

Acknowledgments

The development of the Rocky Mount Comprehensive Bicycle Plan was a collaborative process that involved numerous stakeholders, including the City Council members of Rocky Mount, the Rocky Mount Bicycle Advisory Committee, Nash County, Edgecombe County, Tar River Transit, and the North Carolina Department of Transportation (Division of Bicycle and Pedestrian Transportation and Division 4). The Rocky Mount Comprehensive Bicycle Plan was adopted by the Rocky Mount City Council on February 12, 2007.

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Executive Summary

Scope and Purpose of Plan

This report summarizes the current condition of Rocky Mount's bicycle system. It specifically examines the current use of Rocky Mount's road network for bicycling as well as its off-road facilities. The challenge now is to parlay the vision of a bicycle-friendly community into an interconnected bicycle plan and completed network.



1886-Model for Two (The National Archive)

Vision Statement

Without a bold vision of the future, transportation will not attract the investment it requires to serve the needs of present and future generations. Without a disciplined investment strategy, resources will be wasted and supplemental revenues denied. An effective plan requires both a broad vision and a disciplined investment strategy. Our goal is to chart the future boldly — while committing resources wisely.

The vision for the *Comprehensive Bicycle Plan* for Rocky Mount is as follows:

- Create a Bicycle-Friendly Community
- Increase Travel Ways for Bicycles
- Develop a Viable Bicycle Transportation System
- Promote the Safety and Health of Users
- Create Transportation Choices
- Advance the Community's "Livability"

Public Benefits

Bicycling is recognized to be an appealing alternative due to benefits (described further in **Chapter 1**) such as:

- ***Is environmentally-friendly***
- ***Promotes good health practices***
- ***Improves livability***
- ***Enhances resale value***
- ***Provides travel choice***

Goals and Objectives

Considering the community's vision and the public benefits, short-range and long-range objectives were developed for the *Rocky Mount Comprehensive Bicycle Plan*.

Short-Range:

- Organize periodic events that encourage new riders and promote safety
- Pursue funds to construct high priority bicycle facilities

Long-Range:

- Increase the number of bicyclists
- Increase public awareness of bicycling as a viable mode of travel.
- Promote the rights and responsibilities of bicyclists, pedestrians, and motorists
- Ensure bicycle accommodations are considered, where consistent with the Plan, in projects
- Create additional physical activity opportunities
- Provide improved bicycling opportunity for all residents
- Encourage the design, finance, and construction of transportation facilities that provide safe, secure, and efficient linkages for bicyclists

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- Stimulate the local economy by connecting neighborhoods, businesses, recreation areas, and tourist sites
- Encourage safe riding practices
- Promote the development of seamless transitions for bicycle facilities which cross over the city limit

Current Conditions

Throughout the public involvement process associated with this plan, residents expressed a strong desire for improvements to the conditions and opportunities for bicycling. Citizens want to be able to bicycle safely within their community to run errands, shop, visit friends and neighbors, exercise, and get to work. Similarly, public agency staff and local officials recognize the need to improve safety and opportunities for bicycling. (More detail is presented in **Chapter 2.**)

Types of Cyclists

- Advanced Cyclists
- Basic Cyclists
- Child Cyclists

Types of Facilities

- Shared Lane (Wide Outside Lanes)
- Striped Lanes
- Signed Routes
- Multi-Use Paths

Tar River Trail

Off-road bicycle travel is provided by the Tar River Trail, a 3.12 mile multi-use path that connects Sunset Park, Battle Park, Tom Stith Park, Talbert Park, and Martin Luther King Jr. Park. This trail is a valuable connector between different sides of the city that allows the user to safely bypass several major roads. In addition, the Tar River Trail includes two bridges outfitted to accommodate bicycles and pedestrians that cross the river. One of these is a picturesque wooden arch bridge across the Tar River that is dedicated solely to non-motorized use. The

other is a bicycle and pedestrian cantilever section off of the Peachtree Street Bridge that allows non-motorized traffic to cross the Tar River separately from vehicles.

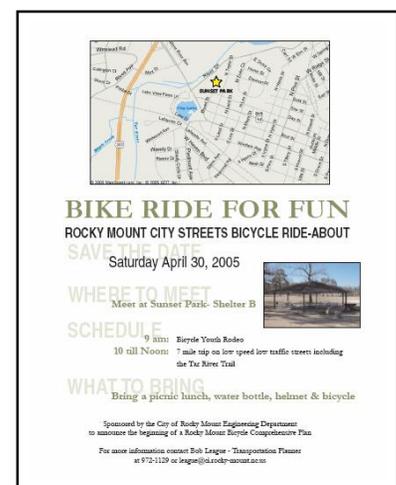
Public Involvement

A Bicycle Advisory Committee (BAC) was formed to meet regularly and discuss the formation of the plan. The BAC was made up of local and state officials, as well as members from concerned local businesses and agencies and independently interested citizens. Representatives from the City of Rocky Mount consisted of members of the engineering, parks and recreation, transit, and police departments. This group helped shape the goals and objectives for the plan and had an active role in developing the draft plan.



On April 30, 2005, Kimley-Horn and the City of Rocky Mount hosted a bicycle ride-about. The ride-about was publicized via newspaper, television, fliers, and word of mouth far in advance, which yielded an impressive turnout of 40 people.

Citizens participated in a 7-mile bike ride around the central portion of the city. The city and consultants were able to learn



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first-hand about the problems faced by the riding public. Rocky Mount Police assisted in developing a safe and enjoyable route and to monitor riders' progress across potentially dangerous intersections. Police officers also conducted a bicycle rodeo prior to the ride-about to teach children about proper bike riding and safety techniques.



Maps were provided in an effort to obtain comments from the public about common origin and destination points as well as improvement or route suggestions.

The City of Rocky Mount conducted a bicycle planning survey which was distributed at the ride-about and available online. Questions were aimed at determining riding preferences, tendencies, and recommendations.

While 56% of respondents classify themselves as basic level riders, the other 44% say they are advanced riders. Respondents feel that route safety is the most important consideration determining whether they would make a trip by bicycle, with traffic, weather, and the need for exercise being other significant determining factors. Participants stated that cars ignoring or crowding bicycles and roads that are too narrow to accommodate both cars and bicycles are their biggest concerns. The presence of striped bicycle lanes is the attribute that would most enhance the riding experience of survey respondents, with bike route signage, clean road surfaces, and maps of bike routes being other important attributes.

The most bicycled roadway by survey respondents is West Mount Drive, in the southwestern part of the city.

What People Want

The presence of striped bicycle lanes is the attribute that would most enhance the riding experience of survey respondents, with bike route signage, clean road surfaces, and maps of bike routes being other important attributes.

Challenges

Road conditions for bicyclists in Rocky Mount today are in need of improvement. While the street system in the

majority of the city is well connected, there are no dedicated bicycle facilities on the roads. Some bridges do have wide shoulders that could accommodate bicycles. There are also some minor arterial, collector, and residential streets with wide lanes that could be signed or striped to indicate their use for bicycles.

Current and Likely Users

According to the 2000 Census, the population of the City of Rocky Mount is 56,244. The majority of the population is middle-aged, with only 13% over the age of 64. This seems to indicate that most of the population would be at an age where they could comfortably ride a bike for recreational and non-recreational purposes. Out of all of the households in the city, 20% are below the poverty level. Also, 51% of the City of Rocky Mount's households own either one vehicle or none at all. This portion of the population may be less likely to use a car for transportation, instead turning to bicycling and walking.

Geographically, Rocky Mount is well suited to bicyclists. Some rolling hills exist, but the terrain within the city limit is mostly flat. Bicyclists were seen mostly in the central areas of the city. However, it was commonplace to see these individuals not observing the correct rules of the road. There appears to be a need for further education of the public about the proper safety techniques for riding a bicycle.

Initiatives Underway

Adopted plans for Rocky Mount, including *Together Tomorrow* (the Comprehensive Plan) and the *Collector Street Plan* support the creation of safe, efficient bicycle transportation

facilities. While two potential projects are being built as incidental elements of larger state-funded roadway widening projects, no

bicycle projects are included in the "independent" bicycle project program administered by NCDOT. This would be a reasonable goal to set for the future, following adoption





of this plan. For example, an independent project could be an extension of the Tar River Trail or a Rail to Trail Project.

The following construction projects are currently in the Transportation Improvement Program (TIP) and include bicycle accommodations, as listed below:

- **Hunter Hill Road** – Widen SR 1604 (TIP number U-3621) from SR 1613 (North Winstead Avenue) to NC 43-48 (Benvenue Road). Planning in progress, Construction scheduled to start in 2010. Includes wide outside lanes.
- **North Winstead Road** – Widen SR 1613 (TIP number U-4019) to multi-lanes from SR 1770 (Sunset Avenue) to SR 1604 (Hunter Hill Road). Construction scheduled to start in 2009. Considering wide outside lanes.

Bicycle System Plan

The recommended bicycle system map showing bicycle corridors and destinations is presented in **Figure 4.4 (Chapter 4)**. Logical connections between neighborhoods and destinations are organized into 20 unique loops or corridors. Names are given to each route to identify destinations served or some other place-based characteristic. The routes are interconnected so a mid- to long-distance rider can extend the trip.

Opportunities

From a safety perspective, bicycle facilities would be preferred on a lower-level road like a collector or minor arterial since speeds and traffic volume are typically lower than on major arterials. Many bicyclists feel more comfortable riding on low-traffic facilities, a consideration which is crucial to increasing the number of new riders. Opportunities exist to ride on residential or collector streets that are parallel facilities to roads such as Sunset Avenue and Winstead Avenue. For example, Beal Street and Nash Street in the downtown area would be viable alternate routes for Sunset Avenue.

Corridors and Destinations

Safety issues and concerns were discussed and more appropriate corridors for bicycle travel were identified in collaboration with the BAC and the public. Corridors were identified to link destinations across the city, such as:

- Tar River Trail
- Municipal Buildings
- Libraries
- Parks
- The YMCA and new Athletic Complex
- Tar River Transit Center
- Schools (public and private)
- NC Wesleyan College and Edgecombe Community College



The development of a bicycle route system heavily favors the connection of these facilities so that the bicycle routes link citizens with places where they want to ride.

Once this *Comprehensive Bicycle Plan* is adopted, the City and NCDOT should work together to incorporate bicycle accommodations in future roadway projects according to the adopted Bicycle System Network.

Bucket of Paint Initiative

For the cost of a bucket of traffic paint, a new bicycle lane can be created. Road maintenance activities provide a good opportunity to create bicycle facilities. Regularly scheduled resurfacing is typically followed by restriping. Instead of marking the stripes exactly where they were before the resurfacing job, the maintenance crews instead can work with engineers to develop a restriping plan consistent with this Bicycle System Network that either narrows the inside travel lanes on a multi-lane road or adds edge lines or bicycle lane lines on a wide residential street. Restriping a road adds very little additional cost. In future resurfacing programs, money could be reapportioned to allow for the repaving of longer stretches

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of road that may link a cyclist with safe beginning and end points for a bicycling trip. As a result, proposed bicycle routes could have inexpensive facilities created in a relatively short timeframe.

Safer Roads Initiative

Furthermore, roadway maintenance conducted on rural-type roads that have narrow paved shoulders or no paved shoulder at all can be rehabilitated to include a wide paved area. This gives bicyclists a safer place to ride, improves long-term roadway surface quality by helping to resist cracking and deterioration, and also gives motorists a refuge in case of car trouble.

Street Design Standards

As new roads proceed in the planning process, provisions can be made to incorporate bicycle facilities as appropriate to the type and context of the road. This encourages a more interconnected bicycle system to develop over time. In this way, the inclusion of bicycle amenities in roadway design will become more commonplace.

Downtown Focus Area

Census data suggest that many residents in the downtown area may be without easy access to a car. This portion of the population will naturally turn to other modes of travel to complete their errands and work or school commutes. As a result, an improved bicycle infrastructure would be beneficial to people with limited access to cars.

Downtown Rocky Mount is a special area of focus not only because of the vehicle ownership characteristics but also due to the great number of bicycle destinations close to one another. Furthermore, tree-lined residential streets frame downtown Rocky Mount and offer a multitude of origins for bicyclists who live there. The density of the housing in this area is also greater than that of the rest of the city. As a result, it has a higher concentration of people that have a number of potential trip destinations within a relatively short distance. This is an ideal situation for choosing bicycling as a travel mode. Improvements to the bicycle infrastructure in this area have the potential to positively affect a large number of users.

Specific areas of the city present unique opportunities to create bicycle facilities. One of these is an abandoned rail corridor that runs from the Imperial Center area to the site of Rocky Mount Mills by the river. This rail line was used by the mill for years, but has become overgrown and neglected since its closure. An abandoned rail line such as this is an ideal location for an off-road shared-use facility. Rail lines are designed for trains, meaning that they cannot sustain sharp turns or steep grades. This characteristic makes them ideal for bicyclists. Also, this corridor could connect the user to many downtown activity centers, and would provide an off-road route protected from vehicular traffic.

The Nash County Railroad Corridor running east-west through Rocky Mount could be considered for another type of off-road facility. Although this is an active rail line, a rail-with-trail concept is being explored that would put a bicycle and pedestrian multi-use path within the right-of-way of the railroad. The rail-with-trail line would provide an opportunity to connect some of the neighborhoods in the west side of the city with the downtown area in a dedicated guideway facility.

Another area in which the City of Rocky Mount has the chance to make a positive impact on the level of bicycle amenities is the new Rocky Mount Sports Complex and YMCA. This area will attract people seeking athletic activity and children below the driving age by the nature of its uses. As a result, the addition of bicycle facilities to some of the entry points of the complex and on surrounding roads would create a safer and more inviting environment for those individuals hoping to travel by bike.



Design of Facilities

Modifications to the City of Rocky Mount street design standards are recommended in **Chapter 5**. These modifications are similar to design standards that other municipalities have adopted, as well as an understanding of the desired level of accommodation for bicyclists along a roadway.



Level of Accommodation

Several factors are involved in evaluating how well a specific roadway accommodates bicyclists. These include the following:

- How many cars? (traffic volume)
- How many trucks? (percent heavy vehicles)
- How wide? (effective width of the roadway, which includes width of the outside lane, presence of a bike lane or paved shoulder, presence of on-street parking, and percentage of permitted on-street parking that is occupied by a vehicle)
- Speed? (of vehicular traffic)
- Smoothness? (pavement surface condition)

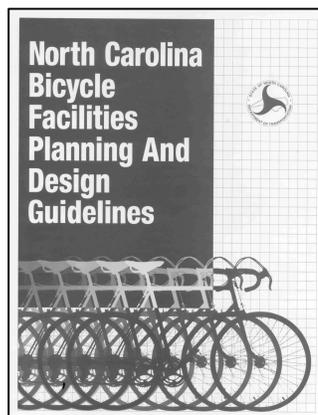
Standards Review

With respect to the Rocky Mount Design Standards, the most pertinent design criteria provided in the national guidelines published by the American Association of State Highway and Transportation Officials (AASHTO) relates to the width of the bike lanes (4 feet) and the width required for multi-use paths (10 feet minimum).

On roadway sections without curb and gutter, a paved shoulder can function as a bicycle facility in lieu of a bike lane. While this is generally acceptable for roadway sections without frequent intersections, on roads where intersections are frequent, appropriate bike lane striping should be applied.

Wide outside curb lanes (typically 14 feet wide, preferably 15 feet) have been used to provide extra space for bicyclists. While wide curb lanes are an effective way to encourage motorists to give cyclists adequate clearance when passing, they are largely unrecognized by casual cyclists as bike facilities.

Research to develop level of accommodation measures for bicyclists has found that having a striped bike lane greatly improves cyclists' feelings of safety and comfort.



In communities like Rocky Mount that want to significantly increase the number of people riding bicycles, it is strongly recommended that a program to create striped bike lanes be adopted, rather than wide outside lanes. In other words, whenever feasible striped bike lanes are preferred over wide outside lanes; the latter is acceptable, however, when striped lanes are not feasible.

State Standards

Wide outside lanes: A width of 14 feet is accepted, however 15 feet is preferred for the outside lane to accommodate bicycles. On a multi-lane roadway, differential striping may be employed to reduce the width of the inside lane and thereby increase the width of the outside lane.

Striped Bicycle Lanes: NCDOT adheres to the standards recommended by AASHTO for these facilities, recommending a 4 foot minimum width except in the presence of parking, where a 5 foot minimum is required.

Signed Bicycle Routes: Simply posting signs along a route is an inexpensive way to guide riders to more bicycle-friendly roads and intersections.

Bicycle Paths or Multi-Use Paths: The minimum width for a bicycle or multi-use path is 10 feet; however, additional width should be considered for areas with difficult terrain or heavy traffic.

Recommended Additions

Striped Parking/Signed Route: Streets not wide enough for bicycle lanes and on-street parking could be given one solid stripe to delineate the parking area from the travel area. If posted as a signed bicycle route, many cyclists could take advantage of the striped area especially when not many motorists park on the street. This is a good alternative to fighting adjacent property owners who insist on keeping on-street parking.

Neighborhood Connector: Connecting two disconnected (but proximate) neighborhood streets with a bollard-protected ten-foot wide bicycle- and pedestrian-only connector path will relieve many parents from driving their children to friends' homes after school.



Street Design Standards

Local Streets. The city's current design standards for local streets provide for 11-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. No modification is recommended for this cross section. Because of their nature, local streets do not typically require additional bicycle facilities. See **Figure 5.1**.

Collector Streets. The city's current design standards for new collector streets provide for 12-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. We recommend revising the standards so that collectors being designed with a design year motor vehicle volume exceeding 2,500 vpd have a cross section including 11-foot travel lanes and 4-foot bike lanes. See **Figure 5.2**.

Minor Arterials. The city's current design standards for new minor arterial streets provide for 12-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. It would be possible to provide a multi-use path adjacent to the roadway. The buffer to the sidewalk (which would be replaced by a side multi-use path) is adequate. The minimum multi-use path width recommended by NCDOT is 10 feet. This means the separation to the right-of-way line could be reduced to 5 feet. We recommend revising the standards so that minor arterial streets are designed with 12-foot travel lanes and 4-foot bike lanes. The retention of the 12-foot travel lanes maintains space for heavy vehicles. See **Figure 5.4**.

Major Arterials. The city's current design standards for major arterial streets provide for 12-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. It would be possible to provide a multi-use path adjacent to the roadway. The buffer between the path and the back of curb would need to be increased to at least 3 feet. The minimum multi-use path width recommended by NCDOT is 10 feet wide, rendering this type of bicycle facility unable to fit within the right-of-way line. It may be necessary to shift the roadway within the right-of-way to provide more space between a multi-use path and the right-of-way line. This would allow for better matching of the grades on the adjacent properties. See **Figure 5.3**.

We recommend revising the standards so that the cross section for major arterial streets includes 12-foot travel lanes and 4-foot bike lanes. The retention of the 12-foot travel lanes maintains space for heavy vehicles. A differential striping with 11-foot lanes toward the middle of the road and 13-foot lanes next to 4-foot wide bike lanes would offer benefits to bicyclists.

Intersection Design Standards

If bicycle lanes are adopted as the standard on-street treatment for bicyclists, special care must be given to the bike lanes design at intersections. Since intersections represent significant conflict points for bicyclists, appropriate striping, marking, and signing is critical to help ensure the proper behavior of cyclists and motorists.

To adopt these standards, Rocky Mount would have to revise one of its striping practices. Currently, intersection lane use symbols are painted on the approaches to many major intersections. These markings typically consist of through/left and through/right arrows painted on the pavement. While the through/left arrow causes no problems for bicyclists, the through/right can be problematic. This treatment can cause improper behavior from motorists who are turning right — they might pass a bicyclist in the bike lane and then turn in front of the bicyclists from the through/right lane. If the through/right symbol is to be used, the bike lane should be discontinued prior to the intersection so that a through lane (the bike lane) is not located to the right of a right-turn lane (the through/right lane). If this marking is omitted, the solid bike lane line should change to a skip line prior to the intersection. (Refer to intersection striping treatments in **Chapter 5** for additional information.)

Getting the Green Light

Most traffic signal loops designed for motorists can detect bicyclists if the cyclists know where to place the bicycle. Bicyclists frequently have trouble being detected at traffic signals. One effective way to address this problem is to mark the location on the pavement where a cyclist would have to stop the bike to be detected by a traffic signal.





Sign of the Times

The routine accommodation of bicycle facilities (bike lanes) within the roadway network is the most important treatment that can be implemented to improve bicyclists' safety. However, the completion of a network of bike lanes will take time. In the meantime, there are some additional treatments which can improve bicycling conditions in Rocky Mount.

SHARE THE ROAD signs can be used to alert drivers to the presence of bicyclists.

BIKE ROUTE signing is another treatment which can be implemented to improve conditions for bicyclists.



Ancillary Facilities and Programs

Mapping and Signing Projects

The proposed area-wide Bicycle System Network should first be mapped and signed with bicycle route signs. Potential improvements are identified in **Chapter 6**. These recommendations encompass issues from maintenance to design and include but are not limited to:

- Provision of bike lanes on local streets where space is available and on-street parking is not an issue
- Use of the shared lane symbol under restricted conditions
- Marking and signing signal loops (and possibly repairing them) for bicyclists
- Repairing utility lids within the bicyclists' line of travel
- Marking railroad crossings to improve safety
- Route signage



Spot Improvement Programs

With the exception of interstates and freeways like I-95 and US 64, roadways should be maintained so they are safe for bicyclists to use. The surface should be free of debris. Longitudinal cracks should be patched and drainage grates with longitudinal slots should be replaced. Utility lids should be flush with the roadway surface. Paved shoulders should be installed where rutting is occurring on the side of non-curb and gutter roadways. These items should be addressed through the normal roadway maintenance program.

Bicycle Parking

Just as motorists need a place to park their cars when they arrive at destinations, bicyclists also need a place to park their bicycles.

Typically, when parking is installed for bicyclists, the primary consideration is simply the accessibility or the convenience of the parking. Their concerns also include security of the parking and the protection afforded to the bicycle.

Educational Programs

The Dangers of Riding Against Traffic and Motorist Yield to Sidewalk Traffic. Riding against traffic — either on the sidewalk or on the roadway — is a common practice in the Rocky Mount area. It is imperative that cyclists who chose to ride on the sidewalk are aware of the hazards associated with this practice. This plan recommends driver- and cyclist-targeted campaigns with graphics representing Rocky Mount. It is also important to target motorists with these campaigns to make the drivers aware they need to scan for traffic on the sidewalk. To maximize the potential for reducing crashes, these campaigns must be run concurrently.

Riding at Night without Lights. Bicyclists operating at night without lights are nearly invisible to motorists, often until it is too late. Even if a bicycle is properly fitted with reflectors, motorists coming from a side street will not see the cyclists until it is too late for the driver to react. Even if bicyclists choose to ride at night without lights, they must be made aware of the dangers they face in the dark. As part of this plan's development, the Study Team reviewed unpublished research papers which show that a minimal



(in terms of time) ad campaign results in a much increased appreciation of the importance that motorists look for pedestrians at night. It is recommended that the City of Rocky Mount bicycle crash program include an educational campaign effort. Informational posters showing sight distances for various colors of clothing and illustrating the limitations of reflectors may provide cyclists as well as pedestrians the information they need to make better choices when choosing gaps to cross the road or when anticipating driver behaviors at driveways and intersections.

Potential Projects

A set of 20 bicycle routes are shown as a complete system in **Figure 4.4** (in **Chapter 4**). Cost figures presented below are the consultants' opinion based on planning studies only. They include opinions of construction cost in 2005 dollars only, therefore excluding right-of-way (if needed), railroads shared-use payments, surveys, design costs, utilities, and contingencies. Because the consultant does not control the cost of construction materials or the cost of labor, there are no assurances of these costs. See Appendix for more information on cost estimates. **Table 7.1** in the next section provides additional information about these routes such as the facility types recommended and overall route lengths.

Reservoir Loop (Figure 7.1)

Connects Nashville Road in the east to Halifax Road in the west. This route connects two parks, a community center, two schools, and the reservoir. *Cost: \$1.25 million.*

Park-Reservoir Connector (Figure 7.2)

Runs along Old Mill Road from Bethlehem Road and the proposed Reservoir Loop, past Englewood Park, and finally alongside May Drive and Sunset Avenue to City Lake. *Cost: \$400,000.*

Farmington Park Loop (Figure 7.3)

Connects the Farmington Park area with the Park-Reservoir Connector and the Englewood Park-City Lake Rail with Trail. A section of this loop runs along Old Mill Road in the area of the Park-Reservoir Connector and is recommended to be a paved shoulder facility. *Cost: \$250,000.*

Englewood Park-City Lake Rail with Trail (Figure 7.4)

Consists not only of the rail with trail multi-use path but also of connecting facilities that link it with the rest of the system. This route connects Englewood Park and City Lake Park. Majority of this facility consists of a rail with trail project. *Cost: \$450,000.*

Hospital/Stoney Creek Connector Trail (Figure 7.5)

Consists primarily of a greenway multi-use path along the southern bank of Stoney Creek, with some connectors. Connects to the existing Tar River Trail and three proposed trails. Connects with the hospital. *Cost: \$800,000.*

Downtown-Reservoir Connector (Figure 7.6)

Runs along Hammond Street and connects two schools and the reservoir, the Tar River Trail extension, and several proposed trails. *Cost: \$25,000.*

Downtown Neighborhood Loop (Figure 7.7)

Connects Sunset Park, City Lake Park, Stith-Talbert Park, Martin Luther King Jr. Park, five schools, the community college, the Children's Museum, a community center, and an art center. *Cost: \$200,000.*

City Lake-Downtown Trail (Figure 7.8)

A multi-use path alongside an active Nash County Railroad line connecting downtown with City Lake and the west side of Rocky Mount. *Cost: \$250,000.*

Downtown Core Loop (Figure 7.9)

Connects two schools, Tar River Transit Station, Library, Arts Center, museums, and historic sites. *Cost: (assuming Main Street to be a signed route) \$25,000.*

Johnson Pope-Holly Street Park (Figure 7.10)

Connects two schools and a park with striped bicycle lanes. *Cost: \$20,000.*

Abandoned Rail to Trail (Figure 7.11)

Connects the Imperial Center downtown with Battle Park and the Falls of the Tar River. *Cost: \$250,000.*

Downtown-East Side Connector (Figure 7.12)

Connects downtown with several Edgecombe neighborhoods and the community college. *Cost: \$30,000.*



East-West Connector (Figure 7.13)
Connects Nash and Edgecombe Counties. Cost: \$60,000.

East Side Loop (Figure 7.14)
Connects two schools and Edgecombe neighborhoods. Cost: \$870,000.

Tar River Trail Extension (Figure 7.15)
Extends the existing trail in both directions. The easterly extension would run from Martin Luther King Jr. Park to Leggett Road. The southwesterly extension would cross Sunset Avenue, run along a utility corridor along the west bank of the river to US 301. Cost: \$700,000.

College Loop (Figure 7.16)
A 13.5 mile loop connecting the Tar River Trail with NC Wesleyan College, Golden East Crossing Mall, Rocky Mount Prep School, the YMCA, and the Sports Complex. Cost: \$2.8 million.

Battleboro Connector (Figure 7.17)
The recently merged community of Battleboro would be connected with this rural bicycle route using paved shoulders on Old Battleboro Road. Cost: \$1.35 million.

West Side Connector (Figure 7.18)
A long route along the western edge of the city, connecting western neighborhoods with Nash General Hospital and six other proposed routes. Cost: \$1.8 million.

Mall-Hornbeam Park Loop (Figure 7.19)
Connects the Golden East Crossing Mall, the YMCA and Sports Complex, Hornbeam Park, and several northwest neighborhoods. Cost: \$450,000.

YMCA Loop (Figure 7.20)
Connects the existing Tar River Trail with the new YMCA and Sports Complex. Cost: \$500,000.

Suggested Priorities

Three levels are used to classify the priority level of each route: short-term, mid-term, and long-term improvements. Short-term improvements are those projects that are recommended for or can be completed within a 5-year period for which \$80,000 is recommended (average \$16,000 per year). Mid-term improvements are expected

to occur between 5 and 10 years into the future for which \$1.65 million in projects is recommended (average \$330,000 per year). Long-term improvements are those projects that fall outside of a 10-year horizon for which a total of \$10.75 million in projects is presented (this would take more than 30 years spending \$350,000 each year). Note that all figures are presented in year 2005 dollars, thus not accounting for inflation or escalation of construction costs. Each route has been classified into one of these priority levels, as shown on the next page in **Table 7.1**. The total network lengths and costs have been adjusted to account for overlapping sections in the individual routes in order to produce accurate overall values.

Funding

Bicycle facility projects can be divided into two types: independent and incidental projects. Independent projects are those that are independent of scheduled highway projects, while incidental projects are bicycle accommodations that are created as a part of a highway project. It is only through the combination of both types of projects that a well-connected and user-friendly network can be created.

The North Carolina General Assembly enacted legislation that authorizes the North Carolina Department of Transportation (NCDOT) to spend any federal, state, local, or private funds available to the Department and designated for the accomplishment of the Bicycle and Bikeway Act of 1974 (see **Chapter 3** and **Chapter 7** for more details).

On August 10, 2005, the President signed into law the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU). With guaranteed funding for highways, highway safety, and public transportation totaling \$244.1 billion, SAFETEA-LU represents the largest surface transportation investment in our nation's history. Provisions address specific safety issues, including bicycle and pedestrian safety.

Funds for bicycle and pedestrian projects come from several different sources that are described in **Chapter 4**; however, allocation of those funds depends on the type of project/program and other criteria.

Rocky Mount Comprehensive Bicycle Plan



Table 7.1 Route and Network Characteristics

Routes	Signed Route	Signed Route with Striped Parking	Striped Bike Lane	Wide Outside Lane	Paved Shoulder	Neighborhood Connector	Multi-Use Path	Length (miles)	Cost
Short-Term									
Downtown Core Loop	✓	✓	✓	✓				4.1	\$25,000
Downtown-East Side Connector	✓							1.7	\$30,000
Downtown-Reservoir Connector	✓	✓						1.5	\$25,000
<i>Short-Term Subtotal</i>									\$80,000
Mid-Term									
Abandoned Rail to Trail							✓	1.3	\$250,000
Downtown Neighborhood Loop	✓	✓	✓				✓	7.7	\$200,000
Tar River Tail Extension							✓	4.5	\$700,000
YMCA Loop	✓				✓		✓	3.5	\$500,000
<i>Mid-Term Subtotal</i>									\$1,650,000
Long-Term									
Battleboro Connector	✓	✓			✓		✓	5.4	\$1,350,000
City Lake-Downtown Trail	✓		✓		✓		✓	1.4	\$250,000
College Loop	✓		✓		✓			14.5	\$2,800,000
East Side Loop	✓		✓	✓	✓			8.5	\$850,000
East-West Connector	✓	✓	✓	✓	✓		✓	4	\$60,000
Englewood Park-City Lake Rail with Trail	✓	✓	✓		✓		✓	4.5	\$450,000
Farmington Park Loop	✓				✓		✓	1.8	\$250,000
Hospital/Stoney Creek Connector Trail	✓				✓		✓	4.9	\$800,000
Johnson Pope-Holly Street Park Loop	✓	✓	✓			✓		2.2	\$20,000
Mall-Hornbeam Park Loop	✓			✓			✓	11.8	\$450,000
Park-Reservoir Connector	✓		✓	✓	✓		✓	1.5	\$400,000
Reservoir Loop	✓		✓	✓	✓		✓	15.9	\$1,250,000
West Side Connector	✓			✓	✓	✓	✓	11.7	\$1,800,000
<i>Long-Term Subtotal</i>									\$10,730,000
Total (length in miles)	34.0	6.0	8.4	13.3	22.4	0.5	27.1	111.7	\$12,460,000



Local Programs

Capital Improvement Program

The Rocky Mount City Council adopted a Capital Improvement Program (CIP) in May 2005 for 2006-2010 totaling \$106.8 million with 175 projects. The first year of the program is valued at \$19.5 million for 94 projects.

Over the course of the CIP (5 years), the City has budgeted \$1.5 million for sidewalk repairs and construction of new sidewalks. However, currently no bicycle projects are among the 175 projects of the CIP. As future Capital Improvement Programs are assembled, there will be an opportunity to allocate funds in order to include this type of project.

Powell Bill

Powell Bill funds are collected by the state in the form of the gasoline tax. These funds are returned by NCDOT to eligible cities and towns for maintaining, repairing, constructing, reconstructing, or widening municipal streets. Powell Bill funds also are used for the construction and maintenance of sidewalks and bikeways located within the rights-of-way of public streets and highways.

Powell Bill funds for the resurfacing of streets and roads over 5 years are included in the CIP at a value of \$3.2 million. Through this road maintenance funding, an incidental bicycle project could potentially be created by supporting road restriping projects that could add bicycle lanes to a roadway without performing any new construction. This also would involve reallocating a portion of the funding currently being used for maintenance to the independent construction of new bicycle facilities.

Transportation Bonds

Voters in growing communities regularly approve the use of bonds in order to improve their transportation systems. Improvements to the bicycle system in Rocky Mount would be a type of project that could be funded using a transportation bond program. No transportation bond initiative is currently in place in Rocky Mount; however, local demand or support for a project or type of project could help to raise interest levels about implementing this type of program.

Parks and Recreation Funding

The City of Rocky Mount's Department of Parks and Recreation is responsible for the expansion and maintenance of its trail and greenway systems. Maintenance for these facilities is appropriated from the General Fund, while facility expansion is a separately considered item. Although no greenway expansion is underway at this time, future expansion of the Tar River Trail or other greenway facilities would be appropriated through the Department of Parks and Recreation budget.

State and Federal Programs

Transportation Improvement Program (TIP)

As a part of the state's Transportation Improvement Program (TIP), bicycle TIP projects can receive allocations through an array of funding resources including Federal Aid Construction Funds and State Construction Funds. As a part of the application process, strict criteria must be met before project selection. These criteria include providing right-of-way information, meeting a set of design standards, showing a need for a project, local support of the project, and the inclusion of the project in a bicycle planning process. Currently, no independent bicycle projects are listed in the TIP for the City of Rocky Mount.

Bicycle projects also may appear in the TIP as incidental projects through another roadway project. For instance, the widening of Hunter Hill Road (TIP # U-3621) is currently projected to include sidewalks and bike lanes. Consideration of bicycle needs during the planning of road projects in the TIP will help to expand the bicycle network in Rocky Mount.

Surface Transportation Program (STP)

STP funds may be used for construction or non-construction bicycle projects. Non-construction projects could include elements such as educational programs, route maps, or brochures with bicycle safety and maintenance tips.

Enhancement Grants

The Enhancement Grant program was established by Congress in 1991 through the Intermodal Surface Transportation Efficiency Act (ISTEA) as a means of ensuring that a variety of projects — most not typically associated with the road-building mindset — were implemented. Enhancement Grant funding is provided



through a 10% subset of the available STP funding for each state. The newly reauthorized federal legislation, *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)*, has continued this program with only minor changes. While 80% of the funding for these grants comes from federal money, 20% is funded at the local level. While the construction of roads is not the intent of the grant, the construction of bicycle facilities is one of many enhancements that the grant targets and could play an important role in enhancing the bicycle safety and connectivity in Rocky Mount.

Rocky Mount has applied for six enhancement grants over the history of this program. Of these, three projects were funded. One bicycle facility grant was applied for but was not received. Future bicycle facilities that would be possible candidates for enhancement grant funding include the rail to trail and rail with trail projects discussed in **Chapter 7**.

Hazard Elimination and Railway-Highway Crossing Programs

These funds are an additional subset of the STP funding, constituting 10% of a state's funds. This program is intended to inventory and correct the safety concerns of all travel modes.

Congestion Mitigation and Air Quality (CMAQ)

CMAQ funds are set aside by the federal government to provide funding opportunities for projects that can demonstrate an appreciable reduction of air pollution by the improvement of transportation facilities. Bicyclists can benefit from this legislation from independent projects such as multi-use paths that would encourage more people to choose non-motorized forms of transportation or from incidental projects that would improve bicycle facilities as a part of another effort.

NCDOT Division Funds

NCDOT separates the state into 14 divisions. Nash County and Edgecombe County are in Division 4. Division funds are another resource that provides allocations or discretionary funding for special projects within each division.

Governor's Highway Safety Program (GHSP)

The Governor's Highway Safety Program is committed to enhancing the safety of the roadways in North Carolina. As a part of this, GHSP funding is provided through an

annual program, upon approval of specific project requests, to undertake a variety of pedestrian and bicycle safety initiatives. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance highway safety. In a bicycle context, this could be used to improve safety at intersections or on corridors where an elevated number of bicycle crashes were observed.

Public/Private Initiatives

Developer Contributions

Rocky Mount does not currently require developers to include bicycle facilities in their developments. However, if setting requirements is not a desired alternative, the developer could be provided with incentives such as reducing the number of parking spaces since there will be an option for people to travel to the site by an alternate mode. Requiring off-site bicycle improvements may be difficult to uphold under the North Carolina statutes.

Policy and Program Initiatives

Based on successful programs in other communities, the City of Rocky Mount collaborated with NCDOT and the project consultants to develop a list of action items for implementation. Ten key measures were identified and are as follows:

1. Establish a standing Bicycle Advisory Committee.
2. Create a seat on the Technical Coordinating Committee for a bicycle advocate.
3. Work with the Tar River Transit to equip transit vehicles with bicycle racks.
4. Through the RMPD increase safe bicycling education and promotion with the local school system.
5. Offer incentives to developers who provide bicycle parking facilities (e.g. reduced number of required automobile parking spaces).
6. Continue good roadway maintenance practices, but be alert to the needs of bicyclists.
7. Through the RM Parks and Recreation Department conduct an annual bicycle event (e.g. local ride, race, challenge).
8. Seek statewide bicycle events to come to the local area (e.g. NC Mountains to Sea and Spring Retreat).
9. Broadcast bicycle promotions from state, federal, and private sources (NCDOT, FHWA, USDOT, bicycle clubs and organizations) on the local cable television

Rocky Mount Comprehensive Bicycle Plan



station, CITY 19. Also develop local bicycle broadcast ads and FYI's.

10. The RMPD should recognize and reward kids bicycling safely with coupons for redemption at local merchants (e.g. free ice cream, pizza, movie ticket).

Evaluation of Routes

Chapter 8 contains detailed discussions of the recommended routes, including focused analyses of barriers such as how to safely cross major highways, rivers, creeks, and railroad tracks. In July 2005, members of the study team rode a sample of the bike routes recommended as a part of this plan. The recommended bicycle system map is shown in **Figure 4.4**. The purpose of riding the area was to obtain a bicyclist's view of the routes and to note the strengths and weaknesses of the routes from the perspective of potential new riders.

The routes were traveled on a Thursday afternoon and Friday morning in periods overlapping the peak hour travel times for commuters. Several other cyclists were observed riding on the routes while the evaluations were being performed. In October 2005, members of the study team drove the routes to collect additional information and check the recommendations. Specific segments were driven again by the study team with city staff to discuss areas that are technically challenging to implement.

Implementing the Plan

A review of the draft plan by the Metropolitan Planning Organization (MPO) Transportation Advisory Committee is scheduled for November 2005. Early in 2006, the City Council is expected to review the draft plan and discuss its recommendations with staff and the consultant. Following City Council approval or adoption, the completed plan with all maps and related materials will be submitted to NCDOT for review and consideration of approval by the Division of Bicycle and Pedestrian Transportation. The City will be required to complete a survey and/or interview after the plan is completed.

Follow-up recommendations after plan adoption consist in part of forming a standing Bicycle Advisory Committee to assist with the implementation of the plan. This committee will consist of members of the general public and city staff who have an interest in bicycling. Working together, there is an increased chance for successful plan implementation. This committee can also help to sustain

public interest in bicycling by helping to promote community bicycle events.

The North Carolina Department of Transportation is credited for beginning the bicycle planning program in North Carolina and for project participation in this plan.

Chapter 1 — Introduction

Vision Statement

Every transportation plan involves an inherent tension: It must map the future with strokes that are broad and bold — and yet it must target investment opportunities with financial realism. Without a bold vision of the future, transportation will not attract the investment it requires to serve the needs of present and future generations. Without a disciplined investment strategy, resources will be wasted and supplemental revenues denied. An effective plan requires both a broad vision and a disciplined investment strategy. Our goal is to chart the future boldly — while committing resources wisely.

The City of Rocky Mount's comprehensive plan, *Together Tomorrow*, outlines a vision for the City: "In the year 2025, Rocky Mount will be a beautiful place to live, work, and play...a city of new excitement and vitality with a high quality of life for all." The City of Rocky Mount is a hub of cultural, social, and economic activity in eastern North Carolina.

The vision for the Comprehensive Bicycle Plan for Rocky Mount is as follows:

- Create a Bicycle-Friendly Community
- Increase Travel Ways for Bicycles
- Develop a Viable Bicycle Transportation System
- Promote the Safety and Health of Users
- Create Transportation Choices
- Advance the Community's "Livability"

History

Bicycles became popular in America in the late 1800s as a practical and relatively inexpensive means of short-range travel for work or recreation. Although bicycles were originally intended as transportation only for adults, designers quickly found a market with younger riders and began manufacturing smaller models. People of all age groups and economic backgrounds enjoyed cycling. Bicycles soon joined carriages, horses, streetcars, and



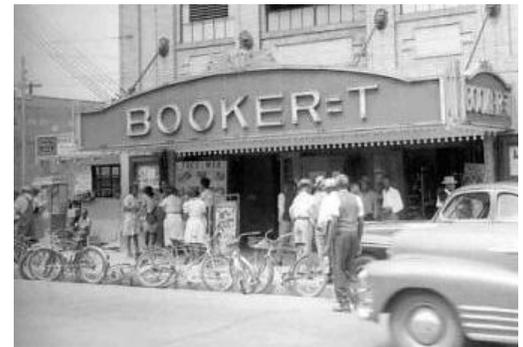
1886-Model for Two (The National Archive)

pedestrians on city streets and also had an important role in civic services such as law enforcement.

At the turn of the century, a growing Rocky Mount also experienced the popularity of the

bicycle. It became convenient to ride a bicycle into or across town for errands, work, school, or visiting friends. With a population over 5,000 in the early 1900s, downtown Rocky Mount buzzed with activity around the railroad, a successful cotton mill, and a busy tobacco market. These allowed for many "firsts" for the town,

including the first daily newspaper (*The Rocky Mount Evening Telegram*), the first library, the first public school, and others. A national "first," the introduction of the age of automobiles,



The Booker-T Theater on East Thomas Street
(City of Rocky Mount)

caused a drop in adults' interest in bicycling, but it remained a favorite activity among children and teenagers. Residents of the city were attracted to the social hot spots and shopping in the downtown area, often traveling by bicycle. In addition to the cycling clubs that formed for social activities, bicyclists united in areas across the country to support a movement for better roads on which they could ride (League of American Wheelman). As downtown daily traffic increased, bicycle safety became important to cyclists, automobile drivers, police, and highway authorities. Several State Departments of Transportation formed committees or divisions responsible for implementing bicycle programs, such as safety education courses in schools. Bicycling had become more than a trend and called for rules, regulations, and rights.

Bicycling legislation began in North Carolina in 1929, when the General Assembly legally defined the bicycle as

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a vehicle and gave it the same status as automobiles on North Carolina highways. In 1974, the General Assembly passed the *Bicycle and Bikeways Act*, establishing the first statewide bicycle program in the United States. This act authorized the North Carolina Department of Transportation (NCDOT) to carry out comprehensive bicycle planning and programming. The NCDOT continues to promote a positive environment for bicyclists and accomplish goals established by the 1974 Act through efforts of the Division of Bicycle and Pedestrian Transportation.

Federal legislation in the 1990s introduced major changes in transportation planning ideas and methodologies for state and local officials. The federal 1992 Intermodal Surface Transportation Efficiency Act (ISTEA) and the 1998 Transportation



Local citizen on a business errand

Equity Act for the 21st Century (TEA-21) allowed more local involvement in the project planning phases to make sure that federal funding was allocated to the most important community priorities. ISTEA and TEA-21 encouraged the development of safe and efficient multimodal transportation facilities, including bicycle facilities and provisions. This study is made possible through a planning grant from the NCDOT Bicycle and Pedestrian Transportation Division. It is intended to serve as a master plan for future investments of local, state, and federal monies.

Today, bicycling as a primary means of transportation is widely popular in densely populated cities around the world. Sometimes commuters find cycling more efficient, affordable, and/or convenient than traveling by automobile on congested urban streets. Although most of the transportation mode split percentage belongs to cars and trucks in the United States, bicycling is still the first (and sometimes the only) choice for some people. Bicycling is recognized to be an appealing alternative because of benefits such as:

- **It is environmentally-friendly.** Cyclists power the machines themselves and do not use fossil fuels. Since bicycles do not release polluting emissions into the air and run on gears versus engine power, both air and noise qualities are improved.
- **Bicycling promotes good health practices.** The United States Surgeon General advises Americans to get 30-60 minutes of exercise 4 to 6 times each week. Bicycling is a low-impact way to exercise and can improve a person's health by lowering blood pressure, strengthening muscles, lowering stress levels, increasing the size, strength, and efficiency of the heart and cardiovascular system, burning fat, and increasing metabolism.
- **It represents the "livability" of a place.** Being able to reach a destination via bicycle gives people another alternative for choosing a travel mode. It combines the functionality of actually getting there with the benefits of exercise and recreation. In places where residents are regularly seen outside walking or bicycling, visitors feel a sense of community and safety there. A city with great "livability" constantly attracts new residents and businesses.
- **The economics of bicycling make sense.** According to a study by the Boston Foundation, in 2003, typical American households spent an average of \$7,125 on transportation costs, including insurance, repair, maintenance, fuel costs, taxes, and other fees - a significant annual investment. The average cyclist only spends \$120 per year on bicycle costs. Choosing to ride a bicycle versus the bus or personal automobile could save one person thousands of dollars in a single year.
- **Bicyclists can generally avoid traffic congestion.** Since a bicycle only takes up about a quarter of the physical space that the average car does, cyclists can maneuver more easily through traffic in urban areas. Often, cyclists can use dedicated bicycle lanes or greenways, which allow for an even more efficient trip.

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- **It's so easy.** According to a 1995 National Personal Transportation Survey, analysts found that approximately 40 percent of all trips made are less than two miles in distance from origin to destination. This means that most bicyclists can make the trip in approximately ten minutes.

Goals and Objectives

Working with the Bicycle Advisory Committee and the City of Rocky Mount, the following Short and Long-Range Goals and Objectives were developed:

Short-Range:

- Organize periodic events that encourage new riders and promote safety.
- Pursue funds to construct high priority facilities.

Long-Range:

- Increase the number of people who regularly bicycle.
- Increase public awareness of bicycling as a viable mode of travel.
- Promote the rights and responsibilities of bicyclists, pedestrians, and motorists in a shared transportation network while improving safety and enforcement.
- Ensure bicycle accommodations are considered, where consistent with the Plan, in a balanced approach to planning and funding transportation projects.
- Create additional physical activity opportunities in Rocky Mount, increasing physical and mental wellness, as well as improving air quality for all.
- Provide improved opportunity and access for bicycling to all residents.
- Encourage the design, finance, and construction of transportation facilities that provide safe, secure, and efficient linkages for bicyclists throughout the City.

- Stimulate the local economy by providing safe and efficient bicycle connectivity between neighborhoods, businesses, recreation areas, and tourist sites.
- Encourage safe riding practices on roads and trails.
- Promote the development of seamless transitions for all bicycle facilities which cross over the city limit.

Scope and Purpose of Plan

This report summarizes the current condition of Rocky Mount's bicycle system. It specifically examines the current use of Rocky Mount's road network for bicycling as well as its off-road facilities. The challenge now is to parlay the vision developed with the Bicycle Advisory Committee and public involvement into an interconnected bicycle plan. However, only through a strong implementation strategy will the bicycle planning efforts of the City of Rocky Mount become a reality. If this is done, the Rocky Mount of the future promises to be a more bikeable and livable community.



Rocky Mount
Bicycle Police

2004 NC Mountains
to Sea Ride Stops
in Rocky Mount



Chapter 2 — Evaluating Current Conditions

Overview

One hallmark of a liveable community is how well it accommodates cyclists. The gap between the tremendous potential for bicycling in the City of Rocky Mount and the current conditions is raised in almost every discussion about bicycling in the city. Throughout the public involvement process associated with this plan, residents expressed a strong desire for improvements to the conditions and opportunities for bicycling. Citizens want to be able to bicycle safely within their community to run errands, shop, visit friends and neighbors, exercise, and get to work. Similarly, public agency staff and local officials recognize the need to improve safety and opportunities for bicycling throughout the area.

Determine Community Concerns, Needs, and Priorities

Types of Cyclists

In order to develop an appropriate bicycle element of a transportation plan, the following “ABCs” of cyclists need to be understood.

Advanced Cyclists — These are usually experienced cyclists who have the ability to safely ride under more typical thoroughfare conditions of higher traffic volume and speed. This group of cyclists generally prefers shared roadways as opposed to striped bike lanes and paths. Although surveys show this group represents only about 20 percent of all cyclists, they also show that these cyclists ride about 80 percent of the bicycle miles traveled yearly. With monthly street sweeping of gutter debris, advanced cyclists typically accept striped bike lanes.

Basic Cyclists — These cyclists are casual or new adult and teenage riders less secure in their ability to ride in traffic without special accommodations. They typically prefer bike paths and bike lanes on collector or arterial streets with less exposure to fast-moving and heavy traffic. Surveys of the cycling public indicate that 80 percent of cyclists can be categorized as basic cyclists.

Child Cyclists — This group, which is a subset of the basic cyclists, includes children (aged 12 and under) on

bicycles who have a more limited field of vision as they ride. This group generally keeps to neighborhood streets, sidewalks, and greenways. When children venture out onto busier roadways, they typically stay on sidewalks or bicycle facilities that keep them safely away from traffic. Given the comfort level of these cyclists, it is recommended that areas in Rocky Mount lacking bike lanes allow children and other cyclists who are uncomfortable riding in traffic to ride on sidewalks with the requirement that they yield to pedestrians.

Cyclists, not unlike drivers, generally become more experienced over time and miles of riding. As cyclists ride and gain more experience operating in traffic, they eventually graduate from the classification of a basic cyclist to an advanced cyclist more capable of operating under typical roadway conditions.

Facilities

As with the definitions for the types of cyclists, it also is important to understand the differences between the types of facilities.

Wide Outside Lanes — This type of facility is often

referred to as a “wide outside lane,” a “shared lane,” or a “wide curb lane.” These facilities provide extra width in the outermost travel lane on either single- or multi-lane roadways to accommodate cyclists.

Typically, shared lane facilities have an outer lane width of 14 feet on multi-lane roadways and 15 feet on two-lane roadways. In both situations, 14 feet should be considered the necessary width and 15 feet should be considered the desired width. It is important to note that the lane width that is measured on this facility type does not include the width of the gutter adjacent to the travel lane. This facility is most appropriate on travel routes with moderate traffic volumes and is suitable for cyclists who are comfortable riding with the flow of regular traffic. These routes can be ridden by basic cyclists, but are most often preferred by advanced cyclists.



Wide outside lane/shared lane

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Striped Lanes — This type of facility consists of an exclusive-use area adjacent to the outermost travel lane. The area delineated for cyclists is a minimum of 4-foot-wide and is marked by a solid white line on the left side and frequent signs and stenciled pavement markings indicating either “Bike Only” or another such message so as to deter vehicles other than bicycles from using the lane for travel. In situations where a striped lane encounters on-street parking, extra width is required, most often a minimum of one additional foot (5-foot total lane width). As with the shared lane facility, delineated bike lane minimum widths do not include any curb-and-gutter that may exist, as these areas may be unsuitable for bicycle travel. Striped bike lanes are one of the facilities of choice for basic and child cyclists because they offer a measure of security (separation from vehicles) not found in all other facilities.

Multi-Use Paths (one side of street) — This type of facility is typically a minimum 10-foot-wide asphalt path that runs parallel to the street and is shared by pedestrians and cyclists. These paths are set back from the curb by a planted verge area that is a minimum width of 5 feet. It



Multi-use path parallel to a roadway with a drainage ditch

generally unacceptable to construct this type of facility where there are frequent curb cuts and intersections because the chance for conflicts between cyclists and vehicles is dramatically

increased. This facility type is generally suitable for all levels of cyclists, but is most often preferred by basic and child cyclists. Off-road multi-use paths can increase the value of neighboring real estate and protect existing corridors from development. Trails and other greenway corridors promote parkland development, wetland preservation, and environmental protection.

Signed Routes — This type of route is created in cases where no room or need exists to create additional space for cyclists. Ideally, signed routes lead cyclists through the “quieter” streets of a city, using neighborhood streets where traffic speeds and volumes are low. This type of route is good for cyclists of any level, provided it is planned on streets that have low traffic volumes and

speed. Signed routes are helpful in wayfinding to link neighborhoods with networks of greenways and bike lanes.

Public Involvement

As a part of the bicycle planning process, an extensive public involvement process was conducted. A Bicycle Advisory Committee (BAC) was formed to meet regularly and discuss the formation of the plan. The BAC was made up of local and state officials, as well as members from concerned local businesses and agencies and independently interested citizens. Representatives from the City of Rocky Mount consisted of members of the engineering, parks and recreation, transit, and police departments. This group helped shape the goals and objectives for the plan and had an active role in developing the final product.



The public involvement process was not limited to the contribution of the BAC. On April 30, 2005, Kimley-Horn and the City of Rocky Mount hosted a bicycle ride-about. The ride-about was publicized via newspaper, television, fliers, and word of mouth far in advance, which yielded an impressive turnout of 40 people. During this ride-about, citizens were urged to come and learn about

BIKE RIDE FOR FUN
ROCKY MOUNT CITY STREETS BICYCLE RIDE-ABOUT
SAVE THE DATE
Saturday April 30, 2005
WHERE TO MEET
Meet at Sunset Park- Shelter B
SCHEDULE
9 AM: Bicycle Youth Rides
10 till Noon: 7 mile trip on low speed low traffic streets including the Tar River Trail
WHAT TO BRING
Bring a picnic lunch, water bottle, helmet & bicycle
Sponsored by the City of Rocky Mount Engineering Department to announce the beginning of a Rocky Mount Bicycle Comprehensive Plan. For more information contact Bob League - Transportation Planner at 919-1129 or league@clm.rokymount.nc.gov

Rocky Mount Comprehensive Bicycle Plan



the bicycle planning process and to participate in a 7-mile bike ride around the central portion of the city. In this way, the city and consultants were able to learn first-hand about the problems faced by the riding public. The ride-about utilized the



expertise of the Rocky Mount Police Department to assist in developing a safe and enjoyable route and to monitor

riders' progress across potentially dangerous intersections. Police officers also conducted a bicycle rodeo prior to the ride-about to teach children about proper bike riding and safety techniques.

In addition, maps were provided in an effort to obtain comments from the public about common origin and destination points as well as improvement or route suggestions.



The City of Rocky Mount conducted a bicycle planning survey in conjunction with the

comprehensive bicycle planning efforts. This survey, which was distributed at the ride-about and available online, asked questions aimed at determining riding preferences, tendencies, and recommendations. A full copy of the survey questions and responses is available in the Appendix.

