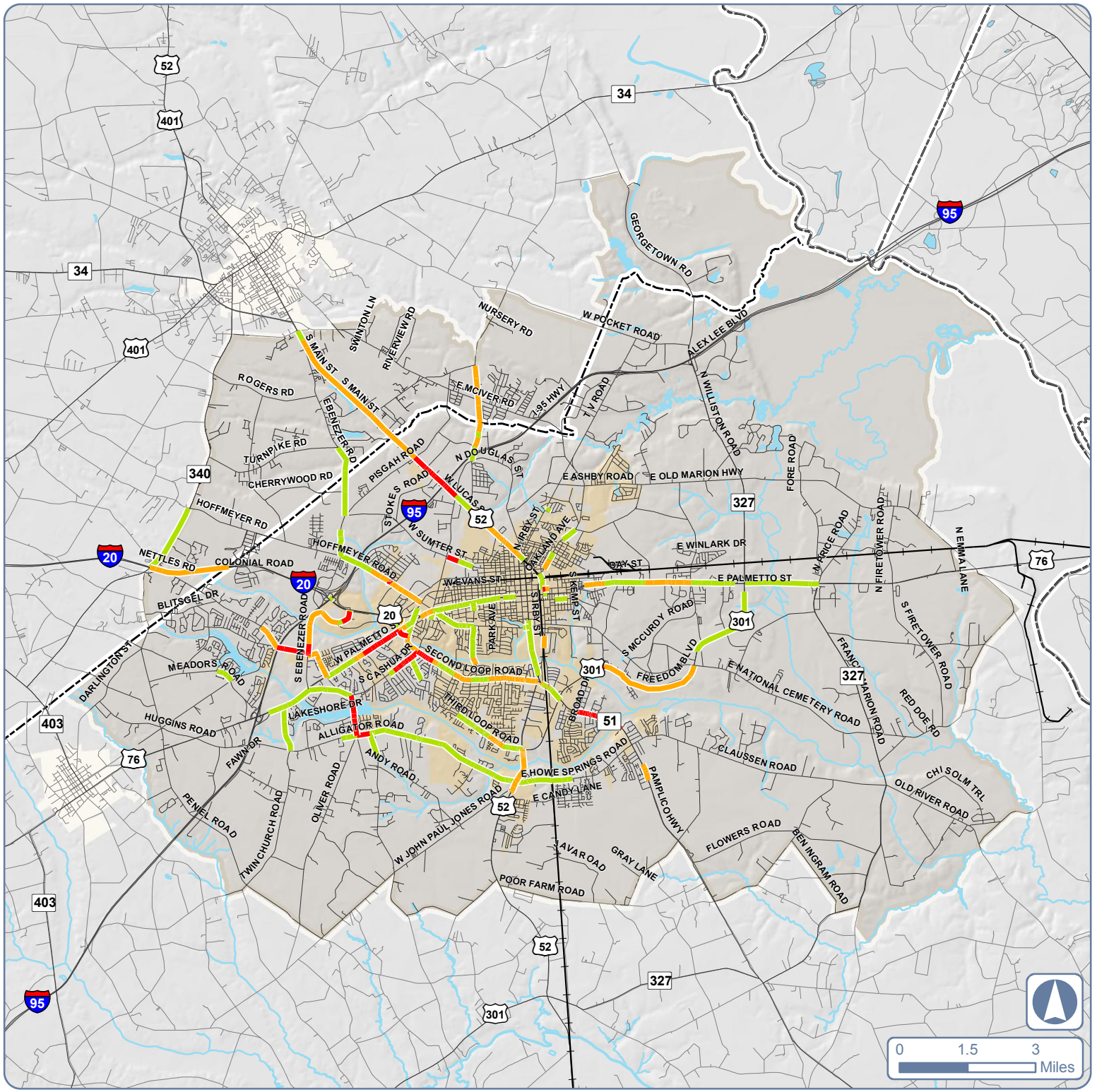

Figure 4.3

2007 Congested Corridors

Level of Service

- LOS D (At Capacity)
- LOS E (Over Capacity)
- LOS F (Well Over Capacity)
- Other Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary

FLATS 2035 LRTP

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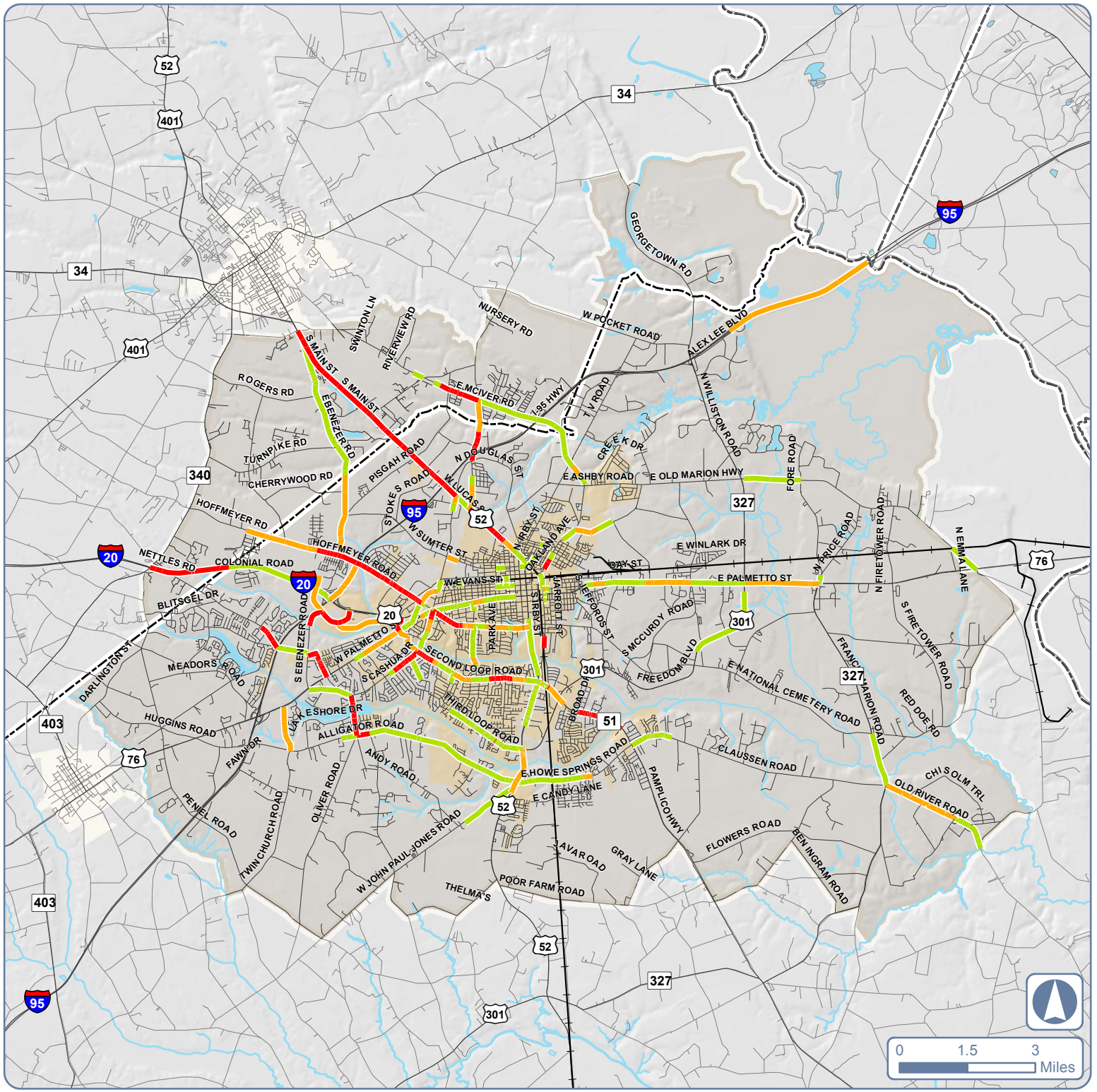


Figure 4.4

2035 Congested Corridors, E+C Conditions

Level of Service

- LOS D (At Capacity)
- LOS E (Over Capacity)
- LOS F (Well Over Capacity)
- Other Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary

FLATS 2035 LRTP

Kimley-Horn and Associates, Inc.

Level of Service Trends

When **Figures 4.3 and 4.4** are compared, additional congestion become evident in the western portion of the region. In the 2035 E+C conditions illustrated in **Figure 4.4**, facilities such as Hoffmeyer Road, Colonial Road, and Ebenezer Road all show new congestion issues. The northern portion of the study area starts to exhibit congestion on facilities such as McIver Road, Charleston Road, and US 52 (Lucas Street). Increased pressure on I-95 also can be noted as congestion becomes apparent on portions of this roadway. However, reduced congestion as a result of committed projects can be seen on corridors such as Alligator Road.

Hoffmeyer Road

US 52 (Lucas Street)

Planning Precedent

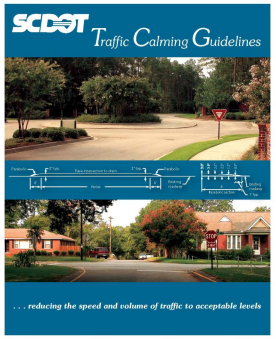
As discussed in **Chapter 2**, several plans and standards have been put in place to study the future of this region's transportation network. This section discusses those documents with direct applicability to the existing and future roadway system.

Existing Guidelines

Several state and local documents provide guidance for roadways in the Florence region. Prior to formulating recommendations, it is important to examine these documents to understand opportunities and restrictions posed by the applicable guidelines. In addition to the guiding documents described below, the Transportation for Communities – Advancing Projects through Partnerships (TCAPP) program is under development at the federal level. TCAPP serves "to integrate collaborative practices into the long-range transportation process that is implemented under the federal planning regulations." The Decision Guide provides supporting information in the form of a framework through which decisions should be made.

SCDOT Traffic Calming Guidelines

These guidelines identify tools for use in traffic calming and also provide an approach for implementation. Traffic calming measures such as speed humps, raised crosswalks and raised intersections, traffic circles and roundabouts, raised landscaped medians, road closures, lane width reductions, and traffic control devices are all discussed in this guidance document. Basic rules of thumb for implementing traffic calming measures are discussed, such as:

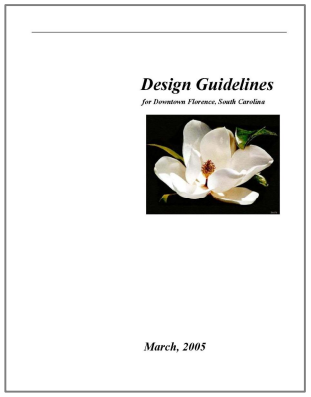


- Measures not eligible within the SCDOT right of way: speed bumps and chicanes, or other measures, such as installation of curbed areas that reduce the total two way travel area to less than 20 feet in width. These are not considered appropriate measures based on safety and accessibility and should not be proposed for installation within the State's right of way. (The local government may exercise the option to remove the roadway from the State's system, if the appropriate criterion is met.)
- Traffic calming measures are not eligible if they compromise roadway safety, based on limited sight distance, severe grades, or other engineering judgment. (The SCDOT may recommend other measures. Approval will only be given if safety is not compromised.)
- Traffic calming measures are not eligible if the petition requiring 75% support or city/county council approval cannot be obtained. (There may be some solutions acceptable to one portion of the impacted area that is not acceptable to another portion of the impacted area. Citizen support of the project is necessary for a successful program.)

SCDOT Access and Roadside Management Standards

SCDOT first developed their Access and Roadside Management Standards (ARMS Manual) in 1991, with the most recent update occurring in 2009. This manual outlines driveway spacing, placement, and design criteria. In addition, this manual provides criteria for requiring Traffic Impact Studies from prospective developments.

Design Guidelines for Downtown Florence



In 2005, a set of design guidelines were developed for Downtown Florence. These guidelines address not only building form and characteristics but also the concept of complete streets and steetscaping. It divides the downtown area into distinct sections (Historic, Redevelopment, etc.) and provides standards for design in each. These standards provide guidance for a downtown street system that serves all travel modes, in addition to catering to the surrounding commercial and residential land uses. Updated guidelines are expected soon.

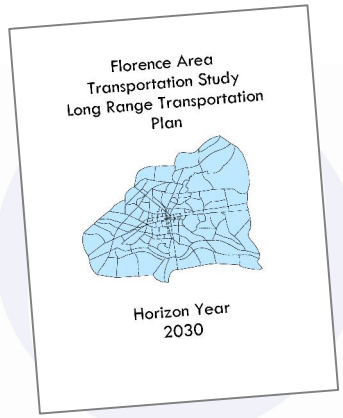
Previous Plans

Previous planning efforts in the FLATS area have been undertaken, yielding a series of roadway recommendations. The analysis done to reach these recommendations will be considered in the 2035 LRTP for context and as a building block toward the final street network priorities established herein.

2030 FLATS LRTP

In the 2030 LRTP, a set of roadway projects was identified for capacity improvements. These improvements included:

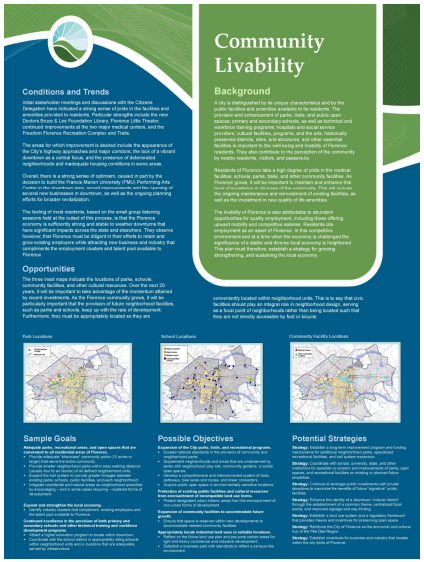
- West Radio Drive/South Ebenezer Road/North Ebenezer Road Phase I (David McLeod Boulevard to South Ebenezer Road)



- West Radio Drive/South Ebenezer Road/North Ebenezer Road Phase II (Palmetto Street to West Radio Drive)
- West Radio Drive/South Ebenezer Road/North Ebenezer Road Phase III (Hoffmeyer Road to West Radio Drive)
- I-95 (US 76 to I-20)
- South Cashua Drive (Second Loop Road to US 76)
- Ashby Road Extension (North Cashua Drive to Douglas Street)
- Darlington Street Extension (Hoffmeyer Road to Beltline Drive)
- Oakland Avenue (Wilson Road to West Lucas Street)

In addition to these capacity improvements, US 52 has been identified for enhancement and beautification.

Comprehensive Plans



At this time, work is in progress for both the City of Florence and the Florence County Comprehensive Plans. Information from the *2035 LRTP* will be used to develop the transportation element of the Florence County Comprehensive Plan. A thoroughfare element is being developed for the City of Florence Comprehensive Plan. Coordination between the LRTP process and this Comprehensive Planning process has been initiated in an effort to streamline the recommendations coming from each. Street network recommendations will be considered with regard to these documents in order to support and enhance the land use planning in the area.

Sales Tax

Chapter 2 includes an overall description of the Florence County One-Cent Capital Project Sales Tax. The projects identified as a part of this sales tax comprise the committed project list for this LRTP. (www.florenceco.org/RoadProjects/) The following projects are identified to be funded through the sales tax (in prioritized order):

1. Pine Needles Road: Widen from Southborough Road to South Ebenezer Road
2. US 378: Widen from US 52 near Lake City to SC 41 in Kingsburg
3. US 76: Widen from I-95 to Main Street in Timmonsville
4. TV Road: Widen from Wilson Road to I-95
5. Pamplico Highway: Widen from Claussen Road to US 378 in Kingsburg
6. US 301 Bypass: Complete bypass from US 76 near Timmonsville to the intersection of US 52/US 301 and Howe Springs Road

Figure 4.5 shows the alignments and locations of these projects.

Next Steps

As a crossroads community facing increasing challenges to efficiently moving people and goods, the people of Florence recognize the need to understand existing conditions and outline effective strategies to carry forward in the future. The Future Roadway Element (**Chapter 5**) summarizes future roadway conditions and systematically evaluates the impact of recommended projects on natural and manmade resources, congestion, safety, and security. The chapter also assesses each project's potential benefit to the transportation system. A portion of the chapter is dedicated to a toolbox of access management and context sensitive design strategies.

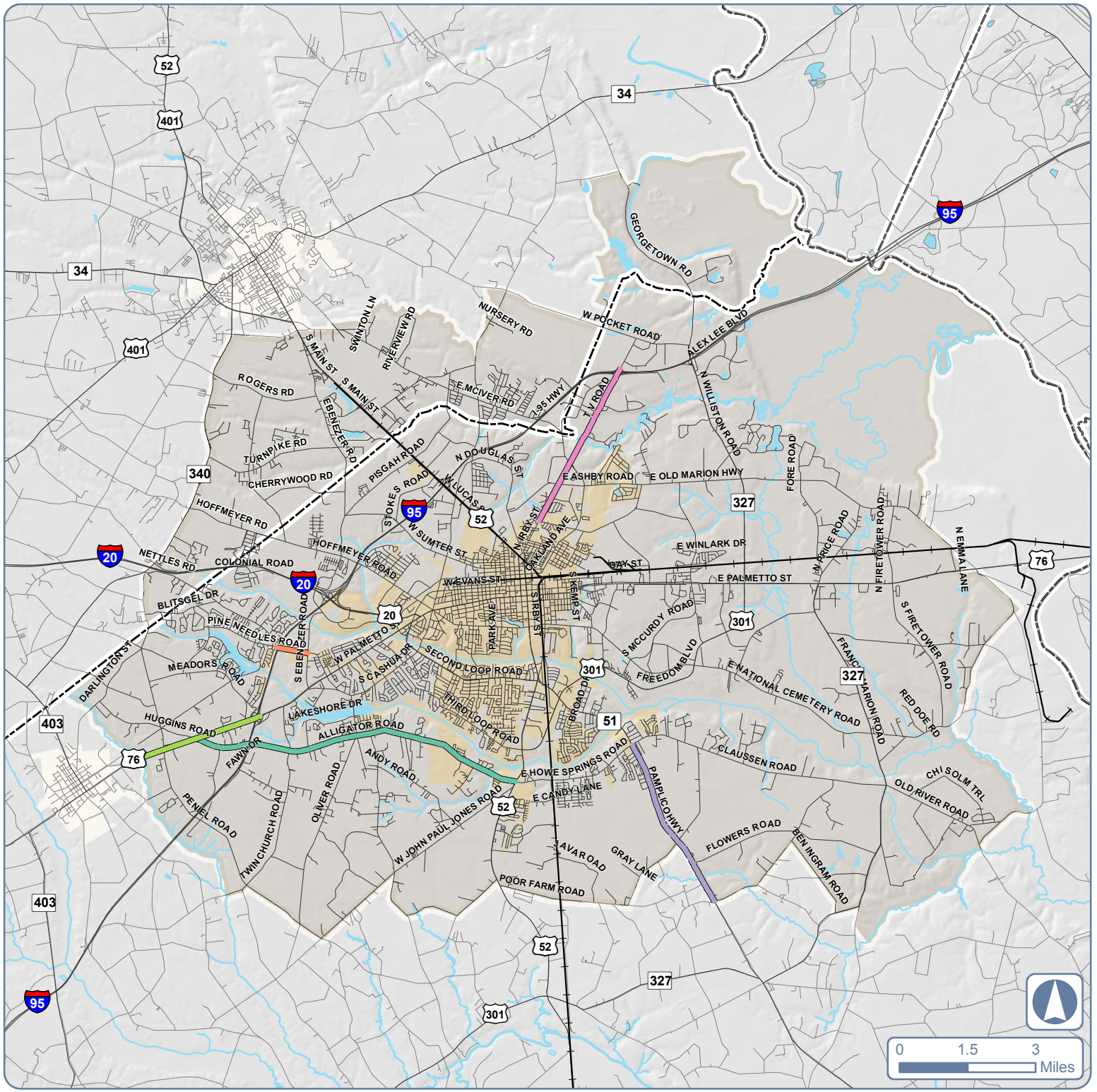


Figure 4.5

FLATS Area Sales Tax Projects

Sales Tax Projects

- Alligator Road/301 Bypass
- Pine Needles Road
- SC 51
- TV Road/Irby Road
- US 76
- Other Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary

*The Florence County sales tax projects located within the FLATS MPO area represent the committed projects for the region.

FLATS 2035 LRTP

Kimley-Horn and Associates, Inc.

Chapter 5

Future Roadway Element

Introduction

Since the first map of Florence was created in 1860, much has changed in the rural crossroads community. But local leaders continue to face the same pressure to create a transportation system that can efficiently move both people and goods. Today's challenge is complicated by the limited funds for transportation projects and competing priorities at the local, state, and federal level. The *2035 FLATS Long Range Transportation Plan (2035 LRTP)* takes into account changing demographics, emerging trends, local desires, and available resources to transform a vision for a balanced transportation network into a realized future. To their credit, local officials have acknowledged that focusing all resources on building roads to combat congestion will do little to address region-wide needs. Instead, the *2035 LRTP* does more with less by focusing on maximizing the existing network and making strategic investments on the highest priority projects.

The Future Roadway Element of the 2035 LRTP provides a detailed look at recommendations, including the construction and widening of arterials, improving access management, and enhancing the collector street network. The chapter also considers safety and security and introduces complete streets concepts. Based on the evaluation matrix presented in this chapter, the recommended roadway projects are placed into the financially constrained or vision plan as described in **Chapter 10**. The chapter concludes with a series of cross sections that illustrate the desire for streets that move people and goods efficiently.

Recommendations

The Existing Roadway Element (**Chapter 4**) outlines the needs and priorities of the region's network of highways and streets. The chapter documents how future demand on the roadway system will hamper the local efforts to provide mobility for people and freight within and through the Pee Dee region. Coupled with the existing natural, man-made, and financial barriers to building new roads, more emphasis has been placed on maximizing the region's existing infrastructure. The recommendations that follow — representing the shared work of local staff, stakeholders, and the TPAC — have been vetted through the public during the second workshop on February 18, 2010.

Arterials

Arterial recommendations are grouped into three categories: Existing Road Widening, Access Management Improvements (i.e. operational/ design improvements), and New Location Construction. The recommendations emphasize the protection of existing roadways through the inclusion of landscaped medians and improved access management design. That is, if a corridor warrants widening or other capacity improvements, a median may be proposed to improve safety, control access, and to enhance the corridor aesthetics.

Although recommendations are detailed below for specific corridors, other improvements (spot safety, bicycle and pedestrian, transit, and freight) can be found within the multimodal recommendations in other chapters of the *2035 LRTP*. And while all of these projects will not appear in the fiscally constrained plan, all projects represent candidates for inclusion in the vision plan.

Existing Road Widening

Existing corridors that require more work than access management solutions alone to solve congestion and safety issues may require widening. The corridors listed below represent facilities currently operating over capacity or projected to be over capacity within the planning horizon of the *2035 LRTP*. These facilities are grouped by their ultimate cross section:

6-Lane Divided Freeway

- **I-95** — David H McLeod Blvd. (I-20 Bus.) to W Palmetto St. (US 76)

5-Lane

- **S Cashua Dr.** — Second Loop Rd. to Knollwood Dr.
- **W Darlington St.** — N Cashua Dr. to Hoffmeyer Rd.

4-Lane Divided

- **Alligator Rd.** — Palmetto St. (US 76) to S Irby St. (US 52)

  Note: Due to the constraints along Alligator Road, this congestion issue will be addressed through the proposed US 301 Bypass (sales tax project).

- **Bentree Ln./Holly Cir.** — David H McLeod Blvd. (I-20 Bus.) to Second Loop Rd.
- **Hoffmeyer Rd.** — Anderson Farm Rd. to N Ebenezer Rd.
- **Hoffmeyer Rd.** — Anderson Farm Rd. to Timmonsville Hwy. (Darlington County – SC 340)
- **National Cemetery Rd.** — S Church St. to Stockade Dr.
- **Pine Needles Rd.** — Southborough Rd. to Ebenezer Rd.
- **Pisgah Rd./Ebenezer Rd.**— Presbyterian Rd. to Hoffmeyer Rd.

  Note: Darlington County supports the extension of improvements to Hoffmeyer Road beyond the FLATS MPO boundary, ending at Lamar Highway (US 401).

- **Radio Dr./Ebenezer Rd.** — David H McLeod Blvd. (I- 20 Bus.) to near Industry Blvd.
- **SC 51/Pamplico Hwy.** — E Howe Springs Rd. to Kate's Garden Ln.
- **Southborough Rd.** — N Sally Hill Rd. (Darlington County) to Pine Needles Rd.
- **TV Rd./Irby St.** — I-95 to Wilson Rd.
- **US 76/Palmetto St.** — E Main St. (in Timmonsville) to I-95

3-Lane

- **N Ebenezer Rd.** — Pisgah Rd. to Main Street (Darlington County – US 52)

  Note: The widening of this segment of Ebenezer Road to a three lanes should accommodate future residential growth along the corridor. However, turn pockets and 2-lane divided cross section may be preferred in strategic locations. This recommendation assumes no improvements are necessary to the bridge over Palmetto Shores Lake.

- **Oakland Ave.** — E Lucas St. to Wilson Rd.
- **Third Loop Rd.** — S Marsh Ave. to S Irby St.

Intersection/Interchange Improvements

Two intersection/interchange projects were identified and evaluated.

- **Five Points Roundabout** — The conversion of this intersection into a two-lane roundabout is discussed in detail as part of the access management section of this chapter.
- **I-95 at McIver Rd. Interchange** — A new half cloverleaf interchange is recommended to improve access to Darlington and relieve stress at Lucas Street (US 52).

Access Management Improvements

Access management improvements typically occur within the existing right-of-way and include converting a two-way left-turn lane into a landscaped median or implementing other access management strategies. Although these improvements will increase the capacity of the roadway to a degree, the main outcome of the projects will be greater access and mobility and enhanced traffic safety. Streetscaping and intersection-level improvements can also be considered to enhance the performance of these corridors. The following roadway segments are recommended for access management improvements.

- **Alligator Rd.** — Knollwood Rd. to S Irby St. (US 52)
- **N Cashua Dr.** — W Palmetto St. (US 76) to Lucas St. (US 52) near Darlington
- **Charleston Rd.** — I-95 to Pocket Road (Darlington County)

  Note: Darlington County has identified the South Charleston Road corridor for future conservation and preservation. Access management for this corridor should work toward achieving this goal.
- **E Cheves St.** — S Church St. to E Palmetto St. (US 76)
- **W Darlington St.** — N Cashua Dr. to N Irby St. (US 52)
- **David H McLeod Blvd.** — I-95 northbound ramps to Woody Jones Blvd.
- **Ebenezer Rd.** — Hoffmeyer Rd. to Radio Dr.
- **Five Points Intersection**
- **Hoffmeyer Rd.** — N Ebenezer Rd. to S Cashua Dr.
- **Irby St. (US 52)** — W Lucas St. (US 52) to Alligator Rd.
- **Main St. (Darlington County)/W Lucas St (US 52)** — N Ebenezer Rd. (Darlington County) to N Irby St.
- **McIver Rd. (Darlington County)** — Charleston Rd. to I-95 (Darlington County)
- **Palmetto St. (US 76)** — Second Loop Rd. to Freedom Blvd.
- **Second Loop Rd./Pamplico Hwy. (SC 51)** — W Palmetto St. (US 76) to Howe Springs Rd./Claussen Rd.

New Location Construction

Building larger facilities such as new freeways or major arterials has become less frequent as the cost of construction (in terms of right-of-way acquisition, materials, and labor) has risen while funding has declined. With these trends expected to continue, facilities recommended to be constructed on new alignment must provide significant congestion relief and/or safety improvements with few alternative options. For this reason, the majority of roadways recommended for construction in the FLATS MPO area will occur at the collector street level. These new roadways, as described in detail in a subsequent section, will be funded by the private sector as land is developed. The only new location facility recommended as part of the *2035 LRTP* is an extension of Brofford Drive from Alligator Road to Third Loop Road. This two-lane facility will provide a new crossing of Middle Swamp. Since this is an extension of a local road, this project is not currently an eligible project for federal funding. This local project is awaiting study for inclusion into federal eligibility. It is assumed for the purposes of this plan that the project will be deemed eligible for federal funding at a later date.

The project team discussed with local officials, city and county planners, and the general public an alternative to widening Alligator Road. The selection of a preferred corridor (noted as the US 301 Bypass in the one-cent sales tax) will require detailed review of potential alignments and their impacts on environmental, social, and cultural resources. The selection of a preferred corridor is recommended to be completed in the short-term implementation phase of the *2035 LRTP* following a detailed corridor alignment study. This study should precede any widening of the existing roadway. Prior to the acquisition of right-of-way of the final alignment, a more extensive NEPA process likely will be required.

Overlays

Some corridors are identified as candidates for overlay districts. Access management overlay districts would control the types and patterns of future growth allowed along the selected corridor. This action should protect the mobility along the corridor by reducing conflict points while ultimately making it better equipped to handle new development. Corridors identified for access management overlay districts include:

- Howe Springs Road between Pamplico Highway (SC 51) and Irby Street (US 52)
- Williston Road (SC 327)/Freedom Boulevard between I-95 and S Irby Street (US 52)

Corridors recommended for rural preservation overlay districts have the potential for growth but residents and local officials want to preserve the corridor's rural characteristics (viewsheds, historic sites, cultural resources, agriculture, etc.). Ideally, corridors targeted for rural preservation overlay districts have larger parallel facilities that could accommodate additional traffic. Two corridors were selected as candidates for rural preservation overlay districts as part of the Florence County Comprehensive Plan. The northern terminus of the Old River Road corridor from Francis Marion Road (SC 327) to Myrtle Beach Highway (US 378) enters the FLATS MPO area.

Collectors

As discussed in **Chapter 4**, the role of a collector street in a balanced transportation system is to collect traffic from neighborhoods and distribute it to the network of arterials. As such, these streets provide relatively less mobility but higher overall accessibility compared to higher level streets. The lower design speeds and multimodal amenities also make these streets attractive for bicyclists and pedestrians. The proper design and spacing of collector streets is critical to ensuring the balanced transportation network envisioned by the residents and local officials in the FLATS region.

Policy Considerations

The design of the collector street network must respect present and future conditions, the public's vision for the future, and how the network can best balance the natural environment, connectivity, access, mobility, and safety.

Natural Environment

With the presence of water features such as Jeffries Creek, Black Creek, Middle Swamp, and a network of significant wetlands in the area, local planners face challenges related to the natural environment. The local geography impacts land use and transportation decisions and affects how the community grows (via suitable land and potential for water and sewer connections), where streets can be constructed and maintained, and where connections between streets can be made. Collector streets, as part of the development process, must respect the natural environment.

Street Spacing and Access

Local officials also must consider street spacing guidelines that promote the efficient development of an expanding transportation system. Ultimately, these street spacing guidelines could be used as "rules of thumb" during the development review process. Different spacing standards are necessary for different development types and intensities. Understanding this principle, a theoretical model largely influenced by land use intensity ranges shows the desired collector street spacing for different intensities (See **Table 5.1**.). In addition to these recommended street spacing standards, individual driveway access to collector streets should be limited to local streets when possible.

Table 5.1 – Collector Street Spacing Standards

Land Use /Type of Collector Street	Intensity (dwelling units per acre)	Access Function	Approximate Street Spacing
Very Low Intensity Residential	Less than 2	High	3,000 to 6,000 feet
Low Intensity Residential	2 to 4	High	1,500 to 3,000 feet
Medium and High Intensity Residential	More than 4	High	750 to 1,500 feet
Activity Center	Mixed-use	Medium	750 to 1,500 feet

Land Use Intensity	Very Low Intensity	Low Intensity	High Intensity
			
Street Spacing	3,000' to 6,000'	1,500' to 3,000'	750' to 1,500'

Design Elements

As most communities' largest collection of public space, streets need to reflect the values of the community and reinforce a unique "sense of place" to be enjoyed by citizens — whether in urban, suburban, or rural contexts. This is especially true for a collector street system that serves as the backbone for local mobility, property access, and non-vehicular transportation modes.

Recently, municipalities across the country have started implementing "complete streets" as one way to transform their transportation corridors from vehicle-dominated roadways into community-oriented streets that safely and efficiently accommodate all modes of travel — not just motor vehicles. The complete street movement as described later in this chapter does not advocate a one size fits all approach — a complete street in an urban area may look quite different from a complete street in a more rural area. However, both facilities are designed to balance mobility, safety, and aesthetics for everyone using the travel corridor. Furthermore, design considerations supportive of complete streets include elements in both the traditional travel corridor (i.e., the public realm) as well as adjacent land uses (i.e., the private realm) for reinforcing the desired sense of place.

Future Collector Street Network

The arterial recommendations listed previously represent only the higher-level facilities recommended in this plan. Collector streets are recommended throughout the FLATS area to improve the general connectivity of the regional road network. The collector street system provides critical connections by bridging the gap between arterials and locals. Collectors gather traffic from neighborhoods and distribute it to the system of major and minor thoroughfares throughout the area. Recommended collector streets have been established to provide additional connections for areas in the periphery of the region that might expect additional future growth. Other recommended collector streets near or within the City of Florence seek to connect existing development and provide other connection opportunities to relieve congestion on surrounding arterials.

Ultimately, the collector streets shown are representative of connections rather than actual alignments. At the time of development, private land owners would work with developers and affected jurisdictions to determine alignments best suited to all parties. No funding from the LRTP will be allocated to the construction of these streets.

The collector streets are envisioned to have two lanes and often have exclusive left turn lanes at intersections with principal and minor arterials and less frequently at intersections with other collectors. The actual design of a collector street will depend upon the surrounding land use context. The typical cross sections for collector streets also are included at the conclusion of this chapter.

The future collector street network developed based on the policy considerations discussed above and the vision and goals and objectives described in **Chapter 2** is shown in the Recommended Improvement Map described on the following page.

Recommendations Maps

Recommended Cross Section Map

The Recommended Cross Section Map (**Figure 5.1**) shows the typical cross section of roadways in the FLATS MPO area. Example cross sections are shown in more detail in the complete streets section that concludes this chapter.

Recommended Improvement Map

While the Recommended Cross Section Map shows what the streets will look like and how they will function, it is important to identify the improvements necessary to reach the preferred vision. The Recommended Improvement Map (**Figure 5.2**) shows the required improvements to the transportation system.

The recommendations listed here represent the long-term vision of the LRTP. The vision plan includes the highway recommendations developed to alleviate congestion, improve access or mobility, and address public concerns. However, only a small portion of this vision plan will be included in the financially constrained plan. This financially constrained plan will be discussed in more detail in **Chapter 10**.

Future Travel Conditions

Future travel conditions on the region's roadways can be examined under a variety of conditions. The Existing Plus Committed (E+C) condition scenario documents 2035 congestion levels if projects underway or with funds appropriated to them are added to existing roadway facilities. The Vision Plan condition includes all recommended projects regardless of funding allocation. The Vision Plan condition reflects future congestion if all non-collector street roadway projects recommended in the plan are implemented. Further discussion of the congestion levels attained through the financially constrained plan is contained in **Chapter 10**.

2035 Existing Plus Committed Conditions

Prior to developing the funded and vision plan projects, future congestion levels were analyzed based on adding only committed projects to the existing transportation network. These conditions are described in **Chapter 4** and illustrated in **Figure 4.4**. While the sales tax initiative is helping alleviate congestion on some key arterials, many roadways will still operate at capacity or over capacity in 2035. Congestion also worsens, primarily in the western portion of the study area due to the lack of proposed improvements as well as the expected growth in this area.

2035 Funded Plan Conditions

Figure 5.3 displays the level of service if the financially constrained projects using current funding methods only are constructed by 2035. When the congested corridors in this section are compared to the congestion levels shown if only the One-Cent Sales Tax projects are constructed, there are several notable improvements and changes. As expected, congestion levels decrease on the funded corridors (S Cashua Drive and Bentree Lane). However, significant congestion issues remain in other areas.

2035 Vision Plan Conditions

The Vision Plan builds on the financially constrained project list by adding a wish list of projects. These projects also are described in **Chapter 10**. The Vision Plan conditions map shows how the committed projects, funded projects, and wish list projects address deficiencies. As expected, the Vision Plan provides the most improvement to the area's congested roadways. **Figure 5.4** illustrates level of service for 2035 following the construction of the vision projects. Congestion decreases are observed throughout the region, with many fewer roadways well over capacity.

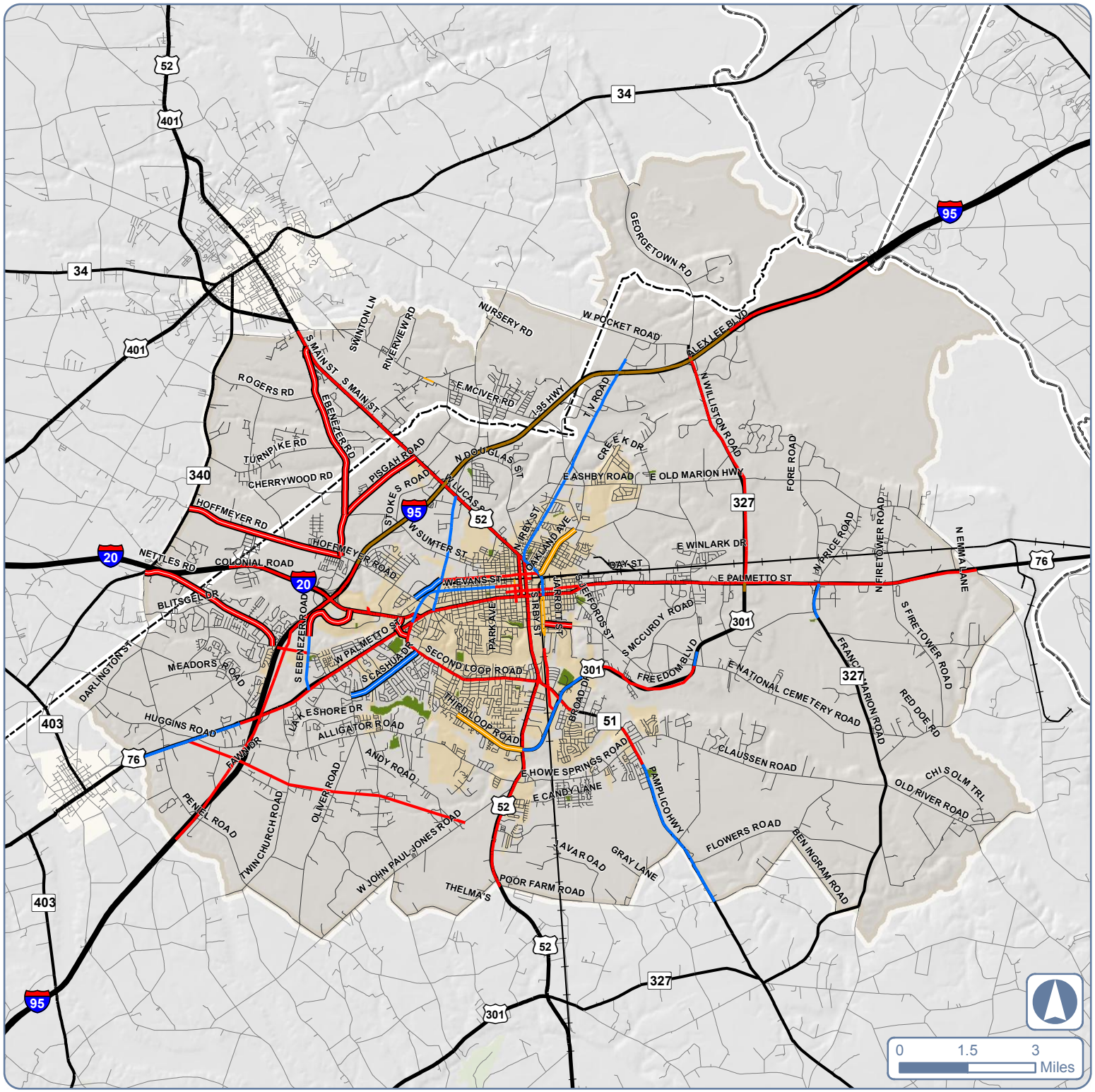


Figure 5.1

Recommended Cross Section Map

Recommended Cross Section

- 6-Lane Freeway
- 5-Lane
- 4-Lane Divided
- 3-Lane

Laneage

- 6 Lanes
- 5 Lanes
- 4 Lanes
- 3 Lanes

Note:
Sales Tax projects are shown as completed.

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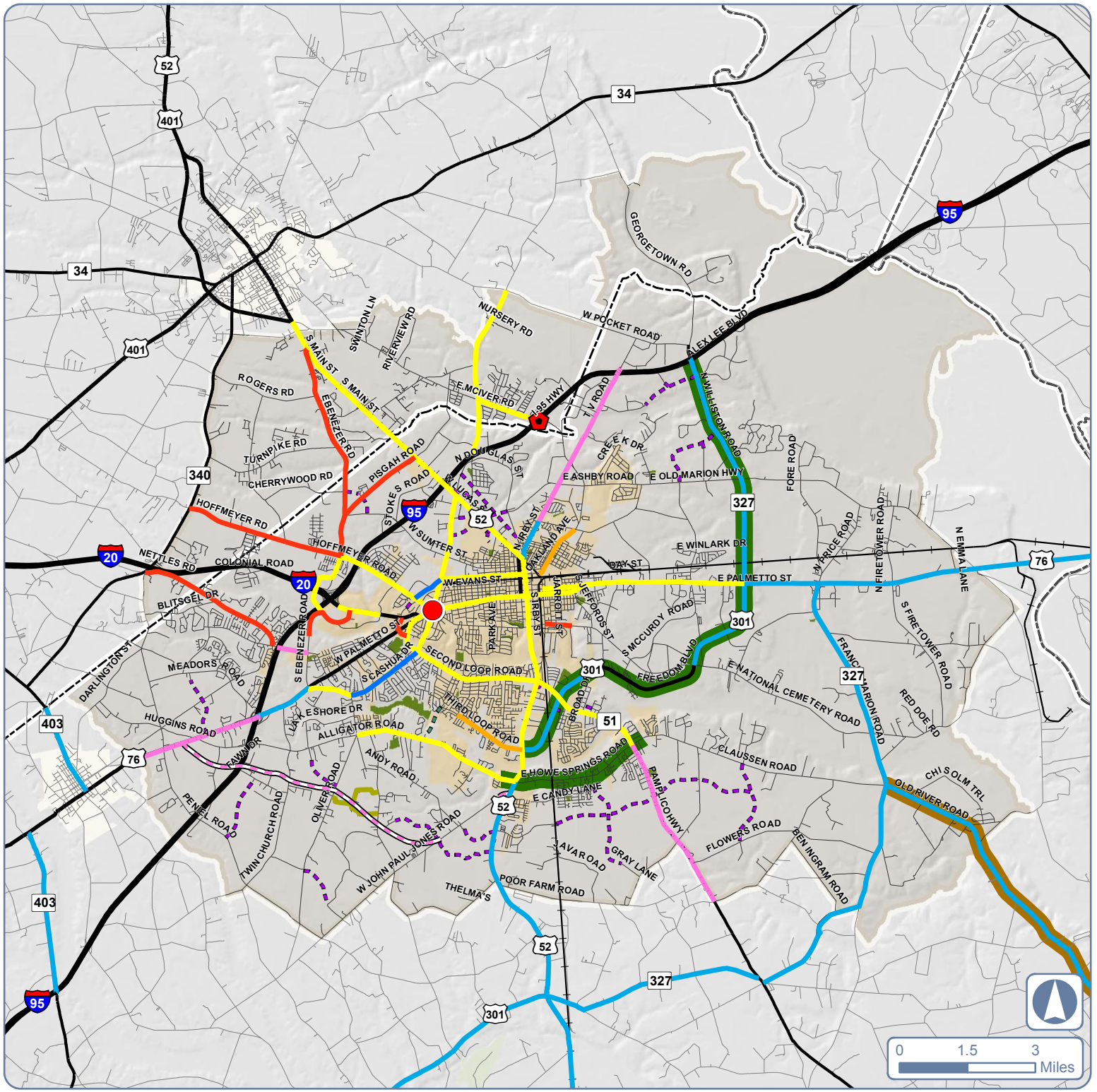

Figure 5.2

Recommended Roadway Improvements

Intersection Improvements

- Proposed Interchange
- Proposed Roundabout

Widening Projects

- 3-Lane
- 4-Lane Div.
- 5-Lane
- 6-Lane Freeway

Other Projects

- Sales Tax Project
- Access Management
- Shoulder Treatment
- Pave - 2-Lane

New Roadways

- Collector Street
- 2-Lane Roadway
- 4-Lane Div. Roadway (ST)

Overlays

- Access Management
- Rural Preservation

Note: Recommendations extending beyond the FLATS MPO boundary correspond to the Transportation Element of the Florence County Comprehensive Plan.

FLATS 2035 LRTP

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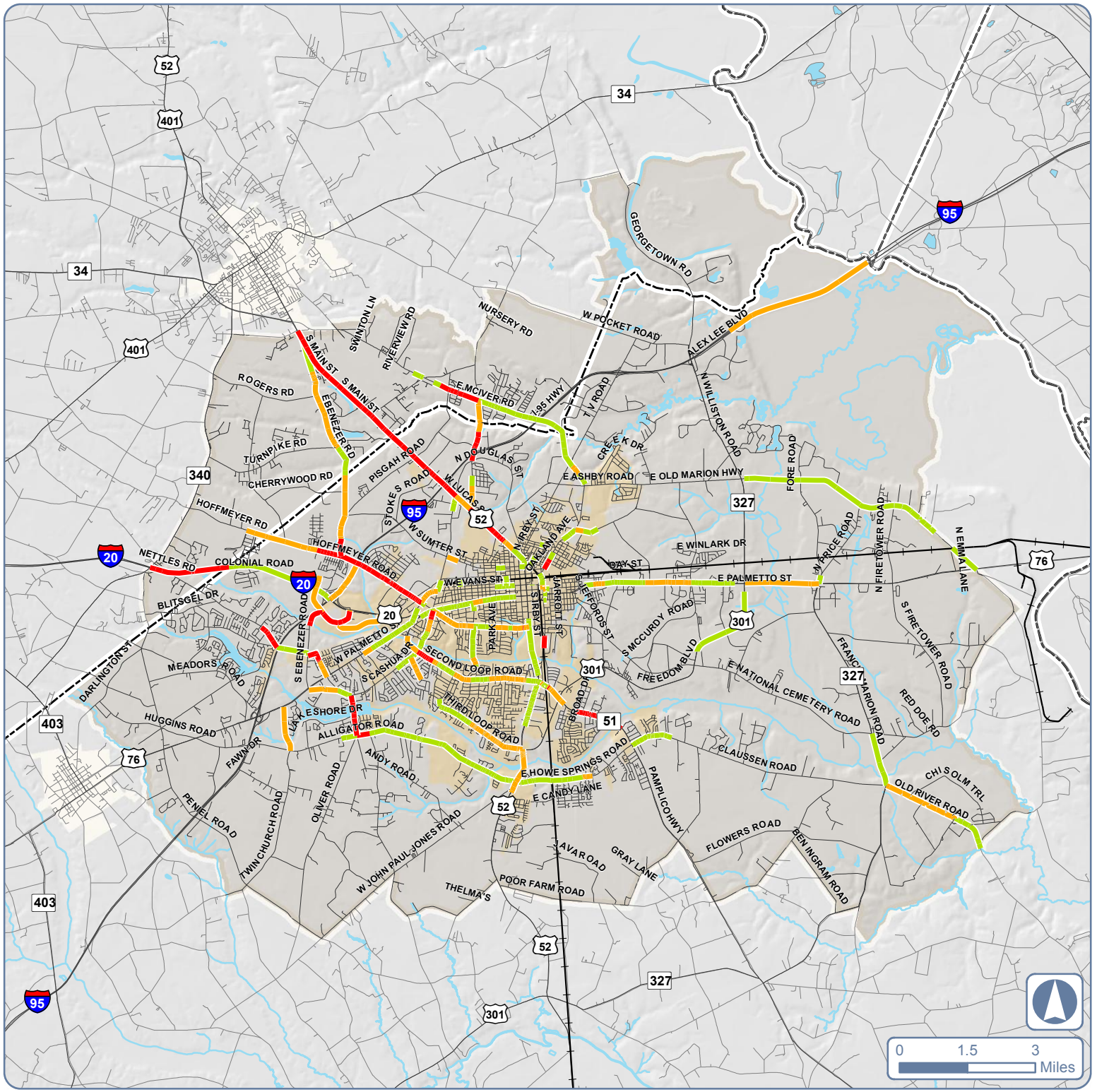

Figure 5.3

2035 Congested Corridors, Funded Plan Conditions

Level of Service

- LOS D (At Capacity)
- LOS E (Over Capacity)
- LOS F (Well Over Capacity)
- Other Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary

FLATS 2035 LRTP

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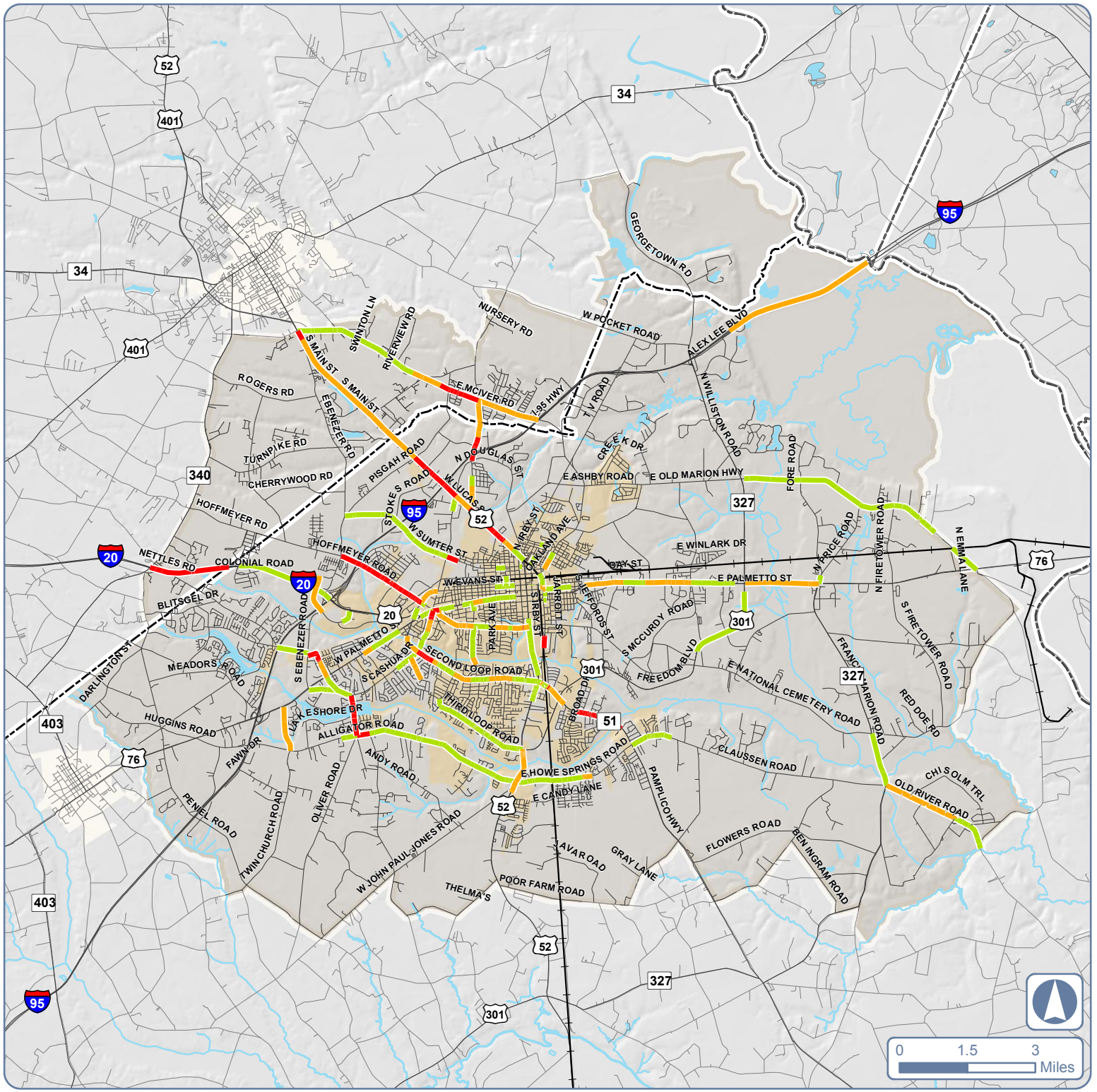

Figure 5.4

2035 Congested Corridors, Vision Plan Conditions

Level of Service

- LOS D (At Capacity)
- LOS E (Over Capacity)
- LOS F (Well Over Capacity)
- Other Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary

FLATS 2035 LRTP

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Safety and Security

With the adoption of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the federal government established safety and security as independent planning factors for consideration in long range transportation plans. This plan seeks to evaluate transportation safety and security while making recommendations for future improvement.

Safety and Transportation Planning

According to the information provided on the SCDOT website, South Carolina currently has the eighth highest fatality rate in the nation. In the first two months of 2010, Florence County had 5 traffic fatalities, tying as the sixth highest county fatality rate in the nation. As a result, it is essential to look at potential solutions for mitigating some of these issues in the FLATS region.

For safety fully to be integrated into the transportation planning process, it must be a focus at all levels of planning — from the US Department of Transportation to local neighborhoods. At the federal level, SAFETEA-LU has established this focus. Other programs at the state and federal level target work zones, older drivers, bicyclists, and pedestrians. Through the LRTP process, residents of the FLATS area highlighted safety concerns that face all travel modes. The following guidelines are presented to ensure safety remains a core component of transportation planning in the FLATS MPO.

Engineering

The roadway recommendations presented in this plan represent a series of engineering enhancements that should improve easier traffic flow while increasing safety for all users. The MPO also has emphasized safety planning by incorporating a crash analysis and ranking system into the LRTP to identify high priority crash locations throughout the planning area. General engineering strategies to maximize safety include: improving highway and road design guidelines; implementing corridor-based access management strategies; identifying appropriate intersection improvements to mitigate crashes; constructing a coordinated network of on-street bicycle facilities and off-street trails; designing streets to be pedestrian-friendly; designating appropriately designed streets for truck freight; and maintaining adequate standards for railroad crossings.

Enforcement

At the public workshops, many attendees express concern for the lack of enforcement of traffic laws. Enforcement activities typically include ways to monitor and maintain the appropriate behaviors of road users (motorists, bicyclists, pedestrians, and transit users). These activities usually include law enforcement participation, task forces, and partnerships with organizations dedicated to improving safety. Safety initiatives being pursued at the state and federal level include "Click It or Ticket", "Booze It & Lose It", and "R U Buckled". The MPO can partner with state agencies and local governments to support enforcement programs in the planning area.

Education

Education programs can target all age groups and skill levels to effectively encourage the safe use of the transportation system. These programs can be incorporated into activities at schools, churches, tasks forces, local organizations, and government-sponsored events. Often, education campaigns work in concert with enforcement. Reaching children through education programs is an important way to support lifelong habits of safely using the transportation system. Safe Routes to School programs educate children on the proper use of sidewalks, bicycle facilities, and roadways. Finally, education programs can enhance the attitude toward safety.

Emergency Services

Ensuring safe access to homes and businesses by emergency personnel is a critical element of safety within the transportation system. When the public speaks about safety, they often mention the need for ambulances and fire trucks to quickly respond to incidents. For crashes, timely response is essential to reducing the severity injuries. The roadway recommendations presented in this plan will have a positive impact on emergency response times. These improvements will encourage an interconnected network of streets that provides route choices and reduced congestion. In addition, improving the signal system and ITS deployment will improve safety.

Security and Transportation Planning

Emphasizing security during the transportation planning process helps identify and implement ways to improve security and mitigate imminent threats. For the Transportation Element, this effort is tied closely to the 2035 FLATS LRTP. The MPO has the advantage of considering security at a regional level, which is a logical first step to ensuring protection at the local level. While general strategies can be formulated at the regional level and the MPO can create multimodal recommendations that enhance security, implementation for many strategies will be the responsibility of local organizations. In the FLATS region, key security considerations include evacuation routes for coastal communities, the evacuation of affected areas by sensitive facilities (such as the H.B. Robinson nuclear plant in Hartsville, SC), protection of freight corridors, the maintenance of bridges, and the safeguard of transit operations. A selection of these considerations is described in more detail below. Each of the considerations should continue to be a focus of the FLATS Policy Committee.

Four Categories of Security

Security measures typically fall into one of four categories: prevention, protection, redundancy, and recovery.

- **Prevention** mainly limits access to ensure the safety of the transportation system.
- **Protection** — in coordination with prevention elements — focuses on vulnerable components of the transportation system such as bridges and rail corridors.
- **Redundancy** within the transportation network creates identifiable alternative routes in the event of an incident. Redundancy most often refers to an interconnected street network, though similar methods should be extended to the bicycle and pedestrian network, transit system, and rail corridors.
- **Recovery** refers to both the initial response during an emergency and long-term activities that aid in the return of normal operations.

Emergency Response and Fire Protection

Natural or man-made community emergencies can occur at any time. Florence and Darlington County Emergency Management Departments are responsible for overall coordination of county, state, and volunteer agencies before, during, and after an emergency. In addition to the county EMS departments, elements of emergency response and fire protection in the FLATS area include municipal and county fire departments, Florence County and Darlington County Sheriff Offices, and police departments for the City of Florence and Francis Marion University.

Evacuation Routes and Shelters

Natural emergencies such as earthquakes, hurricanes, and tropical storms potentially could affect the FLATS MPO area. According to the South Carolina Department of Natural Resources (SCDNR), approximately 70 percent of the earthquakes in South Carolina occur in the Coastal Plain and most are clustered around areas slightly west and north of Charleston. According to the South Carolina Emergency Management Division (SCEMD), South Carolina is one of the most vulnerable states in the nation to be impacted. Six of the state's counties have coastlines along the Atlantic Ocean. The most likely impact is associated with the evacuation of coastal communities prior to a tropical storm or hurricane. **Figure 5.5** illustrates the hurricane evacuation routes and designated emergency shelters in the FLATS MPO area.

Freight Considerations

The Railroads and Highways for National Defense program, with the support of the USDOT, ensures the nation's rail and highway infrastructure can support defense emergencies. The Strategic Rail Corridor Network (STRACNET) consists of 38,800 miles of rail lines important to national defense and provides service to 193 defense installations whose mission requires rail service.

Truck Freight — The South Carolina Truck Weight Law (SC Code: 56-5-4130 and 4160) allows 20,000 lbs. single axle plus 10% tolerance (22,000 lbs.) on all roads except interstate highways. There is no tolerance on Interstates. SC Code: 56-5-4140 explains the statutory limits on the gross weight of a vehicle or combination of vehicles, operated or moved upon any interstate, highway or section of highway. These limits are divided into seven categories depending on a single or combination of vehicles and the number of axles.

Rail Freight — According to 2008 data collected for the hazardous materials commodity flow study for Florence County, the number of hazardous material carloads shipped through Florence County was 12,376. The hazardous material shipped via rail most frequently was Environmentally Hazardous Substances and Liquid, N.O.S. Compared to data presented in a 1998 study, the total number of shipments of hazardous materials through Florence County has increased by 1,507 carloads per year.

Transit Considerations

The Federal Transit Administration requires the Pee Dee Regional Transportation Authority (PDRTA) to spend a minimum of 1% of all federal dollars received on security, though PDRTA typically exceeds this requirement. In the last year, they have added new security cameras and systems at all three of their facilities. They have real time GPS tracking on all of their revenue service and maintenance vehicles and have system-wide cellular phones permanently mounted in all vehicles. Each driver has bluetooth to make/answer calls when not inside the vehicles.

Automated fare boxes are now on all fixed route transit vehicles alleviating the drivers' need to handle cash. Fare cards also are available. PDRTA's newer buses have interior advertising space that can display notices about suspicious packages and other suspicious activity on buses and how to report it. PDRTA also is considering security cameras for the current fixed bus routes. If feasible, these will be added to their next federal grant. In October 2009, PDRTA was awarded a new contract for vehicle scheduling and dispatching software, maintenance software, and AVL (automatic vehicle location). On-board computers will be installed in all vehicles. The AVL system has a "panic button" that the driver can use to alert police in the event of an emergency.

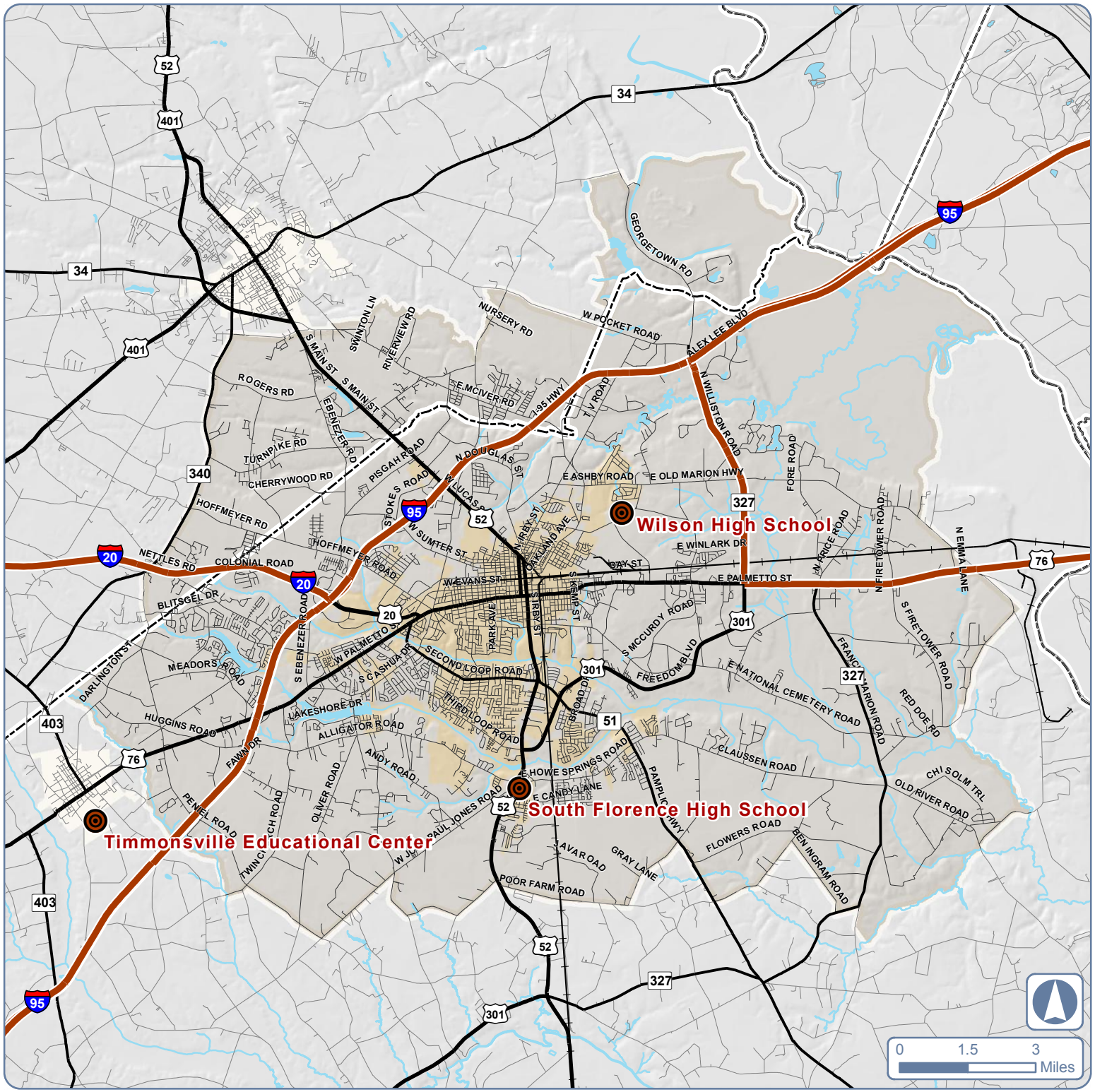

Figure 5.5

Evacuation Routes

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary
- Evacuation Route
- Evacuation Shelter

FLATS 2035 LRTP

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Traffic Safety Analysis

Analysis of crash history along with an examination of existing traffic patterns are an integral part in determining locations where safety improvement countermeasures can benefit both motorists and the community as a whole. Traditionally, crash analysis includes the study of crash frequency and crash type at each location. Crash analysis for the *2035 LRTP* will focus on severity in respect to traffic volume while identifying the intersections where mitigation is most critical.

The crash analysis in this section will be used to identify a set of preliminary countermeasures for five priority crash locations. To allow for effective implementation of safety countermeasures for these study intersections as well as other high-priority crash locations, it is recommended that the FLATS region or member jurisdictions consider establishing a dedicated annual funding source to make safety improvements or to serve as a local match for federal or state safety funds.

Data for crash analysis was obtained from the SCDOT State Traffic Safety Engineering office. A summary of this data is shown in **Tables 5.2 and 5.3**. The data represents the highest ranked intersections based on crash data collected between January 1, 2005 and December 31, 2009. The crash analysis focused on 73 intersections in the FLATS area over the 5-year period. Relevant data considered for each location included total crashes, fatalities, crash types, average annual daily traffic (AADT), and average crash rates for the area. Intersections identified as having abnormally high crash rates for their respective traffic volumes are ranked according to the highest crash rate using the Rate Quality Control Method. Crashes ranked by Equivalent Property Damage Only Rate (a measure of severity with respect to traffic volumes) are shown in **Table 5.3.** The locations are identified in **Figure 5.6.**

Contributing factors to a location's high crash frequency can include intersection design, access considerations, and traffic congestion. Many of the locations identified with high crash frequencies were also areas exhibiting elevated congestion levels. Since this relationship exists between traffic congestion and crash frequency, proposed roadway projects seeking to reduce traffic congestion should be recognized as having secondary safety benefits. Driveway access in proximity to intersections also can contribute to crash frequency by increasing the unexpected conflict points near the intersection.

The following section seeks to study some of the worst-performing intersections in the FLATS area and presents recommendations for potential countermeasures based on the priority ranking system and field review.

Table 5.2 – High Priority Crash Locations — Rate Quality Control Ranking										
RQC Rank	**EPDO Rank**	**Street 1**	**Street 2**	**Total Crashes**	**Fatal**	**Injury**	**PDO**	**Intersection AADT**	**EPDO**	**EPDO Rate**
1	7	Palmetto St.	Williamson Rd.	68	0	41	46	25,350	390.4	15.40
2	8	Knollwood Rd.	Alligator Rd.	28	0	15	20	9,900	146	14.75
3	6	David H McLeod Blvd.	Woody Jones Blvd.	51	0	36	38	20,600	340.4	16.52
4	29	National Cemetery Rd.	Jeffords St.	27	0	5	23	9,825	65	6.62
5	12	Irby St.	Freedom Blvd.	65	0	30	51	28,650	303	10.58
6	37	Lucas St. Frontage	I-95 SB Ramp Connector	27	0	4	24	10,000	57.6	5.76
7	25	E Howe Springs Rd.	Bannockburn Rd.	22	0	5	18	8,600	60	6.98
8	22	Ebenezer Rd.	Industry Blvd.	30	0	9	24	13,200	99.6	7.55

The Rate Quality Control Method is explained below with an excerpt from the Highway Safety Engineering Studies Procedural Guide, a publication of the U.S. Department of Transportation Federal Highway Administration:

"The rate quality control method employs a statistical test to determine if the accident rate at a location is significantly higher than accident rates at other locations with similar characteristics." "The rationale for using the rate quality control method is to eliminate high accident rate locations that are high due to random fluctuation." "It is assumed that the locations have been grouped by roadway class such as intersections, bridges, multilane, limited access, rural two-lane, etc. The statistical test is based on the assumption that the number of accidents at a location follow a Poisson distribution. The normal approximation to the Poisson distribution is used to calculate the critical accident rate as shown below:

$$R_c = R_a + K \sqrt{\frac{R_a}{M}} \quad \frac{1}{2M}$$

Where: R_c = Critical accident rate for a spot (accidents per million vehicles)

R_a = Average accident rate for locations with similar characteristics

M = Millions of vehicles entering the spot during the analysis period

K = The probability, 1 – P, of the critical rate being exceeded by chance. Typical values of K are 2.576 for P = 0.005 and 1.645 for P = 0.05. (Used for this study)"

Table 5.3 – High Priority Crash Locations — Crash Severity Ranking										
EPDO Rank	**RQC Rank**	**Street 1**	**Street 2**	**Total Crashes**	**Fatal**	**Injury**	**PDO**	**Intersection AADT**	**EPDO**	**EPDO Rate**
1	67	John Paul Jones Rd.	Stagecoach Rd.	6	3	4	2	4,900	266	54.29
2	30	Willow Creek Rd.	Pamplico Hwy.	14	2	15	7	8,750	286.6	32.75
3	14	Knollwood Rd.	Lakeshore Dr.	18	0	19	8	8,800	167.6	19.05
4	34	Palmetto St.	Francis Marion Rd.	18	2	6	14	12,900	218	16.90
5	9	McIver Rd.	Ashby Rd.	24	0	21	14	11,300	190.4	16.85
6	3	David H McLeod Blvd.	Woody Jones Blvd.	51	0	36	38	20,600	340.4	16.52
7	1	Palmetto St.	Williamson Rd.	68	0	41	46	25,350	390.4	15.40
8	2	Knollwood Rd.	Alligator Rd.	28	0	15	20	9,900	146	14.75
9	39	Poor Farm Rd.	Irby St.	24	1	18	13	20,325	241	11.86
10	22	Palmetto St.	Ebenezer Rd.	34	0	30	18	23,750	270	11.37
11	15	Cherokee Rd.	Irby St.	54	0	41	33	34,950	377.4	10.80
12	5	Irby St.	Freedom Blvd.	65	0	30	51	28,650	303	10.58
13	37	Mallard Ln.	Cashua Dr.	16	0	13	11	11,500	120.2	10.45
14	11	Palmetto St.	Holly Cir.	41	0	24	28	23,500	229.6	9.77
15	16	Old Marion Hwy.	Williston Rd.	27	0	15	18	15,550	144	9.26
16	10	Cashua Dr.	Third Loop Rd.	27	0	13	18	13,900	127.2	9.15
17	17	Lucas St. Frontage	I-95 NB Ramp Connector	19	0	9	14	10,000	89.6	8.96
18	29	Cashua Dr.	Second Loop Rd.	42	0	35	27	36,250	321	8.86
19	26	Douglas St.	Mechanicsville Rd.	19	0	11	12	11,900	104.4	8.77
20	18	Palmetto St.	Twin Church Rd.	27	0	13	19	15,850	128.2	8.09

EPDO Rate is a measure of severity using equivalent property damage only (EPDO) and average annual daily traffic at each intersection. The EPDO was determined for these intersections using the following formula:

EPDO = 76.8 (F) + 8.4 (I) + PDO, with "F" representing the number of fatalities, "I" representing the number of injuries, and "PDO" representing property damage only collisions at the intersection.

The EPDO Rate is then determined by dividing by the AADT and multiplying by one thousand.

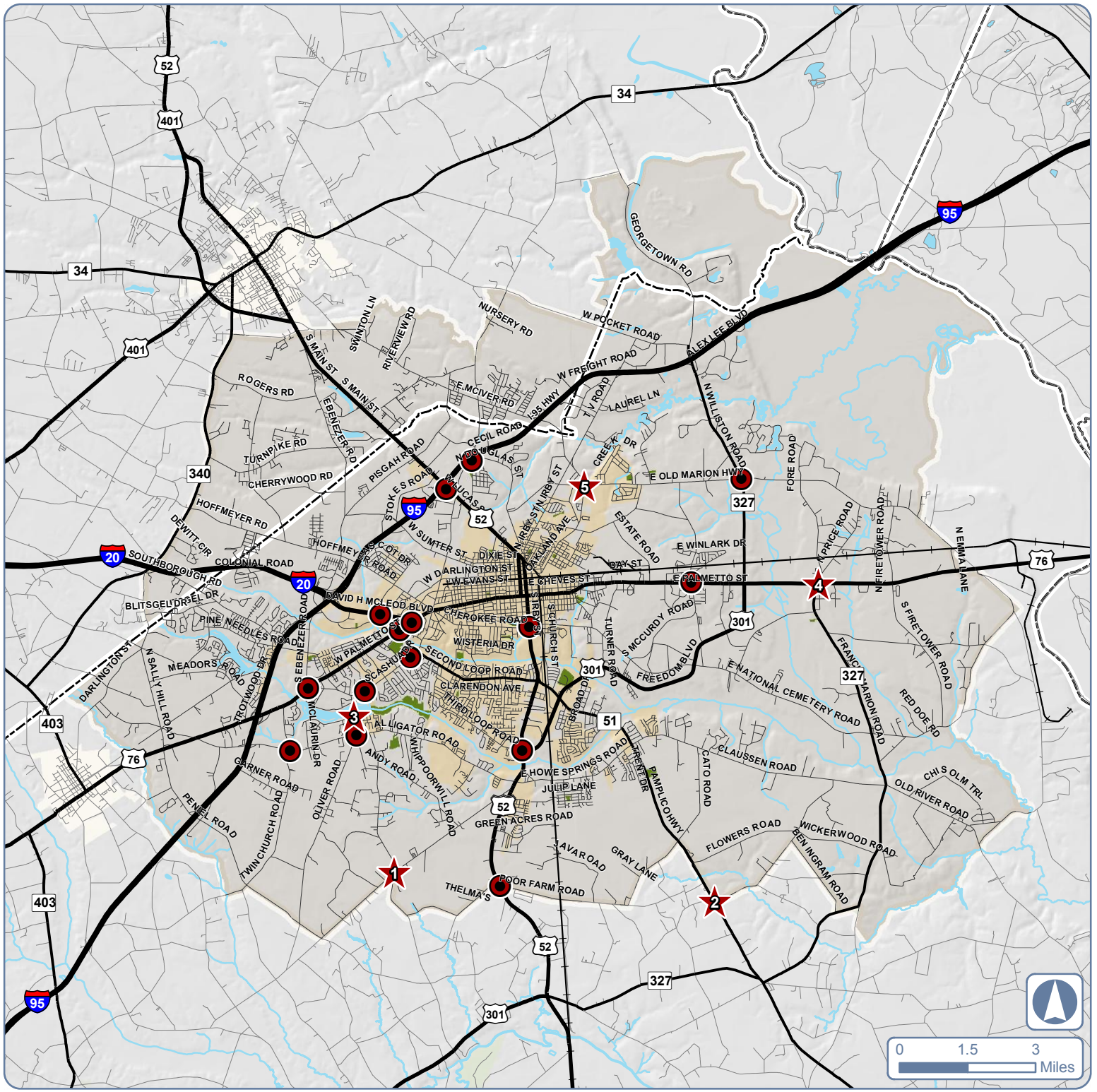

Figure 5.6

Crash Analysis Map

Based on Severity (EPDO Rate)

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary

Priority Crash Locations

- Top 5 Crash Location
- Top 20 Crash Location

For a detailed description of the crashes shown on this map, see Table 5.3 in Chapter 5.

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Priority Locations

A preliminary review of crash history was performed for the top two intersections based on the severity rankings and the top three intersections based on the rate quality control method. Field investigations helped confirm existing conditions, identify design features, and observe driver behavior. These observations provided insight to potential patterns and revealed conditions that could be enhanced through geometric changes or enhancements to traffic control. For each location a list of crash statistics, potential causational factors and recommended countermeasures are included.

John Paul Jones Road & Stagecoach Road
(Severity Rank #1)

The intersection of John Paul Jones Road and Stagecoach Road/ Savannah Grove Road experienced only six total crashes over the 5-year analysis period (2005-2009). The total number of crashes at this location is relatively low; however, crash severity is very high, as only two of the six collisions consisted of property damage only. The other four crashes included three fatalities and four injuries. This intersection was the only intersection in the study area to experience three fatalities over the 5-year period. The most severe crash type at this location was angle collisions, which is responsible for three of the six crashes including all three fatalities and two injuries.

Based on the crash data analysis and visual observation during the field work, potential causes for crashes at this location include reduced sight distance due to intersection skew and the horizontal curvature of Savannah Grove Road/Stagecoach Road. These sight distance issues may inhibit drivers from seeing vehicles traveling on the opposite roadway. Reduced sight distance due to horizontal curvature on Savannah Grove Road/Stagecoach Road may inhibit motorists' view of the stop sign as well.

Due to the crash severity at this location, several safety countermeasures already have been deployed at this location. These include:

- Stop sign ahead warning signs on all four approaches.
- Flashing warning lights above the intersection on all four approaches.
- Conversion to a four-way stop controlled intersection, with flashing warning lights on the northbound and southbound stop signs.

Based on visual observation and the prevailing crash pattern at the intersection, the following countermeasures are also recommended at this intersection.

- Analyze the success of existing countermeasures listed above.
- Realignment of Savannah Grove Road/Stagecoach Road to remove the intersection skew and develop angles between intersection legs that are closer to 90 degrees.
- Advisory speed limits in the intersection area to reduce vehicle speed and raise awareness at the intersection.
- Rumble strips on all four approaches to raise motorist awareness in the area.

Willow Creek Road & Pamplico Highway
(Severity Rank #2)

The intersection of Willow Creek Road and Pamplico Highway experienced 14 total crashes over the 5-year analysis period (2005-2009). Severity was very high at this location as 7 of the 14 collisions involved an injury or fatality. A total of 15 injuries and 2 fatalities occurred over the analysis period. The most severe crash type involved angle collisions which account for 50% of the crashes. Both fatalities and 10 of the 15 injuries occurred due to angle collisions.

Based on crash data analysis and visual observation during the field work, potential causes for crashes at this location include:

- Driver inattention and failure to yield right-of-way by vehicles traveling on Willow Creek Road.
- Vehicles traveling at high speeds on Pamplico Highway.

Based on these visual observations and the prevailing crash pattern at the intersection, the following potential countermeasures are recommended at this location:

- Stop sign ahead warning signs.
- Advisory speed limits on all four approaches.
- Rumble strips on all four approaches to raise motorist awareness in the area.

Palmetto Street & Williamson Road
(Quality Control Rank #1 / Severity Rank #7)

The intersection of Palmetto Street and Williamson Road experienced 68 total crashes over the 5-year analysis period (2005-2009). There were 41 injuries at this location, which account for 33 of the 68 collisions. No fatalities had occurred at this intersection. Angle crashes were the most common crash type as 38 out of 68 crashes (56%) were angle crashes. Angle type crashes tend to have greater severity which is shown in the fact that 25 of the injuries at this location occurred in angle collisions.

Based on crash data analysis and visual observation during the field work, potential causes for crashes at this location include:

- Vehicles failing to yield right-of-way when performing left-turn movements from eastbound and westbound Palmetto Street (US 76) to Williamson Road.
- Excessive speed of vehicles on Palmetto Street (US 76).
- Multiple driveways within proximity to the intersection may initiate angle and rear-end crashes.

Based on these visual observations and the prevailing crash pattern at the intersection the following potential countermeasures are recommended at this location:

- Change left-turn signal phasing to protected-only phasing in order to prevent left-turn angle collisions.
- Close unnecessary driveways near the intersection.

Knollwood Road & Alligator Road
(Quality Control Rank #2 / Severity Rank #8)

The intersection of Knollwood Road and Alligator Road experienced 28 total crashes over the 5-year analysis period (2005-2009). In all, 15 injuries occurred in 8 of the 28 collisions (29%). There were no fatalities at this intersection. Angle collision types were the most common at this location and accounted for 20 of the 28 collisions (71%). Angle collisions are generally more severe than other crash types, which was the case at this intersection where all 15 injuries occurred during angle collisions.

Based on crash data analysis and visual observation during the field work, potential causes for crashes at this location include:

- Vehicles failing to yield right-of-way when turning left from eastbound and westbound Alligator Road.
- Vehicles failing to yield right-of-way when performing left-turn movements from southbound Knollwood Road and northbound Walker Swinton Road.
- Failure to yield right-of-way by vehicles making westbound right-turns from Alligator Road to Knollwood Road. These vehicles may have the opportunity for increased speed with the channelized movement and yield sign.
- Driver confusion due to only 100 feet of spacing between the intersection of Alligator Road & Knollwood Road and Oliver Road & Knollwood Road.

Based on these visual observations and the prevailing crash pattern at the intersection, the following potential countermeasures are recommended at this location:

- Add protected-permitted signal phasing for the eastbound and westbound left-turn movements.
- Use stop control instead of yield control for the westbound channelized right-turn movement or remove channelization.
- Realign Oliver Road to allow for more acceptable spacing between the two intersections.

David H McLeod Boulevard & Woody Jones Boulevard
(Quality Control Rank #3 / Severity Rank #6)

The intersection of David H McLeod Boulevard and Woody Jones Boulevard experienced 51 total crashes over the 5-year analysis period (2005-2009). A total of 36 injuries occurred in 13 of the 51 crashes (25%). There were no fatalities at this location. The two most prevalent crash types include angle collisions and rear end collisions. Angle collisions accounted for 22 crashes (43%) and 22 injuries (61%). Rear end collisions accounted for 20 crashes (39%) and 12 injuries (33%). Angle collisions were obviously the most severe; however, rear end collisions at this location were also fairly severe.

Based on crash data analysis and visual observation during the field work, potential causes for crashes at this location include:

- Limited intersection spacing between frontage roads and David H McLeod Boulevard.
- Vehicles traveling at high speeds on David H McLeod Boulevard.

Based on these visual observations and the prevailing crash pattern at the intersection, the following potential countermeasures are recommended at this location:

- Remove frontage road access on Woody Jones Boulevard just north of the study intersection. Ample access is provided through Trade Court further north.
- Move business driveways on Woody Jones Boulevard further to the south to improve spacing between the study intersection and major traffic generators.
- Install stop light ahead warning signs on David H McLeod Boulevard.

Roadway Project Prioritization

In order to best understand how to allocate the region's limited financial resources, it is important to establish priorities for widening, new location, and intersection improvement projects. In order to create a balanced set of priorities, project evaluations need to go beyond traffic impacts to consider cultural, environmental, economic, multimodal, and land use considerations. Recognizing the need to create a balanced prioritization to establish project rankings, the State of South Carolina passed Act 114 in 2007. Act 114 added Sections 57-1-370 and 57-1-460 to the South Carolina Code of Laws. These sections provide details of the ranking process to be used by SCDOT, as well as its affiliated MPOs and councils of government (COGs).

As noted in the beginning of this chapter, there are a variety of access management, widening, new location, and intersection/interchange improvements recommended for the FLATS region. Per the direction of SCDOT, this prioritization process was used to determine the rankings of regionally significant projects that could potentially receive funding from FLATS guideshare money. Access management and intersection safety projects are by their nature smaller projects that would not be considered as regionally significant. As a result, these projects are not assessed using the SCDOT ranking criteria. Recommended improvements to the Interstate network would be funded through other mechanisms than regional guideshare money, and as a result are also not included in the regional project rankings. The widening and new location projects included in the current one-cent sales tax were also not included in the project ranking, since they were evaluated at an earlier time when being considered for inclusion in the sales tax referendum.

With these considerations in mind, emphasis was placed on ranking the proposed widening projects in the FLATS region. There is only one new location project (Brofford Drive Extension) proposed as a part of the 2035 LRTP. Similarly, there is only one intersection improvement project (Five Points Roundabout) being proposed that could be considered as a recipient of guideshare funds. As a result, rankings are not necessary to establish priorities in these categories.

The next page contains a detailed description of the ranking criteria established by SCDOT for the purposes of prioritizing roadway widening projects. SCDOT's methodology provides the flexibility for MPOs or COGs to infuse some of their locally-specific criteria into the ranking criteria. After discussion with FLATS staff and the FLATS Policy Board, it was determined that the statewide criteria were suitable for use in the region without additional modification.

Table 5.4 shows the weighting factors, project information, and rankings for the proposed roadway widening projects. All the projects are shown in order of their SCDOT-determined rankings. **Figure 5.7** shows these roadway widening projects in priority order.