Fifty-six percent of the seventy-seven people surveyed classify themselves as basic level riders, while the other 44 percent say they are advanced riders. The majority of respondents ride their bicycles one or more times per week, though mostly for shorter trips (less than 10 miles). Most people ride their bicycles primarily for exercise and recreation, though smaller percentages also use their bicycles to run errands and travel for work and non-work trips. Respondents feel that route safety is the most important consideration determining whether they would make a trip by bicycle, with traffic, weather, and the need for exercise being other significant determining factors. Consequently, when asked to rate the streets of Rocky Mount for different types of hazards, participants stated that cars ignoring or crowding bicycles and roads that are too narrow to accommodate both cars and bicycles are their biggest concerns. The presence of striped bicycle lanes is the attribute that would most enhance the riding experience of survey respondents, with bike route signage, clean road surfaces, and maps of bike routes being other important attributes.

Survey participants were also asked questions regarding typical bicycle origins and destinations and suggested route improvements. The most bicycled roadway by survey respondents is West Mount Drive, in the southwestern part of the city. Other frequent responses fell mostly in the western and central portions of the city. The most frequently recommended route improvement is Sunset Avenue. Winstead Avenue, Benvenue Road, US 301, Hunter Hill Road, and Halifax Road are all facilities that are also recommended for improvement. With the exception of two major north-south connectors, most of the suggested roads were in the western and central portions of the city.

Assess Bicycle and Pedestrian Friendliness of Local Transportation System

Community needs can be assessed in other ways besides public involvement. The City of Rocky Mount compiled a record of bicycle crashes for the years 2001 through 2004 (122 crashes). The most frequent locations are listed in **Table 2.1**, along with the location of a recent bicycle fatality crash. These locations are also shown in **Figure 2.1**.

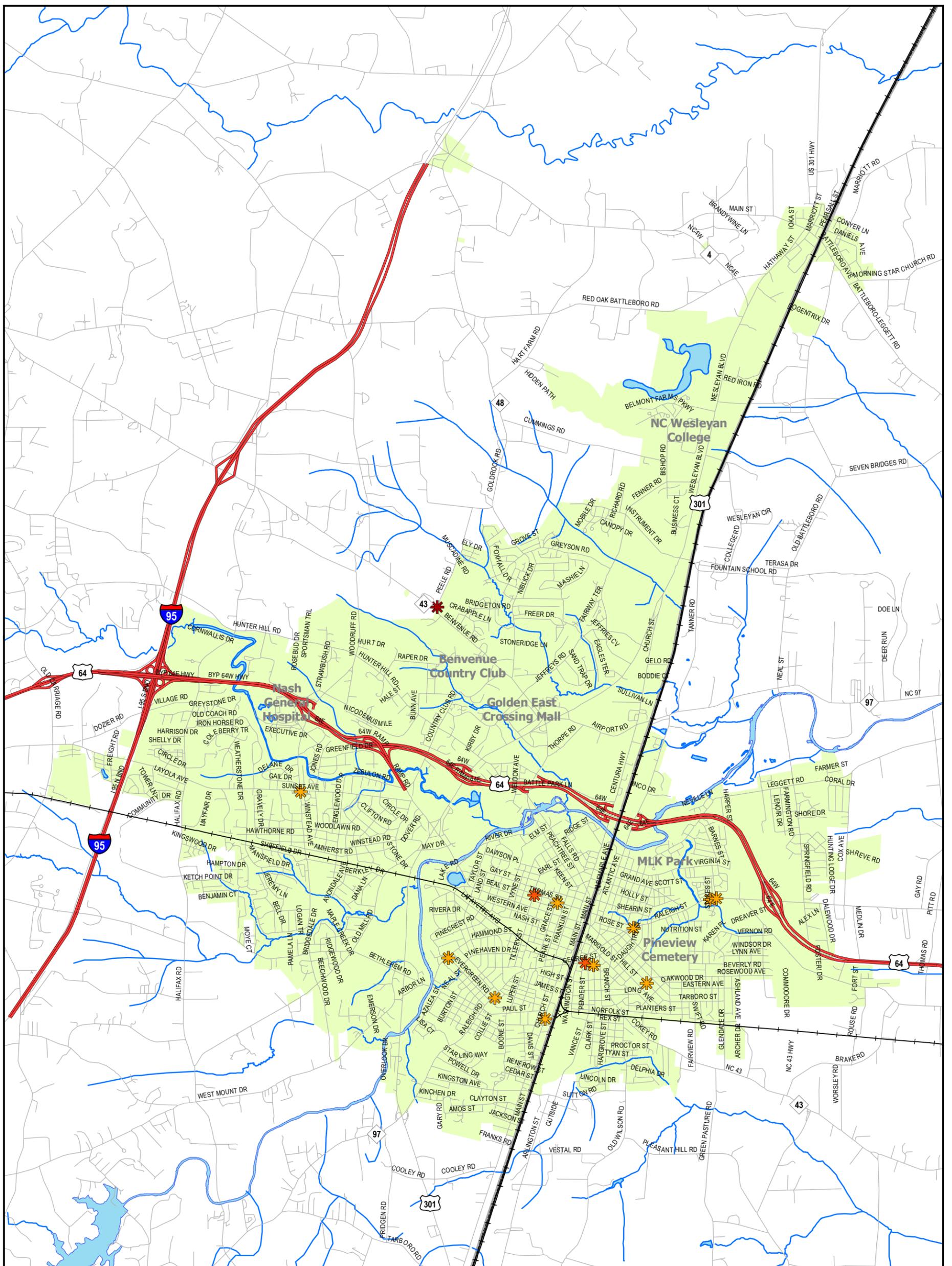


Figure 2.1
Bicycle Crash Locations

Kimley-Horn
and Associates, Inc.



Legend

- | | |
|------------------------|-------------------------|
| Bicycle Crashes | Bodies of Water |
| Fatality (2005) | Rocky Mount City Limits |
| 2 crashes (2001-2004) | County Lines |
| 3 crashes (2001-2004) | |



0 1
Miles



Table 2.1 Bicycle Crash Locations, 2001-2004

Location	# of Crashes
George St. at Arlington St.	3
Thomas St. at Tillery St.	3
Church St. at Daisy St.	2
Edgecombe St. at Clark St.	2
Hammond St. at Evergreen Rd.	2
Raleigh Rd. at Russell St.	2
Raleigh St. at Pinehurst St.	2
Raleigh St. at Stokes St.	2
Raleigh St. at Thomas St.	2
Sunset Ave. at Winstead Ave.	2
Tarboro St. at Redgate Ave.	2
Thomas St. at Grace St.	2
Peele Rd. (2005)	1 (fatality)

The occurrence of the recent fatality crash on Peele Road brings to light the importance of bicycle safety in Rocky Mount.

Off-road bicycle travel is provided by the Tar River Trail, a 3.12 mile multi-use path that connects Sunset Park, Battle Park, Tom Stith Park, Talbert Park, and Martin Luther King Jr. Park. This trail is a valuable connector between different sides of the city that allows the user to safely bypass several major roads. In addition, the Tar River Trail includes two bridges outfitted to accommodate bicycles and pedestrians that cross the river. One of these is a picturesque wooden arch bridge across the Tar River that is dedicated solely to non-motorized use. The other is a bicycle and pedestrian cantilever section off of the Peachtree Street Bridge that allows non-motorized traffic to cross the Tar River separately from vehicles. This bridge has grating for its floor and as a result might not be suitable for some road bikes. In other sections of the trail, there has been some tree root damage, also making it difficult to navigate for road bike users.

Road conditions for bicyclists in Rocky Mount today are in need of improvement. While the street system in the majority of the city is well connected, there are no dedicated bicycle facilities on the roads. Other than the two bridges associated with the Tar River Trail, there are no bridges with bicycle facilities; however, some bridges

do have wide shoulders that could accommodate bicycles. There are also some minor arterial, collector, and residential streets with wide lanes that could be signed or striped to indicate their use for bicycles.

Current Usage/User Demographics

According to the 2000 Census, the population of the City of Rocky Mount is 56,244. 96.5% of the population of the city is considered to live in an urban area, which would indicate better connectivity to services and businesses compared with rural areas. The majority of the population is middle-aged, with only 13.1% over the age of 64 (as seen in **Table 2.2**). This seems to indicate that most of the population would be at an age where they could comfortably ride a bike for recreational and non-recreational purposes. The median household income in Rocky Mount is approximately \$33,000, which is only 78% of the national average of \$42,000. Out of all of the households in the city, 20.1% are below the poverty level. Also, 50.9% of the City of Rocky Mount's households own either no or one vehicle. This portion of the population may be less likely to use a car for transportation, instead turning to bicycling and walking.

Table 2.2 Age of Rocky Mount Population

Age Group	Amount	Percent
Under 18	15,576	27.7
18 to 24	5,261	9.4
25 to 34	6,794	12.1
35 to 44	9,053	16.1
45 to 54	7,609	13.5
55 to 64	4,563	8.1
65 and Over	7,388	13.1

Source: 2000 U.S. Census

Geographically, Rocky Mount is well suited to bicyclists. There are some rolling hills but the terrain within the city limit is for the most part flat. The existing road system has been observed to be used extensively by bicyclists. Bicyclists were seen mostly in the central areas of the city. However, it was commonplace to observe these individuals not observing the correct rules of the road. There appears to be a need for further education of the public about the proper safety techniques for riding a bicycle.



Inventory and Assess Existing Facilities

As of today, the only designated bicycle facility that Rocky Mount has is the Tar River Trail. This trail is well suited to bicycle use since it is a dedicated guideway for non-motorized travel. The Tar River Trail provides the opportunity to safely cross several barriers in the city and has a well-marked crosswalk to assist in crossing Falls Road and Peachtree Street. The trail is wide enough for two-way traffic to pass. Although the trail is paved, there are some sections with tree root damage that would make riding with a road bicycle challenging. The Tar River Trail also connects many destination points in the city, providing many recreational opportunities. Extensions to either end of the trail would allow for greater access from the central parts of the city.

There are no streets with signed bicycle facilities on them at this time in Rocky Mount. The street system is relatively well-connected in most areas of the city. Many residential roads in the area are wide with low traffic volume, creating an environment favorable for bicyclists. However, the presence of major arterials, freeways, and other barriers such as the Tar River make traveling for the bicyclist difficult. The current road network does not provide the type of interconnectivity (through shared lanes, striped lanes, and multi-use paths) that the average rider would require to travel comfortably throughout the city. Key barrier crossings with potential mitigation measures are discussed in **Chapter 8**.

Chapter 3 — Existing Plans, Programs, and Policies

Prior planning documented by various departments of city government create a window for those of us who follow to peer inside and begin to understand what may occur in the future. **Plans** adopted by the City establish intent and how pieces of the community design and development fit together. Adopted **programs** indicate intent to provide funds, although subject to the availability of future funds. **Policies** represent statements that are intended to influence and determine future actions made by the city.

Local Plans

In 2003 the Rocky Mount City Council approved a Comprehensive Plan entitled *Together Tomorrow*. It serves as the official policy document for the City Council, Planning Board, other Boards, the City Manager and his team. Chapter 5 – Transportation states the following goal, objective and strategies related to bicycling.

GOAL:

“A transportation system that improves vehicular traffic flow, expands public transportation services, enhances maintenance and appearance of roadways, increases travel ways for pedestrians and bicyclists and promotes traffic safety.”

OBJECTIVE: **“Increase travel ways for Pedestrians and Bicyclists”**

“A resurgence of interest in making communities more pedestrian-friendly is spreading throughout the nation. It begins with building sidewalks and pathways that connect people with destinations. The interconnected network of walkways and bikeways promotes walking and bicycling and reduces some auto driving and associated parking problems.”

STRATEGIES:

“Provide bike lanes and wide outside lanes for recreational and commuting users. The City should conduct a comprehensive review of existing streets to determine when and where a bikeway network is needed. Standards should be considered that determine when a bike lane (on street) is

appropriate as opposed to bike paths (separated from the traffic). A policy should be considered that requires wide outside lanes for bike access and sidewalks on all new widening projects, especially those undertaken by NCDOT.”

“Coordinate these bike paths and sidewalks with other pedestrian and biking friendly improvements. Provide appropriate crosswalks, traffic lights and bridge crossings to minimize the barriers to pedestrian and bike travel within the community. Increase the presence of street lighting to improve safety for evening use. Such improvements will significantly improve the safety and well-being of the public as well as increase satisfaction in the user.”

“Investigate the feasibility of acquiring abandoned rail corridors for use in completing a trail and / or greenway network. Some of the country’s most popular routes for pedestrians and bicyclists are retrofitted trails built in abandoned railway corridors. The national organization known as Rails-to-Trails has been successful in creating the American Tobacco Trail connecting Durham and Cary with surrounding areas. Rocky Mount could consider similar initiatives and enlist the help of the Rails-to-Trails group. The City should investigate the availability of grant funds to accomplish this strategy and link improvements to a Bikeway / Greenway Master Plan that identifies areas where bikeways / greenways are needed.”

In 2004, the Rocky Mount City Council approved the Sunset Avenue Corridor Plan which includes a transportation element. In it is the statement “The bicycle is another mode of travel and represents another user of Sunset Avenue. Since only skilled and experience riders should ever consider biking on a busy corridor like Sunset Avenue, the number of cyclists there is few. Sunset Avenue is not designated as a bike route, and thus this corridor does not include signage, pavement markings, or a wide lane to facilitate bicycle use.”

Local Programs

The capital improvement program adopted by the Rocky Mount City Council in May 2005 includes several public works projects to improve roadways and build sidewalks.



However, there are no projects included to build bikeways or greenways.

Local Policies

In 2004, the Rocky Mount City Council adopted a *Collector Street Plan* as a complement to the city's *Thoroughfare Plan* and *Comprehensive Plan*. Residential collector streets are two-lane, two-way streets with posted speed limits of 35 mph or less. They typically have homes fronting the street and may permit on-street parking. Examples in Rocky Mount include Michael Scott Drive, Westwood Drive, Foxhall Drive, Barnes Street, Wellington Drive, Rosewood Avenue, Courtland Avenue, Ketchpoint Drive, East Virginia Street, and Winstead Road. The benefits of interconnecting a network of collector streets extends to pedestrians and bicyclists, based on the recommendations of the Plan to require sidewalks and bicycle accommodations on each collector street. The *Collector Street Plan* identifies a connected transportation network using general (not exact) proposed corridors for future collector streets. The exact location of future collector streets and the timing of construction will be determined by future land development. Relevant goals and objectives included in the *Collector Street Plan* are listed below:

GOAL: *Enhance pedestrian and bicycle amenities and promote public transportation services.*

OBJECTIVE:

Develop proposed cross sections for collector streets that describe each type of collector (residential, commercial, and industrial) in terms of accommodation for pedestrians, bicycles, transit, automobiles, and other users. Properly designed collector streets foster alternative modes of transportation and should serve as the primary means of transporting bicyclists, joggers, pedestrians, and motorized wheelchairs within and through residential areas.

*Incorporate existing bicycle, pedestrian, open space, and transit plans identified in *Together Tomorrow, the Comprehensive Plan for Rocky Mount*, including provisions for future connections and service to future activity destinations.*

GOAL: *Develop a collector street system that improves vehicular traffic flow and promotes travel safety.*

OBJECTIVE:

Develop general guidelines for traffic calming use and identify benefits and applications to reduce travel times without increasing travel speeds on collector streets.

Develop spacing standards and access management strategies that minimize driver confusion and conflicts between vehicles and pedestrians.

Local Ordinances

City ordinances related to bicyclists are listed below.

Sec. 20-161. Operation on sidewalks.

It shall be unlawful for any person to operate a bicycle upon any sidewalk in any business or commercial area, including the fire district, in the city. (Code 1967, § 6-4)

Sec. 20-162. Clinging to moving vehicles.

It shall be unlawful for any person while riding a bicycle to hold on to a moving automobile, truck or other vehicle. (Code 1967, § 6-5)

Sec. 20-163. Riding double.

It shall be unlawful for the operator of a bicycle when upon a street to carry any other person on the handlebar, frame or other part of the bicycle, and it shall be unlawful for any person to so ride upon a bicycle. (Code 1967, § 6-6)

State Bicycle Statutes

A good resource for North Carolina statewide laws involving bicyclists', pedestrians' and motorists' responsibilities in interactions with bicyclists and pedestrians is online at <http://www.ncdot.org/transit/bicycle/laws>. Following are highlights provided at this website:

In North Carolina, the bicycle has the legal status of a vehicle. This means that bicyclists have full rights and responsibilities on the roadway and are subject to the



regulations governing the operation of a motor vehicle. North Carolina traffic laws require bicyclists to:

- Ride on the right in the same direction as other traffic
- Obey all traffic signs and signals
- Use hand signals to communicate intended movements
- Equip their bicycles with a front lamp visible from 300 feet and a rear reflector that is visible from a distance of 200 feet when riding at night.

In addition, the Child Bicycle Safety Act of 2001 requires that:

- All bicycle operators under 16 years of age must wear a bicycle helmet on public roads, public paths and public rights-of-way. Although the law does not require adult bicyclists to wear helmets, they are strongly encouraged to do so.
- All child passengers under 40 pounds or 40 inches must be seated and secured in a child seat or a bicycle trailer.

Legal Issues Related to Bicycling

Laws pertaining to the operation of a bicycle vary from state to state. Below are three areas of North Carolina law that need clarification.

Bicycling on Interstate or fully controlled, limited access highways, such as beltlines, is prohibited by policy, unless otherwise specified by action of the Board of Transportation.

There is no law that requires bicyclists to ride single file, nor is there a law that gives cyclists the right to ride two or more abreast. It is important to ride responsibly and courteously, so that cars may pass safely.

There is no law that prohibits wearing headphones when riding a bicycle; however, it is not recommended. It is important to use all your senses to ensure your safety when riding in traffic.

Following are paraphrased sections of the North Carolina Motor Vehicle Code (from the North Carolina General

Statutes) that apply to bicyclists. Note that use of the term “vehicle” includes bicycles.

Where the Law Applies

The law extends beyond the roadway where most people think of motor vehicle laws being applied and includes certain public areas where conflicts between bicyclists and motor vehicles may occur. It includes any area that is generally open to and used by the public for vehicular traffic, including by way of illustration and not limitation any drive, driveway, road, roadway, street, alley, or parking lot upon the grounds and premises of:

- a. Any public or private hospital, college, university, school, orphanage, church, or any of the institutions, parks or other facilities maintained and supported by the State of North Carolina or any of its subdivisions including City of Rocky Mount parks; or
- b. Any service station, drive-in theater, supermarket, store, restaurant, or office building, or any other business, residential, or municipal establishment providing parking space for customers, patrons, or the public; or
- c. Any property owned by the United States government.

Required Lighting Equipment

Every bicycle shall be equipped with a lighted lamp visible up to three hundred feet in front when used at night and must also be equipped with a taillight or rear reflector that is red and visible for up to two hundred feet from the rear when used at night.

Obedience to Railroad Signal

Whenever any person driving a vehicle (including a bicycle) approaches a railroad grade crossing under any of the circumstances stated in this section, the driver of the vehicle shall stop within 50 feet, but not less than 15 feet from the nearest rail of the railroad and shall not proceed until he can do so safely.

Riding On Right Side of Highway

Bicyclists should operate on the right half of streets and highways except as follows:

- when overtaking and passing another vehicle proceeding in the same direction under the rules governing such movement;



- when an obstruction exists making it necessary to drive to the left of the center of the highway; provided, any person so doing shall yield the right-of-way to all vehicles traveling in the proper direction upon the unobstructed portion of the highway within such distance as to constitute an immediate hazard;
- upon a highway divided into three marked lanes for traffic under the rules applicable thereon; or
- upon a highway designated and signposted for one-way traffic.

Upon all highways any vehicle proceeding at less than the legal maximum speed limit shall be driven in the right-hand lane when available for thru traffic, or as close as practicable to the right-hand curb or edge of the highway, except when overtaking and passing another vehicle proceeding in the same direction or when preparing for a left turn.

Overtaking

The driver of any such vehicle overtaking another vehicle proceeding in the same direction shall pass at least two feet to the left thereof, and shall not again drive to the right side of the highway until safely clear of such overtaken vehicle.

Limitations on Privilege of Overtaking and Passing

The driver of a vehicle shall not drive to the left side of the center of a highway, in overtaking and passing another vehicle proceeding in the same direction, unless such left side is clearly visible and is free of oncoming traffic for a sufficient distance ahead to permit such overtaking and passing to be made in safety.

The driver of a vehicle shall not overtake and pass another vehicle proceeding in the same direction upon the crest of a grade or upon a curve in the highway where the driver's view along the highway is obstructed within a distance of 500 feet, or at any railway grade crossing nor at any intersection.

The foregoing limitations on overtaking and passing shall not apply upon a one-way street nor to the driver of a vehicle turning left in or from an alley, private road, or driveway.

Following Too Closely

The driver of a motor vehicle shall not follow another vehicle (including a bicyclist) more closely than is reasonable and prudent, having due regard for the speed of such vehicles and the traffic upon and the condition of the highway.

Bicycle Racing

Bicycle racing on the highways is prohibited except when a racing event has been approved by State or local authorities on any highway under their respective jurisdictions. Approval of bicycle highway racing events shall be granted only under conditions which assure reasonable safety for all race participants, spectators and other highway users, and which prevent unreasonable interference with traffic flow which would seriously inconvenience other highway users.

By agreement with the approving authority, participants in an approved bicycle highway racing event may be exempted from compliance with any traffic laws otherwise applicable thereto, provided that traffic control is adequate to assure the safety of all highway users.

Child Safety

Disability and death of children resulting from injuries sustained in bicycling crashes are a serious threat to the public health, welfare, and safety of the people of this State, and the prevention of that disability and death is a goal of all North Carolinians. Head injuries are the leading cause of disability and death from bicycling crashes. The risk of head injury from bicycling crashes is significantly reduced for bicyclists who wear proper protective bicycle helmets; yet helmets are worn by fewer than five percent (5%) of child bicyclists nationwide. The risk of head injury or of any other injury to a small child who is a passenger on a bicycle operated by another person would be significantly reduced if any child passenger sat in a separate restraining seat.

The purpose of this article in state law is to reduce the incidence of disability and death resulting from injuries incurred in bicycling crashes by requiring that while riding on a bicycle on the public roads, public bicycle paths, and other public rights-of-way of this State, all bicycle operators and passengers under the age of 16 years wear approved protective bicycle helmets; that all bicycle passengers who weigh less than 40 pounds or are less than 40 inches in height be seated in separate restraining

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seats; and that no person who is unable to maintain an erect, seated position shall be a passenger in a bicycle restraining seat, and all other bicycle passengers shall be seated on saddle seats.

Right-of-Way at Crosswalks

Where traffic-control signals are not in place or in operation the driver of a vehicle including a bicycle shall yield the right-of-way, slowing down or stopping if need be to so yield, to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at or near an intersection.

The driver of a vehicle emerging from or entering an alley, building entrance, private road, or driveway shall yield the right-of-way to any pedestrian, or person riding a bicycle, approaching on any sidewalk or walkway extending across such alley, building entrance, road, or driveway.

Review Relevant Local, Regional, and State Plans and Guidelines

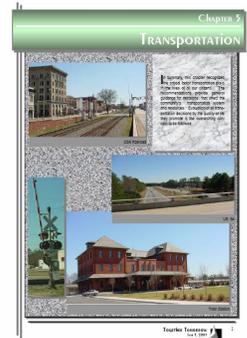
In November 2004, the Rocky Mount Urban Area Municipal Planning Organization (MPO) adopted the *Transportation Plan 2030*, in which Section 4.3 addressed the “Bicycle Element.” The first two phases of the Tar River Trail were completed in 2001, and the *Transportation Plan* identified the overall completion of the Trail as the MPO’s top bicycling priority. The MPO also established action items to pursue short-term goals such as:

- Evaluating the potential for development of a scenic bikeway within the planning area,
- Identifying existing residential streets that may be used to develop local bicycle routes,
- Compiling a list of initiatives that would seek to make bicycling more viable within the MPO (i.e. establishment of a Bicycle/Pedestrian Advisory Committee, procurement of bicycle racks for local parks, public gathering places, etc.),
- And development of a brochure for distribution promoting bicycle use locally.

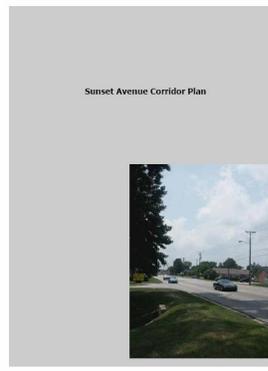
On June 9, 2003, the City of Rocky Mount adopted *Together Tomorrow*, a Tier 1 Smart Growth

Comprehensive Plan. Chapter Five, Section Six of *Together Tomorrow* addresses the City’s transportation needs for bicycling facilities and notes that citizens who attended the public workshops and neighborhood meetings for the local Thoroughfare Plan and Transportation Plan “expressed an interest in having the MPO evaluate more bicycle-related improvements within the planning area.” In 2003, the most important bicycling project within the MPO was the newly completed Tar River Trail, including two pedestrian/bike bridges connecting Battle Park and Stith-Talbert Park to the system.

Together Tomorrow and other long-range planning documents identify Sunset Avenue (US 64 Business) as a major corridor through the City. There are currently no pedestrian or bicycle facilities on Sunset Avenue. In the *Sunset Avenue Corridor Plan* (July 2004), the bicycle is



identified as “another mode of travel and represents another user of Sunset Avenue. Since only skilled and experienced riders should ever consider biking on a busy corridor like Sunset Avenue, the number of cyclists there is few. Sunset Avenue is not designated as a bike route, and thus the corridor does not include signage, pavement markings, or a wide lane to facilitate



bicycle use.”

The City also expresses a goal for improving bicycle facilities in the *Rocky Mount Collector Street Plan*, adopted in June 2004 - “Enhance pedestrian and bicycle amenities and promote public transportation services.” Several objectives make this Goal (Number 3) possible:

Goal 3: Enhance Pedestrian and Bicycle Amenities

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- **Objective 3.1** - Develop proposed cross sections for collector streets that describe each type of collector (residential, commercial, and industrial) in terms of accommodation for pedestrians, bicyclists, transit, automobiles, and other users. Properly designed collector streets foster alternate modes of transportation and should serve as the primary means of transporting bicyclists, joggers, pedestrians, and motorized wheelchairs within and through residential areas.
- **Objective 3.2** - Incorporate existing bicycle, pedestrian, open space, and transit plans identified in *Together Tomorrow*, the Comprehensive Plan for Rocky Mount, including provisions for future connections and service to future activity destinations.

Programs and Initiatives Currently Underway or Planned

There are no Rocky Mount bicycle projects in the “independent” bicycle project program administered by NCDOT. This would be a reasonable goal to set for the future, following adoption of this plan.

Incidental bicycle improvements are also part of roadway projects. The following construction projects are currently in the Transportation Improvement Program (TIP) and some include bicycle accommodations, as listed below:

- **U-3331 (Nash County)** – Widen SR 1616 (Country Club Road) to multi-lanes from US 64 Business to SR 1541 (Jeffreys Road). Planning in progress, ROW FFY 2007, LET FFY 2008.
- **U-3330 (Nash County)** – Add an additional lane in each direction of US 301 Bypass, from NC 43-48 (Benvenue Road) to SR 1836 (May Drive). Planning in progress, ROW FFY 2010, LET Post Years.
- **U-3621 (Nash County)** – Widen SR 1604 (Hunter Hill Road) from SR 1613 (North Winstead Avenue) to NC 43-48 (Benvenue Road). Planning in progress, Design FFY 2006, Mitigation FFY 2009, ROW FFY 2008, LET FFY 2010. Fourteen foot wide outside lanes are recommended for this facility.

- **U-4019 (Nash County)** – Widen SR 1613 (North Winstead Avenue) to multi-lanes from SR 1770 (Sunset Avenue) to SR 1604 (Hunter Hill Road). Planning in progress, Design FFY 2004, Mitigation FFY 2007, ROW FFY 2007, LET FFY 2009. A feasibility study has been performed for this project that recommends wide outside lanes be evaluated for this facility.
- **R-2823 (Nash County)** – New Route – Rocky Mount Northern Connector, from SR 1604 (Hunter Hill Road) to US 301. Widen to multi-lanes, part on new location. Planning in progress, Design FFY 2005, ROW FFY 2010, LET FFY 2012.
- **U-4762 (Edgecombe County)** – Widen SR 1250 (Springfield Road) to multi-lanes from US 64 Alternate to SR 1243 (Leggett Road). **Unfunded Project**
- **Feasibility Study – FS-0204B** – Widen SR 1542 (Airport Road) to multi-lanes from US 301 Bypass to SR 1401 (Tanner Road). Feasibility Study in progress.
- **R-3316 (Nash County)** – SR 1544 (Halifax Road), upgrade existing roadway from SR 1770 (Sunset Avenue) to SR 1714 (Bethlehem Road). **Unfunded Project**
- **U-2561 (Nash County)** – Widen NC 43 to multi-lanes with curb and gutter, from NC 48 (Goldrock Road) to I-95. **Part Complete, Part Unfunded.**

Safety and Education Programs

Effective in October 2001, with the General Assembly's passing of the *Child Bicycle Safety Act*, every person under the age of 16 is required by law to wear an approved safety helmet when riding a bicycle on any public road, public bicycle path, or other form of public right of way. Furthermore, all children passengers under 40 pounds or 40 inches must be seated and secured in a child seat or a bicycle trailer. The NCDOT Department of Bicycle and Pedestrian Transportation posts a variety of bicycling laws and ordinances on their website, including basic bicycling laws such as:

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- Ride on the right side of the road in the same direction as other traffic.
- Obey all traffic signs and signals.
- Use hand signals to indicate intended movements.
- Equip bicycles with a front lamp visible from 300 feet and a rear reflector visible from a distance of 200 feet when riding at night.

The NCDOT Department of Bicycle and Pedestrian Transportation also offers educational materials for children to learn the basics of bicycling, safety, and how to follow the law. Teachers or parents can order posters, pamphlets and brochures, and educational videos online or by calling the Department.

A Raleigh area cycle group shares a website at www.smartcommute.org, where they list the rules of the road for both cyclists and motorists in short:

For cyclists:

- Ride on the right side of the road.
- Ride on the road, and follow the same laws that apply to motorists.
- Always wear a properly fitting helmet.
- Ride predictably.
- Be visible.

For motorists:

- Drive cautiously.
- Yield to cyclists.
- Be considerate.
- Pass with care.
- Watch for children.

Local Agency Initiatives

In May of 2005, the City posted a Bicycle Planning Survey on its webpage for citizens to voice opinions about the current conditions of bicycle facilities around Rocky Mount

and for transportation planners to gather origin/destination and preferred route information. In conjunction with the survey, locals joined engineers and planners from Kimley-Horn and Associates on April 30, 2005 for a “ride-about” through Rocky Mount, which is discussed in more detail in **Chapter 4**.



Community/Advocacy Group Initiatives

As a part of the Comprehensive Bicycle Plan, the City hosted a community ride-about on the morning of Saturday April 30, 2005. Due to the success of this event in encouraging new riders to consider not only the Tar River Trail but also city streets as places to ride, ride-about participants are considering similar events in the future in Rocky Mount.

School-Based Programs

The new federal transportation program will enable and encourage primary and secondary school children to walk and bicycle to school. Both infrastructure-related and behavioral projects will be geared toward providing a safe, appealing environment for walking and biking that will improve the quality of our children’s lives and support national health objectives by reducing traffic, fuel consumption, and air pollution in the vicinity of schools. The major nationwide initiative fueling this effort is the Safe Routes to School program. This may be a source of funds for the City of Rocky Mount to tap.

Law Enforcement Programs and Initiatives

Officers of the Rocky Mount Police Department occasionally travel by bicycle while on patrol. Along with traditional cruisers and other vehicles, the Rocky Mount Police Department has between 15 and 18 bicycles available for officers at any given time. To become certified as a bicycle officer, a 40 hour bike class must be completed and riding must be continued to maintain certification. At this time, 25 officers from the Rocky Mount Police Department have completed the bicycle training. Current plans are to maintain the present level of police and bicycles by completing additional training and replacing bicycles as necessary.

Rocky Mount Comprehensive Bicycle Plan



Upon citizens' requests, the Rocky Mount Police Department offers a Bicycle Registration program. Forms are available through the City's website or by contacting the Department either by phone or in person. Residents may improve their chances of recovering a stolen bicycle if it is registered with the Police Department.

Enforcement Programs:
Over a three year period, there were a total of six citations given by the Rocky Mount Police for bicycle violations. These citations consisted of riding without a helmet and riding without a light. While there are ordinances against riding on the sidewalk and riding the wrong way down the street, these violations do not appear to be strictly enforced.

Encouragement Programs

Many cities across the country hold "Bike to Work" weeks. The month of May is typically considered Bicycle Month in the U.S. May 2005 marked the 49th Annual National Bike Month™ designated by the League of American Bicyclists. The League partnered with Shimano American Corporation and Rodale Publishing (*Bicycling Magazine* & *Mountain Bike Magazine*) in an effort to expand the program and motivate more Americans to commute by bike.

Bicycle Friendly Communities – The League of American Bicyclists also administers the Bicycle Friendly Communities Campaign. This program encourages communities that feel they have made steps towards becoming bicycle-friendly to apply for an award recognizing their efforts. Cary and Carrboro, NC are two cities in the region that have been awarded this honor previously. A Bicycle Friendly Community is to have safe accommodations for bicyclists while also encouraging bicycling for recreational purposes.

Bikes on Buses - Bicycling around town is even more convenient with bike racks on buses; however, the Tar River Transit buses do not have bike racks nor has there been much interest expressed for them by citizens. There

BICYCLE REGISTRATION PROGRAM



YOU CAN PROTECT YOUR BIKE AND YOUR INVESTMENT.

Why Register?

Bicycles are often a serious investment and bicycle theft is a serious problem. Bikes are stolen in Rocky Mount and other cities each year and often the owners do not know their make, model, or serial number. Bicycle Registration is highly recommended, as it may be the only means of returning a stolen bicycle to you, once the police have recovered it. With your recorded information we can make law enforcement agencies nationwide aware that a particular bicycle is stolen. The information you provide about you and your bicycle is recorded and maintained in a computer database in case your bike is stolen in the future. Won't you help us to help you? Please take the time to register your bike.

How to Register?

Complete a **Rocky Mount Bicycle Registration Form**. For more information about this program, call at 912-1436.

have not been requests for bike racks by the general public in Rocky Mount. At this time, Tar River Transit has no definite plans for racks. However, the Tar River Transit Manager says funds should be readily available for bike racks on buses, with an estimated installation cost of \$1200 to \$1500 for a top notch rack to carry two bikes. The Tar River Transit Manager believes the City would only have to pay 5% of this cost with the remainder coming from federal funds.

Major events - The City of Rocky Mount submitted a bid to host the "2006 Spring Retreat", a three day biking event. A selection decision will be made in the Fall of 2005. More than 75 North Carolina communities have bicycle events. The City of Rocky Mount can promote such an event through the event calendar on the NCDOT Division of Bicycle and Pedestrian Transportation website. The NC Mountains to Sea Ride stopped overnight in Rocky Mount in October 2004.

Policies and Institutional Framework

Economic Benefits - the results of the *Pathways to Prosperity* study commissioned by the NCDOT Division of Bicycle and Pedestrian Transportation shows bicycling activities have a substantial economic benefit to the surrounding area. The northern Outer Banks region was selected because of the high levels of bicycling activities and the extensive system of bicycling facilities already in place. According to Secretary of Transportation Mr. Lyndo Tippet:

"NCDOT has long recognized the important physical and environmental benefits of bicycling facilities. Pathways to Prosperity reinforces the many benefits of bicycling by providing concrete evidence that the availability of bicycling opportunities is an important component of North Carolina's economy. We already have a vigorous bicycle and pedestrian program, the first comprehensive state program of its kind in the nation, and I am committed to expanding this effort even further through innovative programs like N.C. Moving Ahead!"

According to the study, about \$6.7 million in municipal, state and federal funding was used to construct the bicycle facilities currently in place on the northern Outer Banks. Thus, the annual \$60 million economic impact of

Rocky Mount Comprehensive Bicycle Plan



cyclists is estimated to be nine times greater than the one-time expenditure of public funds to construct the facilities.

NCDOT is placing an increased emphasis on multimodal transportation across the state with a \$70 million investment being made through N.C. Moving Ahead!, a two-year transportation and economic stimulus package signed into law by Gov. Easley in 2004, and also through the Transportation Improvement Program (TIP).

The Division of Bicycle and Pedestrian Transportation of NCDOT also recently announced a new grant initiative designed to help municipalities throughout the state fund the development of comprehensive bicycle or pedestrian transportation plans. This grant provides \$400,000 annually distributed over a varying number of municipalities.

Pathways to Prosperity also highlights other economic benefits that may result from the presence of bicycle facilities, including the enhancement of nearby property values, the reduced healthcare costs that may result from increased opportunities for exercise and increased preservation of the state's highway infrastructure resulting from the presence of wider paved shoulders. Other studies have also demonstrated that bicycle facilities improve the overall quality of life in a community.

Chapter 4 — Develop Bicycle System Plan

System Overview

As discussed in **Chapter 2**, there are no designated on-road bicycle facilities in the City of Rocky Mount. The Tar River Trail is the only multi-use path existing in the city. The bicycle system envisioned for the future is very different than the existing system. Citizens of Rocky Mount have expressed their desire for an interconnected bicycle system that lets the users travel safely between major destination points. As a part of the *Rocky Mount Bicycle Planning Survey*, respondents identified corridors frequented by cyclists, as well as those corridors where they would like to see usage increase. Corridors that came up frequently in those lists include Sunset Avenue, Winstead Avenue, West Mount Drive, Halifax Road, Hunter Hill Road, Benvenue Road, and US 301. Bicycle Advisory Committee (BAC) members also listed corridors they would most like to see improved, with Sunset Avenue being the most frequently mentioned.

Figure 4.1 shows the road classification system in Rocky Mount. This figure includes both existing and future streets in solid and dashed lines, respectively. The map also shows the hierarchy of road types, called functional classification. Freeways, major and minor arterials, and collector streets are shown in color while local streets are in light grey. As can be seen from this map, some bicycle routes suggested by the general public and the BAC — including Sunset Avenue, Winstead Avenue, Benvenue Road, and US 301 — are all major arterials. This prompts an important question: Is it reasonable to try to create a bicycle network based primarily on high-volume, high-speed arterial roads? From a safety perspective, a lower-level road like a collector or minor arterial would be preferable since speeds and traffic volume are typically lower than on major arterials. Many bicyclists feel more comfortable riding on low-traffic facilities, a consideration which is crucial to increasing the number of new riders. Beginning cyclists are typically unwilling to test their limited skills in heavy high-speed traffic. Opportunities exist to ride on residential or collector streets that are parallel facilities to roads such as Sunset Avenue and Winstead Avenue. For example, Beal Street and Nash Street in the downtown area would be viable alternate routes for Sunset Avenue.

Corridor Identification

Safety issues and concerns were discussed and more appropriate corridors for bicycle travel were identified in collaboration with the BAC and the public. These corridors were chosen due to the connections they would provide to destination points across the city and the connectivity that the overall system would provide. In addition, the safety of the corridor with regard to the amount of traffic traveling on it was considered. The corridors were not finalized, however, until a complete route system could be identified and analyzed.

Municipal buildings, libraries, parks, the new athletic center, hospitals, the Tar River Transit Center, and the many schools and colleges in the area are some of the major destinations in Rocky Mount. A map of these locations is shown in

Figure 4.2. The development of a bicycle route system heavily favors the connection of these facilities so that the bicycle routes link citizens with places where they want to ride.



Trip origins and destinations were investigated as a part of the *Rocky Mount Bicycle Planning Survey*. Many of the origins and destinations were the same as the trip attractors and generators shown in **Figure 4.2**.

Other frequent origins and destinations consisted of individual houses and neighborhoods. Corridors linking the origin and destination points were often identified by individuals as ones that could be improved.

Identify Opportunities

Once the major corridors and points of interest were identified, a route system was developed. The first step in this was to look at current and planned projects that could potentially enhance the system.

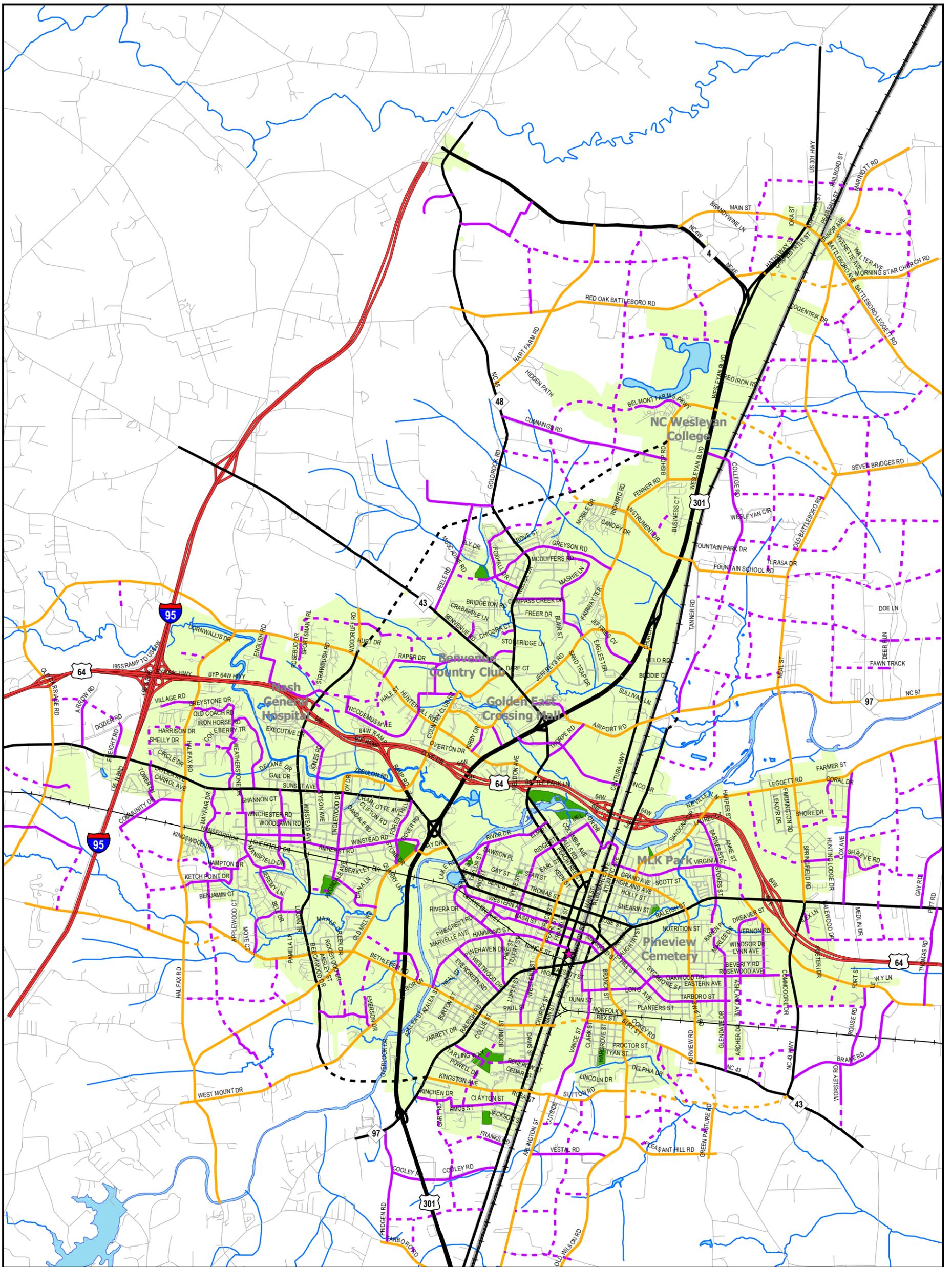


Figure 4.1
Functional Classification

Kimley-Horn
and Associates, Inc.



Legend

- Local Street
- Collector Street
- - - Collector Street (new location)
- Minor Arterial
- Minor Arterial (new location)
- Major Arterial
- - - Major Arterial (new location)
- Freeway; freeway, existing
- Creeks
- Bodies of Water
- State Parks
- Rocky Mount City Limits



0 1
Miles

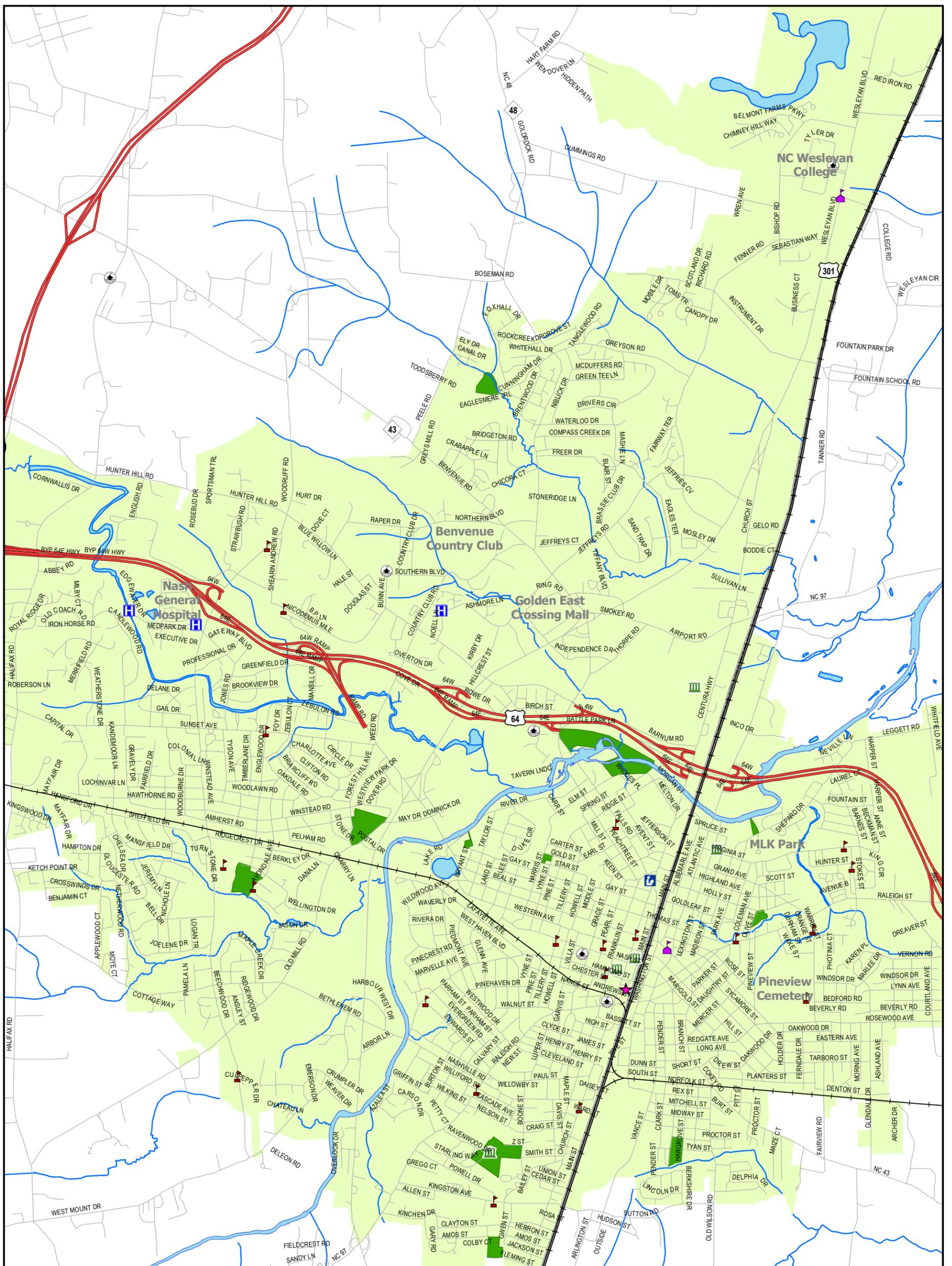


Figure 4.2
Major Destinations

Legend

- | | | |
|--|--|---|
|  Libraries |  Historic Places |  Bodies of Water |
|  Schools |  Hospitals |  Rocky Mount City Limits |
|  Colleges |  Community Facilities |  County Lines |
|  Transit Transfer Station |  Parks | |

Rocky Mount Comprehensive Bicycle Plan



There are several roadway projects expected to receive funding in the 2006-2012 Transportation Improvement Program (TIP), some of which are outlined in



Chapter 3. Project U-3621, a 2.4-mile-long widening of Hunter Hill Road between Winstead Avenue and Benvenue Road, is expected to begin right-of-way acquisition in 2008. This project is currently anticipated to include bike lanes (as well as sidewalks) in its design. However, Hunter Hill Road widening is the only Rocky Mount roadway project in the State TIP currently planned to include bicycle amenities. Once this *Comprehensive Bicycle Plan* is adopted, however, the City and NCDOT will work together to incorporate bicycle accommodations in future roadway projects according to the adopted Bicycle System Network.

Road maintenance activities also provide a good opportunity to create bicycle facilities. Regularly scheduled resurfacing is typically followed by restriping. Instead of marking the stripes exactly where they were before the resurfacing job, the maintenance crews instead can work with engineers to develop a restriping plan consistent with this Bicycle System Network that either narrows the inside travel lanes on a multi-lane road or adds edge lines or bicycle lane lines on a wide residential street. Restriping a road adds very little additional cost. In future resurfacing programs, money could be reapportioned to allow for the repaving of longer stretches of road that may link a cyclist with safe beginning and end points for a bicycling trip. As a result, proposed bicycle routes could have inexpensive facilities created in a relatively short timeframe.

Furthermore, roadway maintenance conducted on rural-type roads that have narrow paved shoulders or no paved shoulder at all can be rehabilitated to include a wide paved area. This gives bicyclists a safer place to ride, improves long-term roadway surface quality by helping to resist cracking and deterioration, and also gives motorists a refuge in case of car trouble.

Public or utility rights-of-way (ROW) can be used as another alternative area for establishing bicycle facilities. The City of Rocky Mount has one such facility in the Tar River Trail. This



greenway is located along the Tar River and makes two crossings of the river. The use of property contiguous to sewer, fiber optics, TV cable, phone line, or natural gas ROW for multi-use easements in the future should be explored. This may help alleviate some of the cost associated with ROW acquisition and renegotiations, assuming a publicly-owned utility or a willing private utility.

Figure 4.1 illustrates the adopted *Thoroughfare and Collector Street Plans*. As new roads (shown as dashed lines on the map) proceed in the planning process, provisions can be made to incorporate bicycle facilities as appropriate to the type and context of the road. This encourages a more interconnected bicycle system to develop over time and the inclusion of bicycle amenities in roadway design will become more commonplace.

Special Focus Areas

Two general areas warrant special attention when developing a bicycle plan. Using US Census 2000 data, the percentage of households owning one vehicle or no vehicle at all was examined within the city limits. The information shown in **Figure 4.3** indicates that many residents in the downtown area, along the major north-south rail corridor, and along Highway 64 may be without easy access to a car. This portion of the population will naturally turn to other modes of travel to complete their errands and work or school commutes. As a result, an improved bicycle infrastructure would be beneficial to people with limited access to cars.

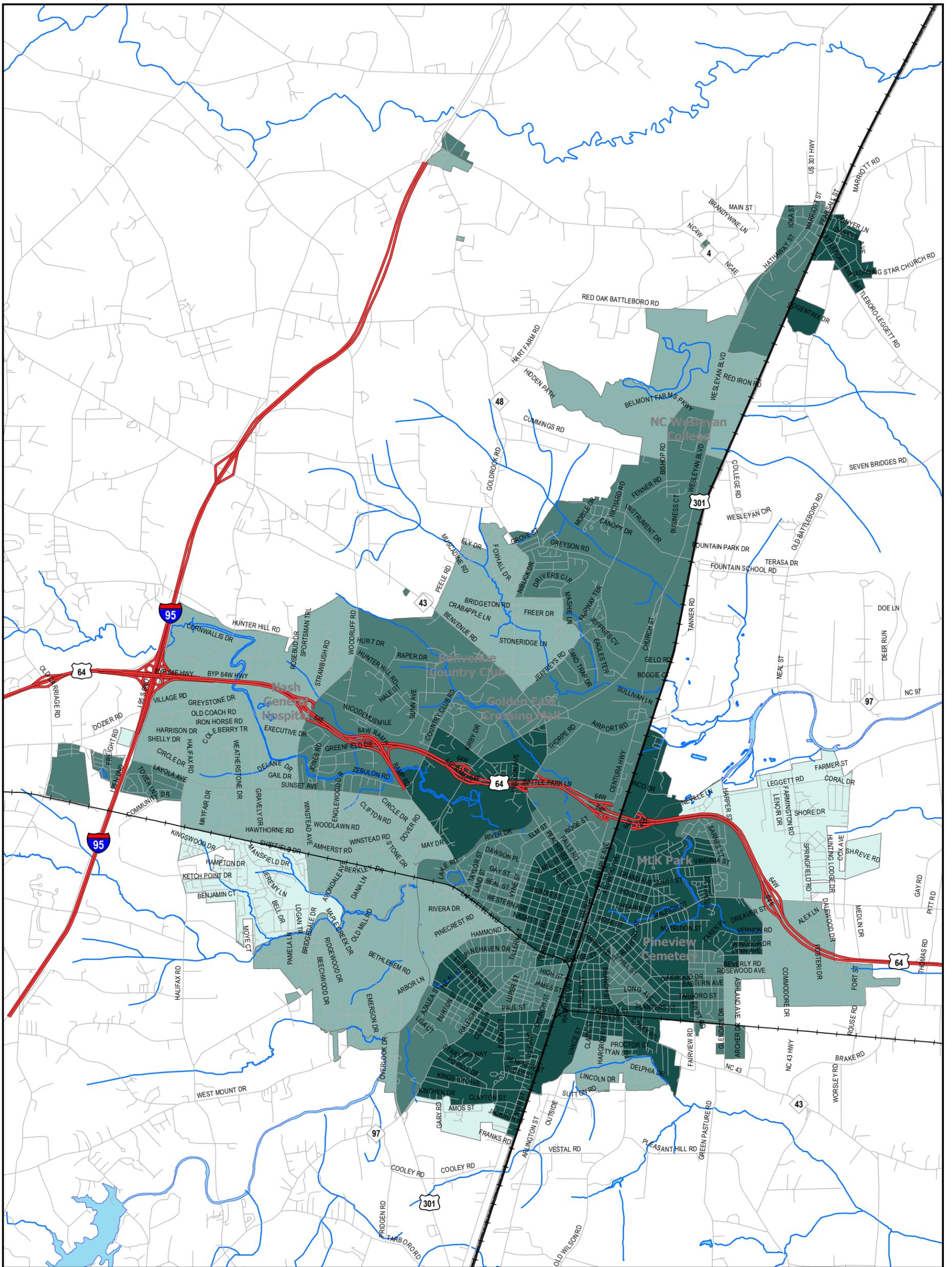


Figure 4.3
Vehicle Ownership

Kimley-Horn
and Associates, Inc.



Legend

- | | |
|--|--|
| 0% - 20% | Bodies of Water |
| 21% - 40% | County Lines |
| 41% - 60% | |
| 61% or more | |



0 1
Miles

Rocky Mount Comprehensive Bicycle Plan



Downtown Rocky Mount is a special area of focus not only because of the vehicle ownership characteristics but also due to the great number of bicycle destinations close to one another. Furthermore, tree-lined residential streets frame downtown Rocky Mount and offer a multitude of origins for bicyclists who live there. The density of the housing in this area is also greater than that of the rest of the city. As a result, it has a higher concentration of people that have a number of potential trip destinations within a relatively short distance. This is an ideal situation for choosing bicycling as a travel mode. Improvements to the bicycle infrastructure in this area have the potential to positively affect a large number of users.

Also, some specific areas of the city present unique opportunities to create bicycle facilities. One of these is an abandoned rail corridor that runs from the Imperial Center area to the site of the old mill by the river. This rail line was used by the mill for years, but has become overgrown and neglected since its closure. An abandoned rail line such as this is an ideal location for an off-road shared-use facility. Rail lines are designed for trains, meaning that they cannot sustain sharp turns or steep grades. This characteristic makes them ideal for bicyclists. Also, this corridor could connect the user to many downtown activity centers, and would provide an off-road route protected from vehicular traffic. Below is a current picture of a section of this abandoned rail corridor, along with a conceptual rendering of what could be done to convert it to a usable and aesthetically pleasing space.

The Nash County Railroad corridor running east-west through Rocky Mount is being considered for another type of off-road facility. Although this is an active rail line, a rail-with-trail concept is being explored that would put a bicycle and pedestrian multi-use path within the right-of-way of the railroad. The rail-with-trail line would provide an opportunity to connect some of the neighborhoods in the west side of the city with the downtown area, in a dedicated guideway facility that previously served as a barrier to bicycle travel.



Another area in which the City of Rocky Mount has the chance to make a positive impact in terms of bicycle amenities is the new Rocky Mount Sports Complex and YMCA. This area will attract people seeking athletic activity and children below

the driving age by the nature of its uses. As a result, the addition of bicycle facilities to some of the entry points of the complex and on surrounding roads would create a safer and more inviting environment for those individuals hoping to travel by bike.

Undoubtedly, other opportunities will present themselves to improve the bicycle network in ways such as these in the future. As large commercial or residential developments come into the area, they should be evaluated for ways in which the needs of bicyclists could be incorporated. Also, as community facilities such as schools, parks, libraries, or community centers are built, the area surrounding each should be examined to determine how it could be adapted to accommodate bicycles. An increased awareness of the needs of the bicycling population will help to gradually improve the quality of facilities available to them.

Bicycle System Plan

The resulting system map showing bicycle corridors and destinations is presented in **Figure 4.4**. This is a preliminary system map showing logical connections between neighborhoods and destinations, organized into 20 unique loops or corridors. For the sake of review and public dissemination, names are given to each route to identify destinations served or some other place-based characteristic. Most importantly, the routes are interconnected so a mid- to long-distance rider can extend the trip.



Current Condition

Potential Use

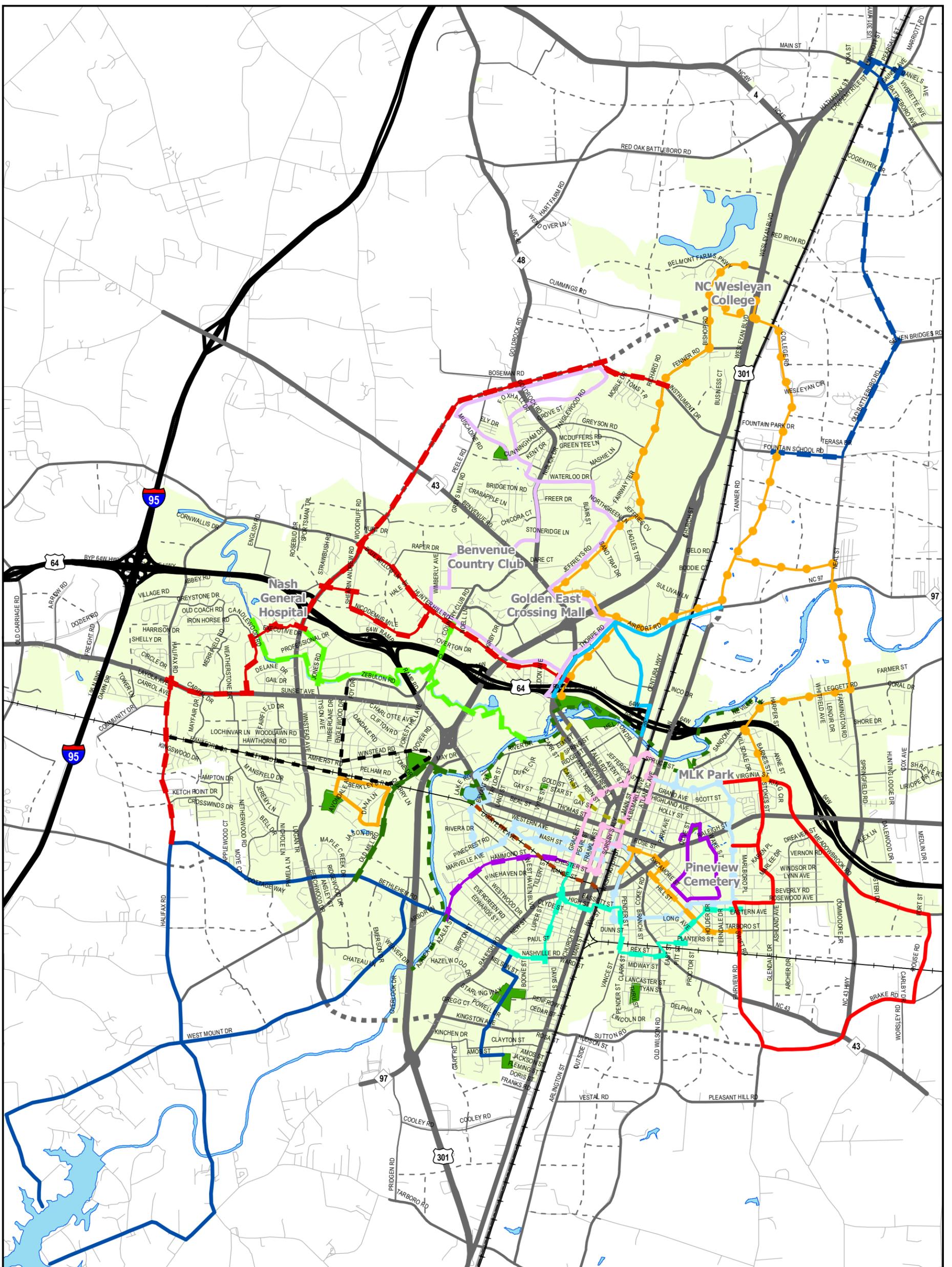


Figure 4.4
Bicycle System Network

Legend

- | | | | |
|-------------------------|------------------------------|--|---------------------------|
| Parks | Abandoned Rail to Trail | Downtown-Reservoir Connector | Mall-Hornbeam Park Loop |
| Bodies of Water | Battleboro Connector | East Side Loop | Park-Reservoir Connector |
| Rocky Mount City Limits | City Lake-Downtown Trail | East-West Connector | Reservoir Loop |
| County Lines | College Loop | Englewood Park-City Lake Rail With Trail | Tar River Trail |
| Existing Road | Downtown Core Loop | Farmington Park Loop | Tar River Trail Extension |
| Proposed Road | Downtown Neighborhood Loop | Hospital-Stoney Creek Connector Trail | West Side Connector |
| | Downtown-East Side Connector | Johnson Pope-Holly Street Park Loop | YMCA Loop |



Chapter 5 — Facility Standards and Guidelines

The Study Team reviewed existing roadway design standards to determine what potential improvements could be implemented to encourage the provision of bicycle facilities in Rocky Mount. The review included the AASHTO bicycle facility design guidelines¹, the *Manual on Uniform Traffic Control Devices*², the NCDOT Design Standards, and the City of Rocky Mount Standard Design Drawings. Highlights of the AASHTO and FHWA documents are identified here, along with a brief discussion of a recent national research project which will have an impact on multi-use path design.

This chapter also includes recommendations for modifications to the City of Rocky Mount Design Standards. These modifications are similar to design standards that other local jurisdictions have adopted, as well as an understanding of the desired level of accommodation for bicyclists along a roadway.

Level of Accommodation for Bicyclists

Several methods have been used to determine how well a roadway accommodates bicyclists. Until the mid-1990s, these methods were based upon the opinions of several authors who did their best to develop a quantifiable method for grading roadways for bicyclists.^{3,4,5,6} In 1995,

¹ AASHTO *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, Washington, DC, 1999.

² *Manual on Uniform Traffic Control Devices*, FHWA, Washington, DC, 2003.

³ Landis, Bruce W., The Bicycle Interaction Hazard Score: A Theoretical model. *Transportation Research Record 1438*, TRB, National Research Council, Washington, D.C. 1994.

⁴ Sorton, Alex. Bicycle Stress Level as a Tool to Evaluate Urban and Suburban Bicycle Compatibility. *Transportation Research Record 1438*, TRB, National Research Council, Washington, D.C. 1994.

⁵ Epperson, Bruce. Evaluating Suitability of Roadways for Bicycle Use: Toward a Cycling Level-of-Service Standard. *Transportation Research Record 1438*, TRB, National Research Council, Washington, D.C. 1994.

groundbreaking research was performed to actually field-validate the perceptions of bicyclists riding on the roadway. This research resulted in the Bicycle Level of Service Model which has since been adopted by several states and municipalities across the country. It has been used to evaluate more than 200,000 miles of roadway and has repeatedly been validated by advisory committees and at public workshops. The Bicycle Level of Service (LOS) Model considers different roadway factors to predict the pseudo-academic letter-grade cyclists would use to rate a roadway. These level of service ratings range from the best (LOS A) to the worst (LOS F). Factors include the following:

- Motor vehicle traffic volumes on the roadway
- Percent heavy vehicles on the roadway
- Effective width of the roadway, which includes width of the outside lane, presence of a bike lane or paved shoulder, presence of on-street parking, and percentage of permitted on-street parking that is occupied by a vehicle
- Speed of the traffic on the roadway
- Pavement surface condition

The Bicycle LOS Model was used to evaluate each of the Rocky Mount Street Design Standards.

Standards Review

AASHTO Guide for the Development of Bicycle Facilities. Referred to as the *Bike Guide*, this is a federal document which sets forth the current design practices accepted by FHWA. In the introduction, the AASHTO *Bike Guide* makes the following statement:

“This guide provides information to help accommodate bicycle traffic in most riding environments. It is not intended to set forth strict standards, but, rather, to present sound guidelines that will be valuable in attaining good design sensitive to the needs of both bicyclists and other highway users. However, in some sections of this guide,

⁶ Davis, Jeff. *Bicycle Safety Evaluation*. Auburn University, 1987.

Rocky Mount Comprehensive Bicycle Plan



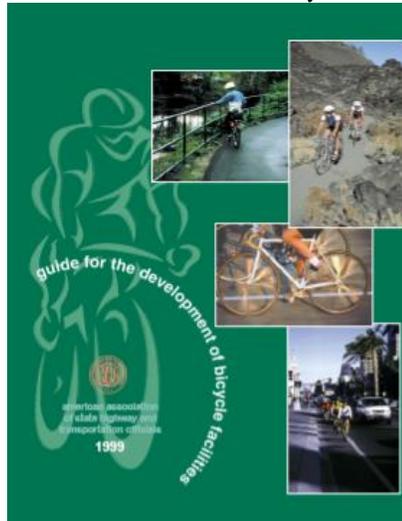
design criteria include suggested minimum guidelines. These are recommended only where further deviation from desirable values could result in unacceptable safety compromises.⁷

As can be seen from the above statement, the AASHTO *Bike Guide* does not constitute a standard (defined as a list of criteria designers are required to follow).

The AASHTO *Bike Guide* discusses planning, design, operations, and maintenance issues associated with bicycle facilities. With respect to design, it provides information about both on-street facilities and multi-use paths. Primarily the AASHTO *Bike Guide* addresses the geometric design considerations for on-street facilities and multi-use paths. These considerations include width dimensions, grades, cross slopes, radii, acceleration rates, deceleration rates and sight distances. While it includes some discussion of traffic control devices, these are the purview of the *MUTCD* and consequently traffic control device design and application should be consistent with the *MUTCD*.

With respect to the Rocky Mount Design Standards, the most pertinent design criteria provided in AASHTO and by the North Carolina standards relates to the width of the bike lanes (4 feet) and the width required for multi-use paths (10 feet minimum behind the face of curb). Figure 5.2 from the *North Carolina Bicycle Facilities Planning and Design Guidelines*, specifying widths for bike lanes, is provided on the following page.

On roadway sections without curb and gutter, a paved shoulder can function as a bicycle facility in lieu of a bike lane. While this is generally acceptable for roadway sections without frequent intersections, on those where intersections are frequent, appropriate bike lane striping should be applied.

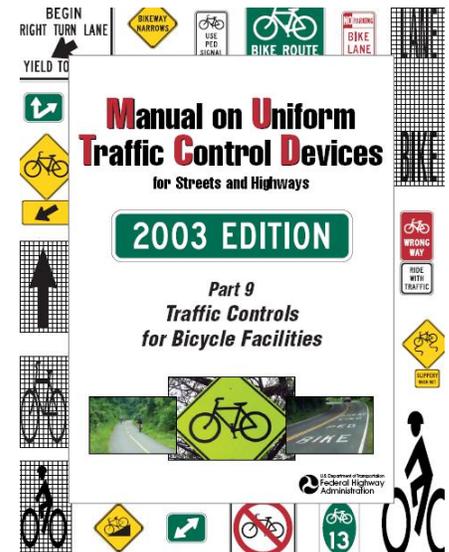


Wide curb lanes (typically 14 feet wide) have been used to provide extra space for bicyclists. While wide curb lanes are an effective way to encourage motorists to give cyclists adequate clearance when passing, they are

largely unrecognized by casual cyclists as bike facilities. Research to develop level of accommodation measures for bicyclists has found that having a striped bike lane greatly improves cyclists' feelings of safety and comfort. In communities like Rocky Mount that want to significantly increase the number of people riding bicycles, it is strongly recommended that a program to create striped bike lanes be adopted, rather than wide outside lanes. In other words, whenever feasible striped bike lanes are preferred over wide outside lanes; the latter is acceptable, however, when striped lanes are not feasible.

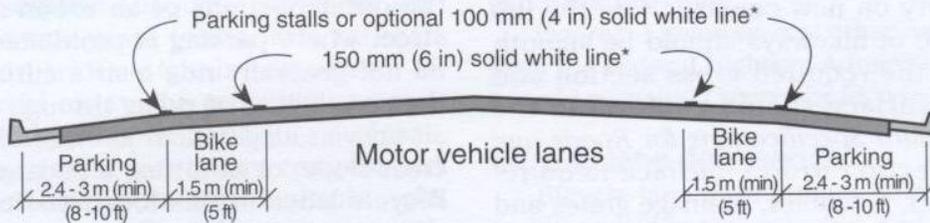
FHWA Manual on Uniform Traffic Control Devices (MUTCD). Unlike the AASHTO *Bike Guide*, the *MUTCD* does constitute a standard. Failure to comply with the *MUTCD* can result in being denied federal funds and opens up non-compliant jurisdictions to additional liability in the event of a crash. The *MUTCD* 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.



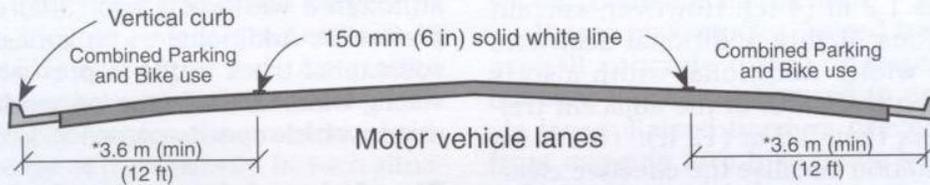
⁷ AASHTO *Guide for the Development of Bicycle Facilities*, pg. 2, American Association of State Highway and Transportation Officials, Washington, DC, 1999.

(1) Marked parking and bike lanes



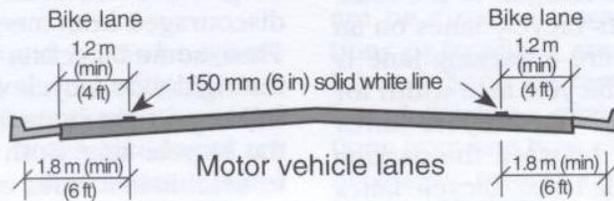
* The optional solid white stripe may be advisable where stalls are unnecessary (because parking is light) but there is concern that motorists may misconstrue the bike lane to be a traffic lane.

(2) Combined parking and bike use



* 3.9 m (13 ft) is recommended where there is substantial parking or turnover of parked cars is high (e.g., commercial areas).

(3) Parking prohibited



(4) Typical roadway in outlying areas parking restricted

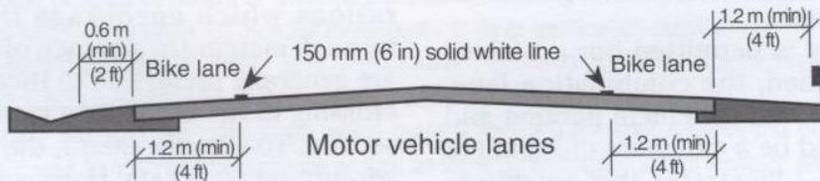


Figure 5-2: Typical bike lane cross sections on two-lane or multi-lane highways.

Source: AASHTO Guide for the Development of Bicycle Facilities, 1991.

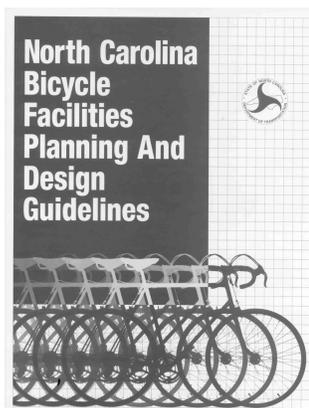
Part Nine of the *MUTCD* specifically addresses bicycle facilities. Signing and striping of bicycle lanes, including striping bike lanes through intersections, is covered in considerable detail in this part. Additionally, special signs and sign dimensions applicable only to bike facilities (both on-street and paths) are included. The striping and signing of multi-use path intersections is also addressed (in a limited fashion). This part of the *MUTCD* also covers requirements for signal timing with respect to bicyclists.

Characteristics of Emerging Road and Trail Users and Their Safety

There are an increasing number of non-motorized devices other than bicycles (such as skateboarders, rollerbladers, and scooters) on multi-use paths and the roadway. The FHWA realized that in order to design facilities which accommodated all users, they must know how each of these devices operates. Consequently, they commissioned a study to determine the operating characteristics of these emerging users. These characteristics included required operating width, speeds, stopping sight distance, design radii, and acceleration rates.⁸

North Carolina DOT Standards

Design standards and guidelines for bicycle planning in North Carolina are provided in two manuals, the *North Carolina Bicycle Facility Planning and Design Guidelines* and *Bicycling and Walking in North Carolina*. While the latter addresses a statewide planning initiative for bicycles and pedestrians, the former seeks to clarify specific aspects of standards that should be used when designing bicycle facilities.



⁸ FHWA, *Characteristics of Emerging Road and Trail Users and Their Safety*, Publication No. FHWA-HRT-04-103, McLean, VA, 2004.

The following basic parameters are set:

Wide outside lane (Shared Lanes): A width of 14 feet is preferred for the outside lane to accommodate bicycles. On a multi-lane roadway, differential striping may be employed to reduce the width of the inside lane and thereby increase the width of the outside lane.

Striped Bicycle Lanes: Bicycle lanes should be considered for a roadway based on the demand, the connectivity of origin and destination points, the surrounding land uses, the traffic and geometric conditions, and the presence of other route alternatives. NCDOT adheres to the standards recommended by AASHTO for these facilities, recommending a 4 foot minimum width except in the presence of parking, where a 5 foot minimum is required.

Signed Bicycle Routes: Signed routes are an inexpensive way to guide riders to more bicycle-friendly roads. 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.

Bicycle Paths or Multi-Use Paths: Off-road paths can be used to link two areas that are not connected for cars or simply to serve as more separated facilities for bicyclists. The minimum width for a bicycle or multi-use path is 10 feet; however, additional width should be considered for areas with difficult terrain or heavy traffic.

The *Bicycle Facility Planning and Design Guidelines* also provide design considerations and recommendations for other types of ancillary bicycle facilities and amenities. These items, such as bike racks, bikes on buses, and bike-friendly drainage grates and railroad crossings help to complete the bicycle system by eliminating barriers and providing security. In addition, the guidelines also discuss the maintenance of bicycle facilities, which is key for the continued safe travel of bicyclists.

Rocky Mount Design Standards

Chapter 5 of the *Rocky Mount Comprehensive Plan* provides roadway cross section design standards for various classifications of roadways. These standards were compared to the City of Rocky Mount Department of

Rocky Mount Comprehensive Bicycle Plan



Engineering Standards, revealing that the values are consistent between the two.

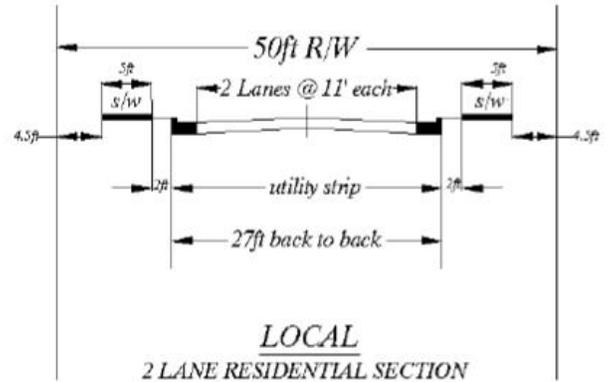
Roadway Sections

Local Streets. The current design standards for local streets are provided to the right. As can be seen, these standards provide for 11-foot lanes. Given this cross-section, it would not be possible to include bicycle lanes in the roadway.

No modification is recommended for this cross section. Because of their quiet nature, local streets do not typically require additional bicycle facilities.

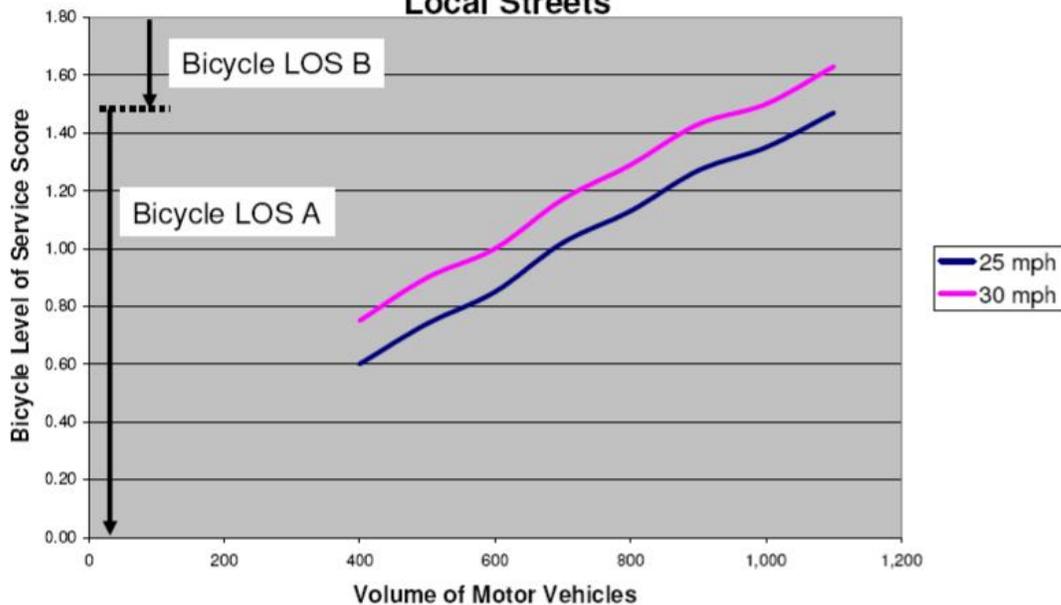
A chart of the Bicycle Level of Service for local roads is shown below (waves in the line are a result of round off errors). According to this information, local streets accommodate bicycles fairly well. In fact, LOS A is maintained on 25-mph local streets with average daily traffic volumes under 1,100 vehicles per day.

An alternate cross-section for local streets is shown in Figure 5.1 to incorporate 4-foot bicycle lanes on each side. This may be desirable on roads with speed or safety problems, or near downtown or other destination points.



Source: Rocky Mount Traffic Engineering Department

Bicycle LOS with respect to Motor Vehicles per Day Local Streets



*Assume 11 foot lane width, 0% trucks, and a Pavement Condition of 3.5

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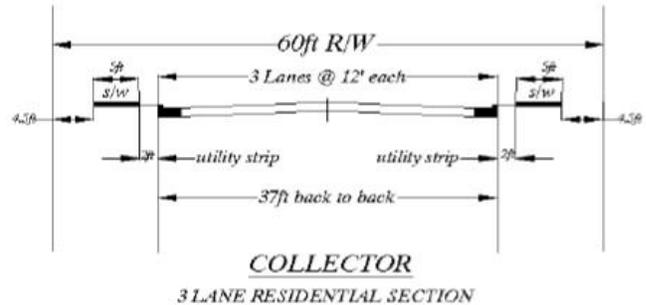


Collector Streets. The current design standards for new collector streets are provided to the right. As can be seen, these standards provide for 12-foot lanes. Given this cross-section, it would not be possible to include bicycle lanes in the roadway.

The graph below illustrates that for the current design standards on 25 mph collector streets, the Bicycle LOS grade will generally become a “C” or worse at an ADT of approximately 2,500 vehicles per day. This LOS grade is below that which many municipalities set for their desirable minimum Bicycle LOS (LOS B is a typical minimum for communities).

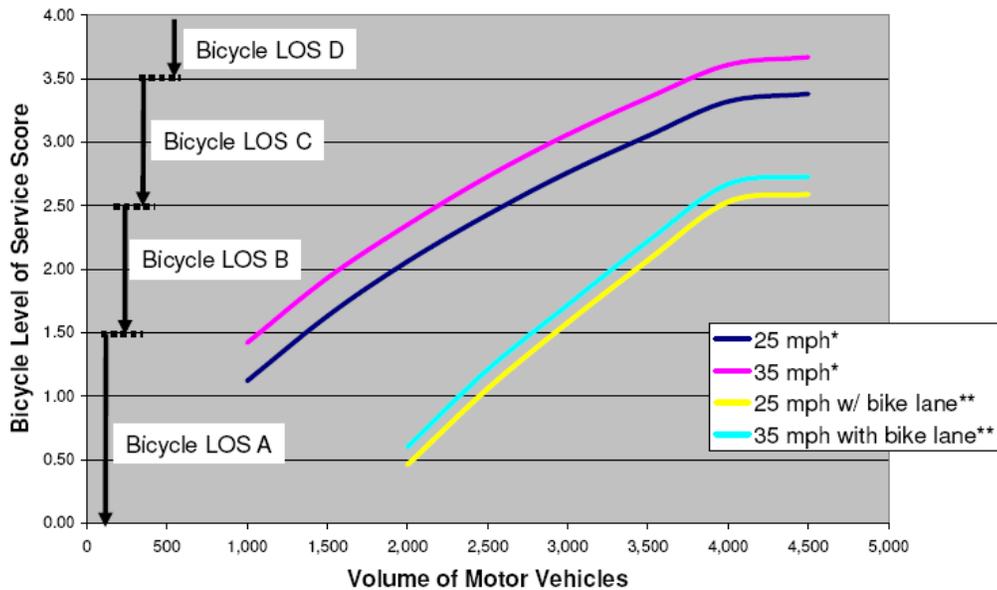
We recommend revising the standards so that for collectors being designed with a design year motor vehicle volume exceeding 2,500 vpd, the cross section includes 11-foot travel lanes and 4-foot bike lanes. This would provide for Bicycle LOS scores at least on the favorable end of the “C” range for all collector roadways. An alternate cross-section is shown in **Figure 5.2** that accommodate parking on both sides as well as 5-foot bike lanes.

Current Collector Street Design Standards



Source: Rocky Mount Traffic Engineering Department

Bicycle LOS with respect to Motor Vehicles per Day Collector Streets



*Assume 12 foot lane width, 1% trucks, and a Pavement Condition of 3.5

**Assume 11 foot lane width, 4 foot bike lane, 1% trucks, and a Pavement Condition of 3.5

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Minor Arterials. The current design standards for new minor arterial streets (shown is a three-lane cross-section) are provided at the right. These standards provide for 12-foot lanes. Given this cross-section, it would not be possible to include bicycle lanes in the roadway.

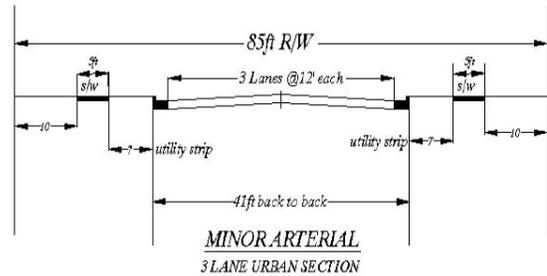
It would be possible to provide a multi-use path adjacent to the roadway. The buffer to the sidewalk (which would be replaced by a side multi-use path) is adequate. The minimum multi-use path width recommended by NCDOT is 10 feet wide. This means the separation to the right-of-way line could be reduced to 5 feet.

As illustrated in the graph below, for the current design standards, the Bicycle LOS grade will generally become a "C" or worse at an ADT of less than 2,000 vehicles per day. This LOS grade is below that which many municipalities set for their desirable minimum Bicycle LOS (LOS B is a typical minimum for communities).

As with the collector streets, we recommend revising the standards so that for minor arterial streets being designed with a design year motor vehicle volume exceeding 2,000 vpd, the cross section includes 12-foot travel lanes and 4-foot bike lanes. This would provide for Bicycle LOS scores at least on the favorable end of the "C" range for all new minor arterial roadways. The retention of the 12-foot travel lanes maintains space for heavy vehicles.

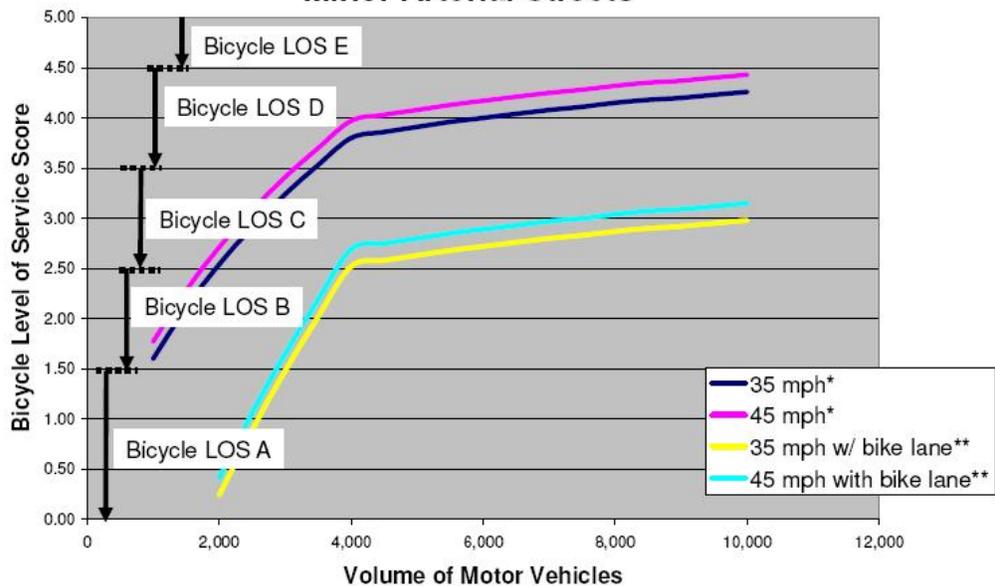
An alternate treatment for minor arterials is shown in **Figure 5.4**. This cross-section consists of a two-lane divided roadway with parking and a multi-use path on one side.

Current 3-Lane Minor Arterial Street Design Standards



Source: Rocky Mount Traffic Engineering Department

Bicycle LOS with respect to Motor Vehicles per Day Minor Arterial Streets



*Assume 12 foot lane width, 2% trucks, and a Pavement Condition of 3.5

**Assume 12 foot lane width, 4 foot bike lane, 2% trucks, and a Pavement Condition of 3.5

Rocky Mount Comprehensive Bicycle Plan



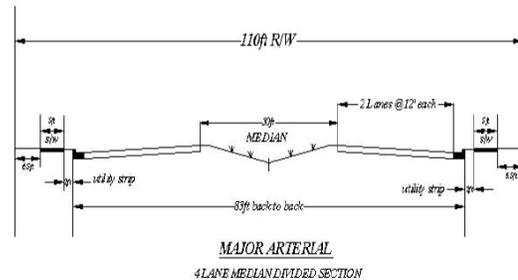
Major Arterials. The current design standards for major arterial streets are shown to the right as a four-lane divided cross section. As can be seen, these standards provide for 12-foot lanes. Given this cross-section, it would not be possible to include bicycle lanes in the roadway.

As with minor arterial streets, it would be possible to provide a multi-use path adjacent to the roadway. The buffer between the path and the back of curb would need to be increased to at least 3 feet. The minimum multi-use path width recommended by NCDOT is 10 feet wide, rendering this type of bicycle facility unable to fit within the right-of-way line. It may be necessary to shift the roadway within the right-of-way to provide more space between a multi-use path and the right-of-way line. This would allow for better matching of the grades on the adjacent properties.

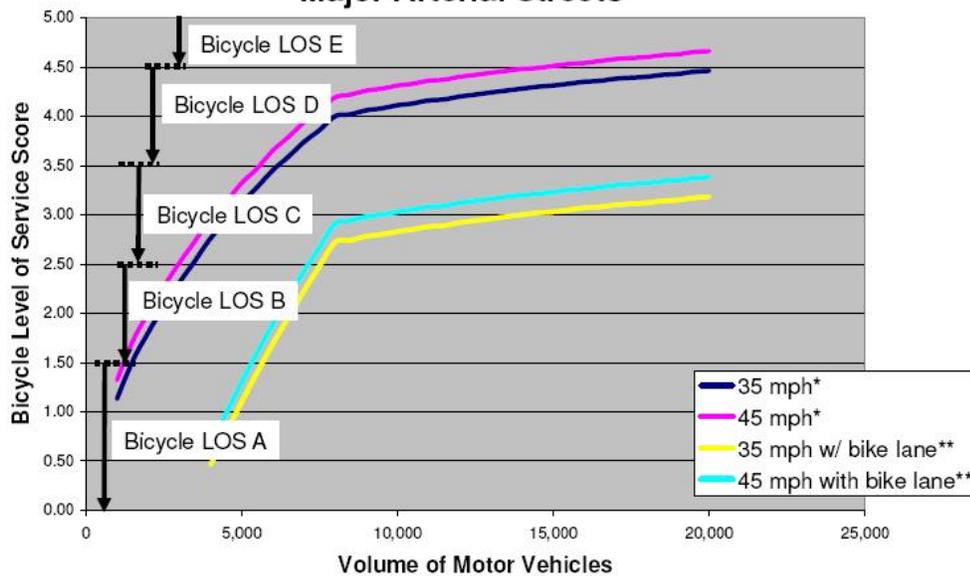
As can be seen from the graph below, for the current design standards the Bicycle LOS grade will generally become a "C" or worse at approximately 3,000 ADT. This volume of traffic is typically exceeded on all major arterial streets. This LOS grade is below that which many municipalities set for their desirable minimum Bicycle LOS (LOS B is a typical minimum for communities).

As with the collector streets, we recommend revising the standards so that the cross section for major arterial streets includes 12-foot travel lanes and 4-foot bike lanes. This would provide for Bicycle LOS scores at least on the favorable end of the "C" range for all collector roadways. The retention of the 12-foot travel lanes maintains space for heavy vehicles. A differential striping with 11-foot lanes toward the middle of the road and 13-foot lanes next to 4-foot wide bike lanes would offer benefits to bicyclists. An alternate treatment for major arterials is shown in **Figure 5.3** with 14-foot wide outside lanes.

Current 4-Lane Major Arterial Street Design Standards



Bicycle LOS with respect to Motor Vehicles per Day Major Arterial Streets



*Assume 4 lane roadway, 12 foot lane width, 2% trucks, and a Pavement Condition of 3.5

**Assume 4 lane roadway, 12 foot lane width, 4 foot bike lane, 2% trucks, and a Pavement Condition of 3.5



Sample Cross-Sections. A set of cross-sections has been developed to reflect road treatments for specific bicycle recommendations. These cross-sections can be adapted to correspond to different road conditions and attributes as necessary. **Figure 5.1** corresponds to a cross-section with striped bike lanes. **Figure 5.2** corresponds to a cross-section with striped bike lanes and parking. **Figure 5.3** denotes a cross-section that has used differential striping to obtain wide outside lanes. **Figure 5.4** shows a cross section containing a multi-use path on one side of the road.

Roadway Intersections

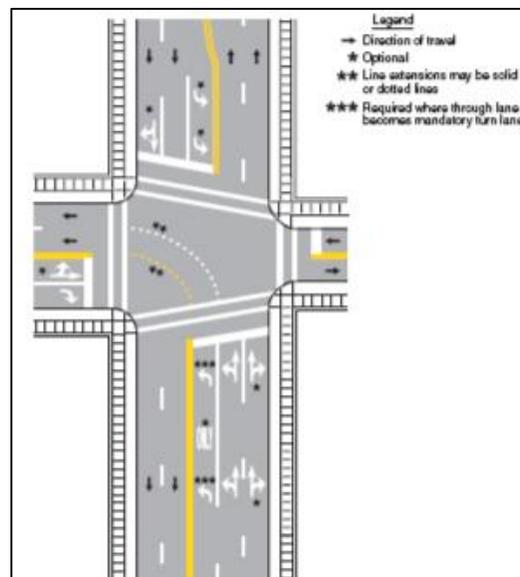
If bicycle lanes are adopted as the standard on-street treatment for bicyclists, special care must be given to the bike lanes design at intersections. Since intersections represent significant conflict points for bicyclists, appropriate striping, marking, and signing is critical to help ensure the proper behavior of cyclists and motorists. At the end of this chapter are six drawings illustrating the proper striping of bike lanes through intersections. These details were developed by a team of traffic engineers, design engineers, and bicycling experts to encourage the safe and legal riding of bicycles through intersections. These drawings are among the most comprehensive in the country and represent bicycle treatments through intersections as taught in the National Highway Institute's Bicycle Facilities Design Course.

To adopt these standards, Rocky Mount would have to revise one of its striping practices. Currently, intersection lane use symbols are painted on the approaches to many major intersections (an example is shown in the graphic at the right⁹). These markings typically consist of through/left and through/right arrows painted on the pavement. While the through/left arrow causes no problems for bicyclists, the through/right can be problematic. This treatment can cause improper behavior from motorists who are turning right — they might pass a

bicyclist in the bike lane and then turn in front of the bicyclists from the through/right lane. If the through/right symbol is to be used, the bike lane should be discontinued prior to the intersection so that a through lane (the bike lane) is not located to the right of a right turn lane (the through/right lane). However, as shown in the graphic at the bottom of the page the through/right pavement marking is optional. If this marking is left off, the solid bike lane line should change to a skip line prior to the intersection.



Signal Loops. Most traffic signal loops designed for motorists can detect bicyclists if the cyclists know where to place the bicycle. Bicyclists frequently have trouble being detected at traffic signals. They often believe the signals are non-responsive and consequently run red lights. One effective way to address this problem is to mark the location on the pavement where a cyclist would have to stop the bike to be detected by a traffic signal. The sign pictured here and the symbol it shows have been tested for cyclist understanding and are being considered for future updates to *MUTCD*. To implement them before they are included in the *MUTCD* would require a request to experiment be filed with FHWA.



Specific signal loops for bike lanes (or multi-use paths) can also serve to improve cycling conditions. A typical treatment is a quadrapole loop with overall dimensions of 2 ft by 20 ft.

⁹ FHWA, *Manual on Uniform Traffic Control Devices*, Figure 3B-22, pg. 3B-34, Washington, DC, 2003.



Figure 5.1 Striped Bike Lanes Local Street Cross-Section

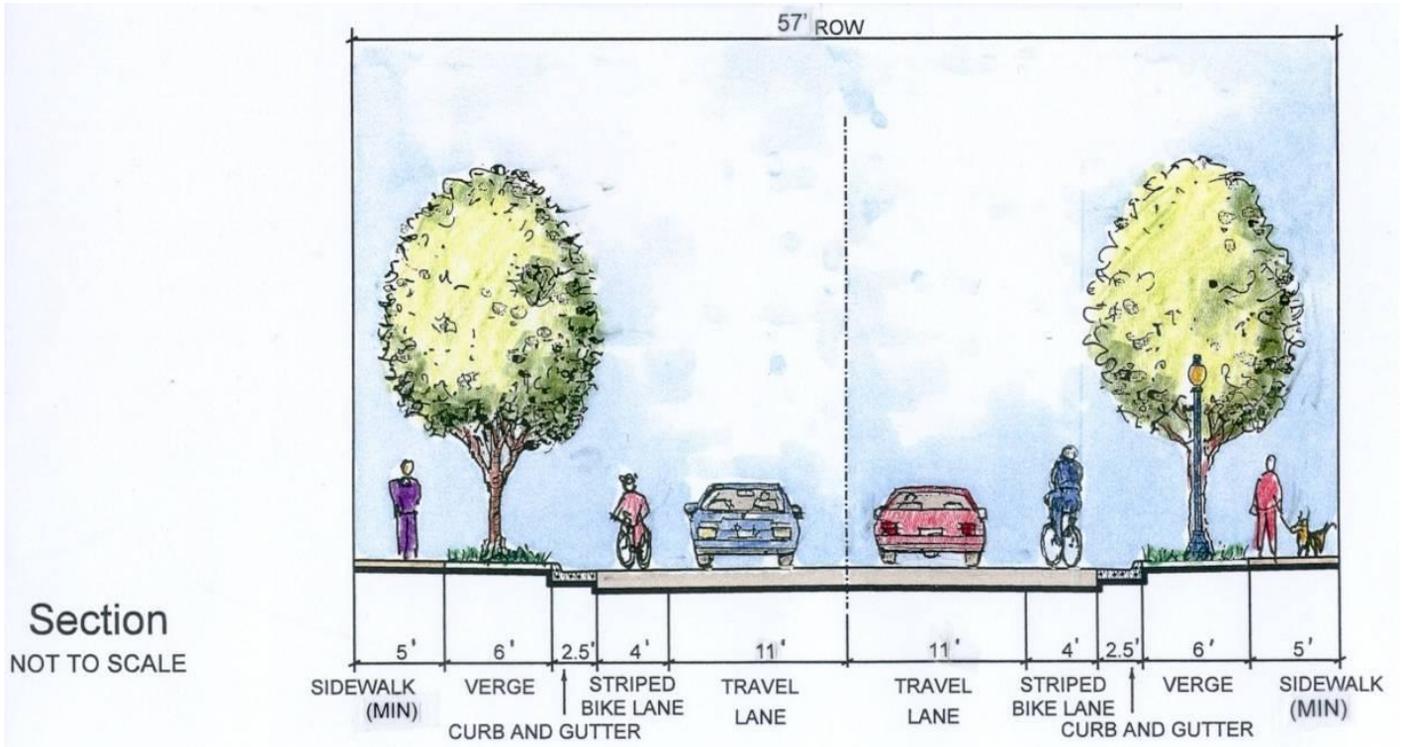


Figure 5.2 Striped Bike Lanes and Parking Collector Street Cross-Section

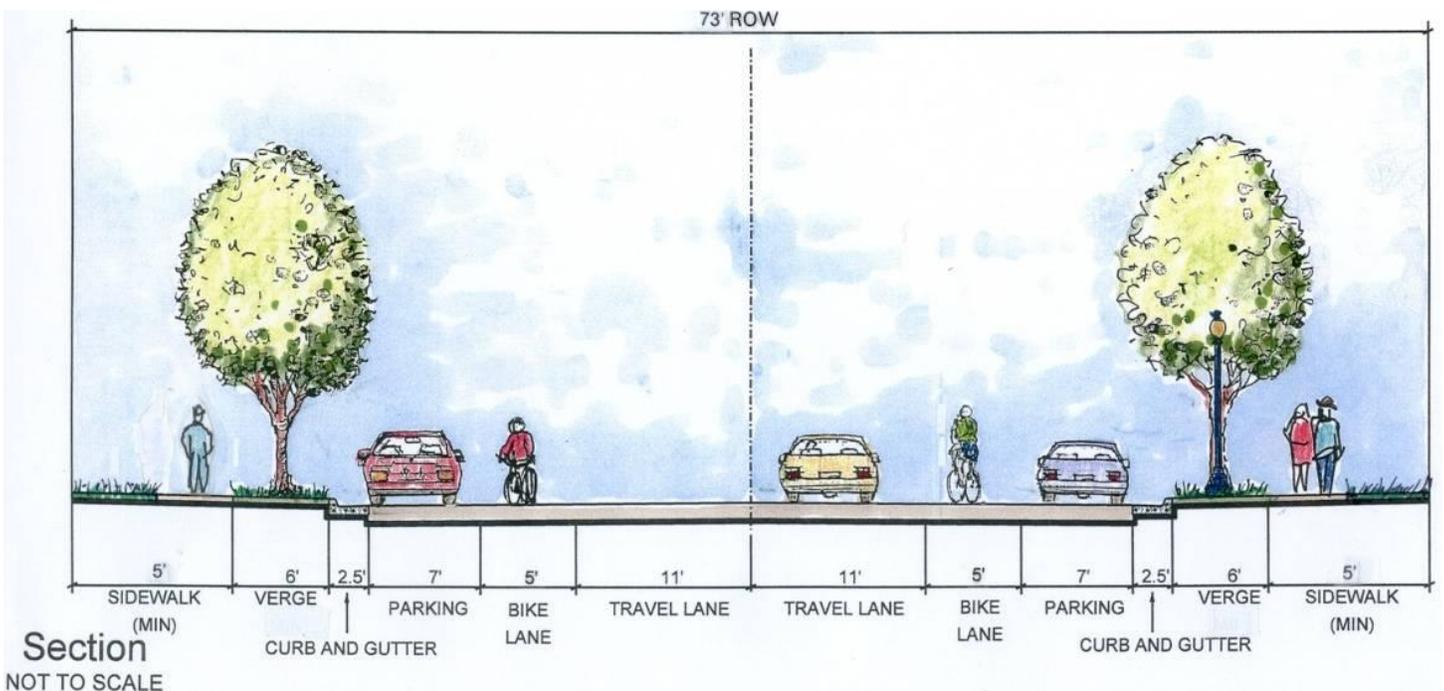




Figure 5.3 Wide Outside Lanes Major Arterial
Cross-Section

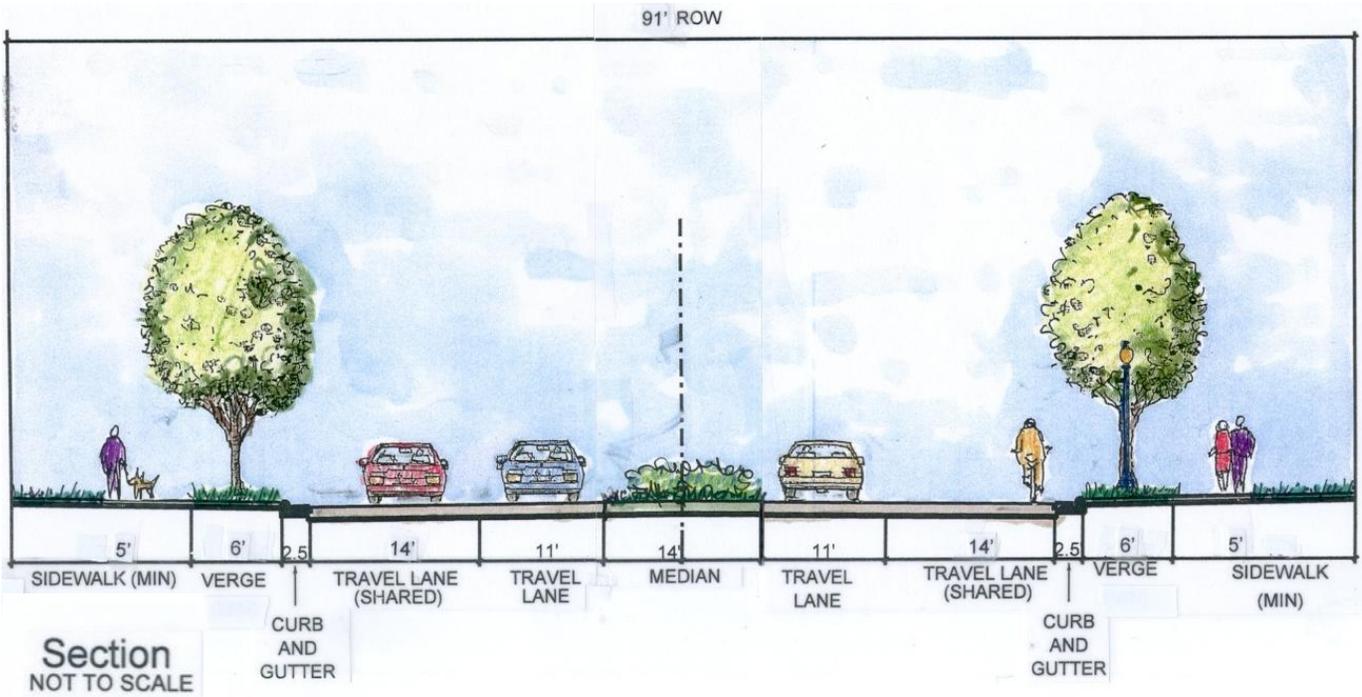
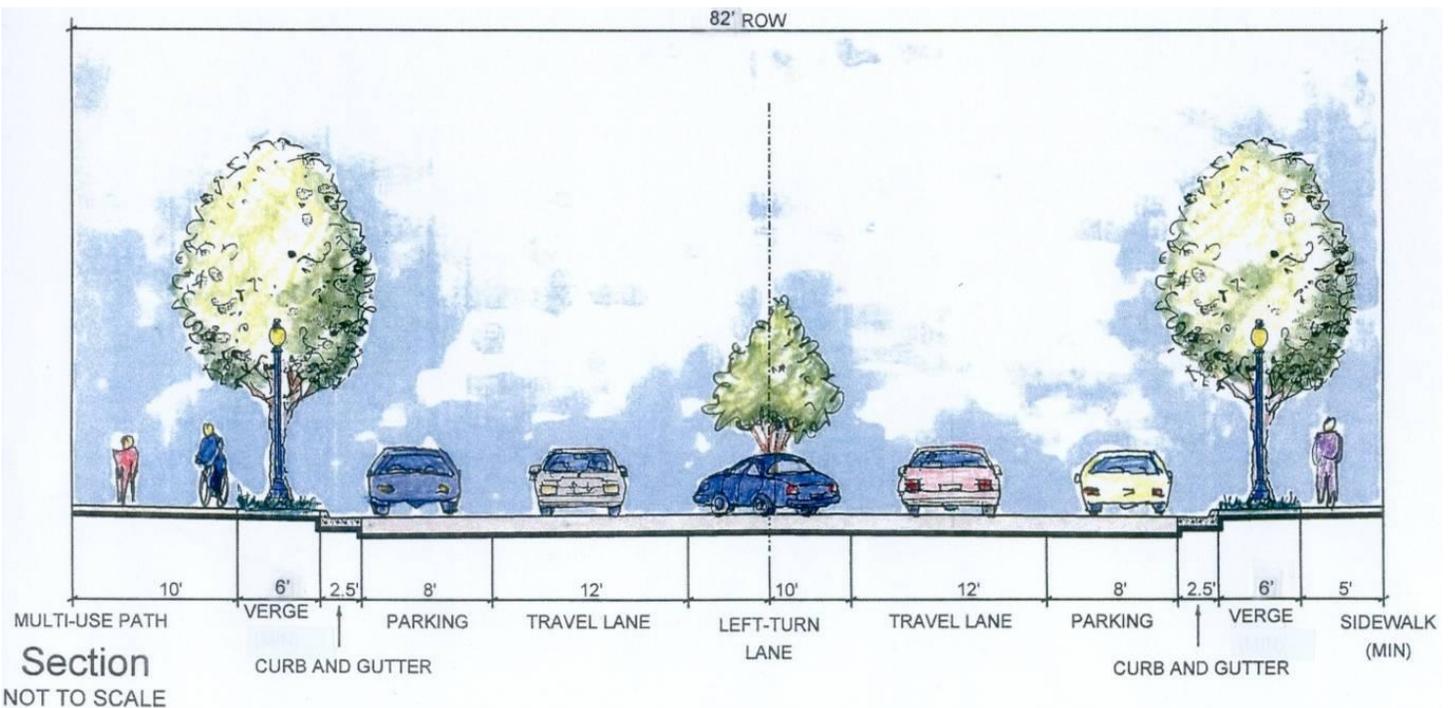


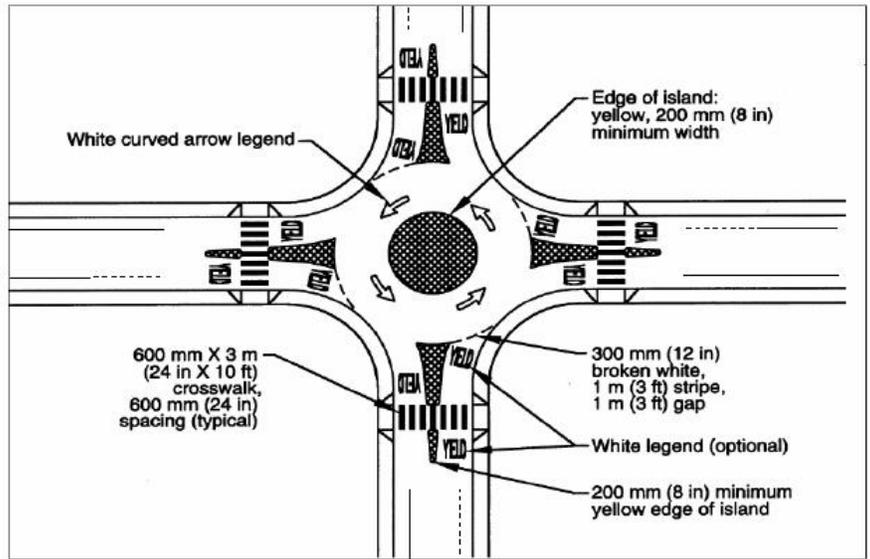
Figure 5.4 Multi-Use Path Minor Arterial
Cross-Section



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Roundabouts. Bicycles fare well at urban compact roundabouts. With low design speeds, minimized conflict areas, and yield upon entry traffic control, well-designed urban compact roundabouts are convenient and safe for bicyclists. With respect to the design of bike lanes at urban compact roundabouts, the approaches should be treated just as any other unsignalized intersection: the bike lanes should be terminated prior to the roundabout, and cyclists should be allowed to claim the lane in the circulating roadway. An example drawing of this treatment, from the FHWA design guide¹⁰ (with a modification to show approach bike lanes) is shown at the bottom of this page.