The purpose of the process is not to determine the explicit impact of a project, but rather simply to identify resources or communities in proximity to recommendations. A more detailed analysis, including a field survey, will be necessary to determine specific impacts on a project-by-project basis when individual project studies are begun.

Statewide MPO/COG Priority Ranking *(source: South Carolina Department of Transportation)*

In cooperation with the state's metropolitan planning organizations (MPOs) and council of governments (COGs), SCDOT has developed processes for ranking road widening and intersection improvements.

SCDOT will maintain a statewide list of ranked widening projects using criteria consistent with Act 114. The statewide list provides a uniform process for evaluating project priorities within each MPO, COG, as well as a statewide basis. MPOs and COGs have the discretion of using the statewide list to establish local priorities or they may use criteria consistent with Act 114, in addition to other criteria that address local desires and/or concerns related to transportation improvements.

The statewide list considers criteria in Act 114 in the following manner:

- Financial Viability – considered as a quantifiable criterion based on estimated project cost and estimated 20-year maintenance cost in relation to the current vehicle miles of travel. The criterion is weighted at 10% of the total project score.
- Public Safety – considered as a quantifiable criterion based on accident data. The criterion is weighted at 15% of the total project score.
- Potential for Economic Development – considered as a quantifiable criterion based on an assessment of short-term, intermediate, and long-term development potential as a result of the proposed improvement. The criterion is weighted at 10% of the total project score.
- Traffic Volume and Congestion – considered as a quantifiable criterion based on current traffic volumes and the associated level-of-service condition. The criterion is weighted at 35% of the total project score.
- Truck Traffic – considered as a quantifiable criterion based on current volume and average daily truck traffic estimates. The criterion is weighted at 10% of the total project score.
- Pavement Quality Index – considered as a quantifiable criterion based on pavement condition assessments. The criterion is weighted at 10% of the total project score.
- Environmental Impact – considered as a quantifiable criterion based on an assessment of potential impacts to natural, social, and cultural resources. The criterion is weighted at 10% of the total project score.
- Alternative Transportation Solutions – considered independently of ranking process. Transit propensity is evaluated based on surrounding population and employment characteristics to support transit service as a potential alternative or in addition to a proposed improvement.
- Consistency with Local Land Use Plans – considered independently of ranking process. A determination of consistency will be made during the long-range plan development process.

Table 5.4 - Roadway Widening Project Total Benefit and Impact Matrix

Project ID	Route	Route Name	County	Project Limits	Route Type	BMP	EMP	Length	Project Cost Estimate	Maintenance Cost ($/lane mile)	Maintenance Costs Over 20 Years	Resurfacing Costs Over 20 Years	Financial Viability/Life Cycle Cost ($/VMT)	Dept. of Commerce Economic Score
1	S-29	S Cashua Drive	Florence	Second Loop Road to Knollwood Drive	2	4.44	6.39	1.95	$ 11,500,000	$ 2,129	$ 415,128	$ 1,443,000	$ 634	1
2	S-829	Bentree Lane/Holly Circle	Florence	David H McLeod Boulevard (I-20 Bus) to Second Loop Road	2	0.00	0.53	0.53	$ 3,100,000	$ 2,129	$ 90,264	$ 313,760	$ 587	0
3	S-1060	Radio Drive/Ebenezer Road	Florence	David H McLeod Boulevard (I-20 Bus) to near Industry Boulevard	2	0.00	1.90	1.90	$ 8,229,000	$ 2,129	$ 323,587	$ 1,124,800	$ 472	2
4	S-49	N Ebenezer Road	Darlington/ Florence	Pisgah Road to Main Street (US 52)	2	0.00	4.09	4.09	$ 12,272,000	$ 1,823	$ 447,389	$ 1,815,960	$ 462	2
5	S-588	Third Loop Road	Florence	S Marsh Avenue to S Irby Street	2	0.00	1.70	1.70	$ 5,278,000	$ 2,129	$ 217,144	$ 754,800	$ 593	1
6	S-24	Oakland Avenue	Florence	E Lucas Street to Wilson Road	2	0.10	1.42	1.32	$ 4,030,000	$ 2,129	$ 168,861	$ 586,968	$ 575	1
7	S-167	W Darlington Street	Florence	N Cashua Drive to Hoffmeyer Road	2	0.00	0.70	0.70	$ 4,017,000	$ 2,129	$ 149,020	$ 518,000	$ 676	1
8	S-13	Hoffmeyer Road	Florence	Anderson Farm Road to N Ebenezer Road	2	0.40	1.70	1.30	$ 12,428,000	$ 2,129	$ 221,401	$ 769,600	$ 1,376	0
9	S-13	National Cemetery Road	Florence	S Church Street to Stockade Drive	2	6.83	7.43	0.60	$ 3,211,000	$ 2,129	$ 102,185	$ 355,200	$ 838	0
10	S-19	Hoffmeyer Road	Darlington/ Florence	Anderson Farm Road to Timmonsville Highway (SC 340)	2	0.00	2.40	2.40	$ 6,565,000	$ 1,823	$ 350,035	$ 1,420,800	$ 837	0
11	S-54	Southborough Road	Darlington/ Florence	N Sally Hill Road to Pine Needles Road	2	0.00	3.40	3.40	$ 18,005,000	$ 1,823	$ 495,883	$ 2,012,800	$ 2,806	0
12	S-112	Pisgah Road/Ebenezer Road	Florence	Presbyterian Road to Hoffmeyer Road	2	1.40	4.48	3.08	$ 15,366,000	$ 2,129	$ 524,551	$ 1,823,360	$ 1,307	2

Table 5.4 - Roadway Widening Project Total Benefit and Impact Matrix

Project ID	Route	Route Name	County	Project Limits	Environ. Score	Functional Classification	Existing Laneage	Improved Laneage	Capacity	2009 AADT	V/C Ratio	PQI	% Trucks	Truck AADT	Safety Score	Viability Rank	Viability %	Financial Viability Score	V/C Rank	V/C %	V/C Score	Truck Rank	Truck %	Truck Score	Overall Score	Overall Statewide Rank
1	S-29	S Cashua Drive	Florence	Second Loop Road to Knollwood Drive	3	Urban - Minor Arterial	2	5	8,600	10,800	1.256	2.22	11%	1188	5	7	0.583	3	2	0.167	5	2	0.167	5	3.922	1
2	S-829	Bentree Lane/Holly Circle	Florence	David H McLeod Boulevard (I-20 Bus) to Second Loop Road	3	Urban - Collector	2	4	8,600	11,261	1.309	3.68	11%	1239	4	9	0.750	4	1	0.083	5	1	0.083	5	3.918	2
3	S-1060	Radio Drive/Ebenezer Road	Florence	David H McLeod Boulevard (I-20 Bus) to near Industry Boulevard	4	Urban - Collector	2	4	8,600	10,780	1.253	2.91	11%	1186	3	11	0.917	5	3	0.250	4	3	0.250	4	3.641	3
4	S-49	N Ebenezer Road	Darlington/ Florence	Pisgah Road to Main Street (US 52)	3	Rural - Major Collector	2	3	8,600	7,700	0.895	2.27	9%	693	3	12	1.000	5	4	0.333	4	5	0.417	3	3.377	4
5	S-588	Third Loop Road	Florence	S Marsh Avenue to S Irby Street	3	Urban - Collector	2	3	8,600	6,200	0.721	3.82	11%	682	5	8	0.667	4	6	0.500	3	7	0.583	3	3.282	5
6	S-24	Oakland Avenue	Florence	E Lucas Street to Wilson Road	2	Urban - Collector	2	3	8,600	6,300	0.733	2.59	11%	693	5	10	0.833	5	5	0.417	3	5	0.417	3	3.159	6
7	S-167	W Darlington Street	Florence	N Cashua Drive to Hoffmeyer Road	4	Urban - Principal Arterial	2	5	14,600	9,900	0.678	2.67	9%	891	5	6	0.500	3	8	0.667	2	4	0.333	4	2.917	7
8	S-13	Hoffmeyer Road	Florence	Anderson Farm Road to N Ebenezer Road	4	Urban - Minor Arterial	2	4	10800	7500	0.694	3.18	6%	450	4	2	0.167	1	7	0.583	3	8	0.667	2	2.668	8
9	S-13	National Cemetery Road	Florence	S Church Street to Stockade Drive	3	Urban - Minor Arterial	2	4	10,800	7,300	0.676	3.32	6%	438	5	4	0.333	2	9	0.750	2	9	0.750	2	2.482	9
10	S-19	Hoffmeyer Road	Darlington/ Florence	Anderson Farm Road to Timmonsville Highway (SC 340)	4	Urban - Minor Arterial	2	4	10,800	4,150	0.384	3.29	6%	249	3	5	0.417	3	11	0.917	1	11	0.917	1	1.929	10
11	S-54	Southborough Road	Darlington/ Florence	N Sally Hill Road to Pine Needles Road	3	Urban - Local/Collector	2	4	8,600	2,150	0.250	3.89	6%	129	4	1	0.083	1	12	1.000	1	12	1.000	1	1.839	11
12	S-112	Pisgah Road/Ebenezer Road	Florence	Presbyterian Road to Hoffmeyer Road	3	Rural - Major Collector	2	4	8,600	4,400	0.512	1.80	9%	396	3	3	0.250	2	10	0.833	1	10	0.833	1	1.780	12

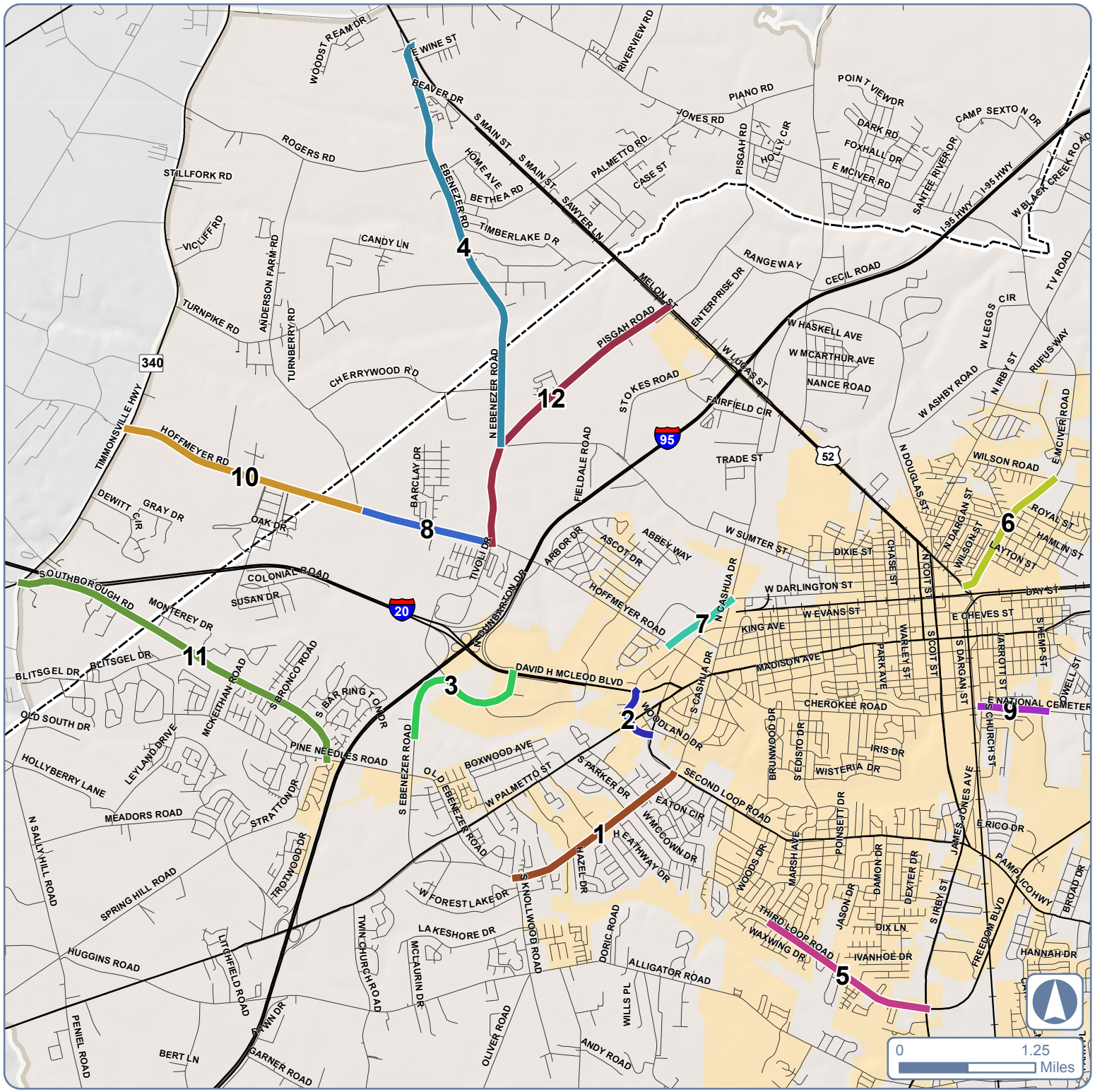

Figure 5.7

Prioritized Roadway Widening Improvements

Project ID

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

Note:
Recommendations shown are widening projects only.

2035 LRTP

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Access Management

According to the FHWA, access management "provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed." The Access Management Manual states that access management results from a cooperative effort between state and local agencies and private land owners to systematically control the "location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway."

The ability of motorists to travel through a given roadway segment is essential for both transportation system efficiency and economic development. Access management balances the needs of motorists using a roadway with the needs of adjacent property owners dependent upon access to the roadway. Poor access management, the function and character of major roadways can deteriorate and adjacent properties can suffer from declining property values and high turnover. This concern is greatest along developed (or developing) corridors such as US 52 and US 76. The limited funds available for transportation investments make access management an even more important consideration.

Access Management Overview

Poor access management directly affects the livability and economic vitality of commercial corridors, ultimately discouraging potential customers from entering the area. A corridor with poor access management lengthens commute times, creates unsafe conditions, lowers fuel efficiency, and increases vehicle emissions. Corridors with poor access management often have increased crashes between motorists, pedestrians, and cyclists; worsening efficiency of the roadway; congestion outpacing growth in traffic; spillover cut-through traffic on adjacent residential streets; and limited sustainability of commercial development.

Table 5.5 describes a few of the benefits of access management.

Table 5.5 – Benefits of Corridor Access Management

User	Benefit
Motorists	▪ Fewer delays and reduced travel times ▪ Safer traveling conditions
Bicyclists	▪ Safer traveling conditions ▪ More predictable motorist movements ▪ More options in a connected street network
Pedestrians	▪ Fewer access points and median refuges increase safety ▪ More pleasant walking environment
Transit Users	▪ Fewer delays and reduced travel times ▪ Safer, more convenient trips to and from transit stops in a connected street and sidewalk network
Freight	▪ Fewer delays and reduced travel times lower cost of delivering goods and services
Business Owners	▪ More efficient roadway system serves local and regional customers ▪ More pleasant roadway corridor attracts customers ▪ Improved corridor aesthetics ▪ Stable property values
Government Agencies	▪ Lower costs to achieve transportation goals and objectives ▪ Protection of long-term investment in transportation infrastructure
Communities	▪ More attractive, efficient roadways without the need for constant road widening

Access Management Strategy Toolkit

Site Access Treatments

Improvements that reduce the total number of vehicle conflicts should be a key consideration during the approval of redeveloped sites along corridors identified for access management programs. Site Access Treatments include the following:

- Improved On-Site Traffic Circulation
- Number of Driveways
- Driveway Placement/Relocation
- Cross Access

Improved On-Site Traffic Circulation

One way to reduce traffic congestion is to promote on-site traffic circulation. Pushing back the throat of an entrance, as shown in the figures below, helps to avoid spillback onto the arterial. This action improves both the safety and efficiency of the roadway. A minimum separation of 100 feet should be provided to prevent internal site operations from affecting an adjacent public street, ultimately causing spillback problems. Approximate construction cost varies and usually is the responsibility of private development.

Number of Driveways

Only the minimum number of connections necessary to provide reasonable access should be permitted. For those situations where outparcels are under separate ownership, easements for shared access can be used to reduce the number of necessary connections. Reducing the number of access points also decreases the number of conflict points, making the arterial safer and more efficient. Approximate construction cost varies and is usually the responsibility of private development.

Driveway Placement/Relocation

Driveways located close to intersections create and contribute to operational and safety issues. These issues include intersection and driveway blockages, increased points of conflict, frequent/unexpected stops in the through travel lanes, and driver confusion as to where vehicles are turning. Driveways close to intersections should be relocated or closed, as appropriate. As a best planning practice, no driveway should be allowed within 100 feet of the nearest intersection.

Cross Access

Cross access is a service drive or secondary roadway that provides vehicular access between two or more continuous properties. Such access prevents the driver from having to enter the public street system to travel between adjacent uses. Cross access can be a function of good internal traffic circulation at large developments with substantial frontage along a major roadway. Similarly, backdoor access occurs when a parcel has access to a parallel street behind buildings and away from the main line. When combined with a median treatment, cross access and backdoor access ensure that all parcels have access to a median opening or traffic signal for left-turn movements.

Median Treatments

Segments of a corridor with sufficient cross access, backdoor access, and on-site circulation may be candidates for median treatments. A median-divided roadway improves traffic flow, reduces congestion, and increases traffic safety — all important goals of access management. While medians restrict some left-turn movements, overall traffic delays are reduced by removing conflicting vehicles from the mainline. Landscaping and gateway features incorporated into median treatments improve the aesthetics of the corridor, in turn encouraging investment in the area. Median treatments include the following:

- Non-Traversable Median
- Median U-Turn Treatment
- Directional Cross (Left-Over Crossing)
- Left-Turn Storage Bays
- Offset Left-Turn Treatment

Non-Traversable Median

These features are raised or depressed barriers that physically separate opposing traffic flows. Inclusion in a new cross-section or retrofit of an existing cross-section should be considered for multi-lane roadways with high pedestrian volumes or collision rates as well as in locations where aesthetics are a priority. A non-traversable median requires sufficient cross and backdoor access.

The advantage of non-traversable medians include increased safety and capacity by separating opposing vehicle flows, providing space for pedestrians to find refuge, and restricting turning movements to locations with appropriate turn lanes. Disadvantages include increased emergency vehicle response time (indirect routes to some destinations), inconvenience, increased travel distance for some movements, and potential opposition from the general public and affected property owners. To overcome some of these disadvantages, sufficient spacing and location of u- and left-turn bays must be identified. Approximate construction cost varies.

Median U-Turn Treatment

These treatments involve prohibiting or preventing minor street or driveway left turns between signalized intersections. Instead, these turns are made by first making a right turn and then making a u-turn at a nearby median opening or intersection. These treatments can increase safety and efficiency of roadway corridors with high volumes of through traffic, but should not be used where there is not sufficient space available for the provision of u-turn movements. The location of u-turn bays must consider weaving distance, but also not contribute to excessive travel distance.

Advantages of median u-turn treatments include reduced delay for major intersection movements, potential for better two-way traffic progression (major and minor streets), fewer stops for through traffic, and fewer points of conflict for pedestrians and vehicles at intersections. Disadvantages include increased delay for some turning movements, increased travel distance, increased travel time for minor street left turns, and increased driver confusion. Approximate construction cost is $50,000 to $60,000 per median opening.

Directional Crossover (Left-Over Crossing)

When a median exists on a corridor, special attention must be given to locations where left turns are necessary. A left-over is a type of directional crossover that prohibits drivers on the cross road (side street) from proceeding straight through the intersection with the main road, but allows vehicles on the mainline to turn left onto the cross road. Such designs are appropriate in areas with high traffic volumes on the major road and lower volumes of through traffic on the cross road, particularly where traffic needs to make left turns from the main line onto the minor street. A properly implemented left-over crossing reduces delay for through-traffic and diverts some left-turn maneuvers from intersections. By reducing the number of conflict points for vehicles along the corridor, these treatments improve safety.

Left-Turn Storage Bays

Where necessary, exclusive left-turn lanes/bays should be constructed to provide adequate storage space exclusive of through traffic for turning vehicles. The provision of these bays reduces vehicle delay related to waiting for vehicles to turn and also may decrease the frequency of collisions attributable to lane blockages. In some cases, turn lanes/bays can be constructed within an existing median. Where additional right-of-way is required, construction may be more costly.

Offset Left-Turn Treatment

Exclusive left-turn lanes at intersections generally are configured to the right of one another, which causes opposing left-turning vehicles to block one another's forward visibility. An offset left-turn treatment shifts the left-turn lanes to the left, adjacent to the innermost lane of oncoming through traffic. In cases where permissive left-turn phasing is used, this treatment can improve efficiency by reducing crossing and exposure time and distance for left-turning vehicles. In addition, the positive offset improves sight distance and may improve gap recognition. In locations with sufficient median width, this treatment can be easily retrofitted. Where insufficient right-of-way width exists, the construction of this treatment can be difficult and costly. As a result, approximate construction costs vary.

Intersection and Minor Street Treatments

The operation of signalized intersections can be improved by reducing driver confusion, establishing proper curb radii, and ensuring adequate laneage of minor street approaches. Intersection and Minor Street Treatments include the following:

- Skip Marks (Dotted Line Markings)
- Intersection and Driveway Curb Radii
- Minor Street Approach Improvements

Skip Marks (Dotted Line Markings)

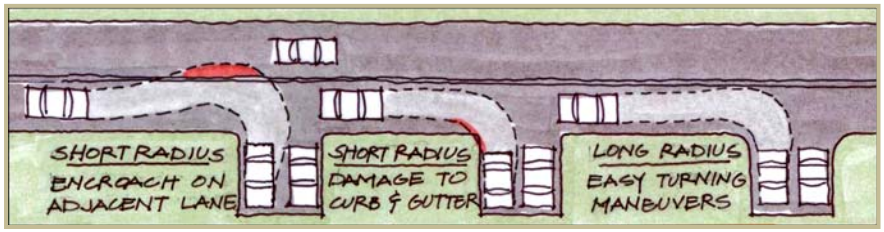
These pavement markings can reduce driver confusion and increase safety by guiding drivers through complex intersections. Intersections that benefit from these lane markings include offset, skewed, or multi-legged intersections. Skip marks are also useful at intersections with multiple turn lanes. The dotted line markings extend the line markings of approaching roadways through the intersection. The markings should be designed to avoid confusing drivers in adjacent or opposing lanes.

Minor Street Approach Improvements

At signalized intersections, minor street vehicular volumes and associated delays may require that a disproportionate amount of green time be allocated to the minor street, contributing to higher-than-desired main street delay. With laneage improvements to the minor street approaches, such as an additional left-turn lane or right-turn lane, signal timing often can be re-allocated and optimized.

Intersection and Driveway Curb Radii

Locations with inadequate curb radii may cause turning vehicles to use opposing travel lanes to complete their turning movement. Inadequate curb radii may cause vehicles to "mount the curb" as they turn a corner and cause damage to the curb and gutter, sidewalk, and any fixed objects located on the corner. This maneuver also can endanger pedestrians standing on the corner. Curb radii should be adequately sized for area context and likely vehicular usage.



One-Way Frontage Roads

Many older major roadway corridors have two-way service roads along both sides of the street. Converting these service roads to one-way with slip ramps has the potential to improve their safety and efficiency — decreasing the number of intersection conflict points from 96 (two-way) to 36 (one-way) at minor road intersections and also reducing confusion at intersections. If applied, the addition of "back door" collector street access will be needed prior to one-way conversion. Approximate construction cost is $1,000,000 per mile.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) provide numerous benefits when implemented as part of an overall transportation management strategy. ITS solutions use communications and computer technology to manage traffic flow in an effort to reduce crashes, mitigate environmental impacts such as fuel consumption and emissions, and reduce congestion from normal and unexpected delays. Successful systems include a variety of solutions that provide surveillance capabilities, remote control of signal systems components, seamless sharing of traveler information with the public, and even allow emergency vehicles to have priority to proceed safely through signalized intersections. Intelligent Transportation Systems include:

- Signalization
- Progressive-Controlled Signal System
- Dynamic Message Signs (DMS)
- Closed Circuit Television Traffic Monitoring
- Emergency Vehicle Preemption

Signalization

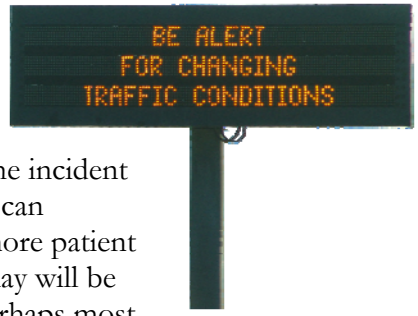
The volume of traffic attracted to some side streets or site driveways is more than can be accommodated acceptably under an unsignalized condition. Delays for minor street movements as well as left-turn movements on the main street may create or contribute to undue delays on the major roadway and numerous safety issues. The installation of a traffic signal at appropriate locations can mitigate these types of issues without adversely affecting the operation of the major roadway provided they are spaced appropriately. Approximate construction cost is $60,000 per signal.

Progressive-Controlled Signal System

A progressive-controlled signal system coordinates the traffic signals along a corridor to allow vehicles to move through multiple signals without stopping. Traffic signals are spaced appropriately and synchronized so when a vehicle is released from one intersection the signal at the next intersection will be green by the time the vehicle reaches it.

Adaptive signal control involves continuously collecting automated intersection traffic volumes and using the volumes to alter signal timing and phasing to best accommodate actual — real-time — traffic volumes. Adaptive signal control can increase isolated intersection capacity as well as improve overall corridor mobility by up to 20% during off-peak periods and 10% during peak periods. Approximate construction cost is $250,000 per system and $10,000 per intersection in addition to 25% of capital costs in training, etc.

Dynamic Message Signs (DMS)



Dynamic Message Signs alert vehicles of congestion or incidents. DMS units give general alerts, such as "congestion ahead" or specific details on the location of the incident or predicted travel times so motorists can mentally prepare. Often, drivers are more patient if they can anticipate how long the delay will be or how far the congestion spreads. Perhaps most importantly, DMS informs drivers who can choose alternate travel routes during heavy congestion, thereby reducing the volume on the freeway, the likelihood of additional incidents, and the average travel time for the system as a whole.

Closed Circuit Television Traffic Monitoring

Closed Circuit Television (CCTV) cameras primarily are used on interstate facilities and major arterials to provide visual traffic volume and flow information to traffic management or monitoring centers. These centers use this information to deploy incident response patrols/equipment and to provide roadway travel delay information to motorists. By having visual roadway information, traffic management centers are able to identify incidents quickly and respond appropriately and efficiently, helping to reduce the effect of incidents on a single location or on multiple roadways. Approximate construction cost is $20,000 per location.

Emergency Vehicle Preemption

This strategy involves an oncoming emergency or other suitably equipped vehicle changing the indication of a traffic signal to green to favor the direction of desired travel. Preemption improves emergency vehicle response time, reduces vehicular lane and roadway blockages, and improves the safety of the responders by stopping conflicting movements. Approximate construction cost is $5,000 to $7,000 per intersection plus $2,000 per equipped vehicle.

Corridors and Solutions

While acknowledging some access management strategies are better suited to one corridor type than another, **Table 5.6** lists four popular cross sections with local examples and potential access management strategies for each corridor type.

Access Management Corridors

Studies of the effects of access management on traffic operations indicate the techniques help increase safety, maintain desired speed, and reduce delays. Several corridors were identified by local staff, the TPAC, the general public as experiencing congestion and unsafe travel conditions. Many of these corridors have been selected for access management improvements as shown in **Figure 5.2**. The 2035 FLATS LRTP also reviewed in detail three corridors and one intersection:

- Palmetto Street (US 76/US 301) between Ballard Street and North Williamson Road/McCurdy Road
- Pamplico Highway (SC 51) between Irby Street and Howe Springs Road/Claussen Road
- Lucas Street (US 52) between I-95 and Edwards Circle
- Five Points intersection

The following sections illustrate potential strategies to alleviate congestion, improve safety, and enhance aesthetics for these areas.

Table 5.6 – Types of Corridors and Potential Solutions

Cross Section	Access Management Strategy	
Five Lanes (Predominantly Retail Land Uses) Local Example ▪ Segments of Pamplico Hwy (SC 51) ▪ Second Loop Rd	▪ Adaptive signal control ▪ Median U-turn treatment ▪ Non-traversable median treatment ▪ Offset left turn treatment ▪ Emergency vehicle preemption ▪ Driveway throat length	▪ Intersection / driveway curb radii ▪ Left-turn storage bays ▪ Minor street approach improvement (left-turn lane and right-turn lane) ▪ Consolidate driveways/cross access ▪ Driveway placement/relocation
Four-Lane Divided with Landscaped Median Local Example ▪ Williston Rd ▪ Segments of Lucas St (US 52)	▪ Adaptive signal control ▪ Median U-turn treatment ▪ Offset left turn treatment ▪ Intersection / driveway curb radii ▪ Signalization (driveways) ▪ Left-turn storage bays	▪ Minor street approach improvement (left-turn lane and right-turn lane) ▪ Emergency vehicle preemption ▪ Driveway throat length ▪ Consolidate driveways/cross access ▪ Driveway placement/relocation
Four-Lane Undivided Local Example ▪ Segments of Palmetto St (US 76) ▪ Coit St	▪ Adaptive signal control ▪ Offset left turn treatment ▪ Intersection / driveway curb radii ▪ Signalization (driveways) ▪ Left-turn storage bays	▪ Minor street approach improvement (left-turn lane and right-turn lane) ▪ Emergency vehicle preemption ▪ Driveway throat length ▪ Consolidate driveways/cross access ▪ Driveway placement/relocation
Four-Lane with Service Roads and Partially Controlled Access Local Example ▪ Segments of Lucas St (US 52) ▪ Segments of David McLeod Blvd	▪ Adaptive signal control ▪ CCTV traffic monitoring ▪ Non-traversable median treatment	▪ One way frontage road system with skip ramps ▪ Emergency vehicle preemption

Palmetto Street (US 76/US 301)

Palmetto Street between Ballard Street and North Williamson Road/McCurdy Road is currently a four lane roadway. The majority of this section has a center two way left turn lane, but portions of the corridor have a grassy median. This corridor not only serves as a regional linkage, it also connects significant activity centers such as the Florence Regional Airport and Francis Marion University. Along the corridor, there is a mix of commercial and residential uses. A portion of the road near the airport also has a frontage road serving adjacent commercial uses.

Currently, this corridor is approaching capacity. Congestion levels are anticipated to increase by 2035, with some sections at capacity. However, there are several opportunities to make improvements to the corridor that would not involve a significant capacity expansion. The access management plan for this corridor (**Figure 5.8**) highlights several different improvement types, such as driveway closures, intersection improvements, bicycle and pedestrian enhancements, median installation, and cross access for future developments.

Some of the most significant improvements include:

- **Intersection improvements at Palmetto Street and McCurdy Road.** These improvements are focused on enhancing the intersection for pedestrians and bicyclists, and include high visibility crosswalks, pedestrian countdown signals, and pedestrian-level lighting.
- **Grade-separated railroad crossing between Cromwell Drive and O'Brian Road.** This railroad bridge is no longer in service. However, since this grade separation and route already exists, this rail corridor could potentially be explored for conversion using the Rails to Trails initiative. This route could not only serve some of the non-motorized traffic along Palmetto Street, but would also connect to the residential neighborhoods to the south.
- **Cheves Street and Palmetto Street intersection redesign.** This intersection was first identified as a priority for redesign through the Traffic and Parking Analysis for McLeod Regional Medical Center Expansion. This intersection is skewed, which may cause confusion and safety issues. The intersection redesign would redirect Cheves Street so that it ties into Palmetto Street at a 90-degree angle. Additionally, medians would be put in place along both sides of Palmetto Street to help minimize conflicting turning movements and direct people to the new intersection. Some pavement removal would take place with the elimination of minor street connections.
- **Signal timing on Palmetto Street.** This corridor is a major route that could benefit from a signal timing plan. This would allow signals along the corridor to function as one unit, and maximize the free flow time for drivers along the corridor.

Figure 5.8 — Palmetto Street (US 76/US 301) Access Management Strategies

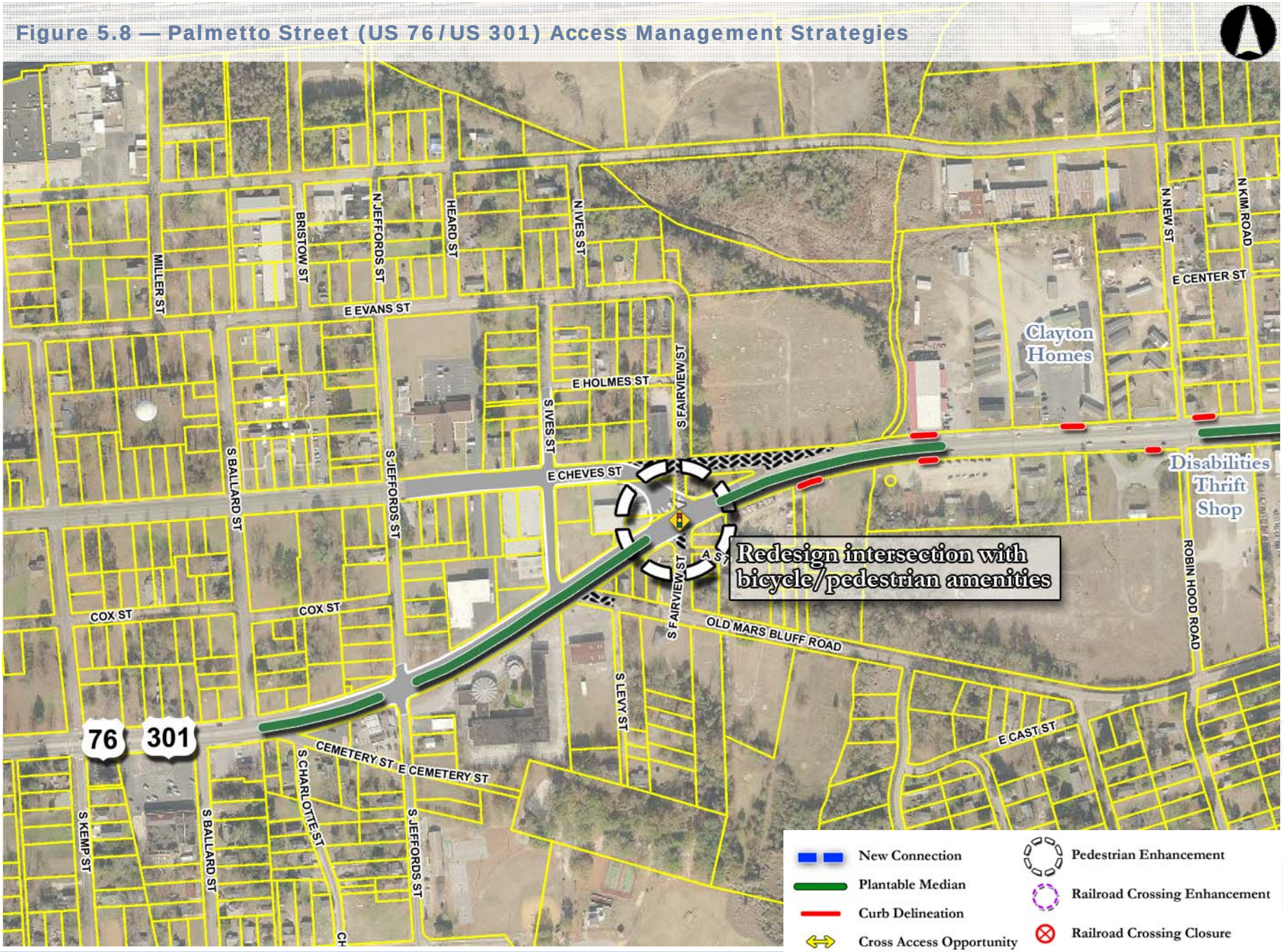


Figure 5.8 — Palmetto Street (US 76 / US 301) – continued

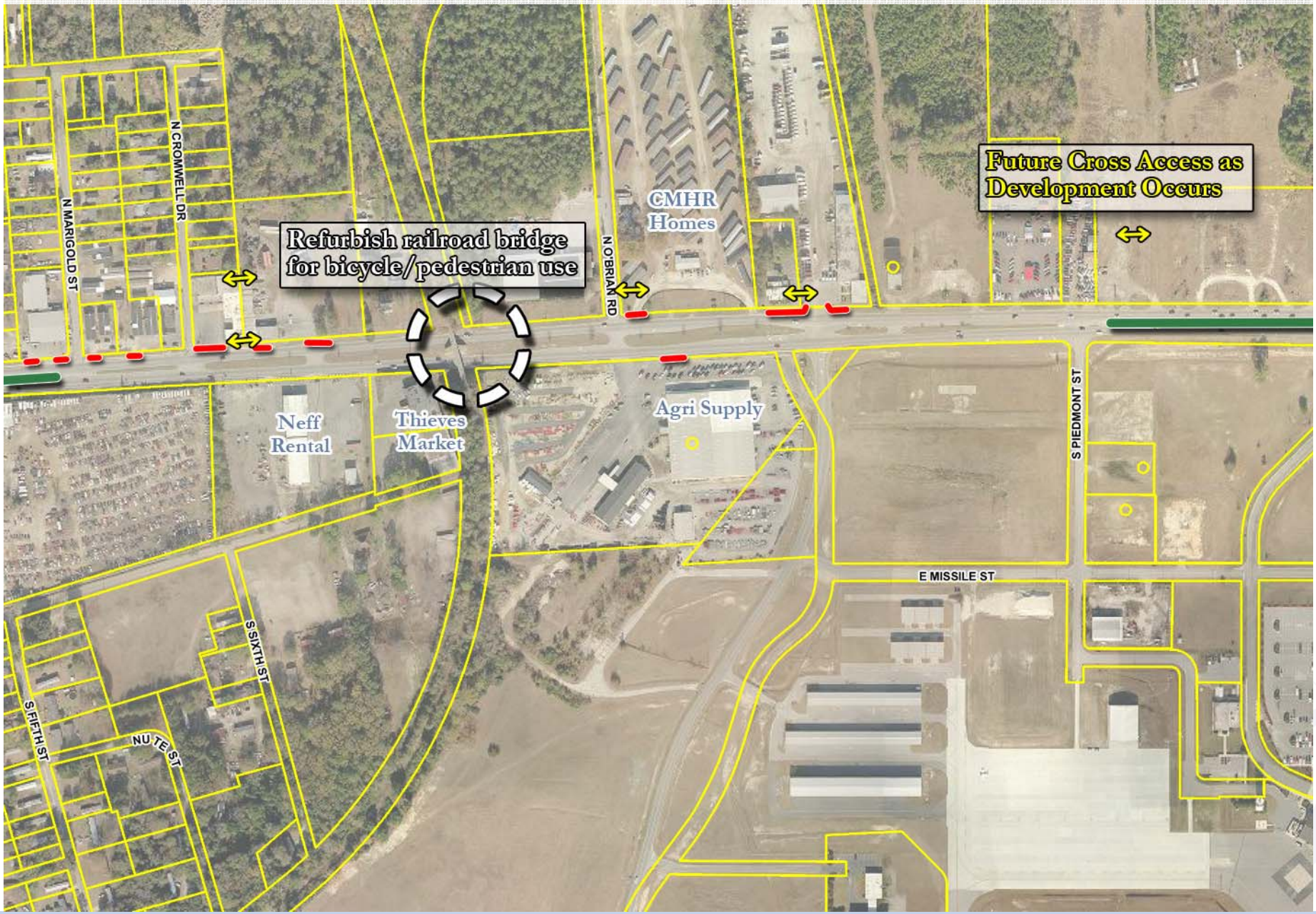


Figure 5.8 — Palmetto Street (US 76/US 301) – continued

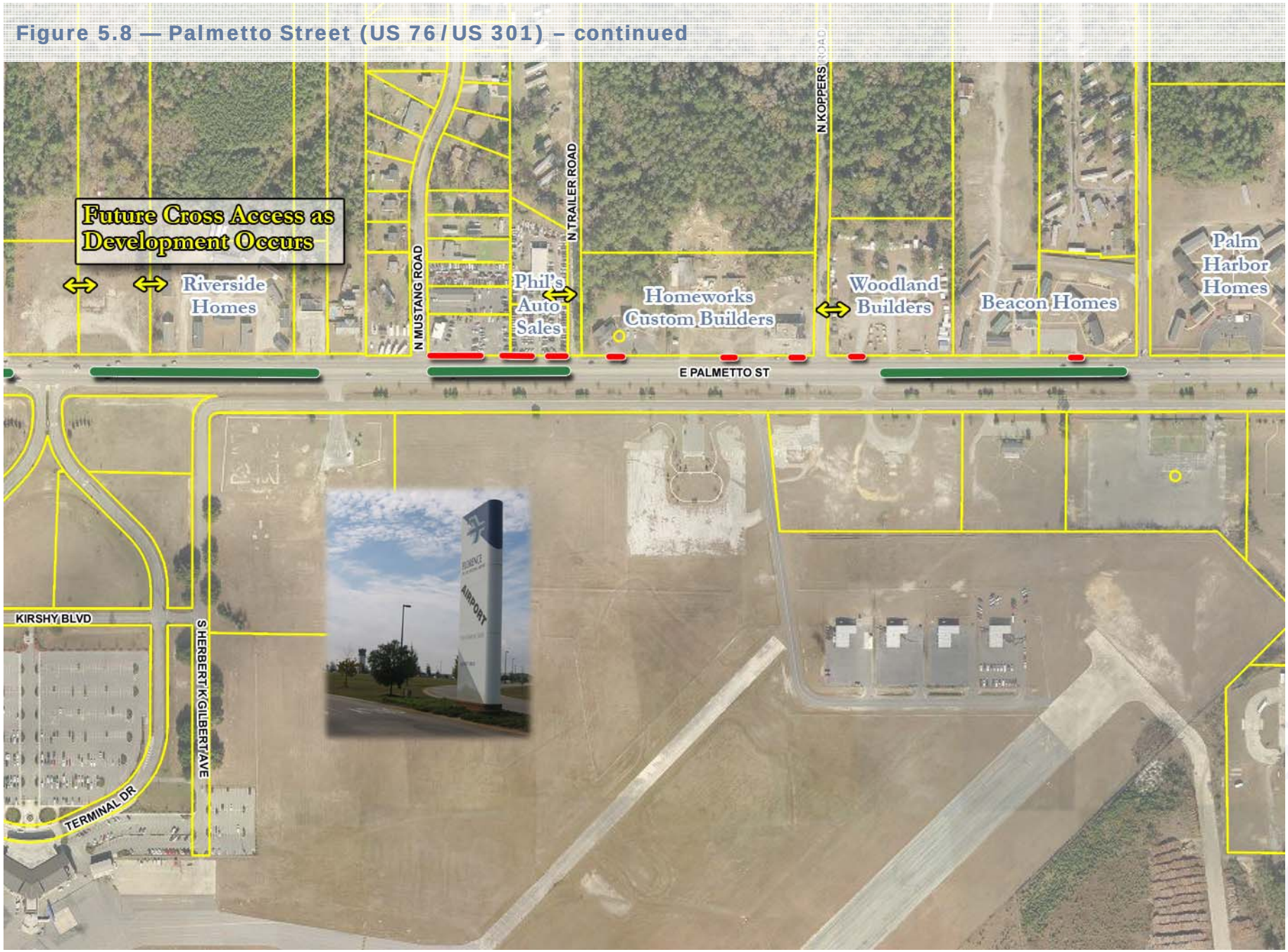
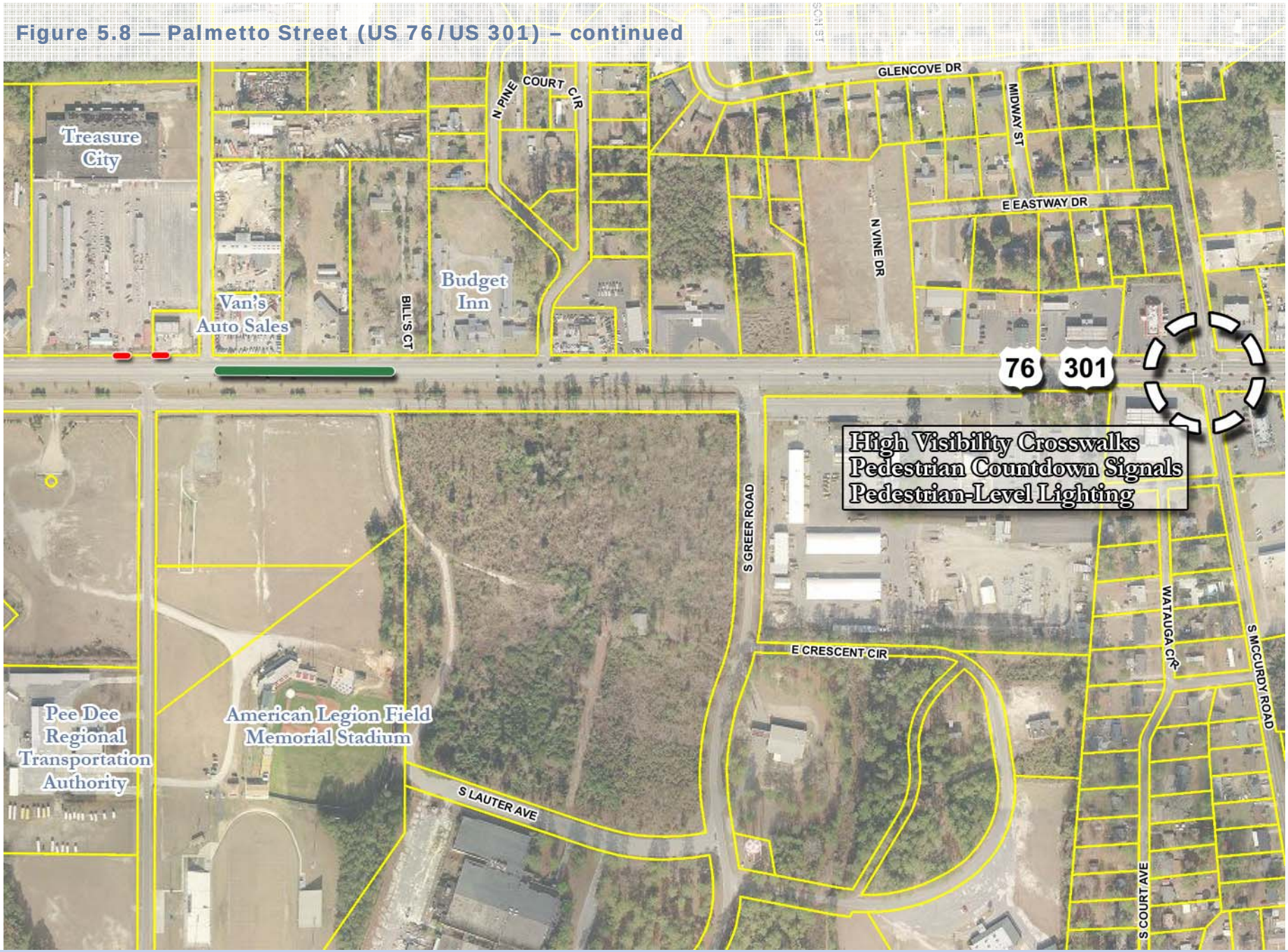


Figure 5.8 — Palmetto Street (US 76/US 301) – continued



Pamplico Highway (SC 51)

Pamplico Highway between Irby Street and Howe Springs Road/Claussen Road is a five lane roadway with a center two way left turn lane. This corridor is a state route that provides connections to several municipalities to the south, and is an important link between the City of Florence and the rest of the county. This section of the corridor links several neighborhoods, serves commercial uses, functions as the primary point of access for the Carolinas Hospital, and provides a link to the Freedom Florence Recreational Complex.

Portions of this corridor are already exceeding capacity, with particular pressure being applied to the section between Broad Drive and Blass Drive. In the future, congestion is expected to increase, with the most significant increases exhibited on the western side of the corridor. To address these concerns, the access management plan (**Figure 5.9**) proposes a set of median additions, driveway closures, collector street linkages, and intersection improvements to enhance the functionality and performance of the corridor.

Some of the key recommendations include:

- **Improvements to the intersection of Pamplico Highway and Irby Street.** Turning movements into and out of the businesses near this intersection cause confusion and can generate delay at the intersection. The installation of medians surrounding this intersection will lead to these site driveways serving only right-in/right-out movements. Enhanced site interconnectivity, elimination of poorly placed driveways, and a collector street connection in the southeast quadrant will help traffic move more efficiently around and between these businesses.
- **Intersection improvements at Pamplico Highway and Freedom Boulevard and at Church Street and Freedom Boulevard.** In order to eliminate the conflicting turn movements from the neighboring commercial developments, medians are recommended for installation at the Pamplico Highway/Freedom Boulevard intersection. These medians will continue with strategic openings throughout the corridor. In order to provide alternatives for traffic in this area, a new collector street linkage is proposed between Montclair Way and Freedom Boulevard. This connection would link with Church Street, and a new traffic signal would be recommended to serve this intersection (assuming appropriate signal warrants can be met).
- **Pedestrian improvements at the intersections of Pamplico Highway with Pine Forest Drive and Howe Springs Road/Claussen Road.** To help the corridor better serve non-motorized traffic, intersection enhancements such as high visibility crosswalks, pedestrian countdown signals, and pedestrian-level lighting are recommended.
- **Signal timing on Pamplico Highway.** The numerous traffic signals on this corridor would perform much more efficiently if signal timing plans were implemented. Signal timing would also need to be coordinated with Carolinas Hospital to ensure that emergency traffic management was adequately provided.

Figure 5.9 — Pamplico Highway (SC 51) Access Management Strategies

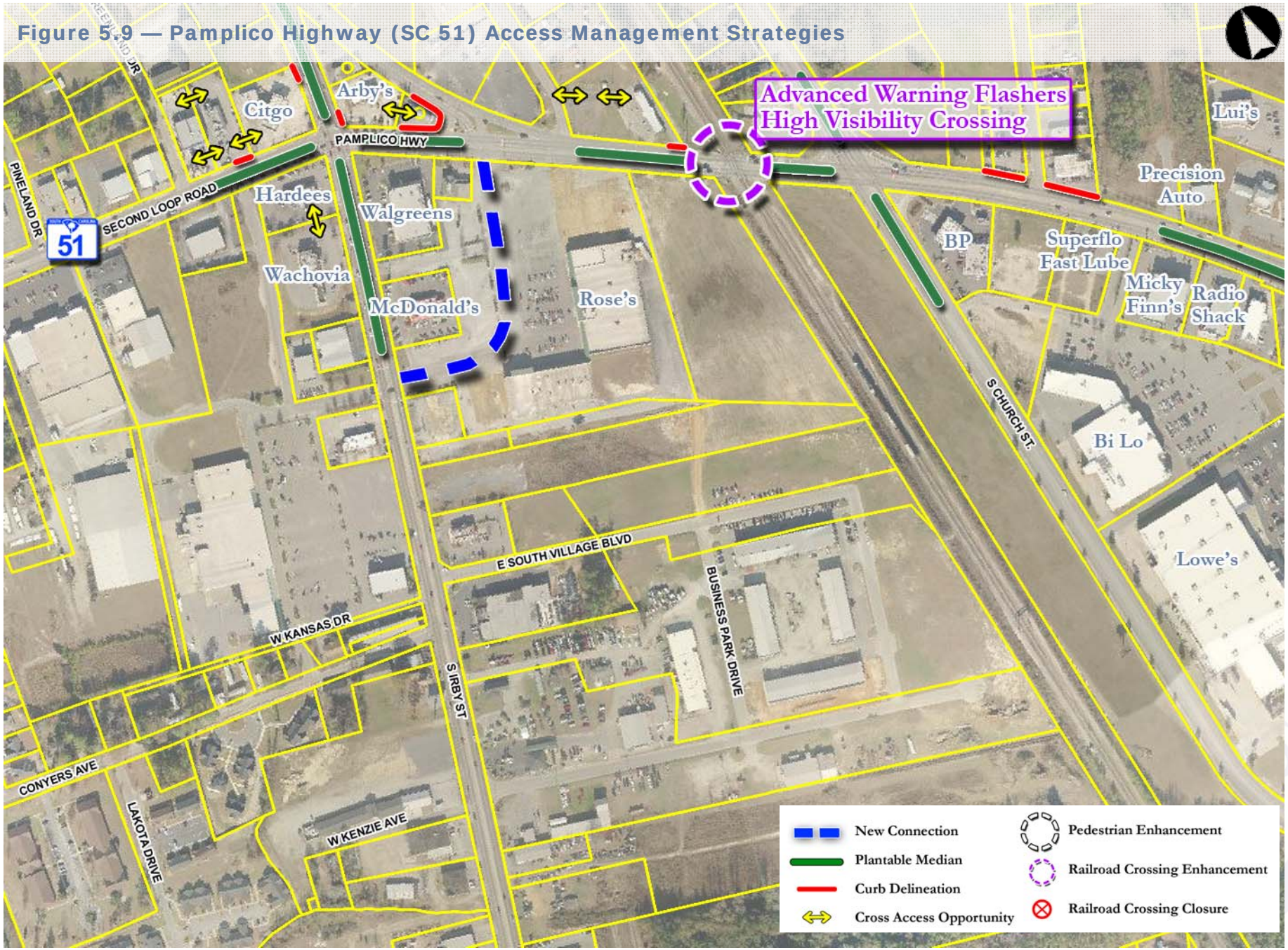


Figure 5.9 — Pamplico Highway (SC 51) – continued

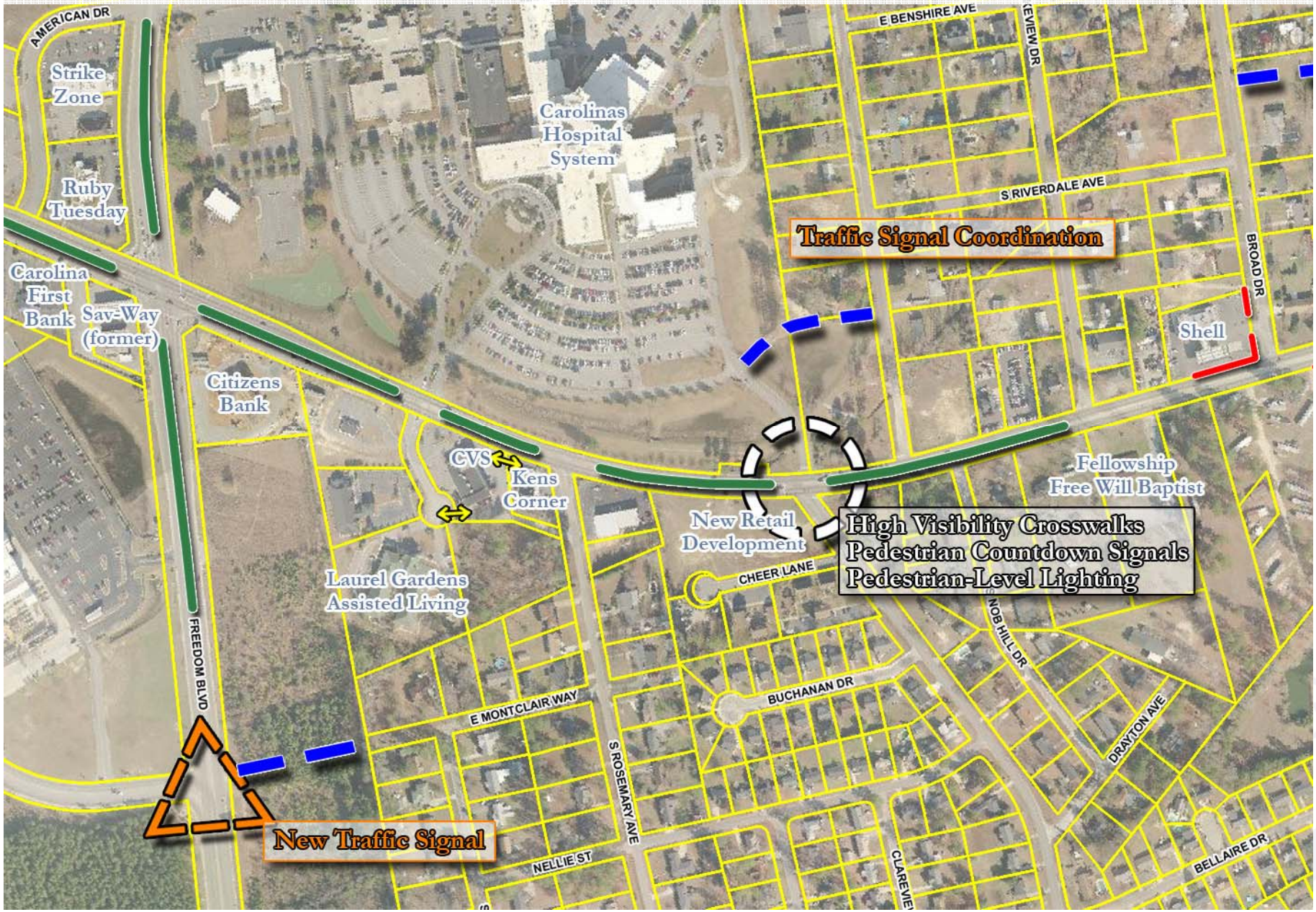


Figure 5.9 — Pamplico Highway (SC 51) – continued

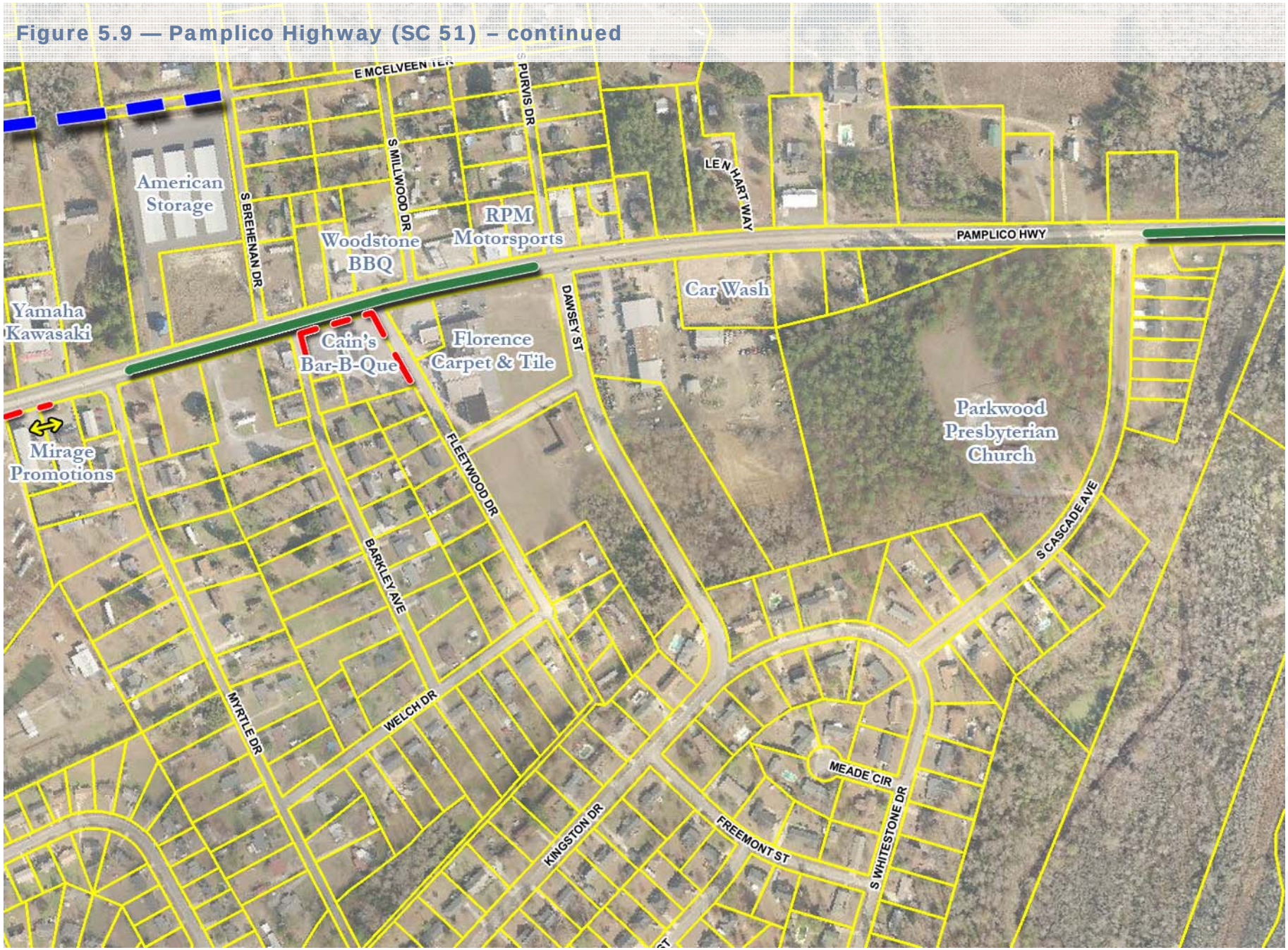
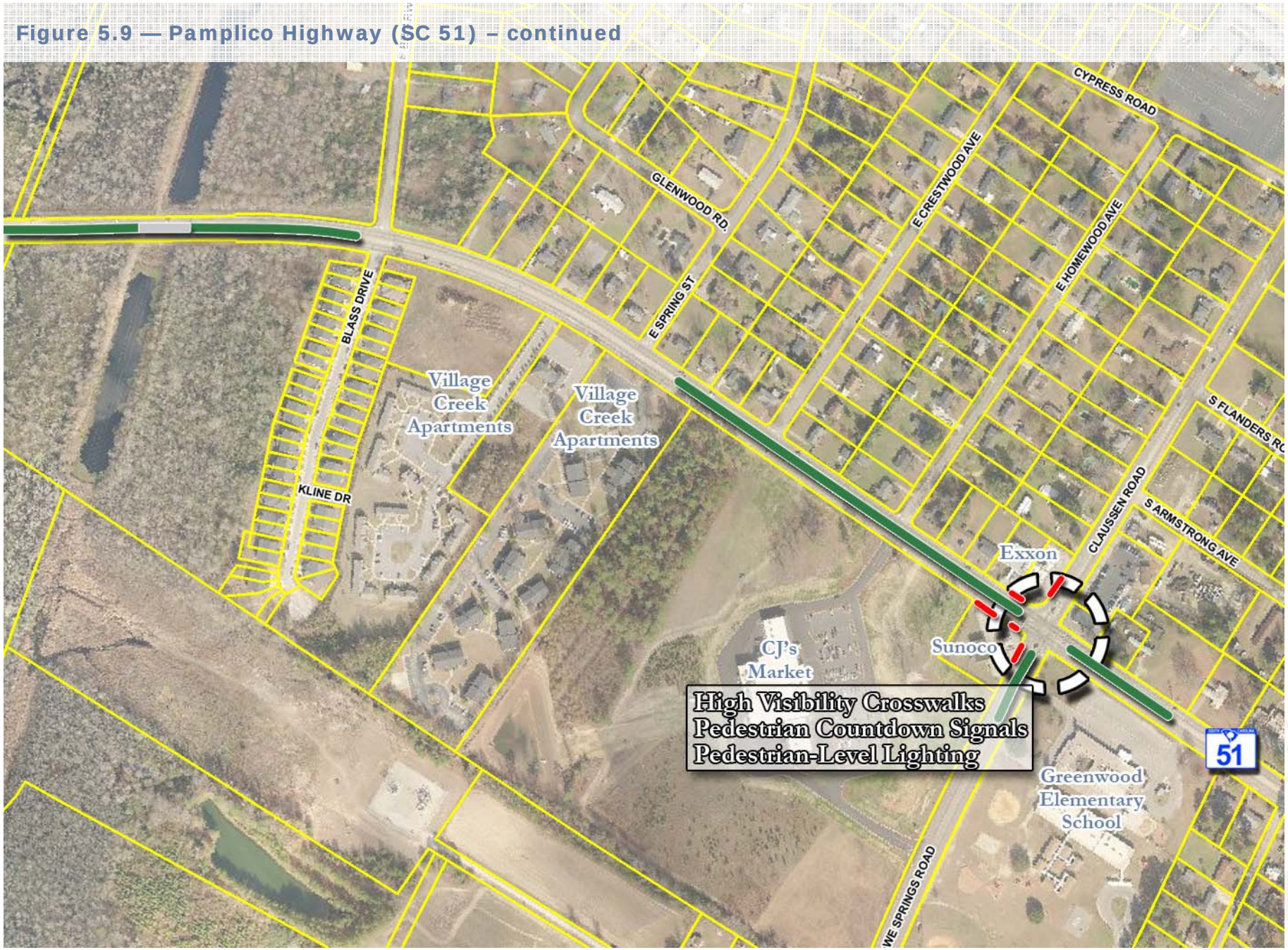


Figure 5.9 — Pamplico Highway (SC 51) – continued



Lucas Street (US 52)

Lucas Street is a five lane roadway between I-95 and Edwards Circle, and a four lane undivided roadway between Edwards Circle and Irby Street. Lucas Street is also designated as US 52 in this section. US 52 connects downtown Florence with suburbs and neighboring communities to the north and south. US 52 is also an important federal highway that runs from the Canadian border in North Dakota to Charleston, SC. Within the studied portion of this corridor, Lucas Street serves a mix of commercial and industrial uses and parallels a railroad track. With the adjacent land uses of this corridor as well as the connections it provides, this corridor has a heavy presence of freight traffic. Members of the public have also commented on aesthetic issues along the corridor such as unattractive signage and intersection treatments.

At this time, the Lucas Street corridor is operating at capacity. Congestion along this section of the corridor is expected to increase significantly in the future, with the corridor operating above capacity by 2035. With the presence of the US route, frontage roads, and interactions with business and the railroad, safety will also continue to be a primary concern on this corridor. To address these issues, the access management plan (**Figure 5.10**) includes a set of intersection and crossing improvements, back-door collector street connections, aesthetic enhancements, median treatments, and driveway closures.

Specific notable recommendations include:

- **New collector street extending Vista Street between Douglas Street and Cashua Drive.** This 2-lane collector street would help provide a parallel route to Lucas Street and back door connection opportunities for businesses along the north side of the corridor. Additional connections would be made to link this road with existing facilities, enhancing the opportunities to use this facility as an alternate route. This new facility would follow an existing easement, reducing right-of-way takings and conflicts. A multi-use path is proposed for construction along this roadway to serve non-motorized traffic that wants to access the Lucas Street area.
- **Railroad crossing enhancements.** Enhanced rail crossings are recommended at Cashua Drive, Schlitz Drive, Mechanicsville Road, Chase Street, and Irby Street. Improvements such as actuated gates and high visibility crossings are recommended to improve the look and functionality of the railroad crossings in these locations.
- **Railroad crossing closures at minor driveways.** Confining railroad crossing opportunities can improve safety, allowing more important crossings to receive additional maintenance funds and by minimizing conflict point opportunities. The crossings recommended for closure serve either vacant property or are secondary site driveways.
- **Signing regulations for the Lucas Road corridor.** Signage regulations are recommended for this corridor. Regulation can be done in the form of citywide ordinance measures, or through the formulation of an overlay district on this corridor to regulate and enhance the appearance of signage.

Figure 5.10 — Lucas Street (US 52) Access Management Strategies

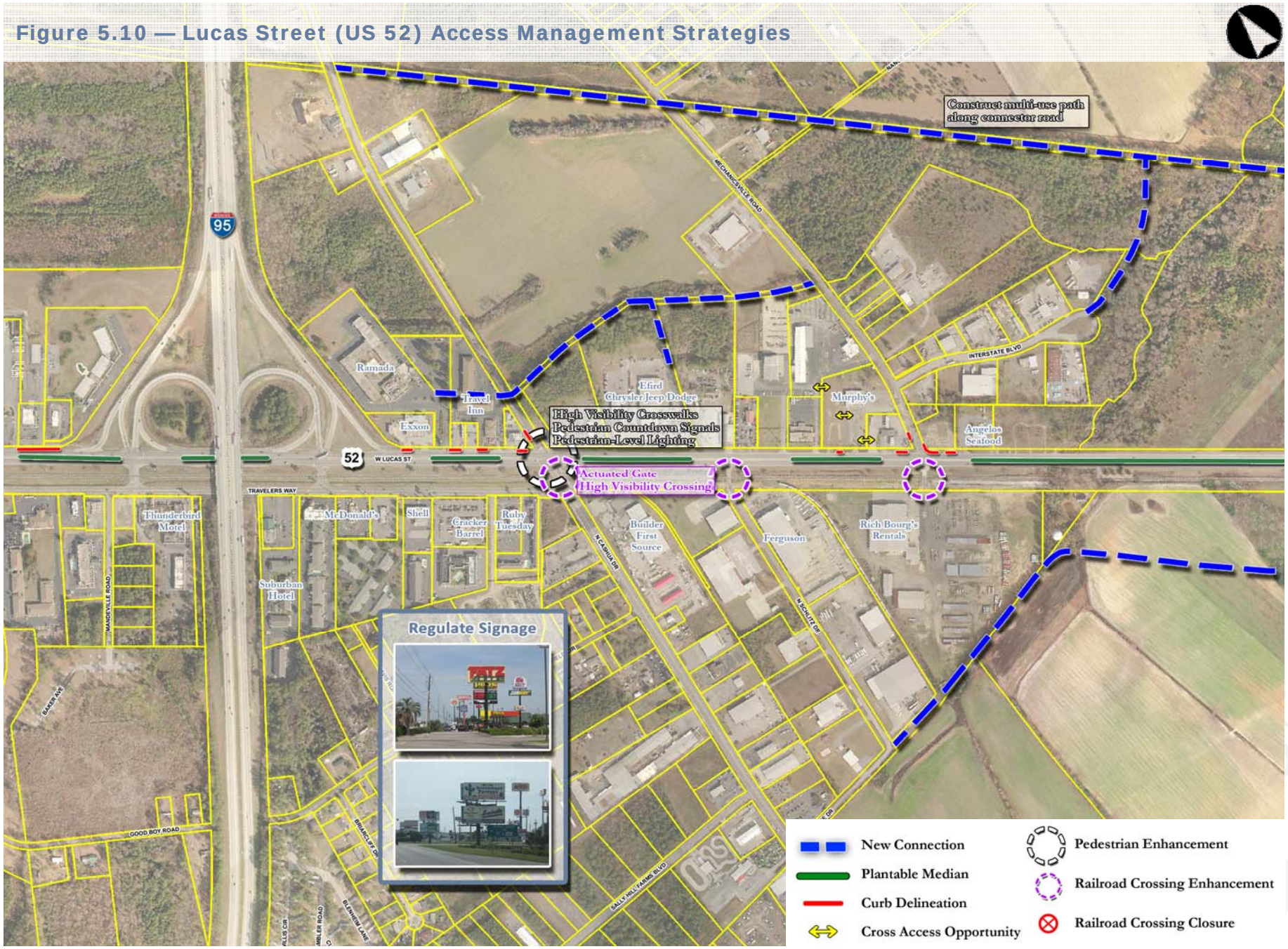
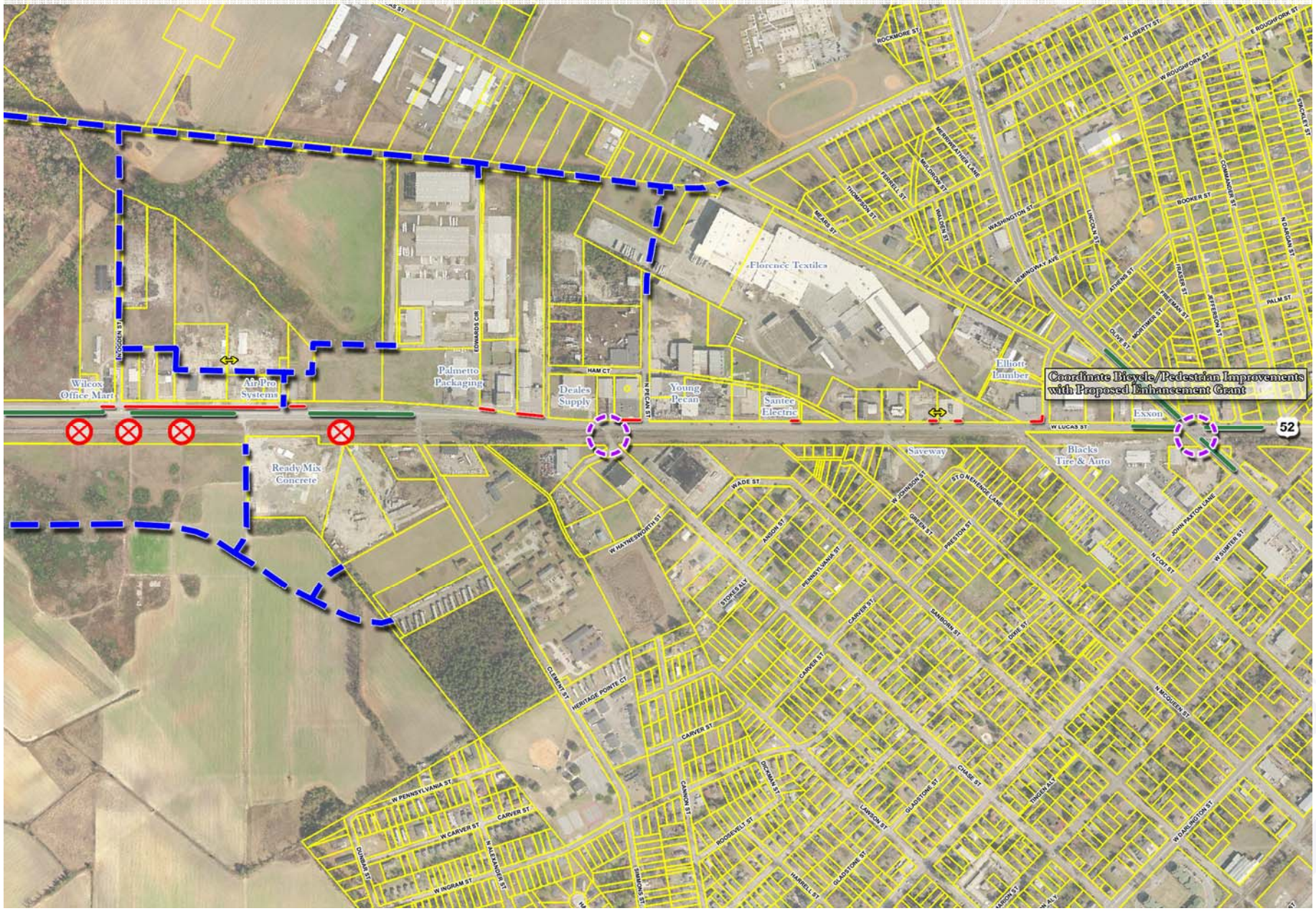


Figure 5.10 — Lucas Street (US 52) – continued



Five Points

The intersection of Cashua Drive, Palmetto Street (US 76), Cherokee Road, and Hoffmeyer Road — known locally as Five Points — consistently is recognized by members of the public as one of the worst transportation issues in the FLATS MPO area. Despite its name, the intersection accommodates movements from six roadway approaches. Additionally, it serves the Florence Mall shopping center and several other retail centers. This intersection currently is controlled using an eight-phase signal and has permitted-protected left-turn arrows on the southeast-bound Hoffmeyer approach and the northwest-bound Cherokee approach.

Members of the Florence County planning staff counted traffic volumes and turning movements at this intersection on June 2, 2009 for both the AM and PM peak hours. Using the data collected, a traffic analysis was conducted to assess the intersection level of service during these times. During both the AM and PM peak hours, traffic operated at LOS E, meaning the intersection was operating at capacity. Additional traffic growth expected in future years for this intersection will make the intersection operate over capacity, increasing congestion and delay.

To address the issues facing Five Points, two different approaches were considered. The first approach examined a range of access management strategies to reduce congestion and enhance safety. The second approach involved a new concept for the intersection, consisting of a two-lane roundabout.

Access Management Strategies

One of the issues facing the Five Points intersection is the prevalence of driveways and curb cuts in proximity to the intersection. The access management approach consolidates or better defines several business driveways in the area. Rather than cutting access to businesses from roads entering the intersection, this approach eliminates duplicate driveways near the intersection that pose safety issues and creates safer driveway locations where motorists can anticipate turning movements.

The presence of two-way left-turn lanes all the way to the intersection on several approaches creates an additional safety issue. The presence of these lanes makes it unclear where motorists may be turning, causing conflicts between vehicles turning into businesses and vehicles turning at the intersection. The access management approach recommends the installation of concrete or landscaped medians for short portions of Palmetto Street, Hoffmeyer Road, and Cashua Drive. These medians would be installed near the intersection, and business driveways in locations with the proposed medians would only allow right-in right-out movements.

While some business owners may be concerned about the median and consolidated driveways making it difficult for customers to get to their businesses, the access management approach includes several measures to mitigate this concern.

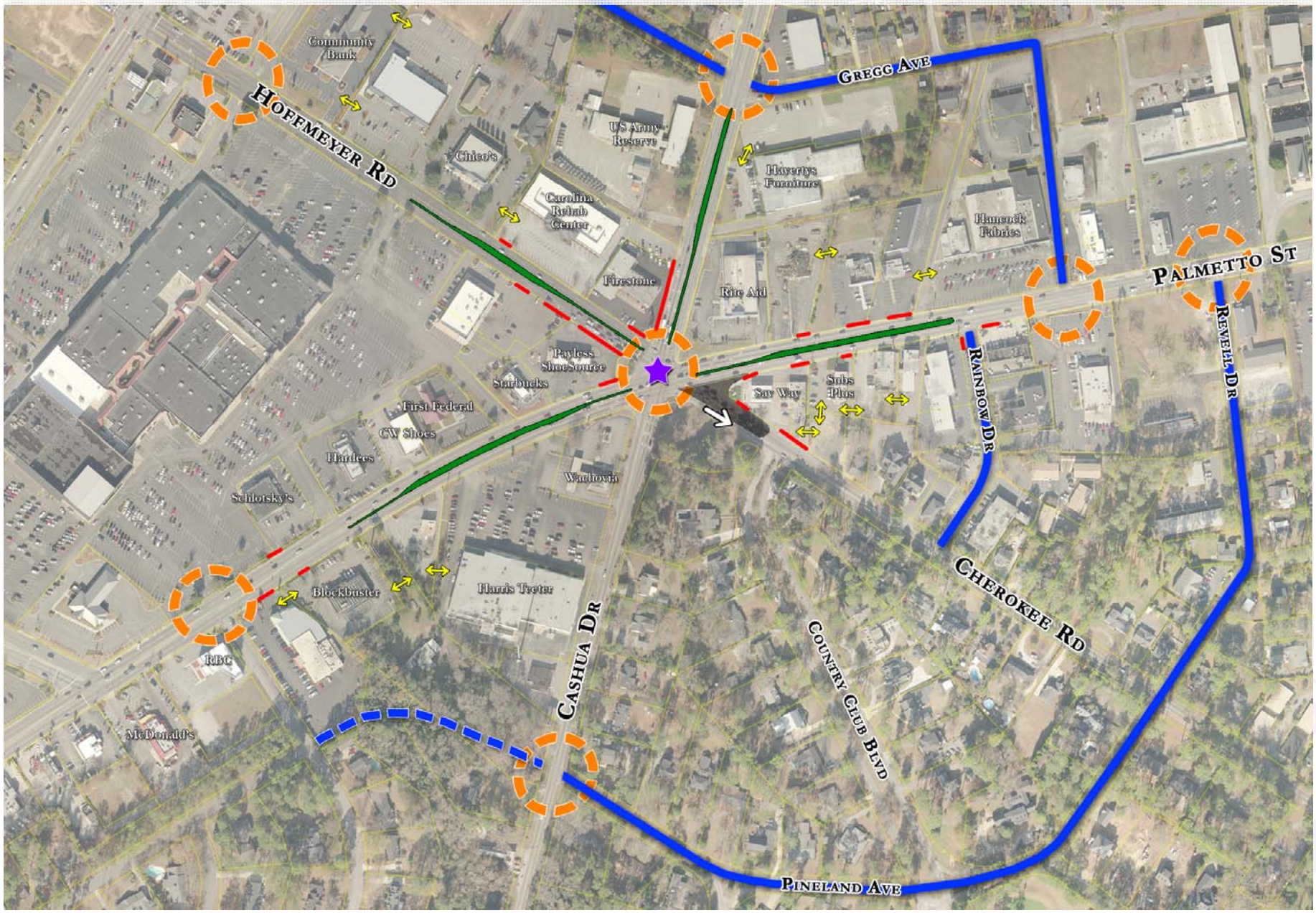
- Improved site interconnectivity links adjacent businesses to allow customers to travel between businesses without using the main road. Other benefits include allowing patrons to walk between businesses and helping businesses capture customers from surrounding complementary land uses.
- An improved collector street network around the intersection would allow vehicles to use side roads and back door access points to businesses. In some cases, patrons could avoid Five Points entirely. Roads slated for improvement near Five Points include Rainbow Drive, Gregg Avenue, and potentially Revell Drive and Pineland Road.

Access management improvements around Five Points also consider bicycle and pedestrian accessibility. Currently, it is very difficult for a bicycle or pedestrian to travel safely through Five Points. A series of bicycle and pedestrian enhancements should be considered not only at this intersection but also at other key crossings in the area. The enhancements of the surrounding collector streets also could be an asset for non-motorized travelers that want to avoid this intersection.

Perhaps the most significant recommendation in the access management alternative is prohibiting vehicles from entering the intersection via Cherokee Road. Cherokee Road is a major connecting corridor for the City of Florence. However, it also is an established residential area and boasts one of the more aesthetically pleasing corridors in the region. While this recommendation eliminates outbound traffic from Cherokee, inbound movements are allowed to continue. The recommended collector street improvements will help outbound traffic divert into other roads. With this roadway removed, the operation of the intersection improves significantly, resulting in a 30 second delay reduction and an intersection LOS C.

The recommendations shown in this alternative are included as **Figure 5.11**.

Figure 5.11 — Five Points — Access Management Strategies



Roundabout Alternative

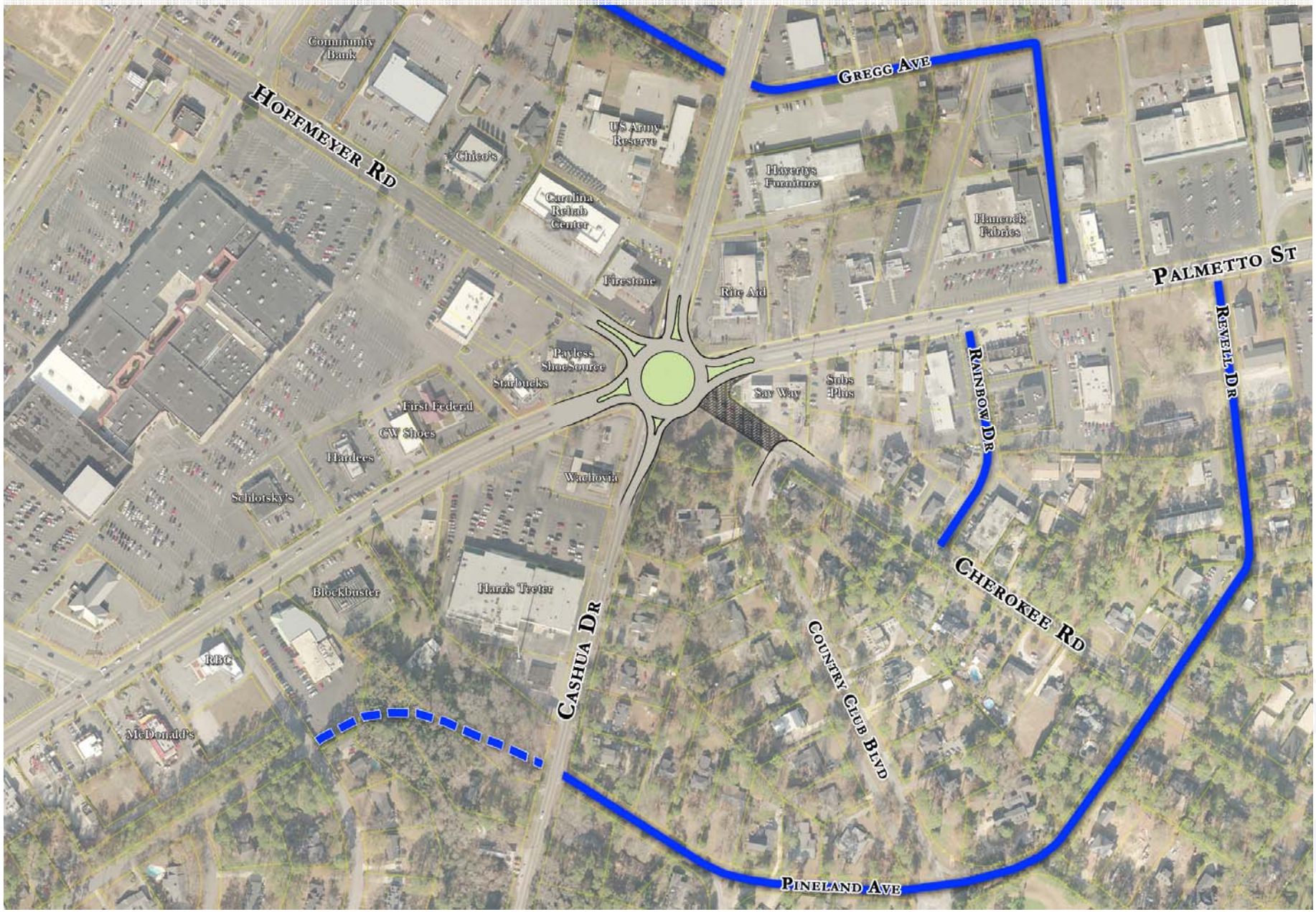
Roundabouts are becoming more widely accepted and commonplace throughout South Carolina. Florence and Darlington Counties are on record as supporting these improvements in lieu of traffic signals at appropriate intersections. At this time, no roundabouts are located within the FLATS MPO area. For the Five Points intersection, a typical one-lane roundabout would not be sufficient to address the high traffic demands in this area. Instead, the proposed two-lane roundabout would allow more vehicles to enter the roundabout as other vehicles circle. The two-lane roundabout would easily accommodate trucks.

For the roundabout alternative to function effectively, the connection to Cherokee Road likely would be eliminated, though the necessary additional analysis would consider the viability of keeping an exiting lane onto Cherokee from the roundabout. The existing large footprint of the Five Points intersection mitigates most of the right-of-way concern associated with constructing the roundabout. If the center of the roundabout is shifted slightly southeast from the center of the current intersection, the design should not significantly infringe upon existing development in four of the five corners. The fifth corner between Cherokee Road and Cashua Drive currently is home to a small pocket park. The current preliminary design takes a small portion of this park. However, the aesthetic features within and surrounding the roundabout could help mitigate the reduction of this landscaped area. A conceptual rendering of the footprint and approaches of this roundabout are shown in **Figure 5.12**.

The installation of a two-lane roundabout has a dramatic effect on the overall performance of the Five Points intersection. With the roundabout in place, both AM and PM peak hour movements are projected to operate at LOS A, the lowest delay category. The elimination of this signal will allow more continuous movements.

For the roundabout to operate most effectively, some of the access management solutions mentioned previously should be implemented. Enhanced back-door connectivity, driveway consolidation or delineation around the intersection, and installation of medians near the intersection approaches make the roundabout system safer and more effective.

Figure 5.12 — Five Points — Roundabout Alternative



Corridor Signal Timing

Synchronizing the timing of traffic signals along a corridor is one of the most cost effective strategies to maximize roadway capacity. In addition to reducing traveler stops and delay, coordinated traffic signal timing can reduce vehicle emissions and improve safety.

Timing Options

Several options exist for providing traffic signal synchronization. A selection of commonly used options is organized below from least complex to most complex.

GPS Time Sync

Installing global positioning system (GPS) receivers at traffic signals does not provide communication to or between traffic signals but does provide a very basic means of synchronizing traffic signals. To coordinate a corridor, clocks in the signal controllers must be kept in sync with one another. Without a means to keep the clock in each signal controller at the exact time, the clocks will drift due to factors such as an unreliable power source or old electrical components. During signal timing implementation, each signal controller is assigned an offset, relative to the controller's internal clock. Even a few seconds of drift within these internal clocks will compromise the coordination along the corridor. By installing a GPS receiver at each location, the signal controllers are able to regularly synchronize their internal clocks against a common and very reliable time source using GPS signals.

The pros of installing GPS receivers include their low cost, (typically less than $1,000 each), high reliability, and low maintenance. The cons are that GPS receivers do not provide any means of communication between the traffic signals, so it is not possible to make signal timing adjustments without physically entering the information into each signal controller in the field.

Closed-Loop Systems

Simple "closed-loop systems" coordinate a number of signals along a corridor. In a closed-loop system, one of the signal controllers is designated as the master and the remaining are slaves. The master controller uses any number of communications means to "talk" to each of the slaves and synchronize the clocks, change timing parameters, or check their status. The master controller can be accessed remotely and signal timing parameters at all of the traffic signals in the closed-loop system can be modified through communication with the master.

Dial-Up Telephone

A basic means for communicating with the low-bandwidth signal controllers in a closed-loop system is using dial-up telephone modems. Dial-up modems are relatively inexpensive (about $400 each) and easily installed and configured. However, they require the installation of telephone service to the signal (usually about $500 in upfront cost) and a monthly service agreement with the telephone provider (usually about $40 a month based on normal usage).

Twisted Pair Copper Cable / Fiber Optic Cable

Options for providing an agency-owned hard-wire connection between signals primarily are twisted pair copper cable and fiber optic cable. The cable typically is installed either overhead on existing utility poles or underground in new conduit. At the end of each type of cable, modems must be integrated with the signal controllers to transmit and receive data. Generally, twisted pair modems are less expensive than fiber optic modems, but the prices for fiber optic modems have been decreasing over the past decade. Typical costs for twisted pair copper and fiber optic cable installations are shown in **Table 5.7**.

Table 5.7 – Cable Costs			
Type of Cable	**Overhead Installation**	**Underground Installation**	**Modem**
Twisted Pair Copper	$7/ft	$17/ft	$500/signal
Fiber Optic	$5/ft	$15/ft	$1,200/signal

The pros of hard-wire connections include that they are agency-owned rather than leased, more secure than other forms of communication, and provide a higher bandwidth than other forms of communication. The con is the high initial installation costs. Compared to copper, fiber optic cables have a much higher bandwidth and are quickly becoming the standard medium of choice for traffic signal communications.

Wireless Radio

A final option for signal communications within a closed-loop system is wireless radio, typically over a 900 MHz frequency. This option involves installing equipment and an antenna at each signal and transmitting data over an unlicensed frequency. The quality of the communications often can be dictated by the presence of interfering radio devices and poor sight lines between antennas. For this reason, a radio and site survey is performed prior to installation to determine the feasibility of a radio system. A wireless radio system costs approximately $6,000 per link including all antennas and equipment, with each repeater (if needed) costing approximately $5,000. The pros of wireless radio are the cost savings over hard-wire (especially over long distances) and the low environmental impact. The cons are the effort required to properly configure the system and the susceptibility to outside interference that can lead to unreliability.

Closed Loop Systems in the FLATS MPO Area

All traffic signals in the Florence area are maintained by SCDOT. SCDOT uses dial-up telephone modems to communicate with signals that are part of closed-loop systems and most of the signals use Type 170 controllers. If an existing system needs retiming, either a formal request can be submitted to SCDOT or a third party can be engaged by the city, county, or MPO to develop and implement new timings plans subject to SCDOT review.

A summary follows of corridors for which potential signal timing improvements were identified. A recommended course of action for the corridors also is provided.

Irby Street — Downtown to Third Loop Road

The primary corridor identified for potential signal timing improvements was Irby Street from downtown Florence south to Third Loop Road — a section that consists of approximately 15 signals. Based on discussions with SCDOT, most of these signals currently are in closed-loop systems that run east-west along cross streets rather than north-south along Irby Street as follows:

- **Irby Street at Lucas Street:** Part of a closed-loop system along Lucas Street that runs from Coit Street to Pine Street
- **Irby Street from Darlington Street to Pine Street:** Part of the downtown closed-loop system that runs along Palmetto Street from Warley Street to Dargan Street
- **Irby Street at Cherokee Road/National Cemetery Road and at Hallmark Square Shopping Center:** Both are part of a closed-loop system that includes 4 or 5 other signals along Cherokee Road/National Cemetery Road
- **Irby Street at Sebrell Street:** Not coordinated with other signals
- **Irby Street from James Jones Avenue to Wakefield Avenue (South Park Shopping Center):** Part of a closed-loop system along 2nd Loop Road/Pamplico Highway that extends east to Pine Forest Drive

- **Irby Street at Wal-Mart Shopping Center:** Not coordinated with other signals
- **Irby Street at Third Loop Road:** Not coordinated with other signals

To provide coordination along a corridor, each traffic signal along the corridor must have the same cycle length and the signals must be close enough together to allow a platoon of vehicles to progress between the signals. Over long distances, platoons of vehicles naturally become dispersed and the benefit of coordination is diminished. Based on the number of existing closed loop systems in place along Irby Street and the distances between these systems, it is unlikely that each of these smaller systems can be synchronized with each other to provide improved flow along the entire length of Irby Street. The signal at Sebrell Street, however, is located approximately 1,000 feet from James Jones Avenue. Therefore, it is recommended that SCDOT consider providing communication to this signal and connecting it to the closed-loop system at Pamplico Highway.

As a new traffic signal is installed along Irby Street, consideration should be given to connecting the new signal(s) to the existing closed loop systems along the corridor and connecting adjacent closed loop systems to each other to improve traffic flow along Irby Street.

Other Corridors

Additional high-priority corridors that have been identified for potential signal timing improvements include the following. While no specific recommendations for providing coordination on these corridors is provided, improvements may be possible at each of the individual traffic signals. Numerous parameters are used when programming a traffic signal even when it is not running in coordination. Where concerns regarding the operations at an individual intersection or series of intersections exist, a traffic analysis may be warranted to investigate improvements to the signal parameters.

Cashua Drive from Palmetto Highway to Second Loop Road

The only signals on this section of Cashua Drive are at Palmetto Highway and Second Loop Road. Given the mile spacing and the number of street and driveway connections along Cashua Drive, it is unlikely that coordinating these two signals would provide a measurable benefit to the traveling public.

Second Loop Road from Palmetto Highway to Woods Drive

The only signals on this section of Second Loop Road are at Palmetto Highway and Cashua Drive. Given the spacing between these two intersections, it is unlikely that coordinating these two signals would provide a measurable benefit to the traveling public.

Pamplico Highway from Irby Street to Howe Springs Road

An existing signal system on Pamplico Highway extends from Irby Street east to Pine Forest Drive. At more than 1.5 miles from Pine Forest Drive, the signal at Howe Springs Road is too far away to be coordinated with the rest of this system.

Palmetto Street from Griffin Street to McCurdy Road

The only existing signals on this section of Palmetto Street are at Griffin Street and McCurdy Road. Given the approximately 3-mile spacing and the number of street and driveway connections along Palmetto Street, it is unlikely that coordinating these two signals would provide a measurable benefit to the traveling public. However, a new traffic signal at Cheves Street currently is under consideration. If this signal is installed, consideration should be given to connecting it to the signal at Griffin Street as well as other signals on Cheves Street.

David McLeod Blvd from I-20 to Palmetto

This section of David McLeod Boulevard is coordinated from Radio Drive to Evans Street.

Downtown Florence Signal Coordination

At this time, all of the signals within the downtown Florence area operated as actuated or pretimed signals within a coordinated system. However, there may be opportunities for retiming certain corridors to perform more efficiently. Roadways such as Cheves Street, Evans Street, Darlington Street, Dargan Street, and Coit Street could be candidates for such retiming. However, the lower traffic volumes compared to other regional arterials and the availability of alternate routes make these facilities a lower priority than the others in this list.

Complete Streets

"Complete streets" describes the transformation of vehicle-dominated thoroughfares in urban and suburban areas into community-oriented streets that safely and conveniently accommodate all modes of travel, not just motorists. Inclusion of complete streets in the *2035 LRTP* is a response to public feedback, from the planning process for this plan as well as previous plans conducted by the city and county. Discussions with the general public, members of the TPAC, local staff, and stakeholders confirmed support for these initiatives. A single voice emerged to express concern for the often inhospitable environment for pedestrians and bicyclists on area roadways. These users currently are not fully accommodated by roads in the Florence area. Complete street projects consider the multimodal elements found throughout the *2035 LRTP*, including:

- Access management to improve public safety (**Chapter 5**)
- Safer and more convenient walkways, sidewalks, and crosswalks (**Chapter 6**)
- Safer and more convenient bikeways (**Chapter 6**)
- Integration of transit (**Chapter 7**)
- Consideration of freight needs (**Chapter 8**)

Implementing Complete Streets

Transforming arterials into complete streets is complicated and requires a diverse range of skill sets and broad support from the community. Fortunately, other metropolitan areas have success stories that have been translated into guiding documents. The most detailed guidance comes from a joint effort of the Institute of Transportation Engineers and Congress for the New Urbanism. With funding from the USDOT and the U.S. Environmental Protection Agency, best practices have been published as *Context-Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*.

Successful complete street transformations require community support and leadership as well as coordination between various disciplines. Common goals for complete streets are economic revitalization, business retention and expansion, and public safety. Typical skill sets needed to retrofit complete streets include urban planning, urban design, landscape architecture, roadway design, utility coordination, traffic engineering, transportation planning, transit planning, architecture, graphic art, and land redevelopment.

Guiding Principles

The most important aspects of a successful complete streets program include the following principles:

- Achieve community objectives.
- Blend street design with the character of the area served.
- Capitalize on a public investment by working diligently with property owners, developers, economic development experts, and others to spur private investment in the area. A typical return-on-investment of $3 private for every $1 of public investment should be expected. Often, the ratio is 10:1 or more.
- Design in balance so traffic demands do not overshadow the need to walk, bicycle, and ride transit safely, efficiently, and comfortably. The design should encourage people to walk.
- Empower citizens to create their own sense of ownership in the success of the street and its numerous characters.

Caveats

Street transformations, however, require tremendous effort by numerous stakeholders. Several factors contribute to the successful implementation of a complete street transformation, including:

- **An interconnected network of major and minor streets with some redundancy in traffic capacity on parallel major streets.** Concern over a loss of traffic capacity can be tempered with surplus capacity elsewhere.
- **A demonstrated and well-defined problem that can be addressed with a complete street transformation.** The community should agree that the problem demands a solution and enough citizens feel compelled to show up, stand up, and speak up in support. It never will be possible to get everyone to agree with each detail of the new design, but near universal agreement on the problem definition is critical.
- **A non-profit group to create an agenda for change.** During the early phases of the transformation project, a non-profit group can help facilitate change and participate in design meetings to make sure that designers continue to pursue solutions and decisions that will ultimately achieve the community objective.

Policy Support

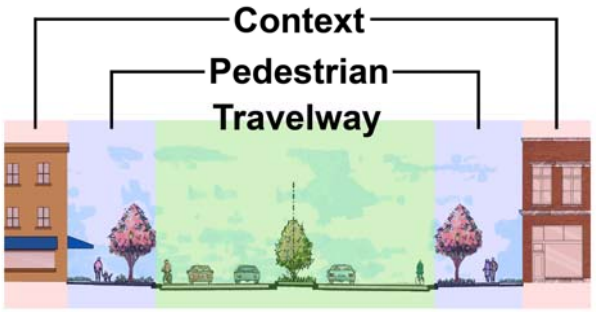
Beyond the support provided through the *2035 LRTP*, other important policy documents that should reflect complete street policies or enabling language include:

- City or County Comprehensive Plans
- Area Plans
- Park Master Plans (if adjacent to the corridor)
- Economic Revitalization/ Development Strategies

Street Realms

The following sections include an overview of how four distinct street realms foster interaction between different modes of travel and adjacent land uses. Included in this discussion is how the built environment and the different ways people travel directly influence the livability of a corridor. The Future Roadway Element concludes with a series of illustrative cross sections depicting different street types.

As described on the following pages, complete streets can be viewed in terms of four basic zones or realms: the **context**, **pedestrian**, **travelway**, and **intersection realms**.



Context Realm

The context realm of a complete street is defined by the buildings that frame the major roadway. Identifying distinct qualities of the context realm requires focusing on four areas: building form and massing, architectural elements, transit integration, and site design. Consideration should be given to all of the following, with modifications as appropriate to fit the specific context of the area.

Building Form and Massing

To enhance an already high-quality street design and help create a complete street, new buildings should be located close enough to the street that they frame the public space

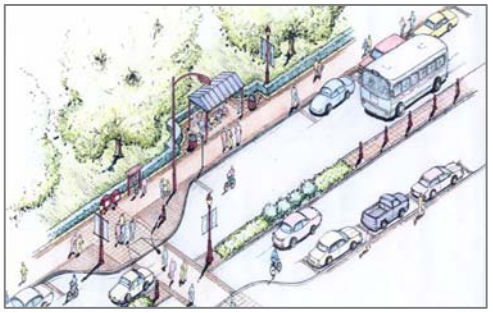
enjoyed by pedestrians. In more urban areas, these buildings should be located directly behind the sidewalk. Buildings with stairs, stoops, or awnings may even encroach into the pedestrian realm to provide visual interest and access to the public space. Suburban environments that must incorporate setbacks for adjacent buildings should limit this distance to 20 feet or less and avoid off-street parking between buildings and the pedestrian realm.

Larger setbacks in these suburban areas will diminish the sense of enclosure afforded to the pedestrian and move access to the buildings farther away from the street. In both environments, new building heights should measure at least 25% of the corridor width. For example, a 100-foot wide roadway right-of-way should be framed by new buildings that are at least 25 feet high (a typical two-story building) on both sides with facades that are at most 20 feet from the edge of right-of-way.

Architectural Elements

Careful placement and design of new buildings adjacent to the major roadway offer opportunities for meaningful interaction between those traveling along the corridor and those using the corridor for other purposes. These opportunities are greatly enhanced when restaurants, small shops and boutiques, residential units, and offices are located adjacent to the street. Building scale and design details incorporated into individual buildings foster a comfortable, engaging environment focused on the pedestrian. Common building design treatments generally favored in a pedestrian environment include awnings, porches, balconies, stairs, stoops, windows, appropriate lighting, promenades, and opaque windows.

Transit Integration



Areas targeted for high-quality transit service must be supported through land use and zoning policies that support transit-oriented development and reflect the benefits of increased access to alternative modes of travel. Policy examples include appropriate densities and intensities for supporting transit use, parking ratios that reflect reduced reliance on the automobile, and setback and design guidelines that result in pedestrian-supportive urban design. In addition, potential transit service identified for transportation corridors within the community should consider the land use, density/intensity, and urban design characteristics of the surrounding environment before selecting proposed technologies or finalizing service plans.

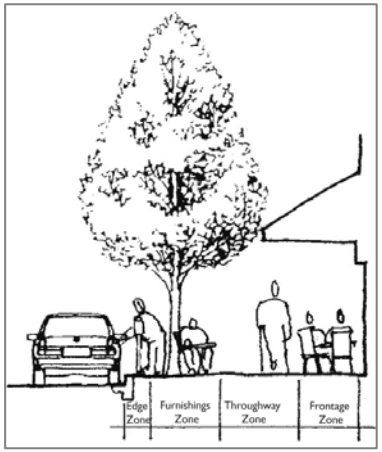
Site Design

The complete street truly is integrated into the surrounding environment when the interface between the site and the street is complementary to the pedestrian environment created along the entire corridor. Access to the site should be controlled through a comprehensive access management program to minimize excessive driveways that create undesirable conflicts for traveling pedestrians. Buildings with entrances facing the street or nearby on the sides of buildings, further defined by interesting landscape and architectural elements incorporated into the entrance area, should reinforce a positive pedestrian experience. Public paths through sites should be provided to shorten blocks longer than 600 feet.

Pedestrian Realm

The pedestrian realm of a complete street extends between the outside edge of sidewalk and the face-of-curb located along the street. Safety and mobility for pedestrians within this realm relies on the presence of continuous sidewalks along both sides of the street built to a sufficient width for accommodating the street's needs as defined by the environment. For example, suburban settings will require different widths than downtown settings. The quality of the pedestrian realm also is greatly enhanced by the presence of high-quality buffers between pedestrians and moving traffic, safe and convenient opportunities to cross the street, and consideration for shade and lighting needs.

The pedestrian realm may consist of up to four distinct functional zones: frontage zone, throughway zone, furnishing zone, and edge zone. The **frontage zone** is located near the back of the sidewalk and varies in width to accommodate potential window shoppers, stairs, stoops, planters, marquees, outdoor displays, awnings, or café tables. The **throughway zone** provides clear space for pedestrians to move between destinations and varies between 6 and 16 feet wide, based on the anticipated demand for unimpeded walking areas. The **furnishing zone** provides a key buffer between pedestrians and moving traffic. It generally measures at least 8 feet wide to accommodate street trees, planting strips, street furniture, utility poles, sign poles, signal and electrical cabinets, phone booths, fire hydrants, bicycle racks, or retail kiosks targeted for the pedestrian realm. The **edge zone** is incorporated into the pedestrian realm concurrent with the presence of on-street parking to allow sufficient room for opening car doors.



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Incorporation of one or more of these function zones in the pedestrian realm of a street generally is based on the context of the surrounding built environment. For example, a more urban, downtown environment will include all four zones in the pedestrian realm and could measure up to 24 feet wide. The pedestrian network located in a more suburban setting may omit one or more of the function zones listed above, resulting in an overall minimum width of 11 feet.

Recommended design elements for promoting a healthy pedestrian realm generally focus on one of four areas of concentration: pedestrian mobility, quality buffers, vertical elements, and public open space. Together, these best practices (as described in *Context-Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*) can be implemented in both urban and suburban environments, to varying degrees, for promoting healthy pedestrian environments.

Pedestrian Mobility

The presence of a comprehensive, continuous pedestrian network serves as the foundation for fostering a walkable community that supports active transportation and mode choice. Sidewalks generally provide clear zones of 6 to 8 feet wide to accommodate pedestrian travel. In more urban environments, amenities in the frontage zone and furniture zone will greatly increase the overall width of the corridor when compared with more suburban settings. Mid-block pedestrian crosswalks should be incorporated into the urban fabric as needed to ensure convenient crossing opportunities are provided approximately every 300 feet for maximum efficiency and safety within the pedestrian system. As a general rule, mid-block crossings should be considered on two-lane urban streets when the block length is greater than 500 feet and the posted speed limit for the travel lanes does not exceed 40 miles per hour.

Quality Buffers

Providing separation between pedestrians and moving traffic greatly enhances the character of the pedestrian realm. The amount of separation incorporated into the pedestrian realm may vary based on the building context or on streets with different travel speed and/or traffic volume characteristics. In downtown areas, parallel or angled on-street parking provides sufficient distance (8 to 18 feet) for separating pedestrian and vehicle traffic. Likewise, landscape planting areas (typically 5 feet wide) incorporated into urban or suburban environments provide adequate lateral separation for pedestrians. In urban areas, street trees may be placed in tree wells within an overall hardscaping surface instead of using suburban-style grass areas.

Vertical Elements

Vertical elements traditionally incorporated into the pedestrian realm include street trees, pedestrian-scale street lighting, and utilities. Street trees provide necessary shade to pedestrians and soften the character of the surrounding built environment. Trees should be spaced 15 to 30 feet apart, be adapted to the local environment, and fit the scale and character of the surrounding area. Pedestrian-scale street lighting incorporated into the pedestrian realm should consider metal halide fixtures mounted 12 to 20 feet high. Metal halide produces a truer, white-light compared with bluish light produced by Mercury vapor streetlights or yellow-orange produced by sodium streetlights. Metal halide streetlights produce lighting conditions where faces more easily can be recognized and the perception of public safety and security is enhanced. Utilities should not interfere with pedestrian circulation or block entrances to buildings, curb cuts, or interfere with sight distance triangles. In some cases, burying utilities underground avoids conflicts and clutter caused by utility poles and overhead wires. However, relocation of overhead utilities to tall poles on just one side of the roadway can be a cost-effective aesthetic alternative to burial of utilities in a duct bank under the road.

Public Open Space

The pedestrian realm serves a dual purpose within the built environment, acting as both a transportation corridor and a public open space accessible to the entire community. As a result, specific design elements incorporated into the pedestrian environment should reinforce this area as a public space. Properly planned, these design elements could provide opportunities for visitors to enjoy the unique character of the corridor in both formal and informal seating areas. Public art and/or specialized surfaces and materials introduced into the pedestrian realm are appreciated by slower moving pedestrians. In more urban areas, street furniture and/or outdoor cafes provide opportunities that foster community ownership in the pedestrian realm, such as people watching. Furthermore, building encroachments in downtown areas, such as stairs and stoops, provide interesting points of access to the pedestrian realm. Lastly, awnings and canopy trees provide shade, which is a welcomed relief during the summer.

Travelway Realm

The travelway realm is defined by the edge of pavement or curb line that traditionally accommodates the travel or parking lanes needed to provide mobility for bicycles, transit, and automobiles sharing the transportation corridor. Recommended design elements incorporated into the travelway realm attempt to achieve greater balance between travel modes sharing the corridor and favor design solutions that promote human scale for the street and minimize pedestrian crossing distance. Recommendations for the travelway realm focus on two areas of consideration: modes of travel and medians.

Multimodal Corridors

Balance between travel modes within the same transportation corridor fosters an environment of choice for mobility that could lead to reduced congestion on major roadways and a healthier citizenry. On a complete street, safe and convenient access to the transportation network for bicycles, transit, and automobiles is afforded within the travelway realm. Travel lanes for automobiles and transit vehicles should measure between 10 and 11 feet wide, depending on the target speed, to manage travel speeds and reinforce the intended character of the street. Parking lanes incorporated into the travelway realm should not exceed 8 feet in width (including the gutter pan) and may be protected by bulb-outs evenly spaced throughout the corridor. Bus stops located along the corridor should be well-designed to include benches and shelters that comfort patrons waiting for the bus. On-street bicycle lanes (typically 4 feet wide) should be considered when vehicle speeds range from 35 to 45 miles per hour. Wide outside lanes may be preferred on other streets. To avoid situations where citizens with only basic bicycle skills may be attracted to a corridor, designated bicycle routes on parallel corridors may be the best option when speeds on the major street exceed 45 mph. According to state law, bicyclists are considered vehicles and are permitted on all corridors except freeways and access-controlled highways.

Median Treatments

Medians often are incorporated into the travelway realm to provide dedicated left-turn lanes, opportunities for landscaping, and pedestrian refuge at crossings. Medians generally vary between 8 and 16 feet wide, depending on their intended application and the limitations of the surrounding built environment. Medians also reinforce other access management solutions provided within the travelway to reduce the number of conflict points and maintain the human scale intended for the complete street.

In addition to center medians, other access management solutions incorporated into the travelway realm should limit the number of individual driveways along the corridor and avoid the use of right-turn deceleration lanes. Together, these improvements will reduce the overall pedestrian crossing distance for the travelway and improve the safety for pedestrians traveling inside the pedestrian realm.

Intersection Realm

Evaluating potential changes for the intersection realm of a street requires careful consideration of the concerns of multiple travel modes that could meet at major intersections within the transportation system. Recommendations for improving the multimodal environment in and around these major intersections focus on two areas of the facility: operations and geometric design.

Geometric Design

Geometric design of an urban intersection should reinforce the operational characteristics of a traffic signal or roundabout. With traffic signals, this includes the introduction of curb extensions, or bulb-outs, to shorten pedestrian crossing distance and protect on-street parking near the intersection. Curb return radii designed for signalized intersections should be 15 to 30 feet to control turning speed around corners. At roundabouts, special consideration should be given to entry and exit speeds, pedestrian refuge in the splitter islands, and assigning predictability to the intersection for pedestrians, bicycles, and vehicles. Both intersection treatments may consider special pavement markings to distinguish pedestrian areas or bicycle lanes, although these surfaces need to be stable, firm, and slip resistant. Additional consideration should be given to maintaining adequate sight triangles in the intersection, addressing the treatment of bicycle lanes through the intersection, and compliance with federal requirements per the American with Disabilities Act for crosswalk and curb ramp design.

Operations and Safety

In terms of operations, traffic signals or roundabouts are the two most appropriate applications for traffic control devices that also could maintain the pedestrian scale of the street reinforced in the context, pedestrian, and travelway realms. The merits of a traffic signal rather than a roundabout for intersection control should be determined on a case-by-case basis after considering key issues such as desired traffic speed, availability of right-of-way, anticipated traffic patterns, and the context of the built environment surrounding the intersection. In general, small signalized intersections may be safer for pedestrians than roundabouts. However, studies of intersection widening always should consider a roundabout. Crash histories support the premise that roundabouts typically have less injury-inducing crashes than large signalized intersections. Furthermore, the slower vehicle speeds associated with most roundabouts result in less injury-inducing crashes when pedestrians are hit by a vehicle.

Recommended Cross Sections

Typical cross-sections that incorporate complete streets concepts are provided on the following pages. The cross sections illustrate complete streets that provide safe and convenient travel for all modes. These streets may require designs that differ from the status quo to create a transportation network that respects the needs of pedestrians, bicyclists, and motorists. Right-of-way for these streets ranges from less than 50 feet for a two-lane collector to nearly 120 feet for a six-lane divided freeway. Within the right-of-way, the sidewalks and landscaping strips shown in the cross sections are wider than presently found in FLATS MPO area. As a result, these recommendations will need to be carefully evaluated by agencies initiating roadway projects.

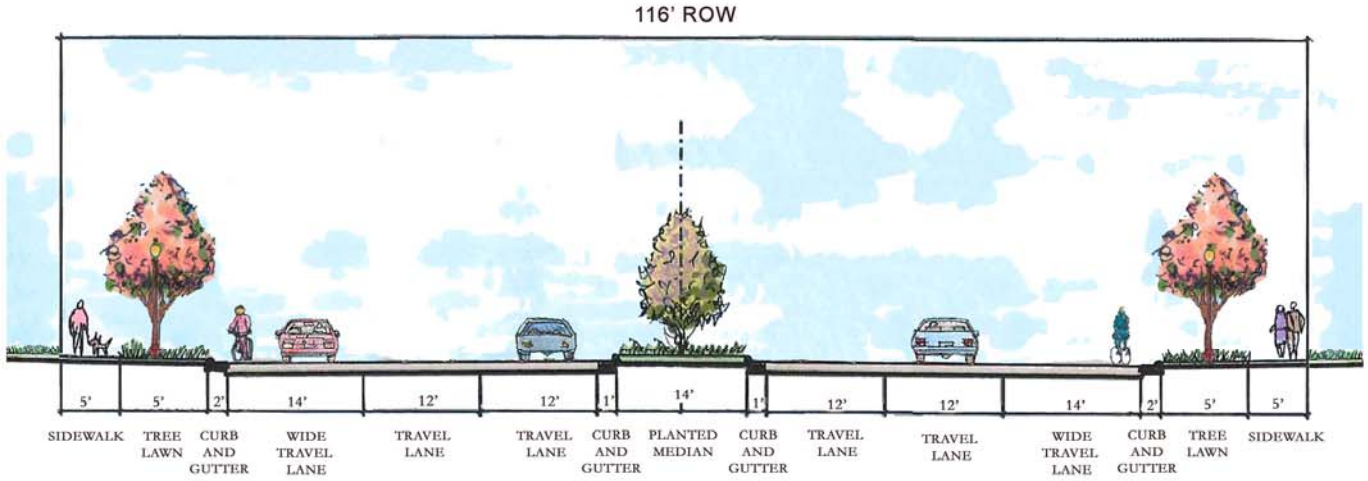
Table 5.8 describes the multimodal building blocks of street typology for the streets illustrated in the cross sections. A few of the illustrative cross sections include alternatives for bicycle facilities. The type of bicycle facility for these corridors should be determined on a case-by-case basis after considering the surrounding land uses and anticipated skill level of bicyclists on the corridors.

Table 5.8 – Elements of Street Typology

	Roadway Context	Access/ Mobility	Travel Lanes	Center Treatment	Bicycle Facilities	Pedestrian Facilities	Roadway Capacity
Principal Arterials							
6-Lane Divided w/ Wide Outside Lanes *116' Right-of-Way / 96' Roadway Width*	Urban/ Suburban	High mobility	2 - 14' 4 - 12'	14' planted median (1' curb/gutter)	14' wide outside lanes	5' sidewalks, both sides	35,000 to 50,000
4-Lane Divided w/ Wide Outside Lanes *96' Right-of-Way / 76' Roadway Width*	Urban/ Suburban	High mobility	2 - 14' 2 - 12'	14' planted median (1' curb/gutter)	14' wide outside lanes	5' sidewalks, both sides	28,000 to 40,000
4-Lane Divided w/ Bike Lanes *96' Right-of-Way / 76' Roadway Width*	Urban/ Suburban	High mobility	4 - 12'	14' planted median (1' curb/gutter)	4' bike lanes, both sides	5' sidewalks, both sides	28,000 to 40,000
5-Lane w/ Wide Outside Lanes *88' Right-of-Way / 68' Roadway Width*	Urban/ Suburban	High mobility	2 - 14' 2 - 12'	12' two-way left-turn lane	14' wide outside lanes	5' sidewalks, both sides	28,000 to 40,000
Minor Arterials							
4-Lane Divided w/ Multi-Use Path *88' Right-of-Way / 68' Roadway Width*	Urban/ Suburban	Moderate mobility	4 - 12'	14' planted median (1' curb/gutter)	10' multi-use path, one side	10' multi-use path, one side	28,000 to 40,000
2-Lane Divided w/ 8' Parallel Parking *78' Right-of-Way / 58' Roadway Width*	Urban	Moderate access/ Moderate mobility	2 - 12'	12' planted median (1' curb/gutter)	Use travel lane	5' sidewalks, both sides	12,000 to 20,000
3-Lane *64' Right-of-Way / 44' Roadway Width*	Suburban	High access/ Moderate mobility	2 - 14'	12' two-way left-turn lane	14' wide outside lanes	5' sidewalks, both sides	12,000 to 20,000
Collectors							
2-Lane Divided w/ Bike Lanes *70' Right-of-Way / 50' Roadway Width*	Suburban	Moderate access/ Moderate mobility	2 - 12'	12' planted median (1' curb/gutter)	4' bike lanes, both sides	5' sidewalks, both sides	12,000 to 20,000
2-Lane w/ Bike Lanes *56' Right-of-Way / 36' Roadway Width*	Urban/ Suburban	High access/ Moderate mobility	2 - 12'	None	4' bike lanes, both sides	5' sidewalks, both sides	9,000 to 14,000
2-Lane w/ Wide Outside Lanes *56' Right-of-Way / 36' Roadway Width*	Urban/ Suburban	High access/ Moderate mobility	2 - 14'	None	14' wide outside lanes	5' sidewalks, both sides	9,000 to 14,000
2-Lane *48' Right-of-Way / 28' Roadway Width*	Urban/ Suburban	High Access	2 - 12'	None	Use travel lane	5' sidewalks, both sides	9,000 to 14,000
Rural 2-Lane w/ Multi-Use Path *56' Right-of-Way / 36' Roadway Width*	Rural	High Access	2 - 12'	None	10' multi-use path, one side or 4' paved shoulder		9,000 to 14,000

Principal Arterial: 6-Lane Divided with 16' Median

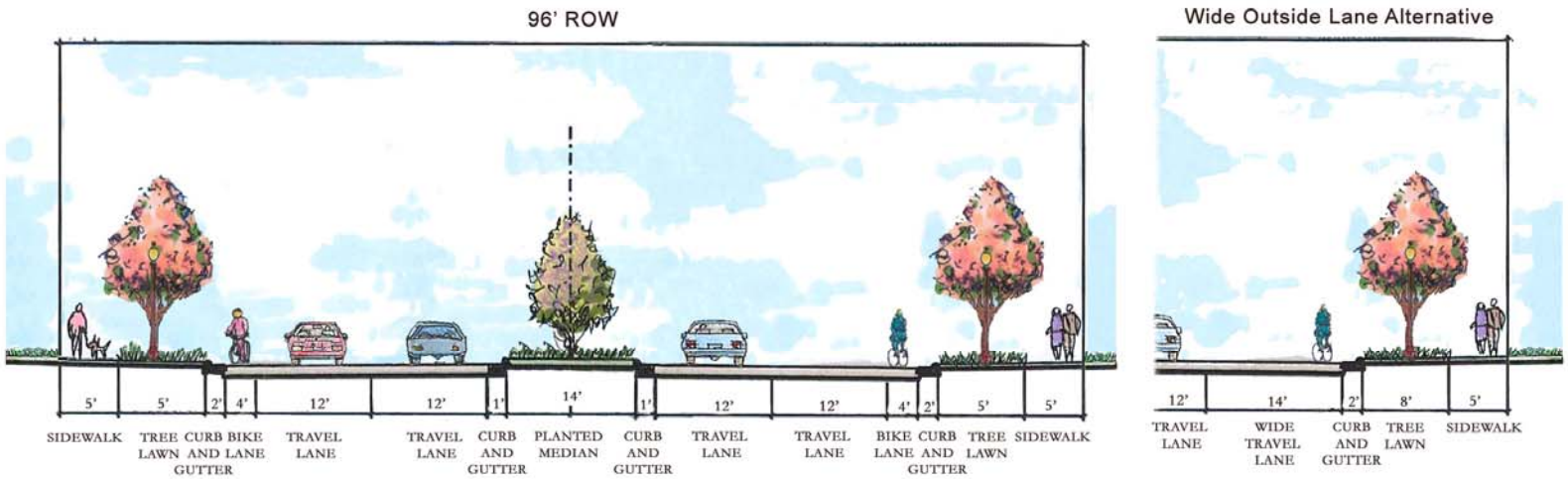
(6-Lane Divided with Raised Median, Wide Outside Lanes, Sidewalks, Landscaping)



Design Features	
Functional Classification	Principal Arterial
Roadway Context	Urban / Suburban
Access/Mobility	High Mobility
Right-of-Way Width	116'
Roadway Width	96' including 6 travel lanes, planted median, and curb and gutter
Traffic Lanes	4 12' travel lanes, 2 14' travel lanes)
On-Street Parking	None
Bicycle Facilities	14' wide outside lanes
Pedestrian Facilities	5' sidewalks, both sides
Median	14' planted with 1' curb and gutter
Tree Lawn	5', both sides
Roadway Capacity	35,000 to 50,000 vehicles per day

Principal Arterial: 4-Lane Divided with 16' Median

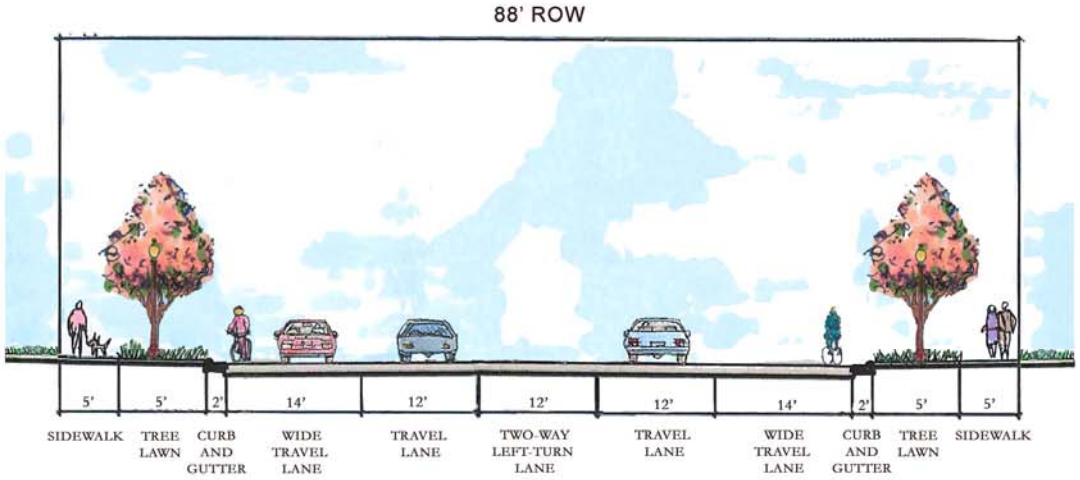
(4-Lane Divided with Raised Median, Bike Lanes, Sidewalks, Landscaping)



Design Features	
Functional Classification	Principal Arterial
Roadway Context	Urban / Suburban
Access/Mobility	High Mobility
Right-of-Way Width	96'
Roadway Width	76' including 4 travel lanes, bike lanes, planted median, and curb and gutter
Traffic Lanes	4 12' travel lanes (WOL alternative: 2 12', 2 14')
On-Street Parking	None
Bicycle Facilities	4' bike lanes or 14' wide outside lanes
Pedestrian Facilities	5' sidewalks, both sides
Median	14' planted with 1' curb and gutter
Tree Lawn	5', both sides
Roadway Capacity	28,000 to 40,000 vehicles per day

Principal Arterial: 5-Lane

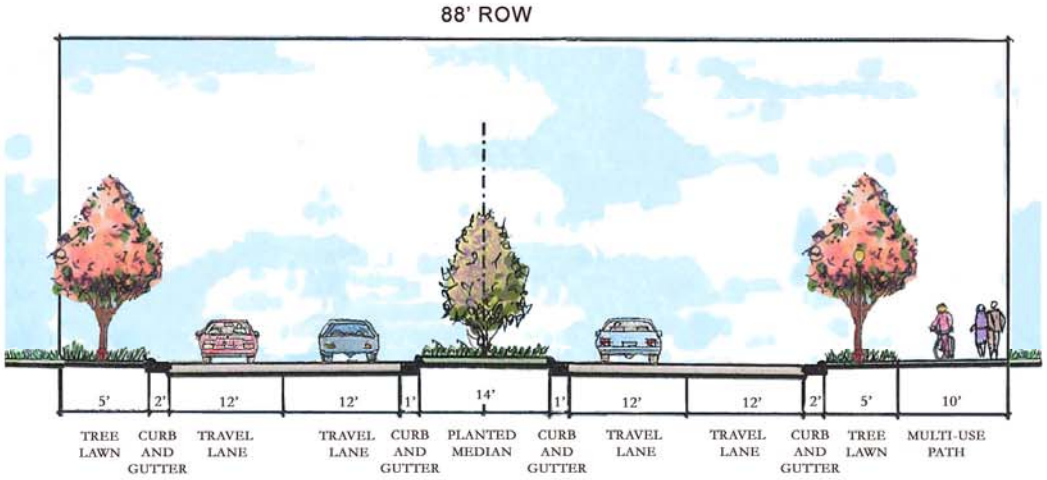
(5-Lane with Wide Outside Lanes, Sidewalks, Landscaping)



Design Features	
Functional Classification	Principal Arterial
Roadway Context	Urban / Suburban
Access/Mobility	Moderate Mobility / Moderate Access
Right-of-Way Width	88'
Roadway Width	68' including 4 travel lanes, two-way left-turn lane, and curb and gutter
Traffic Lanes	2 12' travel lanes, 2 14' travel lanes
On-Street Parking	None
Bicycle Facilities	14' wide outside lanes
Pedestrian Facilities	5' sidewalks, both sides
Median	None
Tree Lawn	5', both sides
Roadway Capacity	28,000 to 40,000 vehicles per day

Minor Arterial: 4-Lane Divided with 16' Median

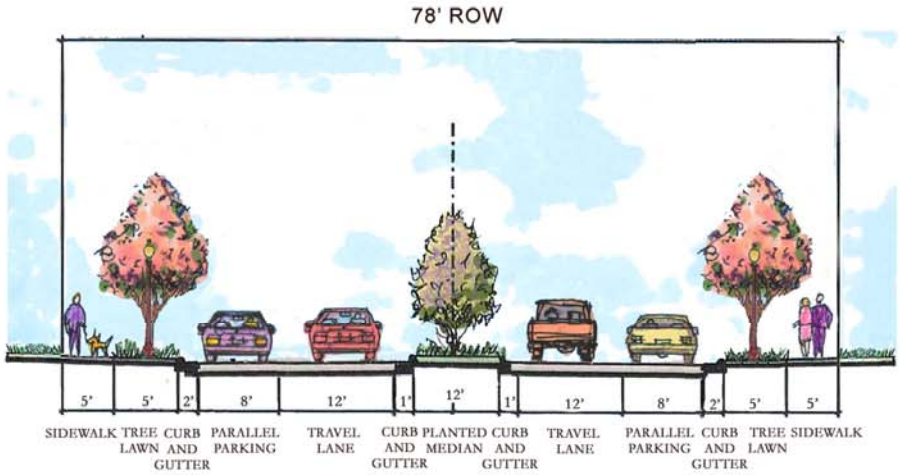
(4-Lane Divided with Raised Median, Multi-Use Path, Landscaping)



Design Features	
Functional Classification	Minor Arterial
Roadway Context	Urban / Suburban
Access/Mobility	High Mobility
Right-of-Way Width	88'
Roadway Width	68' including 4 travel lanes, planted median, and curb and gutter
Traffic Lanes	4 12' travel lanes
On-Street Parking	None
Bicycle Facilities	10' multi-use path, one side
Pedestrian Facilities	10' multi-use path, one side
Median	14' planted with 1' curb and gutter
Tree Lawn	5', both sides
Roadway Capacity	28,000 to 40,000 vehicles per day

Minor Arterial: 2-Lane Divided with Parking

(2-Lane Divided with Raised Median, Parallel Parking, Sidewalks, Landscaping)



Design Features	
Functional Classification	Collector
Roadway Context	Urban
Access/Mobility	Moderate Access / Moderate Mobility
Right-of-Way Width	78'
Roadway Width	58' including 2 travel lanes, parallel parking, planted median, and curb and gutter
Traffic Lanes	4 12' travel lanes (WOL alternative: 2 12', 2 14')
On-Street Parking	8' parallel, both sides
Bicycle Facilities	None
Pedestrian Facilities	5' sidewalks, both sides
Median	12' planted with 1' curb and gutter
Tree Lawn	5', both sides
Roadway Capacity	12,000 to 20,000 vehicles per day

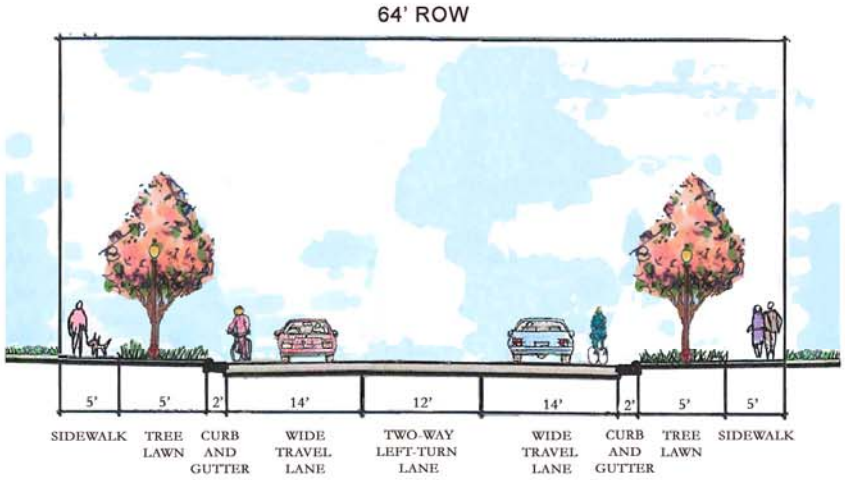
Notes

› The use of curb and gutter versus swale ditch will depend upon the street's proximity to development and the natural environment.

› The type (i.e. residential, commercial, rural, etc.) will depend on the adjacent land use served.

Minor Arterial: 3-Lane

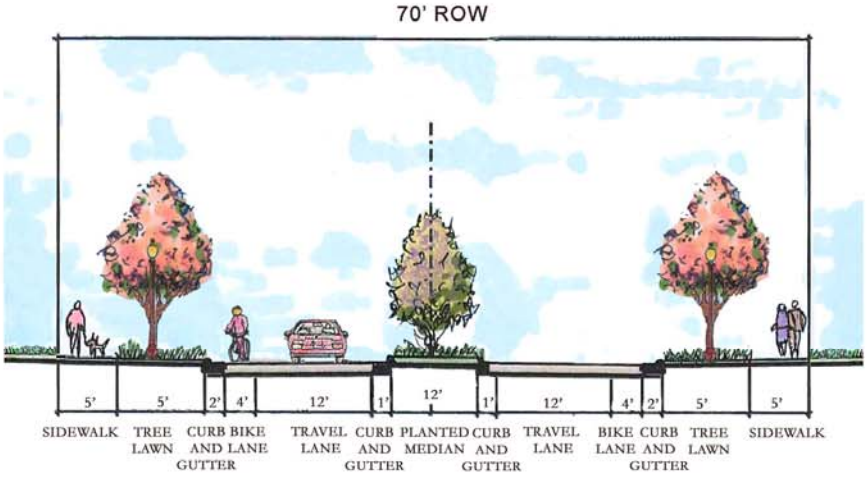
(3-Lane with Wide Outside Lanes, Sidewalks, Landscaping)



Design Features	
Functional Classification	Minor Arterial
Roadway Context	Urban / Suburban
Access/Mobility	Moderate Mobility / High Access
Right-of-Way Width	64'
Roadway Width	44' including 4 travel lanes, two-way left-turn lane, and curb and gutter
Traffic Lanes	2 14' travel lanes
On-Street Parking	None
Bicycle Facilities	14' wide outside lanes
Pedestrian Facilities	5' sidewalks, both sides
Median	None
Tree Lawn	5', both sides
Roadway Capacity	12,000 to 20,000 vehicles per day

Collector: 2-Lane Divided with Bike Lanes (14' Median)

(4-Lane Divided with Raised Median, Bike Lanes, Sidewalks, Landscaping)

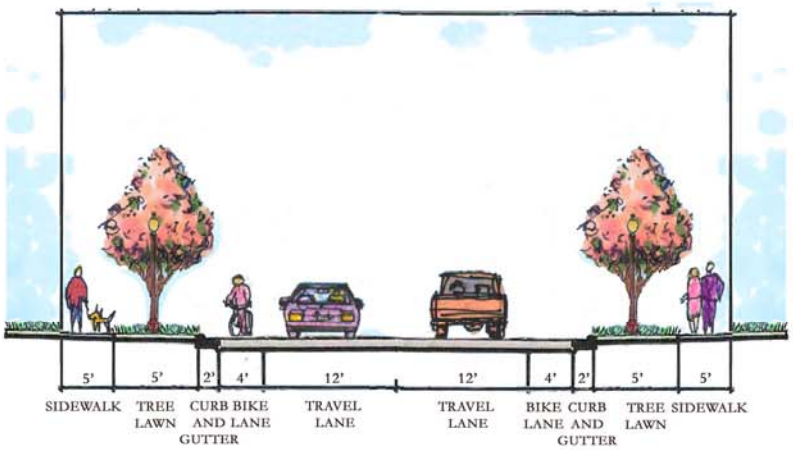


Design Features	
Functional Classification	Collector
Roadway Context	Suburban
Access/Mobility	Moderate Access / Moderate Mobility
Right-of-Way Width	70'
Roadway Width	50' including 2 travel lanes, bike lanes, planted median, and curb and gutter
Traffic Lanes	2 12' travel lanes
On-Street Parking	None
Bicycle Facilities	4' bike lanes
Pedestrian Facilities	5' sidewalks, both sides
Median	12' planted with 1' curb and gutter
Tree Lawn	5', both sides
Roadway Capacity	12,000 to 20,000 vehicles per day

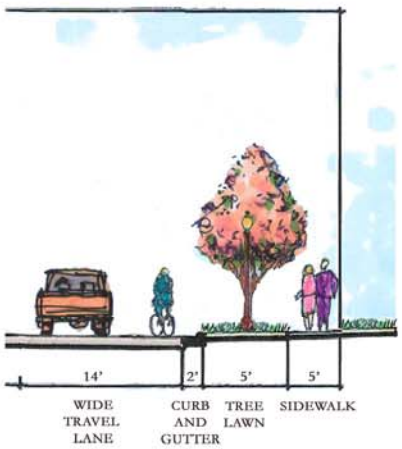
Collector: 2-Lane with Bicycle Facilities

(2-Lane, Bike Lanes, Sidewalks, Landscaping)

56' ROW



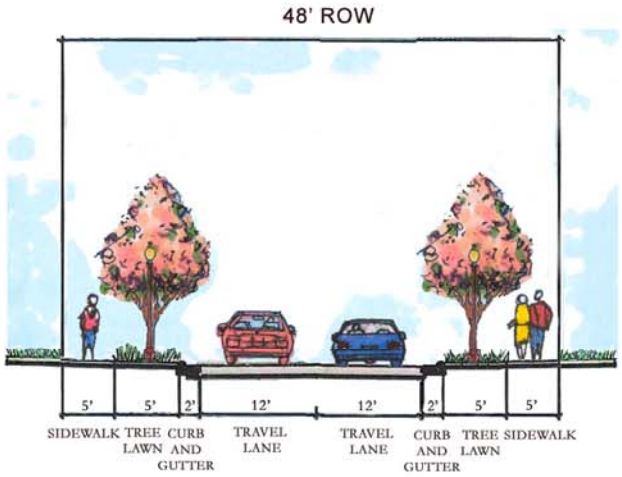
Wide Outside Lane Alternative



Design Features	
Functional Classification	Minor Arterial
Roadway Context	Urban / Suburban
Access/Mobility	High Access / Moderate Mobility
Right-of-Way Width	56'
Roadway Width	36' including 2 travel lanes, bike lanes, and curb and gutter
Traffic Lanes	2 12' travel lanes (WOL alternative: 2 12', 2 14')
On-Street Parking	None
Bicycle Facilities	4' bike lanes or 14' wide outside lanes
Pedestrian Facilities	5' sidewalks, both sides
Median	None
Tree Lawn	5', both sides
Roadway Capacity	9,000 to 14,000 vehicles per day

Collector: 2-Lane

(2-Lane, Sidewalks, Landscaping)



Design Features	
Functional Classification	Collector
Roadway Context	Urban / Suburban
Access/Mobility	High Access
Right-of-Way Width	48'
Roadway Width	28' including 2 travel lanes and curb and gutter
Traffic Lanes	2 12' travel lanes
On-Street Parking	None
Bicycle Facilities	None
Pedestrian Facilities	5' sidewalks, both sides
Median	None
Tree Lawn	5'
Roadway Capacity	9,000 to 14,000 vehicles per day

Notes

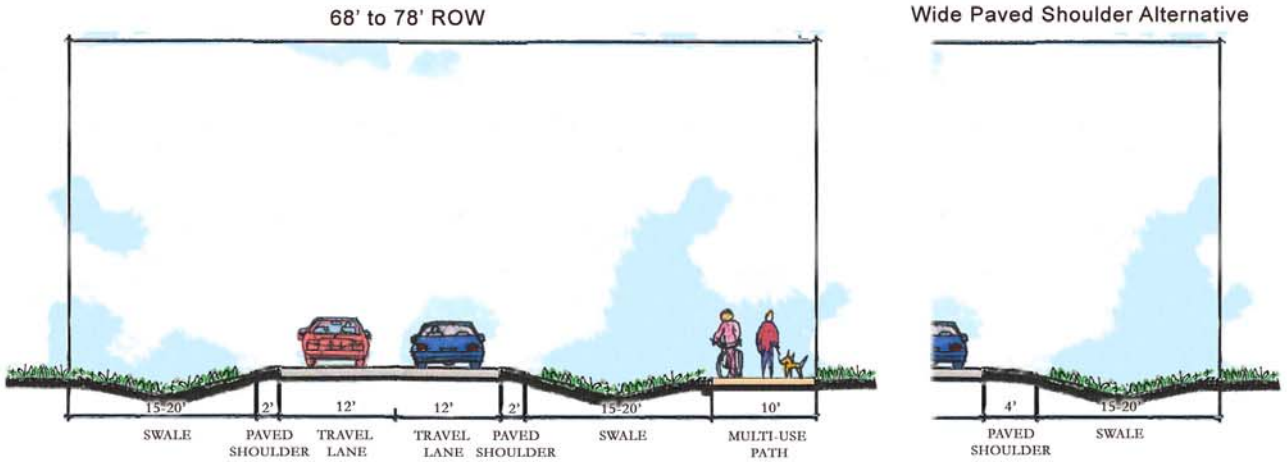
› An alternative to this cross section could include two 14' travel lanes with a 5' sidewalk on one side.

› The use of curb and gutter versus swale ditch will depend upon the street's proximity to development and the natural environment.

› The type (i.e. residential, commercial, rural, etc.) will depend on the adjacent land use served.

Rural Collector: 2-Lane with Multi-Use Path

(2-Lane, Multi-Use Path, Swale)



Design Features	
Functional Classification	Collector
Roadway Context	Rural
Access/Mobility	High Access
Right-of-Way Width	68' to 78'
Roadway Width	28' including 2 travel lanes, paved shoulders
Traffic Lanes	2 12' travel lanes
On-Street Parking	None
Bicycle Facilities	10' multi-use path, one side
Pedestrian Facilities	10' multi-use path, one side
Median	None
Tree Lawn	15' to 20' swale, both sides
Roadway Capacity	9,000 to 14,000 vehicles per day

Chapter 6

Bicycle and Pedestrian Element

Introduction

Throughout the nation, densely populated areas turn to cycling and walking as a viable means of transportation. Sometimes commuters find cycling more efficient, affordable, and convenient than traveling by automobile on congested urban streets. Even in Florence, the planning process for the *2035 FLATS Long Range Transportation Plan* (*2035 LRTP*) revealed local residents commute by bike to work at Francis Marion University. Although most people in the region and across the United States choose to travel by automobile, cycling and walking remains the only option for some people. For this reason, transportation plans no longer focus solely on roadway solutions.

The benefits of cycling and walking are well documented. Taking trips by bike or on foot improves the environment, promotes good health, saves money, eases the burden on roadways, and enhances the livability of a community. Many people choose to bike or walk for one or more of these reasons. For children, persons with disabilities, many elderly, and those who cannot afford an automobile, transit, bicycling, and walking may be their only option for many daily trips.

Members of the TPAC, residents, and stakeholders agreed the need exists to improve facilities for bicyclists and pedestrians. And despite the diversity of backgrounds represented through the public outreach efforts, a consensus was reached that programs are needed to balance the area's transportation network. The bicycle and pedestrian element serves as an educational tool — explaining the types of bicycle users and facilities, describing various pedestrian facilities, and discussing the interaction between these two modes and the larger transportation network. It also provides a toolbox of recommendations based on the "Five E's of Bicycle and Pedestrian Planning," promotes connections to key activity centers using a variety of facility types, and supports these facilities with programs and policies that educate, encourage, enforce, and evaluate the active and safe use of facilities.

The Florence Area Transportation Study completed a Bikeway Master Plan in 2004. The *2035 LRTP* is not intended to replace the Bikeway Master Plan but rather to expand on the recommendations of the plan and provide guidance for its implementation through the process. The bicycle and pedestrian element of the LRTP has evolved as product of community input and outreach, including coordination with members of the TPAC, SCDOT, local stakeholders, local officials, and the general public. This chapter begins with an overview of facility and program opportunities and a description of existing conditions. The chapter concludes with a set of proposed bicycle and pedestrian recommendations.

Five E's of Bicycle & Pedestrian Planning

The comprehensive package of projects and programs recommended for Florence rely on the Five E's of Bicycle and Pedestrian Planning. Addressing these five interrelated components helps create a transportation network that balances the needs of bicyclists, pedestrians, and motorists.

- **Engineering** — Engineering refers to the network of pathways that must be planned, designed, and constructed. A well-planned bicycle and pedestrian system can enhance user safety and enjoyment and may increase the attraction of each mode.
- **Education** — Once the pathways are in place, new and experienced cyclists and pedestrians must be made aware of their locations and the destinations that can be reached by using them. Bicyclists, pedestrians, and motorists must be educated on the "rules of the road" to ensure everyone's safety while operating on and adjacent to the bicycle and pedestrian facilities.
- **Encouragement** — People need to be encouraged to bicycle and walk. Encouragement should become easier as the network of pathways makes the Florence area more bicycle and pedestrian-friendly. As these facilities are constructed, encouragement is critical to justify their investment.
- **Enforcement** — To ensure safety of all users and the long-term sustainability of the bicycle and pedestrian system, the formal and informal "rules of the road" must be heeded by all.
- **Evaluation** — Periodic evaluation in the bicycle and pedestrian network is warranted. This analysis typically focuses on the amount of cycling and walking taking place in the community, the crash and fatality rate when pedestrians and cyclists are involved in traffic crashes, and ways the community works to improve these numbers. Local residents should be included in the evaluation of the area's programs and facilities.

Users and Facilities

To develop and integrate the Bicycle & Pedestrian Element into the LRTP, the types of users and facilities must be understood.

Bicycle Users

Types of users can be described in terms of trip purpose and skill level. Different reasons for taking to the street on bike or foot, combined with the varying levels of skill, require a bicycle and pedestrian plan that is flexible and responsive.

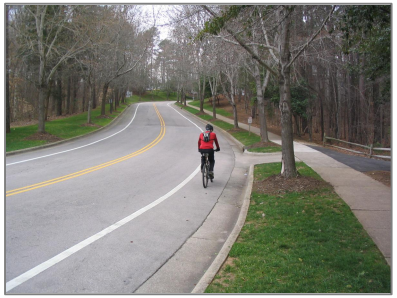
Types of Users by Trip Purpose

Bicycling and walking often falls into two distinct types of travel:

1. **Utilitarian, non-discretionary travel.** Often, children, persons with disabilities, and many elderly are not able to drive. In addition, some households simply cannot afford an automobile. According to the 2000 Census, approximately 11% of all households in the region do not have a vehicle available. This percentage is higher than both the state and national averages. For those unable to drive and persons living in households with no vehicles, the only option for daily necessary trips may be transit, bicycling, and walking.
2. **Recreational, discretionary travel**. As mentioned above, walking and bicycling are excellent methods of exercise, helping residents to establish a healthy lifestyle while enjoying the livability of their communities. Walking and bicycling for fun is increasing in popularity as Americans realize the benefits of these activities.

Both types of travelers require a complete network of bicycle and pedestrian facilities as well as programs that educate and encourage current and future users.

Types of Users by Riding Skill



Advanced Cyclists are usually the most experienced on the road and can safely ride in typical arterial conditions of higher traffic volume and speeds. Most advanced cyclists prefer shared roadways in lieu of striped bike lanes and paths but may be more willing to accept striped bike lanes when the street gutter is cleaned regularly. Although this group represents approximately 20% of all cyclists, they account for nearly 80% of annual bicycle miles traveled.

Basic Cyclists are less secure in their ability to ride in traffic without special accommodations. They usually are casual or new adult/teenage riders who typically prefer multi-use paths or bike lanes on collector or arterial streets. Such facilities reduce basic cyclists' exposure to fast-moving and heavy traffic. Surveys of the cycling public indicate that about 80% of cyclists can be categorized as basic cyclists.

Child Cyclists have a limited field of vision while riding and generally keep to the neighborhood streets, sidewalks, and greenways. On busier streets, this group likely stays on sidewalks or off-street facilities that protect them from traffic. In Florence, cycling on sidewalks is permitted everywhere except downtown. While riding on sidewalks should be discouraged, the comfort level of child cyclists' warrant riding on sidewalks provided they yield to pedestrians.

Bicycle Facilities

Like drivers, cyclists gain experience over time by riding. As cyclists ride and gain more experience operating in traffic, they graduate from basic to advanced cyclists. This transition ensures that the needs of all three types of cyclists must be constantly evaluated and accommodated. To make sure adequate amenities are available to users of all skill levels, the facilities identified here should be incorporated into roadway projects in Florence.

Facility Design References

Two guideline documents should be referenced during the actual design of bicycle and pedestrian facilities:

- *AASHTO Guide for the Development of Bicycle Facilities*—Referred to as the Bicycle Guide, this is a federal document which sets forth the current design practices accepted by FHWA. This document discusses planning, design, operations, and maintenance issues associated with bicycle facilities. With respect to design, it addresses with dimensions, grades, cross slopes, radii, acceleration rates, deceleration rates, and sight distances. The Bicycle Guide is not intended to establish strict standards. It provides "sound guidelines that are valuable in attaining good design sensitive to the needs of both bicyclists and other highway users" (p2).
- FHWA *Manual on Uniform Traffic Control Devices (MUTCD)*—Unlike the AASHTO Bicycle Guide, the MUTCD does constitute a standard. Failure to comply with the MUTCD can result in being denied federal funds and makes liable non-compliant jurisdictions in the event of a crash. The MUTCD addresses standards for signing, striping, markings, signals, islands, and traffic work zone devices (e.g., cones and barricades). It provides information on what symbols may be used on signs and when sign text can vary from the signs provided. The color, width, types and applications of striping are defined in detail. It also provides dimensions and shapes of pavement markings and pavement lettering.

On-Street Bicycle Facilities

On-street bike facilities are designated by striping, signing, and pavement markings on the public right-of-way for the preferential or exclusive use of bicyclists. The type of on-street facility recommended depends on the roadway classification and characteristics. Several types of on-street facilities can be used in conjunction with another to create a well developed bicycle network. These facilities are described in **Table 6.1.**

Table 6.1 On-Street Bicycle Facility Overview

Striped Bike Lanes **Description** ▪ Exclusive-use area adjacent to the outermost travel lane ▪ Typical width: 4' to 5'		**Target User** ▪ Basic and Intermediate Cyclists **Estimated Cost** ▪ $18,000 per mile (striping only)
Wide Outside Lane **Description** ▪ Extra width in outermost travel lane ▪ Best on roadways with speed limits of 35 mph or higher and moderate to high daily traffic volumes ▪ Typical width: 14' outside lane preferred		**Target User** ▪ Advanced Cyclists **Estimated Cost** ▪ $18,000 per mile (striping only)
Multi-Use Path **Description** ▪ Separated from traffic and located in open space (greenway) or adjacent to road with more setback and width than sidewalks (sidepath) ▪ Typical width: 10' preferred; 8' in constrained areas		**Target User** ▪ All Cyclists; Pedestrians **Estimated Cost** ▪ $600,000 per mile (includes clearing, grubbing, grading, and construction)
Paved Shoulders **Description** ▪ Extends the service life of the road by reducing edge deterioration ▪ Connects signed routes and rural roads to more urbanized areas ▪ Provides greater level of safety and comfort for bicyclists ▪ Typical width: 4' (no minimum width required)		**Target User** ▪ Advanced Cyclists **Estimated Cost** ▪ $500,000 per mile (assumes 4' paved shoulder during resurfacing)

Shared Roadways

Shared roadways are streets and roads where bicyclists can be served by sharing the travel lanes with motor vehicles. Usually, these are streets with low traffic volumes and/or low speeds, which do not need special bicycle accommodates in order to be bicycle-friendly.

Signed Bicycle Routes

Signed routes will be an integral part of the bicycling network in the Florence area. These facilities are an inexpensive way to guide riders to more bicycle-friendly roads. They can be used with any facilities listed above, including roads with bicycle lanes, shared roadways, and multi-use paths. The traffic and geometry of a road are important considerations when determining the location of a signed route. In addition, the functionality of the route for the purpose it was intended (e.g., scenic route or utilitarian connector) is a necessary component in the decision-making process.

SHARE THE ROAD signs (MUTCD W11-1 warning sign with Q28-1 subplate) can be used to alert drivers to the presence of bicyclists. They are typically considered when one or more of the following criteria are met:

- Safety problems exist and the roadway cannot be improved with bicycle lanes
- Bicycling volumes are high
- A conflict of obvious courtesy problem exists between vehicle and bicycle traffic sharing the road.

BIKE ROUTE signing (MUTCD D11-1 sign with D1-1b subplate) is another treatment which can be implemented to improve conditions for bicyclists. BIKE ROUTE signs help guide bicyclists to preferred routes—roads with lower motor vehicle traffic speeds, fewer trucks, or lower volumes. Typically they are supplemented with destination and distance signing.

Special signs should be designed to guide bicyclists along the recommended routes. These signs should incorporate their own colors and logos so that they can be recognized easily and help advertise the route to potential bicyclists, and should include the name of the route being utilized.

Other Bicycle Facilities and Amenities

Design considerations should also be given to ancillary bicycle facilities and amenities such as bike racks, bikes on buses, and bike amenities at transit stops, and bike-friendly drainage inlets. Additional descriptions of ancillary facilities are provided in the recommendations identified later in this chapter.

Pedestrian Facilities

Analysis and development of recommendations in this chapter involved reviewing pedestrian facility design guidelines for sidewalks and walkways, curb ramps, marked crosswalks and enhancements, and transit stop treatments.

Sidewalks and Walkways

The Federal Highway Administration (FHWA) defines sidewalks as "walkways that are parallel to a street or highway" and walkways as "pedestrian paths, including plazas and courtyards." The FHWA recommends that sidewalks and walkways be designed with the following characteristics in mind:

- Wide pathways with minimal obstacles or protruding objects
- Clearly defined pedestrian furniture and frontage zones
- Moderate grades and cross slopes
- Rest areas outside of pedestrian zone
- Minimal changes in level
- Firm, stable and slip resistant surfaces
- Good lighting

The Institute of Traffic Engineers (ITE), the American Association of State Highway and Transportation Officials (AASHTO), and FHWA all recommend a minimum width of 5 feet for a sidewalk or walkway to allow two people to pass comfortably or walk side-by-side, and they prefer 4 to 6-foot buffer zones be provided to separate pedestrians from the street. For those with mobility impairments, sidewalks and walkways should be designed to minimize grades and cross slopes. FHWA recommends that the grade and cross slope not exceed 5% and 2%, respectively, wherever possible.

Curb Ramps

For persons with disabilities, curb ramps provide critical access between the sidewalk and street. While allowing for site-specific designs for curb-ramps, FHWA suggests the ramp provide a level land area, be within the marked crosswalk area, avoid large changes of grade, and be distinguishable from surrounding terrain. The Federal Americans with Disabilities Act (ADA) mandates curb ramps at all intersections and mid-block locations where pedestrian crossings exist.

Marked Crosswalks and Enhancements

Marked crosswalks indicate the optimal location for pedestrians to cross a street. While crosswalks usually are installed at signalized intersections, mid-block crosswalks are becoming more popular. Where a higher level of pedestrian visibility is needed, the following enhancements can be incorporated into the crosswalk and street design:

- **Raised Crosswalk**. A raised crosswalk elevates the roadway by 3 to 6 inches, in effect reducing the speed of automobiles and providing increased visibility for high pedestrian-traveled areas. Raised crosswalks must be well-lit and well-marked to allow motorists to detect them at night and during inclement weather.
- **Pedestrian Refuge Island**. These raised islands in the center of a street protect pedestrians from vehicles. At such crossings, pedestrians can concentrate on one direction of traffic at a time by crossing to the center island and waiting for a gap in traffic to complete the trip across the street.
- **Curb Extensions**. Curb extensions can be placed at intersections or mid-block crossings. They extend the sidewalk into the street to improve pedestrian safety by calming traffic, increasing driver awareness of pedestrian activity, and shortening the crossing distance for pedestrians. When combined with landscaping, curb extensions can compensate for overly wide streets and improve the streets character.

Transit Stop Treatments

Most transit trips require pedestrian or bicycle connections. In addition to having well-planned routes, a good transit system provides riders with safe, accessible stops. The design of transit stops should be tailored to the number of riders and provide a buffer from vehicle traffic, sheltered seating, trash cans, bicycle parking, and clear signage that includes route information. To encourage active use of the transit system, a network of sidewalks and paths should connect high-volume transit stops to popular destinations. Pedestrian-level lighting along these paths improves visibility and increases safety for users.

Multi-Use Facilities

Some facilities are designed to accommodate both bicyclists and pedestrians. These multi-use facilities separate non-motorized users from automobile traffic.

Multi-Use Paths on Independent Alignments

Multi-use paths—or shared use trails—are becoming quite popular, not only with bicyclists, but also with many non-motorized transportation device users across the country. They can provide a high-quality bicycling experience in an environment that is protected from motorized traffic because they are constructed in their own corridor, often within open-space area. Multi-use paths can be paved and should be a minimum of 10-feet wide. Their width may be reduced to 8 feet if there are physical or right-of-way constraints. Additional width should be considered for areas with difficult terrain or heavy-traffic.

Multi-use paths are, in effect, little roads and should be designed with clearance requirements, minimum radii, stopping sight distance requirements, and other criteria just as roadways are designed. Additionally designers must comply with the MUTCD and AASHTO Bicycle Guide when designing these facilities.

Although paths should share geometric and operational design guidelines with roadways, they require a greater consideration of amenities. Shade and rest areas with benches and water sources should be designed along multi-use paths. Where possible, vistas should be preserved. Way finding signs (e.g., how far to the library or the next rest area, or directions to restrooms) are important for non-motorized users. These types of design considerations can help make a multi-use path more attractive to potential users.

Sidepaths/Wide Sidewalks

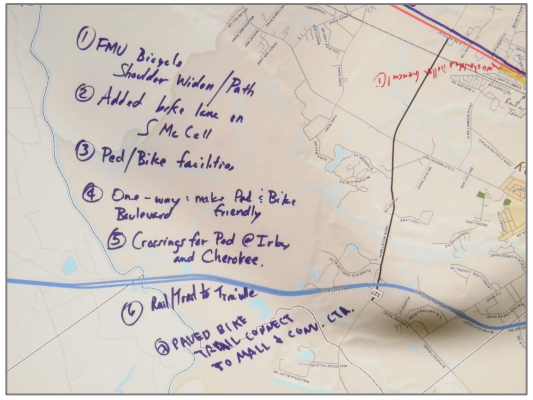
A sidepath is essentially a multi-use path that is oriented alongside a road. These AASHTO Guide to Development of Bicycle Facilities strongly cautions those contemplating a sidepath (or wide sidewalk) facility to investigate various elements of the roadway corridor environment and right-of-way before deciding upon a final design. AASHTO provides nine cautions/ criteria (pp34-35) for designing sidepaths. Research confirms that bicycle/motor vehicle crash rates can be higher for bicyclists riding on a sidepath compared to riders on the roadway. Crashes between motor vehicles and bicyclists on sidepaths can occur when motorists falsely expect bicyclists to yield at all cross streets and driveways. Likewise, stopped vehicles entering or exiting side streets or driveways may block the bicyclists' path. However, careful design can mitigate some of these concerns.

Some high-volume, high-speed roadways exist where sidepaths are the best bicycle facility that can be provided without very costly changes to the roadway corridor. In these cases, it may be desirable to provide a sidepath. This decision must consider the magnitude of intersecting driveway and roadway conflicts. If possible, sidepaths should be provided on both sides of the roadway to encourage bicyclists to ride in the same direction as adjacent traffic. The long-term strategy on these roadways should be to widen the road or narrow the lanes to provide additional space for bicyclists in on-street bike lanes or shoulders.

Assessment & Recommendations

As discussed earlier, bicycling and walking falls into two distinct types of travel: utilitarian (non-discretionary) travel and recreational (discretionary) travel. Bicycling and walking are important modes of transportation in Florence and throughout the Pee Dee region, and these modes are available to people of all ages and socioeconomic backgrounds. In urban areas such as downtown Florence, the modes are efficient and convenient ways to travel. And throughout the region, recreational bicycling is gaining in popularity as expert and novice cyclists take to the scenic rural roads. Regardless of the trip purpose, bicycling and walking provide a high level of independence, flexibility, and freedom of choice relative to where you want to go and when you want to get there.

As roads become more congested, cities increasingly seek better ways to move people from place to place. Because roads cannot be expanded infinitely, other facilities such as bikeways, sidewalks, and transit are important to foster transportation options. A complete network of bicycle and pedestrian facilities as well as programs that educate and encourage current and future users is necessary for bicycling and walking to reach its potential as a transportation alternative in the Florence area. The assessment and recommendations that follow are based on the public outreach feedback received during the *2035 LRTP* planning process as well as the outcome of the 2004 Bikeway Master Plan.



Public Outreach Efforts

Local officials must consider how projects and programs support a spectrum of planning factors. The recommended projects, programs, and initiatives that form the Bicycle & Pedestrian Element:

- Support economic vitality
- Increase safety and security of the transportation system
- Increase accessibility and mobility of people
- Protect and enhance the environment
- Foster connectivity across and between modes
- Emphasize preservation of the existing transportation system.

During public outreach, a passionate and vocal group of bicycle and pedestrian enthusiasts expressed concern for biking and walking in Florence and outlined a collective vision for a more livable community. The vision focused on connecting key activity points such as downtown, libraries, parks, retail areas, Francis Marion University, the performing arts center, and medical facilities. Specific comments included:

- The downtown network generally has good connectivity but lacks proper lighting and is poorly maintained in some locations.
- Consider building trails within the electric utility right-of-way.
- Add bike facilities along Palmetto Street connecting from west of Florence to Francis Marion University.
- Pamplico Highway and Second Loop Road need improvements.
- We need to improve bike/ped crossings near Magnolia Mall.
- Make 5 Points safer for bicyclist and pedestrians.

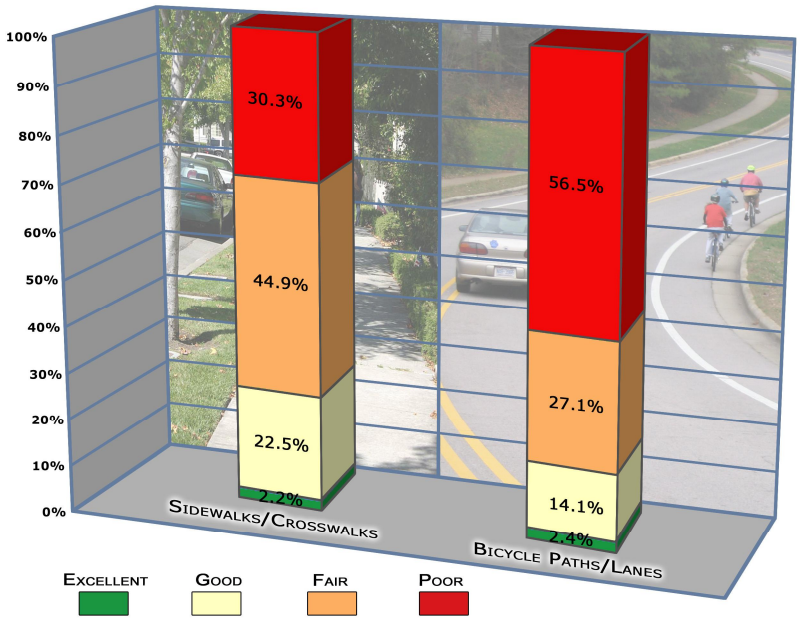
In most cases, their concerns about gaps in the network and unsafe conditions were validated by previous planning efforts (such as the 2004 Bikeway Master Plan) and a review of existing conditions.

Questionnaire Results

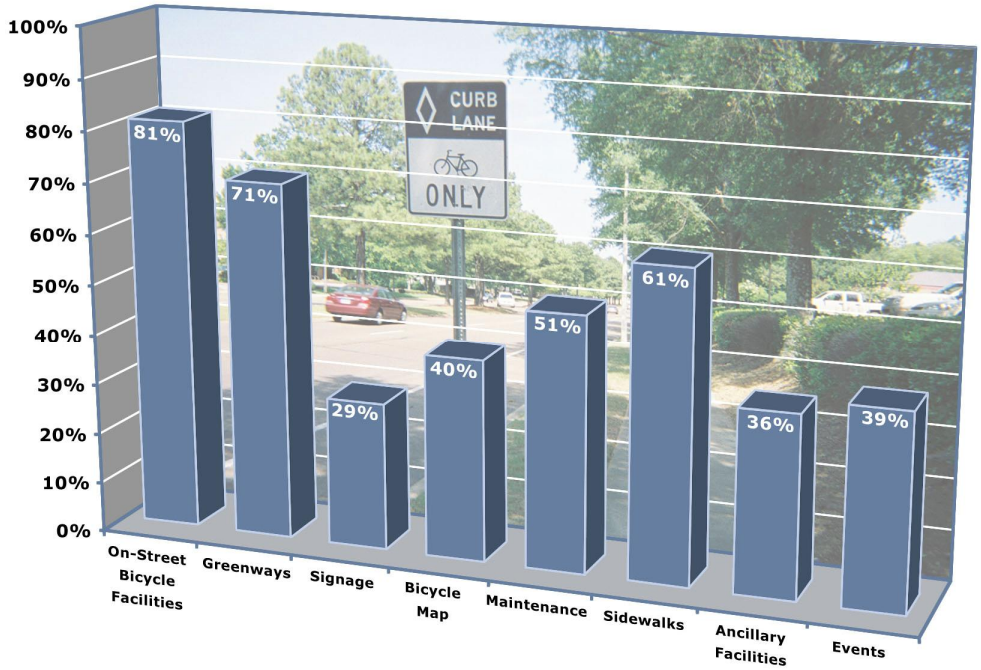
The public questionnaire distributed as part of the long range transportation plan asked participants to rate various elements of the transportation system including bicycle and pedestrian facilities. Sidewalks were rated "fair" or "poor" by 75% of respondents and bicycle facilities were rated "fair" or "poor" by 84% of respondents. Furthermore, only two people gave sidewalks a rating of excellent and no one said the bikeway network was excellent. Only one respondent rated sidewalks and bicycle facilities as excellent.

In addition, the public questionnaire asked participants what improvements could be made to increase their use of bicycling and walking. As shown in the chart below, the majority of answers pointed to on-street bicycle facilities, greenways, and sidewalks. This supports the notion of "if you build it, they will come."

How would you rate the following in the area?



What improvements could be made to increase your use of bicycling or walking?



Bicycle Network

Bicyclists can share multi-use paths with pedestrians or choose to mix with vehicular traffic on roadways. Therefore, bicycle facilities can range from no accommodation for bicyclists to striped bike lanes and off-road multi-use paths. The target user for each application and the unique circumstances of the particular roadway help determine the most appropriate bicycle treatment. For example, on roadways with relatively low automobile volumes and slow travel speeds, experienced bicyclists often feel comfortable riding in traffic with no specific bicycle facilities provided. Marked bicycle facilities or adjacent bicycle paths are desirable as traffic volumes and travel speeds become higher.

Policy Review

Adopted policy and planning documents and programs have an on-going effect on bicycling in the Florence MPO area. The Florence County zoning ordinance encourages construction of greenways (defined as linear belts linking residential areas with other open space areas). Greenways can include bicycle paths, footpaths, and bridle paths, and connecting greenways between residences and recreational areas is encouraged. Maintenance is limited to a minimum of removal and avoidance of hazards, nuisances, or unhealthy conditions.

Existing Bicycle Facilities

The bicycle network in Florence and the surrounding area is limited. Less than 4 miles of wide outside lanes exist, and the region does not have any bicycle lanes. Of the priorities identified in the 2004 Bikeway Master Plan, only portions of the Rail Trail Spur have been completed. The Rail Trail Spur is a 10-foot multi-use path. Although a high priority project for improving connectivity to important destinations, including West Florence High School, the length of new trail added to the current network has been minimal (less than 2.0 miles).

City of Florence Trail System

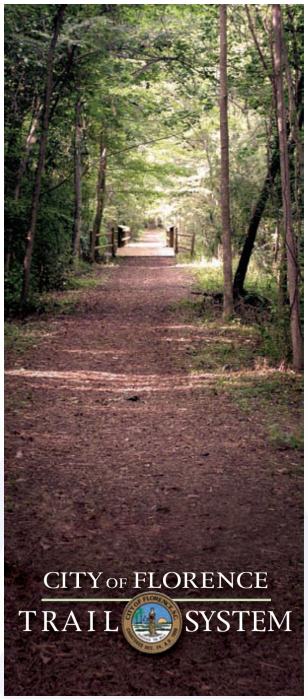
In 2004, the Florence City Council with support of the Parks, Beautification and Leisure Services Commission established a vision for protecting natural corridors and open space within the City of Florence. The vision was to utilize natural features to link natural areas, parks, cultural features, and historic sites for conservation, recreation, and alternative transportation. The key link in the system is Jeffries Creek, which serves as a potential green necklace around the City. The following description of the trail system is included in a brochure produced by the City of Florence. The brochure map is shown on page 6-12.