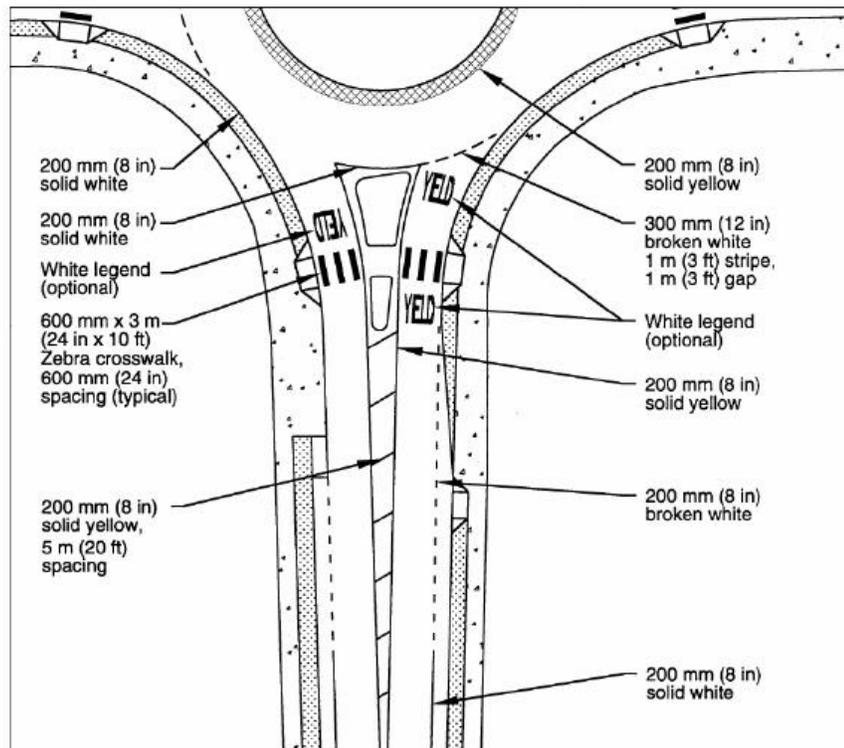


It should be noted that the MUTCD states, "Bicycle lanes shall not be provided on the

Roundabouts: An Informational Guide FHWA-RD-00-67, June 2000 (modified)

circular roadway of a roundabout intersection." This statement is made as a STANDARD and is thus not to be violated.

At more complex roundabouts, such as the one shown to the right, bicyclists should be given a choice to either claim the lane and ride through the circulating roadway, or to move to a widened sidewalk and traverse the roundabout as pedestrians.



Roundabouts: An Informational Guide FHWA-RD-00-67, June 2000

¹⁰ FHWA, Roundabouts: An Informational Guide, FHWA-RD-00-67, McLean, VA, June 2000.



Bicycling Treatments

The routine accommodation of bicycle facilities (bike lanes) within the roadway network is the most important treatment that can be implemented to improve bicyclists' safety. However, since the completion of a network of bike lanes will take time, there are some additional treatments which can improve the bicycling conditions within Rocky Mount.

SHARE THE ROAD signs 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 or obvious courtesy problem exists between motor vehicle and bicycle traffic sharing the road



BIKE ROUTE signing 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



Multi-Use Paths

Multi-use paths are becoming quite popular, not only with bicyclists, but with many non-motorized transportation device users across the country. These facilities come in two basic types: sidepaths — those on the right-of-way adjacent to a roadway; and independent paths — those situated primarily on their own alignment (such as a rail trail). The geometric design criteria are the same for both, and are provided in the AASHTO *Bike Guide*.

Many jurisdictions are noticing that bicyclists are not the only users on their multi-use paths. The recent FHWA report on emerging trail users should be referenced to

determine geometric criteria for non-bicycling users of multi-use paths.

Sidepaths

The AASHTO *Guide to the Development of Bicycle Facilities* strongly cautions those contemplating a sidepath facility to investigate various elements of the roadway corridor environment and right-of-way before making a decision. AASHTO provides nine cautions/criteria (pp. 34-35); unfortunately, these are not quantitative to provide specific direction, and thus only judgment can be used to determine when a sidepath is an acceptable bicycle facility.

In addition to the AASHTO cautions, research from the US and abroad confirm that bicycle/motor vehicle crash rates are higher for bicyclists riding on a sidepath than on a roadway.^{11,12,13,14,15} Consequently, designers are advised to be very careful when choosing to design sidepaths.

One recently completed research study suggests that there may be ways to mitigate some of the safety risks associated with sidepaths.¹⁶ To greatly simplify the results of this research, it finds that crashes occur less often when the speed of the trail user is reduced. This means some sort of “traffic calming” treatment for the trail may be appropriate at intersections. At signalized intersections, it

¹¹ Kaplan, J. *Characteristics of the Regular Adult Bicycle User*. FHWA, U.S. Department of Transportation, 1975.

¹² Moritz, W. *Adult Bicyclists in the United States - Characteristics and Riding Experience in 1996*. *Transportation Research Record: Journal of the Transportation Research Board*, 1636, TRB, National Research Council, Washington, DC, 1998

¹³ Wachtel, A. and D. Lewiston. *Risk Factors for Bicycle-Motor Vehicle Collisions at Intersections*. *ITE Journal*, September, 1994.

¹⁴ Räsänen, M. *How to decrease the number of bicycle accidents? A research based on accidents studied by road accident investigation teams and planning guides of four cities*. Finnish Motor Insurer's Centre, Traffic Safety Committee of Insurance Companies. VALT. Finland, 1995.

¹⁵ Summala, H., E. Pasanen, M. Räsänen, and J. Sievänen, J. *Bicycle Accidents and Drivers' Visual Search at Left and Right Turns*. *Accident Analysis and Prevention*. Elsevier Science Ltd., 1996/03, 28(2), pp.147-53, 1996.

¹⁶ Petritsch, Landis, Huang, Challa. *Sidepath Safety Model - Bicycle Sidepath Design Factors Affecting Crash Rates*, submitted to TRB for publication, July 2005.

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is best to treat the path roadway crossings as crosswalks, bringing the pathway close to the adjacent roadway so its signals can be incorporated into the overall signalization plan. Additional treatments to the typical pedestrian heads may be desirable at these intersections. The most significant of these supplemental treatments is the blank out sign. NO RIGHT ON RED or YIELD TO PEDS IN CROSSWALK signage may increase motorist awareness of individuals riding (or walking) in the crosswalks.

users. If Rocky Mount wishes to encourage bicycling, then it must remember to design its trails so that they attract users, rather than provide a ribbon of asphalt for them to use.



At unsignalized intersections it is best to move the sidepath out of the area of the side street intersection with the adjacent roadway. This allows motorists to deal with one intersection at a time. Additionally, bicyclists are only required to scan in two directions.

Multi-use paths on independent alignments

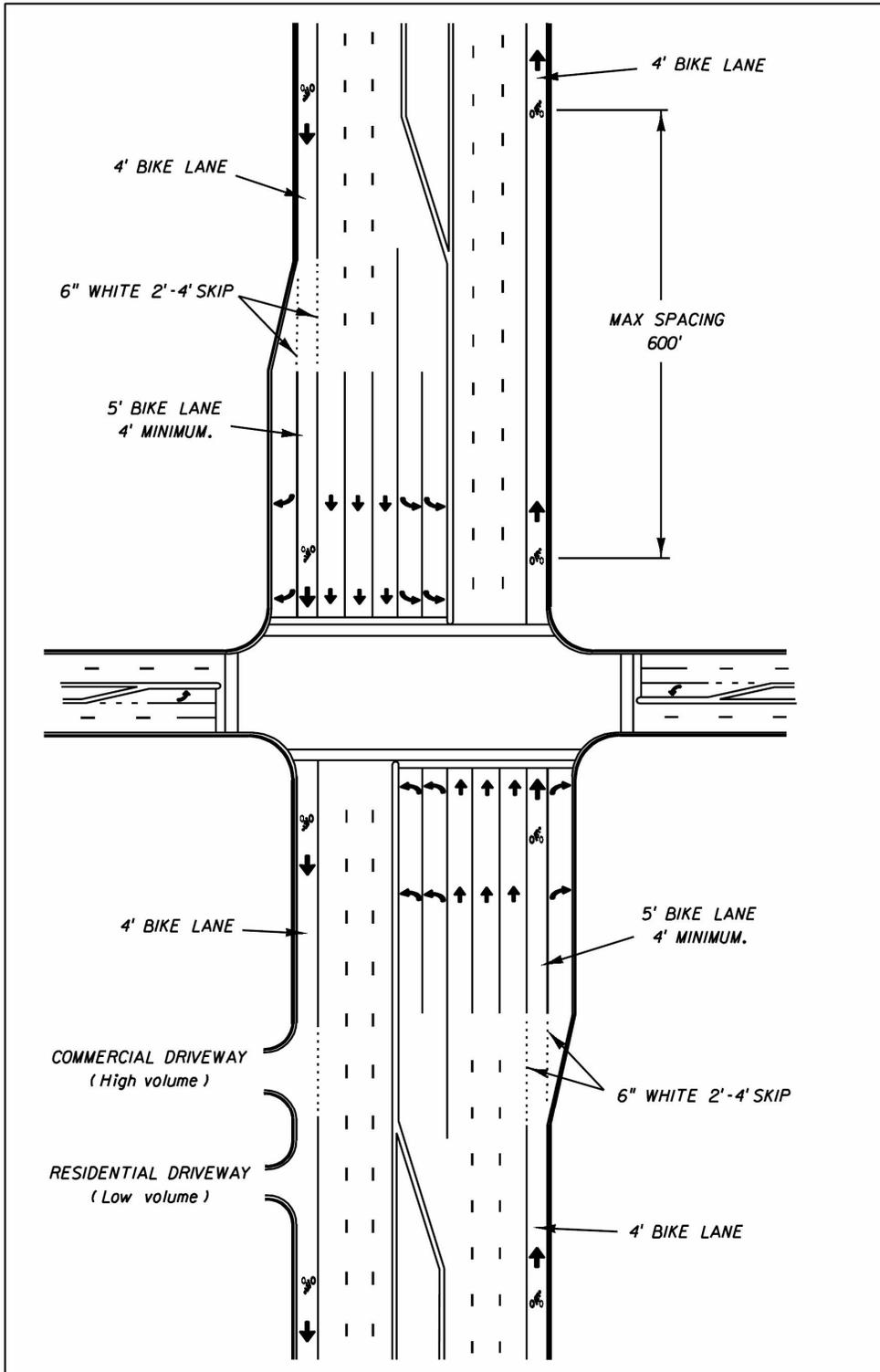
Multi-use paths on independent alignments should be designed according to the AASHTO *Bike Guide* (with the aforementioned reference to non-bicyclist users). Multi-use paths are, in effect, little roads and should be designed as such. This means there are clearance requirements, minimum radii, stopping sight distance requirements and other criteria just as there are for roadways. Additionally, designers must comply with the *MUTCD* when designing these facilities.

Though paths should be thought of as roadways for geometric and operational design purposes, they require much more consideration of amenities than do roadways. Shade and rest areas with benches and water sources should be designed along multi-use paths. Where possible, vistas should be preserved or sought out. Way finding signs (how far to the library or the next rest area or directions to restrooms) are important for non-motorized



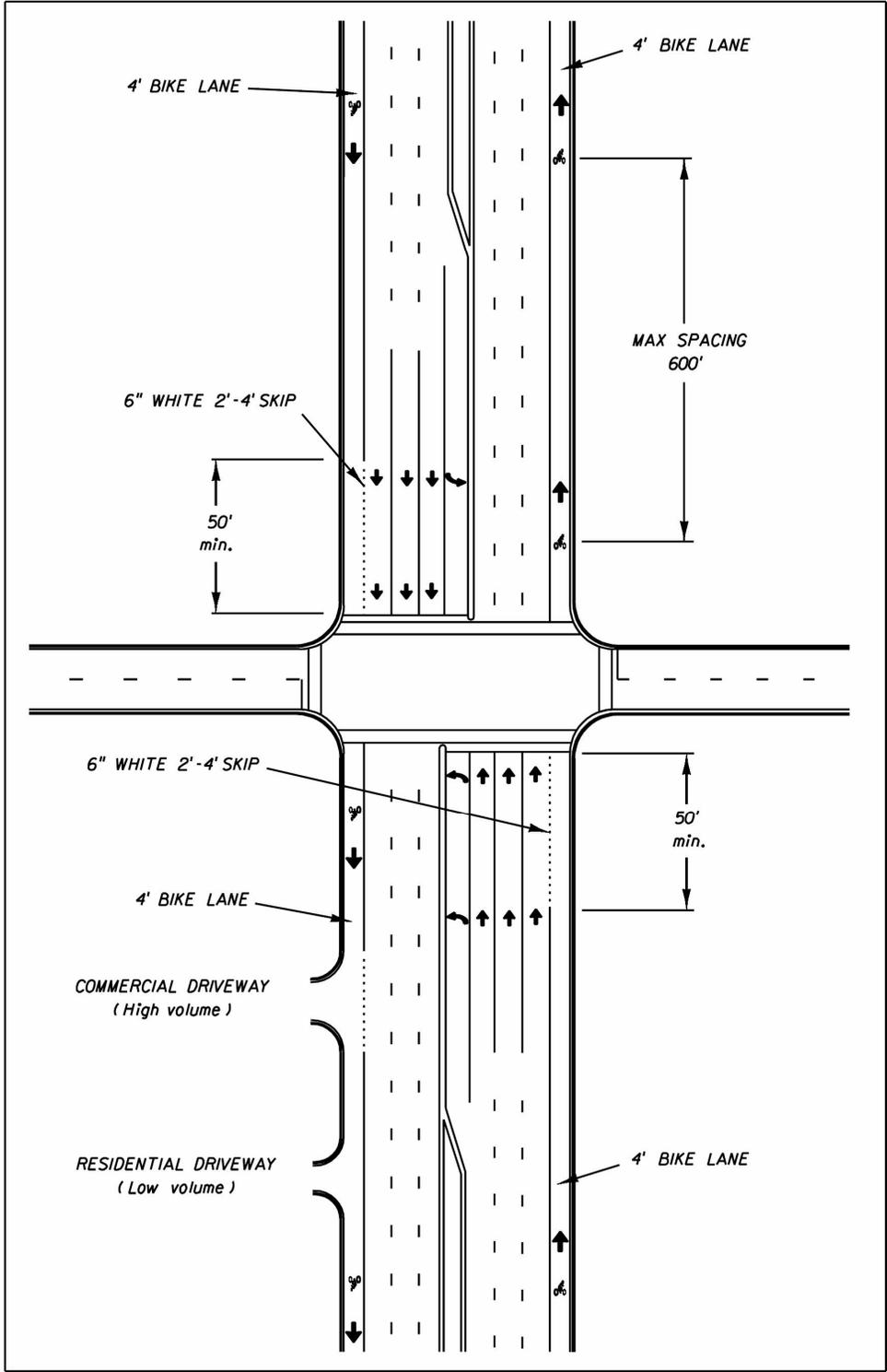
Intersection Striping Treatments

Major Intersection with Separate Right Turn Lane (curb and gutter)



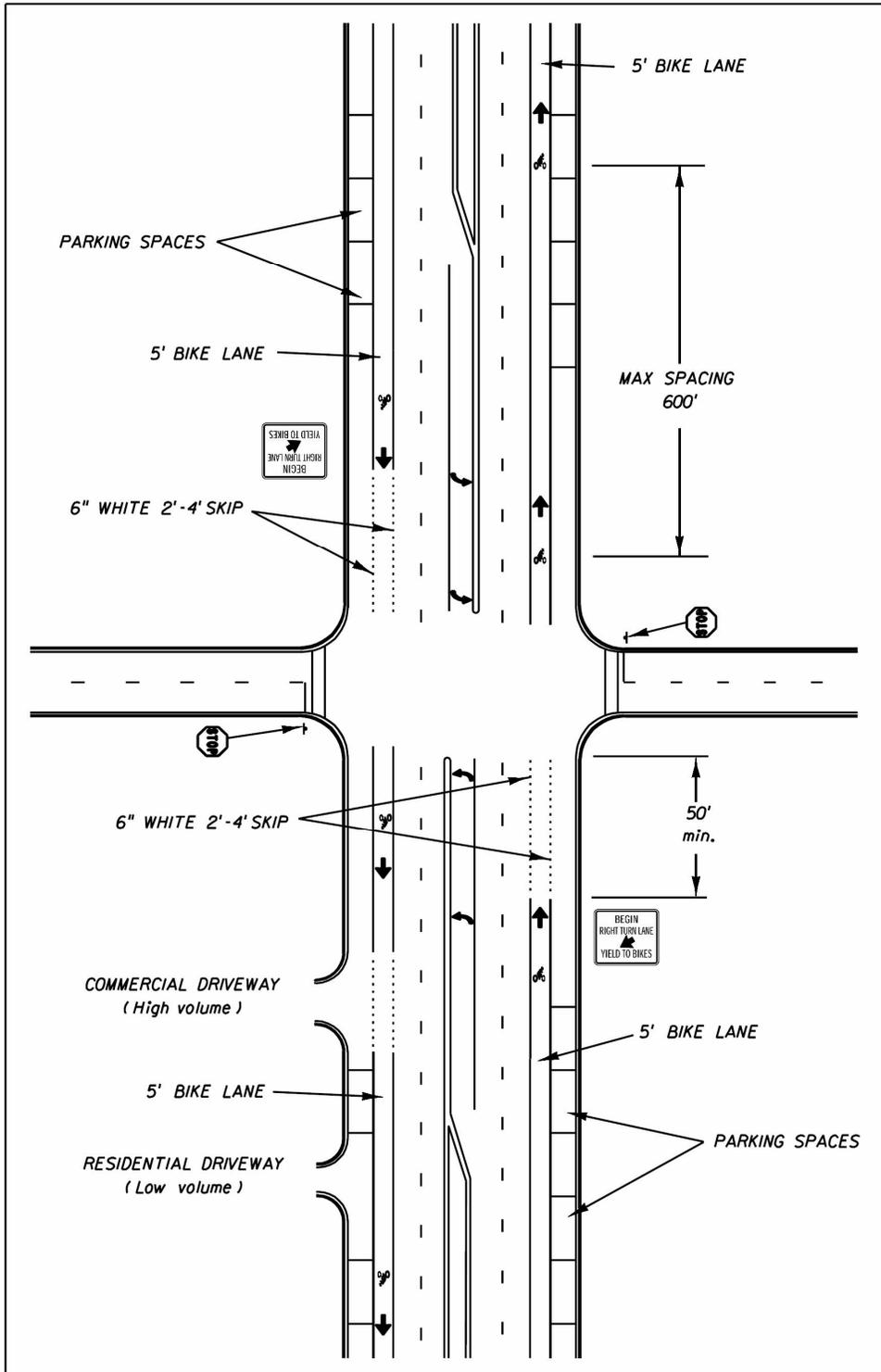


Major with Local Street Intersection and No
Right Turn Lane (curb and gutter)



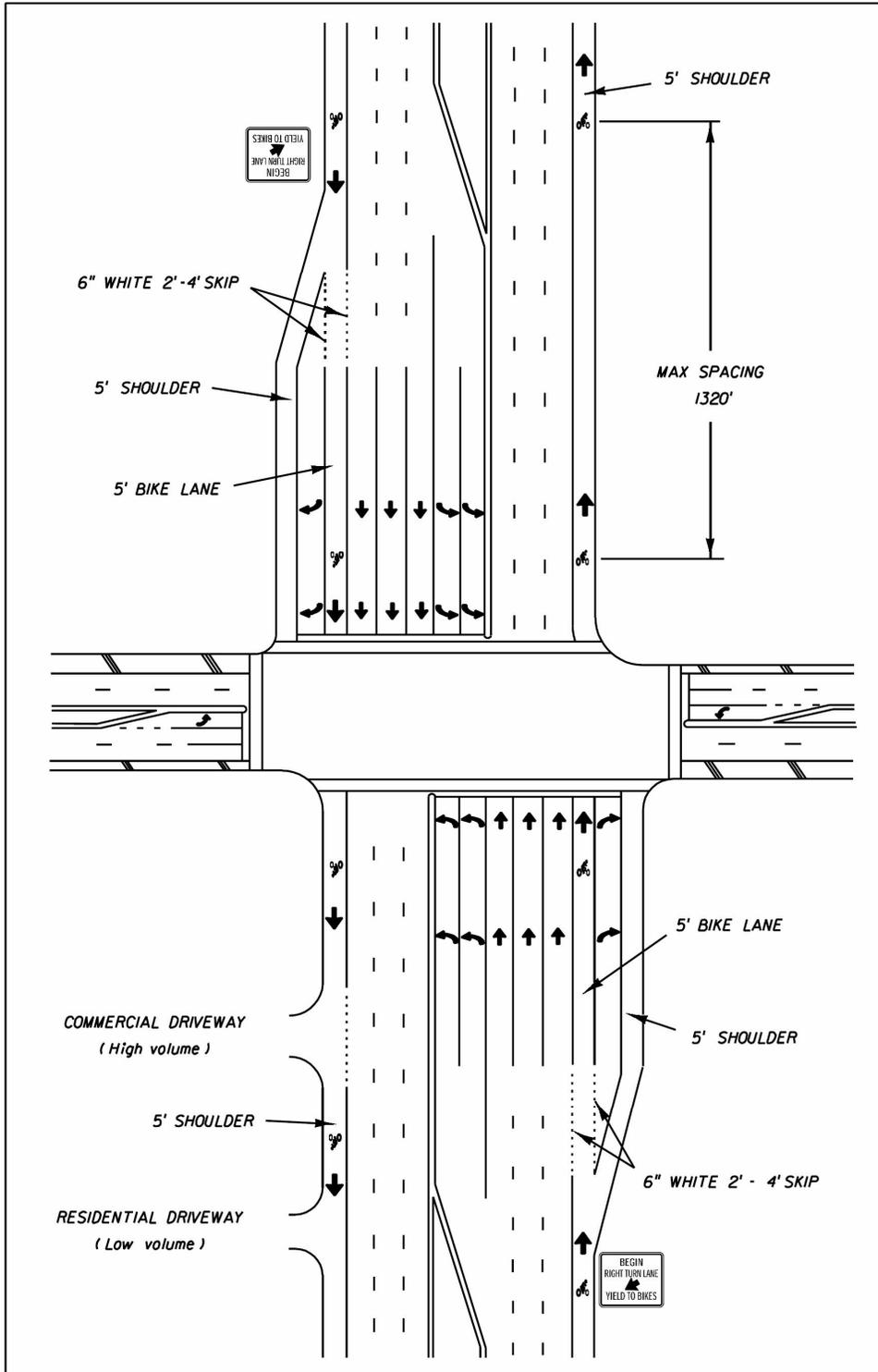


Major with Local Street Intersection, No Right Turn Lane, with On-Street Parking (curb and gutter)



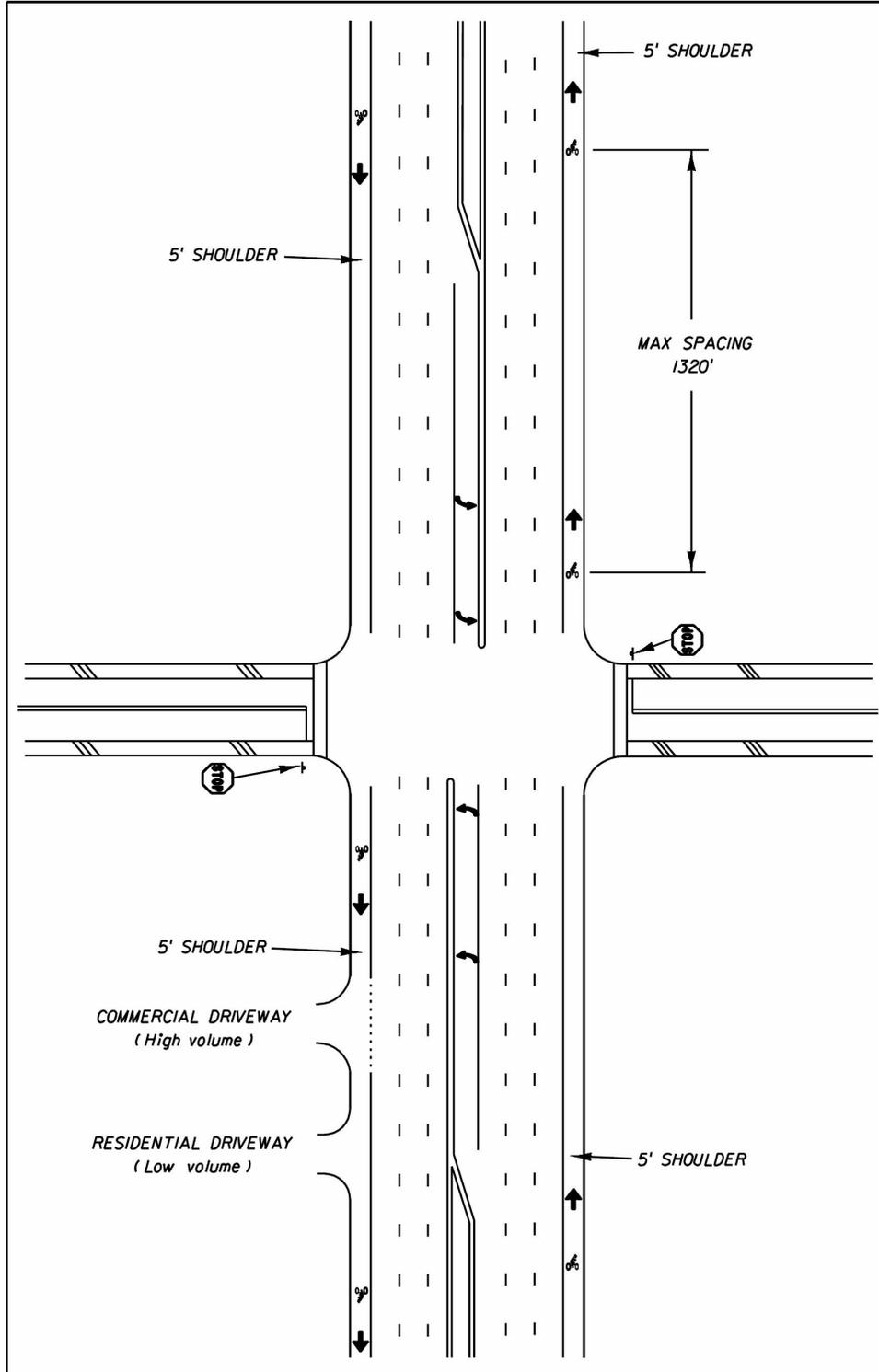


Major Intersection with Designated Shoulder,
Separate Right Turn Lane (paved shoulder)



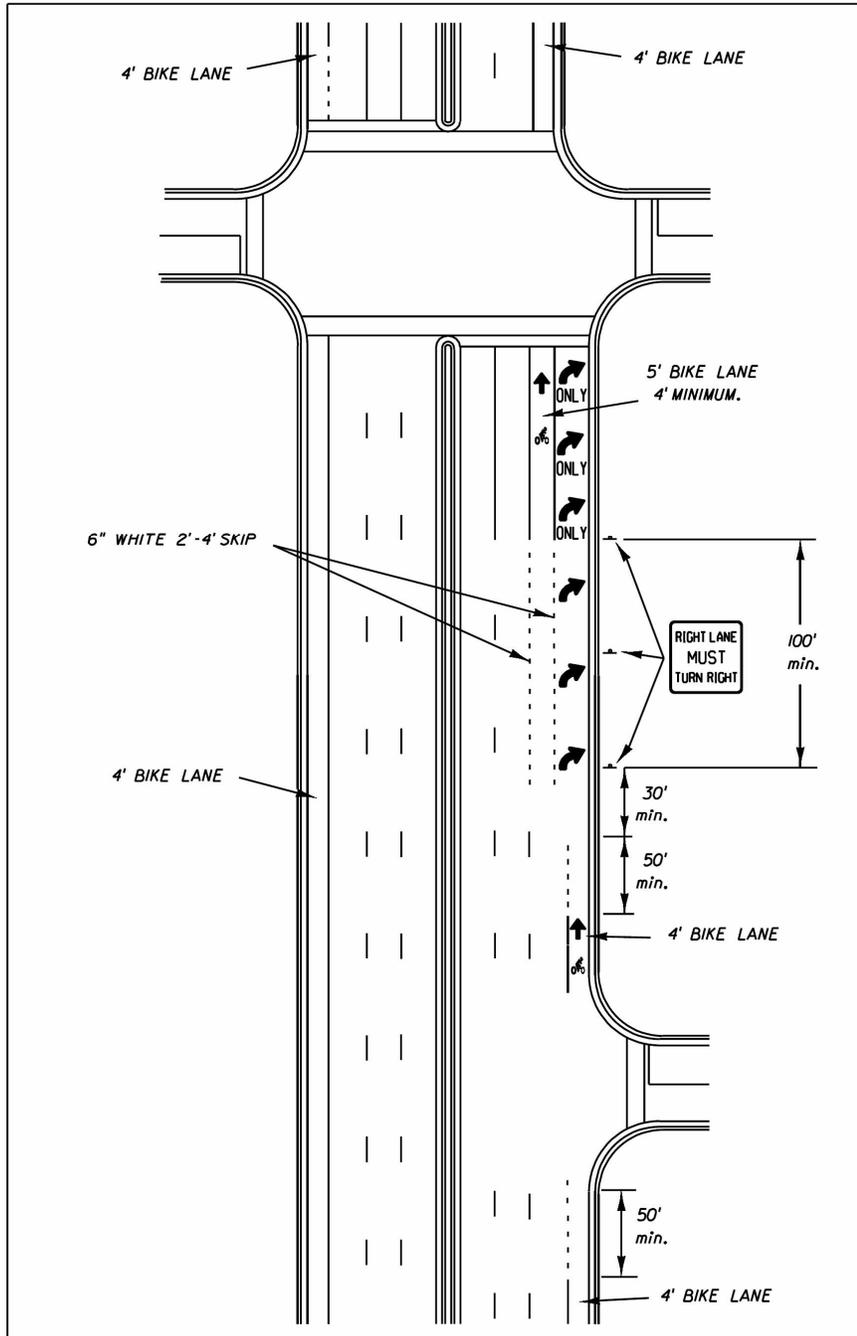


Major with Local Street Intersection, Designated
Shoulder and No Right Turn Lane (paved
shoulder)





Major Intersection, Designated Bike Lane, with
Right Turn Drop Lane (curb and gutter)

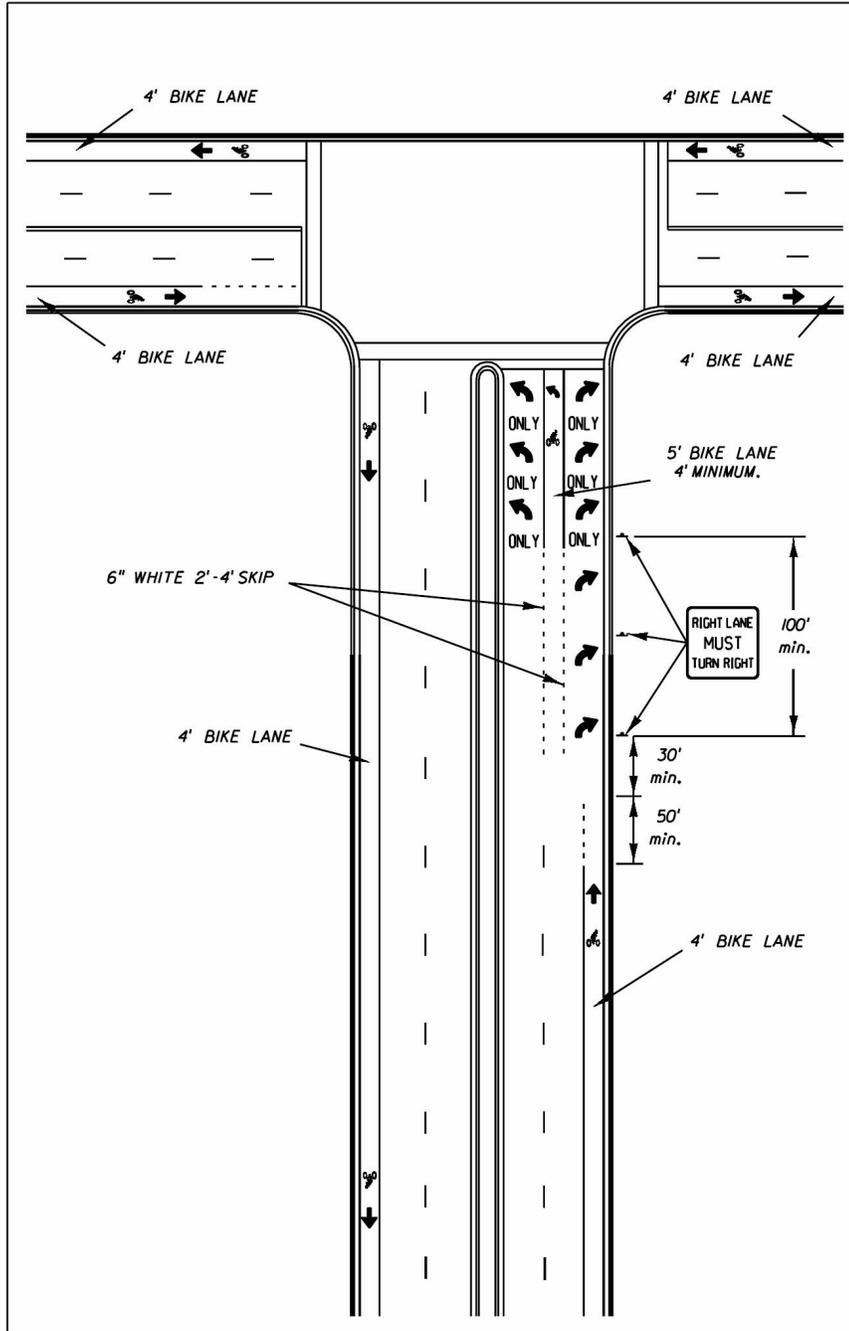


BEGIN RIGHT
TURN LANE YIELD
TO BIKES signs are
not appropriate for
this intersection
configuration.



**Tee Intersection, Designated Bike Lane, with
Right Turn Lane (curb and gutter)**

BEGIN RIGHT TURN LANE YIELD TO BIKES signs are not appropriate for this intersection configuration.





Sample Cost Estimates

To accommodate the bicycle facilities being considered, a set of sample cost estimates were developed. These cost estimates were derived based on unit costs for similar facilities in other areas as well as by referencing the NCDOT cost estimation spreadsheet. Each unit cost is included below, along with a description of how it was obtained. All estimates are provided in 2005 dollars.

Multi-Use Path: \$150,000 per mile

This estimate assumes a 10 foot wide asphalt surface and does not include other potential mitigation such as building on a wetland area. Please refer to **Figure 5.4** for a graphical illustration of this cross-section.

Wide Paved Shoulder: \$305,000 per mile

This figure assumes a 5 foot wide paved shoulder being built where there was currently a grass shoulder on both sides of the road. Other factors such as ditch work are not considered. **Figure 5.3** provides the closest approximation to this cross-section. However, a wide paved shoulder cross-section does not have curb and gutter and would have normally sized outside lanes.

Signed Route: \$250 per sign or \$1000 per mile

This estimate accounts for four signs to be placed in a mile section.

Striped Bike Lanes: \$15,000 per mile

The estimate for striped bike lanes accounts for striping lanes in each direction and signing the route. These lanes are often created in conjunction with resurfacing projects; however, the cost of resurfacing is not included here. Please refer to **Figure 5.1** for a cross-section.

Wide Outside Lanes: \$15,000 per mile

Wide outside lanes are used here when differential striping can be applied to a roadway. As a result, no additional widening is necessary. The estimate accounts for the cost of restriping and signing the route. **Figure 5.3** provides a cross-section of this configuration.

Signed Route with Striped Parking: \$15,000 per mile

These routes are again the result of working within the existing cross-section to create a new facility type. This estimate accounts for striping and signing costs. **Figure 5.2** shows an illustration of this cross-section.

Neighborhood Connector: \$85,000 for a prefabricated bridge

This estimate assumes that the neighborhood connector would consist of a prefabricated bridge run for a short section over a stream or other barrier.

Chapter 6 — Ancillary Facilities and Programs

Mapping and Signing Projects

Comprehensive Route Systems

The proposed area-wide Bike Route System should first be mapped and signed with bicycle route signs. Potential improvements are identified in this chapter. These recommendations encompass issues from maintenance to design and include but are not limited to:

- Provision of bike lanes on local streets where space is available and on-street parking is not an issue
- Use of the shared lane symbol under restricted conditions
- Marking and signing signal loops (and possibly repairing them) for bicyclists
- Repairing utility lids within the bicyclists' line of travel
- Marking railroad crossings to improve safety
- Route signage

While the first five items listed above are important for the bicyclist who has decided to use a specific route, the last — route signage — is critical to helping cyclists determine which route to use. Route signage should provide useful information to the bicyclists. When creating a route system signing plan, one should consider the destinations being served and the best roadways (or facilities) to access those destinations. Signing should include information on the direction to the destinations, the distance to the destinations, and intermittent confirmation that the bicyclist is still on the correct route.

Facilities that can be used to create a comprehensive route system include multi-use paths, bike lanes, shoulders, and shared roadways.

Neighborhood Route Systems

Once a comprehensive route system has been established, it should be linked to neighborhood routes which serve local destinations such as schools and neighborhood parks.

Neighborhood route systems are usually planned along low volume, low speed residential streets with trail connectors to some destinations.

Suitability Rating System

As discussed in Chapter 5, several efforts have been undertaken to quantify how safe and comfortable bicyclists feel on a given type of facility. For this plan's evaluation of design standards, the Bicycle level of service (LOS) was selected. In addition to being widely accepted by State DOTs and local jurisdictions, it is also being considered as the basis for a national LOS model to be included in the Highway Capacity Manual.

The Bicycle LOS methodology allows planners and designers to select a level of accommodation rather than a required specific design treatment to provide for bicyclists along a bike route. What the Bicycle LOS methodology does not do is dictate what level of service is appropriate for a given community or user. This means that a community can decide that for one type of bike route system, such as a neighborhood route system, an LOS A or B may be required. Conversely, LOS C may be acceptable for the routes serving cross town-commuter cyclists.

State/Regional Routes

Any route system implemented by Rocky Mount should consider planned state or regional routes. In addition to linking to any such routes, they should also be signed as destinations within the local comprehensive route system. State and regional routes benefit the local community with support from other jurisdictions, organized promotion, and occasional funding.

Share the Road Signing Initiative

North Carolina has been installing "Share the Road" signage in some form since 1987. This sign, although not a part of the Manual on Uniform Traffic Control Devices (MUTCD) at that time, has since been standardized and

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included in that manual. The sign, shown here, serves to make motorists more aware of the possibility of bicyclists on high-use roads with potentially hazardous conditions. When these signs are placed in a bicycle route, it is typically to denote a more major roadway connecting less frequently traveled roads. These signs serve as important and cost-effective safety and education tools. In fact, the visibility and impact of these signs has recently been acknowledged by the state by the issuing of a “Share the Road” license plate. The additional funds received through the sale of this license plate will be used to promote bicycle education and safety initiatives statewide.



received through the sale of this license plate will be used to promote bicycle education and safety initiatives statewide.

Spot Improvement/Maintenance Programs

General Considerations

All non-Interstate roadways should be maintained so they are safe for bicyclists to use. The surface should be free of debris. Longitudinal cracks should be patched and drainage grates with longitudinal slots should be replaced. Pit lids should be flush with the roadways surface. Paved shoulders should be installed where rutting is occurring on the side of non-curb and gutter roadways. These items should be addressed through the normal roadway maintenance program.



Bicycle Facilities, Including Signal

Clearance and Roadway Symbol Buildup

Bicycle facilities, including trails, require an additional level of effort to provide acceptable maintenance. The maintenance issues mentioned above occur most frequently on the right side of the pavement, where the cyclist is likely to be riding. Consequently, a more frequent maintenance cycle to address these defects should be provided for bicycle routes.

Traffic signal timing and loops along bicycle facilities require extra attention. According to the *MUTCD*¹,

“At installations where visibility-limited signal faces are used, signal faces shall be adjusted so bicyclists for whom the indications are intended can see the signal indications. If the visibility-limited signal faces cannot be aimed to serve the bicyclist, then separate signal faces shall be provided for the bicyclist.

On bikeways, signal timing and actuation shall be reviewed and adjusted to consider the needs of bicyclists.”

While the former can be easily evaluated, the latter concern (that of signal timing) is a little harder to address. The *AASHTO Bike Guide*² provides information of clearance intervals and minimum green times for bicyclists. At wide intersections, the clearance interval equation can result in some excessively long yellow-plus-all red periods for signals. If the facility consists of a shared use path or a bike lane, a signal loop can be placed in the bike lane or on the path in advance of the intersection. When a cyclist passes over the loop the signal will extend the green time for the intersection approach to accommodate the crossing cyclists. This treatment is in common use for motorist and has been applied in various locations for bikes. The design of the loop is critical; the wrong loop in a bike lane will detect cars in the adjacent lane. An effective loop design for detecting bikes in bike lanes is a quadrupole 2 feet wide and 20 feet long (approximately half the size of a normal 40 foot roadway loop). Such a loop readily detects cyclists, but will not detect a car six inches to the side.

¹ FHWA, *Manual on Uniform Traffic Control Devices*, pg. 9D-1, Washington, DC, 2003.

² *AASHTO Guide for the Development of Bicycle Facilities*, pg. 65, American Association of State Highway and Transportation Officials, Washington, DC, 1999.

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Thermoplastic buildup is another concern of bicyclists. Bike lane symbols, lane use (directional) symbols, even crosswalks can all build up with repeated application and cause handling problems for bicyclists. More than two layers of thermoplastic (one marking) should not be allowed on bicycle facilities.

The slipperiness of thermoplastic and paints is another concern of



bicyclists. One way to mitigate this concern is to add sharp silica sand to the glass spheres when it is being applied to the wet thermoplastic or paint. This increases the roughness of the markings' surface, reducing the potential for bicyclists to slip on the thermoplastic.

Safety Railings along Bicycle Facilities

Bridge railing heights have been the subject of recent revisions to the AASHTO *Bike Guide* and ongoing debates among bicycle facility design professionals. The current AASHTO *Bike 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.

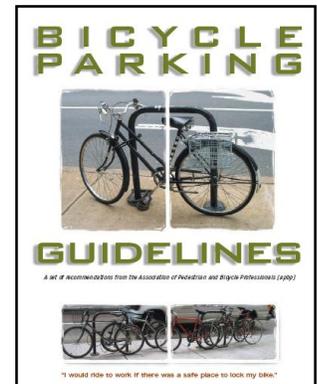
Bicycle Parking Facilities

Just as motorists need a place to park their cars when they arrive at destinations, bicyclists also need a place to park their bicycles. Consequently, when creating a transportation system to accommodate bicycling, parking must be included in that system.

Typically, when parking is installed for bicyclists, the primary consideration is simply the accessibility or the convenience of the parking. While these are significant concerns for bicyclists, they are not the only issues bicyclists are concerned about. Their concerns also include security of the parking and the protection afforded to the bicycle.

Security concerns of bicycle parking can be addressed in several ways. High visibility of the parking rack can improve security. By locating parking near storefronts, or in high pedestrian use zones, the potential for theft or vandalism is reduced. Well-lit areas can improve the security in areas where bicycles are parked after dark. Providing racks that support the frame instead of the wheel make it easier to lock a bike without damaging it. Locking bike lockers also provide good security for bicycles.

The needed protection for a bicycle varies with respect to the purpose of the bicycle trip. For short duration trips, such as to the grocery store or the library, U-shaped bicycle racks on a concrete pad in front of the building may be acceptable. At a park and ride lot, or in front of an office building where the parking is for commuters, bike lockers or covered parking is more appropriate.



The Association of Pedestrian and Bicycle Professionals has produced a guidance document on good bicycle parking design. This excellent document is available on line at the APBP website.³

Safety Initiatives to Reduce Bicycle Motor Vehicle Crashes in Rocky Mount

Sprinkle Consulting reviewed the crash information provided on a map of the Rocky Mount area. The crash locations were largely concentrated in the area around Main Street downtown, providing some clues as to the types of crashes that are occurring. Our site review revealed that most cyclists in this area are casual cyclists whose riding habits are based more upon perceptions of convenience and safety than on actual safe riding practices. They tend to ride on the sidewalk (frequently facing traffic), they frequently ride against traffic on the

³ APBP, Bicycle Parking, available at <http://www.bicyclinginfo.org/pdf/bikepark.pdf>.



roadway, and they do not use lights at night. These behaviors suggest the need for engineering, educational, and enforcement programs to mitigate the crashes.

Engineering/Traffic Calming Countermeasures

Intersection Signage

Static signs such as *NO TURN ON RED when Pedestrians Present* or the *Left Turning Vehicles Yield to Pedestrians* signs have been found to reduce the incidence of pedestrian conflicts at intersections.

Consequently, it is reasonable to expect that these signs would also reduce the conflicts between motorists and bicyclists riding on the sidewalk (or on a sidepath). However, they should be used sparingly and only where there is a documented problem and relatively constant pedestrian/bicycle use of the intersection. The overuse of signs or the use of the signs where pedestrians or cyclists are not using the crosswalks dilute the signs' ability to command the attention of motorists and eventually results in the signs being just background visual clutter.



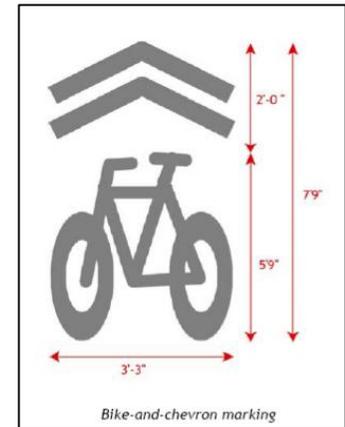
Blank out signs, because they are real time traffic control devices, can continue to be effective at intersections because they are only activated when there is a potential conflict. If motorists see a YIELD TO PEDS sign next to a permissive left turn signal, the motorists will know there is a pedestrian crossing the conflicting crosswalk at that time. This "real-time" aspect of blank out signs allows for them to be placed at locations where conflicts are not frequent or constant enough to make a static sign appropriate.



Shared Lane Symbol

The Shared Lane Symbol has the potential to reduce several different types of crashes and is being used in jurisdictions across the country. Because cyclists tend to center over the symbol, it may be useful for reducing dooring crashes (where a parked motorist opens a door into the path of a cyclist). Additionally, a similar treatment has been found to reduce wrong way riding and riding on the sidewalk, and to improve bicyclists' position in the travel lanes.

Consequently this treatment may actually reduce the incidence of motorist failure to yield to the bicyclist crashes and overtaking crashes. Despite the potential for these collateral improvements, this treatment is recommended only in very selective areas, such as adjacent to on-street parking, or completing a link in a bicycle route.



This treatment is experimental and has not been approved by FHWA, so it would require filing a Request to Experiment with FHWA prior to implementation. An evaluation plan must accompany this Request to Experiment and this must include measures of effectiveness. The following measures of effectiveness are suggested for Rocky Mount:

- Separation between parked cars and bicyclists
- Percent of bicyclists riding on the sidewalk
- Percent of bicyclists riding against traffic
- Motorists' understanding of the symbol
- Bicyclists' understanding of the symbol

Because of the observations made by the Study Team in Rocky Mount, the shared use symbol Request to Experiment is recommended as a countermeasure for improper bicycle riding.

Rocky Mount Comprehensive Bicycle Plan



Transit Interface

At this time, there are no bicycle amenities on the buses of the Tar River Transit system. Bike racks on buses can eliminate a barrier presented to those individuals who need their bicycle for supplemental transportation after they deboard. The train station and bus transfer center in Rocky Mount does have a bike rack for those people who want to ride their bike to the station and then leave it for the remainder of their journey. Amenities for bikes on buses should be considered as a way to enhance the multimodal riding experience for users. Another amenity that should be considered to more fully integrate bicycle use and the transit system is the installation of bike racks near heavily used bus stops in town. With features such as bike racks, benches, and shelters, bus stops become more user-friendly environments.



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was produced for a specific roadway). This representation would include location, demographics, and language. It is also important to target motorists with these campaigns to make the drivers aware they need to scan for traffic on the sidewalk. To maximize the potential for reducing crashes, these campaigns must be run concurrently.

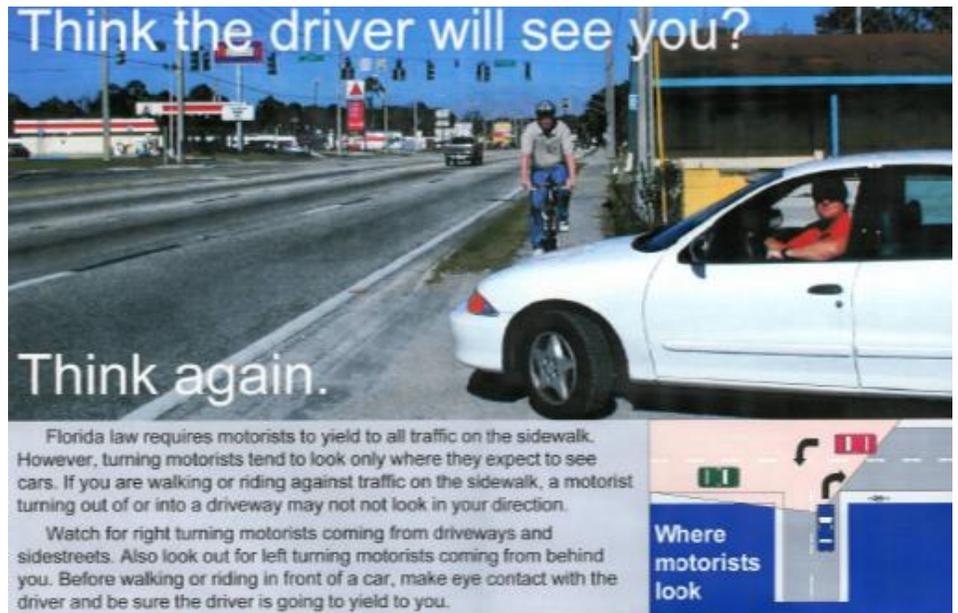
Riding at Night without Lights

Bicyclists operating at night without lights are nearly invisible to motorists, often until it is too late. Even if a bicycle is properly fitted with reflectors, motorists coming from a side street will not see the cyclists until it is too late for the driver to react. Even if bicyclists choose to ride at night without lights, they must be made aware of the dangers they face in the dark. As part of this plan's development, the Study Team reviewed unpublished research papers which show that a minimal (time) ad campaign results in a much increased appreciation of the importance that motorists look for pedestrians at night. It is recommended that the City of Rocky Mount bicycle crash program include an educational campaign effort. Informational posters showing sight distances for various colors of clothing and illustrating the limitations of reflectors may provide cyclists as well as pedestrians the information they need to make better choices when

Educational Countermeasures

The Dangers of Riding Against Traffic and Motorist Yield to Sidewalk Traffic

Riding against traffic, either on the sidewalk or on the roadway is a common practice in the Rocky Mount area. This report acknowledges, however, that sidewalk riding will continue because many people simply are not comfortable riding bikes on the roadway with motor vehicles. Additionally, we cannot expect cyclists to cross a multi-lane roadway to get to a sidewalk so they can ride in the same direction as cars in the adjacent travel lane. Thus, it is imperative that cyclists who chose to ride on the sidewalk be aware of the hazards associated with this practice. This plan recommends driver- and cyclist-targeted campaigns with graphics representing Rocky Mount (the graphic below



choosing gaps to cross the road or when anticipating driver behaviors at driveways and intersections.



Enforcement Countermeasures

The effort to enforce the traffic laws as they relate to bicycle safety should be addressed in a countywide coordinated bicycle enforcement campaign. Sporadic enforcement will not result in significant improvements to cyclist behavior and will likely result in resentment of law enforcement personnel. Those behaviors to be targeted should be determined at the outset of the law enforcement campaign.

It is recommended that the following behaviors be targeted:

- Riding at night without lights
- Violating traffic signals
- Riding against traffic on the roadway

These three behaviors were identified for two reasons. First, they represent particularly hazardous behaviors which result in many crashes. Secondly, and very importantly, the enforcement of these behaviors is easy to justify to the public. When coupled with a large-scale education campaign, the public will understand the importance of the campaign and consequently will accept the enforcement activity.

Chapter 7 — Project Development

Identify Potential Projects and Preferred Treatments

As a part of the recommendations of this plan, a set of 20 bicycle routes were developed for the Rocky Mount area. These bicycle routes are shown as a complete system in **Figure 4.4** and are outlined here along with a description of the facility types recommended and the destination points connected. Cost estimates have been developed for each route based on the unit costs outlined in Chapter 5 and on specific project attributes.

Reservoir Loop (Figure 7.1)

The Reservoir Loop connects from Nashville Road on the east to Halifax Road on the west. This route connects two parks, a community center, two schools, the Tar River Canoe Launch, and two different locations at the reservoir. It also provides connections to the West Side Connector, the Park-Reservoir Connector, the Tar River Trail Extension, the Downtown Reservoir Connector, and the East-West Connector.

Bethlehem Road is a significant road in this route because there are two major barriers to cross. Bethlehem Road is a 3-lane section across the bridge crossing the Tar River. However, after this it widens to a 5-lane section for the bridge crossing US 301. Initially bike lanes were considered for this route and the existing and proposed neighborhood roads connecting to it, with jersey barriers blocking off the middle lane of the 5-lane US 301 bridge for bicycle use. To maintain consistency over the entire route, however, wide outside lanes are recommended for this facility. On this 5-lane bridge, the two-way left-turn lane could be narrowed and differential striping could be employed to achieve the wide outside lanes. The minor neighborhood roads — such as Boone Street, Dalton Road, Clayton Street, and Joyce Street connecting from Nashville Road to the parks — also will support this type of facility.

Bethlehem Road between Beechwood Drive and West Mount Drive also has a width and cross-section that would be adequate to support wide outside lanes via differential striping. Wherever Bethlehem Road narrows to a two-lane road, wide outside lanes are recommended to be

installed in order to accommodate bicyclists. Halifax Road currently has approximately 3 foot grass shoulders that are wider in some areas. These should be paved to accommodate bicycles all the way down to the Tar River Canoe Launch. The bridge crossing the Tar River is scheduled to be replaced in 2008 as TIP project # B-4211. This bridge replacement is recommended to include striped bicycle lanes in order to accommodate bicycle traffic at this key crossing location. The striped bicycle lanes are recommended to begin slightly north of the bridge in order to give bicyclists time to adjust to them before entering the bridge. From the Tar River bridge, the recommended route extends to NC 97 with striped bicycle lanes. NC 97 is a higher traffic and higher speed roadway with a recommended side multi-use path that will allow bicyclists to stay out of the path of automobile traffic. Striped bicycle lanes on Halifax Road between the bridge and this road will allow cyclists a higher degree of comfort traveling between two potential barriers. A signed route is then recommended on Bend of the River Road to carry bicycle traffic to the southern edge of the reservoir.