Trail Connections

The Florence Trail System is comprised of three distinct groupings of trails, each with its own identity and complex of features. Each group of connecting trails or "connections" is shown on the map, along with information on the features being linked together.

Rail Trail Connections

This grouping consists of approximately 10 miles of trails, and provides for individual health and fitness, recognition of environmentally significant areas, opportunities for social interaction in an outdoor environment and introspective experiences. Health and fitness was the primary focus of the original "Rails-to-Trails" facility. Here a hard-surfaced trail provides a venue for personal or group exercise in a pleasing outdoor setting.



An important component of the original Rails-to-Trails was the development of urban transportation modes to supplement the traditional use of vehicular traffic on highways. The first phase of this group of trails, commonly called the Rail Trail, was completed in 2002 and provided the basis for future alternative routes. Alternative transportation opportunities are now provided to the Civic Center, area hotels, restaurants and retail establishments, Lowe's and Hobby Lobby, as well as West Florence High School and residential neighborhoods.

The Veterans Park Trail, in conjunction with the park, provides unique opportunities for personal reflection or meditation. Partnerships with Byrd Properties, Inc. have enabled the City to preserve a significant block of Jeffries Creek wetlands between the creek and Woody Jones Boulevard. The trail traverses this natural area and terminates at the Veterans Park. At the trail's terminus, the Veterans Park invites the public to consider the lives and sacrifices of military personnel who served in uniform during the 20th century.

Urban Connections

This grouping of urban streetways focuses on the connections of city parks to the emerging cultural center in downtown Florence. The parks, strategically located in residential neighborhoods, provide both athletics-based recreation and an opportunity for urban residents to enjoy walking and picnicking in natural settings.

The downtown areas showcase a renaissance of arts and culture that is symbolized by new buildings and new energy for the Florence Downtown. The Florence County Library relocated to its current site on Dargan Street in 2005. In addition to standard library offerings, a wealth of information is available on the history of the City of Florence, Florence County and the Pee Dee area. The Florence Little Theatre, Florence's oldest arts-based performance group, constructed a new building and relocated to Dargan Street in 2008. Francis Marion University's Performing Arts Center, to be constructed downtown, will not only house the University's new music and arts majors, but will also provide the Greater Florence community with a high-capacity auditorium for cultural events and artistic performances. This premier facility will advance the image of the downtown area and act as another catalyst for future development.

Freedom Florence Connections

History, education, environmental protection and recreation may be encountered and appreciated along approximately eight miles of these east Florence trails. This connection corridor runs generally north-south, with Levy Park Community Center located at the northern terminus and an athletics-based recreation facility, Freedom Florence Recreational Complex, at the southern terminus. In between, however, the user will find connections to a wide variety of information and experiences.

Environmental protection is highlighted at two locations – the Pye Branch SWIM project area and the City's wastewater management facility. At the SWIM project, users can observe environmentally degraded wetlands which are being restored by the City to a more natural condition. Coupled with the City's planned wastewater management facility, which is projected to be completed by 2012, the Florence community will share in, and benefit from, environmental technologies that minimize energy use and odors, reduce waste and reclaim stormwater and wastewater. In educational partnerships with organizations like Science South on Jeffries Creek, the community, especially school classes, will be able to gain an appreciation of water management and its communal benefits.

As with the Veterans Park, the Florence Stockade and the adjoining U.S. National Cemetery give the user an opportunity to quietly consider the struggles and suffering inherent in military conflicts. While the Stockade and National Cemetery came into being during the Civil War, veterans from all wars since that time have been, and are still being, interred here.


THE FLORENCE TRAIL SYSTEM
Special Thanks to:
• Florence Oak Council
• HRM Florence LLC
& TMB Florence LLC
• Peart-Robin Inc.
• Lowe's Home Center
• Naturally Outdoors/ Bicycle World
• McLeod Health
• Wal-Mart
• Affordable Suites
• Mrs. Bridge & Lee Foundation
• Bird Properties, Inc. LLC
• Florence School District One
• Pepsi Cola Bottling Company of Florence, S.C.
• Sertoma Club
• S.C.P.R.T.
• S.C.D.O.T.
• Dr. D. Edward Floyd & Family
• Friends of the Florence Stockade
• Goforth, Brown & Associates
Rail Trail Connections
1. Cypress Knee Loop
2. Hoffmeyer Connector
3. Knights Trek Loop
4. Live Oak Connector
5. McLeod Crossings
6. No Name Creek Trail
7. Rail Trail
8. Rutledge Manor Trail
9. Sneed School Trail
10. Veterans Park Trail
Urban Connections
11. Iola Jones Park Connector
12. Jeffries Creek Loop
13. Levy Park Connector
14. Maple Park Connector
15. McLeod Park Connector
16. Northwest Park Connector
17. South Connector
18. Timrod Park Connector
Freedom Florence Connections
19. Cemetery Trail
20. Deer Track Loop
21. Freedom Trail
22. Sarratt's Mill Pond Trail
23. Mckeown Loop
24. Rifle Pit Trail
25. Stockade Trail
26. Triple Oak Trail
27. Wood Duck Trail
Fitness Trails
28. Carver Fitness Trail
29. Leatherman Ctr. Fitness Trail
30. Levy Fitness Trail
31. Northside Fitness Trail
32. Northwest Fitness Trail
33. South Park Fitness Trail
34. Timrod Park Fitness Trail
=Parking
Hoffmeyer
Cashua
Darlington
Evans
Maple Park
David H. McLeod
Palmetto
Cherokee
Second Loop
Third Loop
Pamplico
Freedom
Oakland
Irby
Woods
Ebenezer
Pine Needles
Florence Civic Center
Magnolia Mall
Wal-Mart
Veterans Park
Rail Trail
Rutledge Manor
Sneed Middle School
Live Oak Park
McLeod Health & Fitness
Naturally Outdoors
McLeod Park
Jeffries Creek Park
Timrod Park
Little Theatre
Library
National Cemetery
Lester Park
North West Park
North Side Park
City County Complex
Iola Jones Park
Levy Park
Recreational Complex
Freedom Florence
South Park
Friendship Park
Arts & Cultural District
Downtown
I-20
I-95

Proposed Bicycle Facilities

On-street facilities such as bicycle lanes, wide outside lanes/paved shoulders, and signed routes should be carefully coordinated depending upon the intended character of the street and anticipated experience level of cyclists. These facilities should be supplemented with multi-use paths where appropriate. The importance of improving the bicycle network was clear based on the response to the funding question on the questionnaire distributed as part of the planning process. Of $100 to invest in the transportation network, residents allocated a total of $26 for bicycle facilities (on-street and greenways/trails.

Bikeway Master Plan (2004) Priorities

As part of the Bikeway Master Plan, multiple public summits were held. These summits, along with a thorough review of transportation challenges in the area, led to a set of recommendations. The plan lists the recommendations by the following priority levels:

High Priority

- **Darlington Street Bikeway**
  (signed bike route, shoulder/bike lane, off-street bike path)
- **Rail Trail Spur** (multi-use path)
- **South Rail Trail Extension** (multi-use path)
- **Parks Connector** (bike lane, signed bike route, striped shoulder)
- **McLeod Park Bikeway** (multi-use path)
- **Downtown Connector**
  (bike lane, signed bike route, wide outside lane)

Medium Priority

- **Church Street Bikeway** (wide outside lane)
- **Palmetto Connector** (shoulder/bike lane, signed bike route)
- **Third Loop Connector**
  (signed bike route, striped bike lane/ shoulder, wide outside path)
- **Freedom Florence Bikeway** (multi-use path)
- **Francis Marion Connector** (signed bike route)
- **South Cashua Bikeway** (signed bike route)

Low Priority

- **North Rail Trail Extension** (multi-use path)
- **Lynches River Connector** (striped shoulder)
- **Northeast Connector**
  (wide outside lane, striped shoulder, signed bike route)

Recommended Bicycle Network

The recommended bicycle network includes a coordinated group of on-street facilities and off-street paths. These facilities are shown in **Figures 6.1** and **6.1a**. On-street facilities such as bicycle lanes, paved shoulders, and wide curb lanes should be carefully located depending upon the intended character of the street and anticipated experience level of cyclists. These facilities should be supplemented with multi-use paths where appropriate. In total, the recommended bicycle facilities equal nearly 90 miles of on-street improvements and nearly 11 miles of off-street multi-use paths. Signed bike routes and wide outside lanes/paved shoulders comprise the majority of on-street bike facility recommendations. The improvements include facilities proposed as part of the 2004 Bikeway Master Plan as well as recommendations developed through the public involvement efforts of the *2035 LRTP* and subsequent analysis.

Connectivity should be an integral part in all residential and commercial developments. Where connections for motor vehicles are not provided, multi-use paths can provide connections within and shortcuts through neighborhoods (.e.g., connecting two cul-de-sac streets). Many of the recommendations presented in throughout this chapter could be implemented by the private sector during the land development process. In addition to requiring these facilities, adopted city and county policies should specify the private sector's role in financing and/or constructing these projects.

The construction of on-street bicycle facilities and sidewalks can occur as stand-alone enhancement projects or can be incorporated into public and private infrastructure projects. The second option may be more time- and cost-effective. Infrastructure projects include roadway widening, regular street maintenance, utility work, and new road construction. Adopted city and county policies should require that these projects provide new bicycle and pedestrian facilities.

Striped Bicycle Lanes

A striped bicycle lane is recommended for three corridors in Florence totaling 3 miles:

- **E. Cheves Street** — S. Dargan Street to E. Palmetto Street
- **S. Dargan Street** — E. Cheves Street to National Cemetery Road
- **Park Avenue** — W. Palmetto Street to Wisteria Drive

The one-mile corridor on East Cheves Street corresponds with roadway improvements recommended as part of the McLeod Regional Medical Center Main Campus Master Plan. The eastern terminus of the bicycle lane will occur at a redesigned intersection of Cheves Street and Palmetto Street. At this point, cyclists traveling eastbound toward the airport can utilize a combination of bicycle facilities, including multi-use paths and wide outside lanes to reach Francis Marion University.

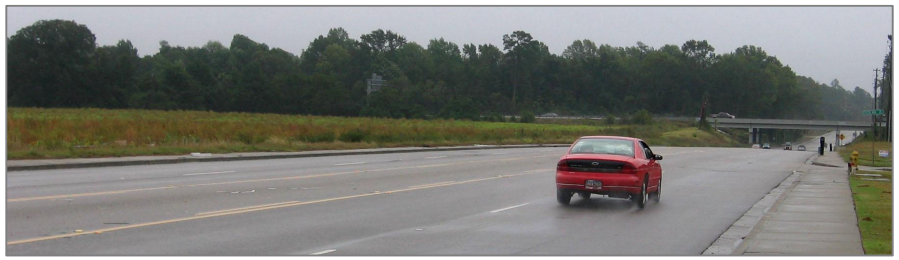
The recommended bicycle lanes on South Dargan Street and Park Avenue correspond with recommendations from the 2004 Bikeway Master Plan. The South Dargan Street bicycle lane will improve connections for bicyclists to the Doctors Bruce and Lee Foundation Library, McLeod Medical Center, and downtown Florence. The wide pavement that exists along the corridor will permit restriping for a bike lane without having to widen the road. The proposed facility on Park Avenue is part of a larger effort to provide access to Jeffries Creek Park, Lucas Park, and Timrod Park as well as to schools on Wisteria Drive.

The eastern terminus of the East Cheves Street bicycle lane will connect to a planned sidepath at the redesigned intersection with East Palmetto Street.

Wide Outside Lanes/Paved Shoulders

The recommended wide outside lanes and paved shoulders provide extra room for bicyclists and motorists without having to exclusively dedicate pavement to bicyclists. The type of treatment in this category will depend on the presence of curb and gutter. Where curb and gutter is or will be provided, a wide outside lane is recommended. Along rural routes with swale drainage, a paved shoulder is the preferred treatment. Paved shoulders not only will serve bicyclists but also will serve pedestrians when a sidewalk is not present and provide a vehicle refuge for distressed vehicles and a buffer for truck traffic traveling on these routes.

The recommendations help complete the bicycle network by connecting to other existing and recommended facilities. Currently, 3.8 miles of existing wide outside lanes are provided within the bicycle network. This measurement does not account for all wide outside lanes or paved shoulders in the study area, but instead accounts for the existing facilities along key links in the bicycle network. Cherokee Road, National Cemetery Road, Oakland Avenue, Alligator Road, and Howe Springs Road account for a portion of the 40.5 miles of recommended wide outside lanes/paved shoulders.



Wide Outside Lane on Hoffmeyer Road

Signed Bike Routes

As an inexpensive facility to guide riders to bicycle-friendly roads, signed routes are an integral part of the recommended bicycle network. The recommended signed routes were selected to encourage bicyclists to travel on lower volume routes, both within city limits and in rural areas. Bicyclists will benefit from the increased motorist attention to them as they move from one signed facility to higher level facilities such as striped bike lanes or wide outside lanes. More than 46 miles of signed routes are recommended, including portions of Second Loop Road, Pamplico Highway, Cashua Drive, and Darlington Street.

Multi-Use Paths

In the public questionnaire, 71% of respondents identified improvements to the greenway network as a reason they would increase their amount of bicycling and walking. Multi-use paths serve bicyclists and pedestrians and protect users from traffic. These facilities include greenways and sidepaths. Approximately 11.9 miles of new multi-use paths are proposed, located along the Pye Branch in eastern Florence, Jeffries Creek west of Florence, and East Palmetto Street. In some locations, the recommended multi-use paths overlap with the City of Florence Trail System.

Bicycle Loops

The network of on- and off-street bicycle facilities provides the opportunity to create a system of bicycle loops. Recommended loops consist primarily of on-street facilities, but they utilize off-street multi-use paths when possible. These loops can be examined from the perspective of individual routes or as an overall interconnected system. The idea is to provide an interconnected system of bike facilities that cater to all levels of experience. Loop routes could even be named or color-coded and displayed at strategic locations throughout the MPO area to provide current information to users and enhance the awareness of cycling in the region. The six recommended bicycle loops vary in size and are shown in **Figure 6.2**. The loops include:

- **Cherokee Loop** — 6.1 miles
- **Downtown Loop** — 7.8 miles
- **Francis Marion Trail** — 21.6 miles
- **Monticello Mile** — 11.5 miles
- **Palmetto Pathway** — 16.8 miles
- **Quinby Pathway** — 16.6 miles

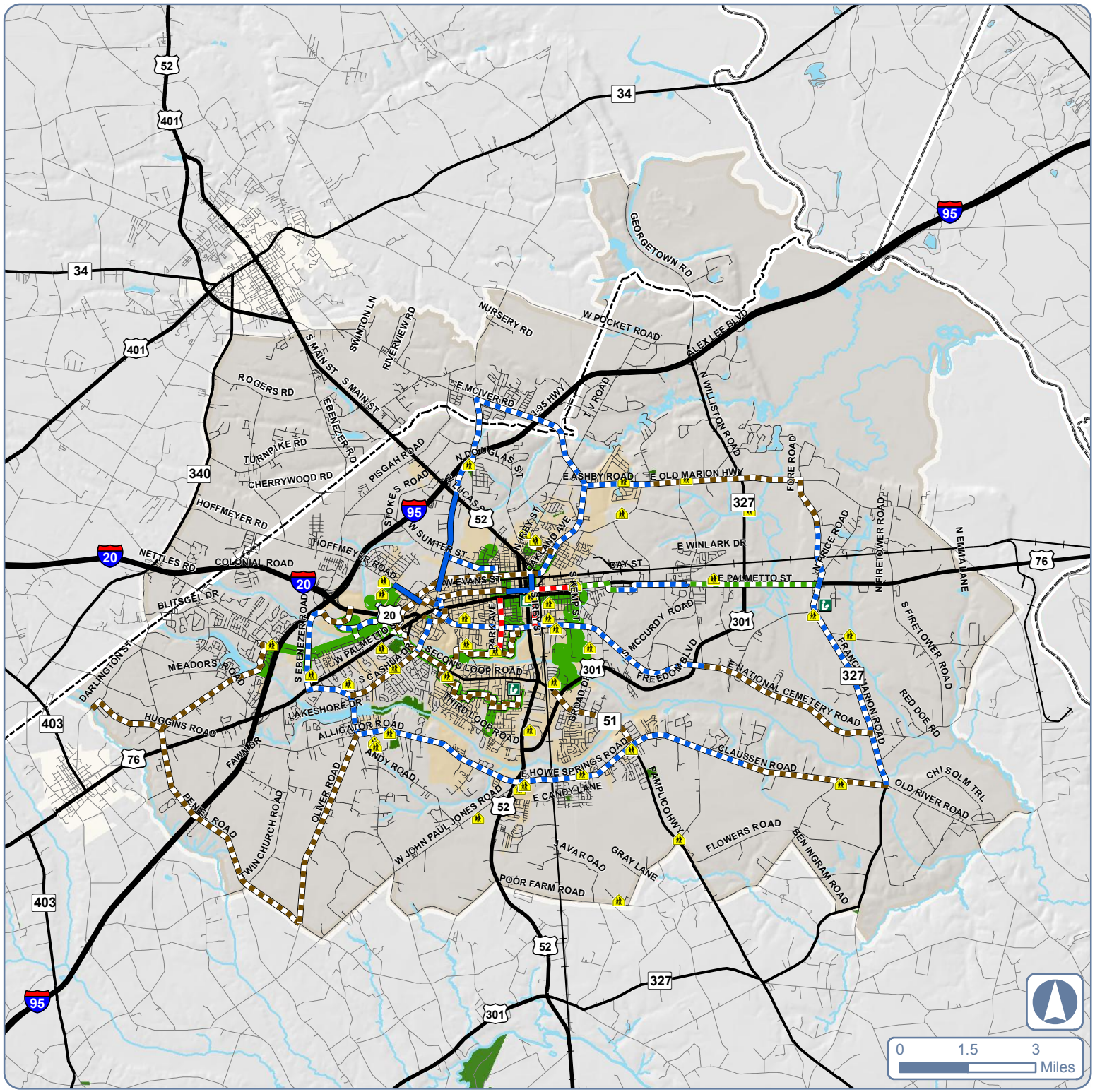


Figure 6.1

Existing and Recommended Bicycle Facilities

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary
- Library
- School

Existing

- Wide Outside Lane
- Florence Trail System

Recommended

- Bicycle Lane
- Wide Outside Lane/ Paved Shoulder
- Signed Route
- Multi-Use Path

FLATS 2035 LRTP

Kimley-Horn and Associates, Inc.

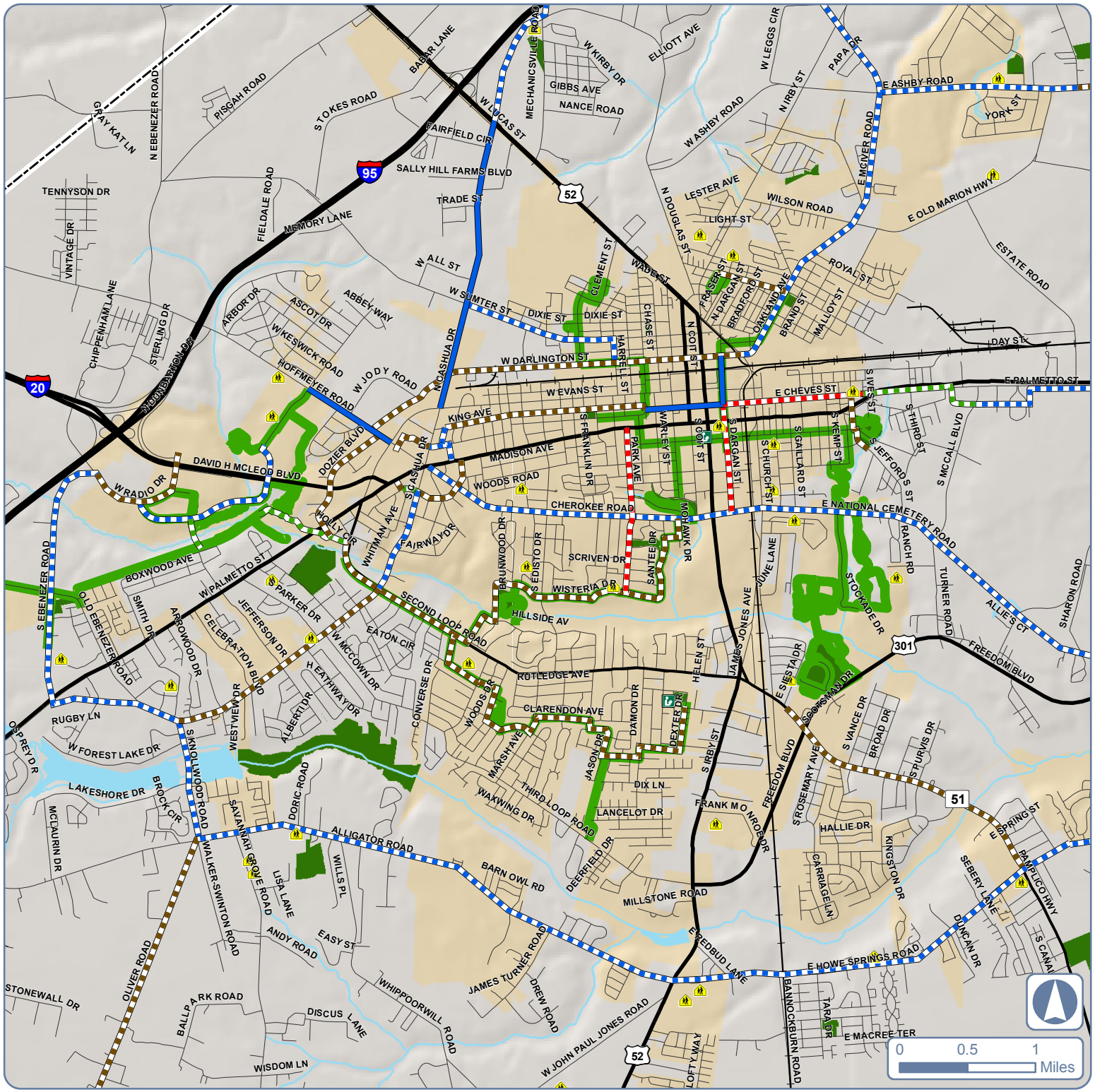


Figure 6.1a

Existing and Recommended Bicycle Facilities

Inset: City of Florence

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary
- Library
- School

Existing

- Wide Outside Lane
- Florence Trail System

Recommended

- Bicycle Lane
- Wide Outside Lane/ Paved Shoulder
- Signed Route
- Multi-Use Path

2035 LRTP

Kimley-Horn and Associates, Inc.

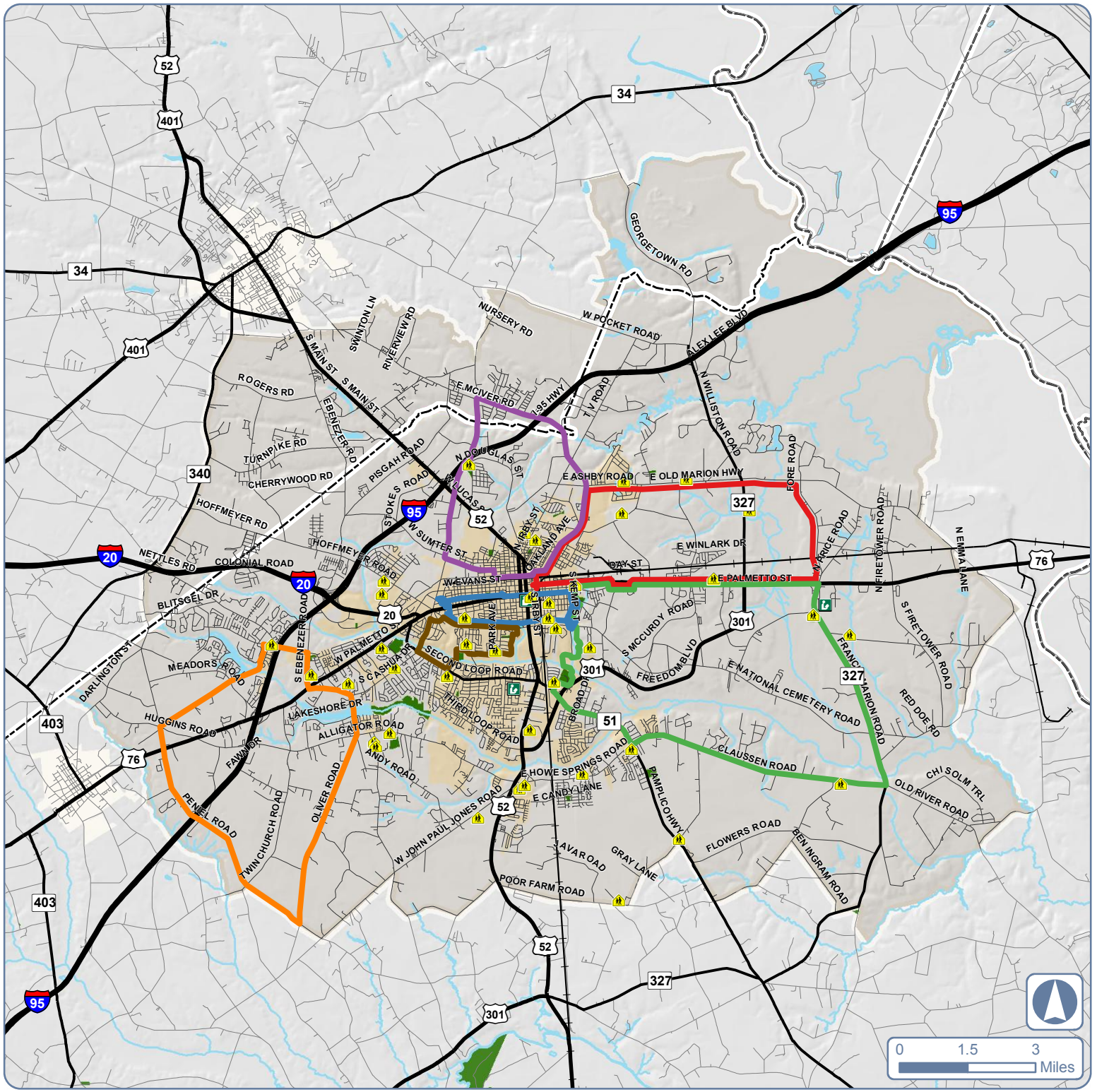


Figure 6.2

Recommended Bicycle Loops

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary
- Library
- School

Recommended Loops

- Cherokee Loop
- Downtown Loop
- Francis Marion Trail
- Monticello Mile
- Palmetto Pathway
- Quinby Pathway

FLATS 2035 LRTP

Kimley-Horn and Associates, Inc.

Pedestrian Network

Walking is a key element to a healthy community's transportation system. Every trip begins and ends as a walking trip; yet walking is often a forgotten mode during the planning process. When a proper pedestrian environment exists, walking offers a practical transportation choice with benefits for individuals and their communities. Features that contribute to making communities more walkable include a healthy mix of land uses, wide sidewalks, buffers between the edge of pavement and the sidewalk and trees to shade walking routes. Slowing traffic, narrowing streets to reduce pedestrian crossing distance and incorporating pedestrian infrastructure (i.e., signage, crosswalks, and adequate pedestrian phasing at signals) into future roadway design plans also ensure walkability.

The availability of pedestrian facilities and amenities plays an important role in encouraging the use of alternative modes of travel to the automobile. In addition to shifting trips from automobile to foot, the success of transit and other alternative travel modes depends greatly on the state of pedestrian facilities and amenities.

Existing Sidewalks

For walking to be considered a realistic alternative, conditions must be favorable for pedestrian use. Sidewalk deficiencies and a largely inhospitable pedestrian environment contribute to a reliance on the automobile even for shorter trips. The most walkable areas in Florence are in the downtown area. Here, pedestrians benefits from a relatively complete sidewalk network and a better mix of human-scaled features to engage pedestrian attention. Beyond the downtown area, however, sidewalks located along major arterials have insufficient buffer areas between pedestrian and fast-moving traffic. Buildings are set back further from the sidewalk, contributing to an inhospitable pedestrian environment.

Policy Review

Just as for the bicycle network, adopted policy and planning documents and programs have an on-going effect on safe and convenient sidewalks in the Florence MPO area. The construction of new developments (residential and non-residential) facilitates the construction of pedestrian infrastructure. The subdivision ordinance (Chapter 28.6) requires sidewalks be installed for all subdivisions that require new street construction.

- Pedestrian paths may be constructed in lieu of sidewalks, but must have a walking surface at least six feet wide constructed with asphalt, concrete, hard-packed gravel, or approved alternative material. In addition, the path must fit the criteria detailed in the Subdivision Ordinance Appendix.
- Where the path is behind or between lots, there must be at least seven feet of vegetated buffering space on each side of the path, measured perpendicularly from the edge of the path.
- Where the path runs adjacent to and parallel to a street, there must be at least four feet of vegetated buffering space between the edge of the path and the hard surface of the street.
- Completed pedestrian paths must be transferred to and accepted by Florence County for maintenance and ownership.

The County zoning ordinance (Chapter 30) also requires sidewalks not less than three feet in width be provided along the front property line of each project building in a townhome community.

Proposed Pedestrian Facilities

Sidewalks are necessary elements in urban areas that have higher land use densities and more pedestrian activity. Sidewalks downtown and in activity centers should be wide enough to provide at least a 5-foot-wide clear width for walking, plus a furniture zone next to the street (for benches, waste receptacles, poles, street trees, and newspaper racks). Consideration also should be given to an edge zone next to buildings. This area would allow space for plants and people to stand while window-shopping or café tables if adjacent business owners want to offer sidewalk service to their customers. This minimum sidewalk width in a downtown retail area is 12 feet.

In other areas, a network of sidewalks on one side of the street, multi-use paths, and trails should serve pedestrians. In general, sidewalk widths should be a minimum of 5 feet in residential neighborhoods with at least a 5-foot wide buffer to the travel way. Sidewalks adjacent to the street without a buffer should be discouraged because of the discomfort it creates for pedestrians.

In the public survey, a majority of respondents identified walkable neighborhoods and commercial centers as a top priority for improvements. 61% of respondents also thought that sidewalks could improve the bicycle and pedestrian network. On average, if respondents were given $100 to improve the transportation network, they would invest $9 in sidewalks. New sidewalks should eliminate gaps in the current sidewalk network and connect existing downtown pedestrian facilities to key destinations in the area.

Pedestrian Accessibility Nodes

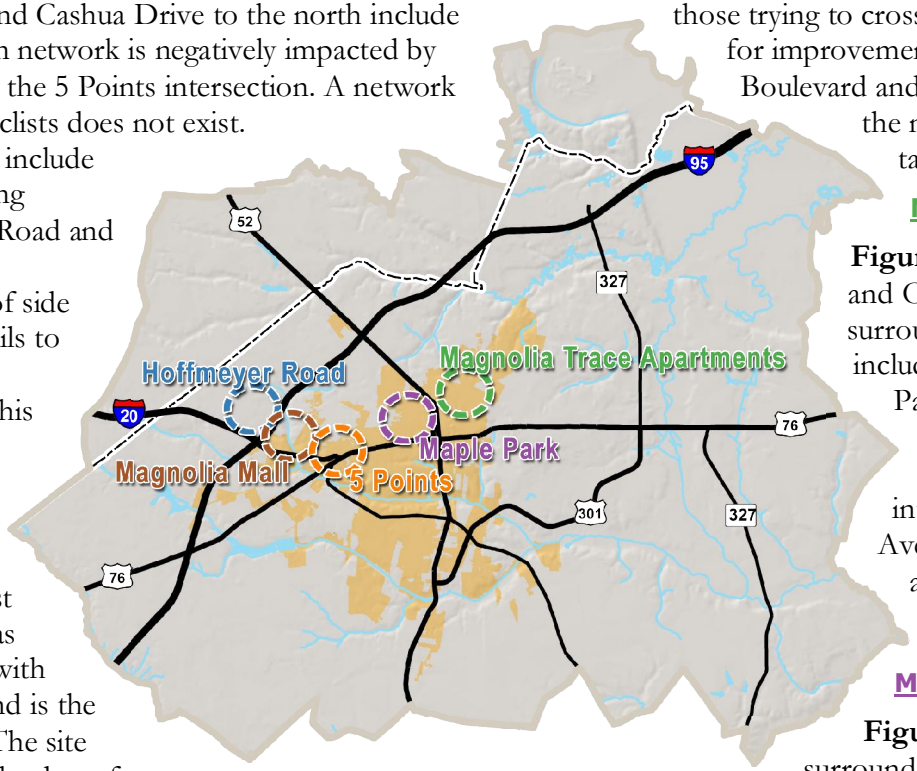
Some pedestrian recommendations are shown as part of the access management corridors and complete street concepts presented in the Future Roadway Element (**Chapter 5**). Improvements of these types should be considered at locations facing similar issues throughout the region. To further define representative pedestrian strategies, the project team with assistance from the TPAC and local stakeholders developed a series of Pedestrian Accessibility Nodes. **Figures 6.3** to **6.7** depict different examples of improvements that can be made to the pedestrian network across the region. Due to the extensive data collection required to prepare a comprehensive set of pedestrian recommendations for each facility within the entire Florence region, a representative approach was undertaken to provide illustrative recommendations.

Five nodes were selected across the region, representing a variety of municipalities and conditions. Each node was centered on one or more activity centers that would potentially draw pedestrian traffic. On each diagram, two circles are drawn around this activity center. The ¼-mile radius represents an approximately five-minute walk for the average pedestrian, while the ½-mile radius represents approximately a ten-minute walk. Therefore, areas within these circles can reasonably expect to generate pedestrians to the activity center.

To address pedestrian needs for each node, several prevailing themes emerged. First, closing gaps in the network of pedestrian facilities should be a priority in order to promote the best use of the existing network. This will prevent pedestrians from being stranded without access to facilities or amenities when the sidewalk terminates. Next, pedestrian access to activity centers from residential areas or other activity centers should be considered. Finally, maintenance of existing and any future pedestrian facilities should be performed regularly in order to maximize the effectiveness of the current infrastructure.

5 Points

Figure 6.3 shows the 5 Points area where Palmetto Street, Cashua Drive, Hoffmeyer Road, and Cherokee Road intersect in western Florence. The ½-mile walking radius includes a variety of retail stores and restaurants as well as neighborhoods along Cherokee Road. While Palmetto Street and Cashua Drive to the north include sidewalks, the pedestrian network is negatively impacted by the unsafe conditions at the 5 Points intersection. A network of safe facilities for bicyclists does not exist. Recommendations here include consistently incorporating sidewalks on Cherokee Road and Hoffmeyer Road and establishing a network of side streets and off-street trails to redirect bicyclists and pedestrians away from this congested intersection.



Hoffmeyer Road

Figure 6.4 shows area of Hoffmeyer Road west of I-95. This location has several neighborhoods with varying income levels and is the site of a future school. The site also borders one of the land use focus areas described in detail in **Chapter 9**. Recommendations at this location include extending the sidewalk on the south side of Hoffmeyer Road to the west, improving connectivity to the future school from adjacent neighborhoods, and improving intersections along Hoffmeyer Road.

Magnolia Mall

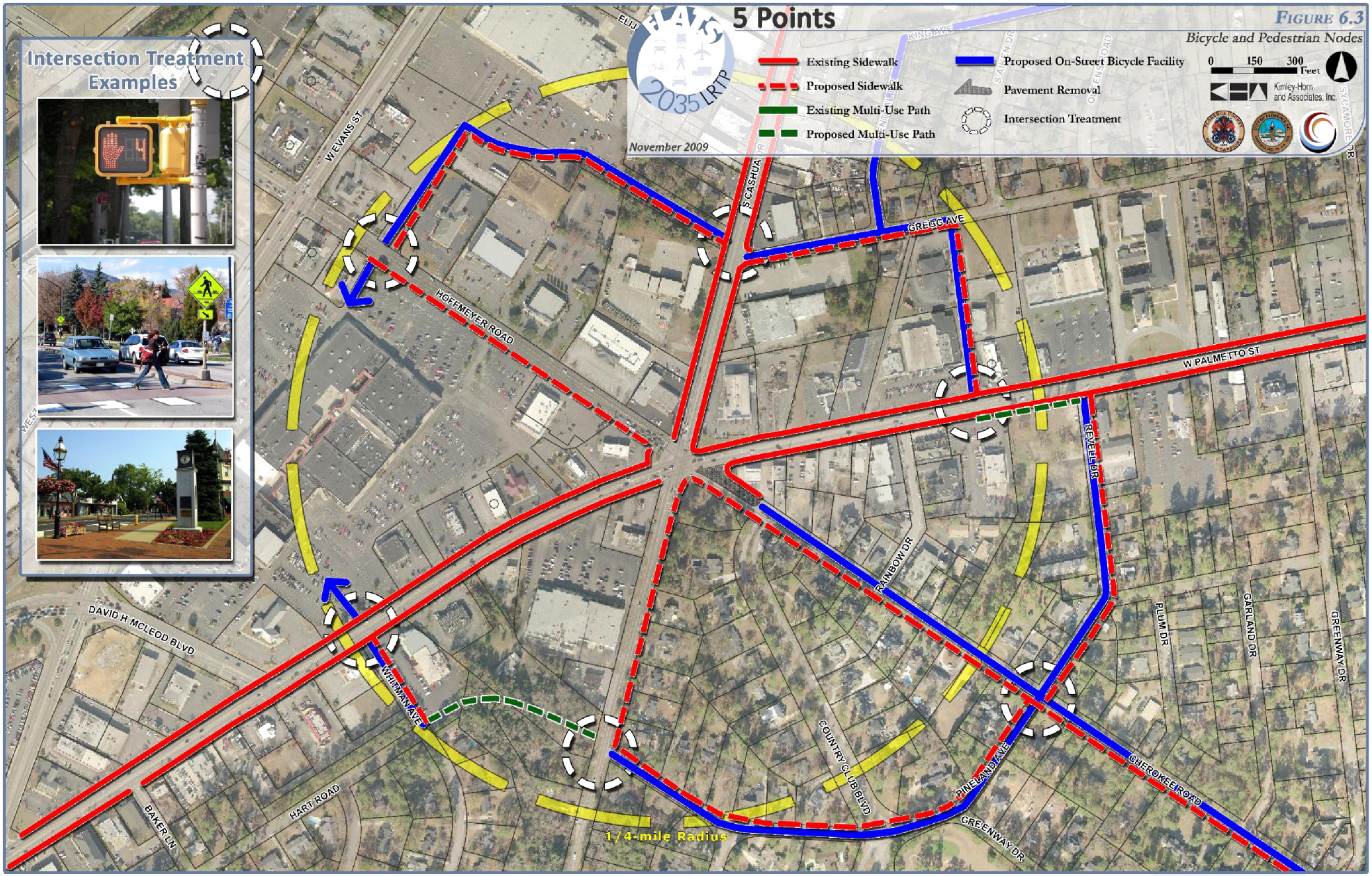
Figure 6.5 is centered on Magnolia Mall. The ½-mile walking radius captures the retail areas south of David McLeod Boulevard, the Florence Convention Center, and West Florence High School. The area currently is inhospitable to bicyclists and pedestrians, particular those trying to cross David McLeod Boulevard. The main objective for improvements is to create a safe crossing of David McLeod Boulevard and to develop a consistent network that connects the neighborhoods, retail area, and the school while taking advantage of the abandoned rail corridor.

Magnolia Trace Apartments

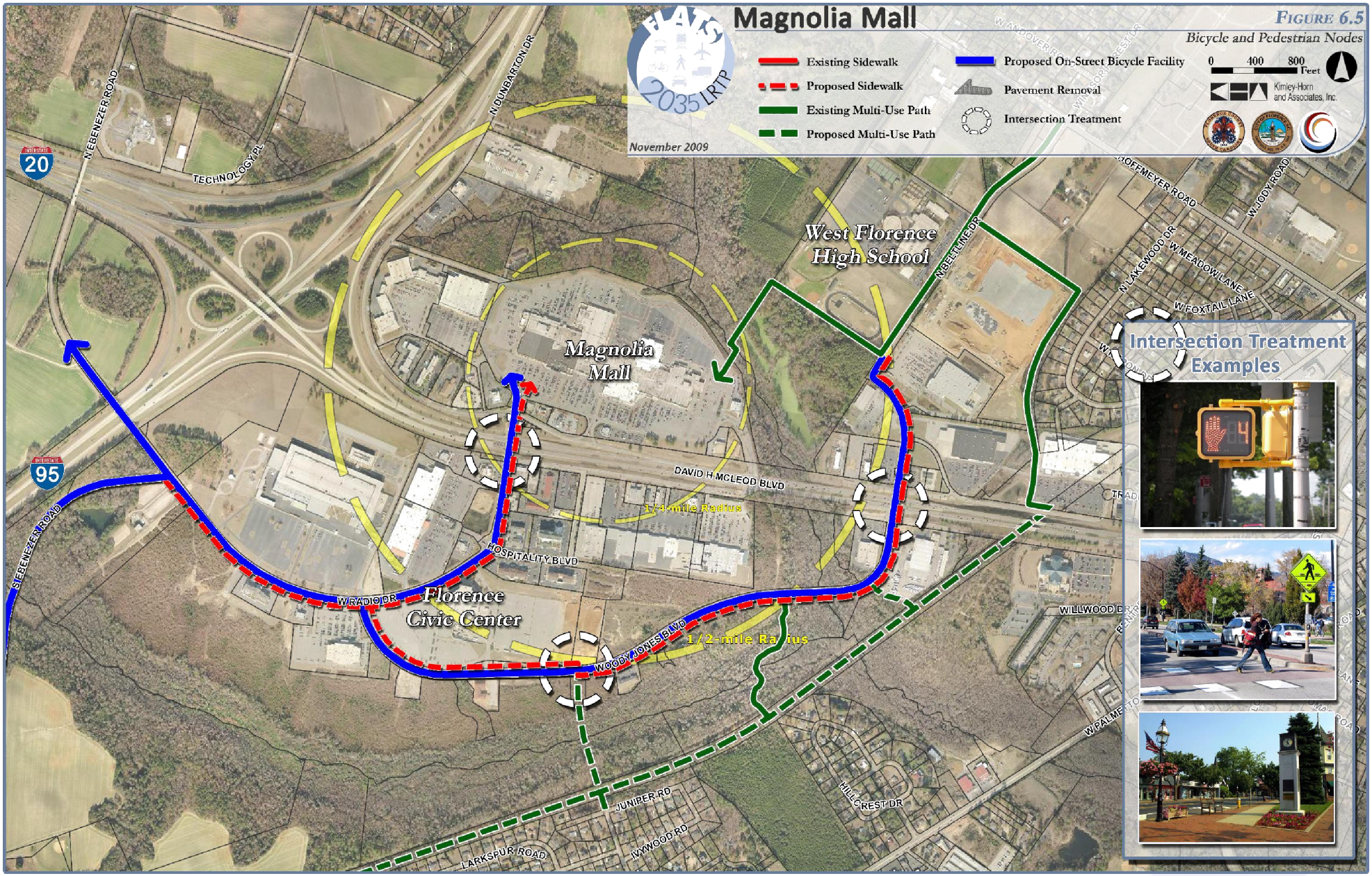
Figure 6.6 centers on the intersection of Royal Street and Oakland Avenue and includes the area surrounding Magnolia Trace Apartments. This area includes neighborhood amenities such as Iola Jones Park and smaller retail stores. As a result, recommendations focus on establishing pedestrian connections at two unsafe intersections and extending sidewalks along Sopkin Avenue, Royal Street, and Oakland Avenue. In addition, a proposed sidewalk on Old Marion Highway will connect homes to a new school.

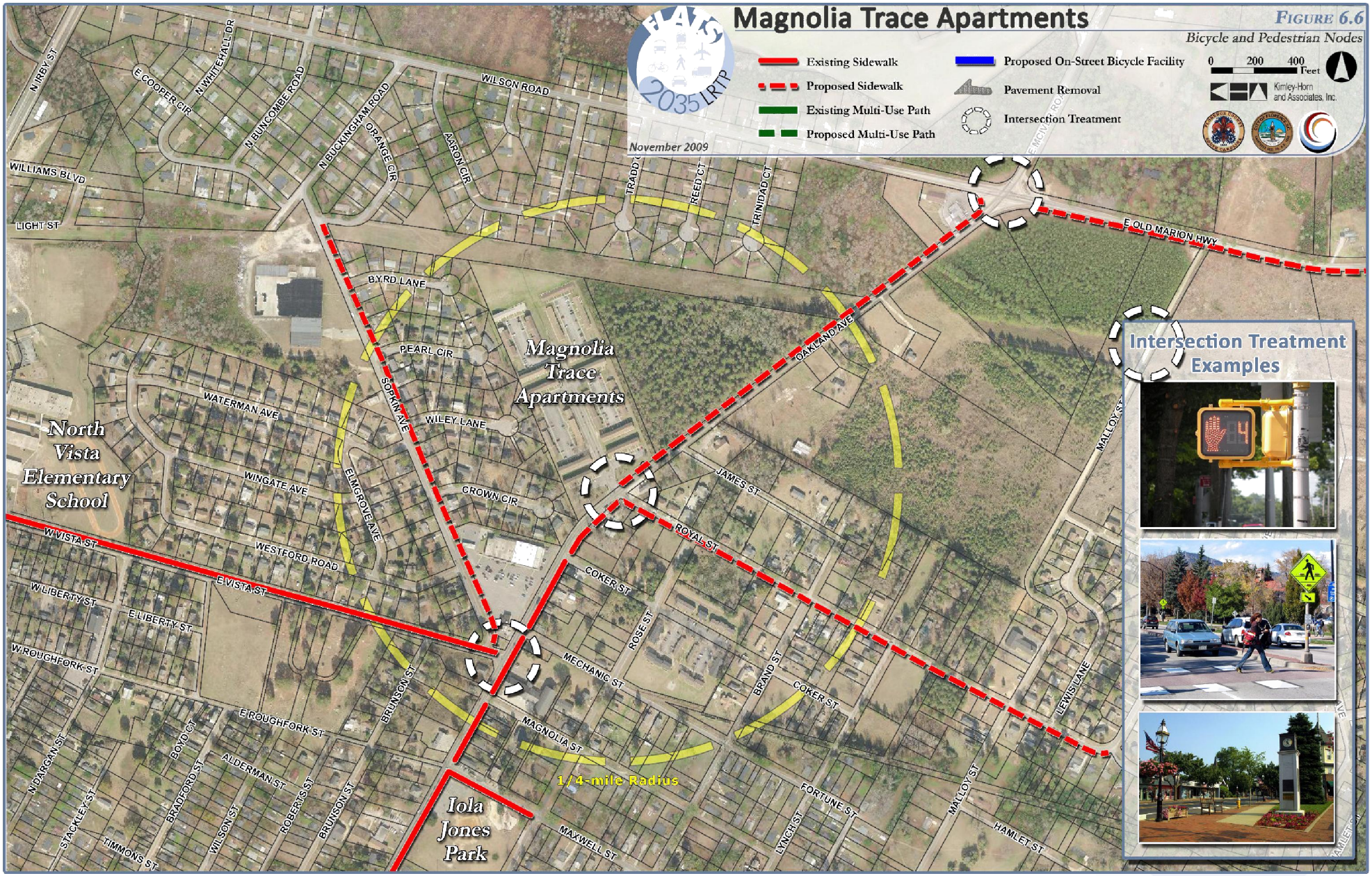
Maple Park

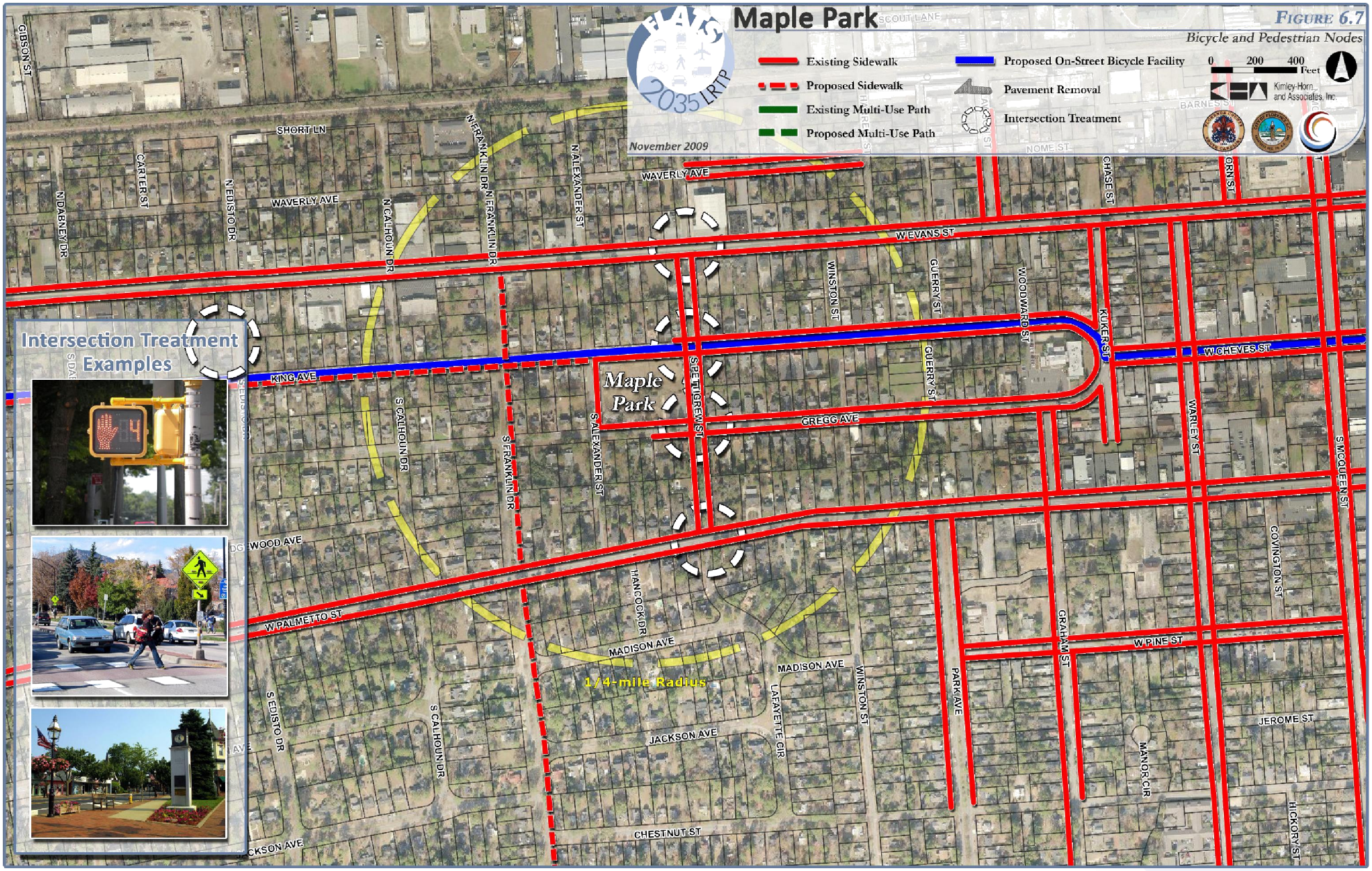
Figure 6.7 focuses on the Maple Park and the surrounding neighborhoods. The area benefits from a traditional grid street network and compared to the other pedestrian accessibility nodes has an excellent pedestrian network. Recommendations for this area target improvements to South Franklin Drive, a north-south corridor through the area, and King Avenue, an east-west route connecting to Maple Park. In addition, an on-street bicycle facility is proposed for King Avenue and West Cheves Street.


5 Points
FIGURE 6.3
Bicycle and Pedestrian Nodes
November 2009
Existing Sidewalk
Proposed Sidewalk
Existing Multi-Use Path
Proposed Multi-Use Path
Proposed On-Street Bicycle Facility
Pavement Removal
Intersection Treatment
0 150 300 Feet
Kimley-Horn and Associates, Inc.
Intersection Treatment Examples
1/4-mile Radius
HOFFMEYER ROAD
GREGG AVE
W PALMETTO ST
REVELL DR
RAINBOW DR
PLUM DR
GARLAND DR
GREENWAY DR
CHEROKEE ROAD
PINELAND AVE
COUNTRY CLUB BLVD
DAVID H MCLEOD BLVD
WHITMAN AVE
HART ROAD
BAKER LN
WEVANS ST
S CASHUA DR
SYCAMORE DR


Hoffmeyer Road
FIGURE 6.4
Bicycle and Pedestrian Nodes
February 2010
Existing Sidewalk
Proposed Sidewalk
Existing Multi-Use Path
Proposed Multi-Use Path
Proposed On-Street Bicycle Facility
Pavement Removal
Intersection Treatment
0 250 500 Feet
Kimley-Horn and Associates, Inc.
Intersection Treatment Examples
1/2-mile Radius
1/4-mile Radius
Harllee Village Concept Plan
HOFFMEYER ROAD
TEABERRY DR
SWEETGRASS DR
ASTER DR
LUPINE DR
DUNHILL CT
VINTAGE DR
QUAIL POINTE DR
BELLINGHAM CT
CHATHAM PL
CHIPPENHAM LANE
MERIONETH ROAD
HARBOROUGH CT
TIVOLI DR
COMBRAY CIR
EBENEZER ROAD
WRENFIELD ROAD
BAYBERRY CIR
WINDOVER RD
BEECHWOOD ROAD
COVE POINTE DR
STERLING DR
COLONY LANE
N DUNEARTON DR
INTERSTATE 95


Magnolia Mall
FIGURE 6.5
Bicycle and Pedestrian Nodes
November 2009
Existing Sidewalk
Proposed Sidewalk
Existing Multi-Use Path
Proposed Multi-Use Path
Proposed On-Street Bicycle Facility
Pavement Removal
Intersection Treatment
0 400 800 Feet
Kimley-Horn and Associates, Inc.
West Florence High School
Magnolia Mall
Florence Civic Center
1/4-mile Radius
1/2-mile Radius
Intersection Treatment Examples
N EBENEZER ROAD
TECHNOLOGY PL
N DUNBARTON DR
DAVID H MCLEOD BLVD
HOSPITALITY BLVD
W RADIO DR
WOODY JONES BLVD
N BELTLINE DR
HOFFMEYER ROAD
W JODY ROAD
N LAKEWOOD DR
W MEADOW LANE
W FOXTAIL LANE
WILLWOOD D
W PALMETTO
JUNIPER RD
IVYWOOD RD
LARKSPUR ROAD
HILLCREST DR
20
95


Magnolia Trace Apartments
FIGURE 6.6
Bicycle and Pedestrian Nodes
November 2009
Existing Sidewalk
Proposed Sidewalk
Existing Multi-Use Path
Proposed Multi-Use Path
Proposed On-Street Bicycle Facility
Pavement Removal
Intersection Treatment
0 200 400 Feet
Kimley-Horn and Associates, Inc.
2035 LRTP
Intersection Treatment Examples
Magnolia Trace Apartments
North Vista Elementary School
Iola Jones Park
1/4-mile Radius
WILSON ROAD
E OLD MARION HWY
OAKLAND AVE
JAMES ST
ROYAL ST
COKER ST
MECHANIC ST
MAGNOLIA ST
E ROUGHFORK ST
W ROUGHFORK ST
E VISTA ST
W VISTA ST
W LIBERTY ST
E LIBERTY ST
WESTFORD ROAD
WINGATE AVE
WATERMAN AVE
WILEY LANE
PEARL CIR
B.Y.RD LANE
CROWN CIR
SOPKIN AVE
ELMGROVE AVE
BRUNSON ST
ROSE ST
BRAND ST
LEWIS LANE
MALLOY ST
FORTUNE ST
LYNCH ST
HAMLET ST
MAXWELL ST
TIMMONS ST
STACKLEY ST
WILSON ST
ROBERTS ST
ALDERMAN ST
BRADFORD ST
BOYD CT
N DARGAN ST
N BUNCOMBE ROAD
N BUCKINGHAM ROAD
ORANGE CIR
AARON CIR
TRADD CT
REED CT
TRINIDAD CT
E COOPER CIR
N WHITEHALL DR
N IRBY ST
WILLIAMS BLVD
LIGHT ST


Maple Park
FIGURE 6.7
Bicycle and Pedestrian Nodes
November 2009
Existing Sidewalk
Proposed Sidewalk
Existing Multi-Use Path
Proposed Multi-Use Path
Proposed On-Street Bicycle Facility
Pavement Removal
Intersection Treatment
0 200 400 Feet
Kimley-Horn and Associates, Inc.
Intersection Treatment Examples
Maple Park
1/4-mile Radius
GIBSON ST
SHORT LN
CARTER ST
N DABNEY DR
N EDISTO DR
WAVERLY AVE
N CALHOUN DR
N FRANKLIN DR
N ALEXANDER ST
W EVANS ST
CHASE ST
WINSTON ST
GUERRY ST
WOODWARD ST
KUKER ST
W CHEVES ST
KING AVE
S CALHOUN DR
S FRANKLIN DR
S ALEXANDER ST
S PETIGREW ST
GREGG AVE
WARLEY ST
S MCQUEEN ST
COVINGTON ST
W PALMETTO ST
HANCOCK DR
MADISON AVE
W PINE ST
GRAHAM ST
PARK AVE
LAFAYETTE CIR
S EDISTO DR
JACKSON AVE
MANOR CIR
JEROME ST
CHESTNUT ST
HICKORY ST

Ancillary Facilities

The results of the public questionnaire revealed 36% of respondents would increase their use of bicycling or walking if more ancillary facilities (parking, restrooms, water fountains, benches) were provided. This is one example of how a complete system requires more than just the recommended on-street bicycle facilities, sidewalks, and multi-use paths. Ancillary facilities often are low-cost measures designed to enhance the functionality and safety of the bicycle and pedestrian network. Ancillary facilities include the physical components of education, encouragement, and enforcement programs recommended throughout this chapter.

Traffic Calming

The importance of traffic calming increases as motorists find short cuts around congested roads and intersections. Even the best planned street networks fall prey to unwanted cut-through and speeding traffic. Traffic calming includes a variety of tools to slow speeds, reduce cut-through traffic, and improve the appearance of the street while increasing safety for pedestrians, bicyclists, and motorists. Best practices for traffic calming are widely published, but the greatest programs include specific measures and general methods tailored to local travel patterns and citizen expectations. As high speeds and changing travel habits continue to threaten bicyclists and pedestrians, Florence and the surrounding area needs traffic calming plans for unsafe roadways.

Source: PedBikeImages.com

Raised Crosswalk

Signage and Mapping Projects

More than 29% of respondents to the questionnaire identified new signage and 40% identified a bicycle map as measures that would increase their bicycling and walking in the study area. Signage and mapping projects educate and encourage the active use of the bicycle and pedestrian network.

Comprehensive Route Systems

To maximize the use of the new and retrofitted facilities, users must know the location of routes, accessible destinations, connections to other routes, and provisions along the way. A route signage plan is recommended to include information on the direction and distance to destinations spaced so bicyclists receive periodic confirmation that they remain on the correct route. The city's trail system has done an excellent job identifying important destinations and creating a plan to safely link residents and visitors to those locations. Building on this effort, other facilities types can benefit from comprehensive route systems, including multi-use paths, bike lanes, shoulders, and wide outside curb lanes.

The City of Florence has created a brochure that explains the trail system and identifies the routes on a map. As the bicycle and pedestrian network in the city and surrounding area matures, such an effort will be critical to the fulfillment of the system. Efforts should not only include comprehensive route signing but also informative maps of bicycle routes and pedestrian trails and pathways.

Share the Road Signing Initiative

"Share the Road" signs heighten the awareness of motorists of the presence of bicyclists on high-use roads with potentially hazardous conditions. These signs serve as important and cost-effective safety and education tools.

Shared Lane Symbol

Commonly referred to as sharrows, Shared Lane Symbols indicate the recommended position for bicyclists in a shared travel lane that is 14 to 15 feet wide. Sharrows communicate to all roadway users how to share the road. Placed approximately three feet from the gutter or four feet from parked cars, the symbol indicates where bicyclists should ride to avoid being hit by suddenly opening car doors.

An added benefit is the reduction of sign clutter on the roadway and less debris in lanes. Sharrows are used in lanes shared by bicyclists and motorists with insufficient width for a bicycle lane.

The markings could be introduced on downtown streets where speeds are 35 mph or less and cyclists of different abilities frequently ride. By initially installing the pavement markings in coordination with "Share the Road" signage, sharrows could help identify bike routes to potential cyclists and motorists. Following a successful introductory period, the symbols could be used throughout the area along facilities with speed limits of 35 mph or less.

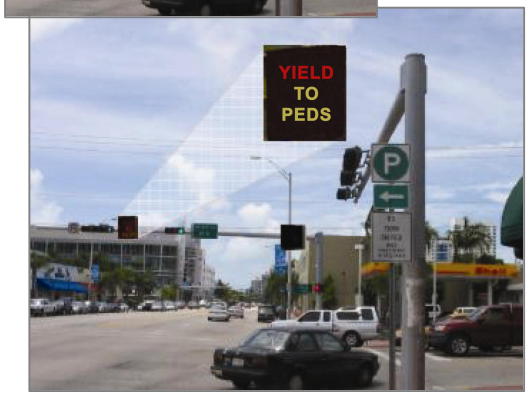
Sharrows show bicyclists the preferred area to ride in order to avoid roadway debris, doors from parked cars, and passing vehicles

Examples of sharrows in Portland, Oregon (top) and at NC State University in Raleigh (left)

Intersection Signage

Any overuse of the signs limits their effectiveness by diluting the ability of the sign to command the attention of motorists. As a result, static and blank out signs only should be used where problems have been documented and relatively constant pedestrian/bicycle use exists. These signs reduce vehicular crashes with pedestrians with messages such as "No Turn on Red When Pedestrians Present" or "Left Turning Vehicles Yield to Pedestrians"

At locations where conflicts are not frequent enough to warrant a static sign, a blank out sign may be appropriate. These signs are activated when there is a potential conflict. Thus, if a pedestrian enters the crosswalk, the motorist will see a "Yield to Pedestrian" sign next to the permissive turn signal. The real-time aspect ensures the signs will be visible when needed and never relegated to visual clutter.



Bicycle Parking Facilities

Like motorists, bicyclists need a place to park their bicycles. Bicycle parking should be included near shopping areas, schools, and recreational areas as well as downtown and near businesses frequented by bicycle riders. It is not enough to simply place a bike rack at a random location. The bike rack should be highly visible, preferably near store fronts or in high pedestrian use zones to reduce the threat of theft. If bicycles are parked after dark, the area also should be well lit. The necessary protection varies according to the purpose of the bicycle trip. For short trips, a U-shaped bicycle rack may be acceptable. For commuter trips, bike lockers or covered parking may be more appropriate.

Bicycle racks also provide an opportunity to enhance the character of an area when they reflect the community culture or character. For additional information on bike rack designs, the Association of Pedestrian and Bicycle Professionals has produced guidance that covers rack design, rack placement, and specifics for appropriate layout of the rack area in dimensions and relation to the surrounding land uses. In addition to bicycle parking facilities, benches, water fountains, public restrooms, and changing areas would be helpful near popular locations and major destination points such as shopping areas and schools.

Source: PedBikeImages.com

Spot Improvement, Maintenance, and Safety

Maintenance of a roadway relative to bicycle safety can be assessed by answering several questions:

- Has debris collected in the bike lane?
- Are perpendicular cracks present?
- Are there perpendicular drainage grates?
- Are utility covers uneven with the roadway surface?

An answer of "yes" to any of these questions should result in roadway maintenance. All bicycle facilities, including trails and the right side of roadways, require additional effort to ensure acceptable maintenance. A more frequent maintenance cycle to address these defects should be provided for bicycle routes. Likewise, areas where excessive debris tends to build and bicyclists have limited refuge should be maintained even more frequently. More than 50% of respondents to the questionnaire identified maintenance improvements as an action that would increase their use of bicycling or walking in the Florence area.

Traffic Signal Considerations

Traffic signal location, timing, and loops along bicycle facilities require extra attention. The MUTCD requires signal faces to be adjusted or separated for optimal visibility by bicyclists and for signal timing to consider the needs of bicyclists. Additional guidance for signal timing and loops is provided by AASHTO.

Roadway Symbol Buildup

Bike lane symbols, lane directional symbols, and crosswalks use thermoplastic markings. To prevent handling problems for bicyclists, the number of layers of thermoplastic should be limited to one. In addition to build-up, the slipperiness of thermoplastic and paints can cause problems. The texture of the treatment can be altered by adding sharp silica sand to the glass spheres during application.

Safety Railings along Bicycle Facilities

Bridge railing heights have been the subject of recent revisions to the AASHTO Bicycle Guide and ongoing debates among bicycle facility design professionals. The current guide states that railing heights should be at least 42 inches to prevent bicyclists who hit the railing from tipping over the top. However, the current AASHTO Bridge Specifications require a 54-inch railing. In practice, designers have been using the 54-inch railing when a structure is being built to the AASHTO specifications and a 42-inch railing along non-structural locations, such as when protecting bicyclists from embankments.

Transit Interface

Over the past few years the Pee Dee Regional Transportation Authority has worked to add bike racks to its transit vehicles. This process expands the footprint of transit by allowing riders to ride a bike to reach their ultimate destination. In addition to racks on transit vehicles, shelters and route information should be provided for pedestrians. Linking transit services with bike and pedestrian facilities ensures a seamless transition between these modes of transportation. Facility improvements for transit should complement the recommended bike and pedestrian facilities.

Source: PedBikeImages.com

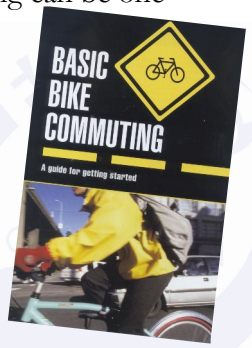
Groups, Programs, and Initiatives

The facility recommendations (including ancillary facilities) must be supplemented with coordinated education, enforcement, and encouragement programs. Some programs instruct and encourage bicyclists and pedestrians in the full and proper use of the non-motorized transportation network. Other programs ensure the safe use of the system by enforcing rules and regulations.

Local Bicycling Clubs

Weekly rides throughout the Florence area are organized by local bicycle clubs, including the Pedal Pack of the Pee Dee. These rides vary in length from 16 miles to up to 65 miles. Many more informal joggers, bicyclists, and walkers can be seen throughout Florence on a regular basis. With an active membership, local bicycling clubs can assist with various outreach efforts including education and encouragement initiatives. These programs include the following:

- **Bicycle Mentor Program** — This program matches experienced riders with those who want to learn more about commuting by bicycle. Ideally, a new rider will find help in discovering the best route to work, while receiving an education concerning how to ride in traffic, in the dark, or in poor weather.
- **Bicycle-to-Work Week** — For adults, Bicycle-to-Work Week can serve as a week-long reminder that bicycling can be one option for traveling to work. The success of Bicycle-to-Work Week often depends on the network of local bicycling enthusiasts to market the program and on local employers to support participation from their employees. A Bicycle-to-Work event could be coordinated with education material designed to explain the benefits of and tips for bicycling to work.



Safe Routes to School

Safe Routes to School is a federally funded program administered in South Carolina by SCDOT. With funding allocated through SAFETEA-LU, the program has encouraged many children to bike and walk to school by promoting bicycle and pedestrian education. Projected funding for South Carolina in 2009 is $2.4 million. Local government agencies should partner with schools and advocacy groups to leverage this funding. In collaboration with on-going efforts, pilot schools should be selected to implement the Safe Routes to School program. The current funding levels are not adequate to provide all needed sidewalk improvements, so priorities must be established. Coordination with SCDOT staff and the FLATS MPO can lead to spot improvements. More information on the program can be found at www.saferoutestoschool.org.

Source: PedBikeImages.com

Policy Recommendations

Policy Recommendations from 2004 Bikeway Master Plan

The 2004 Bikeway Master Plan also included policies supportive of education and increased awareness of bicycle usage and safety. Policies were developed for five major subject areas including planning, facilities, awareness, promotion, and funding.

Incorporate bicycle facilities in transportation planning activities.

- Appoint a bicycle representative to the MPO's Technical Coordinating Committee.
- Establish a Bicycle/Pedestrian Advisory Committee as a function of the Florence Area MPO.
- Require that bicycle issues be considered in all roadway plan reviews.
- Review and amend subdivision ordinances to incorporate bicycle-friendly policies and requirements.
- Incorporate prioritized bikeway improvements into annual Transportation Improvement Program (TIP).
- Periodically update the Bikeway Master Plan.
- Coordinate bikeway planning with local trails/greenway planning.
- Conduct annual bike counts/ surveys on bikeway facilities.

Design and build new and reconstructed roadways to be bicycle-friendly.

- Implement on-road bikeway facilities as part of roadway widening projects.
- Increase level of accommodation for bicyclists in conjunction with routine resurfacing and maintenance activities.
- Implement bicycle-friendly maintenance procedures and maintain bikeway facilities.
- Establish a Spot Improvement Program for implementation of low-cost improvements to enhance conditions for bicyclists.
- Work with local organizations to develop an "Adopt a Bikeway" program to keep bikeway facilities clear of debris and litter.

Promote safe bicycle travel.

- Encourage bicycle education programs in schools.
- Work with local law enforcement agencies and community organizations to promote bicycle safety through increased helmet usage.
- Support and encourage programs that promote motorist awareness of bicyclists' rights.
- Support and encourage programs that educate bicyclists of responsibilities and safe riding habits.

Encourage increased bicycle transportation ridership.

- Provide bicycle racks at major destinations.
- Prepare bicycle route maps.
- Initiate and hold annual bike events such as bike-to-work and bike-to-school days.

Pursue a variety of funding options to implement bikeway projects.

- Implement bikeway improvements as part of new roadway projects.
- Utilize TEA-21 Enhancements funding for bicycle project implementation.
- Seek funding support from private foundations and other grant sources.
- Provide an annual allocation in City/County budgets to leverage other funds for bikeway projects.

Findings & Recommendations

The findings and recommendations presented in **Table 6.2** are grounded in a planning process that included analysis, public outreach, and a review of previous and on-going planning efforts. The recommendations also have been weighed against the needs identified in the other elements of the *2035 LRTP*. The recommendations are grouped by general findings, and some recommendations address more than one finding.

Table 6.2 – Findings & Recommendations

Finding	Recommendation
Network Enhancements	
The general public has joined local officials and planning staff in their desire for an enhanced multimodal transportation with strategically planned on- and off-street connections. Where possible, the construction of these facilities should be incorporated into public and private infrastructure projects. Adopted city and county policies should require projects provide new bicycle and pedestrian facilities. The implementation of recommended facilities should occur in accordance with the phasing plan detailed in **Chapters 10** and **11**.	▪ **Implement the recommended on-street bicycle network that includes striped bicycle lanes, wide outside lanes/paved shoulders, and signed bike routes as shown in Figure 6.1.** ▪ **Construct the greenway (off-street) network as shown in Figure 6.1.** ▪ **Prioritize sidewalk construction to eliminate gaps in the current sidewalk network and connect existing downtown pedestrian facilities to key destinations in the area.** ▪ **Utilize the representative pedestrian nodes shown in Figures 6.3 to 6.7 as decisions are made regarding bicycle and pedestrian facilities at various activity nodes in the region.**
Ancillary Facilities	
A complete bicycle and pedestrian system requires ancillary facilities to complement the network of on- and off-street facilities. The questionnaire indicated more ancillary facilities would increase bicycling and walking in the Florence area.	▪ **Develop traffic calming plans for unsafe roadways.** As high speeds and changing travel habits threaten bicyclists and pedestrians, the MPO should team with local partners and neighborhood leaders to develop actionable traffic calming plans. The planning process should include residents and business owners potentially affected by the plans. ▪ **Allocate funds to install bicycle racks or more advanced bicycle parking facilities at high priority locations.** A list should be developed that prioritizes destinations based on current or potential bicycle use. More weight should be given to areas with greater intensity and diversity of destinations. ▪ **Assess railing heights of bridges along routes with bicycle facilities as identified in Figure 6.1 to determine if they meet AASHTO standards.** ▪ **Partner with PDRTA to coordinate improvements to the pedestrian and bicycle network with existing and future transit needs.**

Signage and Mapping

Signage and mapping enhancements can help maximize the use of the bicycle and pedestrian network. Respondents to the questionnaire identified new signage and a bicycle map as measures that would increase their bicycling and walking. Initial efforts should document existing facilities and be updated as the network matures.

- **Develop traffic calming plans for unsafe roadways.** As high speeds and changing travel habits threaten bicyclists and pedestrians, the MPO should team with local partners and neighborhood leaders to develop actionable traffic calming plans. The planning process should include residents and business owners potentially affected by the plans.
- **Create a route signage plan.** Building on the efforts initiated by the City of Florence to create a trail system, the MPO should work with the city and county to sign appropriate routes with an emphasis on the direction and distance to destinations.
- **Install "Share the Road" signs on identified routes.** These signs bring awareness to motorists that bicyclists may be sharing the road. The MPO should install signs along routes as identified in **Figure 6.1**.
- **Introduce shared lane symbols on appropriate downtown streets.** This effort should be coordinated with the installation of "Share the Road" signs and used as a trail for implementation on other roads throughout the MPO area.
- **Consider enhanced signage at intersections with identified conflicts between motorists and cyclists/pedestrians.** Appropriate measures should be determined based on analysis of specific intersections and may include static signs or blank out signs.

Groups, Programs, and Initiatives

The maximized use of bicycle and pedestrian facilities — including on-street, off-road, and ancillary facilities — requires education, enforcement, and encouragement programs. Facility improvements often require significant investment in resources (both time and money). Coordinated programs can ensure the investments are justified.

- **Partner with local bicycle clubs (such as Pedal Pack of the Pee Dee) to launch education and encouragement programs.** Two initial programs that should be launched are a bicycle mentor program that matches experienced riders with beginners and a bicycle-to-work week that markets the opportunity to commute to work by bicycle.
- **Secure additional Safe Routes to School funding to promote bicycling and walking and bridge gaps in the network near schools.** The MPO, in cooperation with local government agencies, should partner with schools and advocacy groups to identify priorities and leverage funding for pilot projects.

Policy Recommendations

The 2004 Bikeway Master Plan included various policies that support increased awareness of bicycle usage and safety. The Plan was developed through significant public involvement. These efforts should be recognized through the execution of policy changes outlined in the plan's recommendations.

- **Implement the various policies developed as part to the 2004 Bikeway Master Plan.**

Conclusion

The recommendations of the Bicycle & Pedestrian Element balance the need for improved facilities with programs designed to educate the public in the safe use of these facilities, encourage the active use of facilities, enforce the rules of the road, and evaluate the effectiveness of these facilities and programs. The recommendations serve cyclists and pedestrians throughout the entire MPO area. Limits on the improvements that can be constructed due to funding constraints require a proactive approach to implementation. For example, incidental improvements can be implemented as part of the roadway construction projects. Also, the development community should contribute by constructing bicycle and pedestrian facilities as they build the necessary infrastructure to support their projects. A combination of these practices process and local funding programs will allow the implementation of a variety of bicycle and pedestrian improvements.

Chapter 7

Transit Element

Introduction

As the oldest and largest transportation authority in South Carolina, the Pee Dee Transportation Authority (PDRTA) has a long history of serving residents, employees, and visitors in the Florence area. The various services — fixed route, demand-response, and commuter — offered by PDRTA provide some level of service to riders spread out across a 5,000 square mile area. The success by PDRTA in providing exceptional service to both urban and rural patrons has been recognized at the state and national levels.

- In 2009, PDRTA received a top 50 national ranking in the Transportation Fact Book published by the American Public Transportation Association.
- PDRTA was named the 2010 Urban Public Transit Provider of the Year by the South Carolina Department of Transportation.

The Transit Element of the *2035 FLATS Long Range Transportation Plan* (*2035 LRTP*) documents existing public transportation and paratransit service in the FLATS area, evaluates recent and on-going transit planning efforts, and recommends strategies to enhance access and mobility for residents throughout the area. The chapter begins with an overview of the framework required to support public transportation as well as the coordinated decision-making process necessary for public transportation to be effective and efficient.

Historical Trends

Since the end of World War II, the number of Americans using transit has steadily declined as the availability and dependence on private automobiles has risen. Still, local staff and elected officials continue to acknowledge the important role of public transportation in providing mobility to the people, particularly disadvantaged populations, of the greater Florence area. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) requires MPOs to consider all modes of transportation in the analysis of region-wide mobility and the formulation of recommended plans, programs, and policies. The collective result of the modal elements should be an integrated, balanced intermodal transportation system that safely and efficiently moves people and goods.

Transit serves two types of users: captive riders and choice riders.

- Captive riders do not have access to or the ability to use a personal vehicle. Transit options for them are essential. These riders include persons too young to drive, the elderly, persons with disabilities, and those without the financial means to own and operate a personal vehicle.
- Choice riders otherwise have access to a personal vehicle but instead choose to use transit. These riders include persons who decide not to own a personal automobile and those who decide to use transit for work, social, medical, or personal trips. Reasons choice riders use transit include saving money, convenience, comfort, or environmental principles.

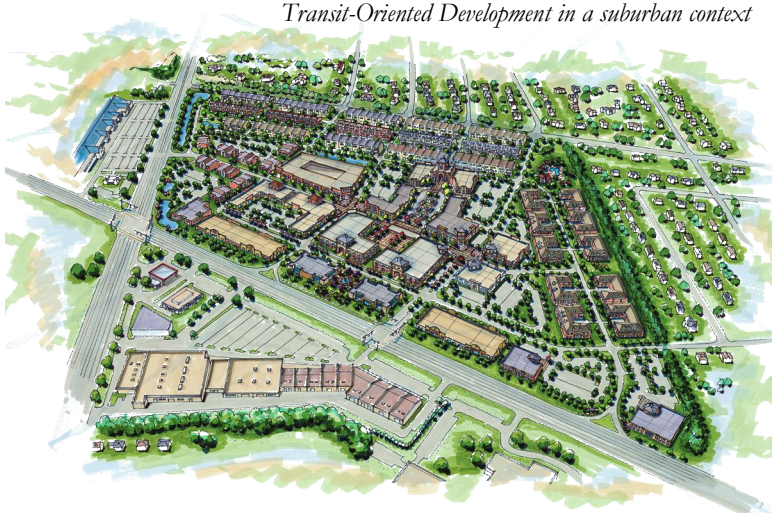
Over the past few decades, population growth in the Florence region has shifted away from the urban core, and convenient and reliable transit service has become more difficult. To encourage transit use and decrease dependence on the automobile, a safe, comfortable customer delivery system with attractive and convenient amenities must be developed around bus stops. This customer delivery system requires a network of sidewalks, safe street crossings, and lighting because most regular transit users walk or bike to and from the stop. The efficiency of transit also depends on an interconnected system of roads and highways suitable for bus traffic. For these reasons, transit cannot be considered in isolation, and the strategies presented in this chapter support improvements to the larger transportation system.

Transit and Urban Form

Across the nation, people agree they would be more likely to use transit if service was fast, frequent, dependable, and easy to use. While such criteria requires a complete system of roads, sidewalks, and bikeways, transit also must provide connections to the places people need to go at a time when they need to get there. As a result, transit must be introduced or expanded within a framework of transit-supportive urban form. PDRTA's on-going coordination with local planning departments illustrates their understanding of this need. Two development types that maximize potential transit ridership include transit-oriented development and transit-ready development.

Transit-Oriented Development

Transit-Oriented Development in a suburban context



Transit-oriented developments (TODs) provide a mixture of residential and commercial uses focused around a transit station or bus stop. The transit stop is surrounded by relatively high density development that spreads out as you move away from the center. The scale of a TOD generally is limited to ¼- to ½-mile in diameter to establish the walkability of the neighborhood. The design of such places maximizes access to transit and supports walking and biking between destinations. The Florence County Comprehensive Plan identifies TODs as an example of sustainable development. As the new transit hub in Florence takes shape, this area of downtown could emerge as the region's first TOD.

Transit-Ready Development

In locations that lack existing transit facilities or lack the demand to support a TOD, regulations and guidelines that support transit-ready development should be enforced. Transit-ready development describes the coordinated design of new neighborhoods and activity centers that supports future transit expansion. Like TODs, transit-ready developments include a mixture of land uses, pedestrian-friendly design, appropriate locations and/or routes for transit, an interconnected network of internal streets, and appropriate densities supportive of future transit use.

Single-Use Transit Destinations

While transit-oriented and transit-ready developments represent ideal urban form for transit destinations, many existing single-use locations in the FLATS area are viable long-term facilities. Francis-Marion University, Florence Regional Airport, Florence Civic Center, Magnolia Mall, McLeod Regional Medical Center, and Carolinas Hospital are a few examples of vital destinations for many residents of the Pee Dee region. While the current urban design near these destinations may not be ideal for transit, they represent locations where access to public transportation continues to be an important priority.

Planning Context

As a critical component of the complete transportation system, transit is closely tied to land use and economic development decisions. Public transit services should be a viable mobility option for those who need it most — senior citizens, the physically or economically disadvantaged, and commuters who choose to ride. At its best, transit provides an efficient and inexpensive transportation mode for persons making the traditional suburban-to-urban commute and those traveling between activity centers. But making transit practical in less dense areas and for suburban-to-suburban commutes is more difficult and typically incurs higher costs and lower ridership. The planning context for the Transit Element combines analysis, feedback from the general public and stakeholders, and previous planning efforts.

FLATS 2035 LRTP Vision

The vision for the *2035 LRTP* (described in **Chapter 2**) represents the collaborative efforts of the Transportation Plan Advisory Committee, numerous stakeholders, and the general public. While the vision is filled with several phrases that speak to roadway improvements, many of the key words from the vision directly relate to the region's public transportation system and how the system contributes to the overall transportation network. These key words are highlighted below:

> We envision a growing community serviced by a **safe and sustainable transportation system** that provides real choice among modes of travel. Our transportation system contributes to an **enhanced quality of life** by providing **attractive connections between destinations** for motorists, bicyclists, pedestrians, and transit users **without compromising cultural and environmental resources**, and it supports the **efficient movement** of people and goods at both the local and regional scale.

SAFETEA-LU Planning Factors

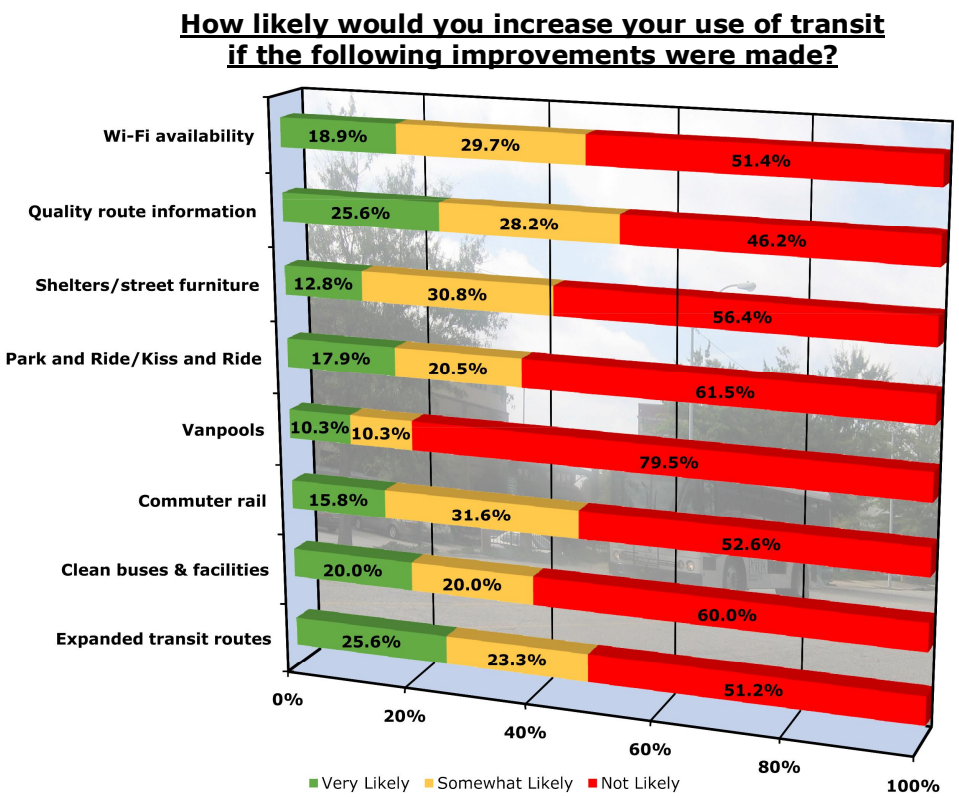
As mentioned in **Chapter 1**, the planning factors from SAFETEA-LU represent one way federal officials assess how the region's long range transportation plan addresses the unique needs of its transportation system. To reinforce the relationship between the federal legislation and the Transit Element of the *2035 LRTP*, the eight planning factors are restated below with added emphasis to ways transit will address the planning factor.