West Mount Drive is a 5-lane road that would not be a candidate for differential striping due to its width. With an existing 9 foot center turn lane, it is unlikely the lanes on this road could be narrowed any more to accommodate a wide outside lane. As a result, this is recommended to be a signed route. This designation will continue until Country Road, where the signed route will turn to reach the northern edge of the reservoir.

The total cost for this project is estimated to be \$1,250,000.

Park-Reservoir Connector (Figure 7.2)

The Park-Reservoir Connector runs along Old Mill Road from Bethlehem Road and the proposed Reservoir Loop, past Englewood Park, and finally alongside May Drive and Sunset Avenue to City Lake. This project connects with the Reservoir Loop, the Englewood Park-City Lake Rail with Trail, the Tar River Trail Extension, and the Downtown Neighborhood Loop. Old Mill Road from Bethlehem Road to the trailhead for the Englewood Park-City Lake Rail with Trail is recommended to have paved shoulders. Currently a grass shoulder exists that supports this widening, and the bridge along this route over a creek already has these facilities. Once the railroad track is crossed, Old Mill Road is recommended to have a multi-use path to connect with Englewood Park.



After crossing US 301 using two sets of crosswalks, the multi-use path will continue near May Drive. This road is crowded with poor pavement conditions and many driveway cuts. As a result, this multi-use path is recommended to follow a utility easement behind the businesses and near the Tar River. Once Sunset Avenue is reached, a cantilever bridge is recommended (as discussed in Chapter 8) to cross the Tar River. The multi-use path would continue past the old power station and into the City Lake Park, where it would circle the park in a path determined by Parks and Recreation Department. This choice of facility allows bicycle traffic to avoid the busy Sunset Avenue corridor.

The total cost for this project is estimated to be \$400,000.

Farmington Park Loop (Figure 7.3)

The Farmington Park Loop connects the Farmington Park area with the Park-Reservoir Connector and the Englewood Park-City Lake Rail with Trail. A section of this loop runs along Old Mill Road in the area of the Park-Reservoir Connector and is recommended to be a paved shoulder facility. Another section of the loop will consist of a portion of the Englewood Park-City Lake Rail with Trail, which will have connections at Old Mill Road and Englewood Drive. The remainder of this route runs through a residential area and will function as a signed route.

The total cost for this loop is estimated to be \$250,000.

Englewood Park-City Lake Rail with Trail (Figure 7.4)

The Englewood Park-City Lake Rail with Trail route consists not only of the rail with trail multi-use path but also of connecting facilities that link it with the rest of the system. This route connects Englewood Park and City Lake Park as well as connecting to the Hospital/Stoney Creek Connector Trail, the Farmington Park Loop, the West Side Connector, the Park-Reservoir Connector, the Tar River Trail Extension, and the City Lake Downtown Trail. The majority of this facility consists of a rail with trail project that would establish a multi-use path alongside a functioning Nash County Railroad (NCRR) line. This path would utilize railroad right-of-way, requiring extensive cooperation and participation by the NCRR.

Another connector to the rail with trail would be Winstead Road, which has sufficient width to be restriped to

accommodate 11-foot travel lanes and 5-foot bike lanes. This bike lane would be continued for a short distance southbound on Englewood Drive to connect to the rail with trail. Englewood Drive up to Sunset Avenue is recommended to be a signed route with striped parking on one side. After crossing Sunset Avenue, this facility is recommended to continue as a signed route up to Zebulon Road since this is a more commercial area. It is also recommended that bicycle detector loops be installed at the intersection of Sunset Avenue and Zebulon Road.

The total cost for the total Englewood Park-City Lake Rail with Trail route (excluding the proposed bicycle detector loop) is \$450,000. The cost for the rail with trail portion alone is estimated to be \$400,000.

Hospital/Stoney Creek Connector Trail (Figure 7.5)

The Hospital/Stoney Creek Connector Trail primarily consists of a greenway/multi-use path that would run along the northern bank of Stoney Creek, with some connector facilities. This route would connect to the West Side Connector, the Englewood Park-City Lake Rail with Trail, and the existing Tar River Trail. Jones Road and Curtis Ellis Drive connect this trail with the hospital area via recommended paved shoulders. The trail could potentially travel along Zebulon Road and Country Club Road from Englewood Drive to Hunter Hill Road. The characteristics of this facility, however, only permit this to be a signed route. The preferred alternative would be to continue along the creek with a multi-use path in this area. The major barrier to this arrangement is crossing US 64 Business, which will need to be addressed. The trail will most likely need to merge with Country Club Road before the crossing of Stoney Creek. The bridge at this stream crossing is currently very narrow and may be replaced in a future TIP project. After this crossing the remainder of the facility should be a signed route.

The total cost of this route is \$800,000, with the trail portion (including behind Zebulon Road) costing \$570,000. The bridge replacement is not included in this cost.

Downtown-Reservoir Connector (Figure 7.6)

The Downtown-Reservoir Connector runs along Hammond Street and connects the two schools as well as the Reservoir Loop, the Tar River Trail Extension, the City Lake-Downtown Trail, the Downtown Core Loop, and the



East-West Connector. The section of Hammond Street from Nashville Road to Tillery Street is recommended to be a signed route with striped parking on both sides. From Tillery Street to Grace Street, this facility is recommended to transition into a signed route without striped parking due to the decrease in road width.

The total cost of this facility is \$25,000.

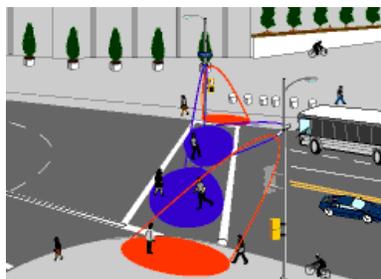
Downtown Neighborhood Loop (Figure 7.7)

The Downtown Neighborhood Loop connects Sunset Park, City Lake Park, Stith-Talbert Park, Martin Luther King Jr. Park, five schools, the Edgecombe Community College, the Booker T. Washington Community Center and City Hall. In addition, it will provide connections to the Downtown Core Loop, the Downtown-East Side Connector, the City Lake Downtown Trail, the Tar River Trail Extension and existing Tar River Trail, and the Abandoned Rail to Trail.

Beginning at City Lake, the Downtown Neighborhood Loop must cross Sunset Avenue. Three recommendations are proposed for this crossing. First, where the landscaped median in Sunset Avenue begins across from City Lake, a lighted crosswalk is proposed to cross this street. The lighted crosswalk would operate by detecting a bicycle or pedestrian using an infrared signal and then flashing yellow in the direction of approaching cars, signaling a stop. This would alert cars to the presence of pedestrians and allow for a safer crossing.



A second option is to install a signal for pedestrians and bicyclists at this location. This signal would be triggered by a push button or by a microwave. A microwave detector not only can recognize bicyclists and pedestrians at the crosswalk, but also can detect slower users in the crosswalk and extend the crossing time for those users.



A third option is to improve the eastern bank of the Tar River by building a multi-use path under the Sunset

Avenue bridge structure to allow cyclists and pedestrians safe passage under Sunset Avenue.

After crossing Sunset, the loop would continue by widening the sidewalk into a multi-use path along this road until reaching River Drive. This is the location for the proposed Tar River Trail Extension, which the loop would utilize. The Downtown Neighborhood Loop would then continue onto the existing Tar River Trail until reaching Myrtle Avenue. Myrtle Avenue has adequate width to be striped with bike lanes on both sides. The loop would then continue onto Virginia Street, which is a relatively low traffic wide street with two schools, the Booker T. Washington Community Center, and access to Martin Luther King Jr. Park. This road would be recommended as a signed route with striped parking due to its width.

From Virginia Street, there is a crossing opportunity to Raleigh Street and Grand Avenue via a cemetery. An addition of a multi-use path through this area would give greater accessibility to the cemetery, provide an important connection, and provide a quiet off-road place to walk and bike. The Downtown Neighborhood Loop continues down Fairview Road which will be a signed route. After this, the route continues onto Rosewood Avenue and then onto Redgate Avenue. Both of these roads are of a sufficient length to stripe for bike lanes on both sides.

The Downtown Neighborhood Loop would continue onto Arlington Street, which has the width and street conditions to support striped parking on both sides while being designated as a signed route. However, the road narrows after Marigold Street. As a result, this will remain a signed route but will no longer support striped parking.

This route continues on the one-way pair of Tarboro Street/Sunset Avenue and Western Avenue/Hill Street due to the forecasted railroad crossing closures at Nash Street/Marigold Street. The facilities on these roads are recommended to be signed routes until reaching Church Street. This is in the downtown core area. As a result, traffic does not travel at very high speeds in this area. The route shifts at this point to Western Avenue and Nash Street. Currently the widths and street conditions on these streets would allow for Western Avenue to be designated as a signed route with one striped parking lane and for Nash Street to have a parking lane and a bike lane. However, it would not be advisable for these facilities to have different classifications since they are essentially the same segment of the route. The ADTs on



these roads are shown as being low enough that one lane in each direction would be adequate to support traffic levels. In fact, with the proposed railroad closings, the traffic levels might decrease. Therefore, it is recommended that these roads be narrowed to 1 lane each with parking and bike lanes.

The Downtown Neighborhood Loop continues onto Mayo Street/Pinecrest Road, where the recommended facility type is a signed route due to the residential nature and width of the road. The route continues at Piedmont Avenue, where a striped bicycle lane is recommended. This segment of the route will contain the trailhead for the City Lake-Downtown Trail and will connect to the proposed multi-use path at City Lake.

The cost for this route is approximately \$200,000.

City Lake-Downtown Trail (Figure 7.8)

The City Lake-Downtown Trail consists of a multi-use path running alongside an active Nash County railroad line. This trail would connect to the Downtown Neighborhood Loop, the Downtown Reservoir Connector, and the East-West Connector. This trail would connect to a historic site, a school, and the City Lake Park.

The total cost for the City Lake-Downtown Trail is estimated to be \$250,000.

Downtown Core Loop (Figure 7.9)

The Downtown Core Loop serves the central downtown area and connects two schools, the Transit Transfer Station, the Imperial Center, one historic site, City Hall and the Braswell Memorial Library. This route also connects to the Downtown Neighborhood Loop, the East-West Connector, the Downtown Reservoir Connector, and the Abandoned Rail to Trail.

Virginia Street from Myrtle Avenue to Albemarle Avenue is recommended to be a signed route with striped parking. This section would connect the Downtown Core Loop with the Downtown Neighborhood Loop. At Albemarle Avenue, the route would continue via the railroad underpass and then along Riverside Drive. The facility type along these two roads is recommended to be a signed route due to road widths and traffic volumes. From Riverside Drive, the Downtown Core Loop would continue south onto Church Street, which is recommended as a signed route.

After this, the route turns onto Grace Street, which would be suitable for wide outside lanes with edge improvements and differential striping. These wide lanes would make this road more attractive for bicycle travel as a means to separate from the higher volume of automobile traffic. After traveling down Grace Street, the loop would continue on Hammond Street toward the Transit Transfer Station. This is recommended to be a signed route. Next the loop would turn onto the one-way pair of Franklin Street and Church Street and briefly merge with the Downtown Neighborhood Loop. These roads are recommended to be signed routes.

The Downtown Core Loop continues on Sunset Avenue to Main Street. Sunset is proposed to be a signed route in this area. Main Street is also proposed as a signed route. However, this facility needs to be analyzed to determine the best incorporation of bicycles in the corridor. A change that will benefit the safety of bicycles would be to convert the current pull-in angle parking on Main Street to back-in angle parking. This enhances visibility when departing from a space and also is safer for individuals leaving a vehicle. Other ideas for this corridor include allowing two-way bicycle traffic on each side of the road (enhancing mobility for bicyclists by eliminating the railroad crossing barrier), putting Main Street on a “road diet” to become one lane in each direction (allowing for greater flexibility with the installation of bicycle lanes), and making Main Street bi-directional on either side of the tracks to reduce the need to cross the railroad unnecessarily.

The route leaves Main Street at Highland Street, which is utilized for two blocks until reaching Atlantic Avenue. Highland is recommended to have parking striped on one side of the road. Atlantic Avenue is then recommended as a signed route up to Virginia Street.

The total cost for the Downtown Core Loop (assuming Main Street to be a signed route) is \$25,000.

Johnson Pope-Holly Street Park Loop (Figure 7.10)

The Johnson Pope-Holly Street Park Loop connects two schools, Holly Street Park and Pineview Cemetery and also connects to the Downtown Neighborhood Loop. This loop runs on Rosewood Avenue from Sycamore Street to Wake Street. This segment of the route is concurrent with the Downtown Neighborhood Loop and is of sufficient



width to be striped with bike lanes. At Wake Street, the route continues to Raleigh Street through Pineview Cemetery and behind Fairview School. This road has very low traffic and is recommended as a signed route. On Raleigh Street, the route is recommended to continue as a signed facility due to its width. However, the rider only has to remain on Raleigh Street for one block before turning onto Mathews Street. This short street is recommended to be a signed route. To reach Holly Street Park from this road, a bicycle-pedestrian bridge has been constructed, which serves as an existing neighborhood connector.

Once on Holly Street, the route continues as a signed facility. It then turns onto Olive Street, which is followed until reaching Raleigh Street. Olive Street is recommended as a signed route due to the low traffic levels, facility width, and on-street parking present. There is a small spur on this route via Shearin Street and Coleman Avenue. This spur only goes as far as O.R. Pope Elementary School, and is recommended to be a signed route. The main route continues across Raleigh Street onto Mercer Street. Mercer Street is recommended to be a signed route and to have striped parking lanes on both sides of the road, allowing for 6-foot parking lanes and 11.5-foot travel lanes. The route continues onto Sycamore Street, which is also recommended to be a signed route with striped parking on both sides. This will allow for 12-foot travel lanes on Sycamore Street. The route then turns onto Rosewood Avenue, completing the loop.

The proposed cost for this loop is estimated to be \$20,000.

Abandoned Rail to Trail (Figure 7.11)

An abandoned rail line in downtown Rocky Mount runs from the Imperial Center area all the way to the old mill by Falls Road. This abandoned rail appears to have most of its right-of-way still intact, and as a result would be a great candidate for a rail to trail project. This would put a multi-use path where the rail had been previously. Due to the former use as a rail line, the area will already be properly graded and in relatively good shape to convert to a multi-use path. This trail would connect to the Downtown Core Loop and would link many of the downtown neighborhoods in Nash County. A spur could also be built off of this line to connect to the existing Tar River Trail.

The proposed cost for this project is estimated to be \$250,000.

Downtown-East Side Connector (Figure 7.12)

The Downtown-East Side Connector links the downtown core with many of the downtown Edgecombe neighborhoods. This route connects with the Edgecombe Community College and with the Downtown Neighborhood Loop, the East-West Connector, and the East Side Loop. A portion of the route runs concurrent with the Downtown Neighborhood Loop on Atlantic Avenue/Arlington Street. The portion of the route on this facility is recommended to be a signed route; however, the implementation of differential striping to create wide outside lanes should be examined as an option. The signed route continues on Eastern Avenue, and then onto Parker Street in order to access Tarboro Street. The Eastern Avenue and Parker Street portions of the Downtown-East Side Connector should be designated as a signed route due to the low traffic volumes and the presence of on-street parking. Once on Tarboro Street, the route continues to Fairview Road. There is sufficient roadway width to stripe bike lanes on Tarboro Street. Currently not much on-street parking exists, but this would need to be prohibited for the successful addition of bike lanes.

The cost of the Downtown-East Side Connector is estimated to be \$30,000.

East-West Connector (Figure 7.13)

The East-West Connector links the south side of downtown by providing a vital bicycle link between Nash and Edgecombe Counties. This facility connects with the Reservoir Loop, the Downtown Core Loop, the Downtown Reservoir Connector, the Downtown-East Side Connector, the East Side Loop, and the City Lake-Downtown Trail.

This route begins on Nashville Road. This road is wide enough in this area to support a signed route with striped parking on one side. A connection is made off of Nashville Road at Grace Street. Grace Street connects all the way from Nashville Road to Hammond Street. This facility is recommended to be a signed route with striped parking between Nashville Road and Raleigh Road (on both sides of the street). However, from Raleigh Road to Hammond Street, there is no longer a need for on-street parking and differential striping can be employed to produce wide outside lanes.



The route continues onto High Street, which due to the low traffic volumes is recommended to be a signed route. The signed route runs briefly on Friend Street, after which it connects with Bassett Street to cross the railroad tracks. After Bassett Street changes names to Ambler Street, the route turns onto Pender Street. These facilities are all recommended to be signed.

The Downtown-East Side Connector continues onto Rex Street, which has adequate width to designate it as a signed route with striped parking on two sides. Rex Street continues in this fashion until reaching Old Wilson Road. At this point, the route crosses to Cokey Road and follows that facility for about a block before entering Planters Street. This section of the route encounters higher traffic facilities and has to cross a railroad track. Cokey Road also narrows significantly after the railroad crossing. As a result of this environment, no other treatment is feasible except a signed route. Additional study should be performed to look at other options in this area.

Once on Planters Street, the width of the road is such that it would support bike lanes on both sides. However, due to the level of difficulty of the rest of the facilities on this route, a wide outside lane would be more appropriate to suit the level of rider anticipated to use this route. The Connector continues up Pitt Street to Oakwood Drive, which goes all the way to Fairview Road. Again, while both of these roads could support bike lanes, wide outside lanes are recommended to accommodate the level of rider anticipated to utilize the route.

The cost of this facility is estimated as \$60,000.

East Side Loop (Figure 7.14)

The East Side Loop connects two schools, the College Loop, the Downtown Neighborhood Connector, the East-West Connector, and the Downtown-East Side Connector. This loop provides an important connection between the neighborhoods in Edgecombe County. The loop begins at Virginia Street where it meets with the Downtown Neighborhood Loop. The Downtown Neighborhood Loop splits off to follow a multi-use path through a cemetery, and the East Side Loop continues down Virginia Street until it ends. Virginia Street is recommended to be a signed route until the dead end due to parking currently being allowed on the road. After this, a road is proposed that would connect Virginia Street with Meadowbrook Road. Meadowbrook currently has wide grass shoulders

that could be paved. Paved shoulders are recommended for the proposed connector as well. Virginia Street should be studied further after the construction of this connector to evaluate whether parking could be limited and wide outside lanes created.

Meadowbrook Road runs all the way to Rouse Road. Rouse Road also has wide grass shoulders that could be paved. However, Rouse Road is a low traffic rural road that will most likely function as an advanced rider's route rather than a basic rider's route. As a result, it would be more cost effective to designate this as a signed route. The initial concept for this route was to continue it on the proposed Tarboro Street Extension; however, factors noticed in the field (occupied homes) will make the extension of this road difficult so an alternate facility was chosen. Instead, the route continues on Rouse Road to Brake Road. The route is recommended to continue as a signed facility on Brake Road until reaching NC 43. The user will travel on NC 43 for a brief period before continuing on proposed extensions of Sutton Road and Fairview Road. All of these routes are recommended to be signed routes for the reasons stated for Rouse Road. The route continues onto the existing portion of Fairview Road (NC 43 Business). A striped bicycle lane was initially considered for this facility; however, since the remainder of this route is more suited for advanced riders paved shoulders are recommended instead where curb and gutter do not exist.

The route continues on Fairview Road until Rosewood Avenue, the intersection point for the Downtown Neighborhood Loop. The route then turns east onto Rosewood Avenue. This road is utilized by the Downtown Neighborhood Loop with the recommendation of striped bike lanes. Therefore, the extension of this facility via the East Side Loop also recommends the use of striped bicycle lanes. The route continues on Stokes Street (part of which is proposed) up to Virginia Street, with a connection on Edgecombe Meadows Drive. Both of these streets are recommended to be designated as signed routes.

The estimated cost of the East Side Loop is \$870,000.

Tar River Trail Extension (Figure 7.15)

The Tar River Trail is a multi-use path that currently extends between Sunset Park and Martin Luther King Jr. Park and runs along the Tar River. Two extensions are



proposed to this trail. The first extension is to the easternmost side and runs from Martin Luther King Jr. Park to Leggett Road. The other extension is to the southwest and would involve crossing Sunset Avenue, running along the utility easement by the west bank of the river to near where the river crosses US 301. The eastern extension connects with the College Loop and the Downtown Neighborhood Loop, while the western extension connects with the Downtown Neighborhood Loop, the Park-Reservoir Connector, the Englewood Park-City Lake Rail with Trail, the Downtown-Reservoir Connector, and the Reservoir Loop. A portion of the western extension also runs concurrently with a portion of the Englewood Park-City Lake Rail with Trail and the Park-Reservoir Connector.

The estimated cost of the eastern section of the Tar River Trail Extension is \$200,000. The estimated cost of the western section of the extension is \$500,000. Overall, the total cost for both sections of the extension is estimated to be \$700,000.

College Loop (Figure 7.16)

The College Loop is approximately 13.5 miles and connects the East Side Loop, the Tar River Trail Extension, the Battleboro Connector, the Mall-Hornbeam Park Loop, the YMCA Loop, and the West Side Connector. This loop also will connect the North Carolina Wesleyan College and the Rocky Mount Preparatory School with the Golden East Crossing Mall and the new YMCA and Rocky Mount Sports Complex.

The loop begins at Barnes Street where it connects with the East Side Loop. This road has sufficient width to support bike lanes if on-street parking is eliminated. The loop continues on Leggett Road where it connects with the Tar River Trail Extension. Leggett Road has 3-foot grass shoulders that would support paving. The route continues on Old Battleboro Road/Springfield Road which also has adequate grass shoulders to be able to pave. Next, the route continues along a proposed collector connecting Old Battleboro Road/Springfield Road with Tanner Road and then on to Tanner Road. The route extends along Tanner Road/College Road from Airport Road in the south to US 301 in the north. Paved shoulders are recommended for the proposed collector (in order to maintain consistency) as well as Tanner Road/College Road. Upon reaching US 301, the route continues on that road for a short distance before reaching the entrance for NC Wesleyan College.

Due to the heavy traffic levels on this road, the facility type is recommended to change to a multi-use path on the east side of the roadway. This would allow users to enter onto the multi-use path from College Road, whose intersection with US 301 is unsignalized, and then cross from the multi-use path onto the campus at the college entrance which is signalized. Once inside the college campus, bike lanes are recommended to be installed on the southern section of the loop around campus and for the exit onto Bishop Road. If the college is willing to stripe the lanes around the full loop this would be a viable alternative as well.

After leaving the NC Wesleyan campus, the route continues south onto Bishop Road, which subsequently intersects with Fenner Road continuing southbound. This section of the route is recommended to be a multi-use path due to the adequate width on the east side of both roads. This will also link many of the ancillary facilities of the college and the Rocky Mount Preparatory School with each other. The multi-use path is also proposed to be extended north on Bishop Road for a short distance until reaching the shopping center at US 301, thus providing access to this shopping area for students and residents nearby. If a multi-use path in this area is cost-prohibitive, designation as a signed route may also be considered.

The route continues onto Jeffreys Road where it runs concurrently with a portion of the Mall-Hornbeam Park Loop. Jeffreys is recommended to be a signed route until reaching Benvenue Road. After this, the route continues for a short distance on Benvenue before turning onto Tiffany Boulevard and then onto Airport Road. The facility type for both of these areas is recommended as a signed route due to the heavy development and traffic in the area. Further study may need to be performed to determine suitable means of ingress and egress from the mall area.

The signed route designation continues on Airport Road until reaching Thorpe Road. At this point, a multi-use facility is recommended for Airport Road. This path, which would run concurrent with a portion of the YMCA Loop, would serve bicycle traffic traveling to and from the YMCA/Sports Complex area and would also serve as an athletic facility. After crossing Centura Highway the recommended route type changes to paved shoulders. The current barrier to this type of facility is the bridge going over the railroad tracks. However, this is scheduled



to be replaced in the TIP, so bicycle facilities should be accommodated.

If the user wants to access downtown Rocky Mount from the College Loop, he or she will use Thorpe Road rather than continuing eastbound on Airport Road. This road, which intersects with Benvenue, is recommended to be a signed route. This designation would continue until reaching Battle Park Lane. At this point, the route continues into Battle Park where it picks up the Tar River Trail. The Downtown Neighborhood Loop could be used on Myrtle Avenue and Virginia Street to complete the loop.

The total cost of the College Loop is estimated to be \$2,800,000.

Battleboro Connector (Figure 7.17)

The Battleboro Connector is a primarily rural route that connects the Battleboro area to the rest of the bicycle facility network via the College Loop. This connector begins at Fountain School Road, which intersects the College Loop traveling along Tanner Road/College Road. This facility is recommended to utilize paved shoulders due to the existing lanes being relatively narrow. The route continues up Old Battleboro Road, which has recommended paved shoulders due to the same factors. Once reaching Battleboro Avenue the route heads into the city, with striped parking along with a signed route recommended. The route makes a loop in this area, utilizing Marriott Street, Bridges Street, and Gainor Avenue. These are all low traffic residential streets and will function adequately as signed routes.

Paving shoulders for long stretches of roadway such as those on Fountain School Road and Old Battleboro Road may be cost prohibitive for a route that may not be heavily used. In this case, "Share the Road" signs may be appropriate instead of designating this as a route.

The estimated cost for the Battleboro Connector with paved shoulders on these two roads is \$1,350,000.

West Side Connector (Figure 7.18)

The West Side Connector is a long route that provides connections between the north and south sides of Rocky Mount in Nash County. This route connects to the Reservoir Loop, the Englewood Park-City Lake Rail with Trail, the Hospital/Stoney Creek Connector Trail, the Mall-Hornbeam Park Loop, the YMCA Loop, and the College Loop. This route also provides access to Nash General

Hospital, two schools, numerous shopping opportunities, and North Carolina Wesleyan College.

Halifax Road provides a connection to the Reservoir Loop via its intersection with Bethlehem Road. North of this intersection up to Sunset Avenue, Halifax Road is planned to be widened. This project is currently unfunded in the TIP, but a feasibility study has been performed that recommended a 5-lane section. The recommendation presented here specifies a 4-lane divided roadway with paved shoulders for bicyclists. An initial concept for this route used existing and proposed residential roads to reach Sunset Avenue. However, the lack of continuity associated with the proposed roads appears to make this alternative unattractive.

Upon reaching Sunset Avenue, it is recommended that a multi-use path be constructed on the south side of the road. This would enable bicyclists to stay off of the roadway and then to cross to Candlewood Road at a signalized intersection. Candlewood Road is a wide neighborhood road that is recommended to be a signed route. A neighborhood connector is recommended to be constructed through a portion of city-owned land along this road in order to cross Stoney Creek and reach the Nash General Hospital and commercial area along Winstead Avenue. This connector would reach to Executive Drive and would consist of a small fixed or removable bridge. This is a commercial road and should be striped to provide wide outside lanes.

Winstead Avenue is recommended to have wide outside lanes between Executive Drive/Curtis Ellis Drive and Hunter Hill Road. This road is currently scheduled to be widened in 2009 and consideration has been given to implementing wide outside lanes. A potential barrier to this treatment would be the bridge over US 64; however, this bridge is currently wide enough that wide outside lanes could be provided with differential striping.

North of Winstead Avenue, the Rocky Mount Northern Connector has been proposed to run from Winstead Avenue to Instrument Drive, with a widening occurring on that facility reaching US 301. This connector, from Winstead Avenue to Instrument Drive, is on the TIP with an environmental assessment due in 2006 and construction scheduled to begin in 2012. For this area, a multi-use path is proposed to run on the east side of the road. A multi-use path would eliminate the need for sidewalks and other on-street bicycle facilities. When



ultimately extended to US 301, this path would connect with the multi-use path proposed around the NC Wesleyan College. However, the path should terminate at Fenner Road rather than extending to US 301 since there are no crossing opportunities expected to be provided for this area. If a multi-use path is determined to not be feasible for this facility, wide outside lanes should be considered in order to remain consistent with the proposed widening of Winstead Avenue.

Hunter Hill Road is also scheduled to be widened in the TIP from Winstead Avenue to Benvenue Road. A feasibility study has already been conducted for this widening and has recommended 14-foot wide outside lanes. Hunter Hill Road is a valuable piece of the West Side Connector since it links the Mall-Hornbeam Park Loop, the Hospital/Stoney Creek Connector Trail, and the YMCA Loop.

The final road in this route is Nicodemus Mile. Nicodemus Mile intersects with Isabella Lane, which has been proposed to be extended to reach Winstead Avenue at the intersection with English Road. Nicodemus Mile also connects with a school. As a result, paved shoulders are recommended for this segment. A multi-use path should also be evaluated as a means to connect to the school.

The total cost for this route (excluding the already funded projects on Hunter Hill Road and Winstead Avenue) is \$1,800,000.

Mall-Hornbeam Park Loop (Figure 7.19)

The Mall-Hornbeam Park Loop connects the Golden East Crossing Mall, the Benvenue Country Club, a historic site, the YMCA/Rocky Mount Sports Complex area, and Hornbeam Park. In addition, it connects to the West Side Connector, the College Loop, the YMCA Loop, and the existing Tar River Trail. This loop gains access to the downtown area via Benvenue Road. Running concurrently with the YMCA Loop and the College Loop, Benvenue Road is a proposed signed route from Thorpe Road to Battle Park Lane, where it will connect to the Tar River Trail. The route continues northward on Thorpe Road which is recommended as a signed route, and then onto Airport Road and Tiffany Boulevard, both of which are signed routes. The route then continues on Benvenue for a short distance near the mall. In this portion of the route, a bicyclist would be able to access the mall area. No bicycle facilities are proposed within the mall property.

Benvenue is recommended as a signed route, but due to high traffic levels a “Share the Road” sign may be more appropriate. Further study needs to be performed to determine safe and implementable methods to accommodate bicyclists in the mall area.

The route continues up Jeffreys Road, running concurrently with the College Loop. This route is recommended to be signed. At Northgreen Lane the route turns into a residential area. It continues onto Mashie Lane and Waterloo Drive, which then turns into Roundtree Drive. All of these roads are recommended as signed routes due to their low traffic residential nature. Waterloo Drive crosses Goldrock Road, but the sight distance at this location should make this crossing realistic. The route continues onto Brentwood Drive and then Foxhall Drive, which connects with Homestead Road. All three of these roads are also recommended to be signed routes. Homestead Road is proposed to be extended to Instrument Drive. In order to maintain consistency, the signed route designation is recommended to continue on this road. The route continues on Instrument Drive to the proposed Rocky Mount Northern Connector, both of which are recommended to have multi-use paths installed. A stream crossing is necessary for the Northern Connector, at which point the route would break off and follow the stream alignment with a multi-use path. This would take the route by Hornbeam Park and ultimately connect it with Cunningham Drive, which is recommended to be a signed route until its intersection with Foxhall Drive.

The Mall-Hornbeam Park Loop also continues south on Goldrock Road from Waterloo Drive until it reaches Northern Boulevard. This road is a candidate for wide outside lanes if differential striping is employed. Once on Northern Boulevard, the route crosses Benvenue Road and eventually merges with Country Club Drive. In this area, the facility is recommended to be designated as a signed route. As the route continues into the residential areas of Southern Boulevard and Bunn Avenue, designation as a signed route remains preferable. The route intersects with the West Side Connector at Hunter Hill Road, which could be utilized to complete the loop.

The total cost for this project (excluding the already funded project on Hunter Hill Road) is estimated to be \$450,000.



YMCA Loop (Figure 7.20)

As the name implies, the YMCA Loop's main purpose is to provide bicycle access to the YMCA/Rocky Mount Sports Complex Area. This loop also connects to the Tar River Trail, the College Loop, and the Mall-Hornbeam Park Loop. One of the goals of this loop is to connect the downtown area of Rocky Mount to the YMCA/Rocky Mount Sports Complex. This is done in two ways. Running concurrently with the College Loop and the Mall-Hornbeam Park Loop, the first method of connection uses Benvenue Road and Thorpe Road. Both of these are recommended to be signed routes, and would connect to the Tar River Trail via Battle Park Lane. The second connection uses another multi-use path to travel along Centura Highway and connect with the Tar River Trail. This path would then turn onto Barnum Road in order to navigate between the football stadium and the gas station. At that point, the multi-use path would connect with proposed multi-use paths that are being built around the YMCA/Sports Complex site.

Airport Road also has a multi-use path recommended between Thorpe Road and Centura Highway. This path does not have to strictly follow the road alignment; rather, it could meander throughout the site before coming out at the intersection with Centura Highway. Upon crossing this road, paved shoulders are recommended for the section of Airport Road between Centura Highway and Tanner Road. The bridge over the railroad tracks, currently too narrow to safely accommodate bicyclists, is scheduled to be replaced in 2006. Wide shoulders should be incorporated into this bridge design. The connection with Tanner Drive provides access to the College Loop.

The total cost for the YMCA Loop (excluding the multi-use paths currently planned and under construction in the YMCA/Sports Complex facility) is \$500,000.

The total estimated cost for all recommended facilities is \$12.5 million. Facility types for the entire network are shown in **Figure 7.21**.

Ancillary Facilities and Programs

There are several other non-construction programs that should be considered during the implementation of this bicycle plan. The overriding theme of these programs is bicycle education. Current curricula devote little attention

to bicycle safety. A more targeted, focused curriculum should be developed for the Rocky Mount area, particularly given NCDOT's increased focus on integrating bicycle facilities into roadway design.

One way to stimulate these educational programs would be to introduce a Safe Routes to School program to Rocky Mount. Safe Routes to School was a program started in Marin County, California with help from the National Highway Traffic Safety Administration to promote children walking and biking to school in a safe environment. Since that time, the Safe Routes to School program has spread nationwide and has a range of teaching tools and events designed to increase bicycle and pedestrian awareness at all grade levels. Children can participate in fun events like Walk and Roll to School Day, go on bicycle scavenger hunts through a Ride 'n' Seek, and earn points and prizes at school through Frequent Rider Miles. All of these, as well as the lesson plans offered through this program, are fun ways to get kids educated about bicycling. For more information, see the website <http://www.saferoutestoschools.org/>.

A bike mentor program is a fun and easy way to get adults more comfortable with bicycling for non-recreational purposes. This program takes adults who would like to learn more about how to bicycle for commuting and matches them with a volunteer who can show them the best route to their work as well as how to bicycle in traffic, in the dark, or in the rain. A bike mentor program educates riders who might not be exposed to classroom activities and is a great way to get new riders excited about an alternate mode of transportation.

Safety education programs need to be targeted to specific audiences and specific road user problems and combined with enforcement activities that are coordinated with the appropriate law enforcement agencies. The primary bicycle safety issue identified by this study is motor vehicle operators' general lack of respect for bicyclists as legitimate users of the roadways. There is a need to educate motorists regarding safe driving behavior related to bicyclists and that bicyclists have a legal and legitimate right to the road. A secondary issue of importance is for bicyclists to be educated about safe and legal bicycling habits and "share the road" ethics. Combining education with well-publicized and focused enforcement operations has proven effective in other communities and should be considered as an approach when planning and



implementing the initiatives above. Education programs at churches, schools, and community centers will allow all age levels to become more informed about bicycle safety. Coordination with the Rocky Mount Police Department Bicycle Officers will allow for this program to be spread throughout the city and to target areas that need it most. Also, public service messages on the television and radio can be instituted to inform the public about proper bike riding techniques, the meaning of signed route and “Share the Road” signs, and driver courtesy.

To further promote safety, the implementation of a city-wide bicycle licensing program should be considered. A bicycle license tag could be permanently affixed to the bike(s) of registered bicyclists. The primary goal of this program is to improve safety for bicyclists, particularly children, who may be unresponsive after an accident and are not able to be quickly identified. A bicycle license tag may enable rescue personnel to more quickly determine an accident victim’s identity, leading to improved decision-making for emergency medical treatment. A secondary goal of a bicycle licensing program is to deter bicycle theft and to increase the opportunity for stolen bicycles to be returned to their proper owners.

Prioritize Projects

After determining the routes and facility types, the next step of the recommendation process is to assign priority levels to each route. Three levels are used to classify the priority level of each route: short-term, mid-term, and long-term improvements. Short-term improvements are those projects that are recommended for or can be completed within a 5-year period. Mid-term improvements are expected to occur between 5 and 10 years into the future. Long-term improvements are those projects that fall outside of a 10-year horizon. Each route has been classified into one of these priority levels, as shown in **Table 7.1** and **Figure 7.22**. **Table 7.1** provides a synopsis of the bicycle routes recommended in the Rocky Mount Bicycle Plan. Each route is listed along with the presence of the various facility types within that route. The lengths and estimated construction costs for the individual routes are also shown. These values assume that no facilities other than those already existing will be shared, so that the cost for each route can be considered as a stand-alone value. In addition to this information, **Table 7.1** provides the total mileage of each facility type estimated as a part of the network, the overall length of all

facilities in the network, and the total estimated construction cost for the entire network. This overall cost accounts for overlapping in the network so no facility is considered more than once. **Table 7.1** is shown on the following page.

As a result of Transportation Improvement Program funds, certain sections of some of the bicycle routes are scheduled to be funded earlier than the routes they are a part of. These sections have been prioritized and are listed in **Table 7.2**.

Table 7.2 Selected Segment Priorities

Short-Term	
Hunter Hill Road, Winstead Avenue to Benvenue Road	Wide Outside Lanes
Winstead Avenue, Sunset Avenue to Hunter Hill Road	Wide Outside Lanes
Airport Road Railroad Bridge	Wide Paved Shoulders
Medium-Term	
Northern Connector/Instrument Drive (new location and widening), Hunter Hill Road to Fenner Road	Multi-Use Path

A cantilever bridge is proposed to cross the Tar River along Sunset Avenue. The proposed bridge would utilize an existing gas line that is supported by a cantilever concrete section. This bridge would therefore require only decking and railing for its construction. The priority for this is Medium-Term in order to remain consistent with the Tar River Trail Extension.

All of the education programs recommended in this chapter are Short-Term priority projects that could be implemented right away. Coordination between city employees, the Rocky Mount Police Department, and the area schools will help to make the speedy implementation of these projects possible.



Table 7.1 Route and Network Characteristics

Routes	Signed Route	Signed Route with Striped Parking	Striped Bike Lane	Wide Outside Lane	Paved Shoulder	Neighborhood Connector	Multi-Use Path	Length (miles)	Cost
Short-Term									
Downtown Core Loop	✓	✓	✓	✓				4.1	\$25,000
Downtown-East Side Connector	✓							1.7	\$30,000
Downtown-Reservoir Connector	✓	✓						1.5	\$25,000
<i>Short-Term Subtotal</i>									\$80,000
Mid-Term									
Abandoned Rail to Trail							✓	1.3	\$250,000
Downtown Neighborhood Loop	✓	✓	✓				✓	7.7	\$200,000
Tar River Trail Extension							✓	4.5	\$700,000
YMCA Loop	✓				✓		✓	3.5	\$500,000
<i>Mid-Term Subtotal</i>									\$1,650,000
Long-Term									
Battleboro Connector	✓	✓			✓		✓	5.4	\$1,350,000
City Lake-Downtown Trail	✓		✓		✓		✓	1.4	\$250,000
College Loop	✓		✓		✓			14.5	\$2,800,000
East Side Loop	✓		✓	✓	✓			8.5	\$850,000
East-West Connector	✓	✓	✓	✓				4	\$60,000
Englewood Park-City Lake Rail with Trail	✓	✓	✓		✓		✓	4.5	\$450,000
Farmington Park Loop	✓				✓		✓	1.8	\$250,000
Hospital/Stoney Creek Connector Trail	✓				✓		✓	4.9	\$800,000
Johnson Pope-Holly Street Park Loop	✓	✓	✓			✓		2.2	\$20,000
Mall-Hornbeam Park Loop	✓			✓			✓	11.8	\$450,000
Park-Reservoir Connector	✓		✓	✓	✓		✓	1.5	\$400,000
Reservoir Loop	✓			✓	✓			15.9	\$1,250,000
West Side Connector	✓			✓	✓	✓		11.7	\$1,800,000
<i>Long-Term Subtotal</i>									\$10,730,000
Total (length in miles)	34.0	6.0	8.4	13.3	22.4	0.5	27.1	111.7	\$12,460,000



Review Funding Opportunities

Bicycle facility projects can be divided into two types: independent and incidental projects. Independent projects are those that are independent of scheduled highway projects, while incidental projects are bicycle accommodations that are created as a part of a highway project. It is only through the combination of both types of projects that a well-connected and user-friendly network can be created.

Local Programs

Capital Improvement Program

There are several types of potential local bicycle funding sources in the City of Rocky Mount. Rocky Mount compiled a Recommended Capital Improvement Program (CIP) for 2006-2010 totaling \$106,805,000 and including 175 projects. The first year of the program comprising the Capital Budget is valued at \$19,542,000 for a list of 94 projects.

Over the course of the CIP (5 years) the City has budgeted \$1.5 million for sidewalk repairs and construction of new sidewalks. However, currently no bicycle projects are among the 175 projects of the CIP. As future Capital Improvement Programs are assembled, there will be an opportunity to reallocate funds in order to include this type of project.

Powell Bill

Powell Bill funds are collected by the state in the form of a gasoline tax. These funds are returned by NCDOT to eligible cities and towns for maintaining, repairing, constructing, reconstructing, or widening municipal streets. Powell Bill funds also are used for the construction and maintenance of sidewalks and bikeways located within the rights-of-way of public streets and highways. The amount of these funds distributed to a municipality is based on the number of street miles to be maintained and the City's population.

Powell Bill funds for the resurfacing of streets and roads over 5 years are included in the CIP at a value of \$3.2 million. Through this road maintenance funding, an incidental bicycle project could potentially be created by supporting road restriping projects that could add bicycle lanes to a roadway without performing any new construction. This also would involve reallocating a portion

of the funding currently being used for maintenance to the independent construction of new bicycle facilities.

Transportation Bonds

Transportation bonds have been instrumental in the strategic implementation of local roadways, transit, and non-motorized travel throughout North Carolina. Voters in communities both large and small regularly approve the use of bonds in order to improve their transportation system. Improvements to the bicycle system in Rocky Mount would be a type of project that could be funded using a transportation bond program. No transportation bond initiative is currently in place in Rocky Mount; however, local demand or support for a project or type of project could help to raise interest levels about implementing this type of program.

Parks and Recreation Funding

The City of Rocky Mount's Department of Parks and Recreation is responsible for the expansion and maintenance of its trail and greenway systems. Maintenance for these facilities is taken out of the general accounts, while facility expansion is a separately considered item. Although there is no greenway expansion underway at this time, future expansion of the Tar River Trail or other greenway facilities would be conducted with the assistance of the Department of Parks and Recreation.

State and Federal Programs

The North Carolina General Assembly enacted legislation (G.S. 136-71.12 Funds) that authorizes the North Carolina Department of Transportation (NCDOT) to spend any federal, state, local, or private funds available to the Department and designated for the accomplishment of Article 4A, *Bicycle and Bikeway Act of 1974*. In addition, the 1998 *Transportation Equity Act for the Twenty-First Century* (TEA-21) requires the Department to set aside federal funds from eligible categories for the construction of bicycle and pedestrian transportation facilities. On August 10, 2005, the President signed into law the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU). With guaranteed funding for highways, highway safety, and public transportation totaling \$244.1 billion, SAFETEA-LU represents the largest surface transportation investment in our Nation's history. Provisions address specific safety issues, including bicycle and pedestrian safety.

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Funds for bicycle and pedestrian projects come from several different sources that are described in this section; however, allocation of those funds depends on the type of project/program and other criteria. The information provided in this section is intended to present a basic overview of the process.

Transportation Improvement Program (TIP)

As a part of the state's Transportation Improvement Program (TIP), bicycle TIP projects can receive allocations through an array of funding resources including Federal Aid Construction Funds and State Construction Funds. As a part of the application process, strict criteria must be met before project selection. These criteria include providing right-of-way information, meeting a set of design standards, showing a need for a project, local support of the project, and the inclusion of the project in a bicycle planning process. There are currently no independent bicycle projects listed in the TIP for the City of Rocky Mount.

Bicycle projects may also appear in the TIP as incidental projects through another roadway project. For instance, the widening of Hunter Hill Road (TIP # R-2823 and U-3621) is currently projected to include sidewalks and bike lanes. Consideration of bicycle needs during the planning of road projects in the TIP will help to expand the bicycle network in Rocky Mount. See www.ncdot.org/transit/bicycle/funding/funding_TIP.html for more information.

Surface Transportation Program (STP)

STP funds may be used for construction or non-construction bicycle projects. Non-construction projects could include elements such as educational programs, route maps, or brochures with bicycle safety and maintenance tips.

Enhancement Grant

The Enhancement Grant program was established by Congress in 1991 through the Intermodal Surface Transportation Efficiency Act (ISTEA) as a means of ensuring that a variety of projects — most not typically associated with the road-building mindset — were implemented. Enhancement Grant funding is provided through a 10% subset of the available STP funding for each state. The newly reauthorized federal legislation (SAFETEA-LU) has continued this program with only minor changes. While 80% of the funding for these grants comes from federal money, 20% is funded at the state

level. While the construction of roads is not the intent of the grant, the construction of bicycle facilities is one of many enhancements that the grant targets and could play an important role in enhancing the bicycle safety and connectivity in Rocky Mount.

Rocky Mount has applied for six enhancement grants over the history of this program. Of these, three projects were funded. One bicycle facility grant was applied for but was not received. Future bicycle facilities that would be possible candidates for enhancement grant funding include the rail to trail and rail with trail projects discussed earlier in the chapter.

Job Access and Reverse Commute Grants

These grants may fund bicycle-related services intended to transport welfare recipients and other eligible low-income individuals to and from employment.

Hazard Elimination and Railway-Highway Crossing Programs

These funds are an additional subset of the STP funding, constituting 10% of a state's funds. This program is intended to inventory and correct the safety concerns of all travel modes.

Congestion Mitigation and Air Quality (CMAQ)

CMAQ funds are set aside by the federal government to provide funding opportunities for projects that can demonstrate an appreciable reduction of emissions by the improvement of transportation facilities. Bicyclists can benefit from this legislation from independent projects such as multi-use paths that would encourage more people to choose non-motorized forms of transportation or from incidental projects that would improve bicycle facilities as a part of another effort.

The Community Development Block Grant (CDBG)

The CDBG program directly funds cities and towns for projects benefiting neighborhood revitalization and economic development. Entitlement funds may be given to activities that benefit low to moderate income persons and/or aid in preventing or eliminating slums and blight. Bicycle routes and trails can qualify for CDBG money, particularly those with documentable economic, cultural, and historic merits. These funds would be received directly from the federal government since Rocky Mount meets the population qualifications to be an entitlement area. More information can be found at

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www.hud.gov/offices/cpd/communitydevelopment/programsl/.

NCDOT Division Funds

NCDOT separates the state into 14 divisions. Nash County and Edgecombe County are in Division 4. Division funds are another resource that provides allocations or discretionary funding for special projects within each division.

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

At the end of each fiscal year, 6.5 percent (or a minimum of \$30 million) of the unreserved credit balance in North Carolina's General Fund is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies, and conservation non-profits to help finance projects that specifically address water pollution problems. CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The Hospital/Stoney Creek Connector Trail and the Tar River Trail Extension are both potential projects that could utilize this funding source.

Governor's Highway Safety Program (GHSP)

The Governor's Highway Safety Program is committed to enhancing the safety of the roadways in North Carolina. As a part of this, GHSP funding is provided through an annual program, upon approval of specific project requests, to undertake a variety of pedestrian and bicycle safety initiatives. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance highway safety. Once a grant is awarded, funding is provided on a reimbursement basis and evidence of reductions in crashes, injuries, and fatalities is required. In a bicycle context, this could be used to improve safety at intersections or on corridors where an elevated number of bicycle crashes were observed. More information about the program can be found at www.ncdot.org/secretary/GHSP.

Share the Road License Plates - On July 11, 2005, the North Carolina General Assembly ratified House Bill 85, which created a special license plate for bicyclists and their friends known as the "Share the Road" License Plate. This specialized plate will have the "Share the Road" sign featured as a logo on the left side of the standard "First in Flight" NC license plate. The Division of Bicycle and

Pedestrian Transportation (DBPT) will receive \$20 of the fees collected per plate to be used for a variety of bicycle education and safety initiatives. For example, these funds may be used to expand the program to distribute bicycle helmets to disadvantaged children through local bicycle safety programs. The standard plate costs \$30 in addition to your regular renewal fee. The personalized "Share the Road" plate costs \$60 in addition to your regular registration fee.

Public/Private Initiatives

Active Living by Design (ALbD)

Active Living by Design is a program sponsored by the Robert Wood Johnson Foundation. ALbD seeks to bring together the health care and transportation communities to create an environment that encourages residents to pursue active forms of transportation such as walking and bicycling. Grants are awarded each year to a selected number of communities that are then required to produce a local match. These grants can be used to create plans, change land use policies, institute education policies, and developing pilot projects. For more information, see www.activelivingbydesign.org.

Bikes Belong Coalition

The Bikes Belong Coalition is sponsored by members of the American Bicycle Industry and has a mission to put more people on bikes more often. They assist local organizations, agencies, and citizens in developing bicycle facility projects that will be funded by TEA-21, as well as other education and capacity projects. Bikes Belong has awarded over \$400,000 in grants, with a return of over \$200 million in funding for bicycle facilities. Bikes Belong Coalition accepts applications for grants of up to \$10,000 each, and will consider successor grants for continuing projects, subject to policy guidelines. The Coalition considers grants from local organizations, agencies, and communities in developing bicycle facilities projects. For more information, see <http://bikesbelong.org>.

The Trust for Public Land

Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land to enhance the health and quality of life in American communities. TPL works with landowners, government agencies, and community groups to create urban parks and greenways as well as conserving land for watershed



protection. For more information on the Trust for Public Land, visit www.tpl.org.

Developer Contributions

Through diligent planning and earlier project identification, regulations, policies, and procedures could be developed to protect future bicycle corridors and require contributions from developers when the property is subdivided. To accomplish this goal, it will take a cooperative effort between local planning staff, NCDOT planning staff, and the development community.

Rocky Mount does not currently require developers to include bicycle facilities in their developments. However, if setting requirements is not a desired alternative, the developer could be provided with incentives such as reducing the number of parking spaces since there will be an option for people to travel to the site by an alternate mode.

Impact Fees

Developer impact fees and system development charges are another funding option for communities looking for ways to pay for transportation infrastructure. They are most commonly used for water and wastewater system connections or police and fire protection services but they have recently 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. Only a handful of communities in North Carolina have approved the use of impact fees (including Cary). The use of impact fees requires special authorization by the North Carolina General Assembly.

Identify Special Funding Opportunities for High Priority Projects

The three routes that have been designated as Short Term priority are the Downtown Core Loop, the Downtown-East Side Connector, and the Downtown-Reservoir Loop. These routes all have either striped bike lanes, wide outside lanes, or striped parking on a signed route recommended for use. All of these facility types can

be created in combination with resurfacing projects for a relatively low cost. The funds needed to do this could be obtained by reallocating Powell Bill money to improve selected larger sections of roadway. The remainder of all three projects is recommended to be a signed route. Again, this is a low cost alternative that could be done using reallocated Capital Improvement Project money. If a funding shortage is still a concern, a grant from the Bikes Belong Coalition or through the Active Living by Design program are options to consider.

Develop Evaluation/Monitoring Process

Recommendations in this plan are divided into different timeframes, ranging from immediate to short-, mid-, and long-term. Success is achieved with implementation so a monitoring process is needed to monitor progress toward implementing the recommendations in this plan. The purpose of a monitoring process is to routinely prepare a summary of progress and present it to managers and elected or appointed boards who will hold the appropriate staff accountable. The summary should be reviewed by managers within the agencies charged with implementation as well as a quasi-independent group such as the City Council (or another advisory group of the Council's choosing). Ideally, this review should occur every six months, but no later than annually. A report to the City Manager and City Council that is agendaized in the normal course of Council business would give the public adequate notice of progress as well. The report should document a list of projects to be implemented in each timeframe, the estimated cost to implement, the actions that have been accomplished to date, the actions anticipated in the next 6 to 12 months, and notification if staff believes the schedule has slipped and the cause for slippage.

Equally important is an objective evaluation process for each new segment of the bicycle plan that is opened to citizens. Counting devices currently in use on the Tar River Trail could be an effective means of "counting" use on newly opened segments to get an estimate of usage. Also, user surveys would be informative to learn more about the who, what, where, when and why type questions of usage. This information may help plan and implement subsequent segments of the bicycle system. As always, any Police crash report that involves either a pedestrian or bicyclist on either an existing street or a newly

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implemented segment of the bicycle route system should be reviewed by the City Traffic Engineer and City Transportation Planner within 48 hours so that appropriate countermeasures can be considered immediately.

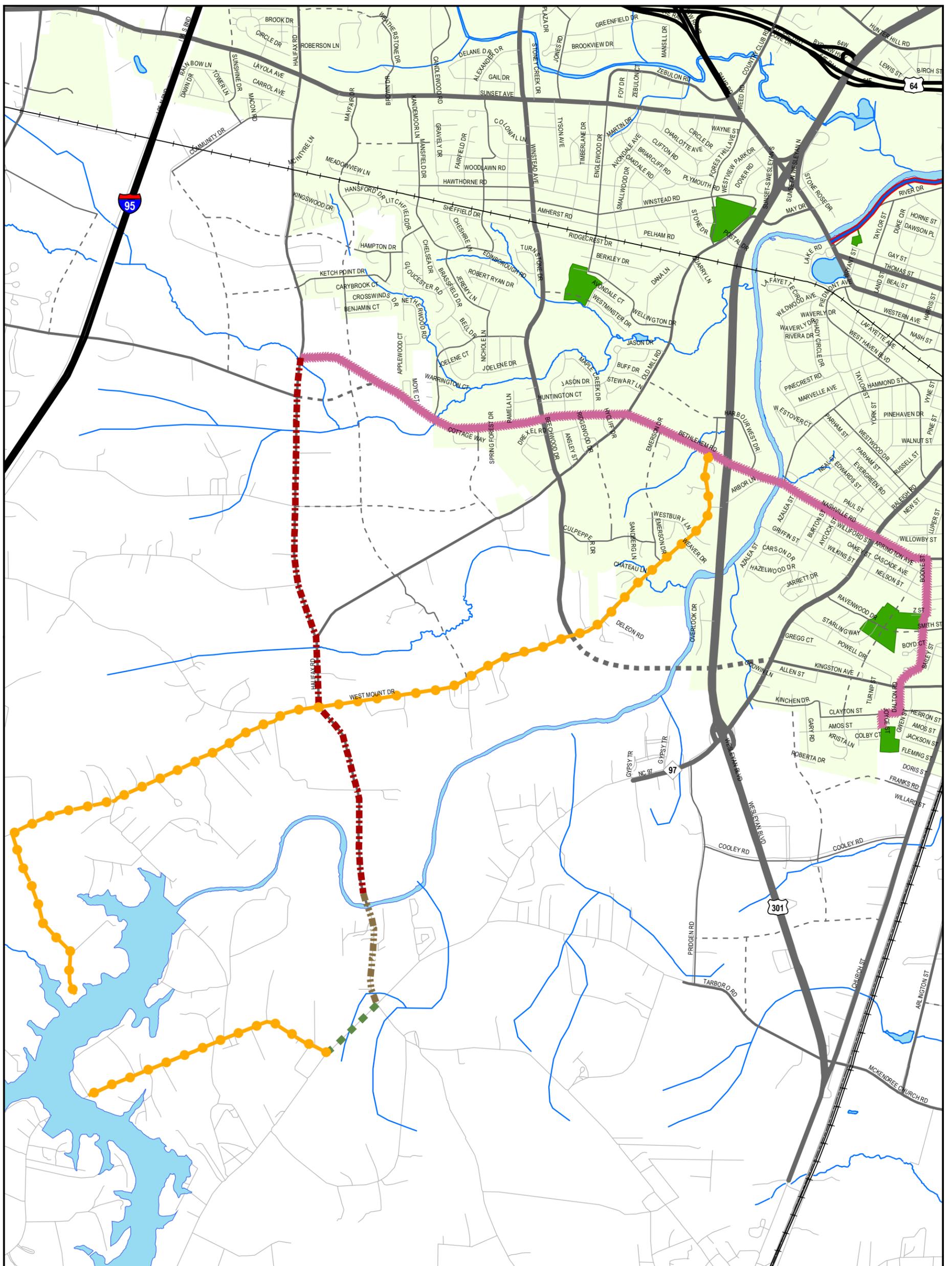


Figure 7.1
Reservoir Loop

Kimley-Horn
and Associates, Inc.