1. **Support the economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
2. **Increase the safety of the transportation system** for motorized and non-motorized users
3. **Increase the security of the transportation system** for motorized and non-motorized users
4. **Increase the accessibility and mobility of people** and freight
5. **Protect and enhance the environment, promote energy conservation, improve quality of life**, and promote consistency between transportation improvements and state and local planned growth and economic development patterns
6. **Enhance the integration and connectivity of the transportation system, across and between modes, for people** and freight
7. Promote efficient system management and operation
8. **Emphasize the preservation of the existing transportation system**

Public Perception

Through the questionnaire and conversations at workshops, the public revealed their perception of the transportation network in the Pee Dee region. In many ways, opinions on the level of service provided by the transit system mirror that of the transportation system as a whole. When asked to rate the regional transportation system as a whole, more than 75% of respondents to the survey rated the system as Fair or Poor, and when asked to consider only transit service, nearly 80% rated it as Fair or Poor.

An insightful perspective that emerged through the public outreach efforts centered on how improvements that increase transit ridership will help the community as a whole, even those who are not taking transit. In addition, the questionnaire asked respondents to state how likely they would be to increase their use of transit if certain improvements were implemented. The results of this question (as shown to the right) identify ways PDRTA may be able to increase their ridership. The most popular responses include both low cost/low effort solutions (quality route information) and higher cost/greater effort initiatives (expanded transit routes).

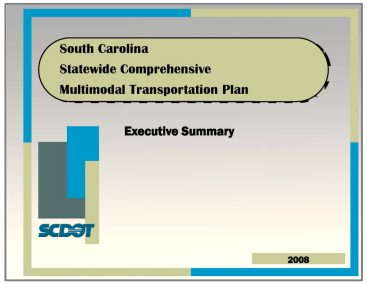


Previous Planning Efforts

Transit planning requires continual assessment of ridership trends, demographic shifts, technological advancements, and managerial processes. Aspects of these assessments are performed regularly by PDRTA as part of state and federal reporting guidelines. Previous planning efforts also have documented this type of information. Transit planning as part of a long range transportation plan at the MPO-level presents existing conditions, describes the vision for public transportation, and outlines general strategies to fulfill that vision. Where PDRTA has undertaken more detailed study, the *2035 Plan* should yield to those recommendations. Previous planning efforts considered during the development of the transit element included the 2030 FLATS Long Range Transportation Plan, the Pee Dee Regional Transit Plan, and the PDRTA Marketing Plan.

In addition, several recently completed plans provide relate to the development of a downtown Florence transportation hub. The most relevant plans include the Florence Conway Transit Assessment Report (April 2009), the South Carolina Statewide Comprehensive Multimodal Plan (May 2008), and the Downtown Florence Transportation Hub Feasibility Study (January 2010).

Statewide Comprehensive Multimodal Plan



The South Carolina Statewide Comprehensive Multimodal Transportation Plan, completed in 2008, evaluates the state's transportation system and provides recommendations for investment in transportation facilities through the year 2030. As a multimodal plan, it considers needs related to highways, passenger and freight rail, public transit, and bicycle and pedestrian accommodations.

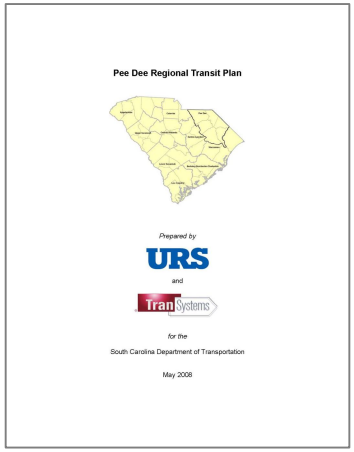
The plan identifies rail corridors in the state for potential transit use, including the CSX rail line adjacent to US 52. The plan notes that future transit service using rail will be dependent upon available right-of-way. And while the plan seeks to identify discontinued or at-risk rail corridors, it notes that abandonment of the line adjacent to US 52 is highly unlikely due to the volume of rail traffic on the corridor and the use of the line by Amtrak. However, the Multimodal Plan recognizes that a parallel consolidation of the line may be a possibility because of the second CSX line to the east of this corridor that connects Dillon to Charleston and travels briefly through the southeast portion of Florence County.

Regarding high speed rail service in Florence, the plan notes that recent preliminary planning studies have evaluated the feasibility of commuter rail and/or BRT, and though these projects remain in the early stages of planning, ongoing efforts are aimed at interim solutions that could set the stage for future commuter rail service. The corridor connecting Florence, Conway, and Myrtle Beach is identified as a "Potential Future High Speed Rail Corridor." However, other corridors in the state (segments of the Federally Designated Southeastern High-Speed Rail Corridor) are considered a high priority for upgrading to high speed standards.

Pee Dee Regional Transit Plan

The Pee Dee Regional Transit Plan was prepared as a component of the Statewide Transit Plan. The plan details the region's transit needs and recommends various actions to improve transit within the region as part of a coordinated statewide effort. The plan recognizes Florence's role in the medical and manufacturing industry and documents the need for additional commuter services as employment density increases. The plan determined the public lacks an understanding of the system and how to use it. Action items outlined in the plan include:

- Closing the funding gap, leveraging federal dollars, and increasing state funding
- Engaging non-traditional partners
- Increasing coordination among providers
- Expanding service by targeting gaps in rural areas, right-sizing urban systems, and increasing commuter-based services
- Coordinating transportation and land use decisions
- Upgrading passenger rail service



Florence Conway Transit Assessment Report

The Florence Conway Transit Assessment Report was prepared for the City of Florence in April 2009. The report recognizes the need to provide enhanced transportation between Francis Marion University and downtown Florence, improved transit service throughout the City of Florence and surrounding areas, and improved commuting alternatives between Florence/Marion and the Grand Strand. The centerpiece of these efforts is a proposed Multimodal Transportation Center north of downtown Florence on a 20-acre site east of US 52 bounded to the south by Darlington Street and to the east by Dargan Street. The South Carolina Central Railroad runs along the edge of the site.

In addition to its use as a transportation hub (PDRTA, Greyhound, taxis), potential site uses include a business incubator with ties to Francis Marion University, a multicultural center, an African American museum, and parking. Subsequent steps identified by the plan included:

- Short-term improvements in bus service between downtown Florence and Francis Marion University (FMU)
- Premium transit service between downtown Florence and FMU
- Extension of premium transit service to Marion
- Extension of premium transit service to Conway

The plan served as a precursor to the Feasibility Study, which was expected to refine the analysis and recommended specific transit modes and technologies based on the Multimodal Transportation Center at the 20-acre north of downtown.

Downtown Florence Transportation Hub – Feasibility Report

The Downtown Florence Transportation Hub – Feasibility Study (draft report – January 2010) was a collaborative effort of PDRTA, the Florence Downtown Development Authority, and the City of Florence. The report follows on the heels of the Florence Conway Transit Assessment Report but expands the scope by evaluating six potential sites for a transportation hub. The facility will serve as an access and transfer point for local and regional bus and taxi service, with a business incubator and parking deck.

Six sites for the transportation hub were evaluated based on four categories — ease of implementation, site assessment, connectivity assessment, and community fit. The recommended site is at the corner of Cheves Street and Dargan Street, with access provided via Dargan Street. Benefits of this site include:

- Proximity to the FMU Performing Arts Center
- Opportunity to coordinate transportation, housing, retail, and university functions
- Potential to revitalize economic interest in existing development along Dargan and Evans Streets
- Limited change to the existing PDRTA system
- Direct connection to a potential relocated Amtrak station
- Greatest opportunity for shared parking

Existing Public Transportation

Throughout the nation, many people only think of buses and trains as modes of public transportation. But public transportation includes everything from taxis and shuttles to commercial airlines and intercity buses. Each of these modes impact residents of the Pee Dee region on a daily basis. Public transportation also includes local buses, trolleys, vans, and shuttles that have a large impact on the day-to-day activities of persons who rely on these services for trips to work, medical appointments, the grocery store, or other locations that their neighbors can reach by private automobile.

Public transportation in the Florence area is provided by the Pee Dee Transportation Authority (PDRTA). PDRTA provides fixed-route bus service, fixed route commuter service, and paratransit (dial-a-ride) services. In addition, private transportation and taxicab companies provide local transportation services, and Greyhound provides intercity bus service.

Pee Dee Regional Transportation Authority

Fixed Route Service

Fixed route service provided by PDRTA includes both local bus service in the greater Florence area as well as commuter service. Fixed route bus service in Florence consists of a "hub and spoke" layout with five routes (or spokes) originating from a hub at the Central Transfer Point on West Evans Street at Dargan Street. A sixth route does not directly connect to the Central Transfer Point but instead connects to another route.

Figure 7.1 shows the six routes, which include:

- Route 1: West Evans – Magnolia Mall
- Route 2: North Florence
- Route 3: East & South Florence
- Route 4: 2nd Loop – DSS – Super Walmart
- Route 5: Palmetto Street – Florence Mall
- Route 6: South Florence/Savannah Grove

The hub and spoke layout emphasizes trips originating from or destined to the downtown area. Each route operates on 1-hour headways on weekdays between 6:00 a.m. and 6:00 p.m. (6:20 a.m. to 6:20 p.m. for Route 6). In the Spring 2010, PDRTA added Saturday service (8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m.) to these routes. Standard fare is $1.50 with discounted fares of $0.75 available for senior citizens (age 65 and older), persons with disabilities, and Medicare cardholders. Transfers for all riders are $0.50. Fixed route ridership increased from 41,203 trips in Fiscal Year 2008 (12-month period ending June 30, 2008) to 50,541 in FY 2009, a 22% surge. With plans to add Francis Marion University transportation in late 2010, ridership likely will continue to rise.

In addition to local fixed route bus service in Florence, PDRTA provides fixed route commuter service to Florence for residents of Dillon, Marion, Hartsville, and Darlington. This service provides residents of these areas an alternative way to get to work and school in Florence. The commuter routes also connect to the local fixed routes in Florence, which greatly increases the destinations accessible to residents in the outlying areas.

Figure 7.1

Fixed Route Bus Service

PDRTA Routes

- Route 1
- Route 2
- Route 3
- Route 4
- Route 5
- Route 6
- PDRTA Bus Stop
- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Park
- Municipal Boundary
- FLATS Boundary
- County Boundary

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Florence County | Florence-Darlington Technical College | City of Florence

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Demand-Response Service

Fixed route buses represent just one type of service offered by PDRTA. The system's demand-response service accounts for more of the day-to-day operation and carries more passengers.

Complementary Paratransit Service

Complementary Paratransit Service provides paratransit or van transportation for individuals who cannot otherwise access the fixed route bus service. The service is designed for individuals with disabilities as defined by ADA. In particular, Complementary Paratransit Service is limited to individuals with disabilities who:

- Cannot board, ride, or disembark from an accessible vehicle without the assistance of another person (except for the bus driver and lift)
- Could ride an accessible vehicle but the route is not accessible
- Have a specific impairment-related condition that prevents them from traveling to or from a boarding or disembarking location

Based on Federal guidelines, Complementary Paratransit Service provides curb-to-curb service 7:00 a.m. to 10:00 a.m. and 3:00 p.m. to 6:00 p.m. Monday through Friday to eligible persons living within ¾-mile of a PDRTA fixed bus route. Riders must make a reservation by calling the PDRTA Florence office during business hours, and reservations are accepted up to 14 days in advance with at least 24 hours notice before the trip. Fare for Complementary Paratransit Service is $2.50 per one way trip. A PCA (Personal Care Attendant) may accompany the eligible person at no charge, and service animals are allowed.

Human Services Transportation

PDRTA provides transportation for many human services agencies located throughout the region. Human services trips carry passengers of all ages and abilities to various destinations. Examples include trips to Adult Day Care facilities, dialysis clinics, nutrition centers, and various medical facilities. Medical appointments make up the largest portion of these services, though work, shopping, and training/education trips are represented. Without PDRTA, many of life's daily activities would be unavailable to residents in the Pee Dee region.

Vanpool Service

Carpooling and vanpooling is an economical and environmental-friendly commuting option. Compared to driving alone to work, carpooling or vanpooling provides personal benefits (reduced commuting expenses and more time to relax when not driving) and community benefits (fewer vehicles miles traveled resulting in cleaner air, less congestion, and reduced fuel consumption). One of the challenges for increasing participation in carpool and vanpool services is finding someone with a similar commute. For many communities, this obstacle is overcome through a carpool and vanpool matching service.

While PDRTA currently does not have a matching service, PDRTA's Transportation Manager is available to help vanpools get started once a citizen or business forms a group of workers with similar commuting patterns. Through its vanpool system, PDRTA provides a vehicle, insurance, gas, and maintenance, and the cost is shared by the riders. Tax incentives provide extra savings for both the employer and employees.

Other Public Transportation Providers

General discussions of public transportation traditionally center on services such as those provided by PDRTA — namely fixed-route and paratransit. These transit services are important components of the larger public transportation network that also includes taxis and intercity bus travel.

Taxis

Residents of the Pee Dee region have numerous options for using taxicabs as public transportation. Taxicab companies operating in the region provide service based on drop-off, per-mile, and waiting time rates. While the availability of taxicabs in the region has no direct correlation to the level of anticipated ridership for transit, the presence of these companies does indicate a need throughout the greater Florence area for a means of travel other than privately owned automobiles.

Amtrak

Amtrak service in Florence is provided from a station at 805 East Day Street north of McLeod Regional Medical Center. The station rests approximately half-way between New York City and Miami, the termini of the Silver Meteor line. Sample one-way fares for travel to New York City and Miami is $95.00 and $71.00, respectively. Station hours and ticketing hours are daily except between 5:00 a.m. and 9:30 a.m.

Greyhound Service

From its terminal at 611 South Irby Street in Florence, Greyhound (Southeastern Stages) connects riders of the Pee Dee region with locations throughout North America, including 18 cities in South Carolina and more than 30 cities in North Carolina. Fares vary based on the trip's distance and departure date. **Table 7.1** shows sample one-way fares for Friday travel to cities across the United States.

In addition to the reduced price of advanced purchases, Greyhound offers a variety of discounts for military personnel and companion travel. Schedules for Greyhound service vary by day and time. Station and ticketing hours are weekdays from 9:00 a.m. to 5:00 p.m. and 8:30 p.m. to 10:00 p.m. or weekends from 10:00 a.m. to 4:00 p.m. and 8:30 p.m. to 10:00 p.m. More information is available at www.greyhound.com.

Table 7.1 – Sample Greyhound Fares

City	Distance from Florence	Regular Refundable Fare	21-Day Advance Purchase Fare
Columbia	80 miles	$26.00	n/a
Charleston	135 miles	$39.50	n/a
Charlotte	160 miles	$57.00	$25.00
Atlanta	290 miles	$76.50	n/a
Washington DC	400 miles	$106.00	$47.00
Orlando	450 miles	$127.00	$56.00
New York City	650 miles	$130.00	$65.00
Chicago	875 miles	$172.00	$76.50
Dallas	1,075 miles	$197.00	$89.00
Los Angeles	2,500 miles	$251.00	$117.00
Seattle	2,950 miles	$270.00	$126.00

Note: Sample fares are one-way from Florence for Friday travel

Source: Greyhound.com

Regional Public Transportation

For longer distance travel, residents of the Pee Dee region can utilize the expanding options at Florence Regional Airport (see **Chapter 8** for more information). In addition to services provided by public transportation providers in the FLATS area, residents can travel to other cities in the region to take advantage of the public transportation options offered in these larger cities. In particular, citizens travel to Charleston, Myrtle Beach, or Columbia for air transportation.

Recommendations

Most daily activities, ranging from school to work to medical appointments to recreation, require some form of personal mobility. For our aging population and persons with disabilities, personal mobility also means independence. The level of mobility afforded to residents in the Florence area varies and gaps exist throughout the transportation network. Good — not just adequate — public transportation closes the gap between the mobility-constrained and those who move about freely. The desire is for public transportation to become a travel mode of choice for a greater proportion of the population. Continued investment in public transportation needs to be made to improve service and make this desire a reality. Following a general service gap analysis, the recommendations of the Transit Element are presented based on a series of four best practice guiding principles. All recommendations have been developed in consideration of PDRTA's organizational goals.

Source: Bing.com

PDRTA Facility on Stadium Road

PDRTA Organizational Goals

PDRTA has established the following organizational goals.

- Continue to provide safe and reliable public transportation for all residents of the counties served by PDRTA.
- Continue to provide safe and reliable specialized transportation for the disabled and elderly citizens of the counties served by PDRTA.
- Improve the cost efficiency and effectiveness of the transportation services by increasing revenues and decreasing expenses when possible.
- Continue to improve the public image of PDRTA.
- Work with local officials to insure the inclusion of transit planning in locally developed plans.
- Stimulate economic growth and development by providing existing and potential businesses with information on work transportation alternatives.
- Continue to actively promote choice ridership and van pools.
- Promote and develop public/private partnerships to enhance quality of life and sustainability.
- Partner with other transportation modes, including rail, to provide seamless transportation for work and leisure.
- Coordinate transportation with other agencies, educational institutions, and private providers to maximize transit use.
- Leverage the use and availability of transit and transit-related federal and state funding sources by increasing local financial support.
- Insure the sustainability of PDRTA through dedicated local funding.

Service Gap Analysis

Federal guidelines identify three groups of people that fall within the captive rider group that are considered as populations with special transportation needs: elderly people (individuals 60 years and over), people with disabilities, and low-income people (150% of the national poverty level). The following information for each of the three groups is based on data reported in the 2000 Census for the Florence Metropolitan Statistical Area (MSA).

- **Elderly Persons** — 20,022 persons (15.9%) are 60 years or older
- **Persons with Disabilities** — 27,430 persons (23.8%) age 5 years or older have at least one disability
- **Low Income Population** — 20,063 persons (16.4%) are below the poverty level

Maps showing the geographic distribution of these population groups can be found in **Chapter 3**. In addition to the three groups identified in federal guidelines, captive riders also include those too young to drive and those without access to a personal vehicle. **Figure 7.2** shows the percentage of persons without access to a personal vehicle based on 2000 Census block groups. While the image indicates households near downtown without access to automobiles are served by bus routes, pockets of households without vehicles outside must rely on paratransit or seek alternative options such as taxis.

Figure 7.3 shows the existing fixed routes in relation to the population density of Florence and Darlington Counties, also based on data from the 2000 Census. The figure indicates the densest areas of the region are served by PDRTA's fixed route bus service. The transit routes also were overlaid on the demographic maps presented in **Chapter 3** to determine location where transit service fails to meet the needs of transit-dependent populations.

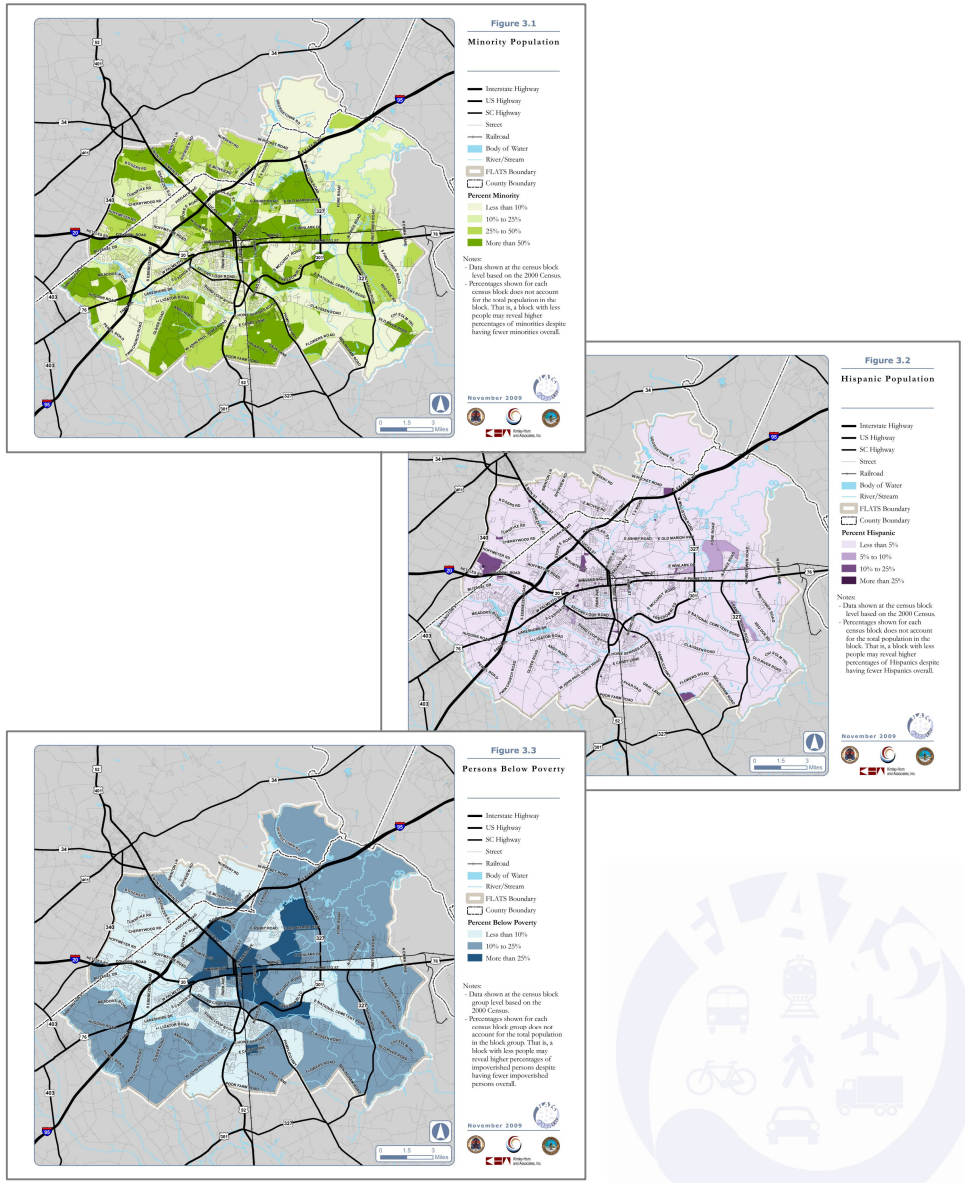
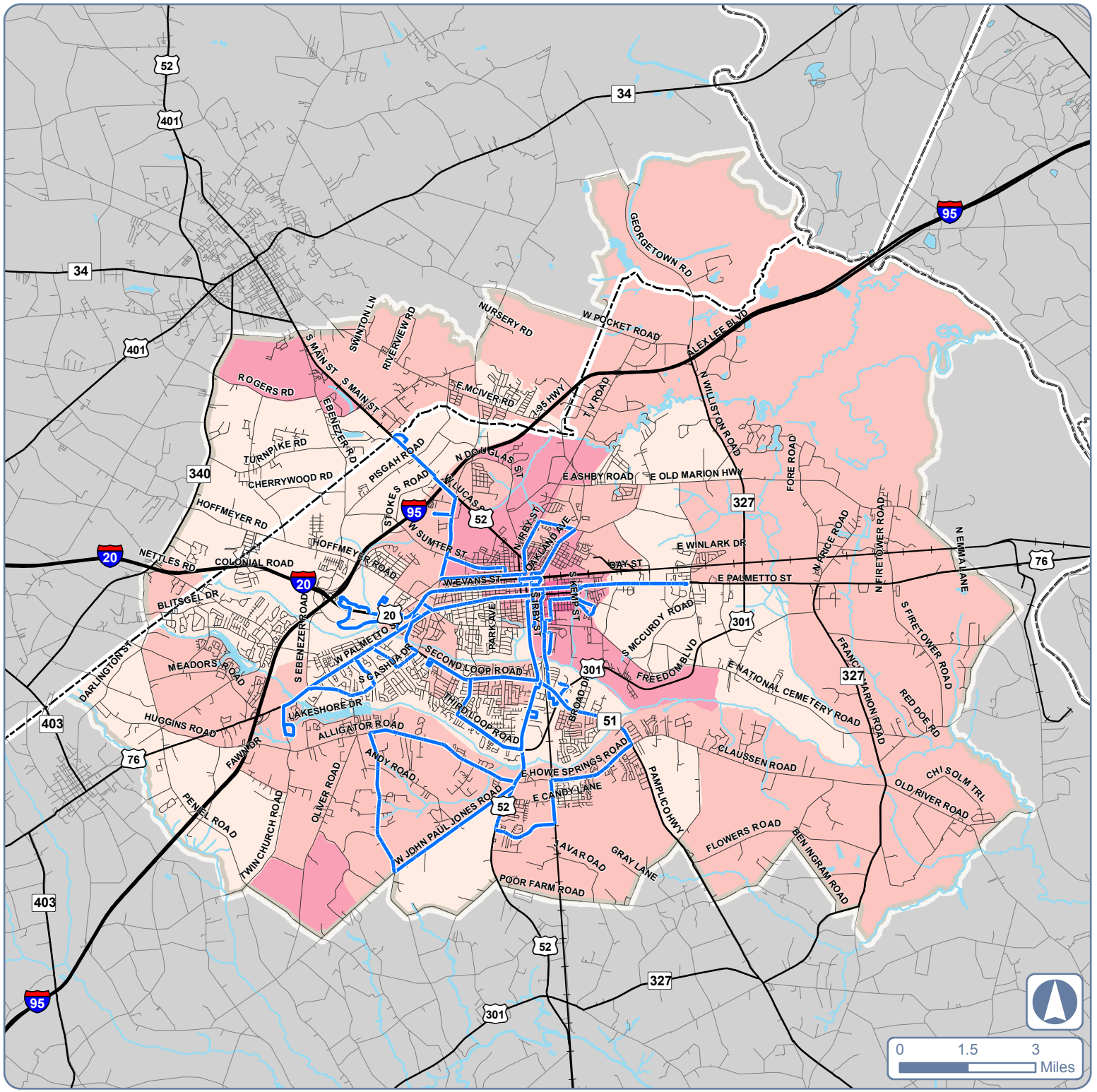


Figure 7.2

Vehicle Availability



Notes:

- Data shown at the census block level based on the 2000 Census.
- Percentages shown for each census block does not account for the total population in the block. That is, a block with less people may reveal higher percentages of households without access to a vehicle despite having fewer such households overall.

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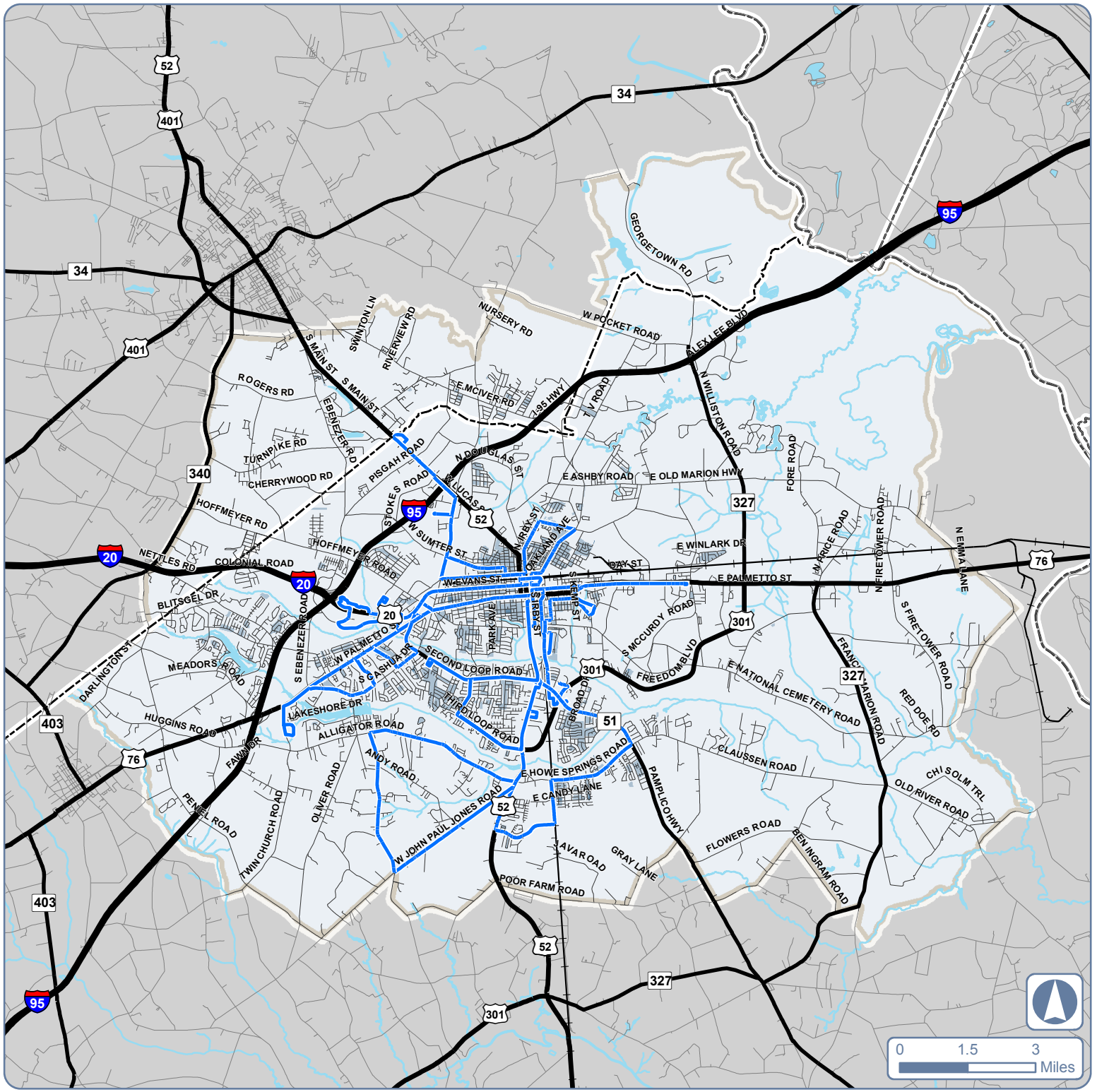

Figure 7.3

Population Density

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- FLATS Boundary
- County Boundary
- PDRTA Bus Route

Persons per Acre

- Less than 5
- 5 to 20
- 20 to 75
- More than 75

Note:
- Data shown at the census block level based on the 2000 Census.

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Best Practice Guiding Principles

The vision for transit in the FLATS area is for it to become a preferred and viable mode of transportation. The guiding principles described below represent best practices for achieving this vision. The principles promote a system that supports regional land use, improves mobility, and benefits the environment. The findings and recommendations that follow are based on the need to balance the issues identified for other elements presented in the *2035 LRTP* and to support these guiding principles.

Land Use Integration

The transit system should support the local and regional land use vision.

Making transit an option for both captive and choice ridership will hinge on land uses that make traveling by transit a viable alternative to personal automobile use. Higher density and mixed-use development in the downtown service area as well as around high-use bus stops will promote economic growth. Well-designed and properly implemented transit can be central to developing or redeveloping activity centers and can target growth to specific corridors.

Mobility Solutions

Mobility should be provided for both choice and captive riders.

Mobility improvements should provide access to more locations, reduce travel times, add more frequent and reliable service, and incorporate different types of service (such as radial routes, circulator routes, demand-response, rail, etc.). Choice riders will need incentive to select transit (reduced travel time, increased access to key locations, or fares subsidized by employers). Captive riders will need access to more destinations (employment centers, schools, places of worship, recreation sites, and medical facilities). Mobility should be measured by improved transit service that enhances the quality of life for both populations.

Environmental Stewardship

Transit improvements should promote improvement in air quality while minimizing impacts to social, cultural, and natural resources.

Transit ridership can reduce the use of private automobiles, which in turn can lower congestion, improve air pollution, and reduce energy consumption. To maximize the functionality of transit and to reduce negative consequences, transit service provided in a particular area should be in line with the intensity and type of surrounding land use.

System Development

Changes to the transit system should be evaluated, planned, and implemented as part of a larger transportation system that includes sidewalks, bicycle facilities, roads, freight, and passenger rail corridors.

Transit service is an important link in a multimodal transportation system that includes pedestrians, bicyclists, motorists, and transit users. Transit can provide a vital connection that allows walking and cycling to become more than recreational and leisure activities. Passenger amenities, such as bus shelters, bus pull-offs, lighting, bicycle racks, and sidewalks should be planned in a way that supports multimodal corridors. By providing amenities and links to other transportation facilities, transit can become a more viable option for travel.

Findings & Recommendations

The findings and recommendations presented in **Table 7.2** are grounded in a planning process that included analysis, public outreach, and a review of previous and on-going planning efforts. The recommendations also have been weighed against the needs identified in the other elements of the *2035 LRTP*. The recommendations are grouped by general findings, and some recommendations address more than one finding.

Table 7.2 – Findings & Recommendations

Finding	Recommendation
Strategic Planning	
Previous planning efforts have provided a basic level of understanding but fall short of addressing the comprehensive needs of the Pee Dee region. PDRTA has initiated several plans of varying scope and objective. However, these plans do not provide a comprehensive review of the rural and urban dynamic of the system or forward defined strategies tied to a funding and phasing program.	▪ **Develop a Comprehensive Transit Master Plan that coordinates the dual functions of urban rural transportation as provided by PDRTA.** While the master plan should reflect the needs of the entire six-county PDRTA region, special consideration should be given to the needs of the FLATS area given the area's role as the economic hub of the region. In addition, development of the Comprehensive Transit Master Plan should be coordinated with the multimodal strategies of the *2035 Plan* where appropriate. • Objective-based needs assessment • Review of the current performance and organizational direction of PDRTA and recommended alternative operational and managerial strategies • Documentation of passenger amenities and future needs • Recommendations for fixed route location, frequency, and duration • Reiteration of targeted marketing initiatives • Phased Implementation Plan and Dynamic Financial Plan • Performance measures upon which to judge success
The Pee Dee region would benefit from the construction of the Multimodal Transportation Center to house the Florence Transit System, Greyhound (Southeastern Stages), and a business incubator. To be successful, a transit system must be integrated with other modes. PDRTA has partnered with the Florence Downtown Development Corporation to develop preliminary plans for a transit hub in downtown Florence.	▪ **Construct the multimodal transportation center in downtown Florence.** Preliminary planning has begun to fulfill the vision for a multimodal transportation center in Florence. PDRTA should continue to work with local, regional, and state leaders to secure adequate funding to see this project to completion.

Finding	Recommendation
Strategic Planning	
With Florence functioning as the center of the region's economic, entertainment, and medical activity, services for commuters must be a priority for the transportation system. Florence County is the only county in the Pee Dee region that increases in population during the day. PDRTA has been a leader among its peers across South Carolina in delivering commuter services for residents in outlying areas. As the population becomes more dispersed and more economic activity centers in Florence, services designed as alternatives to single-occupant private vehicles will provide critical mobility to the region's residents. The Pee Dee Regional Transit Plan also acknowledges the need for commuter services.	▪ **Expand opportunities for residents throughout the Pee Dee region to participate in carpools and vanpools.** The current vanpool services offered through PDRTA should be enhanced to include a rideshare matching program for both carpools and vanpools. A web-based program linked to www.pdrta.org should be introduced as part of the redesigned PDRTA website scheduled to be launched in 2010. When the rideshare program matures, a coordinator should be hired to work directly with major employers and local educational institutions to manage and market the program. ▪ **Enhance the commuter fixed route service currently offered by PDRTA.** In its marketing plan, PDRTA identified students and the business community as part of its target market. By identifying these groups, PDRTA established a goal of developing services and advertising to meet the unique needs of these groups. New routes focused on commuter services for these groups should be explored as part of the Comprehensive Transit Master Plan. ▪ **Identify strategic locations for park-and-ride facilities.** Having conveniently located park-and-ride lots throughout the Pee Dee region will be an important strategy for increasing the participation in carpool, vanpool, and commuter bus services. Where possible, partnerships with businesses and other private land owners should be formed to limit the financial burden of PDRTA in establishing park-and-ride locations. Demand for each location should dictate the level of amenities provided. ▪ **Construct a facility in Marion that consolidates the PDRTA office and transfer center.** Plans are underway to construct a facility in Marion that will expand opportunities to reach commuters from Marion. The new facility should add amenities to the transfer center that today is little more than a posted sign. Park-and-ride facilities should be included. ▪ **Remain actively involved in efforts to explore passenger rail service in Florence.** Previous plans at the state and local level have explored general ways to establish passenger rail service in the region. These plans are very much in the preliminary stage and future analysis and coordination will need to occur.
The Florence area's older population will continue to grow as the local population gets older and the region continues to attract retirees. The PDRTA Marketing Plan documents the importance and challenge of providing mobility to the aging population accustomed to the flexibility afforded by automobiles.	▪ **Implement the targeted marketing campaign outlined in the marketing plan.** The marketing plan provides a list of recommendations to market PDRTA's fixed route and demand response services to senior citizens. The recommendations include a range of targeted printed media (maps, brochures, rack cards, ride guides, posters) as well as improved advertising and public relations. ▪ **Develop strategies to transition paratransit riders to the fixed route system.** For able senior citizens (and other paratransit riders) living within walking distance to PDRTA bus routes, a focused effort must be given to transitioning ridership from paratransit to the fixed route bus system.

Finding	Recommendation
Land Use Coordination	
Land use decision and transit initiatives have operated in a vacuum. Growth and shifting land development patterns will continue to impact the delivery of PDRTA services. As noted in the previous plans, an increase in the transportation-dependant population will increase the daily need for transportation throughout the Pee Dee region. A flexible system that grows with the region is a necessary goal.	▪ **Coordinate future fixed routes with land use development patterns.** PDRTA should continue to work with the city and county planning departments to ensure transit service is considered in future development projects. In locations with larger scale development and redevelopment impacts, the review process should ensure transit-ready development features such as a mixture of land uses at appropriate densities, interconnected streets, and pedestrian-friendly design. At a minimum, the coordination between PDRTA and local planning departments should ensure new neighborhoods geared toward the elderly and low income populations are transit friendly. ▪ **Utilize the Comprehensive Transit Master Plan to determine if modifications to the current hub and spokes layout are necessary.** The hub and spoke layout of the current fixed route system emphasizes trips to and from the downtown area. While the concentration of downtown destinations will support transit in the future, the continued decentralization of activity centers as the region grows will require consideration of changes in both system organization and headway times. The system must be flexible to growth within the region, particularly as the transit-dependent population expands. ▪ **Locate civic land uses within walking distance of public transit.** Civic land uses such as libraries, parks, administration buildings, and social services should be located within walking distance of public transportation. Existing bus routes and amenities should be evaluated to ensure equal accessibility to those choosing to ride transit. In addition, the ability to provide access via transit should be a priority when selecting locations for future public facilities.
Publicity and Outreach	
Current and potential riders need clear, up-to-date information about PDRTA services. In the past, PDRTA has experienced difficulty in effectively marketing their services. As a response, PDRTA hired a consultant to develop a marketing plan that evaluates current marketing needs and proposes a series of recommendations for targeted groups.	▪ **Develop a phased implementation plan with detailed action items based on the marketing strategies outlined in the PDRTA Marketing Plan.** The PDRTA Marketing Plan provides an excellent list of general marketing strategies as well as target marketing strategies. However, the plan lacks a defined implementation schedule based on the funding and resources available to PDRTA staff.

Finding	Recommendation
Customer Delivery System	
Riders and non-riders often form their perception of the transit system based on a customer delivery system that includes bus stop amenities as well as sidewalks and bikeways. The perception of these amenities can impact the overall success of the transit system, which depends on adequate sidewalks and bikeways as well as a comfortable environment to wait for the bus.	▪ **Coordinate bus stop upgrades with improvements to the pedestrian and bicycle network.** The *2035 Plan* recommends a series of bikeway and sidewalk improvements to connect activity centers and neighborhoods. Improvements to the pedestrian and bicycle network, especially those constructed as part of new road construction and/or widening, should be coordinated with existing and future transit needs. ▪ **Enhance bus stops.** Only one PDRTA bus route has bus stop signs. Focus group sessions conducted as part of the PDRTA Marketing Plan indicated that the lack of bus stop signs deters riders, especially new riders, from using the system. Initial steps to enhance the system's bus stops have begun, starting with the purchase of solar-powered signs. PDRTA has recognized the need to provide better amenities at bus stops, and future plans to add shelters will require additional funding and coordination with private land owners (especially at locations in which shelters/benches will be added outside the public right-of-way). Funding limitations can be overcome by creating a sponsorship program ($100 to sponsor a bench) and forming partnerships with adjacent land owners. Bus stops should be enhanced based on a priority score, with high volume and high visibility locations receiving top priority.
Safety and Security	
Safety and security of the public transportation system is a federal requirement and a local priority that requires both consideration and funding. Through SAFETEA-LU, the federal government established safety and security as independent planning factors for consideration in long range transportation plans. As the most public component of the transportation network, lapses in safety and security of the transit system can severely diminish its viability and cripple mobility in the region.	▪ **Improve the safety and security of the transit system.** The federal government requires PDRTA to spend a minimum of 1% of their federal dollars on safety and security. To date, PDRTA installed cameras and surveillance in their facility and installed automated fareboxes to eliminate cash transactions. The following additional tasks should be completed: • Install cameras on transit buses • Complete the installation of solar lighted bus stop signs with rotating beacons to alert the driver of activity at the bus stop • Install mobile data terminals on buses to relay GPS information in real time • Equip buses with the equivalent of a "black box" data recorder to provide information in the event of an incident These improvements are in various stages of implementation. Safety and security of the transit system also can be achieved by improving bus stops through better lighting and properly maintained landscaping.

Conclusion

Transit provides a vital service in daily life of passengers. The focus of many recommendations in this chapter is to promote transit as a safe, convenient, and dependable form of transportation. Longer-term solutions target improvements for captive and choice riders to ensure transit exists as a sustainable transportation alternative. Solutions for transit extend beyond what typically is considered transit planning. Strategies presented in other elements of the *2035 LRTP* will help establish transit as a viable alternative for residents, employees, and visitors throughout the Pee Dee region.

- Improving roadways and creating a more connected roadway network allows transit vehicles to service people more efficiently
- Constructing a consistent bicycle and pedestrian network helps residents safely move between bus stops and their final destination
- Coordinating land use and transportation decision-making processes ensures that new development — whether roads, homes, offices, or shops — will support existing and future transit service

If transit is going to flourish in the FLATS area, local leaders must be committed to progressive planning and continuous assessment even as they actively seek innovative funding sources for short- and long-term investments.

Chapter 8

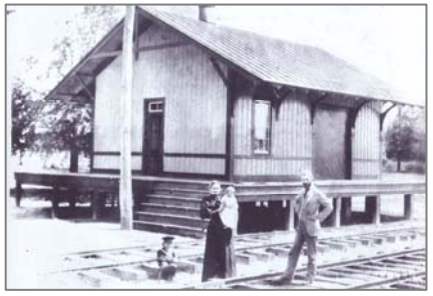
Freight & Aviation Element

Introduction

When the federal government passed the SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) legislation, national policy leaders reaffirmed the importance of planning freight and aviation at a regional scale. Moving goods continues to be one of the most expensive parts of the production cycle, and a significant way to reduce costs for end users is to ensure the efficient movement of goods by highway, rail, and air. Effective planning also accounts for the transfer of goods from one mode to another. As a hub of industrial activity for the southeastern United States, changes to the transportation capacity in the FLATS area will impact areas beyond the MPO boundary. Maintaining and improving the infrastructure not only will promote economic growth across the country but also will provide long-term economic stability for Florence and the surrounding area.

A strategic approach to freight and aviation planning can limit the effects of such high concentrations of freight industries and infrastructure (including congestion, increased conflict points, and growth constraints). The recommendations of the Freight & Aviation Element of the *2035 FLATS Long Range Transportation Plan* (*2035 LRTP*) addresses the future needs of truck and rail freight as well as aviation service. While every recommendation cannot be included within the financially constrained plan, some can be implemented with highway or transit recommendations. It is assumed funding restricted to freight projects will be applied to the area of greatest priority. Additional funding and implementation strategies are discussed in **Chapters 10** and **11**.

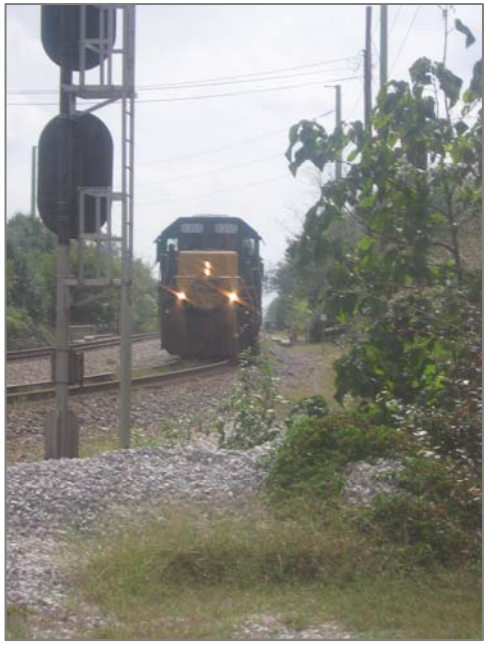
Historical Trends



Perhaps more than any other element of the *2035 LRTP*, freight has played a pivotal role throughout the history of the Florence area beginning with the city's start as a railroad depot. Since the railroad arrived in the mid 1800s, the historical trends of both freight and aviation in the greater Pee Dee region have paralleled the trends of the nation as a whole. The economy of the Florence area has flourished as local businessmen and entrepreneurs stayed on the leading edge of technology and trends in moving freight as the network evolved from a regional to an international influence. Policy decisions also have mirrored national trends. As truck freight emerged, some emphasis was shifted to improving the network of highways.

The Bureau of Transportation Statistics estimated 4.6 billion ton-miles of freight were hauled domestically in the United States in 2006. (A ton-mile represents one ton of freight shipped one mile and is the primary physical measure of freight transportation output.) Rail accounted for 40% of the ton-miles while trucks accounted for slightly less than 28%. The growth of these two means of freight movement has steadily increased since the 1980s. While the total ton-miles of freight carried by trains has increased more than other modes, railroads have experienced a decreasing market share for decades as more freight is moved by truck. This reliance on trucks has facilitated "just in time" delivery; increased truck traffic; and contributed to worsening congestion on many highways.

The continued loss of the rail freight market share to the movement of freight by truck has impacted key corridors across the United States. The continued trend of limited funds for improving these roadway corridors likely will lead to worsening congestion. However, the cost of moving goods by truck in terms of time and money will increase, and the economic losses due to congestion will rise. With expanded port activity in Charleston and southeastern North Carolina a real possibility, relieving roadway congestion through urban centers demands more attention. In Florence, where significant highway and rail corridors intersect, enhanced coordination between modes will become even more important as the cost of transportation increases and roadway congestion further impacts travel times.



Economic Implications

At the National Association of Development Organizations (NADO) annual conference in October 2009, SCDOT representatives discussed statewide freight planning practices to an audience of regional planners, local government officials, and representatives from non-profit organizations and corporations. Freight implications for the state included:

- Expansion of the Port of Charleston and construction of a new port at Jasper
- Expansion of the Panama Canal by 2015 that will increase volumes for east coast ports
- Development of inland mega-sites
- Increased focus on the state as a logistics hub

To date, the state has relied on plans such as the *2035 LRTP* to identify freight needs and recommendations. In the absence of a statewide freight transportation plan, regional transportation plans will continue to provide direction to freight planning activities in South Carolina.

Planning Context

No other element of the *2035 LRTP* is more closely tied to economic development than freight and aviation. Historically, rail and highway corridors have provided a spine upon which industrial growth could occur in the Florence area. Industrial growth, in turn, has spawned population growth and commercial expansion. For this reason, obstacles facing the freight community can slow population growth and economic development.

Often these obstacles are related to other segments of the transportation network. Successful planning efforts for freight and aviation incorporate the specific interests of other modes, especially roadway recommendations that involve capacity improvements or access management strategies. The planning context for the Freight & Aviation Element builds upon the *2035 LRTP* vision and SAFETEA-LU planning factors with public and stakeholder feedback and review of ongoing planning efforts.

FLATS 2035 LRTP Vision

Several key words from the *2035 LRTP* vision relate directly to the safe and efficient movement of goods via highway, rail, and air as well as how these systems contribute to the overall transportation network. These key words are emphasized below:

> We envision a **growing community** serviced by a **safe and sustainable transportation system** that provides real choice among modes of travel. Our transportation system contributes to an enhanced quality of life by providing attractive connections between destinations for motorists, bicyclists, pedestrians, and transit users without compromising cultural and environmental resources, and it **supports the efficient movement of people and goods at both the local and regional scale**.

SAFETEA-LU Planning Factors

The SAFETEA-LU planning factors introduced in **Chapter 1** and reiterated throughout the *2035 LRTP* provide a means for federal officials to assess the long range transportation plan's response to the unique needs of the regional transportation system. To reinforce the relationship between the federal legislation and the Freight & Aviation Element, the eight planning factors are restated below with added emphasis to ways improvements to the freight and aviation network will address the planning factor.

1. **Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency**
2. **Increase the safety of the transportation system** for motorized and non-motorized users
3. **Increase the security of the transportation system** for motorized and non-motorized users
4. **Increase the accessibility and mobility of** people and **freight**
5. Protect and enhance the environment, promote energy conservation, improve quality of life, and **promote consistency between transportation improvements and state and local planned growth and economic development patterns**
6. **Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight**
7. **Promote efficient system management and operation**
8. Emphasize the preservation of the existing transportation system

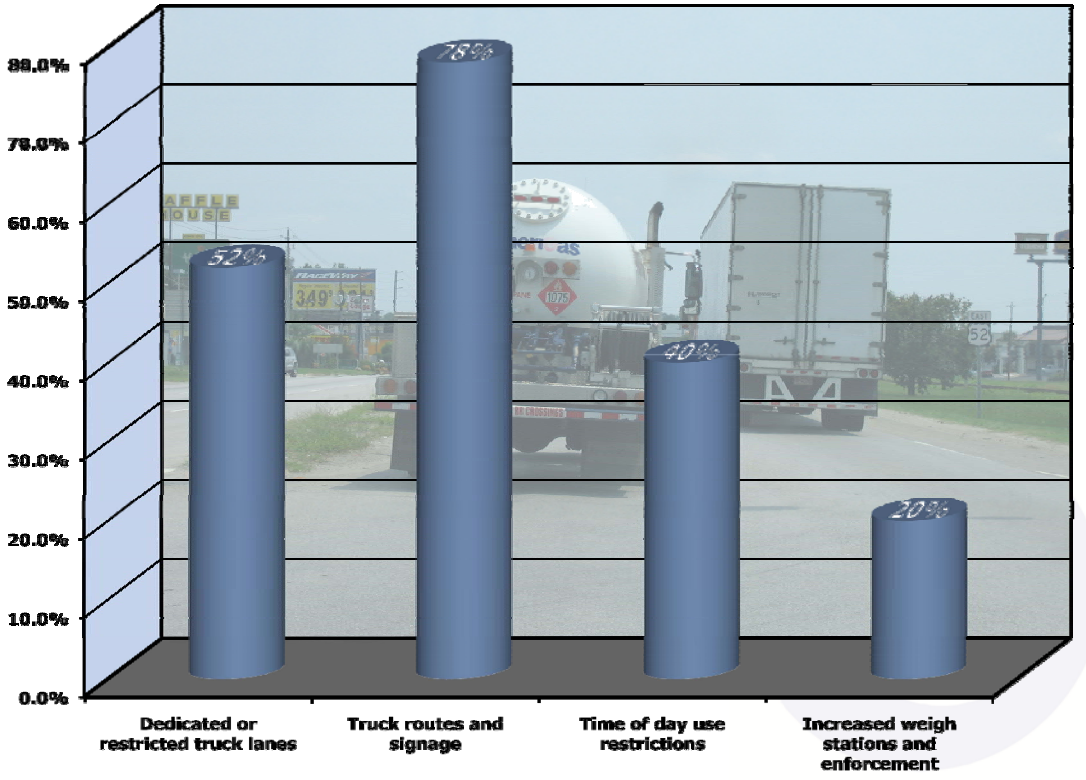
Public Perception

The planning process for the *2035 Plan* included multiple channels for public feedback. These channels included TPAC meetings, discussions with stakeholders and the general public, the public questionnaire distributed throughout the community, and a freight questionnaire targeted to different types of freight operators in the MPO. At the first TPAC meeting, several of the initial goals of the LRTP related to the movement of freight on the region's roadways and rail corridors. In particular, the TPAC stressed the importance of improving freight mobility and downtown access as well as easing the movement of goods to and from industrial areas. Following additional discussions with the TPAC and vetting through public outreach, these initial goals were refined and described in detail in **Chapter 2**. But the broader goals of safety, security, accessibility, and mobility directly relate to freight movement. Both the public questionnaire and freight questionnaire supported these goals.

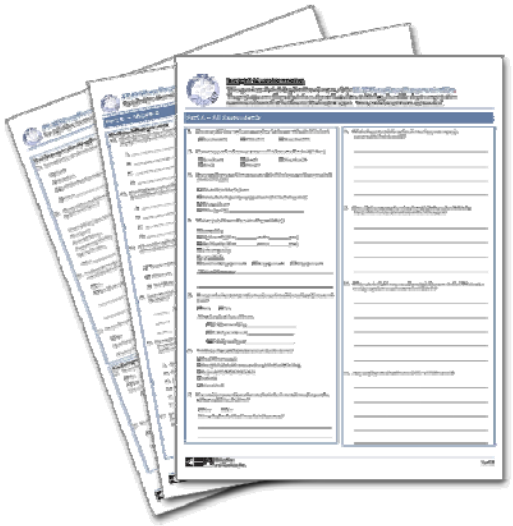
Public Questionnaire

In addition to questions tailored to the different modes of the LRTP, the public questionnaire distributed to the TPAC and general public asked specific questions regarding the movement of freight. When asked if improvements are needed to handle trucks on major roads, 68% of respondents answered yes. The graph to the right shows the preferred improvements according to the same respondents. More than three out four respondents wanted truck routes and signage, while more than half selected dedicated or restricted truck lanes.

What improvements should be made to handle truck traffic on major roads?



Freight Questionnaire



A brief questionnaire was distributed by MPO staff to members of the freight community to provide a perspective on the trends and issues operators face. Like the questionnaire distributed to the public at large, the freight edition was not intended to be scientifically valid but rather another venue through which to gather feedback. Issues raised in the responses included older roadways not adapted to the larger size of new traffic, lack of facilities to the Myrtle Beach area, and a shortage of intermodal accommodations. The questionnaire included quantitative and qualitative questions that revealed the following trends.

- Most businesses experience transportation peaks, though the peaks vary throughout the year by company.
- Drivers generally use the shortest route between the pick up and delivery location.
- Major truck routes included I-95, I-20, US 76, US 52, Palmetto Street, Irby Street. Interchanges identified on the questionnaires for high freight use include US 52/Lucas Street (Exit 164), TV Road (Exit 169), and SC 327/North Williston Road (Exit 170).
- Heavy vehicle restrictions are important to the operation of most respondents.

Existing Conditions

The planning process for freight and aviation — whether for truck freight, rail freight, or aviation services — encounters significantly different obstacles and political hurdles than planning other transportation modes. For highways, bicycle/pedestrian, and transit, government agencies are responsible for developing and maintaining facilities for the entire community's benefit. Freight, particularly in regards to rail freight, remains the only mode in which the main facilities are privately controlled. Public information typically available for other modes is considered proprietary and held confidential by private businesses. As a result, information and analysis conducted for freight often is less extensive than that of other modes.

Even under the umbrella of freight and aviation planning, different elements operate in unique organizational and governing environments. Local zoning boards dictate the location of trucking facilities while the operation of the trucks is controlled by SCDOT. Rail primarily is regulated at the federal level, but private corporations determine the use or abandonment of railroad right-of-way. Local or regional jurisdictions typically operate airports, but actual air freight service is provided by national corporations regulated by the Federal Aviation Administration (FAA). The review of existing conditions and formulation of recommendations proceeded with an understanding of these obstacles.

Freight Network

The movement of freight throughout the southeastern United States and across South Carolina has played an important role in the economic vitality of the region. Nowhere is that more true than in Florence, a city that was founded based on the potential of its rail access. Over the years, manufacturing has remained a core component of the FLATS regional economy even as the sector declined in neighboring regions. The confluence of two interstate highways and proximity of two major ports provides a robust base for economic activity. However, the freight community also requires a sound interconnected system for the movement of goods.

As shown in **Table 8.1**, when comparing all modes of shipment between 2002 and 2035, the FHWA Office of Freight Management and Operations estimates the share of truck freight to decline for trips within and from South Carolina and increase for trips to the state. According to the data, other intermodal and pipeline/unknown shipments are expected to gain market share.

Table 8.1 – Percentage[1] of Shipments by Mode (2002)

	Within SC		From SC		To SC	
	2002	2035	2002	2035	2002	2035
Truck	93%	89%	84%	79%	80%	86%
Rail	4%	4%	4%	2%	5%	3%
Water	<1%	<1%	<1%	<1%	<1%	<1%
Air (air & truck)	<1%	<1%	<1%	<1%	<1%	0%
Truck & Rail	<1%	<1%	<1%	<1%	<1%	<1%
Other intermodal[2]	<1%	<1%	4%	7%	6%	8%
Pipeline & unknown[3]	2%	7%	7%	12%	7%	3%

Notes:

[1] Numbers may not add to totals due to rounding.
[2] Other intermodal includes U.S. Postal Service and courier shipments and all intermodal combinations other than truck and rail and air and truck.
[3] Pipeline and unknown shipments are combined because data on region-to-region flows by pipeline are statistically uncertain.

Source: Office of Freight Management and Operations

Highway Freight

The Florence region boasts one of the best highway freight networks in the state, anchored by I-95 and I-20. I-95 is one of the nation's busiest freight corridors, connecting the east coast's major population and economic centers. In South Carolina, up to 25 percent of vehicles traveling on I-95 are trucks, second only to I-85. The MPO's other interstate highway, I-20, is an important east-west connector for the southern United States. Beginning at its terminus in Florence, the interstate travels through Columbia, Atlanta, and Dallas. Within Florence County, these interstate highways are supplemented by numerous US highways, including the north-south route US 52 and east-west routes US 76 and US 378. Collectively, the interstate and US highways carry the most traffic — both in terms of personal vehicles and commercial trucks. But some SC highways, especially outside the Florence city limits, also carry significant freight traffic. These corridors include Pamplico Highway (SC 51), Williston Road (SC 327), and SC 403 near Timmonsville.

From a statewide perspective, the implication of freight activity on the highway network is significant. SCDOT maintains more than 840 miles of interstate highways. According to an October 2009 presentation by SCDOT at the National Association of Development Organizations Conference, 45 miles of South Carolina's interstate highways have capacity needs. Given freight activity increases due to industrial growth and expansion of port facilities, SCDOT predicts by 2030 more than 50 percent of the interstate highways will operate below acceptable levels of service and up to 50 interchanges will need to be reconstructed. On the state's primary and secondary roads, more than 1,100 miles (3% of total miles) will need to be improved at a cost of $7 billion in today's dollars.

Rail Freight

Without the railroad, Florence likely would not exist. Since the mid-1800s when the town of Florence was founded at the junction of two rail lines, the region has matured as a rail and transportation center. Economic growth in the first early years of the city was tied directly to the freight mobility provided by the rail corridors. And even as the highway network has improved and reduced the dependence on rail for moving goods, the region continues to rely on its rail network to connect industrial sites to ports and end users.

The Association of American Railroads (AAR) defines three railroad classifications.

- **Class I** railroads are the largest operating railroads in terms of revenue. The actual definition of a Class I railroad has changed over the years to account for inflation and other factors. As of 2005, the Association of American Railroads (AAR) defined Class I railroads as having annual operating revenues that exceed $319.3 million. The number of Class I railroads has shrunk from more than 130 in 1939 to only seven in the United States and Canada today. These seven railroads account for 93 percent of the industry's revenues.
- **Class II** railroads, commonly known as "Regionals", currently classified by the AAR as having operating revenues of $20.5 to $277.7 million. As with Class I railroads, the revenue benchmark used to classify these railroads is adjusted periodically. Class II railroads are not nearly as large as Class I railroads and typically operate only within a particular region. However, they offer well-equipped main lines for faster movement of freight as well as local switching operations. A total of 12 Class II railroads exist in the United States today, none of which operate in South Carolina.
- **Class III** railroads, commonly known as "Shortlines", are defined by the AAR as a railroad with less than $10 million in annual operating revenue. While shortlines are the industry's smallest in terms of miles of track and revenue, they are the most numerous in the nation with approximately 500 in operation.

CSX Transportation, the South Carolina Central Railroad, and Amtrak operate in the FLATS MPO area, using the region's Class I and Class III rail lines. No Class II railroads exist in South Carolina.

- Florence is home to a major CSX switching yard (located just north of downtown east of Lucas Street (US 52) and has direct rail service to two major seaports (Charleston, SC and Wilmington, NC). This rail line, shown in **Figure 8.1**, follows US 76 from the east to downtown then parallels US 52 to the south. This line is the company's major north-south route connecting Charleston with Washington, DC. CSX also owns a short rail corridor that parallels West Darlington Street. The CSX railroad in Florence County currently is an active Class I rail line.
- The South Carolina Central Railroad (SCRF), a RailAmerica property, is a Class III shortline railroad that connects Florence with Bishopville via Darlington and Hartsville. In total, SCRF maintains more than 120 miles of railroad (including a separate segment between Cheraw and Society Hill). The portion of the SCRF railroad in the MPO area is adjacent to Lucas Street/South Main Street.
- Amtrak passenger rail, with its station located at 805 East Day Street near McLeod Regional Medical Center, offers a connecting service between Florence and the cities of Greenville, Spartanburg, Myrtle Beach, and Columbia, with intermediary stops to Camden and Conway. The station rests approximately half-way between New York City and Miami, the termini of the Silver Meteor line. According to the Great American Stations website, the total Amtrak rail boardings in 2008 for the City of Florence were 47,163.

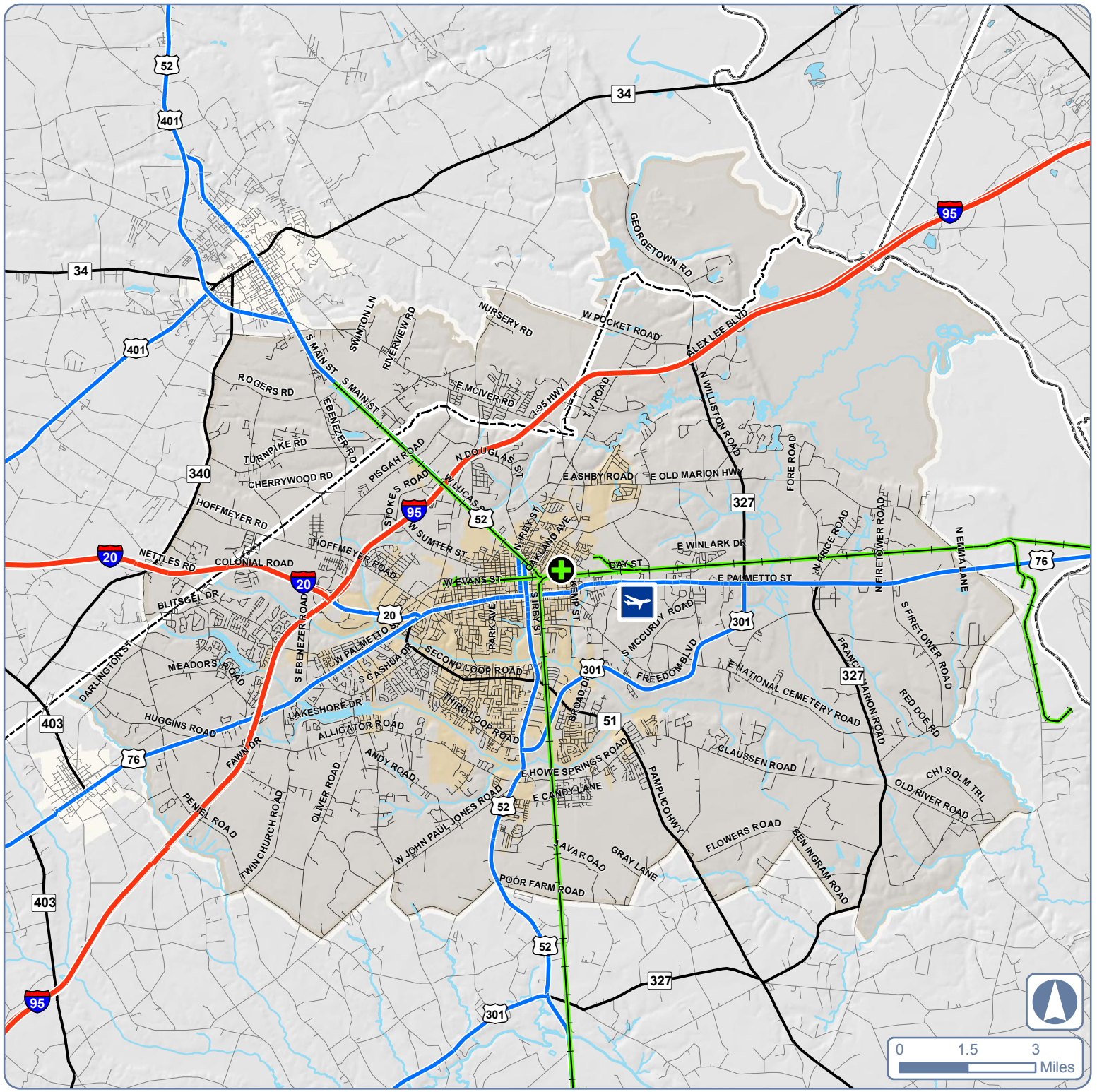


Figure 8.1

Freight & Aviation Network

- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary
- Florence Regional Airport
- CSX Switching Yard

FLATS 2035 LRTP

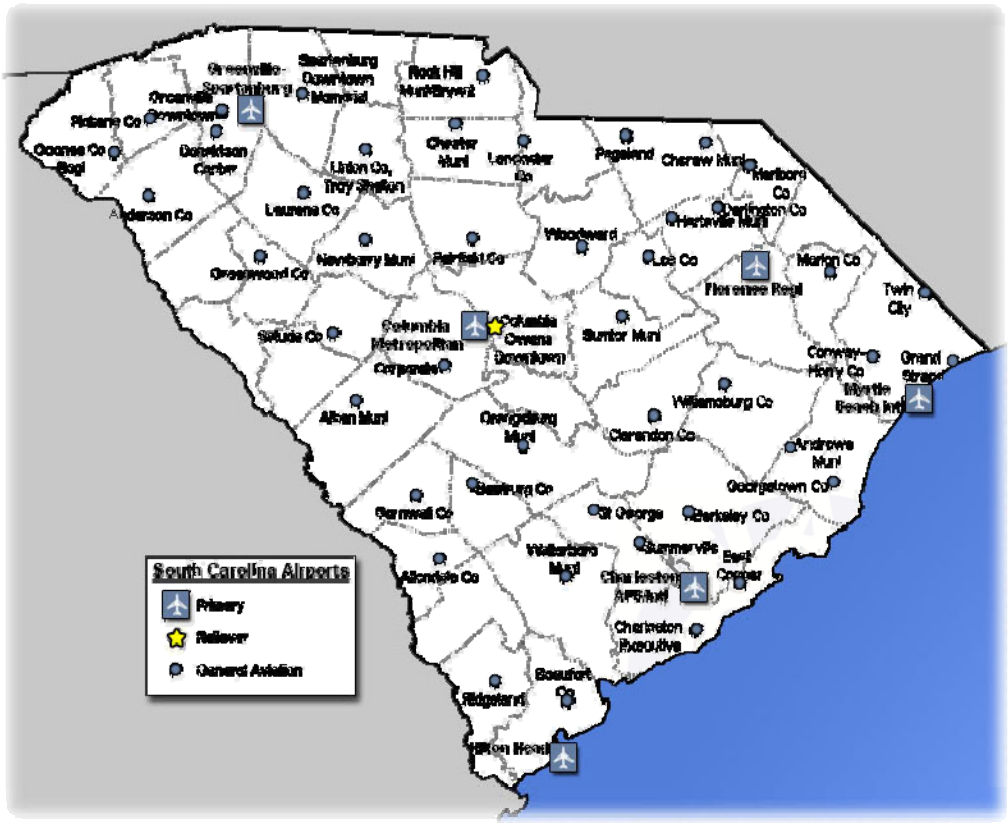
Kimley-Horn and Associates, Inc.

Aviation Services

South Carolina's airports are an important component of the statewide transportation system and a catalyst for the state's economy. Aviation needs — including passengers on commercial airlines, those piloting a private aircraft, and the movement of goods — are fulfilled through a combination of large airports and smaller facilities across the Palmetto State. These facilities fall into one of three major categories:

- **Commercial Service/Primary Airports** — These airports include facilities that serve regularly scheduled passenger service. The three largest facilities in the state are Charleston International, Greenville-Spartanburg International, and Myrtle Beach International. Other airports with scheduled passenger service in the state include Florence Regional Airport, Columbia Metropolitan Airport, and Hilton Head Island Airport.
- **General Aviation Airports** — These airports include smaller facilities that exist in the majority of counties throughout the state. They typically have paved runways 2,000 feet to 5,500 feet in length and can accommodate small (single engine) and medium-sized (multi-engine) aircraft. These airports often provide opportunities for businesses with suitable aircraft to avoid the use of larger facilities and minimize air travel associated with lag time. They also have proven useful in attracting business to communities throughout the state. No general aviation airports are located within the FLATS MPO area.
- **Reliever Airports** — These airports are large general aviation airports that provide additional capacity when the area's primary commercial airport reaches capacity. Columbia Owens Downtown is the state's only reliever airport.

The image to the right illustrates the location of these airport categories in South Carolina.



Existing Facilities

Florence Regional Airport (FLO)

Located a few miles east of downtown, Florence Regional Airport is a general aviation airport served by two commercial airlines (Delta Connection and US Airways). The commercial airlines provide regional service to Hartsfield-Jackson Atlanta International Airport (Delta) and Charlotte-Douglas International Airport (US Airways). **Figure 8.1** shows the location of Florence Regional Airport within the context of the FLATS MPO area. **Table 8.2** details the flight schedules.

Table 8.2 – Flight Schedules

Flight #	Time	Airline	Days
Departures			
4173	5:45 am	US AIR	Daily (except Sunday)
4901	6:40 am	Delta/ASA	Daily
4439	7:45 am	US AIR	Sunday Only
4169	9:22 am	US AIR	Daily (except Sat. or Sun.)
4107	11:10 am	US AIR	Sat. and Sun. only
4494	1:00 pm	US AIR	Daily (except Sat. or Sun.)
4191	2:42 pm	US AIR	Daily (except Saturday)
4743	3:22 pm	Delta/ASA	Daily
4256	5:53 pm	US AIR	Daily (except Sat. or Sun.)
Arrivals			
4169	8:55 am	US AIR	Daily (except Sat. or Sun.)
4107	10:44 am	US AIR	Sat. and Sun. Only
4494	12:32 pm	US AIR	Daily (except Sat. or Sun.)
4191	1:48 pm	US AIR	Daily
4843	2:57 pm	Delta/ASA	Daily
4256	5:27 pm	US AIR	Daily (except Sunday)
4852	7:43 pm	Delta/ASA	Daily
4443	8:05 pm	US AIR	Sunday Only
4262	9:10 pm	US AIR	Daily (except Sunday)
4392	9:44 pm	US AIR	Sunday only

Source: www.florenceairport.com, March 2010

History and Future Trends

The history of Florence Regional Airport began with the purchase of 300 acres east of downtown Florence in 1928. During World War II, the site served as a training base (Florence Army Airfield) and an additional 1,400 acres were added. Following the war, the property was deeded to the City of Florence, which eventually split the property with Florence County. In 1999, the airport's operation was assigned to the Pee Dee Regional Airport Authority (PDRAA). Over the past ten years, the PDRAA has focused on maintaining a safe and reliable facility. Today, the PDRAA has turned its attention to enhancing the passenger experience by improving the parking facility, reorganizing the passenger waiting areas, and installing a new baggage carousel with complimentary luggage carts. Future plans include the construction of a new passenger concourse and gate areas with improved vending facilities. Current plans will allow expansion to 12 gates with ramp and apron facilities.

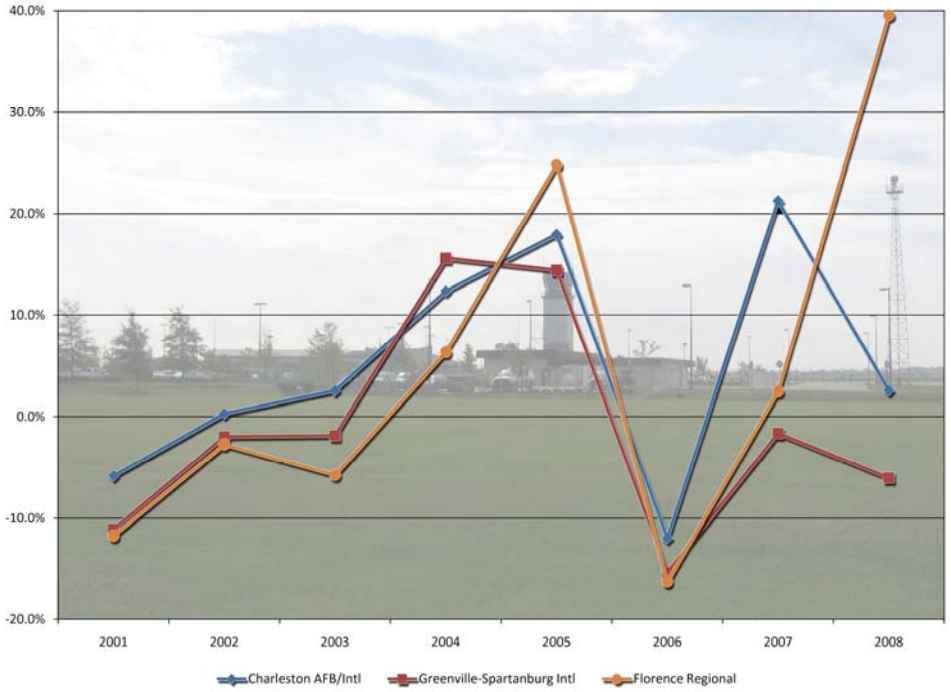
Aircraft and Enplanements

As of February 12, 2010, a total of 37 aircraft were based at the airport — 26 single-engine, 10 multi-engine, and 1 jet. The Federal Aviation Administration (FAA) compiles enplanement statistics for air facilities in the United States. A review of the trends for South Carolina's largest airports from 2001 to 2008 shows Florence Regional Airport continues to be the state's sixth largest airport by enplanements. **Table 8.3** shows statistics for 2000 and 2008, indicating Florence Regional Airport was one of only two airports in the grouping that grew from 2000 to 2008. The associated graph illustrates how Florence's airport has followed the same trend as the state's two largest airports in annual percent change of enplanements. This trend changed between 2007 and 2008, when the Florence airport continued to grow while the Charleston and Greenville airports did not.

Table 8.3 – Enplanements in South Carolina's Largest Airports			
	2000	2008	Percent Change
Charleston AFB/Intl	834,787	1,174,667	40.7%
Greenville-Spartanburg Intl	788,807	699,805	-11.3%
Myrtle Beach Intl	766,729	705,430	-8.0%
Columbia Metropolitan	607,228	565,938	-6.8%
Hilton Head	92,465	79,912	-13.6%
Florence Regional	50,384	64,835	28.7%

Source: www.faa.gov, March 2010

Percent Change in Enplanements from Previous Year



Airport Specifications

09/27 Runway

- **Designation**: 09/27
- **Width**: 148 feet
- **Length**: 6,502 feet
- **Surface**: asphalt in good condition

Lighting and Approach Aids:

- **Runway Edge Lights**: High Intensity
- **Runway Markings**: good condition
- **Visual Glide Slope Indicators**: 4-light PAPI on each approach
- **Approach Lights**: MALSR: 1400 feet medium intensity approach lighting system with runway alignment indicator lights

01/19 Runway

- **Designation**: 01/19
- **Width**: 147 feet
- **Length**: 6,000 feet
- **Surface**: asphalt in good condition

Lighting and Approach Aids:

- **Runway Edge Lights**: Medium Intensity
- **Runway Markings**: good condition
- **Visual Glide Slope Indicators**: 4-light PAPI on each approach

Recommendations

The ease of moving goods within and through a region — whether by highway or rail — is critical to remain competitive in a global marketplace. And the importance of reliable, convenient air travel is an important consideration for both quality of life and economic development. Officials at the state and local levels realize the advantage of having safe and efficient systems to move people and goods. The recommendations and strategies of the different modes in the *2035 LRTP* represent important steps to setting the stage for these systems to exist in the Florence region for the next 25 years. While the freight environment may be different in 2035, all trends point to the continued reliance on the region's network of highways and rail corridors to fuel economic development. The recommendations of the Freight & Aviation Element presented at the end of this chapter are based on a series of best practice guiding principles. The general recommendations build upon the strategies in the other elements of the *2035 LRTP*.

Best Practice Guiding Principles

The guiding principles that follow provide best practices for achieving a vision that ties freight and aviation in the Florence region to larger quality of life and economic development goals. The principles promote a system that recognizes the important role the movement of goods plays in the region. The findings and recommendations that conclude this element build upon the strategies and recommendations of other elements of the *2035 LRTP*, particularly the Future Roadway Element. The findings and recommendations also support the guiding principles.

Economic Development

The role the freight and aviation industries play in economic development should be a consideration as projects are weighed against competing priorities.

Given the global competitiveness of today's economy, the movement of freight and accessibility to reliable air travel is among the most important factors for business and industrial development. This fact recognizes that many industries define economic competition by the ease and timeliness in which they can move goods and services. Freight and aviation projects must assume their proper place within the regional transportation prioritization process.

Safety and Security

Safety and security of the freight network should be an overarching concern in the creation of plans, policies, and programs.

SAFETEA-LU emphasizes safety and security as independent planning factors for consideration in long range transportation plans. The growing volume of freight moving throughout the region underscores the need for a focus on safety and security in freight planning exercises — both as part of regional multimodal transportation plans and local freight-specific initiatives.

Education

An education campaign should be an on-going effort for local officials and industry stakeholders.

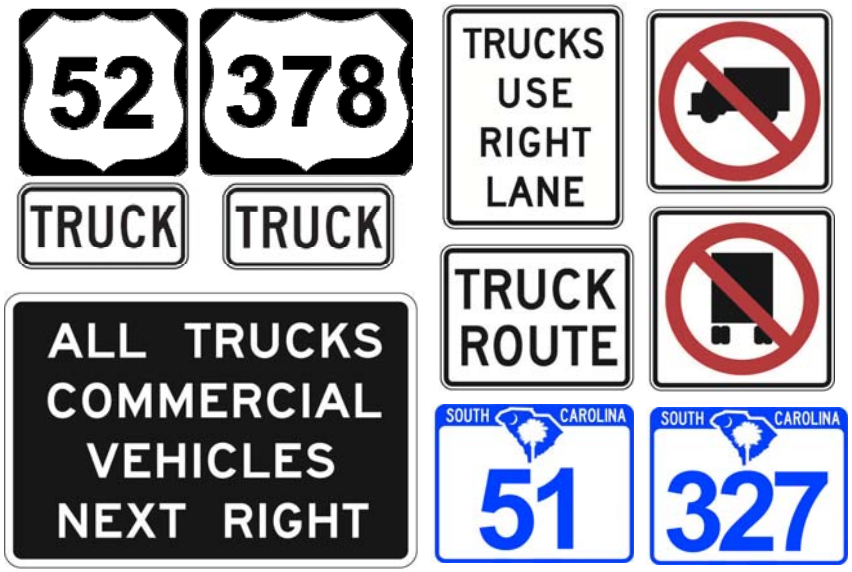
While the proper functioning of freight activity contributes heavily to the quality of life consumers' value, most consumers relate to freight only by the large trucks on area roadways and the long trains holding up the morning commute. Freight planning should address key issues and develop mitigation strategies that seamlessly integrate freight movement into the existing transportation system while educating the public on the importance of freight transportation to the region. The needs and issues of shippers, carriers, and other affected stakeholders should be emphasized.

Truck Routing

Increasing truck traffic on the region's freeways and arterials makes it more important to guide these vehicles to routes designed to accommodate them. As mentioned previously, persons responding to the public questionnaire not only recognized that improvements to handle truck traffic are needed but also identified truck routes and signage as the preferred improvement. Routes designated for trucks should be signed and publicized so truck operators can utilize them and the general public will recognize these streets have been designed with truck traffic in mind. The design of the routes should allow the safe and efficient operation of trucks. **Figure 8.2** shows routes that are recommended to be retrofitted and signed for truck traffic. Trucks, with the exception of local deliveries, should be prohibited on routes not signed for truck traffic as described below. These routes were selected based on feedback from local staff, freight industry leaders, analysis, and field review. The following considerations should be applied:

- **Truck Classification** — Trucks should be defined as vehicles with a manufacturer's gross vehicle weight of 33,000 pounds or more. This definition excludes most straight trucks, panel trucks and delivery trucks but includes large trucks with more than two axles such as tractor-trailers and tandem axle dump trucks. Public service vehicles such as garbage collection trucks also would be excluded from this definition.

- **Route Designation** — Area roadways recommended to serve as truck routes are shown in **Figure 8.2**. Should the SCDOT adopt a statewide truck route map, these designations should be considered. As industrial development occurs, it will be important to provide efficient truck access and circulation to improve freight mobility while limiting cut-through truck traffic in adjacent neighborhoods. Within city limits consideration should be given to amending local ordinances to specifically prohibit through trip truck movements on local streets. Prohibiting trucks on state maintained roadways will require SCDOT approval.
- **Route Enhancement** — Once truck routes are designated, improvements should be prioritized to ensure the routes are fully utilized. The FLATS MPO should: (1) work with SCDOT to prioritize resurfacing of designated routes in an effort to reduce noise and vibration from trucks; (2) adjust signal timing where necessary to allow uninterrupted through movements based on posted speed limits; and (3) partner with local and state entities to improve critical intersections (turning radii, lane width, and the provision of dedicated turn lanes). These improvements will greatly improve the efficiency and safety of these corridors, in turn encouraging their use by truckers.
- **Route Education** — Signs should be posted at the city limits, freeway exits, and other appropriate locations directing truck drivers to roadways on which their movements are permitted. At a minimum, this should include limiting travel to the network identified in **Figure 8.2**, except for local deliveries. In addition to signage, Florence County and its municipalities should work together to publish educational materials and distribute it to businesses and industries concerning truck routes and restrictions.