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.5
Miles

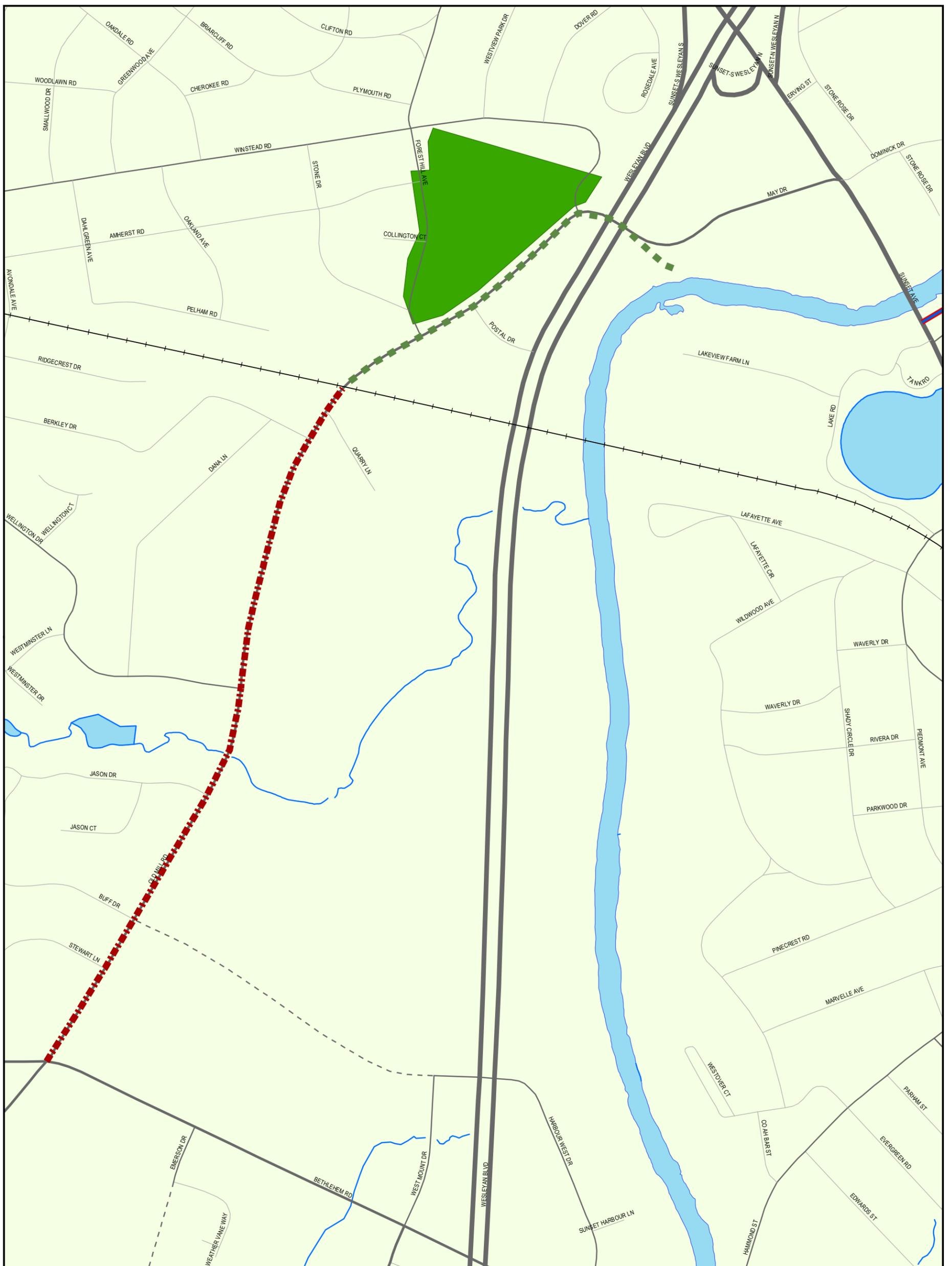


Figure 7.2
Park-Reservoir Connector

Kimley-Horn
and Associates, Inc.



- Parks
- Bodies of Water
- Rocky Mount City Limits
- County Lines
- Existing Road
- Proposed Road
- Tar River Trail
- Multi-Use Path
- Neighborhood Connector
- Wide Paved Shoulder
- Signed Route
- Signed Route with Striped Parking
- Striped Bike Lane
- Wide Outside Lane



0 0.15
Miles

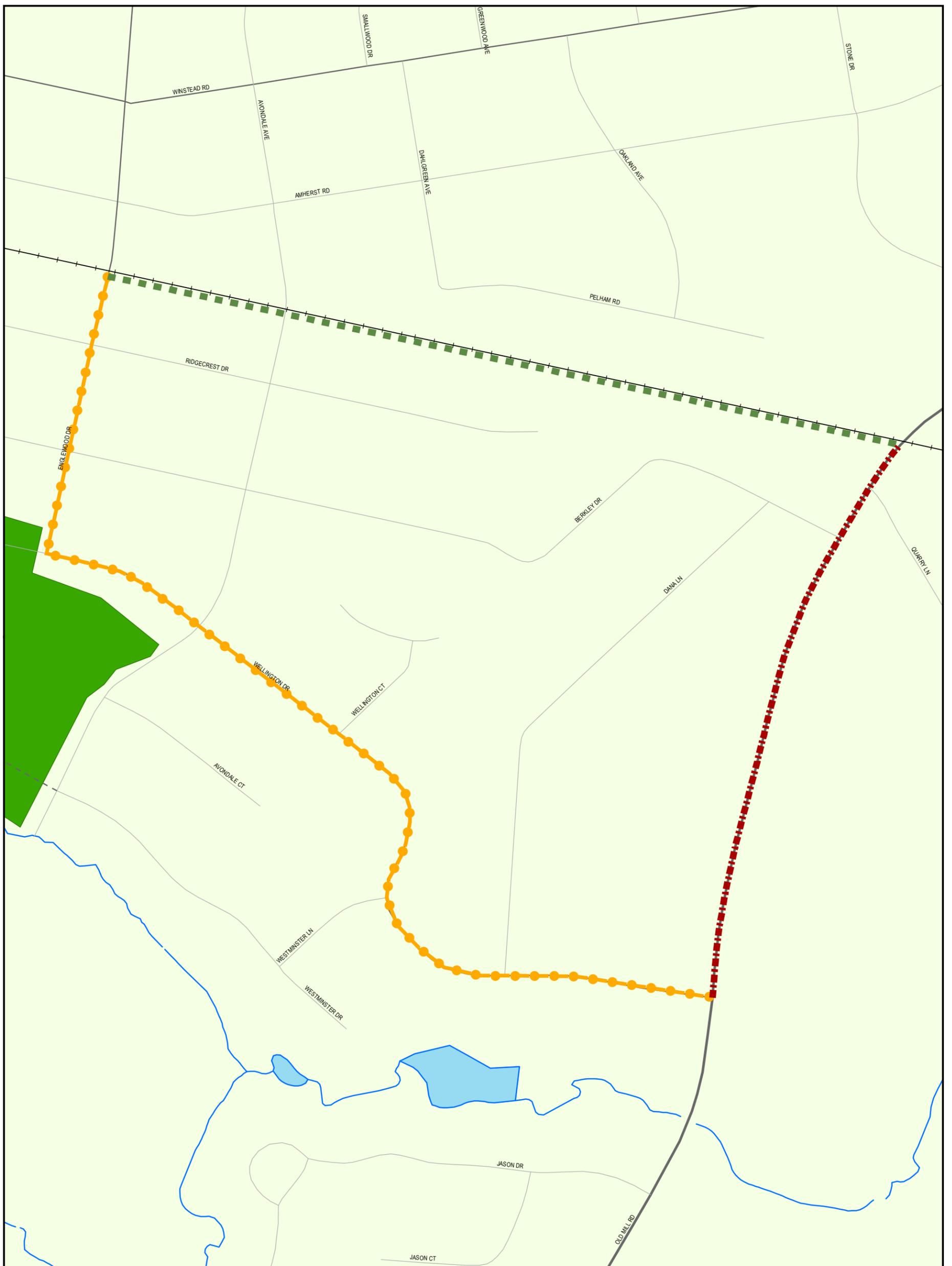


Figure 7.3
Farmington Park Loop

Kimley-Horn
and Associates, Inc.



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.1
Miles

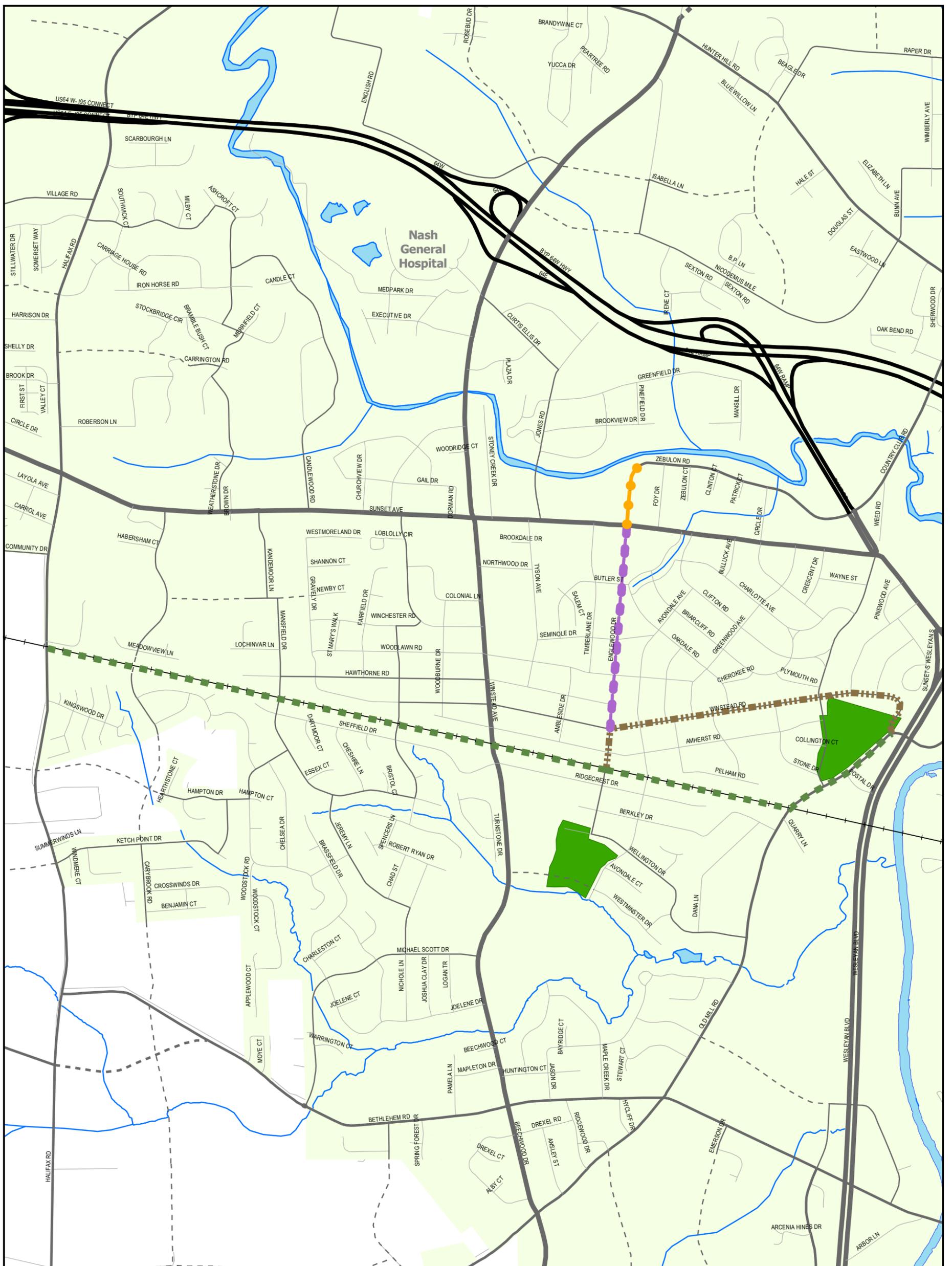


Figure 7.4
Englewood Park-City Lake Rail with Trail

- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |





Figure 7.5
Hospital/Stoney Creek Connector Trail



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.35
 Miles



Figure 7.6
Downtown-Reservoir Connector



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.2 Miles

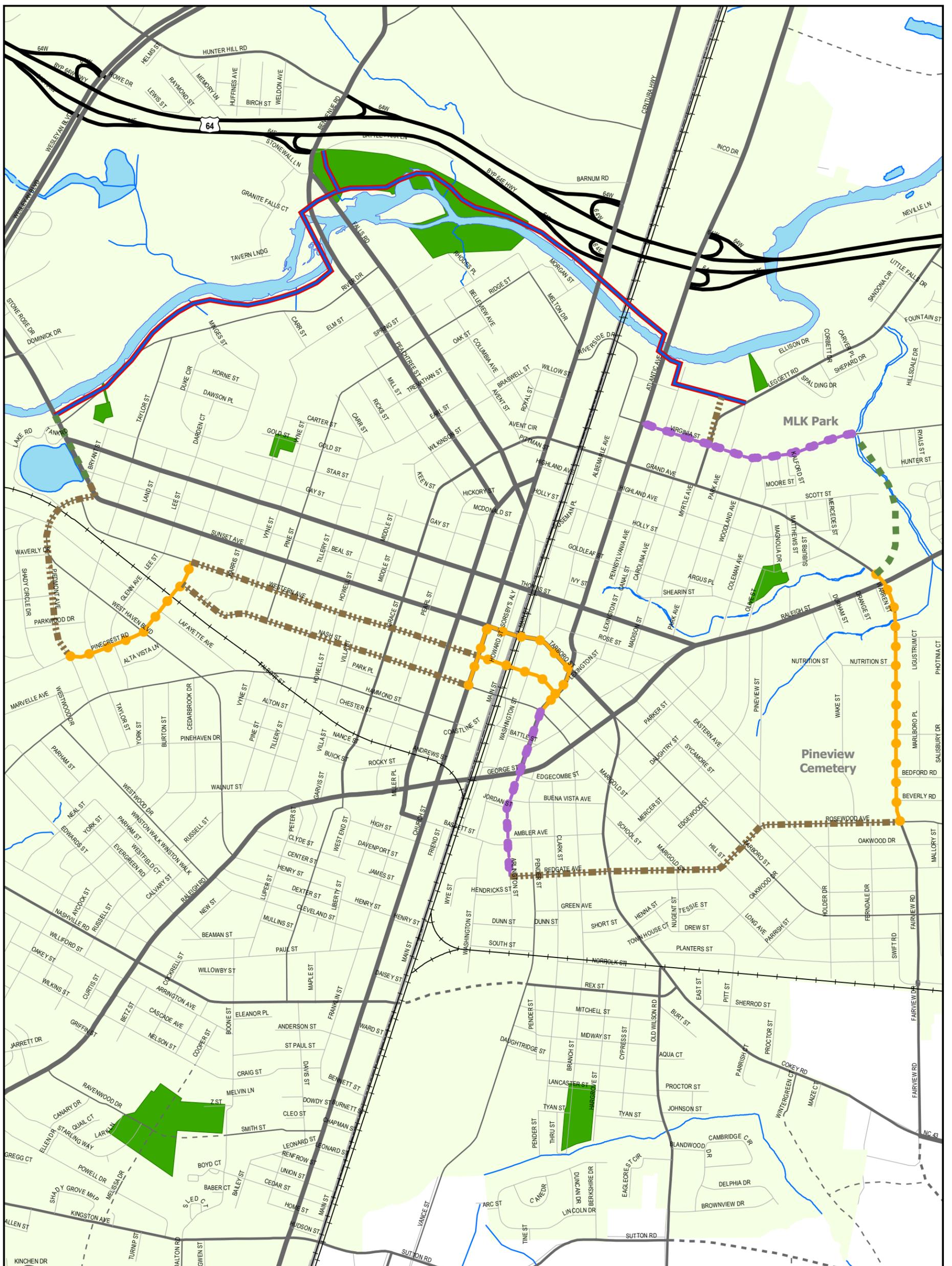


Figure 7.7
Downtown Neighborhood Loop



- Parks
- Bodies of Water
- Rocky Mount City Limits
- County Lines
- Existing Road
- Proposed Road
- Tar River Trail
- Multi-Use Path
- Neighborhood Connector
- Wide Paved Shoulder
- Signed Route
- Signed Route with Striped Parking
- Striped Bike Lane
- Wide Outside Lane





Figure 7.8
City Lake-Downtown Trail

Kimley-Horn
and Associates, Inc.



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.15
Miles

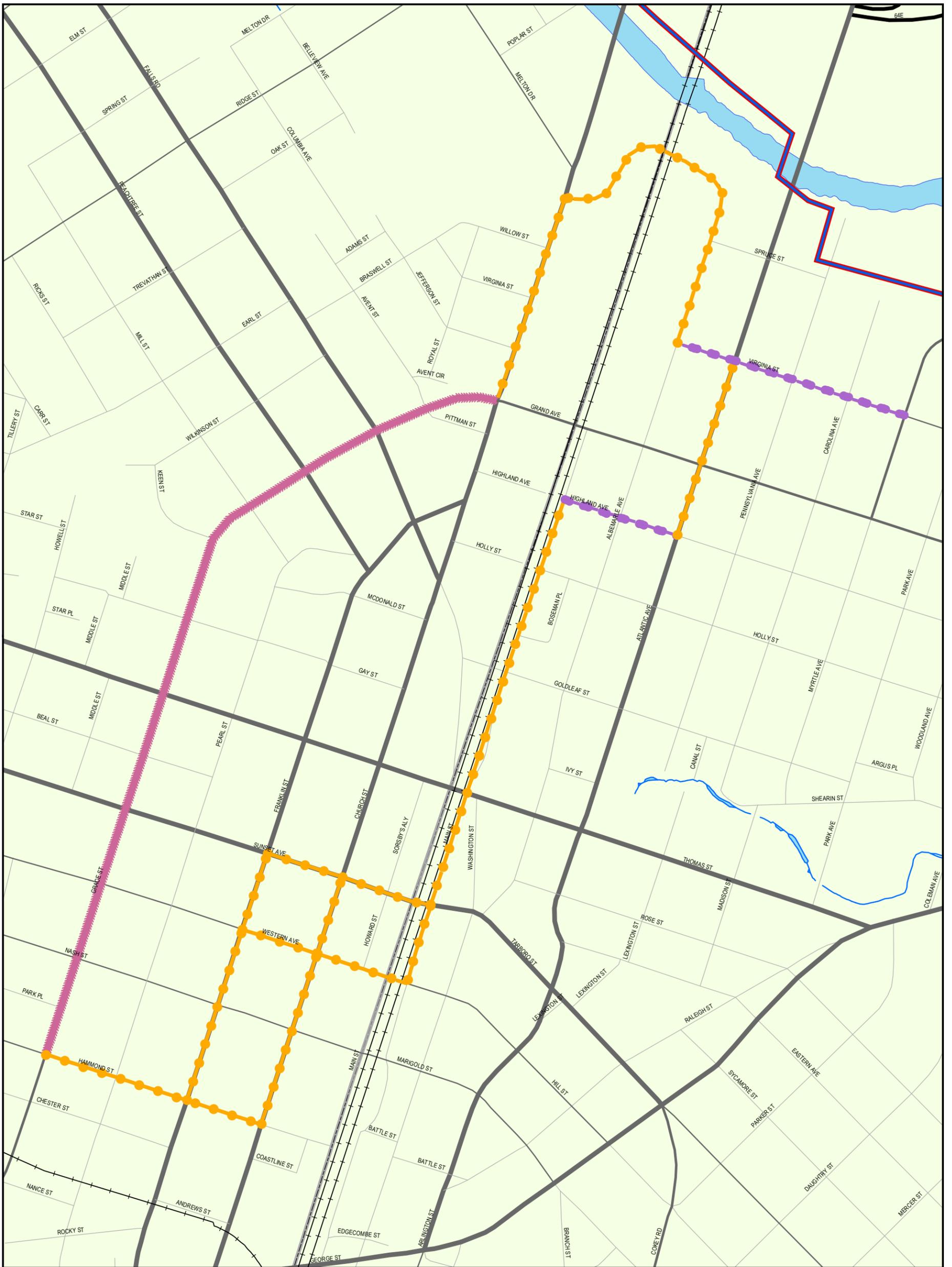


Figure 7.9
Downtown Core Loop



Kimley-Horn
and Associates, Inc.



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.15
Miles

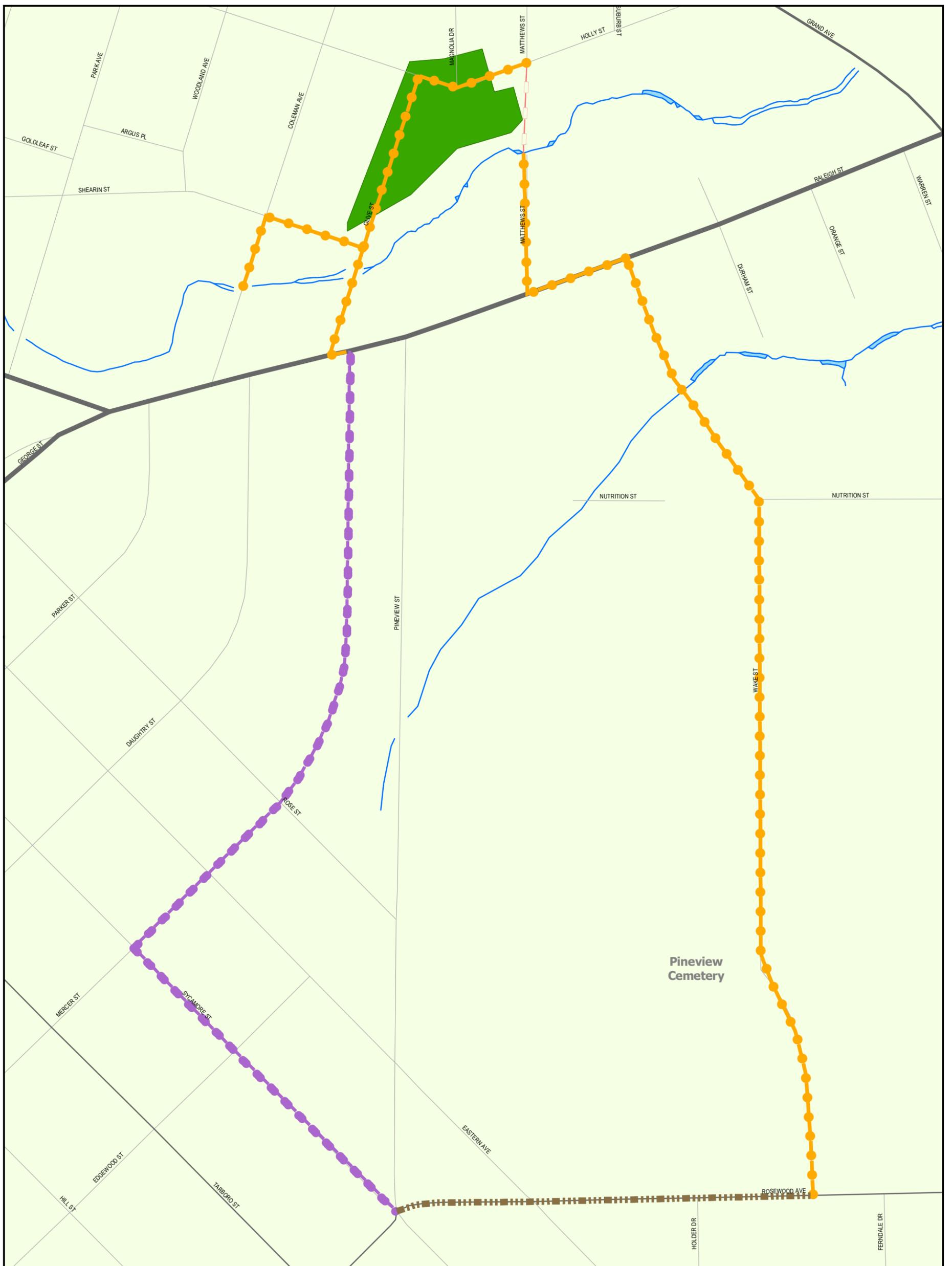


Figure 7.10
Johnson Pope-Holly Street Park Loop

Kimley-Horn and Associates, Inc.



- Parks
- Bodies of Water
- Rocky Mount City Limits
- County Lines
- Existing Road
- Proposed Road
- Tar River Trail
- Multi-Use Path
- Neighborhood Connector
- Wide Paved Shoulder
- Signed Route
- Signed Route with Striped Parking
- Striped Bike Lane
- Wide Outside Lane



0 0.1 Miles



Figure 7.11
Abandoned Rail to Trail

Kimley-Horn
and Associates, Inc.



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.15
Miles

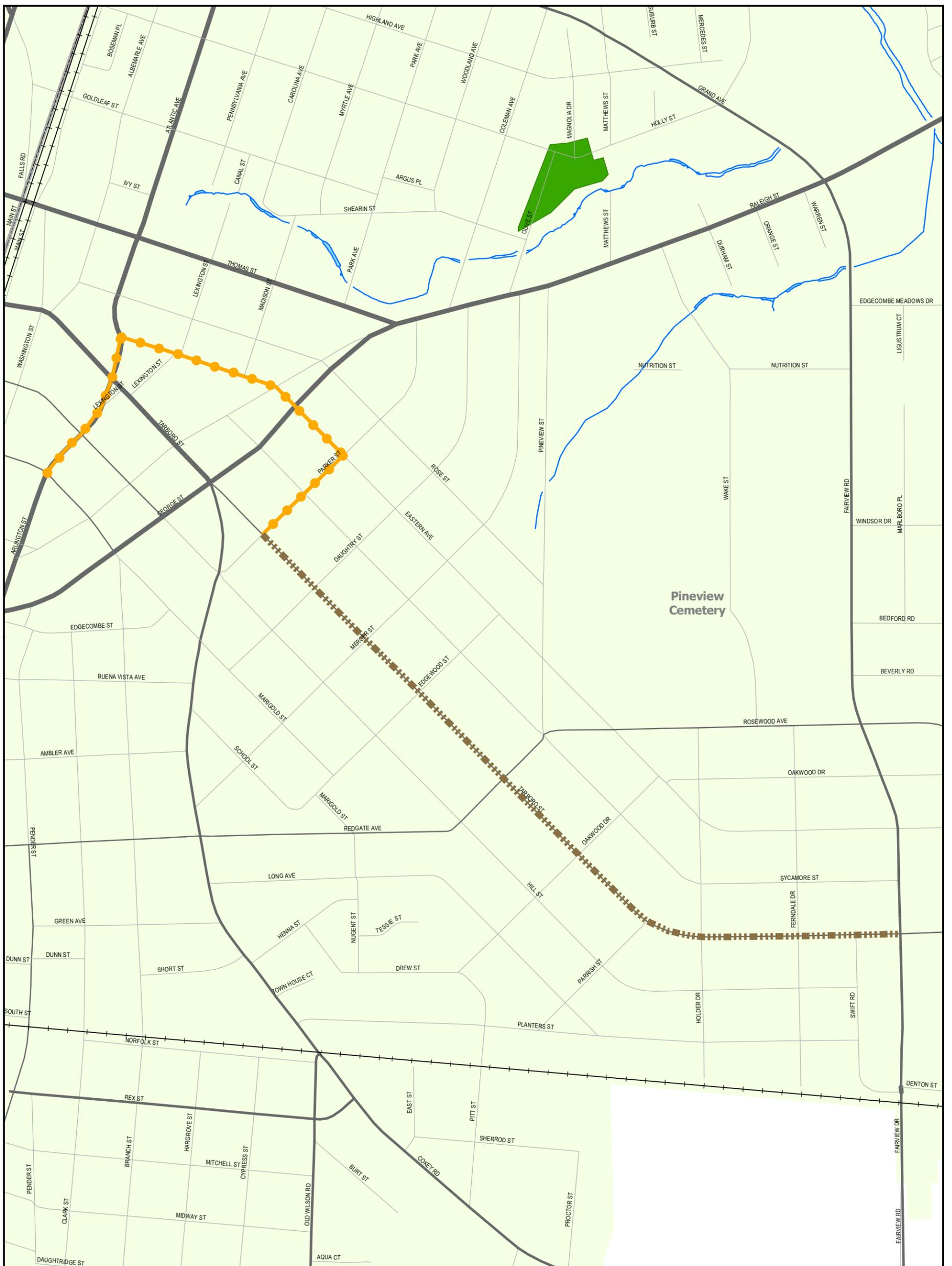


Figure 7.12
Downtown-East Side Connector

Kimley-Horn
and Associates, Inc.



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.25
Miles

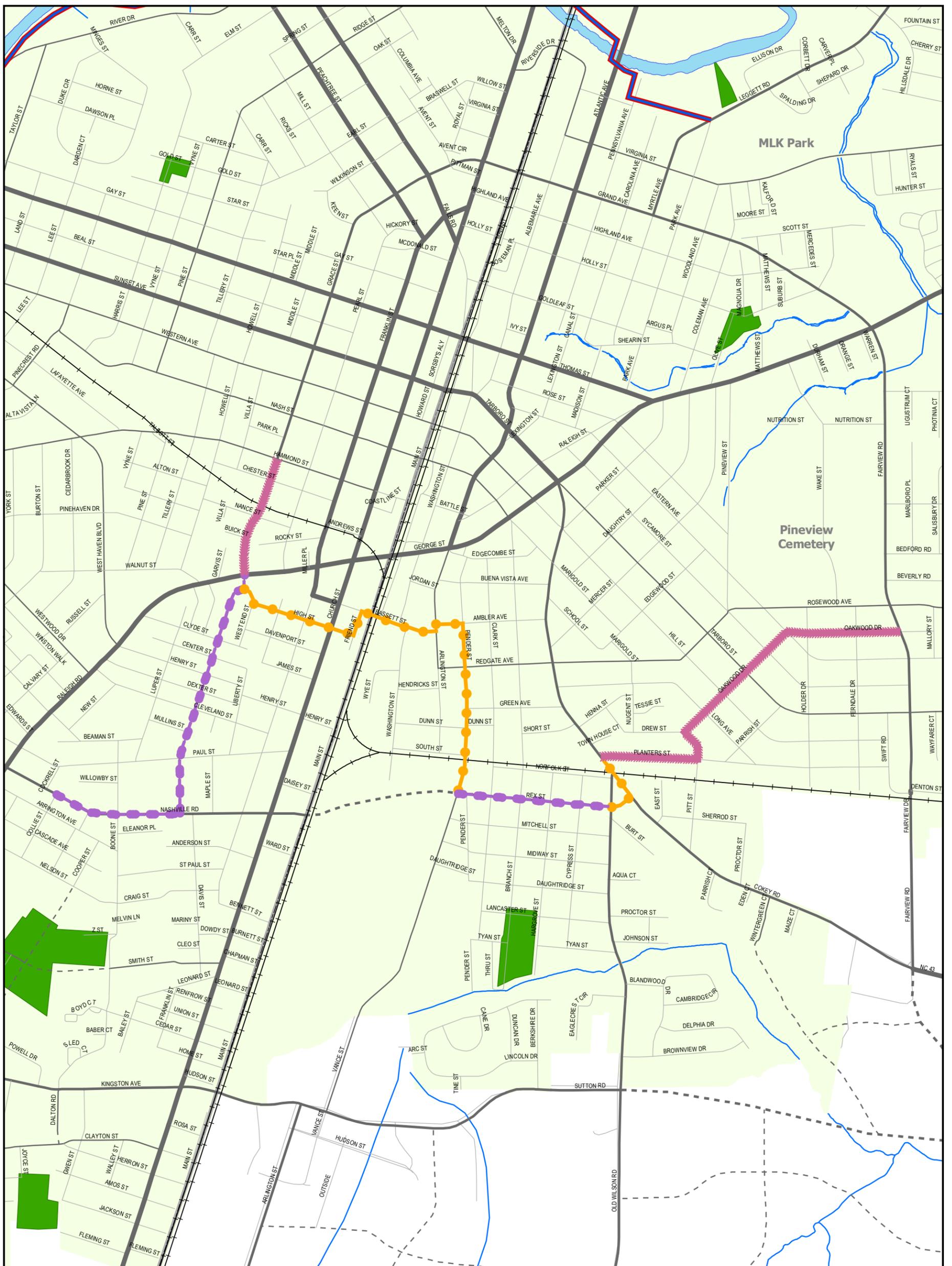


Figure 7.13
East-West Connector

- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



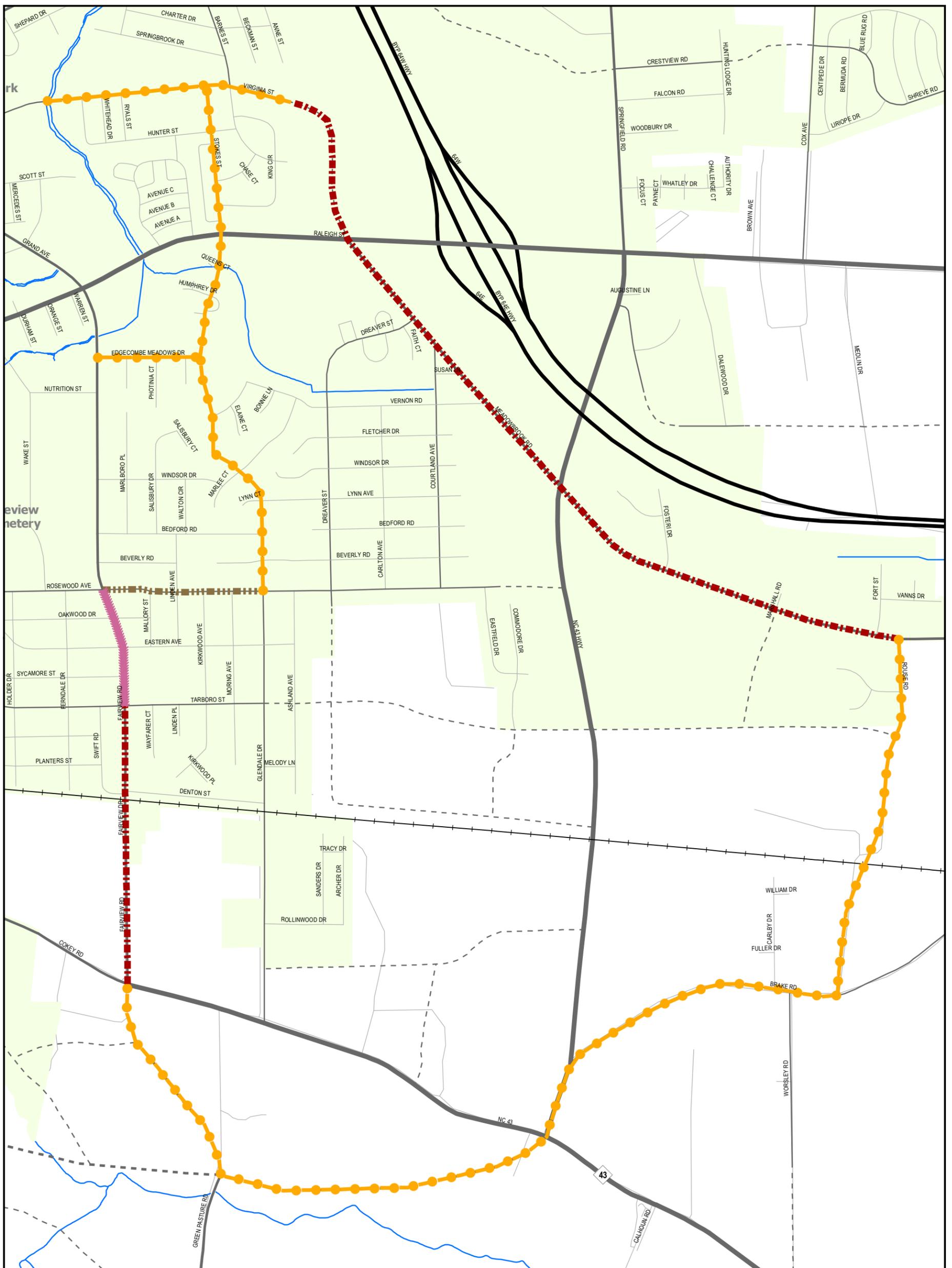


Figure 7.14
East Side Loop

Kimley-Horn
and Associates, Inc.



- Parks
- Bodies of Water
- Rocky Mount City Limits
- County Lines
- Existing Road
- Proposed Road
- Tar River Trail
- Multi-Use Path
- Neighborhood Connector
- Wide Paved Shoulder
- Signed Route
- Signed Route with Striped Parking
- Striped Bike Lane
- Wide Outside Lane



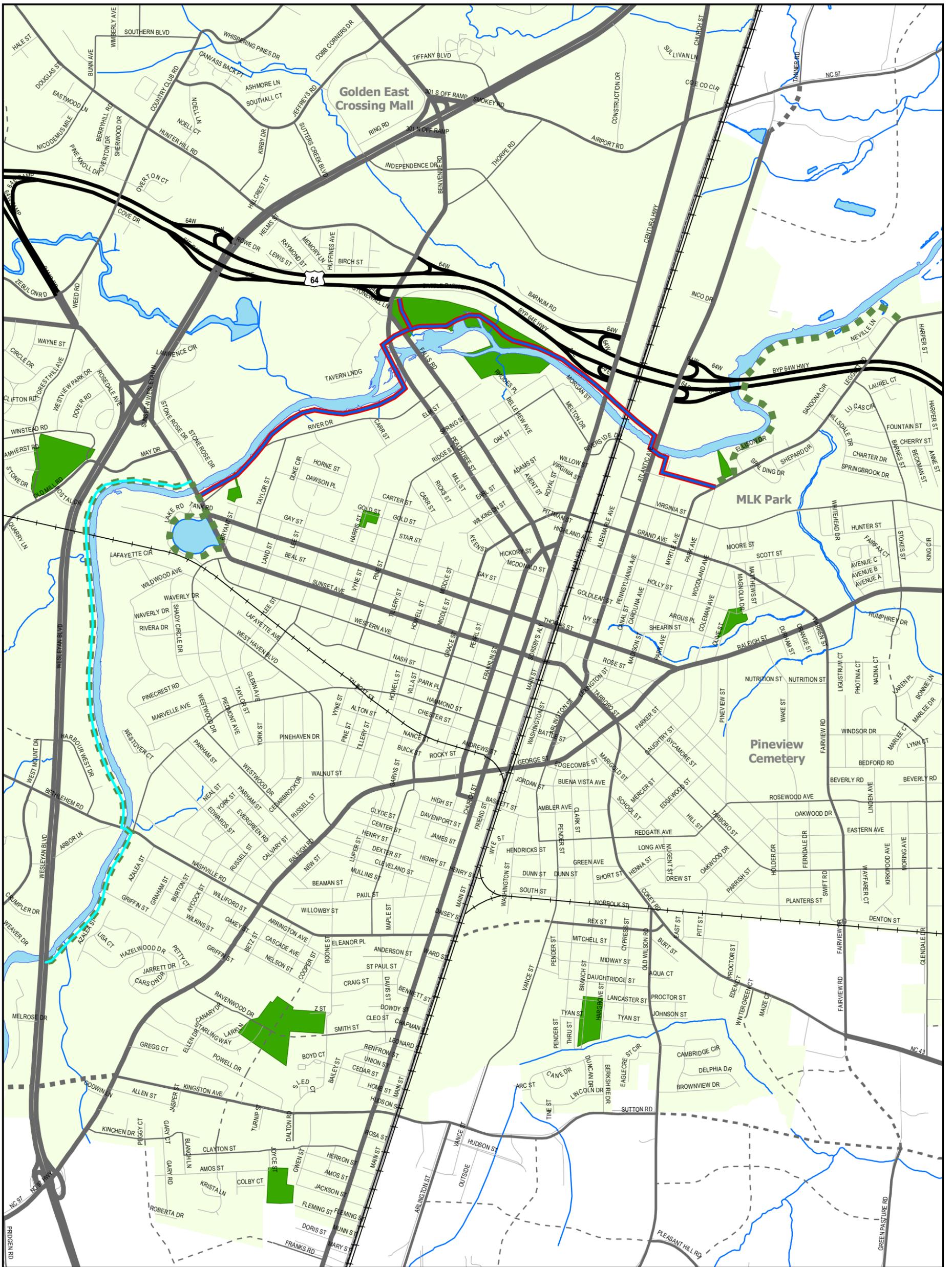


Figure 7.15
Tar River Trail Extension



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.7 Miles

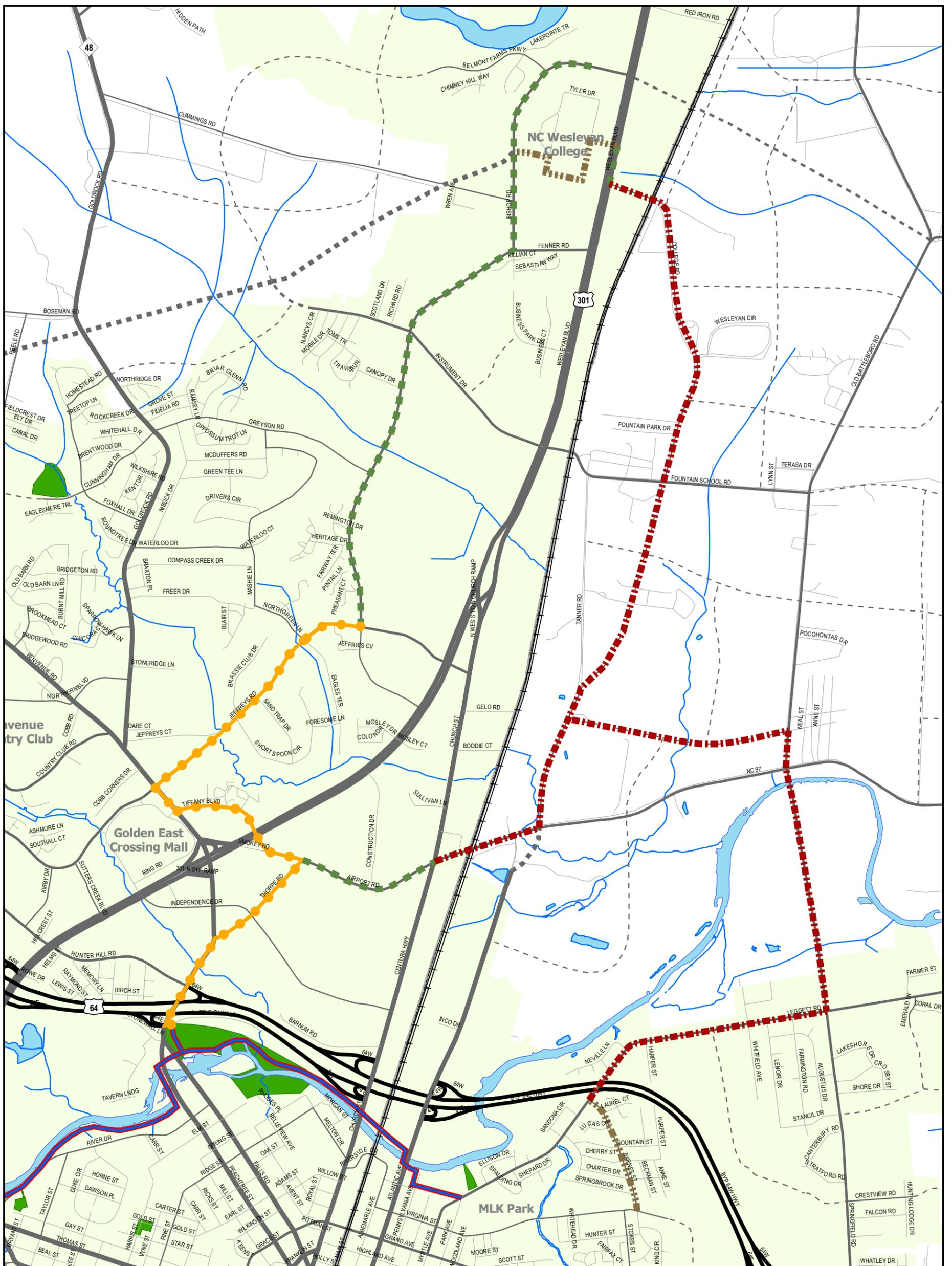


Figure 7.16
College Loop



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.5
Miles

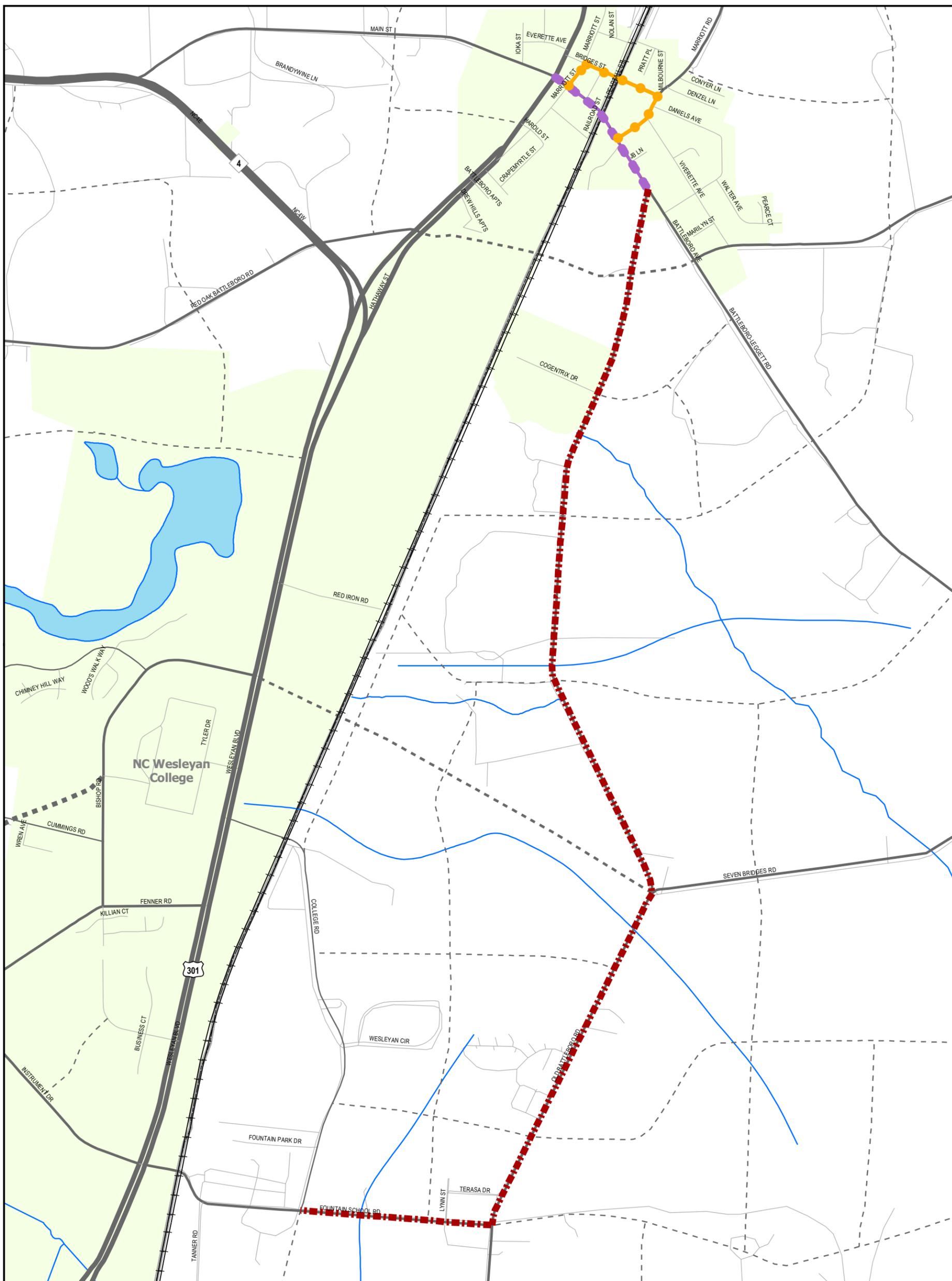


Figure 7.17
Battleboro Connector



Kimley-Horn
and Associates, Inc.



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



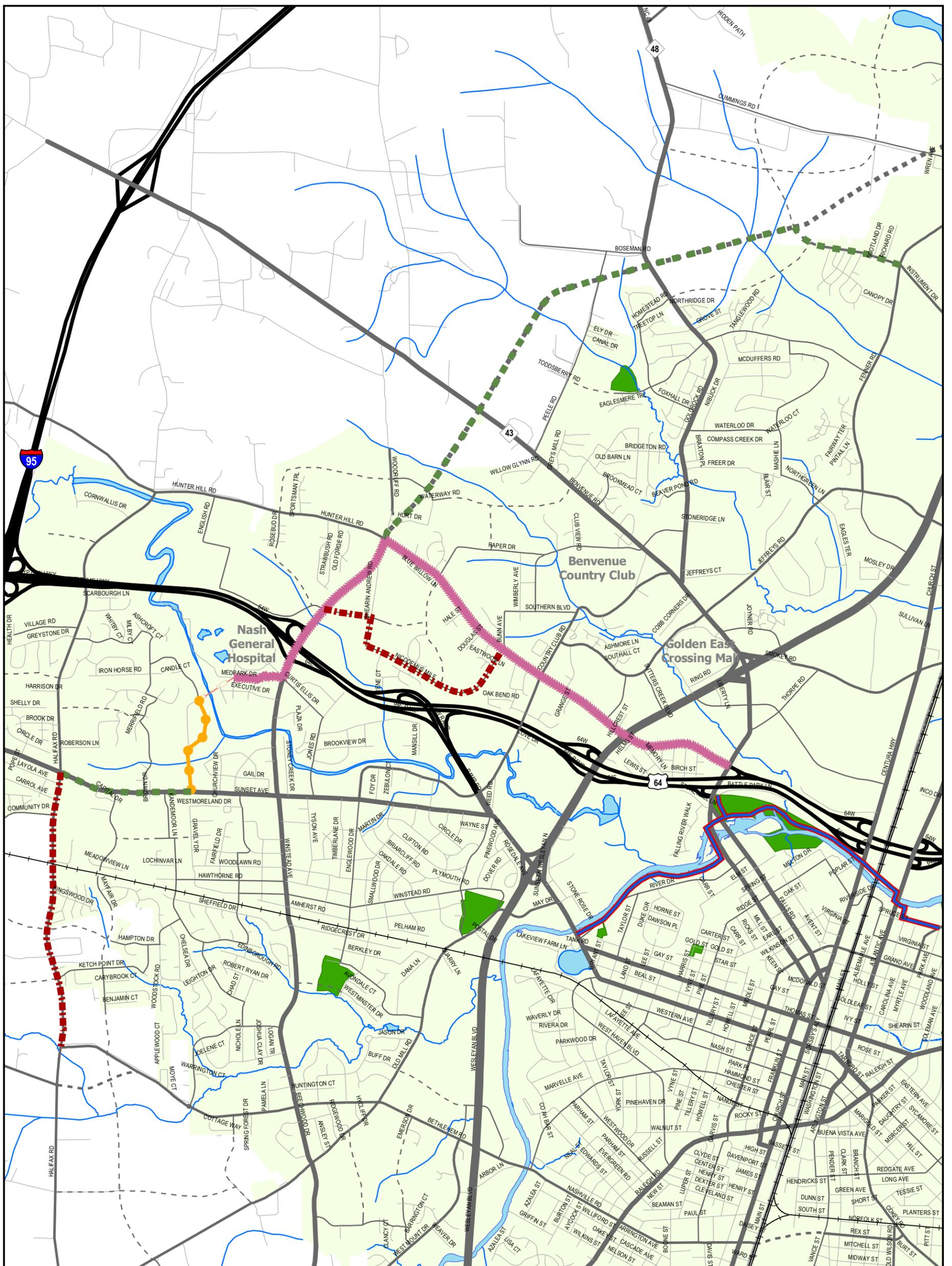


Figure 7.18
West Side Connector



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



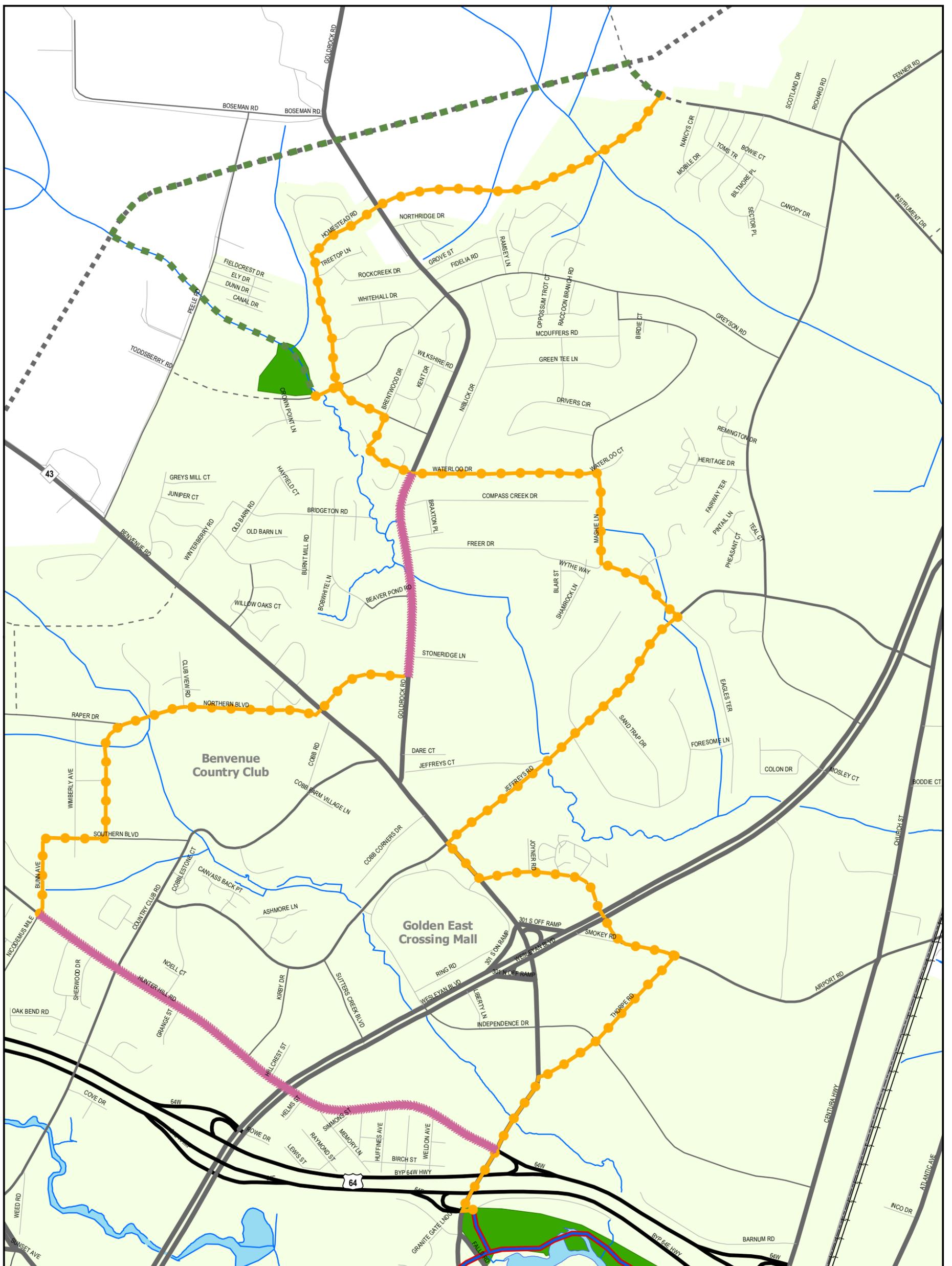


Figure 7.19
Mall-Hornbeam Park Loop

- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 0.5 Miles

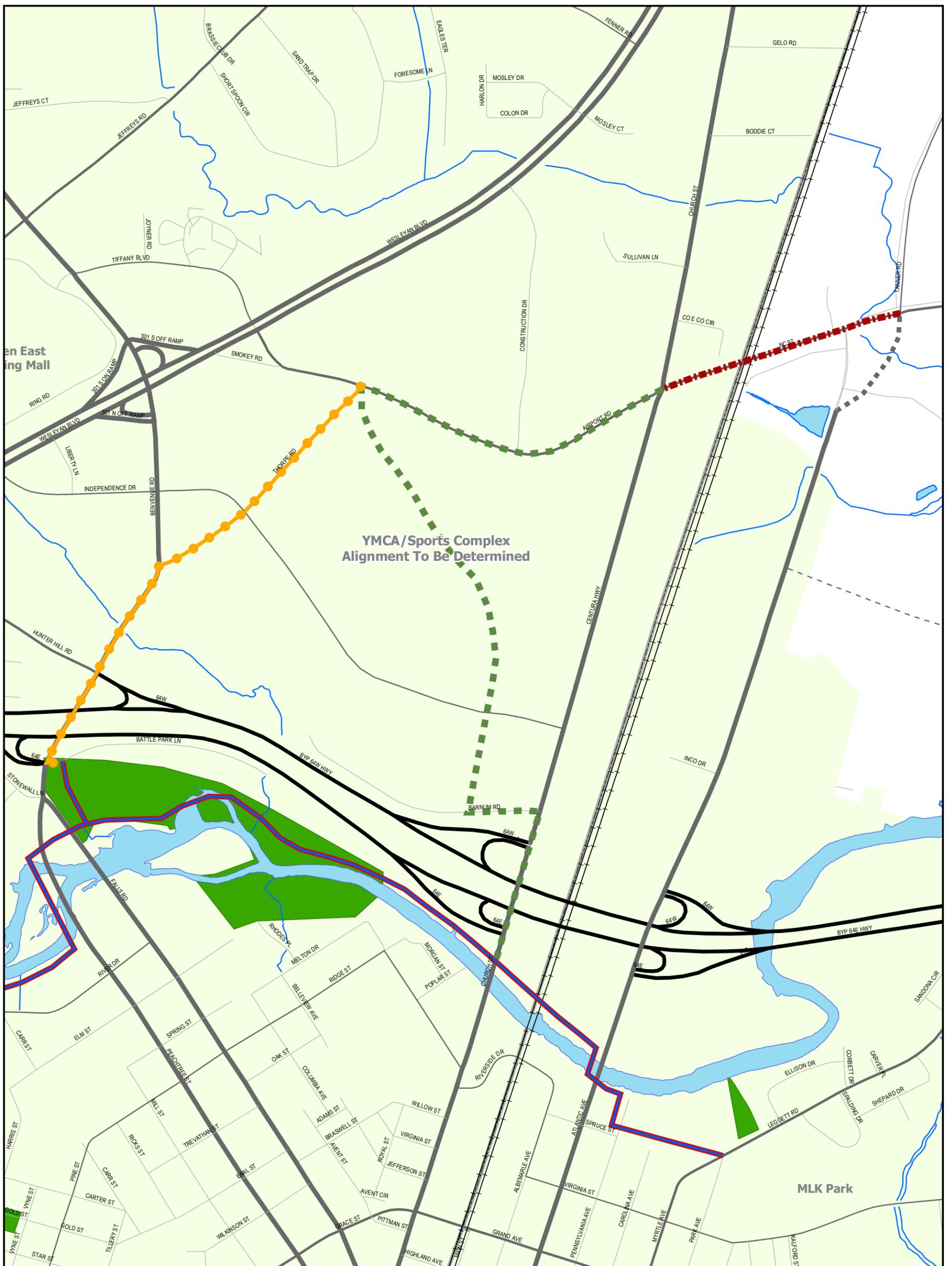


Figure 7.20
YMCA Loop



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



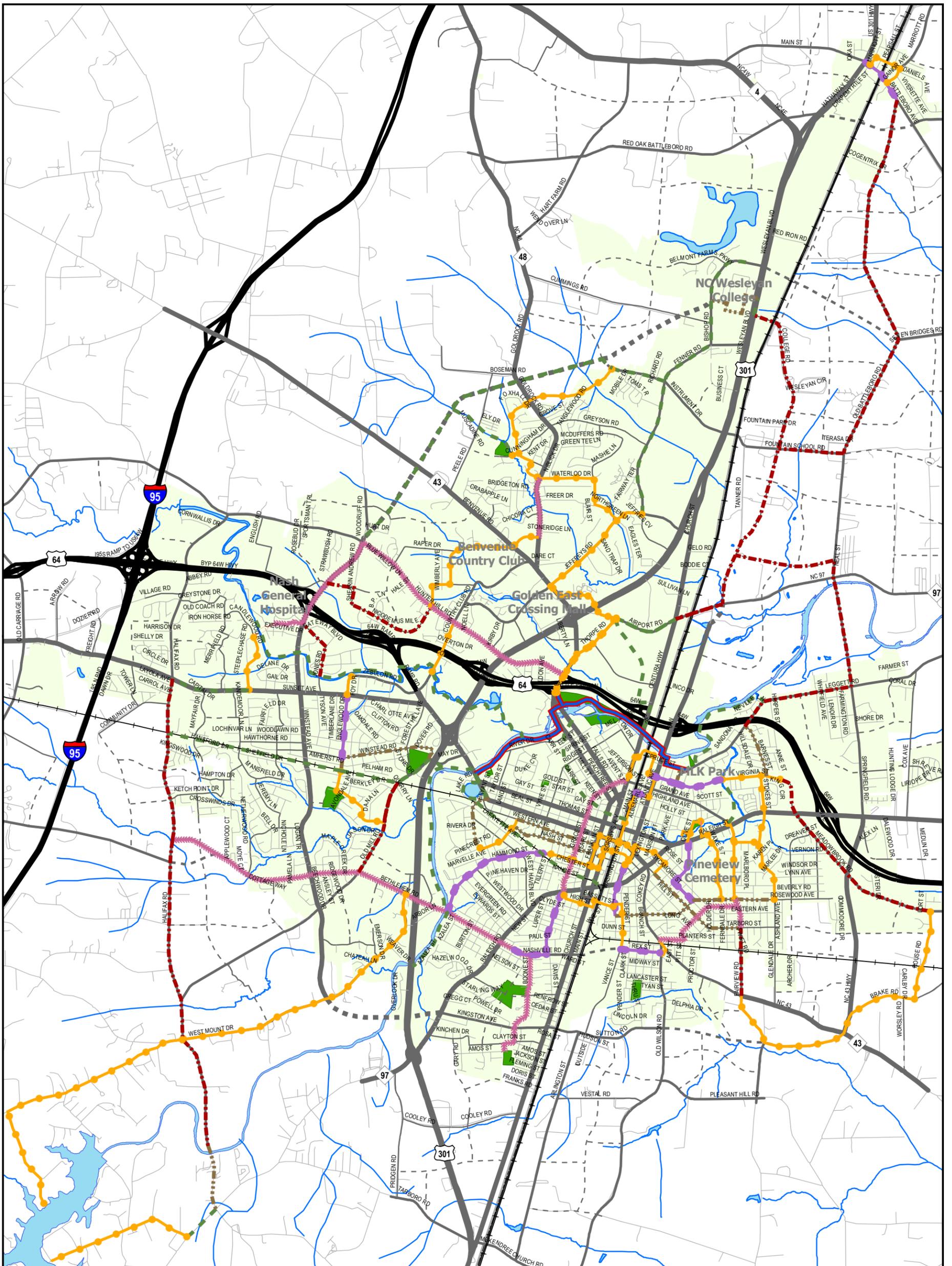


Figure 7.21
Facility Types



- | | | |
|-------------------------|------------------------|-----------------------------------|
| Parks | Tar River Trail | Signed Route |
| Bodies of Water | Multi-Use Path | Signed Route with Striped Parking |
| Rocky Mount City Limits | Neighborhood Connector | Striped Bike Lane |
| County Lines | Wide Paved Shoulder | Wide Outside Lane |
| Existing Road | | |
| Proposed Road | | |



0 1 Miles

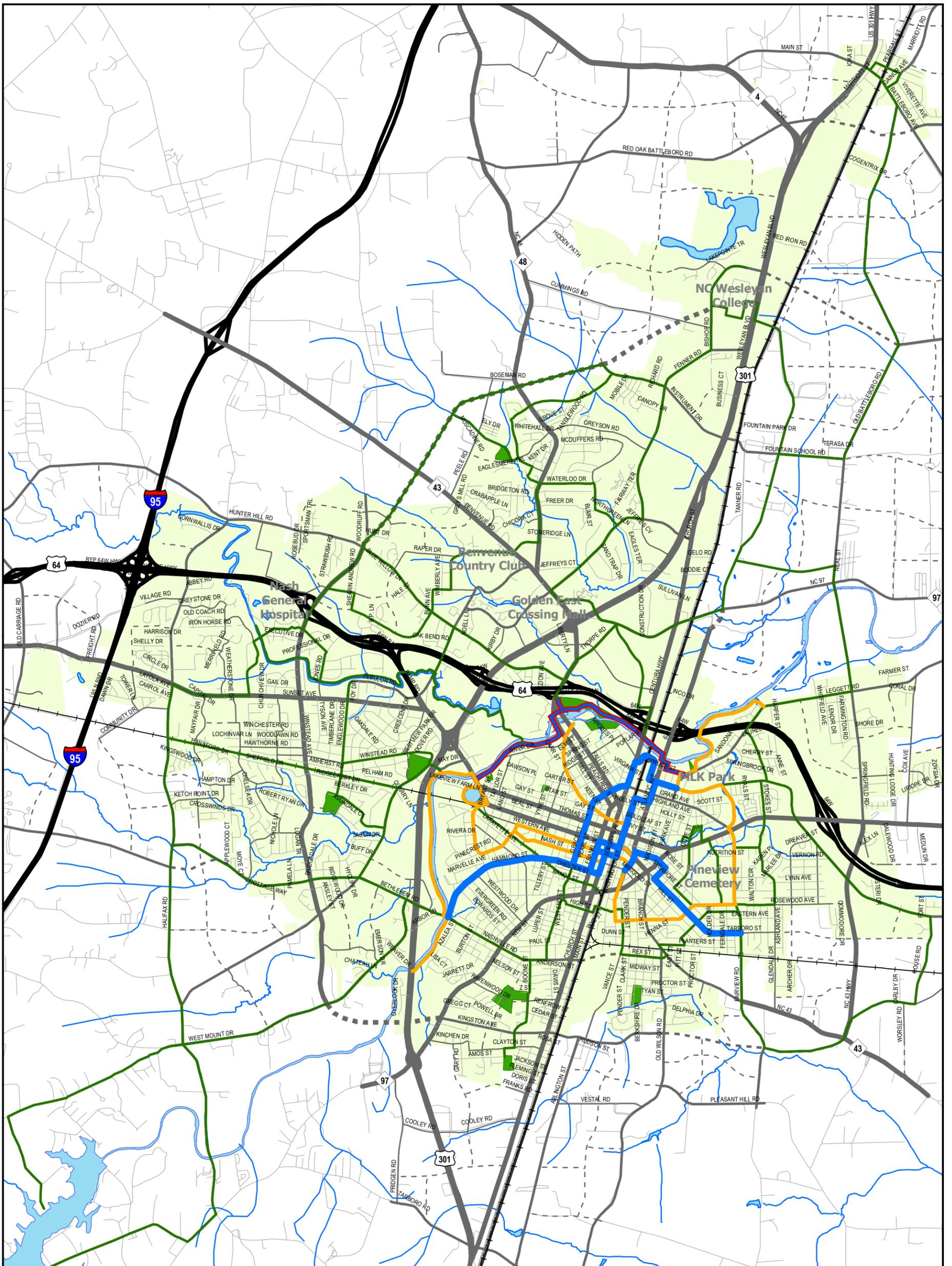


Figure 7.22
Project Priorities

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Legend

- | | | |
|---|---|--|
|  Parks | Priority |  Tar River Trail (Existing) |
|  Bodies of Water |  Short Term | |
|  Rocky Mount City Limits |  Medium Term | |
|  County Lines |  Long Term | |
|  Existing Road | | |
|  Proposed Road | | |



0 1
Miles

Chapter 8 — Recommendations

Project Descriptions

Evaluation of the Bicycle Route System

On July 21 and 22, 2005, members of the project team rode a sample of the bike routes recommended as a part of this plan. The recommended bicycle facility map is shown in **Figure 4.4**. The purpose of riding the area was to obtain a bicyclist's view of the routes and to note the strengths and weaknesses of the routes from the perspective of potential new riders.

The routes were ridden on a Thursday afternoon and Friday morning in periods overlapping the peak hour travel times for commuters. Several other cyclists were observed riding on the routes while the evaluations were being performed.

THE SOUTHEASTERN ROUTE

The first route analyzed consists of Hammond Street, Main Street, Virginia Street, Grand Avenue and Fairview Road. Portions of the Downtown-Reservoir Connector, the Downtown Core Loop, the Downtown Neighborhood Route, and the East Side Loop (see **Figure 4.4**) were included in this analysis. This route essentially connects Bethlehem Road in the southwest and Cokey Road in the southeast to the train station and the Main Street shopping district.

Hammond Street (Downtown-Reservoir Connector)

West of Tillery Street, Hammond Street has predominantly wide lanes through residential areas. This is a two lane roadway with on-street parking (although no cars were seen parking on the roadway during the review). Where there is on-street parking designated, such as near the elementary school, additional space is provided for parking. A left turn lane is included on the approach to significant intersections.

The wide lanes could be used to create striped bicycle lanes. However, on-street parking in this area could make bike lanes impractical. As a result, Hammond Street is recommended to be a signed route with striped parking in

this area. This gives bicyclists a refuge area when there are no parked cars and separates them from moving vehicles. The left turn lanes provided at some intersections would require the striped parking to end prior to the intersections. However, providing "Share the Road" signs on the approaches to these discontinuities would partially mitigate their impact on cyclists.

One potentially hazardous condition noted on the route was the railroad crossing where Hammond intersects



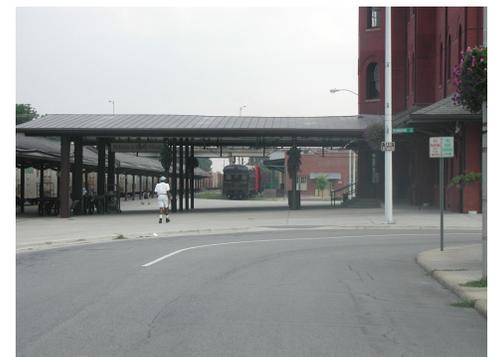
Talbott Street. The roadway crosses these tracks on a diagonal creating the potential for a "wheel trap" type crash. Fortunately, there are number of ways this risk can be minimized. One way to minimize the

impact of this crossing is to create a wider shoulder which would allow bicyclists to approach the crossing closer to a right angle.

East of Tillery Street, there is on-street parking provided on the north side of the street. Cars were using this parking at the time of the evaluation ride. It appears this section of roadway is too narrow to stripe a bike lane or have striped parking.

Hammond Street does not actually cross the rail line at Main Street, but rather ends in front of the Transit Transfer Station. To get around this barrier, several routes were considered. A contraflow bike lane was initially considered on the east side of Main Street to Nash Street. However, the space required for the lane

appears to be taken up with a drop-off lane for the train station. A view from Main Street looking south at the Hammond Street intersection is shown in the



Rocky Mount Comprehensive Bicycle Plan



adjacent picture. Alternatively, the route is recommended to shift to the north to Nash Street along the one way pair of Franklin Street and Church Street.

Main Street (Downtown Core Loop)

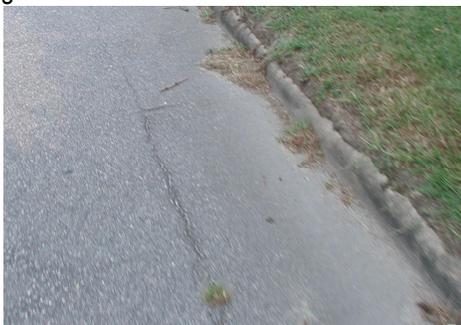
The route segment along Main Street runs through the heart of downtown Rocky Mount, a commercial area with on-street parking. It appears that there is sufficient roadway width to install bike lanes along this section. At Albemarle Avenue, the roadway becomes one-way northbound. Consequently, another street has to be chosen for the route at this location.

The Main Street pair should be considered as an alternative to these roads to fill this segment of the route as Main Street serves many more storefronts. If Main Street is considered for this bike route segment, there should be a study conducted to convert the current angle parking to back-in angle parking and the route should be signed. One potential hazard along this location is the skewed railroad crossing at Goldleaf Street. However, because of the wide roadway, this could be addressed in the same manner as the previous crossing at Hammond and Talbott, which is to stripe a bike lane and provide an arrow showing the preferred crossing angle. This crossing area is also quite rough and would benefit from a resurfacing.

There are other options for this corridor, including eliminating parallel parking by the railroad tracks to accommodate bike lanes or creating two-way bicycle traffic on both sides of the road to allow for greater accessibility. If the contraflow option is considered, it may be preferable to make Main Street two-way on each side of the tracks and to perform a streetscape on the area to make it more attractive as a commercial center.

Virginia Street (Downtown Core Loop/Downtown Neighborhood Loop)

When considering a connection between Main Street and Fairview Road, the logical first choice is Grand Avenue. Grand Avenue is a four-lane undivided



roadway. The outside lane is fairly wide and could have been restriped as a bike lane. Unfortunately, the roadway pavement appears to have been paved over a concrete gutter pan as cracking is present along (what appears to be) the old asphalt / concrete seam line. The resulting through lane width does not appear to be adequate for cyclists as several were observed riding on the adjacent sidewalks.

Since Grand Avenue had an average daily traffic in 2003 of 12,000 vehicles per day, this roadway could be considered for a "road diet". This consists of restriping the road with a through lane in each direction and a two-way left turn lane. This would allow for a bike lane to be placed on the roadway. There is significant pavement cracking along this section making the ride a bit bumpy. Two cyclists were observed riding on the sidewalk within this section.

A preferable alternative to this scenario is moving the route to Virginia Street. Virginia Street is a relatively low-traffic facility that provides connections to the Tar River Trail and two schools. This road would be a better fit for a bicycle route. A possible multi-use path through a cemetery would provide an off-road connection between Virginia Street and Fairview Road.

Fairview Road (Downtown Neighborhood Loop/East Side Loop)

At Raleigh Street, Fairview Road is briefly a five-lane section. It appears this section may be wide enough to accommodate bike lanes. However, shortly thereafter, Fairview Road becomes a three lane section. Along this section the roadway does not appear to have adequate pavement width for a bike lane because of intermittent cracks at the old gutterpan seam. As a result, the route is recommended to be signed over the entire expanse.

There are two utility covers along this section which could be hazardous to bicyclists.

The first is just south of Nutrition Street in the northbound lane. This broken lid could puncture a tire, bend a rim, or cause a crash for a bicyclist running over the utility cover. A second lid, just south of Tarboro



Rocky Mount Comprehensive Bicycle Plan



Street in the southbound lane presents a similar but less severe potential for a crash or damage to a bicycle.

South of Tarboro Street Fairview Road transitions to a shoulder cross section. Paved shoulders should be considered along this section. The railroad tracks, while identified as a barrier, intersect the roadway at a 90 degree angle, and did not appear to cause a significant handling problem when crossed.

THE NORTHWESTERN ROUTE

The second route analyzed consists of Englewood Drive, Zebulon Road, Hunter Hill Road, Bunn Avenue, Southern Boulevard, Country Club Drive, Northern Boulevard, Goldrock Road, Waterloo Drive, Mashie Lane, Northgreen Lane, Country Club Road, Jeffreys Road, and Bishop Road. Portions of the Englewood Park-City Lake Rail with Trail, the Hospital/Stoney Creek Connector Trail, the West Side Connector, the Mall-Hornbeam Park Loop, and the College Loop (see **Figure 4.4**) were included in this analysis. This route essentially connects Winstead Road on the south to Benvenue Road, and then to NC Wesleyan College in the north.

Englewood Drive (Englewood Park-City Lake Rail with Trail)

Englewood Drive is a wide, unstriped residential street, presumably with allowed on-street parking, though no cars were seen on the roadway. The elementary school just south of Sunset had marked on-street parking used primarily when school is in session. It appears the cross section would accommodate bike lanes; however, due to the on-street parking in the neighborhood a signed route with striped parking is recommended.

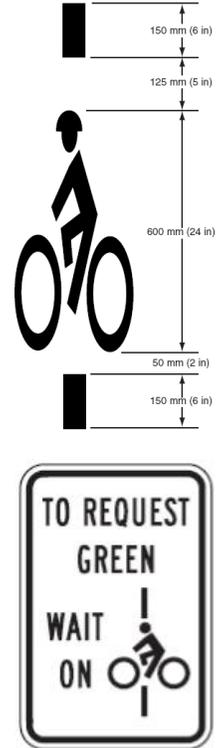
Some areas along this roadway are rough to ride because of pavement deterioration. Additionally, thermoplastic rumble strips have been placed in the southbound lanes along this section of roadway. If these are necessary, consider leaving two feet clear on the outside of the travel lane.

Zebulon Road (Hospital/Stoney Creek Connector Trail)

Zebulon Road is a three-lane section, with two through lanes and a two-way center left turn lane. There does not appear to be adequate room to stripe bike lanes on this section. Due to the heavy volumes and commercial nature of Zebulon Road, it is recommended that the route

continues along the Stoney Creek alignment as a multi-use path.

The traffic signal loop at Buck Leonard Boulevard and Zebulon / Country Club does not appear to detect bicycles on the southbound approach. If the signal loop does not detect bicyclists, it should be replaced. If the loop does detect bicyclists, consider installing the Bicycle Detector Pavement Marking and the R10-22 sign on this loop to inform bicyclists where they should position themselves to activate the green light. Traveling across this intersection on the multi-use path should be done at a crosswalk with an infrared or push-button signal. Another option would be to continue along the creek where Buck Leonard Boulevard crosses. However, this underpass may require extensive bridge retrofitting to be feasible.



Hunter Hill Road/Bunn Avenue/ Southern Boulevard/Country Club Road/Northern Boulevard/Goldrock Road/Waterloo Drive/Mashie Lane/Northgreen Lane (West Side Connector/Mall-Hornbeam Park Loop)

R10-22

When considering a route between Zebulon Road and Jeffreys Road, Country Club Road is clearly the most direct route. Country Club Road is two lanes with open shoulders. In several areas there is rutting at the edge of pavement which could be a hazard if a bicyclist strayed off of the roadway. North of Jeffreys, the space for paved shoulders is questionable. There are also curve (limiting sight distance), and grade (cyclists riding uphill tend to wobble more than on a flat surface) problems in this area. If Jeffreys Road is taken in this area, riders will encounter heavy multi-lane traffic and numerous driveways. Therefore, an alternate route may be preferable.

To reach Jeffreys Road, the route instead turns west onto Hunter Hill Road. This road, while not currently bicycle-friendly, will have 14 foot wide outside lanes when it is widened. The route then follows the lower speed facilities of Bunn Avenue, Southern Boulevard, Country Club Drive, and Northern Boulevard to reach Goldrock Road. This road has higher volumes but may be restriped to obtain wide outside lanes. The neighborhood roads of Waterloo

Rocky Mount Comprehensive Bicycle Plan



Drive, Mashie Lane, and Northgreen Lane then allow the user to reach Jeffreys Road. While this route is longer and more circuitous, the enhanced safety will make it a more attractive option.

Jeffreys Road (Mall-Hornbeam Park Loop/College Loop)

Jeffreys Road is a three-lane section, with two through lanes and a two-way center left turn lane, and has good pavement. It does not appear that there is room to incorporate bike lanes along this section of roadway.

Jeffreys Road becomes four lanes with turn lanes at the Golden East Mall Ring Road. After Benvenue Road, it becomes a three-lane again. Shortly thereafter, Jeffreys Road becomes a two-lane open shoulder.



Numerous drop-off areas exist adjacent to the pavement which could cause crashes should bicyclists stray from the pavement. Some of these drop-offs are near intersections and may be the result of motorists moving onto the shoulders to pass left turning motorists. However, some occur on a tangent section which implies perhaps there is a cross slope problem that may need to be addressed. A paved shoulder or at least a small paved or gravel strip should be considered along this portion of Jeffreys Road to provide a comfortable place for cyclists to ride, as well as a refuge for motorists.

Bishop Road

Bishop Road is a two-lane roadway with open shoulders. Bishop Road is also open shoulder and, like Jeffreys Road, has edge maintenance issues. Paved shoulders along this section could be considered. However, the grass shoulder along the east side of the road is very large, implying that a multi-use path might be more appropriate to accommodate bicyclists from the nearby school and college.

General Observations

Route Signing

One observation with respect to designating a facility (or collection of facilities) as a route is that routes, by definition, should have origins and destinations. As such, they should be signed accordingly.

Simply designating a roadway as a Bicycle Route using the sign shown in MUTCD sign D11-1 does not really provide enough information to the cyclists. All roads (except those where cyclists are prohibited) are essentially bike routes. Specific routes should be signed using direction, distance, and destination signing provided for in the MUTCD.¹



D11-1



Examples of potential routes can be seen on **Figure 4.4** and include the College Loop, the Mall-Hornbeam Park Loop, the Downtown Neighborhood Loop, and the YMCA Loop. Other destinations for the proposed routes might not be obvious to the potential user, reinforcing the need for destination signing.

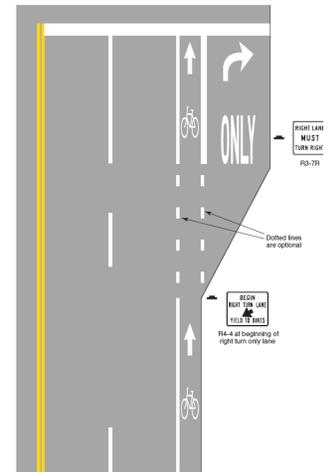
Paved Shoulder and Bike Lane Recommendations

This analysis has recommended paved shoulders for many roadways with open shoulder; however, bike lanes would be preferable in some situations. Several bicyclists, who appeared to be casual recreational cyclists, were observed riding against traffic on these roadways.

The use of bike lanes allows for the placement of arrows on the pavement and WRONG WAY BIKE signs on the back of other signs.

Bike lanes have been shown to reduce the incidences of wrong way riding and promote proper vehicular cycling. The difference in geometric design is at intersections: whereas a paved shoulder would be to the right of a right turn lane, a bike lane must be to the left.

This may require full base compaction at the intersections as opposed to a lesser treatment for paved shoulders.



Rocky Mount makes a practice of placing lane use arrows on the approach to intersections. When bike lanes are installed on a roadway, these lane use symbols are inappropriate. Because the bike lanes are (typically)

¹ Additional examples of route signage can be found in the MUTCD in Figure 9B-4.

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striped as through lanes, a through-right lane is inappropriate on the left side of a bike lane. The practice of marking approach through-right lanes at intersections would need to be discontinued along a route with a bike lane.



Barrier Analysis

Many factors should be considered in determining the appropriate bicycle facility type, location, and priority for implementation. The improvements recommended in this plan address the physical conditions, barriers, and inconveniences to bicycling throughout the community, as well as make the best use of bicycle-friendly facilities. With every community bicycle plan, there are some areas that have physical barriers to bicycle travel caused by topographical features, such as rivers, railroads, freeways, or other impediments. In such cases, providing a facility to overcome a barrier can create new opportunities for bicycling.

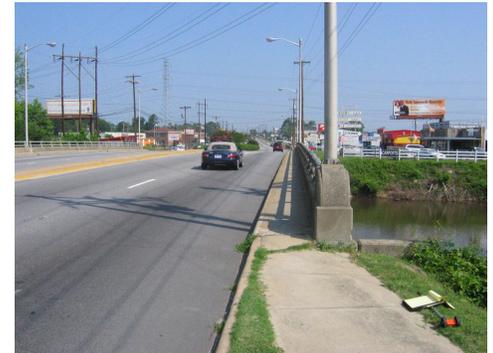
Bridges can serve an important function by providing bicycle access across barriers. However, some bridge features in the Rocky Mount area restrict bicycle access or create unfavorable conditions for bicyclists. As such, the cost for retrofitting these facilities to accommodate safe bicycle travel can be exorbitant. The most common of these bridge-related design deficiencies are curb-to-curb widths that are too narrow; grate (drainage) inlets that are oriented the wrong way; low railings or parapets; and certain types of expansion joints, such as finger-type joints that can cause steering difficulties.

In an effort to address some of these critical barriers within the Rocky Mount study area, a field investigation was conducted to determine cost-feasible opportunities for providing bicycle amenities across these facilities. Eight barrier locations were selected by the project team based on their proximity to other bicycle facilities and importance to bicycle connectivity. The following provides a synopsis of the existing conditions at these locations, as well as recommendations for bicycle-related improvements.

Sunset Avenue at Tar River (Bridge)

This bridge provides a vital link between the US 64/US 301 and the downtown central business district. As a

gateway to the City, Sunset Avenue carries a significant amount of traffic at approximately 21,000 vehicles per day. The bridge itself is five lanes divided at 68 feet curb-to-curb with 3-foot wide raised concrete sidewalks on both sides. Due to the lack of amenities, the bridge becomes a barrier for bicyclists as the Tar River Trail dead ends at this location. Crossing it will provide an important linkage for the bicycle community.



Bike Improvement Recommendation: The travel lanes along the bridge are too narrow (at 13 feet) to accommodate a bikeway. However, a cantilever utility (water) line exists on the west side of the bridge, which could include an 8-foot multiuse path for bicyclists and pedestrians. The cost for retrofitting the multiuse path



Before



After

would be relatively inexpensive with the addition of a deck and rail only. Also, a 10-foot multiuse path under the south side of the bridge could be constructed to eventually connect to the Tar River Trail. The end bents (i.e., abutments) of the existing bridge on the south side are wide enough to accommodate this path.

Bethlehem Road at Tar River (Bridge)

This bridge connects southwest Rocky Mount to the downtown residential community along Hammond Street. With a boat access ramp located on the south side of the Tar River and an open space area to the northwest,

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bicycle and pedestrian access across the bridge will be important.

Bethlehem Road carries approximately 16,000 vehicles per day at the bridge. Hammond Street (two lanes) intersects with Bethlehem



Road/Nashville Road at an existing signal less than 50 feet east of the bridge. The bridge deck is three lanes (including an eastbound left turn bay) at 44 feet curb-to-curb with 2-foot (south side) and 5-foot (north side) wide



raised concrete sidewalks. The deck surface is in poor condition. Another key design limitation is the existing guard rail (both sides), which ties directly into the sidewalk, cutting off pedestrian access.

Bike Improvement Recommendation: The asphalt surface along the bridge is wide enough (at 44 feet) to accommodate three 12-foot lanes and 4-foot striped bike lanes. This can easily be accommodated as the bridge deck is resurfaced.

Hammond Street is an excellent candidate for a future bikeway as its width (approximately 30 feet curb-to-curb) appears to be wide enough to accommodate bike lanes. With this in mind, the signalized intersection of



Bethlehem/Nashville at Hammond needs to be upgraded to include a pedestrian signal countdown and crosswalks. Also, to facilitate easy access over the bridge along the Tar



River and access to the existing boat ramp, an 8-foot multiuse path under the east end of the bridge could be constructed. The end bents (i.e., abutments) of the

existing bridge on the south side are wide enough to accommodate this path.

Sutton Road Tunnels/CSX Railroad

The Sutton Road Tunnels present a significant challenge to bicycle and pedestrian mobility.

The tunnels provide a needed crossing of the CSX rail corridor. However, the design and layout of the tunnels are not conducive to safe bicycling. Sutton Road carries approximately 4,000 vehicles per day at this location.

Through each tunnel, Sutton Road is one lane at 10 feet curb-to-curb with a 3-foot drainage channel in the back of the curb. The tunnels operate one direction at a time controlled by signals at the far ends of the east and west



tunnels. The traffic flow through the tunnels is complicated by the fact that the CSX operations center driveway

access is located in the middle of the tunnel. Other issues that may complicate proposed improvements include reoccurring flood activity and low clearance (8 feet) through the tunnels. It should be noted that during a recent field review, a bicyclist was observed traveling through one of the tunnels during rush hour.

Bike Improvement Recommendation: The Sutton tunnel is not a part of a bicycle route recommended in this plan. However, limited crossing opportunities may continue to make this a desirable crossing point for some riders. Although plans have identified replacing these tunnels with a new bridge with adequate width to accommodate bicycle and pedestrian facilities, there are no dedicated funds at this time. In lieu of this, and realizing the demand for crossing the CSX railroad, we

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recommend installing a pedestrian activated signal at both ends of the tunnels to provide adequate time for a pedestrian or bicyclist to safely travel through the tunnels.

Falls Road at Tar River (Bridge)

This bridge connects northwest Rocky Mount and US 64 to the downtown central business district. The Tar River Trail crosses Falls Road (at grade with dedicated crosswalk) on the north side of the bridge. Providing a connection to the Tar River Trail at this location will be an important linkage within the bikeway system. Falls Road is currently a two-lane, one-way arterial carrying approximately 7,000 vehicles per day at the bridge. The bridge deck is 35 feet curb-to-curb with 5-foot wide raised concrete sidewalks on both sides. Also, the deck is lined with adequate pedestrian level lighting.



Bike Improvement Recommendation: The deck is in need of resurfacing. When this occurs, the travel lanes should be restriped to include a 5-foot dedicated bike lane as seen in this rendering. Also, the



posted speed limit along Falls Road is 35 miles per hour. However, during a recent field review, we

observed vehicles often exceeding the speed limit. This may increase the difficulty of safely crossing Falls Road. If desired, a bicycle and pedestrian signal crossing with a pedestrian countdown could be installed at the existing Tar River Trail crossing. Additional pedestrian crossing warning signs may be warranted to make drivers more aware of bicycle and pedestrian activity.

Peachtree Street at Tar River (Bridge)

This bridge also connects northwest Rocky Mount and US 64 to the downtown central business district. The Tar River Trail crosses Peachtree Street (at grade with dedicated crosswalk) on the north side of the bridge. The bridge deck is outfitted with a 10-foot multiuse path located on the west side of the bridge.

Bike Improvement Recommendation: No major improvements are needed to this bridge. However, during a recent field review, it was observed that vehicles often exceed the speed limit along this roadway. In addition, site distance at the crosswalk may be inadequate for vehicles traveling southbound. This may increase the difficulty of safely crossing Peachtree Street. If desired, a bicycle and pedestrian signal crossing with a pedestrian countdown could be installed at the existing Tar River Trail crossing. Additional pedestrian crossing warning signs may be warranted to make drivers more aware of bicycle and pedestrian activity.



Benvenue Road (NC 43) at US 64 (Bridge)

There are two separate bridges that provide access across US 64 along Benvenue Road. This crossing is important to bicycle connectivity because it provides a direct link to community activity centers/destinations such as the YMCA, Sports Complex, and the Golden East Crossing Mall. Benvenue Road is a multilane facility in this area and carries approximately 16,000 vehicles per day at the bridges. Two signals are located at the ramp termini to the US 64 interchange.

Bike Improvement Recommendation: The bridge end bents for both grade separations appear to have adequate width between the back-of-curb and the end bents to accommodate a 10-foot-wide multiuse path. Some grading work will be required to accommodate the improvements. However, retaining walls should not be necessary. This improvement would benefit the College Loop, the YMCA Loop, and the Mall-Hornbeam Park Loop. However, this facility is currently designated as a signed route due to its connection with Thorpe Road.

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YMCA and the Rocky Mount Sports Complex

The YMCA and the Rocky Mount Sports Complex will be a desirable

and attractive destination for pedestrians and bicyclists. Direct and safe access for bicyclists in and out of these facilities will be an important feature to consider in the implementation of a system-wide bicycle plan. Currently, these two facilities are bounded by Thorpe Road to the west, Airport Road to the north, Church Street to the east, and the Independence Drive to the south. All of these roads are two-lane facilities except for Church Street, which is five lanes with a continuous middle left-turn lane.

Bike Improvement Recommendation: The following recommendations are proposed for each facility providing access to the YMCA and the Rocky Mount Sports Complex.

Thorpe Road: Access to these facilities via Thorpe Road (posted speed limit is 45 miles per hour) is provided at the intersection of Independence Drive (unsignalized). Thorpe Road does not have the width to support on-road bicycle facilities such as striped bike lanes or wide outside lanes. Therefore, Thorpe Road is recommended to be a signed route.



Airport Road: Airport Road (posted speed limit is 45 miles per hour) carries approximately 7,000 vehicles per day. Access to these facilities via Airport Road is provided just east of the

Construction Drive intersection (unsignalized). Airport Road (24 feet wide) has wide outside grass shoulders (6 feet to 8 feet wide) that should be adequate to support a multi-use path on one side of the road.

Church Street: Church Street (posted speed limit is 55 miles per hour) carries approximately 12,000 vehicles per day in the area of the



section is five-



gutter with street lighting and no sidewalks. Access to the YMCA and Sports Complex is provided at a location across from the RBC Headquarters. Due to the high traffic volume and high rate of speed of vehicles along the roadway, it is recommended that Church Street not be a designated facility for bicycles.

YMCA Complex. The roadway cross (60 feet wide) lane curb and

Independence Drive: This collector road was recently completed as a part of the complex and connects Thorpe Road to Church Street.

Independence Drive is 40 feet face-to-face of the curb and gutter. There will not be adequate width on Independence



Drive to support on-road bicycle facilities such as bike lanes or wide outside lanes. However, there will be a series of multi-use paths around the complex that will allow bicyclists to travel freely.

Benvenue Road (NC 43) at US 301 (Bridge)

This interchange bridge crosses US 301 just north of the US 64 corridor. Benvenue Road is a primary arterial providing direct access to the Golden East Crossing Mall. Benvenue Road at the bridge is currently a five-lane (three northbound and two southbound lanes) carrying approximately 13,000 vehicles per day. The bridge deck is 65 feet curb-to-curb with 4-foot wide raised concrete sidewalks on both sides. Just south of the bridge, Benvenue Road has two signals located at the US 301 northbound ramp terminal and the intersection of

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Independence Drive. The US 301 southbound ramp terminal, located just north of the bridge, is unsignalized. Sight distance

is limited across this bridge because it is built on a crest. Also, the deck has no street- or pedestrian-level lighting. Bicycle access and mobility across this section of Benvenue Road is very hazardous due to the lack of amenities and the high level of traffic.

Bike Improvement Recommendation: If Benvenue Road is chosen as the desired crossing location of US 301, there are two possible bikeway improvements that need to be considered with the current width: 1) the travel lanes could be restriped to accommodate five 11-foot lanes with 5-foot bike lanes on both sides; or, 2) the travel lanes could be restriped to accommodate three 12-foot inner lanes and two 14.5-foot outside lanes for more experienced cyclists. The deck surface appears to be in good condition.

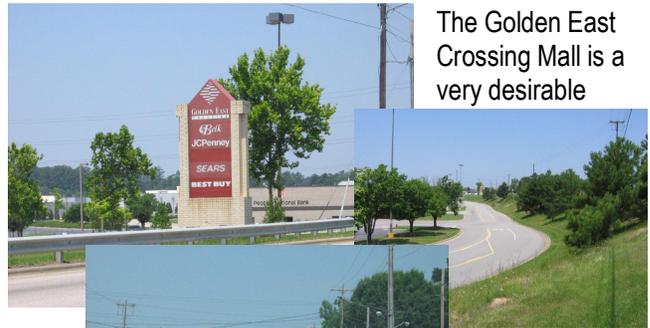
Other bicycle improvements include installing pedestrian signals, pedestrian countdown, and



crosswalks at the signalized intersections of US 301 NB ramp terminal and Independence Drive.

Due to the heavy traffic and number of lanes on Benvenue at this bridge, an alternate route may be preferable. The College Loop and the Mall-Hornbeam Park Loop are both recommended to travel along Tiffany Boulevard. While also heavily traveled, this road is not as heavily used as Benvenue and as such would be preferable. It also has an at-grade crossing with US 301 which is signalized, thus easing a crossing for bicyclists. This road also turns into Airport Road, which is recommended to have a multi-use path to help get bicyclists off the road.

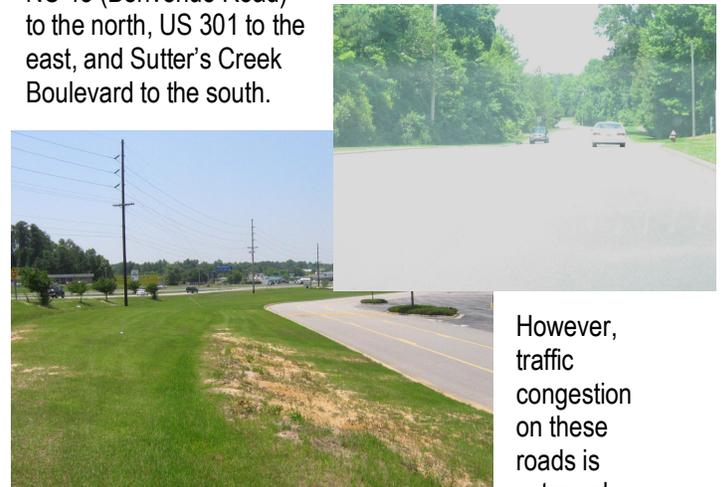
Golden East Crossing Mall



The Golden East Crossing Mall is a very desirable



destination and activity area. The Mall is surrounded by the three-lane Ring Road with wide travel lanes and adequate grass shoulders in back of the curb. The Mall is bounded by Jeffrey's Road to the west, NC 43 (Benvenue Road) to the north, US 301 to the east, and Sutter's Creek Boulevard to the south.



However, traffic congestion on these roads is extremely

high and presents a considerable barrier to bicycle access and mobility.

Bike Improvement Recommendation: Access to the mall area may be provided using on-street or off road greenway improvements. On-road improvements, either wide outside lanes or a dedicated bike lane, could be considered along Jeffrey's Road and Sutter's Creek Boulevard. However, bicycle and pedestrian access to

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the mall area and the Ring Road could be provided via a multiuse path, which can be bridged across Sutter's Creek and can connect to the three-lane Ring Road. The Ring Road could easily be restriped to accommodate a dedicated bike lane or the outside shoulders could be used to construct an 8-foot multiuse path. However, this would have to be approved by the mall since this is a private road. Therefore, no facilities have been recommended on mall property at this time.

*Reference: **Guide for the Development of Bicycle Facilities**, AASHTO, 1999*

Staffing/Committee Recommendations

Once bicycle routes and programs have been recommended, the next step is to ensure that these ideas are implemented in the community. While this can be done in part by city staff and by NCDOT, continued community involvement is necessary for this plan's success. To do this, it is recommended that a standing Bicycle Advisory Committee be formed consisting of members of the public and city staff. This advisory committee would monitor the progress of the bicycle plan implementation, champion projects in the area, and assist in coordinating bicycle events in the community. It is difficult to overstate the importance of public involvement in the ultimate success of this plan. Collaboration with the local bicyclists clubs would also be important for the advisory committee so that members could get a frequent rider's perspective on many of the issues with which they are routinely faced.

Chapter 9 — Implementation Plan

This report summarizes the current condition of Rocky Mount's bicycle system. It specifically examines the current use of Rocky Mount's road network for bicycling as well as its off-road facilities. The challenge now is to parlay the vision of a bicycle-friendly community into an interconnected bicycle plan and completed network.

A Vision for the Future

Without a vision of the future, bicycle transportation will not attract the investment it requires to serve the needs of present and future generations. Resources will be wasted and supplemental revenues denied without a disciplined investment strategy. Our goal is to chart the future boldly — while committing resources wisely.

With this in mind, the vision developed for the *Rocky Mount Comprehensive Bicycle Plan* is as follows:

- Create a Bicycle-Friendly Community
- Increase Travel Ways for Bicycles
- Develop a Viable Bicycle Transportation System
- Promote the Safety and Health of Users
- Create Transportation Choices
- Advance the Community's "Livability"

A set of goals and objectives was developed at the outset of this plan to help reflect this vision. Some of the goals and objectives included pursuing funds to construct high priority bicycle facilities, increasing the number of bicyclists, increasing public awareness of bicycling, and encouraging safe riding practices.

Current Conditions

Throughout the public involvement process associated with this plan, residents expressed a strong desire for improvements to the conditions and opportunities for bicycling. Citizens want to be able to bicycle safely within their community to run errands, shop, visit friends and neighbors, exercise, and get to work. Similarly, public

agency staff and local officials recognize the need to improve safety and opportunities for bicycling. The Tar River Trail provides a pleasant off-road facility, but additional connectivity is needed to develop a true bicycle network.

There are two road construction projects currently in the NCDOT Transportation Improvement Program (TIP) that include or are considering inclusion of bicycle accommodations, as listed below:

- **Hunter Hill Road** – Widen SR 1604 (TIP number U-3621) from SR 1613 (North Winstead Avenue) to NC 43-48 (Benvenue Road). Planning in progress, Construction scheduled to start in 2010. Includes wide outside lanes.
- **North Winstead Road** – Widen SR 1613 (TIP number U-4019) to multi-lanes from SR 1770 (Sunset Avenue) to SR 1604 (Hunter Hill Road). Construction scheduled to start in 2009. Considering wide outside lanes.

There are no independent bicycle projects currently in the TIP for Rocky Mount. This would be a reasonable goal to set for the future, following adoption of this plan. For example, an independent project could be an extension of the Tar River Trail or a Rail to Trail Project.

Design of Facilities

Modifications to the City of Rocky Mount street design standards are recommended in **Chapter 5**. These modifications are similar to design standards that other municipalities have adopted, as well as an understanding of the desired level of accommodation for bicyclists along a roadway. Existing and recommended bicycle facility types are provided here, along with recommendations for Rocky Mount's street and intersection design guidelines.

State Standards

Wide outside lanes: A width of 14 feet is accepted, however 15 feet is preferred for the outside lane to accommodate bicycles. On a multi-lane roadway, differential striping may be employed to reduce the width of the inside lane and thereby increase the width of the outside lane.



Striped Bicycle Lanes: NCDOT adheres to the standards recommended by AASHTO for these facilities, recommending a 4 foot minimum width except in the presence of parking, where a 5 foot minimum is required.

Signed Bicycle Routes: Simply posting signs along a route is an inexpensive way to guide riders to more bicycle-friendly roads and intersections.

Bicycle Paths or Multi-Use Paths: The minimum width for a bicycle or multi-use path is 10 feet; however, additional width should be considered for areas with difficult terrain or heavy traffic.

Recommended Additions

Striped Parking/Signed Route: Streets not wide enough for bicycle lanes and on-street parking could be given one solid stripe to delineate the parking area from the travel area. If posted as a signed bicycle route, many cyclists could take advantage of the striped area especially when not many motorists park on the street. This is a good alternative to fighting adjacent property owners who insist on keeping on-street parking.

Neighborhood Connector: Connecting two disconnected (but proximate) neighborhood streets with a bollard-protected ten-foot wide bicycle- and pedestrian-only connector path will relieve many parents from driving their children to friends' homes after school.

Rocky Mount Street Design Standards

Local Streets. The city's current design standards for local streets provide for 11-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. No modification is recommended for this cross section. Because of their nature, local streets do not typically require additional bicycle facilities. **Figure 5.1** provides an alternate local street cross-section incorporating 4-foot bike lanes, ideal for areas with safety or speed problems or near destination points.

Collector Streets. The city's current design standards for new collector streets provide for 12-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. We recommend revising the standards so that collectors being designed with a design year motor vehicle volume exceeding 2,500 vpd have a

cross section including 11-foot travel lanes and 4-foot bike lanes. **Figure 5.2** shows a collector street incorporating parking and 5-foot bike lanes on both sides of the street.

Minor Arterials. The city's current design standards for new minor arterial streets provide for 12-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. It would be possible to provide a multi-use path adjacent to the roadway. The buffer to the sidewalk (which would be replaced by a side multi-use path) is adequate. The minimum multi-use path width recommended by NCDOT is 10 feet wide. This means the separation to the right-of-way line could be reduced to 5 feet. We recommend revising the standards so that minor arterial streets are designed with 12-foot travel lanes and 4-foot bike lanes. The retention of the 12-foot travel lanes maintains space for heavy vehicles.

Figure 5.4 depicts a two-lane divided cross-section with parking and a 10-foot side multi-use path.

Major Arterials. The city's current design standards for major arterial streets provide for 12-foot lanes. Given this cross section, it would not be possible to include bicycle lanes in the roadway. It would be possible to provide a multi-use path adjacent to the roadway. The buffer between the path and the back of curb would need to be increased to at least 3 feet. The minimum multi-use path width recommended by NCDOT is 10 feet wide, rendering this type of bicycle facility unable to fit within the right-of-way line. It may be necessary to shift the roadway within the right-of-way to provide more space between a multi-use path and the right-of-way line. This would allow for better matching of the grades on the adjacent properties. See **Figure 5.3** provides an alternate cross-section with 14-foot wide outside lanes to accommodate bicyclists.

We recommend revising the standards so that the cross section for major arterial streets includes 12-foot travel lanes and 4-foot bike lanes. The retention of the 12-foot travel lanes maintains space for heavy vehicles. A differential striping with 11-foot lanes toward the middle of the road and 13-foot lanes next to 4-foot wide bike lanes would also offer benefits to bicyclists.

Rocky Mount Intersection Design Standards

If bicycle lanes are adopted as the standard on-street treatment for bicyclists, special care must be given to the bike lanes design at intersections. Since intersections



represent significant conflict points for bicyclists, appropriate striping, marking, and signing is critical to help ensure the proper behavior of cyclists and motorists.

To adopt these standards, Rocky Mount would have to revise one of its striping practices. Currently, intersection lane use symbols are painted on the approaches to many major intersections. These markings typically consist of through/left and through/right arrows painted on the pavement. While the through/left arrow causes no problems for bicyclists, the through/right can be problematic. This treatment can cause improper behavior from motorists who are turning right — they might pass a bicyclist in the bike lane and then turn in front of the bicyclists from the through/right lane. If the through/right symbol is to be used, the bike lane should be discontinued prior to the intersection so that a through lane (the bike lane) is not located to the right of a right-turn lane (the through/right lane). If this marking is omitted, the solid bike lane line should change to a skip line prior to the intersection. (Refer to intersection striping treatments in **Chapter 5** for additional information.)

Ancillary Facilities and Programs

Mapping and Signing Projects

The proposed area-wide Bike System Network should first be mapped and signed with bicycle route signs. Potential improvements are identified in **Chapter 6**. These recommendations encompass issues from maintenance to design and include but are not limited to:

- Provision of bike lanes on local streets where space is available and on-street parking is not an issue. Consideration should be given to whether bike lanes are the preferred alternative in each situation before implementation occurs
- Investigation of the use of the shared lane symbol under restricted conditions
- Marking and signing signal loops (and possibly repairing them) for bicyclists
- Repairing utility lids within the bicyclists' line of travel
- Marking railroad crossings to improve safety

- Route signage

Spot Improvement Programs

With the exception of interstates and freeways like I-95 and US 64, roadways should be maintained so they are safe for bicyclists to use. The surface should be free of debris. Longitudinal cracks should be patched and drainage grates with longitudinal slots should be replaced. Utility lids should be flush with the roadway surface. Paved shoulders should be installed where rutting is occurring on the side of non-curb and gutter roadways. These items should be addressed through the normal roadway maintenance program.

Bicycle Parking

Just as motorists need a place to park their cars when they arrive at destinations, bicyclists also need a place to park their bicycles.

Typically, when parking is installed for bicyclists, the primary consideration is simply the accessibility or the convenience of the parking. Their concerns also include security of the parking and the protection afforded to the bicycle.

Educational Programs

The Dangers of Riding Against Traffic and Motorist Yield to Sidewalk Traffic. Riding against traffic — either on the sidewalk or on the roadway — is a common practice in the Rocky Mount area. It is imperative that cyclists who chose to ride on the sidewalk are aware of the hazards associated with this practice. This plan recommends driver- and cyclist-targeted campaigns with graphics representing Rocky Mount. It is also important to target motorists with these campaigns to make the drivers aware they need to scan for traffic on the sidewalk. To maximize the potential for reducing crashes, these campaigns must be run concurrently.

Riding at Night without Lights. Bicyclists operating at night without lights are nearly invisible to motorists, often until it is too late. Even if a bicycle is properly fitted with reflectors, motorists coming from a side street will not see the cyclists until it is too late for the driver to react. Even if bicyclists choose to ride at night without lights, they must be made aware of the dangers they face in the dark. As



part of this plan's development, the Study Team reviewed unpublished research papers which show that a minimal (in terms of time) ad campaign results in a much increased appreciation of the importance that motorists look for pedestrians at night. It is recommended that the City of Rocky Mount bicycle crash program include an educational campaign effort. Informational posters showing sight distances for various colors of clothing and illustrating the limitations of reflectors may provide cyclists as well as pedestrians the information they need to make better choices when choosing gaps to cross the road or when anticipating driver behaviors at driveways and intersections.