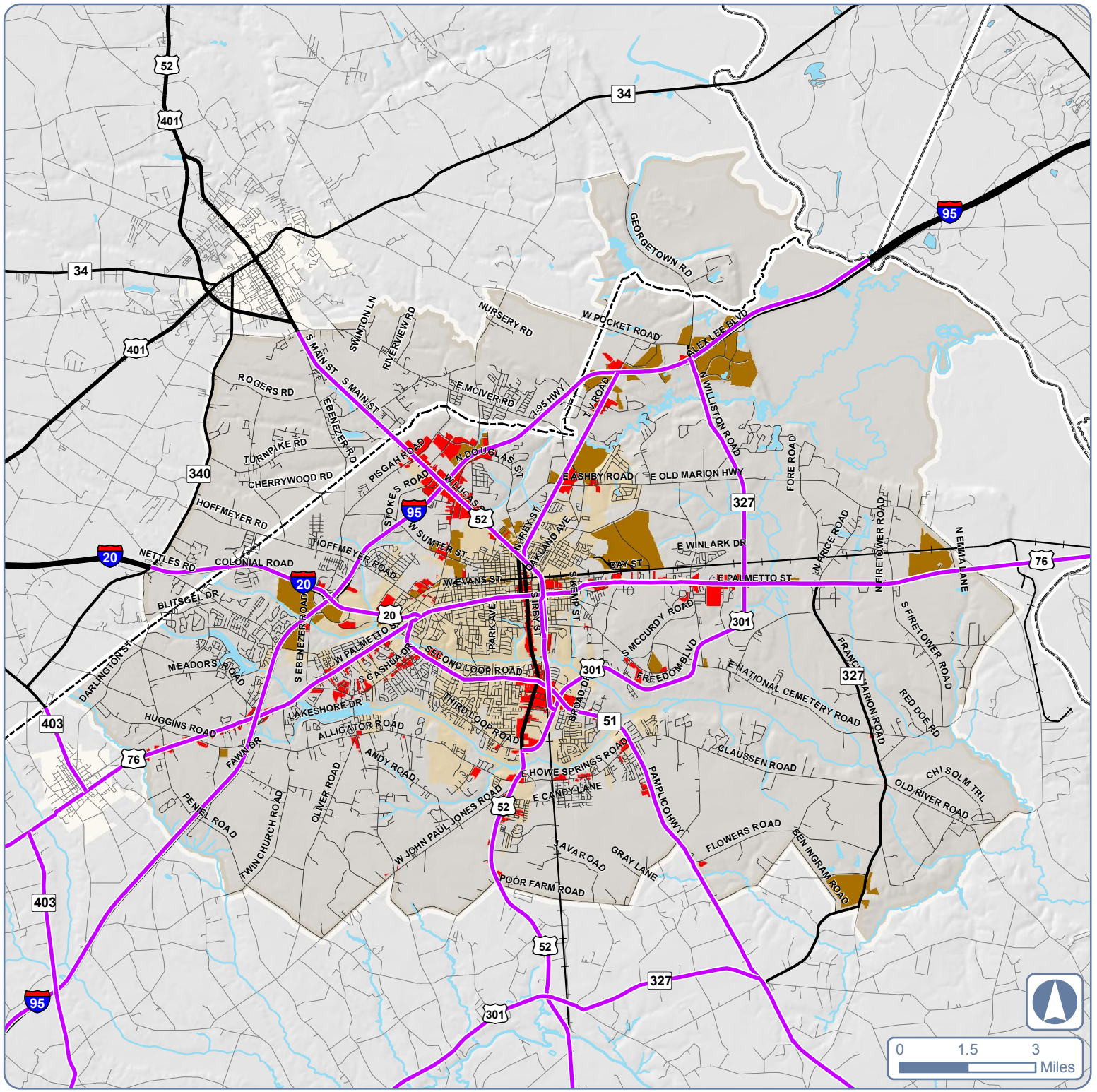


Findings & Recommendations

The findings and recommendations (**Table 8.4)** incorporate the outcome of previous planning efforts, public outreach, field review, and analysis. The relationship between these recommendations and the needs identified in the other elements of the *2035 LRTP* also has been considered. The recommendations are grouped by general findings, and some recommendations address more than one finding.

Figure 8.2

Freight Routes



- Interstate Highway
- US Highway
- SC Highway
- Street
- Railroad
- Body of Water
- River/Stream
- Municipal Boundary
- FLATS Boundary
- County Boundary
- Freight Routes

Future Land Use*

- Commercial G & P
- Industrial G & P

*Future Land Use categories (Commercial Growth & Preservation, Industrial Growth & Preservation) are derived from the Florence County Comprehensive Plan.

FLATS 2035 LRTP

Kimley-Horn and Associates, Inc.

Table 8.4 – Findings & Recommendations

Finding	Recommendation
Strategic Oversight	
Technical guidance is necessary to enhance regional economic competitiveness through freight initiatives. Perhaps more than any other element in *2035 LRTP*, freight improvements have the most potential to enhance the economic footing of the region and maintain a desirable quality of life. Strategic oversight is needed to ensure an efficient, reliable, and safe freight system becomes a reality.	▪ **Establish an Oversight Committee to provide feedback and strategic direction for freight and aviation at the regional level.** SAFETEA-LU requires MPOs to provide interested parties and freight stakeholders reasonable opportunities to provide input on transportation plans and programs. Recent efforts have been initiated to bring together a group of stakeholders to advance freight initiatives. The FLATS MPO should continue to take the lead on this process. The strategic direction may include: • Support for economic development through enhanced connectivity of the freight system. • Advancement of freight initiatives that support job creation. • Promotion of socially and environmentally responsible methods for movement of goods within and through the Pee Dee region. • Sound public investments that minimize costs and improve the efficiency of moving goods and services. • Sound public investments that provide long-term returns on public expenditures. • Greater priority to freight in the regional planning process.
Design Standards	
Officially recognized and publicized truck routes are a basic component of a larger effort to direct truck traffic to properly designed corridors. The strength of this effort rests on the ability of local and regional officials coming to an agreement on the proper design for truck routes.	▪ **Implement the recommended freight network as shown in Figure 8.2.** This process should serve as the foundation for continuing efforts to define a proper freight network within the region and to integrate future multimodal initiatives. ▪ **Develop design guidelines for freight infrastructure (roadways, intersections, and rail crossings).** Design guidelines consistently implemented at the municipal and county level for designated roadways should include proper lane widths, shoulder treatments, turning radii, and intersection treatments.

Finding	Recommendation
Project Development	
The development of freight projects traditionally has not occurred independent of regional roadway project development. While it is critical to integrate freight considerations in the public planning processes at all levels, the unique nature of freight needs and issues requires a balance between the development of projects as part of a regional multimodal planning process and the strategic direction offered only through a freight-specific regional plan.	▪ **Develop a regional freight plan that identifies corridors and conflict points for freight activity.** The plan should evolve from a dialogue between decision-makers, planners, and private sector stakeholders. The plan should establish freight needs and strategies and forward an action plan tied to an implementation schedule and appropriate funding sources. At a minimum, the regional freight plan should: • Identify improperly designed intersections that experience heavy truck traffic. • Address freight needs of area carriers and distributors at both the corridor and regional scales. • Establish a recurring schedule that evaluates pavement quality and general maintenance issues along freight corridors. • Identify, evaluate, and establish implementation parameters for low-cost congestion management improvements (e.g. traffic signal timing). ▪ **Remain actively involved in efforts to explore passenger rail service in Florence.** Previous plans at the state and local level have explored general ways to establish passenger rail service in the region. These plans are very much in the preliminary stage and future analysis and coordination will need to occur. Future enhancement to the freight and passenger rail system must be coordinated. ▪ **Implement ITS improvements that deliver on-time information to freight carriers and the general public.** Properly designed and executed ITS solutions will provide real-time information to highway users, allowing them time to react as traffic conditions change. ▪ **Prioritize projects in a way that gives extra weight to initiatives that promote intermodal freight and goods movement.** The evaluation matrix presented in **Chapter 5** considers freight in the process of prioritizing projects. Other plans (e.g. capital improvement plans) that program funds should follow suit.

Finding	Recommendation
Safety and Security	
Safety and security are critical components of any transportation plan, particularly plans that develop policies and programs for freight. The increasing volume of freight movement gives extra weight to the need to focus on safety and security as recommendations are developed. One way to ensure access and mobility for the freight industry is to enhance the safety and security of the existing network and set in place parameters to maintain standards.	▪ **Enhance safety for freight providers and the general public by identifying and prioritizing locations for improvements.** Efforts to prioritize projects based on safety and security should include a process that incorporates input from the freight sector. The following tasks should be completed: • Identify and prioritize locations with high truck/auto conflict to reduce injuries and loss of property. • Identify and prioritize rail grade crossings for improvement or closure. • Improve the flow of freight traffic by monitoring and disseminating roadway conditions using Intelligent Transportation Systems (ITS). ▪ **Provide for the secure movement of goods within and through the FLATS MPO area.** Communication with agencies and stakeholders is an essential element of a proactive approach to security issues. This process requires an effective working relationship between planning officials, law enforcement and emergency response personnel, and freight providers. The following tasks should be completed: • Discuss regional freight security issues as part of the Regional Freight Plan and meetings of the Oversight Committee. • Identify potential funding sources (such as through the Department of Homeland Security and other agencies) for freight security initiatives and support efforts to establish new revenue streams.

Conclusion

Few places in the United States have access to ports, railroads, and highways on the same level as the greater Florence area. The viability of the region's freight network is a critical element of economic competitiveness and mobility, and the safe and efficient movement of goods adds value to businesses and the general public. The Freight Element of the *2035 LRTP* considers the freight mobility needs of the region and recognizes that the city and county can work together to improve the movement of goods and services in a way that maintains the region's vision for economic development and quality of life. The outcome of improved freight planning should be a cornerstone of the ongoing efforts to sustain the competitiveness of the region in a global marketplace.

While considering freight in long range planning activities such as the *2035 LRTP* has reinforced the importance freight as part of regional and state planning initiatives, it remains difficult to see projects to completion that enhance freight movement. That is, even when freight is a core element of a plan, specific freight issues often are lost in translation before projects are programmed for funding. This battle makes it difficult for freight advocates to realize equal consideration as priorities and funding are programmed. And though numerous resources have been created to help MPOs incorporate basic freight issues into their planning activities, little guidance is available to help them translate general discussions into concrete programs and projects. Local officials — in cooperation with a dedicated committee of freight advocates — must make a concerted effort to overcome this obstacle.

Chapter 9

Land Use Element

Introduction

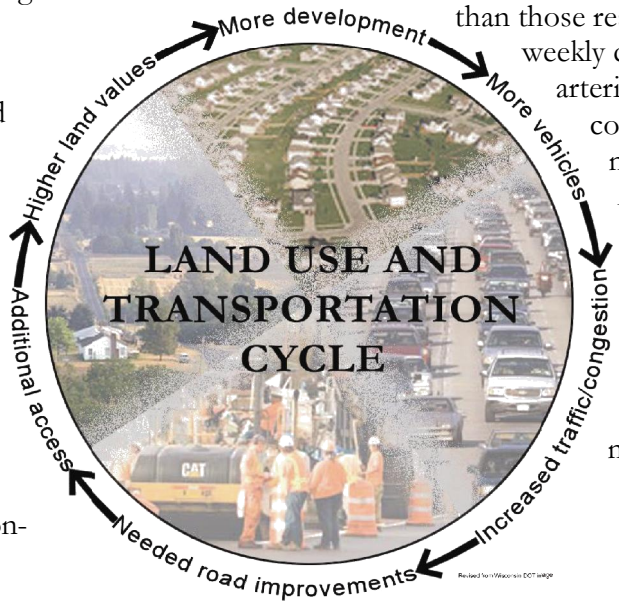
In recent years, planners and community leaders across the country have observed increased public interest in reversing the trend of urban sprawl and its consequences. Their efforts largely are motivated by the impacts of suburban development patterns: consumption of sensitive land for development, costly expansion of public infrastructure, and increasing traffic congestion. In cities like Florence and Quinby and surrounding Darlington and Florence Counties, the distance between complementary land uses (e.g., home and work, home and school, or home and shopping) and a lack of overall street connectivity leads to unintended consequences for the regional transportation system — increased vehicle miles traveled and energy consumption, longer commute times, increased air pollution, heightened infrastructure and public service costs, and decreased acreage critical to agrarian communities. These trends will continue if changes are not made to better integrate land use, urban design, and transportation decision-making.

Linking these three areas cannot be successful with a one-size-fits-all approach. The *2035 FLATS Long Range Transportation Plan* respects the variety of local smart growth planning initiatives underway in cities and counties inside the MPO planning area — such as reinvestment in downtown, suburban place-making, and rural preservation — and promotes transportation improvements sensitive to the overall goals of these initiatives within the context of the surrounding transportation system. The FLATS MPO planning area includes the urban areas of Florence and Quinby as well as more suburban and rural environments in the unincorporated Darlington and Florence counties. The City of Florence is the most densely populated location within the planning area and serves as the economic hub of the Pee Dee region.

The Florence Area Transportation Study Metropolitan Planning Organization (FLATS MPO) is joining its peers in South Carolina to take a proactive approach to promoting more sustainable development patterns. Evaluating the relationship between land use, urban design, and regional travel behavior in a scenario planning analysis produces several benefits. When considered together, decisions and investments regarding all three elements can have a significant bearing on the MPO planning area:

- The impacts to sensitive land uses can be minimized when facilities identified for transportation investments are located *after* considering appropriate land use patterns and development intensities for the area.
- Prime locations for development can be stimulated if transportation investments consider available capacity or appropriate mobility options.
- Complementary activities can be placed next to existing or planned transportation infrastructure, making the most of development opportunities and dedicated transportation investments.
- The quantity and location of travel demand can be influenced by land use decisions, making the possibility of real choices for various modes of travel both accessible and attractive.

The underlying motive is to improve the efficiency of the regional transportation system while promoting livability within local communities. These relationships were analyzed in detail for the MPO planning area and represent opportunities to better integrate land use, urban design, and transportation decision-making processes.



How Do Regions Grow?

What Influences Regional Development?

Although presence of environmental features and historical growth patterns tend to be powerful indicators of the location and arrangement of future growth, cities and counties can help guide growth through other planning mechanisms. The most popular ways to influence regional development include the planned transportation system, public policies and ordinances, and public and private funding. These mechanisms are described below.

Transportation System

The transportation system greatly influences development patterns because it dictates the fastest, most convenient, and safest routes of travel. In addition, the various modes of travel influence the settlement patterns of residents. Those who desire community facilities and day-to-day services that are accessible by walking, cycling, or public transit, will choose to live in different locations than those residents who prefer to drive to their daily and weekly destinations. Interstates, highways, and large arterials prioritize vehicular travel, while boulevards, collector streets, and neighborhood streets provide more multi-modal transportation opportunities. As transportation corridors are improved and expanded, new development typically follows. This push-pull interaction between transportation infrastructure and development patterns typically results in concentrated growth along major thoroughfares with a wide variety of residential types designed to take advantage of the most convenient transportation facilities.

Public Policies and Ordinances

Although transportation infrastructure can directly guide growth, public policies and ordinances can also direct growth. These planning documents prescribe regulations that encourage growth where adequate public facilities exist or require private developers to pay for extension of such services. Redevelopment zones, such as the Downtown Redevelopment Area in the City of Florence, encourage development in existing urban areas. Subdivision ordinances can require transportation and public service infrastructure not currently present in affected areas.

Public and Private Funding

As private developers leverage funds to construct new residential and non-residential buildings in the area, public funds are also used to extend community services to these new developments. Public-private funding interactions guide growth indirectly by linking existing and future communities. Public institutions or privately funded institutions that serve the public good can also leverage a substantial amount of public and private dollars. Hospitals and universities dictate growth patterns and trends through placement of facilities that draw development — new performing arts centers, medical facilities, and maintenance of outdoor spaces all contribute to making certain locations more desirable for residents and smaller businesses looking to locate within an area.

A combination of policies, transportation infrastructure, and investment can work cohesively to guide growth to the most suitable areas, or, if considered separately, can unevenly distribute growth across large areas of land.

What makes a Place a Place?

Historical trends and the variables that influence development combine to create regions that exhibit different characteristics. These different characteristics can be summarized by a variety of different conceptual development scenarios. These scenarios are unique based on the presence of different growth sectors, including rural areas, suburban neighborhoods, suburban centers, urban centers, and special districts. To describe the look and feel of these sectors in a local context, place types were developed. Place Types describe the specific qualities that resonate with residents and business owners. Such qualities include street patterns, densities, neighborhood connections, and size, scale, and orientation of buildings. These qualities differ across a landscape—helping planners and residents define and distinguish a rural area from an urban area. The purpose of place types is to provide a measurable framework for interpreting the intuitive differences that people feel as they move through a community from urban to more rural areas.

FLATS LRTP Place Types

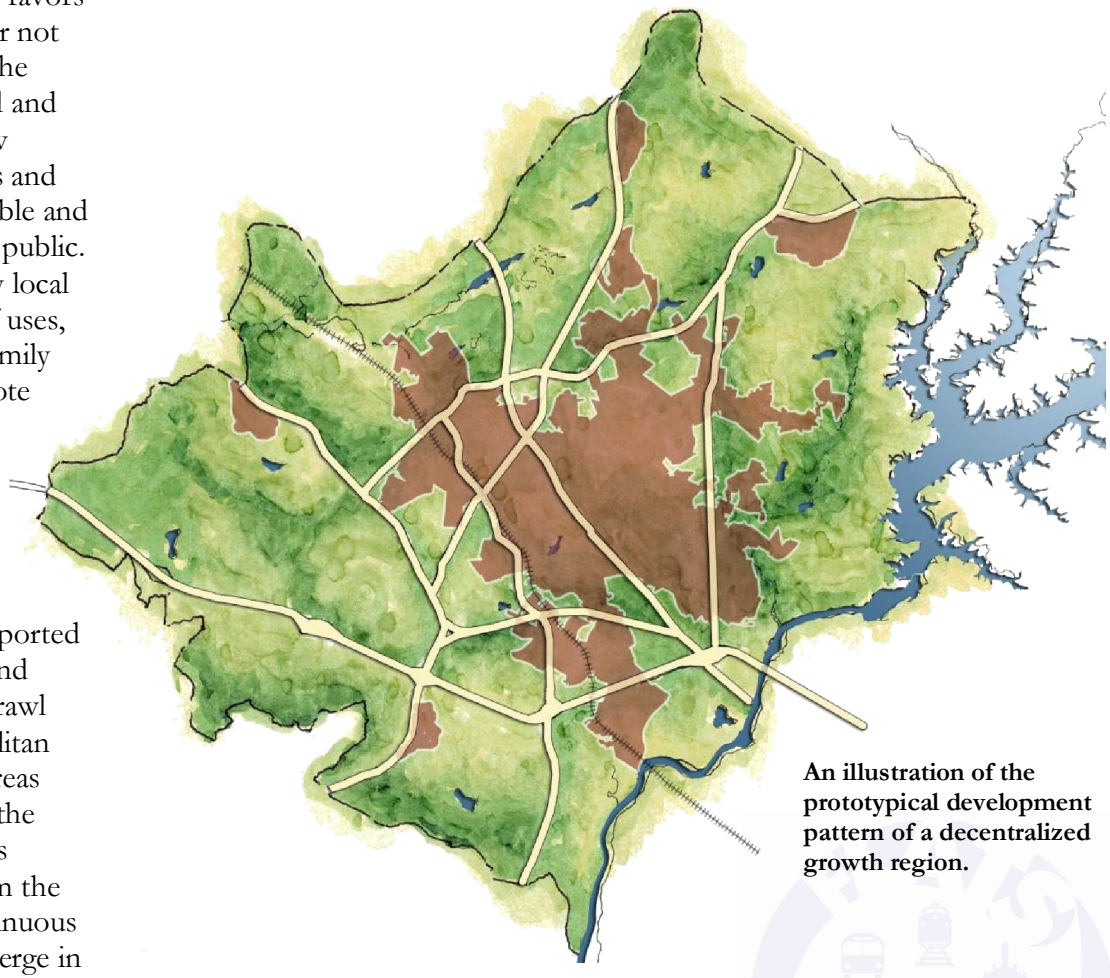
These different characteristics are summarized by a variety of different conceptual development scenarios. Those used as a reference in preparing this chapter are described in the following pages. They include decentralized growth, centers and corridors, and compact development.

Decentralized Growth

Decentralized growth (a.k.a. suburban development or sprawl) favors single use, low-density development that is generally isolated or not well-connected. The development pattern became popular in the United States following the end of World War II, when federal and local policies were enacted to promote the construction of new single-family, large-lot neighborhoods outside of urban centers and funding for the national transportation system favored affordable and convenient automobile travel over mass transit for the general public. Continued emphasis on decentralized growth is exemplified by local zoning ordinances that still require low densities, separation of uses, and large parking areas; by consumers' preference for single-family homes on large lots, and by low development costs that promote rapid consumption of land outside urban areas.

Decentralized Growth Patterns

Scholars describe decentralized growth using three general categories: low-density, continuous sprawl, ribbon sprawl, and leapfrog development sprawl. Low-density, continuous sprawl occurs at the margins of existing metropolitan areas and is supported primarily by the piecemeal extension of basic public facilities and services such as water, sewer, electricity, and roads. Ribbon sprawl follows major transportation corridors outward from metropolitan areas. Land in proximity to the corridors is developed, while areas without direct access remain rural. Over time, rural areas near the corridor are converted to suburban development as land values increase and public facilities and services are extended out from the transportation corridor. Leapfrog sprawl describes the discontinuous pattern of suburbanization, whereby large "developments" emerge in green fields because of the extension of supporting infrastructure (e.g., a new freeway interchange). Over time, rural areas in between metropolitan areas and leapfrog sprawl are converted to suburban development similar to the development pattern of ribbon sprawl.



An illustration of the prototypical development pattern of a decentralized growth region.

Five Components of Decentralized Growth

Decentralized growth patterns include five basic components: suburban residential neighborhoods, suburban commercial centers, suburban employment centers, civic institutions, and a road network. Each of these uses is strictly segregated from the others.

Suburban residential neighborhoods generally are formed as subdivisions or communities, with a relatively uniform housing type and low density throughout. Homes are oriented interior to the site and are typically buffered from surrounding development by transitional uses or landscape areas. Suburban commercial centers serve the daily needs of surrounding suburban residential neighborhoods. They typically locate near high-volume roads and key intersections, and design themselves to be accessible primarily by automobile. Buildings are set back from the road behind large surface parking lots, with little or no connectivity between adjacent businesses. Suburban employment centers (i.e., office parks or industrial parks) provide basic jobs and keep a small percentage of people in the area during normal work hours, while most still commute daily to the central business district for employment opportunities. Suburban employment centers typically include a series of buildings surrounded by large, surface parking lots. Suburban institutions include the town hall, churches, schools, and parks, all of which are scattered throughout the community.

The road network connects suburban residential neighborhoods, commercial centers, employment centers, and institutions. The physical distance between complementary land uses in a decentralized growth area tends to promote automobile travel, particularly since safe, convenient facilities are not available for transit riders, bicyclists, or pedestrians. Periods of congestion are common on a suburban road network given the long commutes and reliance on the automobile.

Illustrative examples of different development types prevalent in a decentralized growth region.

Suburban Neighborhood

Suburban Interchange Development

Suburban Business Park

Effects of Decentralized Growth

In recent years, planners and community leaders across the country have observed increased public interest in reducing or reversing the trend of decentralized growth and its consequences. Their efforts are largely motivated by the impacts associated with low-density, sprawling development patterns: consumption of sensitive land for development, costly expansion of public infrastructure, and increasing traffic congestion. In cities and regions, the physical distance between complementary land uses (e.g., between home and work, home and school, or home and shopping) and a lack of overall street connectivity leads to unintended consequences — increased vehicle miles traveled and energy consumption, longer commute times, increased air pollution, heightened infrastructure and public service costs, and decreased resource lands.

Centers, Corridors, & Open Space

Growth directed into discrete centers, linked by one or more regional transportation corridors, encourages compact development, economic vitality, and environmental stewardship. Land surrounding compact centers remains green and generally reserved for rural preservation, agriculture activities, and open space. The development pattern is popular in urbanizing cities and counties hoping to implement the principles and technologies of smart growth, new urbanism, or transit-oriented development. Managing the location and magnitude of development centers in a region helps target infrastructure needs and control implementation costs, as well as shift impacts away from environmentally-sensitive areas.

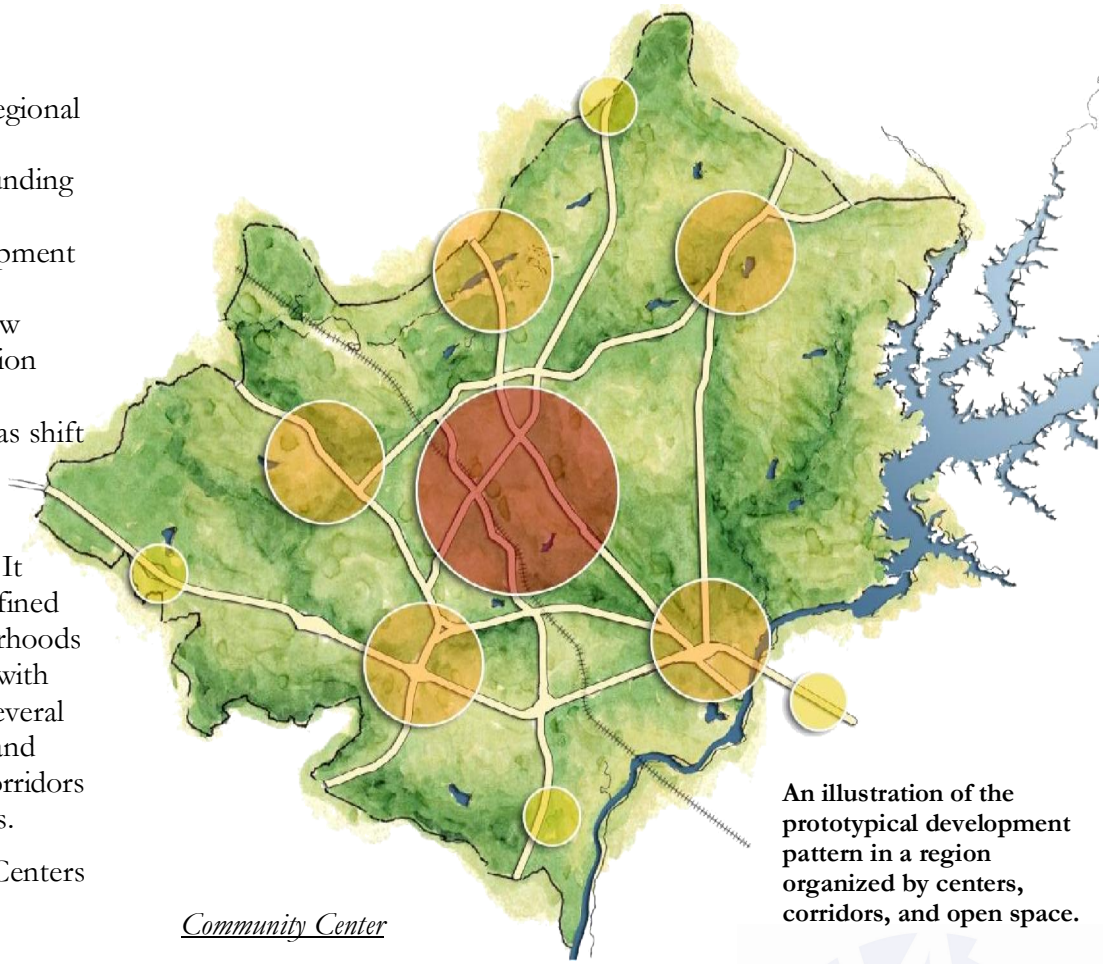
Compact Development Centers

Compact development helps create more livable communities. It typically concentrates dense, mixed-use development near a defined center with progressively lower densities spreading into neighborhoods surrounding it. Uses and buildings are located on small blocks with streets designed to encourage bicycle and pedestrian activity. Several housing types are provided in the center to meet future needs and preferences. Centers are connected by regional transportation corridors that encourage longer distance travel by automobile, rail, or bus.

Compact development centers will vary by type and intensity. Centers may include, but are not limited to, the following:

Rural Hamlet

A rural hamlet represents the small node of commercial activity near the intersection of two rural highways. Small-scale businesses, such as gas stations, convenience stores, or restaurants, serve some daily needs of the surrounding rural population. Employment and other commercial needs for rural residents are provided for in community, town, or metropolitan centers.



An illustration of the prototypical development pattern in a region organized by centers, corridors, and open space.

Community Center

A community center offers residents the ability to live, shop, work, and play in one community. They include a mixture of housing types and residential densities integrated with goods and services residents need on a daily basis. Larger community centers become known as town centers (see below). The design and scale of the development encourages active living, with a comprehensive and interconnected network of walkable streets.

Town Center

A town center is the locally-serving area of economic, entertainment, and community activity. Buildings in the core of the town center typically stand two or more stories with residential units above storefronts. They are typically surrounding by mixed-use neighborhoods that encourage active living, with a comprehensive and interconnected network of walkable streets.

Metropolitan Center

A metropolitan center is the focal point of the region. It is the hub of employment, shopping, entertainment, civic, and cultural activities, with a mix of housing types and common open space for active living. As a magnet to other surrounding centers, the metropolitan center becomes the iconic symbol of the region, starting with historic buildings and a traditional grid street network. The compact, walkable environment and mix of residential and non-residential uses in a metropolitan center support multiple modes of transportation.

Regional Transportation Corridors

Compact development centers are served by one or more regional transportation corridors. Corridors provide dedicated right-of-way and limited access to adjoining properties for safe and efficient travel. Corridors may support an interstate, heavy rail, light rail, or regional bus. Spacing between development centers would vary depending on the transportation technology.

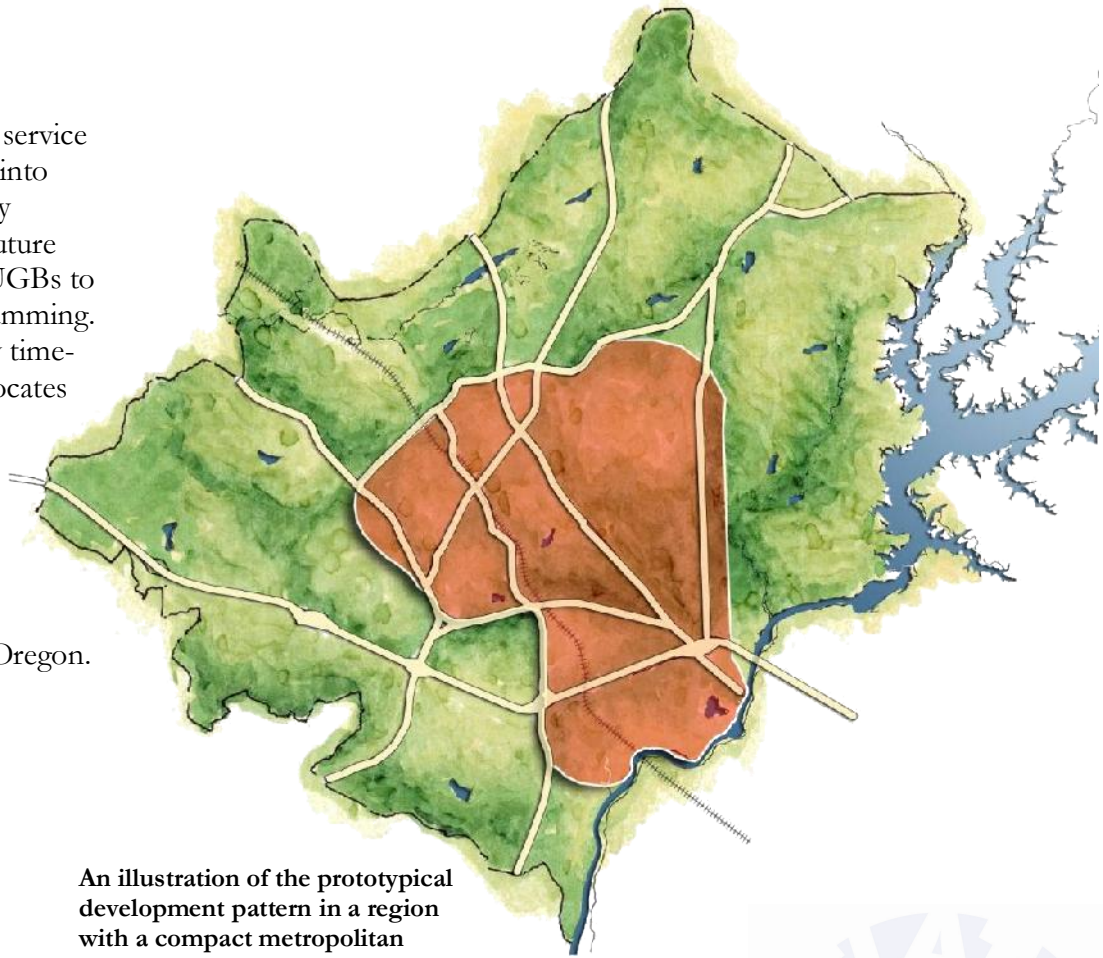
An illustration of the prototypical development pattern assumed for a compact town center within a centers & corridors development scenario, corridors, and open space.

Compact Center Development Pattern

Urban Growth Boundary

An urban growth boundary (a.k.a. urban service area or utility service district) is a policy initiative to limit outward urban expansion into surrounding farms and natural areas. The boundary completely surrounds the built environment plus an area designated for future growth within the planning horizon. Local governments use UGBs to guide local land use decisions and capital improvement programming. The boundaries for a UGB change over time, often refined by time-driven policy reviews, major events, or market concerns. Advocates credit UGBs with promoting reinvestment in downtown, providing housing for a variety of types and preferences, limiting unnecessary suburban sprawl, and fiscal responsibility. Affordable housing is a primary concern for many residents living in an urban growth boundary.

Urban growth boundaries, or their equivalent, are currently authorized in Washington, Maine, Maryland, Tennessee, and Oregon. Portland, Oregon is the most famous example of a compact metropolitan center.



An illustration of the prototypical development pattern in a region with a compact metropolitan center, corridors, and open space.

A compact metropolitan center represents uniform, outward growth from the city's historic core. Early expansion of the metropolitan center was slow and steady; tied to new transportation technologies such as the railroad, streetcar, and automobile. Historic edges to the center were formed by lakes, rivers, oceans, and mountains. Widespread suburbanization of the United States in the 1950s threatened the incremental growth behind compact metropolitan centers. Advocates for the development pattern responded with new policies and ordinances that control the timing and location of new development in a region. These tools are commonly referred to as urban growth boundaries, urban service areas, or utility service districts.

Components of a Compact Center

Compact metropolitan centers manage growth by promoting planned, compact, and orderly development patterns. These patterns are efficiently served by public facilities and services — water, sewer, roads, schools, fire, and police — while preserving agriculture activities and open space outside of a defined development boundary. Development patterns and intensities may vary in a single, large metropolitan center because of economic, social, or physical conditions unique to the area. However, the centers promote overall six basic principles: increased densities and intensities, healthy mix of complementary residential and non-residential uses, variety of housing types, preference for in-fill development and redevelopment over urban expansion, a comprehensive network of green infrastructure, and a multi-modal transportation system.

An illustration of the prototypical development pattern assumed for a metropolitan center, corridors, and open space.

Community Assessment

Development Trends in the FLATS MPO Area

Development in the FLATS area has been guided by the presence of environmental features and historical settlement patterns. A description of these features, existing, and future growth patterns is provided below.

Environmental Features

The FLATS area is characterized by an abundance of environmental features and natural resources. Fertile, agricultural soils, surface water streams, wetlands, and swamps are present throughout the study area. These resources serve biological and social functions, ensuring continued agricultural production, recreational opportunities, abundance of scenic view-sheds, and the provision of wildlife habitat.

A large proportion of the soils in the study area are designated as prime agricultural land by the US Department of Agriculture, and the Florence County Comprehensive Plan promotes conservation of farming and protection of these soils. Non-agricultural rural land also surrounds the urban areas of Quinby and Florence.

In addition to these rural and agricultural areas, the FLATS area contains a variety of environmentally significant features. Most numerous and important are the small streams that flow through the area. The stream floodways have been protected through greenways and riparian buffers. Approximately 22% of the total land in the study area is located within the 100 year flood plain. Some of these streams register high coliform counts and are considered "impaired." As such, future protection remains critical in reducing water pollution in the study area. The extensive greenway system runs throughout the study area and includes a variety of trails. Florence County also has adopted a storm water management plan that addresses EPA and SC Department of Health and Environmental Control (SCDHEC) requirements for protecting streams from water run-off.

The FLATS study area falls in the westernmost edge of the Carolina Bays phenomenon unique to South Carolina. Wetlands and swamps are located near the many waterways of Florence and are common throughout the study area. Protection of these resources is less prevalent then stream protection. These wetlands were last inventoried in 1993.

The location of areas that remain protected to preserve environmental integrity and public health also help guide the location and direction of growth. While wetlands, floodplains, and riparian corridors are protected from growth, access to these natural resources for recreation also draws growth nearer to these resources.

Existing Development Patterns

Historically, the FLATS MPO planning area was composed of agrarian and rural development. Employment opportunities in healthcare, manufacturing, and commercial operations have led to increased urban and suburban development. Development in the City of Florence is more urban in nature than surrounding areas. A dense grid network of streets forms the urban core, and is surrounded by single family and multi-family urban neighborhoods with houses on lots of less than ¼ acre. Suburban development has followed the major transportation thoroughfares, with strip commercial, suburban office, and low density residential lining SC76, SC52, I-20, and I-95. The remainder of the study area largely is composed of working agricultural operations and rural residences on lots of two acres or more. The unique combination of urban areas, suburban development along major transportation corridors, and abundant agriculture provides both exciting and challenging future development opportunities for the FLATS area.

Future Development

Florence occupies an ideal location in South Carolina and the region. The presence of active railroads, I-95, and I-20 has made it a critical shipping hub. Manufacturing centers have clustered around the city to take advantage of this efficiency, as have hospitals, medical research institutions, and universities. Continued development and investment in these operations have helped attract additional residents to the area. Florence County is expected to grow 3% every five years by 2030, while the MPO planning area is expected to add approximately 9,000 new households between now and 2035. Employment is expected to remain stable over the planning horizon. When completing the scenario planning exercise for the FLATS region, residential growth beyond 2035 was considered.

Chapter Overview

The Land Use Element of the *2035 LRTP* evaluates the relationship between land use, urban design, and transportation using the principles of urban form. This evaluation is completed at two scales. First, at a macro scale, the project team evaluated multiple community scenarios based on various development patterns and intensities using CommunityViz. The result is a series of measures of effectiveness that document the benefits of reorganizing urban form throughout the study area into more compact, nodal development patterns. Second, at a micro scale, two representative focus areas generalize land use categories and illustrate how this reorganization can occur at the site master planning level.

The incorporation of a land use discussion in the long range transportation plan is timely, not only due to the recent SAFETEA-LU guidance but also because of continued economic growth of the greater Florence area.

Scenario Planning Process

Scenario planning represents the next generation of analytical processes created to evaluate the influence of various development patterns and intensities on the efficiency of a proposed transportation system. Visualization of the interaction between land use, urban design, and transportation decision-making provides community leaders with the information they need to evaluate the consequences of potential actions. Building on this momentum, FHWA and other federal agencies actively promote the use of scenario planning models by state DOTs, MPOs, and local governments to better integrate land use, urban design, and transportation decisions.

Scenario planning considers multiple futures for a community based on various development patterns and intensities. Through consensus and evaluation, these futures come together into a vision and set of strategies used to direct policy. Typically, scenario planning represents a multi-step process: (1) Inventory existing conditions, (2) Develop trend analysis, (3) Explore alternative development scenarios, (4) Assess impacts and trade-offs, and (5) Prioritize options and make recommendations. Scenario planning in FLATS followed this general framework.

Place Type Palette

One way to describe a community's growth and development patterns is to apply place types. Place types give the community a common language when describing growth patterns and visions and opportunities for the future. Community character embodies the different land use types and development patterns envisioned for a community. The term "place types" represents the look or feel of a place, that which sets it apart from other areas. Place types have their own unique setting, development pattern, and visual qualities.

A place type palette was developed to identify and describe different development patterns, types, and intensities prevalent in the FLATS region. Generalized development characteristics used to describe the different place types include: generalized land use pattern (e.g., mixed or stand-alone), residential density, non-residential intensity, prevailing building height, open space elements, block size, or street pattern. Equal emphasis on land use and urban form in the place type descriptions guides decisions about growth and development, land preservation, resource protection, and the provision of community facilities and services during the scenario planning process.

The selected place types are not synonymous with land use categories or zoning districts used by cities and counties nor should they be thought to replace the rules and requirements set forth in currently adopted city or county ordinances. The following place types were identified for the study area:

- Open Space
- Working Farm
- Rural Living
- Estate Density Residential
- Mobile Home Community
- Small Lot, Suburban Neighborhood
- Multifamily Suburban Neighborhood
- Suburban Commercial Center
- Employment Center
- Education Center
- Mixed-Use Urban District
- Transit-Oriented Development
- Metropolitan Center
- University
- Regional Airport

The place type sheets found on pages 9-13 through 9-22 describe in detail the 20 character areas developed for the scenario planning study.

Open Space

Character and Intent

Open space is characterized by areas of significant natural or cultural value. These areas are generally undisturbed and have been protected from development by local, state, and federal agencies or by public, private, and nonprofit organizations. In the study area, these areas include water bodies, permanent conservation areas, riparian buffers along perennial and intermittent streams, large floodplain areas, parkland, golf courses, cemeteries, and dedicated open space inside residential subdivisions.

Land Use Considerations

Primary Land Uses

parks, greenways, natural areas, and wildlife corridors

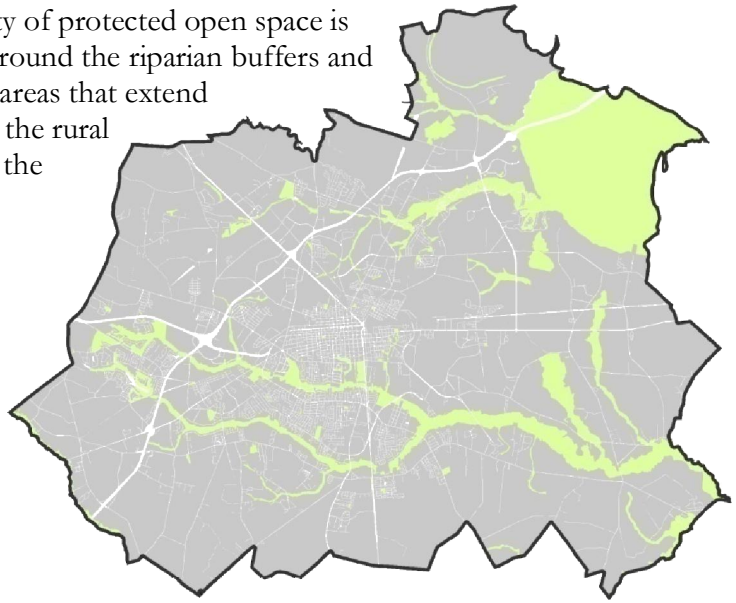
Secondary Land Uses

golf courses, cemeteries, and water dependent recreation activities

Precedent Photos

Context Map

The majority of protected open space is organized around the riparian buffers and flood plain areas that extend throughout the rural portions of the study area.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on a site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with preserved open space:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	N/A
Prevailing Building Height	N/A
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors

Street Pattern	N/A
Typical Street Spacing	N/A
Street Connectivity	Low
Typical Street Cross Section	Rural

Working Farm

Character and Intent

Working farms are actively being used for commercial agriculture or forestry activities, including cultivated farmland, timber harvest, livestock, or woodlands. These areas also support the primary residence of the property owner and any out-buildings associated with activities on the working farm.

Land Use Considerations

Primary Land Uses

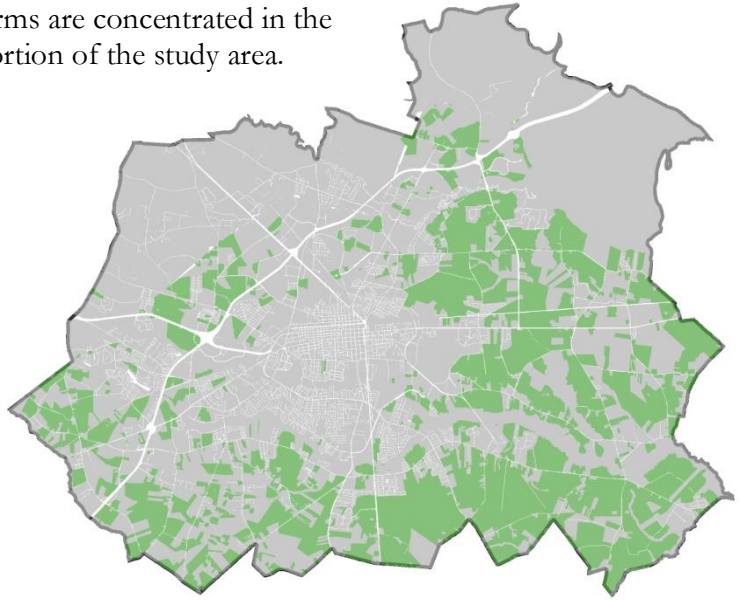
cultivated farmland, timber harvest, livestock, and woodlands

Secondary Land Uses

single-family detached home, warehouse/storage, and light industrial

Context Map

Working farms are concentrated in the southern portion of the study area.



Precedent Photos

Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on a site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with working farms:

General Development Pattern	Isolated Uses
Residential Density	0.10 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	1 to 3 stories
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors

Street Pattern	N/A
Typical Street Spacing	N/A
Street Connectivity	Low
Typical Street Cross Section	Rural

Rural Living

Character and Intent

Rural living areas are characterized by large lots, abundant open space, pastoral views, and a high degree of separation between buildings. Residential homes are located randomly throughout the countryside, integrated into the natural landscape. The lot size and separation between buildings decrease as you approach the edges of rural living areas. The buildings at the edges are oriented toward highways or major arterials, with direct access to the highway or major arterial via a small driveway. More dense development in the place type should only be allowed in conservation-based subdivisions (a.k.a. cluster development), which leaves large areas for permanent open space and uninterrupted views of the surrounding natural area.

Land Use Considerations

Primary Land Uses

single-family detached homes, single family attached homes (conservation-based subdivision only), mobile homes, and hobby farms

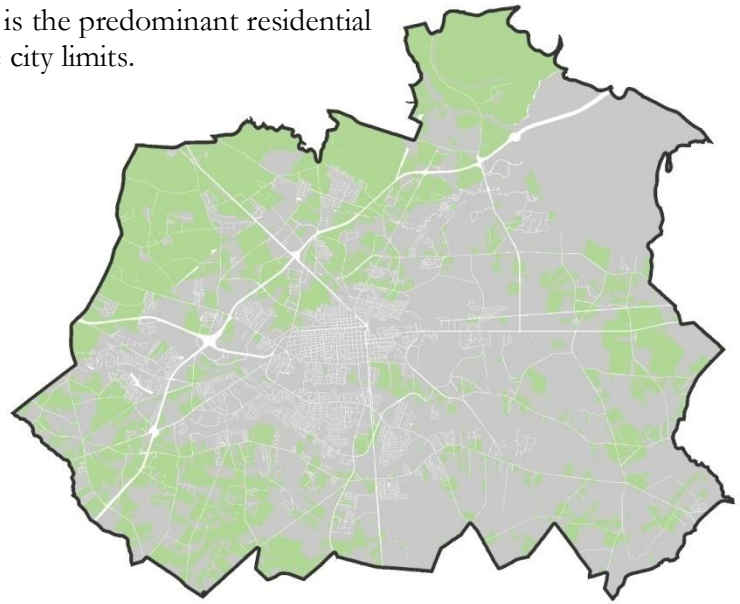
Secondary Land Uses

churches, parks, trails and open space

Precedent Photos

Context Map

Rural living is the predominant residential area outside city limits.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with rural living:

General Development Pattern	Isolated Uses
Residential Density	1 d.u./5 acres
Non-Residential Intensity	N/A
Prevailing Building Height	2 stories
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors

Street Pattern	N/A
Typical Street Spacing	N/A
Street Connectivity	Low
Typical Street Cross Section	Rural

Rural Cross Roads

Character and Intent

A rural cross roads represents the small node of commercial activity at the intersection of two rural highways. Small-scale businesses, such as gas stations, convenience stores, or restaurants, serve some daily needs of the surrounding rural population. Employment and other commercial needs for rural residents are provided for in Suburban Commercial and Employment Centers.

Land Use Considerations

Primary Land Uses

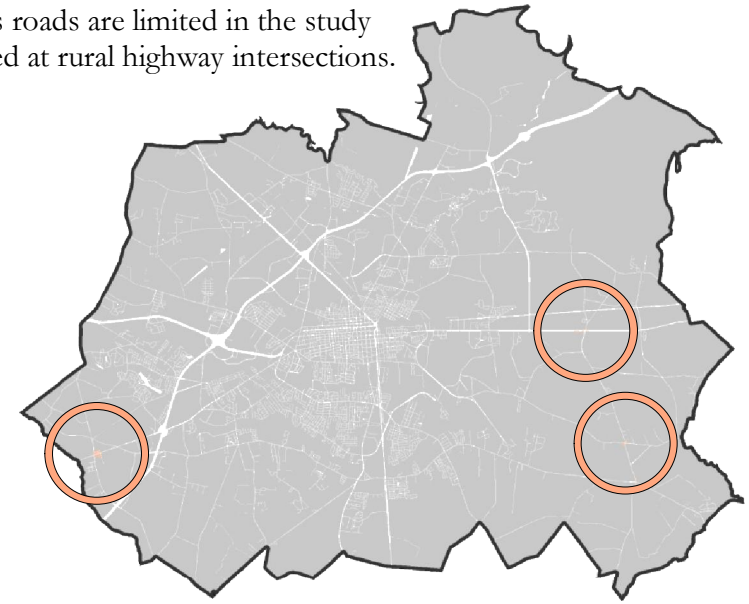
gas station, restaurant, convenience store, and hardware store

Secondary Land Uses

fire station, post office, and general government center

Context Map

Rural cross roads are limited in the study area, located at rural highway intersections.



Precedent Photos

Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with a rural cross roads:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.15 to 0.25 FAR
Prevailing Building Height	1 to 2 stories
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors

Street Pattern	N/A
Typical Street Spacing	N/A
Street Connectivity	Low
Typical Street Cross Section	Rural

Estate Density Residential

Character and Intent

Estate density residential neighborhoods generally are formed as large lot, rural subdivisions on the fringes of rural living areas. Homes are oriented interior to the site and typically are buffered from surrounding development by transitional uses or landscaped areas. Many neighborhoods 'borrow' open space from adjacent rural or natural areas. Blocks typically are large and streets are typically rural in character. In some cases, an estate density residential neighborhood is served by only one long dead end street.

Land Use Considerations

Primary Land Uses

single-family detached homes

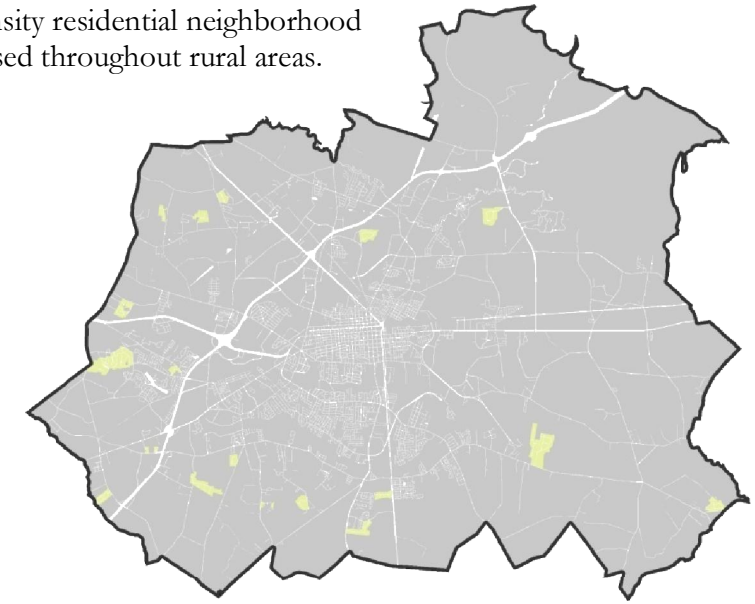
Secondary Land Uses

churches, parks, trails, and open space

Precedent Photos

Context Map

Estate density residential neighborhood are dispersed throughout rural areas.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with estate residential areas:

General Development Pattern	Isolated Uses
Residential Density	0.2 to 1.0 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	2 stories
Open Space Elements	Protected Natural Areas/ Greenways/Stream Corridors

Street Pattern	Curvilinear
Typical Street Spacing	1,500 to 3,000 ft
Street Connectivity	Low
Typical Street Cross Section	Rural

Mobile Home Community

Character and Intent

Mobile home communities are characterized by single-wide and double-wide mobile homes on individual lots clustered in an area owned and managed by a single entity. These neighborhoods are found throughout the study area and provide one affordable housing option for residents.

Land Use Considerations

Primary Land Uses

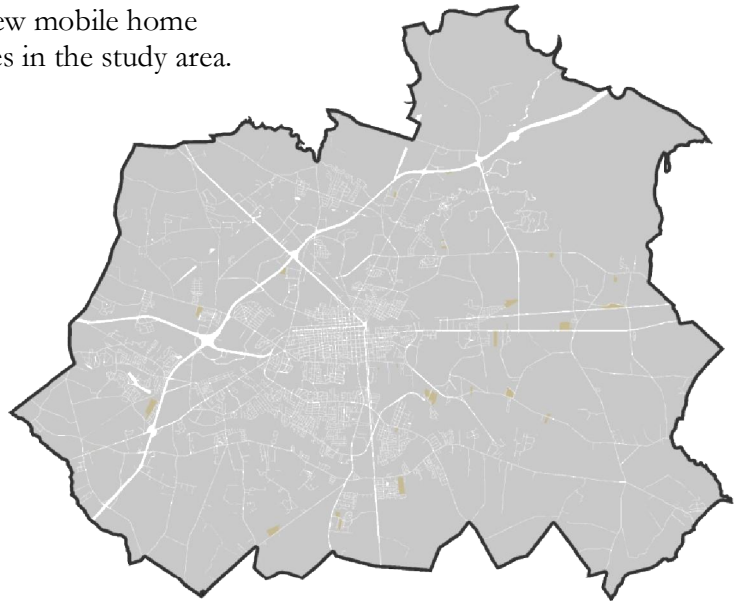
single wide mobile homes, double wide mobile homes

Secondary Land Uses

neighborhood center, pool, parks, trails and open space

Context Map

There are few mobile home communities in the study area.



Precedent Photos

Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with a mobile home community:

General Development Pattern	Isolated Uses
Residential Density	8.0 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	1 story
Open Space Elements	Protected Natural Areas/ Greenways/Parks

Street Pattern	Curvilinear
Typical Street Spacing	N/A
Street Connectivity	Low
Typical Street Cross Section	Rural

Small Lot Suburban Neighborhood

Character and Intent

Small lot, suburban neighborhoods are generally formed as subdivisions or communities, with a relatively uniform housing type and density throughout. They are found in proximity to Suburban Commercial and Employment Centers, and they provide rooftops necessary to support the commercial and office uses within the centers. Buildings are oriented interior to the site and are typically buffered from surrounding development by transitional uses or landscaped areas. Suburban neighborhoods are traditionally auto-dependent, characterized by low street connectivity and the presence of cul-de-sacs.

Land Use Considerations

Primary Land Uses

single-family detached homes, townhomes, and duplexes

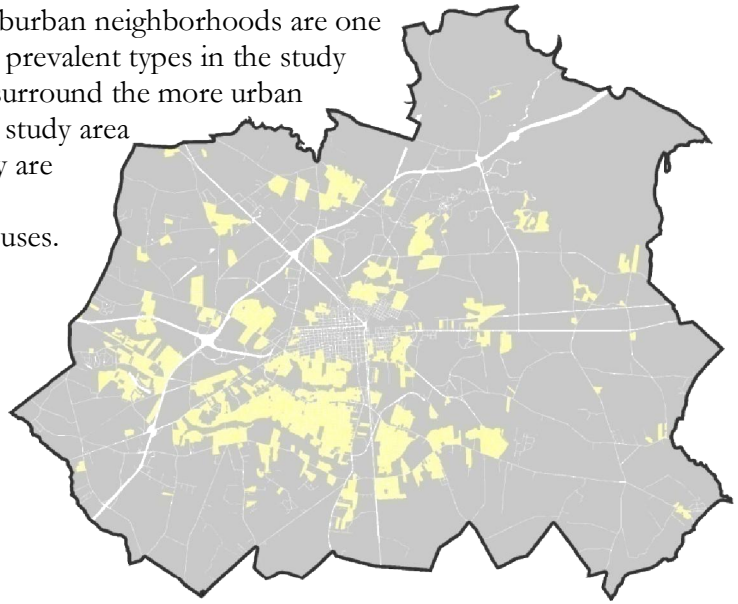
Secondary Land Uses

churches, neighborhood serving amenities (pools/playgrounds), parks, trails, and open space

Precedent Photos

Context Map

Small lot suburban neighborhoods are one of the most prevalent types in the study area. They surround the more urban parts of the study area and typically are buffered by transitional uses.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following place-making qualities are associated with small lot suburban neighborhoods:

General Development Pattern	Isolated Uses
Residential Density	1.0 to 7.0 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	1 to 3 stoires
Open Space Elements	Neighborhood Parks/ Greenways/Stream Corridors

Street Pattern	Curvilinear
Typical Street Spacing	1,500 to 3,000 ft
Street Connectivity	Medium
Typical Street Cross Section	Urban

Multifamily Suburban Neighborhood

Character and Intent

Multifamily suburban neighborhoods are generally formed as complexes or communities, with a relatively uniform housing type and density throughout. They support the highest residential density in the suburban landscape, and may contain one of the following housing types: condominiums, townhomes, or apartments.

Multifamily suburban neighborhoods are found in close proximity to Suburban Commercial and Employment Centers, which provide rooftops necessary to support the commercial and office uses within the centers. Buildings are oriented interior to the site and are typically buffered from surrounding development by transitional uses or landscaped areas. Large parking lots and low street connectivity are common in multifamily suburban neighborhoods.

Land Use Considerations

Primary Land Uses

apartments, townhomes condominiums and senior housing

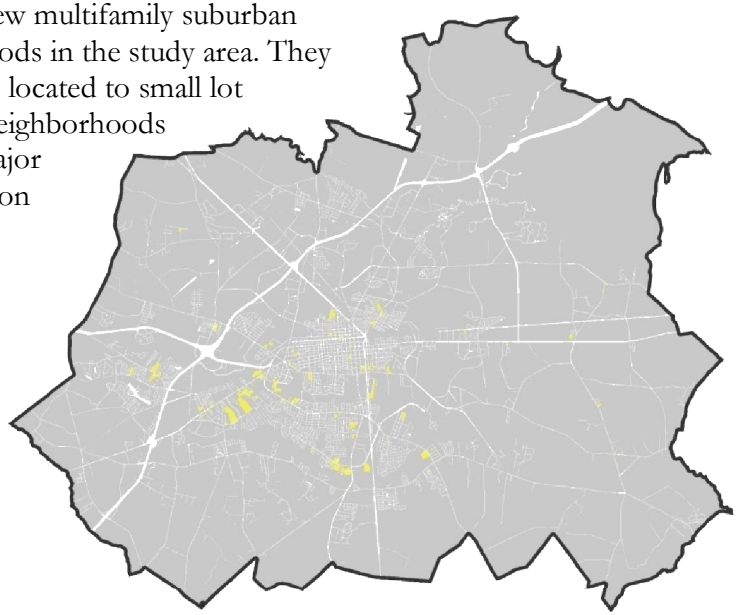
Secondary Land Uses

churches, neighborhood serving amenities (pools/playgrounds), parks, trails and open space

Precedent Photos

Context Map

There are few multifamily suburban neighborhoods in the study area. They typically are located to small lot suburban neighborhoods and near major transportation corridors.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following place-making qualities are associated with multifamily suburban neighborhoods:

General Development Pattern	Isolated Uses
Residential Density	8.0 to 10.0 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	2 to 4 stoires
Open Space Elements	Neighborhood Parks/ Greenways/Stream Corridors

Street Pattern	Modified Grid
Typical Street Spacing	1,500 to 3,000 ft
Street Connectivity	Medium
Typical Street Cross Section	Urban

Urban Neighborhood

Character and Intent

Urban neighborhoods support a mix of moderate- to high-density housing options. These neighborhoods are relatively compact, and may contain one or more of the following housing types: small lot, single family detached, townhomes, condominiums, or apartments. Buildings are generally oriented toward the street.

The design and scale of development in an urban neighborhood encourages active living, with a complete and comprehensive network of walkable streets. Cul-de-sacs are restricted to areas where topography, environment, or existing development makes other street connections prohibitive.

Land Use Considerations

Primary Land Uses

single-family detached homes, townhomes, duplexes, apartments, and condominiums

Secondary Land Uses

churches, parks, trails and open space

Precedent Photos

Context Map

Urban neighborhoods are limited to the immediate area surrounding the downtown core of Florence.

Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following place-making qualities are associated with urban neighborhoods:

General Development Pattern	Isolated Uses
Residential Density	3.0 to 5.0 d.u./acre 6.0 to 10.0 d.u./acre
Non-Residential Intensity	N/A
Prevailing Building Height	1 to 3 stories
Open Space Elements	Neighborhood Parks/ Greenways/Stream Corridors

Street Pattern	Grid
Typical Street Spacing	300 to 1,200 ft
Street Connectivity	High
Typical Street Cross Section	Urban

Mixed-Use Neighborhood

Character and Intent

A mixed-use neighborhood offers residents the ability to live, shop, work, and play in one community. They include a mixture of housing types and residential densities integrated with goods and services residents need on a daily basis (see Town Center description). The design and scale of the development encourages active living, with a comprehensive and interconnected network of walkable streets.

Land Use Considerations

Primary Land Uses

single-family detached homes, townhomes, apartments, senior housing, restaurant, neighborhood-serving commercial, and professional office

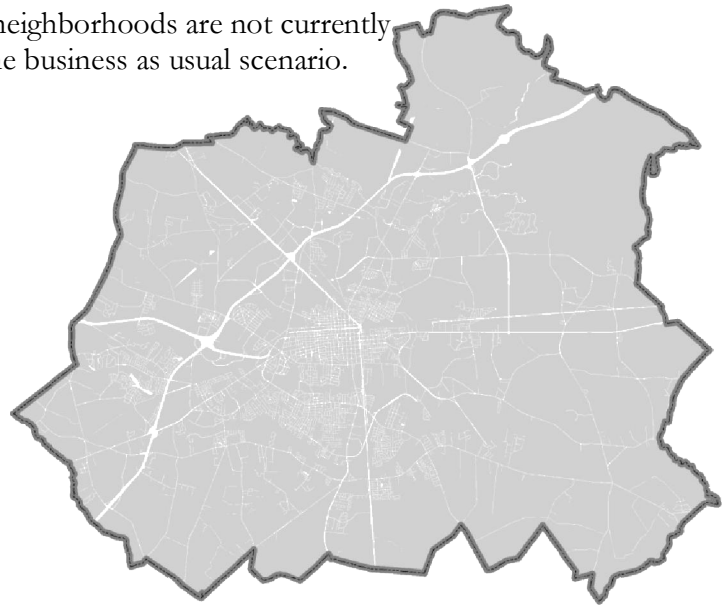
Secondary Land Uses

churches, general government services, parks, trails, open space, and public spaces

Precedent Photos

Context Map

Mixed-Use neighborhoods are not currently present in the business as usual scenario.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with mixed-use neighborhoods:

General Development Pattern	Mixed Uses
Residential Density	3.0 to 6.0 d.u./acre (SF) 8.0 to 15.0 d.u./acre (MF)
Non-Residential Intensity	0.35 to 2.00 FAR
Prevailing Building Height	2 to 4 stories
Open Space Elements	Community Parks/ Public Spaces/Stream Corridors

Street Pattern	Modified Grid
Typical Street Spacing	600 to 1,500 ft
Street Connectivity	High
Typical Street Cross Section	Urban

Suburban Commercial Center

Character and Intent

Suburban commercial centers serve the daily needs of surrounding suburban residential neighborhoods. They typically locate near high-volume roads and key intersections, and design themselves to be accessible primarily by automobile. Buildings are typically set back from the road behind large surface parking lots, with little or no connectivity between adjacent businesses. Common types of suburban centers in the study area include multi-tenant strip centers, big box stores, and large shopping malls.

Land Use Considerations

Primary Land Uses

general commercial services, restaurant, multi-tenant commercial, big box commercial, hotel, and professional office

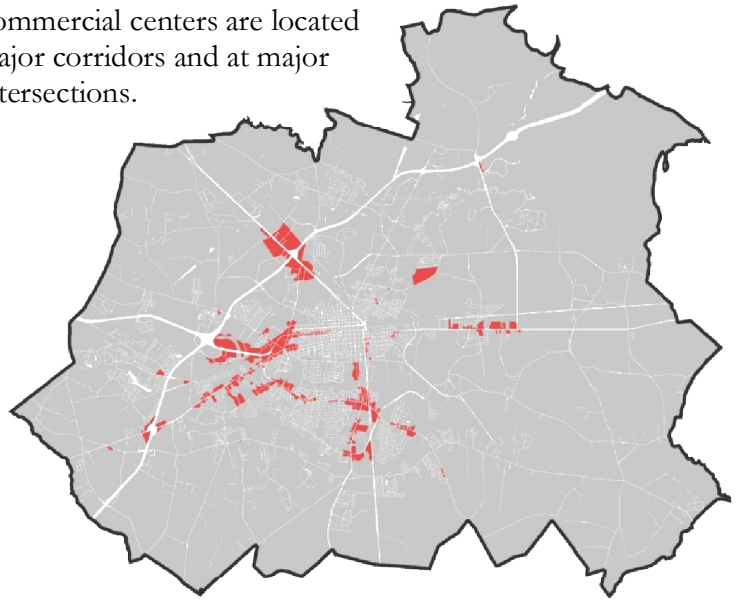
Secondary Land Uses

churches, park, trails, and open space

Precedent Photos

Context Map

Suburban commercial centers are located along the major corridors and at major suburban intersections.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with suburban commercial centers:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.20 to 0.50 FAR
Prevailing Building Height	1 to 2 stories
Open Space Elements	Stream Corridors

Street Pattern	N/A
Typical Street Spacing	1,200 to 1,500 ft
Street Connectivity	N/A
Typical Street Cross Section	Suburban

Employment Center

Character and Intent

Employment centers provide basic jobs and keep people in the study area during normal work hours. They include both large-scale isolated buildings with numerous employees and areas containing multiple businesses that support and serve one another. They are typically buffered from surrounding development by transitional uses or landscaped areas and are located in proximity to major highways or thoroughfares.

Land Use Considerations

Primary Land Uses

professional office, research and development, medical services, and flex space

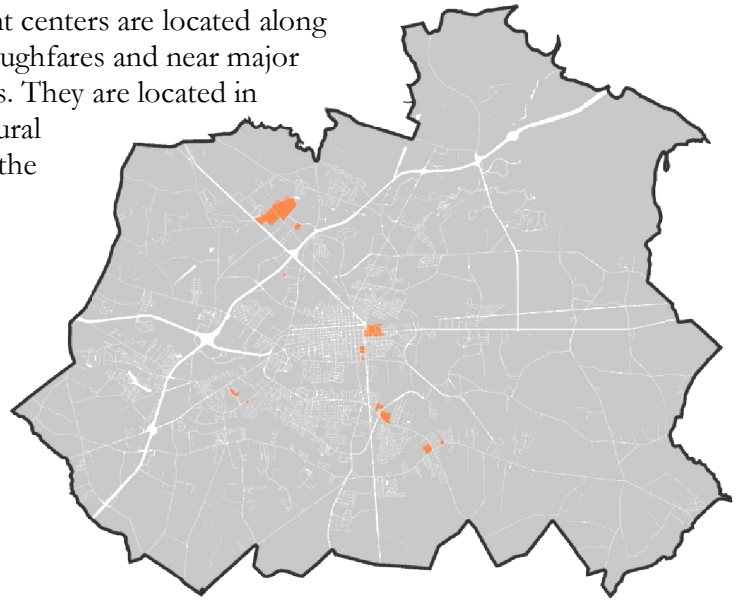
Secondary Land Uses

commercial (primarily serving the employment center), churches, general government services, parks, trails, and open space

Precedent Photos

Context Map

Employment centers are located along major thoroughfares and near major intersections. They are located in urban and rural portions of the county.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with suburban employment centers:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.20 to 0.50 FAR
Prevailing Building Height	1 to 4 stories
Open Space Elements	Stream Corridors

Street Pattern	N/A
Typical Street Spacing	1,200 to 1,800 ft
Street Connectivity	Medium
Typical Street Cross Section	Suburban

Suburban Education Center

Character and Intent

A suburban education center includes academic buildings, administrative offices, athletic fields, and other supporting infrastructure typically associated with an elementary school, middle school, high school, vocational school, or community college. A center in the study area generally reflects a traditional suburban prototype: one- to two-story buildings oriented interior to the site, large parking lot(s), internal circulation pattern conducive to parent drop-off/pick-up, athletic fields reserved for school use only, and wide buffers from surrounding uses. Access to a campus typically is limited to driveways located near the front of the main building for security reasons.

Land Use Considerations

Primary Land Uses

elementary school, middle school, high school, vocational school, and community college

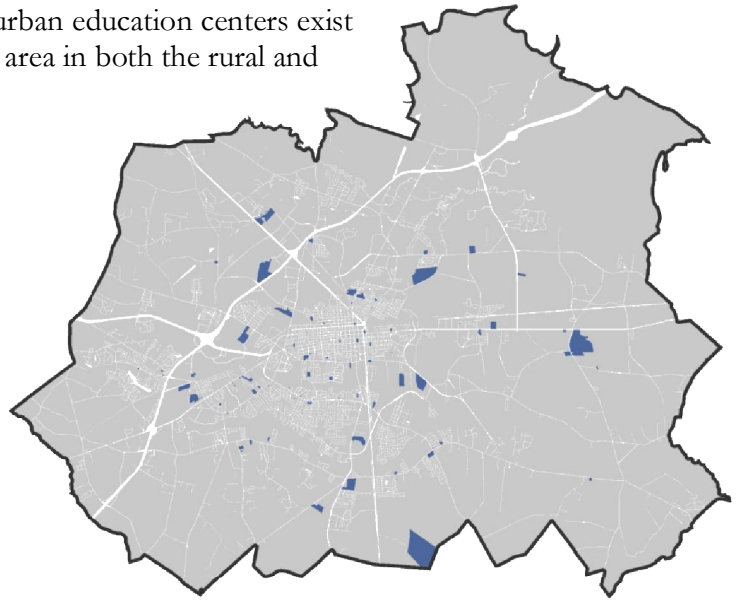
Secondary Land Uses

park and recreation facilities, cultural center, and community meeting rooms

Precedent Photos

Context Map

Several suburban education centers exist in the study area in both the rural and urban areas.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with suburban education centers:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.20 to 0.35 FAR
Prevailing Building Height	1 to 2 stories
Open Space Elements	Stream Corridors/ Athletic Fields/Playground

Street Pattern	N/A
Typical Street Spacing	1,200 to 1,500 ft
Street Connectivity	N/A
Typical Street Cross Section	Suburban

Manufacturing Center

Character and Intent

Manufacturing centers provide basic jobs and keep people in the study area during normal work hours. They typically are located near major transportation corridors (i.e., highways or railways) and may include light or heavy industrial uses, transportation hubs, or technology centers. Clusters of uses that support or serve one another should be encouraged to be located in industrial parks.

Land Use Considerations

Primary Land Uses

manufacturing centers, transportation hubs, technology centers, light industrial uses, and heavy industrial uses

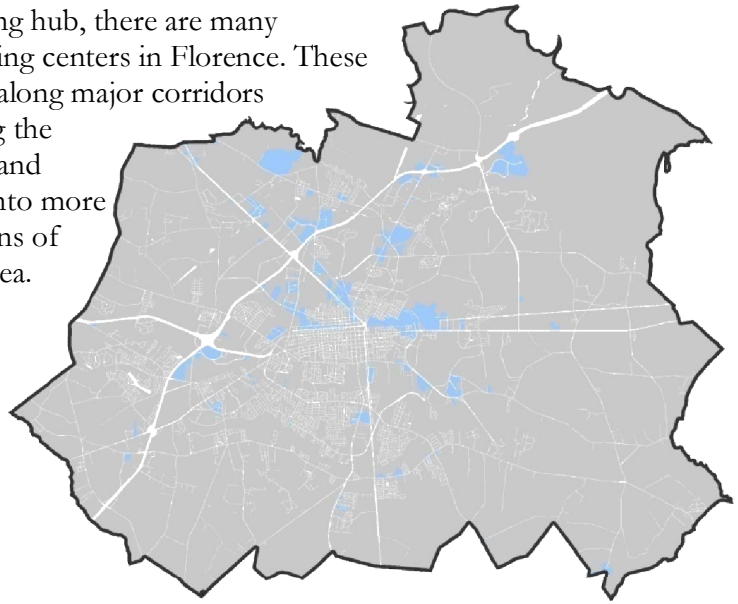
Secondary Land Uses

commercial (serving primarily the manufacturing center), parks, trails, open space, and fire stations

Precedent Photos

Context Map

As a shipping hub, there are many manufacturing centers in Florence. These are located along major corridors surrounding the downtown and extending into more rural portions of the study area.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the character area type. The following characteristics are associated with manufacturing centers:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.10 to 0.25 FAR
Prevailing Building Height	1 to 3 stories
Open Space Elements	Pocket Parks/ Stream Corridors

Street Pattern	Curvilinear
Typical Street Spacing	1,200 to 1,500 ft
Street Connectivity	Medium
Typical Street Cross Section	Suburban

Urban Mixed-Use District

Character and Intent

Urban mixed-use districts represent the first tier of expansion from the traditional Central Business District (CBD). They extend the short blocks, grid street pattern, and mix of uses originated in the downtown. Building height and intensity become progressively lower moving away from the CBD; however, buildings are still oriented toward the street. Compact, walkable streets support multiple modes of transportation.

Land Use Considerations

Primary Land Uses

condominiums, apartments, townhomes, restaurants, community-serving commercial, professional office, museums and libraries, and government buildings

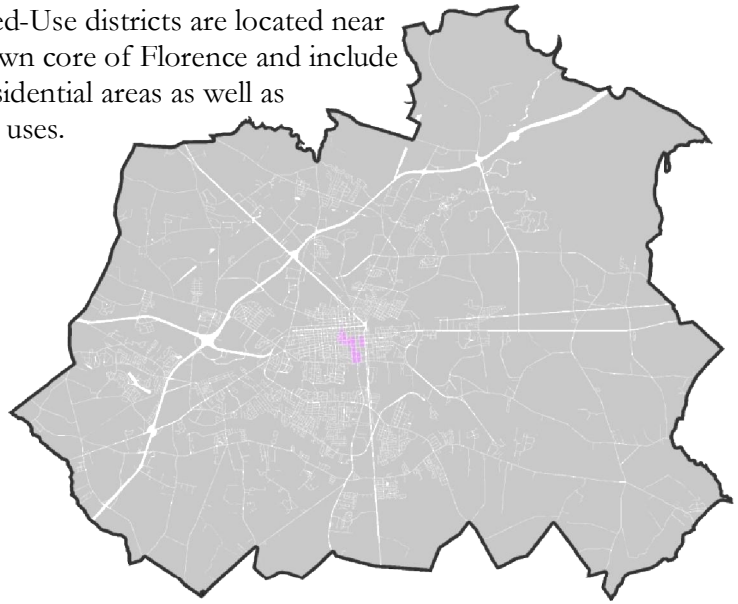
Secondary Land Uses

churches, parks, and open space

Precedent Photos

Context Map

Urban Mixed-Use districts are located near the downtown core of Florence and include small lot residential areas as well as commercial uses.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with an urban mixed-use district:

General Development Pattern	Mixed Uses
Residential Density	3.0 to 6.0 d.u./acre (SF) 8.0 to 12.0 d.u./acre (MF)
Non-Residential Intensity	0.35 to 1.00 FAR
Prevailing Building Height	1 to 4 stories
Open Space Elements	Community Parks/ Public Spaces/Stream Corridors

Street Pattern	Grid
Typical Street Spacing	600 to 1,500 ft
Street Connectivity	High
Typical Street Cross Section	Urban

Town Center

Character and Intent

Town centers are locally-serving areas of economic, entertainment, and community activity. Buildings in the core of the town center typically stand two or more stories with residential units above storefronts. They typically are surrounded by mixed-use neighborhoods that encourage active living, with a comprehensive and interconnected network of walkable streets.

Land Use Considerations

Primary Land Uses

townhomes, apartments, senior housing, restaurant, community-serving commercial, professional office, and live/work/shop units

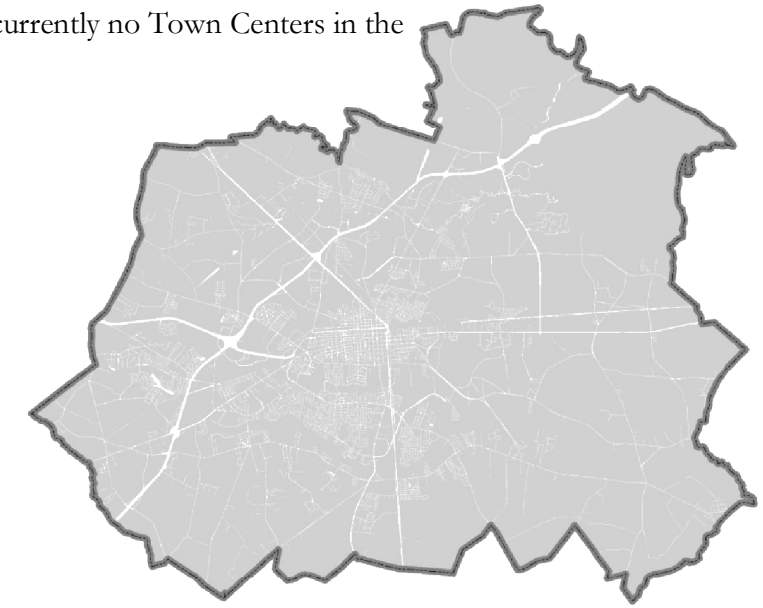
Secondary Land Uses

public spaces and community buildings

Precedent Photos

Context Map

There are currently no Town Centers in the study area.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with a town center:

General Development Pattern	Mixed Uses
Residential Density	3.0 to 6.0 d.u./acre (SF) 8.0 to 15.0 d.u./acre (MF)
Non-Residential Intensity	0.35 to 2.00 FAR
Prevailing Building Height	2 to 4 stories
Open Space Elements	Community Parks/ Public Spaces/Stream Corridors

Street Pattern	Grid
Typical Street Spacing	300 to 1,200 ft
Street Connectivity	High
Typical Street Cross Section	Urban

Transit-Oriented Development

Character and Intent

Transit-oriented development (TOD) represents the concentration of mixed-use, dense development around a transit center. Uses and buildings are located on small blocks with streets designed to encourage bicycle and pedestrian activity. High density development is located primarily within ¼ mile of the transit station, with progressively lower densities spreading out into neighborhoods surrounding the center.

TOD is credited with relieving traffic congestion on the surrounding street network by shifting automobile trips to transit and by capturing some trips on-site between complementary land uses. National literature recommends a minimum residential density of 7.0 dwelling units per acre and a minimum non-residential intensity of 25.0 employees per acre to support TOD served by regional bus; and about twice these minimums for a location served by light or heavy rail.

Land Use Considerations

Primary Land Uses

condominiums, apartments, townhomes, restaurants, general commercial, professional office, live/work/shop units, and government buildings

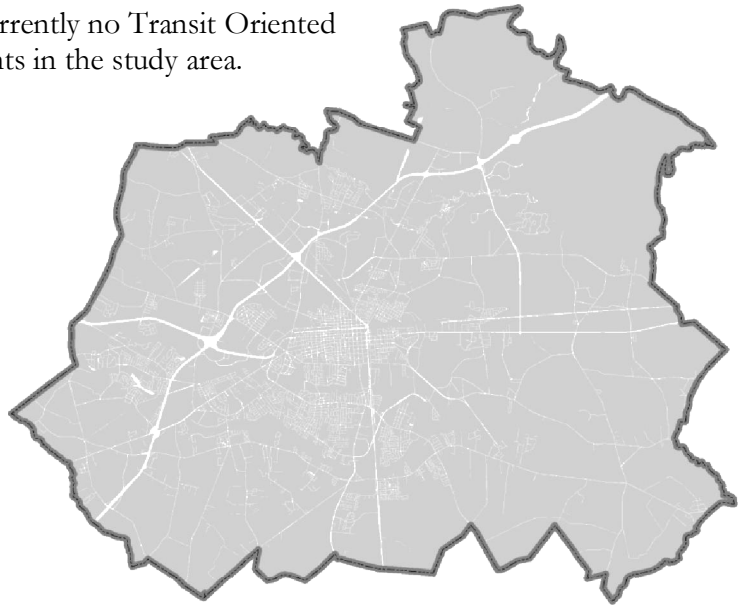
Secondary Land Uses

churches, parks, and plazas

Precedent Photos

Context Map

There are currently no Transit Oriented Developments in the study area.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with a transit-oriented development:

General Development Pattern	Mixed Uses
Residential Density	6.0 to 8.0 d.u./acre (SF) 8.0 to 25.0 d.u./acre (MF)
Non-Residential Intensity	0.35 to 3.00 FAR
Prevailing Building Height	2 to 6 stories
Open Space Elements	Community Parks/ Public Spaces/Stream Corridors

Street Pattern	Grid
Typical Street Spacing	300 to 1,200 ft
Street Connectivity	High
Typical Street Cross Section	Urban

Metropolitan Center

Character and Intent

A metropolitan center is the focal point of the region. It is the hub of employment, shopping, entertainment, civic, and cultural activities, with a mix of housing types and common open space for active living. As a magnet to surrounding towns and neighborhoods, the central business district becomes the iconic symbol of the region, starting with historic buildings and a traditional grid street network. The compact, walkable environment and mix of residential and non-residential uses in a metropolitan district support multiple modes of transportation.

Land Use Considerations

Primary Land Uses

condominiums, apartments, restaurants, community-serving commercial, professional office, live/work/shops units, museums and libraries, and government buildings

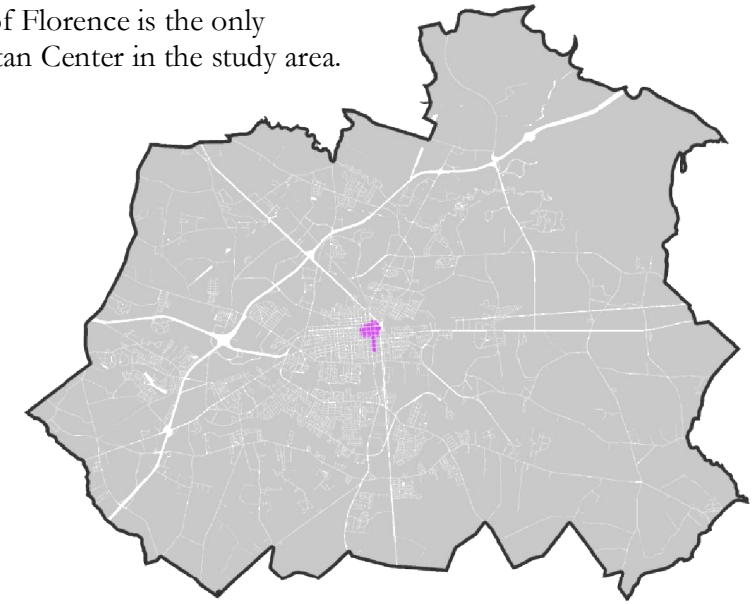
Secondary Land Uses

churches, parks, trails, and open space

Precedent Photos

Context Map

The City of Florence is the only Metropolitan Center in the study area.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with a metropolitan center:

General Development Pattern	Mixed Uses
Residential Density	6.0 to 6.0 d.u./acre (SF)
	8.0 to 25.0 d.u./acre (MF)
	1.0 FAR (MU)
Non-Residential Intensity	0.35 to 2.00 FAR
Prevailing Building Height	2 to 4 stories
Open Space Elements	Public Plazas/ Amphitheaters/Stream Corridors

Street Pattern	Traditional Grid
Typical Street Spacing	300 to 1,200 ft
Street Connectivity	High
Typical Street Cross Section	Urban

University

Character and Intent

Three major colleges and universities operate within the study area:

- Francis Marion University provides undergraduate and graduate studies for nearly 4,000 students. The 300-acre campus includes a core of academic buildings, surface parking around the perimeter of the campus, athletic fields, and a large area of preserved natural vegetation.
- Clemson University Cooperative Extension operates an office in the City of Florence. This office concentrates on agriculture issues, including row crops, livestock, and horticulture.
- Florence-Darlington Technical College provides 75 fields of study for full- and part-time students. The 100-acre main campus on Lucas Street includes eight buildings. A satellite campus, the Health Services Campus, is located in Downtown Florence.

Land Use Considerations

Primary Land Uses

academic buildings and related uses, residence halls, athletic fields

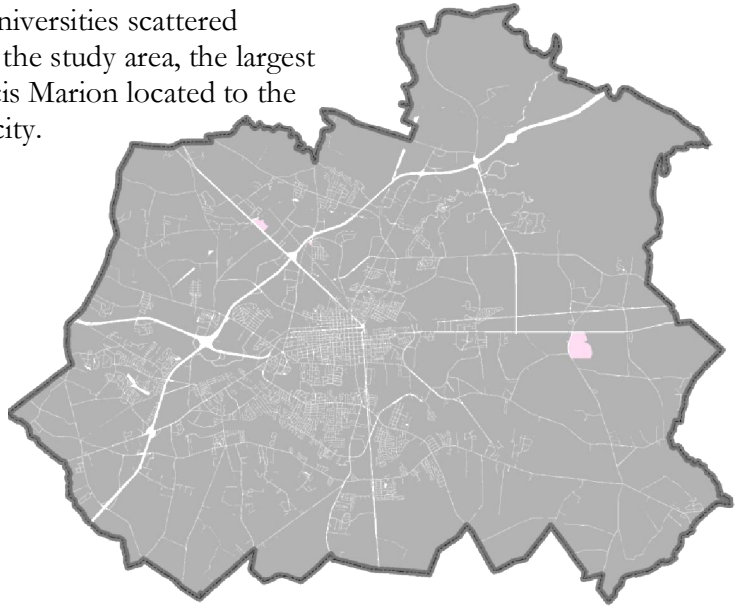
Secondary Land Uses

commercial and professional offices (serving university activities)

Precedent Photos

Context Map

There are universities scattered throughout the study area, the largest being Francis Marion located to the east of the city.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with a university:

General Development Pattern	Mixed Uses
Residential Density	8.0 to 15.0 d.u./acre
Non-Residential Intensity	0.20 to 0.35 FAR
Prevailing Building Height	1 to 3 stories
Open Space Elements	Pocket Parks/Public Plazas/ Stream Corridors

Street Pattern	Modified Grid
Typical Street Spacing	600 to 1,500 ft
Street Connectivity	Medium
Typical Street Cross Section	Urban

Regional Airport

Character and Intent

The Florence Regional Airport is located in the study area. It includes a passenger terminal, two major runways (i.e., over 6,000 feet each), control tower, storage hangers, and car rental facility. Commercial passenger service is provided daily by Delta Airlines and US Airways. Fifty-two private airplanes are also based at the airport. In 2007, the FAA reported 86 airport operations at the airport each day.

Restrictions on use, placement, and height for some forms of development should be followed in designated runway protection zones extending from all runways at the airport.

Land Use Considerations

Primary Land Uses

airport activities, flight school, warehouse, and shipping

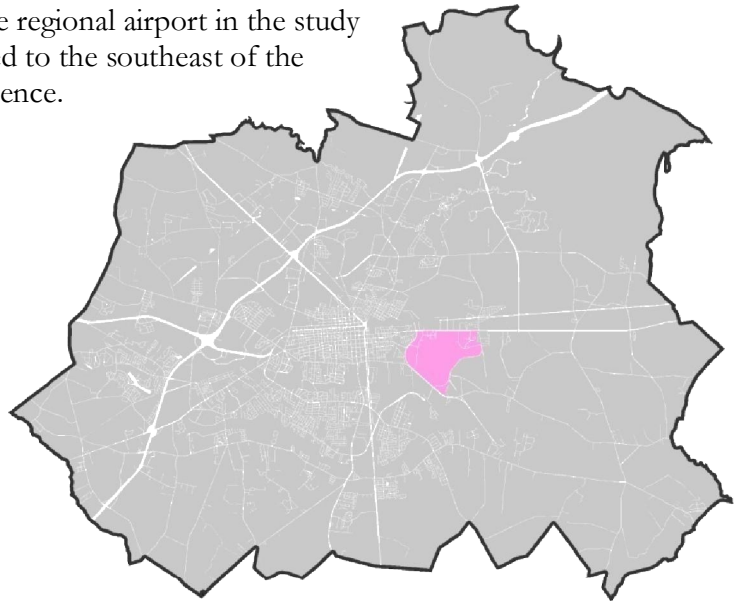
Secondary Land Uses

light and heavy industrial, professional office (highly dependent on air travel), and general commercial uses serving airport activities

Precedent Photos

Context Map

There is one regional airport in the study area– located to the southeast of the City of Florence.



Form & Pattern

Form & pattern refers to the design and arrangement of buildings, streets, landscaping, and other elements on the site. Together, form and pattern reinforce the intent of the place type. The following characteristics are associated with a regional airport:

General Development Pattern	Isolated Uses
Residential Density	N/A
Non-Residential Intensity	0.10 to 0.20 FAR
Prevailing Building Height	1 to 3 stories
Open Space Elements	Buffer Areas/ Stream Corridors

Street Pattern	N/A
Typical Street Spacing	N/A
Street Connectivity	Low
Typical Street Cross Section	Suburban

FLATS Development Scenarios

Place types were assigned in the FLATS study area to represent future growth under four regional development scenarios (i.e., "compact development", "centers and corridors", "decentralized growth", and "business-as-usual") for the study area. By comparing the scenarios, the impact of the location and extent of the character areas on the efficiency of the transportation system can be measured. All four development scenarios represent the same study area, long-term planning horizon (2035), and control totals for population and employees maintained in the FLATS Regional Travel Demand Model.

A brief summary of the four development scenarios follows.

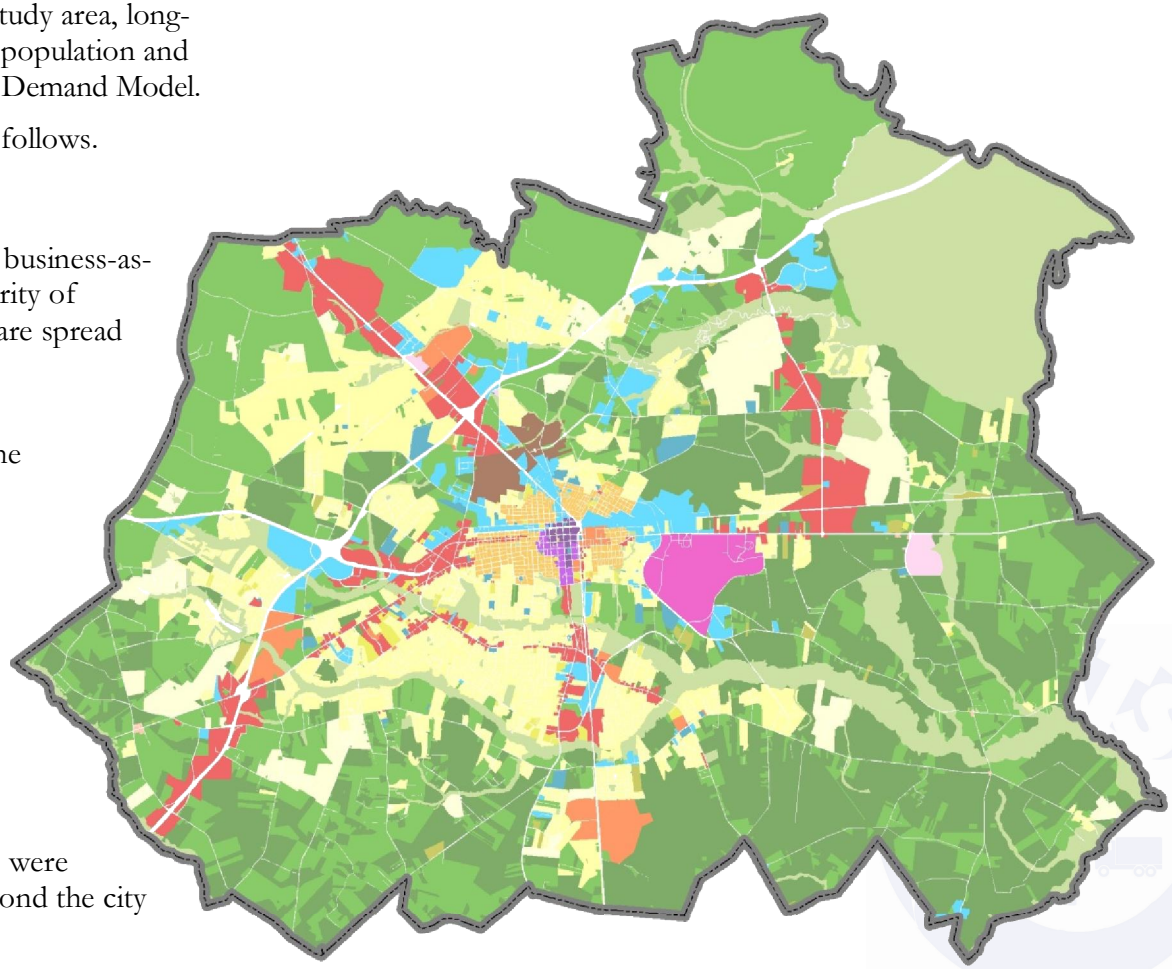
Decentralized Growth (Sprawl)

Decentralized growth is the most similar scenario to business-as-usual. Small lot suburban neighborhoods and a majority of suburban commercial centers at major intersections are spread throughout the study area. New development is not concentrated at nodes.

The following components were used to represent the decentralized growth scenario:

- Large-lot vacant parcels
- Cheap land
- Congested corridors
- Interstates interchanges
- Frontage on US highways
- Water and sewer infrastructure

Areas most suitable for development in this scenario were located along major roadways and extended well beyond the city limits of Florence and Quinby.



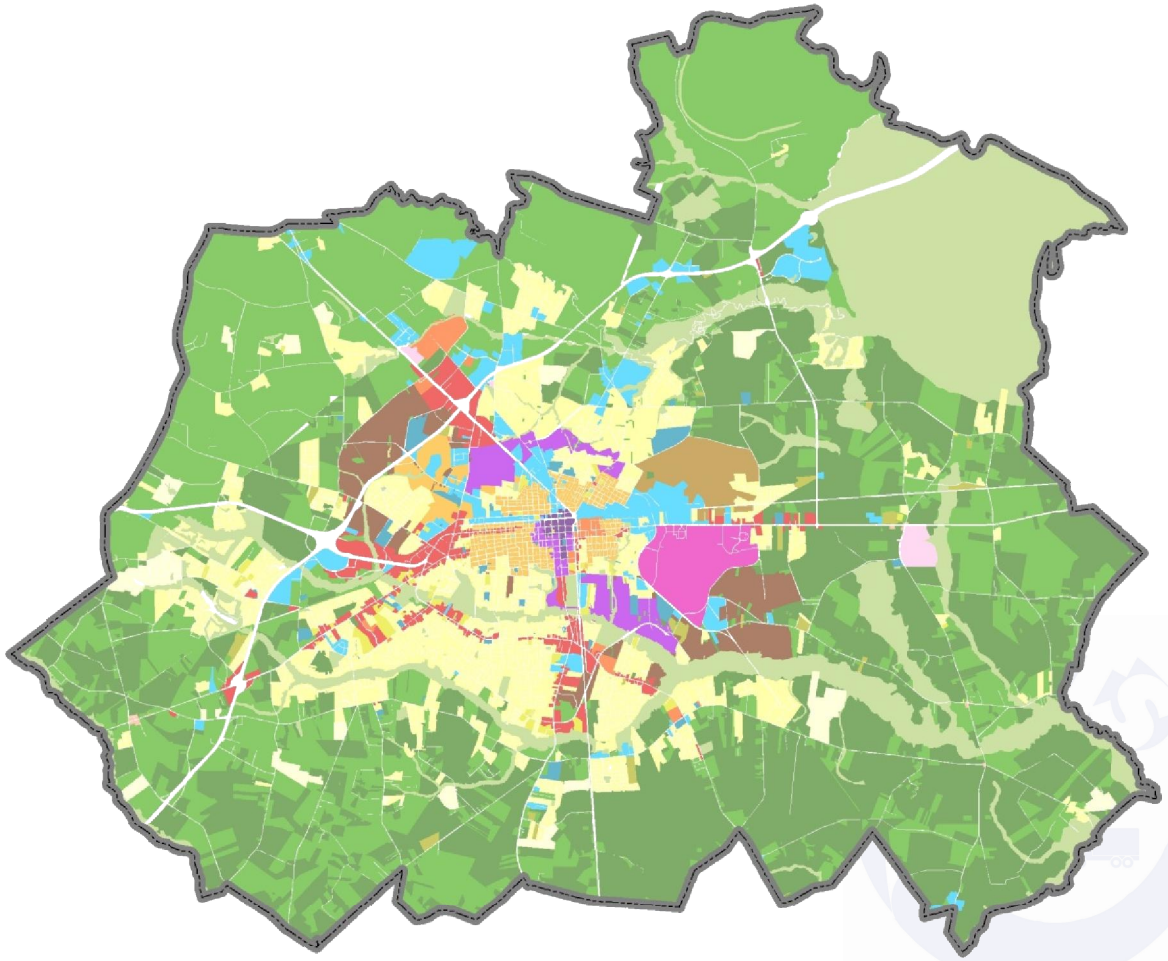
Compact Development (Concentric Circles)

Unlike the preceding scenario, the compact center scenario represents the biggest departure from business as usual. It focuses all new development within concentric circles surrounding the City of Florence. New development is mostly infill, high intensity, mixed use and attempts to maintain a hypothetical urban growth boundary in the study area.

The following components were used to determine the compact development scenario:

- Prime farmland
- Small vacant lots
- Redevelopment zone
- Water and sewer infrastructure
- Congestion levels
- Expensive land
- Access to transit stops
- Access to job clusters
- Access to retail clusters
- Location within city limits

The areas most suitable for development in this scenario were those tightly clustered around the downtown core of Florence.



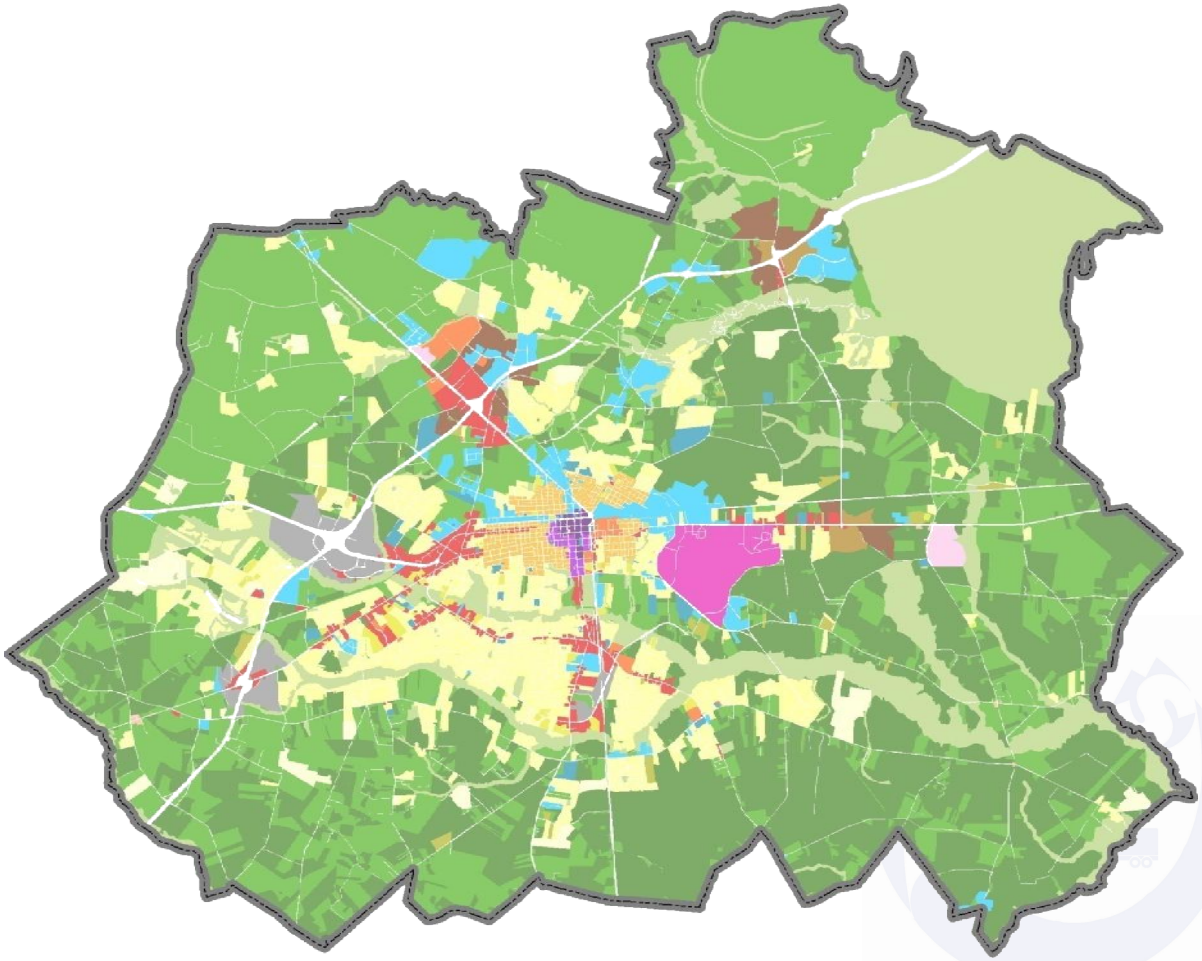
Centers and Corridors

Centers and corridors applies the conceptual development scenario to the study area by taking advantage of existing transit stops, major destination points, and major intersections. At these areas, mixed use, higher intensity development was clustered to draw new growth in from more rural and suburban locations. These nodes remain well connected to the urban core by existing transportation infrastructure.

The following components were used to determine the centers and corridors scenario:

- Prime farmland
- Small vacant lots
- Redevelopment potential
- Water and sewer infrastructure
- Congested corridors
- Expensive land
- Access to transit stops
- Access to job clusters
- Access to retail clusters
- Access to rail lines
- Access to pedestrian nodes

In this scenario, centers and corridors that linked suburban and rural development to the urban core were the most suitable for development.



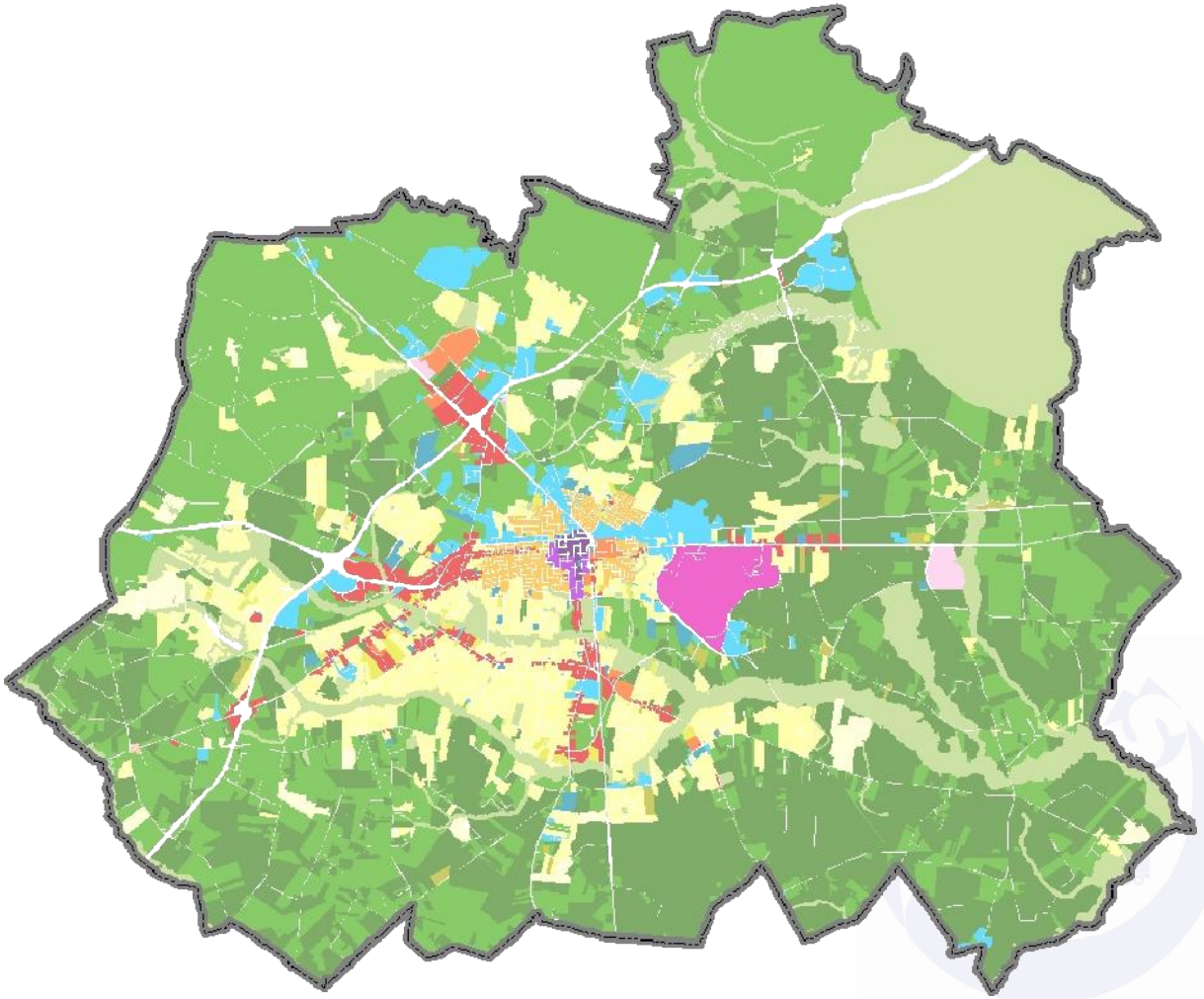
Business-as-Usual (Hybrid)

Business-as-usual represents existing development and planned programs and policies affecting land use. It is characterized by large amounts of small lot suburban neighborhoods with concentrated employment and commercial uses along major corridors. The downtown core of Florence remains intact.

The following components were used to determine the Business-as-Usual (hybrid) scenario:

- Prime farmland
- Large lot, vacant parcels
- Cheap land
- Congested corridors
- Access to interstates
- Frontage on US highways
- Water & sewer service
- Access to job clusters
- Access to retail clusters

Business-as-usual was set up to show current development trends. As such, the most suitable land is spread throughout the county and includes existing urban, rural, and suburban locations.



Development Scenario Trade-offs

Summary statistics for evaluating the impacts of four development scenarios were created using CommunityViz® software and the 2035 FLATS model. Measures of Effectiveness (MOEs) articulate the significance of reorganizing land use patterns and development densities/intensities to improve efficiency of the regional transportation system (i.e., business-as-usual scenario vs. compact development scenario). Viable travel alternatives and more compact, mixed-use development centers reduce travel distance between complementary land uses and reliance on the automobile for day-to-day activities. This leads to less vehicle miles traveled, less vehicle hours traveled, and higher average automobile travel speeds (system-wide) compared to the sprawling development pattern in the business-as-usual scenario. Further, vehicle miles traveled at times of highest demand on the transportation system were reduced in most scenarios (i.e., VMT at LOS E in **Table 9.1**), resulting in a more efficient transportation system. **Table 9.2** summarizes all the MOEs generated from the 2035 FLATS Model for the two development scenarios.

Table 9.1 – Land Use MOEs

MOE	Centers & Corridors	Compact Development	Decentralized Growth
Urban Footprint			

The size of the arrow corresponds with the relative magnitude of change between that scenario and the base (business-as-usual) scenario.

A compact development scenario also reduces the spatial footprint of the built environment on the surrounding landscape. Urban centers and surrounding walkable neighborhoods identified in the hypothetical compact development scenario would limit creeping low-density, sprawl development patterns and reduce accompanying public infrastructure costs.

Output data from CommunityViz® indicates that the urban footprint of growth could be reduced in the compact development scenario while accommodating the same magnitude of growth projections for 2035.

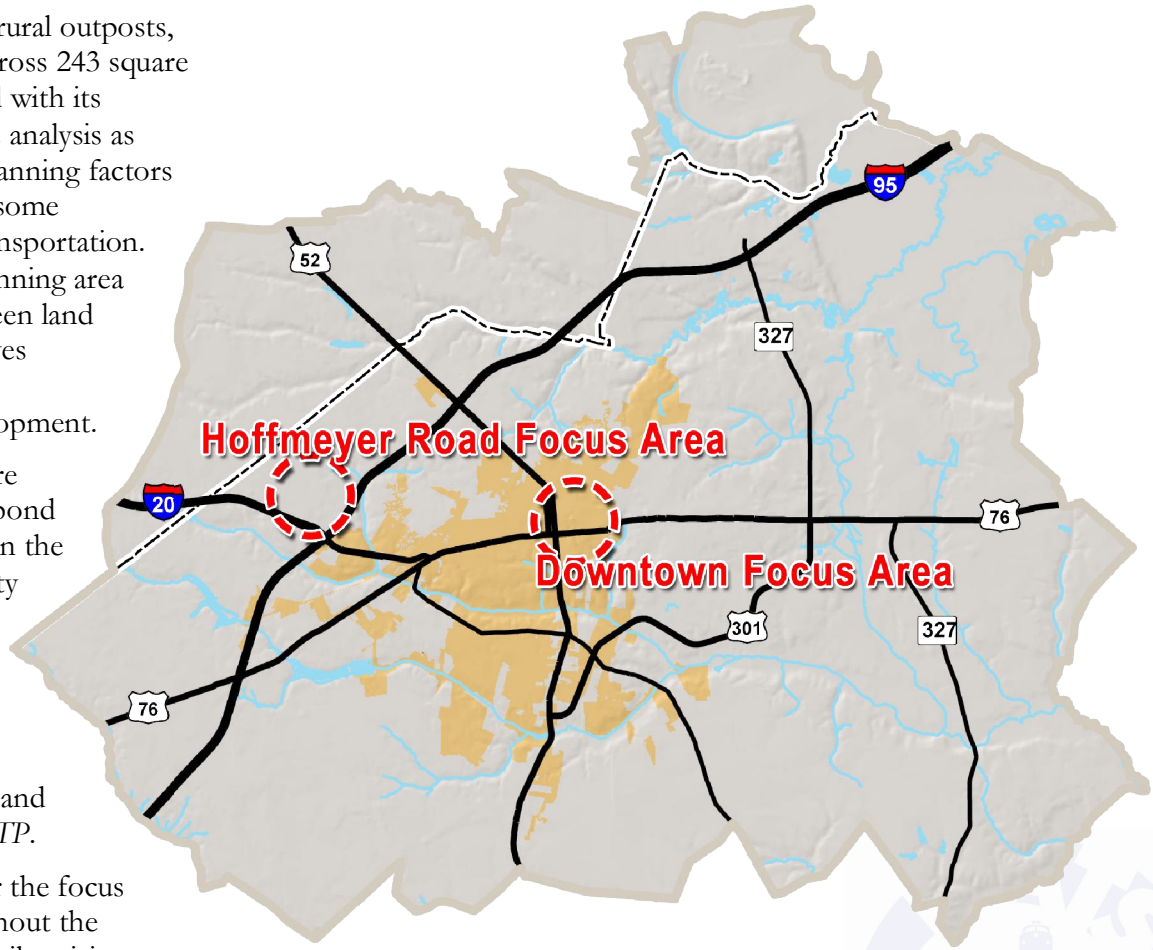
Table 9.2 – Transportation MOEs

MOE	Centers & Corridors	Compact Development	Decentralized Growth
Vehicle Miles Traveled (VMT)			
Vehicle Hours Traveled (VHT)			
VMT at Level of Service E			
VHT at Level of Service E			

The size of the arrow corresponds with the relative magnitude of change between that scenario and the base (business-as-usual) scenario.

Focus Area Studies

The FLATS MPO area is blessed with an urban core, rural outposts, active farmland, and unspoiled wetlands. Stretching across 243 square miles, the expanse of the FLATS MPO area combined with its diversity makes it difficult to conduct detailed land use analysis as part of the long range transportation plan. The new planning factors associated with the SAFETEA-LU legislation require some attention be paid to the interaction of land use and transportation. Selection of diverse, smaller focus areas within the planning area allows detailed analysis of the local relationships between land use, urban form, and travel behavior. Planning initiatives represented in two focus areas include Downtown Redevelopment and Traditional Neighborhood Development.



The City of Florence and Florence County currently are updating their comprehensive plans. The plans correspond with the findings of the planning initiatives described in the focus area studies. Planning staff from Florence County helped identify two focus areas to describe ways these emerging planning initiatives can be applied: Downtown Florence (Urban Redevelopment/ Residential Infill) and Hoffmeyer Road (Traditional Neighborhood Development). These locations were presented to the planning staff from Florence County and the City of Florence prior to inclusion in the *2035 LRTP*.

Recommendations and best development practices for the focus areas can — and should — be applied to areas throughout the region. New development and redevelopment with similar vision, development patterns, and supporting infrastructure can consider the results of this exercise when formulating plans that better integrate land use, urban form, and transportation decision-making.

Introduction of the Four D's

Local officials must consider the "Four Ds" commonly associated with the relationship between urban form and transportation — density, diversity, design, and (travel) distance — as they seek more balance in the land use and transportation equation. The evaluation of these issues as part of the land use planning exercises of the *2035 LRTP* have created proven strategies to shorten commuting distance between complementary land uses, increase travel choices, and create a more efficient transportation system. A brief summary of the four Ds associated with better integrating urban form and travel behavior follows. These concepts are further discussed as part of the focus area analysis.

Density

People often reject residential density and non-residential intensity because they envision traffic congestion or unattractive buildings. Those in favor of residential density and non-residential intensity recognize the diverse housing and travel options as beneficial to the community. Research shows perceived density usually does not relate to actual density, and the same density or intensity can look and feel quite different based on the building or neighborhood's scale and design. Good planning and design match an environment while naturally incorporating the benefits of a variety of transportation modes.

In general, residential density refers to the number of housing units per area of land. It is commonly reported in dwelling units per acre but also can be reported in persons per acre using household size characteristics. Dense urban projects sometimes measure residential density in floor-area-ratio (FAR), which is the ratio of gross building floor area to the total lot area. Non-residential intensity (e.g., commercial, office, or industrial uses) commonly is reported in floor-area-ratio for both suburban and urban conditions.

As in most communities, location often is the main factor in determining density and intensity in the Florence MPO area. Moving away from downtown Florence, land likely has developed at a lower density and intensity. Managing the location and magnitude of new density or intensity within the built environment helps planners determine infrastructure needs and implementation costs, and it shifts impacts away from environmentally-sensitive areas.

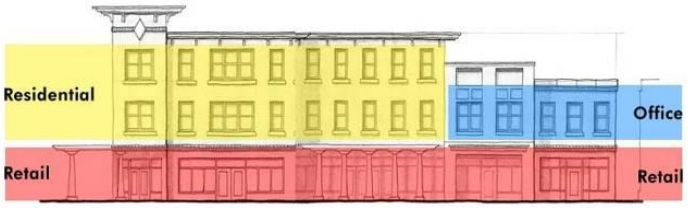
Visualizing Density

Diversity

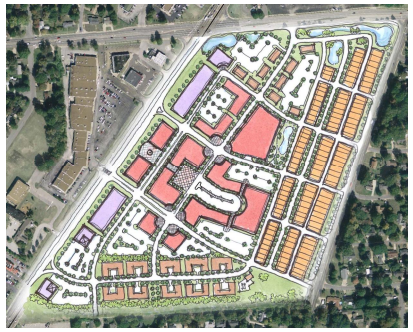
By creating places where people live, play, work, and shop in one general area, mixed-use developments combine various public amenities with compatible land uses in a centralized location. Successful mixed-use developments generally include residential uses and one or more of the following: commercial, office, light industrial, civic, hotel, public parks or plazas, and dedicated open space. Promoting a mix of land uses often is associated with smart growth, new urbanism, transit-oriented development, and Traditional Neighborhood Development.

While mixed-use developments come in a variety of forms, they typically are categorized as either vertical mixed-use buildings or horizontal mixed-use sites. As described in *Planning and Urban Design Standards* published for the American Planning Association (APA):

- **Vertical mixed-use** buildings combine different uses in the same building. The lower floors generally have more public uses, with private uses on the upper levels. Examples include residential space over commercial establishments, street-level retail with an office tower above, residential and hotel uses in the same building, and retail wrapped around a parking structure with multiple uses above. Vertical mixed-use development may have any number of revenue-producing and mutually supportive uses in the same building.
- **Horizontal mixed-use** development combines single-use buildings on distinct parcels in one planned development project with a range of uses. Examples include residential neighborhoods surrounding commercial or office development adjacent to a major highway or a medical campus with surrounding professional offices. This approach avoids the financing and code complexities of vertical mixed-use buildings while achieving the goals of place-making made possible by conveniently bringing together complementary uses in one place.



Vertical mixed-use buildings can occur at different scales in the built environment. The image above represents less intense vertical mixed-use buildings typical of an urban town center.



An illustrative example of horizontal mixed-use development.

Both types of developments create vibrant places while meeting the everyday needs of the community. They offer advantages over single-use developments by fostering a more efficient, livable transportation system characterized by shorter trip lengths, modal choice, convenient access, and internal trip capture.

In some communities, hurdles remain to building mixed-use development because of local government's continued adherence to Euclidean zoning, which generally isolates residential, commercial, office, and industrial uses to separate zoning districts. The City of Florence, through ongoing efforts to update its comprehensive plan, has begun to emphasize diversity in terms of land uses, character, and design. Likewise, the land use element of the Florence County Comprehensive Plan stresses more urban, mixed-use environments such as compact development and transit oriented design. Still, the city and county must work collaboratively to identify preferred locations for these types of development and then create flexible, performance-based standards for appropriate locations to support the development of these centers through policy measures.

Design

Urban design shapes the blocks, neighborhoods, and districts that give our cities identity and organize the built environment. Various elements of urban design provide a three-dimensional physical form to the requirements for density and diversity established in locally adopted comprehensive plans or zoning ordinances.

Urban design looks at various elements in the public realm that provide three-dimensional physical form for the built environment.

The emphasis for urban design is the public realm, which is created by public space (e.g., streets, plazas, open space) and the buildings that define them. Urban design looks at the various elements that influence these spaces and uses design elements to provide connections between people, places, and buildings. Specific elements of urban design — street pattern, streetscape design, block size, building scale and massing, parking, and landscaping — directly influence travel mode choice and travel behavior when supported by appropriate minimum densities and diversity of land uses. These design elements provide context to the transportation system and celebrate the street network as the centerpiece to the public realm.

Combining design elements (e.g., bicycle lanes, sidewalks, bus stops, street trees, and on-street parking) in the streetscape can transform transportation corridors from vehicle-dominated thoroughfares to community-oriented complete streets that safely and conveniently accommodate all modes of travel. The type, placement, and scale of design elements included in the streetscape for transportation corridors generally vary with the context of the surrounding environment. Programming improvements need to be tailored to rural, suburban, and urban environments.

The orientation, scale, and massing of buildings on a site relative to the adjacent transportation corridor can reinforce those design elements that support a complete street. Literature from around the country cites safe, predictable connections between adjacent properties, orientation of buildings, and elimination of excessive parking requirements as ways to promote a more balanced transportation system that favors walking between nearby destinations once arriving to the site by automobile or transit.

Distance

The travel distance between origin and destination is a primary factor (along with travel mode choice) for influencing travel behavior. The physical distance between complementary land uses in rural or suburban settings tends to promote automobile travel, particularly since safe, convenient facilities usually are not available for pedestrians and bicyclists. Denser mixed-use areas decrease the travel distance between complementary land uses and support transit, bicycle, and walking as viable alternatives to the automobile.

Focus Area Planning Process

The detailed study of the relationships between land use, urban form, and travel behavior in each of the focus areas followed the same four-step planning process:

1. Inventory existing conditions.
2. Evaluate existing development controls.
3. Formulate development scenarios.
4. Identify development scenario trade-offs.

Step One: Inventory Existing Conditions

An inventory of existing conditions was completed for both focus areas using geographic information system (GIS) data, aerial photography, photos, and field analysis. This information was used to characterize the study area based on existing land use patterns and development conditions. Particular attention was paid to physical features in the focus area in the context of the surrounding environment such as the distribution of open space, size and character of existing buildings, land use mix, size and character of streets, available travel modes, internal and external connections, location of parking, and interface of properties versus the public street.

Step Two: Evaluate Existing Development Controls

A review was conducted of locally adopted plans, programs, and policies administered by the City of Florence and Florence County. This information was used to inventory existing development controls to prepare a business-as-usual development scenario and identify potential barriers to implementing alternative development scenarios. This step included the review of local comprehensive plans, zoning ordinances, and subdivision ordinances.

Step Three: Development Scenarios

Two development scenarios were prepared for each focus area. The first development scenario represents a continuation of existing plans, programs, and policies administered by the local government under the current zoning designation (i.e., business-as-usual). The second development scenario represents a shift in planning philosophy toward one or more of the previously identified planning initiatives gaining popularity for better linking land use, urban form, and transportation planning — Downtown Redevelopment and Traditional Neighborhood Development.

Both scenarios for each focus area include a preferred development pattern, transportation infrastructure needs, and recommended multimodal circulation strategies. Development plans for the two scenarios are kept as consistent as possible for optimal comparison between the two. Also included were best development practices for parking, building placement and arrangement, site access, circulation, and connectivity based on the desired urban form category and prescribed regulatory framework.

Step Four: Development Scenario Trade-Offs

Trade-offs between the two development scenarios prepared for each focus area were identified using a set of elasticity factors developed for the U.S. Environmental Protection Agency. These factors relate physical features of the built environment — density, diversity, and design — to the percentage change in vehicle trips and vehicle miles traveled resulting from the two development scenarios. A technical memorandum describing in detail the methodology for estimating travel demand impacts from land use and urban design changes is included in the *Smart Growth Index Indicator Dictionary, Appendix A* prepared for the U.S. Environmental Protection Agency by Criterion, Inc. in October 2002.

Downtown Florence Focus Area

Downtown Florence, the civic and government center of Florence County, serves as a regional employment center, particularly for businesses supporting the medical facilities associated with McLeod Regional Medical Center. The existing infrastructure and streetscape along the Evans Street and Dargan Street corridors is in place to create a vibrant downtown. But the shift in recent years toward suburban living has eroded the vibrancy of this area of downtown. The focus area includes both the retail corridor of Irby Street and civic uses such as churches, Doctors Bruce and Lee Foundation Library, the Poyner Adult and Community School, and the new Francis Marion University Performing Arts Center.

The Downtown Florence focus area is centered on two main north/south connectors through downtown, Irby and Dargan Streets. It also includes the critical east/west corridors of Palmetto and Cheves Streets. The western boundary of the study area is Coit Street, while the rail line just west of Church and Barringer Streets forms the eastern boundary. Cedar Street forms the southern boundary of the focus area. The northern boundary follows Evans Street between Dargan Street and the rail corridor, then follows along the back of the buildings fronting Evans Street between Dargan and Coit Streets.

Planning Process

Step One: Inventory Existing Conditions

A physical assessment of the focus area highlighted strengths, weaknesses, and opportunities for better integrating land use, urban form, and transportation decision-making. A summary of existing conditions for the focus area is organized using the 4D planning framework.

Density

The focus area has a low density uncharacteristic of a typical urban area due to high vacancy and 1- to 2-story buildings surrounded by large open areas and surface parking lots. From single family residential to multi-story office buildings, this focus area is characterized by many large, single use buildings that in some cases occupy a majority of the city block.

Diversity

Existing land uses in the focus area include residential, retail, office, civic, and surface parking. The area could be characterized as horizontal mixed use with each use separated, usually by surface parking lots. The main core of the focus area predominantly is civic uses, and moving toward the focus area edge, small professional offices and single family dwellings are more prevalent.

Design

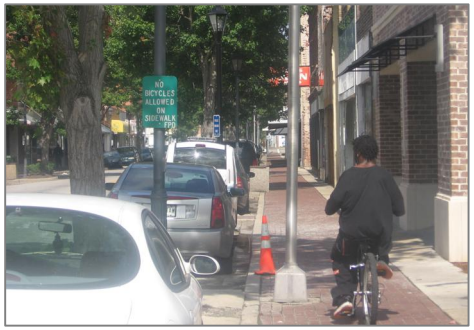
Downtown Florence streets form a grid pattern that provides highly-walkable blocks and safe convenient access between complementary uses. Building scale, massing, and materials vary widely throughout the focus area due to the presence of different land uses, buildings with historic significance, and redevelopment of certain parcels.

Distance

The proximity of complementary land uses served by an efficient transportation system provides travel mode choices in the urban core, reducing travel distance and supporting transit, bicycle, and walking as viable alternatives to the automobile. Two important features of the focus area relate to distance:

- The Central Transfer Point for the Pee Dee Regional Transit Authority (PDRTA) is located at the intersection of Evans Street and Dargan Street in the northeastern corner of the study area. Route 5 (Palmetto Street – Florence Mall) travels through the study area along Palmetto Street. The distance from the Central Transfer Point to the study area is on average just over a quarter mile.

- The 2004 Florence Area Bikeway Master Plan establishes detailed bicycle routes in the Florence Area. Portions of the Palmetto Connector, Downtown Connector, and Francis Marion Connectors travel through the focus area. Offering safe bicycle routes encourages alternative modes of travel and shortens distances between uses.



Step Two: Evaluate Existing Development Controls

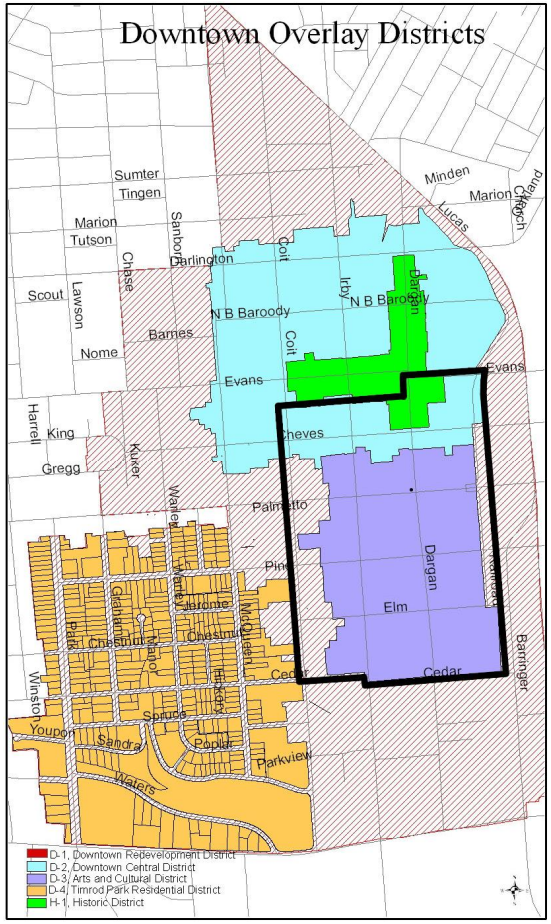
The following documents were reviewed for the focus area to identify supporting policies and/or potential barriers in preparing development scenarios for the Downtown focus area:

- *Zoning Ordinance of the City of Florence (Updated April 2009)*
- Florence County GIS Mapping and Zoning Application
- *Design Guidelines for Downtown Florence, South Carolina*
- *Florence Area Bikeway Master Plan*
- Coordination with Florence County Comprehensive Plan Update

The downtown focus area is located within Florence city limits and is governed by the existing development controls set forth in the *Zoning Ordinance of the City of Florence*. Existing zoning designations in the focus area are Multi-Family Residential (R-4), Limited Business (B-1), General Business (B-3), Central Business (B-4), and Industrial (B-6). Overall, the existing zoning provides a mix of uses, and B-1 — the predominant zoning in the focus area — allows office, institutional, and residential uses. The residential zoned areas only allow up to two family dwellings, which can be characterized as low density. The only other zoning area that allows residential uses is B-1 zoning. A majority of the focus area currently is developed, though vacant lots and businesses not characterized in the civic core of the study area are scattered throughout the focus area.

Despite the concentration of institutional uses and proximity to Florence's central business district, a surprisingly low number of people live in the focus area. The current zoning restricts the ability to infill with multi-family housing and mixed use developments without seeking a variance or rezoning. Existing zoning separates uses, rendering Irby Street a retail corridor, Dargan Street a civic corridor, and the eastern and western edges as low density residential.

The City of Florence established The Florence Downtown Development Corporation, which has inventoried the existing urban fabric of downtown, studied redevelopment opportunities, and outlined design guidelines to promote preservation, redevelopment, restoration, and revitalization in downtown Florence. As a part of this initiative, downtown overlay districts have been created to describe how and where redevelopment occurs downtown.



The Downtown Focus Area (outlined in black) falls within Downtown Overlay Districts.

The entire study area falls within this downtown redevelopment initiative. The Arts and Cultural District (D-3) covers the majority of the study area, while small areas fall within the Central District (D-2) and the Historic District (H). The Arts and Cultural District emphasizes this area as the civic heart of the community. Design guidelines for this area encourage orienting facades toward the street and creating pedestrian spaces within retail areas that add to the life of downtown Florence.

Step Three: Development Scenarios

Two development scenarios were created for the 165-acre Downtown focus area: business-as-usual and Downtown Redevelopment (vertical mixed use). These scenarios are summarized below and illustrated on the following pages.

Business-as-Usual Scenario

The business-as-usual scenario assumes the continued redevelopment of individual parcels or the consolidation of a few parcels. As this trend continues, additional strain will be placed on existing surface parking infrastructure and the practice of providing parking per development requirements will continue. The business-as-usual scenario assumes current zoning provisions would dominate the growth pattern. Some development in the scenario would require a zoning change, but it would closely follow the currently allowed uses. Likewise, this scenario assumes the physical separation of uses prevalent in the area today will continue. The business-as-usual scenario includes:

- 130,000 square feet of additional retail
- 50,000 square feet of medical office space
- 50,000 square feet of office
- 120-room hotel
- 60 townhome units
- 120 multi-family/low income housing units
- 2.5 acres of open space (equal to 1.5% of focus area)

Underutilized or vacant parcels identified during the field inventory were the primary location for redevelopment in the business-as-usual scenario. With the continuation of existing zoning and development practices, these redeveloped parcels develop inside a vacuum (that is, each parcel develops based on opportunity and/or market forces). While new development may follow the design guidelines, by not

implementing the concept of vertical mixed use or structured parking the amount of available space for development is greatly decreased. Also, with the piecemeal development of individual parcels, uses remain segregated and automobile trips are emphasized.

Downtown Redevelopment

Reinvestment in downtown and urban living is an initiative for the Florence Downtown Development Corporation. This development scenario targets vertical mixed use development for underutilized parcels currently occupied by vacant buildings and surface parking lots. Rather than develop separately, entire underutilized blocks were considered as part of this redevelopment plan. The Downtown Redevelopment Scenario includes:

- 74,000 square feet of mixed use space
  - This mixed use space could be used in many combinations, one being 56,000 square feet of medical office and 18,000 square feet of retail.
  - Live/work opportunities within vertical mixed use space could provide up to 75 additional live/work units.
- 50,000 square feet of office
- 120 room hotel
- 68 townhome units
- 120 multi-family/low income housing units
- 7.5 acres of open space, including areas near retail (equal to 4.5% of focus area)

The vertical mixed use in this scenario better utilizes urban land and preserves open space, which is critical to attracting residents to downtown areas. This plan incorporates structured parking wrapped by ground floor mixed use or retail. This approach reduces surface parking and addresses the streetfront as desired in an urban area. The live/work component infuses residential components into the heart of downtown. Rather than develop residential where it is already identified through zoning, pockets of residential developments are placed into entire blocks to create a neighborhood atmosphere.

Step Four: Development Scenario Trade-Offs

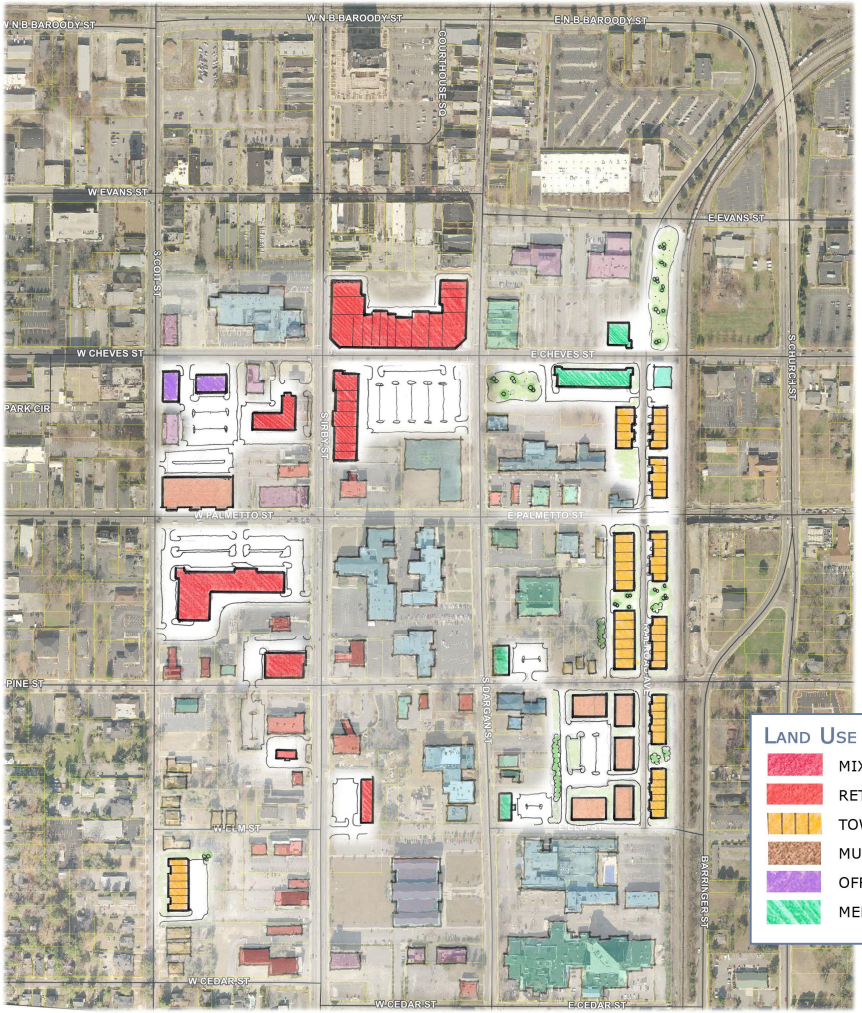
General development characteristics were used as input data to estimate the travel demand impacts likely to occur from land use and urban design changes. Comparative statistics calculated for the two development scenarios confirm that vertical mixed use developments would reduce automobile travel generated inside the focus area. The increased density and specific urban design elements prescribed in the downtown redevelopment scenario would reduce the number of vehicle trips (1.13% reduction) and vehicle miles traveled (0.81% reduction) compared to the business-as-usual scenario. **Table 9.3** provides further comparison of the scenarios.

Table 9.3 – Downtown Focus Area Development Comparison

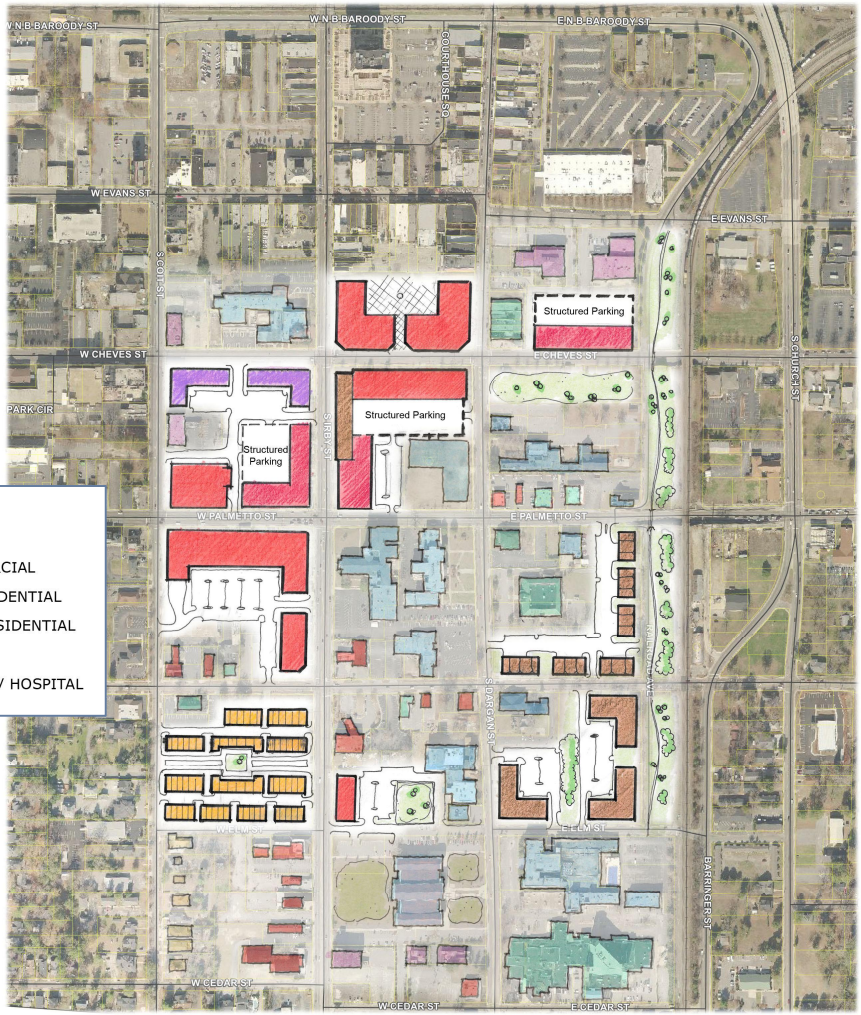
	Business-as-Usual	Downtown Redevelopment
Average Residential Density	16 dwelling units per acre	12 dwelling units per acre
Average Non-Residential Intensity (FAR)	0.13 to 0.35	0.24 to 0.50
Typical Street Pattern	Grid	Grid
Typical Block Length	600 linear feet	600 linear feet
General Land Use Pattern	Separation of Uses	Mixed Uses
Prevailing Building Height (stories)	2 stories	3 stories
Street Network Density	High	High
Street Network Connectivity	High	High
Pedestrian Infrastructure	High	High
Bicycle Infrastructure	High	High
Vehicle Infrastructure	High	High
Public Transit Infrastructure	High	High
Preserved/Public Open Space	1.5%	4.5%

Downtown Focus Area

Business-as-Usual



Downtown Redevelopment



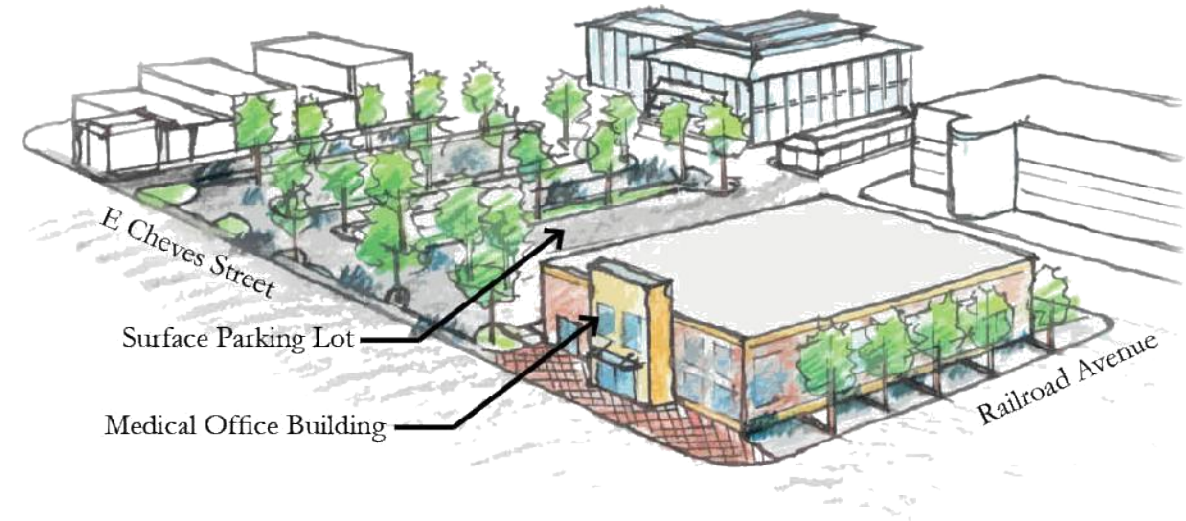
The business-as-usual scenario (above) assumes continuation of existing land use patterns and development intensities, observed in the focus area as lower density/intensity development separated by surface parking. For comparison, the downtown redevelopment scenario (right) infuses the area with livability by introducing vertical mixed use and preserving open space. This enhanced scenario includes structured parking wrapped with retail or mixed use fronting the street.

Visualizing Vertical Mixed Use

Downtown Focus Area

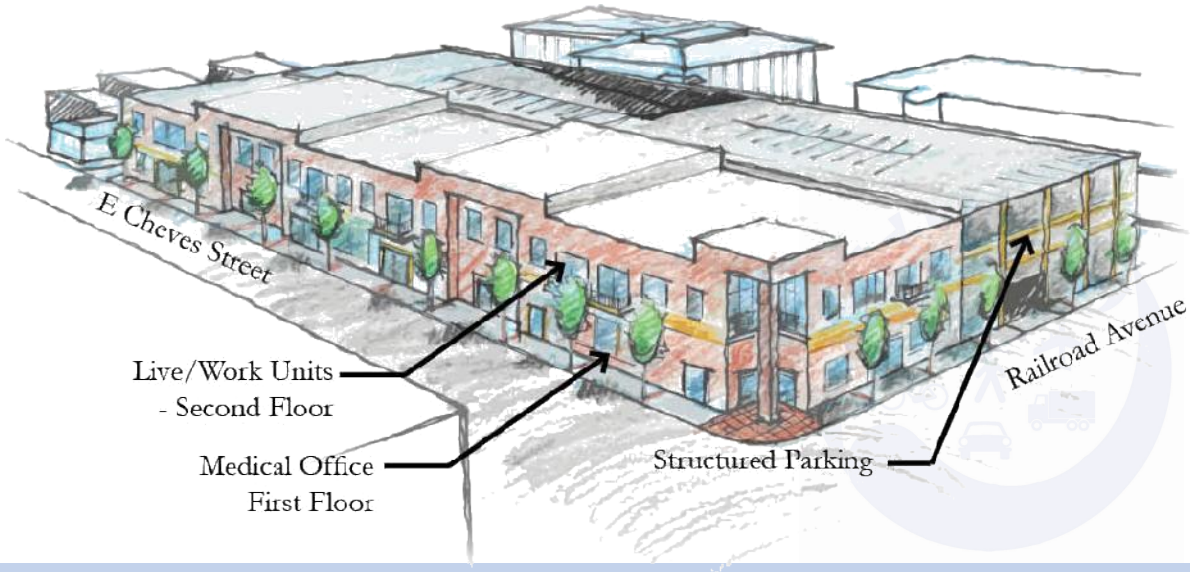
Business-as-Usual

Today, the corner of the Cheves Street/Railroad Avenue intersection is a surface parking lot for buildings within that block. The sketch to the right depicts how business-as-usual infill development could occur. While the proposed medical office building addresses the street, surface parking would need to be retained to serve existing and proposed buildings. On-street parking could provide additional spaces needed for the infill development as well as to replace parking lost for the development of the medical office building.



Downtown Redevelopment

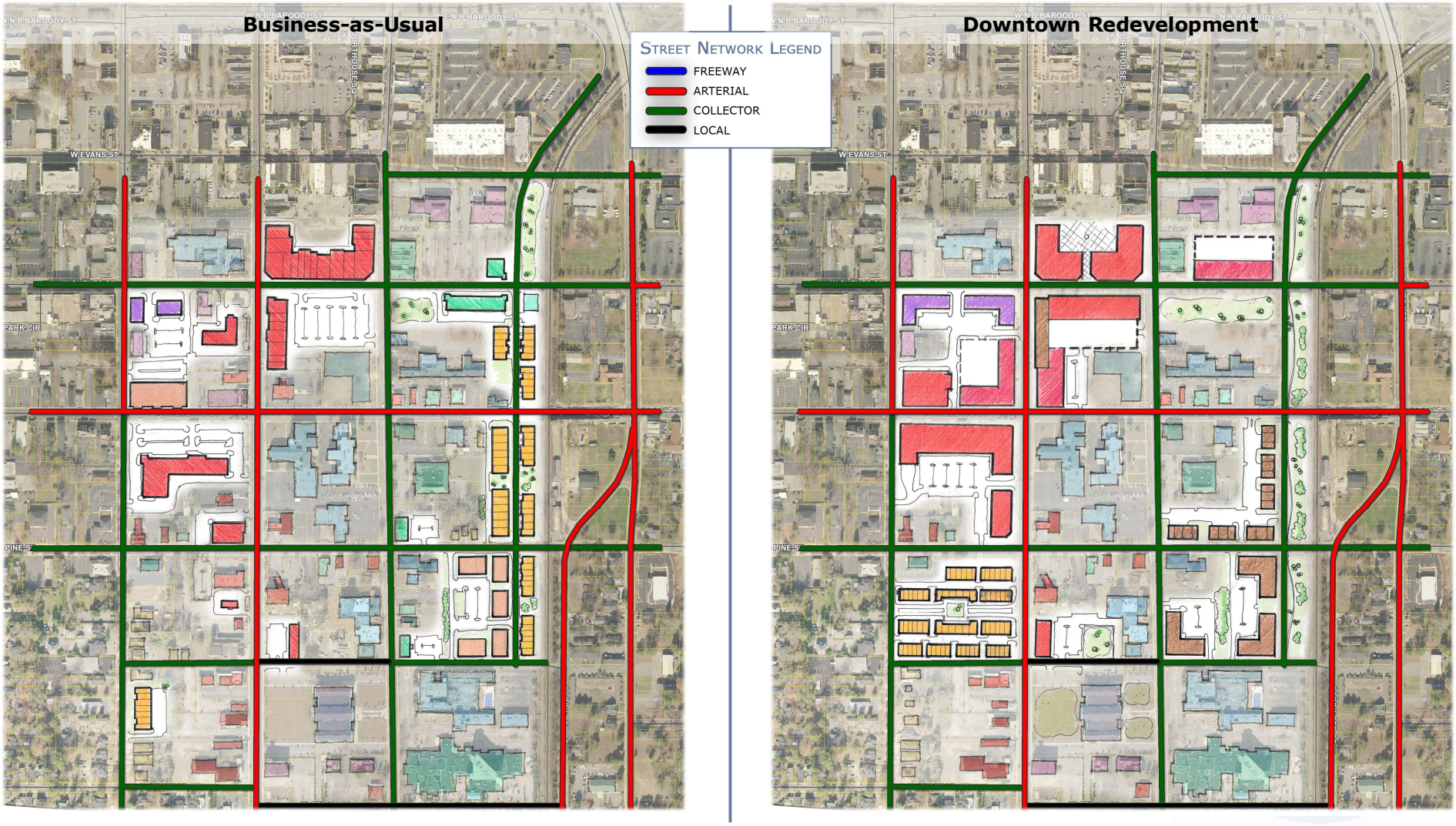
The Downtown Redevelopment scenario emphasizes vertical mixed use. The sketch to the right visualizes vertical mixed use for the same corner (Cheves Street at Railroad Avenue) of the focus area. By implementing structured parking and vertical mixed use on the existing surface parking lot, the same amount of medical office space could be developed with the addition of live/work residential units and structured parking that provides enough parking for all the surrounding buildings (both existing and proposed). Also, the entire streetfront along Cheves Street has an urban feel, a sense of character that is lost in the business-as-usual scenario.



Street Network

Downtown Focus Area

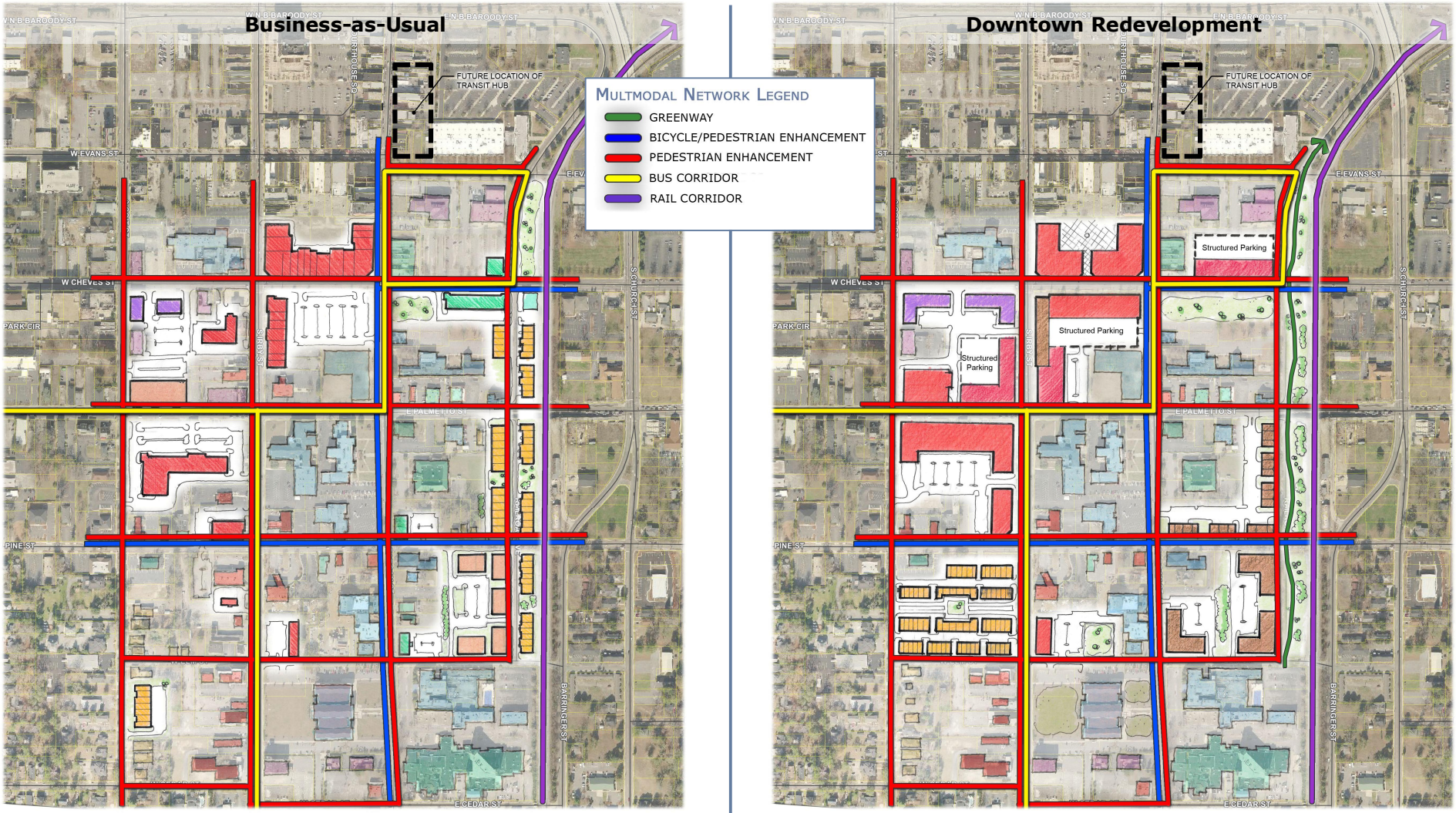
With its urban location, the Downtown Focus Area benefits from a grid network that distributes traffic more evenly throughout the focus area. Because both scenarios focus on preserving existing infrastructure, no change in the street network is expected. However, the enhanced livability of the Downtown Redevelopment scenario will be evident at the street level due to an improved streetscape and additional modes using the street network.



MULTIMODAL NETWORK

Downtown Focus Area

As with the Street Network, the grid pattern of downtown Florence provides a relatively unchanged network between the two scenarios. In both, a well-connected and diverse multimodal network is provided. The current PDRTA Central Transfer Point and anticipated location of the transit hub in the vicinity will ensure transit remains prominent in the future and will support increased civic, commercial, and residential uses. The Downtown Redevelopment scenario introduces a greenway adjacent to the rail corridor. Emphasizing a multimodal network benefits the focus area in a variety of ways.



Hoffmeyer Road Focus Area

As the interstate highway system grew on the outskirts of Florence, the shift to suburban living surrounded by sprawling retail centers strained the existing transportation system. Located near the interchange of I-95 and I-20, the Hoffmeyer Road Focus Area exemplifies suburban growth within the FLATS MPO area. The Hoffmeyer Road Focus Area is bounded by Hoffmeyer Road on the south, Ebenezer Road along the west, Sumter Street to the north and the I-95 corridor to the east. The selection of this area for detailed study is notable for several reasons:

- The recent widening of Hoffmeyer signifies additional growth is on the horizon.
- A new school is planned less than a mile south of the focus area.

- With existing residential neighborhoods nearby and infrastructure in place for the King's Gate, accessible neighborhood service retail will be warranted in the near future.

Planning Process

Step One: Inventory Existing Conditions

As with the Downtown Focus Area, a physical assessment of the focus area highlighted strengths, weaknesses, and opportunities for better integrating land use, urban form, and transportation decision-making. A summary of existing conditions for the focus area is organized using the 4D planning framework.

Density

The existing density of the focus area is low, characterized by large multi-acre single family parcels and large areas of open space currently used for agriculture. Subdivisions surrounding the focus area range from 1 to12 dwelling units per acre.

Diversity

Existing land uses in the focus area are limited to single family residential and agricultural uses.

Design

In general, the focus area is relatively flat, and prime for agriculture uses. Two streams cross the site from east to west and divide the focus area into developable areas. Floodplains and wetlands along the streams provide opportunities for trail networks. The roads surrounding the site provide adequate access to the focus area.

Distance

The distance between complementary uses such as employment and shopping necessitates travel by automobile. Without connectivity among subdivisions, trips typically are longer as most subdivisions have only one or two access points to main roads. Although the Hoffmeyer Road widening project provides wider outside lanes for bicycles and sidewalks on both sides, a lack of connectivity for other modes of transportation exists where the widening project ends and the two-lane rural cross-section begins. Currently fixed route transit is

not provided within the focus area, and the *Florence Area Bikeway Master Plan* does not propose any routes to or near the focus area.

Step Two: Evaluate Existing Development Controls

The following documents were reviewed for the focus area to identify supporting policies and/or potential barriers in preparing development scenarios for the Hoffmeyer Focus area:

- Florence County GIS Mapping and Zoning Application
- *Florence Area Bikeway Master Plan*
- Coordination with Florence County Comprehensive Plan Update

The focus area is located in unincorporated Florence County, and no existing development controls or zoning are applied to parcels in the focus area. The surrounding development pattern has followed the same pattern of a large parcel (or consolidation of smaller parcels) being developed into suburban neighborhoods. This development pattern usually can be sustained without land use plans guiding growth. Land use ideas expressed in this study will be coordinated with the Florence County Comprehensive Plan Update to help guide smart growth and cooperation to existing and proposed transportation infrastructure.

Step Three: Development Scenarios

Two development scenarios were created for the 350-acre Hoffmeyer Road Focus Area: business-as-usual and a Traditional Neighborhood Development scenario that incorporates mixed use and traditional neighborhood development. These scenarios are summarized below and illustrated on the following pages.

Business-as-Usual Scenario

The business-as-usual scenario assumes the continued development pattern of subdivisions with neighborhood-related retail focused toward Hoffmeyer Road. Focusing the retail on Hoffmeyer Road forces other site access to Ebenezer Road and places additional strain on the two-lane Ebenezer Road. Without zoning, the development pattern of subdivisions developing on easily purchased parcels would continue. The business-as-usual scenario includes:

- 200,000 square feet of retail
- 80,000 square feet of assisted living facility
- 228 multi-family units
- 48 townhome units
- 28 ½-acre single family units
- 34 ¼-acre single family units
- 112 ⅛-acre single family units
- 25-acre community park
- 110 acres of open space (equal to 31% of focus area)

Environmentally sensitive areas are preserved in this scenario. However, these areas also limit connectivity because stream crossings are restricted. By focusing traditional shopping center and neighborhood retail development along Hoffmeyer and Ebenezer Roads, residential uses pushed further away from retail sites limits the opportunity for alternative modes of transportation such as walking and bicycling. Land uses in the business-as-usual scenario are separated, rather than mixed, which lengthens trips and erodes the neighborhood's identity.

Traditional Neighborhood Development

Once completed, the Florence County Comprehensive Plan will promote sustainable development patterns that include compact development and the conservation of farmland. The Traditional Neighborhood Development scenario prescribes a development pattern that reduces vehicular trips, fosters a sense of community, and condenses commercial to preserve open space. The scenario uses a similar development program (i.e. number of residences and square footage of commercial area) as the business-as-usual scenario, but the application of cluster development and traditional neighborhood

design offers a wider range of single family lot sizes with most homes having direct access to shared open space. This alternative includes:

- 160,000 square feet of retail
- 80,000 square feet of assisted living facility
- 228 multi-family units
- 48 townhome units
- 32 ½-acre single family units
- 27 ¼-acre single family units
- 52 ⅛-acre single family units
- 56 $^{1}/_{10}$-acre single family units
- 20-acre park
- 118 acres of open space, including community green (equal to 34% of focus area)
- 41 acres of preserved agricultural land (equal to an additional 11% of preservation in the focus area)

By creating a mixed use center focused not on roads, but within the center of the focus area, a Community Center brings identity to an otherwise nondescript crossroads. Focusing development along roads and not parking fields also contributes to a more walkable environment. Using development patterns such as traditional neighborhood development and cluster development, which typically results in smaller single residential lots offers more shared open space and preserved green spaces. Offering a variety of lot sizes and living types within a development also creates a more marketable development that targets more buyers rather than only a few. The road network, set in a more grid-like pattern also lessens trips and provides better connectivity within and between neighborhoods.

Step Four: Development Scenario Trade-Offs

General development characteristics were used as input data to estimate the travel demand impacts likely to occur from land use and urban design changes. Comparative statistics calculated for the two development scenarios confirm that implementing the vision for mixed use and traditional neighborhood development types would have a positive impact on reducing the amount of vehicular travel generated inside the focus area. This is evident specifically through the street network pattern between the two scenarios. It is estimated that the increased density and specific design elements prescribed in the alternative development scenario would reduce both the number of vehicle trips (5.59 percent reduction) and vehicle miles traveled (7.04 percent reduction) compared to the business-as-usual scenario. **Table 9.4** provides further comparison of the scenarios.

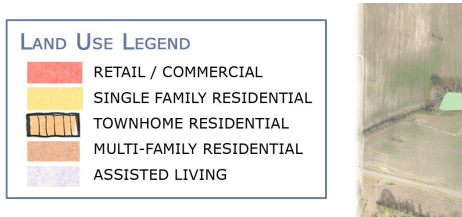
Table 9.4 – Hoffmeyer Road Focus Area Development Comparison

	Business-as-Usual	Traditional Neighborhood
Average Residential Density	3 dwelling units per acre	6 dwelling units per acre
Average Non-Residential Intensity (FAR)	0.09 to 0.18	0.12 to 0.23
Typical Street Pattern	Curvilinear	Grid
Typical Block Length	350 to 550 linear feet	400 to 650 linear feet
General Land Use Pattern	Separation of Uses	Mixed Uses
Prevailing Building Height (stories)	2 stories	2 stories
Street Network Density	Low	High
Street Network Connectivity	Low	High
Pedestrian Infrastructure	Low	High
Bicycle Infrastructure	Medium	Medium
Vehicle Infrastructure	Medium	High
Public Transit Infrastructure	None	Low
Preserved/Public Open Space	31%	49%

Hoffmeyer Road Focus Area

The business-as-usual scenario (left) assumes continuation of existing suburban land development that includes segregated uses, large lot development, and big box retail fronted by parking. The Traditional Neighborhood Development scenario (below) includes smaller lots to preserve farmland and open space and creates a mixed use lifestyle center with commercial, multi-family, and assisted living uses.

Business-as-Usual

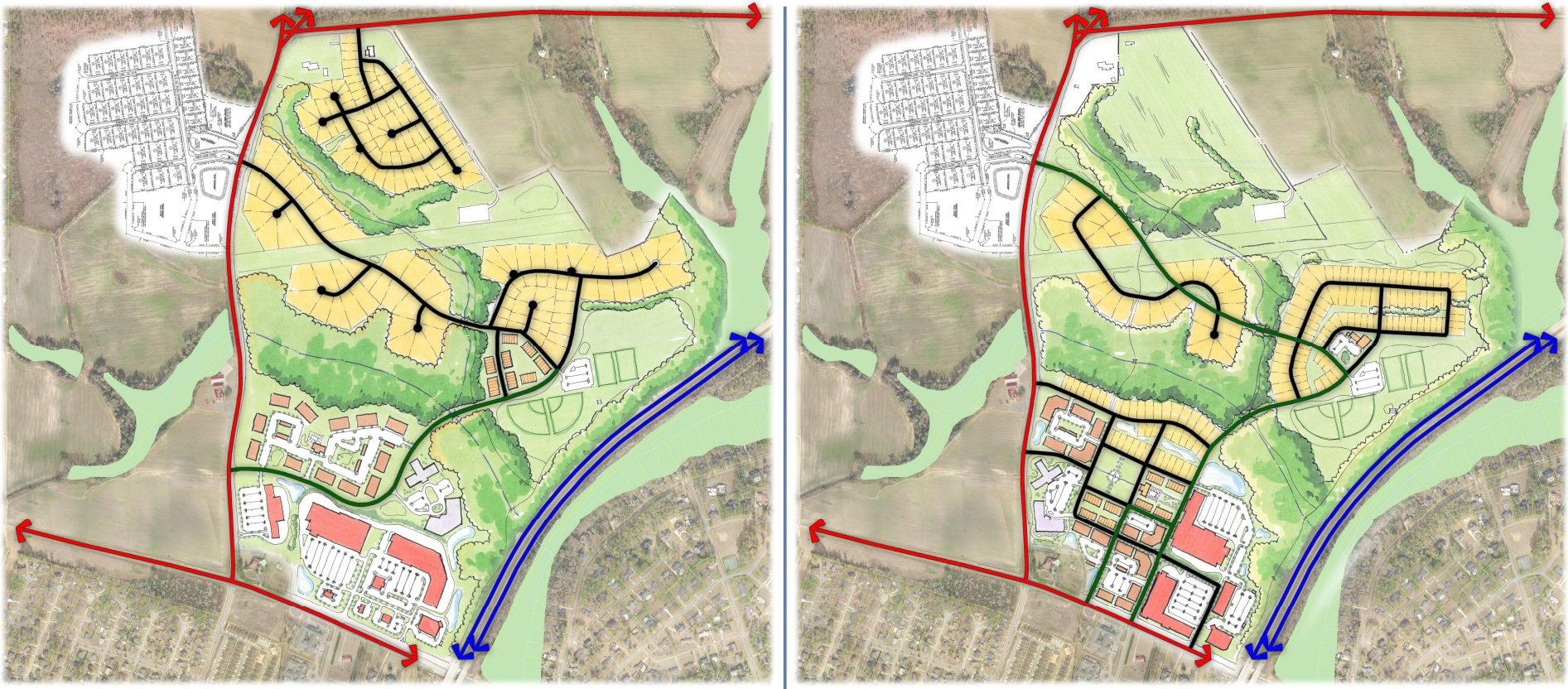


Traditional Neighborhood Development

Street Network

Hoffmeyer Road Focus Area

The street network maps for both scenarios clearly show how enhanced land development patterns can increase internal connectivity and reduce the burden on the external road network. The business-as-usual scenario burdens Hoffmeyer Road and Ebenezer Road and includes numerous cul-de-sacs. In contrast, the traditional neighborhood development has a more efficient, connected road network with different size streets and numerous opportunities to connect within the neighborhood. Cul-de-sacs are limited to areas with environmental features that prevent street connections.



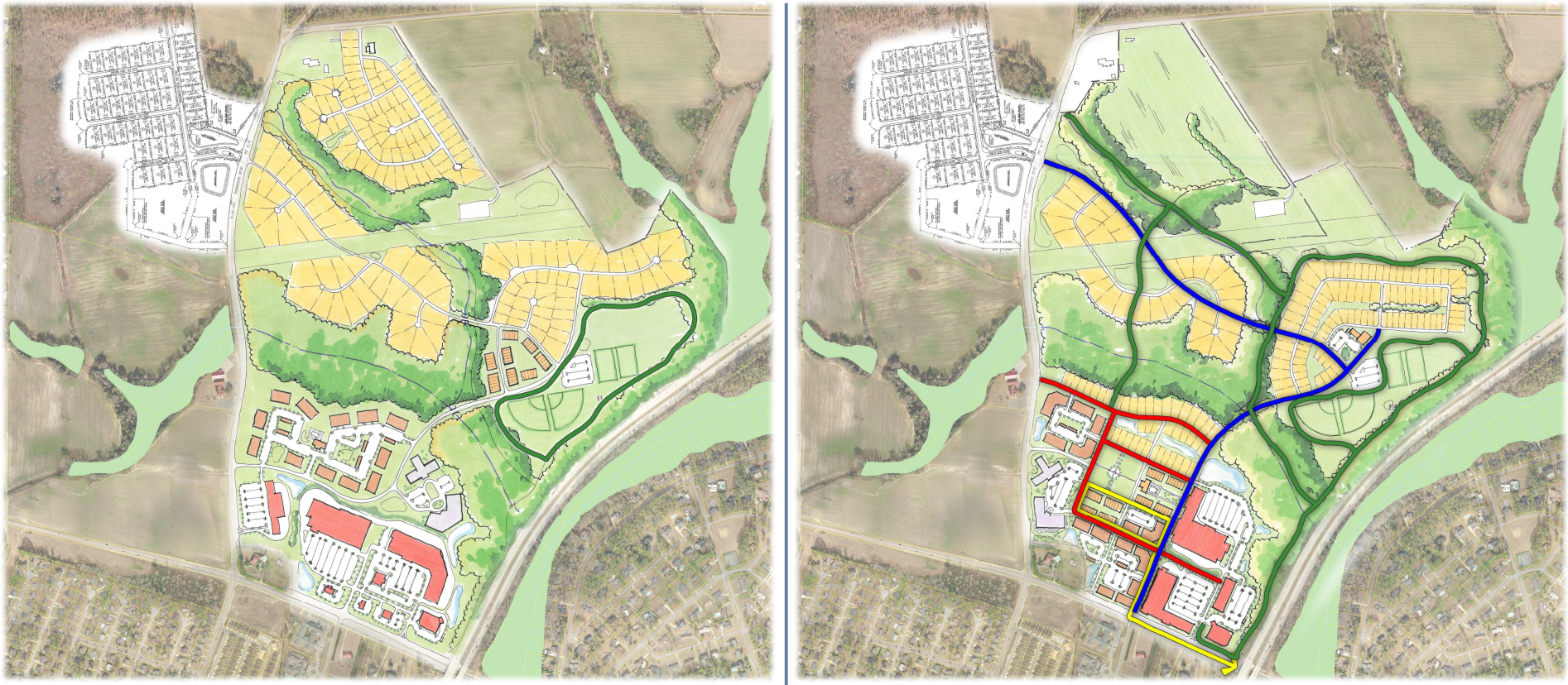
Business-as-Usual

Traditional Neighborhood Development

Multimodal Network

Hoffmeyer Road Focus Area

Like the street network, a comparison of the multimodal network shows significant improvement in the Traditional Neighborhood Development scenario. The business-as-usual scenario reveals a lack of bicycle and pedestrian amenities and poor connections within the site. In particular, connections to the lone greenway in the park are limited and safe accommodations are not provided between the commercial area near Hoffmeyer Road and the single family residences. Transit service in the business-as-usual scenario does not exist as the lack of intensity or diversity of land uses prohibits future service extensions. The bicycle and pedestrian networks and inclusion of transit service in the enhanced scenario relates to the connectivity of the street network and the coordination of land uses. An interconnected bicycle and pedestrian network provides connection between retail, assisted living, homes, and the park. The density and mix of land uses combined with and the interconnected street network allow the opportunity for PDRTA service to circulate through the lifestyle center near Hoffmeyer Road.