Potential Projects

The recommended bicycle system map showing bicycle corridors and destinations is presented in **Figure 4.4 (Chapter 4)**. Logical connections between neighborhoods and destinations are organized into 20 unique loops or corridors. Names are given to each route to identify destinations served or some other place-based characteristic. The routes are interconnected so a mid- to long-distance rider can extend the trip. Cost figures presented below are the consultants' opinion based on planning studies only. They include opinions of construction cost only, therefore excluding right-of-way (if needed), railroad shared-use payments, surveys, design costs, utilities, and contingencies. Because the consultant does not control the cost of construction materials or the cost of labor, there are no assurances of these costs. See Appendix for more information on cost estimates.

Reservoir Loop (Figure 7.1)

Connects Nashville Road in the east to Halifax Road in the west. This route connects two parks, a community center, two schools, and the reservoir. *Cost: \$1.25 million.*

Park-Reservoir Connector (Figure 7.2)

Runs along Old Mill Road from Bethlehem Road and the proposed Reservoir Loop, past Englewood Park, and finally alongside May Drive and Sunset Avenue to City Lake. *Cost: \$400,000.*

Farmington Park Loop (Figure 7.3)

Connects the Farmington Park area with the Park-Reservoir Connector and the Englewood Park-City Lake Rail with Trail. A section of this loop runs along Old Mill

Road in the area of the Park-Reservoir Connector and is recommended to be a paved shoulder facility. *Cost: \$250,000.*

Englewood Park-City Lake Rail with Trail

(Figure 7.4)

Consists not only of the rail with trail multi-use path but also of connecting facilities that link it with the rest of the system. This route connects Englewood Park and City Lake Park. Majority of this facility consists of a rail with trail project. *Cost: \$450,000*

Hospital/Stoney Creek Connector Trail

(Figure 7.5)

Consists primarily of a greenway multi-use path along the southern bank of Stoney Creek, with some connectors. Connects to the existing Tar River Trail and three proposed trails. Connects with the hospital. *Cost: \$800,000.*

Downtown-Reservoir Connector (Figure 7.6)

Runs along Hammond Street and connects two schools and the reservoir, the Tar River Trail extension, and several proposed trails. *Cost: \$25,000.*

Downtown Neighborhood Loop (Figure 7.7)

Connects Sunset Park, City Lake Park, Stith-Talbert Park, Martin Luther King Jr. Park, five schools, the community college, the Children's Museum, a community center, and an art center. *Cost: \$200,000.*

City Lake-Downtown Trail (Figure 7.8)

A multi-use path alongside an active Nash County Railroad line connecting downtown with City Lake and the west side of Rocky Mount. *Cost: \$250,000.*

Downtown Core Loop (Figure 7.9)

Connects two schools, Tar River Transit Station, Library, Arts Center, museums, and historic sites. *Cost: (assuming Main Street to be a signed route) \$25,000.*

Johnson Pope-Holly Street Park (Figure 7.10)

Connects two schools and a park with striped bicycle lanes. *Cost: \$20,000.*

Abandoned Rail to Trail (Figure 7.11)

Connects the Imperial Center downtown with Battle Park and the Falls of the Tar River. *Cost: \$250,000.*



Downtown-East Side Connector (Figure 7.12)

Connects downtown with several Edgecombe neighborhoods and the community college. *Cost: \$30,000.*

East-West Connector (Figure 7.13)

Connects Nash and Edgecombe Counties. *Cost: \$60,000.*

East Side Loop (Figure 7.14)

Connects two schools and Edgecombe neighborhoods. *Cost: \$870,000.*

Tar River Trail Extension (Figure 7.15)

Extends the existing trail in both directions. The easterly extension would run from Martin Luther King Jr. Park to Leggett Road. The southwesterly extension would cross Sunset Avenue, run along a utility corridor along the west bank of the river to US 301. *Cost: \$700,000.*

College Loop (Figure 7.16)

A 13.5 mile loop connecting the Tar River Trail with NC Wesleyan College, Golden East Crossing Mall, Rocky Mount Prep School, the YMCA, and the Sports Complex. *Cost: \$2.8 million.*

Battleboro Connector (Figure 7.17)

The recent merger with the community of Battleboro would be connected with this rural bicycle route using paved shoulders on Old Battleboro Road. *Cost: \$1.35 million.*

West Side Connector (Figure 7.18)

A long route along the western edge of the city, connecting western neighborhoods with Nash General Hospital and six other proposed routes. *Cost: \$1.8 million.*

Mall-Hornbeam Park Loop (Figure 7.19)

Connects the Golden East Crossing Mall, the YMCA and Sports Complex, Hornbeam Park, and several northwest neighborhoods. *Cost: \$450,000.*

YMCA Loop (Figure 7.20)

Connects the existing Tar River Trail with the new YMCA and Sports Complex. *Cost: \$500,000.*

Policy and Program Initiatives

Based on successful programs in other communities, the City of Rocky Mount collaborated with NCDOT and the project consultants to develop a list of action items. This list details policy and program measures recommended for implementation. These measures will help to increase awareness and support for bicycling in the community, as well as promote bicycling priorities through the local political process. Ten key measures were identified and are as follows:

1. **Establish a standing Bicycle Advisory Committee.**

The cycling community is represented in many cities by a committee of volunteers. This committee will consist of members of the general public who have an interest in bicycling and city staff. The ideas of the BAC can be shared with the planning and policy organizations of the City and MPO. Working together, there is an increased chance for successful plan implementation. This committee can also help to sustain public interest in bicycling by helping to promote community bicycle events. Successful committees in other communities should be studied by the staff to develop recommendations for the structure and operation of the Rocky Mount Bicycle Advisory Committee.

2. **Create a seat on the Technical Coordinating Committee for a bicycle advocate.**

Although planners are supposed to be open minded and multi-modal in their thinking, it is easy to slight a mode of transportation during the busy work of just getting the job done. By naming a specific member to the Technical Coordinating Committee as a bicycle advocate, the MPO is recognizing the importance and great potential of bicycle travel. Perhaps this TCC member should also be a member of the Bicycle Advisory Committee. Another benefit would be to increase the local representation on the TCC, assuming that the bicycle advocate would be a local resident.

3. **Work with the Tar River Transit to equip transit vehicles with bicycle racks.**

Installation of bicycle racks on buses and vans is relatively low-cost. In addition, funding is available for



the purchase and installation of these racks. Despite the fact that few North Carolina transit systems have bike racks on their buses and there has not been an outcry for these racks in Rocky Mount, Tar River Transit should equip a bus on a trial basis. The bus outfitted should be one of the larger vehicles in the fleet that serves a route with a high likelihood of bicycle traffic, such as a downtown route or a route through a low-income area. Once this amenity is available, it may catch on and lead to a demand from the public for additional racks.

4. **Through the RMPD increase safe bicycling education and promotion with the local school system.**

There is currently interest in bicycling and bicycle education among the Rocky Mount Police Department. The key to bicycle safety and education program implementation is to find real support for bicycle education among the school leaders and the parents of students. The City could approach the school superintendent and PTO organizations to discuss how bicycle education efforts may be enhanced.

The City should work with NCDOT and the National Center for Bicycling and Walking, which are sources for a bicycle training course geared for elementary school students and other bicycle safety programs.

5. **Offer incentives to developers who provide bicycle parking facilities (e.g. reduced number of required automobile parking spaces).**

Bicycle parking incentives should be designed to be an attractive option and a real savings for the developer. For example, a project may reduce parking spaces if bicycle parking is provided. The rate at which auto parking is reduced will have to be determined. A reasonable maximum allowance of reduced parking requirements should be established. Other key development factors such as supporting best storm water management practices should be considered before offering incentives.

6. **Continue good roadway maintenance practices, but be alert to the needs of bicyclists.**

The City Engineering and Public Works Departments can collaborate to ensure that maintenance practices serve the needs of the bicyclist. Attention should be paid to issues of:

- Sweeping bike lanes
- Surface repairs
- Vegetation encroaching into bikeways
- Sign and pavement marking repair
- Drainage improvements
- Utility cut backfill

7. **Through the RM Parks and Recreation Department conduct an annual bicycle event (e.g. local ride, race, challenge).**

Across the nation and state more bicycle events are taking place and the local communities are seeing economic benefit for their efforts. Many participants in the April 2005 Ride-About asked for more events like that one. The first events may start small but as momentum builds, funding for larger outings will need to be guaranteed.

8. **Seek statewide bicycle events to come to the local area (e.g. NC Mountains to Sea and Spring Retreat).**

Rocky Mount offers a comfortable climate and flat terrain conducive to bicycling, and the existing park and trail facilities serve as an additional attraction for future bike events. The 2004 NC Mountains to Sea Ride stopped overnight in Rocky Mount and was highly successful. The annual NC Spring Retreat is a bike event that would be a boost to the local economy. Nearby cities like New Bern and Scotland Neck are having very good success with their bike outings.

9. **Broadcast bicycle promotions from state, federal, and private sources (NCDOT, FHWA, USDOT, bicycle clubs and organizations) on the local cable television station, CITY 19. Also develop local bicycle broadcast ads and FYI's.**



The local cable television station currently broadcasts ads for public transit. With similar efforts, promotional and educational ads for bicycling could be broadcast. State and federal agencies should be contacted to find available information at no cost to only a nominal charge. The staff and local persons should be able to produce bicycle videos for CITY 19.

10. The RMPD should recognize and reward kids bicycling safely with coupons for redemption at local merchants (e.g. free ice cream, pizza, movie ticket).

As done in other cities, the police officers could reward kids seen operating their bicycles in a safe manner. When spotted bicycling properly the children are given coupons redeemable at local merchants recruited to participate in the program.

Suggested Priorities

Route Priorities

Three levels are used to classify the priority level of each route: short-term, mid-term, and long-term improvements. Short-term improvements are those projects that are recommended for or can be completed within a 5-year period for which \$80,000 is recommended (average \$16,000 per year). Mid-term improvements are expected to occur between 5 and 10 years into the future for which \$1.6 million in projects is recommended (average \$320,000 per year). Long-term improvements are those projects that fall outside of a 10-year horizon for which a total of \$10.75 million in projects is presented (this would take more than 30 years spending \$350,000 each year). Note that all figures are presented in year 2005 dollars, thus not accounting for inflation or escalation of construction costs. Each route has been classified into one of these priority levels, as shown in **Table 7.1** on the next page.

Facility Recommendation Priorities

Short-Term

- Develop bicycle network map (done in conjunction with this plan)

- Modify the city's current street design standards for collectors, minor arterials, and major arterials to include opportunities for bicycle facilities
- Revise the standard practice of using through/right arrows to accommodate the use of striped bicycle lanes
- Construct bicycle parking facilities at government buildings, parks, and community centers where they are not already present

Mid-Term

- Institute simultaneous educational programs regarding the dangers of riding against traffic and motorists yielding to sidewalk traffic (this should continue through the long-term range)
- Implement education program about bicyclists riding at night without lights (this should be extended through the long-term range)

Long-Term

- Retrofit and install new signal loops with increased sensitivity for bicycles, with corresponding marking and signing
- Mark railroad crossings and pave additional width where necessary to improve bicycle crossing safety

Policy and Program Priorities

Short-Term

- Establish a standing Bicycle Advisory Committee
- Create a seat on the Technical Coordinating Committee for a bicycle advocate
- Conduct an annual bicycle event (e.g. local ride, race, challenge) (this should continue through the mid and long-term time periods)



Table 7.1 Route and Network Characteristics

Routes	Signed Route	Signed Route with Striped Parking	Striped Bike Lane	Wide Outside Lane	Paved Shoulder	Neighborhood Connector	Multi-Use Path	Length (miles)	Cost
Short-Term									
Downtown Core Loop	✓	✓	✓	✓				4.1	\$25,000
Downtown-East Side Connector	✓							1.7	\$30,000
Downtown-Reservoir Connector	✓	✓						1.5	\$25,000
<i>Short-Term Subtotal</i>									<i>\$80,000</i>
Mid-Term									
Abandoned Rail to Trail							✓	1.3	\$250,000
Downtown Neighborhood Loop	✓	✓	✓				✓	7.7	\$200,000
Tar River Trail Extension							✓	4.5	\$700,000
YMCA Loop	✓				✓		✓	3.5	\$500,000
<i>Mid-Term Subtotal</i>									<i>\$1,650,000</i>
Long-Term									
Battleboro Connector	✓	✓			✓		✓	5.4	\$1,350,000
City Lake-Downtown Trail	✓		✓		✓		✓	1.4	\$250,000
College Loop	✓		✓		✓			14.5	\$2,800,000
East Side Loop	✓		✓	✓	✓			8.5	\$850,000
East-West Connector	✓	✓	✓	✓				4	\$60,000
Englewood Park-City Lake Rail with Trail	✓	✓	✓		✓		✓	4.5	\$450,000
Farmington Park Loop	✓				✓		✓	1.8	\$250,000
Hospital/Stoney Creek Connector Trail	✓	✓			✓		✓	4.9	\$800,000
Johnson Pope-Holly Street Park Loop	✓		✓			✓		2.2	\$20,000
Mall-Hornbeam Park Loop	✓			✓	✓		✓	11.8	\$450,000
Park-Reservoir Connector	✓		✓	✓	✓		✓	1.5	\$400,000
Reservoir Loop	✓			✓	✓			15.9	\$1,250,000
West Side Connector	✓			✓	✓	✓	✓	11.7	\$1,800,000
<i>Long-Term Subtotal</i>									<i>\$10,730,000</i>
Total (length in miles)	34.0	6.0	8.4	13.3	22.4	0.5	27.1	111.7	\$12,460,000



Mid-Term

- Increase safe bicycling education in conjunction with the Rocky Mount Police Department and the local school system
- Recognize and reward kids bicycling safely with coupons for redemption at local merchants (e.g. free ice cream, pizza, movie ticket) distributed by the RMPD

Long-Term

- Equip Tar River Transit vehicles with bicycle racks
- Offer incentives to developers who provide bicycle parking facilities (e.g. reduced number of required automobile parking spaces).
- Continue good roadway maintenance practices, but be alert to the needs of bicyclists
- Seek statewide bicycle events to come to the local area (e.g. NC Mountains to Sea and Spring Retreat)
- Broadcast bicycle promotions from state, federal, and private sources (NCDOT, FHWA, USDOT, bicycle clubs and organizations) on the local cable television station, CITY 19. Also develop local bicycle broadcast ads and FYI's

Funding Opportunities for Short-Term Projects

The three routes that have been designated as Short Term priority are the Downtown Core Loop, the Downtown-East Side Connector, and the Downtown-Reservoir Loop. These routes all have either striped bike lanes, wide outside lanes, or striped parking on a signed route recommended for use. All of these facility types can be created in combination with resurfacing projects for a relatively low cost. The funds needed to do this could be obtained by reallocating Powell Bill money to improve selected larger sections of roadway. The remainder of all three projects is recommended to be a signed route. Again, this is a low cost alternative that could be done using reallocated Capital Improvement Project money. If a funding shortage is still a concern, a grant from the

Bikes Belong Coalition or through the Active Living by Design program are options to consider.

The revision of Rocky Mount's street design standards and intersection standards can be accomplished at no cost. These revisions will require a time investment from city employees and the appropriate reviewing groups.

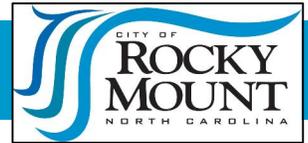
Bicycle parking can be another low-cost recommendation, depending on the security level and aesthetic value desired. A portion of parks and recreation funding could be set forth for these facilities, or if outside funding is desired, a grant from the Bikes Belong Coalition or from the federal and state Job Access and Reverse Commute grant program could assist. NCDOT has a program to provide funding for these facilities through the TIP that has been applied in locations such as Gaston County.

The creation of an annual bicycle event will require a small amount of funding but can be done for relatively little cost. Donations from the local bicycle shops as well as volunteer efforts can help to reduce the cost of this type of event.

Funding sources that can be explored for short, mid, and long-term projects are discussed in **Chapter 7**.

Final Steps

A review of the draft plan by the Metropolitan Planning Organization (MPO) Transportation Advisory Committee took place in November 2005. Early in 2006, the City Council is expected to review the draft plan and discuss its recommendations with staff and the consultant. Following City Council approval or adoption, the completed plan with all maps and related materials will be submitted to NCDOT for review and consideration of approval by the Division of Bicycle and Pedestrian Transportation. The City will be required to complete a survey and/or interview after the plan is completed. To adopt and implement this plan, it will take a concerted effort by the City, working with NCDOT Division of Bicycle and Pedestrian Transportation, NCDOT Division 4, Nash County, and Edgecombe County. It is recommended that the City of Rocky Mount staff conduct an annual review of the implementation plan either in conjunction with or independent of the proposed Bicycle Advisory Committee and present a progress report to the City's elected leadership.



Appendices

Survey

Agendas

Flyer Sample

Cost Estimates

ROCKY MOUNT BICYCLE PLANNING SURVEY

The City of Rocky Mount wants to improve the conditions and opportunities for bicycling in our community. Your input will support the work in progress to develop the Rocky Mount Comprehensive Bicycle Plan. Please complete the survey by providing information as it applies to you. Providing your name and contact information is optional, but it would be helpful to discuss bicycling and to inform you of bicycle plans in the future. (Please print clearly)

Name _____

Mail address _____

_____ Zip code _____

Telephone _____ (home) _____ (work) _____ (cell)

Email _____

Age _____ Sex _____

1. Work Status Employed _____ Work at home _____ Retired _____ Student _____

2. Do you ride a bicycle? _____ Do you own a bicycle? _____ How many? _____

3. How many bicycle riders live at your address? _____

4. How would you classify your bike riding skill level?
_____ Beginner (Under age 12) _____ Basic _____ Advanced

5. List any bicycle organization or club that you belong to.

6. How often do you ride a bicycle?
_____ days per week / _____ days per month / _____ days per year

7. What is the length of your typical bicycle trip? _____ mile

8. Check ALL the times that you typically ride a bicycle.
_____ most everyday _____ daytime _____ night time
_____ weekdays _____ weekends _____ holiday
_____ vacation _____ summer _____ fall
_____ winter _____ spring

9. Where do you ride? Check all that apply.
_____ In the City of Rocky Mount _____ Edgecombe County _____ Nash County
_____ Other cities _____ Other states _____ Vacation sites
_____ Competitive races _____ Touring events

10. For what purposes do you ride? Check all that apply.

- Commute to work How far? _____
- Commute to school How far? _____
- Shopping trip Recreation
- Physical exercise Visit neighbor/family/friend
- Deliver goods Run errands
- To attend meeting function

11. Where do you normally ride your bicycle? Give the starting point (origin) and stopping place (destination) of bicycle trips you are most likely to take in Rocky Mount.

<u>Origin</u>	to	<u>Destination</u>
_____		_____
_____		_____
_____		_____

12. Some bicycle trips are difficult to make. List below the trips you would like to be able to make in Rocky Mount but you currently feel that you can not do so safely.

<u>Origin</u>	to	<u>Destination</u>
_____		_____
_____		_____
_____		_____

13. What geographical areas of Rocky Mount do you think need bicycle facility improvements?

14. Check all of the following factors that determine if you make a trip by bicycle or not.

- Travel time Bicycle parking Safety of route
- Traffic Costs of other modes of travel Need for exercise
- Facilities for shower/changing clothes Weather Hills
- Theft/bike security Other _____

15. Please check all that would enhance your riding safety and enjoyment.

- bike rack at your destination bike rack on transit bus
- striped bicycle lane on the road pavement bike route signage
- clean road surface drainage grates flush with pavement surface
- maps of bike routes

16. Do you wear a helmet when riding? _____

17. Have you ever been in a traffic crash on a bicycle? _____ What type?

Bicycle / Car / Truck _____ Bicycle / Motorcycle _____

Bicycle / Pedestrian _____ Bicycle alone _____

18. Please rate the Rocky Mount city streets for bicycle riding by circling one number.

	Not Dangerous			Dangerous	
Gravel, glass, debris	1	2	3	4	5
Drainage grates	1	2	3	4	5
Cars turning/stopping					
In front of bicycles	1	2	3	4	5
Cars ignoring or crowding					
Bicycles to the roadside	1	2	3	4	5
Roads too narrow for cars					
And bicycles	1	2	3	4	5
Traffic volume	1	2	3	4	5
Harrassment from drivers	1	2	3	4	5
Other _____	1	2	3	4	5

19. Name the roads that you ride the most often.

20. What roads would you most like improved for bicycling?

21. Name the facilities or types of places you think bicycle routes should connect.

22. Check all that apply. How do you ride your bicycle?

- _____ with the traffic flow
- _____ against the traffic flow
- _____ wrong way on ONE WAY streets
- _____ on the sidewalk
- _____ through red traffic signal
- _____ without stopping at STOP sign
- _____ two people on a bicycle (single seat)

23. Do you support change in bicycle facilities and policies to make Rocky Mount a more bicycle friendly community? _____

24. How do you rate the following ideas for improving bicycling in Rocky Mount?

	Very Important		Not Important		
	1	2	3	4	5
Bike lanes with striping on the pavement	1	2	3	4	5
Wide outside travel lane to provide space For bicycle	1	2	3	4	5
Removal / repair of hazards such as potholes	1	2	3	4	5
Repair or replace high drainage grates	1	2	3	4	5
Streets that are signed as bike routes	1	2	3	4	5
Bike paths that are separate from the street	1	2	3	4	5
Bikeways that go from residential areas To nearby commercial areas	1	2	3	4	5
Bikeways that connect to each other For long distances	1	2	3	4	5
More bicycle parking at destinations	1	2	3	4	5
Bicycle racks available on buses	1	2	3	4	5
Lockers and showers at workplace	1	2	3	4	5
Removal of curbside parking on city Streets to provide more space for bikes	1	2	3	4	5
Local bicycle facility map	1	2	3	4	5
Educational materials describing safe Bicycle riding	1	2	3	4	5
Educating car drivers on bicyclists' use Of roadways	1	2	3	4	5
Bicycle education in elementary and Middle schools	1	2	3	4	5

25. What do you perceive to be the major barriers to bicycle transportation in Rocky Mount?

26. In general how would you rate the bicycle conditions in Rocky Mount?

___ good ___ fair ___ poor

Please return the survey by fax to 972-1176 or mail to Bob League, City of Rocky Mount, P.O. Box 1180, Rocky Mount, NC 27802.

For more information on transportation planning activities in Rocky Mount visit the MPO website or call Bob League (972-1129). www.ci.rocky-mount.nc.us/mpo/

Rocky Mount Bicycle Planning Survey Responses

Questions						
1. Do you support change in bicycle facilities and policies to make Rocky Mount a more bicycle friendly community?	Total Responders					
	74	Yes (74)	No (0)			
2. Work Status	74	Employed (60)	Work at Home (4)	Retired (6)	Student (4)	
3. Do you ride a bicycle?	74	Yes (69)	No (5)			
Do you own a bicycle?	70	Yes (66)	No (4)			
How many?	60	One (20)	Two (18)	Three (12)	Four (6)	Five or more (4)
4. How many bicycle riders live at your address?	71	One (8)	Two (35)	Three (13)	Four (10)	Five (5)
5. How would you classify your bike riding skill level?	77	Beginner <12 (0)	Basic (43)	Advanced (34)		
6. How often do you ride a bicycle?	71					
		0 Days/Week	4			
		1-2 Days/Week	6			
		3 Days/Week	18			
		4 days/Week	8			
		5 Days/Week	7			
		6 Days/Week	2			
		7 Days/Week	4			
		1-2 Days/Month	5			
		3 Days/Month	2			
		4 Days/Month	7			
		5-6 Days/Month	4			
		< 10 Days/Year	4			

Rocky Mount Bicycle Planning Survey Responses

7. What is the approximate length of your typical bicycle trip?	Total Responders		
	68	1 to 5 miles	27
		6 to 10 miles	21
		11 to 15 miles	6
		16 to 20 miles	5
		21 to 25 miles	4
		26 to 30 miles	4
		30+ miles	1
8. Check all the times that you typically ride a bicycle.	Total Responders		
	71	Most everyday	15
		Daytime	42
		Night time	12
		Weekdays	34
		Weekends	53
		Holidays & vacations	37
9. Where do you ride? Check All that apply.	Total Responders		
	71	In the City of Rocky Mount	55
		Edgecombe County	10
		Nash County	50
		Other cities	18
		Other states	14
		Vacation sites	12

Rocky Mount Bicycle Planning Survey Responses

10. For what purposes do you ride? Check all that apply.	Total Responders		
	71		
		Commuter to work	5
		Commuter to school	1
		Shopping trip	2
		Physical exercise	65
		Deliver goods	0
		Recreation	62
		Run errands	3
		Visit neighbor/family/friend	10
		To attend meeting function	2
11. Where do you normally ride your bicycle? Give the starting point (origin) and stopping place (destination) of bicycle trips you are most likely to take in Rocky Mount.	Total Responders		
	39		
	Origin	Destination	
	Nash Community College	Winstead Ave	
	Winstead Ave	Nash County	
	YMCA	Nash General Hospital	
	S. Taylor St	MLK Statue	
	S. Taylor St	MLK Park, Nash Co, Red Oak, Nashville	
	Ketchpoint	Englewood	
	Bel Air Estates	Jenkins Garage	
	Home	West Mount, Englewood	
	Bunn Farm	FleetPride	
	Home	Around County	
	Tar River Trail @ MLK Park	Sunset Park	
	Jefferson St	Random	
	Nash County/Red Oak	Battleboro Areas	
	Home	Sunset Park	
	129 S. Kirkwood Ave	Tom Stith Park	
	Home	Around Neighborhood	

Rocky Mount Bicycle Planning Survey Responses

11. Where do you normally ride your bicycle? Give the starting point (origin) and stopping place (destination) of bicycle trips you are most likely to take in Rocky Mount. (Continued)	Tom Stith Park	Battle Park	
	Cleveland St	City Lake	
	Winstead Ave	Reservoir	
	West Mount	Old Carriage Rd/Oak Level/Halifax Rd	
	Beal St	Tar River Trail	
	Beal St	Farmers Market/Library	
	Beal St	Area Parks	
	Hunter Hill Rd	City Offices	
	Hammond St	Greenway Trail/return home	
	Avondale Ct	Englewood Methodist Church	
	Avondale Ct	Oakdale Rd	
	Memory Ln	City Lake/Greenway	
	Hammond St	West Mount Dr	
	Old Carriage Rd	Hunter Hill Rd	
	Forest Hill Ave	Winstead Ave	
Edwards Middle School	Battle Park		
Rocky Mount	Tarboro		
Home	Wesleyan College		
Home	Reservoir		
Bishop Rd	Belmont Park		
12. I feel that the following desired bicycle trips cannot be made safely in Rocky Mount.	Total Responders	36	
			Origin
			Destination
			Amherst
			Sunset Park/Benvenue Area
			Bethlehem Rd
			Halifax Rd
			Old Route 64
			Halifax Rd
			Old Carriage Rd
			Halifax Rd
			S. Taylor St
			Any where on Sunset
		Home	
		Golden East Mall	
		Westridge	
		Downtown	
		Home	
		Sunset Park	
		Raleigh St	
		Tom Stith Park	
		Beal St	
		Englewood Elementary	
		Home	
		Library	

Rocky Mount Bicycle Planning Survey Responses

12. I feel that the following desired bicycle trips cannot be made safely in Rocky Mount. (Continued)		Hunter Hill Rd Premier Theater Bridgewood Rd Bike path on Benvenue Rd Englewood Sunset Park Englewood City Hall Sunset Ave Main St Falls Rd Benvenue Rd Home Wesleyan Blvd Goldrock Rd Greyson St Stone Park Sunset Park Home City Lake Red Oak Train Station Red Oak Harris Teeter Home Sunset Avenue Fords Colony Bishop Rd																							
13. Check all of the factors that would determine if you make a trip by bike or not.	Total Responders 72	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Travel time</td><td style="text-align: center;">21</td></tr> <tr><td>Bicycle parking</td><td style="text-align: center;">23</td></tr> <tr><td>Facilities for shower/changing</td><td style="text-align: center;">7</td></tr> <tr><td>Safety of route</td><td style="text-align: center;">63</td></tr> <tr><td>Traffic</td><td style="text-align: center;">49</td></tr> <tr><td>Costs of other modes of travel</td><td style="text-align: center;">4</td></tr> <tr><td>Need for exercise</td><td style="text-align: center;">43</td></tr> <tr><td>Weather</td><td style="text-align: center;">45</td></tr> <tr><td>Hills</td><td style="text-align: center;">7</td></tr> <tr><td>Theft/bike security</td><td style="text-align: center;">32</td></tr> <tr><td>Other: After dusk</td><td style="text-align: center;">1</td></tr> </table>	Travel time	21	Bicycle parking	23	Facilities for shower/changing	7	Safety of route	63	Traffic	49	Costs of other modes of travel	4	Need for exercise	43	Weather	45	Hills	7	Theft/bike security	32	Other: After dusk	1	
Travel time	21																								
Bicycle parking	23																								
Facilities for shower/changing	7																								
Safety of route	63																								
Traffic	49																								
Costs of other modes of travel	4																								
Need for exercise	43																								
Weather	45																								
Hills	7																								
Theft/bike security	32																								
Other: After dusk	1																								
14. Do you wear a helmet when riding?	Total Responders 72	Yes (57)	No (15)																						

Rocky Mount Bicycle Planning Survey Responses

15. Please check all that would enhance your riding safety and enjoyment.	Total Responders					
	69					
		Maps of bike routes	47			
		Bike route signage	49			
		Clean road surface	48			
		Bike rack at your destination	33			
		Bike rack on transit bus	10			
		Striped bicycle lane on the road pavement	59			
		Drainage grates flush with pavement surface	36			
16. Please rate Rocky Mount streets for these hazards.	Total Responders	Not Dangerous		Dangerous		
	66	Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Gravel, glass debris		6	19	21	10	9
Drainage grates		3	19	23	15	5
Cars turning/stopping in front of bicycles		1	5	14	29	15
Cars ignoring or crowding bicycles to the roadside		---	2	13	26	26
Roads too narrow for cars and bicycles		1	5	15	19	25
Traffic volumes		2	4	25	23	10
Harassment from drivers		5	4	12	10	3
Other		---	3	1 (Dogs)	2	4
17. Name the roads that you ride most often.	Total Responders					
	45					
		West Mount Dr	11	Fairfield Ct	1	
		Bethlehem Rd	5	Fairfield Dr	1	
		Sunset Ave	5	Gravelly Dr	1	
		Halifax Rd	6	Shannon Ct	1	
		Ketchpoint	3	Newby Ct	1	

Rocky Mount Bicycle Planning Survey Responses

17. Name the roads that you ride most often. (Continued)	Old Carriage Rd	4	Brake Rd	1
	Bend of the River Rd	4	Womble Rd	1
	Hammond St	3	Hunter Hill Rd	4
	Glenn Ave	1	Around City Lake	2
	Lee St	1	Grace St	1
	Beechwood Dr	3	Church St	2
	Providence Rd	1	Around Sunset Park	1
	Amherst Rd	2	Westhaven Neighborhood	1
	Hwy 97	2	Pearl St	1
	Gypsy Trail	1	Avondale Ave	1
	Winstead Ave	8	Greenwood/Oakdale	1
	Winstead Rd	5	Old Mill Rd	1
	Laurel Tr	1	Benvenue Rd	2
	Falls Rd	3	Red Oak/Battleboro Rd	2
	River Dr	1	Browntown Rd	2
	Raleigh St	1	Watson Seed Farm Rd	2
	Atlantic Ave	1	Ashton Rd	1
	Knob Hill	1	Redman Rd	1
	Behind Westridge Shop Ctr	1	Tar River Trail	1
	Neighborhood Streets	5	Nicodemus Mile	2
	Nash County	2	Country Club Rd	1
	Goldrock Rd	1	Englewood Area	1
Wesleyan Blvd	1	Bishop Rd	1	
	Total Responders			
18. What roads would you most like improved for bicycling?	36			
	301	6	Halifax Rd	5
	Sunset Ave	15	Church St	3
	Bethlehem Rd	3	Winstead Ave	8
	Hunter Hill Rd	6	Goldrock Rd	1
	Old Mill Rd	2	Falls Rd	2
	Benvenue Rd	8	Peachtree St	1
	Winstead Rd	1	Grace St	1
	Raleigh St	1	Thomas St	1

Rocky Mount Bicycle Planning Survey Responses

18. What roads would you most like improved for bicycling? (Continued)	E Grand Ave	1	Franklin St	1															
	Fairfield Ct	1	Atlantic Ave	1															
	Fairfield Dr	1	Hwy 97	1															
	Gravelly Dr	1	Cokey Rd	1															
	Shannon Ct	1	West Mount Dr	1															
	Newby Ct	1	Country Club Rd	2															
	Bishop Rd	1	Fenner Rd	1															
	English Rd	1	Nicodemus Mile	2															
	Greyson St	1	Goldrock Rd	1															
<p>Other Comments: Roads that lead to attractions; Any that are bumpy; More trails like Lake Crabtree in Raleigh, and Rails to Trails in Durham; Decent mountain bike trails; Roads that connect from neighborhoods through the town for a system, bridges and crosswalks; Make it possible for bikers to change traffic signals at busy intersections.</p>																			
19. Name the facilities or types of places you think bicycle routes should connect.	Total Responders																		
	35	<p>Comments</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Malls, parks, historic districts</td></tr> <tr><td>Circumnavigate city</td></tr> <tr><td>A safe circular route of 20-30 miles</td></tr> <tr><td>Hospital, mall, school, library</td></tr> <tr><td>Farmington Park to Sunset Park</td></tr> <tr><td>Parks, downtown area</td></tr> <tr><td>Ponds, parks, recreational facilities</td></tr> <tr><td>Tom Stith Park, RM pool area, Sunset Park</td></tr> <tr><td>Important places</td></tr> <tr><td>Imperial Center, museums, Farmer's market</td></tr> <tr><td>Grocery stores, restaurants, movie theaters</td></tr> <tr><td>City Hall, train station, Tar River Trail</td></tr> <tr><td>Sports Complex, Englewood shopping center</td></tr> <tr><td>Westridge to new YMCA</td></tr> <tr><td>Residential areas</td></tr> <tr><td>Colleges</td></tr> </table>			Malls, parks, historic districts	Circumnavigate city	A safe circular route of 20-30 miles	Hospital, mall, school, library	Farmington Park to Sunset Park	Parks, downtown area	Ponds, parks, recreational facilities	Tom Stith Park, RM pool area, Sunset Park	Important places	Imperial Center, museums, Farmer's market	Grocery stores, restaurants, movie theaters	City Hall, train station, Tar River Trail	Sports Complex, Englewood shopping center	Westridge to new YMCA	Residential areas
Malls, parks, historic districts																			
Circumnavigate city																			
A safe circular route of 20-30 miles																			
Hospital, mall, school, library																			
Farmington Park to Sunset Park																			
Parks, downtown area																			
Ponds, parks, recreational facilities																			
Tom Stith Park, RM pool area, Sunset Park																			
Important places																			
Imperial Center, museums, Farmer's market																			
Grocery stores, restaurants, movie theaters																			
City Hall, train station, Tar River Trail																			
Sports Complex, Englewood shopping center																			
Westridge to new YMCA																			
Residential areas																			
Colleges																			

Rocky Mount Bicycle Planning Survey Responses

20. Check all that apply. How do you ride your bicycle?	Total Responders					
	69	With the traffic flow		63		
		Against the traffic flow		6		
		Wrong way on ONE WAY St		1		
		On the sidewalk		20		
		Through red traffic signal		1		
		Without stopping at stop sign		4		
		Two people on single seat bike		1		
21. How do you rate the following ideas for improving bicycling in Rocky Mount?	Total Responders	Very Important		Not Important		
	73	Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Bike lane with paint stripe on the pavement	49	13	10	---	1	
Wider outside travel lanes to provide space for cars & bikes	44	16	8	4	1	
Removal/repair of hazards such as potholes	27	21	16	5	4	
Repair or replace high drainage grates	20	21	20	7	3	
Streets that are signed as bike routes	39	19	11	3	1	
Bike paths that are separate from the street	37	15	16	3	1	
Bikeways that go from residential areas to nearby commercial areas	28	22	19	1	1	
Bikeways that connect to each other for long distances	38	13	12	4	2	
More bicycle parking at destinations	20	12	29	4	4	
Bicycle racks available on buses	10	8	20	17	13	
Lockers and showers at workplace	9	9	13	20	15	
Removal of curbside parking on city streets to provide more space for bikes	7	16	19	16	9	
Local bicycle facility map	19	30	10	10	1	
Educational materials describing safe bicycle riding	23	16	21	6	3	
Educating car drivers on bicyclists' use of roadways	32	19	10	8	1	
Bicycle education in elementary and middle schools	30	24	9	5	1	

Rocky Mount Bicycle Planning Survey Responses

22. What do you perceive to be the major barriers to bicycle transportation in Rocky Mount?	Total Responders	47			
<p>Safety; Traffic; Narrow streets; Lack of dedicated bike lanes/paths; Speeding motorists; S's; Education of motorists; Bike parking; Respect from motorists; Fear; Major routes out of town are dangerous; Unsafe areas (crime); Cyclists not following traffic laws; Motorists not sharing the road; Danger at crossings like the river and major intersections; Ample space for bikes and cars; Lack of bike route signs; Unfriendly roadways; Lack of interest; Harassing motorists; Bike paths not completely separate from traffic lanes; Not enough/long enough trails; Bad roads; Not enough lighted sidewalks/bike paths; Visibility of riders; Community support; Lack of mountain bike trails, and consideration for mountain bikers needs; Dogs; Lack of cycling activities; Lack of meeting places for cyclists; None; Riding against traffic; Education of bike riders; Riding without a helmet; Riding on busier roads; Weather</p>					
23. In general how would you rate the bicycle conditions in Rocky Mount?	Total Responders	68			
		Good (5)	Fair (41)	Poor (22)	
24. Age/Sex of Responders.	No. Males 49	Youngest 15	Oldest 72	Average Age 43	
		No. Females 25	Youngest 14	Oldest 57	Average Age 38



AGENDA

ROCKY MOUNT BAC

KICKOFF MEETING

1. Self-Introductions (name, how long lived in Rocky Mount, interest in bicycling)
2. Study Background
3. Project Organization and BAC Role / Mission Statement
4. Introduction of Consultant / Contact Information
5. Study Area Map
6. Scope of Consultant's Work
7. Schedule and Process
8. Public Involvement Activities
9. Planning Issues ("If I Were King/Queen")
 - Review draft Goals and Objectives
 - Review draft User Survey
10. Presentation: "Balancing a Transportation System"

Note: City and consultant facilitation of the agenda is informal and interactive. Comments & questions are encouraged.



AGENDA

ROCKY MOUNT BAC

MEETING #2 – Tuesday March 8 at 4 o'clock

1. Self-Introductions
2. Study Overview for new members – results of “If I were King or Queen of Rocky Mount” visioning exercise
3. Rocky Mount Police – bicycle education and enforcement issues
4. Rocky Mount Parks and Recreation – bicycle education and community interests, Tar River Trail issues
5. Goals and Objectives – review handout in February meeting packet and be prepared to discuss and accept them
6. User Survey
7. Plans for April 30 Ride-about
8. Introduction to existing bicycling conditions

Note: City and consultant facilitation of the agenda is informal and interactive. Comments & questions are encouraged.



AGENDA

ROCKY MOUNT BAC

MEETING #3 – Tuesday April 12 at 4 o'clock

1. Self-Introductions
2. Old Business
 - Results of “If I were King or Queen of Rocky Mount”
 - Goals and Objectives
 - User Survey
3. Update: April 30 Bicycle Ride-about
4. Consultant Activities: Street Inventory
5. Committee Activity: Mapping Exercise to mark-up basemaps showing desired on-street bicycle routes

Note: City and consultant facilitation of the agenda is informal and interactive. Comments & questions are encouraged.

BAC Homework: due May 10
working groups meet to pick one street each and
develop a street action plan (bullet list)



AGENDA

ROCKY MOUNT BAC

MEETING #4 – Tuesday May 10 at 4 o'clock

1. Old Business
 - Homework
 - User Survey
 - Rideabout
2. Public Comments
3. Prioritization Criteria
4. Barriers

Note: City and consultant facilitation of the agenda is informal and interactive. Comments & questions are encouraged.



AGENDA

ROCKY MOUNT BAC

MEETING #5 – Tuesday August 9 at 4 o'clock

1. Report Chapters 1 and 2
2. Barrier Analysis
 - Overview
 - Discussion
3. Route Analysis
 - Selected route analysis
 - Proposed System Map
 - Discussion and Mark-up

Note: City and consultant facilitation of the agenda is informal and interactive. Comments & questions are encouraged.



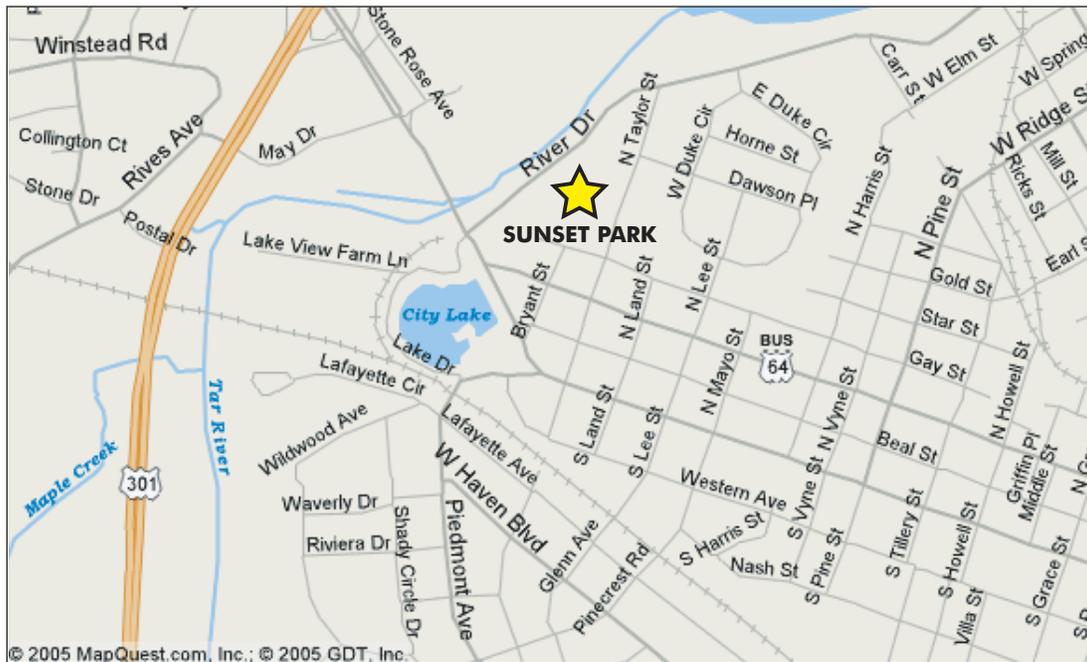
AGENDA

ROCKY MOUNT BAC

MEETING #6 – Wednesday October 12 at 4 o'clock

1. Handout Copies of Report Chapters 5 and 6
2. Recommended Route Analysis
 - Suggested Revisions
 - Discussion
3. Priorities
 - Factors to Consider
 - Discussion
4. Next Steps
 - Report
 - Public Workshop

Note: City and consultant facilitation of the agenda is informal and interactive. Comments & questions are encouraged.



BIKE RIDE FOR FUN

ROCKY MOUNT CITY STREETS BICYCLE RIDE-ABOUT

SAVE THE DATE

Saturday April 30, 2005

WHERE TO MEET

Meet at Sunset Park- Shelter B



SCHEDULE

9 am: Bicycle Youth Rodeo

10 till Noon: 7 mile trip on low speed low traffic streets including the Tar River Trail

WHAT TO BRING

Bring a picnic lunch, water bottle, helmet & bicycle

Sponsored by the City of Rocky Mount Engineering Department to announce the beginning of a Rocky Mount Bicycle Comprehensive Plan

For more information contact Bob League - Transportation Planner at 972-1129 or league@ci.rocky-mount.nc.us

Facility Name	Battleboro Connector
Total Mileage	5.4
Total Cost	\$ 1,350,000

Signed Route

Total Mileage	0.6
Cost Per Mile	\$ 1,000
Total Cost	\$ 600

Signed Route with Striped Parking

Total Mileage	0.5
Cost Per Mile	\$ 15,000
Total Cost	\$ 7,500

Striped Bike Lane (no new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	4.3
Cost Per Mile	\$ 305,000
Total Cost	\$ 1,311,500

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	0.0
Cost Per Mile	\$ 150,000
Total Cost	\$ -

Facility Name **City Lake-Downtown Trail**
Total Mileage 1.4
Total Cost \$ 250,000

Signed Route
Total Mileage 0.0
Cost Per Mile \$ 1,000
Total Cost \$ -

Signed Route with Striped Parking
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (no new pavement)
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (new pavement)
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Wide Outside Lane
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Paved Shoulder
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Neighborhood Connector
Total Number 0
Cost Per Unit \$ 85,000
Total Cost \$ -

Multi-Use Path
Total Mileage 1.4
Cost Per Mile \$ 150,000
Total Cost \$ 210,000

Facility Name	College Loop
Total Mileage	14.5
Total Cost	\$ 2,800,000

Signed Route

Total Mileage	2.6
Cost Per Mile	\$ 1,000
Total Cost	\$ 2,600

Signed Route with Striped Parking

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (no new pavement)

Total Mileage	1.2
Cost Per Mile	\$ 15,000
Total Cost	\$ 18,000

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	7.0
Cost Per Mile	\$ 305,000
Total Cost	\$ 2,135,000

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	3.7
Cost Per Mile	\$ 150,000
Total Cost	\$ 555,000

Facility Name	Downtown Core Loop
Total Mileage	4.1
Total Cost	\$ 25,000

Signed Route
Total Mileage 2.7
Cost Per Mile \$ 1,000
Total Cost \$ 2,700

Signed Route with Striped Parking
Total Mileage 0.4
Cost Per Mile \$ 15,000
Total Cost \$ 6,000

Striped Bike Lane (no new pavement)
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (new pavement)
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Wide Outside Lane
Total Mileage 1.0
Cost Per Mile \$ 15,000
Total Cost \$ 15,000

Paved Shoulder
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Neighborhood Connector
Total Number 0
Cost Per Unit \$ 85,000
Total Cost \$ -

Multi-Use Path
Total Mileage 0.0
Cost Per Mile \$ 150,000
Total Cost \$ -

Facility Name	Downtown-East Side Connector
Total Mileage	1.7
Total Cost	\$ 30,000

Signed Route
Total Mileage 0.7
Cost Per Mile \$ 1,000
Total Cost \$ 700

Signed Route with Striped Parking
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (no new pavement)
Total Mileage 1.0
Cost Per Mile \$ 15,000
Total Cost \$ 15,000

Striped Bike Lane (new pavement)
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Wide Outside Lane
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Paved Shoulder
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Neighborhood Connector
Total Number 0
Cost Per Unit \$ 85,000
Total Cost \$ -

Multi-Use Path
Total Mileage 0.0
Cost Per Mile \$ 150,000
Total Cost \$ -

Facility Name	Downtown Neighborhood Loop
Total Mileage	7.7
Total Cost	\$ 200,000

Signed Route
Total Mileage 2.1
Cost Per Mile \$ 1,000
Total Cost \$ 2,100

Signed Route with Striped Parking
Total Mileage 1.1
Cost Per Mile \$ 15,000
Total Cost \$ 16,500

Striped Bike Lane (no new pavement)
Total Mileage 3.8
Cost Per Mile \$ 15,000
Total Cost \$ 57,000

Striped Bike Lane (new pavement)
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Wide Outside Lane
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Paved Shoulder
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Neighborhood Connector
Total Number 0
Cost Per Unit \$ 85,000
Total Cost \$ -

Multi-Use Path
Total Mileage 0.7
Cost Per Mile \$ 150,000
Total Cost \$ 105,000

Facility Name	Downtown Reservoir Connector
Total Mileage	1.5
Total Cost	\$ 25,000

Signed Route

Total Mileage	0.2
Cost Per Mile	\$ 1,000
Total Cost	\$ 200

Signed Route with Striped Parking

Total Mileage	1.3
Cost Per Mile	\$ 15,000
Total Cost	\$ 19,500

Striped Bike Lane (no new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	0.0
Cost Per Mile	\$ 150,000
Total Cost	\$ -

Facility Name	East Side Loop
Total Mileage	8.5
Total Cost	\$ 850,000

Signed Route
Total Mileage 5.1
Cost Per Mile \$ 1,000
Total Cost \$ 5,100

Signed Route with Striped Parking
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (no new pavement)
Total Mileage 0.4
Cost Per Mile \$ 15,000
Total Cost \$ 6,000

Striped Bike Lane (new pavement)
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Wide Outside Lane
Total Mileage 0.3
Cost Per Mile \$ 15,000
Total Cost \$ 4,500

Paved Shoulder
Total Mileage 2.7
Cost Per Mile \$ 305,000
Total Cost \$ 823,500

Neighborhood Connector
Total Number 0
Cost Per Unit \$ 85,000
Total Cost \$ -

Multi-Use Path
Total Mileage 0.0
Cost Per Mile \$ 150,000
Total Cost \$ -

Facility Name	East-West Connector
Total Mileage	4.0
Total Cost	\$ 50,000

Signed Route

Total Mileage	1.3
Cost Per Mile	\$ 1,000
Total Cost	\$ 1,300

Signed Route with Striped Parking

Total Mileage	1.4
Cost Per Mile	\$ 15,000
Total Cost	\$ 21,000

Striped Bike Lane (no new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	1.3
Cost Per Mile	\$ 15,000
Total Cost	\$ 19,500

Paved Shoulder

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	0.0
Cost Per Mile	\$ 150,000
Total Cost	\$ -

Facility Name	Englewood Park-City Lake Rail with Trail
Total Mileage	4.5
Total Cost	\$ 450,000

Signed Route

Total Mileage	0.2
Cost Per Mile	\$ 1,000
Total Cost	\$ 200

Signed Route with Striped Parking

Total Mileage	0.6
Cost Per Mile	\$ 15,000
Total Cost	\$ 9,000

Striped Bike Lane (no new pavement)

Total Mileage	1.1
Cost Per Mile	\$ 15,000
Total Cost	\$ 16,500

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	2.6
Cost Per Mile	\$ 150,000
Total Cost	\$ 390,000

Facility Name	Farmington Park Loop
Total Mileage	1.8
Total Cost	\$ 250,000

Signed Route

Total Mileage	0.8
Cost Per Mile	\$ 1,000
Total Cost	\$ 800

Signed Route with Striped Parking

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (no new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	0.4
Cost Per Mile	\$ 305,000
Total Cost	\$ 122,000

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	0.6
Cost Per Mile	\$ 150,000
Total Cost	\$ 90,000

Facility Name	Hospital/Stoney Creek Connector Trail
Total Mileage	4.9
Total Cost	\$ 800,000

Signed Route

Total Mileage	0.5
Cost Per Mile	\$ 1,000
Total Cost	\$ 500

Signed Route with Striped Parking

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (no new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	0.6
Cost Per Mile	\$ 305,000
Total Cost	\$ 183,000

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	3.8
Cost Per Mile	\$ 150,000
Total Cost	\$ 570,000

Facility Name	Johnson Pope-Holly Street Park Loop
Total Mileage	2.2
Total Cost	\$ 20,000

Signed Route

Total Mileage	1.2
Cost Per Mile	\$ 1,000
Total Cost	\$ 1,200

Signed Route with Striped Parking

Total Mileage	0.7
Cost Per Mile	\$ 15,000
Total Cost	\$ 10,500

Striped Bike Lane (no new pavement)

Total Mileage	0.3
Cost Per Mile	\$ 15,000
Total Cost	\$ 4,500

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	0.0
Cost Per Mile	\$ 150,000
Total Cost	\$ -

Facility Name	Park-Reservoir Connector
Total Mileage	1.5
Total Cost	\$ 400,000

Signed Route

Total Mileage	0.0
Cost Per Mile	\$ 1,000
Total Cost	\$ -

Signed Route with Striped Parking

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (no new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Striped Bike Lane (new pavement)

Total Mileage	0.0
Cost Per Mile	\$ 305,000
Total Cost	\$ -

Wide Outside Lane

Total Mileage	0.0
Cost Per Mile	\$ 15,000
Total Cost	\$ -

Paved Shoulder

Total Mileage	1.0
Cost Per Mile	\$ 305,000
Total Cost	\$ 305,000

Neighborhood Connector

Total Number	0
Cost Per Unit	\$ 85,000
Total Cost	\$ -

Multi-Use Path

Total Mileage	0.5
Cost Per Mile	\$ 150,000
Total Cost	\$ 75,000

Facility Name	Reservoir Loop
Total Mileage	15.6
Total Cost	\$ 1,250,000

Signed Route
Total Mileage 7.0
Cost Per Mile \$ 1,000
Total Cost \$ 7,000

Signed Route with Striped Parking
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (no new pavement)
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (new pavement)
Total Mileage 0.6
Cost Per Mile \$ 305,000
Total Cost \$ 185,000

Wide Outside Lane
Total Mileage 5.0
Cost Per Mile \$ 15,000
Total Cost \$ 75,000

Paved Shoulder
Total Mileage 3.0
Cost Per Mile \$ 305,000
Total Cost \$ 915,000

Neighborhood Connector
Total Number 0
Cost Per Unit \$ 85,000
Total Cost \$ -

Multi-Use Path
Total Mileage 0.4
Cost Per Mile \$ 150,000
Total Cost \$ 60,000

Facility Name	Tar River Trail Extension
Total Mileage	4.5
Total Cost	\$ 700,000

Signed Route
Total Mileage 0.0
Cost Per Mile \$ 1,000
Total Cost \$ -

Signed Route with Striped Parking
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (no new pavement)
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (new pavement)
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Wide Outside Lane
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Paved Shoulder
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Neighborhood Connector
Total Number 0
Cost Per Unit \$ 85,000
Total Cost \$ -

Multi-Use Path
Total Mileage 4.5
Cost Per Mile \$ 150,000
Total Cost \$ 675,000

Facility Name	West Side Connector
Total Mileage	11.7
Total Cost	\$ 1,800,000

Signed Route
Total Mileage 0.6
Cost Per Mile \$ 1,000
Total Cost \$ 600

Signed Route with Striped Parking
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (no new pavement)
Total Mileage 0.0
Cost Per Mile \$ 15,000
Total Cost \$ -

Striped Bike Lane (new pavement)
Total Mileage 0.0
Cost Per Mile \$ 305,000
Total Cost \$ -

Wide Outside Lane
Total Mileage 3.7
Cost Per Mile \$ 15,000
Total Cost \$ 55,500

Paved Shoulder
Total Mileage 2.9
Cost Per Mile \$ 305,000
Total Cost \$ 884,500

Neighborhood Connector
Total Number 1
Cost Per Unit \$ 85,000
Total Cost \$ 85,000

Multi-Use Path
Total Mileage 4.5
Cost Per Mile \$ 150,000
Total Cost \$ 675,000