Business-as-Usual

Traditional Neighborhood Development

Conclusion

With the updates to the City and County comprehensive plans and the increased activity by the Florence Downtown Development Corporation, it is clear that momentum is shifting throughout the FLATS MPO area for planning initiatives that integrate the land use, urban form, and transportation elements of smart growth. Region-wide interest in a sustainable future was realized through conversations with TPAC members, local planning staff, elected officials, and the general public. The FLATS MPO supports smart growth initiatives underway — such as downtown reinvestment, traditional neighborhood development, and rural preservation — and promotes transportation improvements sensitive to the overall goals of these initiatives within the context of the regional transportation system.

If the built environment is to support a balanced and efficient transportation system, the four Ds of urban and form and travel behavior — density, diversity, design, and destinations — may need to be reevaluated. The focus area scenarios highlight the benefits of changing urban form (i.e., density, diversity, and design) to reduce vehicle trips and vehicle miles traveled. The smart growth initiatives incorporated into the focus areas also provide more choices among modes for residents, employees, and visitors to fulfill their daily needs. Moving forward, champions of smart growth will need to lead the efforts to reevaluate how these ideas are translated within the Florence area.

The scenario planning analysis confirms that reorganization of urban form throughout the study area into a more compact, nodal development pattern significantly improves the efficiency of the transportation system, while preserving unspoiled natural areas immediately surrounding town limits. Successful implementation of a compact, nodal development pattern will require fundamental changes to certain land use plans, programs, and policies administered by Florence County, the City of Florence, Quinby, and Darlington County. Purposeful coordination among private landowners, officials for the City and County, and the South Carolina Department of Transportation to combine land use and transportation planning processes traditionally completed in isolation will ensure a more efficient and fiscally responsible regional transportation system.

Findings & Recommendations

The findings and recommendations (**Table 9.5**) show general strategies the City and County can adopt to support land use considerations that balance the transportation network as outlined earlier in this chapter. The guidelines include ways to reinforce the connections between the four Ds commonly associated with improving the relationship between land use, urban design, and transportation. These tools focus on carrying out the vision of the *2035 LRTP* —a growing community, enhanced quality of life, and the efficient movement of people and goods both locally and regionally.

While the FLATS MPO has limited powers to directly influence land use decisions, the MPO — working with the city and the county — can encourage numerous local initiatives to support smart growth,. The local strategies that conclude the chapter will be the responsibility of some combination of the City, County, and MPO. More information on the responsible party for each strategy is provided in the Implementation Plan (**Chapter 11**).

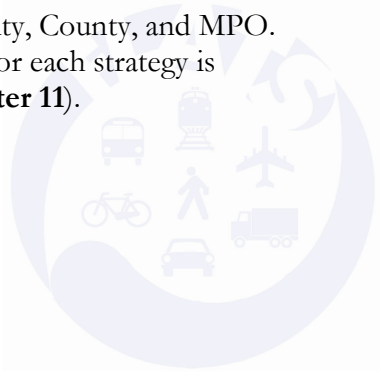


Table 9.5 – Findings & Recommendations	
Finding	**Recommendation**
Planning Philosophy	
The FLATS MPO has a definite interest in and responsibility to improve the efficiency of the regional transportation network without comprising the livability of local communities. The MPO should promote strategies and coordination efforts that forward smart growth initiatives; integrate land use, urban form, and transportation planning; and promote the livability of the greater Florence area.	▪ **Continue to support local initiatives that result in a more efficient, livable transportation system (street connectivity, complete streets, etc.).** ▪ **Promote development design to manage access and reduce congestion levels on major roadways.** ▪ **Partner with local, regional, state, and federal agencies that share a common vision for implementing smart growth development.** ▪ **Respect local government control and their desire to implement smart growth initiatives when programming improvements to the regional transportation system.** ▪ **Understand that "one size does not fit all" for implementing smart growth development.** New plans, programs, or policies adopted by elected officials should acknowledge the differences between rural, suburban, and urban settings. ▪ **Reinvest in existing infrastructure and promote infill development or redevelopment instead of continued sprawl out from the core of the community.**
Actionable Items	
Numerous smart growth initiatives can be spearheaded by the MPO and enforced by the City and County. Partnerships are a key component and can contribute to significant improvements in the quality growth throughout the Pee Dee region.	▪ **Develop livable street design guidelines for major arterial and collector streets (begin with endorsement of the cross-section design recommendations in this report and expand to include the Institute of Transportation Engineers/Congress for the New Urbanism recommendations).** Include recommendations for cross-section, lane width, planting specifications, sidewalk, street lighting, etc. ▪ **Establish standards to increase connectivity within and between developments.** ▪ **Develop design guidelines that establish development priorities and core design principles for implementing smart growth initiatives.** ▪ **Prepare best development practices and conduct design summits to educate and encourage developers to incorporate these principles into their land use planning and development process.** ▪ **Prioritize projects in the capital improvements plan that influence the positive timing and location of new development.** ▪ **Seek state and federal funding supportive of activities to improve the quality of development and protect human health and the environment.**

Chapter 10

Financial Plan

Introduction

Federal SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) legislation requires a financial plan be performed as a part of a Metropolitan Planning Organization's (MPO) Long Range Transportation Plan. The financial plan shows proposed investments that are realistic in the context of reasonably anticipated future revenues over the life of the plan and for future network years, set for the purpose of the *2035 FLATS Long Range Transportation Plan (2035 LRTP)* as 2020 and 2035. Meeting this test is referred to as "financial constraint." The mix of transportation recommendations proposed to meet metropolitan transportation needs over the next 26 years is consistent with revenue forecasts. The Financial Plan details both proposed investments toward these recommendations and revenue forecasts over the life of the plan.

The proposed recommendations were developed in collaboration with the FLATS MPO, City of Florence, Town of Quinby, Florence and Darlington Counties, SCDOT, FHWA, Pee Dee Regional Council of Governments, and the Pee Dee Regional Transportation Authority (PDRTA). These projects include roadway, bicycle, pedestrian, and transit facilities and services for the life of this plan. The financial plan also reflects existing and committed projects, the Transportation Improvement Program (TIP), and the future plans of FLATS, SCDOT, City of Florence, Florence County, Darlington County, Pee Dee COG, and PDRTA. These recommendations also reflect travel demand benefits and socioeconomic impacts studied using the evaluation matrix process detailed in **Chapter 5**. Finally, these projects result from an extensive public participation process that included public workshops (two public sessions), stakeholder interviews, and the participation of a Transportation Plan Advisory Committee. More information on the public outreach efforts can be found in **Chapter 2**.

Revenue forecasts were developed after a review of previous state and local expenditures, current funding trends, and likely future funding levels. The revenue forecasts involved consultation with FLATS, SCDOT, City of Florence, Florence and Darlington Counties, Pee Dee COG, and PDRTA. All dollar figures discussed in this section initially were analyzed in current year dollars (i.e. 2009) and then inflated to reflect projected year of funding or implementation. Based on current national standards and applicable local forecasts, an annual inflation rate of 3% was used to forecast costs and revenues.

This chapter provides an overview of revenue assumptions, probable cost estimates, and financial strategies along with the detailed research results used to derive these values. Since this is a planning level funding exercise, all funding programs, projects, and assumptions will have to be re-evaluated in subsequent plan updates.

Financial Planning Scenarios

The FLATS MPO obtains funding for its projects through a combination of local, state, and federal sources. State and federal dollars are primarily distributed through the guideshare funding program. This funding amount is determined largely by current and projected regional population and vehicle miles traveled compared to other regions of the state. As a result, funding levels are not expected to increase substantially over the life of this plan. These low funding levels will not be adequate to implement many of the projects identified as a part of this study, thereby leaving many deficiencies unaddressed across all modes of transportation.

Florence County approved a 1-cent sales tax for transportation projects in 2006 (discussed in more detail in **Chapter 2**). Over seven years of the sales tax, this funding source is anticipated to generate $148 million in county revenue. A $250 million grant from the State Infrastructure Bank is being combined with this local revenue, generating a total of $398 million that otherwise would not have been available. This additional funding is enabling the county to move forward with several significant roadway capacity projects that would not have received funding in the short-term otherwise.

The sales tax was approved by voters to last seven years. While this funding source provides an excellent mechanism to get high-priority projects implemented, its conclusion in 2014 will leave the FLATS area with a funding shortage. To mitigate this funding shortage, a range of alternative funding sources could be considered. These funding sources will be discussed in greater detail at the end of this chapter. However, once the improvements constructed using the current sales tax begin to be open to the public, voters may be amenable to renewing the sales tax initiative for another seven-year period.

The financial plan consists of two separate analyses. The first scenario represents the constrained plan using the current sales tax as well as current state and federal funding sources. The second scenario analyzes the effect of renewing the 1-cent sales tax, with the extension beginning in 2014 and expected to last through 2021. The current funding levels being provided are not projected to be available for future sales tax renewals. The assumption for this renewal is that 50 cents of SIB funding will be contributed for every 1 dollar generated locally. The current sales tax has approximately 41% of its total funding devoted to projects within the FLATS area. To maintain consistency, this percentage would be assumed to be carried forth into the renewal. When all of these items are considered, the sales tax and accompanying SIB funding would generate approximately $12.5 million annually for the FLATS area and approximately $31 million per year over the entire Florence County area, assumed to be applied entirely toward transportation. Within the sales tax, 40% of funding would be dedicated to highway capital projects, 25% would be dedicated to highway maintenance and paving, 15% would be dedicated to bicycle and greenway funding, 5% would be dedicated to pedestrian funding, and 15% would be dedicated to capital transit funds. These two scenarios are outlined in detail through this chapter.

It is important to note that the alternative scenario studied in this chapter represents a hypothetical sales tax renewal. The assumptions used to develop this hypothetical renewal are different than those being employed in the current Florence County Sales Tax. If a renewal of the one-cent sales tax is considered, the years of implementation and the funding allocation assumptions will need to be analyzed further by Florence County policymakers and staff.

Table 10.1 - 2035 LRTP Revenue Forecast Current Funding Methods Only						
Period	**Highway**	**Transit Capital**	**Transit Operations**	**Pedestrian/ Bicycle**	**Highway Maintenance**	**Totals**
2009-2020	177,510,000	47,260,000	14,510,000	450,000	26,510,000	266,250,000
2021-2035	47,040,000	21,700,000	30,990,000	890,000	49,430,000	150,040,000
Totals	224,550,000	68,960,000	45,500,000	1,340,000	75,940,000	416,290,000

Table 10.2 - 2035 LRTP Costs Current Funding Methods Only						
Period	**Highway**	**Transit Capital**	**Transit Operations**	**Pedestrian/ Bicycle**	**Highway Maintenance**	**Totals**
2009-2020	177,990,000	47,260,000	14,510,000	450,000	26,510,000	266,730,000
2021-2035	46,550,000	21,700,000	30,990,000	890,000	49,430,000	149,550,000
Totals	224,540,000	68,960,000	45,500,000	1,340,000	75,940,000	416,280,000

Table 10.3 - 2035 LRTP Revenue Forecast Sales Tax Renewal Included						
Period	**Highway**	**Transit Capital**	**Transit Operations**	**Pedestrian/ Bicycle**	**Highway Maintenance**	**Totals**
2009-2020	210,570,000	59,660,000	14,510,000	16,980,000	47,180,000	348,900,000
2021-2035	49,580,000	22,650,000	30,990,000	2,160,000	51,020,000	156,400,000
Totals	260,150,000	82,310,000	45,500,000	19,140,000	98,200,000	505,300,000

Table 10.4 - 2035 LRTP Costs Sales Tax Renewal Included						
Period	**Highway**	**Transit Capital**	**Transit Operations**	**Pedestrian/ Bicycle**	**Highway Maintenance**	**Totals**
2009-2020	209,800,000	59,660,000	14,510,000	16,980,000	47,180,000	348,130,000
2021-2035	50,340,000	22,650,000	30,990,000	2,160,000	51,020,000	157,160,000
Totals	260,140,000	82,310,000	45,500,000	19,140,000	98,200,000	505,290,000

System Costs and Revenues

Tables 10.1 and **10.2** show the forecasted revenues and costs for the *2035 LRTP*, assuming the continuation of current state and federal funding levels, and the termination of the sales tax revenue after 2014. Funding is divided to reflect a 2020 interim year and a 2035 final plan year. Highway capital projects, highway maintenance projects, bicycle and pedestrian, transit operations, and transit capital each are divided into individual costs and revenues. These tables indicate that using current funding level estimates, total projected overall revenue during the planning period would be approximately $416.29 million. After considering the estimated costs for all modes, the total cost over the planning period would be approximately $416.28 million.

Tables 10.3 and **10.4** show the forecasted revenues and costs for the LRTP, incorporating the proposed sales tax renewal discussed in the previous section. With this additional funding source, revenues rise over $89 million to approximately $505.30 million over the life of the plan. With the supplementary sales tax revenue, additional projects can be added to all of the modes, resulting in a total cost of approximately $505.29 million.

Highway Funding

Tables 10.5 and **10.6** reflect the proposed costs and revenues for highway projects with current funding sources and with the renewal of the 1-cent sales tax, respectively. The costs and revenues are broken up between highway capital projects and maintenance. With the sales tax renewal, an estimated additional $57.9 million will be available for highway capital and maintenance projects within the FLATS area in the funded plan.

Table 10.5 - Highway Costs and Revenues
Current Funding Methods Only

	Costs			Revenue			
Period	Highway	Maintenance	Total	Highway	Maintenance	Total	Difference
2009-2020	177,990,000	26,510,000	204,500,000	177,510,000	26,510,000	204,020,000	-480,000
2021-2035	46,550,000	49,430,000	95,980,000	47,040,000	49,430,000	96,470,000	490,000
Totals	224,540,000	75,940,000	300,480,000	224,550,000	75,940,000	300,490,000	10,000

Table 10.6 - Highway Costs and Revenues
Sales Tax Renewal Included

	Costs			Revenue			
Period	Highway	Maintenance	Total	Highway	Maintenance	Total	Difference
2009-2020	209,800,000	47,180,000	256,980,000	210,570,000	47,180,000	257,750,000	770,000
2021-2035	50,340,000	51,020,000	101,360,000	49,580,000	51,020,000	100,600,000	-760,000
Totals	260,140,000	98,200,000	358,340,000	260,150,000	98,200,000	358,350,000	10,000

Maintenance Funding

Maintenance funding in the FLATS region primarily is used for roadway maintenance and paving of dirt roads, though pedestrian and bicycle facilities also are maintained with these funds. Maintenance currently is funded using C-funds based on the county gas tax collections. These monies are distributed to resurfacing and maintenance projects throughout Florence and Darlington County. In Florence County, approximately $160,000 per month is being generated through this funding source. For the purposes of this plan, 40% of this total amount is assumed to be allocated to areas within the FLATS MPO. This funding source is not expected to increase. Instead, it is shown here as keeping pace with inflation.

The proposed sales tax renewal would have 25% of its funds dedicated to maintenance and paving projects. This funding source may be applied to projects such as the improvements to the freight routes identified in **Chapter 8**, adding shoulders and repaving critical areas. This funding source may also be applied for the paving of rural roads or maintenance of critical roadways and shoulder facilities within the region.

Projecting these funding sources through the 2035 horizon year of the LRTP, the total maintenance funding available for the region totals approximately $76 million. However, when the sales tax renewal is added, this amount increases substantially to $98 million. In each scenario, the maintenance costs generated annually are assumed to equal the revenue available. The sales tax renewal scenario would allow a more aggressive maintenance schedule to be pursued, resulting in better quality roads, freight routes, bicycle facilities, and sidewalks across the region.

Capital Highway Funding

As discussed in **Chapter 4**, funding for highway projects in the FLATS region consists of SCDOT guideshare funding as well as the 1-cent sales tax for Florence County enacted in 2006. At its outset, the existing sales tax was devoted entirely toward the construction of six projects, five of which are partially or fully contained within the FLATS area. With regard to the monetary value, approximately 41% of these projects are located within the FLATS area. Between 2009 and 2014, the existing sales tax and corresponding SIB grant is anticipated to generate approximately $160 million in the FLATS area, which will be entirely put toward the identified projects. It is anticipated that the US 301 Bypass Extension may not be fully funded through this sales tax. After considering the funding levels available, it is assumed that $50 million of this project can be funded using current sales tax and matching SIB grant funding. The remainder of this project (approximately $23 million in current-year dollars) will be designated as a priority and funded through other means.

The FLATS MPO area is receiving an annual guideshare revenue amount of $2.3 million according to the current TIP. This number was slightly diminished in 2009 to account for a negative balance the previous year. Based on trends observed on a national and state level, this amount is not expected to grow at a rate that outpaces inflation. The FLATS MPO also has an annual debt service amount between 2009 and 2025 to pay off the balance of the efforts undertaken through the "27 in 7" program. With this in mind, approximately $17 million in guideshare funding will be available in the FLATS between 2009 and 2020. Approximately $47 million is anticipated to be available between 2020 and 2035. For more information on the STIP, please visit http://www.scdot.org/inside/stip.shtml.

As a part of the revenue analysis, the proposed sales tax renewal was also considered. Forty percent of the total funding that would be made available through this sales tax renewal and assumed SIB grant funding would be allocated to capital highway projects. Between 2014 and 2021, this additional funding source is assumed to generate approximately $35.6 million for highway capital improvements within the FLATS area.

Once the funding levels have been established, the next step is to consider what needs to be filled within the two horizon year periods of the plan. To do this, the evaluation matrix and recommendations shown in **Chapter 5** have been consulted. Proposed project recommendations were analyzed to determine social and environmental conditions as well as public feedback and transportation network effects. While it would be ideal to implement all of these projects, only a portion can be accommodated in the funded plan. As a result, higher rated projects were considered for implementation prior to lower rated projects.

The following tables and figures divide the projects in the evaluation matrix into 2020 and 2035 funded horizon years and a vision plan. **Tables 10.7**, **10.8**, and **10.9** show projects for the current funding methods scenario during each of these three horizons. The map displayed as **Figure 10.1** shows the highway projects included as a part of this scenario, organized by funding horizon year. **Tables 10.10**, **10.11**, and **10.12** include highway projects funded using current methods as well as the renewed sales tax initiative before 2020, 2035, or unfunded in the vision, respectively. **Figure 10.2** shows the highway projects included as a part of this scenario.

The $35.6 million generated for capital highway projects from the sales tax renewal would allow the completion of the Bentree Lane/Holly Circle widening project and the Five Points Roundabout within the 2020 horizon year, and the widening of Radio Drive/Ebenezer Road by 2035. The cost of capital highway projects remaining in the vision plan is reduced from $273.6 million to $210.8 million.

Table 10.7 - Roadway Project Cost Estimates, 2020 Horizon Year, Current Funding Methods Only

ID	Facility	Description	Existing Laneage	Existing Median	Future Laneage	Future Median	2009 Estimated Total Project Cost with Contingency	Estimated Project Cost (inflated)	Funding Year	# Years Inflation	Horizon	2020 Horizon Cost (inflated)	2040 Horizon Cost (inflated)	Vision Cost (inflated)
Operational/Design Improvements														
A2	N Cashua Drive	W Palmetto Street (US 76) to Lucas Street (US 52): Use access management to improve mobility and safety	Varies	Varies	N/A	N/A	$ 3,125,000.00	$ 3,517,215.03	2013	4	1	$ 3,517,000		
A4	E Cheves Street	From S Church Street to E Palmetto Street (US 76): Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 500,000.00	$ 597,026.15	2015	6	1	$ 597,000		
A5	W Darlington Street	From N Cashua Drive to N Irby Street (US 52): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 875,000.00	$ 1,044,795.76	2015	6	1	$ 1,045,000		
A13	Ebenezer Road	From Hoffmeyer Road to Radio Drive: Use access management to improve mobility and safety	2	None	N/A	N/A	$ 875,000.00	$ 1,108,423.82	2017	8	1	$ 1,108,000		
A7	Five Points Intersection	Five Points Intersection: Use access management to improve mobility and safety	N/A	N/A	N/A	N/A	$ 500,000.00	$ 597,026.15	2015	6	1	$ 597,000		
A10	Howe Springs Road	From Pamplico Highway (SC 51) to S Irby Street (US 52): Use access management overlay to guide development	2	None	N/A	N/A	$ -	$ -	2012	3	1	$ -		
A8	Williston Road (SC 327)/ Freedom Boulevard	From I-95 to S Irby Street (US 52): Use access management overlay to guide development	2	None	N/A	N/A	$ -	$ -	2012	3	1	$ -		
Expand Existing/New Location														
E2	S Cashua Drive	From Second Loop Road to Knollwood Drive: Widen to 5-lanes with a two-way left-turn lane	2	None	5	TWLT	$ 11,500,000.00	$ 11,500,000.00	2015	6	1	$ 11,500,000		
E15*	Pine Needles Road	From Southborough Road to Ebenezer Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 17,676,768.00	$ 17,676,768.00	2011	2	1	$ 17,676,768		
E16*	SC 51/ Pamplico Highway	From E Howe Springs Road to Kate's Garden Lane: Widen to 4-lanes with a median	2	None	4	Grass	$ 25,792,990.13	$ 25,792,990.13	2014	5	1	$ 25,792,990		
E19*	TV Road/Irby Street	From I-95 to Wilson Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 34,519,290.00	$ 34,519,290.00	2014	5	1	$ 34,519,290		
E20*	US 76/Palmetto Street	From E Main Street to I-95: Widen to 4-lanes with a median	2	None	4	Grass	$ 31,641,621.00	$ 31,641,621.00	2014	5	1	$ 31,641,621		
E21-a*	US 301 Bypass (Proposed)	From Palmetto Street (US 76) to S Irby Street (US 52): Construct a 4-lane roadway with a median - Phase 1	Varies	None	4	Grass	$ 73,464,146.00	$ 73,464,146.00	2014	5	1	$ 50,000,000		

* = Funded via current Florence County sales tax funds

Table 10.8 Roadway Project Cost Estimates, 2035 Horizon Year, Current Funding Methods Only

ID	Facility	Description	Existing Laneage	Existing Median	Future Laneage	Future Median	2009 Estimated Total Project Cost with Contingency	Estimated Project Cost (inflated)	Funding Year	# Years Inflation	Horizon	2020 Cost	2040 Cost	Vision Cost
Operational/Design Improvements														
A6	David H McLeod Boulevard	From I-95 northbound ramps to Woody Jones Boulevard: Use access management to improve mobility and safety	6	Grass	N/A	N/A	$ 625,000.00	$ 891,100.55	2021	12	2		$ 891,000	
A9	Hoffmeyer Road	From N Ebenezer Road to S Cashua Drive: Use access management to improve mobility and safety	5	TWLT	N/A	N/A	$ 1,250,000.00	$ 2,066,059.54	2026	17	2		$ 2,066,000	
A11	McIver Road (Darlington County)	From Charleston Road to I-95 (Darlington County): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 750,000.00	$ 1,395,220.93	2030	21	2		$ 1,395,000	
Expand Existing/New Location														
E9	Bentree Lane/Holly Circle	From David H McLeod Boulevard (I-20 Bus) to Second Loop Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 3,185,000.00	$ 4,541,048.42	2021	12	2		$ 4,541,000	
E21-b	US 301 Bypass (Proposed)	From Palmetto Street (US 76) to S Irby Street (US 52): Construct a 4-lane roadway with a median - Phase 2	Varies	None	4	Grass	$ 23,464,146.00	$ 37,653,066.17	2025	16	2		$ 37,653,000	

Table 10.9 Roadway Project Cost Estimates, Vision Plan, Current Funding Methods Only

ID	Facility	Description	Existing Laneage	Existing Median	Future Laneage	Future Median	2009 Estimated Total Project Cost with Contingency	Estimated Project Cost (inflated)	Funding Year	# Years Inflation	Horizon	2020 Cost	2040 Cost	Vision Cost
Operational/Design Improvements														
A1	Alligator Road	From Knollwood Road to S Irby Street (US 52): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 1,875,000.00	$ 4,164,916.89	2036	27	3			$ 4,165,000
A3	Charleston Road	From I-95 to Pocket Road (Darlington County): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 1,875,000.00	$ 4,164,916.89	2036	27	3			$ 4,165,000
A15	Irby Street (US 52)	From W Lucas Street (US 52) to Alligator Road: Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 4,125,000.00	$ 9,162,817.15	2036	27	3			$ 9,163,000
A14	Main Street (Darlington County)/ W Lucas Street (US 52)	From N Ebenezer Road (Darlington County) to N Irby Street: Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 2,000,000.00	$ 4,442,578.01	2036	27	3			$ 4,443,000
A16	Palmetto Street (US 76)	From Second Loop Road to Freedom Boulevard: Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 3,500,000.00	$ 7,774,511.52	2036	27	3			$ 7,775,000
A12	Second Loop Road/ Pamplico Highway (SC 51)	From W Palmetto Street (US 76) to Howe Springs Road/ Claussen Road: Use access management to improve mobility and safety	5	TWLT	N/A	N/A	$ 3,375,000.00	$ 7,496,850.39	2036	27	3			$ 7,497,000
Expand Existing/New Location														
E1	Brofford Drive Extension*	From Alligator Road to Third Loop Road: Construct a 2-lane, undivided roadway	0	None	2	None	$ 4,979,000.00	$ 11,059,797.96	2036	27	3			$ 11,060,000
E3	W Darlington Street	From N Cashua Drive to Hoffmeyer Road: Widen to 5-lanes with a two-way left-turn lane	2	None	5	TWLT	$ 4,017,000.00	$ 8,922,917.94	2036	27	3			$ 8,923,000
E6	N Ebenezer Road	From Pisgah Road to Main Street (Darlington County - US 52): Widen to 3-lanes with a two-way left-turn lane	2	None	3	TWLT	$ 12,272,000.00	$ 27,259,658.68	2036	27	3			$ 27,260,000
E10	Hoffmeyer Road	From Anderson Farm Road to Timmonsville Highway (Darlington County - SC 340): Widen to 4-lanes with a median	2	None	4	Grass	$ 12,428,000.00	$ 27,606,179.76	2036	27	3			$ 27,606,000
E11	Hoffmeyer Road	From Anderson Farm Road to N Ebenezer Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 6,565,000.00	$ 14,582,762.32	2036	27	3			$ 14,583,000
E13	National Cemetery Road	From S Church Street to Stockade Drive: Widen to 4-lanes with a median	2	None	4	Grass	$ 3,211,000.00	$ 7,132,559.00	2036	27	3			$ 7,133,000
E14	Oakland Avenue	From E Lucas Street to Wilson Road: Widen to 3-lanes with a two-way left-turn lane	2	None	3	TWLT	$ 4,030,000.00	$ 8,951,794.69	2036	27	3			$ 8,952,000
E7	Pisgah Road/ Ebenezer Road	From Presbyterian Road to Hoffmeyer Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 15,366,000.00	$ 34,132,326.86	2036	27	3			$ 34,132,000
E8	Radio Drive/ Ebenezer Road	From David H McLeod Boulevard (I-20 Bus) to near Industry Boulevard: Widen to 4-lanes with a median	2	None	4	Grass	$ 8,229,000.00	$ 18,278,987.23	2036	27	3			$ 18,279,000
E17	Southborough Road	From N Sally Hill Road (Darlington County) to Pine Needles Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 18,005,000.00	$ 39,994,308.55	2036	27	3			$ 39,994,000
E18	Third Loop Road	From S Marsh Avenue to S Irby Street: Widen to 3-lanes with a two-way left-turn lane	2	None	3	TWLT	$ 5,278,000.00	$ 11,723,963.37	2036	27	3			$ 11,724,000
Intersection or Interchange Improvements														
I1	Five Points Intersection	Five Points Intersection: Construct two-lane roundabout	N/A	N/A	N/A	N/A	$ 12,051,000.00	$ 26,768,753.81	2036	27	3			$ 26,769,000

* = Not currently an eligible project for federal funding. This local project is awaiting study for inclusion into federal eligibility. It is assumed for this plan that the project is deemed eligible for federal funding.

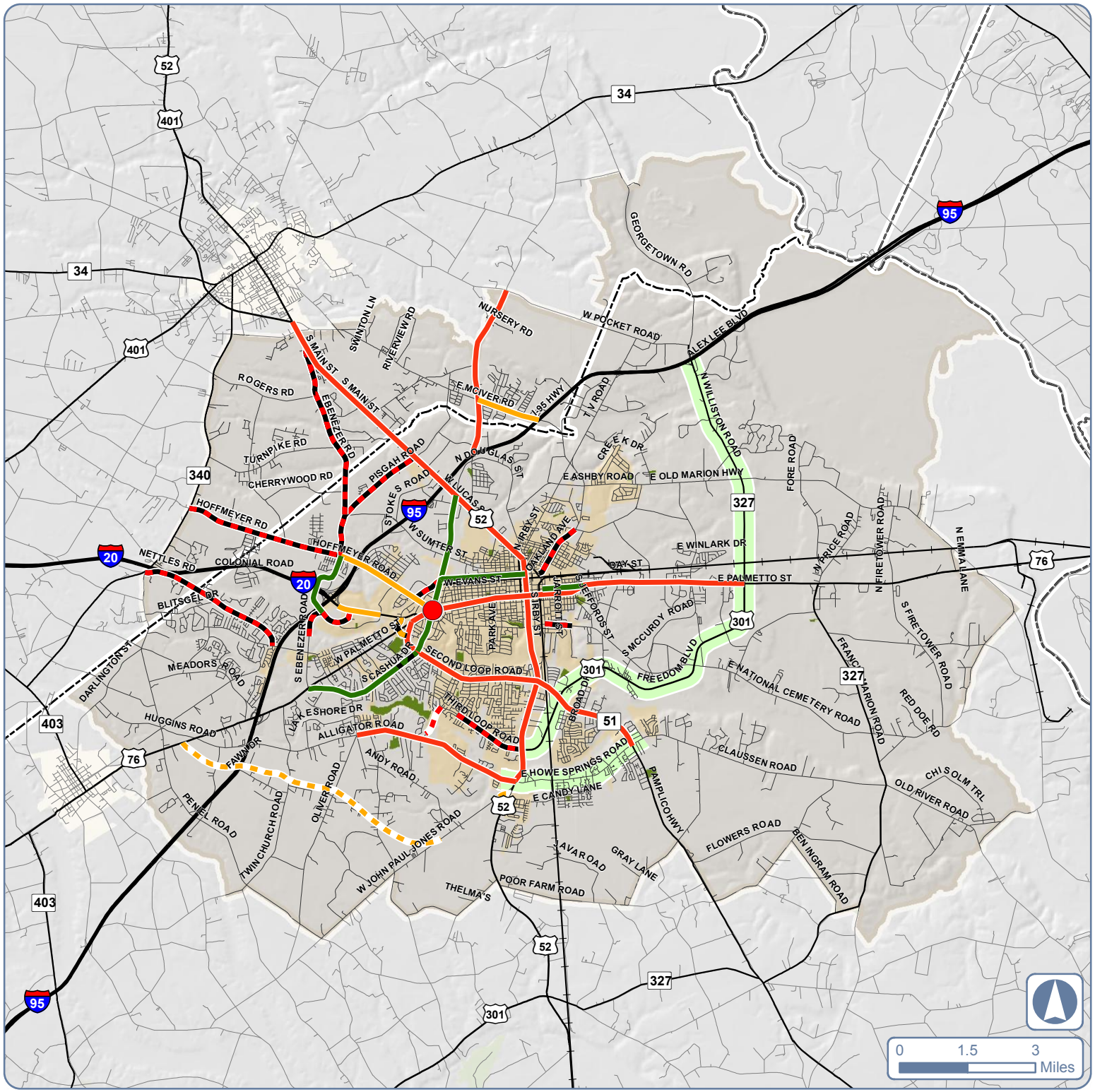


Figure 10.1

Financial Constraint

Current Funding Methods

- Roundabout (Vision)

2020 Project

- Access Management
- Widening
- New Location

2035 Project

- Access Management
- Widening
- New Location

Vision Project

- Access Management
- Widening
- New Location

Access Management Overlay

- 2020

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Table 10.10 - Roadway Project Cost Estimates, 2020 Horizon Year, Sales Tax Renewal Included

ID	Facility	Description	Existing Laneage	Existing Median	Future Laneage	Future Median	2009 Estimated Total Project Cost with Contingency	Estimated Project Cost (inflated)	Funding Year	# Years Inflation	Horizon	2020 Horizon Cost (inflated)	2040 Horizon Cost (inflated)	Vision Cost (inflated)
Operational/Design Improvements														
A1	Alligator Road	From Knollwood Road to S Irby Street (US 52): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 1,875,000.00	$ 2,306,013.50	2016	7	1	$ 2,306,000		
A2	N Cashua Drive	W Palmetto Street (US 76) to Lucas Street (US 52): Use access management to improve mobility and safety	Varies	Varies	N/A	N/A	$ 3,125,000.00	$ 3,517,215.03	2013	4	1	$ 3,517,000		
A4	E Cheves Street	From S Church Street to E Palmetto Street (US 76): Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 500,000.00	$ 597,026.15	2015	6	1	$ 597,000		
A5	W Darlington Street	From N Cashua Drive to N Irby Street (US 52): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 875,000.00	$ 1,044,795.76	2015	6	1	$ 1,045,000		
A6	David H McLeod Boulevard	From I-95 northbound ramps to Woody Jones Boulevard: Use access management to improve mobility and safety	6	Grass	N/A	N/A	$ 625,000.00	$ 865,146.17	2020	11	1	$ 865,000		
A13	Ebenezer Road	From Hoffmeyer Road to Radio Drive: Use access management to improve mobility and safety	2	None	N/A	N/A	$ 875,000.00	$ 1,108,423.82	2017	8	1	$ 1,108,000		
A7	Five Points Intersection	Five Points Intersection: Use access management to improve mobility and safety	N/A	N/A	N/A	N/A	$ 500,000.00	$ 597,026.15	2015	6	1	$ 597,000		
A10	Howe Springs Road	From Pamplico Highway (SC 51) to S Irby Street (US 52): Use access management overlay to guide development	2	None	N/A	N/A	$ -	$ -	2012	3	1	$ -		
A14	Main Street (Darlington County)/ W Lucas Street (US 52)	From N Ebenezer Road (Darlington County) to N Irby Street: Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 2,000,000.00	$ 2,609,546.37	2018	9	1	$ 2,610,000		
A11	McIver Road (Darlington County)	From Charleston Road to I-95 (Darlington County): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 750,000.00	$ 1,007,937.28	2019	10	1	$ 1,008,000		
A16	Palmetto Street (US 76)	From Second Loop Road to Freedom Boulevard: Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 3,500,000.00	$ 4,304,558.53	2016	7	1	$ 4,305,000		
A8	Williston Road (SC 327)/ Freedom Boulevard	From I-95 to S Irby Street (US 52): Use access management overlay to guide development	2	None	N/A	N/A	$ -	$ -	2012	3	1	$ -		
Expand Existing/New Location														
E9	Bentree Lane/Holly Circle	From David H McLeod Boulevard (I-20 Bus) to Second Loop Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 3,185,000.00	$ 4,034,662.71	2017	8	1	$ 4,035,000		
E2	S Cashua Drive	From Second Loop Road to Knollwood Drive: Widen to 5-lanes with a two-way left-turn lane	2	None	5	TWLT	$ 11,500,000.00	$ 11,500,000.00	2015	6	1	$ 11,500,000		
E15*	Pine Needles Road	From Southborough Road to Ebenezer Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 17,676,768.00	$ 17,676,768.00	2011	2	1	$ 17,676,768		
E16	SC 51/ Pamplico Highway	From E Howe Springs Road to Kate's Garden Lane: Widen to 4-lanes with a median	2	None	4	Grass	$ 25,792,990.13	$ 25,792,990.13	2014	5	1	$ 25,792,990		
E19	TV Road/Irby Street	From I-95 to Wilson Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 34,519,290.00	$ 34,519,290.00	2014	5	1	$ 34,519,290		
E20	US 76/Palmetto Street	From E Main Street to I-95: Widen to 4-lanes with a median	2	None	4	Grass	$ 31,641,621.00	$ 31,641,621.00	2014	5	1	$ 31,641,621		
E21-a	US 301 Bypass (Proposed)	From Palmetto Street (US 76) to S Irby Street (US 52): Construct a 4-lane roadway with a median - Phase 1	Varies	None	4	Grass	$ 73,464,146.00	$ 73,464,146.00	2014	5	1	$ 50,000,000		
Intersection or Interchange Improvements														
I1	Five Points Intersection	Five Points Intersection: Construct two-lane roundabout	N/A	N/A	N/A	N/A	$ 12,051,000.00	$ 16,681,402.38	2020	11	1	$ 16,681,000		

* = Funded via current Florence County sales tax funds

Table 10.11 Roadway Project Cost Estimates, 2035 Horizon Year, Sales Tax Renewal Included

ID	Facility	Description	Existing Laneage	Existing Median	Future Laneage	Future Median	2009 Estimated Total Project Cost with Contingency	Estimated Project Cost (inflated)	Funding Year	# Years Inflation	Horizon	2020 Cost	2040 Cost	Vision Cost
Operational/Design Improvements														
A3	Charleston Road	From I-95 to Pocket Road (Darlington County): Use access management to improve mobility and safety	2	None	N/A	N/A	$ 1,875,000.00	$ 2,673,301.66	2021	12	2		$ 2,673,000	
Expand Existing/New Location														
E8	Radio Drive/ Ebenezer Road	From David H McLeod Boulevard (I-20 Bus) to near Industry Boulevard: Widen to 4-lanes with a median	2	None	4	Grass	$ 8,229,000.00	$ 13,205,129.29	2025	16	2		$ 13,205,000	
E21-b	US 301 Bypass (Proposed)	From Palmetto Street (US 76) to S Irby Street (US 52): Construct a 4-lane roadway with a median - Phase 2	Varies	None	4	Grass	$ 23,464,146.00	$ 34,457,889.46	2022	13	2		$ 34,458,000	

Table 10.12 Roadway Project Cost Estimates, Vision Plan, Sales Tax Renewal Included

ID	Facility	Description	Existing Laneage	Existing Median	Future Laneage	Future Median	2009 Estimated Total Project Cost with Contingency	Estimated Project Cost (inflated)	Funding Year	# Years Inflation	Horizon	2020 Cost	2040 Cost	Vision Cost
Operational/Design Improvements														
A9	Hoffmeyer Road	From N Ebenezer Road to S Cashua Drive: Use access management to improve mobility and safety	5	TWLT	N/A	N/A	$ 1,250,000.00	$ 2,776,611.26	2036	27	3			$ 2,777,000
A15	Irby Street (US 52)	From W Lucas Street (US 52) to Alligator Road: Use access management to improve mobility and safety	4/5	Varies	N/A	N/A	$ 4,125,000.00	$ 9,162,817.15	2036	27	3			$ 9,163,000
A12	Second Loop Road/ Pamplico Highway (SC 51)	From W Palmetto Street (US 76) to Howe Springs Road/ Claussen Road: Use access management to improve mobility and safety	5	TWLT	N/A	N/A	$ 3,375,000.00	$ 7,496,850.39	2036	27	3			$ 7,497,000
Expand Existing/New Location														
E1	Brofford Drive Extension*	From Alligator Road to Third Loop Road: Construct a 2-lane, undivided roadway	0	None	2	None	$ 4,979,000.00	$ 11,059,797.96	2036	27	3			$ 11,060,000
E3	W Darlington Street	From N Cashua Drive to Hoffmeyer Road: Widen to 5-lanes with a two-way left-turn lane	2	None	5	TWLT	$ 4,017,000.00	$ 8,922,917.94	2036	27	3			$ 8,923,000
E6	N Ebenezer Road	From Pisgah Road to Main Street (Darlington County - US 52): Widen to 3-lanes with a two-way left-turn lane	2	None	3	TWLT	$ 12,272,000.00	$ 27,259,658.68	2036	27	3			$ 27,260,000
E10	Hoffmeyer Road	From Anderson Farm Road to Timmonsville Highway (Darlington County - SC 340): Widen to 4-lanes with a median	2	None	4	Grass	$ 12,428,000.00	$ 27,606,179.76	2036	27	3			$ 27,606,000
E11	Hoffmeyer Road	From Anderson Farm Road to N Ebenezer Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 6,565,000.00	$ 14,582,762.32	2036	27	3			$ 14,583,000
E13	National Cemetery Road	From S Church Street to Stockade Drive: Widen to 4-lanes with a median	2	None	4	Grass	$ 3,211,000.00	$ 7,132,559.00	2036	27	3			$ 7,133,000
E14	Oakland Avenue	From E Lucas Street to Wilson Road: Widen to 3-lanes with a two-way left-turn lane	2	None	3	TWLT	$ 4,030,000.00	$ 8,951,794.69	2036	27	3			$ 8,952,000
E7	Pisgah Road/ Ebenezer Road	From Presbyterian Road to Hoffmeyer Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 15,366,000.00	$ 34,132,326.86	2036	27	3			$ 34,132,000
E17	Southborough Road	From N Sally Hill Road (Darlington County) to Pine Needles Road: Widen to 4-lanes with a median	2	None	4	Grass	$ 18,005,000.00	$ 39,994,308.55	2036	27	3			$ 39,994,000
E18	Third Loop Road	From S Marsh Avenue to S Irby Street: Widen to 3-lanes with a two-way left-turn lane	2	None	3	TWLT	$ 5,278,000.00	$ 11,723,963.37	2036	27	3			$ 11,724,000

* = Not currently an eligible project for federal funding. This local project is awaiting study for inclusion into federal eligibility. It is assumed for this plan that the project is deemed eligible for federal funding.

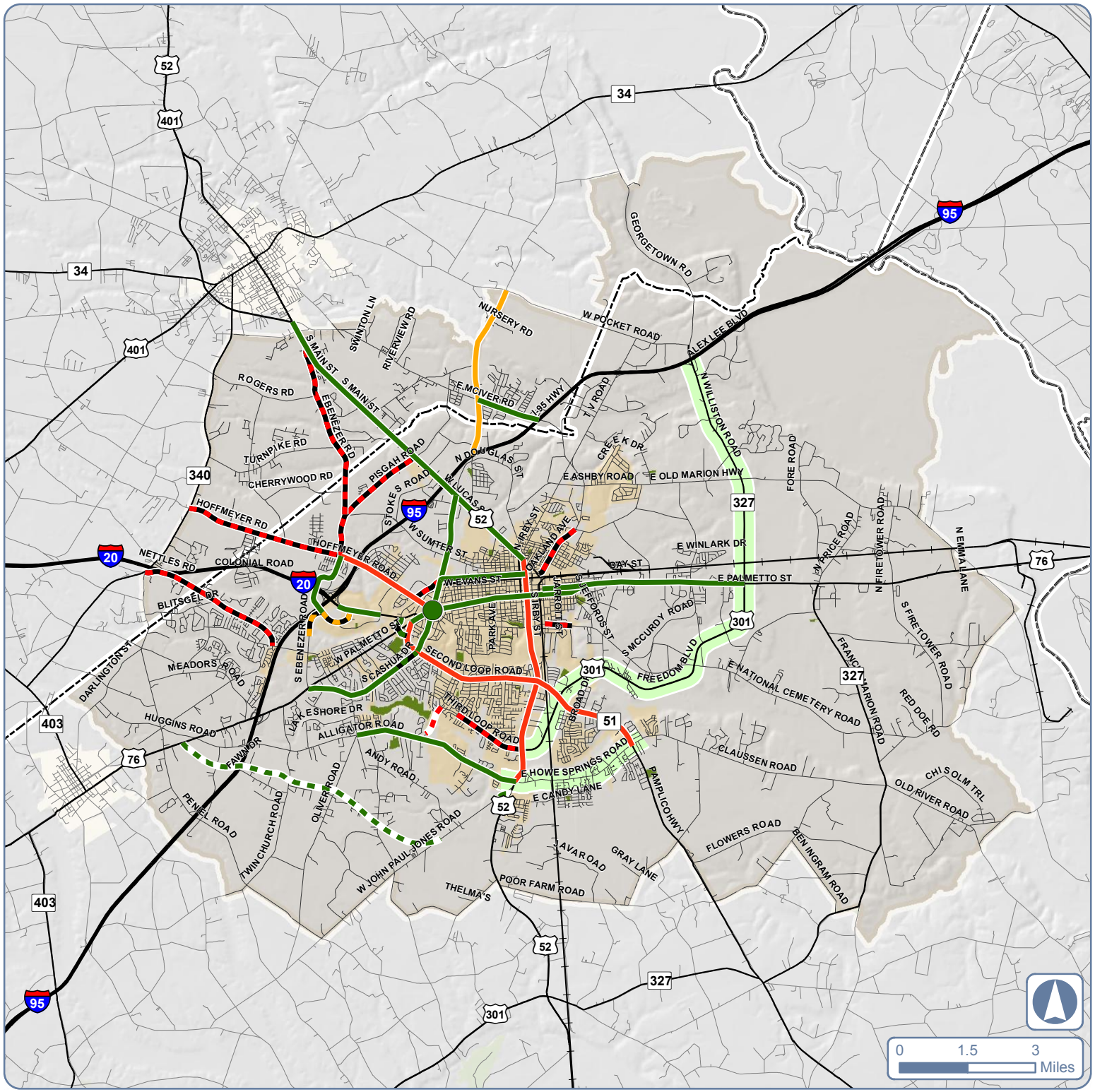

Figure 10.2

Financial Constraint

Sales Tax Renewal

- Roundabout (2020)

2020 Project

- Access Management
- Widening
- New Location

2035 Project

- Access Management
- Widening
- New Location

Vision Project

- Access Management
- Widening
- New Location

Access Management Overlay

- 2020

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Tables 10.13 and **10.14** reflect the proposed costs and revenues for bicycle and pedestrian projects with current funding sources and with the renewed 1-cent sales tax, respectively. Currently, new bicycle and pedestrian facilities in the FLATS region are primarily funded using Enhancement Funds. Enhancement funds are available from the state annually as a part of STP and guideshare funding sources. In order for enhancement funds to be used, these funds require a 20% local match. FLATS has $117,000 allocated for both 2009 and 2010 in the current TIP for bicycle and pedestrian projects using enhancement funds. To be conservative, these funds are assumed to rise with inflation but not to outpace it.

In keeping with the FLATS and Florence County commitment to pursue the complete streets concept in future planning and design, 20% of the funding received through the proposed sales tax renewal for Florence County would be dedicated to bicycle, greenway, and pedestrian projects. 15% of this amount is assumed to be set aside for bicycle facilities and greenways, while 5% would be dedicated to pedestrian facilities. It is assumed that with the projected sales tax revenues and SIB grant monies that over $19 million would be dedicated to bicycle and pedestrian projects within the FLATS area from the 2014-2021 sales tax renewal. This amount greatly outpaces the $1.3 million of federal and state funds projected for the 25-year horizon of this plan. The monies dedicated to bicycle and pedestrian projects through the sales tax renewal clearly would communicate the desire of the Florence area to move to a more bicycle and pedestrian-friendly locale.

Table 10.13 - Pedestrian & Bicycle Costs and Revenues* Current Funding Methods Only

Period	Costs	Revenues	Difference
2009-2020	450,000	450,000	0
2021-2035	890,000	890,000	0
Totals	1,340,000	1,340,000	0

** Maintenance expenses accounted for under roadways.*

Table 10.14 - Pedestrian & Bicycle Costs and Revenues* Sales Tax Renewal Included

Period	Costs	Revenues	Difference
2009-2020	16,980,000	16,980,000	0
2021-2035	2,160,000	2,160,000	0
Totals	19,140,000	19,140,000	0

** Maintenance expenses accounted for under roadways.*

As discussed in **Chapter 6**, a series of on- and off-road bicycle and greenway facilities were recommended for the FLATS area. These recommendations include 3.1 miles of striped bicycle lanes, 46.2 miles of signed routes, 40.6 miles of wide outside lanes or paved shoulders, and 4.9 miles of multi-use paths. To account for pedestrian needs, it is assumed that the member jurisdictions of the FLATS area would like to construct two miles of sidewalk per year. When considering the typical per-mile costs of these facilities, the analysis shows that current funding levels could only construct about 3% of these facilities. However, with the funding from the sales tax renewal, it is estimated that approximately 80% of these facilities could be constructed within the timeframe of this plan.

Transit Funding

Tables 10.15 and **10.16** reflect the proposed costs and revenues for transit capital and operations projects with current funding sources and with the renewed 1-cent sales tax, respectively. PDRTA is currently pursuing funding for several different initiatives from state and federal sources. To better understand the dynamics of transit funding, capital funding is considered separately from operations and maintenance funding.

Table 10.15 - Transit Costs and Revenues
Current Funding Methods Only

	Costs			Revenue			
	Capital	Operations	Total	Capital	Operations	Total	Difference
2009-2020	47,260,000	14,510,000	61,770,000	47,260,000	14,510,000	61,770,000	0
2021-2035	21,700,000	30,990,000	52,690,000	21,700,000	30,990,000	52,690,000	0
Totals	68,960,000	45,500,000	114,460,000	68,960,000	45,500,000	114,460,000	0

Table 10.16 - Transit Costs and Revenues
Sales Tax Renewal Included

	Costs			Revenue			
	Capital	Operations	Total	Capital	Operations	Total	Difference
2009-2020	59,660,000	14,510,000	74,170,000	59,660,000	14,510,000	74,170,000	0
2021-2035	22,650,000	30,990,000	53,640,000	22,650,000	30,990,000	53,640,000	0
Totals	82,310,000	45,500,000	127,810,000	82,310,000	45,500,000	127,810,000	0

Capital Transit Costs and Revenues

In the current TIP, capital funding is designated for PDRTA between 2009 and 2012. On average, capital funds during this time increase an average of 2% annually. To project future capital funding amounts, a 2% annual increase was applied to the TIP funding, beginning in 2016. In addition to these funds, PDRTA is pursuing funding for capital projects such as the Florence Multimodal Terminal, the Marion Park and Ride, a new bus maintenance facility, and new clean fuel low-floor buses. For these larger initiatives, funding is being sought through future federal transportation legislation and through state allocations. Capital transit funds come from several federal and state sources.

The proposed sales tax renewal is assumed to have 15% of its total funding allocated toward transit. For the purposes of this plan, the additional sales tax funding is assumed to be used for capital transit funding purposes. This additional revenue between 2014 and 2021 could allow PDRTA to accelerate some of its large capital projects, and to more quickly develop its desired future network. If the sales tax renewal initiative is pursued, further study should be undertaken to determine the best split between capital and operations funding needs. This funding will also help the FLATS and Florence County areas move toward their vision of complete streets.

The proposed sales tax renewal would add over $13 million to transit revenues between 2014 and 2021. With this funding available, approximately $82 million will be available for capital costs and revenues. Using only current funding methods, approximately $69 million is assumed to be available for capital expenditures.

Transit Operations Funding

On an annual basis, PDRTA has $507,000 in maintenance and operation costs for their fixed-route system for the FLATS area. There is $493,000 in maintenance and operation costs for the demand responsive system for the FLATS area. Beyond 2010, funding levels for maintenance and operation are assumed to increase at a rate of 1% to account for the needs of the growing transit system. These funds are also anticipated to increase with inflation. Over the planning period, a total of $45.5 million in maintenance and operations costs are assumed for the PDRTA system. For more information on PDRTA, see www.pdrta.org.

Transportation Funding Sources

FLATS MPO Funding

The Florence Area Transportation Study receives federal funds for transportation related projects for the FLATS MPO area. Transportation related projects funded by federal dollars for the FLATS MPO area must be considered and approved by the FLATS Policy Committee. The FLATS Policy Committee consists of representatives from the State Legislature, members of Florence County Council, Florence City Council, and the Mayors of Florence and Quinby. All transportation related projects, presented to the FLATS Policy Committee are first examined by the FLATS Study Team for recommendation. The FLATS Study Team consists of technical representatives from various agencies and departments in the area. Projects approved by the FLATS Policy Committee are then presented to SCDOT for final approval. The approved projects must be listed in the FLATS TIP, which is updated on a yearly basis. In addition, these projects are listed in the State TIP.

Federal law requires each state to establish a fiscally constrained STIP. Projects located on a federally-eligible highway must be placed in the STIP to protect their federal eligibility. Before any project in the STIP can move forward to construction, federal law requires that it must undergo extensive review. Besides engineering concerns, the plans for each project must consider environmental mitigation, national security, safety, bicycle and pedestrian needs, and consistence with planned growth and development plans.

Pee Dee COG Funding

The Pee Dee Council of Governments (PDCOG) receives federal money for highway improvement projects outside the FLATS area for Florence and Darlington Counties. Like the FLATS MPO, the PDCOG is required to have a Long Range Transportation Plan (LRTP), with all projects listed in their TIP and the STIP. The majority of funds available to the PDCOG currently are being applied toward debt service for highway projects completed as a result of the "27 in 7" bonding initiative as mentioned earlier in this chapter.

Transit Funding

PDRTA receives federal funds through the FTA programs. As authorized by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users of 2005 (SAFETEA-LU), the FTA provides stewardship of combined formula and discretionary programs totaling more than $10B to support a variety of locally planned, constructed, and operated public transportation systems throughout the United States. Transportation systems typically include buses, subways, light rail, commuter rail, streetcars, monorail, passenger ferry boats, inclined railways, or people movers.

Federal funds awarded to PDRTA are listed in the FLATS TIP. Providing planning assistance to the major mass transit provider in the FLATS area helps the efficiency of the current transportation network by potentially removing traffic from area roadways. FLATS maintains this assistance by providing map books to PDRTA and continuously updating demographic information to them.

Rail Funding

The Department of Homeland Security (DHS) has provided roughly $18 billion in awards to state and local governments for programs and equipment that help to manage security. Through the Transit Security Grants Program (TSGP), DHS has provided $374.7 million to date to 60 of the country's rail mass transit, ferry, and intra-city bus systems in 25 states and the District of Columbia. In addition to this funding, states and localities can, under certain conditions, tap into other Homeland Security Grant Program and Urban Area Security Initiative funds for rail security projects and initiatives.

Airport Funding

The Federal Aviation Administration (FAA) is an agency of the United States Department of Transportation with authority to regulate and oversee all aspects of civil aviation in the U.S. Federal grant funds or federal property transfers for airport purposes are obtained through the FAA. The FAA enforces certain obligations to fund recipients through its Airport Compliance Program.

Alternative Funding Sources

State revenues alone will not sufficiently fund a systematic program to construct transportation projects in the FLATS MPO area. Therefore, jurisdictions within the FLATS region must consider alternative funding measures that could help implement this plan. One alternative funding measure, a 1-cent sales tax, already has been evaluated by Florence County and has been voted into place by its citizens. A potential renewal of these sales tax funds is discussed in detail in this chapter. Other alternative funding measures being considered and applied in areas around the state and the nation are included here.

Impact Fees

Developer impact fees and system development charges provide a funding option for communities looking to fund collector streets and associated infrastructure. They most commonly are used for water and wastewater system connections or police and fire protection services, but recently they have been used to fund school systems and pay for the impacts of increased traffic on existing roads. Impact fees place the costs of new development directly on developers and indirectly on those who buy property in the new developments. Impact fees free other taxpayers from the obligation to fund costly new public services that do not directly benefit them. A few communities in South Carolina have approved the use of impact fees (e.g., Berkeley County, Summerville). The use of impact fees requires special authorization by the South Carolina General Assembly.

Transportation Bonds

Transportation bonds have been instrumental in the strategic implementation of local roadways and non-motorized travel throughout South Carolina. Voters in communities both large and small regularly approve the use of bonds to improve their transportation system. Projects that historically have been funded through transportation bonds include sidewalks, road extensions, new road construction, and streetscape enhancements.

Developer Contributions

Through diligent planning and earlier project identification, regulations, policies, and procedures could be developed to protect future arterial corridors and require contributions from developers when the property is subdivided. These measures would reduce the cost of right-of-way and would in some cases require the developer to make improvements to the roadway that would result in a lower cost when the improvement is actually constructed. To accomplish

this goal, it will take a cooperative effort between local planning staff, SCDOT planning staff, and the development community.

One area where developers can be expected to assist in the implementation of transportation improvements is for new collector streets. Collector streets support the traffic impacts associated with local development. For this reason, developer contributions should be responsible sharing the cost of these improvements.

Oversize Agreement

An oversize agreement provides cost sharing between the city/county and a developer to compensate a developer for constructing a collector street instead of a local street. For example, instead of a developer constructing a 28-foot back-to-back local street, additional funding would be provided by the locality to upgrade the particular cross-section to a 34-foot back-to-back cross section to accommodate bike lanes.

Grant Anticipation Revenue Vehicles (GARVEE) Bonds

GARVEE Bonds can be utilized by a community to implement a desired project more quickly than if they waited to receive state or federal funds. These bonds are let with the anticipation that federal or state funding will be forthcoming. In this manner, the community pays for the project up front, and then receives debt service from the state. GARVEE bonds also are an excellent way to capitalize on lower present-day construction and design costs, thereby finishing a project more quickly and economically than if it was delayed to meet state timelines.

Safe Routes to School

Safe Routes to School receives funding through the federal SAFETEA-LU legislation and provides funding for individual schools to create route plans or develop facilities that create a safer walking and biking environment for their students. South Carolina has a yearly application program for which any school, school district, municipality or other governmental body, or non-profit association may apply.

Bicycle and Pedestrian Funding

Bicycle and pedestrian projects are often eligible for their own funding sources. For instance, the Robert Wood Johnson Foundation funds a grant program called Active Living by Design. The purpose of this program is to provide communities with a small grant to study bicycle, pedestrian, or other healthy living initiatives. There are other such grant programs in existence for bicycle and pedestrian projects, which would help to supplement the funding currently received by these modes. Other funding sources that can or have been used to enhance the existing bicycle and pedestrian network within the FLATS area include the South Carolina Parks, Recreation and Trails grants, Recreation Land Trust grants, City of Florence Hospitality Fund, City of Florence General Fund, and private donations.

Aesthetic Enhancement Funding

Small aesthetic improvements often have a large impact in creating a more pleasing transportation system. SCDOT has two formal programs to help provide an avenue for community involvement in the transportation system. The Adopt-A-Highway program allows individuals or groups to help maintain a part of the highway system. SCDOT's Adopt-An-Interchange program actually provides 80% funding toward landscaping and beautifying an interchange, with only a 20% local match. This initiative is a part of the state's enhancement funding program.

Enhancement Grants

State and federal grants can play an important role in implementing strategic elements of the transportation network. Several grants have multiple applications, including Transportation Enhancement Grants as well as state and federal transit grants. The Enhancement Grant program, established by Congress in 1991 through the Intermodal Surface Transportation Efficiency Act (ISTEA), ensures the implementation of projects not typically associated with the road-building mindset. While the construction of roads is not the intent of the grant, the construction of bicycle and pedestrian facilities is one of many enhancements that the grant targets.

Enhancement funding has already played an important role in enhancing the pedestrian safety and connectivity in the FLATS area. Approximately $700,000 of FLATS enhancement funding was utilized to begin the rail trail connection in the City of Florence. Potential enhancement projects follow the standard FLATS Study Team recommendation and Policy Committee approval to submit to SCDOT. Projects approved by SCDOT for these funds require a government entity as the applicant and a 20% match in funding. In the current 2010-2015 TIP for the FLATS MPO, the Irby Street Gateway project had funding allocated for 2009. Enhancement funds are also projected for use in 2010.

For additional information on alternative funding strategies, please visit the following websites:

GARVEE Bonds
www.fhwa.dot.gov/innovativeFinance/garguid1.htm

Safe Routes to School
www.saferoutesinfo.org/ www.scdot.org/community/saferoutes.shtml

Bicycle and Pedestrian Funding
www.activelivingbydesign.org/
www.walkinginfo.org/funding/sources.cfm

Adopt-A-Highway
www.scdot.org/community/adoptahiway.shtml

Adopt-An-Interchange
www.scdot.org/community/tep_inter.shtml

Enhancement Grants
www.scdot.org/community/tep_app.shtml

Chapter 11

Implementation Plan

Introduction

The success of the *2035 FLATS Long Range Transportation Plan* (*2035 LRTP*) will hinge on the collaboration of local, regional, and state officials with the private sector. The Implementation Plan sets the stage for the successful orchestration of the programs, policies, and facilities recommended throughout the *2035 LRTP*. The core of the Implementation Plan is a series of Action Plan tables that list specific projects, a phasing plan by horizon year, available funding sources, and agencies responsible for implementing the vision. This approach serves two purposes: (1) it provides a blueprint for decision-makers to enable them to track progress and schedule future improvements, and (2) clearly defined action items help the FLATS MPO identify public and private investment opportunities that are healthy, sustainable, and achievable through well-guided transportation and land use policies that encourage quality design and environmental stewardship.

Today's Paradigm Shift

Through the city and county's comprehensive plan updates, a focus on downtown, and renewed interest in transit, the Florence region has begun to shift its approach to land development and investment in transportation infrastructure. This paradigm shift, in part, is the result of the community taking a stand against worsening traffic congestion, rising safety concerns, and unsustainable land development. But reversing the trends in land use and transportation will require education and perseverance. Property owners historically have been reluctant to reinvest in their property, resulting in poorly designed areas that stand in stark contrast to the vibrant downtown Florence once enjoyed. Local officials and the community at large now recognize the quality of private investment in both design and orientation greatly impacts the attractiveness of the area. With transportation as a catalyst, successful and sustainable development can emerge through the cooperative effort of public and private ventures.

Action Plan

The implementation strategies in this chapter recognize the effect improvements have on travel safety and mobility, commerce, development patterns, and the visual appeal of the area. Some improvements will be implemented through the development review process, while major infrastructure improvements likely will require state and federal funding as well as self-financing mechanisms. Funding for these major projects is limited and statewide competition for it spirited. The purpose of the Action Plan is to recognize these challenges and suggest strategies and resources to address each challenge. With this in mind, the Action Plan identifies next step items for each category described in detail throughout this report. Ultimately, these recommendations can be administered concurrently or as priorities and regional initiatives present themselves.

The following series of tables (**Tables 11.1 to 11.4**) represent specific action items for each modal component (highways, bicycle & pedestrian, transit, freight, and aviation) as well as considerations for land use. These tables are based on the Findings and Recommendations presented in each element of the *2035 LRTP*. The timeframe for improvements coincides with the horizon years introduced in the Financial Plan (**Chapter 10**) — Short-Term (2010 to 2020) Long-Term (2021 to 2035), and Vision (beyond 2035). It should be emphasized that the Action Plan assumes the reauthorization of the Sales Tax Referendum. Also, projects listed in the Vision Plan are not fiscally or financially constrained. However, these projects are included in the recommendations to allow decision-makers the flexibility to adjust the regional transportation priorities on an annual basis.

Table 11.1 – Action Plan Matrix — General Action Items		
Action Item / Strategic Direction	**Timeframe**	**Responsible Party**
Adopt the *2035 FLATS Long Range Transportation Plan.* As a part of FWHA's SAFETEA-LU requirements, federal funds cannot be allocated to a local highway project without it being a part of a mutually adopted, financially-constrained plan.	2012	FLATS/SCDOT
Apply the recommendations of this plan during the development review process. Use this plan as a tool to review proposed development projects and plans as they are implemented within the Florence region.	Ongoing – Initiate immediately	City/County/SCDOT
Work collaboratively with the City of Florence, Florence County, Darlington County, the Town of Quinby, SCDOT, and local stakeholders to secure funding and implement the recommendations of the *2035 LRTP*.	Ongoing – Initiate immediately	City/County/ FLATS/SCDOT
Use the future collector street network as a tool to review proposed development projects and plans as future collector streets are located.	Ongoing – Initiate immediately	City/County/FLATS
Encourage access management policies that create a balance between the need for access to the transportation system and the desire to protect the mobility of major corridors.	Ongoing – Initiate immediately	FLATS
Work with the real estate community to increase public awareness of proposed highways (i.e., US 301 Bypass, etc.) and future street connections through enhanced signage – i.e., "Future Street Extension".	2012	City/County/FLATS
Require developments to reserve right-of-way for, and in some cases construct future collector streets.	2012	City/County/FLATS
Proactively support bicycle and pedestrian provisions in all SCDOT roadway improvements.	2012	FLATS/SCDOT
Adopt collector street spacing standards (**Table 5.1**) and median opening, driveway, and signal spacing standards as a part of the city and county development code.	2013	City/County
Adopt policies and dedicating funding to help construct traffic calming measures on existing streets.	2014	City/County/FLATS
Proactively pursue the reauthorization of the Florence County One-Cent Sales Tax Referendum in 2014.	2014	Florence County

Table 11.2 – Action Plan Matrix — Highway Action Items		
Action Item / Strategic Direction	**Timeframe**	**Responsible Party**
Committed Projects Action Items		
Pine Needles Road — Southborough Road to Ebenezer Road — Widen to 4-lanes with a median.	2011	County/SCDOT
Palmetto Street (US 76) — I-95 to Main St in Timmonsville — Widen to 4-lanes with a median.	2014	County/SCDOT
TV Road/Irby Street — Wilson Road to I-95 — Widen to 4-lanes with a median.	2014	County/SCDOT
Pamplico Highway (SC 51) — E Howe Springs Road to Kate's Garden Lane — Widen to 4-lanes with a median.	2014	County/SCDOT
US 301 Bypass — Southern Bypass connection from Palmetto Street (US 76) to Irby Street (US 52) – Widen Alligator Road or build a new location facility connecting with John Paul Jones, creating a 4-lane facility with a median.	2022	County/SCDOT
Short-Term (2010 to 2020) Action Items		
Williston Road (SC 327)/Freedom Boulevard — I-95 to S Irby Street (US 52) — Adopt access management overlay.	2012	FLATS/SCDOT
Howe Springs Road — Pamplico Highway (SC 51) to S Irby Street (US 52) — Adopt access management overlay.	2012	FLATS/SCDOT
N Cashua Drive — W Palmetto Street (US 76) to Lucas Street (US 52) — Apply access management strategies.	2013	FLATS/SCDOT
S Cashua Drive — Second Loop Road to Knollwood Drive — Widen to 5-lanes with a two-way left-turn lane.	2015	FLATS/SCDOT
E Cheves Street — S Church Street to E Palmetto Street (US 76) — Apply access management strategies.	2015	FLATS/SCDOT
W Darlington Street — N Cashua Drive to N Irby Street (US 52) — Apply access management strategies.	2015	FLATS/SCDOT
Five Points Intersection — Apply access management strategies.	2015	FLATS/SCDOT
Alligator Road — Knollwood Road to S Irby Street (US 52) — Apply access management strategies.	2016	FLATS/SCDOT
Palmetto Street (US 76) — Second Loop Road to Freedom Boulevard — Apply access management strategies.	2016	FLATS/SCDOT

Short-Term (2010 to 2020) Action Items (continued)		
Bentree Lane/Holly Circle — David H McLeod Boulevard (I-20 Bus) to Second Loop Road — Widen to 4-lanes with a median.	2017	FLATS/SCDOT
Ebenezer Road — Hoffmeyer Road to Radio Drive — Apply access management strategies.	2017	FLATS/SCDOT
Main Street (Darlington County)/ Lucas Street (US 52) — N Ebenezer Road (Darlington County) to N Irby Street — Apply access management strategies.	2018	FLATS/SCDOT
McIver Road (Darlington County) — Charleston Road to I-95 — Apply access management strategies.	2019	FLATS/SCDOT
David McLeod Boulevard — I-95 northbound ramps to Woody Jones Boulevard — Apply access management strategies.	2020	FLATS/SCDOT
Five Points Intersection — Construct two-lane roundabout.	2020	FLATS/SCDOT
Long-Term (2021 to 2035) Action Items		
Charleston Road — I-95 to Pocket Road (Darlington County) — Apply access management strategies.	2021	FLATS/SCDOT
Radio Drive/Ebenezer Road — David H McLeod Boulevard (I-20 Bus) to near Industry Boulevard — Widen to 4-lanes with a median.	2025	FLATS/SCDOT

Vision Plan (beyond 2035) Action Items		
Brofford Drive Extension — Alligator Road to Third Loop Road — Construct a 2-lane, undivided roadway.	2036	FLATS/SCDOT
W Darlington Street — N Cashua Drive to Hoffmeyer Road — Widen to 5-lanes with a two-way left-turn lane.	2036	FLATS/SCDOT
N Ebenezer Road — Pisgah Road to Main Street (Darlington County – US 52) — Widen to 3-lanes with a two-way left-turn lane.	2036	FLATS/SCDOT
Hoffmeyer Road — Anderson Farm Road to Timmonsville Highway (Darlington County – SC 340) — Widen to 4-lanes with a median.	2036	FLATS/SCDOT
Hoffmeyer Road — Anderson Farm Road to N Ebenezer Road — Widen to 4-lanes with a median.	2036	FLATS/SCDOT
Hoffmeyer Road — N Ebenezer Road to S Cashua Drive — Apply access management strategies.	2036	FLATS/SCDOT
Irby Street (US 52) — W Lucas Street (US 52) to Alligator Road — Apply access management strategies.	2036	FLATS/SCDOT
National Cemetery Road — S Church Street to Stockade Drive — Widen to 4-lanes with a median.	2036	FLATS/SCDOT
Oakland Avenue — E Lucas Street to Wilson Road — Widen to 3-lanes with a two-way left-turn lane.	2036	FLATS/SCDOT
Pisgah Road/Ebenezer Road— Presbyterian Road to Hoffmeyer Road — Widen to 4-lanes with a median.	2036	FLATS/SCDOT
Second Loop Road/Pamplico Highway (SC 51) — W Palmetto Street (US 76) to Howe Springs Road/ Claussen Road — Apply access management strategies.	2036	FLATS/SCDOT
Southborough Road — N Sally Hill Road (Darlington County) to Pine Needles Road — Widen to 4-lanes with a median.	2036	FLATS/SCDOT
Third Loop Road — S Marsh Avenue to S Irby Street — Widen to 3-lanes with a two-way left-turn lane.	2036	FLATS/SCDOT

Table 11.3 – Action Plan Matrix — Multimodal Action Items		
Action Item / Strategic Direction	**Timeframe**	**Responsible Party**
Bicycle & Pedestrian Action Items		
Implement the recommended on-street bicycle network that includes striped bicycle lanes, wide outside lanes/paved shoulders, and signed bike routes as shown in **Figure 6.1**.	Ongoing	City/County/ FLATS/SCDOT
Construct the greenway (off-street) network as shown in **Figure 6.1**.	Ongoing	City/County/ FLATS/SCDOT
Utilize the representative pedestrian nodes shown in **Figures 6.3 to 6.7** for guidance as decisions are made regarding bicycle and pedestrian facilities at various activity nodes in the region.	Ongoing	City/County/ FLATS/SCDOT
Prioritize sidewalk construction to eliminate gaps in the current sidewalk network and connect existing downtown pedestrian facilities to key destinations in the area.	2012	City/County/FLATS
Create a route signage plan.	2012	City/County/FLATS
Secure additional Safe Routes to School funding to promote bicycling and walking and bridge gaps in the network near schools.	2012	City/County/ FLATS/SCDOT
Implement the various policies developed as part to the ***2004 Bikeway Master Plan***.	2013	City/County/ FLATS/SCDOT
Develop traffic calming plans for unsafe roadways.	2013	City/County/ FLATS/SCDOT
Allocate funds to install bicycle racks or more advanced bicycle parking facilities at high priority locations.	2013	City/County/ FLATS/SCDOT
Install "Share the Road" signs on identified routes.	2013	City/County/ FLATS/SCDOT
Partner with local bicycle clubs (such as Pedal Pack of the Pee Dee) to launch education and encouragement programs.	2013	City/County/ FLATS/SCDOT

Bicycle & Pedestrian Action Items		**(continued)**
Assess railing heights of bridges along routes with bicycle facilities as identified in **Figure 6.1** to determine if they meet AASHTO standards.	2014	City/County
Introduce shared lane "sharrow" symbols on appropriate downtown streets.	2014	City/County/ FLATS/SCDOT
Partner with PDRTA to coordinate improvements to the pedestrian and bicycle network with existing and future transit needs.	2015	City/County/ FLATS/SCDOT
Consider enhanced signage at intersections with identified conflicts between motorists and cyclists/pedestrians.	2015	City/County/ FLATS/SCDOT
Transit Action Items		
Implement the targeted marketing campaign outlined in the marketing plan.	Ongoing	FLATS/ PDRTA
Coordinate future fixed routes with land use development patterns.	Ongoing – Initiate immediately	City/County/ FLATS/ PDRTA
Improve the safety and security of the transit system.	Ongoing – Initiate immediately	PDRTA
Locate civic land uses within walking distance of public transit.	Ongoing	City/County/PDRTA
Enhance bus stops.	2012	City/FLATS/PDRTA
Develop a phased implementation plan with detailed action items based on the marketing strategies outlined in the PDRTA Marketing Plan.	2012	FLATS/ PDRTA
Expand opportunities for residents throughout the Pee Dee region to participate in carpools and vanpools.	2013	PDRTA
Utilize the Comprehensive Transit Master Plan to determine if modifications to the current hub and spokes layout are necessary.	2013	PDRTA
Identify strategic locations for park-and-ride facilities.	2014	City/County/ FLATS/ PDRTA

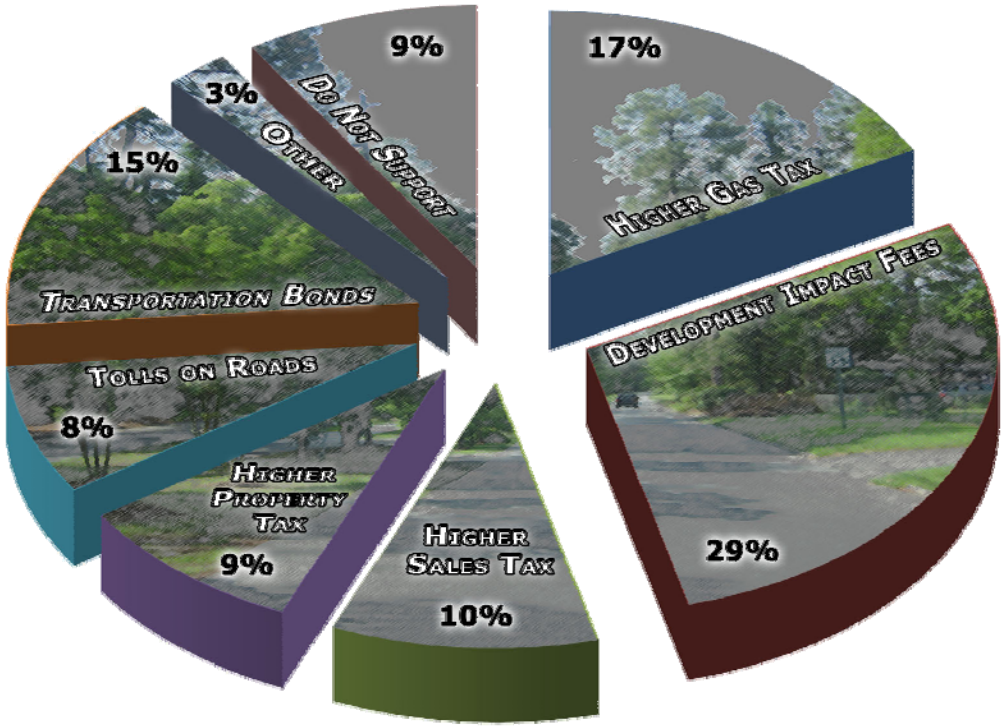
Transit Action Items		**(continued)**
Enhance the commuter fixed route service currently offered by PDRTA.	2015	PDRTA
Develop strategies to transition paratransit riders to the fixed route system.	2015	PDRTA
Coordinate bus stop upgrades with improvements to the pedestrian and bicycle network.	2016	City/County/PDRTA
Construct the multimodal transportation center in downtown Florence.	2017	City of Florence/PDRTA
Construct a facility in Marion that consolidates the PDRTA office and transfer center.	2018	PDRTA
Freight & Aviation Action Items		
Provide for the secure movement of goods within and through the FLATS MPO area.	Ongoing – Initiate immediately	FLATS/SCDOT
Prioritize projects in a way that gives extra weight to initiatives that promote intermodal freight and goods movement.	Ongoing – Initiate immediately	FLATS/SCDOT
Establish an Oversight Committee to provide feedback and strategic direction for freight and aviation at the regional level.	2012	FLATS
Implement the recommended freight network as shown in **Figure 8.2**.	2013	FLATS/SCDOT
Develop design guidelines for freight infrastructure (roadways, intersections, and rail crossings).	2014	FLATS/SCDOT
Develop a regional freight plan that identifies corridors and conflict points for freight activity.	2014	FLATS/SCDOT
Enhance safety for freight providers and the general public by identifying and prioritizing locations for improvements.	2015	FLATS/SCDOT
Implement ITS improvements that deliver on-time information to freight carriers and the general public.	2016	FLATS/SCDOT

Table 11.4 – Action Plan Matrix — Land Use Action Items		
Action Item / Strategic Direction	**Timeframe**	**Responsible Party**
Land Use Action Items		
Continue to support local initiatives that result in a more efficient, livable transportation system (street connectivity, complete streets, etc.).	Ongoing – Initiate immediately	City/County/FLATS /SCDOT
Promote development design to manage access and reduce congestion levels on major roadways.	Ongoing – Initiate immediately	City/County/FLATS /SCDOT
Partner with local, regional, state, and federal agencies that share a common vision for implementing smart growth development.	Ongoing – Initiate immediately	City/County/FLATS /SCDOT
Respect local government control and their desire to implement smart growth initiatives when programming improvements to the regional transportation system.	Ongoing – Initiate immediately	City/County/FLATS /SCDOT
Understand that "one size does not fit all" for implementing smart growth development.	Ongoing – Initiate immediately	City/County/FLATS /SCDOT
Reinvest in existing infrastructure and promote infill development or redevelopment instead of continued sprawl out from the core of the community.	Ongoing – Initiate immediately	City/County/FLATS /SCDOT
Seek state and federal funding supportive of activities to improve the quality of development and protect human health and the environment.	Ongoing	City/County/FLATS
Develop livable street design guidelines for major arterial and collector streets (begin with endorsement of the cross-section design recommendations in this report and expand to include the ITE/CNU recommendations).	2012	City/County/FLATS
Establish standards to increase connectivity within and between developments.	2012	City/County/FLATS
Develop design guidelines that establish development priorities and core design principles for implementing smart growth initiatives.	2013	City/County/FLATS
Prepare best development practices and conduct design summits to educate and encourage developers to incorporate these principles into their land use planning and development process.	2014	City/County/FLATS
Prioritize projects in the capital improvements plan that influence the positive timing and location of new development.	2014	City/County/FLATS

Funding Opportunities

The development of a comprehensive transportation network can occur through incremental adoption of local policies and programs supplemented by state programs and assistance from the private sector. Obviously, the success of the Sales Tax program cannot be understated. It is through the efforts of the local transportation decision-makers that these multimodal transportation projects have moved forward much faster than what could have occurred using traditional funding programs (i.e., gas tax, etc.).

As transportation priorities change, it will be important for the City of Florence, the Town of Quinby, Florence County, Darlington County, and the FLATS MPO to identify funding resources to implement the recommendations of this plan. The public questionnaire asked participants to identify funding strategies they would support to implement recommendations in the plan. The result of this question is shown in the pie chart to the right. Funding strategies included gas taxes, impact fees on developments, sales taxes, property taxes, tolls, and transportation bonds. State revenues alone will not sufficiently fund a systematic program of transportation projects within the study area. Therefore, the MPO and member jurisdictions must consider alternative funding measures that could allow for the implementation of this plan. The following provides a brief overview of the top performing alternative funding measures as expressed by the public.



Development Impact Fees (29%)

Developer impact fees and system development charges provide a funding option for communities looking for ways to pay for transportation infrastructure. Impact fees most commonly are used for water and wastewater system connections or police and fire protection services but recently several counties across South Carolina have used impact fees to pay for the impacts of increased traffic on existing roads. Impact fees place the costs of new development directly on developers and indirectly on those who buy property in the new developments. Impact fees relieve other taxpayers from the burden of funding costly new public services that do not directly benefit them. Cities and counties in South Carolina may enact development impact fees by securing special legislative authorization.

Gas Taxes (17%)

Today, 16 cents from every gallon of gasoline or diesel fuel purchased in the state of South Carolina is assessed as a state motor fuel tax. The average combined local, state, and federal gasoline tax in South Carolina is 35.2 cents per gallon. This makes South Carolina the state with the fourth lowest gasoline taxes in the nation. If an additional tax increase was implemented, this would provide a substantial increase in transportation funding. However, special legislative authorization must be secured to allow an increase in fuel tax. *Sources: American Petroleum Institute, www.api.org/statistics/fueltaxes; South Carolina Department of Revenue, www.sctax.org.*

Transportation Bonds (15%)

Transportation bonds have been instrumental in the strategic implementation of local roadways, transit, and non-motorized travel throughout South Carolina. Voters in communities both large and small regularly approve the use of bonds in order to improve their transportation system. Nearly every improvement identified in this plan could be financially supported using a transportation bond program. When the improvement occurs on a state-owned street, approvals and encroachment permits from SCDOT will be required.

Local Sales Tax (10%)

One of the most successful self-financing programs ever initiated in the State of South Carolina is the Florence County Sales Tax Program. Over seven years of the sales tax, this funding source is anticipated to generate $148 million in county revenue. A $250 million grant from the State Infrastructure Bank is being combined with this local revenue, generating a total of $398 million that otherwise would not have been available. With this in mind, the reauthorization of the Sales Tax referendum should be considered in 2014 when the current program ends. Public education and consensus building would be critical for a sales tax program to be reauthorized.

Conclusion

Through effective public outreach and the inclusion of a citizen-based advisory committee, the development of the *2035 LRTP* reinforces the vision and needs of the region. It is through this collaborative process that we have learned community leaders, business owners, and citizens of the Florence region have high expectations for the regional transportation system.

The Florence region has become an attractive transportation hub spurred by major transportation infrastructure facilities such as I-95, I-20 and US 52, healthy commercial growth, and the potential for expanded rail service. The realization that federal and state dollars are becoming more difficult to secure shows the Florence region has reached a tipping point. Do we rely on the status-quo for addressing our regional transportation needs, or do we continue to proactively move forward and address those needs through innovative measures and self-financing mechanisms that support the growth and continued prosperity of the region?

With this in mind, transportation decision-makers must continue to support funding strategies that address transportation infrastructure needs. Whether through reauthorization of a new sales tax referendum, additional vehicle tax, impact fees, or other innovative funding strategies, the region no longer can rely on federal gas tax dollars alone. One thing is certain. The most critical steps toward funding and implementing the plan will be carried by champions or leaders within the community. Ultimately, continued collaboration between state, local agencies, and the general public will provide more opportunities to foster a safe, aesthetically-pleasing, and well-balanced multimodal transportation system that makes the Florence region an attractive place to live.